External Services

Service Level Agreement

A method to consolidate the ANSP needs

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Agenda

1- Introduction

2- Context

3- The problem to be solved

4- Proposed approach – Illustration (Meteo Services)

5- A method based on a tool

6- Conclusion

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M3 Systems, a French company created in 1999

Specialised in the field of Spatial Applications and Air traffic Management.

Based in Toulouse and Brussel

M3 System develops its activities in an international context

Our business

Consultancy, expertise, research & development in transport areas

Our clients

EuroControl, DSNA, ENAC, ESA, ONERA, …

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System

A combination of physical components, procedures and human resources organized to perform a function

Service

Capabilities put in place to answer a set of coherent actor's needs

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Supporting service

Services and arrangements which support the provision of an ATM service **covered** by the ATM service-provider's Safety Management System.

External service

All material and non-material supplies and services, which are delivered by any organization **not covered** by the ATM service-provider's Safety Management System.

Actor
Stakeholders who are directly connected to, or in relationship with the System
Example : ANSP, suppliers, …

Scope
The System boundaries

Users need
Expression of need or constraint

Procedure
Working activities

An ATM « service » is like a use case, defined and designed to answer « user needs » expressed by « actors » in a working context (procedure).

An ATM « service » is based on « Supporting Services » and/or « External Services ».

The « External service » provided by external « actor » are specified by a set of requirement (functional, technical, performance, interface, …) justified by « user needs ».

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The processes leading to the use of External Services :

| Expression of needs | Identification of External Service providers and interfaces | Definition and implementation of a **Service Level Agreement** | The monitoring of the effective level of service |

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Build a service agreement at the right level according to end user needs

- Identify and clarify the expected users needs

- Identify possible hazards and put in place actions to avoid them

- Specify external services by a set of requirements justified by end users needs and safety objectives

- Master evolutions all along the life cycle process
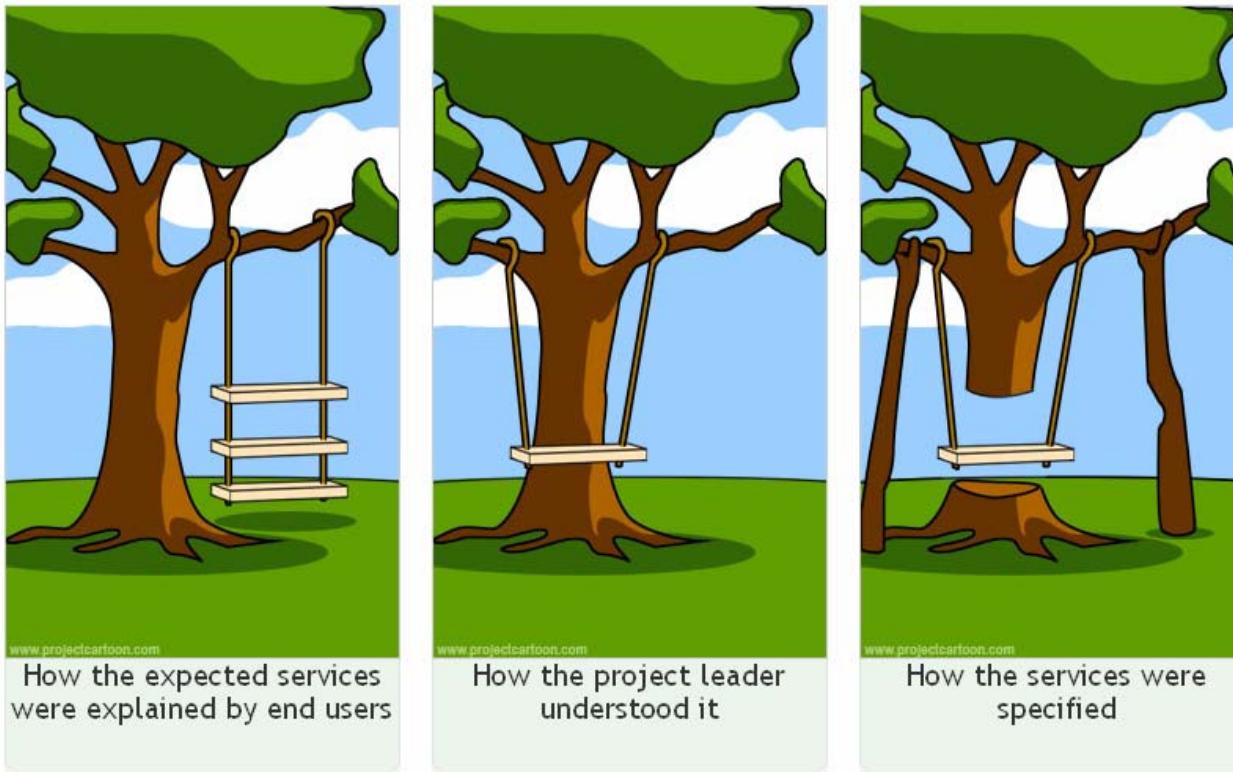
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How the expected services were explained by end users

How the project leader understood it

How the services were specified

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How the services were designed and implemented

How the services were adjusted

How it performed under load

How the expected services were documented

How the expected services were supported

What the end user really needed
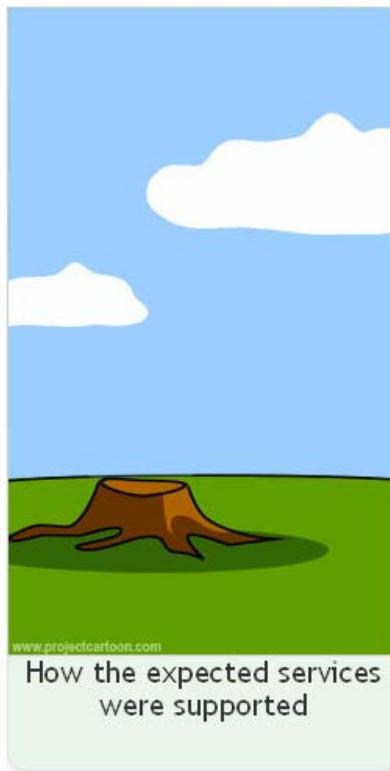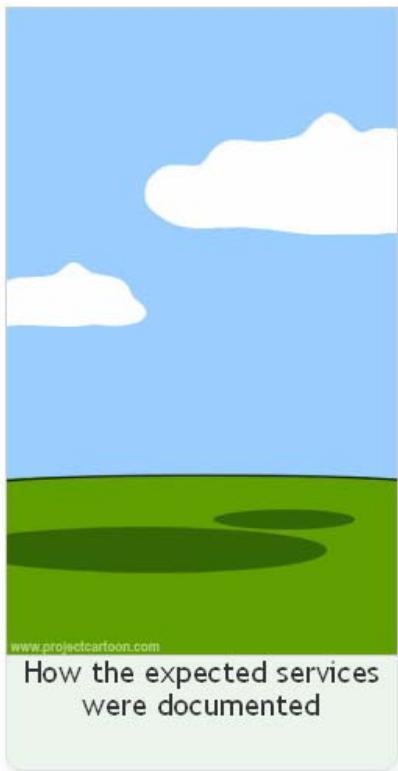
What we would like to avoid

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The circular diagram shows five segments around a central "SAFETY" label:

1. Understand the context
2. Define the scope
3. Capture & Consolidate the user needs
4. Specify External Services
5. Formalize the SLA

An iterative and top-down approach to

- Understand the context,
- Identify the ATM/Supporting/External services process
- Define the scope of the project (SLA definition),
- Capture & clarify needs
- Specify the external services by a set of requirements justified by needs
- Maintain traceability between the requirements
- Keeping the safety consideration all along the process

