Atos

ADVICE REPORT

AVALON SOLUTIONS

Document history

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Approvals

This document requires the following approvals:

Project Board

Name	Title	Date	Signature

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This document has been distributed to Project Board and Contributors and additionally to:

Name	Title	Version
Petra Janssen	Process coach	1.0
Petra Janssen	Process coach	1.1

Management summary

Atos helps companies in becoming digital, which this project is meant to help with. They are a company that leads other companies. The company also supports the digital transformation of its clients across various business sectors such as manufacturing.

ATOS main issue before outsourcing this project is that they do not have a simulated demo environment to show how SAP (products) will help their clients.

Currently, Atos presents their demos for SAP to clients using a PowerPoint presentation and a crane wagon made with Lego as a visual aid. Thus, ATOS must demonstrate different scenarios every time by creating various demo environments based on the client's needs. 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 its demos appealing to a broader scope of industries within manufacturing. The main goal of this project was to find, evaluate and recommend 3D simulation software products, from which a selection is made to be used for developing and visualizing different use cases.

The project is related to several points in ATOS' 3-year plan. The project is related to their focus on industry verticals, focusing on specific industries, to help with digital transformations in those areas. The advised solution fits in the Manufacturing Operations Management section of the mapping architecture. By using the solution, Atos can evaluate out different demo cases after connecting it with SAP for making various manufacturing processes.

The proposed 3d simulation software is called **Visual Components.** The software stands out from other software's by being very visually appealing, easy-to-use, and having a lot of training possibilities. Implementing this software would help ATOS make their demos more scalable, and efficient, visually appealing, flexible, and effective.

These improvements in the process of giving 3D demos will lead to: A faster adoption process for IOT (internet of things) with customers, reduced time of the SAP implementation phase for the customers, reduced testing time and it will increase ATOS' sales.

It is advised for ATOS to start with the most inexpensive license option version (essential version) of Visual Components, this since the price is another point that is important for ATOS. This does mean that it is not possible to make such use of functions as importing own models and multiple VR possibilities, but this weighs against the price.

The project could be followed up by a project which designs and creates the connection between SAP and the 3d Simulation software through OPC UA.

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1. Introduction

1.1 Client, assignment, and purpose

Atos is a worldwide digital leader with offices in over 70 countries. Atos is the global leader in secure and decarbonized digital with a range of market-leading digital solutions along with consultancy services, digital security and decarbonization offerings. The company also supports the digital transformation of its clients across various business sectors: Defense, Financial Services, Health, Manufacturing, Media, Energy & Utilities, Public sector, Retail, Telecommunications and Transportation.

Currently, Atos presents their demos for SAP to clients using a PowerPoint presentation and a crane wagon made with Lego as a visual aid. The main goal of this project was to find, evaluate and recommend 3D simulation software products, from which a selection is made to be used for developing and visualizing different use cases.

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. 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 its demos appealing to a broader scope of industries within manufacturing.

1.2 Conditions

At the beginning of the project, certain deliverables were agreed upon with the client. The final delivery will consist of 7 main deliverables.

The main delivery will consist of the Project plan, package selection report, requirement analysis, end to end use cases, reusable demo components, implementation plan and the advice report

Delivering all these deliverables should make the research and made work reproducible so that ATOS can make use of it in the future.

After the delivery of all the products, the project and its responsibilities will be transferred fully to ATOS. The project is made by students, which will all have other responsibilities after this delivery.

1.3 Reading guide

After this introduction, an overview of the architecture of ATOS will be given in chapter 2. In this chapter, it will become clear where the made project fits in the mission & vision and the IT & business architecture of ATOS. In chapter 3, the made research will shortly be described with the most important results. This chapter should give all the relevant information to understand the alternatives given in chapter 4. In the last chapter of this document the conclusion (advice) and recommendations will be given.

