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HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION

BACKGROUND

[0001] Software-based systems are appropriate for many data flow and data processing applications. Yet, there are many situations where dedicated electronic hardware is faster at processing data than software. However, redesigning dedicated hardware each time a new data processing application or data formatting requirement comes up is an expensive proposition. And, designing, debugging and manufacturing dedicated electronic hardware is time-consuming, especially when revision cycles are taken into account. Video processing is one such data processing application, in which there are many different standards, and new standards are being introduced, resulting in the need for flexible solutions for data processing. Therefore, there is a need in the art for a solution which overcomes the drawbacks described above.

SUMMARY

[0002] In some embodiments, a platform for data flow processing is provided. The platform, which can be a computing device includes one or more swappable pods or cards in one or more chassis, coupled through a module messaging interface network. Each of the one or more swappable pods or cards having one or more hardware modules or one or more software modules and one or more of the plurality of swappable pods or cards having a portion for user-definable hardware modules or user-definable software modules. The plurality of swappable pods or cards being user-configurable to implement data flow processing architectures.

[0003] A programmable device for data flow processing in a user-configurable server with swappable pods or cards is provided. The device includes a programmable logic device (PLD) having a first region and a second region. The first region comprises a hardware-based or firmware-based router with a port enabling communication between the router and the second region, and the second region comprises one or more sandboxes with user-definable electronic circuits.

[0004] Other aspects and advantages of the embodiments will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the described embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The described embodiments and the advantages thereof may best be understood by reference to the following description taken in conjunction with the accompanying drawings. These drawings in no way limit any changes in form and detail that may be made to the described embodiments by one skilled in the art without departing from the spirit and scope of the described embodiments.

[0006] Fig. 1A is a block diagram of a single chassis version of a server or platform with swappable pods and Module Message Interface (MMI) network in accordance with some embodiments.

[0007] Fig. 1B is a block diagram of a multi-chassis version of a server or platform with swappable pods and Module Message Interface network in accordance with some embodiments.

[0008] Fig. 2 is a block diagram showing internal components of a pod for the servers/platforms of Figs. 1A and 1B in accordance with some embodiments.

[0009] Fig. 3 is a block diagram of a programmable device for the servers of Figs. 1A and 1B, with a Module Message Interface router, a bridge, and sandboxes for configurable modules in accordance with some embodiments.

[0010] Fig. 4 is a block diagram of a processor card for the servers or platforms of Figs. 1A and 1B in accordance with some embodiments.

[0011] Fig. 5 is a block diagram depicting memory superposition in an embodiment of a pod in accordance with some embodiments.

[0012] Fig. 6A depicts an example of Module Message Interface network packet or message format, as used in communication among hardware and software modules in the server or platform with swappable pods in accordance with some embodiments.

[0013] Figs. 6B-1 through 6B-3 illustrate a schematic diagram illustrating the use a variable width buses in conjunction with the MMI protocol in accordance with some embodiments.

[0014] Fig. 7 is a block diagram of various modules coupled to the Module Message Interface network connection, in an embodiment of the server or platform of Fig. 1A in accordance with some embodiments.

[0015] Fig. 8 depicts a configuration of the modules of Fig. 7 for data flow processing, such as processing of video data in accordance with some embodiments.

[0016] Fig. 9 depicts a further configuration of the modules of Fig. 7, with a direct function interface in accordance with some embodiments.

[0017] Fig. 10 is a block diagram of an embodiment of the server or platform of Fig. 1A for processing stream live data, including video data in accordance with some embodiments.

[0018] Fig. 11 is a block diagram of an embodiment of the server or platform of Fig. 1A or Fig. 1B for transcoding video from multiple video inputs, for multiple video outputs in accordance with some embodiments.

[0019] Fig. 12 is a flow diagram for a method for data flow processing in the platform described herein in accordance with some embodiments.

[0020] Fig. 13 is an illustration showing an exemplary computing device which may implement the embodiments described herein.

DETAILED DESCRIPTION

[0021] Embodiments of a single or multi-chassis server with a variety of flexible features for hardware-defined and software-defined functionality in data streaming and data processing systems, including video, are herein disclosed. The server or system is user-configurable and user-reconfigurable, with user-definable hardware modules and user-definable software modules, to implement data flow processing architectures. Pods and cards are removable, insertable, replaceable and optionally hot-swappable in the chassis. A pod may refer to a module for bulk storage for any type of data and may optionally be referred to as a module or a card. Various combinations of hardware modules, software modules and memories of various types are coupled through a Module Message Interface (MMI) network that supports communication directly among modules. Unlike processor-centric systems with operating systems and hardware subordinate to a centralized processor or group of processors, in many of the embodiments the processors, where present, are considered subordinate to the hardware. It should be appreciated that in some embodiments described herein the workload can be offloaded from a programmable logic device to a processor for tasks that can be done serially and/or slower. A header on Module Message Interface packets specifies chassis, board, module, instance and type identifiers, so that packets in the MMI network are routed to a hardware or software module in a pod or card in the chassis or one of multiple chassis. An FPGA (field programmable gate array), PLD (programmable logic device), ASIC (application specific integrated circuit), or some hybrid of FPGA / PLD / ASIC, which can be used in pods and cards, has a bridge with an MMI router, and one or more sandboxes for user-defined electronic circuits, optionally including processors. Some embodiments use

memory superposition, where multiple types of memory, for example multiple types of RAM (random-access memory), are used in a specified data flow. Multiple examples are shown of data flow processing architectures that can be configured from MMI network coupled hardware and software modules in pods and/or cards, in various embodiments.

[0022] Fig. 1A is a block diagram of a single chassis version of a server with swappable pods 104 and Module Message Interface network. A chassis 102 houses various pods 104 and/or cards 106, and may also have one or more power supplies, fans, rails for sliding pods or cards, connectors, a midplane and/or a backplane, and other fixtures and components commonly used in and available for a chassis. Some or all of the pods 104 and/or cards 106 have one or more inputs, outputs and/or bidirectional ports or connectors, for coupling to external signal or communication sources or destinations. A pod 104 or a card 106 may also have direct connections to one or more other pods 104 or cards 106. Usually, the majority or all of the pods 104 and/or cards 106 have an MMI network connection 108 to each other, although it is possible a pod 104 or card 106 may have only internal connections and connections to another pod 104 or card 106 but no MMI network connection/interconnect 108, for example when a pod 104 or card 106 is a subordinate or slave to another pod 104 or card 106. It should be appreciated that MMI network connection 108 does not specify the physical layer, but refers the protocol in some embodiments and may be referred to as an interconnect. Thus, MMI could layer on PCIe, Ethernet, direct serial or parallel connection, or any other suitable connection. Pods 104 and cards 106 can be identical, i.e., multiple instances of the same type of pod 104 or card 106, or can be differing. One or more routers, for the MMI network, can be internal to the server, or external. In some embodiments, each pod 104 or card 106 has a router.

[0023] Fig. 1B is a block diagram of a multi-chassis version of a server with swappable pods 104 and Module Message Interface network. As in the single chassis version of Fig. 1A, the pods 104 and/or cards 106 (not shown, but see Fig. 1A) are coupled to the MMI network connection 108 and thus to each other through the MMI network. The MMI network connection/interconnect 108 couples one chassis 102 to each other chassis 102 in the system, for example through electrical or optical cable, and is available for coupling to further components or systems external to the multi-chassis server. Again as in the single chassis version, one or more routers for the MMI network can be internal or external. In some embodiments, each chassis 102 has one or more routers and may be connected to a streaming service via the Internet or some other connection.

[0024] Fig. 2 is a block diagram showing internal components of a pod 104 for the servers of Figs. 1A and 1B. The pod 104 has an MMI network connection/interconnect 108, which can be made through wiring, fiber optics, signal traces, connector(s), etc., coupled to or coupling one or more hardware modules 110, one or more software modules 112 and/or memory 114, which can be of one or more differing types, in various combinations. One or more printed circuit boards (PCBs) 116, one or more cards 106, and/or one or more storage media devices 118 such as hard disk drives, solid-state drives, optical drives, etc., with various internal connections 120, can be included in various combinations in a pod 104. Internal connections 120 are for the hardware modules 110, software modules 112 and/or memory 114 to couple to the MMI network connection 108, either directly or through other components, and may also include internal connections among modules and/or memory 114 that bypass or do not go through the MMI network connection 108. In some embodiments, internal connections 120 can also include

connections among pods 104 and/or cards 106, again bypassing or not going through the MMI network connection 108. An internal connection 120, among or between hardware modules 110, software modules 112, and/or memory 114 in various combinations, could be made by ports, signal lines, buses, hardware FIFO (first in first out) queues, etc.

These same components and possibilities apply further to cards 106, which are generally of a smaller form factor than a pod 104, and can be inserted into a pod 104 or inserted into a chassis 102 in various embodiments.

[0025] Fig. 3 is a block diagram of a programmable device for the servers of Figs. 1A and 1B, with a Module Message Interface router 124, a bridge 128, and sandboxes 132 for configurable modules. The programmable device could be, for example, an FPGA 122 as depicted here, a PLD or an ASIC, or more than one of these, or some combination of these, or other programmable device that can configure electronic circuitry, in some versions including one or more processors or controllers. Many such programmable devices are programmed according to a program memory, and are reprogrammable, others are programmed once during manufacturing, for example one time programmable (OTP) or application-specific integrated circuits. In Fig. 3, the programmable device is an FPGA 122 in a pod 104, for example mounted to a printed circuit board that is one of one or more printed circuit boards in the pod 104, but the programmable device could also be in a card 106. In some embodiments of the server, the majority of the pods 104, or all of the pods 104, and the majority of the cards 106, or all of the cards 106 if present in the system, each have a programmable device similar to the one depicted in Fig. 3, or variation thereof.

[0026] The FPGA 122 has multiple sections in some embodiments, one of which is a bridge 128 for external communication, for example a serial connection to an external network or a parallel connection to an external bus and shown generally as I/O, and internal communication. The bridge 128 is thus a communication bridge between the outside of the server or system, and internal modules and/or memory, and has at least two ports, I/O for external communication and MMI for internal (and possibly also external) communication. The bridge 128 is a module that sits on a router port, for purposes of crossing the I/O type or protocol (i.e., from a wide internal parallel bus to PCIe, or Ethernet, etc). The bridge 128 may contain a security layer 130, and in some embodiments is a firewall for MMI message traffic policies. In turn, the MMI network connection 108 connects to one or more sandboxes 132 in other sections of the FPGA, and can connect to other modules 110, 112 and/or memory 114 elsewhere in the pod 104. The bridge 128 can translate between whatever protocol is used on the I/O connection to devices or systems external to the server, and the MMI network protocol (see Fig. 6). In some embodiments, the MMI router 124 is hardware-based, that is it lacks a processor. In other embodiments, the MMI router 124 is firmware-based, that is it has a dedicated processor with dedicated software that is not otherwise user programmable nor part of an operating system. In some embodiments, the MMI router 124 has both hardware-based and software-based implementations. In some versions, modules communicate to the MMI router 124 and inform the MMI router 124 of their addresses and/or identifiers, which information the MMI router 124 stores locally, for example in a table. In one embodiment, the MMI router 124 gathers statistics such as communication bandwidth, possibly on a per module basis for analysis, telemetry, decision making, etc. The MMI

router 124 could tap off and record messages, or perform predictive analytics, such as determining how close the system is to full capacity of the resources or full capacity of the router itself.

[0027] Each of one or more sandboxes 132 on the FPGA 122 is designated for programmable electronic circuits, which could include analog circuitry, digital circuitry, memory, one or more processors or controllers, etc., in various combinations, with the intent of providing user-programmable functionality for user customization of one or more pods 104 or cards 106. For example, a user could define an analog, digital or mixed-signal hardware module 110, or a software module 112 in embodiments with processor or controller availability in the FPGA 122, or more than one of these or some combination of these, in one or more sandboxes 132. In some versions, the bridge 128 is locked to prevent user access, in an FPGA 122 that supports partial reconfiguration, so that a user can configure or reconfigure one or more modules in one or more sandboxes 132, but cannot reconfigure the bridge 128. Configuration or reconfiguration of a sandbox 132 is performed through the MMI network in some versions, through the I/O of the FPGA 122 in other versions, and through the I/O of the FPGA 122, the MMI router 124 and the MMI network in still further versions.

[0028] In some embodiments, the bridge 128 has a security layer 130. One of the functions of the security layer 130 could be to protect the circuitry of the bridge, including the MMI router 124 in embodiments that have one, from being reprogrammed. Another function of the security layer 130 could be authentication of a user or other verification of permission to reconfigure a sandbox 132. Various further security functions are readily devised and implemented. In some embodiments the security layer

130 could be a firewall for MMI message traffic based on static or dynamic policy or rules.

[0029] Many features could be implemented in the sandboxes 132. User-definable hardware modules and user-definable software modules are possible, and could include dynamic port interfaces to processing elements or other modules, configurable as to data width and/or speed, or direct connect (e.g., serial link or parallel bus) versus hardware queue (e.g., FIFO) or software queue. Dynamic or automatic table creation could be based on what processing elements are connected. Scalable performance and resource utilization is possible. Clock cycle utilization can be regulated, such as for controlling power consumption or thermal characteristics. Port interfaces could support off-chip, off-board and off-chassis routing to processing elements. Ports can be defined so that no single processing element can stall the router. In some embodiments one or more sandboxes 132 could be logically or physically combined to form a larger sandbox with additional MMI access resources or capability. Sandboxes 132 can be of differing resource sizes and MMI ports 126. It should be appreciated that sandboxes 132 may present one common and unified interface that couples the sandboxes 132 to a network of other resources which may or may not include other sandboxes 132 in some embodiments.

[0030] High-speed message passing mechanisms between processing elements, between processing elements and hardware, or between or among hardware modules 110 can be defined in hardware (i.e., electronic circuits without processor intervention) to route messages containing source and destination identifiers (see example MMI packet in Fig. 6) more quickly and efficiently than typical software-based mechanisms. Use of

dedicated hardware for message passing avoids the general problems and time delays/latency of software-based mechanisms, such as required uses of mutex (a lock, based on mutual exclusion) or semaphores, memory bandwidth consumed as a result of memory thrashing, cache coherency issues, time loss with cache flushes or inefficiencies of bypassing cache, difficulty in debugging software, etc.

[0031] In the FPGA 122, multiple processing elements, e.g., processors or processor cores may be available. Dedicating one or more processors or processor cores to a task or function may be computationally more efficient than multithreading or multitasking with a single, more powerful processor or core, as a result of true parallel processing and eliminating software overhead for the multithreading or multitasking.

[0032] By deeply embedding processing elements in hardware, tasks can be highly integrated into hardware offload and acceleration modules. Hardware modules 110 can form an extension of processing elements, which are running software. Hardware offload/acceleration modules may extend software in a coprocessor type situation or may perform much larger intelligent tasks. The combination is a hybrid hardware + software processing element, where the software provides a thin layer that interconnects all of the hardware submodules. In many such embodiments, the FPGA 122 directly bridges together the network interfaces, hardware modules 110, software modules 112, and various types of memory and storage media devices for the data flow and data path. Thus, the critical data flow path does not loop through an application CPU with operating system (OS), but is instead bridged with a multiplicity of deeply embedded processing elements. System performance is maximized with hybrid hardware and software data processing.

[0033] Fig. 4 is a block diagram of a processor card 134 for the servers of Figs. 1A and 1B. one or more processors 136 are available for software modules 112, processing tasks, configuration of components in the system, etc. Communication with the processor(s) 136 is through the FPGA 122, one or more bridges 128, and the MMI network connection 108 and an interface 138, which could be a port or connector. Possible uses for a processor 136 include offloading hardware tasks to software, orchestrating data flows, orchestrating configurations or reconfigurations of hardware modules 110 and/or software modules 112, and executing software from software modules 112 when or if a processor is not available elsewhere, e.g., in a sandbox 132 or another card 106 or pod 104. Processors 136 can be allocated as a resource, in some sense as a virtual computing resource. Embodiments of the processor card 134 can be inserted into a chassis 102 or a pod 104, or integrated into a pod. Ease of replacement, upgrade or addition of a processor card 134 confers flexibility in computing resources for the server.

[0034] Fig. 5 is a block diagram depicting memory superposition 140 in an embodiment of a pod 104. Memory superposition 140 can also be in a card 106, or shared across multiple pods 104 cards 106, in further embodiments. For memory superposition 140, two or more types of memory, such as SRAM (static random access memory) 144, DRAM (dynamic random access memory) 146, FRAM (ferroelectric random-access memory) 148, RLDRAM (reduced latency dynamic random access memory) 150, flash 152 (electrically erasable programmable read-only memory or EEPROM), 3D Xpoint, etc., are made available for a data flow or other data processing operation. In some embodiments, memory superposition 140 uses multiple types of RAM. The various types of memory are connected to an FPGA 122 or ASIC 142, or other circuitry designed to

couple to and communicate with each type of memory and also couple to and communicate with the MMI network connection 108. It should be appreciated that Fig. 5 may be extended to processing element superposition where a task or work load is given and the task or work load may be carried out in hardware on FPGA, ASIC, or in software in a softcore or hardcore, etc., or some dynamic combination of all.

[0035] Each type of memory has an optimal use. SRAM is expensive to produce per bit, thus densities are low. However SRAM is fast and pays no penalty (e.g., latency, delay) for random-access reads nor writes. By contrast, flash is fast on read but slower on write, and less expensive per bit than SRAM and so has higher densities. With DRAM there is a penalty to be paid for random-access, as a result of page open and close requirements.

In addition DRAM must be refreshed periodically, which affects usable bandwidth.

However, DRAM is fast and inexpensive per bit compared to SRAM, and is thus available in much higher densities at relatively low cost (e.g., DDR3 (double data rate type three synchronous DRAM) memory in personal computers), further reducing costs due to high volume. RLDRAM is between SRAM and DRAM in density, speed and cost. RLDRAM has a higher penalty for random-access than SRAM, but a lower penalty than DRAM, and cost per bit is lower than with SRAM but higher than for DRAM. Thus available densities for RLDRAM are larger than SRAM but lower than DRAM.

Analogous to the overlapping of waves to form a final observed wave in wave superposition, where each wave contributes to the whole, in this case different types of memory are being overlapped, each with benefits and drawbacks, to form a final memory system which performs optimally in a given video stream or other data flow/ data processing task. In embodiments extended to processing elements each type of processing

element has an optimal use. For processing elements, factors include speed, performance, power consumption, thermal, parallel vs serial processing etc. Thus one skilled in the art would appreciate that processing element superposition where a task or work load is given and the task or work load may be carried out in hardware on FPGA, ASIC, or in software in a softcore or hardcore, etc., or some dynamic combination of all of the above may be substituted for the memory superposition described herein.

[0036] For example, during identification and classification of network traffic, lookup tables are typically implemented for hashing, direct lookup, linked lists, binary search, etc. In order to perform these tasks within an allotted time before the next arriving packet, it is important to have deterministic and guaranteed memory access times, as well as random-access since traffic can come in any order. Until traffic is classified, one is unable to filter out certain traffic nor determine priority, thus all traffic must be checked in some way. SRAM is well-suited for this use. Once classified there are often other tables and metadata that must be maintained in order to perform some useful function with classified traffic (such as tracking, prioritization, routing, sequencing, grouping, etc. For this, there is a need for more memory capacity to store metadata, while still maintaining high random-access. RLDRAM is well-suited to this use. Following this stage, there is typically some other processing required which involves even more memory in order to accomplish, such as decoding digital video or capturing traffic. By this stage, the random-access can be significantly reduced due to sequencing and prioritization. DRAM is well-suited to this need for the highest memory capacity and potentially reduced random-access. Thus, in this embodiment, the memory system is made optimal by superposition of SRAM, RLDRAM and DRAM, which increases

overall performance and reduces overall cost. It may also be advantageous to have the same data in multiple types of ram for different types of access needed at different times. In a similar vein it may be advantageous to a given processing element implemented in both hardware and software to dynamically direct a task based on various factors at the time the task is received.

[0037] In combination with a unified memory or processing element interface that abstracts the multiplicity of other memory or processing element interfaces, and communicates through a single interface, such as the MMI network. Memory and/or processing superposition 140 offers multiple types of memories or processing elements that are in a sense virtualized and can be assigned or allocated to the same or differing address ranges according to bandwidth, density, latency or other readily parameterized task needs, and reconfigured for subsequent tasks. One arrangement of the memory superposition 140 is as multilevel cache, e.g., level 1, level 2, level 3 cache. Data could be kept or moved among levels through an LRU (least recently used) algorithm. Another arrangement of memory superposition 140 is interleaved memory, to achieve an average access bandwidth. Input bandwidth, output bandwidth, or power could be blended among different types of RAM or drives such as rotational or disk drives versus solid-state drives, storage media modules, and different drive interfaces. Yet another arrangement of memory superposition 140 is swapped memory over a specified address range. Further arrangements of memory superposition 140 are readily devised in keeping with the teachings herein and the needs of a given task or data flow. Memory can be virtualized, in some embodiments.

