

# AlbatrOSS

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*Architecture for Location Based Applications of Third generation Operation Support Systems*

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### ABSTRACT

This deliverable provides the intermediate architecture and component specifications for the work being undertaken in the second phase of AlbatrOSS. It presents the updated functional architecture, information model, 3G OSS component specifications and methodology guidelines for the Trial 2 work that is being continued in WP4 and WP5.

### KEYWORDS

**Requirements, Functional Architecture, Information Model, 3G OSS Components, Methodology**

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# **IST-2001-34780**

## **AlbatrOSS**

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### **Deliverable D8**

## **Intermediate Architecture and Specifications (for Trial System Version 2) Annex 1 and Annex 2**

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## Table of Contents

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0.1A1.1 Introduction.....	5
0.1.1A1.1.1 Objectives of the Guidelines.....	5
0.1.2A1.1.2 Feedback from Trial 1.....	5
0.1.3A1.1.3 The Foundation.....	7
0.1.4A1.1.4 Definition of the Overall Lifecycle for the Development of Components and Trial System Integration.....	8
0.2A1.2 Business Process Analysis and Design.....	9
0.2.1A1.2.1 Description.....	9
0.2.2A1.2.2 Outputs.....	9
0.2.3A1.2.3 Template.....	9
0.3A1.3 Functional Architecture Specification.....	10
0.3.1A1.3.1 Description.....	10
0.3.2A1.3.2 Textual Use Case Template.....	10
0.3.3A1.3.3 Outputs.....	11
0.4A1.4 System Analysis and Design.....	11
0.4.1A1.4.1 Introduction.....	11
0.4.2A1.4.2 Mapping of LBCs to DBCs.....	11
0.4.3A1.4.3 Analysis and Design of DBCs.....	12
0.4.4A1.4.4 Integration of DBCs and Business Logic.....	15
0.5A1.5 Solution Conformance Testing .....	15
0.6A2.1 Authorisation and Authentication Manager.....	22
0.7A2.2 Customer Report Manager.....	24
0.8A2.3 Customer, Service and Contract Manager.....	26
0.9A2.4 Data Collection Control and Analysis (DCCA) Manager.....	26
0.10A2.5 Domain Manager .....	31
0.11A2.6 FairQuotes Web Service.....	32
0.12A2.7 Federated Mediation Adaptor .....	35
0.13A2.8 Google Web Service.....	39
0.14A2.9 Mapporama Web Service.....	40
0.15A2.10 MeetMe Service.....	43
0.16A2.11 Monitoring Analysis Component.....	44
0.17A2.12 Network Performance Evaluator.....	46
0.18A2.13 OSA-Parlay X Web Service (Dynamic user context manager).....	50

0.19A2.14 Q3ADE IPDR Store.....	52
0.20A2.15 Rating Component.....	56
0.21A2.16 Resource Repository Manager.....	63
0.22A2.17 Security and Privacy Manager.....	68
0.23A2.18 Service Roaming Manager.....	74
0.24A2.19 User Location Agent.....	75
0.25A2.20 User Profile Manager.....	77
0.26A2.21 User Session Manager.....	80

## Table of Figures

## **Annex 1 Methodology Guidelines**

### **0.1 A1.1 Introduction**

#### **0.1.1 A1.1.1 Objectives of the Guidelines**

The methodology to be used by AlbatrOSS, and presented as guidelines, has to take into account the specificity of the systems to be developed and their environment. In the environment, we could include some business requirements as well as state of the art, i.e. methodologies already used by the telecommunications community and other practices.

It is not the aim of the AlbatrOSS consortium to develop a new methodology. AlbatrOSS is aiming to provide guidelines enabling reusable components to be developed and component-based systems to be built. These guidelines will integrate different methodological approaches as well as experiences from other projects.

The methodology guidelines are a necessity for a project such as AlbatrOSS where different partners develop different components to be integrated into systems and thus need to respect a common methodological approach, defining the development steps, the artefacts to be used, etc. We should also underline that one aim of the project is to promote ideas and concepts developed and validated by the project. To reach this objective it is necessary to use a common language, such as the Unified Modeling Language (UML), and a consistent methodological approach.

One important feature of the AlbatrOSS methodology guidelines is to integrate architectural principles and concepts (these are derived from NGOSS). Therefore, we define methodology guidelines as a way of building systems which comply with rules or principles which sometimes are not easy to apply. Architectural principles and concepts are therefore transcribed in the form of templates which can be used in a straightforward manner.

The methodology guidelines defined by AlbatrOSS aim to cover the full cycle of sub-trial systems development, integration and validation. This can be distinguished from the more complex lifecycle described by the Rational Unified Process (RUP), referring to a more operational environment. However, the AlbatrOSS methodology guidelines start from the business requirements definition and continue as far as the validation of the trial systems. Therefore, it is important to describe the methodology guidelines as a support for the different lifecycle phases, i.e. starting from business requirements, which can be validated when running the resulting trial systems, through conformance tests.

The AlbatrOSS methodology guidelines are defined as one result of the project, as we consider guidelines an essential element for the adoption of architecture principles and concepts such as those defined by NGOSS. Therefore we consider that AlbatrOSS could really contribute in this way to the TeleManagement Forum and more widely to the telecommunications community. So, as with other results from the project, the methodology guidelines will be evaluated by people who have used it within the project and they should be presented at workshops.

#### **0.1.2 A1.1.2 Feedback from Trial 1**

The AlbatrOSS lifecycle is based on a two-phased approach and we are now starting the development and adaptation of components and trial systems for Trial 2.

For the development of Trial 1 systems, AlbatrOSS partners reused methodology developed in previous projects, such as the FORM IST project, as we did not have time to define specific methodology guidelines.

However, this should be used as valuable experience from the partners and it has been decided to capitalise on this experience when defining the methodology guidelines to be used for Trial 2. Capture of Trial 1 feedback has been obtained via questionnaires provided to those responsible for Trial 1 sub-trial systems.

The questionnaire was oriented towards obtaining knowledge of the common practices from the different groups and expectations for methodology guidelines. This should therefore insure that the methodology guidelines proposed to the consortium in Trial 2 will be used by the different sub-trial groups.

Each sub-trial development team answered the questionnaire and the results could be summarised as follows:

1. The methodology used for Trial 1 systems development was based on previous projects for some (particularly FORM which defined methodology guidelines as part of an Open Development Framework) while others based the methodology only on UML.
2. The different teams used different tools such as Visio (2 teams) and Rational Rose (2 teams) for creating UML diagrams. One partner used the WSDL editor and others used different tools. However, it seems that the use of tools is considered to be something important. The methodology guidelines group will not prescribe one of these tools, even if this could cause problems between partners when exchanging diagrams.
3. The need for a methodology perceived for Trial 1 can be related to the expectations for Trial 2. It seems that partners are really interested in seeing the guidelines driving the first development phases of the sub-trial systems. Therefore, guidelines are defined as needed for the functional specification and the specification of OSS components. It seems less important to guide developers when developing the “internals” of the component. This view is stressed by one partner who did not feel any need for methodology guidelines in Trial 1 as only one person was in charge of the sub-trial specification.
4. The role of use cases for specification of the functional architecture is essential. Most of the partners used at least textual use cases and a few used use case diagrams.
5. The different teams defined their systems as a set of reusable components. However, an agreement on how to define contracts was really lacking. One team used WSDL, another used sequence diagrams for defining interfaces. Other teams did not define contracts. Guidelines for the specification of reusable components should therefore be considered for Trial 2.

UML was used by all teams and most of the partners have experience with the language. However, except for use cases (particularly textual ones), UML diagrams are not frequently used. Only a few partners used sequence and class diagrams.

In the definition of the information exchanged between components, some partners used specific standards (XML, PAM) which define information models. XML seems to be adopted by most of the partners. Therefore the use of XML, perhaps through WSDL, should not be a problem for the partners.

Partners are evenly balanced about whether to include the test phase in the methodology guidelines. However, it seems that they are open to this, even if they are more interested in having guidelines for the first specification phase as we have seen before.

The main expectation from the partners concerning the methodology is to have something easy to use, in the form of simple recommendations, notation to be used and cookbook style. The answer of one partner can be used as a good example of these expectations: “The methodology guidelines should allow partners to show how their systems/building blocks/services can interact with other partners to achieve the trial objectives. Furthermore, the methodology should be reusable in project deliverables to expose the trial systems to the general public. The key aspect of

ology is the provision of templates as the use of templates forces disparate partners to describe their s in the same fashion so that all participants can easily understand the artefacts developed. The methodology concise and realistic and should not promote the development of non-relevant artefacts. A cookbook-type with directions on how and when to use the methodology stages would be very useful”.

In conclusion, based on this feedback we could extract the following recommendations for the development of the methodology guidelines:

- Partners are open to using methodology guidelines, as far as they are easy to use. Therefore they should be defined in terms of templates and recommendations.
- Partners are particularly interested in having guidelines for the initial specification phases (not for the internal design of components).
- Partners are used to UML and tools to generate UML diagrams. However, no specific tools will be recommended by the methodology group.
- Partners are used to specifying the functional architecture from use cases.
- In Trial 1 agreement was lacking on reusable component descriptions, including contract descriptions. This needs to be addressed in the methodology guidelines.

### 0.1.3 A1.1.3 The Foundation

As explained before, AlbatrOSS methodology guidelines do not aim to develop a new methodology but to reuse existing methodologies as well as experiences from other projects and partners.

AlbatrOSS deliverable D3 [D3] provided an analysis of relevant methodologies which could be used for defining our guidelines. This allows us to select a limited set of methodologies and guidelines which are the foundation for defining AlbatrOSS methodology guidelines.

The selection of the influences has been made regarding the needs, i.e. development of complex component-based systems (multi-domain environment, multi-party development), the experience of the partners, the applicability of the guidelines and the possibility of integrating business requirements as well as architecture principles (derived from NGOSS).

Therefore the following elements will influence AlbatrOSS methodology guidelines:

- **UML**: UML is recognised by the IT and telecommunications community as the common language for defining object-oriented systems. Therefore, most of the artefacts generated from the project in the development phases are based on UML.
- **NGOSS**: it is recognised by the partners that a main influence of the project comes from TM Forum and particularly the NGOSS work. Moreover, the results of the project will be directed towards this organisation. The main influence of NGOSS, regarding AlbatrOSS methodology guidelines, comes from the NGOSS views, i.e. Business, System, Implementation and Run-Time views. NGOSS does not prescribe guidelines, but defines which artefacts are to be provided for implementing each view. Therefore, it makes sense for AlbatrOSS to propose such guidelines for implementing each view and the mapping from one view to another.
- **FORM Open Development Framework (ODF) Methodology Guidelines**: four AlbatrOSS partners have already used these as they participated in the FORM project. They are already presented in the form of guidelines, based on RUP and some NGOSS principles. This FORM result is therefore reusable, for some part, within AlbatrOSS.

Other methodologies have been evaluated such as RUP and the Catalyst Methodology. FORM adapted RUP, which is oriented towards the development of operational systems, to the specific need of projects such as FORM or AlbatrOSS. Concerning the Catalyst Methodology, it seems AlbatrOSS methodology guidelines are focused on component specification and system integration. The

management area, as defined by Catalyst, is not a main issue for AlbatrOSS. Moreover, none of the partners have experience with this methodology.

### *Relationships with MDA*

Model Driven Architecture (MDA) addresses the full lifecycle of integration and interoperability of enterprise systems comprising software, hardware, humans, and business sub-systems. It provides a systematic framework to understand, design, operate, and evolve all aspects of such enterprise systems, using engineering methods and tools. The framework is based on modelling different aspects and levels of abstractions of such systems, and exploiting interrelationships between these models. MDA is a generic framework that builds upon common modelling techniques such as UML and the Meta Object Facility (MOF) and software infrastructures such as the Common Object Request Broker Architecture and Enterprise Java Beans used in different application fields.

It is therefore recognised that the AlbatrOSS architecture principles can be supported by such a methodology, and this is also true for NGOSS. However, it seems that applying MDA as it is today is quite complex and heavy, and not mature for some parts (PIM vs. PSM). It is still necessary to demonstrate the need for such complexity and the ROI. Therefore, AlbatrOSS chose to select a lighter approach, which better suits AlbatrOSS partner expectations.

#### **0.1.4 A1.1.4 Definition of the Overall Lifecycle for the Development of Components and Trial System Integration**

AlbatrOSS methodology guidelines support the full lifecycle for the development of components and systems integration up to validation. We are using the NGOSS views as a starting point for the definition of this lifecycle. The aim of NGOSS is to externalise a set of artefacts describing the system and gathered in the NGOSS Knowledge Base. Based on this, the different kind of people who want to interact with the system can use different views regarding their specific need.

AlbatrOSS aims to define the necessary artefacts corresponding to each view. However, providing artefacts for describing the system is not the principle goal of AlbatrOSS partners. The main purpose for AlbatrOSS partners is to develop components and integrate both these and reused ones into trial systems to be validated.

Therefore, AlbatrOSS methodology guidelines have a twofold aim, with a primary objective of supporting partners when developing and integrating trial systems. As such, they do not only indicate the artefacts to be produced (for each view), but provide a seamless step-by-step implementation of the development lifecycle.

The different steps of the development lifecycle are described as follows:

1. **Business view:** includes the business requirements, the business models and the business process models (including process flow). This step is executed within AlbatrOSS by WP2.
2. **Functional models:** this step allows the mapping from the Business view to the System view. It provides the functional requirements as well as a set of functional blocks. This step is supported by production of use cases.
3. **System view:** provides component models as well as shared information models.
4. **Implementation view:** this step should provide technological aspects of the system. Therefore, we go from a technology-neutral model towards technology-specific ones. This step is not described, for the moment, in the AlbatrOSS methodology guidelines.
5. **Run-Time view:** in AlbatrOSS the run-time view is focused on solution conformance testing. This step will enable the running system to be validated against requirements.

## **0.2 A1.2 Business Process Analysis and Design**

### **0.2.1 A1.2.1 Description**

This step aims to produce the artefacts for the Business view and therefore defines the system from the business point of view, in terms of business requirements, business models and business process models.

This step is carried out at the beginning through analysis of business reports and interview analysis. This provides the business context and business requirements.

The production of scenarios is often a way to stimulate dialogue as it is easy to exchange and figure out innovative ideas from scenarios.

The first phase allows business requirements to be captured and will provide the necessary input to build business models. These express, from the business point of view, the relationships between stakeholders. In this first step we need also to analyse the information to be passed from one stakeholder to another. This can be grouped into Reference Points.

The next step of the Business Analysis consists of defining Business Processes. They are deduced from the scenarios and the description of the business relationships. The Business Process flow defines the interactions between processes but should also provide an initial insight into the information to be exchanged.

The Business Analysis phase is an iterative process where the different artefacts are refined iteratively.

### **0.2.2 A1.2.2 Outputs**

The main outputs from the Business Analysis phase are:

- The Business Requirements, which need to be classified. These will be reused when defining the test cases.
- The scenarios, which can be reused for defining the test cases.
- The Business Models, which define roles and relationships between stakeholders.
- The Business Process Models, which define the Business Processes to be implemented by each role. The Business Processes Model can also provide a dynamic view through the definition of the Process flow, as well as an initial definition of the information to be exchanged.

Use case diagrams can be used as a way to define Business Process flow. However, in the business analysis phase we do not prescribe the use of any UML diagram.

### **0.2.3 A1.2.3 Template**

Here is a proposed layout allowing the different outputs expected from this phase to be presented.

It is defined as a layout structure:

1. General Description: presenting the context, a global view of the problem and associated business requirements as well as the Business Model with a description of the actors.
2. Scenario Description: presenting the scenario which captures the business requirements.
3. Business Processes: presenting for each business process the specific requirements induced from the scenario.
4. Business Process Flow: describing for each business process the corresponding flow.

