IEEE 802 LAN/MAN STANDARDS COMMITTEE (LMSC)

CRITERIA FOR STANDARDS DEVELOPMENT (CSD) For Proposed Project 802.15.4r

Based on IEEE 802 LMSC Operations Manuals approved 15 November 2013

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# IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

## Project process requirements

### Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

1. The definitions will be part of this project.

YES

1. The definitions will be part of a different project and provide the plan for that project or anticipated future project.
2. The definitions will not be developed and explain why such definitions are not needed.

### Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

1. Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) **YES**
2. If not, explain why the CA document is not applicable.

## 5C requirements

### Broad market potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

1. Broad sets of applicability.

802.15.4 is a widely used standard in a wide variety of applications today such as including internet of things, home area networks, smart grid networks, industrial and control networks, and wireless sensor networks where a standardized approach to ranging and location awareness will further expand the value of the standard. This amendement builds on the current standard and will extend the existing capabilities, which will expand the potential markets further.

1. Multiple vendors and numerous users

There are many silicon and system vendors producing systems based on 802.15.4 capable of implementing the technologies and techniques expected to be included in this amendment.

### Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

1. Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?

No, the proposed standard is an amendment or revision to an existing

standard for which it has been previously determined that compliance

with the above IEEE 802 standards is not possible.

1. If the answer to a) is no, supply the response from the IEEE 802.1 WG.
The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

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### Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

This amendment builds on the existing capabilities of 802.15.4 and extends the PHY and MAC enabling a wider set of interoperable radio based distance measurements techniques. No other 802 standard addresses extended scope of radio based distance measurement technologies in the wider context of communication centric PHY’s and related the control and exchange of range related information at MAC level.

### Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

1. Demonstrated system feasibility:
The ability to combine data communication and radio based distance measurements has been proven based on individual implementations (amongst others 802.15.4a). The intent is to extend the capabilities of PHY and MAC and enable alternative techniques to achieve the objective.
2. Proven similar technology via testing, modeling, simulation, etc.

The MAC and PHYs defined by 802.15.4 are proven technology with implementations available globally from many vendors. This amendment can be realized using similar implementation techniques.

### Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

1. Balanced costs (infrastructure versus attached stations)
The objective of this project is to enable scalable solutions, which allow to shift complexity between infrastructure and attached stations depending on the need of the final application. There will be different cases for fixed infrastructure configurations with stations attached (e.g building automation, production control, livestock management,…) as well as ad-hoc self-configurable meshed networks with the related capabilities (e.g. firefighter moving in an unknown territory,…)
2. Known cost factors

Location Awareness has become a key requirement in many new applications and services. There is high interest in extending the capabilities of geo-positioning from outdoor to indoor applications. One main driver for the combination of data communication with radio based measurement techniques is to reduce overall system cost, which come with the integration of additional capabilities serving the same purpose (ultra-sonic, laser based distance measurements, inertial sensing, …)

1. Consideration of installation costs.
One of this proposed amendment’s objectives includes reduction in cost of installation and maintenance with minimal to no operator intervention.
2. Consideration of operational costs (e.g., energy consumption).
Based on test results, prototype, and production solutions, the estimates meet expected size, cost, and power requirements thereby reducing the effective cost of ownership for the target applications significantly.
3. Other areas, as appropriate.

This amendment will be implementable with similar technologies currently available 802.15.4 products. Enhancing ranging capabilities of the standard enables an improved level of location awareness, which will result in reduced deployment and installation costs. It is not expected the enhancements of this amendment will increase substantially energy consumption or other costs.