[0038] Fig. 6A depicts a Module Message Interface network packet 154, as used in communication among hardware and software modules 110, 112 in the server with swappable pods 104. The packet 154 has a header 156, with fields specifying destination, and a payload 168, with data to be sent to the destination, and may have other data. The header 156, in one embodiment, specifies a chassis ID (identifier) 158, a board ID 160, a module ID 162, an instance ID 164, and a type ID 166, the combination of which uniquely specifies each hardware module 110 and software module 112. It should be appreciated that further information may be integrated into the header 156, such as header length, a header CRC, user tag, etc. Address parameters, for instance ranges of addresses or offsets may also be specified in the header 156. For example, an MMI packet 154 could be destined to chassis number two, board number three in that chassis, module number seven on that board, instance number three of that module on that board, and the module being a hardware type. Hardware modules 110 can be addressed directly through the header 156, while communications to software modules 112 are sent to the processor card 134, a pod 104 or card 106 with one or more processors, or a pod 104 that may further have one or more sandboxes 132, and then sent internally within that resource to the software module 112 or otherwise processed as befits circumstances specific to the software module 112. For correct routing, the MMI router 124 should be informed of the locations of software modules 112, as well as the hardware modules 110. At the MMI router 124, the fields in the header 156 of the packet 154 are resolved to addresses, much like or as a port number, a memory address or other address in an address space. Variations on the header 156 and variations on the packet 154 are readily devised in keeping with the teachings herein. For example, some versions have source

information in the header 156. A resource manager, for providing information for address resolution to the MMI router 124, could be implemented in hardware, software, or even in the cloud (i.e., the global communication network known as the Internet, and contents thereof known as the World Wide Web). Module identifiers could be static (typically, for hardware) or dynamic (typically for software). As explained below the header CRC 167 may be utilized to validate the routing portion without having to check the CRC on the whole message / packet. For many messages, such as command and response, a user tag 165 is blindly returned in the response to a command in some embodiments. In further cases the user tag 165 may also provide additional routing information for certain use cases. The user tag 165 in some embodiments is protected by the header CRC 167.

[0039] Figs. 6B-1 through 6B-3 illustrate a schematic diagram illustrating the use a variable width buses in conjunction with the MMI protocol in accordance with some embodiments. It should be appreciated that different bus widths may be utilized based on throughput needs, application requiring maximum speed will use the widest bus while applications not requiring full speed can use a narrower bus. Fig. 6B1 illustrates a scheme for an 8 wide bus, Fig. 6B-2 illustrates a scheme for a 4 wide bus, and Fig. 6B-3 illustrates a scheme for a 2 wide bus. The embodiments guarantee that the CRC 169 can be calculated on the bus width boundary of the data width in an efficient manner. This mechanism is enabled by requiring that the CRC 169 begins on the boundary of the bus width and not the 64 bit word width. In the embodiments, the CRC 169 is always on a word based on the bus width. That is, header 156, tag 165, header CRC 167 is followed by payload 168 and then CRC 169 follows on the bus width boundary for the next word

in each of Figs. 6B-1-3. It should be appreciated that the embodiments allow for the efficient encoding and decoding. While CRCs are discussed above, in some embodiments, e.g., with a highly reliable connection, the CRC is optional.

[0040] Fig. 7 is a block diagram of various modules coupled to the Module Message Interface network connection, in an embodiment of the server of Fig. 1A. While not an exhaustive list of possible modules 110, 112 for the server, this set illustrates some of the power, flexibility, and possibilities for configuration for various architectures, of the pods 104 and cards 106. Coupled to the MMI network connection 108 are an MMI router 124, a receive interface 170, a data receiver 172, a software processing element 174, a decoder 176, a CRC (cyclic redundancy check) calculator 178, memory 114, a data transmitter 180, a transmit interface 182, and storage media 184. Figs. 8 and 9 show two of the possible configurations for these hardware modules 110 and software modules 112, in a data flow system architecture suitable for video processing.

[0041] Fig. 8 depicts a possible configuration of the modules of Fig. 7 for data flow processing, such as processing of video data. One or more software processing elements 174 may optionally be deeply embedded within a data flow path in some embodiments. The data flow path has one or more data receivers receiving data from one or more receive interfaces 170, memory 114, and one or more data transmitters 180 transmitting data via one or more transmit interfaces 182. This creates a hybrid hardware and software system to maximize the total system performance. The data receiver directly interfaces to the memory 114 to optionally store received data or a portion thereof and/or metadata, while forwarding notifications to one or more software processing elements 174 via a receiver notification interface 190. The receiver notification interface 190 may

be FIFO-based such that a software processing element 174 may treat this hardware interface as a hardware queue, not requiring further buffering or queuing and software, to maximize performance. The data transmitter 180 directly interfaces to the memory 114 to optionally retrieve data or a portion thereof stored by the data receiver 172 and/or metadata, receiving instructions from a software processing element 174 via a transmitter instruction interface 192. The transmitter instruction interface 192 may be FIFO-based such that a software processing element may treat this hardware interface as a hardware queue, not requiring further buffering or queuing and software, to maximize performance. A software processing element 174 may optionally be connected to the memory 114 to inspect data stored by the data receiver 172, modify the data stored by the data receiver 172 and/or use a general memory available to a software processing element 174 for operation.

[0042] A CRC calculator 178 is directly connected to the memory 114 and is able to receive instructions from and provide responses to a software processing element 174 via a CRC interface 186. The CRC calculator 178 is under the influence of a software processing element 174 such that the CRC calculator 178 is able to generate a CRC for any data within the memory autonomously, once instructed by the software processing element 174, in parallel with other operations a software processing element 174 may be performing, without the need for the data to be passed to a software processing element 174. Upon completion, the resultant CRC may be reported back to a software processing element 174, stored in memory 114 and/or be validated against a pre-existing CRC within the memory 114 without the validation result being reported back to a software processing element 174.

[0043] A decoder 176 is directly connected to the memory 114 and is able to receive instructions and provide responses via a decoder interface 188. The decoder 176 is under the influence of a software processing element 174 such that the decoder 176 is able to decode and analyze the data stored in memory 114 by a data receiver 172 autonomously, once instructed by the software processing element 174, in parallel with other operations a software processing element 174 may be performing, without the need for the data to be passed through a software processing element 174. Upon completion, the decoder informs a software processing element 174 of any findings. Based on these findings, a software processing element 174 determines what is to happen to the stored data, including but not limited to deletion or selecting a particular data transmitter 180 to which to forward the data. Other functions could be carried out on data stored in memory 114 by a data receiver 172 in hardware blocks under the influence of a software processing element 174. Such functions could be creating or modifying data or metadata for storage in the memory 114.

[0044] Various trade-offs can be considered during the design stage for configuring this and other data flow architectures. The connections shown in Fig. 8 can be implemented using the MMI network connection 108 among various modules 110, 112 and memory 114. Or, some or many of these connections could be configured directly among modules 110, 112 and memory 114, for example using hardwiring in newly designed pods 104 or cards 106, or configured through the sandboxes 132. There are advantages to each of these approaches, in that hardwiring may be most efficient for hardware processing but not reconfigurable, whereas configuration through sandboxes is reconfigurable (i.e., can be configured initially, then reconfigured at a later time, e.g. for

update, upgrade, etc.). And, connection solely or with a majority through the MMI network connection 108 takes the least amount of design work and is the most reconfigurable, but may have longer delays/latency due to the use of packets and network connection rather than direct hardwiring or hardware configuration through sandboxes 132. Various embodiments offer all of these possibilities, for user consideration and optimization in a user-configured architecture for data flow processing.

[0045] Fig. 9 depicts a further configuration of the modules of Fig. 7, with a direct function interface 200. In this embodiment, there is a direct function interface 200 between the data receiver 172 and a decoder 176 and/or a CRC calculator 178 or other hardware functions. The data receiver 172 may then directly instruct hardware functions to perform some action on data within the memory 114 and/or generate additional data to store in the memory 114 via the direct function interface 200. Results from the hardware functions may then be reported back to the data receiver 172 via the direct function interface 200 and/or reported to a software processing element 174. Any results returned to the data receiver 172 may then influence a notification issued to a software processing element 174 by a receiver notification interface 190. The memory 114 may be a single memory bank or multiple memory banks, and may be physically implemented with, but not limited to RLDRAM, SRAM, SSRAM, DRAM, flash, 3D Xpoint, etc., or combination thereof.

[0046] Fig. 10 is a block diagram of an embodiment of the server of Fig. 1A for processing stream live data 214, such as video data. For example, the stream live data 214 could be a video data stream from a live event. In the server, a single chassis 102 or multiple chassis 102, several pods 104 are coupled to and connected by the MMI network

connection 108. The stream live data 214 enters via an interface, e.g., via Ethernet or a pod 104 with a controller 201 that is coupled to a memory or storage media interface 206, which in turn is coupled to a further module 208 with a hard drive, solid-state drive and/or compute module. Other pods 104 coupled to the MMI network connection 108 include a pod 104 with an Ethernet connection, one or more line cards 212 and an FPGA 122, and a pod 104 with a processor card 134 (or just the processor card 134 inserted into a chassis 102). The stream live data 214 can be stored in one of the storage media devices, before or after processing by a compute module or the processor card 134, and the processed live data can then be streamed out through the pod 104 with the line card(s) 212 to the Ethernet connection. Optional fans 210 cool the various components in the chassis 102. In this embodiment, the memory or drive interface 206 and further module 208 with hard drive, solid-state drive and/or compute module are connected with direct connections 202, 204 and act as resources through the controller 201 coupled to the MMI network. Further pods 104 or cards 106 can be coupled to the MMI network for further processing of the stream live data 214. One example function the pods 104 could perform is video data transcoding, such as from one format to another. This is further developed in Fig. 11.

[0047] Fig. 11 is a block diagram of an embodiment of the servers/platforms of Fig. 1A or Fig. 1B for transcoding video from multiple video inputs, for multiple video outputs. Multiple pods 104 each with video in 216, multiple pods 104 each with a transcoder 220, multiple pods 104 each with video out 218, and a pod 104 with memory superposition 140 are coupled to the MMI network connection in one or more chassis 102 (not shown, but see Figs. 1A and 1B). There could be one or more video inputs on each of the pods

104 and one or more video outputs on each of the pods 104, in various combinations, and further pods 104 added for other functions such as shown in Figs. 7-9 or as readily devised for further functionality (e.g., DMA or direct memory access attached to memory, a bus and/or the MMI network, graphics acceleration, audio processing, feature recognition, etc.) in keeping with the teachings herein, in further embodiments.

[0048] In one scenario for the server of Fig. 11, there are 18 cameras at a sports event, with data coming in as video data streams (or analog video). And, there are multiple formats and platforms for viewing the live video, such as HDTV (high-definition television), 4K television, browsers on personal computers, smart phones, and possibly even 3-D (three-dimensional, also known as stereo vision) television. An operator, who is monitoring all 18 cameras (or monitors), selects viewpoints, or in a variation customers of the video feeds can select viewpoints. With these inputs, the server switches among the video feeds and transcodes to the various formats, using various types of memory from memory superposition 140, and sends the video out to the various destinations. Further functions that could be implemented in this or other video data stream processing embodiments include facial or object recognition, or scene analysis, e.g. for surveillance video, or to follow a favorite actor, sports team player, celebrity, racehorse or a designated object such as a ball or for that matter a racecar, also picture in picture, split screen, compression, graphics overlays, video processing for special effects, etc.

[0049] Opportunities are opened up to analyze data as it flows rather than only post-processing data after data has been stored, reducing overall network usage and associated energy. Further opportunities for variations on the above embodiments include performing scene analysis or facial recognition to incoming security feeds and only

storing what is considered interesting, pre-tagging data destined for later search, data mining, database manipulating, intrusion or fraud detection, flagging restricted content wherever it is being moved, analyzing video content and compiling only selected parts, and so on.

[0050] These examples from Figs. 1A-11 are but a small number of the possible architectures and configurations for data flow processing that are possible with embodiments of pods 104 and cards 106. With the flexibility of pod 104 design and substitution, trade-offs and capabilities of hardware modules 110 and software modules 112, memory superposition 140, sandboxes 132 for user-defined functionality, communication and coupling of modules over the MMI network, plus options of direct connections among components, solutions for data flows and data processing needs can be developed in embodiments of what can be termed “hardware defined everything”, or HDx in a server. With suitable optimizing among the various trade-offs, such configurations of pods 104 and cards 106 implement hardware-emphasized solutions, possibly with software or firmware offloading of hardware functions, that exceed software-emphasized or software-based implementations in efficiency, throughput, bandwidth, and even power consumption. Bus width, clock speed, cards and modules can all be tailored, by a user, to a specific data flow.

[0051] The server with pods 104 and cards 106 that may further be hot-swappable and can be mixed and matched provides a storage agnostic, function agnostic platform to build on top of, with flexibility and programmability. As protocols change, components in the system can be swapped, upgraded or reconfigured but will still provide an advantage in hardware over software-only or software-centric systems. The use of

FPGAs 122, and especially with the introduction of sandboxes 132, support the “hardware defined everything” concept, and allow systems to be built for what’s next, i.e., systems not yet designed. Memory superposition 140 abstracts the media behind the scenes, and presents an interface with an address range and automatic optimization of type of memory for calculating on data going by. Processing element superposition abstracts processing elements behind the scenes, and presents a common interface. The MMI router 124 and bridge 128, in the FPGA 122, and more generally the MMI network, pods 104 and cards 106, act as a foundation on which to build a data flow/data processing architecture, with reprogrammable blocks that can implement functions and acceleration for functions. MMI is messaging based, to uniquely address any module, including third-party drop in modules.

[0052] In order to support the server with user-reconfigurable pods 104 and cards 106, so that users can implement data flow processing architectures with various embodiments of the system, a development kit could be provided. The development kit follows the apps (applications) model of software development kits (SDK) for third parties to develop applications to run on a platform. An SSDK (semi-soft development kit), an HSDK (hardware/software development kit), or an HDxK (hardware defined everything development kit) provides access, definition and control of the sandboxes 132, and software for processing elements in the FPGA 122 or external to the FPGA 122, e.g., in a processor card 134 (see Fig. 4) or one or more processors elsewhere in a pod 104. A development kit could be extended to provide design services for custom pods 104 or cards 106, which could optionally include or exclude the FPGA 122. FPGA 122 elements, such as base blocks, the MMI router 124, ports, hardware FIFOs, processors or

processor cores, sandboxes 132, etc. could be offered for example in a library and/or a user area could be defined as open and reconfigurable. A development kit that is centric around data flows could offer analysis of metrics such as data throughput, bandwidth, energy consumption, network usage, memory usage, bottlenecks, etc., so that the user can pursue optimization of various data flow architectures during a development phase, then select an architecture to implement (i.e., configure) in the system. In some embodiments, an Apps model may be employed as enabled by the common defined interface made possible through the MMI sandbox. That is, a market place to buy, sell, trade Intellectual Property (IP) sandbox modules is made possible through the platform described herein. It should be appreciated that the Apps model may be implemented in hardware, software or some combination of the two.

[0053] Fig. 12 is a flow diagram for a method for data flow processing in the platform described herein in accordance with some embodiments. The method includes configuring a plurality of swappable pods, hardware modules, or cards in one or more chassis, coupled through a module messaging interface network, to implement a data flow processing architecture in action 1200. The MMI network/protocol may include the mechanism described above and may include the header CRC and CRC mechanism described with regard to Figs. 6A and 6B-1-3. In action 1202 the method includes configuring user-definable hardware modules or user-definable software modules in each of one or more of the plurality of swappable pods, hardware modules, or cards. In an action 1204 the method includes communicating a data flow in accordance with the implemented data flow processing architecture among one or more hardware modules or one or more software modules in each of the plurality of swappable pods, hardware

modules, or cards, including the user-definable hardware modules or user-definable software modules. The communicating the data flow through the module messaging interface network, may include a network coupled to the plurality of swappable pods, hardware modules, or cards and/or a protocol supporting messaging-based communication using packets each having a header with a chassis identifier, a board identifier, a module identifier, an instance identifier, and a type identifier, so that each type of module, each instance of a type of module, and each module on each board in each chassis can be addressed through the header. In some embodiments the method may include selecting a memory superposition in at least one of the plurality of swappable pods, hardware modules, or cards having a plurality of types of memory with selectable arrangement of the plurality of types of memory as multilevel cache, interleaved memory, swapped memory over a specified address range, and memory allocated to specified address ranges according to parameterized task needs as described above.

[0054] It should be appreciated that the methods described herein may be performed with a digital processing system, such as a conventional, general-purpose computer system. Special purpose computers, which are designed or programmed to perform only one function may be used in the alternative. Fig. 13 is an illustration showing an exemplary computing device which may implement the embodiments described herein. The computing device of Fig. 13 may be used to perform embodiments of the functionality for a configurable server and a development kit in accordance with some embodiments. The computing device includes a central processing unit (CPU) 1301, which is coupled through a bus 1305 to a memory 1303, and mass storage device 1307. Mass storage

device 1307 represents a persistent data storage device such as a floppy disc drive or a fixed disc drive, which may be local or remote in some embodiments. The mass storage device 1307 could implement a backup storage, in some embodiments. Memory 1303 may include read only memory, random access memory, etc. Applications resident on the computing device may be stored on or accessed via a computer readable medium such as memory 1303 or mass storage device 1307 in some embodiments. Applications may also be in the form of modulated electronic signals modulated accessed via a network modem or other network interface of the computing device. It should be appreciated that CPU 1301 may be embodied in a general-purpose processor, a special purpose processor, or a specially programmed logic device in some embodiments.

[0055] Display 1311 is in communication with CPU 1301, memory 1303, and mass storage device 1307, through bus 1305. Display 1311 is configured to display any visualization tools or reports associated with the system described herein. Input/output device 1309 is coupled to bus 1305 in order to communicate information in command selections to CPU 1301. It should be appreciated that data to and from external devices may be communicated through the input/output device 1309. CPU 1301 can be defined to execute the functionality described herein to enable the functionality described with reference to Figs. 1-12. The code embodying this functionality may be stored within memory 1303 or mass storage device 1307 for execution by a processor such as CPU 1301 in some embodiments. The operating system on the computing device may be MS DOSTM, MS-WINDOWSTM, OS/2TM, UNIXTM, LINUXTM, or other known operating systems. Selected should be appreciated that the methods through resources.

[0056] Detailed illustrative embodiments are disclosed herein. However, specific functional details disclosed herein are merely representative for purposes of describing embodiments. Embodiments may, however, be embodied in many alternate forms and should not be construed as limited to only the embodiments set forth herein.

[0057] It should be understood that although the terms first, second, etc. may be used herein to describe various steps or calculations, these steps or calculations should not be limited by these terms. These terms are only used to distinguish one step or calculation from another. For example, a first calculation could be termed a second calculation, and, similarly, a second step could be termed a first step, without departing from the scope of this disclosure. As used herein, the term “and/or” and the “/” symbol includes any and all combinations of one or more of the associated listed items.

[0058] As used herein, the singular forms “a”, “an” and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms “comprises”, “comprising”, “includes”, and/or “including”, when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. Therefore, the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting.

[0059] It should also be noted that in some alternative implementations, the functions/acts noted may occur out of the order noted in the figures. For example, two figures shown in succession may in fact be executed substantially concurrently or may

sometimes be executed in the reverse order, depending upon the functionality/acts involved.

[0060] With the above embodiments in mind, it should be understood that the embodiments might employ various computer-implemented operations involving data stored in computer systems. These operations are those requiring physical manipulation of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. Further, the manipulations performed are often referred to in terms, such as producing, identifying, determining, or comparing. Any of the operations described herein that form part of the embodiments are useful machine operations. The embodiments also relate to a device or an apparatus for performing these operations. The apparatus can be specially constructed for the required purpose, or the apparatus can be a general-purpose computer selectively activated or configured by a computer program stored in the computer. In particular, various general-purpose machines can be used with computer programs written in accordance with the teachings herein, or it may be more convenient to construct a more specialized apparatus to perform the required operations.

[0061] A module, an application, a layer, an agent or other method-operable entity could be implemented as hardware, firmware, or a processor executing software, or combinations thereof. It should be appreciated that, where a software-based embodiment is disclosed herein, the software can be embodied in a physical machine such as a controller. For example, a controller could include a first module and a second module. A controller could be configured to perform various actions, e.g., of a method, an application, a layer or an agent.

[0062] The embodiments can also be embodied as computer readable code on a tangible non-transitory computer readable medium. The computer readable medium is any data storage device that can store data, which can be thereafter read by a computer system. Examples of the computer readable medium include hard drives, network attached storage (NAS), read-only memory, random-access memory, CD-ROMs, CD-Rs, CD-RWs, magnetic tapes, and other optical and non-optical data storage devices. The computer readable medium can also be distributed over a network coupled computer system so that the computer readable code is stored and executed in a distributed fashion. Embodiments described herein may be practiced with various computer system configurations including hand-held devices, tablets, microprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers and the like. The embodiments can also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a wire-based or wireless network.

[0063] Although the method operations were described in a specific order, it should be understood that other operations may be performed in between described operations, described operations may be adjusted so that they occur at slightly different times or the described operations may be distributed in a system which allows the occurrence of the processing operations at various intervals associated with the processing.

[0064] In various embodiments, one or more portions of the methods and mechanisms described herein may form part of a cloud-computing environment. In such embodiments, resources may be provided over the Internet as services according to one or more various models. Such models may include Infrastructure as a Service (IaaS),

Platform as a Service (PaaS), and Software as a Service (SaaS). In IaaS, computer infrastructure is delivered as a service. In such a case, the computing equipment is generally owned and operated by the service provider. In the PaaS model, software tools and underlying equipment used by developers to develop software solutions may be provided as a service and hosted by the service provider. SaaS typically includes a service provider licensing software as a service on demand. The service provider may host the software, or may deploy the software to a customer for a given period of time. Numerous combinations of the above models are possible and are contemplated.

[0065] Various units, circuits, or other components may be described or claimed as “configured to” or “configurable to” perform a task or tasks. In such contexts, the phrase “configured to” or “configurable to” is used to connote structure by indicating that the units/circuits/components include structure (e.g., circuitry) that performs the task or tasks during operation. As such, the unit/circuit/component can be said to be configured to perform the task, or configurable to perform the task, even when the specified unit/circuit/component is not currently operational (e.g., is not on). The units/circuits/components used with the “configured to” or “configurable to” language include hardware—for example, circuits, memory storing program instructions executable to implement the operation, etc. Reciting that a unit/circuit/component is “configured to” perform one or more tasks, or is “configurable to” perform one or more tasks, is expressly intended not to invoke 35 U.S.C. 112, sixth paragraph, for that unit/circuit/component. Additionally, “configured to” or “configurable to” can include generic structure (e.g., generic circuitry) that is manipulated by software and/or firmware (e.g., an FPGA or a general-purpose processor executing software) to operate in manner

that is capable of performing the task(s) at issue. “Configured to” may also include adapting a manufacturing process (e.g., a semiconductor fabrication facility) to fabricate devices (e.g., integrated circuits) that are adapted to implement or perform one or more tasks. “Configurable to” is expressly intended not to apply to blank media, an unprogrammed processor or unprogrammed generic computer, or an unprogrammed programmable logic device, programmable gate array, or other unprogrammed device, unless accompanied by programmed media that confers the ability to the unprogrammed device to be configured to perform the disclosed function(s).