5. List of the business requirements: enabling evaluators to trace whether these requirements are fulfilled during conformance tests.

### 0.3 A1.3 Functional Architecture Specification

#### 0.3.1 A1.3.1 Description

Most of the necessary inputs for the Functional Architecture specification are provided by the Business Analysis phase.

The aim of this phase is to do the mapping between the business view and a component view (system view). Therefore, one important aspect of this phase is to extract functional blocks from the business process flow. Functional blocks, or Logical Business Components, gather together a coherent set of functions.

The selection and break down into functional blocks depend on different factors. It is a meeting point between business people and architects. The latter bring the component knowledge, which allows functional blocks to be selected based on knowledge of existing reusable components. The business process grouping defined in the eTOM framework [GB921] can help to define the logical grouping.

In an initial step, Business Process flows can be used as a starting point for the definition of use cases, where we have to introduce the functional blocks. It means that different processes can be grouped into one functional block.

Based on this initial step, we can extract each functional block to specify it from the definition of the functions it needs to provide.

Here, also, we have to iterate until a consistent functional reference architecture is obtained.

Use cases and sequence diagrams are the main UML diagrams that can be used in this phase. We propose also to use a textual use case, see example below (Table A1.1), which allows a full description of functional blocks. Use cases can be recursive. Use cases contain steps which can be expressed as new use cases and so forth. Use cases are described depending on which system scope and level they belong to. Use cases at the highest level are naturally more abstract in nature and are useful when focusing on the overall system functionality or when considering the strategic goals of a system. For every recursion the use cases become more detailed until the usability on the design level is clear.

#### 0.3.2 A1.3.2 Textual Use Case Template

**Use Case ID:** UC-XX-N (XX= 2 letters to identify a suite of use cases, N= Sequence Number)

**Use Case Name:** Title for the use case

**Brief Description:** Brief description of the use case (objectives)

**Actors:** Actors interacting with the system

**Triggers:** Event which will trigger the flow of events

**Pre-conditions:**

**Flow of events:** **Basic Flow:**

- 1.
- 2.
- 3.

**Alternative Flows**

- (allowing the process to be described in case of abnormal events)

**Post-condition:**

**Requirement Id:** We could link the use case to requirements from WP2/3

**Superordinate UC:** Highest level

**Subordinate UCs:** - the level below, if it exists

**Open Issues:** < a list of open issues for this use case awaiting decisions >

**UC Comments:** < optional additional comments to illustrate use case >

**Table A1.1: Textual Use Case Description****0.3.3 A1.3.3 Outputs**

The main outputs from the Functional Architecture specification are:

- A Functional Reference Architecture, showing all the functional blocks and points of interface between these blocks.
- For each functional block a description providing a definition of each function. We propose to include in each description a suite of use cases. The granularity of the use cases depends on the complexity of the system to be described. The information to be exchanged via functions needs also to be described and as far as possible to refer to existing information models such as SID.

**0.4 A1.4 System Analysis and Design****0.4.1 A1.4.1 Introduction**

The objective of this section is to offer a methodology which allows a specification of the system being implemented to be obtained, independent of the technology and starting from the specification of business requirements.

This methodology is based on the adaptation of the NGOSS principles to the AlbatrOSS requirements. It is an approach based on a top-down view, starting from the business requirements down to the concrete specification of the system.

Its artefacts mainly come from a methodology which is widely recognised and can be directly applied in this working environment, RUP.

The methodological process consists of several stages:

- Mapping from Logical Business Components (LBCs) to Deployable Business Components (DBC)
- Analysis and Design of DBCs, both externally and internally, providing a guideline for the adaptation of the SID
- Integration of DBCs and Business Logic

The objective pursued is the initiation of the implementation and the deployment of the DBCs orchestrated by a DBC manager (the Process Manager).

**0.4.2 A1.4.2 Mapping of LBCs to DBCs**

The first step in the systems analysis and design methodology guidelines is the mapping from LBCs to DBCs. From the Logical Business Components that group some functionalities from the eTOM processes, a number of Deployable Business Components need to be obtained, i.e. a specification of the physical components that

will incorporate such functionality. This mapping will not be direct; one LBC could become one or more DBCs and one DBC could be derived from one or more LBCs. This step is similar to the mapping of the Functional Blocks to Building Blocks in the TMN model.

Several issues have to be considered when this mapping is carried out. First of all, one of the purposes of the NGOSS architecture is the reuse of existing components. These components could be COTS (Commercial Of The Shelf) or in-house components. Thus, the first step is to identify the available components that could be used in the system. On the other hand, these components are likely to need an adaptation layer to the system or a completion phase, and this layer or phase would have to be carried out.

Another issue is the size of each DBC and the amount of functionality that it implements. The granularity of the components should be decided depending on the system complexity and the functional relationships between LBCs. Finally, the coupling between DBCs should be taken into account. The amount of interchanged data between components should be minimised while the flexibility to easily change the requirements and maintain the components should be kept. In order to achieve loosely coupled components, the interaction between them must be mediated by a Process Manager which implements all the business logic.

#### 0.4.3 A1.4.3 Analysis and Design of DBCs

Within the top-down approach the adoption of DBCs offers two points of view:

- **External:** Specified by the relationships (contracts) between collaborating DBCs, the data they interchange and their expected behaviour
- **Internal:** Specified by the internal architecture of each DBC which deploys the functionality exported in its contract

##### 0.4.3.1 A1.4.3.1 Specification of the DBC

There are two different points of view in specifying the requirements of DBCs:

- **Functional Requirements:** Specify the actions that a DBC must be able to perform. Within the reference methodology (RUP), use cases are selected for this purpose as methodology artefacts. Use cases offer a systematic and intuitive means of capturing functional requirements with a focus on value added to user. In the previous section there is a textual template for specifying these uses cases that should be used in this phase.
- **Non-Functional Requirements:** Specify component properties which could be expressed with normal text, such as:

○ *Reliability:* frequency and severity of failure, recoverability, accuracy

○ *Performance:* speed, availability, response time, memory usage

○ *Operability:* maintainability, being kept up to date after release

○ *Other constraints:* platform dependencies, maintainability, extensibility...

##### 0.4.3.2 A1.4.3.2 Specification of the Shared Data Model (SDM)

The concept of the SID is fundamental to the principles of NGOSS-based systems. It is the means by which useful information, relevant to a given set of business processes, may be factored out, shared, and operated on by multiple business processes on a system-wide basis.

The SID consists of a set of entities that are organised into a set of management domains. These domains provide a mapping to the business and system views of the NGOSS system, as defined using eTOM and SIM terms. This is achieved by starting with the UML metamodel and refining its generic concepts to suit the application-specific needs of an NGOSS system. The instantiation of the SID provides one or more SID-compliant data models, which are present for all NGOSS Components to share and use. These SID-compliant data models comprise our Shared Data Model.

The definition of the shared information needed by a specific contract may (and is in fact encouraged to) reuse existing shared information definitions. Shared information definitions are contained within the SID. It is assumed that the reuse of shared information definitions will be accomplished by one of two mechanisms. These mechanisms are *by-reference* and *by-copy-and-extend*. In the former case, the definition of information contained within a specific shared information model is referenced by *name*. In the latter case, the definition of shared information is copied from an external shared information model into a local shared information model and then referenced by *name*.

#### 0.4.3.3 A1.4.3.3 Definition of the Contract

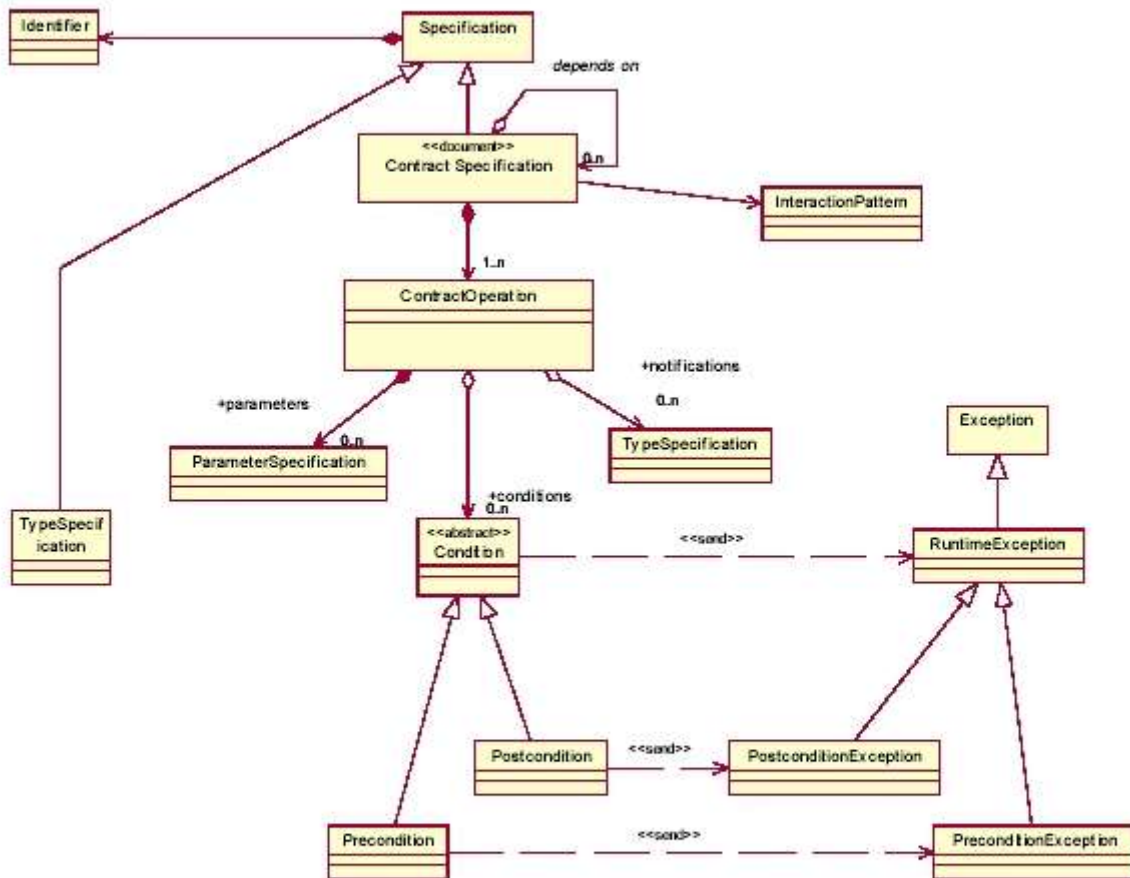
The NGOSS Contract is used to define the shared public services that are offered by components at any level of the NGOSS deployment. In general terms, an NGOSS Contract has the following characteristics:

- NGOSS Contracts are identified by a name, a version number, and the contract definition authority.
- NGOSS Contracts can be extended. The extension contract references the contract upon which the extension is based.
- NGOSS Contracts can contain one or more contract operations.
- NGOSS Contracts have a textual behavioural description that defines the expected behaviour.
- NGOSS Contracts have a sequence of formal parameters. Each parameter has a name, type, and direction. The direction of a formal parameter indicates whether it is an:
  - Input parameter
  - Output parameter or
  - Input/Output parameter
  - Return parameter
- NGOSS Contracts specify a set of pre-conditions, a set of post-conditions and a set of exceptions (along with the conditions under which the individual exceptions will be raised).

The **pre-conditions** specify the state of the system that is required in order to obtain the defined expected result (or results), i.e. the conditions that must be met before the expected result(s) can be obtained.

**Post-conditions** specify the state of the system that an implementation of a contract is obliged to ensure at the completion of processing.

An NGOSS Contract defines the invocation semantics and behaviour of a service that is offered within an NGOSS deployment. From the perspective of the TeleManagement Forum, the contract specification is developed as a UML model. Figure A1.1 illustrates this concept:



**Figure A1.1: Static Structure of Contract Specifications**

A more compact representation of the contract, based on XML, is needed to support efficiency at runtime. The format of the XML representation of a contract is defined in this document.

**0.4.3.4 A1.4.3.4 Internal analysis and design of the DBC**

The building of a DBC consists of a cluster of Building Blocks (BBs) interacting to deploy the functionality required by the DBC contract.

The first step is focused on identifying the BBs forming each DBC and deploying them in a collaborative way.

This process is similar to the process of identifying the DBS from LBCs, with several differences:

- A higher level of coupling is allowed.
- Reusability should be encouraged by isolating common functionality in basic BBs (factorisation takes a relevant importance in the reusability fact). COTS BBs and proprietary BBs are key to this aim.

- It is not necessary to use a process manager since BBs implement their own piece of the process logic.

Once the BBs to be implemented have been identified, the RUP methodology should be used for their internal construction.

After all the BBs are available, interactions between them should be specified in order to carry out the scenarios derived from the use cases defined for the DBC. The artefacts for such a task are sequence / collaboration diagrams.

#### 0.4.4 A1.4.4 Integration of DBCs and Business Logic

The main aim of this section is to provide the guidelines to obtain the business logic of each business process and a useful representation of it. It has been explained how to obtain the components (DBC) that participate in the deployment of the business process. Now it is necessary to show how these DBCs implement the business logic. Based on the RUP methodology, some artefacts are proposed in order to follow a workflow of tasks leading to such business logic representation.

Note that having reached this point, we should look back again through the NGOSS principles where a concrete DBC takes the responsibility of mapping the business logic, the Process Manager (PM).

The first step of the workflow mentioned above is the **scenario analysis**. The use cases from the business analysis phase in which the business logic is contained are the starting point for this task. From the use cases that represent a business process, the possible scenarios shall be specified. These scenarios are represented as UML Sequence Diagrams in which the DBCs interact with the Process Manager DBC. In order to isolate the business logic, a DBC should not invoke other DBCs but the Process Manager. In the Sequence Diagrams, the business logic view of every scenario, the interchanged data and the contracts invoked are shown.

Once the Sequence Diagrams of the scenarios are available, the next step is to identify those groups of interactions, **tasks**, between the PM and one or more DBCs which start with an asynchronous event (usually from the DBCs to the PM)

Among the different scenarios, some tasks could be divided into simpler ones in order to increase the number of common tasks among the scenarios. This **factorisation step** is a way of easing the task synthesis phase.

The following step is the **task synthesis**. It is not compulsory and consists of building a UML activity diagram from every scenario where the “activities” represent the tasks identified in the previous step. Such diagrams represent the dynamics of each scenario.

Finally, in a **process synthesis** step, a state-chart diagram will show the states of the business process and the conditions and events that must take place in order to move from one state to the next one. This diagram should be produced by merging the activity diagrams from the previous step, if done, or the sequences of identified tasks from the sequence diagrams.

This state-chart diagram could be transformed into different artefacts in order to adapt the business logic to the needs of a specific PM (Petri nets, textual rules, etc.).

#### 0.5 A1.5 Solution Conformance Testing

This section outlines the template that is used to describe the evaluation of each of the sub-trials. The evaluation is targeted at the following items:

- **OSS components:** this is a functionality evaluation for each of the sub-trial OSS components. It answers the question about which OSS components have been built and analyses the functionality of each of the components.
- **Output of standardisation work:** it evaluates the use of standards in the design and development of the OSS components. It addresses issues concerning the extent to which standards were useful. For example, did the use of 3GPP standards, recommendations, technical reports etc., provide any benefits?
- **Implementation Technology:** addresses the implementation issues related to the OSS component. For example, are there the advantages in EJB, SOAP for the implementation of OSS components?

### o Evaluation Procedure

ure involves devising test cases and executing them on the OSS components. The main purpose of this is r components are appropriate for the management of 3G OSS systems, do they provide the necessary means t of 3G services? (results) and analysing them against evaluation criteria and requirements.

ich will be validated in the test case. An example is given below.

