

The EUROCONTROL Validation Planning Process

A brief presentation on the outcome of
TRS139/04

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Introduction

- A project to produce templates for Validation plans was commissioned by ESC
- There were to be templates produced for validation planning at the following levels:
 - EUROCONTROL ATM 2000+ Strategy Vol. 1
 - EUROCONTROL ATM 2000+ Strategy Vol. 2
 - OI or OI Cluster 'Life Cycle' Phase
 - Project/Experiment Level
- In addition, completed examples for each level; a 'help guide' and a report on findings were to be provided

Introduction

- The contract was awarded to Think Research in partnership with ISA Software.
- The work began in October 2004 and was completed by the end of December 2004.
- This presentation is a result of this work, an overview of the validation process it was based on, the templates themselves, and various issues to do with the EOCVM, the VDR, the EMH and further work still to be done.

Purpose

- ESC collects and maintains a centralised, overall view of the validation activities executed by European partners in the Validation Data Repository (VDR). ESC has also developed the Strategic Support Tool (SST) and the Project Management System (PMS).
- In order to support the organisations in the use of the validation methodologies and preparation of validation plans there is the need for templates for the validation planning documents at the different planning levels.
- The templates should also ease the collection of planning data into the VDR – and, where applicable provide a connection to the PMS and SST.
- The objective of this project is a study of the feasibility and subsequent prototyping of the templates together with a synthesis of the relevant findings.

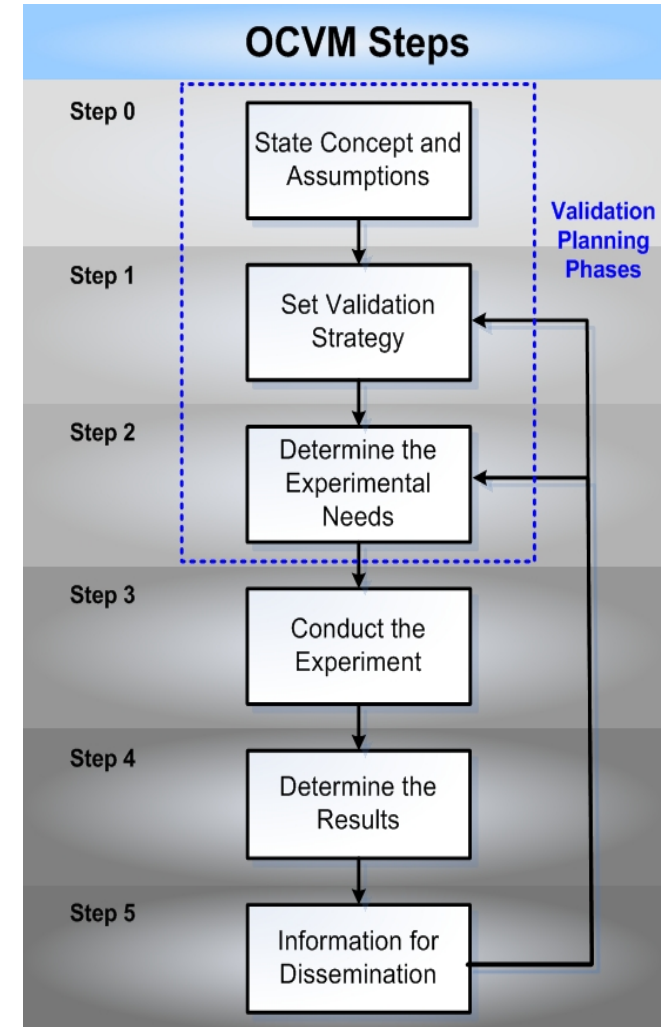
Purpose

- This project has certain specific objectives, strongly linked to the expected deliverables of the project:
 - To produce an analysis of certain baseline strategy documents with the planning issues in particular extracted;
 - To produce validation plan templates to enable the capture of validation planning information at various levels and for each of the validation life cycle phases V1, V2 and V3;
 - To provide ESC with examples of completed templates and a guidance document for reference;
 - To investigate and identify possible data structures and elements which could be later formalised and used to connect with other tools such as VDR, SST and PMS;
 - To produce a report detailing project analysis, findings and recommendations.

Process

The Validation Planning Process

- To understand what templates were needed at each level and what the inputs and expected outputs were, the general validation planning process was mapped out.
- This process was based on current Eurocontrol practise and the methodology outlined in the OCVM.
- The validation process should ultimately ensure that any programmes, projects or experiments conducted are appropriate and will provide real benefit to the ATM community and ATC in general.
- Within the OCVM there are six steps that make up the entire validation process. Of these six, the first three are solely validation planning.