[0066] The foregoing description, for the purpose of explanation, has been described with reference to specific embodiments. However, the illustrative discussions above are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in view of the above teachings. The embodiments were chosen and described in order to best explain the principles of the embodiments and its practical applications, to thereby enable others skilled in the art to best utilize the embodiments and various modifications as may be suited to the particular use contemplated. Accordingly, the present embodiments are to be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope and equivalents of the appended claims.

CLAIMS

What is claimed is:

1. A programmable device for data flow processing in a user-configurable server with swappable pods or cards, comprising:

a programmable logic device (PLD) having a first region and a second region;

the first region comprising a hardware-based or firmware-based router with a port enabling communication between the router and the second region; and

the second region comprising one or more sandboxes with user-definable electronic circuits.

2. The programmable device of claim 1, further comprising:

the router communicative to translate between a first protocol and a second protocol, for messaging with system resources.

3. The programmable device of claim 1, wherein each of the sandboxes comprises user-programmable one or more of: analog circuitry, digital circuitry, memory, processors or controllers.

4. The programmable device of claim 1, wherein the port comprises:

a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and the user-definable electronic circuits therein.

5. The programmable device of claim 1, wherein the port comprises:

a bridge being lockable to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.

6. The programmable device of claim 1, wherein the port comprises:

a bridge having a security layer to authenticate a user or verify a permission, to reconfigure one or more of the one or more sandboxes.

7. The programmable device of claim 1, further comprising:

the router configured to perform analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization.

8. A method of operating a programmable device in a swappable pod or card in a configurable platform for data flow processing, comprising:

configuring user-definable electronic circuits in one or more sandboxes in a first region of the programmable device;

directing data of a data flow from external communication into a port of a second region of the programmable device;

routing the data, through a bridge of a hardware or firmware-based router of the second region, on an at least internal communication network to and from the one or more sandboxes; and

directing the data, or modified version thereof, out through the port or a further port.

9. The method of claim 8, further comprising:

translating, in the router, between a first protocol and a second protocol for messaging with each of the one or more sandboxes.

10. The method of claim 8, further comprising:

user-programming one or more of: analog circuitry, digital circuitry, memory, processors or controllers in one or more sandboxes.

11. The method of claim 8, further comprising:

unlocking the bridge to enable user access to each of the one or more sandboxes and the user-definable electronic circuits therein; and

locking the bridge to disable user access to each of the one or more sandboxes and the user-definable electronic circuits therein.

12. The method of claim 8, further comprising:

locking the bridge to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.

13. The method of claim 8, further comprising:

authenticating a user or verifying a permission, in a security layer in the bridge; and
reconfiguring one or more of the sandboxes, responsive to the authenticating or the verifying.

14. The method of claim 8, further comprising:

performing, in the router, analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization.

15. A tangible, non-transitory, computer-readable media having instructions thereupon which, when executed by a processor, cause the processor to perform a method comprising:

configuring user-definable electronic circuits in one or more sandboxes in a second region of a programmable device in ~~one of a plurality of~~ swappable pod or card in a user-or configurable server for data flow processing;

directing data of a data flow from external communication into a port in a first region of the programmable device;

routing the data, through a bridge of a hardware or firmware-based router of the first region of the programmable device, on an at least internal communication network to and from the one or more sandboxes; and

directing the data, or modified version thereof, out through the port or a further port.

16. The computer-readable media of claim 15, wherein the method further comprises:

translating, in the router, between a first protocol and a second protocol for messaging with each of the sandboxes.

17. The computer-readable media of claim 15, wherein the method further comprises:

unlocking the bridge to enable user access to each of the one or more sandboxes and the user-definable electronic circuits therein; and

locking the bridge to disable user access to each of the one or more sandboxes and the user-definable electronic circuits therein.

18. The computer-readable media of claim 15, wherein the method further comprises:

locking the bridge to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.

19. The computer-readable media of claim 15, wherein the method further comprises:

authenticating a user or verifying a permission, in a security layer in the bridge; and
reconfiguring one or more of the sandboxes, responsive to the authenticating or the verifying.

20. The computer-readable media of claim 15, wherein the method further comprises:

performing, in the router, analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization.

ABSTRACT

A programmable device for data flow processing in a user-configurable server with swappable pods or cards is provided. The device includes a field programmable logic device (PLD) having a first region and a second region. The first region comprises a hardware-based or firmware-based router with a port enabling communication between the router and the second region, and the second region comprises one or more sandboxes with user-definable electronic circuits.

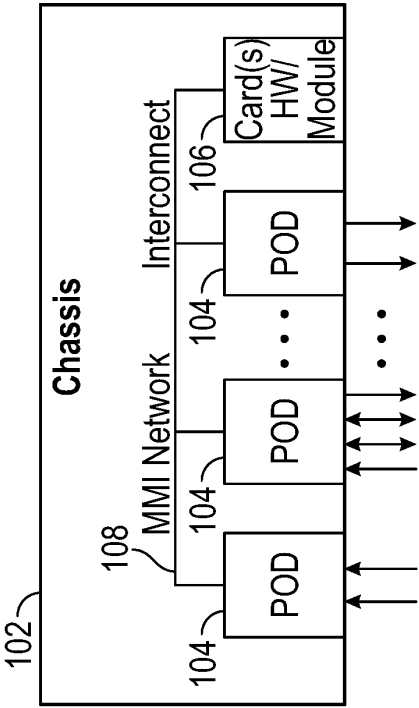


FIG. 1A

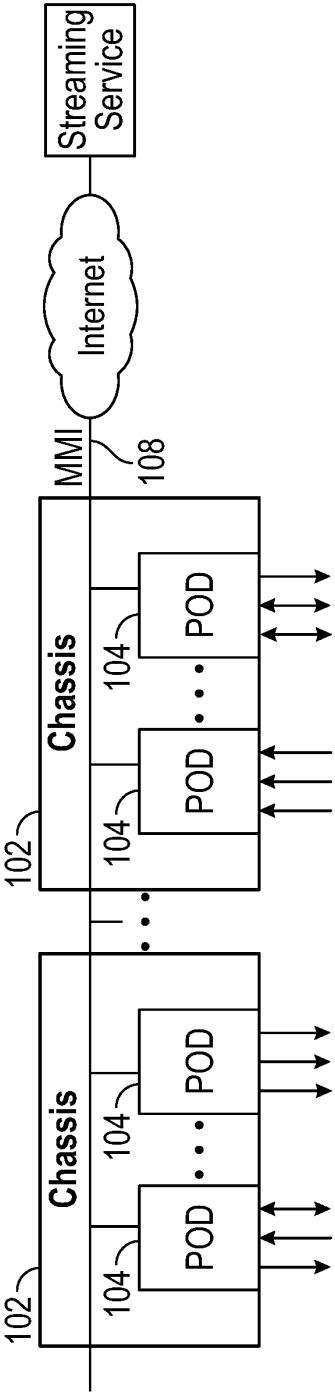


FIG. 1B

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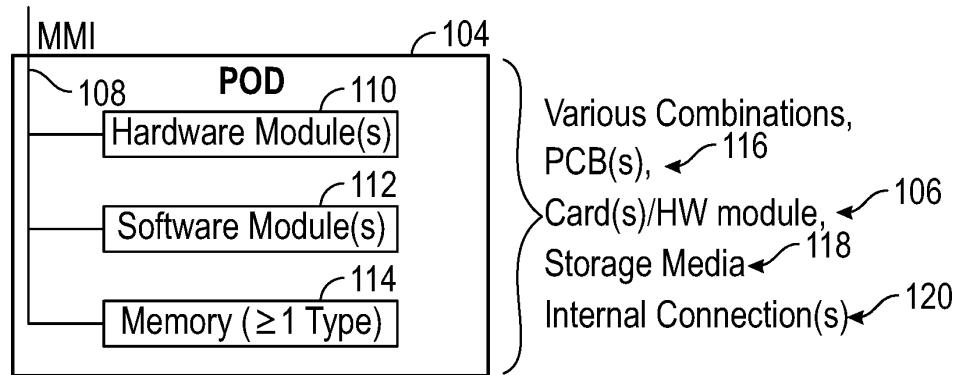


FIG. 2

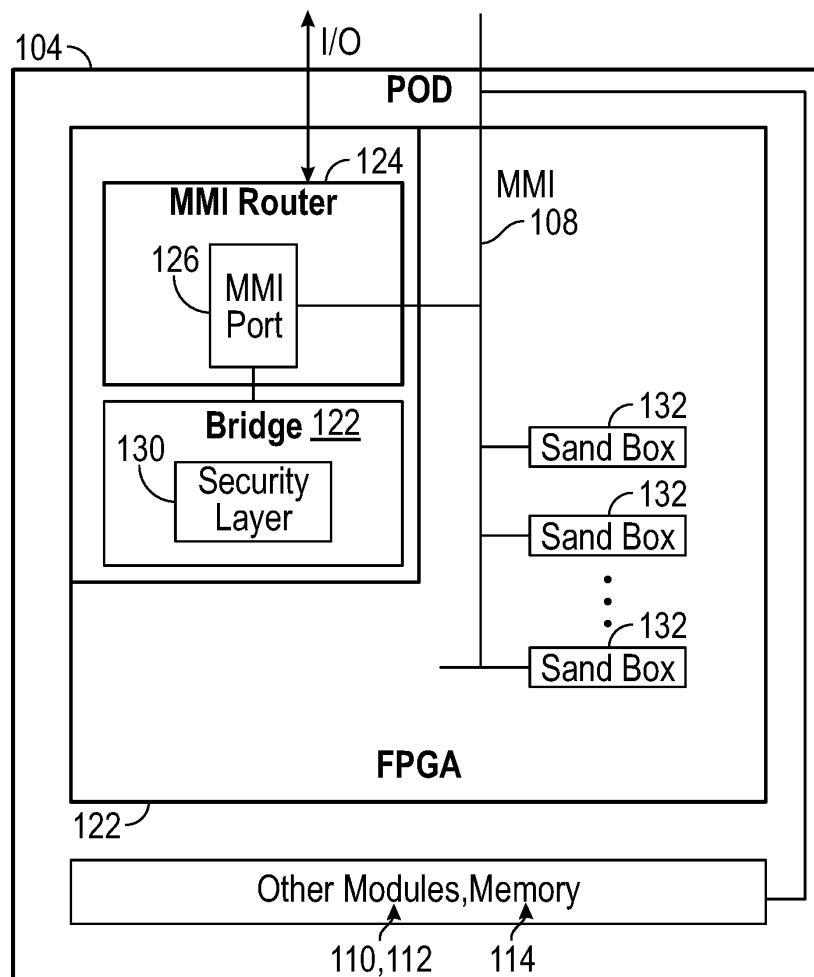


FIG. 3

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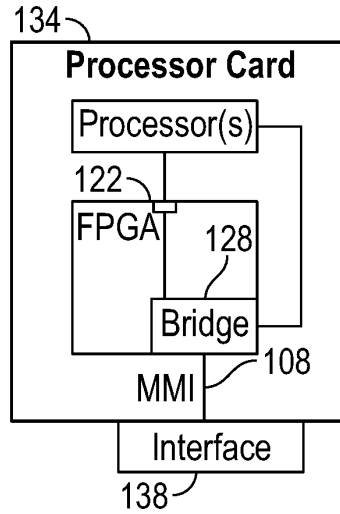


FIG. 4

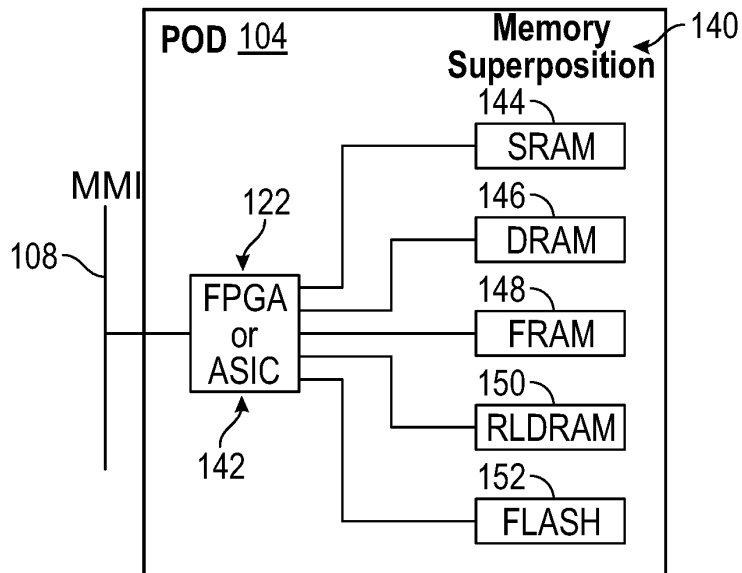


FIG. 5

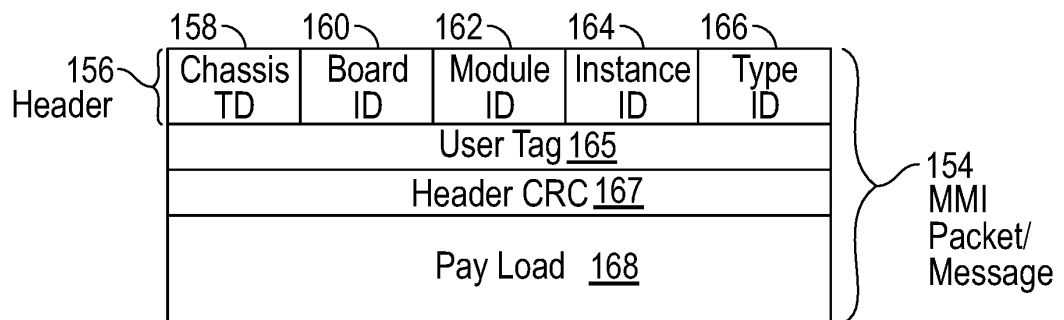


FIG. 6A

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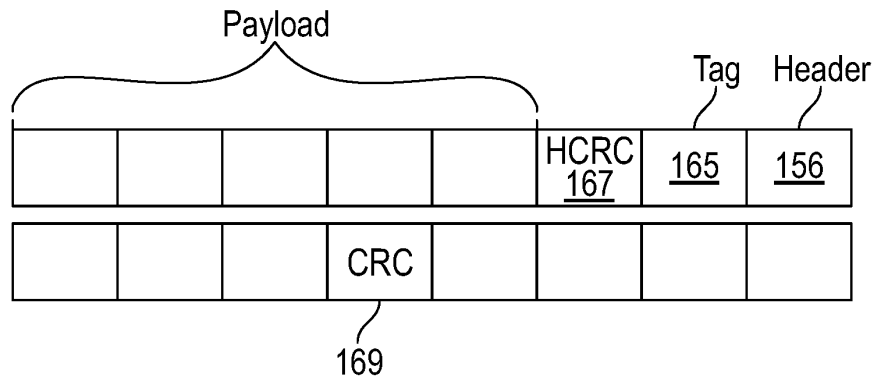


