

U.S. Patent No. 11,687,971		
1[pre]: A method comprising:	37[pre]: A mobile wireless device comprising:	50[pre]: A computer program product for installation in a non-volatile memory in a wireless device, the computer program product comprising computer program instructions that, when read from the non-volatile memory, and then executed by one or more processors in the wireless device, cause the wireless device to:
	37[a]: one or more radios for providing reception and transmission for each of a Bluetooth wireless protocol and a second wireless protocol;	
	37[b]: one or more processors; and	
	37[c]: one or more memory devices coupled to the one or more processors, the one or more memory devices storing a set of instructions that when executed by the one or more processors cause the one or more processors to perform operations including:	
1[a]: receiving, at a wireless device, via a short range wireless protocol, a first plurality of beacon transmissions, each beacon transmission comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) a beacon service identifier,	37[d]: receiving from a beacon transmitter, using the Bluetooth wireless protocol, a first plurality of beacon transmissions during a first time period, each of the beacon transmissions including (a) a MAC address, (b) a unique identifier, the unique identifier does not directly identify a location of the beacon transmitter, and (c) a beacon service	50[a]: process a first plurality of beacon transmissions, received at the wireless device via a Bluetooth wireless protocol, each beacon transmission comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and

wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the short range wireless protocol;	identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;	(c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;
1[b]: receiving, at the wireless device via a second wireless protocol, the stored information from one or more servers, the stored information relating to a particular entity or object associated with a first unique identifier, and wherein the second wireless protocol is different from the short range wireless protocol;	37[e]: receiving from one or more servers, using the second wireless protocol, stored information related to a entity or object associated with a first unique identifier;	50[b]: process stored information transferred from one or more servers to the wireless device via a second wireless protocol, wherein the stored information relates to an entity or object associated with a first unique identifier, and wherein the second wireless protocol is different from the Bluetooth wireless protocol;
1[c]: causing selection of one or more of the unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service; and	37[f]: selecting one or more unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with the particular wireless beacon service;	50[c]: select one or more of the unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service; and
1[d]: taking first further action relating to the stored information, if the first unique identifier is present among the	37[g]: taking first further action relating to the stored information, if the first unique identifier is present among the	50[d]: perform a first further action, the first further action relating to the stored information, if the first unique

selected one or more unique identifiers.	selected one or more unique identifiers;	identifier is present among the selected one or more unique identifiers.
	37[h]: receiving, by the wireless device, using the Bluetooth wireless protocol, during a second time period, a second plurality of beacon transmissions, each of the second plurality of beacon transmissions comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) the beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not accessible to the wireless device utilizing the Bluetooth wireless protocol;	
	37[i]: selecting one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier indicating that a particular received beacon transmission is associated with the	

	same particular wireless beacon service;	
	37[j]: taking second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions, wherein the second unique identifier is associated with the same entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device; and	
	37[k]: wherein the MAC address received in a beacon transmission including the second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier.	
2[pre]: The method of claim 1, wherein the receiving, at the wireless device, via a short range wireless protocol, of the first plurality of beacon transmissions occurs in a first time period, and		51[pre]: The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, cause the wireless device to: during a

		first time period: process the first plurality of beacon transmissions in the first time period, and
2[a]: wherein the method further comprises, during a second time period:		51[a]: during a second time period:
2[b]: receiving, at the wireless device, via a short range wireless protocol, a second plurality of beacon transmissions, each of the second plurality of beacon transmissions comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not accessible to the wireless device utilizing the short range wireless protocol;		51[b]: process a second plurality of beacon transmissions, received at the wireless device via the Bluetooth wireless protocol, each beacon transmission comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;
2[c]: causing selection of one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier		51[c]: select one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier indicating that the particular

indicating that the particular received beacon transmission is associated with the same particular wireless beacon service; and		received beacon transmission is associated with the same particular wireless beacon service; and
2[d]: taking second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions, wherein the first unique identifier and the second unique identifier are both associated with the same particular entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device.		51[d]: perform a second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions, wherein the first unique identifier and the second unique identifier are both associated with the same particular entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device.
3. The method of claim 2 wherein the MAC address received in a beacon transmission including the second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier, and wherein a plurality of beacon transmissions including the particular service identifier and the first unique identifier are received in the first time		52: The computer program product of claim 51 wherein the MAC address received in a beacon transmission including the second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier, and wherein a plurality of beacon transmissions including the particular beacon service identifier and the first unique identifier

