

Exhibit D4
Invalidity Chart:
U.S. Patent No. 7,313,575 (“’575 Patent”) (Steven R. Carr, Venkatakrishnan Muthuswamy, and Tudor Har)
in view of
IBM RedBook: DB2 UDB Evaluation Guide for Linux and Windows (Chen)

IBM Redbook: DB2 UDB Evaluation Guide to Chen et al. (“IBM Evaluation Guide”) anticipates and/or renders obvious claims 1-14, 16-28, and 30-36 (“asserted claims”) of the ’575 patent under 35 U.S.C. §102 and/or §103, either alone or in combination with other prior art references, and/or in combination with the knowledge of a person of ordinary skill. The IBM Evaluation Guide anticipates and/or renders obvious the asserted claims of the ’575 patent as those claims have been applied by Valtrus in its Infringement Contentions and/or under SAP’s understanding of the proper construction of the claims.

Nothing stated herein shall be treated as an admission or suggestion that SAP agrees with Valtrus regarding either the scope of any of the asserted claims or the claim constructions advanced by Valtrus in its Infringement Contentions or anywhere else, or that any of SAP’s accused products meet any limitation of the asserted claims. Nothing stated herein shall be construed as an admission or a waiver of any particular construction of any claim term. Nothing stated herein shall be construed as an admission that the asserted claims are directed to patent-eligible subject matter. SAP reserve all rights to challenge any of the asserted claims under 35 U.S.C. § 101. SAP also reserve all rights to challenge any of the claim terms herein under 35 U.S.C. § 112, including by arguing that they are indefinite, not supported by the written description and/or not enabled. Accordingly, nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. § 112. Nothing stated herein shall be construed as an admission or waiver with respect to the effective filing date of any of the asserted claims.

The following chart includes references to the structure, function, operation, and/or features of the technology described in the IBM Evaluation Guide. SAP reserve the right to present direct evidence of the structure, function, operation, and/or features of the technology described in the IBM Evaluation Guide (including product samples, source code, and/or witness testimony) and/or its prior art status, and to present alternative or additional documents concerning the structure, function, operation, and/or features of the technology described in the IBM Evaluation Guide and/or its prior art status, as evidence that the technology described in the IBM Evaluation Guide anticipates and/or renders obvious the asserted claims of the ’575 patent.

The cited portions of the IBM Evaluation Guide are merely illustrative, and Defendants reserve the right to rely on alternative or additional evidence, including uncited portions of the IBM Evaluation Guide. Where the chart below states that the IBM Evaluation Guide “describes” or “provides for” a limitation, such disclosure may be express, inherent, or implicit.

If not anticipated, one or more claims of the '575 patent are rendered obvious in light of the IBM Evaluation Guide alone or the IBM Evaluation Guide in combination with the knowledge of a person of ordinary skill in the art.

In addition, if not anticipated, one or more claims of the '575 patent are rendered obvious in light of the IBM Evaluation Guide in combination with one or more of the references identified in SAP's Invalidity Contentions.

Claim Element	Claim Language	Chen
1pre	A data services handler for execution on a computing system comprising:	Chen discloses “A data services handler for execution on a computing system comprising”: Chen at 1-2: DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management. Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
1[a]	an interface executing on the computing system for communicating between a data store and applications that supply and consume data; and	Chen discloses “an interface executing on the computing system for communicating between a data store and applications that supply and consume data”: Chen at 2-3:

		Multimedia extensibility: DB2 UDB allows you to extend the capabilities of the database to meet your specific organizational requirements. This feature includes the ability to support more advanced applications involving multimedia data such as documents, images, audio and video. You can now develop applications that use this technology and extend DB2 to support these new applications. In addition, new XML, spatial and high-speed searching extenders are available, along with object-relational extensions to the SQL language. Web-enablement: DB2 UDB is integrated with Web technology so that data can be easily accessed from the Internet or from your intranet to provide a more secure environment. This feature allows you to build e-business or Internet applications that can enable competitive advantage, greater customer service, or reduced costs. Partner solutions: DB2 UDB is capable of supporting a broad range of data management applications with excellent performance and reliability. As a result, a large number of industry solution providers, including SAP, Baan, Peoplesoft, and many more, have adopted DB2 to support their applications; or adapted their tools to support DB2. This feature allows you to more quickly satisfy your requirements by buying rather than developing solutions. Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also <u>facilitates your Administration tasks by providing you with a GUI-based wizard</u>, a set of administrative stored procedures and an Administration command.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with
--	--	---

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
1[b]	a real time information director (RTID) executing on the computing system that transforms data for supply, consumption, or both by the applications under direction of polymorphic metadata that defines a security model and data integrity rules for application to the data, the RTID to dynamically instantiate, create, and cache for reuse disassemblers and assemblers according to demand, the RTID further comprising:	Chen discloses “a real time information director (RTID) executing on the computing system that transforms data for supply, consumption, or both by the applications under direction of polymorphic metadata that defines a security model and data integrity rules for application to the data, the RTID to dynamically instantiate, create, and cache for reuse disassemblers and assemblers according to demand, the RTID further comprising”: Chen at 318: “7.3.1 What is XML? XML stands for eXtensible Markup Language. XML is a meta-markup language and is used for creating your own markup languages. Using XML, you can define the tags for your markup language... It is also an open, license-free, cross-platform standard, which means anyone can create, develop, and use tools for XML. XML is a structured data format, which allows it to store complex data, whether it is originally textual, binary, or object-oriented.” Chen at 362: “DB2 Intelligent Miner™ Scoring: DB2 Intelligent Miner Scoring provides scoring technology as a DB2 extender. It extends database capabilities and enables users to deploy data mining in real-time applications with a simple SQL call. “ Chen at 322-323: “Version 8 of DB2 has extended the Web services capability of DB2 by adding the functionality to invoke other Web services as well as providing Web services to consumers. This allows you to extend the SQL language with Web services operations, enabling you to combine set-oriented data access with the simplicity and power of Web services. Web services may be used to transform existing data or to retrieve real-time data.” Chen at Figure 7-3:

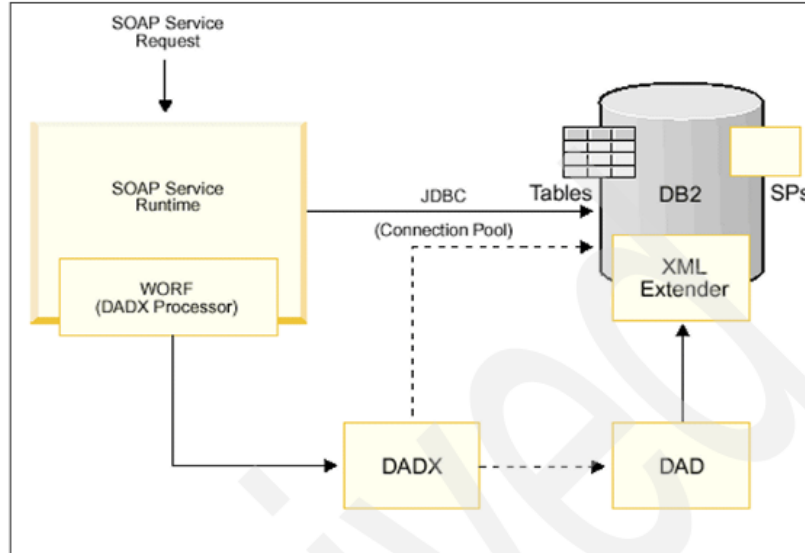


Figure 7-3 WORF architecture

Chen at 318-319:

“7.3.2 DB2 XML Extender

DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to **decompose XML documents** into relational data. It does so by providing a set of **new data types**, functions, and stored procedures.

Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.

Storing the XML document

With DB2 XML Extender you can either store the entire XML document in DB2 as a **user-defined data type** or **map the XML content into columns in DB2 tables**.

		 – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file.” Chen at 189: “5.5.8 Object REXX (Windows only) Object REXX contains features typical of an object-oriented language, such as subclassing, polymorphism, and data encapsulation. It is an extension of the IBM REXX language, which has been expanded to include classes, objects, and methods. [Page 036/422] Each database includes a set of system catalog tables, which describe the logical and physical structure of the data. DB2 creates and maintains an extensive set of system catalog tables for each database. These tables contain information about the definitions of database objects, such as user tables, views, and indexes, as well as security information about the authority that users have on these objects. [Page 396/422] DB2 Multiplatform Tools from IBM are key enabling technologies for maintaining high database performance and availability and data integrity. <u>Additional Support from another source link of IBM DB2 –</u> <u>IBM DB2 UDB Exploitation of the Windows Environment (IBM)</u> “ Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with
--	--	--

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
1[c]	at least one disassembler defined according to the polymorphic metadata that disassembles inbound data documents into multiple records in preparation for insertion into metadata tables; and	Chen discloses “at least one disassembler defined according to the polymorphic metadata that disassembles inbound data documents into multiple records in preparation for insertion into metadata tables”: Chen at 181: “Dynamic SQL Dynamic SQL statements are those that your application builds and executes at run time. In our sample application where we allow users to dynamically create a query is a good example of dynamic SQL. The application builds the SQL statement while it’s running, and then submits the statement for processing. Examples of embedded SQL (both static and dynamic) can be found in: sqllib/samples/c sqllib/sample/cpp sqllib/sample/cobol sqllib/sample/cobol_mf “ Chen at 298: “DB2 will now have a specific amount of pages that will cache SQL statements which will speed up execution if the same query is required more than once. (This has been changed from its derived value as the derived value is based on the maximum number of applications, which has been kept at 40)” Chen at 318-319: “7.3.2 DB2 XML Extender

		DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system. <u>Additional Support from another source link of IBM DB2 – IBM DB2 UDB Exploitation of the Windows Environment (IBM)</u> “ Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
1[d]	at least one assembler defined according to the polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table whereby data is transformed for supply, consumption or both.	Chen discloses “at least one assembler defined according to the polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table whereby data is transformed for supply, consumption or both”: Chen at 318-320: “7.3.1 What is XML? XML stands for eXtensible Markup Language. XML is a meta-markup language and is used for creating your own markup languages. Using XML, you can define the tags for your markup language. XML tags are used to describe the contents of the document. This means that any type of data can be defined easily using XML. XML is universal not only by its range of applications but also by its ease of use: Its text-based nature makes it easy to create

		tools. It is also an open, license-free, cross-platform standard, which means anyone can create, develop, and use tools for XML. XML is a structured data format, which allows it to store complex data, whether it is originally textual, binary, or object-oriented. 7.3.2 DB2 XML Extender DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. Storing the XML document With DB2 XML Extender you can either store the entire XML document in DB2 as a user-defined data type or map the XML content into columns in DB2 tables. DB2 XML Extender can also store the XML document as an external file in the file system with a pointer to that file stored in the DB2 database so that you can keep working with your legacy flat files but benefit from the advantages offered by DB2 at the same time. DB2 XML Extender provides powerful capabilities to search the XML elements and attributes. DB2 XML Extender provides two options you can use for integrating XML documents into DB2: XML Columns: This method allows you to store XML documents in DB2. The documents are inserted into columns which are enabled for XML, and can be updated, retrieved, and searched. Element and attribute data can be mapped to DB2 tables called side tables, which can then be indexed for fast searches. With this method once the document is stored, you have a whole range of possibilities for working with the XML document: – You can extract and search XML elements and attributes in the XML document directly or for improved performances you can store in the side tables the elements and attributes you are likely to access more often. – You have the option to update the content of an XML element or the value of an XML attribute. – The XML document can also be retrieved and used by your XML application. XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data.
--	--	---

		With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2. “ Chen at 189: “5.5.8 Object REXX (Windows only) Object REXX contains features typical of an object-oriented language, such as subclassing, polymorphism, and data encapsulation. It is an extension of the IBM REXX language, which has been expanded to include classes, objects, and methods. REXX is an interpreted language which doesn’t use a precompiler, compiler, or linker. Instead, three DB2 APIs are used to create DB2 applications in REXX: SQLEXEC which supports the SQL language. SQLDBS which supports command-like versions of DB2 APIs. SQLDB2 which supports a REXX specific interface to the command-line processor.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	--

Claim Element	Claim Language	Chen
2pre	The data services handler according to claim 1 further comprising:	Chen discloses “the data services handler according to claim 1 further comprising”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
2[a]	a data mapper collecting data from a plurality of diverse applications that can supply data in multiple diverse external	Chen discloses “a data mapper collecting data from a plurality of diverse applications that can supply data in multiple diverse external document formats and mapping the supplied data to a predetermined unified data model according to the polymorphic metadata”: Chen at 318-319:

	document formats and mapping the supplied data to a predetermined unified data model according to the polymorphic metadata.	“DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	---	---

Claim Element	Claim Language	Chen
3pre	The data services handler according to claim 1 wherein:	Chen discloses “the data services handler according to claim 1 wherein”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your

		Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
3[a]	the real time information director comprises a logic that cleanses and enriches the data, supplies data security, and insures data integrity.	Chen discloses “the real time information director comprises a logic that cleanses and enriches the data, supplies data security, and insures data integrity”: Chen at 314: “This section introduces the concepts and architecture that comprise this part of the data warehousing capabilities of DB2. Data Warehousing allows you to create stores of informational data, which is data that is extracted from the operational data and then transformed for decision making. The typical operation of a data warehousing tool can involve: _ Extracting data from the operational database (such as our sample application) _ Cleaning the data _ Performing calculations to summarize the data _ Writing the summarized data to a target in a separate database The outcome is that users can then query a separate database (the warehouse) which is more specialized to their requirements and won’t impact the performance of the operational database.”

