IMPLEMENTATION PLAN

AVALON SOLUTIONS

Document history

Introduction

This document contains information for Atos about how to implement the software in the future.

The document contains the current situation, bottlenecks, desired situation, implementation with business and IT architecture, group information for the implementation, phases for the implementation and ways to test the implementation of the software.

Table of contents

1.0 General

1.1 Current situation

The main issue is that Atos does not have a simulated demo environment to show how SAP (products) will help their clients. Thus, they must demonstrate different scenarios every time by creating various demo environments based on the client's needs with using Lego parts. The current situation is not flexible and/or scalable and caters only to one specific scenario for a specific industry. Atos wants to be able to make their demos appealing to a broader scope of industries within manufacturing.

1.2 Changes needed

At the moment ATOS has some problems caused by the current way of giving 3d demos
- No more 3D demos made with Lego
- Changing demo environments quickly takes too much time.
- Current way of giving demos is not user friendly
- The current visualization of giving demos is not in a realistic environment such as a factory work floor.

1.3 Implementation goal

The goal of the implementation of the 3D software package is to make sure the demos that are given to potential clients of Atos have a more professional look to make the demo's interesting for the clients. Next to that it is the goal to make sure the Atos employees are able to quickly change demos in the software. At first, changing the Lego demo took a lot of time, this 3D software can save a lot of time.

The implementation of a 3D factory simulation software will lead to the following points:
- A faster adoption process for IOT (internet of things) with customers.
- Reducing time of the implementation phase.
- Reducing testing time.
- Increasing sales.

1.4 Implementation within IT & Business architecture

Our solution would be placed within their new system architecture, connected to the SAP Demo environment. This is part of technology lab at their BTIC (Business Technology Innovation Center). Here, our solution will have to meet BTIC expectation like any other of Atos' products. The implementation will be easily integrated with minimal to negligible hinderance in daily tasks.
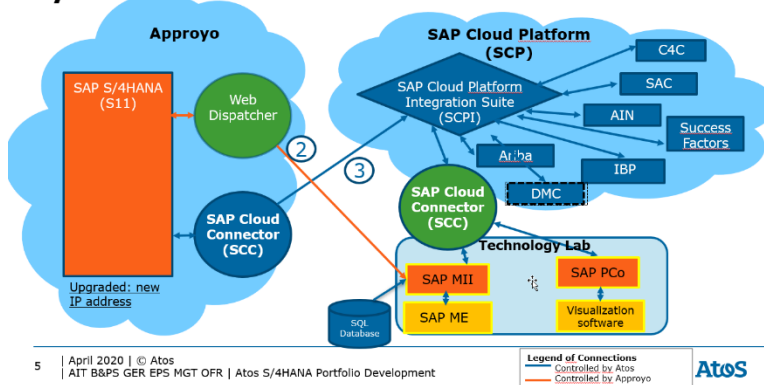
2.0 Project organization

2.1 Project group

Current function	Role within the implementation	Responsible for
ATOS IT employee	IT professional	Keeping an overview of the technical part of the implementation. Helping ATOS SAP consultant
ATOS SAP consultant	consultant	Presenting and making changes on demos.
Visual component employee	VC specialist	Helping implementation visual components in company. Contact person for questions or problems
ATOS Manager	Project manager	Overseeing project and guide teams in right direction

2.2 Communication plan

Who communicates with who and when?

Addressee	Message	Medium	Frequency	Reason
ATOS manager	Visual components employee	Mail/Teams	At least once a week	Keep both companies in to the loop of the progress and possible problems.
ATOS IT employee	ATOS manager	Mail/Teams	At least once a week	The ATOS IT employee keeps the ATOS manager up to date on the progress. The ATOS manager needs this to keep VC up to date.
ATOS SAP consultant	ATOS manager	Mail/Teams	At least once a week	The ATOS IT employee keeps the ATOS manager up to date on the progress. The ATOS manager needs this to keep VC up to date.
ATOS IT employee	Visual components employee	Mail/Teams	When necessary	If there are questions IT related, the ATOS IT employee can contact the Visual Components Employee
ATOS SAP consultant	Visual components employee	Mail/Teams	When necessary	If there are questions SAP related, the ATOS SAP consultant can contact the Visual Components Employee

3.0 Method

3.1 Phasing

Phase	Description	Status	Date
1	Preparing employees/software and hardware for the change.	Planned	Week 1
2	Prepare employees aftercare / solve problems that have arisen.	Planned	* Week 2 (this can be extended if the software or hardware needs replacement)
3	Realization / testing	Planned	Week 3 – week 6
4	* Going live in demo environment	Planned	Week 7
5	Step off the current way of giving demos.	Planned	Week 7
6	Acceptation.	Planned	Week 7
7	* Going live of 3d software in BTIC (business technology innovation center)	Planned	Week 8

* If the 3d demo software will be launched in a test environment first, the software will be launched in the BTIC environment when the software in the test environment is launched without problems.