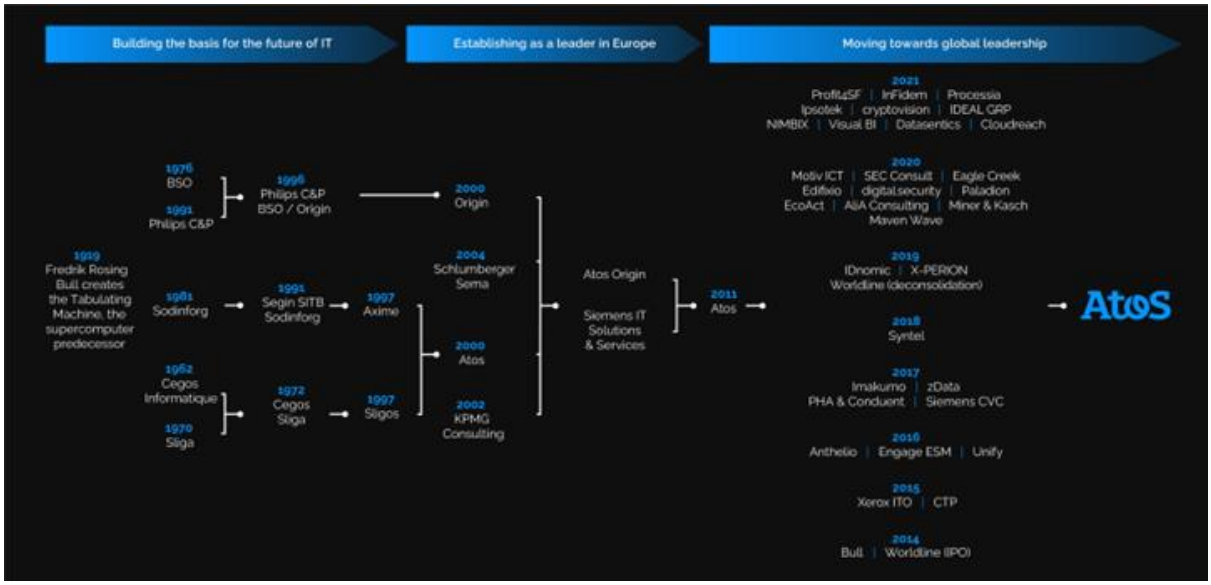
2. Architecture

In this chapter, the description of the IT and the Business Architecture of Atos has been conducted, along with explanations how our project and findings align with it keeping in mind the mission and vision and their future goals.

2.1 Mission & vision

Our work on the project is related to several points in their 3-year plan. This project is related to their focus on industry verticals, focusing on specific industries, to help with digital transformations in those areas. This is also related to the expansion of their customer base and focus on IoT and edge computing, which are connected to and can be monitored by SAP. This is all within the context of manufacturing, the industry vertical they focus on for this project.

Atos helps companies in becoming digital, which this project is meant to help with. They are a company that leads other companies, instead of following them in a market sense as is illustrated in the following image.

