vf-OS: virtual factory Operating System

WP8: vf Smart Application Piloting and Validation

D8.1c: Annex E: Pilot 3 Evaluation Report
Vs: 1.0.3

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Short Abstract
This document provides general information about the vApps that are to be developed in the vf-OS project related to Pilot 3 needs: Manufacturing Assembly and Collaboration. This concerns describing the vApps and their functionalities, the interactions between customers and manufacturing users as well as software developers, and the story maps developed.

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History

See Annex A.

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This deliverable is subject to final acceptance by the European Commission.

Further Information

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Executive Summary

Deliverable “D8.1c Annex Pilot 3 Evaluation Report” provides a detailed description of the evaluation activities within Pilot 3: Manufacturing Assembly / Collaboration. The pilot vApps described in this document focus on providing support to collaborative product analysis, industrial capability validation, cross-plant production planning coherence checking, as well as quality assurance validation and tracking.

The annex contains the reports corresponding to the three evaluation periods regarded in the DOA at M24, M30, and M36. Each evaluation report contains a description of the software used for the evaluation (Software Under Test), the evaluation questionnaires generated using the Goal-Questions-Metrics (GQM) methodology, and the results of the evaluation.

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1 Pilot 3 Detailed Calendar

This section presents the development methodology and detailed calendar for Pilot 3 vApps development, and validation. A less detailed calendar is introduced in D8.1c Validation Scenarios main document deliverable, where it states:

- **Phase 1:** To be released at month M24, scopes vfCollaborationAnalyser R1 developed by LYON2 and validated at M27 by ASC and ALM
- **Phase 2:** To be released at month M30, scopes vfCollaborationAnalyser R2, vfIndusEnabler R1 and vfProductionPlanner R1. vfIndusEnabler is developed by LYON2 and validated by ASC. vfProductionPlanner is developed by LYON2 and validated by ALM
- **Phase 3:** To be released at month M36, scopes vfCollaborationAnalyser R3, vfIndusEnabler R2 and vfProductionPlanner R2. vfQualityAssurance and vfProductionTracker are developed by LYON2 and validated by ALM

Some of the key concepts to be considered are:

- vApps differ in number of iterations/versions because vApps development depends on the availability of vf-OS components necessary for that vApp. vApps with more iterations involve less development effort in some of their iterations, as previous vf-OS components are integrated in previous releases of the same vApp. Figure 1 shows that fact
- The parallelism between vf-OS component developments (releases) and vApps developments (releases) forces vApps developers to freeze the baseline of vf-OS component software packages used for evaluation purposes at M26, M29 and M35. This means that the versions of vf-OS component used for integration purposes may not be the latest version
- A complete evaluation of vApps is intended at the end of the project, where all the vf-OS components are in their last and complete development, and end-users have fully deployed and run their business processes with the new software systems

The development of vApps is based on agile methodologies, where the global functionality of an app is split in smaller functional groups called user stories. Those user stories where provided in D8.1a, and a detailed specification of user stories per vApp was performed for Pilot 3 case in the Annex E of D8.1b. User stories are grouped in sprints, that are bi-weekly deadlines where several user stories are developed and technically tested. Work generated in a sprint will be acknowledged and showcased at WP8 bi-weekly meetings, where status and risks are communicated to APR / TARDY users. Development problems due to inconsistencies with vf-OS component functionalities will be posted at the same bi-weekly pace. Development of vApps will finish 1 month before the ending of the phase. Evaluation of the vApp will be done the last month along with light bug-fixing.

With all the previous considerations, the development calendar foreseen for Pilot 3 is shown in Figure 1.

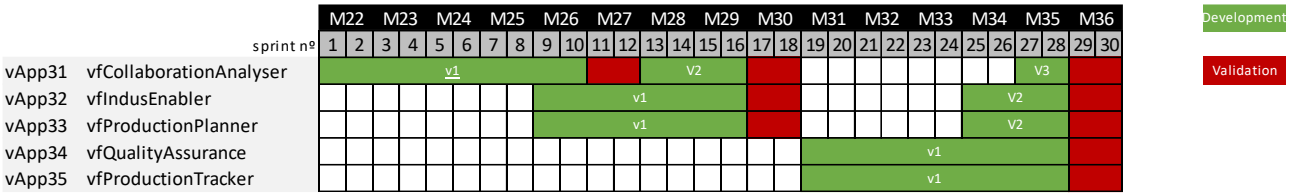

Figure 1 Pilot 3 development and validation calendar

2 M27 Evaluation Report

2.1 Software Under Test

As was described in D8.1b, vApp31 - vfCollaborationAnalyser aims to evaluate the capacity of the consortium APR and TARDY to industrialize products from common customer projects. This evaluation is in the form of a classification of the business opportunity (ie Mandatory, High ROI, nice to have, or not relevant) and results from the analysis of the STEP file (Standard for the Exchange of Product Data file), customer project details and the two companies' data.

At M24, vApp31 back-end services are developed through a first level of orchestration with an ongoing release of both additional services provided by LYON2 for (i) STEP decomposition in features and (ii) acceptance notification for quoting (ranking of each partner features). To maximise the relevance of the ranking service, the CAD document used for testing is compliant to STEP-NC standard (ISO 10303 + ISO 14649 using AP238).

For the first release of vApp31 (M24), the front-end interfaces are under development with a minimal design effort till the release the vf-OS front-end component. The vApp31 M24 does not test the complete vApp functionality as stated in D8.1c, but a subset of already available components covering the back-end of the vApp (see Figure 2).

Component	Functionality
Connectors	ODBC, STEP file and LXP ERP connectors are used in native implementations to connect files and databases.
Manufacturing Enablers	3DSCAN services are used to ingest and scan STEP file (converted in STL format (stereolithography file format)) 3D web viewer services are used to provide HTML5 view of STEP features (as XML3D asset).
Process Execution	The set of CAD related services are implemented as asynchronous as they are time consuming for multiple conversions. Service orchestration is done using BPEL processes design to be used through the process execution vf-OS component.

Figure 2: Pilot 3 test components

2.2 GQM Questionnaire

This section will be updated in M27.

2.3 GQM Results

This section will be updated in M27.

3 M30 Evaluation

Contents to filled in at M30.

4 M36 Evaluation

Contents to be filled in at M36.

Annex A: History

Document History	
Versions	V0.1.0: • New section Pilot 3 detailed calendar introduced • Section Software Under Test introduced with the support of APR and TARDY V0.1.1: • Changes to section 1 to be aligned with Pilot 3 V0.1.3: • Internal review UNINOVA, fixing UPV V1.0.2, V1.0.3: • Second Internal review IKERLAN, fixing UPV • Coordinator review ICE, fixing UPV
Contributions	LYON2: • Nejib Moalla, Abdelhadi Belfadel APR: • Benjamin Menghini TARDY: • Yannick Gerphagnon UPV: • Francisco Fraile, Víctor Anaya (internal review) KBZ: • Carlos Agostinho (1st internal review) IKERLAN: • Eduardo Saiz (2nd internal review)

Annex B: References

None

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