Billing component	OSS Description
Creation of a bill	Use the different XML transformation and formatting tools to generate a user bill.

How did the use of de jure and de facto standards, recommendations, technical reports, etc., benefit the specification and implementation of OSS components. Thus, to what extent has the output of standardisation been useful?

Parlay/OSA standards	Description
Built-in features	Provides standardised interfaces to network components. Rated 3: some of the interfaces are overly specified and were not useful to implement completely.

Describe which technologies have been used to develop the OSS components. Example technologies are EJB, WEB Services and CORBA. An example is given below where a rating is also given.

Jboss	Marks
Built-in Features	J2EE, JAAS, EJB-SOAP. Jboss does not fully implement the EJB-soap specification yet
Standards Implementation	Implants the standards fully: i.e. J2EE, JAAS

### o Test cases

The main purpose of test cases is to demonstrate through trials whether the functionality implemented by the OSS components fulfils the requirements of the management of 3G services. The functionality of the components will be verified and test cases will ensure that components correctly implement specific functions. The template for a test case is appended below.

Test Case #	Explanation
Purpose	This item should address the following: What is the purpose of the test case? What is verified through the test case? Name the component(s) whose functionality is being verified and evaluated. If two or more components are involved, is there a logical path that passes through these components and is being verified?
Description	What operation(s) does the user (or a component) perform on other component (s)? How does the component(s) being acted upon respond?
Precondition	What must be ready (from the infrastructure side or the OSS component side) before the test can be executed?
Test Result	What does the result of this test case mean to the user (in terms of an observable/visible result)? Did the test case discover an error? Test results are qualitative data, which is fed into an evaluation process and evaluated against a set of criteria.
Test Case Evaluation Criteria	What does the result of the test case mean to the provider (in terms of functionality or conforming to standards)? What criterion (or criteria) will the SP apply to measure the success of the result?
Requirements Addressed	Which requirements does the test case address? Refer to requirements captured in the D2, D3 deliverables.

### o Evaluation Procedure and Trial Results Collection

The goal is to validate whether OSS components being developed are suitable for the management of 3G services and to assess the impact of GPRS and UMTS technologies on the OSS components. The evaluation is performed from three different stakeholder viewpoints:

The evaluators are

- End user
- Service provider
- Developer

### o Evaluator – End User

For the end-user perspective we evaluate the following items:

- Requirements as defined in D2
- Importance of 3G OSS issues

To rate the importance of the requirements identified in D2, the evaluators are requested to give marks on the importance of the requirements for the success of 3G services in general and location-based services in particular. Marks are given on the scale of 1-4 indicating the degree of importance.

Requirements are evaluated per scenario. For example:

Service Roaming Scenario	Marks
D2: 4.1.8 Security	Highly useful
D2: 4.2.3 User Information	Useful.
D2: 4.1.3 SLA and Subscription Management	Useful.
D3: 2.1 OSS Support for service roaming	Marginally useful

Importance of 3G OSS issue: the evaluators are requested to give marks on the importance of the issue for the success of 3G services. Marks are given on the scale of 1-4 indicating the degree of importance. For example:

Sub-trial 3G service usage	Marks
User's Location	Highly important
Availability and Provision of location-based service	Highly important

#### o Evaluator – Service Provider

From the service provider perspective we evaluate the fulfilment of the requirements and how 3G issues are addressed.

Evaluators are requested to give marks on the degree to which a component (or a set of components) fulfils the requirements captured during the requirement analysis phase of the project. For example:

Service Roaming Scenario	Test Case	Marks
D2: 4.3.1 Roaming and VHE	#1	Fulfils with some exceptions. Those exceptions are: (1), (2), (3) ....
D2: 4.2.4 Communication protocol	#1	Fulfils fully.

Evaluators are requested to give marks on the degree to which a component (or a set of components) addresses 3G OSS issues in general and location-based service OSS in particular. For example:

3G OSS Issue	Marks
User's Location	Addresses fully.
Availability and Provision of location-based service	Addresses with some exceptions. Those exceptions are: (1), (2), (3) ....

#### o Evaluator – Developer

From the developer perspective we focus on the use of standards in the process of designing and implementing the OSS components. We distinguish various categories listed below:

- Benefits of the Use of Standards
  - Development plan
  - Design of 3G OSS Component
  - Rapid Development
  - Smoother Integration of Components
- Quality of the Standard Used
  - Usability
  - Practicability
  - Completeness
- Technology Impact
  - Built-in Features
  - Standards Implementation
  - Specific technology evaluation

### Benefits of the Use of Standards

The evaluators are requested to give marks on how the use of technical reports, standards, recommendations, etc., being produced by standards bodies benefited.

#### Development plan

Marks	Meaning
4	Development plan benefited greatly.
3	Development plan benefited but there are some exceptions: (1), (2), (3), .....
2	Development plan benefited marginally.
1	Development plan did not benefit.

#### Design of 3G OSS Component

Marks	Meaning
4	Use of a standard allowed generic design of 3G OSS components.
3	Use of a standard did allow generic design of 3G OSS components but there are some exceptions: (1), (2), (3) ...
2	Use of a standard allowed generic design of 3G OSS components only marginally.
1	Use of standard did not allow generic design.

#### Rapid Development

Marks	Meaning
4	Use of a standard allowed rapid development of component.
3	Use of standard did allow rapid development of component but there are some exceptions: (1), (2), (3) .....
2	Use of a standard allowed rapid development of components only marginally.
1	Use of a standard did not allow rapid development of components.

#### Smoother Integration of Components

Marks	Meaning
-------	---------

4	Use of a standard allowed smoother integration of OSS components.
3	Use of a standard did allow smoother integration of component but there are some exceptions: (1), (2), (3) .....
2	Use of a standard allowed smoother integration of components only marginally
1	Use of a standard did not allow smoother integration of components

### Quality of the Standard Used

The evaluators are requested to give marks on the quality of the standard used.

#### Usability

Marks	Meaning
4	Entire a standard/specification easy to understand.
3	Easy to understand with some exceptions. Those exceptions are: (1), (2), (3) ....
2	Difficult to understand.
1	Not understandable.

#### Practicability

Marks	Meaning
4	Entire standard/specification easy to implement.
3	Easy to implement with some exceptions. Those exceptions are: (1), (2), (3) ....
2	Difficult to implement.
1	Cannot be implemented.

#### Completeness

Marks	Meaning
3	Standard/specification is complete.
2	Standard is complete but some minor aspects/parts have been overlooked. Those parts are: (1), (2), (3) ....
1	Major aspects/parts of the standard have been overlooked.

#### Technology Impact

The evaluators are requested to give marks on how important the technology chosen is for the development of OSS component. Please indicate the degree on the scale of 1-4.

#### Built-in Features

Marks	Meaning
3	The technology does have built-in features that are very useful in the development of OSS components. Features are (1), (2), (3) .....
2	The technology does have built-in features but they are only marginally useful.
1	The technology does not have any built-in features useful for the development of OSS components.

**Standards Implementation**

<b>Marks</b>	<b>Meaning</b>
4	The technology chosen is very suitable for the implementation of the standard. Please name the standard.
3	The technology chosen is suitable for the implementation of only these aspects/parts of a standard: (1), (2), (3) .....
2	The technology chosen is only marginally suitable for the implementation of the standard.
1	The technology chosen is not suitable for the implementation of the standard.

Specific technology (Example Jboss)

<b>Criterion</b>	<b>Marks Given</b>
Built-in Features	3: J2EE, JAAS, EJB-SOAP
Standards Implementation	4: J2EE, JAAS

## Annex 2 Component Contracts

The components being used in Trial 2 are described in this annex using a high-level (NGOSS) description of the interfaces, i.e. technology-neutral contract defined interfaces. The XML interfaces depend on three other NGOSS XML Schemas, all of which are included in the TM Forum document *NGOSS Architecture Technology Neutral Specification - Contract Specification* [TMF053B].

### 0.6 A2.1 Authorisation and Authentication Manager

**Name:** AA Manager

**Developer:** FOKUS

**Version:** June 2003

**Description:** The main purpose of the AAM is to provide authentication based on JAAS authentication that enables LoginModule-independence in applications and authorisation functionality based on JAAS authorisation that enables user-based access control to the services.

**Exported contracts:** The AAM is related to the contract “AA Manager”.

**Dependencies:** CSC Manager

**Other constraints:**

**Reference to SID:** The information entities accessed through the contracts of the AA Manager are part of the General Model (see section 4.1) and the SLA Model (see section 4.3). The user and agreement entities are used.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name="CustomerInformationSteward" version="1.0.0" id-authority="TMF">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="CustomerName" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:basic-string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:result-code" version="1.0.0" id-authority="TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="LoginContext" interaction-type="interrogation">
          <parameter-list>
            <parameter name="login_module_name">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="callbackHandler">
              <type name="javax.security.auth.callback.CallbackHandler" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normal-completion">

```

```

        <parameter-list>
            <parameter name="login_context">
                <type name="javax.security.auth.login.LoginContext" version="1.0.0"
id-authority="TMF"/>
            </parameter>
        </parameter-list>
    </termination>
    <termination name="abnormal-completion">
        <parameter-list>
            <parameter name="LoginException">
                <type name="tmf:exception" version="1.0.0" id-authority="TMF"/>
            </parameter>
        </parameter-list>
    </termination>
</termination-list>
</operation>
</operations>
<operations>
    <operation name="login" interaction-type="interrogation">
        <parameter-list>
            <!-- No parameters -->
        </parameter-list>
        <termination-list>
            <termination name="normal-completion">
                <!-- No exception means that the login process was successful -->
            </termination>
            <termination name="abnormal-completion">
                <parameter-list>
                    <parameter name="LoginException">
                        <type name="tmf:exception" version="1.0.0" id-authority="TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
</operations>
<operations>
    <operation name="logout" interaction-type="interrogation">
        <parameter-list>
            <!-- No parameters -->
        </parameter-list>
        <termination-list>
            <termination name="normal-completion">
                <parameter-list>
                    </parameter-list>
            </termination>
            <termination name="abnormal-completion">
                <parameter-list>
                    <parameter name="LoginException">
                        <type name="tmf:exception" version="1.0.0" id-authority="TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
</operations>
<operations>
    <operation name="getSubject" interaction-type="interrogation">
        <parameter-list>
            </parameter-list>
        </parameter-list>
        <termination-list>

```

```

        <termination name="normal-completion">
            <parameter-list>
                <parameter name="subject">
                    <type name="javax.security.auth.Subject" version="1.0.0" id-
authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="abnormal-completion">
            <!-- No exception but a null reference on Subject -->
            <parameter-list>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
</operations>
</interface>
<behavior>
This module is to log in and to log out a user and to receive the name of the currently
authenticated user.
</behavior>
    </contract>
</contract-specification>

```

## 0.7 A2.2 Customer Report Manager

**Name:** OSS: CR-Manager

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** This component aims at carrying out service reporting to customer. In the DIS sub-trial, this component will be in charge of the post-session reporting.

**Exported contracts:** **PostSessionReportGeneration**

This contract allows a customer reporting system to generate a post session report including the service performance and usage.

**Dependencies:** This component needs to interact with:

- A data collection process to collect the usage and performance related to the last session
- A rating component to provide rated data
- A service quality management system to collect the possible SLA violation

**Other constraints:** None

**Reference to SID:** The report generated by the component is not addressed by the AlbatrOSS SID. However, IPDRDoc that is used to collect usage data and to rate it is defined in the SID.

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name=" PostSessionReportGeneration" version="1.0.0" id-
authority="AlbatrOSS">

```

```

    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ReportingStatus" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:PerformanceReport" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:UsageReport" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="generateGeneralReport" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="sessionID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="userID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normalTermination" >
              <parameter-list>
                <parameter
name="performanceReport">
                  <type
name="albatross:PerformanceReport" version="1.0.0"
authority="AlbatrOSS"/>
                </parameter>
                <parameter name="usageReport">
                  <type
name="albatross:UsageReport" version="1.0.0"
authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name="reportingFailed" >
              <parameter-list>
                <parameter name="reportingStatus">
                  <type
name="albatross:ReportingStatus" version="1.0.0"
authority="AlbatrOSS"/>
                </parameter>
                <parameter name="
performanceReport">
                  <type
name="albatross:PerformanceReport" version="1.0.0"
authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
      </operations>
    </interface>
  
```

```

name="albatross:UsageReport" version="1.0.0"
authority="AlbatrOSS"/>
        <parameter name="usageReport">
            <type
                id-
            </parameter>
        </parameter-list>
    </termination>
    </termination-list>
    </operation>
</operations>
</interface>
<behavior>
    This contract allows external components to make the
CustomerReportManager component
    generate a report.
</behavior>
</contract>
</contract-specification>

```

### 0.8 A2.3 Customer, Service and Contract Manager

**Name:** Customer, Service and Contract Manager

**Developer:** FOKUS

**Version:** June 2003

**Description:** This component manages all data about users, customers, services, contracts etc, which is stored in a database as entity beans according to the EJB specification and provides the other components with the information they need.

**Exported contracts:** None.

**Dependencies:** None.

**Other constraints:** Has no public interface and can only be reached by the AA Manager after successful authentication of the user.

**Reference to SID:** The information entities accessed through the contracts of the Customer, Service and Contract Manager are part of the General Model (see section 4.1) and the SLA Model (see section 4.3). All agreement and SLA-related entities are used.

### 0.9 A2.4 Data Collection Control and Analysis (DCCA) Manager

**Name:** OSS:DCCA-Manager

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** This component aims at collecting the different types of data that are generated during a session and that enables it to prove and to measure the service performance and usage. Sensitive processes, like billing and SLA control, rely on this key component.

<b>Exported contracts:</b>	<p><b>pushUsageData</b> This contract enables any external system to store usage data.</p> <p><b>getSessionUsageData</b> This contract enables any external system to retrieve all usage data linked to a given session that has been stored beforehand.</p>
<b>Dependencies:</b>	<p>This component needs to interact with:</p> <ul style="list-style-type: none"> <li>- The different 3G services involved in order to store usage data</li> <li>- A customer reporting component that will use this data to generate the customer report</li> </ul>
<b>Other constraints:</b>	None
<b>Reference to SID:</b>	Usage data will be provided through the IPDR format defined in the SID.