Phase 1

Phase	Description	required person(s)
1	Preparing employees/software and hardware for the change.	Atos IT employee Atos SAP consultant Visual Components Employee Atos Manager
1.1	• Introduction session for stakeholders to inform them about the changes and the new software package. Inform the stakeholders about their tasks in the project.	Atos IT employee, Atos Manager
1.2	• Have a look at the current software and how they connect with the new Visual Components.	Atos IT employee, Visual Components Employee, Atos SAP consultant
1.3	• Have a look at the current hardware that the stakeholders will use during the installation and during the work with Visual Components.	Atos IT employee,
1.4	• Install Visual components	Atos IT employee, Visual Components Employee
1.5	• Prepare employees by giving them training about Visual Components.	Atos IT employee, Visual Components Employee

Phase 2

Phase	Description	required person(s)
2	Prepare employees aftercare / solve problems that have arisen.	Atos IT employee Atos SAP consultant Visual Components Employee Atos Manager
2.1	• Discuss how employees have prepared for the change and discuss employee needs.	Atos IT employee, Atos Manager
2.2	• Resolving employee deficiencies when these have surfaced in the discussion between management and staff.	Atos Manager
2.3	• Resolving software deficiencies when these have surfaced in the discussion between management and staff.	Atos IT employee Atos SAP consultant
2.4	• Resolving hardware deficiencies when these have surfaced in the discussion between management and staff.	Atos IT employee

Phase 3

Phase	Description	required person(s)
3	Realization / testing	Atos IT employee Atos SAP consultant Visual Components Employee Atos Manager
3.1	• Realizing 3D demo's (ongoing action until end of phase).	Atos IT employee
3.2	• Set up the OPC Server.	Atos IT employee, Atos SAP consultant
3.3	• Test OPC Server connection.	Atos IT employee, Atos SAP consultant
3.4	• Set up the OPC Client.	Atos IT employee, Atos SAP consultant
3.5	• Test OPC Client connection.	Atos IT employee, Atos SAP consultant
3.6	• Connect current SAP environment with Visual Components and use OPC client and OPC Server.	Atos IT employee, Atos SAP consultant, Visual Components Employee
3.7	• Test connection between SAP environment and Visual Components.	Atos IT employee, Atos SAP consultant, Visual Components Employee
Helpful links **3.6: https://academy.visualcomponents.com/lessons/** **Filter by Category: connectivity** **Contains multiple helpful links on how to set up connections between visual components and other platforms. Another helpful link where information about the connection between SAP and VC can be found.**		

Phase 4

Phase	Description	required person(s)
4	* Going live in demo environment	Atos IT employee Atos SAP consultant Atos Manager

Phase 5

Phase	Description	required person(s)
5	Step off the current way of giving demos.	Atos IT employee Atos SAP consultant Atos Manager

Phase 6

Phase	Description	required person(s)
6	Acceptation.	Atos IT employee Atos SAP consultant Atos Manager

Phase 7

Phase	Description	required person(s)
7	* Going live of 3d software in BTIC (business technology innovation center)	Atos IT employee Atos SAP consultant Atos Manager

3.3 Required equipment, hardware, and software

Phase	Description	Period
Visual Components Software	To use the visual components software, Atos needs product keys.	Start date: 25/07/2022 End date: /
PC's	The visual components software is quite big, and it is best to have a powerful PC to make sure the employees can work smooth with the software and that the graphics are good. (System requirements of Visual Components: https://www.visualcomponents.com/system-requirements/)	Start date: 25/07/2022 End date: /
SAP demo environment	The SAP demo environment sends factory data and signals via OPC UA to the 3D simulation software.	Start date: 08/08/2022 End date: /
OPC Client	The OPC Client is a software module that enables the 3d simulation software to acquire data from an OPC Server. *Atos needs more research on how to set up of this OPC connection. This is out of the project scope.*	Start date: 08/08/2022 End date: /
OPC Server	The OPC Server enables SAP to provide their data to the 3d simulation software using OPC. OPC is based on client/server architecture. *Atos needs more research on how to set up of this OPC Server. This is out of the project scope.*	Start date: 08/08/2022 End date: /

3.4 operational impact specification

The operational impact specification is a planning tool used to estimate the impact of the system in the environment where it is being implemented. This plan can be used as the basis of planning costs, hardware requirements, service-level agreements, disaster recovery planning, and many other areas.