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Our approach

1 Understand the context

2 Define the scope

3 Capture & Consolidate the user needs

4 Specify External Services

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Identify the necessaries resources

What kind of necessaries resources does an ANSP need ?
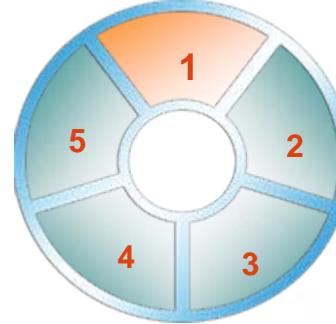
Identify Actors
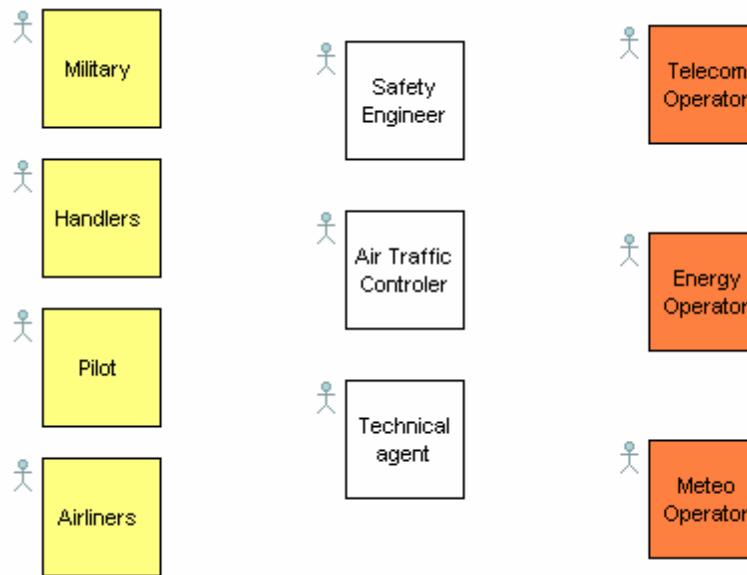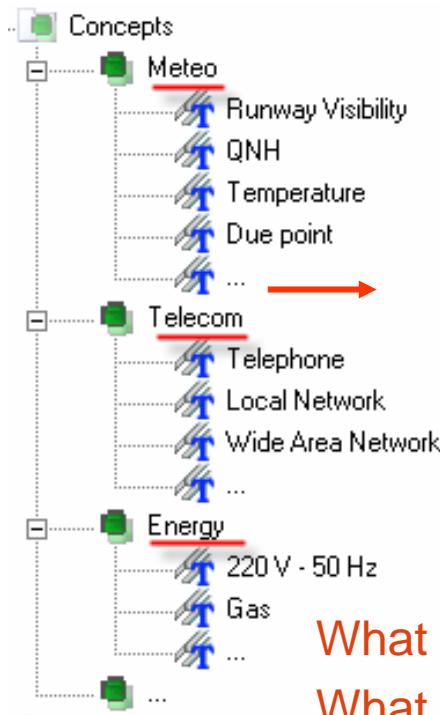
What are the local & end users ?

What are the external providers ?

Who's involved ?

Who's concerned ?

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Understand the context
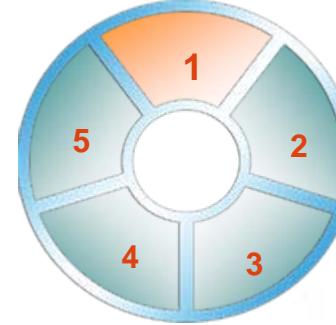
Classify Actors
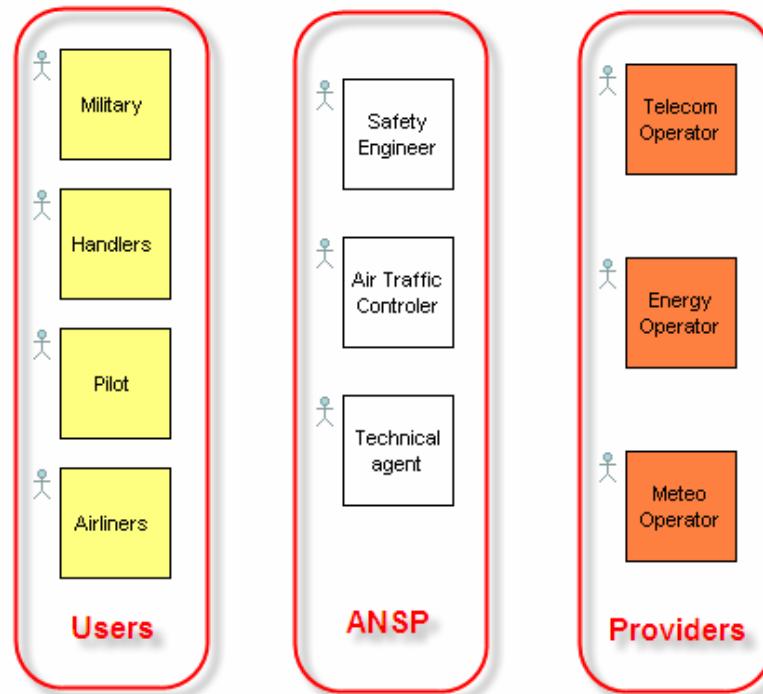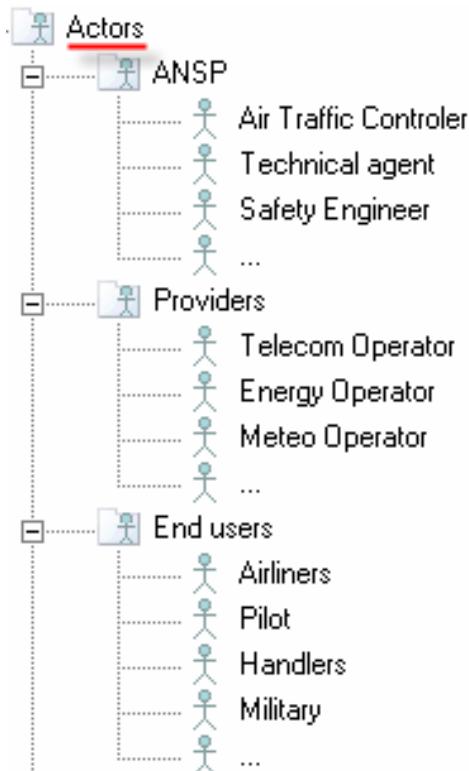
Categories : ANSP, End Users, Providers

