# Minutes of 18 Nov 2001 Meeting

of the IEEE P1016 Working Group

## "Internal PAR"

The group began with discussion of the PAR (which has been approved) to discuss any needed changes.

Clarify harmonization with SWEBOK and 12207? No changes needed at this time.

Organization: Check availability of David Emery for liaison work.

Process standard v. Notation Standard: reaffirmed design-as-product is WG focus.

## Working Group Project Plan

The project plan was approved with a proviso that the comments of the Management Board be incorporated into current version:

Norm Schneidewind raised issue of whether design patterns would be addressed in P1016. WG resolved the scope of the notion design entities includes design patterns and frameworks, etc. (This is analogous to scope of notion "system" in IEEE 1471.)

David Schultz raised concern that industry practice is not mature enough to develop a standard. **Basil**: Dr Lawrence's expectation is that we do a standard. It is up to the group. If we find we can't get consensus for a standard, then we'll change the PAR at that point.

**Dr J**: There may be development efforts that don't adopt a model, they may be outside [of use of] the standard.

Working Group organization: leave as is, loose for now.

Project Schedule was accepted. We will deliver first "publiic" draft by end of first quarter 2002 (30 March).

There are two conference presentations in the schedule as milestones. **RH**: What's the goal? And when should they be?

**Basil**: Purpose is to present at a conference at that point is to show an audience that we have something Announce ourselves, solicit reviewers, get some feedback on draft, and feedback on 1016–1998.

**RH**: A workshop in conjunction with a conference would be more effective than a paper presentation.

**Action: RH will look for appropriate venues for that time frame.**

**RH**: Do we have to do a design specification? And conduct a specification design review? Not in the project plan by design.

**Action: RH will keep detailed schedule.**

**Action: All should send inputs to RH for detailed schedule.**

## Proposed Baseline Documents

WG has a list of baseline documents for consultation in developing P1016. The list is kept current on the WG web site.

## Relationship to other Organizations

Loosely coupled for now.

Coordination by draft.

Sidebar: Video conferencing only 2-way with Net Meeting. Jason did some research into alternatives. Basil will propose a new solution to WG.

## Scope and Expectations

This discussion took place with reference to Dr J's slides, starting with slide 2, on Scope:

A. Vertical execution, satisfaction of IEEE standards' umbrella requirements in terms of scope.

Vertical compatibility high-level and low-level design (not to be confused with Architectural Design)

B. Horizontal Compatibility with 'phase based' IEEE Stds: 830, 1471 inputs, 1012 outputs.

**Dr J**: P1016  must be a perfect fit with—but not require—users of P1016 to use these other IEEE standards

We split C as it appears on the slide into C and D, as follows:

C. Base-level requirements on complying SDD

D. Meta capabilities: enabling evaluation of "compliant" language and notation standards.

These ideas belong in the Purpose and Introduction.

Types of Systems: no limitations (anything that can be dealt with by 12207)

Results of activities [list]: no limitations

**RH**: Should we limit scope of P1016 to design situations where there are existing requirements? Or also prototyping, spiral, iterative approaches? This has consequences for content: e.g., Is traceability in our scope or not? Yes

**Dr J**: We should restrict scope of P1016 to design situations where there is a model.

Other useful and doable things not limited to SDD [per old 1016]: Introduce notion of viewpoints to allow end users to define their own types of design views. **Dr J**: we can inherit stuff from IEEE 1471 and use for design.

## Criteria for Success

Feedback from public meetings, reviewers, early user group.

Usefulness of new 1016, specifically for stakeholders and public, including to various "notational communities." **Dr J**: If any notational piece can find its place in a standard, you can say that your standard is complete with respect to that community.

Completeness [closing the gap/expected scope in terms of IEEE SSS]:

- measure completeness of our standard with respect to what 12207 requires

Effectiveness [goodness of SDD in terms of usage/technical content]

Exactness of requirements, so that compliance can be determined

## Criteria for Compliance with P1016

Refer to Dr J's slide 3.