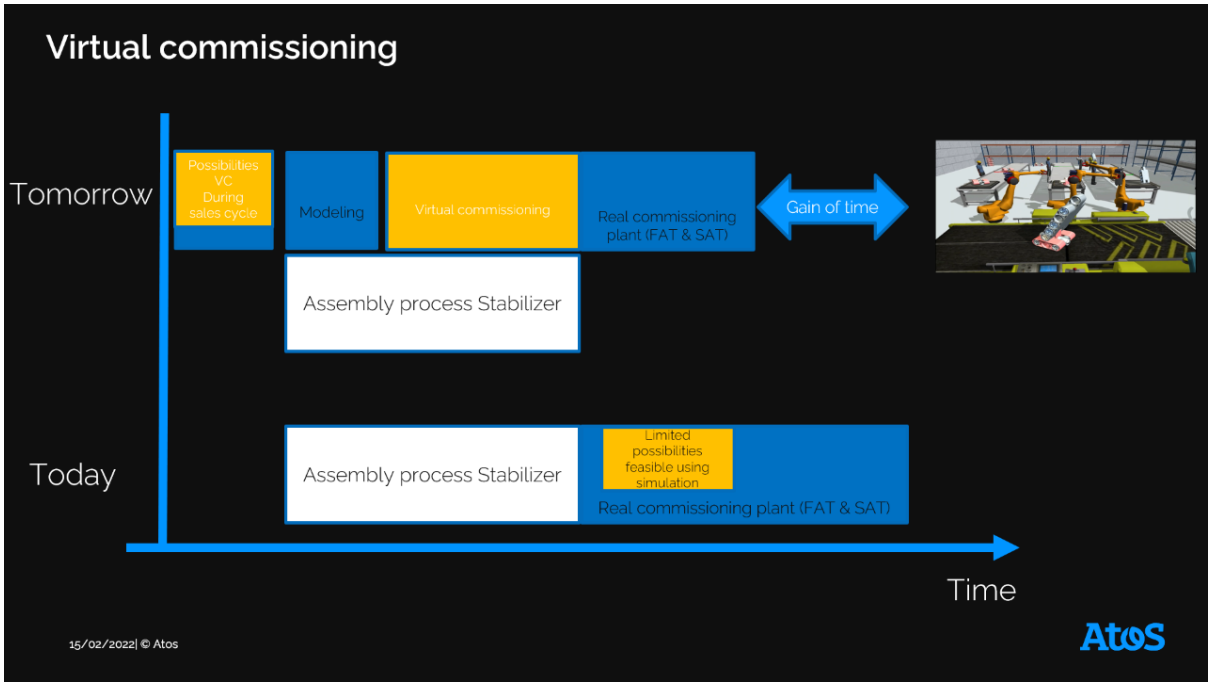


So, adopting a 3D visualization tool that can be used to visualize the factory work floor is helpful in multiple ways.

With the sales cycle it helps the people in sales creating better, more attractive, and interactive demo presentations. It makes it easier to pull in customers and convince them into adopting their solution.

It also helps Atos in the implementation phase, as they normally need to perform factory acceptation tests and site acceptation tests which are done at the office and at the customer, respectively. If they can show online simulations of how IoT and SAP would work when implemented, it saves them a lot of time since the need for testing dramatically decreases.

The gain of time can also be seen in the image below, where with virtual commissioning the creation of a demo factory takes less time than when this must be done without.



ATOS has the mission to be the trusted partner of its clients on their journeys of sustainable digital transformation. To accomplish this mission, ATOS relies on their powerful assets and resources and a solid business model which leverages their distinctive platforms and industrial solutions. This project perfectly fits this mission as it can serve as such an asset/resource to leverage their distinctive platforms and industrial solutions (SAP).

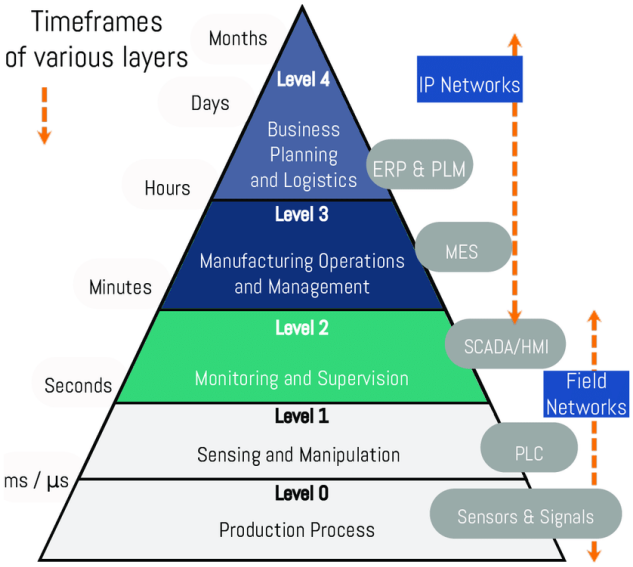
2.2 IT & Business architecture

Atos acts as a consultancy firm and is providing solutions for third-party customers regarding process automation. One way of selling these services is through the demo presentation they give at their experience center. The solution will be placed within that part of the business structure supporting the marketing and sales department, where the implementation of it will hinder neither the customer nor the employee.

