Workshop on ODP for Enterprise Computing (WODPEC 2004)

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Abstract

This Workshop aims at providing a discussion forum where researchers, practitioners and representatives of standardization bodies on these topics can meet and exchange experiences, problems and ideas related to the use of RM-ODP in the realm of Enterprise Distributed Computing, and explore together possible solutions and future work.

1. Introduction

As software technology becomes a core part of business enterprises in all market sectors, customers demand more flexible enterprise systems. This demand coincides with the increasing use of personal computers and digital assistants, the trend of IT organizations towards downsizing, and today's easy access to local and global communication networks, which together provide an excellent infrastructure for open distributed systems.

In response to these market needs, there has been a significant development in International Standards in software and system engineering in the last decade. In particular, the rapid growth of distributed processing has led to the adoption of the Reference Model of Open Distributed Processing (RM-ODP, [1] [2] [3] [4]). This Reference Model provides a co-ordinating framework for the standardisation of open distributed processing (ODP) and creates an architecture within which support of distribution, interworking, and portability can be integrated, together with a framework for the specification of ODP systems.

The RM-ODP is based on precise concepts derived from current distributed processing developments and, as far as possible, on the use of formal description techniques for specification of the architecture. RM-ODP has four fundamental elements: an object modelling approach to system specification; the specification of a system in terms of separate but interrelated viewpoint specifications; the definition of a system infrastructure providing distribution transparencies for system applications; and a framework for assessing system conformance.

Five years after its final adoption as an ITU-T Recommendation and ISO/IEC International Standard, the RM-ODP is increasingly relevant, because the size and complexity of current IT systems is challenging most of the current software engineering methods and tools. These tools were not conceived for use with large, open and distributed systems, which are precisely the systems that the RM-ODP addresses

The RM-ODP has already lead to some real experience and supporting systems, including both good and bad reports; a number of conformant products and implementations; some related developments through the Object Management Group and, of course, groups both of supporters and of detractors. The knowledge gained from these experiences, together with the fact that ISO has just launched a Study Group to consider the possible revision of the Reference Model (see [16]), provides an excellent opportunity for all parties involved in Enterprise Distributed Computing to meet and discuss the present state and future development of the RM-ODP and its related family of standards.

In this context, this Workshop aims at providing a discussion forum where researchers, practitioners and representatives of standardization bodies on these topics can meet and exchange experiences, problems and ideas related to the use of RM-ODP in the realm of Enterprise Distributed Computing, and explore together possible solutions and future work.

2. The Reference Model

In slightly more detail, the current components of the RM-ODP are as follows:

ITU-T Rec. X.901 | ISO/IEC 10746-1: Overview contains a motivational overview of ODP giving scoping, justification and explanation of key concepts, and an outline

of the ODP architecture. It contains explanatory material on how this Reference Model is to be interpreted and applied by its users, who may include standards writers and architects of ODP systems. It also contains a categorization of required areas of standardization expressed in terms of the reference points for conformance identified in ITU-T Recommendation X.903 | ISO/IEC 10746-3. This part is not normative.

ITU-T Rec. X.902 | ISO/IEC 10746-2: Foundations contains the definition of the concepts and analytical framework for normalized description of (arbitrary) distributed processing systems. This is only to a level of detail sufficient to support ITU-T Rec. X.903 | ISO/IEC 10746-3 and to establish requirements for new specification techniques. This part is normative.

ITU-T Rec. X.903 | ISO/IEC 10746-3: **Architecture** contains the specification of the required characteristics that qualify distributed processing as open. These are the constraints to which ODP standards must conform. It uses the descriptive techniques from ITU-T Rec. X.902 | ISO/IEC 10746-2. This part is normative.

ITU-T Rec. X.904 | ISO 10746-4: **Architectural semantics** contains a normalization of the ODP modeling concepts defined in ITU-T Rec. X.902 | ISO/IEC 10746-2 Clauses 8 and 9. The normalization is achieved by interpreting each concept in terms of the constructs of the different standardized formal descriptions.

3. The ISO review process

The ISO Study Group is concerned with requirements for revision of the Reference Model of Open Distributed Processing (RM-ODP). Its objective is the elicitation and analysis of requirements for the revision of the RM-ODP, and the preparation of a set of recommendations to ISO/IEC JTC1/SC7 about the actions, if any, that are required.

The RM-ODP is the mature result of a large amount of technical effort, consequently the Study Group is not expected to propose major restructuring or change, but to correct errors and take account of recent developments in the industry, so as to maintain the broad scope of the standard. However, if it becomes apparent during the study that there is merit in considering the standardization of alternative frameworks based on different structuring principles, the Study Group may recommend the establishment of new projects to that effect. In proposing any update to the RM-ODP, the group will take into account the need to remain consistent with existing standards based on it, such as the Enterprise Language [6], the ODP Trader [10] [11], the Naming Framework [5] and the standard for Interface References and Binding [8].