### DCCAManager\_pushUsageData Contract

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="DCCAManager_pushUsageData" version="1.0.0" id-authority="Albatross">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="countAction" interaction-type="announcement">
          <parameter-list>
            <parameter name="sessionID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="userID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="labelAction">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
        </operation>
        <operation name="addObjectSize" interaction-type="announcement">
          <parameter-list>
            <parameter name="sessionID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="userID">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="labelObject">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>
```

```

        <parameter name="sizeObject">
            <type name="tmf:integer" version="1.0.0"
id-authority="TMF"/>
        </parameter>
    </parameter-list>
</operation>
<operation name="startSessionDurationMeasurement" interaction-
type="announcement">
    <parameter-list>
        <parameter name="sessionID">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="userID">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="label">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
    </parameter-list>
</operation>
<operation name="endSessionDurationMeasurement" interaction-
type="announcement">
    <parameter-list>
        <parameter name="sessionID">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="userID">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="label">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
    </parameter-list>
</operation>
</operations>
</interface>
<behavior>
    This contract enables external components to get some information
    tracked by the
    DCCAManager when they are signaled.
</behavior>
</contract>
</contract-specification>

```

### DCCAManager\_getSessionUsageData Contract

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name="DCCAManager_getSessionUsageData" version="1.0.0" id-
authority="AlbatrOSS">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
                <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
            </import>
            <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">

```

```

        <type name="albatross:DCCASStatus" version="1.0.0" id-
authority="Albatross" />
    </import>
</imports>

    <interface>
        <operations>
            <operation name="getActionCounter" interaction-
type="interrogation">
                <parameter-list>
                    <parameter name="sessionID">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                    <parameter name="userID">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                    <parameter name="labelCountedAction">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                </parameter-list>
                <termination-list>
                    <termination name="normalTermination" >
                        <parameter-list>
                            <parameter name="actionCounter">
                                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
                            </parameter>
                        </parameter-list>
                    </termination>
                    <termination name="getCounterFailed" >
                        <parameter-list>
                            <parameter name="status">
                                <type
name="albatross:DCCASStatus" version="1.0.0"
id-
authority="Albatross"/>
                            </parameter>
                        </parameter-list>
                    </termination>
                </termination-list>
            </operation>
            <operation name="getObjectSize" interaction-
type="interrogation">
                <parameter-list>
                    <parameter name="sessionID">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                    <parameter name="userID">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                    <parameter name="labelObject">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                </parameter-list>
                <termination-list>
                    <termination name="normalTermination" >
                        <parameter-list>
                            <parameter name="objectTotalSize">

```

```

                                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                <termination name="getCounterFailed ">
                                <parameter-list>
                                <parameter name="status">
                                <type
name="albatross:DCCASStatus" version="1.0.0"
                                id-
authority="Albatross"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>

                                <parameter name="sizeObject">
                                <type name="tmf:integer" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                </operation>
                                <operation name="getSessionDuration" interaction-
type="interrogation">
                                <parameter-list>
                                <parameter name="sessionID">
                                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                <parameter name="userID">
                                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                <termination name="normalTermination" >
                                <parameter-list>
                                <parameter name="sessionDuration">
                                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                <termination name="getSessionDurationFailed ">
                                <parameter-list>
                                <parameter name="status">
                                <type
name="albatross:DCCASStatus" version="1.0.0"
                                id-
authority="Albatross"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                </operations>
                                </interface>
                                <behavior>
                                This contract enables external components to get usage data related to
a given
                                session and a given user.
                                </behavior>
                                </contract>
                                </contract-specification>

```

## 0.10 A2.5 Domain Manager

<b>Name:</b>	Domain Manager
<b>Developer:</b>	Lucent Technologies
<b>Version:</b>	June 2003
<b>Description:</b>	The Domain Manager keeps track of the network that a user is in for the purpose of User Location. A 3 <sup>rd</sup> party service can request the Domain Manager for the location of a user. The request is then forwarded to the appropriate access network. Privacy settings for a user can prevent a request from being forwarded.
<b>Exported contracts:</b>	DomainManager, Parlay X “terminal location service”
<b>Dependencies:</b>	UL agent, OSA/Parlay
<b>Other constraints:</b>	
<b>Reference to SID:</b>	Entities from the Core Model and the User Preference Meta Model are applicable.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="DomainManager" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:uri" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:subscriber-id" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="UpdateNetworkInfo" interaction-
type="announcement">
          <parameter-list>
            <parameter name="subscriber">
              <type name="albatross:subscriber-id"
version="1.0.0" id-authority="AlbatrOSS"/>
            </parameter>
            <parameter name="UL-interface">
              <type name="tmf:uri" version="1.0.0" id-
authority="TMF"/>
            </parameter>
            <parameter name="cost_of_usage">
              <type name="tmf:float" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
        </operation>
        <operation name="GetCurrentNetworkInfo" interaction-
type="interrogation">
```

```

        <parameter-list>
            <parameter name="subscriber">
                <type name="albatross:subscriber-id"
version="1.0.0" id-authority="AlbatrOSS"/>
            </parameter>
        </parameter-list>
    </termination-list>
    <termination name="GetCurrentNetworkInfoRsp">
        <parameter-list>
            <parameter name="UL-interface">
                <type name="tmf:uri"
version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="cost_of_usage">
                <type name="tmf:float"
version="1.0.0" id-authority="TMF"/>
            </parameter>
        </parameter-list>
    </termination>
    <termination name="GetCurrentNetworkInfoErr">
        <parameter-list>
            <parameter name="reason">
                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
            </parameter>
        </parameter-list>
    </termination>
</termination-list>
</operation>
</operations>
</interface>
<behavior>
    This interface maintains information on the current access network of
subscribers.
</behavior>
</contract>
</contract-specification>

```

## 0.11 A2.6 FairQuotes Web Service

**Name:** WS:FairQuotes

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** This web service enables flight information to be retrieved when requested.

**Exported contracts:** **FairQuotes\_FlightInformation**

This contract corresponds to the web service interface defined by FairQuotes to provide some flight information.

**ThirdParty\_QoS**

This contract must be supported by the different 3rd party service providers involved in monitoring their QoS. It enables the service integrator to retrieve the operational state of the related 3rd party service.

**Dependencies:** This component supports some operations that will be used to support the complete and integrated service as defined in the DIS scenario script. This component will interact with SQM that will fetch its operational state.

**Other constraints:** None

**Reference to SID:** The SID does not address the service content aspect.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="FairQuotes_FlightInformation" version="1.0.0" id-
authority="AlbatrOSS">
    <imports>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:FlightDescription" version="1.0.0"
id-authority="AlbatrOSS"/>
        <type name="albatross:FlightInformationStatus" version="1.0.0"
id-authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="getFlightInformation" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="flightDescription">
              <type name="albatross:FlightDescription"
id-authority="AlbatrOSS"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normalTermination" >
              <parameter-list>
                <parameter
name="flightInformation">
                  <type
name="albatross:Address" version="1.0.0"
id-authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name="getFlightInformationFailed ">
              <parameter-list>
                <parameter
name="flightInformationStatus">
                  <type
name="albatross:FlightInformationStatus" version="1.0.0"
id-
authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
      </operations>
```

```

        </interface>
        <behavior>
            This contract enable to get some flight information.
        </behavior>
    </contract>
</contract-specification>

```

### 3<sup>rd</sup> party service management interface for QoS:

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name="ThirdParty_QoS" version="1.0.0" id-authority="AlbatrOSS">
      <imports>
        <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
          <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
          <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
        </import>
        <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
          <type name="albatross: 3rdPartyQoS FailureReport"
            version="1.0.0"
            id-authority="AlbatrOSS"/>
        </import>
      </imports>
      <interface>
        <operations>
          <operation name="getOperationalState" interaction-
            type="interrogation">
            <parameter-list>
              <parameter name="serviceIntegratorID">
                <type name="tmf:string" version="1.0.0"
                  id-authority="TMF"/>
              </parameter>
            </parameter-list>
            <termination-list>
              <termination name="normalTermination" >
                <parameter-list>
                  <parameter
                    name="operationalState">
                    <type name="tmf:float"
                      version="1.0.0" id-authority="TMF"/>
                </parameter>
              </parameter-list>
            </termination>
              <termination name="failure">
                <parameter-list>
                  <parameter name="failureReport">
                    <type
                      name="albatross:3rdPartyQoSFailureReport" version="1.0.0"
                      id-
                      authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
      </operations>
    </interface>
    <behavior>
      This contract must be supported by the different involved 3rd party
      service providers
      operational state to monitor their QoS. It enables the service integrator to get the

```

```

of the related 3rd party service.
    </behavior>
  </contract>
</contract-specification>
A2.20

```

## 0.12 A2.7 Federated Mediation Adaptor

- Name:** Federated Mediation Adaptor (FMA)
- Developer:** FOKUS
- Version:** June 2003
- Description:** The FMA component performs usage mediation for services and network resources. It collects and aggregates usage data, encodes the data in IPDR documents, and transfers the documents to a rating component. It also collects and aggregates IPDR documents produced by other FMA components.
- Exported contracts:** The FMA provides two contracts to its users:  
**FederatedUsageMediation**  
 This contract is provided to a remote FMA running in another administration domain. It enables FMAs to exchange a single IPDR document or a set of IPDR documents.  
**UsageMediation**  
 This contract is provided for the collection of the usage data from network and service resources.
- Dependencies:** RBS.
- Other constraints:** None identified thus far.
- Reference to SID:** The information entities exchanged through the contracts of FMA are part of the Billing subgroup of the Shared Information and Data Model presented in section 4.4 of this deliverable.

### Federated Mediation

```

<?xml version = "1.0" encoding = "UTF-8"?>

<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xmlns =
"http://www.tmforum.org/ngoss" xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name = "FederatedUsageMediation" version = "1.0.0" id-authority = "FOKUS">
    <imports>
      <import from = "http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name = "tmf:basic-string" version = "1.0.0" id-authority =
"TMF"/>
        <type name = "tmf:result-code" version = "1.0.0" id-authority =
"TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name = "sendAcctInfoDoc" interaction-type =
"interrogation">
          <parameter-list>
            <parameter name = "acctInfoDoc">
              <type name = "AcctInfoDoc" version =
"1.0.0" id-authority = "FOKUS"/>

```

```

        </parameter>
      </parameter-list>
    </termination-list>
    <termination name = "normal-completion">
      <parameter-list>
        <parameter name = "status-code">
          <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
        <parameter name = "acctInfoDoc">
          <type name = "AcctInfoDoc"
version = "1.0.0" id-authority = "FOKUS"/>
        </parameter>
      </parameter-list>
    </termination>
    <termination name = "abnormal-completion">
      <parameter-list>
        <parameter name =
"e_acctInfoExchange">
          <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
<operation name = "sendAcctInfoDocSet" interaction-type =
"interrogation">
  <parameter-list>
    <parameter name = "acctInfoDocSet">
      <type name = "AcctInfoDocSet" version =
"1.0.0" id-authority = "FOKUS"/>
    </parameter>
  </parameter-list>
  <termination-list>
    <termination name = "normal-completion">
      <parameter-list>
        <parameter name = "status-code">
          <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
        <parameter name =
"acctInfoDocSet">
          <type name =
"AcctInfoDocSet" version = "1.0.0" id-authority = "FOKUS"/>
        </parameter>
      </parameter-list>
    </termination>
    <termination name = "abnormal-completion">
      <parameter-list>
        <parameter name =
"e_acctInfoExchange">
          <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
</operations>
</interface>
<behavior> This contract is provided by FMA (Federated Mediation Adapter) to a
remote FMA running

```

in another administration domain. It enable FMAs to exchange a single IPDR document or a set of IPDR documents.

```

    </behavior>
  </contract>
</contract-specification>

```

## Usage Mediation

```

<?xml version = "1.0" encoding = "UTF-8"?>
<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xmlns =
"http://www.tmforum.org/ngoss" xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name = "UsageMediation" version = "1.0.0" id-authority = "FOKUS">
    <imports>
      <import from = "http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name = "tmf:basic-string" version = "1.0.0" id-authority =
"TMF"/>
        <type name = "tmf:result-code" version = "1.0.0" id-authority =
"TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name = "sendUsageData" interaction-type =
"interrogation">
          <parameter-list>
            <parameter name = "usageData">
              <type name = "UsageData" version =
"1.0.0" id-authority = "FOKUS"/>
            </parameter>
            <parameter name = "accountingSessionID">
              <type name = "integer" />
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name = "normal-completion">
              <parameter-list>
                <parameter name = "status-code">
                  <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                </parameter>
                <parameter name = "usageData">
                  <type name = "UsageData"
version = "1.0.0" id-authority = "FOKUS"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
              <parameter-list>
                <parameter name =
"e_usageMediation">
                  <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
        <operation name = "newSession" interaction-type = "interrogation">
          <parameter-list>
            <parameter name = "sessionConfigurationData">
              <type name = "SessionConfigurationData"
version = "1.0.0" id-authority = "FOKUS"/>
            </parameter>
          </parameter-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>

```

```

        </parameter-list>
        <termination-list>
            <termination name = "normal-completion">
                <parameter-list>
                    <parameter name = "status-code">
                        <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                    <parameter name =
"accountingSessionID">
                        <type name = "integer" />
                    </parameter>
                </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
                <parameter-list>
                    <parameter name =
"e_usageMediation">
                        <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
    <operation name = "endSession" interaction-type = "interrogation">
        <parameter-list>
            <parameter name = "accountingSessionID">
                <type name = "integer" />
            </parameter>
        </parameter-list>
        <termination-list>
            <termination name = "normal-completion">
                <parameter-list>
                    <parameter name = "status-code">
                        <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                    <parameter name =
"terminationStatus">
                        <type name = "string" />
                    </parameter>
                </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
                <parameter-list>
                    <parameter name =
"e_usageMediation">
                        <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
</operations>
</interface>
<behavior> This contract is provided by FMA (Federated Mediation Adapter) for
the
collection of the usage data from network and service resources. The openSession and
endSession operations
are used to open service usage session. When usage session is over, sendUsageData operation is
used
to collect usage data. </behavior>

```

```
</contract>
</contract-specification>
```

### 0.13 A2.8 Google Web Service

- Name:** WS:Google
- Developer:** ATOS ORIGIN
- Version:** June 2003
- Description:** This web service supports internet search engine facilities.
- Exported contracts:** **LocationBasedInternetSearch**  
 This contract corresponds to the google web service interface. It enables access to the google functionalities by calling specific operations. Particularly the exported operation enables the city to be defined where the user is located and the user's current field(s) of interest.
- ThirdParty\_QoS**  
 This contract must be supported by the different 3rd party service providers involved in monitoring their QoS. It enables the service integrator to retrieve the operational state of the related 3rd party service (cf. WS:FairQuotes contract).
- Dependencies:** This component supports some operations that will be used to support the complete and integrated service as defined in the DIS scenario script. This component will interact with SQM that will fetch its operational state.
- Other constraints:** None
- Reference to SID:** The SID does not address the service content aspect.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="LocationBasedInternetSearch" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:SearchResult" version="1.0.0" id-
authority="AlbatrOSS"/>
        <type name="albatross:SearchStatus" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="search" interaction-type="interrogation">
          <parameter-list>
            <parameter name="cityName">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="interestField">
```

```

                                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                <parameter name="otherKeyWords">
                                    <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                    <termination name="normalTermination" >
                                        <parameter-list>
                                            <parameter name="searchResult">
                                                <type
name="albatross:SearchResult" version="1.0.0"
                                                id-authority="AlbatrOSS"/>
                                            </parameter>
                                        </parameter-list>
                                    </termination>
                                    <termination name="searchFailed ">
                                        <parameter-list>
                                            <parameter name="searchStatus">
                                                <type
name="albatross:SearchStatus" version="1.0.0"
                                                id-
authority="AlbatrOSS"/>
                                            </parameter>
                                        </parameter-list>
                                    </termination>
                                </termination-list>
                            </operation>
                        </operations>
                    </interface>
                <behavior>
                    This contract enables to get a list of URLs that relates to a given
location and a
                    particular field of interest.
                </behavior>
            </contract>
        </contract-specification>

```

## 0.14 A2.9 Mapporama Web Service

**Name:** WS:Mapporama  
**Developer:** ATOS ORIGIN  
**Version:** June 2003  
**Description:** This web service supports Mapporama web services that provide reverse geo-coding information (addresses with latitude and longitude) and related maps.