FIG. 6B-1

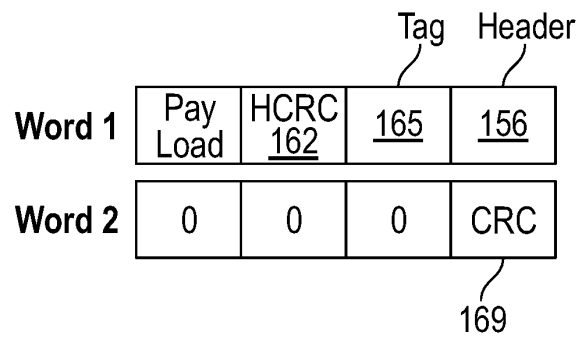


FIG. 6B-2

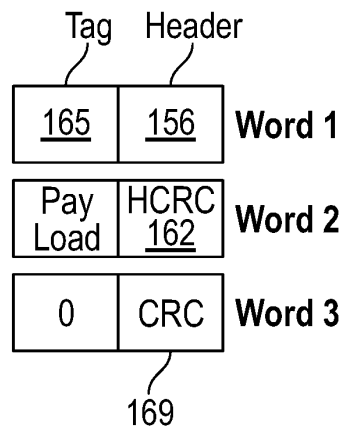


FIG. 6B-3

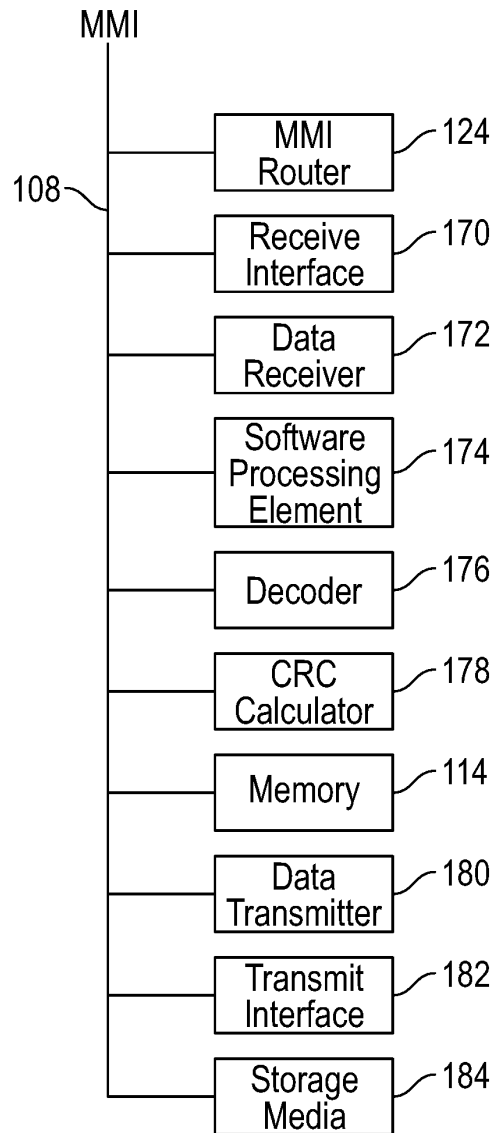


FIG. 7

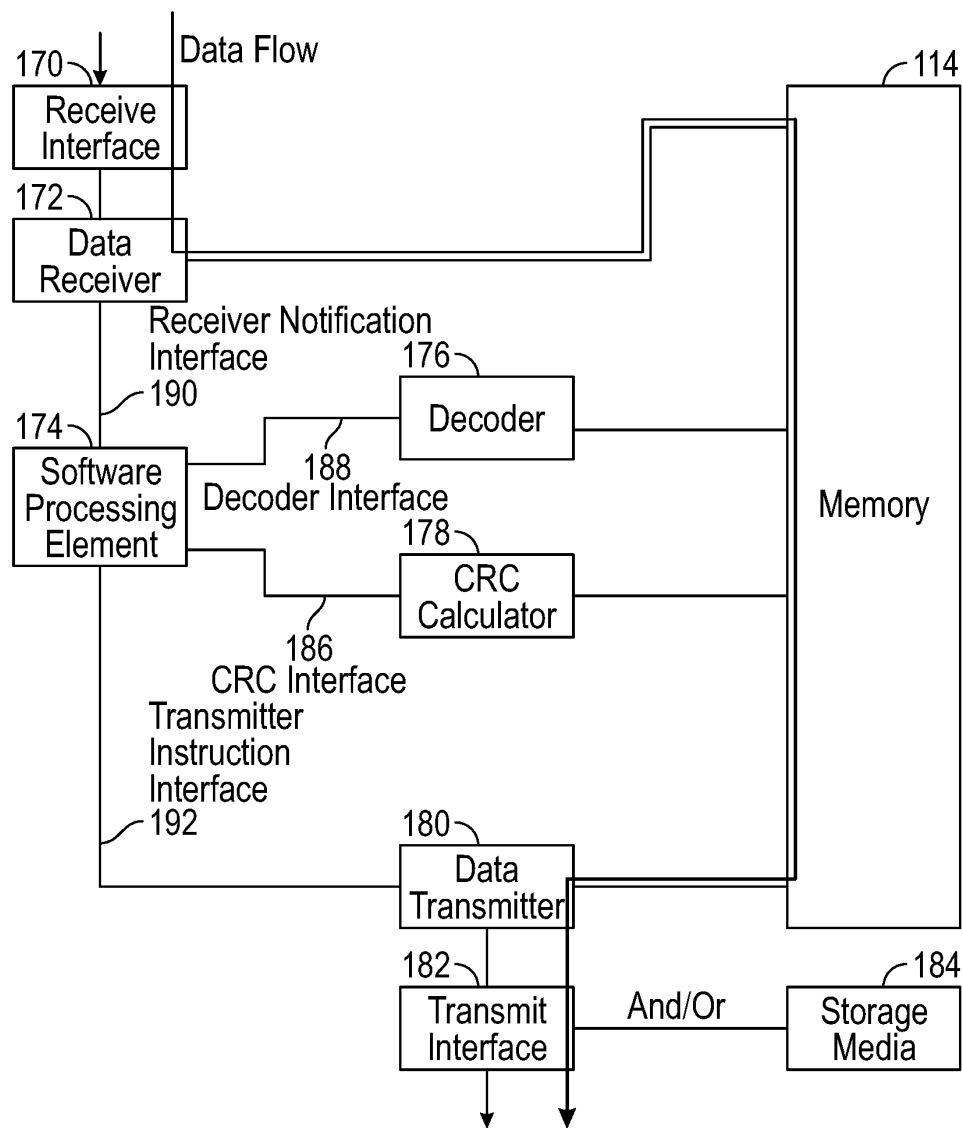


FIG. 8

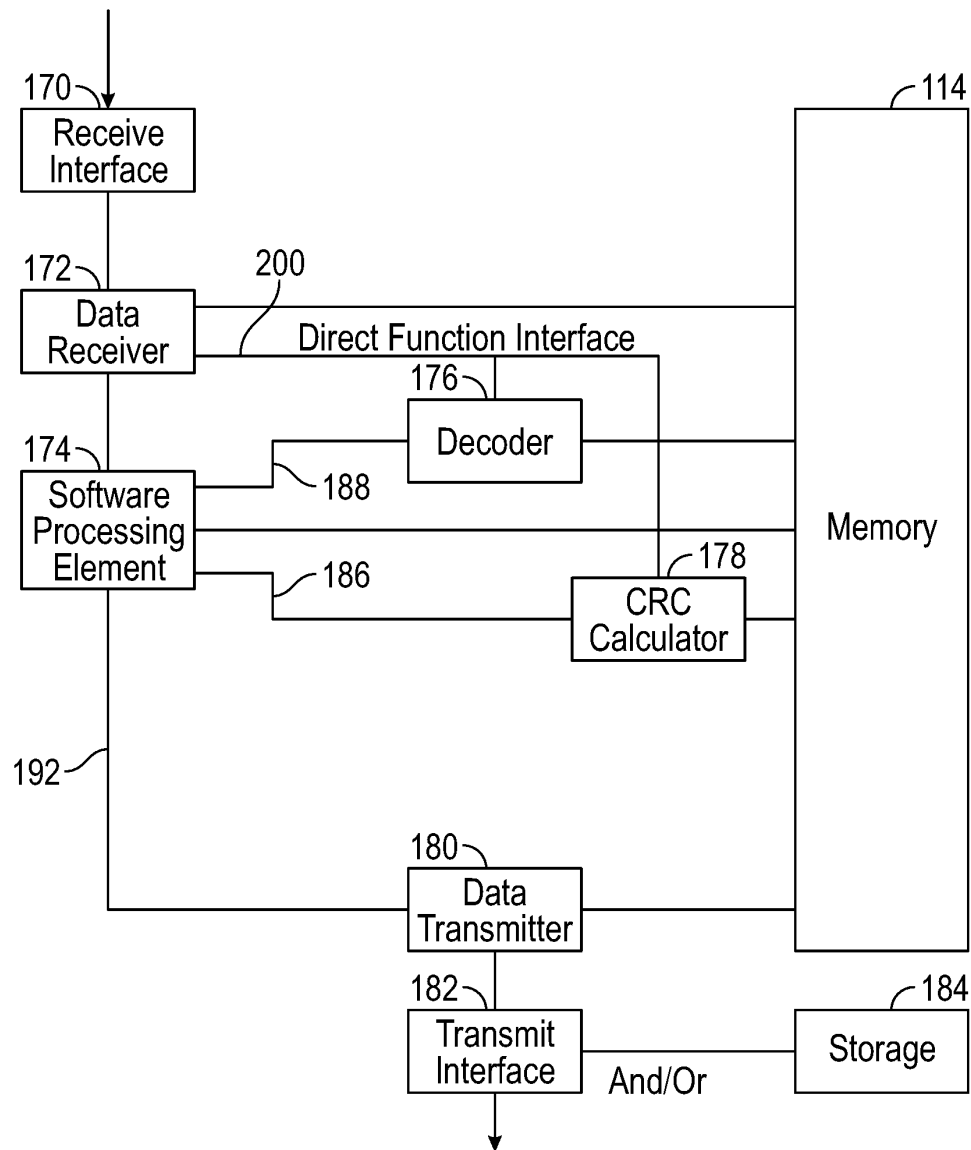


FIG. 9

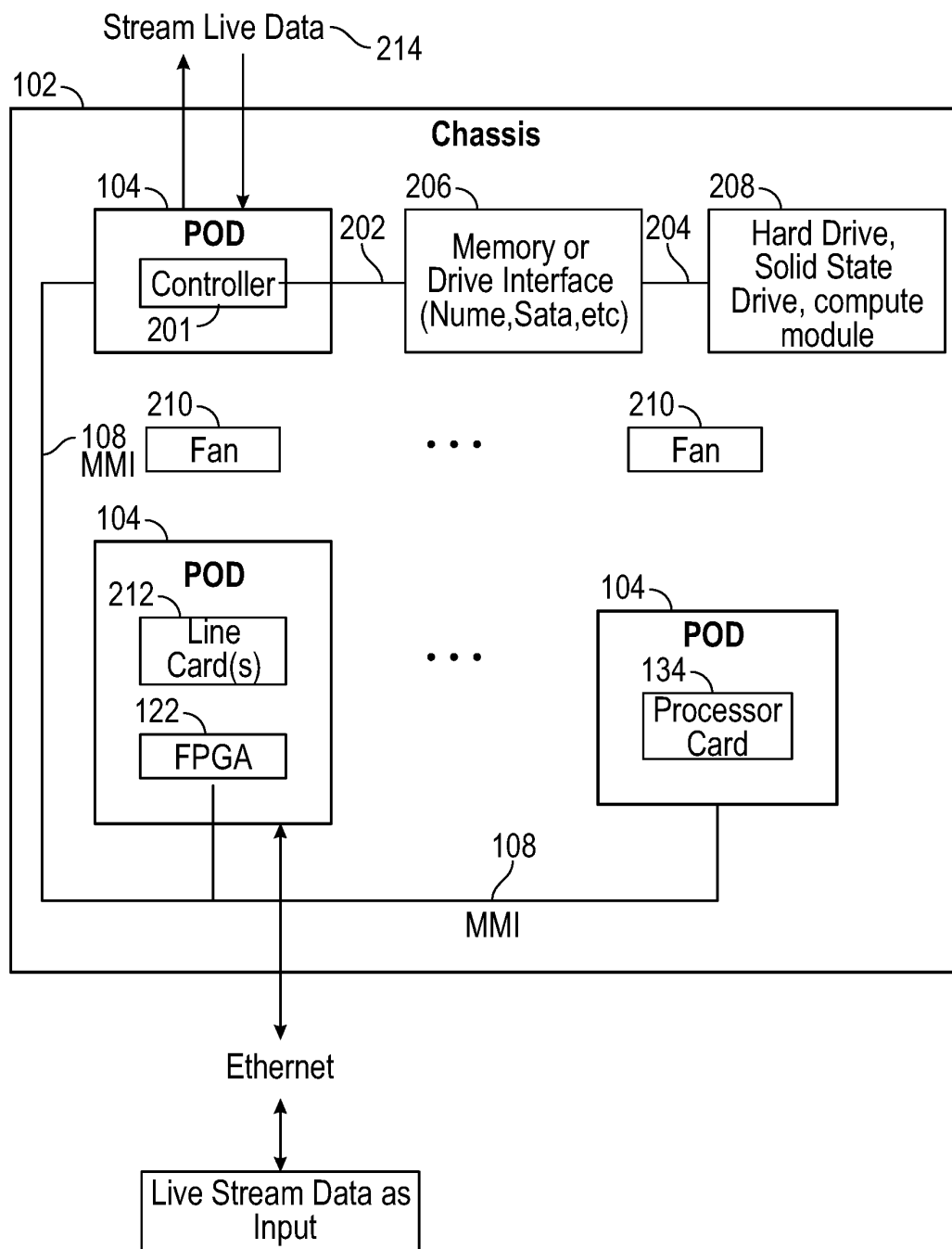


FIG. 10

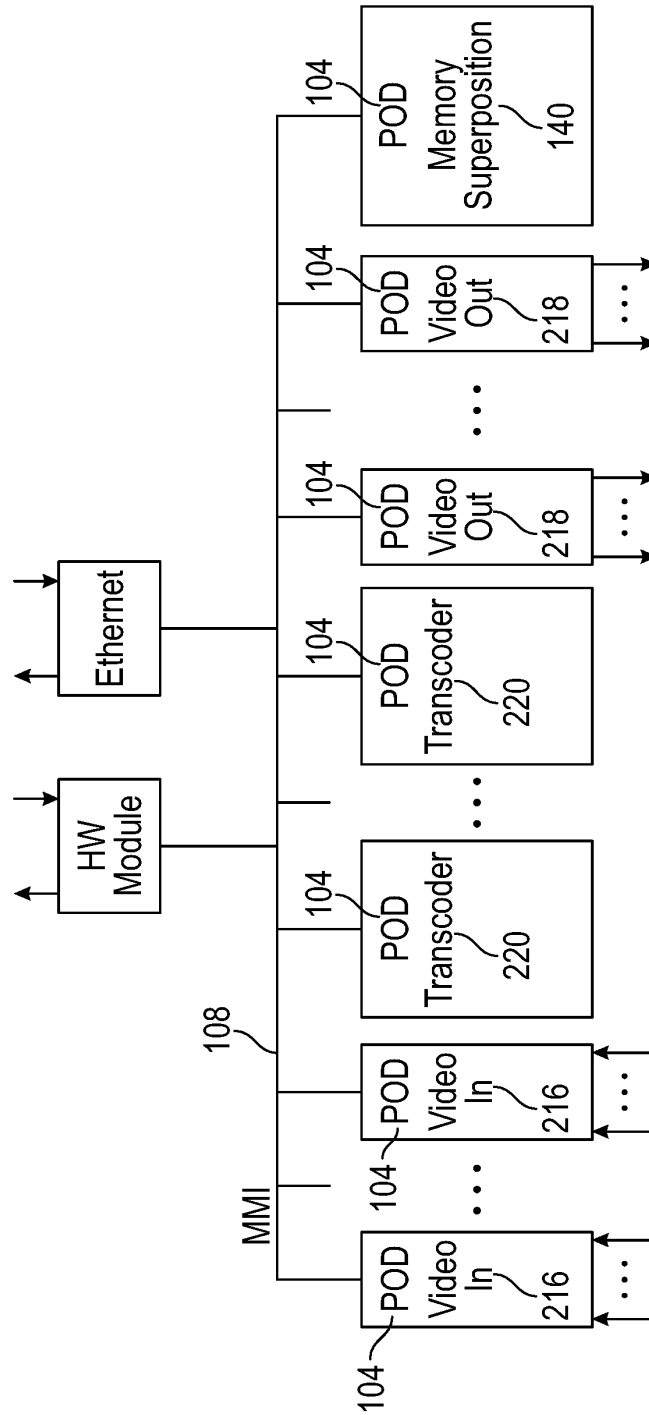


FIG. 11

10 /10

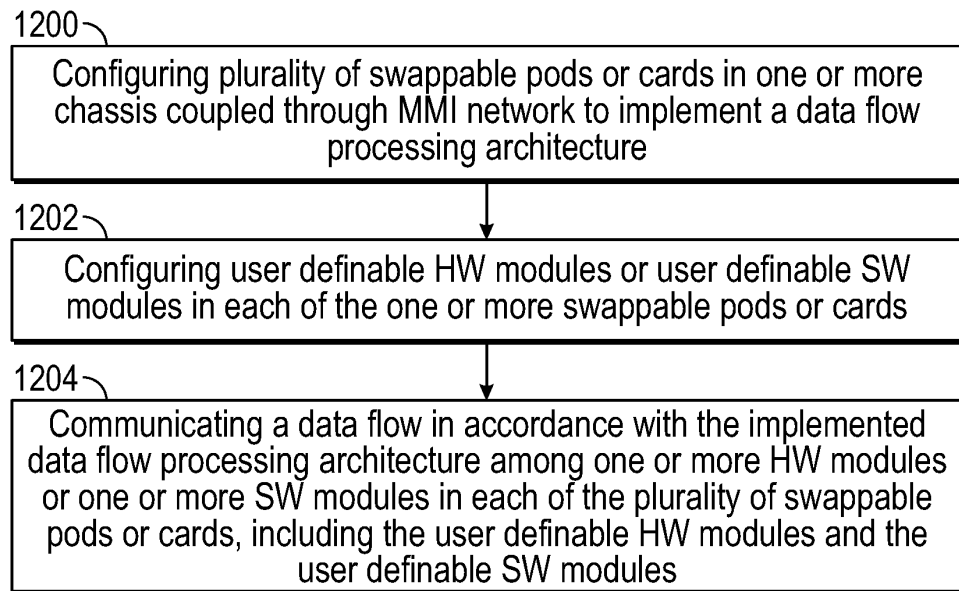


FIG. 12

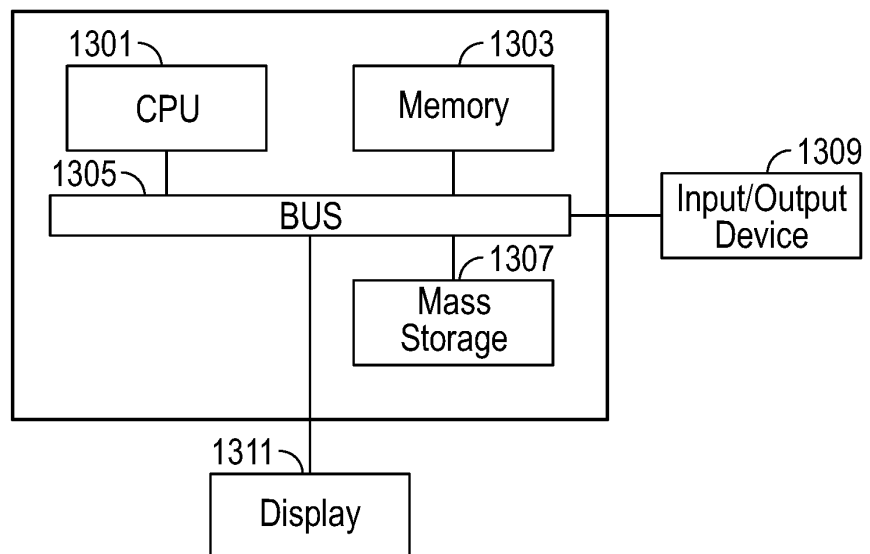


FIG. 13

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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Address 2		240 Woodscape Court				
City	Johns Creek	State/Province	GA			
Postal Code	30022-3244	Country i	US			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Jesse	B.	YATES			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Atlanta	State/Province	GA	Country of Residence	US	
Mailing Address of Inventor:						
Address 1		CONCURRENT VENTURES, LLC				
Address 2		2451 Cumberland Parkway SE, Ste. 300 #3310				
City	Atlanta	State/Province	GA			
Postal Code	30339	Country i	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						
Add						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		

☐ An Address is being provided for the correspondence information of this application.

Customer Number	52904		
Email Address	mginxy@gmail.com	Add Email	Remove Email

Application Information:

Title of the Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
Attorney Docket Number	CV2	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

Publication Information:
☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	52904		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			
Add			

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
- NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1 Remove		
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear			
☒ Assignee	Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor :			
If the Applicant is an Organization check here. ☒			
Organization Name	Concurrent Ventures, LLC		
Mailing Address Information For Applicant:			
Address 1	240 Woodscape Court		
Address 2			
City	Johns Creek	State/Province	GA
Country	US	Postal Code	30022-3244
Phone Number		Fax Number	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee	1			
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
				Remove
If the Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Non-Applicant Assignee:				
Address 1				
Address 2				
City		State/Province		
Country ⁱ		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Assignee Data may be generated within this form by selecting the Add button.				Add

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Michael L. Gencarella/		Date (YYYY-MM-DD)	2018-07-15
First Name	Michael L.	Last Name	Gencarella	Registration Number
				44703
Additional Signature may be generated within this form by selecting the Add button.				Add

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	CV2
		Application Number	
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no person are required to respond to a collection of information if it does not display a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
As the below named inventor, I hereby declare that: This declaration is directed to: ☒ The attached application, or ☐ United States application or PCT international application number: _____ filed on: _____ The above-identified application was made or authorized to be made by me I believe that I am the original inventor or an original joint inventor of a claimed invention in the application I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.	
WARNING:	
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identify them. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.210(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.	
LEGAL NAME OF INVENTOR Inventor: <u>Jesse D. Beeson</u> Date (Optional): _____ Signature: _____	
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire membership firm, should accompany this form or must have been previously filed. Use an additional PTO/AIA/US form for each additional inventor.	

This collection of information is requested by 35 U.S.C. 115 and 37 C.F.R. 1.51. The information is requested in order to determine whether a proposed invention is eligible for the USPTO's processes for expedited examination. Confidentiality is guaranteed by 35 U.S.C. 115 and 37 C.F.R. 1.51 and between March 2007 to October 2007 to complete, including gathering information and submitting the completed application form to the USPTO. The information requested is for the individual cases. Any comments on the amount of time you require to complete this form and/or suggestions for reducing the time needed to be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22304-1450. You may also contact the USPTO at 1-800-790-4848. (USPTO Form 101)

THIS ADDRESS: SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22304-1450.

⁶ The third assumption is the separability of the production function from the demand function.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
---------------------------	---

As the below named inventor, I hereby declare that:

This declaration is directed to: ☒ The attached application, or
☐ United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

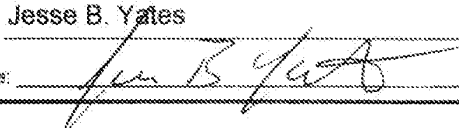
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Jesse B. Yates Date (Optional): _____
Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/D1 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 123 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
First Named Inventor/Applicant Name:		Jesse D Beeson		
Filer:		Michael L. Gencarella		
Attorney Docket Number:		CV2		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				785

Electronic Acknowledgement Receipt	
EFS ID:	33180256
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D Beeson
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	15-JUL-2018
Filing Date:	
Time Stamp:	16:10:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		CV2_spec.pdf	163411	yes	39
			106ebd213e2abba31aee6f0fc9251f22b5d5d73		

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	34	
	Claims		35	38	
	Abstract		39	39	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	CV1_CV2_formal_figs.pdf	47600	no	10
			23a1c394f2c8e5989d3bcc37cdcd2e583c547331		
Warnings:					
Information:					
3	Application Data Sheet	ADSCV2.pdf	1306587	no	7
			75d8238f317d0841e8e39ee708e2492e532156f7		
Warnings:					
Information:					
4	Oath or Declaration filed	CV2_dec.pdf	1118605	no	2
			281e49abee66a45b038d46a4646bbc75b0b34934		
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	35053	no	2
			44a63599598e22ab233764d3d80ade296fdbee65		
Warnings:					
Information:					
Total Files Size (in bytes):			2671256		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/035,674				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A				
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	330		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *	x 50 =	0.00	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	0.00						
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00						
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	785		TOTAL				
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/035,674	07/15/2018	Jesse D. BEESON	CV2

52904
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

CONFIRMATION NO. 3715
FORMALITIES LETTER



Date Mailed: 08/01/2018

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.

The surcharge is due for any one of:

- late submission of the basic filing fee, search fee, or examination fee,
- late submission of inventor's oath or declaration,
- filing an application that does not contain at least one claim on filing, or
- submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **75** basic filing fee.
- \$ **80** surcharge.
- \$ **330** search fee.
- \$ **380** examination fee.
- \$(**0**) previous unapplied payment amount.
- \$ **865** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tpnguyen/



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/035,674	07/15/2018	2835	0.00	CV2	20	3

CONFIRMATION NO. 3715

FILING RECEIPT



0000000101387978

52904
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

Date Mailed: 08/01/2018

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jesse D. BEESON, Johns Creek, GA;
Jesse B. YATES, Atlanta, GA;

Applicant(s)

Concurrent Ventures, LLC, Johns Creek, GA;

Power of Attorney: None

Domestic Applications for which benefit is claimed - None.

A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/31/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/035,674**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION

Preliminary Class

361

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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To: mginxy@gmail.com,mginxy@icloud.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 52904

Aug 01, 2018 04:21:48 AM

Dear PAIR Customer:

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 52904 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
16035674	NTC.MISS.PRT	08/01/2018	CV2
	APP.FILE.REC	08/01/2018	CV2

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

Electronic Patent Application Fee Transmittal				
Application Number:		16035674		
Filing Date:		15-Jul-2018		
Title of Invention:		HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
First Named Inventor/Applicant Name:		Jesse D. BEESON		
Filer:		Michael L. Gencarella		
Attorney Docket Number:		CV2		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 5 months with \$0 paid	2255	1	1500	1500
Miscellaneous:				
Total in USD (\$)				2365

Electronic Acknowledgement Receipt	
EFS ID:	35305958
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D. BEESON
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	01-MAR-2019
Filing Date:	15-JUL-2018
Time Stamp:	22:20:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$2365
RAM confirmation Number	030419INTEFSW22220200
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	39147	no	2
			1f76679ed9485f3a8cb11fdefea27a36786e2dc9		
Warnings:					
Information:					
Total Files Size (in bytes):			39147		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/035,674			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	330		N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A			
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *	x 50 =	0.00	OR				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	0.00					
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00					
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	785		TOTAL			
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE			TOTAL ADD'L FEE			
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE			TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/035,674	07/15/2018	2835	865	CV2	20	3

CONFIRMATION NO. 3715

UPDATED FILING RECEIPT



0000000107045368

52904
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

Date Mailed: 04/03/2019

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jesse D. BEESON, Johns Creek, GA;
Jesse B. YATES, Atlanta, GA;

Applicant(s)

Concurrent Ventures, LLC, Johns Creek, GA;

Power of Attorney: None

Domestic Applications for which benefit is claimed - None.

