

Item entitled, "Further Enhancements to LTE TDD for DL-UL Interference Management and Traffic Adaptation ", referred to hereinafter as "eIMTA."

[0006] Conventional techniques for performing dynamic UL-DL reconfiguration have shortcomings. For example, the UE may not have reliable information regarding the UL-DL configuration that the UE is supposed to use at the time when the reconfiguration should be applied. Moreover, it is difficult or impractical to optimize conventional solutions for different scenarios. For example, signaling overhead is not minimized in a typical scenario where the switching periodicity applied by the network is on the order of tens of milliseconds. Hence, there is a clear need for more advanced solutions for performing dynamic UL-DL reconfiguration.

SUMMARY OF SOME EMBODIMENTS:

[0007] According to a first ~~set of exemplary embodiments of the invention~~aspect, a method comprises generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window. This method complements UL-DL configuration signaling by providing more reliable reception of UL-DL configuration information. This indication is performed with smaller signaling overhead compared to conventional schemes and with reasonable complexity on both the UE side and an eNB side.

[0008] According to a second ~~set of exemplary embodiments of the invention~~aspect, an apparatus comprises one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink

configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

- 5 [0009] According to a third ~~set of exemplary embodiments of the invention~~aspect, a computer program product comprises a computer-readable storage medium bearing computer

program code embodied therein for use with a computer, the computer program code comprising code for generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

[0010] According to a fourth ~~set of exemplary embodiments of the invention~~ aspect, a method comprises receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied; ~~wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment~~ the first and second information is received via common physical layer signaling and specifies the new uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

[0011] According to a fifth ~~set of exemplary embodiments of the invention~~ aspect, an apparatus comprises one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied; ~~wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment~~ the first and second information is received via common physical layer signaling and specifies the new uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

[0012] According to a sixth ~~set of exemplary embodiments of the invention~~aspect, a computer program product comprises a computer-readable storage medium bearing computer program code embodied therein for use with a computer, the computer program code comprising code for receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied; ~~wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment~~ the first and second
5 information is received via common physical layer signaling and specifies the new uplink-downlink configuration persistency window that starts at the application time, and no
10 uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

[0013] Still other ~~aspects~~embodiments, features, and advantages of the invention are readily apparent from the following detailed description, simply by illustrating a number of particular embodiments and implementations, including the best mode contemplated for carrying out the invention. The invention is also capable of other and different
 5 embodiments, and its several details can be modified in various obvious respects, all without departing from the spirit and scope of the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS:

10 [0014] FIG. 1 is a data structure diagram showing an illustrative radio frame that includes a plurality of subframes.

[0015] FIG. 2 is a process flow diagram that illustrates a method, and a result of execution by one or more processors of a set of computer program instructions embodied on a computer readable memory, for providing information to a user equipment specifying an
 15 uplink-downlink configuration to be applied to the user equipment according to a set of exemplary embodiments of the present invention.

[0016] FIG. 3 is an exemplary data structure diagram used to perform time division duplexing uplink-downlink reconfiguration signaling according to a set of exemplary embodiments of the present invention;

20 [0017] FIG. 4 illustrates a wireless communications network according to a set of exemplary embodiments of the present invention;

DETAILED DESCRIPTION:

[0018] One goal of the 3GPP Release 12 Work Item entitled, "Further Enhancements to
 25 LTE TDD for DL-UL Interference Management and Traffic Adaptation " (hereinafter, "eIMTA"), is to enable a more flexible time division duplexing (TDD) UL-DL reconfiguration. One purpose of this reconfiguration is to provide traffic adaptation which may be used, for example, in the context of small cells. As a starting point, the UL-DL configuration of an enhanced Node B (eNB) will vary relatively frequently for those UEs
 30 configured to perform a flexible UL/DL mode, as compared to the presently existing situation where the UL-DL configuration is quite stationary and fixed over time. A predefined cell-specific UL-DL configuration is broadcast in the cell using a System Information Block #1 (SIB-1). Legacy user equipments (UEs) configured to operate in

CLAIMS**We Claim:**

1. A method comprising:

5 generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

10 providing the generated information to a user equipment, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

15 2. The method of claim 1 further comprising specifying the signaling time using a first parameter that is indicative of a starting point of an uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

20 3. The method of any one of claims 1 or 2 wherein the generated information comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which common physical signaling is used to indicate a new uplink-downlink configuration.

25 4. The method of any one of claims 1-3 wherein the generated information comprises allocating at least one time period for an uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

30 5. An apparatus comprising one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform:

generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

5 providing the generated information to a user equipment, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

10 6. The apparatus of claim 5, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform specifying the signaling time using a first parameter that is indicative of a starting point of an uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

15 7. The apparatus of any one of claims 4 or 5, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform the generating using a first parameter that is indicative of a radio frame periodicity and a second parameter that is indicative of a subframe offset; and wherein the computer
20 program code is further configured, with the one or more processors, to cause the apparatus to specify the subframe offset in terms of frames or subframes at which common physical signaling is used to indicate a new uplink-downlink configuration.

25 8. The apparatus of any one of claims 4-7, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform the generating by allocating at least one time period for an uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

30 9. A computer program product comprising a computer-readable storage medium bearing computer program code embodied therein for use with a computer, the computer program code comprising code for:

generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

5 providing the generated information to a user equipment, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

10 10. The computer program product of claim 9, further comprising code for specifying the signaling time using a first parameter that is indicative of a starting point of an uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

15 11. The computer program product of any one of claims 9 or 10, further comprising code for performing the generating using a first parameter that is indicative of a radio frame periodicity and a second parameter that is indicative of a subframe offset, and further comprising code for specifying the subframe offset in terms of frames or subframes at which common physical signaling is used to indicate a new uplink-downlink
20 configuration.

25 12. The computer program product of any one of claims 9-11, further comprising code for performing the generating by allocating at least one time period for an uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

30 13. A method comprising:
receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and

receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;

wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

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14. The method of claim 13 further comprising specifying the signaling time using a first parameter that is indicative of a starting point of an uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

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15. The method of any one of claims 13 or 14 wherein the received first or second information further comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which common physical signaling is used to indicate a new uplink-downlink configuration.

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16. The method of any one of claims 13-15 wherein the received first or second information further comprises at least one allocated time period for an uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

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17. An apparatus comprising one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform:

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receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and

receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;

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wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

18. The apparatus of claim 17 wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform specifying of the signaling time using a first parameter that is indicative of a starting point of an uplink-downlink configuration persistency window, and specifying of the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

19. The apparatus of any one of claims 17 or 18 wherein the received first or second information further comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which common physical signaling is used to indicate a new uplink-downlink configuration.

20. The apparatus of any one of claims 17-19 wherein the received first or second information further comprises at least one allocated time period for an uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

21. A computer program product comprising a computer-readable storage medium bearing computer program code embodied therein for use with a computer, the computer program code comprising code for:

receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and

receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;

wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment.

22. The computer program product of claim 21 further comprising code for specifying the signaling time using a first parameter that is indicative of a starting point of

an uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

CLAIMS**We Claim:**

1. A method comprising:

5 generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

10 providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

15 2. The method of claim 1 further comprising specifying the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

20 3. The method of claim 1 wherein the generated information comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

25 4. The method of claim 1 wherein the generated information includes one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to specify either an uplink or a downlink.

30 5. The method of claim 1 wherein the generated information comprises allocating at least one time period for the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-

downlink configuration persistency window.

6. The method of claim 1 further comprising using the common physical layer signalling for performing the uplink-downlink configuration signaling, wherein the common
5 physical layer signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

7. The method of claim 6 further comprising providing an indication of the new uplink-downlink configuration in a payload of the downlink control information (DCI).
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8. An apparatus comprising one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform:

generating information that is indicative of: (a) a signaling time at which an uplink-
15 downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink
20 configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

9. The apparatus of claim 8, wherein the computer program code is further
25 configured, with the one or more processors, to cause the apparatus to perform specifying the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency
30 window.

10. The apparatus of claim 8, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform the generating using a first parameter that is indicative of a radio frame periodicity and a

second parameter that is indicative of a subframe offset; and wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to specify the subframe offset in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

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11. The apparatus of claim 8, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform the generating by using one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to specify either an uplink or a downlink.

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12. The apparatus of claim 8, wherein the computer program code is further configured, with the one or more processors, to cause the apparatus to perform the generating by allocating at least one time period for the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

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13. The apparatus of claim 8 wherein the common physical layer signalling is used for performing the uplink-downlink configuration signaling, and wherein the common physical layer signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

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14. The apparatus of claim 8 wherein an indication of the new uplink-downlink configuration is provided in a payload of the downlink control information (DCI).

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15. A computer program product comprising a computer-readable storage medium bearing computer program code embodied therein for use with a computer, the computer program code comprising code for:

generating information that is indicative of: (a) a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and (b) an application time at which the new uplink-downlink configuration is to be applied; and

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providing the generated information to a user equipment via common physical layer signalling, wherein the generated information specifies the new uplink-downlink

configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

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16. The computer program product of claim 15, further comprising code for specifying the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

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17. The computer program product of claim 15, further comprising code for performing the generating using a first parameter that is indicative of a radio frame periodicity and a second parameter that is indicative of a subframe offset, and further comprising code for specifying the subframe offset in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

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18. The computer program product of claim 15, further comprising code for performing the generating by using one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to specify either an uplink or a downlink.

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19. The computer program product of claim 15, further comprising code for performing the generating by allocating at least one time period for the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

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20. The computer program product of claim 15, further comprising code for using the common physical layer signalling for performing the uplink-downlink configuration signaling, wherein the common physical signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

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21. The computer program product of claim 20, further comprising code for

providing an indication of the new uplink-downlink configuration in a payload of the downlink control information (DCI).

22. A method comprising:

5 receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and

receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;

10 wherein the first and second information is received via common physical layer signalling and specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

15 23. The method of claim 22 further comprising specifying the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

20 24. The method of claim 22 wherein the received first or second information further comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

25 25. The method of claim 22 wherein the received first or second information further includes one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to
30 specify either an uplink or a downlink.

26. The method of claim 22 wherein the received first or second information further comprises at least one allocated time period for the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a

commencement of the uplink-downlink configuration persistency window.

27. The method of claim 22 further comprising using the common physical layer signalling for performing the uplink-downlink configuration signaling, wherein the common
5 physical layer signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

28. The method of claim 27 further comprising receiving an indication of the new
10 uplink-downlink configuration in a payload of the downlink control information (DCI).

29. An apparatus comprising one or more processors and one or more memories including computer program code, the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform:
receiving first information at a user equipment that is indicative of a signaling time at
15 which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and
receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;
wherein the first and second information is received via common physical layer
20 signaling and specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

30. The apparatus of claim 29 wherein the computer program code is further
25 configured, with the one or more processors, to cause the apparatus to perform specifying of the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying of the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration
30 persistency window.

31. The apparatus of claim 29 wherein the received first or second information further comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and

wherein the subframe offset is specified in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

32. The apparatus of claim 29 wherein the received first or second information
5 further includes one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to specify either an uplink or a downlink.

33. The apparatus of claim 29 wherein the received first or second information
10 further comprises at least one allocated time period the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

34. The apparatus of claim 29 further comprising using the common physical layer
15 signalling for performing the uplink-downlink configuration signaling, wherein the common physical layer signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

35. The apparatus of claim 34 further comprising receiving an indication of the new
20 uplink-downlink configuration in a payload of the downlink control information (DCI).

36. A computer program product comprising a computer-readable storage medium bearing computer program code embodied therein for use with a computer, the computer program code comprising code for:

25 receiving first information at a user equipment that is indicative of a signaling time at which an uplink-downlink configuration signaling for a new uplink-downlink configuration is to take place, and

receiving second information at the user equipment that is indicative of an application time at which the new uplink-downlink configuration is to be applied;

30 wherein the first and second information is received via common physical layer signaling and specifies the new uplink-downlink configuration to be applied to the user equipment in a plurality of subframes of an uplink-downlink configuration persistency window that starts at the application time, and no uplink-downlink configuration change occurs within the uplink-downlink configuration persistency window.

37. The computer program product of claim 36 further comprising code for specifying the signaling time using a first parameter that is indicative of the start of the uplink-downlink configuration persistency window, and specifying the application time using a second parameter that is indicative of a duration of the uplink-downlink configuration persistency window.

38. The computer program product of claim 36 wherein the received first or second information further comprises a first parameter that is indicative of a radio frame periodicity or a radio subframe periodicity, and a second parameter that is indicative of a subframe offset, and wherein the subframe offset is specified in terms of frames or subframes at which the common physical layer signaling is used to indicate the new uplink-downlink configuration.

39. The computer program product of claim 36 wherein the received first or second information further includes one or more fixed subframes specifying an uplink, one or more fixed subframes specifying a downlink, and one or more flexible subframes each of which may be used to specify either an uplink or a downlink.

40. The computer program product of claim 36 wherein the received first or second information further comprises at least one allocated time period for the uplink-downlink configuration persistency window, such that an uplink-downlink configuration change may only occur at a commencement of the uplink-downlink configuration persistency window.

41. The computer program product of claim 36 further comprising code for using the common physical layer signalling for performing the uplink-downlink configuration signaling, wherein the common physical layer signalling is based on a specific downlink control information (DCI) format scrambled with a Radio Network Temporary Identifier (RNTI).

42. The computer program product of claim 41 further comprising receiving an indication of the new uplink-downlink configuration in a payload of the downlink control information (DCI).