<b>Exported contracts:</b>	<p><b>RT_location</b></p> <p>This contract corresponds to the Maporama web service interface.</p> <p>This contract allows external components to get some real-time information about the user's current location. This information is:</p> <ul style="list-style-type: none"> <li>- The current address with a given accuracy</li> <li>- The current map of the user's environment</li> </ul> <p><b>ThirdParty_QoS</b></p> <p>This contract must be supported by the different 3rd party service providers involved in monitoring their QoS. It enables the service integrator to retrieve the operational state of the related 3rd party service (cf. WS:FairQuotes contract)</p>
<b>Dependencies:</b>	<p>This component supports some operations that will be used to support the complete and integrated service as defined in the DIS scenario script.</p> <p>This component will interact with SQM that will fetch its operational state.</p>
<b>Other constraints:</b>	None
<b>Reference to SID:</b>	The SID does not address the service content aspect.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name=" RT_location" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:uri" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name=" albatross:Address" version="1.0.0" id-
authority="AlbatrOSS"/>
        <type name="albatross:AddressLocationStatus" version="1.0.0"
id-authority="AlbatrOSS"/>
        <type name="albatross:MapInfos" version="1.0.0" id-
authority="AlbatrOSS"/>
        <type name="albatross:DrawMapStatus" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="locateAddress" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="latitude">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="longitude">
              <type name="tmf:string" version="1.0.0" id-
authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
```

```

        <termination name="normalTermination" >
            <parameter-list>
                <parameter name="currentAddress">
                    <type
name="albatross:Address" version="1.0.0"
                    id-authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="addressLocationFailed ">
            <parameter-list>
                <parameter
name="addressLocationStatus">
                    <type
name="albatross:AddressLocationStatus" version="1.0.0"
                    id-
authority="AlbatrOSS"/>
                </parameter>
                <parameter name="currentAddress">
                    <type
name="albatross:Address" version="1.0.0"
                    id-authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
<operation name="drawMap" interaction-type="interrogation">
    <parameter-list>
        <parameter name="latitude">
            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="longitude">
            <type name="tmf:string" version="1.0.0" id-
authority="TMF"/>
        </parameter>
        <parameter name="mapInfos">
            <type name="albatross:MapInfos" version="1.0.0"
                id-authority="AlbatrOSS"/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normalTermination" >
            <parameter-list>
                <parameter name="mapUri">
                    <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="drawMapFailed ">
            <parameter-list>
                <parameter name="drawMapStatus">
                    <type
name="albatross:DrawMapStatus" version="1.0.0"
                    id-
authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>

```

```

        </operations>
    </interface>
    <behavior>
    This contract allows external components to get some real Time information
about the
        current user location. This information are:
        - the current address with a given accuracy,
        - the current map of the user environment.
    </behavior>
    </contract>
</contract-specification>

```

## 0.15 A2.10 MeetMe Service

**Name:** MeetMe service

**Developer:** Lucent Technologies

**Version:** June 2003

**Description:** The MeetMe service is a 3<sup>rd</sup> party demonstration service. It is a location-based mobile dating service that demonstrates the use of the facilities of the AlbatrOSS components. Apart from a web-based user interface, it offers a (web-based) management interface, and an interface to exchange profile data with other instances of the service.

**Exported contracts:** Mobile MeetMe service

**Dependencies:** Interface Repository, Domain Manager, Q3ADE IPDR Store

**Other constraints:**

**Reference to SID:** The MeetMe service reflects entities from the Core Model, the User Preference Meta Model for dating profiles, and the Billing Model for charging purposes.

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name="Mobile MeetMe service" version="1.0.0" id-authority="AlbatrOSS">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
                <type name="tmf:exception" version="1.0.0" id-authority="TMF"/>
            </import>
            <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
                <type name="albatross:guestprofile" version="1.0.0" id-authority="AlbatrOSS"/>
            </import>
        </imports>
        <interface>
            <operations>
                <operation name="startMobileMeetMe" interaction-type="announcement">
                    <parameter-list>
                        <parameter name="userid">
                            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
                        </parameter>
                        <parameter name="username">
                            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>

```

```

        </parameter>
        <parameter name="password">
            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
        <parameter name="servicetoken">
            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
        <parameter name="language">
            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
    </parameter-list>
</operation>
<operation name="getGuestProfile" interaction-type="interrogation">
    <parameter-list>
        <parameter name="username">
            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
        <parameter name="password">
            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
        <termination-list>
            <termination name="normal-completion">
                <parameter-list>
                    <parameter name="guestprofiledata">
                        <type name="albatross:guestprofile" version="1.0.0"
id-authority="Albatross"/>
                    </parameter>
                </parameter-list>
            </termination>
            <termination name="abnormal-completion">
                <parameter-list>
                    <parameter name="exception">
                        <type name="tmf:exception" version="1.0.0" id-
authority="TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </parameter-list>
</operation>
</operations>
</interface>
<behavior>
    This interface allows starting of the Mobile MeetMe service, and to obtain profile
data from a user.
</behavior>
</contract>
</contract-specification>

```

## 0.16 A2.11 Monitoring Analysis Component

**Name:** Monitoring Analysis Component (MAC)  
**Developer:** FOKUS  
**Version:** June 2003

- Description:** The MAC collects and aggregates KPIs (key performance indicators) from network and service resources and transforms them into KQIs (key quality indicators) using algorithms. Using one or more KQIs as the basis, the MAC produces service quality reports which can be used by other OSS processes and a system administrator.
- Exported contracts:** QoSMeasurementAdmin: This contract is provided by the MAC to an OSS application for obtaining reports on service quality.
- Dependencies:** NPE.
- Other constraints:** None identified thus far.
- Reference to SID:** The information entities exchanged through the contracts of MAC are part of the SLA subgroup of the Shared Information and Data Model presented in section 4.3 of this deliverable.

```

<?xml version = "1.0" encoding = "UTF-8"?>

<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xmlns =
"http://www.tmforum.org/ngoss" xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name = "QoSMeasurementAdmin" version = "1.0.0" id-authority = "FOKUS">
    <imports>
      <import from = "http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name = "tmf:basic-string" version = "1.0.0" id-authority =
"TMF"/>
        <type name = "tmf:result-code" version = "1.0.0" id-authority =
"TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name = "startMeasurement" interaction-type =
"interrogation">
          <parameter-list>
            <parameter name = "MeasurementTaskParameter">
              <type name = "MeasurementTaskParameter"
version = "1.0.0" id-authority = "FOKUS"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name = "normal-completion">
              <parameter-list>
                <parameter name = "status-code">
                  <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                </parameter>
                <parameter name = "TaskID">
                  <type name = "integer" />
                </parameter>
                <parameter name = "TimeStamp">
                  <type name = "dateTime" />
                </parameter>
              </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
              <parameter-list>
                <parameter name =
"e_QoSMeasurementException">
                  <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>

```

```

        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
<operation name = "reportQuality" interaction-type =
"interrogation">
  <parameter-list>
    <parameter name = "TaskID">
      <type name = "integer" />
    </parameter>
    <parameter name = "TimeStamp">
      <type name = "dateTime" />
    </parameter>
  </parameter-list>
  <termination-list>
    <termination name = "normal-completion">
      <parameter-list>
        <parameter name = "status-code">
          <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
        <parameter name =
"QualityReportParameter">
          <type name = "" version =
"1.0.0" id-authority = "FOKUS"/>
        </parameter>
      </parameter-list>
    </termination>
    <termination name = "abnormal-completion">
      <parameter-list>
        <parameter name =
"e_QoSMeasurementException">
          <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
</operations>
</interface>
<behavior> This contract is provided by MAC (Monitoring Analysis
Component) to an OSS application to obtain service quality report.
The user of this contract uses startMeasurement and reportQuality operations to start the
measurement process and
obtain the service quality report from MAC. </behavior>
</contract>
</contract-specification>

```

## 0.17 A2.12 Network Performance Evaluator

**Name:** Network Performance Evaluator (NPE)  
**Developer:** FOKUS  
**Version:** June 2003

- Description:** For the values of KPIs, the MAC relies on the NPE. The process of collecting KPIs from network and service resources is automated. NPE is a rule-based component and manages the operations of performance meters which collect performance data from network and service resource. Meters can be programmed by means of filter specifications, which are simple rules that instruct meters to send performance or traffic data or monitor any specific IP address.
- Exported contracts:** RemoteQoSMeasurement: This contract is provided by the NPE to the MAC.
- Dependencies:** None.
- Other constraints:** None identified thus far.
- Reference to SID:** The information entities exchanged through the contracts of the NPE are part of the SLA subgroup of the Shared Information and Data Model presented in section 4.3 of this deliverable.

```
<?xml version = "1.0" encoding = "UTF-8"?>
<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xmlns =
"http://www.tmforum.org/ngoss" xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name = "RemoteQoSMeasurement" version = "1.0.0" id-authority = "FOKUS">
    <imports>
      <import from = "http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name = "tmf:basic-string" version = "1.0.0" id-authority =
"TMF"/>
        <type name = "tmf:result-code" version = "1.0.0" id-authority =
"TMF"/>
      </import>
    </imports>
    <complexType name = "date">
      <sequence>
        <element name = "tvsec" type = "xsd:long" minOccurs = "1"
maxOccurs = "1"/>
      </sequence>
    </complexType>
    <complexType name = "flow">
      <sequence>
        <element name = "srcip" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "dstip" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "srcport" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "dstport" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
      </sequence>
    </complexType>
    <complexType name = "Metric">
      <sequence>
        <element name = "mtask1ID" type = "xsd:long" minOccurs = "1"
maxOccurs = "1"/>
        <element name = "mtask2ID" type = "xsd:long" minOccurs = "1"
maxOccurs = "1"/>
        <element name = "mcollector1ID" type = "xsd:long" minOccurs =
"1" maxOccurs = "1"/>
        <element name = "mcollector2ID" type = "xsd:long" minOccurs =
"1" maxOccurs = "1"/>
        <element name = "Name" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
      </sequence>
    </complexType>
  </contract>
</contract-specification>
```

```

        <element name = "Description" type = "xsd:string" minOccurs =
"1" maxOccurs = "1" nillable = "true"/>
        <element name = "Creator" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "start" type = "ns:date" minOccurs = "1"
maxOccurs = "1"/>
        <element name = "stop" type = "ns:date" minOccurs = "1"
maxOccurs = "1"/>
        <element name = "filter" type = "ns:flow" minOccurs = "1"
maxOccurs = "1"/>
    </sequence>
</complexType>
<complexType name = "HTTPRTTMetric">
    <complexContent>
        <extension base = "ns:Metric">
            <sequence>
                <element name = "Meter1" type = "xsd:string"
minOccurs = "1" maxOccurs = "1" nillable = "true"/>
            </sequence>
        </extension>
    </complexContent>
</complexType>
<complexType name = "MeasurementResult">
    <all>
        <element name = "mmtaskStatus" type = "xsd:string" minOccurs =
"1" maxOccurs = "1" nillable = "true"/>
        <element name = "mmtaskStatusLupdate" type = "xsd:string"
minOccurs = "1" maxOccurs = "1" nillable = "true"/>
        <element name = "mmtcollectorStatus" type = "xsd:string"
minOccurs = "1" maxOccurs = "1" nillable = "true"/>
        <element name = "mmtcollectorStatusLupdate" type = "xsd:string"
minOccurs = "1" maxOccurs = "1" nillable = "true"/>
        <element name = "httpMin" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "httpMax" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "httpAvg" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "httpNumMeas" type = "xsd:string" minOccurs =
"1" maxOccurs = "1" nillable = "true"/>
        <element name = "dnsMin" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "dnsMax" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "dnsAvg" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "dnsNumMeas" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "tcpMin" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "tcpMax" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "tcpAvg" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
        <element name = "tcpNumMeas" type = "xsd:string" minOccurs = "1"
maxOccurs = "1" nillable = "true"/>
    </all>
</complexType>
<interface>
    <operations>
        <operation name = "startMeasurement" interaction-type =
"interrogation">
            <parameter-list>
                <parameter name = "startMeasurementRequest">
                    <type name = "HTTPRTTMetric" version =
"1.0.0" id-authority = "FOKUS"/>
                </parameter>
            </parameter-list>
        </operation>
    </operations>
</interface>

```

```

        </parameter-list>
        <termination-list>
            <termination name = "normal-completion">
                <parameter-list>
                    <parameter name = "status-code">
                        <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                    <parameter name =
"startMeasurementResponse">
                        <type name =
"HTTPRPTMetric" version = "1.0.0" id-authority = "FOKUS"/>
                    </parameter>
                </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
                <parameter-list>
                    <parameter name = "exception">
                        <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
    <operation name = "obtainMeasurement" interaction-type =
"interrogation">
        <parameter-list>
            <parameter name = "obtainMeasurementRequest">
                <type name = "HTTPRPTMetric" version =
"1.0.0" id-authority = "FOKUS"/>
            </parameter>
        </parameter-list>
        <termination-list>
            <termination name = "normal-completion">
                <parameter-list>
                    <parameter name = "status-code">
                        <type name = "tmf:result-
code" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                    <parameter name =
"obtainMeasurementResponse">
                        <type name =
"MeasurementResult" version = "1.0.0" id-authority = "FOKUS"/>
                    </parameter>
                </parameter-list>
            </termination>
            <termination name = "abnormal-completion">
                <parameter-list>
                    <parameter name = "exception">
                        <type name =
"tmf:exception" version = "1.0.0" id-authority = "TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
</operations>
</interface>
<behavior> This contract is provided by NPE (Network Performance Evaluator) to
MAC (Monitoring Analysis
Component). It enables measurement of the performance of network and service resources. The
user of this contract

```

```
(i.e. MAC) uses startMeasurement and obtainMeasurement operations to start the measurement
process and
obtain the performance data from network or service resources. Among other parameters, the two
most important parameters
that are passed to these two operations are: (1) the name of KPI (key performance indicator) ;
and (2) the name (or names) of the Performance Meter that will
retrieve the data. The value of the requested KPI is returned as the performance data.
</behavior>
    </contract>
</contract-specification>
```

## 0.18 A2.13 OSA-Parlay X Web Service (Dynamic user context manager)

<b>Name:</b>	WS:OSA-Parlay-X
<b>Developer:</b>	ATOS ORIGIN
<b>Version:</b>	June 2003
<b>Description:</b>	This web service enables access to OSA/Parlay functionalities. In the DIS sub-trial the system will specifically access the user's location and user's status information.
<b>Exported contracts:</b>	<p><b>MapporamaComponent_RT_location</b></p> <p>This contract corresponds to some part of the OSA-Parlay-X web service interface. This contract allows external components to obtain some contextual information about the user from an OSA Parlay gateway, such as current position and communication status.</p> <p><b>ThirdParty_QoS</b></p> <p>This contract must be supported by the different 3rd party service providers involved in monitoring their QoS. It enables the service integrator to retrieve the operational state of the related 3rd party service (cf. FairQuotes contract).</p>
<b>Dependencies:</b>	<p>This component supports some operations that will be used to support the complete and integrated service as defined in the DIS scenario script.</p> <p>This component will interact with SQM that will fetch its operational state.</p>
<b>Other constraints:</b>	None
<b>Reference to SID:</b>	The SID does not address the service content aspect.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name="OsaParlayXComponent_userContext" version="1.0.0" id-
authority="AlbatrOSS">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </import>
            <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
                <type name="albatross:OSAParlayStatus" version="1.0.0"
id-authority="AlbatrOSS"/>
                <type name="albatross:UserStatus" version="1.0.0"
id-authority="AlbatrOSS"/>
            </import>
        </imports>
    </contract>
</contract-specification>
```

```

        </imports>
        <interface>
            <operations>
                <operation name="getPosition" interaction-type="interrogation">
                    <parameter-list>
                        <parameter name="userPhoneNumber">
                            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                        </parameter>
                    </parameter-list>
                    <termination-list>
                        <termination name="normalTermination" >
                            <parameter-list>
                                <parameter name="latitude">
                                    <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                                </parameter>
                                <parameter name="longitude">
                                    <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                        <termination name="getPositionFailed " >
                            <parameter-list>
                                <parameter name="OSAParlayStatus">
                                    <type
name="albatross:OSAParlayStatus" version="1.0.0"
                                    id-
authority="AlbatrOSS"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                    </termination-list>
                </operation>
                <operation name="getUserStatus" interaction-
type="interrogation">
                    <parameter-list>
                        <parameter name="userPhoneNumber">
                            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                        </parameter>
                    </parameter-list>
                    <termination-list>
                        <termination name="normalTermination" >
                            <parameter-list>
                                <parameter name="userStatus">
                                    <type
name="albatross:UserStatus" version="1.0.0"
                                    id-
authority="AlbatrOSS"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                        <termination name="getUserStatusFailed " >
                            <parameter-list>
                                <parameter name="OSAParlayStatus">
                                    <type
name="albatross:OSAParlayStatus" version="1.0.0"
                                    id-
authority="AlbatrOSS"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                    </termination-list>
                </operation>
            </operations>
        </interface>
    
