CLAIMS:

~~1. A method of communicating information from a sensor concerning a received signal, comprising:~~

~~(a) responsive to receiving by at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,~~

~~sending from the at least one detecting sensor an assistance information corresponding to the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, to at least one non-detecting sensor,~~

~~wherein the assistance information is capable of being utilized by the at least one non-detecting sensor to perform an action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.~~

~~2. A method of performing an action associated with a received signal, comprising:~~

~~(a) receiving by at least one non-detecting sensor, an assistance information from at least one detecting sensor,~~

~~wherein the assistance information was sent by the at least one detecting sensor, responsive to receiving by the at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,~~

~~wherein the assistance information corresponds to the at least one detected emitted signal to at least one non-detecting sensor during the defined time interval; and~~

(b) performing the action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

3. A non-transitory program storage device readable by a computer tangibly embodying computer readable instructions executable by the computer to perform a method of communicating information from a sensor concerning a received signal; the method comprising:

(a) responsive to receiving by at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,

sending from the at least one detecting sensor an assistance information corresponding to the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, to at least one non-detecting sensor,

wherein the assistance information is capable of being utilized by the at least one non-detecting sensor to perform an action with respect to data indicative of an entire data of a frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

4. A non-transitory program storage device readable by a computer tangibly embodying computer readable instructions executable by the computer to perform a method of performing an action associated with a received signal; the method comprising:

(a) receiving by at least one non-detecting sensor, an assistance information from at least one detecting sensor,

wherein the assistance information was sent by the at least one detecting sensor, responsive to receiving by the at least one detecting sensor, during a defined

~~time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,~~

~~wherein the assistance information corresponds to the at least one detected emitted signal to at least one non-detecting sensor during the defined time interval; and~~

~~(b) performing the action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.~~

~~5.~~1. A system capable of communicating information concerning a received signal, comprising: a sensor, the sensor comprising a processing circuitry and configured to:

(a) responsive to receiving by at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,

send from the at least one detecting sensor assistance information corresponding to the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, to at least one non-detecting sensor,

wherein the assistance information is capable of being utilized by the at least one non-detecting sensor to perform an action with respect to data indicative of an entire data of a frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~6.~~2. The system of ~~C~~claim 1~~5~~, wherein the assistance information does not comprise the entire data of the frequency band received by the at least one detecting sensor during the defined time interval.

~~7.~~3. The system of ~~any one of C~~claims 1~~5 and 6~~, wherein the assistance information comprises at least one instruction for saving of data received by the at least one non-detecting sensor during the corresponding defined time interval, indicative of the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, and
wherein performing the action comprises: said saving of data, and sending at least a portion of the saved data to a system center when communication to the system center is available.

~~8.~~4. The system of ~~any one of C~~claims 1~~5 and 6~~, wherein performing the action comprises extracting, from the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor during the corresponding defined time interval, data indicative of the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~9.~~5. The system of claim 4~~8~~, wherein the assistance information comprises data indicative of an entire received data sample at the at least one detecting sensor corresponding to the at least one emitted signal detected by the at least one detecting sensor.

~~10.~~6. The system of claim 5~~9~~, wherein the data indicative of the entire received data sample comprises data indicative of an entire received data sample at the at least one detecting sensor corresponding to at least one frequency of the at least one detected emitted signal.

~~11.~~7. The system of ~~any one of~~ claims 5~~9 and 10~~, wherein the data indicative of the entire received data sample comprises data indicative of an entire

received data sample at the at least one detecting sensor corresponding to sample times of the at least one detected emitted signal.

~~12. The system of any of claims 8 to 11, the system further configured to:~~

~~prior to performing step (a), perform the following:~~

~~(b) responsive to receiving by the at least one detecting sensor, during a defined time interval, data indicative of the entire data of the frequency band received by the at least one detecting sensor during the defined time interval, the entire data comprising the at least one signal emitted by the at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,~~

~~sending by the at least one detecting sensor, during the defined time interval, to at least one of other sensors in a selected sensor group, first information indicative of the at least one detected emitted signal, wherein the first information is indicative of the Signal to Noise Ratio (SNR) of the at least one detected emitted signal; and~~

~~(c) responsive to receiving first information from the at least one of other sensors in the selected sensor group, indicative of detection of the at least one detected emitted signal by the at least one of other sensors,~~

~~determining which assistance information, if any, should be sent to each one of at least one of other sensors in the selected sensor group.~~

~~13. The system of Claim 12, wherein step (c) further comprises: responsive to the detecting sensor receiving the at least one detected emitted signal at a highest Signal to Noise Ratio, determining that step (a) should be performed in respect of each sensor in the selected sensor group that did not send first information indicative of detection of the at least one detected emitted signal, said each sensor constituting at least one non-detecting sensor.~~

~~14. The system of any one of Claims 12 or 13, wherein the first information sent by at least one detecting sensor to at least one of other sensors comprises a pulse parameters set.~~

~~15.~~8. The system of ~~any one of~~ claims 15 ~~to 14~~, wherein a required communication bandwidth for the assistance information is substantially smaller than a communication bandwidth required when sending the entire data of a frequency band received by the at least one detecting sensor during the defined time interval.