Process

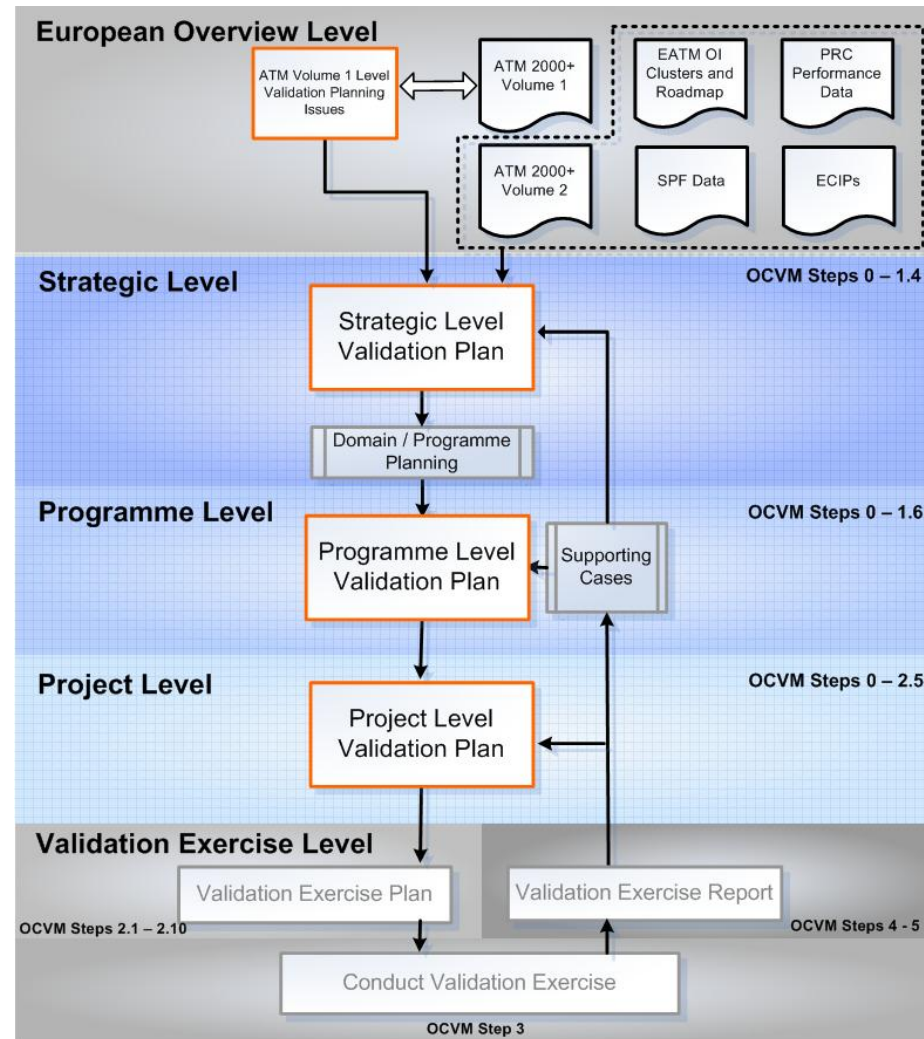
The Validation Planning Process

- In these three early steps information is gathered about the various problems and concepts and a series of validation exercises are planned to assess the concepts ability to provide a suitable solution to the problem.
- Yet the process begins even before the Programme / Project view given in the OCVM.
- It begins back at a European Strategy Level with documents such as ATM 2000+, the EATM roadmap, the SPF, ECIPs etc.
- Based on this, the OCVM and the identified validation planning levels, the following process was mapped out.