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
4pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
4[a]	the RTID using a same descriptive polymorphic metadata to build both assemblers and disassemblers for a same document class.	Chen discloses “the RTID using a same descriptive polymorphic metadata to build both assemblers and disassemblers for a same document class”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
5pre	The data services handler according to claim 1	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”:

	wherein the real time information director further comprises:	Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
5[a]	a logic that defines a data model according to received descriptive metadata that identifies individual data elements and specifies logic behaviors applicable to the individual data elements.	Chen discloses “a logic that defines a data model according to received descriptive metadata that identifies individual data elements and specifies logic behaviors applicable to the individual data elements”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your

		XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
6pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML

		documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
6[a]	a logic that represents metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class.	Chen discloses “a logic that represents metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class”: Chen at 174: “Distinct type: These share a common representation with built-in data types. The classic example is to create a UDT of pounds and a UDT of dollars. Although both of these UDTs are based on the DB2 decimal built-in, you cannot compare the values of a pounds and dollars without writing a UDF to cast between the two. Much the same way as you cannot directly compare two built-in numerics without using a function.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
---------------	----------------	------

7pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
7[a]	a logic that represents metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful metadata classes delegate operation to the stateless	Chen discloses “a logic that represents metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful metadata classes delegate operation to the stateless polymorphic metadata objects”: Chen at 7: “A relational database presents data as a collection of tables. A table consists of a defined number of columns and any number of rows. Each database includes a set of system catalog

	polymorphic metadata objects.	tables that describe the logical and physical structure of the data, a configuration file containing the parameter values allocated for the database, and a recovery log with ongoing transactions and archivable transactions.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	-------------------------------	--

Claim Element	Claim Language	Chen
8pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises:”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.”

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
8a	at least one metadata object constructed using constructors of multiple metadata classes, the constructors having parameters that specify metadata data elements and being nested to represent hierarchical relationships between the specified metadata data elements, the at least one metadata object including identifying information for deriving the hierarchical relationships.	Chen discloses “at least one metadata object constructed using constructors of multiple metadata classes, the constructors having parameters that specify metadata data elements and being nested to represent hierarchical relationships between the specified metadata data elements, the at least one metadata object including identifying information for deriving the hierarchical relationships”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Chen at 319-320: “XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following:

		– You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2. Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
9pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your

		Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
9[a]	a logic that uses received data document mapping metadata to disassemble elements of inbound data documents into rows and columns to be inserted into inbound metadata-selected tables in a database, select rows and columns from outbound metadata-selected tables of the database, assemble elements from the outbound metadata-selected tables into an outbound data document, and generate a schema for documents that can be	Chen discloses “a logic that uses received data document mapping metadata to disassemble elements of inbound data documents into rows and columns to be inserted into inbound metadata-selected tables in a database, select rows and columns from outbound metadata-selected tables of the database, assemble elements from the outbound metadata-selected tables into an outbound data document, and generate a schema for documents that can be input or output using the received data document mapping metadata”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML

	input or output using the received data document mapping metadata.	documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Chen at 319-320: “XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2. Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	--

Claim Element	Claim Language	Chen
----------------------	-----------------------	-------------

10pre	The data services handler according to claim 1 wherein:	Chen discloses “the data services handler according to claim 1 wherein”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
10[a]	the real time information director receives and publishes data documents having a content and a format defined by document metadata.	Chen discloses “the real time information director receives and publishes data documents having a content and a format defined by document metadata”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your

		XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	--

Claim Element	Claim Language	Chen
11pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML

		documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
11[a]	a logic that reads a schema of tables identified in metadata; and	Chen discloses “a logic that reads a schema of tables identified in metadata”: Chen at 319-320: “XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2.

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
11[b]	a logic that automatically generates and caches prepare SQL statements from a content metadata portion of document metadata according to the schema.	Chen discloses “a logic that automatically generates and caches prepare SQL statements from a content metadata portion of document metadata according to the schema”: Chen at 8: “An index is a set of keys, each pointing to rows in a table. An index allows more efficient access to rows in a table by creating a direct path to the data through pointers. The SQL optimizer automatically chooses the most efficient way to access data in tables. The optimizer takes indexes into consideration when determining the fastest access path to data. Unique indexes can be created to ensure uniqueness of the index key. An index key is a column or an ordered collection of columns on which an index is defined. Using a unique index will ensure that the value of each index key in the indexed column or columns is unique.” Chen at 152: “SQL Assist is an easy-to-use GUI tool that will build SQL statements for you in a step-wise fashion. It supports the building of SQL SELECT, INSERT, UPDATE and DELETE statements. SQL Assist has been enhanced in DB2 Version 8.1 to include: - Assistance for creating table joins - SQL syntax checking - The option to copy and paste an existing SQL statement into SQL Assist, and then use the SQL Assist interface to make modifications” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
12pre	The data services handler according to claim 1 further comprising:	Chen discloses “the data services handler according to claim 1 further comprising”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
12[a]	a servlet that invokes the real time information director synchronously when an inbound data document is delivered via HyperText Transport Protocol (HTTP):	Chen discloses “a servlet that invokes the real time information director synchronously when an inbound data document is delivered via HyperText Transport Protocol (HTTP)”: Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element

		is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
12[b]	a logic that invokes the real time information director asynchronously when an inbound data document is delivered via Java Message Service (JMS);	Chen discloses “a logic that invokes the real time information director asynchronously when an inbound data document is delivered via Java Message Service (JMS)”: Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
12[c]	a servlet that invokes the real time information director synchronously when an outbound data document is requested via HyperText Transport Protocol (HTTP); and	Chen discloses “a servlet that invokes the real time information director synchronously when an outbound data document is requested via HyperText Transport Protocol (HTTP)”: Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
12[d]	a logic that invokes the real time information director asynchronously when an outbound data document is requested via Java Message Service (JMS).	Chen discloses “a logic that invokes the real time information director asynchronously when an outbound data document is requested via Java Message Service (JMS)”: Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
13pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

13[a]	a subscription handler that responds to a triggering event by publishing a document according to content and format specified by Document Metadata, and sending the document to a designated queue or topic.	Chen discloses “a subscription handler that responds to a triggering event by publishing a document according to content and format specified by Document Metadata, and sending the document to a designated queue or topic”: Chen at 313: “The Replication Center is used to map a source table or view to a target table. You define a subscription set which is a group of one or more target tables (called subscription members) that will be processed as a unit by Apply. The changes from the CD tables are applied for each table separately, in the same order they occurred at the source. A single COMMIT is issued after the last member in the set is processed.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
-------	--	--

Claim Element	Claim Language	Chen
14pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.

		Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
14[a]	a security manager that identifies an agent on behalf of whom information is queried or updated in a document request, dynamically assigns an internal unique identifier to consumers and agents upon registration; and the real time information director grants access to individual documents based on security policies according to a relationship between an agent, a consumer affected by the agent, and permissions granted by the consumer.	Chen discloses “a security manager that identifies an agent on behalf of whom information is queried or updated in a document request, dynamically assigns an internal unique identifier to consumers and agents upon registration; and the real time information director grants access to individual documents based on security policies according to a relationship between an agent, a consumer affected by the agent, and permissions granted by the consumer”: Chen at 211: “DB2 uses a combination of external security services and internal access control information to secure the information kept in the database. To access a database server, a user must be authenticated either on the client or the server. The database manager configuration file contains configuration parameters to define how clients are authenticated. Once a user is authenticated and has access to a DB2 instance, DB2 continues to provide security by restricting the user to the set of authorities and privileges that the user is assigned to.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

--	--	--

Claim Element	Claim Language	Chen
16pre	The data services handler according to claim 14 wherein:	Chen discloses “the data services handler according to claim 14 wherein”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
16[a]	the security manager enforces securities policies that are customized to identify specific agent and	Chen discloses “the security manager enforces securities policies that are customized to identify specific agent and consumer relationships expressed in a business model”: Chen at 213: “Once the user is authenticated and attached to the DB2 instance, the user will be

	consumer relationships expressed in a business model.	able to use DB2 objects based on the authorities and privileges that are given. There are three types of authorities which are assigned to groups by the instance owner (on Linux) or an Administrative user (on Windows). These authorities are available so that a user can maintain database objects at a high level, such as the database or tables. The following authorities are configurable in the database manager configuration file: SYSADM group name (SYSADM_GROUP); SYSCTRL group name (SYSCTRL_GROUP); and SYSMANT group name (SYSMAINT_GROUP).” Chen at 315: “If you have DB2 Warehouse Manager, you can create an information catalog of the data in the warehouse. An information catalog is a database that contains business metadata. Business metadata helps users identify and locate data and information available to them in the organization. Data Warehouse Metadata can be published to the information catalog. The information catalog can be searched to determine what data is available in the warehouse.” Chen at Figure 7-2:
--	--	---

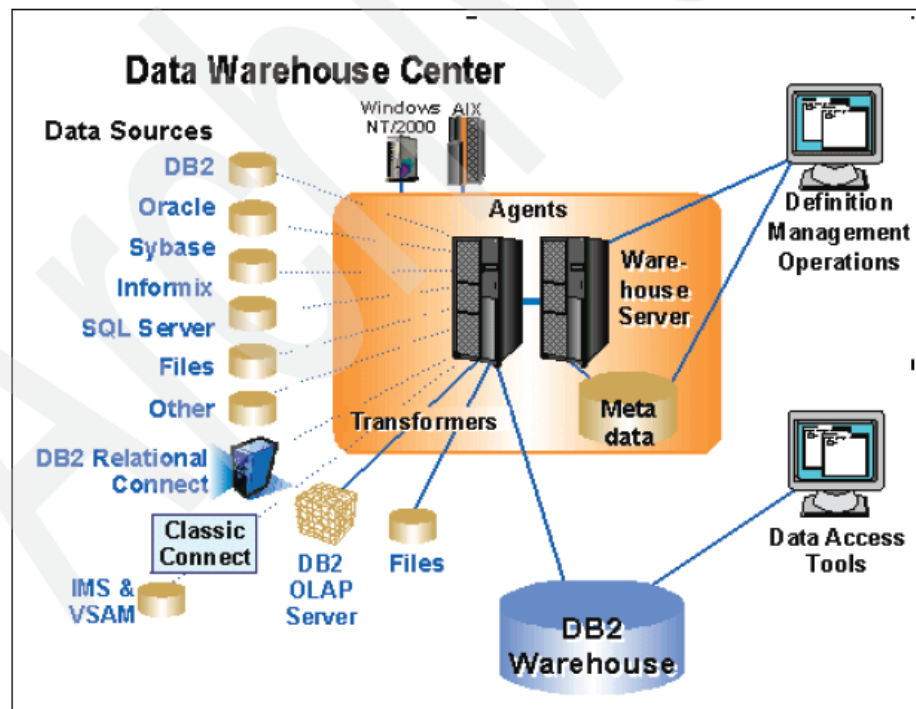


Figure 7-2 Elements of the Data Warehouse Center

Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
17pre	The data services handler according to claim 1	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”:

	wherein the real time information director further comprises:	Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
17[a]	an audit log handler that responds to changes in the data store by compiling and storing information based on metadata that determines content and detail of the compiled information.	Chen discloses “an audit log handler that responds to changes in the data store by compiling and storing information based on metadata that determines content and detail of the compiled information”: Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
18pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

18[a]	a data cleanser that receives data elements identified by Document Metadata, normalizes the data elements, queues source and destination information for detection of duplicates, and cross-references duplicates in the data store.	Chen discloses “a data cleanser that receives data elements identified by Document Metadata, normalizes the data elements, queues source and destination information for detection of duplicates, and cross-references duplicates in the data store”: Chen at 173: “A constraint is a DB2 rule the user can specific in table design to ensure the data integrity. The database manager enforces the constraints. DB2 contains these four types of constraints: _ Unique constraints: These are rules that forbid duplicate values in one or more columns within a table. Unique and primary keys are the supported unique constraints. In our example, a unique constraint can be defined on the N_NATIONKEY column in the NATION table to ensure that the same country (or region) identifier is not given to two countries (or regions).” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
-------	--	--

Claim Element	Claim Language	Chen
19pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your

		Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
19[a]	an aggregation engine that computes aggregates in memory from data selected from the data store.	Chen discloses “an aggregation engine that computes aggregates in memory from data selected from the data store”: Chen at 316-317: “A process contains a series of steps that perform a transformation and movement of data for a specific warehouse use. In general, a process moves source data into the warehouse. Then, the data is aggregated and summarized for warehouse use. A process can produce a single flat table or a set of summary tables. A process might also perform some specific type of data transformation. A step is the definition of a single operation within the warehouse. By using SQL statements or calling programs, steps define how you move data and transform data. When you run a step, a transfer of data between the warehouse source and the warehouse target, or any transformation of that data, can take place.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
20pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises.”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
20[a]	a real-time scoring engine.	Chen discloses “a real-time scoring engine”:

		Chen at 362: “DB2 Intelligent Miner™ Scoring: DB2 Intelligent Miner Scoring provides scoring technology as a DB2 extender. It extends database capabilities and enables users to deploy data mining in real-time applications with a simple SQL call. DB2 Intelligent Miner Scoring enables your applications to better serve business and consumer users alike - by providing more informed recommendations, personalizing customer and supplier treatment, and building more efficiencies into the online experience to be more responsive to the specific situation at hand” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
21pre	The data services handler according to claim 1 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 1 wherein the real time information director further comprises:” Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML

		documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
21[a]	a business rules engine that defines a business object model capable of enabling access to data described by Document Metadata, performing computations on data relevant to business rules specified by the business object model, concluding a decision based on computation results, and executing the decision.	Chen discloses “a business rules engine that defines a business object model capable of enabling access to data described by Document Metadata, performing computations on data relevant to business rules specified by the business object model, concluding a decision based on computation results, and executing the decision”: Chen at 3: “Business intelligence support: DB2 UDB has particular strengths in supporting business intelligence applications such as data warehousing and on-line analytical processing (OLAP). DB2 provides parallel database technology and query optimization resulting in the ability to help customers find competitive advantage, offer better customer service, or reduce costs by mining their data for the knowledge required to make better decisions. Further, this feature does not require the additional expense of a specialized database. DB2 UDB provides a single database that can be used across an enterprise for all data management requirements from OLAP to OLTP.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
22pre	An article of manufacture comprising:	Chen discloses “an article of manufacture comprising” Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[a]	a controller-usable storage medium having a computer readable program code embodied therein for managing data services, the computer readable program code further comprising:	Chen discloses “a controller-usable storage medium having a computer readable program code embodied therein for managing data services, the computer readable program code further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage

		data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[b]	a code causing the controller to transfer data among a data store and applications that supply and consume data;	Chen discloses “a code causing the controller to transfer data among a data store and applications that supply and consume data”: Chen at 2-3: “Web-enablement: DB2 UDB is integrated with Web technology so that data can be easily accessed from the Internet or from your intranet to provide a more secure environment. This feature allows you to build e-business or Internet applications that can enable competitive advantage, greater customer service, or reduced costs. Partner solutions: DB2 UDB is capable of supporting a broad range of data management applications with excellent performance and reliability. As a result, a large number of industry solution providers, including SAP, Baan, Peoplesoft, and many more, have adopted DB2 to support their applications; or adapted their tools to support DB2. This feature allows you to more quickly satisfy your requirements by buying rather than developing solutions.” Chen at 318-319: “7.3.2 DB2 XML Extender DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents

		into relational data. It does so by providing a set of new data types, functions, and stored procedures. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[c]	a code causing the controller to transform data for transfer using a representation of metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class;	Chen discloses “a code causing the controller to transform data for transfer using a representation of metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class”: Chen at 2: “Web-enablement: DB2 UDB is integrated with Web technology so that data can be easily accessed from the Internet or from your intranet to provide a more secure environment. This feature allows you to build e-business or Internet applications that can enable competitive advantage, greater customer service, or reduced costs.” Chen at 318-319:

		“With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.” Chen at 318: “7.3.1 What is XML? XML stands for eXtensible Markup Language. XML is a meta-markup language and is used for creating your own markup languages. Using XML, you can define the tags for your markup language. XML tags are used to describe the contents of the document. This means that any type of data can be defined easily using XML. XML is universal not only by its range of applications but also by its ease of use: Its text-based nature makes it easy to create tools. It is also an open, license-free, cross-platform standard, which means anyone can create, develop, and use tools for XML. XML is a structured data format, which allows it to store complex data, whether it is originally textual, binary, or object-oriented.” Chen at 189: “5.5.8 Object REXX (Windows only) Object REXX contains features typical of an object-oriented language, such as subclassing, polymorphism, and data encapsulation. It is an extension of the IBM REXX language, which has been expanded to include classes, objects, and methods. REXX is an interpreted language which doesn’t use a precompiler, compiler, or linker. Instead, three DB2 APIs are used to create DB2 applications in REXX: SQLEXEC which supports the SQL language. SQLDBS which supports command-like versions of DB2 APIs. SQLDB2 which supports a REXX specific interface to the command-line processor.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with
--	--	--

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[d]	a code causing the controller to dynamically instantiate, create, and cache for reuse at least one disassembler and at least one assembler according to demand;	Chen discloses “a code causing the controller to dynamically instantiate, create, and cache for reuse at least one disassembler and at least one assembler according to demand”: Chen at 318-319: “With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.” Chen at 181: “Dynamic SQL Dynamic SQL statements are those that your application builds and executes at run time. In our sample application where we allow users to dynamically create a query is a good example of dynamic SQL. The application builds the SQL statement while it’s running, and then submits the statement for processing. Examples of embedded SQL (both static and dynamic) can be found in: sqllib/samples/c sqllib/sample/cpp sqllib/sample/cobol sqllib/sample/cobol_mf “ Chen at 298: “DB2 will now have a specific amount of pages that will cache SQL statements which will speed up execution if the same query is required more than once. (This has been changed

		from its derived value as the derived value is based on the maximum number of applications, which has been kept at 40)” Chen at 318-319: “7.3.2 DB2 XML Extender DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system. <u>Additional Support from another source link of IBM DB2 –</u> <u>IBM DB2 UDB Exploitation of the Windows Environment (IBM)</u> : Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[e]	a code dynamically created by the controller as defined by polymorphic metadata that disassembles	Chen discloses “a code dynamically created by the controller as defined by polymorphic metadata that disassembles inbound data documents into multiple records in preparation for insertion into metadata tables”: Chen at 318-319:

	inbound data documents into multiple records in preparation for insertion into metadata tables; and	“With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.” Chen at 318-320: “7.3.1 What is XML? XML stands for eXtensible Markup Language. XML is a meta-markup language and is used for creating your own markup languages. Using XML, you can define the tags for your markup language. XML tags are used to describe the contents of the document. This means that any type of data can be defined easily using XML. XML is universal not only by its range of applications but also by its ease of use: Its text-based nature makes it easy to create tools. It is also an open, license-free, cross-platform standard, which means anyone can create, develop, and use tools for XML. XML is a structured data format, which allows it to store complex data, whether it is originally textual, binary, or object-oriented. 7.3.2 DB2 XML Extender DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system. Storing the XML document
--	--	--