```

```

        </termination-list>
    </operation>
</operations>
</interface>
<behavior>
    This contract allows external components to get some contextual information
about the
    user from an OSA Parlay gateway, like his current position and communication
status.
</behavior>
</contract>
</contract-specification>

```

## 0.19 A2.14 Q3ADE IPDR Store

**Name:** Q3ADE IPDRStore

**Developer:** UH Communications A/S

**Version:** 2.0

**Description:** The Q3ADE IPDRStore component implements the functionality of the logical function “Federated Usage Mediation” described in the AlbatROSS functional architecture in section 3.3.

The Q3ADE IPDRStore component is responsible for

- Recording usage information from metering components and mediating to standardised IPDR record format. Usage information can be received in either proprietary formats (PAR) over an FTP interface or as XML based records retrieved through a web-services interface.
- Providing persistency for IPDR records. After usage data retrieval and mediation, the IPDR Store component provides persistency for the IPDR records when awaiting correlation and subsequent transmission.
- Performing correlation of usage records. Network and service usage data records pertaining to the same user or service session are correlated and packaged into IPDR documents.
- Transmitting IPDR documents over a web services interface to a Rating component for further processing by rating and billing functions.

**Exported contracts:** **IPDRStore\_NDM-U\_A**

This contract allows service elements to send Proprietary Account Records (PAR) to the IPDRStore for processing. The Proprietary Account Record (PAR) is part of the Billing subgroup of the Shared Information and Data Model presented in section 4.4 of this deliverable.

**IPDRStore\_NDM-U\_B**

This interface allows a service element to push usage information as IPDR documents to the Q3ADE IPDRStore.

**IPDRStore\_NDM-U\_D**

This contract allows a billing system to subscribe to the Q3ADE IPDRStore in order to receive IPDR documents.

**Dependencies:** The Q3ADE IPDRStore component allows a Rating component to subscribe to IPDR Documents.

The Q3ADE IPDRStore component can be set to subscribe for usage data from metering components.

**Other constraints:** None

**Reference to SID** The Proprietary Account Record (PAR), IPDR Record (IPDR) and IPDR Document (IPDRDoc) are part of the Billing subgroup of the Shared Information and Data Model presented in section 4.4 of this deliverable.

### IPDRStore\_NDM-U\_A

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="IPDRStore_NDM-U_A" version="1.0.0" id-authority="Albatross">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:par" version="1.0.0" id-
authority="Albatross"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="Open" interaction-type="interrogation">
          <parameter-list>
            <parameter name="UserName">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="Password">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="OpenRsp"/>
            <termination name="FaultOpenRsp">
              <parameter-list>
                <parameter name="openFault">
                  <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
        <operation name="Put" interaction-type="interrogation">
          <parameter-list>
            <parameter name="fileName">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="par">
              <type name="albatross:par"
version="1.0.0" id-authority="Albatross"/>
            </parameter>
          </parameter-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>
```

```

        </parameter>
      </parameter-list>
    </termination-list>
    <termination name="PutRsp"/>
    <termination name="FaultPutRsp">
      <parameter-list>
        <parameter name="putFault">
          <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
<operation name="Close" interaction-type="announcement"/>
</operations>
</interface>
<behavior>
  This contract allows service elements to send Proprietary Account
Records (PAR) to the IDRStore for processing.
</behavior>
</contract>
</contract-specification>

```

### IPDRStore\_NDM-U\_B

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="IPDRStore_NDM-U_B" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:unsigned-int" version="1.0.0" id-
authority="TMF"/>
        <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:boolean" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:uri" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ipdr-status-list" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="PushIPDRReq" interaction-type="interrogation">
          <parameter-list>
            <parameter name="ipdrDocument">
              <type name="ipdr:document"
version="1.0.0" id-authority="IPDR"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="PushIPDRRsp">
              <parameter-list>
                <parameter name="statusList">
                  <type
name="albatross:ipdr-status-list" version="1.0.0" id-authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name="FaultPushIPDRRsp">

```

```

        <parameter-list>
            <parameter name="reason">
                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="seqNumHint">
                <type name="tmf:integer"
version="1.0.0" id-authority="TMF"/>
            </parameter>
        </parameter-list>
    </termination>
</termination-list>
</operation>
</operations>
</interface>
<behavior>
    This interface allows a service element to push usage information as
IPDR documents to the IPDRStore.
</behavior>
</contract>
</contract-specification>

```

### IPDRStore\_NDM-U\_D

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name="IPDRStore_NDM-U_D" version="1.0.0" id-authority="AlbatrOSS">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
                <type name="tmf:unsigned-int" version="1.0.0" id-
authority="TMF"/>
                <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
                <type name="tmf:boolean" version="1.0.0" id-authority="TMF"/>
                <type name="tmf:uri" version="1.0.0" id-authority="TMF"/>
            </import>
        </imports>
        <interface>
            <operations>
                <operation name="SubscribeReq" interaction-type="interrogation">
                    <parameter-list>
                        <parameter name="version">
                            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                        </parameter>
                        <parameter name="requestorId">
                            <type name="tmf:uri" version="1.0.0" id-
authority="TMF"/>
                        </parameter>
                        <parameter name="groupId">
                            <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                        </parameter>
                        <parameter name="beginSeqNum">
                            <type name="tmf:unsignedint"
version="1.0.0" id-authority="TMF"/>
                        </parameter>
                        <parameter name="idOnly">
                            <type name="tmf:boolean" version="1.0.0"
id-authority="TMF"/>
                        </parameter>
                    </parameter-list>
                </operation>
            </operations>
        </interface>
    </contract>
</contract-specification>

```

```

        </parameter-list>
        <termination-list>
            <termination name="SubscribeRsp">
                <parameter-list>
                    <parameter name="groupId">
                        <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                    </parameter>
                    <parameter name="beginSeqNum">
                        <type
name="tmf:unsignedint" version="1.0.0" id-authority="TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
            <termination name="FaultSubscribeRsp">
                <parameter-list>
                    <parameter
name="unsubscribeFault">
                        <type name="tmf:string"
version="1.0" id-authority="TMF"/>
                    </parameter>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
    <operation name="UnsubscribeReq" interaction-
type="interrogation">
        <parameter-list>
            <parameter name="version">
                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
            <parameter name="requestorId">
                <type name="tmf:uri" version="1.0.0" id-
authority="TMF"/>
            </parameter>
        </parameter-list>
        <termination-list>
            <termination name="UnsubscribeRsp">
            </termination>
        </termination-list>
    </operation>
</operations>
</interface>
<behavior>
    This contract allows a billing system to subscribe to the IPDRStore in
order to receive IPDR documents.
</behavior>
</contract>
</contract-specification>

```

## 0.20 A2.15 Rating Component

**Name:** Rating Component  
**Developer:** WIT  
**Version:** 1.0

**Description:** The Rating component incorporates functionality to perform rating and billing on usage records presented from a mediation source. The rating process involves applying a charging scheme that encapsulates the rules and processes for rating a particular service to a usage record. This assigns a charge entry to the record. The billing component takes the rated documents and presents a detailed summary of the user's service session including individual service charges and totals in a format that is specified in the user's profile. The Rating component uses a single record repository to store and retrieve the rated usage records.

**Exported contracts:** **NDM-U Protocol Specification (push protocol primitive)**  
The IPDR NDM-U document transfer protocol defines a transport neutral specification of the possible interfaces between an IPDR Transmitter (IT) and Business Support System (BSS). Typically the IT maps to the transport interface of the mediation entity and the BSS maps to the rating and billing entity.

**Persistence**

A common interface was defined to facilitate persistence and retrieval of rated usage documents.

**Dependencies:** Q3ADE IPDR Store

**Other constraints:** None

**Reference to SID:**

IPDR Record (IPDR) and IPDR Document (IPDRDoc) are part of the Billing subgroup of the Shared Information and Data Model presented in section 4.4 of this deliverable.

### NDM-U Protocol Specification

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss
C:\Projects\AlbatrOSS\TMFORU~1\Contracts\Schema\contract.xsd">
  <contract name="NDM-U Transfer Protocol" version="1.0" id-authority="AlbatrOSS">
    <description>Contract specification for the IPDR NDM-U Transfer Protocol. Only
covers the Push protocol primitive</description>
    <imports>
      <import from="types.xml">
        <type name="basic-string" version="1.0" id-authority="TMF"/>
        <type name="integer" version="1.0" id-authority="TMF"/>
        <type name="uri" version="1.0" id-authority="TMF"/>
        <type name="uuid" version="1.0" id-authority="TMF"/>
        <type name="IPDRDoc" version="1.0" id-authority="IPDR"/>
        <type name="NegativeRsp" version="1.0" id-authority="IPDR"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="PushReq" interaction-type="interrogation">
          <parameter-list>
            <parameter name="version">
              <type name="integer" version="1.0" id-
authority="TMF"/>
            </parameter>
            <parameter name="requestorId">
```

```

                                <type name="uri" version="1.0" id-
authority="TMF"/>
                                </parameter>
                                <parameter name="groupId">
                                <type name="basic-string" version="1.0"
id-authority="TMF"/>
                                </parameter>
                                <parameter name="docId">
                                <type name="uuid" version="1.0" id-
authority="TMF"/>
                                </parameter>
                                <parameter name="groupSeqNum">
                                <type name="integer" version="1.0" id-
authority="TMF"/>
                                </parameter>
                                <parameter name="IPDRDoc">
                                <type name="IPDRDoc" version="1.0" id-
authority="IPDR"/>
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                <termination name="PushRsp+"/>
                                <termination name="PushRsp-">
                                <parameter-list>
                                <parameter name="NegativeRsp">
                                <type name="NegativeRsp"
version="1.0" id-authority="IPDR"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                </operations>
                                </interface>
                                <behavior>String</behavior>
                                </contract>
</contract-specification>

```

## Persistence

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XML Spy v4.2 U (http://www.xmlspy.com)-->
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss
C:\Projects\AlbatrOSS\TMFORU~1\Contracts\Schema\contract.xsd">
    <contract name="Persistence Contract" version="1.0" id-authority="TSSG">
        <description>Contract specification for the IPDR document persistence component
used by the RBS</description>
        <imports>
            <import from="types.xml">
                <type name="basic-string" version="1.0" id-authority="TMF"/>
                <type name="integer" version="1.0" id-authority="TMF"/>
            </import>
        </imports>
        <interface>
            <operations>
                <operation name="openDatabase" interaction-type="interrogation">
                    <parameter-list>
                        <parameter name="server">
                            <type name="basic-string" version="1.0"
id-authority="TMF"/>
                        </parameter>
                        <parameter name="port">

```

```

                                <type name="integer" version="1.0" id-
authority="TMF"/>
                                </parameter>
                                <parameter name="username">
                                <type name="basic-string" version="1.0"
id-authority="TMF"/>
                                </parameter>
                                <parameter name="password">
                                <type name="basic-string" version="1.0"
id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                <termination name="normal-completion">
                                <parameter-list>
                                <parameter name="result">
                                <type name="result-code"
version="1.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                <termination name="abnormal-completion">
                                <parameter-list>
                                <parameter name="exception">
                                <type name="exception"
version="1.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                <operation name="closeDatabase" interaction-
type="interrogation">
                                <parameter-list/>
                                <termination-list>
                                <termination name="normal-completion">
                                <parameter-list>
                                <parameter name="result">
                                <type name="result-code"
version="1.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                <termination name="abnormal-completion">
                                <parameter-list>
                                <parameter name="exception">
                                <type name="exception"
version="1.0" id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                <operation name="addDocument" interaction-type="interrogation">
                                <parameter-list>
                                <parameter name="name">
                                <type name="basic-string" version="1.0"
id-authority="TMF"/>
                                </parameter>
                                <parameter name="location">
                                <type name="basic-string" version="1.0"
id-authority="TMF"/>
                                </parameter>

```

```

        <parameter name="document">
            <type name="basic-string" version="1.0"
id-authority="TMF"/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normal-completion">
            <parameter-list>
                <parameter name="result">
                    <type name="result-code"
version="1.0" id-authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="abnormal-completion">
            <parameter-list>
                <parameter name="exception">
                    <type name="exception"
version="1.0" id-authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
<operation name="deleteDocument" interaction-
type="interrogation">
    <parameter-list>
        <parameter name="name">
            <type name="basic-string" version="1.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="location">
            <type name="basic-string" version="1.0"
id-authority="TMF"/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normal-completion">
            <parameter-list>
                <parameter name="result">
                    <type name="result-code"
version="1.0" id-authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="abnormal-completion">
            <parameter-list>
                <parameter name="exception">
                    <type name="exception"
version="1.0" id-authority="TMF"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
<operation name="getDocument" interaction-type="interrogation">
    <parameter-list>
        <parameter name="name">
            <type name="basic-string" version="1.0"
id-authority="TMF"/>
        </parameter>
        <parameter name="location">

```



```

        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
</operations>
</interface>
<behavior/>
</contract>
</contract-specification>

```

## Types

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XML Spy v4.2 U (http://www.xmlspy.com)-->
<shared-information-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss
C:\Projects\Albatross\TMFORU~1\Contracts\Schema\sld.xsd">
  <shared-information name="basic-string" version="1.0" id-authority="TMF">
    <type name="UTF-8" version="1.0" id-authority="ISO"/>
  </shared-information>
  <shared-information name="integer" version="1.0" id-authority="TMF">
    <type name="" version="1.0" id-authority="ISO"/>
  </shared-information>
  <shared-information name="uri" version="1.0" id-authority="TMF">
    <extends name="basic-string" version="1.0" id-authority="TMF"/>
  </shared-information>
  <shared-information name="uuid" version="1.0" id-authority="TMF">
    <extends name="basic-string" version="1.0" id-authority="TMF"/>
  </shared-information>

  <shared-information name="result-code" version="1.0.0" id-authority="TMF">
    <type name="" version="" id-authority=""/>
  </shared-information>
  <shared-information name="exception" version="1.0.0" id-authority="TMF">
    <attributes>
      <attribute name="message">
        <type name="basic-string" version="1.0.0" id-authority="TMF"/>
      </attribute>
    </attributes>
  </shared-information>

  <shared-information name="NegativeRsp" version="1.0" id-authority="IPDR">
    <attributes>
      <attribute name="reasonCode">
        <type name="integer" version="1.0" id-authority="TMF"/>
      </attribute>
      <attribute name="delayHint">
        <type name="integer" version="1.0" id-authority="TMF"/>
      </attribute>
      <attribute name="seqNumHint">
        <type name="integer" version="1.0" id-authority="TMF"/>
      </attribute>
      <attribute name="versionHint">
        <type name="basic-string" version="1.0" id-authority="TMF"/>
      </attribute>
      <attribute name="primitiveList">
        <type name="basic-string" version="1.0" id-authority="TMF"/>
      </attribute>
    </attributes>
  </shared-information>

```