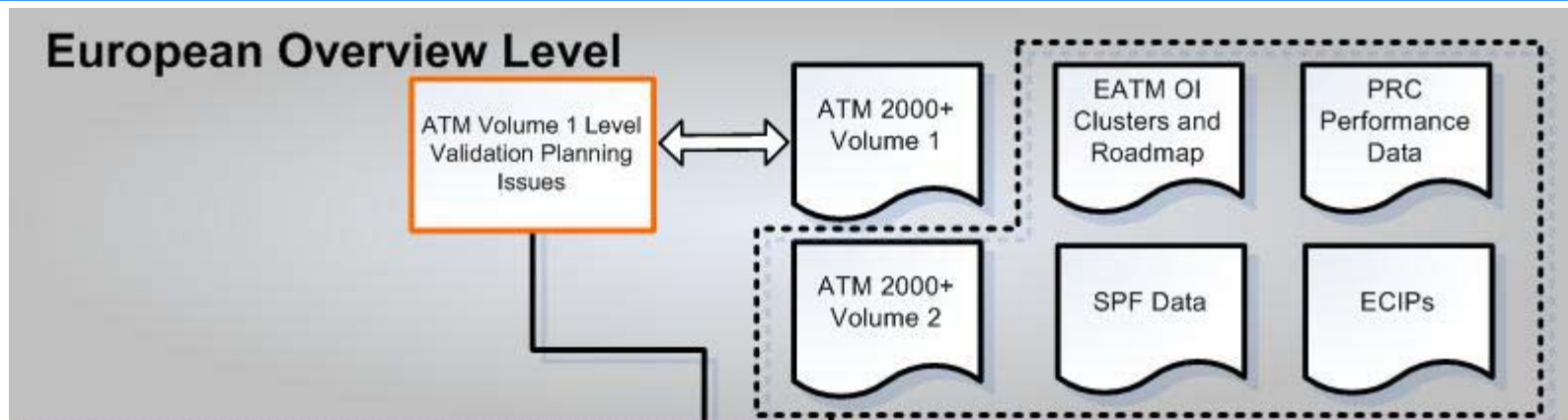
Process

Click on each level for a more detailed view.

The Validation Planning Process



European Overview Level



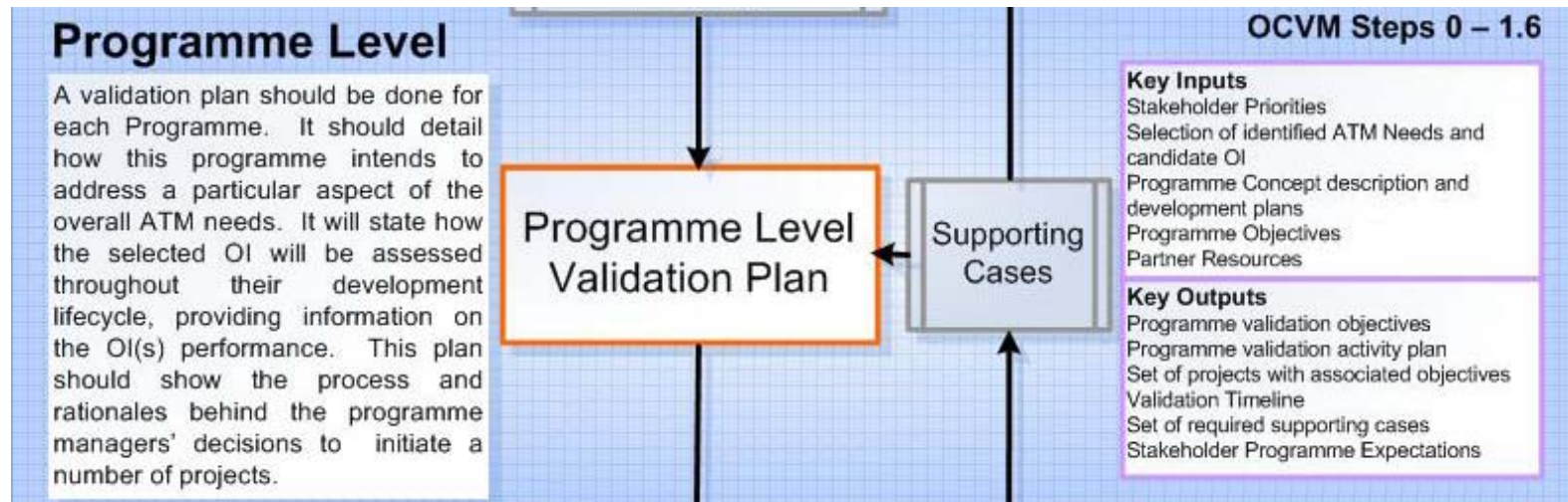
- The first of the levels identified before the project started, this level is the highest level and in reality, quite removed from the commonly understood notion of 'validation'.
- The analysis showed that at this level, not much actual validation planning is done in practice.
- Instead, it is here that validation planning issues should be identified
- The overriding purpose at this stage is to set guidelines for the shape and high level objectives of validation at a European level.
- Initially, this was to be a separate validation plan but on reflection, it was thought that the information likely in any such plan would be better suited to integration into ATM 2000+ Volume 1 (e.g. Section 4 – Strategic Objectives, and Section 6 – Management Considerations)