A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/31/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/035,674**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION

Preliminary Class

361

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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SelectUSA

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To: mginxy@gmail.com,mginxy@icloud.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 52904

Apr 03, 2019 08:57:31 AM

Dear PAIR Customer:

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 52904 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	APP.FILE.REC	04/03/2019	CV2

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If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
52904	7590	11/04/2019	EXAMINER	
Michael gencarella			PHAM, BRENDA H	
12875 lucero lane			ART UNIT	
los altos hills, CA 94022			PAPER NUMBER	
			2412	
			NOTIFICATION DATE	
			DELIVERY MODE	
			11/04/2019	
			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

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mginxy@gmail.com
mginxy@icloud.com

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-7, drawn to a structure of a programmable device, classified in CPC H04L41/12 (class 370/254)

II. Claims 8-20, drawn to a method for data flow processing, classified in CPC H04L12/66 (class 370/401)

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP 802.01). In the instant case, group I is directed towards housing. Group II is directed towards data flow method. These groups require different searches.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different CPC or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

- **In an event Group I is elected**, claims 1-7 further contain claims directed to the following patentable distinct species:

Species I, claims 1, 3, 4 and 6 discloses a router, classified in H04L12/66 CPC.

Species II, claims 1, 2, 5 and 7 discloses one or more sandboxes, classified in CPC H04L41/12.

In an event Group II is elected, claims 8-20 further contain claims directed to the following patentable distinct species:

Species I, claims 8, 15, 9, 12, 14, 16, 18 and 20 directly related method related to routing data, classified in H04L12/66 CPC.

Species II, claims 8, 15, 10, 11, 13, 17 and 19 directly related to sandboxes, classified in CPC H04L41/12.

- The Species are independent or distinct because they are mutually exclusive with each other based on different function on each species as stated in the claims. In addition, these species are not obvious variants of each other based on the current record.

2. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, or a single grouping of patentably indistinct species, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

There is a search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different CPC or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species or grouping of patentably indistinct species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the

requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species or grouping of patentably indistinct species.

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

4. An attorney/Agent contact information is not available in file (PALM).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENDA H PHAM whose telephone number is (571)272-3135. The examiner can normally be reached on 571-272-3135.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Jiang can be reached on 571-270-7191. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRENDA H. PHAM
Primary Examiner
Art Unit 2412

Application/Control Number: 16/035,674
Art Unit: 2412

Page 7

/BRENDA H PHAM/
Primary Examiner, Art Unit 2412

To: mginxy@gmail.com,mginxy@icloud.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 52904

Nov 04, 2019 03:48:41 AM

Dear PAIR Customer:

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	CTRS	11/04/2019	CV2

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

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Michael gencarella
12875 lucero lane
los altos hills, CA 94022



**Courtesy Reminder for
Application Serial No: 16/035,674**

Attorney Docket No: CV2

Customer Number: 52904

Date of Electronic Notification: 11/04/2019

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If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

PATENT

In re the application of)
Jesse Beeson)
Application No: 16/035,674)
Filed: 07-15-2018)
For: HARDWARE DEFINED ANYTHING IN A)
PLATFORM WITH SWAPPABLE PODS,)
MESSAGE INTERFACE, SANDBOXES AND)
MEMORY SUPERPOSITION)
Examiner: PHAM, Brenda
Art Unit: 2412
Atty. Docket No: CV2

RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the restriction requirement mailed November 4 2019, Applicants elects, with traverse, the claims of Group 1 (Claims 1-7) to prosecute in the above-identified patent application. Applicants elect species 2 of Group 1. Applicant reserves the right to file a divisional application covering the subject matter of any non-elected species. The Examiner asserts that the species are mutually exclusive of each other based on different function. Applicants respectfully request the Examiner support this assertion as the species are not mutually exclusive and the claim 1 includes both functions. In addition, claim 1 is generic.

Should the Examiner have any questions concerning this matter, please contact the undersigned.

Respectfully submitted,
WOMBLE CARLYLE SANDRIDGE & RICE, LLP

/Michael L. Gencarella/

Michael L. Gencarella, Esq.
Reg. No. 44,703

Electronic Patent Application Fee Transmittal				
Application Number:		16035674		
Filing Date:		15-Jul-2018		
Title of Invention:		HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
First Named Inventor/Applicant Name:		Jesse D. BEESON		
Filer:		Michael L. Gencarella		
Attorney Docket Number:		CV2		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description		Fee Code	Quantity	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt	
EFS ID:	38478874
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D. BEESON
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	03-FEB-2020
Filing Date:	15-JUL-2018
Time Stamp:	17:30:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$100
RAM confirmation Number	E202023H32139328
Deposit Account	
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Election / Restriction Filed	Restriction_Election_Group1.pdf	71502	no	1
			222bf71feae509c301b1b2f18669b1a416edc7d		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30951	no	2
			dc5f32bd307e44c06e53aee3b7f18c774b390a		
Warnings:					
Information:					
Total Files Size (in bytes):			102453		
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
52904	7590	03/11/2020	EXAMINER	
Michael gencarella			PHAM, BRENDA H	
12875 lucero lane			ART UNIT	
los altos hills, CA 94022			PAPER NUMBER	
			2412	
			NOTIFICATION DATE	
			DELIVERY MODE	
			03/11/2020	
			ELECTRONIC	

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Notice of Pre-AIA or AIA Status

Restriction/Election Requirement

4. Figure 3 of the application is directly related to the claimed invention.

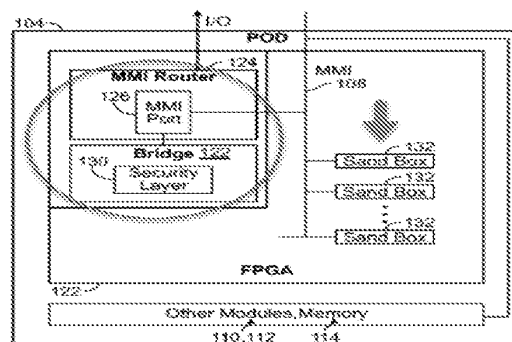


FIG. 3

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 5 is rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification fails to disclose “wherein the port comprises: a bridge being lockable to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.”

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

8. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Earl et al. (US 2011/0107398 A1).

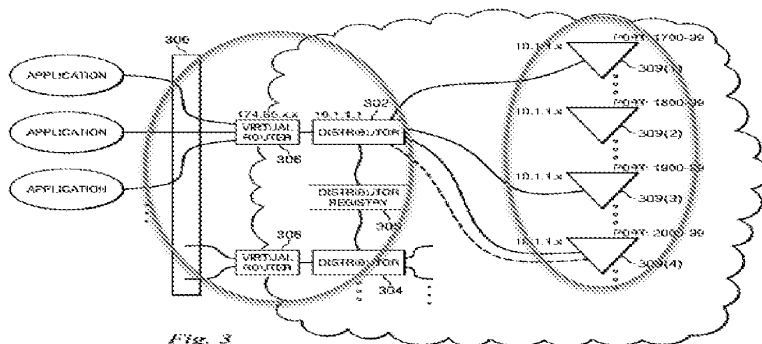
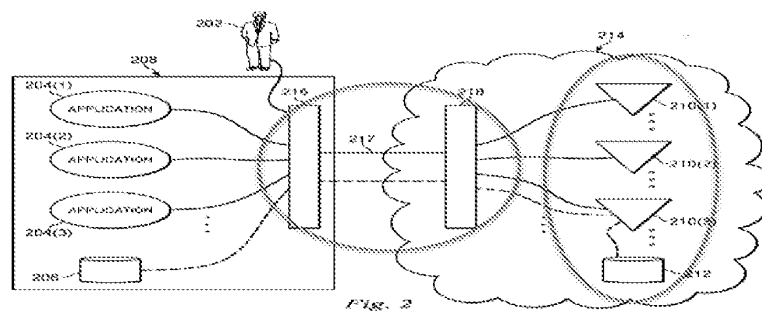
Regarding claim 1, Earl et al. discloses a programmable device for data flow processing in a user-configurable server with swappable pods or cards, comprising

(“System and method for enabling user access of cloud assets”):

a programmable logic device (PLD) having a first region and a second region;

a first region comprising a hardware-based or firmware-based router with a port enabling communication between the router **(bridge 300, virtual router 306 and Distribution 302, see figure 3)** and the second region; and

the second region comprising one or more sandboxes with user-defined electronic circuits **(210(1)...210(3))**



Regarding claim 2, Earl et al. teaches the router communicative to translate between a first protocol and a second protocol, for messaging with system resources.

Earl et al. Application Publication May 5, 2015 Sheet 1 of 4 US 2015/007339

ii Application Publication May 5, 2015 Sheet 3 of 4 US 2015/007339

[[0030]: “virtual routers 306, 308, provide a NAT for translating a single external address to multiple internal addresses.)

Regarding claim 3, Earl et al. discloses wherein each of the sandboxes comprises user-programmable one or more of: analog circuitry, digital circuitry, memory, processors or controllers. (**“System and method for enabling user access of cloud assets are described. In one embodiment, a method comprises authenticating a user to a system comprising a cloud computing environment in which a plurality of cloud assets are hosted; assembling a deployment associated with the authenticated user in accordance with a policy, the deployment comprising designated ones of the cloud assets; and providing a secure mechanism by which the designated ones of the cloud assets comprising the deployment are accessible by the authenticated user.” Abstract**).

Regarding claim 4, Earl et al. discloses wherein the port comprises: a bridge being lockable to prevent user access, an unlockable to enable user access, to each of the sandboxes and the user-definable electronic circuits therein. (**[[0025]: “enable authentication of the user 202 and, applying policy defined by the enterprise, uses the information gathered by the secure bridge 216 as a result of the authentication (such as roles, groups, etc.) as arguments to grant the appropriate rights and permission to access the assets 204(1)-204(3) and 206 in the private cloud 208.**)

Regarding claim 6, Eart et al. discloses wherein the port comprises: a bridge having a security layer to authenticate a user or verify a permission, to reconfigure one or more of the one or more sandboxes. ([0016]: “providing a secure mechanism by which the designated ones of the cloud assets comprising the deployment are accessible by the authenticated user.”...[0020]: “FIG. 4...a process for transparent access and management of user accessed cloud assets in which a mechanism is provided for enabling a user to establish an identify with a secure bridge thereof.”)

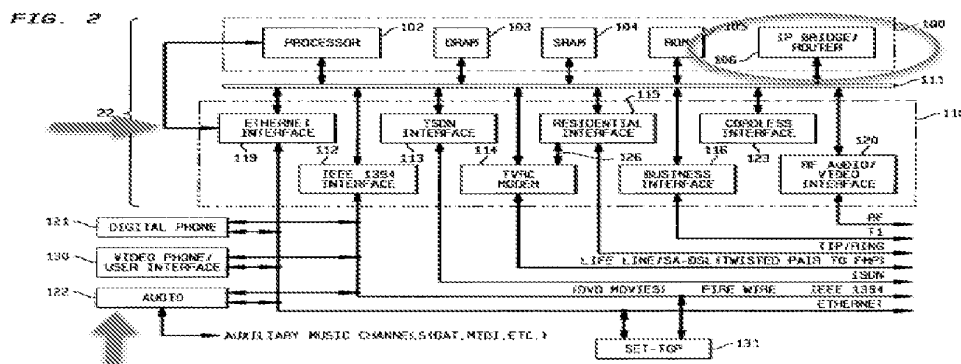
9. Claims 1, 3-4 and 7 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Gerszberg et al. (US 6,307,839).

Regarding claim 1, Gerszberg discloses a programmable device for data flow processing in a user-configurable server with swappable pods or cards, comprising:

a programmable logic device (PLD) having a first region and a second region;

a first region comprising a hardware-based or firmware-based router with a port enabling communication between the router and the second region (**router/IP bridge 106**); and

the second region comprising one or more sandboxes with user-defined electronic circuits (**Digital Phone, Video Phone/user interface 130, Audio 122**).



U.S. Patent (US 6,307,839) (US 6,307,839)

Regarding claim 3, Gerszberg et al. further teaches wherein each of the sandboxes comprises user-programmable one or more of: analog circuitry, digital circuitry, memory or processors or controllers. (see figure 2).

Regarding claim 4, Gerszberg et al. teaches wherein the port comprises: a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and the user-definable electronic circuits therein. **(“The ISD may be variously configured to provide any number of suitable services. For example, the ISD 22 may offer high fidelity radio channels by allowing the user to select a particular channel and obtaining a digitized radio channel from a remote location and outputting the digital audio, for example, on audio interface 122, video phone 130, and/or digital phones 121.” Col. 7, lines 20-30.**

Regarding claim 7, Gerszberg et al. teaches the router configured to perform analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization. **(“Both the ISD 22 and the FMP 32 have the capability to sense and seize the available bandwidth band allocate that bandwidth to the requested service, deciding the optimal bandwidth allocation scheme for managing the requested services...dynamic reconfiguration of the frame is possible so that different devices may be assigned amounts of time slots within the frame to dynamically vary the bandwidth allocation between the devices.”, col. 10, lines 60-67).**

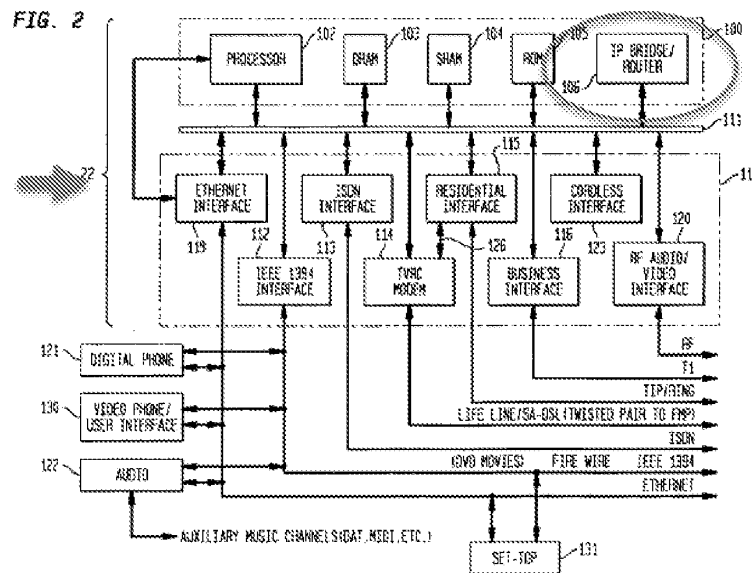
Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103 as being unpatentable over Gerszberg et al. (US 6,307,839) in view of Shur (5,809,233).

Regarding claim 2, although Gerszberg et al. fails to explicitly teach the router communicative to translate between a first protocol and a second protocol, for messaging with system resources, it is inherently configured in router 106. The router 106 may perform some of the translation from one protocol to another, such as from IP to Ethernet.



U.S. Patent Oct. 23, 2001 Sheet 2 of 8 US 6,307,839 1

In an alternative, in view of Shur teaches (**"All the packets that exit a LAN for the packet switching network in our example, must go through the bridge 30 or**

router 40. When the bridge/router passes packet from the LANs to the packet switching network, the bridge/router is said to be a gateway, because it passes packets from one architecture (e.g. Local area network architecture) to a second architecture (e.g. packet switching architecture). The bridge/router is also a gateway because the bridge/router may have two different protocols implemented in the bridge/router. Therefore, the bridge/router may be the physical device that does some of the translation from one protocol to another.” Col. 1, lines 60-67).

Therefore, it would have been obvious to those having ordinary skill in the art before the effective filing date of the claimed invention to combine Shur with Gerszberg et al.

12. Claim 7 is rejected under 35 U.S.C. 103 as being unpatentable over Earl et al. (US 2011/0107398 A1) in view of Gerszberg et al. (US 6,307,839).

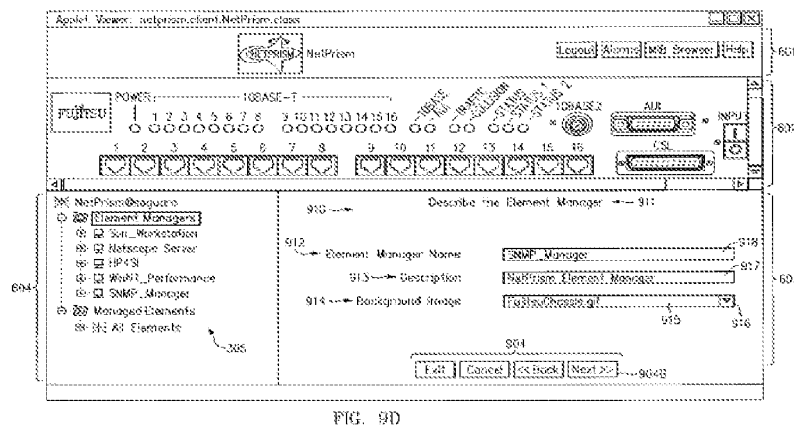
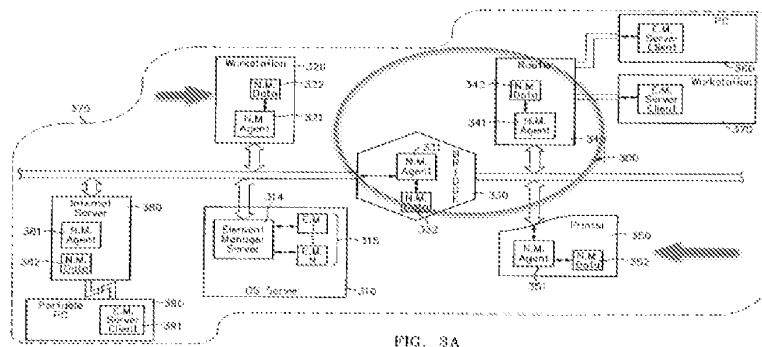
Regarding claim 7, Earl et al. fails to disclose the router configured to perform analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization.

Gerszberg et al. in the same field of invention, discloses the claimed feature. Gerszberg et al. teaches (“**Both the ISD 22 (router) and the FMP 32 have the capability to sense and seize the available bandwidth band allocate that bandwidth to the requested service, deciding the optimal bandwidth allocation scheme for managing the requested services...Within the single frame, dynamic reconfiguration of the frame is possible so that different devices may be assigned amounts of time slots within the frame to dynamically vary the bandwidth allocation between the devices.”, col. 10, lines 60-67).**

Therefore, it would have been obvious to those having ordinary skill in the art before the effective filing date of the claimed invention to combine Gerszberg et al. with Earl et al. for implement dynamic configuration of bandwidth.

13. The prior art made of record and not relied upon is considered pertinent to applicant disclosure:

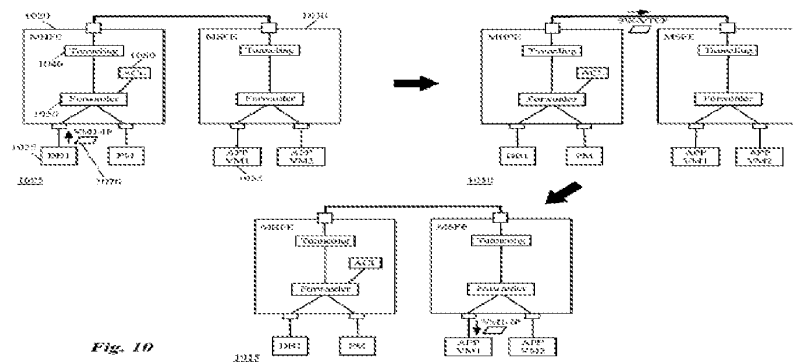
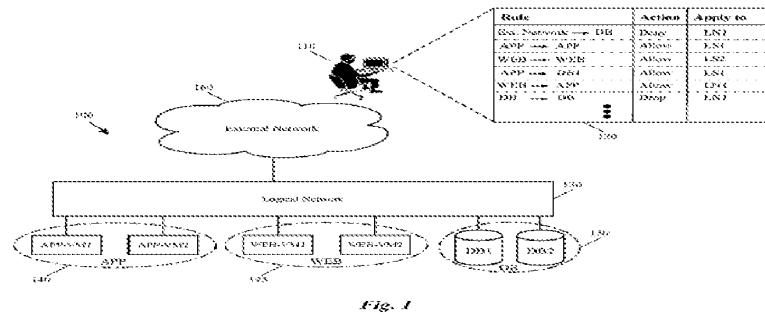
Kekic et al. (5,999,179) discloses platform independent computer network management client.



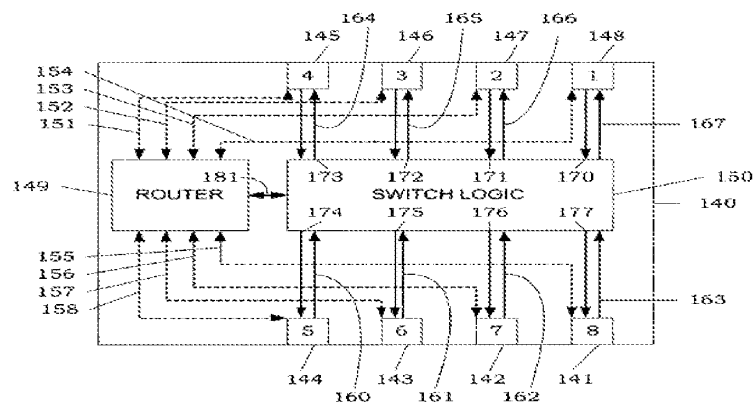
U.S. Patent Dec. 7, 1999 Sheet 3 of 37 5,999,179

U.S. Patent Dec. 7, 1999 Sheet 15 of 37 5,999,179

Chanda et al. (US 2018/0007005 A1) discloses implementing logical network security on a hardware switch.



Mies et al. (US 7,397,788 B2) discloses methods and apparatus for device zoning in fibre channel arbitrated loop systems.