~~16. The system of Claim 15, wherein the required communication bandwidth for the assistance information is less than 10 percent of that required when sending the entire data of a frequency band received by the at least one detecting sensor during the defined time interval.~~

~~17. The system of any one of claims 5 to 16, wherein the at least one signal emitted by at least one emitter is a non-coherent signal.~~

~~18.~~9. The system of ~~C~~claim 48, wherein the assistance information comprises at least one set of parameter values corresponding to the least one detected emitted signal, wherein said extracting data indicative of at the least one emitted signal comprises determining at least a Time of Arrival (TOA) value of the at least one emitted signal at the at least one non-detecting sensor, said at least the Time of Arrival of the at least one emitted signal constituting data indicative of at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~19. The system of Claim 18, wherein the at least one set of parameter values comprises at least: emitter frequency, a pulse width (PW), at least one Time of Arrival corresponding to the least one detected emitted signal, a Pulse Repetition Interval (PRI) and a number of pulses.~~

~~20. The system of any one of Claims 18 to 19, wherein the size of the at least one parameter set for one emitter and for one dwell is less than 1000 bits.~~

~~21. The system of any one of claims 18 to 20, wherein the at least one signal emitted by at least one emitter is a coherent signal.~~

~~22.~~10. The system of ~~any one of C~~claims ~~15 to 21~~, -wherein the sending of the assistance information from the at least one detecting sensor comprises at least one of: sending directly from the detecting sensor to the non-detecting sensor, relaying via at least one other sensor, and relaying via at least one system center.

11. The system of ~~any one of C~~claims ~~15 to 22~~, wherein at least one of the following is met:

~~23.~~ i) the at least one detecting sensor and at least one non-detecting sensor are comprised in at least one of an airborne vehicle, a balloon, a space-borne vehicle, a ground station, a ground vehicle, and a water-borne vehicle~~.~~;

~~24. The system of any one of Claims 5 to 23, wherein~~ ii) the at least one system center is comprised in at least one of airborne vehicle, a balloon, a space-borne vehicle, a ground station, a ground vehicle, and a water-borne vehicle~~.~~;

~~25. The system of any one of Claims 5 to 24, wherein~~ iii) the at least one emitter is one of ~~:~~ a radio transmitter equipment, a radar, and ~~-~~a communication system.

~~26. The system of any one of Claims 5 to 25, wherein the action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval may be utilized for calculating a location of the at least one emitter.~~

~~27.~~12. The system of ~~any one of C~~claims ~~15 to 26~~, wherein said step (a) is further performed for at least a next defined time interval.

~~28.~~13. A –system capable of performing an action associated with a received signal, comprising: a sensor, the sensor comprising a processing circuitry and configured to:

(a) receive by at least one non-detecting sensor, an assistance information from at least one detecting sensor,

wherein the assistance information was sent by the at least one detecting sensor, responsive to receiving by the at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,

wherein the assistance information corresponds to the at least one detected emitted signal to the at least one detecting sensor during the defined time interval; and

(b) perform the action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~**29.** The system of Claim 28, wherein the assistance information does not comprise the entire data of the frequency band received by the at least one detecting sensor during the defined time interval.~~

~~30.~~14. The system of ~~any one of C~~claims 13~~28 and 29~~, wherein the assistance information comprises at least one instruction for saving of data received by the at least one non-detecting sensor during the corresponding defined time interval, indicative of the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, and

wherein performing the action comprises: said saving of data, and sending at least a portion of the saved data to a system center when communication to the system center is available.

~~31.~~15. The system of any one of ~~C~~claims 13~~28 and 29~~, wherein performing the action comprises extracting, from the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor during the

corresponding defined time interval, data indicative of the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~32.~~16. The system of claim 15~~31~~, wherein the assistance information comprises data indicative of an entire received data sample at the at least one detecting sensor corresponding to the at least one emitted signal detected by the at least one detecting sensor.

~~33. The system of any one of Claims 31 to 32, wherein said extracting data indicative of the at least one emitted signal comprises calculating difference data, based on the data indicative of the entire received data sample at the at least one detecting sensor corresponding to the at least one detected emitted signal, and on the data indicative of the entire data of the frequency band received by the at least one non-detecting sensor during the corresponding defined time interval, said difference data constituting data indicative of the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.~~

~~34.~~17. The system of ~~C~~claim 15~~31~~, wherein the assistance information comprises at least one set of parameter values corresponding to the least one detected emitted signal, wherein said extracting data indicative of the at least one emitted signal comprises determining at least a Time of Arrival (TOA) value of the at least one emitted signal at the at least one non-detecting sensor, said at least the Time of Arrival of the at least one emitted signal constituting data indicative of at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.