```

<shared-information name="IPDRType" version="1.0" id-authority="IPDR">
  <attributes>
    <attribute name="IPDRCreationTime">
      <type name="" version="" id-authority=""/>
    </attribute>
    <attribute name="seqNum">
      <type name="integer" version="1.0" id-authority="TMF"/>
    </attribute>
  </attributes>
</shared-information>
<shared-information name="IPDRDoc.EndType" version="1.0" id-authority="IPDR">
  <attributes>
    <attribute name="count">
      <type name="integer" version="1.0" id-authority="TMF"/>
    </attribute>
    <attribute name="endTime">
      <type name="" version="" id-authority=""/>
    </attribute>
  </attributes>
</shared-information>
<shared-information name="IPDRDoc" version="1.0" id-authority="IPDR">
  <attributes>
    <attribute name="IPDR">
      <type name="IPDRType" version="1.0" id-authority="IPDR"/>
    </attribute>
    <attribute name="IPDRDoc.End">
      <type name="IPDRDocEndType" version="1.0" id-authority="IPDR"/>
    </attribute>
  </attributes>
</shared-information>
</shared-information-specification>

```

## 0.21 A2.16 Resource Repository Manager

<b>Name:</b>	Basic-Service-RRM
<b>Developer:</b>	ATOS ORIGIN
<b>Version:</b>	June 2003
<b>Description:</b>	This component stewards shared data in an OSS platform environment. Any kind of data of persistence infrastructure can be managed by this component if it has been declared beforehand.
<b>Exported contracts:</b>	<p><b>RRM_use contract</b></p> <p>This contract enables any external component to access resources managed by the RRM.</p> <p><b>RRM_administrate contract</b></p> <p>This contract enables external components to configure the RRM in order to manage new resource models.</p>
<b>Dependencies:</b>	This component is not dependent on other ones. It can interact with any external components that require some shared data.
<b>Other constraints:</b>	None

**Reference to SID:** All the persistent SID data required to support the DIS sub trial will be accessible through this component:

- User profile
- User preferences
- SLA
- PAM preferences...

### RRM\_use contract

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="RRM_use" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name=" albatross:
rrm.resourceinstance.ResourceInstanceKey"
        version="1.0.0" id-authority="AlbatrOSS"/>
        <type name=" albatross:rrm.resourcemodel.ResourceModel"
        version="1.0.0" id-authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="getResourceInstance" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="ressourceInstanceKey">
              <type name="
albatross:rrm.resourceinstance.ResourceInstanceKey"
              version="1.0.0" id-
authority="AlbatrOSS"/>
            </parameter>
            <parameter name="modelName">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normalTermination">
              <parameter-list>
                <parameter
name="resourceInstance">
                  <type name="
albatross:rrm.resourceinstance.ResourceInstance"
                  version="1.0.0" id-
authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name=" RRMFailed">
              <parameter-list>
                <parameter name=" rrmFailure ">
                  <type
name="albatross:RRMFailure" version="1.0.0"

```

```

                                id-
authority="Albatross"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                <operation name="createResourceInstance" interaction-
type="interrogation">
                                <parameter-list>
                                <parameter name="resourceInstance">
albatross:rrm.resourceinstance.ResourceInstance"
                                <type name="
"/>
                                version="1.0.0" id-authority="Albatross
                                </parameter>
                                <parameter name="modelName">
id-authority="TMF"/>
                                <type name="tmf:string" version="1.0.0"
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                <termination name="normalTermination" />
                                <termination name=" RRMFailed">
                                <parameter-list>
                                <parameter name=" rrmFailure ">
name="albatross:RRMFailure" version="1.0.0"
                                <type
                                id-
authority="Albatross"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                </termination-list>
                                </operation>
                                <operation name="getResourceModel" interaction-
type="interrogation">
                                <parameter-list>
                                <parameter name="modelName">
id-authority="TMF"/>
                                <type name="tmf:string" version="1.0.0"
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                <termination name="normalTermination" >
                                <parameter-list>
                                <parameter name="resourceModel">
albatross:rrm.resourcemodel.ResourceModel"
                                <type name="
                                version="1.0.0" id-
authority="Albatross"/>
                                </parameter>
                                </parameter-list>
                                </termination>
                                <termination name=" RRMFailed">
                                <parameter-list>
                                <parameter name=" rrmFailure ">
name="albatross:RRMFailure" version="1.0.0"
                                <type
                                id-
authority="Albatross"/>

```

```

        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
</interface>
<behavior>
  This contract enables any external component to access resources
managed by the RRM.
</behavior>
</contract>
</contract-specification>

```

### RRM\_administrate contract

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="RRM_administrate" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name=" albatross:
rrm.resourceinstance.ResourceInstanceKey"
        version="1.0.0" id-authority="AlbatrOSS"/>
        <type name=" albatross:rrm.resourcemodel.ResourceModel"
        version="1.0.0" id-authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="addResourceManager" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="ressourceManagerName">
              <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normalTermination"/>
            <termination name="RRMFailed">
              <parameter-list>
                <parameter name=" rrmFailure ">
                  <type
name="albatross:RRMFailure" version="1.0.0"
                  id-
authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
        <operation name="addResourceModel" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="resourceModelXML">

```

```

                                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                                </parameter>
                                </parameter-list>
                                <termination-list>
                                    <termination name="normalTermination" >
                                        <parameter-list>
                                            <parameter name="resourceModel">
                                                <type name="
albatross:rrm.resourcemodel.ResourceModel"
                                                version="1.0.0" id-
authority="AlbatrOSS"/>
                                            </parameter>
                                        </parameter-list>
                                    </termination>
                                </termination-list>
                                <termination name=" RRMFailed">
                                    <parameter-list>
                                        <parameter name=" rrmFailure ">
                                            <type
name="albatross:RRMFailure" version="1.0.0"
                                            id-
authority="AlbatrOSS"/>
                                        </parameter>
                                    </parameter-list>
                                </termination>
                            </termination-list>
                        </operation>
                    <operation name="removeResourceManager" interaction-
type="interrogation">
                        <parameter-list>
                            <parameter name="managerName">
                                <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                            </parameter>
                        </parameter-list>
                    <termination-list>
                        <termination name="normalTermination"/>
                        <termination name=" RRMFailed">
                            <parameter-list>
                                <parameter name=" rrmFailure ">
                                    <type
name="albatross:RRMFailure" version="1.0.0"
                                    id-
authority="AlbatrOSS"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                    </termination-list>
                </operation>
            <operation name="removeResourceModel" interaction-
type="interrogation">
                <parameter-list>
                    <parameter name="modelName">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                </parameter-list>
            <termination-list>
                <termination name="normalTermination"/>
                <termination name=" RRMFailed">
                    <parameter-list>
                        <parameter name=" rrmFailure ">

```

```

name="albatross:RRMFailure" version="1.0.0"
authority="Albatross"/>
        <type
            id-
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
</interface>
<behavior>
    This contract enables external components to configure the RRM in order
to manage new
    resource models.
</behavior>
</contract>
</contract-specification>

```

## 0.22 A2.17 Security and Privacy Manager

**Name:** OSS-SAP-Manager

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** The OSS:SAP-manager is able to recognise the login and the password of a given user and to accept the user's login request. Then it assigns to this user the related userID that will be used to identify the user during the whole session.

During the subscription process the OSS:SAP manager is requested by the Subscription manager to authenticate the user's contract electronic signature.

**Exported contracts:** **Authentication**

This contract allows external components to make the UserSecurityAndPrivacyManager component authenticate a given user.

**Dependencies:** At the beginning of a service session this component will interact with the session manager that will request user authentication.

It will be triggered by the Subscription manager during the sign in process, at service subscription time.

**Other constraints:** None

**Reference to SID:** For security reasons, the SAP Manager does not share user authentication information with other components. Therefore this aspect is not covered by the SID.

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name=" Authentication" version="1.0.0" id-authority="Albatross">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </import>
            <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
                <type name="albatross:AuthenticationStatus" version="1.0.0"

```

```

        id-authority="AlbatrOSS"/>
    </import>
</imports>
<interface>
    <operations>
        <operation name="authenticate" interaction-type="interrogation">
            <parameter-list>
                <parameter name="userName">
                    <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                </parameter>
                <parameter name="password">
                    <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                </parameter>
            </parameter-list>
            <termination-list>
                <termination name="authenticationOK" >
                    <parameter-list>
                        <parameter name="userID">
                            <type name="tmf:string"
version="1.0.0" id-authority="TMF"/>
                        </parameter>
                    </parameter-list>
                </termination>
                <termination name="authenticationFailed">
                    <parameter-list>
                        <parameter
name="authenticationStatus">
                            <type
name="albatross:AuthenticationStatus" version="1.0.0"
                            id-
authority="AlbatrOSS"/>
                        </parameter>
                    </parameter-list>
                </termination>
            </termination-list>
        </operation>
    </interface>
    <behavior>
        This contract allows external components to make the
UserSecurityAndPrivacyManager
        component authenticate a given user.
    </behavior>
</contract>
</contract-specification>

```

## A2.24 Service Activation Manager

<b>Name:</b>	OSS-SA-Manager
<b>Developer:</b>	ATOS ORIGIN
<b>Version:</b>	June 2003
<b>Description:</b>	This component activates a given service after subscription (i.e. it makes a given service available for a given user).
<b>Exported contracts:</b>	<p><b>ServiceActivation</b></p> <p>This contract allows external components to make a Service Activation system activate services for customers with the agreed service level.</p>

**Dependencies:** This component is called by the Service Subscription manager to activate the subscribed service for a given user.

During the activation process, it has to interact with several OSS components to configure the service:

- The billing component to activate a particular billing scheme for a given user
- The SQM to create the related SLA
- The DCA&A manager to assess the Time-to-Activation criterion
- The customer report manager to activate the reporting process regarding this user
- The user profile manager to make the service available to the related user

**Other constraints:** None

**Reference to SID:** The service aggregation domain of the SID as well as entities defined in the core domain that describe the relationship between service, customers and users will be used to support the activation process.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss
http://75a02417.prism.si.fr.atosorigin.com/tmf/ngoss/contract.xsd">
  <contract name=" ServiceActivation" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <!-- Used SID types -->
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:Service" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceLevelAgreement" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceLevelSpecification" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:Customer" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceActivationReport" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="activateService" interaction-
type="interrogation">
          <parameter-list>
            <parameter name="customer">
              <type name="albatross:Customer"
version="1.0.0" id-authority="AlbatrOSS"/>

```

```

        </parameter>
        <parameter name="services">
            <type name="albatross:Service"
version="1.0.0" id-authority="AlbatrOSS"/>
        </parameter>
        <parameter name="">
            <type
name="albatross:ServiceLevelSpecification" version="1.0.0" id-authority="AlbatrOSS"/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normalTermination" >
            <parameter-list>
                <parameter
name="activationReport">
                    <type
name="albatross:ServiceActivationReport" version="1.0.0"
                    id-
authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
        <termination name="activationFailed ">
            <parameter-list>
                <parameter
name="activationStatus">
                    <type
name="albatross:ServiceActivationReport" version="1.0.0"
                    id-
authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
    </operation>
</operations>
</interface>
<behavior>
    This contract allows external components to make the
ServiceActivationManager
    componentactive services for customers with the needed service level.
</behavior>
</contract>
</contract-specification>

```

## A2.25 Service Quality Manager

**Name:** OSS-SQ-Manager

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** This component provides key Service Quality Management facilities like:

- SLA definition and control
- Performance data measurement
- Degradation and violation detection

**Exported ServiceQualityMonitoring contracts:**

This contract enables control of the SQM component and access to the different functions that manage the different service quality resources, like loading service definitions, instantiating them, creating service levels and customers and creating service level agreements for these customers.

**Dependencies:** SQM has a high level of autonomy. It has to interact with some other component to collect performance data. Some are managed at the 3<sup>rd</sup> party level. Other can be accessed internally by interacting with other OSS components, such as the data collection manager, the billing component.

Moreover, the SQM is called by the Customer report manager to fetch information required for the post-session report.

**Other constraints:** None

**Reference to SID:** The SQM has its own internal information model relying on the SLA handbook. However investigations are being undertaken to evaluate the level of compliance with the SID AlbatrOSS model.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss
http://75a02417.prism.si.fr.atosorigin.com/tmf/ngoss/contract.xsd">
  <contract name="ServiceQualityMonitoring" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <!-- Used SID types -->
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:Service" version="1.0.0" id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceLevelAgreement" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceLevelSpecification" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:Customer" version="1.0.0" id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ServiceQualityReport" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
  </contract>
</contract-specification>
```

```

    <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
      <type name="albatross:ServiceDefinition" version="1.0.0" id-
authority="AlbatrOSS"/>
    </import>
  </imports>
  <interface>
    <operations>
      <operation name="loadServiceDefinition" interaction-type="announcement">
        <parameter-list>
          <parameter name="serviceDefinition">
            <type name="albatross:ServiceDefinition" version="1.0.0" id-
authority="AlbatrOSS"/>
          </parameter>
        </parameter-list>
      </operation>
      <operation name="instantiateService" interaction-type="announcement">
        <parameter-list>
          <parameter name="serviceName">
            <type name="tmf:string" version="1.0.0" id-authority="AlbatrOSS"/>
          </parameter>
        </parameter-list>
      </operation>
      <operation name="createServiceLevel" interaction-type="announcement">
        <parameter-list>
          <parameter name="serviceLevel">
            <type name="albatross:ServiceLevel" version="1.0.0" id-
authority="AlbatrOSS"/>
          </parameter>
        </parameter-list>
      </operation>
      <operation name="createCustomer" interaction-type="announcement">
        <parameter-list>
          <parameter name="customer">
            <type name="albatross:Customer" version="1.0.0" id-
authority="AlbatrOSS"/>
          </parameter>
        </parameter-list>
      </operation>
      <operation name="createServiceLevelAgreement" interaction-type="announcement">
        <parameter-list>
          <parameter name="customerName">
            <type name="tmf:string" version="1.0.0" id-authority="AlbatrOSS"/>
          </parameter>
          <parameter name="serviceName">
            <type name="tmf:string" version="1.0.0" id-authority="AlbatrOSS"/>
          </parameter>
          <parameter name="serviceLevelName">
            <type name="tmf:string" version="1.0.0" id-authority="AlbatrOSS"/>
          </parameter>
        </parameter-list>
      </operation>
    </operations>
  </interface>
  <behavior>
    This contract allows external components to make the ServiceQualityManager component
    load service definitions, instantiate them, create service levels and customers and
    create
    service level agreements for these customers.
  </behavior>
</contract>
</contract-specification>

```

## 0.23 A2.18 Service Roaming Manager

<b>Name:</b>	Service Roaming Manager
<b>Developer:</b>	FOKUS
<b>Version:</b>	June 2003
<b>Description:</b>	The main purpose of the Service Roaming Manager is to provide functionality that will enable the provisioning of location-based and time-dependent end-user services and roaming in a UMTS environment. This component provides the user roaming function.
<b>Exported contracts:</b>	This component is related to the contract Roaming Manager
<b>Dependencies:</b>	User Profile Manager, AA Manager
<b>Other constraints:</b>	To communicate between two Service Roaming Managers, the provider ID and password need to be sent.
<b>Reference to SID:</b>	The Service Roaming Manager does not access directly any part of the SID model but uses modified data objects from the User Preference Meta Model (see section 4.6).