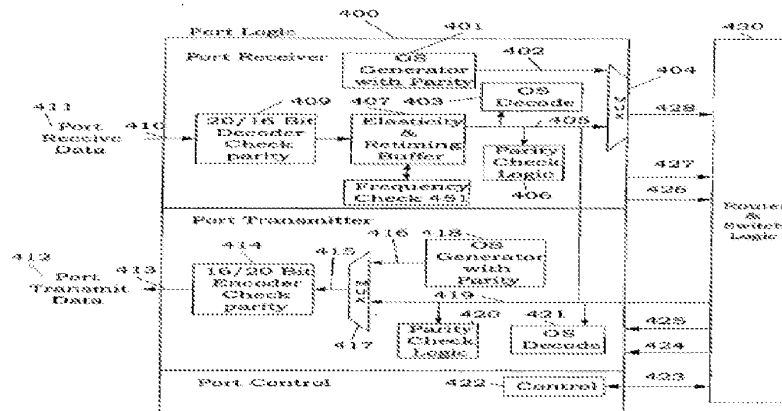


Fig. 8

Mackie et al. (US 1 and B2) discloses network device data plane sandboxes for third party controlled packet forwarding paths.

U.S. Patent Dec. 10, 2019 Sheet 2 of 6 US 10,505,868 B2

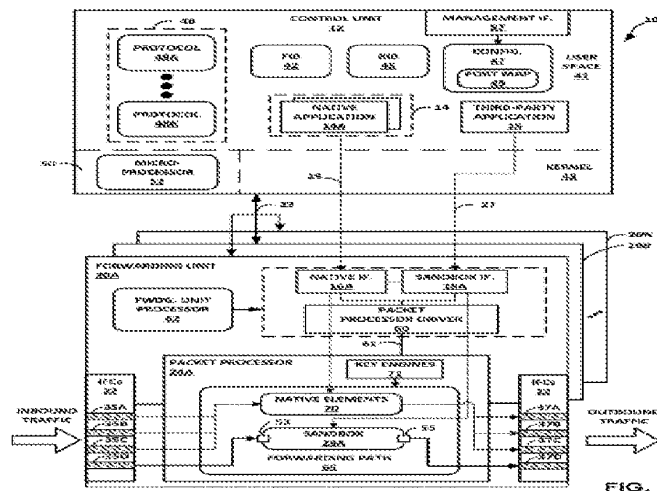


FIG. 2

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENDA H PHAM whose telephone number is (571)272-3135. The examiner can normally be reached on 571-272-3135.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Jiang can be reached on 571-270-7191. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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BRENDA H. PHAM
Primary Examiner
Art Unit 2412

/BRENDA H PHAM/
Primary Examiner, Art Unit 2412

<i>Notice of References Cited</i>	Application/Control No. 16/035,674		Applicant(s)/Patent Under Reexamination BEESON et al.	
	Examiner BRENDA H PHAM		Art Unit 2412	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20110107398-A1	05-2011	Earl; Doug	H04L9/32	726/3
*	B	US-6307839-B1	10-2001	Gerszberg; Irwin	H04J3/1682	370/230
*	C	US-5809233-A	09-1998	Shur; David Hilton	H04L12/4608	340/9.14
*	D	US-5999179-A	12-1999	Kekic; Miodrag M.	H04L41/0213	715/734
*	E	US-20180007005-A1	01-2018	Chanda; Anupam	H04L63/0236	1/1
*	F	US-7397788-B2	07-2008	Mies; Carl	H04L12/42	370/230
*	G	US-10505868-B2	12-2019	Mackie; Scott	H04L41/12	1/1
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 20200305

Search Notes 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

CPC - Searched*		
Symbol	Date	Examiner
(H04L12/462.CPC. H04L12/4625.CPC. H04L29/06163.CPC. H04L12/5601.CPC. H04L45/50.CPC. H04L2012/5665.CPC. H04L12/ 56.CPC. H04L2012/56.CPC. H04L12/66.CPC. H04L2012/46.CPC. H04L2012/5618.CPC. H04L12/46.CPC. H04L12/4625.CPC. H04L12/ 462.CPC. H04L12/40097.CPC. H04L12/40091.CPC.)	03/06/2020	b.p.

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
370	285, 401, 402, 360, 359, 389, 395.5.	03/06/2020	b.p.

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST	03/06/2020	b.p.

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	
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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	25417	(H04L12/462.CPC. H04L12/4625.CPC. H04L29/06163.CPC. H04L12/5601.CPC. H04L45/50.CPC. H04L2012/5665.CPC. H04L12/56.CPC. H04L2012/56.CPC. H04L12/66.CPC. H04L2012/46.CPC. H04L2012/5618.CPC. H04L12/46.CPC. H04L12/4625.CPC. H04L12/462.CPC. H04L12/40097.CPC. H04L12/40091.CPC.)	US-PGPUB; USPAT	OR	ON	2020/03/06 12:17
L2	15958	1 and (bridge router)	US-PGPUB; USPAT	OR	ON	2020/03/06 12:17
L3	668	1 and (bridge same router same (user sandbox))	US-PGPUB; USPAT	OR	ON	2020/03/06 12:19

3/6/2020 12:19:33 PM**C:\Users\bpham\Documents\EAST\Workspaces\15535472.wsp**

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	9056	(router with (user\$defin\$4) (user\$program\$6))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:43
L2	286	(router with (user\$defin\$4) (user\$program\$6) with translat\$4 with protocol)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:45
L3	270	2 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:46
L4	500	(Brenda near pham) and (router gateway) and local and interface	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:48
L5	496	4 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:49
L6	11	4 and @ad<="20180715" and (user\$defined user\$program\$4)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 10:59
L7	794	((router gateway) with (local near4 bridge))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:02
L8	35	7 and @ad<="20180715" and (user\$defined user\$program\$4)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:03
L9	5	(router with bridge with (user\$defin\$4) (user\$program\$6) with translat\$4 with protocol)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:17
L10	8776	(router with bridge with (user\$defin\$4) (user\$program\$6))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:19
L11	0	(router with bridge with ((user\$defin\$4) (user\$program\$6)) with local)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:20
L12	118	(router with (local near bridge))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:20

EAST Search History

L13	4	12 and @ad<="20180715" and (user\$defined user\$program\$4)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/05 11:20
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3/5/2020 11:22:12 AM

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(mmi adj router)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:01
L2	439	(router same (sand\$box))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:01
L3	392	2 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:01
L4	4991	(fpga same router)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:24
L5	4	(fpga same router same (user near programmable))	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:25
L9	1369	(fpga same router same circuitry)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:26
L10	270	(fpga same router same (analog digital) same circuitry)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:27
L11	254	10 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:27
L14	185	(pod same router and fpga)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:40
L15	164	14 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:40
L18	3723	(user with defined) same router	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:43
L19	1722	(user near defined) same router	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:43
L20	413	(user near defined) same router and FPGA	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:43
L21	383	20 and @ad<="20180715"	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 17:44
L23	890	router same (sim adj card)	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 18:00
L24	383	20 and @ad<="20180715" and fpga	US-PGPUB; USPAT; USOCR; EPO; DERWENT;	OR	ON	2020/03/04 18:00

EAST Search History

			IBM_TDB			
L25	720	(user near defined) with router	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 18:03
L26	173	25 and @ad<="20180715" and fpga	US-PGPUB; USPAT; USOCR; EPO; DERWENT; IBM_TDB	OR	ON	2020/03/04 18:03

3/4/2020 6:28:14 PM**C:\Users\bpham\Documents\EAST\Workspaces\15535472.wsp**

Bibliographic Data

Application No: 16/035,674

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /BRENDA H PHAM/

Examiner's Signature

Initials

Title:

HARDWARE DEFINED ANYTHING IN A PLATFORM WITH
SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND
MEMORY SUPERPOSITION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/15/2018	370	2412	CV2
RULE			

APPLICANTS

Concurrent Ventures, LLC, Johns Creek, GA,

INVENTORS

Jesse D. BEESON Johns Creek, GA, UNITED STATES

Jesse B. YATES Atlanta, GA, UNITED STATES

CONTINUING DATA

FOREIGN APPLICATIONS

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07/31/2018

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STATE OR COUNTRY

UNITED STATES

ADDRESS

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

FILING FEE RECEIVED

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Dear PAIR Customer:

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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	CTNF	03/11/2020	CV2
	892	03/11/2020	CV2

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**Courtesy Reminder for
Application Serial No: 16/035,674**

Attorney Docket No: CV2
Customer Number: 52904
Date of Electronic Notification: 03/11/2020

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STATEMENT OF DELAY DUE TO COVID-19 OUTBREAK (Page 1 of 1)			
Applicant or Patent Owner	Concurrent Ventures		
Application No. or Patent No.	16/035,674	Filing Date or Issue Date	7/15/18
Title of Invention	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION		
This statement accompanies a filing or payment that was delayed due to the COVID-19 outbreak. A practitioner, applicant, patent owner, petitioner, third-party requester, inventor, or other person associated with the filing or fee was personally affected by the COVID-19 outbreak, including, without limitation, through office closures, cash flow interruptions, inaccessibility of files or other materials, travel delays, personal or family illness, or similar circumstances, such that the outbreak materially interfered with timely filing or payment.			
Signature	/Michael Gencarella/	Date	8/6/20
Name (Print or Type)	Michael Gencarella	Practitioner Registration Number	44703
<i>Note: This form must be signed in accordance with 37 CFR 1.33. Please see 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required and indicate below the total number of forms submitted.*</i>			
☒ *Total of <u>1</u> forms are submitted.			

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Electronic Acknowledgement Receipt	
EFS ID:	40215753
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D. BEESON
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	06-AUG-2020
Filing Date:	15-JUL-2018
Time Stamp:	16:17:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	CV2_NFOA_3_11_2020response.pdf	105218 55d60ed122370d8b18b73c39c82ce74e372c17da	no	10

Warnings:

Information:					
2	Transmittal Letter	CV2sb0449.pdf	135712	no	2
			3cac0bf39e2454ba15c58a9f9a68373747e146ec		
Warnings:					
Information:					
Total Files Size (in bytes):				240930	
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of	)	
Jesse Beeson	)	Examiner: PHAM, Brenda
	)	
Application No: 16/035,674	)	Art Unit: 2412
	)	
Filed: 07-15-2018	)	Atty. Docket No: CV2
	)	
For: HARDWARE DEFINED ANYTHING IN A	)	
PLATFORM WITH SWAPPABLE PODS,	)	
MESSAGE INTERFACE, SANDBOXES AND	)	
<u>MEMORY SUPERPOSITION</u>	)	

AMENDMENT

Commissioner for Patents
PO. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Nonfinal Office Action dated March 11, 2020, please amend the application as follows.

Amendments to the claims are reflected in the listing of claims which begins on page 2 of this response.

Remarks begin on page 6 of this response.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A programmable device for data flow processing in a user-configurable server with swappable pods or cards, comprising:

a programmable logic device (PLD) having a first region and a second region;

the first region comprising a hardware-based or firmware-based router with a port enabling communication between the router and the second region; and

the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD.

2. (original) The programmable device of claim 1, further comprising:

the router communicative to translate between a first protocol and a second protocol, for messaging with system resources.

3. (original) The programmable device of claim 1, wherein each of the sandboxes comprises user-programmable one or more of: analog circuitry, digital circuitry, memory, processors or controllers.

4. (currently amended) The programmable device of claim 1, wherein the port comprises:

a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and the user-definable programmable electronic circuits therein.

5. (original) The programmable device of claim 1, wherein the port comprises:

a bridge being lockable to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.

6. (original) The programmable device of claim 1, wherein the port comprises:

a bridge having a security layer to authenticate a user or verify a permission, to reconfigure one or more of the one or more sandboxes.

7. (original) The programmable device of claim 1, further comprising:

the router configured to perform analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization.

8-20 (canceled)

21. (new) The programmable device of claim 1, wherein the one or more sandboxes each comprise port interfaces that are configurable as to data width or speed.

22. (new) The programmable device of claim 1, wherein the one or more sandboxes each comprise clock cycle utilization regulation for controlling power consumption or thermal characteristics.

23. (new) The programmable device of claim 1, wherein the one or more sandboxes comprises a plurality of sandboxes that are logically or physically combinable to form a larger sandbox.

24. (new) A programmable device for data flow processing in a user-configurable server, comprising:

a programmable logic device (PLD) having a first region and a second region;

the first region comprising a hardware-based or firmware-based router having a bridge with a port enabling communication between the router and the second region;

the second region comprising a plurality of sandboxes with user-definable programmable electronic circuits of the PLD; and

an internal communication network in the PLD, coupling the port of the bridge of the router and the one or more sandboxes for the data flow processing.

25. (new) The programmable device of claim 24, further comprising:

the router to translate between a first protocol used external to the second region and a second protocol used in the internal communication network in the PLD.

26. (new) The programmable device of claim 24, wherein each of the plurality of sandboxes comprises user-programmable one or more of: analog circuitry, digital circuitry, memory, processors or controllers.

27. (new) The programmable device of claim 24, wherein the bridge is lockable to prevent user access, and unlockable to enable user access, to the plurality of sandboxes and the user-definable programmable electronic circuits therein.

28. (new) The programmable device of claim 24, wherein the bridge is lockable to enable reconfiguration of the plurality of sandboxes, prevent reconfiguration of the bridge and prevent reconfiguration of the router.

29. (new) The programmable device of claim 24, wherein the bridge has a security layer to authenticate a user or verify a permission, to reconfigure one or more of the plurality of sandboxes.

30. (new) The programmable device of claim 24, further comprising:

the router configured to perform analytics on resources of the programmable device, on a per module basis, including determining communication bandwidth and resource utilization in the plurality of sandboxes.

31. (new) The programmable device of claim 24, wherein the each of the plurality of sandboxes comprises one or more port interfaces configurable as to data width or speed.

32. (new) The programmable device of claim 24, wherein each of the plurality of more sandboxes comprises clock cycle utilization regulation for controlling power consumption or thermal characteristics.

33. (new) The programmable device of claim 24, wherein the plurality of sandboxes is logically or physically combinable to form a single, larger sandbox.

REMARKS

Claims 1-20 were pending in the application. Claims 8-20 were withdrawn. Claims 1-7 are rejected. Claims 1 and 4 are currently amended. Claims 8-20 are canceled. Claims 21-33 are new. Support for the amendment is found at least in paragraphs 26-29. No new matter has been introduced through this amendment. Claims 1-7 and 21-33 are now pending in the application. Applicants have provided a statement of delay due to Covid outbreak to address the extension fees.

Rejections Under 35 USC §112

Claim 5 is rejected under 35 USC §112(a) or 35 USC §112 (pre-AIA), first paragraph as allegedly failing to comply with the written description requirement. Applicant respectfully submits that the specification describes the limitations of claim 5 in such a way as to reasonably convey to one skilled in the art that the inventor at the time the application was filed had possession of the claimed invention.

Specification paragraph 26 discloses, “The bridge 128 is a module that sits on a router port, for purposes of crossing the I/O type or protocol (i.e., from a wide internal parallel bus to PCIe, or Ethernet, etc). The bridge 128 may contain a security layer 130, and in some embodiments is a firewall for MMI message traffic policies. In turn, the MMI network connection 108 connects to one or more sandboxes 132 in other sections of the FPGA”. This teaches that the router port comprises a bridge that contains a security layer, and the bridge connects through the router port and the MMI network connection, i.e., through the MMI router (see elsewhere in paragraph 26) to one or more sandboxes.

Specification paragraph 27 discloses, “In some versions, the bridge 128 is locked to prevent user access, in an FPGA 122 that supports partial reconfiguration, so that a user can configure or reconfigure one or more modules in one or more sandboxes 132, but cannot reconfigure the bridge 128.” This teaches that the bridge is lockable, and when the bridge is locked a user cannot reconfigure the bridge, i.e., the bridge is lockable to prevent reconfiguration of the bridge. Also, the bridge is locked so that the user can configure or reconfigure modules in the sandboxes, i.e. locking the bridge enables reconfiguration of the sandboxes.

Specification paragraph 28 discloses, “In some embodiments, the bridge 128 has a security layer 130. One of the functions of the security layer 130 could be to protect the circuitry of the bridge, including the MMI router 124 in embodiments that have one, from being reprogrammed.” This teaches that the MMI router and the circuitry of the bridge are or can be protected and that protecting the circuitry of the bridge and the router protects the bridge and the router from being reprogrammed. Combined with the teachings of paragraph 27, this teaches that locking the bridge would also prevent the router from being reconfigured.

Hence, upon reading these passages in context of the remainder of the specification and the claims as filed, the hypothetical person of ordinary skill in the art would interpret the specification as disclosing the claim 5 limitations, “wherein the port comprises: a bridge being lockable to prevent reconfiguration of the bridge and prevent reconfiguration of the router while enabling reconfiguration of the one or more sandboxes.” Claim 5 therefore complies with the written description requirement.

Rejections Under 35 USC §102

Claims 1-4 and 6 are rejected under 35 USC §102(a)(2) as allegedly being anticipated by Earl et al. (US 2011/0107398). Applicant respectfully submits that independent claim 1 as currently amended has limitations not shown in Earl.

Regarding the claim 1 limitations of “a programmable logic device (PLD) having a first region and a second region”, the Office Action appears not to have properly examined these limitations and does not cite where in Earl they can be found. Programmable logic device, or PLD, is a term of art referring to a specific type of integrated circuit that has user programmable electronic circuits. Earl is silent regarding a programmable logic device, and there is no teaching in Earl to put the cited elements of cited Figures 2 and 3 in a programmable logic device. Hence, the Office Action has not properly shown these claim limitations, and Earl does not show these claim limitations.

Regarding the claim 1 limitations of “the second region comprising one or more sandboxes with user-defined electronic circuits”, the Office Action cites Earl Fig. 2 assets 210(1)... 210(3) (see paragraph 25). Applicant amends these limitations to recite, “the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD.” Earl discloses

that the assets 210 (see paragraph 25) are also referred to as virtual machines 210 (see paragraph 29) and cloud assets (see paragraph 28). More generally, Earl discloses (see paragraph 23 and Fig. 1) that the cloud structure includes a hardware layer 100 comprising storage assets 102, processing assets 104, and network assets 106, insulated from the workloads by the virtualization layer 108 hardware, storage and networking. There is no disclosure in Earl that the cited cloud assets/assets 210/virtual machines 210 are sandboxes with user-definable programmable electronic circuits of a programmable logic device. Hence, Earl does not show the amended claim 1 limitations of “the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD.”

Earl therefore does not show all of the limitations of claim 1. Claim 1 and claims depending therefrom are not anticipated by Earl.

Claims 1, 3, 4 and 7 are rejected under 35 USC §102(a)(1) as allegedly being anticipated by Gerszberg et al. (US 6,307,839). Applicant respectfully submits that the independent claim 1 as currently amended has limitations not shown in Gerszberg.

Regarding the claim 1 limitations of “a programmable logic device (PLD) having a first region and a second region”, the Office Action appears not to have properly examined these limitations and does not cite where in Gerszberg they can be found. Programmable logic device, or PLD, is a term of art referring to a specific type of integrated circuit that has user programmable electronic circuits. Gerszberg is silent regarding a programmable logic device, and there is no teaching in Gerszberg to put the cited elements of cited Figure 2 in a programmable logic device. Hence, the Office Action has not properly shown these claim limitations, and Gerszberg does not show these claim limitations.

Regarding the claim 1 limitations of “the second region comprising one or more sandboxes with user-defined electronic circuits”, the Office Action cites Gerszberg Fig. 2 digital phone, videophone/user interface 130, audio 122. Applicant amends these limitations to recite, “the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD.” Gerszberg discloses that the videophone 130 includes a touchscreen display 141 and softkeys 142 (see Fig. 3A and column 8 lines 12-14), and that (see column 7 lines 26-30), “A digital telephone may be connected to the audio interface 122 such that a user may select any one of a

number of digital audio service channels by simply having the user push a digital audio service channel button on the telephone and have the speakerphone output particular channels.”. There is no disclosure in Gerszberg that the cited videophone with touchscreen display, softkeys, audio interface, digital audio service channel buttons, and speakerphone output are sandboxes with user-definable programmable electronic circuits of a programmable logic device. Hence, Gerszberg does not show the amended claim 1 limitations of “the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD.”

Gerszberg therefore does not show all of the limitations of claim 1. Claim 1 and claims depending therefrom are not anticipated by Gerszberg.

Rejections Under 35 USC §103

Claim 2 is rejected under 35 USC §103 as allegedly being unpatentable over Gerszberg in view of Shur (US 5,809,233). Shur does not cure the deficiencies of Gerszberg to show all of the limitations of independent claim 1. Hence, claim 2 is patentable by virtue of dependency from claim 1.

Claim 7 is rejected under 35 USC §103 as allegedly being unpatentable over Earl in view of Gerszberg. Neither Earl nor Gerszberg, singly or in combination, show all of the limitations of independent claim 1, as discussed above. Hence, claim 7 is patentable by virtue of dependency from claim 1.

Further regarding claim 5, the claim appears not to have been examined by the Office Action for compliance with 35 USC §102 and 35 USC §103, which deprives Applicant of the opportunity to respond to such examination or amend the claim. In light of this omission, Applicant respectfully suggests the subsequent Office Action should be a Nonfinal Office Action.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all of the pending claims are in condition for allowance. A notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at **(408) 341-3015**. If any fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 09-0528 (Order No. C67508 1010).

Should the Examiner have any questions concerning this matter, please contact the undersigned.

Respectfully submitted,

Womble Bond Dickinson (US) LLP

/Michael L. Gencarella/

Michael L. Gencarella, Esq.
Reg. No. 44,703



United States Patent and Trademark Office

Office of the Chief Financial Officer

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Effective Date

08/06/2020

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I202088D18301977

Fee Code

2252

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EXTENSION FOR RESPONSE
WITHIN 2ND MONTH

Amount Paid

\$300.00

Payment Method

Deposit Account



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NOTICE OF ALLOWANCE AND FEE(S) DUE

52904 7590 10/09/2020
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

EXAMINER

PHAM, BRENDA H

ART UNIT

PAPER NUMBER

2412

DATE MAILED: 10/09/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715

TITLE OF INVENTION: HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	01/11/2021

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52904 7590 10/09/2020
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715

TITLE OF INVENTION: HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES
AND MEMORY SUPERPOSITION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	01/11/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHAM, BRENDA H	2412	370-401000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

- ☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
52904	7590	10/09/2020	EXAMINER	
Michael gencarella 12875 lucero lane los altos hills, CA 94022			PHAM, BRENDA H	
			ART UNIT	PAPER NUMBER
			2412	
DATE MAILED: 10/09/2020				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/035,674	Applicant(s) BEESON et al.	
	Examiner BRENDA H PHAM	Art Unit 2412	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to August 6, 2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are See Continuation Sheet. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☒ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☒ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
---	---

/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	/BRENDA H PHAM/ Primary Examiner, Art Unit 2412
--	--

Continuation of 3. The allowed claim(s) is/are: 1-3, 5-7, 21-23, 25-33, renumbering as 1-18, respectively

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

2. The application has been amended as follows:

Claims 4 and 27 have been canceled.