		With DB2 XML Extender you can either store the entire XML document in DB2 as a user-defined data type or map the XML content into columns in DB2 tables. DB2 XML Extender can also store the XML document as an external file in the file system with a pointer to that file stored in the DB2 database so that you can keep working with your legacy flat files but benefit from the advantages offered by DB2 at the same time. DB2 XML Extender provides powerful capabilities to search the XML elements and attributes. DB2 XML Extender provides two options you can use for integrating XML documents into DB2: XML Columns: This method allows you to store XML documents in DB2. The documents are inserted into columns which are enabled for XML, and can be updated, retrieved, and searched. Element and attribute data can be mapped to DB2 tables called side tables, which can then be indexed for fast searches. With this method once the document is stored, you have a whole range of possibilities for working with the XML document: – You can extract and search XML elements and attributes in the XML document directly or for improved performances you can store in the side tables the elements and attributes you are likely to access more often. – You have the option to update the content of an XML element or the value of an XML attribute. – The XML document can also be retrieved and used by your XML application. XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2
--	--	---

		tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2. “ Chen at 189: “5.5.8 Object REXX (Windows only) Object REXX contains features typical of an object-oriented language, such as subclassing, polymorphism, and data encapsulation. It is an extension of the IBM REXX language, which has been expanded to include classes, objects, and methods. REXX is an interpreted language which doesn’t use a precompiler, compiler, or linker. Instead, three DB2 APIs are used to create DB2 applications in REXX: SQLEXEC which supports the SQL language. SQLDBS which supports command-like versions of DB2 APIs. SQLDB2 which supports a REXX specific interface to the command-line processor.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
22[f]	a code dynamically created by the controller as defined by polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table.	Chen discloses “a code dynamically created by the controller as defined by polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table”: Chen at 318-320: “7.3.1 What is XML? XML stands for eXtensible Markup Language. XML is a meta-markup language and is used for creating your own markup languages. Using XML, you can define the tags for your

		markup language. XML tags are used to describe the contents of the document. This means that any type of data can be defined easily using XML. XML is universal not only by its range of applications but also by its ease of use: Its text-based nature makes it easy to create tools. It is also an open, license-free, cross-platform standard, which means anyone can create, develop, and use tools for XML. XML is a structured data format, which allows it to store complex data, whether it is originally textual, binary, or object-oriented. 7.3.2 DB2 XML Extender DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system. – You can extract and search XML elements and attributes in the XML document directly or for improved performances you can store in the side tables the elements and attributes you are likely to access more often. – You have the option to update the content of an XML element or the value of an XML attribute. – The XML document can also be retrieved and used by your XML application. XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following:
--	--	--

		– You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2.” Chen at 189: “5.5.8 Object REXX (Windows only) Object REXX contains features typical of an object-oriented language, such as subclassing, polymorphism, and data encapsulation. It is an extension of the IBM REXX language, which has been expanded to include classes, objects, and methods. REXX is an interpreted language which doesn’t use a precompiler, compiler, or linker. Instead, three DB2 APIs are used to create DB2 applications in REXX: SQLEXEC which supports the SQL language. SQLDBS which supports command-like versions of DB2 APIs. SQLDB2 which supports a REXX specific interface to the command-line processor.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
Claim Element	Claim Language	Chen

23pre	The article of manufacture according to claim 22 further comprising:	Chen discloses “the article of manufacture according to claim 22 further comprising” Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
23[a]	a code causing the controller to transform data under direction of polymorphic metadata that defines a security model and data integrity rules for application to the data.	Chen discloses “a code causing the controller to transform data under direction of polymorphic metadata that defines a security model and data integrity rules for application to the data”: Chen at 314: “The Data Warehouse Center is a component of DB2 that automates data warehouse processing. You can use the Data Warehouse Center to define the processes that move and transform data for the warehouse and then to schedule, maintain, and monitor these processes. It can support sources of various types of relational databases, ODBC sources, replication tables, OLE-DB sources, application sources like WebSphere MQ queues, SAP R/3 and Web site information.”

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
24pre	The article of manufacture according to claim 22 further comprising:	Chen discloses “the article of manufacture according to claim 22 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
24[a]	a code causing the controller to collect data from a plurality of diverse applications that can supply data in	Chen discloses “a code causing the controller to collect data from a plurality of diverse applications that can supply data in multiple diverse external document formats and mapping the supplied data to a predetermined unified data model according to the polymorphic metadata”:

	multiple diverse external document formats and mapping the supplied data to a predetermined unified data model according to the polymorphic metadata.	Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	---	--

Claim Element	Claim Language	Chen
25pre	The article of manufacture according to claim 22 further comprising:	Chen discloses “the article of manufacture according to claim 22 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.”

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
25[a]	a code causing the controller to represent metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful meta data classes delegate operation to the stateless poly morphic metadata objects.	Chen discloses “a code causing the controller to represent metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful meta data classes delegate operation to the stateless poly morphic metadata objects”: Chen at 7: “A relational database presents data as a collection of tables. A table consists of a defined number of columns and any number of rows. Each database includes a set of system catalog tables that describe the logical and physical structure of the data, a configuration file containing the parameter values allocated for the database, and a recovery log with ongoing transactions and archivable transactions.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
26pre	The article of manufacture according to claim 22 further comprising:	Chen discloses “the article of manufacture according to claim 22 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm

		devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
26[a]	a code causing the controller to construct at least one metadata object using constructors of multiple metadata classes;	Chen discloses “a code causing the controller to construct at least one metadata object using constructors of multiple metadata classes”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element

		is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
26[b]	a code causing the controller to use constructor parameters to specify metadata data elements and being nested to represent hierarchical relationships between the specified metadata data elements, the at least one metadata object including identifying information for deriving the hierarchical relationships.	Chen discloses “a code causing the controller to use constructor parameters to specify metadata data elements and being nested to represent hierarchical relationships between the specified metadata data elements, the at least one metadata object including identifying information for deriving the hierarchical relationships”: Chen at 319-320: “XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data. With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
27pre	The article of manufacture according to claim 22 further comprising:	Chen discloses “the article of manufacture according to claim 22 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
27[a]	a code causing the controller to use received data document mapping metadata to disassemble elements of inbound data documents into rows and columns to be inserted into inbound metadata-selected tables in a database, select rows and columns from outbound	Chen discloses “a code causing the controller to use received data document mapping metadata to disassemble elements of inbound data documents into rows and columns to be inserted into inbound metadata-selected tables in a database, select rows and columns from outbound metadata-selected tables of the database and assemble elements from the outbound metadata-selected tables into an outbound data document, and generate a schema for documents that can be input or output using the received data document mapping metadata”: Chen at 319-320: “XML Collections: This method allows you to map XML document structures to DB2 tables, so that you can compose XML documents from existing DB2 data, or decompose XML documents into DB2 data.