Operational profile

Operating Hours	Active on demand, depending on the amount and frequency of demo requests
Expected Availability	high availability: 99.5%
Expected Reliability	fault tolerance: 99%
Maximum Tolerable Outage	None during the workday. Maintenance and updates on the software is only allowed during 8 pm and 8 am.
Backup Window	Outside of scenarios involving clients (i.e., creating models for demos): 1 – 2 hours
Backup Requirements	daily between 23:00 - 24:00 hours, weekend availability
Operating Hours	full backup once a week

Growth estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
# Of Workstations	1	1	1	2	2
Storage Requirements (GB)	3GB	3GB	3GB	6GB	6GB

Integration points

System to be integrated	approach	frequency
SAP Demo Environment	The VC client will be connected to the SAP demo environment with a PLC connection through OPC-UA	Active on-demand.

4.0 Testing

4.1 Systemic Competencies

For exploring the system I.e., our advised 3D Simulation Software, Visual Component's competency, we have conducted the software testing, planning, design, and execution of the system.
Software testing is "The process of analysing a software item to detect the differences between existing and required conditions and to evaluate the features of the software items."
This test plan describes the testing approach and the overall framework that will lead the testing of our ERP system. Our main goal of testing is to reveal any errors and to ensure that the system being developed corresponds to the system requirements and acceptance criteria. To make testing more effective, we have formed test strategies, execution strategy and a test management section.
The method of testing used is the "arrange – act – assert" cycle which states to set up a situation (arrange), perform an action (act) and then check the outcomes of the action (assert) when performing a test.
This project is using an agile approach, with weekly iterations. At the end of each week the requirements identified for that iteration will be delivered to the team and should be evaluated by Atos. After formally developing the essential requirements and use case specifications for the 3D Simulation Software, in this test plan we are going to be forming the acceptance criteria and conduct different test cases in order to assess the variance in our system.

4.2 Acceptant and Acceptance criteria

In brief, acceptance criteria are the conditions that a software product must meet to be accepted by a user or a customer. They are unique for each user story and define the feature behaviour from the end-user's perspective.
Our software or functionality of the software related to the use case of using the re-usable demos built by the team using Visual Components and will be accepted when:
Acceptant on behalf of the organisation:

Name	Function	Department
WILLEM DEKKERS	Stakeholder	Business Management
NICK VAN PELT	Stakeholder	Business Management
BAS MOMMERS	Stakeholder	Business Management
Atos Sales Representatives	Sales Department Employees will be testing and using the software advised.	Sales Management

Atos expects to use the advised software I.e., Visual Components to build new demo use cases for testing out new manufacturing systems whilst using the demos made by the team.
Following are the acceptance criteria listed for the use case, along with the errors that are allowed.

Severity A = Defect is a showstopper and will obstruct production
Severity B = Defect is severe, but can be solved with less cost and some rework
Severity C = Defect is disruptive, and can be solved with little costs (user-friendliness)
Severity D = Defect is cosmetic (wrong layout)

Use Case	Test objective / use case description	Norm (number of accepted defects)	Type of Defect/ Error
[UR-1.1] An Atos employee wants the possibility to change the shown demo environment.	i. Atos should be able to switch between different demo use case environment.	A = 0, B = 0, C = 1, D = 1	i. Delay in receiving the 3D components from their SAP system. ii. A lag in the system Transfer of inaccurate information
[UR-2.1] An Atos employee wants to make a 3D demo of a factory or part of a factory.	i. User should be able to use the reusable components inside Visual Components for building their factory. User should be able to import their factory layout.	A = 0, B = 1, C = 1, D = 1	i. Not being able to import or process their factory layout file.
[UR-1.2] A client wants to see their possible factory layout in 3D.	i. User should be able to use the reusable components inside Visual Components for building their factory. User should be able to import their factory layout.	A = 0, B = 1, C = 1, D = 1	i. Not being able to import or process their factory layout file.