Claim 1 has been amended as:

"A programmable device for data flow processing in a user-configurable server with swappable pods or cards, comprising:

a programmable logic device (PLD) having a first region and a second region;

the first region comprising a hardware-based or firmware-based router with a port enabling communication between the router and the second region; and

the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD,

wherein the port comprises: a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and the user-definable programmable electronic circuits therein."

Claim 24 has been amended as:

"A programmable device for data flow processing in a user-configurable server, comprising:

a programmable logic device (PLD) having a first region and a second region;

the first region comprising a hardware-based or firmware-based router having a bridge with a port enabling communication between the router and the second region;

the second region comprising a plurality of sandboxes with user-definable programmable electronic circuits of the PLD; and

an internal communication network in the PLD, coupling the port of the bridge of the router and the one or more sandboxes for the data flow processing,

wherein the bridge is lockable to prevent user access, and unlockable to enable user access, to the plurality of sandboxes and user-definable programmable electronic circuits therein."

3. Authorization for this examiner's amendment was given in an interview with Attorney Michael L. Gencarella, Reg. No. 44,703 on September 26, 2020.

REASONS FOR ALLOWANCE

4. Claims 1-3, 5-7, 21-23, 25-33 are allowed over prior art made of record.
5. The following is an examiner's statement of reasons for allowance:

Figure 3 of the application is directed to the claimed invention.

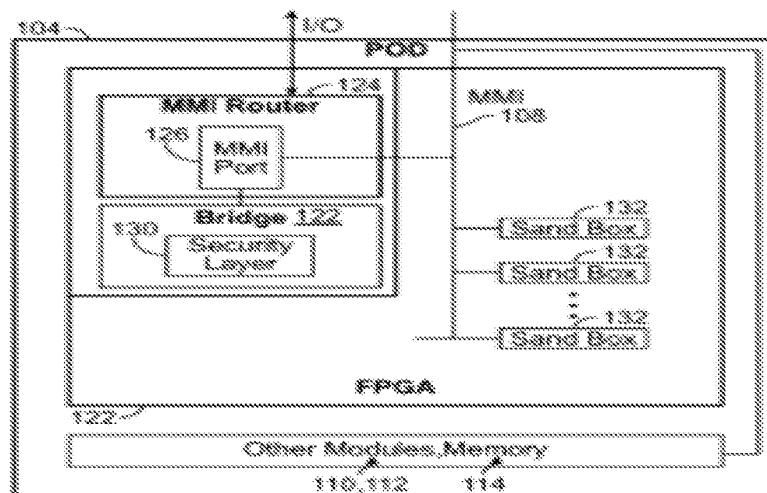
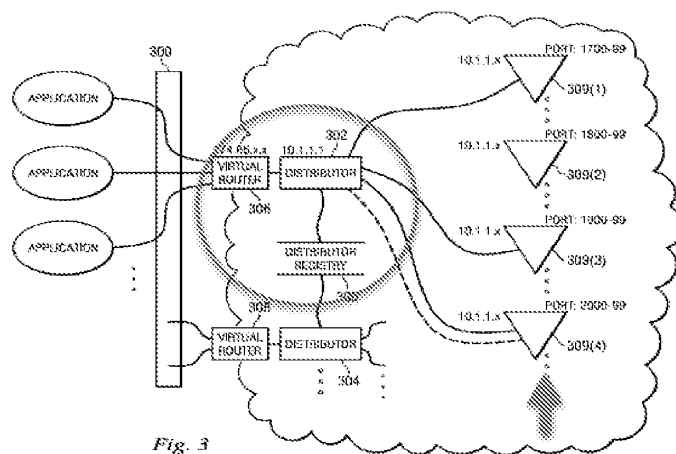


FIG. 3

- Applicant's arguments, see Remarks, filed August 6, 2020, with respect to the rejections under 35 U.S.C. §102 have been fully considered and are persuasive. The rejection has been withdrawn.

The closest prior art made of record, Earl et al. (US 2011/0107398 A1) discloses a programmable device for data flow processing in a user-configurable server with swappable pods or cards, ("System and method for enabling user access of cloud assets") comprising:

- a programmable logic device (PLD) having a first region and a second region;
- a first region comprising a hardware-based or firmware-based router with a port enabling communication between the router (bridge 300, virtual router 306 and Distribution 302, see figure 3) and the second region. See figure 3.



U.S. Application Publication May 5, 2011 Sheet 3 of 4 US 2011/0107398

Earl et al. fails to teach or fairly suggests in combination the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD, wherein the port comprises: a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and user-definable programmable electronic circuits therein.

- Mies et al. (US 7,397,788 B2) discloses a programmable device for data flow processing in a user-configurable server with swappable pods or cards comprising:
 - a programmable logic device (PLD) having a first region and a second region;
 - a first region comprising a hardware-based or firmware-based router with a port enabling communication between the router. See figure 4.

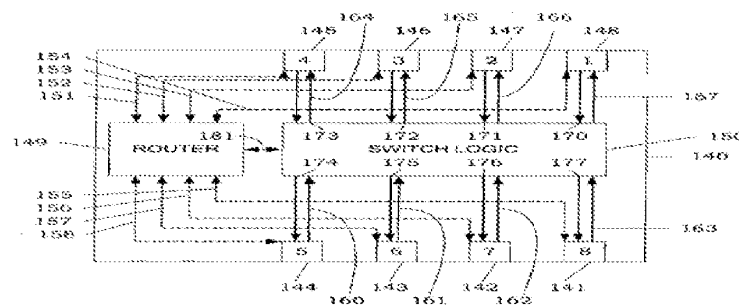


Fig. 4

Mies et al. fails to teach or fairly suggests in combination “the second region comprising one or more sandboxes with user-definable programmable electronic circuits of the PLD, wherein the port comprises: a bridge being lockable to prevent user access, and unlockable to enable user access, to each of the sandboxes and the user-definable programmable electronic circuits therein.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENDA H PHAM whose telephone number is (571)272-3135. The examiner can normally be reached on 571-272-3135.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Jiang can be reached on 571-270-7191. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRENDA H. PHAM
Primary Examiner
Art Unit 2412

/BRENDA H PHAM/
Primary Examiner, Art Unit 2412

Search Notes 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

CPC - Searched*		
Symbol	Date	Examiner
(H04L12/462.CPC. H04L12/4625.CPC. H04L29/06163.CPC. H04L12/5601.CPC. H04L45/50.CPC. H04L2012/5665.CPC. H04L12/ 56.CPC. H04L2012/56.CPC. H04L12/66.CPC. H04L2012/46.CPC. H04L2012/5618.CPC. H04L12/46.CPC. H04L12/4625.CPC. H04L12/ 462.CPC. H04L12/40097.CPC. H04L12/40091.CPC.)	03/06/2020	b.p.

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
370	285, 401, 402, 360, 359, 389, 395.5.	03/06/2020	b.p.

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST	03/06/2020	b.p.
EAST	09/26/2020	b.p.

/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	/BRENDA H PHAM/ Primary Examiner, Art Unit 2412
--	--

<i>Search Notes</i> 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	(H04L12/462.CPC. H04L12/4625.CPC. H04L29/06163.CPC. H04L12/5601.CPC. H04L45/50.CPC. H04L2012/5665.CPC. H04L12/56.CPC. H04L2012/56.CPC. H04L12/66.CPC. H04L2012/46.CPC. H04L2012/5618.CPC. H04L12/46.CPC. H04L12/4625.CPC. H04L12/462.CPC. H04L12/40097.CPC. H04L12/40091.CPC.)	09/26/2020	b.p.

/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	/BRENDA H PHAM/ Primary Examiner, Art Unit 2412
--	--

Issue Classification 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

CPC						
Symbol					Type	Version
H04L	/	12	/	4604	F	2013-01-01
H04L	/	69	/	08	I	2013-01-01
H04L	/	41	/	082	I	2013-01-01
H04L	/	69	/	18	I	2013-01-01
H04L	/	63	/	08	I	2013-01-01
G06F	/	21	/	53	I	2013-01-01
H04L	/	45	/	56	I	2013-01-01
G06F	/	2221	/	034	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	18
/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	26 September 2020	O.G. Print Claim(s)
(Primary Examiner)	(Date)	1
		O.G. Print Figure
		3

Issue Classification 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

INTERNATIONAL CLASSIFICATION		
CLAIMED		
H04L	12	46

NON-CLAIMED		

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/BRENDA H PHAM/ Primary Examiner, Art Unit 2412 (Primary Examiner)	26 September 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 3

U.S. Patent and Trademark Office

Part of Paper No.: 20200926

Issue Classification 	Application/Control No. 16/035,674	Applicant(s)/Patent Under Reexamination BEESON et al.
	Examiner BRENDA H PHAM	Art Unit 2412

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47																
CLAIMS																
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 18	
/BRENDA H PHAM/ Primary Examiner, Art Unit 2412 (Primary Examiner) _____ (Date) 26 September 2020		O.G. Print Claim(s) 1	O.G. Print Figure 3

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	22	(programmable same router same bridge same (user near3 defin\$4))	US-PGPUB; USPAT; USOCR	OR	ON	2020/09/26 16:19
L2	106	(programmable same router same (user near3 defin\$4))	US-PGPUB; USPAT; USOCR	OR	ON	2020/09/26 16:19
L3	6	(programmable same router same (user near3 defin\$4)).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2020/09/26 16:19

9/26/2020 4:20:13 PM

C:\Users\bpham\Documents\EAST\Workspaces\15535472.wsp

To: mginxy@gmail.com,mginxy@icloud.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 52904

Oct 09, 2020 04:23:49 AM

Dear PAIR Customer:

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	NOA	10/09/2020	CV2
	INTV.SUM.EX	10/09/2020	CV2

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Michael gencarella
12875 lucero lane
los altos hills, CA 94022



**Courtesy Reminder for
Application Serial No: 16/035,674**

Attorney Docket No: CV2
Customer Number: 52904
Date of Electronic Notification: 10/09/2020

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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PRINTER RUSH
(PTO ASSISTANCE)

Application: **16035674**

Examiner: **Pham**

GAU: **2412**

From:

Location: **IDC**

Creation Date: **11/05/2020**

Week Date: **10/5/2020**

<u>DOC CODE</u>	<u>DOC DATE</u>	<u>MISCELLANEOUS</u>
☐ 1449 ☐ IDS ☒ CLM ☐ IIFW/FWCLM ☐ SRFW ☐ DRW ☐ OATH ☐ 312 ☐ SPEC	<u>08/06/2020</u>	☐ Continuing Data ☐ Foreign Priority ☐ Document Legibility ☐ Fees ☐ Petition (TC) ☒ Other

[RUSH] Message:

The allowed claims on the PTOL-37 NOA 10/9/2020 do not match the claim set.
The PTOL-37 has claims 1-3,5-7,21-23 and 25-33 present.
The claim set has claims 1-3,5-7,21-26 and 28-33 present.
Please resolve
Thank you

[XRUSH] Response:

Initials: _____

Examiner: PUBS contact - James Leija, (703) 756-1197

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REV: AUG 16

Page 1/1



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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
52904	7590	11/16/2020	EXAMINER	
Michael gencarella			PHAM, BRENDA H	
12875 lucero lane				
los altos hills, CA 94022				
			ART UNIT	PAPER NUMBER
			2412	
			NOTIFICATION DATE	DELIVERY MODE
			11/16/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mginx@gmail.com
mginx@icloud.com

Corrected Notice of Allowability	Application No. 16/035,674	Applicant(s) BEESON et al.	
	Examiner BRENDA H PHAM	Art Unit 2412	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to August 6, 2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are See Continuation Sheet. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
 a) ☐ All b) ☐ Some *c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	5. ☐ Examiner's Amendment/Comment 6. ☐ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
---	---

/BRENDA H PHAM/ Primary Examiner, Art Unit 2412	
--	--

Continuation of 3. The allowed claim(s) is/are: 1-3, 5-7, 21-26, 28-33, renumbering as 1-18, respectively

PRINTER RUSH
(PTO ASSISTANCE)

Application: **16035674**

Examiner: **Pham**

GAU: **2412**

From:

Location: **IDC**

Creation Date: **11/05/2020**

Week Date: **10/5/2020**

<u>DOC CODE</u>	<u>DOC DATE</u>	<u>MISCELLANEOUS</u>
☐ 1449	<u>08/06/2020</u>	☐ Continuing Data
☐ IDS		☐ Foreign Priority
☒ CLM		☐ Document Legibility
☐ IIFW/FWCLM		☐ Fees
☐ SRFW		☐ Petition (TC)
☐ DRW		☒ Other
☐ OATH		
☐ 312		
☐ SPEC		

[RUSH] Message:

The allowed claims on the PTOL-37 NOA 10/9/2020 do not match the claim set.
The PTOL-37 has claims 1-3,5-7,21-23 and 25-33 present.
The claim set has claims 1-3,5-7,21-26 and 28-33 present.
Please resolve
Thank you

[XRUSH] Response:

The allowed claims on the PTOL-37
has been corrected.
Thank you.

Initials: _____

Examiner: PUBS contact - James Leija, (703) 756-1197

NOTE: This form will be included as part of the official USPTO record with the response document coded as XRUSH.

REV: AUG 16

Page 1/1

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Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 52904

Nov 16, 2020 03:39:00 AM

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los altos hills, CA 94022
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Application	Document	Mailroom Date	Attorney Docket No.
16035674	NOA	11/16/2020	CV2

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
7590 Michael gencarella 12875 lucero lane los altos hills, CA 94022			EXAMINER PHAM, BRENDA H	
			ART UNIT	PAPER NUMBER
			2412	
			NOTIFICATION DATE	DELIVERY MODE
			01/26/2021	ELECTRONIC

Notice of Abandonment

This application is abandoned in view of:

1. ☐ The applicant's failure to timely file a proper reply to the Office letter mailed on _____.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission date _____), which is after the expiration of the period for reply (including a total extension of _____ month(s)) which expired on _____.
 - (b) ☐ No reply has been received.
2. ☒ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission date _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____.
The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☒ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawing have been received.
4. ☐ Applicant's failure to timely file the inventor's oath or declaration no later than the date on which the issue fee was paid as required by the Notice Requiring Inventor's Oath or Declaration (PTO-2306).
 - (a) ☐ An inventor's oath or declaration was received on _____ (with a Certificate of Mailing or Transmission date _____), which is after the date on which the issue fee was paid.
 - (b) ☐ While an oath or declaration (or substitute statement) for one or more inventors was received, an oath or declaration (or substitute statement) for at least one other inventor has not been received.
 - (c) ☐ No inventor's oath or declaration has been received.
5. ☐ Drawings received on _____ were disapproved by examiner. See examiner's response dated _____.
6. ☐ Corrected drawings were received on _____, which is after the expiration of the one-month period for reply set in examiner's response dated _____.
7. ☐ No corrected drawings have been received in reply to one-month period set in examiner's response dated _____.
8. ☐ The reason(s) below:

Petitions to revive under 37 CFR 1.137(a) or request to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

A Gezahegn
(571)-272-4200 or 1(888)-786-0101
Patent Publication Branch
Office of Data Management
FORM PTO-ABNO (Rev. 03/17)

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Cc: PAIR_eOfficeAction@uspto.gov
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Jan 27, 2021 04:28:43 AM

Dear PAIR Customer:

Michael gencarella
12875 lucero lane
los altos hills, CA 94022
UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	ABN	01/26/2021	CV2

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Document Description: Petition for Review by the Office of Petitions

PTO/SB/6A (12-20)

Approved for use through 12/31/2020. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)		Docket Number (Optional)
Page 1 of 3		
First named inventor: <u>Beeson, Jesse D.</u>		
Application No.: <u>16/025,674</u>	Art Unit: <u>2412</u>	
Filed: <u>7/15/2018</u>	Examiner: <u>Pham, B</u>	
Title: <u>Hardware Defined anything in a platform with swappable pods, message interface, sandboxes and memory superposition.</u>		
Attention: Office of Petitions Mail Stop Petition Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 FAX (571) 273-8300		
NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.		
The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the Office notice or action plus any extensions of time actually obtained.		
APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.		
NOTE: A grantable petition requires the following items:		
(1) Petition fee;		
(2) Reply and/or issue fee;		
(3) Terminal disclaimer with disclaimer fee -- required for all utility and plant applications filed before June 8, 1995, and for all design applications; and		
(4) Statement that the entire delay was unintentional.		
1. Petition fee		
☒ Small entity fee \$ <u>1050</u> (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.		
☐ Micro entity fee \$ _____ (37 CFR 1.17(m)). Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.		
☐ Undiscounted fee \$ _____ (37 CFR 1.17(m)).		
2. Reply and/or fee		
A The reply and/or fee to the above-noted Office notice or action in the form of		
<u>Issue fee payment</u> (identify the type of reply):		
☐ has been filed previously on _____.		
☒ is enclosed herewith.		
B The issue fee and publication fee (if applicable) of \$ <u>600</u>		
☐ has been paid previously on _____.		
☒ is enclosed herewith.		

The collection of information is required by 37 CFR 1.137(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)**

Page 2 of 3

3. Terminal disclaimer with disclaimer fee

- ☐ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.
- ☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ _____) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional.

Petitioner is reminded that a delay resulting from a deliberately chosen course of action on the part of the applicant does not become an "unintentional" delay within the meaning of 37CFR 1.137 because:

- the applicant does not consider the claims to be patentable over the references relied upon in an outstanding Office action;
- the applicant does not consider the allowed or patentable claims to be of sufficient breadth or scope to justify the financial expense of obtaining a patent;
- the applicant does not consider any patent to be of sufficient value to justify the financial expense of obtaining the patent; or
- the applicant remains interested in eventually obtaining a patent, but simply seeks to defer patent fees and patent prosecution expenses.

Petitioner is further reminded that an intentional delay resulting from a deliberate course of action chosen by the applicant is not affected by:

- the correctness of the applicant's (or applicant's representative's) decision to abandon the application or not to seek or persist in seeking revival of the application;
- the correctness or propriety of a rejection, or other objection, requirement, or decision by the Office; or
- the discovery of new information or evidence, or other change in circumstances subsequent to the abandonment or decision not to seek or persist in seeking revival.

NOTE: Where the petition under 37 CFR 1.137(a) is filed more than two years after the date the application became abandoned, the United States Patent and Trademark Office requires an additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional. This requirement is in addition to the requirement to provide a statement that the entire delay was unintentional. See *Clarification of the Practice for Requiring Additional Information in Petitions Filed in Patent Applications and Patents Based on Unintentional Delay*, 85 FR 12222 (March 2, 2020). See MPEP 711.03(c)(II)(C)-(F) for additional guidance on the information required to establish that the entire delay was unintentional.

- ☐ Because this petition under 37 CFR 1.137(a) is being filed more than two years after the date the application became abandoned, additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional is enclosed herewith.

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (12-20)

Approved for use through 12/31/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)**

Page 3 of 3

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.


Signature

Michael Goncorella
Typed or Printed Name

12875 Lupo Lane
Address

Los Altos CA 94022
Address

2/3/21
Date

Date

44703
Registration Number, if applicable

Registration Number, if applicable

4086556298
Telephone Number

Telephone Number

Enclosures:

- ☒ Petition fee under 37 CFR 1.17(m)
☒ Reply and/or fee
☐ Terminal Disclaimer Form
☐ Additional sheet(s) containing statements establishing unintentional delay
☐ Other: _____

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

- ☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.
☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

Date

Signature

Typed or printed name of person signing certificate

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52804 7590 10/09/2020
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Michael Gencarella (Typed or printed name)
(Signature)
2/3/21 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/015,674	07/15/2018	Jesse D. BEESON	CV2	3715

TITLE OF INVENTION: HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERVISION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEES DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	01/11/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHAM, BRENDA H	2412	370-401000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Concurrent Ventures

Johns Creek, Georgia

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

- ☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☒ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____
Typed or printed name Michael Gencarella

Date 2/3/21
Registration No. 44703

Electronic Patent Application Fee Transmittal				
Application Number:	16035674			
Filing Date:	15-Jul-2018			
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION			
First Named Inventor/Applicant Name:	Jesse D. BEESON			
Filer:	Michael L. Gencarella			
Attorney Docket Number:	CV2			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
PET. REVIVE ABANDON APP, DELAY PYMT-RESP	2453	1	1050	1050
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
UTILITY APPL ISSUE FEE	2501	1	600	600
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1650

Electronic Acknowledgement Receipt	
EFS ID:	41828494
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D. BEESON
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	03-FEB-2021
Filing Date:	15-JUL-2018
Time Stamp:	16:59:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions	Image_00019.pdf	662458	no	3
			508d50d00ab33262a55968d055d39782eb9138b3		

Warnings:

Information:					
2	Issue Fee Payment (PTO-85B)	Image_00018.pdf	325602	no	1
			57eb304f268676e44448eb14b830a82ace744651		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32229	no	2
			5decc8c026d054639b07d9d5bf2ff655b23c94f4		
Warnings:					
Information:					
Total Files Size (in bytes):			1020289		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT6532618

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
Name		Execution Date
CONCURRENT VENTURES, LLC		01/15/2021
RECEIVING PARTY DATA		
Name:	XTREAMEDGE, INC.	
Street Address:	240 WOODSCAPE CT	
City:	JOHNS CREEK	
State/Country:	GEORGIA	
Postal Code:	30022	
PROPERTY NUMBERS Total: 28		
Property Type	Number	
Patent Number:	9274722	
Patent Number:	8954614	
Patent Number:	8954615	
Patent Number:	8984172	
Patent Number:	8954616	
Patent Number:	8943243	
Patent Number:	8954617	
Patent Number:	9436404	
Patent Number:	10235096	
Patent Number:	10048895	
Patent Number:	10057346	
Patent Number:	10764618	
Patent Number:	9813313	
Patent Number:	9529767	
Patent Number:	10067904	
Patent Number:	10599605	
Patent Number:	9582455	
Patent Number:	8924596	
Patent Number:	9201597	
Patent Number:	9753658	

Property Type	Number
Patent Number:	10359956
Patent Number:	10873753
Application Number:	14099820
Application Number:	16035674
Application Number:	16035672
Application Number:	16035671
Application Number:	16035670
Application Number:	16035668

CORRESPONDENCE DATA

Fax Number:
Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 678-823-2775
Email: jesse.beeson@concurrent-ventures.com
Correspondent Name: JESSE BEESON
Address Line 1: 240 WOODSCAPE CT
Address Line 4: JOHNS CREEK, GEORGIA 30022

NAME OF SUBMITTER:	JESSE BEESON
SIGNATURE:	/Jesse Beeson/
DATE SIGNED:	02/03/2021
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 9
source=XtreamEdge - Patent Assignment (Concurrent) - v3 - signed#page1.tif
source=XtreamEdge - Patent Assignment (Concurrent) - v3 - signed#page2.tif
source=XtreamEdge - Patent Assignment (Concurrent) - v3 - signed#page3.tif
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source=XtreamEdge - Patent Assignment (Concurrent) - v3 - signed#page8.tif
source=XtreamEdge - Patent Assignment (Concurrent) - v3 - signed#page9.tif

PATENT ASSIGNMENT

This Patent Assignment (“Patent Assignment”) is made as of January 15, 2021 (the “Effective Date”) by and between Concurrent Ventures, LLC, a Georgia limited liability corporation (“Assignor”) and XstreamEdge, Inc., a Delaware corporation (“Assignee”).