Strategy Level



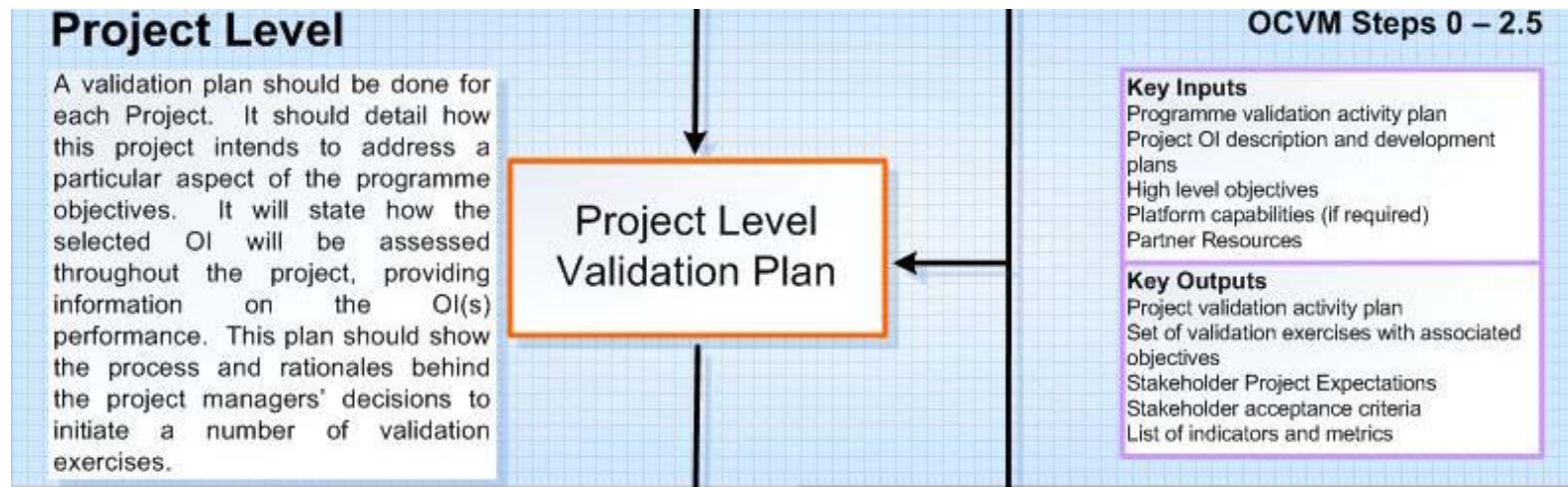
- The first real analysis is done at the next level down – Strategic Level. This is a combination of analysis and planning also done at European or Agency Level. Information from various key documents is taken and analysed so that suitable recommendations can be made as to where the next European ATM Research and Development programmes and projects should focus. The outputs of this document guide the direction of the long term R&D portfolio
- This should be a living document created at the beginning of a major phase in ATM Research and Development and updated after any major validation events or the release of any major validation documents.

Programme Level



- Taking input from the Strategy Level plan, a series of programmes are initiated and these will then have their own validation plan. At this level, the process becomes more recognisable and tangible according to most people's idea of 'validation'. A thorough analysis of the ATM needs and stakeholder expectations leads to a proposal for a set of validation exercises (often structured by projects) that will help develop and assess one or more Operational Improvements (OI). The output of this plan is a set of validation projects, validation exercises and a real idea of what needs to be done in the medium term.
- Created at the programme planning stages or (at latest) very early programme life and updated periodically throughout programme life or after major programme changes.

Project Level



- At a European level, most OI are developed in collaboration with many partners and in many projects. Thus the next plan to be produced is the Project Validation Plan. These are a more formal, lower level version of the issues contained in the Programme plan and interpreted at a Project Level. The purpose of this plan is to provide a real plan of validation activity that can be attributed to programme partners, a particular timeframe and with clear expectations.
- Created at the project planning stages or (at latest) very early project life and updated periodically throughout project life or after major project or validation exercise changes.

Templates

- The purpose of a template is to introduce a common (best practise) approach and have comparable documents throughout the agency
- 3 templates were provided:
 - Strategy Level
 - Programme Level
 - Project Level
- All templates use 'top down' approach initially with obvious links from one level to the next and a common core of information
- Based on existing EUROCONTROL MS Word document templates
- Detailed 'help' guide also provided to guide users on type, level and likely source of information for each section
- The templates guide the practitioner through the steps of the OCVM and thus have quite a firm structure with some scope for the authors to adapt the templates to their own needs.
- A key point of the templates, especially at higher levels (Programme and above) is that as much existing information as possible should be re-used in these plans. A lot of the information asked for already exists in other programme document or strategy documents.
- Example (completed) versions of the templates exist for reference.