4.3 Test Strategy

The project is using an agile approach, with weekly iterations. In this approach, at the end of each week the requirements identified for that iteration will be delivered to the team and will be tested. Following this method, we would be able to identify the defects in the initial stages but also helps in reducing cost of bugs by fixing them early. Additionally, as this method is more test driven i.e., testing is performed at the time of implementation whereas, in the traditional process, the testing is performed after the implementation. This approach follows a customer centralized approach by delivering a high- quality product as early as possible.

4.4 Product risk analyse (PRA)

The reason for conducting the Product Risk Analysis is to have a better understanding of what kind of errors or risks we can have in the application before we confirm it for production. When we perform the risk analysis during software testing, we can identify the areas where the risk would be high.

4.5 Test goals

Test goal	Description	Characteristic
[UR-1.1] An Atos employee wants the possibility to change the shown demo environment.	1.1 Atos employee knows how to work with the software. 1.2 Atos employee has a design of the process and can easily drag – drop components in the environment. 1.3 Atos employees can use the 3D files from SAP system.	Functionality, User – Friendliness, Performance
[UR-2.1] An Atos employee wants to make a 3D demo of a factory or part of a factory.	2.1 Atos employee can drag – drop components of his factory. 2.2 Atos employee can import his factory components.	Functionality, Performance, User- Friendliness
[UR-1.2] A client wants to see their possible factory layout in 3D.	3.1 Atos employee can drag – drop components of his factory. 3.2 Atos employee can import his factory layout.	Functionality, Suitability, User- friendliness

4.6 Risk table (PRA table)

The risk class (RC) determines the thoroughness of the test. Risk class A is the highest risk class and C is the lowest. The test strategy is subsequently focused on covering the risks with the highest risk class as early as possible in the test project.

Test goals	Characteristic	Risk	Damage	RC	Argumentation
[UR-1.1] An Atos employee wants the possibility to change the shown demo environment.	Functionality, User – Friendliness, Performance	7	8	B	They can use the demos that the team made for getting inspiration. But since the risk is less, they can follow a tutorial.
[UR-2.1] An Atos employee wants to make a 3D demo of a factory or part of a factory.	Functionality, Performance, User-Friendliness	8	9	A	Since this is the step with highest priority of our use case, there can be a possibility that not all the components of the factory are present. If this case occurs, they should be able to import their file.
[UR-1.2] A client wants to see their possible factory layout in 3D.	Functionality, Suitability, User-friendliness	8	9	A	Since this is the step with highest priority of our use case, there can be a possibility that not all the components of the factory are present. If this case occurs, they should be able to import their file.

4.7 Test Design Techniques

For testing out these use cases, the team build two re-usable demos for Beer Brewery case and the Crane stabilizer using Visual Components. The finalized version of these demos is described briefly below.

5.0 Guarantee

5.1 Education

For the use of visual components, someone will have to be trained within ATOS to be able to manage this. A visual components coach will come along for this, he/she will give an explanation that will take +- 4 hours. When the new visual component 'Specialist' within ATOS has had this training, this self-study will follow, if this is necessary of course. After this training and self-study, it is the intention that this person within ATOS has enough knowledge to be able to manage the software sufficiently and intervene in the event of errors, and to pass this on to management.

5.2 Maintenance, support, and management

If Atos uses the new software package of Visual components, someone should make sure the software keeps working. One person or multiple persons could be responsible for checking/updating the software and the connections when necessary.