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1
5 2
4 3

Clarify the role of actors

Users
- Military
- Handlers
- Pilot
- Airliners

ATM Services

ANSP
- Safety Engineer
- Air Traffic Controler
- Technical agent

External Services

Providers
- Telecom Operator
- Energy Operator
- Meteo Operator
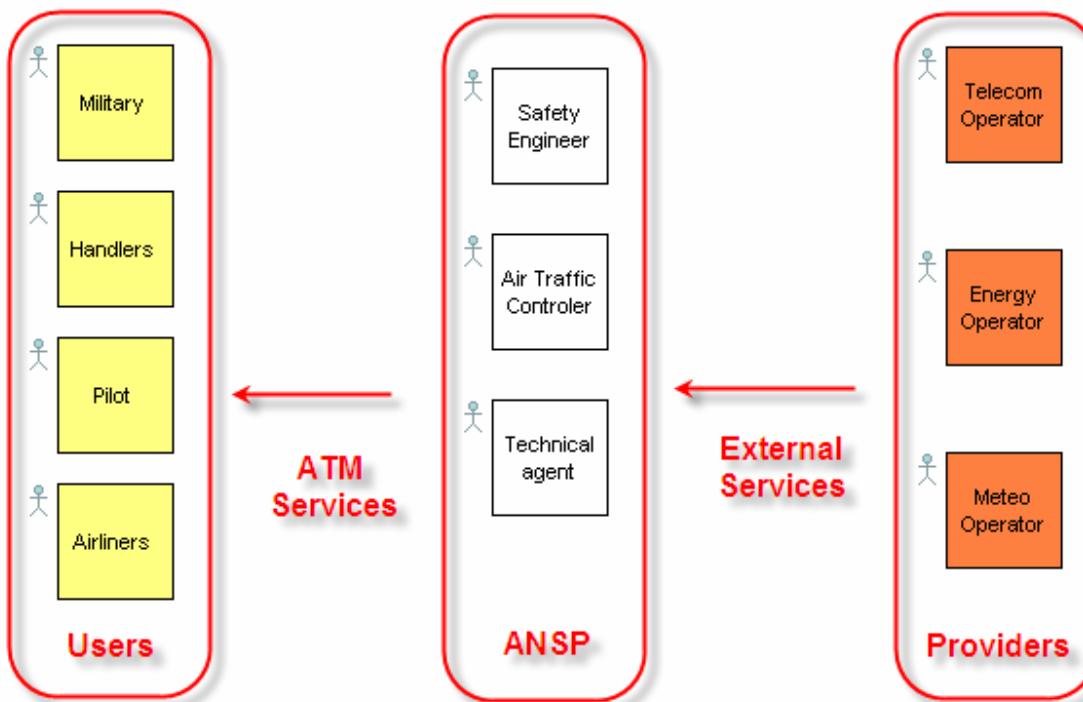
Create a global vision of the context
Simple and efficient !

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Clarify the interactions between actors & services
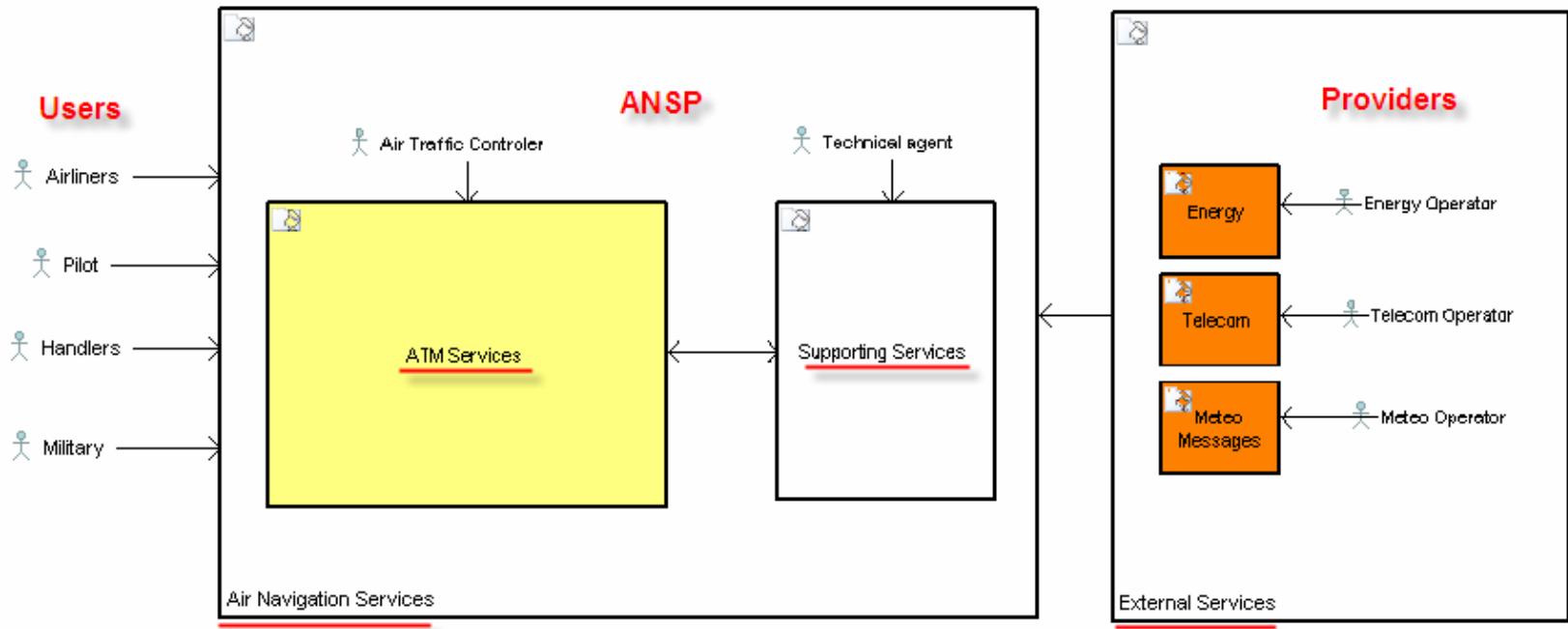
A framework to facilitate the capture of needs

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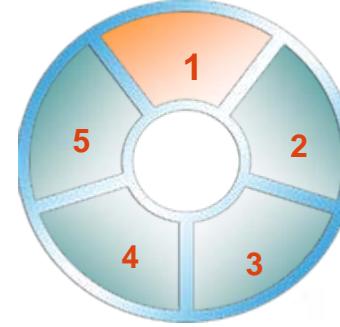
Understand the context

Clarify the ATM services

1 Understand the context

2 Define the scope

3 Capture & Consolidate the user needs

4 Specify External Services

5 Formalize the SLA

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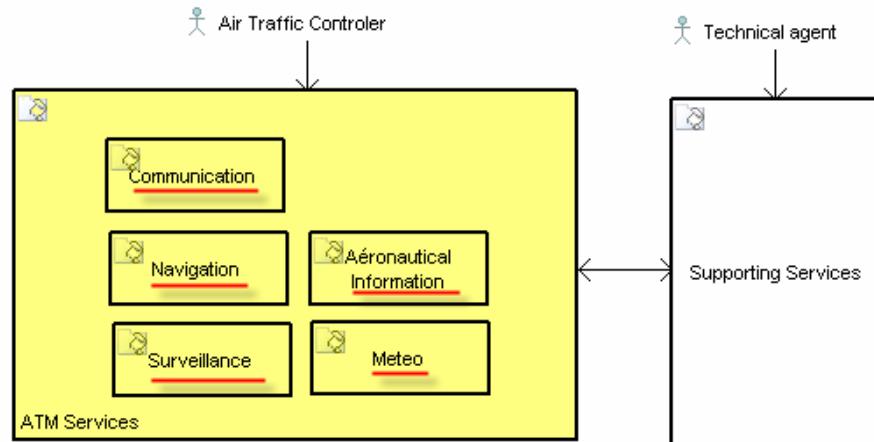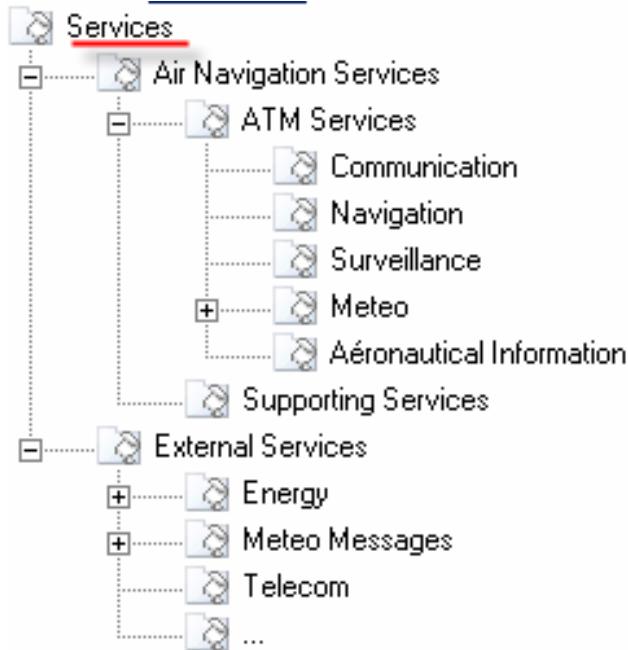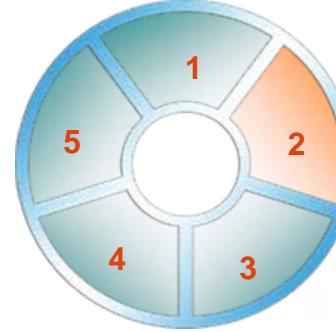
Define the project bounderies

