**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |
| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | SG3e Technical Guidance Document |
| Date Submitted | [January, 2015] |
| Source | Thomas Kürner | E-mail: t.kuerner@tu-bs.de |
| Re: |  |
| Abstract | SG3e System Requirements and Evaluation Criteria to be developed |
| Purpose | Supporting document for the development of the amendment 3e of IEEE 802.15.3 |
| Notice | This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15. |

|  |
| --- |
| **List of contributors** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Table of Contents

[1 Definitions: 4](#_Toc408826416)

[2 General Guidelines [1] 4](#_Toc408826417)

[3 Introduction 7](#_Toc408826418)

[4 Applications 7](#_Toc408826419)

[5 Technical Requirements 7](#_Toc408826420)

[6 Evaluation Criteria 7](#_Toc408826421)

[7 References 7](#_Toc408826422)

# Definitions:

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# General Guidelines [1]

This technical guidelines document (TGD) describes the technical aspects that SG3e (High-Rate Close Proximity HRCP) standard must fulfill, such as performance-related issues, reliability issues and availability issues. These types of requirements are often called quality of service (QoS) requirements; other requirements are usually maintenance-level requirements or external constraints, sometimes called compliance. Technical requirements are summarized as any other specifications; they have a name and a unique identifier. Technical requirements are documented in the same manner as any specifications, including a description, an example, a source or references to related technical requirements and a revision history.

SG3e needs to effectively define and manage requirements to ensure they are meeting needs of the applications, while proving compliance.

Ideally, requirements are:

• Correct (technically and legally possible)

• Complete (express a whole idea or statement)

• Clear (unambiguous and not confusing)

• Consistent (not in conflict with other requirements)

• Verifiable (it can be determined that the system meets the requirement)

• Traceable (uniquely identified and trackable)

• Feasible (can be accomplished within cost and schedule)

• Modular (can be changed without excessive impact)

• Design-independent (does not pose a specific solution on design)

Each requirement must first form a complete sentence, containing a subject and a predicate. These sentences must consistently use the verb “shall”, “will” or “must” to show the requirement's mandatory nature, and “should” or “may” to show that the requirement is optional. The whole requirement specifies a desired end goal or result and contains a success criterion or other measurable indication of the quality.

The TGD needs to capture these levels of user requirements, maintaining intelligent traceability and change impact analysis between them.

Typical constraint requirements can specify:

• Performance

• Interfaces

• Security

• Safety

• Reliability

• Availability

• Maintainability

An efficient way of writing better requirements is to ensure they are clearly mapped to test cases. Making sure each requirement is clearly verifiable from the start, not only helps prepare later phases of the project, it also puts the developer in the correct state of mind. Requirements and their associated tests must also indicate what the system should not do, and what happens at the limits (degraded mode).

This rule also applies for compliance requirements: indicating how they shall be tested is a good way to write better requirements.

The TGD need to implement a reliable and repeatable change control process that helps turn this challenge into an opportunity.

By providing examples and counter-examples of good requirements and documents, IEEE can enhance the quality, consistency, and completeness of the requirements. These can originally be templates, industry standards and rules inside a repository, such as the IEEE server.

Requirement typical sentence construction

Defects to avoid:

* Vagueness
* Weakness
* Over specification
* Subjectivity
* Multiplicity
* Unclear meaning
* Implicit meaning

Some words to be used with caution:

“adequate”, “applicable”, “appropriate”, “approximate”, “bad”, “best practice”, “between”, “clearly”, “compatible”, “completely”, “consider”, “could”, “down to”, “easy/easily”, “effective”, “efficient”, “equivalent”, “excellent”, “good”, “his/her”, “however”, “ideal”, “etc”, “in order to”, “include but shall not be limited to”, “least”, “like”, “low”, “maximise”, “may”, “most”, “minimum/mal”, “must”, “nearly”, “necessary”, “needed”, “normal”, “or”, “possible/bly“, “practicable”, “provide”, “quality”, “readily”, “relevant”, “safe/ly“, “same”, “should”, “significant”, “similar”, “so as”, “subject to”, “substantial”, “sufficient”, “suitable”, “support”, “target”, “typical”, “up to”, “user friendly”, “whether”, “will”, “with”, “worse”.

# Introduction

This document provides the technical contents of the project to develop the amendment 3e to IEEE 802.15.3 to enable [to be filled in] according to the PAR and CSD of this project [ref. to PAR and CSD]. This document will provide guidance on how to respond to a call for proposals.

# Applications

[a short paragraph to the relevant sections in the TG3d ARD]

## Kiosk downloading

## Toll gates

## Wireless data storage

# Technical Requirements

[fill in, what is expected form the proposals. What should the proposals define, specify, etc.?]

## Functional Requirements

### Discovery (or Peer Recognition)

### Association

### QoS

### Security

### Power Management

## Performance Requirements

### Spectral efficiency

### Data rate

### Error rate

### Latency

# Regulations

# Evaluation Criteria

[fill in, how the proposals will be evaluated wrt to the fulfillment of the requirements defined in section 4]

# References

[1] TG6 Technical Requirements Document IEEE 802. 15-08-0644-08-0006