WHEREAS, in connection with and pursuant to that certain Asset Purchase Agreement of even date herewith, by and between Assignor (as the seller) and Assignee (as the purchaser) (the “Purchase Agreement”), all right, title and interest in and to certain intellectual property owned by Assignor is to be transferred to Assignee, specifically the Transferred Patents (as defined in Section 1 below) and the inventions disclosed therein;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, effective as of the Effective Date:

1. “Transferred Patents” means those patents and/or patent applications listed in Attachment A and any and all patents in the same Patent Family (as defined in Section 2 below) as any of the foregoing patents and/or patent applications, throughout the world.

2. “Patent Family” means a set comprised of all patents and applications that at any time are (a) linked or entitled to be linked through one or more claims of priority pursuant to 35 U.S.C. §§ 120 or 119(e) (the equivalent laws or regulation of any other patent authority) or by a disclaimer issue or (b) that are, or are entitled to be, international or foreign counterparts, reissues, divisionals, renewals, extensions, continuations or continuations-in-part with respect to any other patents and applications in such set.

3. Assignor hereby irrevocably assigns, transfers and sells to Assignee all of Assignor's rights, title and interest in and to the following:

a. Transferred Patents, and the inventions disclosed in any of the foregoing, and all issuances, divisions, continuations, continuations-in-part, reissues, extensions, reexaminations, and renewals thereof;

b. all rights of any kind whatsoever of Assignor accruing under any of the foregoing provided by applicable law of any jurisdiction, by international treaties and conventions, and otherwise throughout the world;

c. any and all royalties, fees, income, payments, and other proceeds now or hereafter due or payable with respect to any and all of the foregoing; and

d. all causes of action and enforcement rights, whether currently pending, filed, or otherwise, for the foregoing, including without limitation all rights to pursue damages, injunctive relief and other remedies for past, current and future infringement.

4. In the event that additional assignment documents are required to accomplish or record the assignment to Assignee of the Transferred Patents in any other country or jurisdiction, Assignor hereby agrees, without further consideration, to execute and deliver such assignments to Assignee.

5. Assignor irrevocably constitutes and appoints Assignee, with full power of substitution, to be its true and lawful attorney, and in its name, place or stead, to execute, acknowledge, swear to and file, all instruments, conveyances, certificates, agreements and other documents, and to take any action which shall be necessary, appropriate or desirable to effectuate the transfer of the Transferred Patents in

accordance with the terms of this Patent Assignment; provided, however, that such power shall be exercised by Assignee only in the event that Assignor fails to take the necessary actions required hereunder to affect or record such transfer, or prosecution of such Transferred Patents within thirty (30) days of Assignee's reasonable written request, or ten (10) days prior to the deadline for taking the required action if earlier. This power of attorney shall be deemed to be coupled with an interest and shall be irrevocable.

6. Assignee shall have the right to file or record this Patent Assignment, and any additional assignment documents as provided above, with the United States Patent and Trademark Office and any other equivalent authority anywhere else in the world.

7. In consideration of the assignments herein, Assignee agrees to pay and shall pay any outstanding amounts and costs currently owed by Assignor for the maintenance and/or prosecution of the Transferred Patents. Effective immediately upon the transfer of Transferred Patents to Assignee, Assignor has no continuing responsibility to pay maintenance costs of the Transferred Patents. Further, effective immediately upon the transfer of Transferred Patents to Assignee, any further fees billed or invoiced to the Assignor relating to the Transferred Patents shall, at the Assignor's discretion, be (a) billed to the Assignee by Assignor or (b) otherwise forwarded to the Assignee for payment.

8. This Patent Assignment shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

9. This Patent Assignment and any claim, controversy, dispute, or cause of action (whether in contract, tort, or otherwise) based upon, arising out of, or relating to this Patent Assignment and the transactions contemplated hereby shall be governed by, and construed in accordance with, the laws of the United States and the State of Delaware, without giving effect to any choice or conflict of law provision or rule (whether of the State of Delaware or any other jurisdiction).

10. This Patent Assignment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. The delivery of copies of this Patent Assignment or other documents to be delivered pursuant to this Patent Assignment, including executed signature pages where required, by electronic transmission will constitute effective execution and delivery of this Patent Assignment or such other document for all purposes. Signatures transmitted electronically will constitute original signatures for all purposes.

[Remainder of Page Blank.]

IN WITNESS WHEREOF, Assignor and Assignee have executed this Patent Assignment as of the Effective Date.

ASSIGNOR

CONCURRENT VENTURES, LLC

By: Jesse D Beeson
Name: Jesse D. Beeson
Title: Chief Executive Officer & Manager

ASSIGNEE

XTREAMEDGE, INC.

By: Stacy Kenworthy
Name: Stacy Kenworthy
Title: Vice President

Attachment A

Transferred Patents

Ctry	Type	Status	Title	Application Number	Patent Number
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance	14/099,713	9,274,722
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on temperature	14/099,723	8,954,614
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on temperature ranges	14/099,740	8,954,615
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on storage media device fill percentage	14/099,752	8,984,172
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on storage media device write rate	14/099,767	8,954,616
US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on storage media device read rate	14/099,811	8,943,243

US	PRI	Granted	System, method and article of manufacture for monitoring, controlling and improving storage media system performance based on data type	14/099,807	8,954,617
US	PRI	Published	System and method for dynamically load balancing storage media devices based on a minimum performance level	14/099,820	
US	PRI	Granted	System and method for dynamically load balancing across storage media devices having fast access rates	14/099,848	9,436,404
US	PRI	Granted	System and method for dynamically load balancing storage media devices based on an average or discounted average sustained performance level	14/099,846	10,235,096
CN	PCT	Granted	System and method for dynamically load balancing storage media devices based on a mid-range performance level	2014800749511	CN105981351
EP	PCT	Published	System and method for dynamically load balancing storage media devices based on a mid-range performance level	14867506.9	
US	PRI	Granted	System and method for dynamically load balancing storage media devices based on a mid-range performance level	14/099,845	10,048,895
WO	ORD	Expired	System and method for dynamically load balancing storage media devices based on a mid-range performance level	PCT/US2014/069143	
US	PRI	Granted	System, method and article of manufacture for automatic detection and storage/archival of network video	14/099,841	10,057,346

US	PRI	Granted	System, method and article of manufacture for automatic detection and storage/archival of network video in a video-on-demand scenario	14/099,837	10,764,618
US	PRI	Granted	System, method and article of manufacture for automatic detection and storage/archival of network video to offload the load of a video management system (VMS)	14/099,836	9,813,313
CN	PCT	Granted	A system and method for abstracting storage media devices via a full duplex queued command interface	2014800750720	CN105981001
EP	PCT	Published	A system and method for abstracting storage media devices via a full duplex queued command interface	14867130.8	
US	PRI	Granted	System and method for abstracting SATA and/or SAS storage media devices via a full duplex queued command interface to increase performance, lower host overhead, and simplify scaling storage media devices and systems	14/099,833	9,529,767
US	CON	Granted	System and method for abstracting SATA and/or SAS storage media devices via a full duplex queued command interface to increase performance, lower host overhead, and simplify scaling storage media devices and systems	15/388,970	10,067,904

US	CON	Granted	System and method for abstracting SATA and/or SAS storage media devices via a full duplex queued command interface to increase performance, lower host overhead, and simplify scaling storage media devices and systems	16/118,849	10,599,605
WO	ORD	Expired	A system and method for abstracting storage media devices via a full duplex queued command interface	PCT/US2014/069149	
US	PRI	Granted	System and method for abstracting SATA and/or SAS storage media devices via a full duplex queued command interface to increase performance, lower host overhead, and simplify scaling storage media devices and systems	14/099,830	9,582,455
CN	PCT	Granted	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	2014800738485.00	CN105934744
EP	PCT	Published	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	14867963.2	
US	PRI	Granted	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	14/099,844	8,924,596
US	CON	Granted	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	14/585,003	9,201,597

US	CON	Granted	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	14/952,320	9,753,658
US	CON	Granted	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	15/694,468	10,359,956
WO	ORD	Expired	System and method for dividing and synchronizing a processing task across multiple processing elements/processors in hardware	PCT/US2014/069153	
US	PRI	Granted	Hardware defined anything in a platform with swappable pods, message interface, sandboxes and memory superposition	16/035,675	10,873,753
US	PRI	Allowed	Hardware defined anything in a platform with swappable pods, message interface, sandboxes and memory superposition	16/035,674	
US	PRI	Allowed	Optimization for network connections	16/035,672	
US	PRI	Pending	Targeted advertising inserted into individual streaming media feeds or static images	16/035,671	
US	PRI	Allowed	Preprocessing data as it lands on storage media, in a hardware accelerated processing pipeline	16/035,670	
US	PRI	Pending	Hash-based file system	16/035,668	

Signature: *Jesse D Beeson*
Jesse D Beeson (Jan 15, 2021 09:46 EST)

Email: jdbeeson007@gmail.com

Signature: *Stacy Kenworthy*
Stacy Kenworthy (Jan 15, 2021 08:40 EST)

Email: stacy.kenworthy@gmail.com

XtreamEdge - Patent Assignment (Concurrent) - v3

Final Audit Report

2021-01-15

Created:	2021-01-15
By:	D. Pearson Beardsley (adobesign@dpblegal.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAhKEIK-ChwLsA2foT-ubbKiPSiYrWVf1O

"XtreamEdge - Patent Assignment (Concurrent) - v3" History

-  Document created by D. Pearson Beardsley (adobesign@dpblegal.com)
2021-01-15 - 1:21:02 AM GMT- IP address: 99.155.82.125
-  Document emailed to Jesse D Beeson (jdbeeson007@gmail.com) for signature
2021-01-15 - 1:22:19 AM GMT
-  Email viewed by Jesse D Beeson (jdbeeson007@gmail.com)
2021-01-15 - 2:08:38 PM GMT- IP address: 76.240.18.97
-  Document e-signed by Jesse D Beeson (jdbeeson007@gmail.com)
Signature Date: 2021-01-15 - 2:44:35 PM GMT - Time Source: server- IP address: 76.240.18.97
-  Document emailed to Stacy Kenworthy (stacy.kenworthy@gmail.com) for signature
2021-01-15 - 2:44:36 PM GMT
-  Email viewed by Stacy Kenworthy (stacy.kenworthy@gmail.com)
2021-01-15 - 2:46:17 PM GMT- IP address: 66.249.88.150
-  Document e-signed by Stacy Kenworthy (stacy.kenworthy@gmail.com)
Signature Date: 2021-01-15 - 2:47:03 PM GMT - Time Source: server- IP address: 162.228.214.153
-  Agreement completed.
2021-01-15 - 2:47:03 PM GMT



Best Available Copy
PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

5280A 7590 10/09/2020
Michael Gencarella
12875 Lucero Lane
Los Altos Hills, CA 94022



Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Michael Gencarella (Typed or printed name)
[Signature] (Signature)
2/3/21 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16035674	07/15/2018	Jesse D. BEESON	CV2	3715

TITLE OF INVENTION: HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	01/11/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHAM, BRENDA H	2412	370-401000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address"-indication (or "Fee Address" Indication form PTO/SB/47; Rev (3-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list:

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE (CITY and STATE OR COUNTRY)

Concurrent Ventures

Johns Creek, Georgia

Please check the appropriate assignee category or categories (will not be printed on the patent): ☒ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☒ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.31. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature *[Signature]*

Date **2/3/21**

Typed or printed name **Michael Gencarella**

Registration No. **44703**

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/6A (12-20)

Approved for use through 12/31/2020. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)		Docket Number (Optional)
Page 1 of 3		
First named inventor: <u>Beeson, Jesse D.</u>		
Application No.: <u>16/025,674</u>	Art Unit: <u>2412</u>	
Filed: <u>7/15/2018</u>	Examiner: <u>Pham, B</u>	
Title: <u>Hardware Defined anything in a platform with swappable pods, message interface, sandboxes and memory superposition.</u>		
Attention: Office of Petitions Mail Stop Petition Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 FAX (571) 273-8300		
NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.		
The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the Office notice or action plus any extensions of time actually obtained.		
APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.		
NOTE: A grantable petition requires the following items:		
(1) Petition fee;		
(2) Reply and/or issue fee;		
(3) Terminal disclaimer with disclaimer fee -- required for all utility and plant applications filed before June 8, 1995, and for all design applications; and		
(4) Statement that the entire delay was unintentional.		
1. Petition fee		
☒ Small entity fee \$ <u>1050</u> (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.		
☐ Micro entity fee \$ _____ (37 CFR 1.17(m)). Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.		
☐ Undiscounted fee \$ _____ (37 CFR 1.17(m)).		
2. Reply and/or fee		
A The reply and/or fee to the above-noted Office notice or action in the form of <u>Issue fee payment</u> (identify the type of reply):		
☐ has been filed previously on _____.		
☒ is enclosed herewith.		
B The issue fee and publication fee (if applicable) of \$ <u>600</u>		
☐ has been paid previously on _____.		
☒ is enclosed herewith.		

The collection of information is required by 37 CFR 1.137(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)**

Page 2 of 3

3. Terminal disclaimer with disclaimer fee

- ☐ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.
- ☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ _____) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional.

Petitioner is reminded that a delay resulting from a deliberately chosen course of action on the part of the applicant does not become an "unintentional" delay within the meaning of 37CFR 1.137 because:

- the applicant does not consider the claims to be patentable over the references relied upon in an outstanding Office action;
- the applicant does not consider the allowed or patentable claims to be of sufficient breadth or scope to justify the financial expense of obtaining a patent;
- the applicant does not consider any patent to be of sufficient value to justify the financial expense of obtaining the patent; or
- the applicant remains interested in eventually obtaining a patent, but simply seeks to defer patent fees and patent prosecution expenses.

Petitioner is further reminded that an intentional delay resulting from a deliberate course of action chosen by the applicant is not affected by:

- the correctness of the applicant's (or applicant's representative's) decision to abandon the application or not to seek or persist in seeking revival of the application;
- the correctness or propriety of a rejection, or other objection, requirement, or decision by the Office; or
- the discovery of new information or evidence, or other change in circumstances subsequent to the abandonment or decision not to seek or persist in seeking revival.

NOTE: Where the petition under 37 CFR 1.137(a) is filed more than two years after the date the application became abandoned, the United States Patent and Trademark Office requires an additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional. This requirement is in addition to the requirement to provide a statement that the entire delay was unintentional. See *Clarification of the Practice for Requiring Additional Information in Petitions Filed in Patent Applications and Patents Based on Unintentional Delay*, 85 FR 12222 (March 2, 2020). See MPEP 711.03(c)(II)(C)-(F) for additional guidance on the information required to establish that the entire delay was unintentional.

- ☐ Because this petition under 37 CFR 1.137(a) is being filed more than two years after the date the application became abandoned, additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional is enclosed herewith.

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (12-20)

Approved for use through 12/31/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)**

Page 3 of 3

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.


Signature

Michael Goncorella
Typed or Printed Name

12875 Lupo Lane
Address

Los Altos CA 94022
Address

2/3/21
Date

Date

44703
Registration Number, if applicable

Registration Number, if applicable

4086556298
Telephone Number

Telephone Number

Enclosures:

- ☒ Petition fee under 37 CFR 1.17(m)
☒ Reply and/or fee
☐ Terminal Disclaimer Form
☐ Additional sheet(s) containing statements establishing unintentional delay
☐ Other: _____

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

- ☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.
☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

Date

Signature

Typed or printed name of person signing certificate

Electronic Patent Application Fee Transmittal				
Application Number:	16035674			
Filing Date:	15-Jul-2018			
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION			
First Named Inventor/Applicant Name:	Jesse D. BEESON			
Filer:	Michael L. Gencarella			
Attorney Docket Number:	CV2			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
PET. REVIVE ABANDON APP, DELAY PYMT-RESP	2453	1	1050	1050
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
UTILITY APPL ISSUE FEE	2501	1	600	600
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1650

Electronic Acknowledgement Receipt	
EFS ID:	42001043
Application Number:	16035674
International Application Number:	
Confirmation Number:	3715
Title of Invention:	HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERPOSITION
First Named Inventor/Applicant Name:	Jesse D. BEESON
Customer Number:	52904
Filer:	Michael L. Gencarella
Filer Authorized By:	
Attorney Docket Number:	CV2
Receipt Date:	23-FEB-2021
Filing Date:	15-JUL-2018
Time Stamp:	17:10:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1650
RAM confirmation Number	E20212MH23062179
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Image_00018.pdf	325602	no	1
			57eb304f268676e44448eb14b830a82ace744651		
Warnings:					
Information:					
2	Petition for review by the Office of Petitions	Image_00019.pdf	662458	no	3
			508d50d00ab33262a55968d055d39782eb9138b3		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32228	no	2
			092b6b6d2ed3cd0eedc93b2d8516972df9ca05c		
Warnings:					
Information:					
Total Files Size (in bytes):			1020288		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52804 7590 10/09/2020
Michael gencarella
12875 lucero lane
los altos hills, CA 94022

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Michael Gencarella (Typed or printed name)
(Signature)
2/3/21 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/015,674	07/15/2018	Jesse D. BEESON	CV2	3715

TITLE OF INVENTION: HARDWARE DEFINED ANYTHING IN A PLATFORM WITH SWAPPABLE PODS, MESSAGE INTERFACE, SANDBOXES AND MEMORY SUPERVISION

APPL. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEES DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	01/11/2021

EXAMINER	ART UNIT	CLASS/SUBCLASS
PHAM, BRENDA H	2412	370-401000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Concurrent Ventures

Johns Creek, Georgia

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

- ☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☒ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____
Typed or printed name Michael Gencarella

Date 2/3/21

Registration No. 44703



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	07/15/2018	Jesse D. BEESON	CV2	3715
52904	7590	03/19/2021	EXAMINER	
Michael gencarella			PHAM, BRENDA H	
12875 lucero lane			ART UNIT	PAPER NUMBER
los altos hills, CA 94022			2412	
			NOTIFICATION DATE	DELIVERY MODE
			03/19/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mginxy@gmail.com
mginxy@icloud.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Application of :
BEESON et al. :
Application No. 16/035,674 :
Filed: 15 Jul 2018 : **DECISION ON PETITION**
For: HARDWARE DEFINED ANYTHING IN :
A PLATFORM WITH SWAPPABLE PODS, :
MESSAGE INTERFACE, SANDBOXES AND :
MEMORY SUPERPOSITION :

This is a decision on the petition under the unintentional provisions of 37 CFR 1.137(a), filed February 3, 2021 and February 23, 2021, to revive the above-identified application.

The petition is **GRANTED**.

This application became abandoned for failure to timely pay the issue fee as required by the Notice of Allowance and Fee(s) Due mailed October 9, 2020, which set a statutory period for reply of three months. Accordingly, the application became abandoned on January 10, 2021. A Notice of Abandonment was mailed on January 26, 2021.

The petition satisfies the requirements of 37 CFR 1.137(a) in that petitioner has supplied (1) the reply in the form of payment of the issue fee of \$600.00, (2) the petition fee of \$1,050.00 and (3) a proper statement of unintentional delay.

This application is being referred to the Office of Data Management for further processing into a patent.

Telephone inquiries concerning this decision should be directed to Jamice Brantley at (571) 272-3814. Telephone inquiries regarding the status or the processing as a patent should be directed to the Office of Data Management at (571) 272-4200.

/ANDREA M SMITH/
Andrea Smith
Lead Paralegal Specialist, Office of Petitions



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/035,674	04/20/2021	10985943	CV2	3715

52904 7590 03/31/2021
Michael gencarella
12875 lucero lane
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ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

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APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

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IR103 (Rev. 10/09)

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Application	Document	Mailroom Date	Attorney Docket No.
16035674	ISSUE.NTF	03/31/2021	CV2

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