~~35. The system of claim 34, wherein said determining at least the Time of Arrival value comprises performing actions to filter out noise in the data indicative of an entire data of a frequency band received by the at least one non-detecting sensor, thereby detecting the emitted signal, wherein the actions to filter out noise comprise integrating a portion of the data indicative of an entire data of a frequency band that corresponds to at least one emitter frequency and wherein the~~

~~portion of the data corresponds to time intervals corresponding to the at least one detected emitted signal.~~

~~**36.** The system of claim 35, wherein said actions to filter out noise comprise:~~

~~i) performing at least one first integration, of the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor during the corresponding defined time interval, said first integration based on a first integration time interval and on the at least one emitter frequency, thereby creating first data points, wherein the first integration time interval corresponds to a defined percentage of the Pulse Width; and~~

~~ii) determining whether the first data points comprise the data indicative of at least one emitted signal received by the at least one non-detecting sensor.~~

~~**37.** The system of claim 36, the system further configured to:~~

~~iii) in response to determining that the first data points do not comprise the data indicative of at least one emitted signal, perform a second integration, of data indicative of the first data points, based on a second integration time interval, and on the at least one emitter frequency, thereby creating second data points, wherein the second integration time interval corresponds to the Pulse Repetition Interval; and~~

~~iv) determine that the second data points comprise the data indicative of at least one emitted signal received by the at least one non-detecting sensor.~~

~~**38.** The system of claim 37, wherein the second integration time interval is based on the Pulse Repetition Interval (PRI).~~

~~**39.** The system of claim 38, wherein the second integration time interval is equal to the Pulse Repetition Interval (PRI).~~

~~**40.** The system of any one of claims 37 to 39, wherein the second integration is one of a Fourier Transform, a Discrete Fourier Transform and a Fast Fourier Transform.~~

41. The system of any one of claims 36 to 40, wherein the first integration time interval is equal to PW/2.

42. The system of any one of claims 36 to 41, wherein the first integration is one of a Fourier Transform, a Discrete Fourier Transform, a Fast Fourier Transform and a Finite Impulse Response (FIR).

43. The system of any one of claims 37 to 42, the system further configured to:

(v) set the second integration time interval to be equal to Pulse Width,

(vi) select, from the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor, a portion of the data which corresponds to a time that is within a second time interval before at least one Time of Arrival of the at least one emitted signal at the at least one non-detecting sensor, and a third time interval after the at least one Time of Arrival, constituting data indicative of the entire data of a frequency band received by the at least one non-detecting sensor during the corresponding defined time interval;

(vii) perform at least one modified first integration, of the portion of the data, said first integration based on a first integration time interval and on at least one emitter frequency, thereby creating modified first data points, wherein the first integration time interval corresponds to the Pulse Width, wherein first integrations are performed separately in respect of each of the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor, wherein the modified first data points constitute first data points; and

(viii) repeat steps (iii) and (iv),

thereby determining a second Time of Arrival value of the at least one emitted signal.

44. The system of claim 43, wherein the second Time of Arrival value is more accurate than the Time of Arrival value.

~~45. The system of any one of claims 34 to 44 wherein the at least one signal emitted by at least one emitter is a coherent signal.~~

~~46.~~18. The system of ~~any of~~ claims 15~~31 to 45~~, wherein the extracting of the data indicative of the at least one emitted signal by the at least one non-detecting sensor can be performed without the at least one non-detecting sensor being required to buffer data samples until communication to the system center is available.

~~47. The system of any one of Claims 28 to 46, wherein the data indicative of the entire data of a frequency band received by the at least one non-detecting sensor comprises the entire data of a frequency band received by the at least one non-detecting sensor.~~

~~48. The system of any one of Claims 28 to 47, wherein the action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval may be utilized for calculating a location of the at least one emitter.~~

~~49.~~19. The system of ~~any one of C~~claims 13~~28 to 48~~, wherein step (a) is further performed for at least a next defined time interval.

~~50.~~20. A –system capable of performing an action associated with a received signal, comprising: a sensor, the sensor comprising a processing circuitry and configured to:

(a) ~~responsive to receiving by at least one detecting sensor, during a defined time interval, data indicative of an entire~~ responsive to receiving by at least one detecting sensor, during a defined time interval, data indicative of an entire data of a frequency band received by the at least one detecting sensor during the defined time interval, comprising at least one signal emitted by at least one emitter, and to detecting of the at least one emitted signal by the at least one detecting sensor,

sending from the at least one detecting sensor assistance information corresponding to the at least one emitted signal detected by the at least one detecting sensor during the defined time interval, to at least one system center,

wherein the assistance information is capable of being utilized by the at least one system center to send second assistance information to at least one non-detecting sensor,

wherein the second assistance information is capable of being utilized by the at least one non-detecting sensor to perform an action with respect to data indicative of an entire data of the frequency band received by the at least one non-detecting sensor during a corresponding defined time interval, the action corresponding to the at least one emitted signal received by the at least one non-detecting sensor during the corresponding defined time interval.