Because the employees start working with a new software package, there could be multiple questions. A person should be responsible for answering these questions and helping the employees. This person should have enough knowledge about Visual Components.
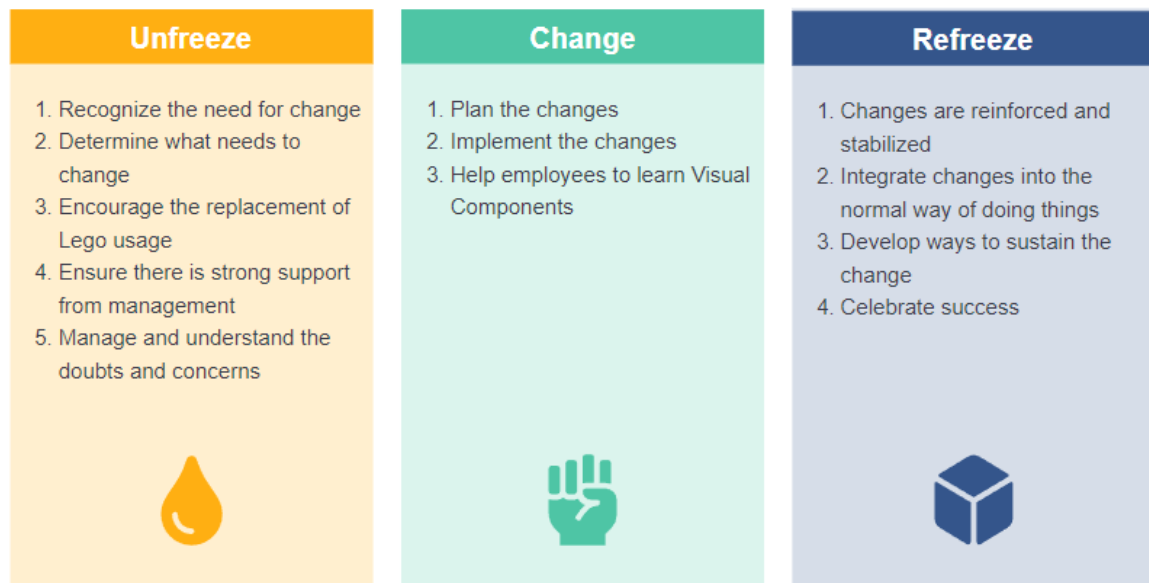
5.3 risk analysis

Identified	probability	impact	Rank
Computer with VC crashes (license is restricted to computer).	L	H	M
Interaction between ERP and visual components fails.	L	H	M
The staff is not trained properly.	L	M	L
Lack of Change Management.	M	M	M
Insufficient project management.	L	H	M
Failure to keep to the standard specifications that the software supports.	L	M	L

Risk Description	Risk Response
Computer with VC crashes (license is restricted to computer).	It will be tried to fix the certain computer when this is not possible VC will be contacted and there will be asked for a solution for the problem.
Interaction between ERP and VC fails.	When it is not possible to connect the SAP ERP with VC the company will contact VC and ask them how to fix this.
The staff is not trained properly.	There will be held extra trainings for the employees.
Lack of Change Management.	Employees will be explained in a better/another way why the change is good for the company.
Insufficient project management.	Reassessment of the project structure and implementation.
Failure to keep to the standard specifications that the software supports.	The specifications of the needed software will be upgraded.

Stakeholder	Message	Strategy	Frequency	Communicators	Feedback
IT professional	Declaration of issues and communication about the project.	Team conference	daily	consultant, project manager	In-person / mail
Consultant	Declaration of issues and communication about the project.	Team conference	daily	Admins, project manager	In-person / mail
VC specialist	Solution of problem.	Mail / call / videocall	When needed	Project manager	Mail / call / videocall
Project manager	Implementation checkpoint	Mail or team conference	When achieved	Admin/consultant	In-person
Project manager	Declaration of issues.	Mail	When needed	VC specialist	Mail / call / videocall

5.4 Change management

Lewin's Change Model

Unfreeze
1. Recognize the need for change
2. Determine what needs to change
3. Encourage the replacement of Lego usage
4. Ensure there is strong support from management
5. Manage and understand the doubts and concerns

Change
1. Plan the changes
2. Implement the changes
3. Help employees to learn Visual Components

Refreeze
1. Changes are reinforced and stabilized
2. Integrate changes into the normal way of doing things
3. Develop ways to sustain the change
4. Celebrate success

Phase	Steps	Department
Unfreeze	1. Recognize the need for change	Atos IT employee, Atos SAP consultant, Atos BTIC manager
Unfreeze	2. Determine what needs to change	Atos SAP consultant, Atos BTIC manager
Unfreeze	3. Encourage the replacement of Lego usage	Atos BTIC manager

Unfreeze	4. Ensure there is strong support from management	Atos BTIC manager
Unfreeze	5. Manage and understand the doubts and concerns	Atos BTIC manager
Change	1.Plan the changes	Atos project manager
Change	2. Implement the changes	Atos IT employee, Atos SAP consultant, Atos BTIC manager
Change	3. Help employees to learn Visual Components	Visual components employee
Refreeze	1.Changes are reinforced and stabilized	Atos IT employee, Atos SAP consultant, Atos BTIC manager
Refreeze	2. Integrate changes into the normal way of doing things	Atos IT employee, Atos SAP consultant, Atos BTIC manager
Refreeze	3. Develop ways to sustain the change	Atos IT employee, Atos SAP consultant
Refreeze	4. Celebrate success	Atos BTIC team