They are using the **ISA 95 framework** which is used for developing an automated interface between enterprise and control systems. After discussing the same with Atos, it was concluded that our project fits on the **Level 1 and Level 2** on the ISA 95 framework.

Level 1: Our advised solution can be initially connected with their specific PLC machine, OPC and SAP software.

Level 2: Once the software fills the hardware and software requirements, they can use our made use case demos for monitoring and further supervision of the software according to their needs.



There are couple of essential skills which are required for the implementation of a software system. They are as follows:

1. Seek holistic data center systems knowledge
2. Look for interoperability expertise
3. Ability to address abstract problems
4. A DevOps mindset and programming skill
5. A checklist of technical knowledge

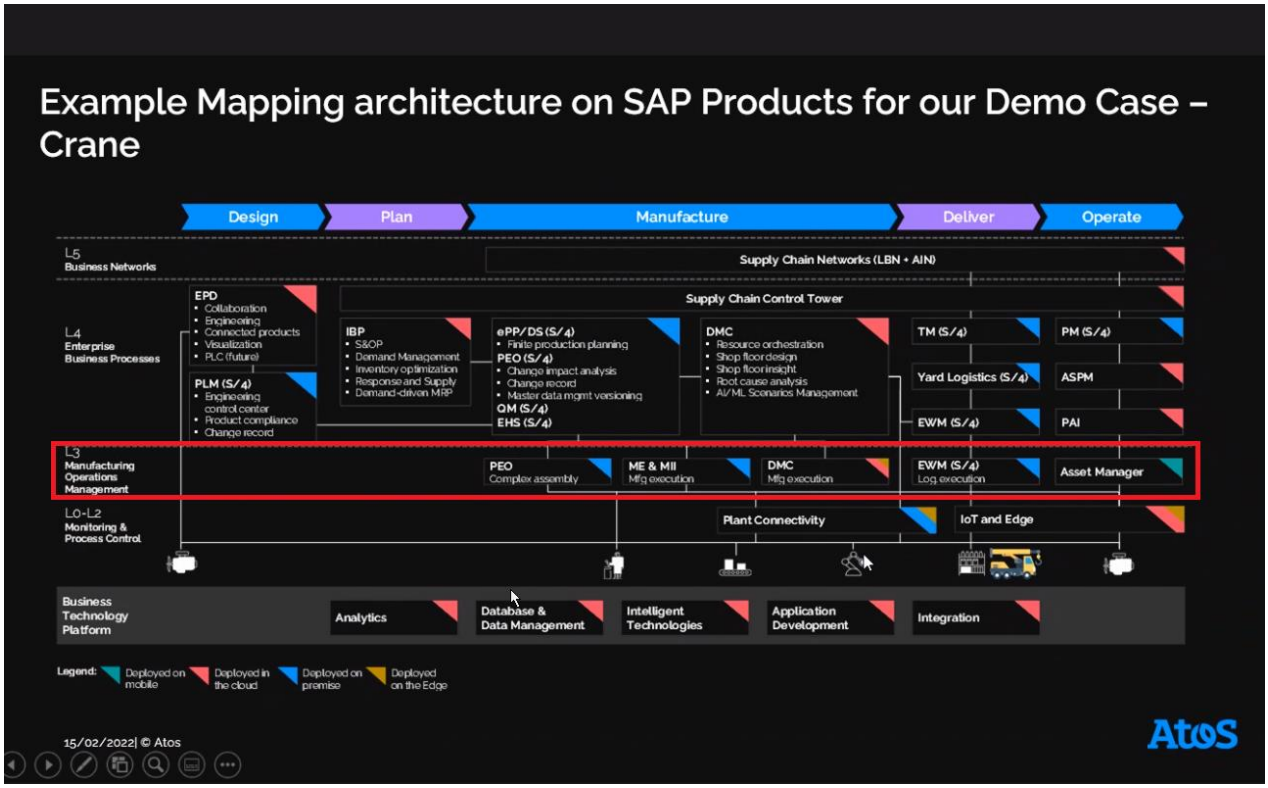
During our weekly meeting, we discussed the specific IT architecture of Atos where our project's research and findings will be helpful and used in future. Following is the mapping architecture diagram for the demo use case of the crane stabilizer that the team built for them by using Visual Components and Flexsim 3D Simulation software.