	metadata-selected tables of the database and assemble elements from the outbound metadata-selected tables into an outbound data document, and generate a schema for documents that can be input or output using the received data document mapping metadata.	With the XML Collections method, you can do the following: – You can populate the columns of one or more DB2 tables starting from an XML document. The tags in the XML document and the XML document itself is not stored in DB2; only the values of the elements and attributes you are interested in are stored in DB2. The mapping between elements and attributes in the XML document and the DB2 tables is given by the DAD file. – You can create an XML document using the data in columns of one or more DB2 tables. DB2 XML Extender composes an XML document using the data stored in columns of DB2 tables. Here again, the mapping between data in the DB2 tables and the composed XML document is done using the DAD file. – You can work with the data shredded (or decomposed) from the XML document as you would work with any relational data in DB2.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	---	--

Claim Element	Claim Language	Chen
28pre	An enterprise system comprising:	Chen discloses “an enterprise system comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high

		performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Chen at 112: “4.1 Application description Our goal at the onset of this project is to provide a straight forward yet scalable framework for a client application to exercise the features of DB2. We chose to make the application Web accessible to exploit the largest installed base of desktop environments. To this end, the focal point of our application environment is an <u>Apache Web Server</u> which can interact with a user’s Web browser and provide DB2 connectivity via the PHP scripting language” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
28[a]	a plurality of interlinked computer servers and networks enabling multiple users to access applications and data on the servers; and	Chen discloses “a plurality of interlinked computer servers and networks enabling multiple users to access applications and data on the servers”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce,

		customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Chen at 112: “4.1 Application description Our goal at the onset of this project is to provide a straight forward yet scalable framework for a client application to exercise the features of DB2. We chose to make the application Web accessible to exploit the largest installed base of desktop environments. To this end, the focal point of our application environment is an <u>Apache Web Server</u> which can interact with a user’s Web browser and provide DB2 connectivity via the PHP scripting language” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
28[b]	a real time information director (RTID) executing on at least one of the interlinked servers that manages information flow between a data store and applications that supply and consume data and dynamically instantiates, creates, and caches for reuse disassemblers and assemblers according to demand,	Chen discloses “a real time information director (RTID) executing on at least one of the interlinked servers that manages information flow between a data store and applications that supply and consume data and dynamically instantiates, creates, and caches for reuse disassemblers and assemblers according to demand”: <i>See Claim 28pre, 1[b], 1[c]</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

28[c]	the RTID that creates at least one disassembler defined according to the polymorphic metadata that disassembles inbound data documents into multiple records in preparation for insertion into metadata tables and create at least one assembler defined according to the polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table whereby data is transformed for supply, consumption, or both.	Chen discloses “the RTID that creates at least one disassembler defined according to the polymorphic metadata that disassembles inbound data documents into multiple records in preparation for insertion into metadata tables and create at least one assembler defined according to the polymorphic metadata that assembles outbound data documents from at least one record selected from at least one metadata-selected table whereby data is transformed for supply, consumption, or both”: <i>See Claim 1[b], 1[d], 1[e]</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
-------	---	---

Claim Element	Claim Language	Chen
30pre	The enterprise system according to claim 28 further comprising:	Chen discloses “The enterprise system according to claim 28 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer

		applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Chen at 112: “4.1 Application description Our goal at the onset of this project is to provide a straight forward yet scalable framework for a client application to exercise the features of DB2. We chose to make the application Web accessible to exploit the largest installed base of desktop environments. To this end, the focal point of our application environment is an <u>Apache Web Server</u> which can interact with a user’s Web browser and provide DB2 connectivity via the PHP scripting language” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
30[a]	a server platform coupled to the real time information director that serves deployed models, customer data, and interaction data.	Chen discloses “a server platform coupled to the real time information director that serves deployed models, customer data, and interaction data.”: Chen at Figure 7-2:

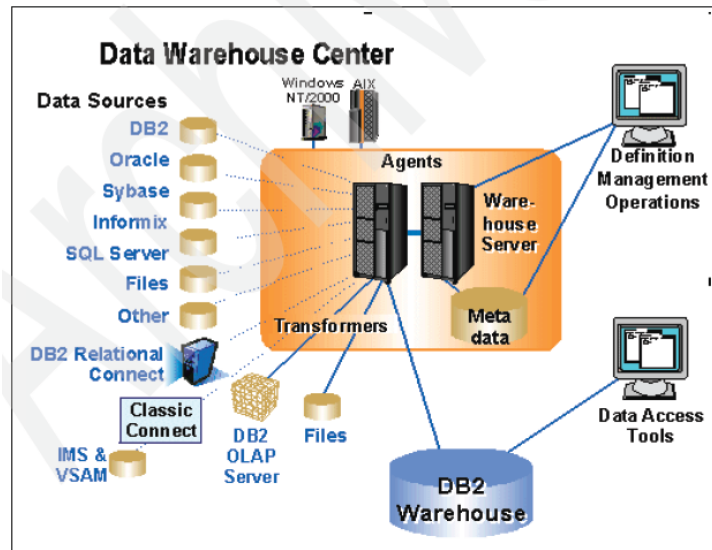


Figure 7-2 Elements of the Data Warehouse Center

Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
31pre	The enterprise system according to claim 28 wherein:	Chen discloses “the enterprise system according to claim 28 wherein”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer

		applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Chen at 112: “4.1 Application description Our goal at the onset of this project is to provide a straight forward yet scalable framework for a client application to exercise the features of DB2. We chose to make the application Web accessible to exploit the largest installed base of desktop environments. To this end, the focal point of our application environment is an <u>Apache Web Server</u> which can interact with a user’s Web browser and provide DB2 connectivity via the PHP scripting language” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
31[a]	the RTID represents metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and	Chen discloses “the RTID represents metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class”: Chen at 174: “Distinct type: These share a common representation with built-in data types. The classic example is to create a UDT of pounds and a UDT of dollars. Although both of these UDTs are based on the DB2 decimal built-in, you cannot compare the values of a pounds and dollars without writing a UDF to

	attributes being defined specific to object class.	cast between the two. Much the same way as you cannot directly compare two built-in numerics without using a function.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
32pre	The enterprise system according to claim 28 wherein:	Chen discloses “the enterprise system according to claim 28 wherein”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Chen at 112: “4.1 Application description Our goal at the onset of this project is to provide a straight forward yet scalable framework for a client application to exercise the features of DB2. We chose to make the application Web accessible to exploit the largest installed base of desktop environments. To this end, the focal point of our application environment is an Apache Web Server which can interact

		with a user’s Web browser and provide DB2 connectivity via the PHP scripting language” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
32[a]	the RTID represents metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful metadata classes delegate operation to the stateless polymorphic metadata objects.	Chen discloses “the RTID represents metadata as stateless polymorphic objects that are permanent after initial construction, whereby methods of stateful metadata classes delegate operation to the stateless polymorphic metadata objects.”: Chen at 7: “A relational database presents data as a collection of tables. A table consists of a defined number of columns and any number of rows. Each database includes a set of system catalog tables that describe the logical and physical structure of the data, a configuration file containing the parameter values allocated for the database, and a recovery log with ongoing transactions and archivable transactions.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

Claim Element	Claim Language	Chen
---------------	----------------	------

33pre	A data services handler according to claim 1 further comprising:	Chen discloses “a data services handler according to claim 1 further comprising”: Chen at 1-2: “DB2 UDB is a scalable and industrial strength relational database management system. It is flexible enough to serve both structured and unstructured data management needs of a single user to very large enterprises. It is suitable for a wide range of customer applications, which can be deployed on a variety of hardware and software platforms all the way from palm devices to massive parallel multiprocessor systems. It is a high performance middleware software that provides a secure and reliable system to manage data or content for a wide variety of customer applications, such as e-Commerce, customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), business intelligence (BI), Web portals, content and knowledge management.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
33[a]	at least one generator that is dynamically created by the RTID as defined by polymorphic metadata and generates an extended Markup Language (XML) Schema that describes format of the documents, the at least one disassembler, assembler, and generator that use a	Chen discloses “at least one generator that is dynamically created by the RTID as defined by polymorphic metadata and generates an extended Markup Language (XML) Schema that describes format of the documents, the at least one disassembler, assembler, and generator that use a single descriptive polymorphic metadata.”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your

	single descriptive polymorphic metadata.	Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
34pre	The data services handler according to claim 33 wherein the metadata further comprises:	Chen discloses “the data services handler according to claim 33 wherein the metadata further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML

		documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
34[a]	content metadata that defines data to be included into a document; and	Chen discloses “content metadata that defines data to be included into a document”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
34[b]	format metadata that defines how the data appears in the document.	Chen discloses “format metadata that defines how the data appears in the document”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Chen at 320: “Document Access Definition (DAD): DB2 XML Extender also provides you with a mapping scheme called Document Access Definition (DAD), which is a file used to map the XML document to relational data. The DAD is an XML formatted document which allows you to associate XML document structure to a DB2 database when using either XML Columns or XML Collections. The structure of DAD files is different when using an XML Column or an XML Collection.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with

		the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	--	---

Claim Element	Claim Language	Chen
35pre	The data services handler according to claim 33 wherein the real time information director further comprises:	Chen discloses “the data services handler according to claim 33 wherein the real time information director further comprises”: Chen at 318-319: “DB2 XML Extender provides the ability to store and access XML documents, and also to compose XML documents from the existing relational data or to decompose XML documents into relational data. It does so by providing a set of new data types, functions, and stored procedures. With DB2 XML Extender, you can use SQL as the main access method to your XML documents, which makes your task much easier. It also facilitates your Administration tasks by providing you with a GUI-based wizard, a set of administrative stored procedures and an Administration command. Even though XML solves many of the problems by providing a standard format for data interchange, there are other problems, such as storing the XML documents in a centralized repository, as well as the ability to quickly search for information or to trigger automatic data interchange when a particular action occurs. These kinds of issues can be addressed only by a database management system.” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
35[a]	a query logic that queries the database to determine information about tables	Chen discloses “a query logic that queries the database to determine information about tables in the database that the document uses, the information including field name, field datatype, and field allowance of nulls”:

	in the database that the document uses, the information including field name, field datatype, and field allowance of nulls.	Chen at 299: “Our example of using the Design Advisor consists of four steps: _ Running an existing query against the database _ Using the Design Advisor to check if indexes will help the query execution _ Checking that the indexes have been created _ Running the query again with the indexes” Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
--	---	--

Claim Element	Claim Language	Chen
36pre	A method for executing on a computer system for managing data services comprising:	Chen discloses “a method for executing on a computer system for managing data services comprising”: <i>See Claim 1pre.</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
36[a]	transferring data among a data store and applications that supply and consume data;	Chen discloses “transferring data among a data store and applications that supply and consume data”: <i>See Claim 22[b].</i>

		Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
36[b]	transforming data for transfer using a representation of metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class;	Chen discloses “transforming data for transfer using a representation of metadata as polymorphic objects, enabling individual metadata objects to have distinct numbers and types of attributes according to a predetermined object class, the behaviors and attributes being defined specific to object class”: <i>See Claim 22[c].</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
36[c]	dynamically instantiating, creating, and caching for reuse at least one disassembler and at least one assembler according to demand;	Chen discloses “dynamically instantiating, creating, and caching for reuse at least one disassembler and at least one assembler according to demand”: <i>See Claim 22[d].</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.

36[d]	disassembling inbound data documents into multiple records in preparation for insertion into metadata tables; and	Chen discloses “disassembling inbound data documents into multiple records in preparation for insertion into metadata tables”: <i>See Claim 22[e].</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.
36[e]	assembling outbound data documents from at least one record selected from at least one metadata-selected table.	Chen discloses “assembling outbound data documents from at least one record selected from at least one metadata-selected table”: <i>See Claim 22[f].</i> Viewing Chen as a whole and view of contemporary prior art, this element would have been inherent or obvious to one of ordinary skill in the art. To the extent it is found that the element is not expressly disclosed in Chen, Chen renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein.