CLAIMS

What is Claimed is:

1. A method for aggregating wireless access technologies in a wireless network, comprising:

employing a data interface to obtain a wireless resource schedule for wireless resources of the wireless network;

employing a data processor to analyze the wireless resource schedule and identify wireless signal resources employed by a baseline wireless access technology;

employing the data processor to reserve a subset of the wireless resources of the wireless network for control or reference signals of a second wireless access technology; and

employing a wireless transmitter to send a resource scheduling for the control or reference signals to access terminals configured for the second wireless access technology.

2. The method of claim 1, further comprising establishing a system information block (SIB) for the subset of the wireless resources and transmitting the resource scheduling in the SIB.

3. The method of claim 1, further comprising at least one of:

transmitting the resource scheduling over at least one resource employed by the baseline wireless access technology; or

reserving a common channel of the wireless network for the second wireless access technology and transmitting the resource scheduling on the common channel.

4. The method of claim 1, further comprising reserving all wireless signal resources of the wireless network for the second wireless access technology for a selected duration or a selected periodic duration.

5. The method of claim 1, further comprising employing at least one of the following for the subset of the wireless resources:

a subset of physical hybrid automatic repeat request (HARQ) indicator channel (PHICH) resource groups employed by the wireless network;

a subset of control channel elements (CCEs) employed by the wireless network;

a subset of control segment resource elements (REs) employed by the wireless network;

a subset of physical downlink shared channel (PDSCH) resources employed by the wireless network; or

a subset of multicast/broadcast single frequency network (MBSFN) resources employed by the wireless network.

6. The method of claim 5, further comprising mapping uplink transmissions of the access terminals configured for the baseline wireless access technology such that corresponding PHICH groups for these access terminals do not collide with the subset of PHICH groups reserved for the second wireless access technology, if the subset of PHICH groups is employed for the subset of the wireless resources.

7. The method of claim 5, further comprising separating the subset of CCEs employed for the subset of the wireless resources from CCEs employed for physical downlink control channel (PDCCH) signals.

8. The method of claim 5, further comprising employing one or more REs reserved for PDCCH in a control segment for the subset of the wireless resources.

9. The method of claim 8, further comprising mitigating performance loss of access terminals configured for the baseline wireless access technology if PDCCH transmissions of these terminals are punctured by at least one of the subset of control segment REs by at least one of:

modifying PDCCH signal power for these access terminals;

modifying a number of REs assigned for transmission of PDCCH for these

terminals; or

optimizing a PDCCH to CCE mapping for these access terminals.

10. The method of claim 5, further comprising mitigating performance loss to access terminals configured for the baseline wireless access technology if the subset of PDSCH resources are employed for the subset of the wireless resources by at least one of:

increasing signal power or modifying rate control of the access terminals configured for the baseline wireless access technology;

making a scheduling decision for at least one access terminal configured for the baseline wireless access technology based on expected performance loss for the at least one access terminal; or

modifying a duty cycle of the subset of PDSCH resources employed for the subset of the wireless resources.

11. The method of claim 5, further comprising reserving non-control symbols of MBSFN subframes for the subset of the wireless resources.

12. The method of claim 1, further comprising at least one of:

employing a downlink part of a special time division duplex (TDD) subframe for the subset of the wireless resources; or

employing a guard period (GP) field of the special TDD subframe for the subset of the wireless resources and advertising a different number of GP symbols for access terminals configured for the baseline wireless access technology and for access terminals configured for the second wireless access technology.

13. The method of claim 1, further comprising setting a GP field of a special TDD subframe employed by access terminals configured for the baseline wireless access technology to a larger value than that of the access terminals configured for the second wireless access technology, and employing extra GP field symbols set for the baseline wireless access technology for the subset of the wireless resources.

14. The method of claim 1, further comprising employing at least one of the following scheduling patterns for reserving the subset of the wireless resources:

scheduling the subset of the wireless resources every N subframes, where N is an integer;

cycling through different parts of a frequency band on subframes employed for the second wireless access technology;

cycling through different subbands over different subframes; or

employing distributed virtual resource block mapping in a subframe employed for the second wireless access technology.

15. The method of claim 1, further comprising dynamically adapting scheduling patterns for reserving the subset of the wireless resources based on:

number of access terminals configured for the second wireless access technology;

amount of control information required to be transmitted to these access terminals; or

control resources to be used for transmission of control information.

16. An apparatus for aggregating wireless access technologies, comprising:

memory for storing a set of modules configured to provide wireless access to access terminals configured for a legacy wireless access technology and access terminals configured for an advanced wireless access technology; and

a data processor for executing the set of modules, the set comprising:

a signal parsing module that analyzes a wireless network resource scheduling to identify wireless resources scheduled for the legacy wireless access technology;

a selection module that assigns control or reference signal (RS) resources for the advanced wireless access technology according to a performance loss mitigation policy, wherein the policy specifies control or RS resources that do not conflict with the wireless network resource scheduling for the legacy wireless access technology, or

specifies implementation of a mediation procedure for control or reference signal resources that do conflict with the wireless network resource scheduling.

17. The apparatus of claim 16, further comprising a scheduling module that sends a message to the access terminals configured for the advanced wireless access technology, wherein the message specifies location of the control or RS resources.

18. The apparatus of claim 17, wherein the scheduling module broadcasts the message *via* a SIB or a common channel dedicated for the access terminals configured for the advanced wireless access technology.

19. The apparatus of claim 17, wherein the scheduling module unicasts the message to one or more of the access terminals configured for the advanced wireless access technology.

20. The apparatus of claim 16, wherein the selection module assigns the control or RS resources to PHICH resource groups reserved for the advanced wireless access technology.

21. The apparatus of claim 20, wherein the mediation procedure comprises mapping access terminals configured for the legacy wireless access technology to uplink resources that correspond to a set of PHICH resource groups other than the PHICH resource groups reserved for the advanced wireless access technology.

22. The apparatus of claim 16, wherein the selection module assigns the control or RS resources to at least one of:

a subset of CCEs that are defined for PDCCH transmissions of the legacy wireless access technology; or

control segment REs that are not employed by the legacy wireless access technology for RS, PHICH or physical control format indicator channel (PCFICH) transmissions.

23. The apparatus of claim 22, wherein the mediation procedure increases transmit power or modifies a number of REs assigned for PDCCH transmissions of access terminals configured for the legacy wireless access technology to mitigate performance loss for these terminals.

24. The apparatus of claim 16, wherein at least one of:

the selection module assigns the control or RS resources to control PDSCH REs that at least partially conflict with data assignments for the legacy wireless access technology; or

the selection module assigns the control or RS resources to control PDSCH REs reserved for the advanced wireless access technology, and further wherein these control PDSCH REs can be utilized at least in part for data transmissions of the access terminals configured for the advanced wireless access technology.

25. The apparatus of claim 24, further comprising a compensation module that implements at least one of the following actions to mitigate performance loss to the access terminals configured for the legacy wireless access technology:

increases signal power or modifies rate control of these access terminals;

makes a scheduling decision for at least one of these access terminals based on expected performance loss for the at least one of these access terminal; or

modifies a duty cycle of the subset of PDSCH resources employed for the subset of the wireless resources.

26. The apparatus of claim 16, wherein the selection module assigns the control or RS resources to non-control symbols of MBSFN subframes.

27. The apparatus of claim 16, wherein the selection module assigns the control or RS resources to at least one of:

a downlink part of a special TDD subframe;

GP field symbols of the special TDD subframe that are ignored by the access terminals configured for the legacy wireless access technology; or

extra GP field symbols of the special TDD subframe that are scheduled for the legacy wireless access technology.

28. The apparatus of claim 16, further comprising an adaptation module that dynamically modifies assignment of the control or RS resources based on network loading or prevailing wireless conditions.

29. The apparatus of claim 28, wherein:

the network loading comprises a number of access terminals served by the apparatus or an amount of control information to be transmitted to the access terminals configured for the advanced wireless access technology; or

the prevailing wireless conditions include channel performance estimates submitted by the access terminals configured for the legacy wireless access technology or the access terminals configured for the advanced wireless access technology.

30. The apparatus of claim 16, wherein the performance loss mitigation policy specifies an adaptive resource assignment pattern comprising at least one of:

reserving the control or RS resources every N subframes;

cycling reservation of the control or RS resources through different parts of a frequency band;

cycling reservation of the control or RS resources through different subbands over different subframes; or

employing distributed virtual resource block mapping in a subframe employed for the control or RS resources.

31. An apparatus that facilitates wireless communication for multiple wireless access technologies, comprising:

means for employing a data interface to obtain a wireless resource schedule for wireless resources of a wireless network;

means for employing a data processor to identify wireless signal resources employed by a baseline wireless access technology from the wireless resource schedule;

means for employing the data processor to reserve a subset of the wireless resources of the wireless network for control or reference signals of a second wireless access technology; and

means for employing a wireless transmitter to send a resource scheduling for the control or reference signals to access terminals configured for the second wireless access technology.

32. At least one processor configured to facilitate wireless communication for multiple wireless access technologies, comprising:

a first module that identifies wireless signal resources of a wireless network employed by a baseline wireless access technology;

a second module that reserves a subset of the wireless signal resources for control or reference signals of a second wireless access technology; and

a third module that sends a resource scheduling for the control or reference signals to access terminals configured for the second wireless access technology.

33. A computer program product, comprising:

a computer-readable medium, comprising:

a first set of codes for causing a computer to identify wireless signal resources of a wireless network employed by a baseline wireless access technology;

a second set of codes for causing the computer to reserve a subset of the wireless signal resources for control or reference signals of a second wireless access technology; and

a third set of codes for causing the computer to send a resource scheduling for the control or reference signals to access terminals configured for the second wireless access technology.

34. A method of wireless communication, comprising:

employing a wireless receiver to receive a resource scheduling policy directed toward a first wireless access technology;

obtaining a supplemental resource scheduling policy directed toward a second wireless access technology; and

employing a data processor to analyze the supplemental resource scheduling

policy and decode control or RS transmissions for the second wireless access technology as specified by the supplemental resource scheduling policy.

35. The method of claim 34, further comprising obtaining the supplemental resource scheduling policy in a unicast message, or on a SIB or control channel dedicated for the second wireless access technology.

36. The method of claim 34, further comprising obtaining the supplemental resource scheduling policy from a preconfigured setting stored in memory.

37. The method of claim 34, further comprising obtaining periodic or triggered updates to the supplemental resource scheduling policy and updating control or RS transmission decoding for the second wireless access technology accordingly.

38. The method of claim 34, further comprising generating an estimate of wireless conditions measured at the wireless receiver and submitting the estimate to a serving base station to trigger an update to the supplemental resource scheduling policy.

39. The method of claim 34, further comprising decoding data transmissions at least in part based on resources specified by the supplemental resource scheduling policy.

40. The method of claim 34, further comprising identifying control or RS assignments that at least partially interfere with data traffic scheduling and adjusting signal decoding to alleviate performance loss.

41. An apparatus that employs an advanced long term evolution (LTE-A) access technology in a wireless network that supports a long term evolution (LTE) access technology and the LTE-A access technology, comprising:

a wireless receiver that obtains and decodes a scheduling policy for the LTE access technology;

a memory that stores a set of modules configured for employing the LTE-A access technology of the wireless network; and

a data processor for executing the set of modules, the set comprising:

a parsing module that extracts an LTE-A scheduling policy from a scheduling message provided by the wireless network;

an analysis module that examines the LTE-A scheduling policy and identifies resource scheduling for LTE-A traffic pertaining to the apparatus.

42. The apparatus of claim 41, wherein the parsing module obtains the scheduling message in a unicast message sent by the wireless network to the apparatus, or on a SIB or control channel dedicated for LTE-A.

43. The apparatus of claim 41, wherein the parsing module obtains the LTE-A scheduling policy from a preconfigured memory setting.

44. The apparatus of claim 41, wherein the parsing module further obtains periodic or triggered updates to the LTE-A scheduling policy based on current network load or prevailing wireless conditions, and further wherein the data processor updates the LTE-A scheduling policy.

45. The apparatus of claim 41, wherein the LTE-A scheduling policy includes an assignment of LTE-A control or RS resources to at least one of:

every N subframes;

a series of different frequency subbands in different signal subframes containing LTE-A transmissions;

a series of different parts of a frequency subband; or

a distributed virtual resource block in at least one of the different signal subframes containing LTE-A transmissions.

46. The apparatus of claim 41, further comprising a sampling module that estimates wireless conditions at the wireless receiver and submits a wireless condition estimate to the wireless network to facilitate dynamic and adaptive LTE-A scheduling.

47. The apparatus of claim 41, further comprising a compensation module that identifies LTE-A control or RS transmissions that at least partially interfere with data traffic pertaining to the apparatus, and adjusts signal decoding to alleviate performance

loss.

48. An apparatus configured for wireless communication, comprising:

means for employing a wireless receiver to receive a resource scheduling policy directed toward a first wireless access technology;

means for obtaining a supplemental resource scheduling policy directed toward a second wireless access technology; and

means for employing a data processor to analyze the supplemental resource scheduling policy and decode control or RS transmissions for the second wireless access technology as specified by the supplemental resource scheduling policy.

49. At least one processor configured for wireless communication, comprising:

a first module that receives a resource scheduling policy directed toward a first wireless access technology;

a second module that obtains a supplemental resource scheduling policy directed toward a second wireless access technology; and

a third module that analyzes the supplemental resource scheduling policy and decodes control or RS transmissions for the second wireless access technology as specified by the supplemental resource scheduling policy.

50. A computer program product, comprising:

a computer-readable medium, comprising:

a first set of codes for causing a computer to receive a resource scheduling policy directed toward a first wireless access technology;

a second set of codes for causing the computer to obtain a supplemental resource scheduling policy directed toward a second wireless access technology; and

a third set of codes for causing the computer to analyze the supplemental resource scheduling policy and decode control or RS transmissions for the second wireless access technology as specified by the supplemental resource scheduling policy.

CLAIMS

1. A method for wireless communication, comprising:

determining whether to map a shared data channel to a time-frequency resource element, the mapping determination being based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology;

transmitting the shared data channel based at least in part on the mapping determination; and

transmitting a reference signal (RS) in the time-frequency resource element.

2. The method of claim **1**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

the method further comprising not mapping the PDSCH to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

3. The method of claim **1**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

the method further comprising mapping the PDSCH to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency resource element carries the RS.

4. The method of claim **1**, further comprising mitigating performance loss of a user equipment (UE) configured for the legacy wireless technology by at least one of:

increasing a transmit power of the shared data channel;

modifying a rate control of the UE;

scheduling the UE based on the mapping determination; or

reducing a duty cycle of the RS.

5. The method of claim **1**, wherein the legacy wireless technology includes Long Term Evolution (LTE) and the advanced wireless technology includes LTE-Advanced (LTE-A).

6. The method of claim **1**, further comprising mapping the shared data channel to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

7. An apparatus for wireless communication, comprising:

means for determining whether to map a shared data channel to a time-frequency resource element, the mapping determination being based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology;

means for transmitting the shared data channel based at least in part on the mapping determination; and

means for transmitting a reference signal (RS) in the time-frequency resource element.

8. The apparatus of claim **7**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

9. The apparatus of claim **7**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

wherein the PDSCH is mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency resource element carries the RS.

10. The apparatus of claim **7**, further comprising means for mitigating performance loss of a user equipment (UE) configured for the legacy wireless technology by at least one of:

means or increasing a transmit power of the shared data channel;

means for modifying a rate control of the UE;

means for scheduling the UE based on the mapping determination; or

means for reducing a duty cycle of the RS.

11. The apparatus of claim **7**, further comprising means for mapping the shared data channel to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

12. An wireless communication apparatus, comprising:

determining whether to map a shared data channel to a time-frequency resource element, the mapping determination being based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology;

transmitting the shared data channel based at least in part on the mapping determination; and

transmitting a reference signal (RS) in the time-frequency resource element.

13. The apparatus of claim **7**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

wherein the at least one processor is further configured to map the PDSCH to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

14. The apparatus of claim **7**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

wherein the at least one processor is further configured to map the PDSCH to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency resource element carries the RS.

15. The wireless communication apparatus of claim **12**, wherein the at least one processor is further configured to mitigate performance loss of a user equipment (UE) configured for the legacy wireless technology by at least one of:

increasing a transmit power of the shared data channel;

modifying a rate control of the UE;

scheduling the UE based on the determining; or

reducing a duty cycle of the RS.

16. The wireless communication apparatus of claim **12**, wherein the at least one processor is further configured to map the shared data channel to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

17. A computer program product for wireless communication, comprising:

a non-transitory computer-readable medium, comprising:

code for causing at least one computer to determine whether to map a shared data channel to a time-frequency resource element, the mapping determination

being based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology;

code for causing the at least one computer to transmit the shared data channel based at least in part on the mapping determination; and

code for causing the at least one computer to transmit a reference signal (RS) in the time-frequency resource element.

18. The computer program product of claim **17**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

19. The computer program product of claim **17**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency resource element carries the RS.

20. The computer program product of claim **17**, wherein the non-transitory computer-readable medium further includes code for causing the at least one computer to map the shared data channel to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

21. A method for wireless communication, comprising:

receiving a shared data channel, wherein a mapping of the shared data channel to a time-frequency resource element is based at least in part on whether the shared data

channel is associated with one of a legacy wireless technology and an advanced wireless technology; and

receiving a reference signal (RS) in the time-frequency resource element.

22. The method of claim **21**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

23. The method of claim **21**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

wherein the PDSCH is mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency one resource element carries the RS.

24. The method of claim **21**, wherein the shared data channel is mapped to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

25. The method of claim **21**, wherein the legacy wireless technology includes Long Term Evolution (LTE) and the advanced wireless technology includes LTE-Advanced (LTE-A).

26. An apparatus for wireless communication, comprising:

means for receiving a shared data channel, wherein a mapping of the shared data channel to a time-frequency resource element is based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology; and

means for receiving a reference signal (RS) in the time-frequency resource element.

27. The apparatus of claim **26**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

28. The apparatus of claim **26**, wherein the shared data channel is a physical downlink shared channel (PDSCH); wherein the PDSCH is mapped to the at least one resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and wherein the time-frequency resource element carries the RS.

29. A wireless communication apparatus, comprising:

at least one processor configured to:

receive a shared data channel, wherein a mapping of the shared data channel to at least one resource element is based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology, and

receive a reference signal (RS) in the at least one resource element; and

a memory coupled to the at least one processor.

30. The wireless communication apparatus of claim **29**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

wherein the PDSCH is not mapped to the at least one resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

31. The wireless communication apparatus of claim **29**, wherein the shared data channel is a physical downlink shared channel (PDSCH);

wherein the PDSCH is mapped to the at least one resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the at least one resource element carries the RS.

32. The wireless communication apparatus of claim **29**, wherein the shared data channel is mapped to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

33. A computer program product, comprising:

a non-transitory computer-readable medium, comprising:

code for causing at least one computer to receive a shared data channel, wherein a mapping of the shared data channel to a time-frequency resource element is based at least in part on whether the shared data channel is associated with one of a legacy wireless technology and an advanced wireless technology, and

code for causing the at least one computer to receive a reference signal (RS) in the time-frequency resource element.

34. The computer program product of claim **33**, wherein the shared data channel is a physical downlink shared channel (PDSCH); and

wherein the PDSCH is not mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the advance wireless technology.

35. The computer program product of claim **33**, wherein the shared data channel is a physical downlink shared channel (PDSCH); wherein the PDSCH is mapped to the time-frequency resource element if the PDSCH is for a user equipment (UE) configured for the legacy wireless technology; and

wherein the time-frequency resource element carries the RS.

36. The computer program product of claim **33**, wherein the shared data channel is mapped to one or more resource elements that are non-overlapping with the at least one resource element used for the RS.

37. The computer program product of claim **33**, wherein the legacy wireless technology includes Long Term Evolution (LTE) and the advanced wireless technology includes LTE-Advanced (LTE-A).