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MS6 Initial standardisation plan

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Abstract

This document describes the main activities related to standardisation of the project results that are planned by the IRATI consortium to be performed during the first year of the project.

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Acronyms

ETSI European Telecommunications Standards Institute

IETF Internet Engineering Task Force

IRATI Investigating RINA as an Alternative to TCP/IP

NFV Network Functions Virtualisation

ONF Open Networking Foundation

OSI Open System Interconnection

PSOC Pouzin Society

PTT Public Telegraph and Telephone company

RINA Recursive InterNetwork Architecture

SDN Software-Defined Networking

SDO Standards Development Organization

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1 Introduction

IRATI standardisation activities will be performed in coordination with the international RINA research work carried out within the Pouzin Society (PSOC). PSOC is an international effort that groups under a common umbrella all the activities around RINA research, prototyping and promotion. The standardisation effort within the project will contribute to the establishment of PSOC as a legal entity and the standardisation of the RINA specifications. To achieve these two objectives during the first year of the project the IRATI consortium will focus on the following actions:

- a) Improve the existing RINA specifications.
- b) Study the standards development process of the existing SDOs and their internal organisation, in order to consider its applicability to PSOC.

Last but not least, the IRATI project will also allocate efforts to make current SDOs more aware about RINA. To achieve this goal during the first year, the IRATI consortium will identify the current established SDOs relevant to the project with the purpose to raise their awareness of RINA.

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2 Improvement of the RINA specifications

The RINA reference model and specifications will be used by PSOC as the RINA standard. Part of the work that will be conducted within the WP2 of IRATI is analysing and reviewing the RINA architecture reference model and specifications, in order to identify missing functionality, inconsistencies or errors. In particular, IRATI will focus on:

- Specifying a DIF operating on top of Ethernet networks, as it is completely missing in the current RINA specifications.
- Ensuring that the current specifications fulfil all the requirements in terms of the services needed to be offered by the ISPs and cloud service providers.
- Identifying missing specifications, holes in the different mechanisms of the IPC subsystems or missing policy enforcements, and propose enhancements/refinements on the overall reference model and specifications, in order to enable the targeted implementation to support the expected use cases.

The improved versions of the RINA reference model and specifications will be submitted to PSOC as an input for standardisation.

An important standardisation aspect of RINA is that, unlike traditional communication-centric SDOs, only the mechanisms need to be standardised by PSOC while policies can be open or proprietary. Communities with common interests could agree on the sets of policies that address the requirements of their domain: for example utilities, content distribution companies, media streaming enterprises, medical communities, and so on could agree on conventions for their set of policies to optimally addressing their requirements. This is not unlike the development of profiles for specific domains in other standards efforts. It is likely that it would be undesirable to standardise these in order to allow greater flexibility in their use. It is easy to imagine that “profiles” such as these would not define a unique set of policies to be used but classes of them.

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3 Study of the existing SDOs

Amongst the main objectives of PSOC is the creation of a new Standards Development Organisation (SDO) that will be dedicated to the promotion and adoption of RINA through open standards development. The motivations for establishing a new SDO instead of using the existing ones, such as the IETF, (strategy also recently adopted by the Open Networking Foundation to standardise OpenFlow) is mainly practical: history has shown that standards efforts are most successful when there is a common goal and the participants are all working towards that goal. Radical innovations and paradigm changes, such as the ones introduced by RINA, usually require new actors to develop them into mainstream technologies. Legacy stakeholders have difficulty abandoning their old way of thinking. One of the greatest examples of this fact is the failure of OSI, where there was no agreement on using the new connectionless model or the legacy connection-oriented model.

To help PSOC towards the realisation of this objective, IRATI will conduct a study on existing relevant SDOs. We are interested in examining the standards development process and also the internal organisation these SDOs follow. By comparing the alternative options we can reach to a proposal for the new SDO that will be created by PSOC.

The definition of a standards development process involves decisions on topics such as:

- Who is allowed to vote and have input on new or revised standards
- What is the exact step-by-step process and procedures used for review and approval and how can these be changed
- How are bias and commercial interests handled
- What measures are used to ensure an equal voice by all participants regardless of size
- How is the “tyranny of the majority” avoided, i.e. acting on the expediency or desires of the moment (A problem of these sorts of organizations that has been recognized for 300 years).
- What is the patent policy and how is IPR managed
- How are negative votes or ballots handled
- What type of consensus is required for approval and certification

The internal organisation of an SDO defines the different entities that take part in the processes, their role within the organisation and the ways they interact and cooperate with other entities. Some possible examples of entities within an SDO are:

- The Members
- The Committees
- The Boards
- The Working Groups
- The Interest Groups

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- The Coordination Groups

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4 Identification of existing SDOs relevant to the project

IRATI will take into consideration the current relevant SDOs and target particular contributions to raise their level of RINA awareness. Discussions with representatives and presentations in meetings can be used to explain the problems faced in the Internet today and the solutions RINA provides. During the first year of the project, the IRATI partners will analyze existing SDOs and identify a reduced number of organisations that could benefit from the ideas produced in the project. This analysis will be used to select the most appropriate group within the chosen SDOs, so that IRATI partners can approach it in an efficient way.

An example of a relevant SDO for IRATI could be ETSI, in particular the “Network Functions Virtualisation” (NFV) industry specification group. RINA, through the separation of mechanism and policy, provides a very elegant approach towards the network functions virtualisation, and plugging them in and out from different DIFs.

Since programmability is one of the strong points of RINA, as enabled by the principle of separating mechanism from policy, another example could be Open Networking Foundation (ONF). RINA goes beyond the current Software-Defined Networking (SDN) initiative by providing a policy-configurable functional unit (the DIF) that provides the essential elements required in all forms of computer networking. Instead of directly dealing with APIs exposing the hardware, RINA provides the right abstractions that enable software developers to design and plug-in policies that customise the behaviour of any DIF while still maintaining security and stability.

The analysis produced during the first year will also capture the planned meetings of the targeted groups, so that IRATI can organize an effective strategy to submit contributions during the second year of the project.