Illustration : The boundaries on the definition of a Meteo service
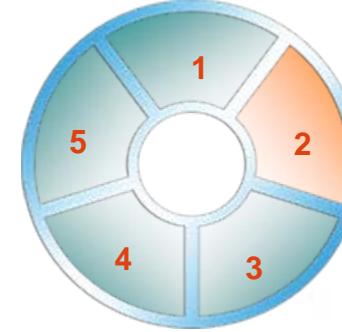
Define the project bounderies
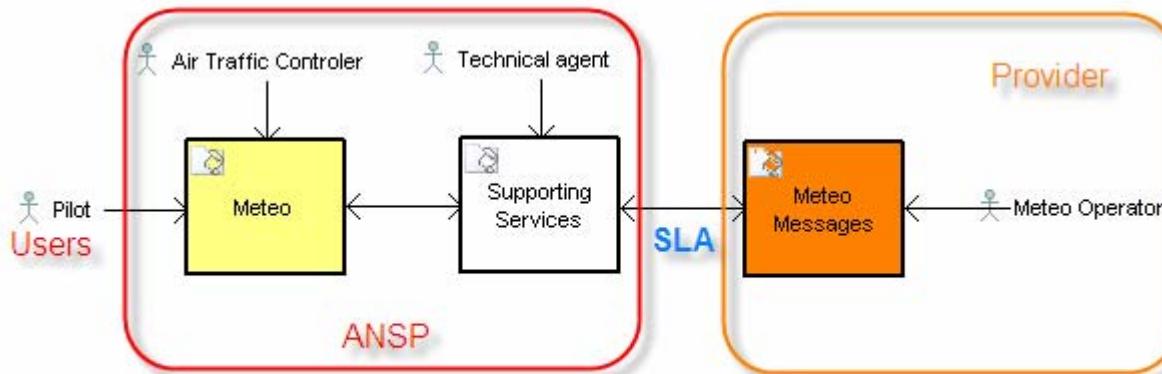
The scope of the project

Focus on the actors and the services
concerned by this SLA (Meteo)

1 Understand the context

2 Define the scope

3 Capture & Consolidate the user needs

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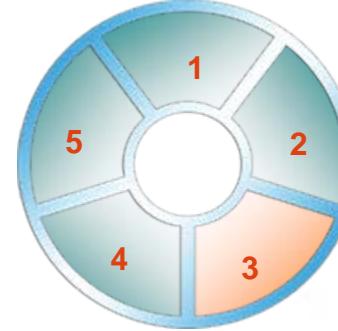
Capture & Consolidate the user needs

Identify the working procedures (origine of user needs)

Involved in

Services
- Air Navigation Services
  - ATM Services
    - Communication
    - Navigation
    - Surveillance
    - Meteo
    - Aéronautical Information
  - Supporting Services
- External Services
  - Energy
  - Meteo Messages
  - Telecom
  - ...

Working Procedures
- Meteo Procedures
  - Forecast Procedure
  - Observation Procedure
  - Low Visibility Procedure
  - ...
- Energy Procedures
- Telecom Procedures
- ...
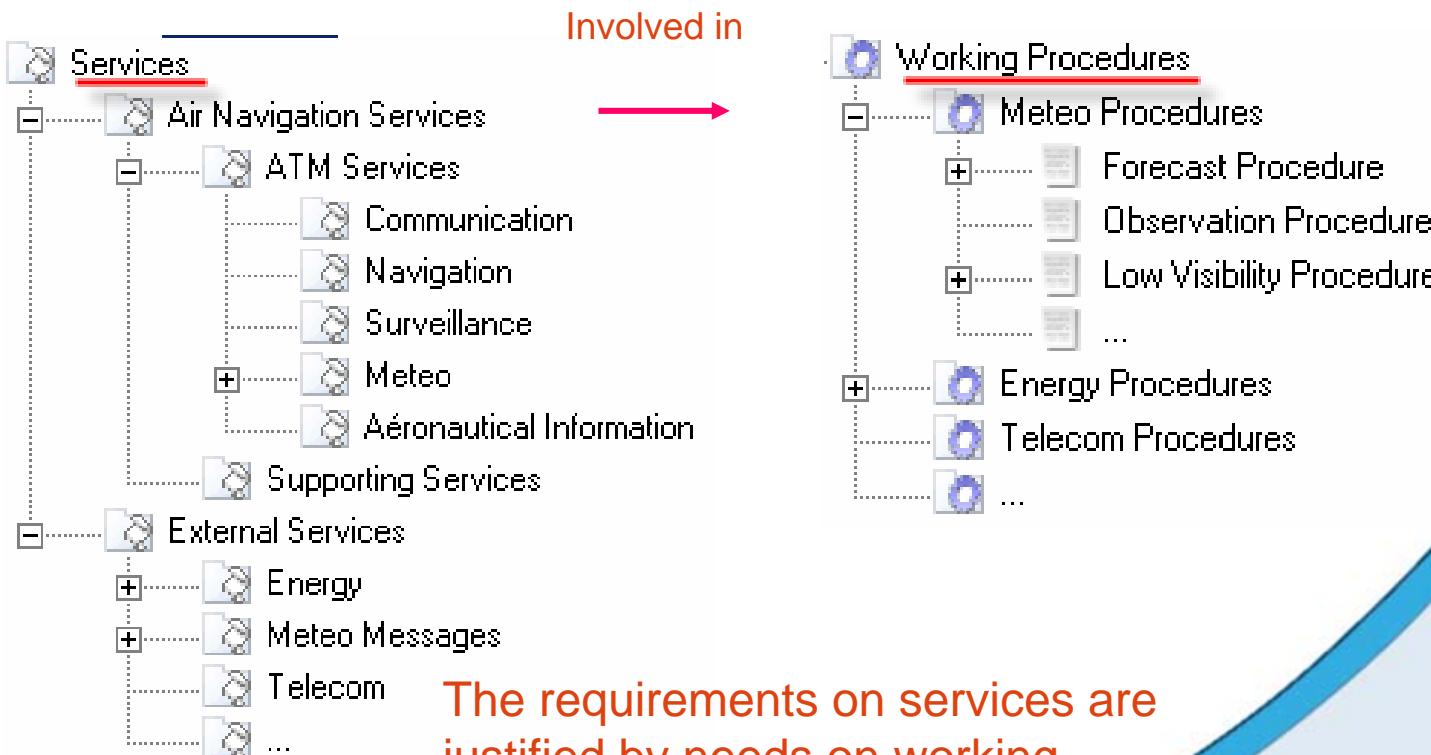
The requirements on services are justified by needs on working procedures.