It illustrated the different sections of the architecture that our project would help them with such as the Design, Plan, Manufacture, Deliver and Operate. Upon discussion, Atos and the team confirmed that our scope would only be part of the Design, Plan and Manufacture for Level 3.

Design: Designing the processes of the different demo use cases. Atos provided this before-handedly for the two use cases: beer brewery and the crane stabilizer demos.

Plan: For planning how the use cases will be built using different software demo components. This was relied on by the team and we were given the freedom to experiment with and build by using the most appropriate components.

Manufacture: Atos will partially work this section. It involves joining the 3D Simulation software with their connectivity software's such as OPC, PLC and SAP.



2.3 Future orientation

ATOS has the goal to extend their IT architecture with hyperscalers like AWS and Microsoft to have a more scalable infrastructure. Our solution would fit in the short- and long-term goals that Atos has in term of customer growth, ATOS expects to align better with their clients by using the solution, which leads to customer growth. Our solution will help ATOS with their go-to-market strategy, in the **WHY** and **WHAT** section. Demonstrating why the clients need SAP and showing what ATOS is selling.

3. Research

The project was shaped and planned using agile methodology framework. By implementing the **COBIT** framework, the project was divided into different sections as mentioned below.

Evaluate, Direct and Monitor

In this section, the team conducted the requirements analysis of the software, IT and Business architecture, and overall KPIs which were required by Atos. We sort them by using the MOSCOW framework. The products which were a result of this section are:

1. Stakeholder Analysis
2. Requirements Analysis Document
3. Customer Journey and Personas of Atos Demo Engineers
4. Project Plan

Align, Plan and Organize

After finalizing the requirements criteria and giving the project an initial direction, the focus shifted on conducting the research on different 3D Simulation Software's. Which are available in the market and are leading in the manufacturing industry. The products which were a result of this section are:

1. Solution Research Document
2. Solution Selection Matrix
3. KPI List needed in the Software
4. Current and Desired Process Analysis by making BPMNs
5. Initial Interviews with Atos

Some of the most important results regarding the advice is the solution selection matrix, below the matrix can be seen for Visual components and Flexsim. To see an overview of the matrix for each 3d software there should be looked in the Solution Selection Matrix – Atos (Ver 1.0).xlsx file.

KPIs	weight	Flexsim	Visual components
Aesthetically appealing	5	5	10
Displays discreet and continuous manufacturing processes	5	10	10
The package must be OPC compatible.	5	10	10
The package must be compatible with SAP	5	10	10
The package must visualize manufacturing process using 3D models	5	10	10
The 3D models are/can be animated	5	10	10
The 3D models can be added by drag & drop	4	10	10
The package sends and receives signals from/to the ERP through the OPC connection	3	10	10
The number moving items displayed should be at least 20	4	10	5
Re-usable manufacturing modules	1	10	10
Measurement and decision-making statistic tools (ExpertFit and Stat:Fit)	4	10	10
Dashboard for visualizing model performance	4	10	10
Accessible via browser and stores data on cloud	2	1	5
Compatible databases (MySQL, Access, ODBC, SAP Hana etc.)	2	10	5
Training and Pricing*	5	5	5
Total		522	525

1 - Does not meet criteria	5 - Somewhat meets criteria	10 - Fully meets criteria

Build, Acquire and Implement

With the help of the solution selection document, we were able to achieve our top 3 choices for testing out by building use cases. The top three software's which were reached, researched, and evaluated in depth were AnyLogic, Flexsim and Siemens Technomatrix. Through the feedback sessions with Atos, the scope shifted onto finding a solution which also looked like a market leader. For fulfilling this requirement, the team went back a step and found Visual Components. The products which were a result of this section are:

1. The two demo use cases (beer brewery case and crane stabilizer) made by using Flexsim.
2. The two demo use cases (beer brewery case and crane stabilizer) made by using Visual Components.
3. The pencil manufacturing demo use case made by using AnyLogic.
4. Acquiring student licenses for Flexsim and Visual Components
5. One – on – one interview with Flexim's sales representative for asking off the KPIs required by Atos.