The Study Group will prepare a report to present to the SC7 Plenary in May 2005. The report will document requirements submitted and the actions proposed on them. Recommendations on actions may include:

a) Proposing technical corrigenda to the existing standard;

b) Proposing one (or more) new projects for the revision of the current standard;

c) Proposing one (or more) projects for the standardization, or mapping, of alternative frameworks.

The approach of the Study Group can be summarized as follows:

a) A dissemination activity, where the existence and mandate of this Study Group will be publicized to as wide an audience as possible;

b) A contribution activity, where submissions clearly identifying the requirements, the rationale, and the proposed revisions are made;

c) A collection activity, where requirements will be elicited, generated and collected.

d) An analysis activity, where requirements will be analyzed, classified and prioritized

e) A planning activity, where the rationale for action is established and concrete steps proposed.

4. Workshop organisation

The Workshop is expected to have four main sessions:

- Session 1: Introduction.

- Session 2: RM-ODP basics

- Session 3: Tools and Applications

- Session 4: Workshop conclusions

The Introductory session will present the schedule, contents and objective of the Workshop, and will also serve to introduce the participants of the Workshop.

"RM-ODP basics" will cover the (4) papers that address general issues of the RM-ODP:

1. "Semantic interoperability: using RM-ODP to bridge communication gaps between stakeholders." H.Kilov.

2. "What Foundations does the RM-ODP Need?" P. Linington.

3. "Action Templates and Causalities in the ODP Computational Viewpoint." R. Romero and A. Vallecillo.

4. "The role of the RM-ODP Computational Viewpoint Concepts in the MDA approach." J.P. Almeida, M. van Sinderen and L. Ferreira Pires.

"Tools and Applications" will cover the (5) papers that deal with applications of the RM-ODP, tool support for it, and its relationship with MDA:

1. "Applying Model-Driven Development to Business Systems using RM-ODP and EDOC" Y. Nagase, D. Hashimoto and M. Sato

2. "Architecting frameworks for specific applications with RM-ODP." A.P. Gonçalves Serra, S.A. Vicente, D. Karam Jr and M. Martucci Jr.

3. "A Model-Driven Approach for Information System Migration." R. Le Delliou, N. Ploquin, M. Belaunde, R. Bendraou and L. Féraud.

4. "Challenges for ODP-based infrastructure for managing dynamic B2B networks." Lea Kutvonen.

5. "Proposal for a Model Driven Approach to Creating a Tool to Support the RM-ODP." D. Akehurst.

These two main sessions will share a common structure, with each of the presentations followed directly by questions for clarification, and the session concluded by a general wrap-up discussion. The items to be identified during the presentations of the papers and the wrap-up discussion at the end of each session could include the following:

- Issues, limitations, and current problems of RM-ODP

- Requirements for modifications, enhancements, and developments of RM-ODP

- Issues for the Study Group

- Identification of future work e.g., tools, etc.

The last part ("Conclusions") will try to identify the results from the Workshop. The idea is that this part not only concludes the Workshop, but also is used to write down the final issues that the Study Group may undertake, and to outline future work, useful tools that may be developed, etc. The intention is that WODPEC participants should take something away with them after the Workshop, namely some agreed ideas, work to do, etc.

References

[1] ITU-T Recommendation X.901 | ISO/IEC IS 10746-1, *Information technology - Open Distributed Processing – Reference Model: Overview*, 1996.

[2] ITU-T Recommendation X.902 | ISO/IEC IS 10746-2, *Information technology - Open Distributed Processing – Reference Model: Foundations*, 1996.

[3] ITU-T Recommendation X.903 | ISO/IEC IS 10746-3, *Information technology - Open Distributed Processing – Reference Model: Architecture*, 1996.

[4] ITU-T Recommendation X.904 | ISO/IEC IS 10746-4, *Information technology - Open Distributed Processing – Reference Model: Architectural Semantics*, 1996.

[5] ITU-T Recommendation X.910 | ISO/IEC 14771, *Information technology - Open Distributed Processing - Naming framework*, 1998.

[6] ITU-T Recommendation X.911 | ISO/IEC 15414, *Information technology - Open Distributed Processing-Enterprise Language*, 2001.

[7] ITU-T Recommendation X.920 | ISO/IEC 14750, *Information technology - Open Distributed Processing - Interface Definition Language*, 1997.

[8] ITU-T Recommendation X.930 | ISO/IEC 14753, *Information technology - Open Distributed Processing - Interface references and binding*, 1998.

[9] ITU-T Recommendation X.931 | ISO/IEC 14752, *Information technology - Open Distributed Processing - Protocol support for computational interactions*, 1999.

[10] ITU-T Recommendation X.950 | ISO/IEC 13235-1, *Information technology - Open Distributed Processing - Trading Function: Specification*, 1997.

[11] ITU-T Recommendation X.952 | ISO/IEC 13235-3, *Information technology - Open Distributed Processing - Trading Function: Provision of trading function using OSI Directory service*, 1997.

[12] ITU-T Recommendation X.960 | ISO/IEC 14769. *Information technology - Open Distributed Processing - Type repository function*, 1999.

[13] http://www.lcc.uma.es/~av/ODPStudyGroup/SGannouncement.html