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SASI WS 02.08
Brussels 23-25/06 2008

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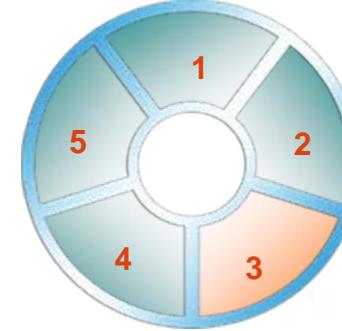
Describe the working procedures / Diagram activities
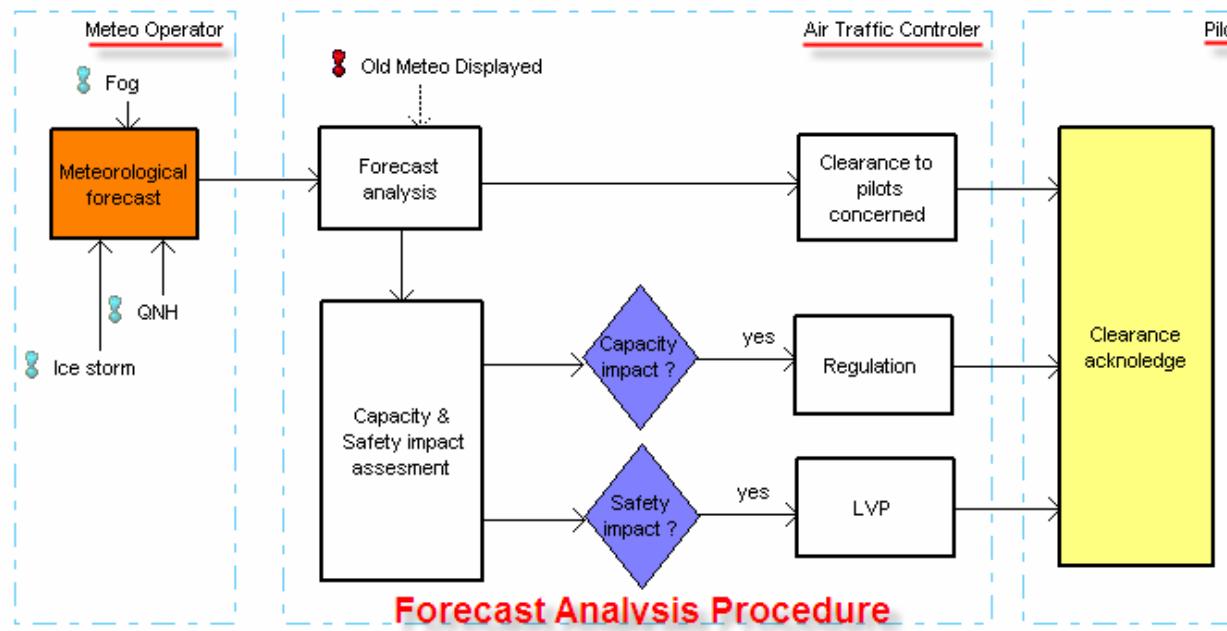
Who does what (activities) ? When ?

What are the inputs ? The results ?

1

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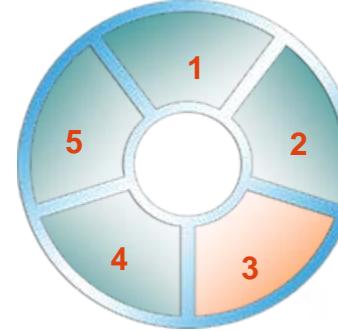
Integrate safety considerations
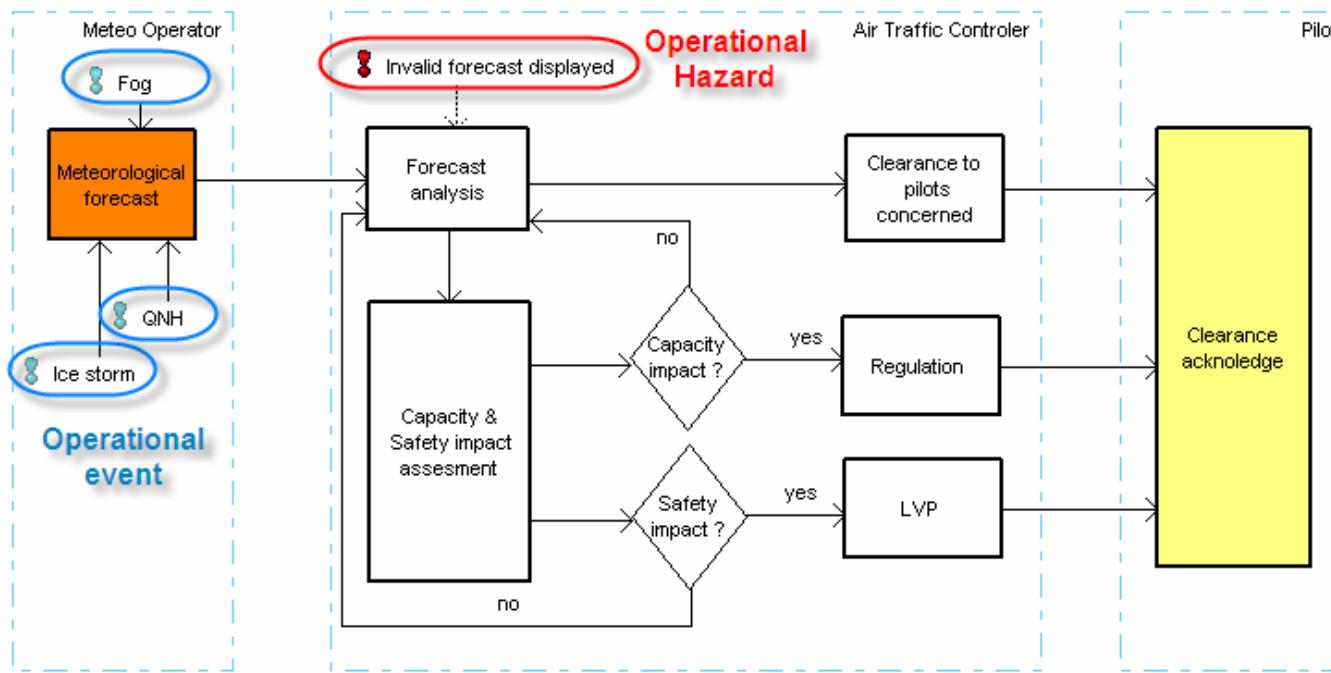
What are the operational events (triggers) ?

What are the operational hazards ?

What are the safety objectives in order to
avoid them ?

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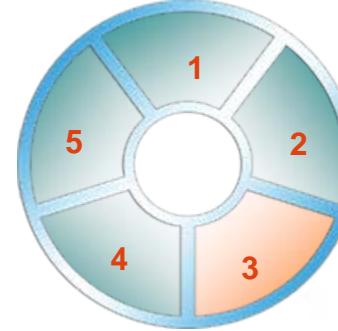
Express the needs in such context
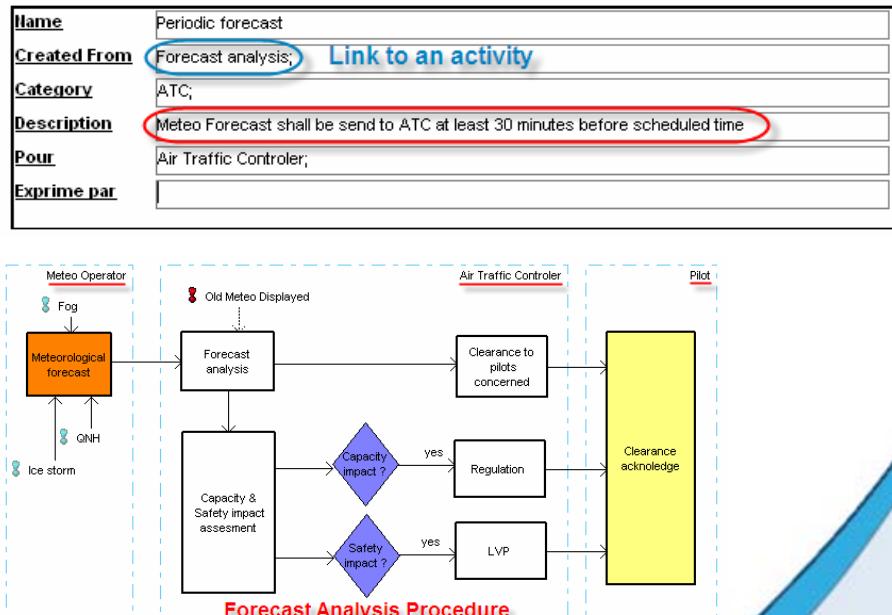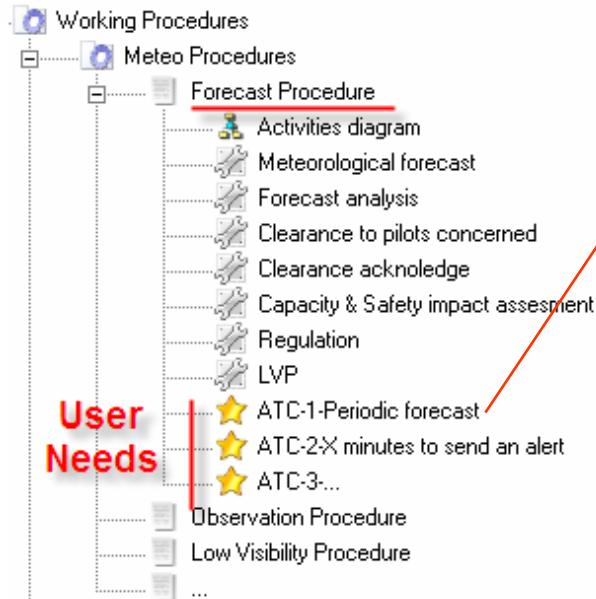
Capture user needs (description)

Connect user needs to activities (justification)

Classify the needs, etc.

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1 Understand the context

2 Define the scope

3 Capture & Consolidate the user needs

4 Specify External Services

5 Formalize the SLA

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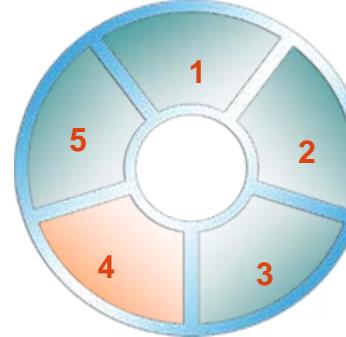
ATM Service requirements justified by user needs

The ATM Services are specified by a set of requirements justified by user needs and safety objectives, expressed in a working context.

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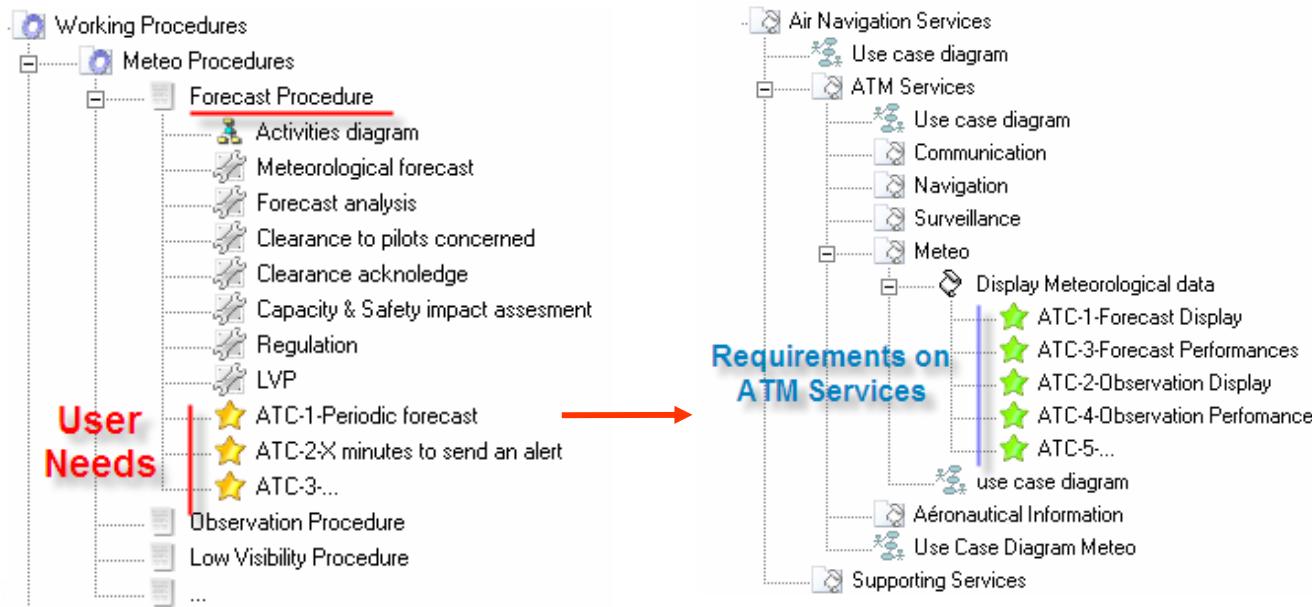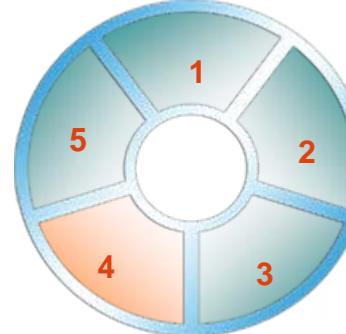
Description of ATM Requirements

Each requirement is described and linked to user needs and/or safety objectives.

External Service requirements

The requirements on external services are derived from ATM requirements.

Requirements on ATM Services

Requirements on external Services

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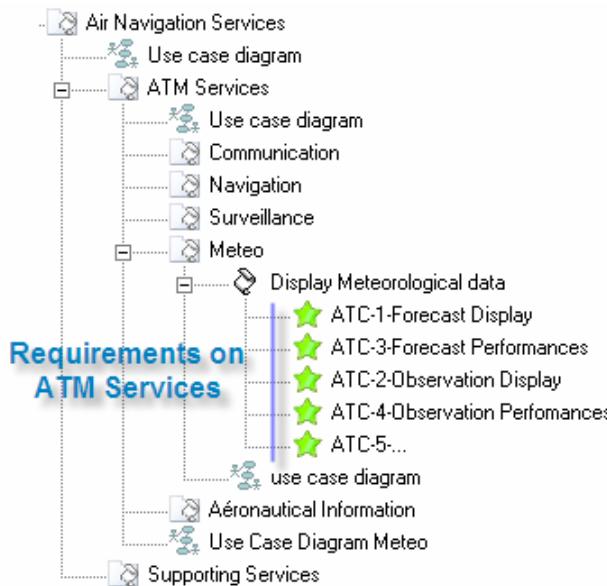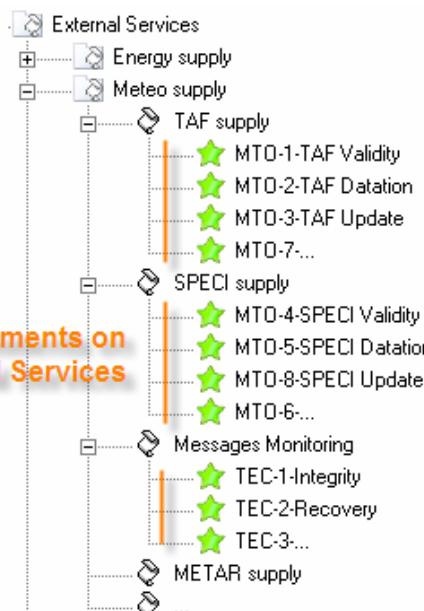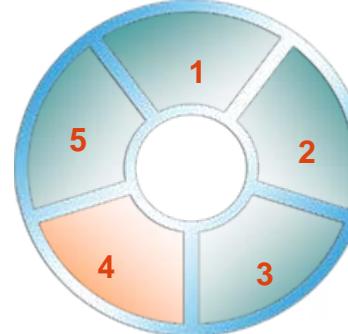
External Service requirements

Each « external »requirement is described and justified.