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation = "contract.xsd">
  <contract name="RoamingManager" version="1.0.0" id-authority="TMF">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="UserProfile" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:basic-string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:result-code" version="1.0.0" id-authority="TMF"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="getProfileData" interaction-type="interrogation">
          <parameter-list>
            <parameter name="user_id">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normal-completion">
              <parameter-list>
                <parameter name="status-code">
                  <type name="tmf:result-code" version="1.0.0" id-authority="TMF"/>
                </parameter>
                <parameter name="ProfileData">
                  <type name="de.fhg.fokus.portaloss.sid.ProfileData" version="1.0.0"
id-authority="TMF"/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name="abnormal-completion">
              <parameter-list>
                <parameter name="exception">
                  <type name="tmf:exception" version="1.0.0" id-authority="TMF"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>

```

```

        </parameter>
      </parameter-list>
    </termination>
  </termination-list>
</operation>
</operations>
</interface>
<behavior>
This contract enables the exchange of a user profile between two roaming managers.
</behavior>
</contract>
</contract-specification>

```

## 0.24 A2.19 User Location Agent

**Name:** User Location Agent

**Developer:** Lucent Technologies

**Version:** June 2003

**Description:** The UL agent is triggered by the AAA agent component when a user enters a wireless LAN network. It informs the Domain Manager component of the user's service provider about the updated location.

**Exported contracts:** UserLocationAgent, Parlay X "terminal location service", Access Network Management

**Dependencies:** Domain Manager, Interface Repository

**Other constraints:**

**Reference to SID:** Entities from the Core Model are applicable to the UL agent.

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="UserLocationAgent" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:subscriber-id" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="NotifyNewUser" interaction-type="announcement">
          <parameter-list>
            <parameter name="subscriber">
              <type name="albatross:subscriber-id" version="1.0.0" id-
authority="AlbatrOSS"/>
            </parameter>
          </parameter-list>
        </operation>
      </operations>
    </interface>
    <behavior>
      This interface receives an update when a new user enters the access network.
    </behavior>
  </contract>

```

```
</contract-specification>
```

## Access Network Management

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="AccessNetworkManager" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
        <type name="tmf:uri" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:ip-address" version="1.0.0" id-
authority="AlbatrOSS"/>
        <type name="albatross:latlong" version="1.0.0" id-
authority="AlbatrOSS"/>
      </import>
    </imports>
    <interface>
      <operations>
        <operation name="AddAccessPoint" interaction-type="interrogation">
          <parameter-list>
            <parameter name="id">
              <type name="tmf:string" version="1.0.0" id-authority="AlbatrOSS"/>
            </parameter>
            <parameter name="ip">
              <type name="albatross:ip-address" version="1.0.0" id-
authority="AlbatrOSS"/>
            </parameter>
            <parameter name="cost">
              <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="location">
              <type name="albatross:latlong" version="1.0.0" id-authority="AlbatrOSS"/>
            </parameter>
          </parameter-list>
        </operation>
        <operation name="UpdateAccessPoint" interaction-type="interrogation">
          <parameter-list>
            <parameter name="id">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="ip">
              <type name="albatross:ip-address" version="1.0.0" id-
authority="AlbatrOSS"/>
            </parameter>
            <parameter name="cost">
              <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="location">
              <type name="albatross:latlong" version="1.0.0" id-authority="AlbatrOSS"/>
            </parameter>
          </parameter-list>
        </operation>
        <operation name="RemoveAccessPoint" interaction-type="interrogation">
          <parameter-list>
            <parameter name="id">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
          </parameter-list>
        </operation>
      </operations>
    </interface>
  </contract>
</contract-specification>
```

```

        </parameter>
      </parameter-list>
    </operation>
    <operation name="GetAccessPointInfo" interaction-type="interrogation">
      <parameter-list>
        <parameter name="id">
          <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
        </parameter>
      </parameter-list>
      <termination-list>
        <termination name="GetAccessPointInfoRsp">
          <parameter-list>
            <parameter name="id">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="ip">
              <type name="albatross:ip-address" version="1.0.0" id-
authority="Albatross"/>
            </parameter>
            <parameter name="cost">
              <type name="tmf:float" version="1.0.0" id-authority="TMF"/>
            </parameter>
            <parameter name="location">
              <type name="albatross:latlong" version="1.0.0" id-
authority="Albatross"/>
            </parameter>
          </parameter-list>
        </termination>
        <termination name="GetAccessPointInfoErr">
          <parameter-list>
            <parameter name="reason">
              <type name="tmf:integer" version="1.0.0" id-authority="TMF"/>
            </parameter>
          </parameter-list>
        </termination>
      </termination-list>
    </operation>
  </operations>
</interface>
<behavior>
  This interface allows management of available Access Points in the access network,
  including their geographical location and cost of usage
</behavior>
</contract>
</contract-specification>

```

## 0.25 A2.20 User Profile Manager

**Name:** OSS-UP-Manager

**Developer:** ATOS ORIGIN

**Version:** June 2003

**Description:** This component stewards all the persistent user information by providing functions that update different related entities.

<b>Exported contracts:</b>	<b>UserProfileManagement</b> This contract enables external components to manage user profiles: access, addition, removal, update.
	<b>RegistrationStatus</b> This contract provides information on whether a given user is registered in the UserProfileManager.
<b>Dependencies:</b>	The user profile manager wraps the Resource Repository Manager by providing a functional view dedicated to user information management.
<b>Other constraints:</b>	None
<b>Reference to SID:</b>	The data structure user profile which is used to exchange user-related information is an aggregation of data defined in the SID model.

### userProfileManagement Contract

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name=" userProfileManagement" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        </import>
    </imports>
    <interface>
      <operations>
        <operation name="getUserProfile" interaction-type="interrogation">
          <parameter-list>
            <parameter name="userID">
              <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </parameter>
          </parameter-list>
          <termination-list>
            <termination name="normalTermination" >
              <parameter-list>
                <parameter name="userProfile">
                  <type name="albatross:profile" version="1.0.0"
id-authority="AlbatrOSS "/>
                </parameter>
              </parameter-list>
            </termination>
            <termination name=" getUserProfileFailed ">
              <parameter-list>
                <parameter name=" profileManagerStatus ">
                  <type name="albatross:ProfileManagerStatus" version="1.0.0"
id-authority="AlbatrOSS"/>
                </parameter>
              </parameter-list>
            </termination>
          </termination-list>
        </operation>

        <operation name="addUserProfile" interaction-type="interrogation">
          <parameter-list>
```

```

        <parameter name="userProfile">
            <type name="albatross:profile" version="1.0.0"
                id-authority="AlbatrOSS "/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normalTermination" />
        <termination name="addUserProfileFailed ">
            <parameter-list>
                <parameter name=" profileManagerStatus ">
                    <type name="albatross:ProfileManagerStatus" version="1.0.0"
                        id-authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
<operation name="removeUserProfile" interaction-type="interrogation">
    <parameter-list>
        <parameter name="userProfile">
            <type name="albatross:profile" version="1.0.0"
                id-authority="AlbatrOSS "/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normalTermination" />
        <termination name="removeUserProfileFailed ">
            <parameter-list>
                <parameter name=" profileManagerStatus ">
                    <type name="albatross:ProfileManagerStatus" version="1.0.0"
                        id-authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
<operation name="updateUserProfile" interaction-type="interrogation">
    <parameter-list>
        <parameter name="oldUserProfile">
            <type name="albatross:profile" version="1.0.0"
                id-authority="AlbatrOSS "/>
        </parameter>
        <parameter name="newUserProfile">
            <type name="albatross:profile" version="1.0.0"
                id-authority="AlbatrOSS "/>
        </parameter>
    </parameter-list>
    <termination-list>
        <termination name="normalTermination" />
        <termination name="updateUserProfileFailed">
            <parameter-list>
                <parameter name=" profileManagerStatus ">
                    <type name="albatross:ProfileManagerStatus" version="1.0.0"
                        id-authority="AlbatrOSS"/>
                </parameter>
            </parameter-list>
        </termination>
    </termination-list>
</operation>
</operations>
</interface>

```

```

    <behavior>
        This contract enables external components to manage user profiles: access, addition,
        removal, update.
    </behavior>
</contract>
</contract-specification>

```

### registrationStatus Contract

```

<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
    <contract name=" UserProfileManager_registrationStatus " version="1.0.0"
id-authority="AlbatrOSS">
        <imports>
            <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
                <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
            </import>
            <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
                <type name=" albatross:GetRegistrationFailureReport" version="1.0.0"
id-authority="AlbatrOSS"/>
            </import>
        </imports>
        <interface>
            <operations>
                <operation name="getRegistrationStatusWithID" interaction-type="interrogation">
                    <parameter-list>
                        <parameter name="userID">
                            <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
                        </parameter>
                    </parameter-list>
                    <termination-list>
                        <termination name="userIsRegistered"/>
                        <termination name="userIsNotRegistered"/>
                        <termination name="getRegistrationStatusFailed">
                            <parameter-list>
                                <parameter name="failureReport">
                                    <type name=" albatross:GetRegistrationFailureReport"
version="1.0.0" id-authority="AlbatrOSS"/>
                                </parameter>
                            </parameter-list>
                        </termination>
                    </termination-list>
                </operation>
            </operations>
        </interface>
        <behavior>
            This contract enable to know if a given user is registered into the UserProfileManager.
        </behavior>
    </contract>
</contract-specification>

```

## 0.26 A2.21 User Session Manager

**Name:** OSS-US-Manager  
**Developer:** ATOS ORIGIN  
**Version:** June 2003

**Description:** This component is in charge of managing an entire user session after a user login request. This manager:

- Triggers the authentication process to accept or reject the user login request
- Creates and Identifies the user session
- Measures the session duration
- Displays the user welcome environment
- Manages session termination and triggers the post-session reporting

**Exported contracts:** **UserSessionControl**

This contract provides functionalities that enable a complete session (creation, termination) to be managed.

**Dependencies:** This component has to interact with many components to support a session execution. In particular, it has to get specific user information in order to configure the session according to user preferences and to provide a relevant welcome environment.

**Other constraints:** None

**Reference to SID:** The user–service relationship as defined in the SID and the user’s preferences.

```
<?xml version="1.0" encoding="UTF-8"?>
<contract-specification xmlns="http://www.tmforum.org/ngoss"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.tmforum.org/ngoss/contract.xsd">
  <contract name="UserSessionControl" version="1.0.0" id-authority="AlbatrOSS">
    <imports>
      <import from="http://www.tmforum.org/sid/hypothetical_types.xml">
        <type name="tmf:string" version="1.0.0" id-authority="TMF"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:CallRequestStatus" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:SessionStatus" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:CallParameterList" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:SessionId" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:SessionStatus" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
      <import from="http://www.ist-albatross.org/sid/hypothetical_types.xml">
        <type name="albatross:SessionParameterList" version="1.0.0"
          id-authority="AlbatrOSS"/>
      </import>
    </imports>
  </contract>
</contract-specification>
```

```

        </import>
    </imports>
    <interface>
        <operations>
            <operation name="callRequest" interaction-type="interrogation">
                <parameter-list>
                    <parameter name="userIdentifier">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                    <parameter name="password">
                        <type name="tmf:string" version="1.0.0"
id-authority="TMF"/>
                    </parameter>
                </parameter-list>
                <termination-list>
                    <termination name="callAccepted">
                        <parameter-list>
                            <parameter name="sessionId">
                                <type
name="albatross:SessionId" version="1.0.0"
                                id-
authority="AlbatrOSS"/>
                            </parameter>
                        </parameter-list>
                    </termination>
                    <termination name="callRefused">
                        <parameter-list>
                            <parameter
name="callRequestStatus">
                                <type
name="albatross:CallRequestStatus" version="1.0.0"
                                id-
authority="AlbatrOSS"/>
                            </parameter>
                            <parameter
name="callParameterList">
                                <type
name="albatross:CallParameterList" version="1.0.0"
                                id-
authority="AlbatrOSS"/>
                            </parameter>
                        </parameter-list>
                    </termination>
                </termination-list>
            </operation>
            <operation name="callNegotiate" interaction-
type="interrogation">
                <parameter-list>
                    <parameter
name="callParameterList">
                        <type
name="albatross:CallParameterList" version="1.0.0"
                        id-
authority="AlbatrOSS"/>
                    </parameter>
                </parameter-list>
                <termination-list>

```

```

                                <termination name="callAccepted">
                                    <parameter-list>
                                        <parameter name="sessionId">
                                            <type
name="albatross:SessionId" version="1.0.0"
                                            id-
authority="Albatross"/>
                                        </parameter>
                                        <parameter
name="callParameterList">
                                            <type
name="albatross:CallParameterList" version="1.0.0"
                                            id-
authority="Albatross"/>
                                        </parameter>
                                    </parameter-list>
                                </termination>
                                <termination name="callRefused">
                                    <parameter-list>
                                        <parameter
name="callRequestStatus">
                                            <type
name="albatross:CallRequestStatus" version="1.0.0"
                                            id-
authority="Albatross"/>
                                        </parameter>
                                        <parameter
name="callParameterList">
                                            <type
name="albatross:CallParameterList" version="1.0.0"
                                            id-
authority="Albatross"/>
                                        </parameter>
                                    </parameter-list>
                                </termination>
                                </termination-list>
                            </operation>
                            <operation name="suspendSession" interaction-
type="interrogation">
                                <parameter-list>
                                    <parameter name="sessionId">
                                        <type
name="albatross:SessionId" version="1.0.0"
                                        id-
authority="Albatross"/>
                                    </parameter>
                                </parameter-list>
                                <termination-list>
                                    <termination name="requestAccepted" />
                                    <termination name="requestRefused">
                                        <parameter-list>
                                            <parameter name="sessionStatus">
                                                <type
name="albatross:SessionStatus" version="1.0.0"
                                                id-
authority="Albatross"/>
                                            </parameter>
                                        </parameter-list>
                                    </termination>
                                </termination-list>
                            </operation>
                            <operation name="resumeSession" interaction-
type="interrogation">
                                <parameter-list>
                                    <parameter name="sessionId">

```

```

name="albatross:SessionId" version="1.0.0"
authority="Albatross"/>
</parameter>
</parameter-list>
<termination-list>
  <termination name="requestAccepted" />
  <termination name="requestRefused">
    <parameter-list>
      <parameter name="sessionStatus">
        <type
name="albatross:SessionStatus" version="1.0.0"
authority="Albatross"/>
id-
</parameter-list>
</termination>
</termination-list>
</operation>
<operation name="updateSession" interaction-
type="interrogation">
  <parameter-list>
    <parameter name="sessionId">
      <type
name="albatross:SessionId" version="1.0.0"
authority="Albatross"/>
id-
</parameter>
<parameter
name="sessionParameterList">
  <type
name="albatross:SessionParameterList" version="1.0.0"
authority="Albatross"/>
id-
</parameter>
</parameter-list>
<termination-list>
  <termination name="requestAccepted" />
  <termination name="requestRefused">
    <parameter-list>
      <parameter
name="sessionRequestStatus">
        <type
name="albatross:SessionRequestStatus" version="1.0.0"
authority="Albatross"/>
id-
</parameter>
<parameter
name="sessionParameterList">
  <type
name="albatross:SessionParameterList" version="1.0.0"
authority="Albatross"/>
id-
</parameter>
</parameter-list>
</termination>
</termination-list>
</operation>
<operation name="terminateSession" interaction-
type="interrogation">
  <parameter-list>
    <parameter name="sessionId">
      <type
name="albatross:SessionId" version="1.0.0"
authority="Albatross"/>
id-

```

```

                </parameter>
            </parameter-list>
        </termination-list>
        <termination name="requestAccepted" />
        <termination name="requestRefused">
            <parameter-list>
                <parameter name="sessionStatus">
                    <type
name="albatross:SessionStatus" version="1.0.0"
                    id-
authority="AlbatrOSS"/>
                </parameter-list>
            </termination>
        </termination-list>
    </operation>
    <operation name="terminateAbnormalSession" interaction-
type="interrogation">
        <parameter-list>
            <parameter name="sessionId">
                <type
name="albatross:SessionId" version="1.0.0"
                id-
authority="AlbatrOSS"/>
            </parameter>
        </parameter-list>
        <termination-list>
            <termination name="requestAccepted" />
            <termination name="requestRefused">
                <parameter-list>
                    <parameter name="sessionStatus">
                        <type
name="albatross:SessionStatus" version="1.0.0"
                        id-
authority="AlbatrOSS"/>
                    </parameter-list>
                </termination>
            </termination-list>
        </operation>
    </operations>
</behavior>
    This contract allows to create a session and manage it.
</behavior>
</contract>
</contract-specification>

```

## 0.27