Notation/Language used for SDD must have:

1. Official Standard status [passed an open process of approval with professional peer review, assuring existing body of records of critical evaluation]

2. Formally/precisely defined semantics

**RH**: Industrial community may have trouble with this. A lot of people are allergic to words like "formal". Revised to:
- Precisely defined syntax and semantics
- Such as, via field-tested meta model or a verified formal mathematical model providing the basis for consistency, automation etc.
- For example IDEF0, IDEF1, UML, VDL, Z, SSADAM (BSI Std)
3. Publicly available documentation [for IV&V, Education and Training] available including:

Guidance for use with actual examples

Nice to have:

4. Published experimental data on usage [and benefits]

## Work Breakdown Structure

Discussion of revision to the planned table of contents to P1016. Following additions were made for P1016/D0.1:

1 Scope
2 References
3 Definitions
4. Considerations for producing an SDD
4.1 Software life cycle
4.2 SDD within the life cycle [in compliance with 12207/SWEBOK?]
4.3 Purpose of an SDD [in compliance with 12207/12207.1]
4.4 Required internal characteristics from an SDD…(normative) [compliant with 12207]
4.5 Required input output characteristics from an SDD (normative?)
5. Design description information content (normative)
5.1 Introduction
5.2 Design entities [TBD]
5.3 Design entity attributes [in compliance with 12207]
5.4 General requirements for Notation/Language [that shall be used within compliant SDD]
6. Design description organization (normative) [in compliance with 12207/12207.1]
6.1 Introduction
6.2 Design views [following 1471]
6.3 Design viewpoints [following 1471]
Annex A (Informative) Use of IEEE 1302.1 Functional Modeling Language in an SDD [?]
Annex B (Informative) Use of IEEE 1302.2 Conceptual Modeling Language in an SDD [Jovanovic]
Annex C (Informative) Use of the Unified Modeling Language in an SDD [Mrdalj]
Annex D (Informative) Use of ISO Z in an SDD [?]
Annex E (Informative) Use of the ISO Vienna Definition Language in an SDD [?]

**Action: Ira Sachs will draft D and E, possibly combining into a single formal methods annex.**

## Harmonization with IEEE 830

Types of requirements: functional and characteristics other than functional. Have to be carried out by design. Design should provide a solution that can be evaluated at highest level. Non functional requirements may only be traceable at the highest level, while functional may be traceability at all levels. Dr J and SM will prepare a tiny meta model of design elements and their relationships to connect to a meta model of requirements and to a meta model of V&V activities.

SDDs should be the same as the ones that 1012 expects to review.

Borrow from 1471 meta model.

**Action: SM, Dr J will capture meta models and distribute.**

Our design descriptions should point back to the 830 categories (functional, performance, design constraints, ...)

**Dr J**: What is status of 830? **Basil**: Revision is just started, they will be going to a standard, too.

## Harmonization with IEEE 12207

Compliance with 12207 incorporated into scope.

Notions (including products and activities) pertaining to "Architectural Design" in 12207 are included in 1016 as "High level Design" to separate them from "real" architecture.

## Harmonization with IEEE 1471 (RH)

There are potentially three areas of interaction of P1016 with 1471.

1. As inspiration: notions of view and viewpoint, its conceptual framework (i.e., its metamodel)

2. As conflict: both 1471-2000 and 1016-1998 attempt to address how to achieve compliance with 12207 with respect to the Software Architecture Document—are they both right?

3. As input to design: an architectural description (AD), if it exists, should be an input to design. How does this effect content of P1016?

## Harmonization with IEEE 1012 (JS)

**JS**: Is the IEEE std for design reviews part of the baseline documents?

**JS**: Is an Interface Description Document (IDD) within the scope of SDD? **Dr J**: Yes, it could be used for suppliers and acquirers. Also, interfaces as part of SDD content.

**Action: JS will track the completeness/continuity of 830–1016–1012, wrt content.**

**Action: JS will draft a position (via email) on design acceptance criteria and their role in P1016.**

**JS**: What is role of SDD in context of maintenance rather than new development?

**Basil**: We are supposed to look at component-based design. If we have components that already exist, we need to handle that case. Design recovery is also within the scope of P1016.

**Dr J**: This is all good, but not same as role in maintenance!

## Future Plans

After this meeting, draft P1016/D0.1 will be distributed to participants.

**Action: All inputs based on D0.1 should be sent to editor by 29 November.**

These inputs will be incorporated to make D0.2 for circulation to all participants by 3 December. Goal of 0.2 is to add first drafts of annexes for formal methods, UML, IDEFs, etc.

**Action: All review D0.2 by 14 December, comments to Editor.**

**Action: Participants meeting via videoconference around 16 December, to incorporate comments and make Go/No Go decision: Release draft reviewers.**

Next meeting is 20–21 January 2002, near Savannah, GA (at Georgia Southern University), hosted by **Dr J**

## Attendees

Basil Sherlund (Basil)

Vladan Jovanovic (Dr J)

Stevan Mrdalj (SM)

Rich Hilliard (RH)

Judy Speights (JS)