External Services
- Energy supply
- Meteo supply
  - TAF supply
    - MTO-1-TAF Validity
    - MTO-2-TAF Datation
    - MTO-3-TAF Update
    - MTO-7-...
  - SPECI supply
    - MTO-4-SPECI Validity
    - MTO-5-SPECI Datation
    - MTO-8-SPECI Update
    - MTO-6-...
  - Messages Monitoring
    - TEC-1-Integrity
   - TEC-2-Recovery
    - TEC-3-...
  - METAR supply
  - ...

Requirements on external Services
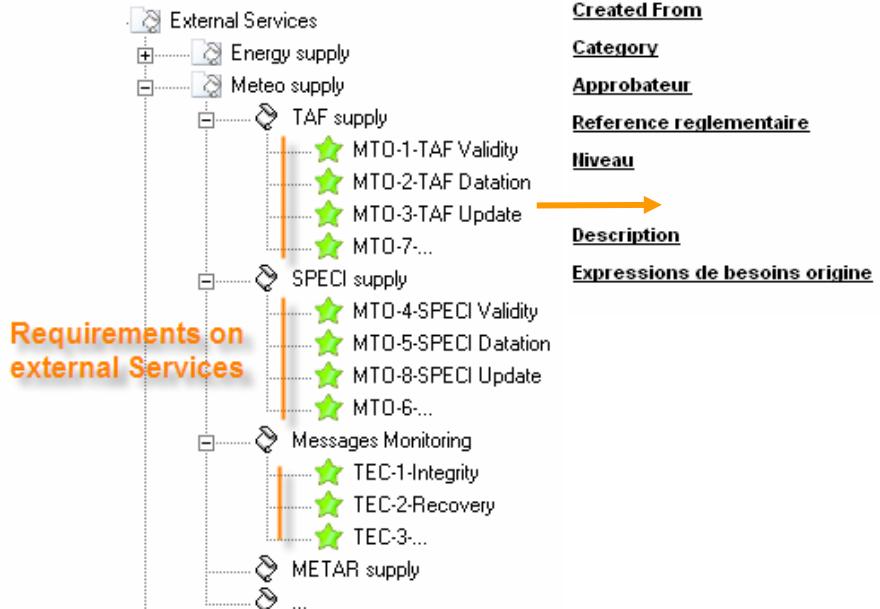
Name	TAF Update
Created From	
Category	MTO;
Approbateur	
Reference reglementaire	
Niveau	1

Requirement on External Service

Description — TAF message shall be updated 2 times per hour.
Expressions de besoins origine — Periodic forecast; **Link to user needs**

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Specify External Services

Consolidation of the requirements (SAFETY)

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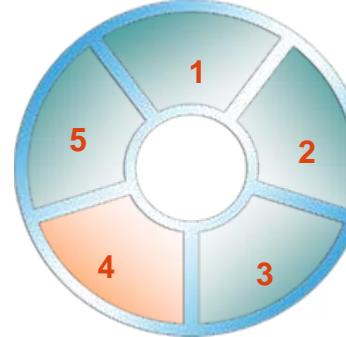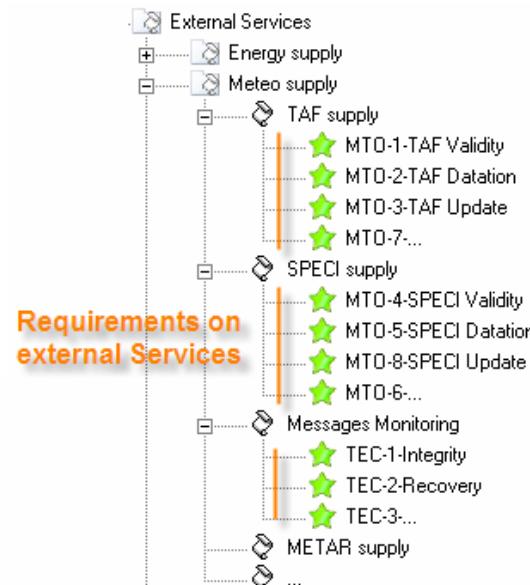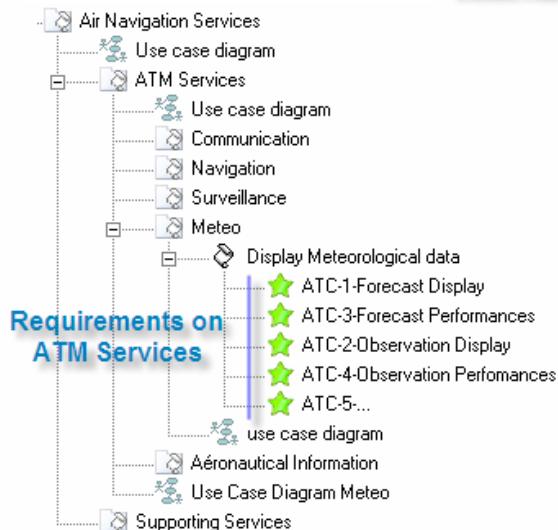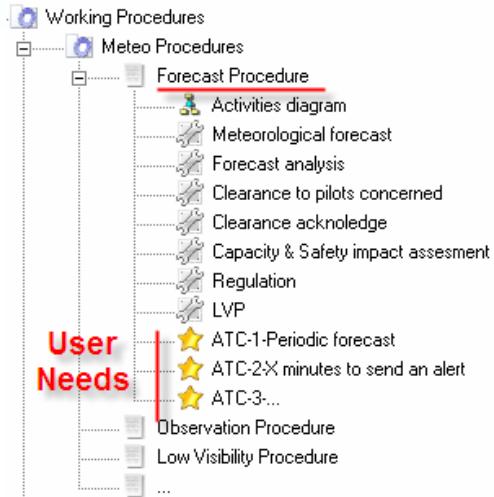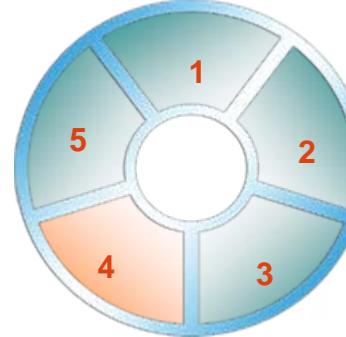
Consolidation of the requirements (SAFETY)

What are the requirements related to a need ? (impact)

⭐ Periodic forecast **User need**
▫ ◊ /Services/Air Navigation Services/ATM Services/Meteo/Display Meteorological data
⭐ **ATC-3-Forecast Performances**
⭐ **ATC-1-Forecast Display** **Requirements on ATM Service**
▫ ◊ /Services/External Services/Meteo supply/Messages Monitoring
⭐ **TEC-2-Recovery**
▫ ◊ /Services/External Services/Meteo supply/SPECI supply
⭐ **MTO-8-SPECI Update** **Requirements on Meteo Supply**
▫ ◊ /Services/External Services/Meteo supply/TAF supply
⭐ **MTO-3-TAF Update**