period, and no beacon transmissions including the same particular service identifier and the second unique identifier are received in the first time period.		are received in the first time period, and no beacon transmissions including the same service identifier and the second unique identifier are received in the first time period.
4. The method of claim 3 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.	40. The mobile wireless device of claim 37 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.	53: The computer program product of claim 52 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.
5. The method of claim 4 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.	41. The mobile wireless device of claim 40 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.	54. The computer program product of claim 53 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.
6. The method of claim 2 wherein the first or the second further action is related to receiving advertising information for presentation to a user of the wireless device, based upon the first or the second unique identifier, or information derived from the first or second unique identifier.		55: The computer program product of claim 51 wherein the first or the second further action is additionally related to receiving advertising information for presentation to a user of the wireless device, based upon the first or the second unique identifiers, or based upon information derived from the first or second unique identifier.
		56. The computer program product of claim 50 wherein the first further action is additionally related to receiving advertising information for presentation to a user of the wireless device, based upon the unique

		identifier, or based upon information derived from the first unique identifier.
7. The method of claim 2 wherein one or more of the first further action and the second further action includes receiving content from a server based upon information derived from either the first unique identifier or the second unique identifier.	42. The mobile wireless device of claim 37 wherein one or more of the first further action and the second further action includes receiving content from a server based upon information derived from either the first unique identifier or the second unique identifier.	57. The computer program product of claim 51 wherein one or more of the first further action and the second further action additionally includes causing the wireless device to receive content from a server based upon information derived from either the first unique identifier or the second unique identifier.
		58. The computer program product of claim 52 wherein the first further action additionally includes causing the wireless device to receive content from a server based upon information derived from the first unique identifier.
8. The method of claim 2, wherein the first or second further action includes sending a message to another device associated with an account related to the first and the second unique identifiers.	43. The mobile wireless device of claim 37, wherein the first or second further action includes sending a message or causing a server to send a message to another device associated with an account related to the first and the second unique identifiers.	59. The computer program product of claim 51, wherein the first or second further action additionally includes causing the wireless device to send a message to another device associated with an account related to the first or the second unique identifiers, or information derived from the first or the second unique identifiers.
9. The method of claim 2 wherein following the taking of the first or second further action, a server associated with an account for a user of the wireless device performs a step of sending an email message to an		60. The computer program product of claim 51, wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to: after the first or

email address associated with the account for the user, the email message relating to the particular entity or object.		second further action: send information to a server associated with an account for a user of the wireless device, to enable the server to send a message to an email address associated with the account for the user.
		61. The computer program product of claim 50, wherein the first further action additionally includes causing the wireless device to send information to a server associated with an account for a user of the wireless device, and enabling the server to send a message to an email address associated with the account for the user as a result of the first further action.
10. The method of claim 2 wherein the second further action includes preventing sending of the second unique identifier or information derived from the second unique identifier by the wireless device to at least one of the one or more servers.	44. The mobile wireless device of claim 37 wherein the second further action includes preventing sending of the second unique identifier or information derived from the second unique identifier by the mobile wireless device to at least one of the one or more servers.	62. The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to prevent sending the second unique identifier or information derived from the second unique identifier by the wireless device to at least one of the one or more servers.
12. The method of claim 1 wherein the taking first further action further includes causing the wireless device, to: send the first unique identifier or information derived from the first unique identifier to at least one of the		64. The computer program product of claim 50 wherein the first further action additionally includes causing the wireless device to: send the first unique identifier or information derived from the first unique identifier to at

one or more servers, and receive the stored information in response.		least one of the one or more servers, and subsequently receive the stored information in response thereto.
13. The method of claim 1 wherein the stored information is received at the wireless device from at least one of the one or more servers prior to the taking of the first further action.		65: The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to receive stored information at the wireless device from at least one of the one or more servers prior to performing the first further action.
14. The method of claim 2 wherein the stored information is received at the wireless device from at least one of the one or more servers prior to performing one or more of the first and the second further action.		66. The computer program product of claim 51 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to: receive stored information at the wireless device from at least one of the one or more servers prior to performing one or more of the first and the second further action.
15. The method of claim 1 further comprising: using the stored information to determine if the first unique identifier is present among the first selected one or more unique identifiers.	46. The mobile wireless device of claim 37 wherein the operations further comprise: using the stored information to determine if the first unique identifier is present among the first selected one or more unique identifiers.	67. The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to: use the stored information to determine if the first unique identifier is present among the

		first selected one or more unique identifiers.
16. The method of claim 2 wherein all beacon transmitter devices participating in the particular wireless beacon service have the same particular beacon service identifier.		68: The computer program product of claim 51 wherein all beacon transmitter devices participating in the particular wireless beacon service have the same particular beacon service identifier.
18. The method of claim 2 wherein the steps performed at the wireless device are performed as a result of an application program executing on the wireless device.		
19. The method of claim 2 wherein the second further action is related to either a product tied to a location or an advertisement tied to a location.		72. The computer program product of claim 51 wherein the second further action is additionally related to either a product tied to a location or to an advertisement tied to a location.
22. The method of claim 2 wherein the second further action includes allowing a user associated with the wireless device to be provided access to an object or device associated with the wireless beacon service.	48. The mobile wireless device of claim 37 wherein the second further action includes allowing a user associated with the mobile wireless device to be provided access to an object or device associated with the wireless beacon service.	75. The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to allow a user associated with the wireless device to access to an object or device associated with the wireless beacon service.
23. The method of claim 2 wherein the taking second further action additionally comprises: controlling further communications between the wireless device and at least one device or server associated with an	49. The mobile wireless device of claim 37 wherein the first or second further action additionally comprises: controlling further communications between the mobile wireless device and at least one device or server associated with an entity or object in	76: The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to control further communications between the wireless device and at least one other device or server associated with an entity or

entity or object in proximity to the wireless device.	proximity to the wireless device based upon information derived from the first or second unique identifier.	object in proximity to the wireless device.
24. The method of claim 3 further comprising: receiving, at the wireless device, timing notification information for coordination of active times for beacon transmissions.	82. The mobile wireless device of claim 37 wherein the operations further comprise: receiving, at the mobile wireless device, timing notification information for coordination of active times for beacon transmissions.	77. The computer program product of claim 52 wherein the computer program instructions, when executed by the wireless device, further cause the wireless device to: receive, at the wireless device, timing notification information for coordination of active times for beacon transmissions.
25. The method of claim 24 wherein the receiving, at the wireless device of the timing notification information is not directly from the beacon transmitter.		78. The computer program product of claim 77 wherein the timing notification information is not received directly from the beacon transmitter.
		83. The computer program product of claim 53 wherein the receiving, at the wireless device of the timing notification information is not directly from the beacon transmitter.
26. The method of claim 2 further comprising: using the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.	38. The mobile wireless device of claim 37 wherein the operations further comprise: using the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.	79: The computer program product of claim 51 wherein the computer program instructions, when executed by the wireless device, further cause the wireless device to: use the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.
27. The method of claim 1 wherein the MAC address is a randomly generated	39. The mobile wireless device of claim 37 wherein each MAC	81: The computer program product of claim 50 wherein the MAC address

48 bit number matching a format of a Bluetooth BD_ADDR.	address or a respective beacon transmission is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR.	is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR.
28. The method of claim 3 wherein the short range protocol is derived from Bluetooth.		
29. The method of claim 1 wherein the first further action is related to receiving advertising information for presentation to a user of the wireless device, based upon the first unique identifier, or information derived from the first unique identifier.		
30. The method of claim 1 wherein the first further action includes receiving content from a server based upon information derived from the first unique identifier.		
31. The method of claim 1 wherein following the taking of the first further action, a server associated with an account for a user of the wireless device performs a step of sending an email message to an email address associated with the account for the user as a result of the first further action.		
34. The method of claim 1 wherein the first further action is related to either a product tied to a location or an advertisement tied to a location.		

35. The method of claim 3 wherein the taking second further action additionally comprises: controlling further communications between the wireless device and at least one device or server associated with an entity or object in proximity to the wireless device.		
36. The method of claim 1 further comprising: using the stored information to determine if the first unique identifier is present among the selected one or more of the unique identifiers from the first plurality of beacon transmissions.		80: The computer program product of claim 50 further comprising program instructions that, when executed by the one or more processors, cause the wireless device to: use the stored information to determine if the first unique identifier is present among the selected one or more of the unique identifiers from the first plurality of beacon transmissions.