Monitor, Evaluate and Assess

The final phase consisted of testing out Visual Components thoroughly, checking off the requirements of Atos for their 3D simulation software. This was possible by scheduling a one – on – one interview with the Visual Component's sales representative for asking off the required KPI which the team were looking for.

For a more extensive report, please refer to our research document which answers each of the research question set in the beginning of the project. The products which were a result of this section are:

1. The definitive version of the demo use cases of the two demo use cases (beer brewery and crane stabilizer) using Visual Components.
2. Video of both use cases built by using Visual Components and Flexsim software's.
3. Business Case
4. Research Document
5. Implementation Plan
6. Advise Report

4. Alternatives

This part is the core of your advisory report. Here you indicate one or more measures to solve the problem, considering the preconditions discussed in your introduction.

Alternative 1: Visual components

Content

The first possible solution for the problem is the implementation of the 3d factory simulation software named Visual components. The software is a visually appealing software with a lot of different options when it comes to discrete manufacturing. Making processes of the process manufacturing industry is less possible in this alternative.

The software has three different licensing options, since the differences between these options are only in price and features, the different options will be listed as sub alternatives and not completely new alternatives.

Alternative 1: Essential version
Alternative 1: Professional version
Alternative 1: Premium version

Contribution alternative

The usage of the 3d factory simulation software will make the usage and making of demos:

- More scalable
- More efficient
- More visually appealing to customers
- More flexible
- More effective

The implementation of the 3d factory simulation software will also:

- Speed up the adoption process for IOT (internet of things) with customers.
- Reducing time of the implementation phase.
- Reducing testing time.
- Increase sales.

The three different licensing options all have benefits were the most important are:

License Type	**Essential**	**Professional**	**Premium**
Used for	The ability to design, build and simulate a factory with pre-defined components.	Features essential version + Ability to define and create own factory components.	Features professional version + Connect to different PLC's and have a VR experience.

Timeframe contribution

The time it takes for the alternative to take effect and can be implemented is estimated at 8 weeks. An overview of the implementation can be seen in the table below, for a more detailed overview of this implementation, see its associated document.

1	**Preparing employees/software and hardware for the change.**	**Planned**	**Week one**
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 six
4	*** Going live in demo environment**	Planned	Week seven
5	**Step off the current way of giving demos.**	Planned	Week seven
6	**Acceptation.**	Planned	Week seven
7	*** Going live of 3d software in BTIC (business technology innovation center)**	Planned	Week eight

Necessities

For this alternative, a number of requirements are needed to get a good indication of what is needed for this alternative.

- Hardware.
- Subscription fee.
- Employee training.
- Connections between software components.

Hardware

The needed hardware to support visual components can be found here.

Subscription fee

The subscription fee differs for each licensing option

- Essential version: € 4000 (Annual)
- Professional version: € 12000 (Annual)
- Premium version: € 14000 (Annual)

These costs are seen as fixed costs, so a payback period cannot be immediately calculated for them. It is unknown how much the software will yield when it is ready.

Employee training

Training courses will be caried out by a visual components employee, who will give a training of about 4 hours, which will cost around € 2000.

Pros- and cons

In this section, the discussion of the pros and cons of advising Visual components is discussed.

Pros

- The software is visually very appealing.
- The software is easy to use once it is mastered.
- The software has a lot of discrete manufacturing possibilities.
- There are a lot of Training/tutorial opportunities.

Cons

- The software licensing is fixed to a computer.
- The software is expensive, especially the professional and premium version.
- The software is extensive, which takes a lot of time to learn.
- The software has less possibilities for process manufacturing.

Alternative 2: Flexsim

Content

The second possible solution for the problem is the implementation of the 3d factory simulation software named Flexsim. Throughout the duration of the project, Flexsim was termed and used as the Minimal Viable Product for Atos to use.