What are the origins of a External requirement ? (justification)

⭐ TAF Update **Requirement on Meteo supply**
▫ /Context/Working Procedures/Meteo Procedures/Forecast Procedure
▫ ⭐ **ATC-1-Periodic forecast**
User need
▫ /Context/Working Procedures/Meteo Procedures/Forecast Procedure
▫ **Forecast analysis**
▫ /Context/Actors/ANSP
Working context
Air Traffic Controler

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Our approach

1 Understand the context

2 Define the scope

3 Capture & Consolidate the user needs

4 Specify External Services

5 Formalize the SLA

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SLA Documentation

Finaly, a deep knowledge of the context in terms of :

•Resources

•Actors, Stakeholders

•Scope of the project

•Operational events, operational hazards, working procedures

•Users needs related to operational context

•Safety objectives put in place to avoid hazards

•Requirements on ATM/Supporting/External Services

•Justification and traceability

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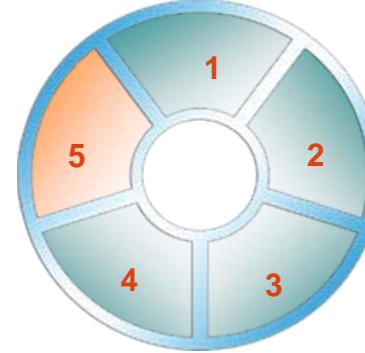
SLA Documentation

Automatic MS Word generation of parts of the SLA

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Our method has been implemented through a tool called SMiner.

The S-Miner content is based on a Meta Model

The Meta Model is adjusted to be compliant with our analysis method

http://www.profeci.eu
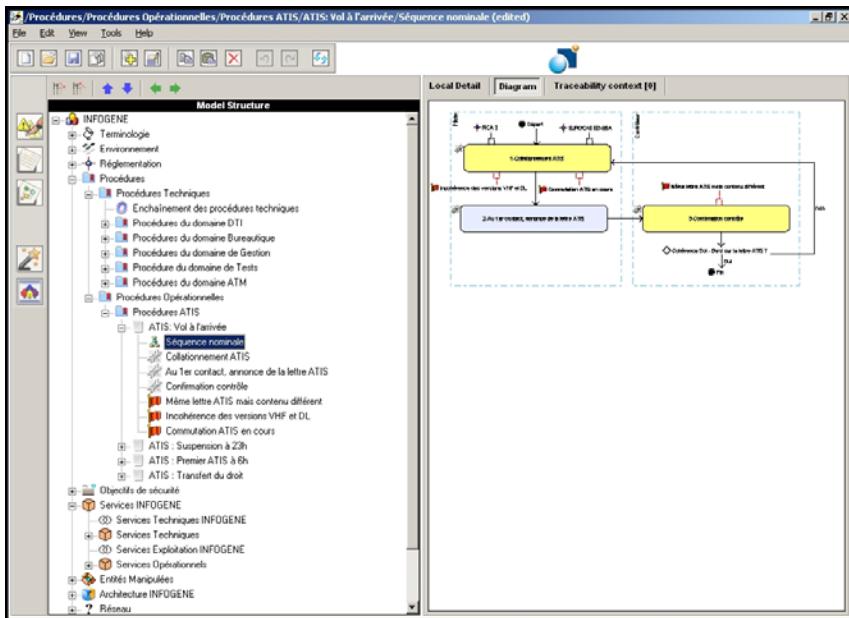
Traceability is explicitly managed within the model.

Coverage & Traceability metrics are automatically built from traceability links.

What are the requirements related to a need ? (Top-down approach)

What are the origins of a requirement ? (Bottom-up approach)

What are the stakeholders who will use a service ?
What for ?

What are the needs expressed by a stakeholder ?
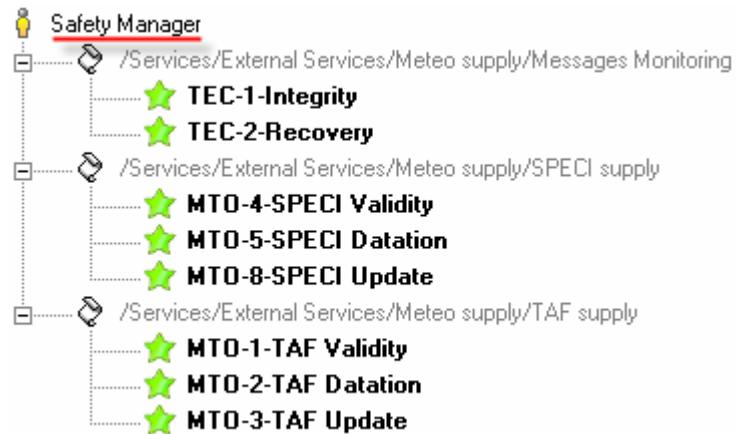
Automatic MS Word generation of reports

With the look and feel of the customer documentation

All the reports are coherent by construction. All of them are generated from a single model.

SLA Folder
- **Scope**
- Working Procedures
- **ATM Services**
- **Actor**
- Meteo SLA
- Telecom SLA
- Energy SLA
- ...

Meteo supply
- TAF supply
  - MTO-1-TAF Validity
  - MTO-2-TAF Datation
  - MTO-3-TAF Update
- SPECI supply
  - MTO-4-SPECI Validity
  - MTO-5-SPECI Datation
  - MTO-8-SPECI Update
- Messages Monitoring
  - TEC-1-Integrity
  - TEC-2-Recovery
- METAR supply
- ...

PROFECI
Conseil & Outils sur mesure

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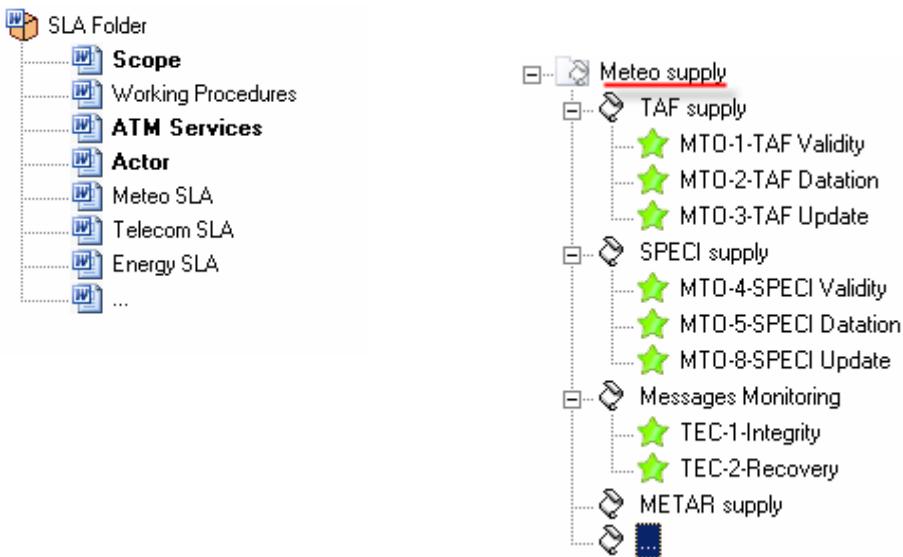
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A method to model the context, formalise the expected services, define the project scope, collect the needs, and finaly specify and design the right system.

A tool to master the complexity, to warranty the coherence and quality of the results

A solution to create a Service Agreement at the right level

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