European OCVM

- The templates are designed to work in conjunction with the European / Eurocontrol Operational Concept Validation Methodology (OCVM) and prompt the validation practitioner to address the issues contained within the OCVM, resulting in a thorough application of the methodology
- The OCVM Steps 0 – 2 were one of the main design inputs into the templates
- The designer of the templates is a co-author of the OCVM.
- The OCVM Programme / Project view and concept lifecycle view were used in template design.
- Some minor and one major recommendation for the OCVM as a result of the project (see following slides)

EOCVM

- Strategy Level
 - The issues and decisions in a Strategy Level Template may actually represent a third layer to the OCVM – one that fits around the programme level.
 - The design follows a high level application of Steps 0 to 1.4
 - This provides a useful analysis and capture of information and also means that the information is presented in a format similar to the OCVM – a feature which will make it easier to compare levels and relate levels to each other.
- Programme Level
 - First plan concerning existing OCVM steps
 - The Programme level plan covers Steps 0 to 1.6 in a lower level
- Project Level
 - The main bulk of the OCVM methodology and most commonly recognised
 - Project Level Plans cover Steps 0 to 2.5 (after which point the OCVM steps relate to planning at a validation exercise level and then the conduct, analysis and reporting of the validation exercises).

EOCVM

- Recommendations as a result of this project:
 - In this project, 3 levels of validation planning (Strategy, Programme and Project) were used. The OCVM only supports 2 of these levels (Strategy and Project). While these 2 are the most important (and practical) it is a recommendation that the OCVM be updated to include some guidance on strategy level validation planning.
 - In the process of designing these templates the OCVM Step 2.1 (Identify the level of Maturity) was always done much earlier (after, or as part of, Step 0.2). This project recommends that this decision be reviewed so that a conclusion may be reached as to where this step should fall in the OCVM process.
 - The third recommendation concerns the application of the OCVM. These templates cover all the OCVM steps from Step 0.1 to Step 2.5. There remains in the OCVM a number of documents for which templates could be produced. At the validation exercise level this includes a Validation Exercise (or Experimental) plan, a template for scenarios, analysis plans or experimental designs. Like the planning, the analysis and reporting can be done at various levels and so templates could again be produced at validation exercise, project and programme level for the dissemination of validation results

VDR

- VDR also a main input to the design of the templates
- Common validation plan templates should be compliant with the VDR in order to ease the transfer of information process into the VDR
- The final report includes a mapping of Template sections to VDR input locations.
- An initial analysis was done on the compatibility of the VDR and the validation plans. At strategy level the 'fit' of the validation plans to the VDR is not obvious. Development would be required to the VDR to enable this high level information to be captured. Most other information at both programme and project level can be captured in some form.
- The next (advanced) stage for the relation to the VDR (and SST) would be for the validation plan information to be automatically captured in (or transferred to) the VDR. Studies like the VDR-V2MP Integration project show that this is possible in theory however the templates would need to become more advanced and use more than the standard MS Word functionality. Users would also require some training to learn the transfer process and it is thought that some flexibility would be lost in the automation.

EMH

- Now the templates have been designed, their application needs to be considered and one way to do this would be via the Eurocontrol Management Handbook
- For example:
 - The OCVM would map generic tasks / deliverables onto the EATM Business model which would then be included as generic deliverables for any Activity.
 - In practice, the Domain/Programme Managers would define how the specific objectives of their Activity are to be assessed, identifying tasks to be performed. The generic deliverables of these validation tasks are mapped onto each phase of their Activity plan (EATM Business Model).
 - The templates would be used by the Activity Manager to describe the scope of validation work to be performed, how to implement it and to plan the work packages and perhaps ultimately to gain approval for the work.
 - Viewed from the perspective of the ESC - responsible for a co-ordinated validation plan - it may be necessary to show how all OI are to be validated. This must give transparency between what is expected at the strategic level and what is actually being delivered at the Activity level and is thus a portfolio level activity.

Next Steps

- The templates themselves are complete. They must now be reviewed and accepted by potential users
- One such review would be with the CAATS project
- Following this would be a more formal assessment of how to integrate the templates into the Eurocontrol business model and EMH
- Finally, the continuation of the project to provide templates for other OCVM activities – Experimental Plans, Analysis Plans, Operational Scenarios etc.