The software includes five different licenses options according to the user's needs and requirements.

License Type	Express	Runtime	Student	Education	Enterprise
Used for	Testing, Evaluating and model viewer only	Run only (no model building)	Educational use only	Educational use only	Any

Contribution alternative

The usage of the 3d factory simulation software will make the usage and making of demos:

- More scalable
- More efficient
- More visually appealing to customers
- More flexible
- More effective

The implementation of the 3d factory simulation software will also:

- Speed up the adoption process for IOT (internet of things) with customers.
- Reducing time of the implementation phase.
- Reducing testing time.
- Increase sales.

Following is the table comparing the different versions of the software with the most important KPIs required by Atos.

License Type	Express	Runtime	Student	Education	Enterprise
Model Building Features	30	Not applicable	100	No limit	No limit
OPC + SAP + Database Connection	Connectivity Possible	Not applicable	Yes	Yes	Yes
Visual – Model Floor, Background and Recorder	Visual possible except video recorder	Not applicable	Yes	Yes	Yes

Timeframe contribution

The time it takes for the alternative to take effect and can be implemented is estimated at 8 weeks. An overview of the implementation can be seen in the table below, for a more detailed overview of this implementation, see its associated document.

1	**Preparing employees/software and hardware for the change.**	**Planned**	**Week one**
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 six
4	*** Going live in demo environment**	Planned	Week seven
5	**Step off the current way of giving demos.**	Planned	Week seven
6	**Acceptation.**	Planned	Week seven
7	*** Going live of 3d software in BTIC (business technology innovation center)**	Planned	Week eight

Necessities

For this alternative, a number of requirements are needed to get a good indication of what is needed for this alternative.

Hardware	**Subscription Fee**	**Employee Training**	**Connections between Software Components**
Minimum Hardware Requirements	**Student:** Free + Student License for 6 months **Enterprise**: +/- €12000 **Other subscriptions**: Vendor based	a. **Core Training:** principles of simulations and model building b. **+ Extra Days**: one – on – one training days c. **Custom Training**: project based. €2000 for two days	Connection between SAP and OPC is possible

Pros- and cons

In this section, the discussion of the pros and cons of advising Flexsim is discussed.

The **pros** of using Flexsim are as follows:

1. The customer service is very responsive and various types of training opportunities are available.
2. Reduces manual time of testing for Atos. They can try out different use cases by making basic versions.
3. The software offers both discreet and continuous manufacturing process building.
4. Very beginner friendly but would take time to master all the functionalities.
5. Student licenses are free and are available for 6 months and can be renewed.

The **cons** of using Flexims are as follows:

1. The visual of the software is very basic.
2. The training and buying costs of the enterprise version are expensive.
3. The pro version is required for advanced functionalities such as using statistical experimental.
4. The need for making a script for custom values to be measured.

5. Identified Risks and Mitigation Steps

The below risk table illustrates project risks using color schemes. The legend is presented in the first table, which uses colors to address the severity of each task.

		Probability		
		Low	Medium	High
Impact	Significant	Substantial management required	Must monitor and manage risks	Extensive management crucial
	Moderate	May accept risks but monitor them	Management effort useful	Management effort required
	Minor	Accept risks	Accept risks but monitor them	Monitor and manage risks

Figure 2 Risk Analysis Legend

Risk Type	Risk Probability	Risk impact	Prevention	Solution

Insufficient training and reskilling of end users	Medium – High (It is likely to occur because they will be using this software for creating the demo cases)	High (If they cannot use the software the demo cases will have to be created using the Lego system	Planning a schedule for following workshops and tutorials and consider each task by priority versus implementation time.	Scheduling a personal workshop from Visual Components.
Not give the desired end product	Medium (Most of the demo cases are possible to create)	High (Again the process must be visualized manually)	Have strict guidelines of what the client can expect	Find compromise and adjust existing features to better suit the demands of client.
Lack of change management	Medium (If they fail to implement the software and cannot connect to SAP	High (Failing to connect to SAP will be a major setback	Establish a clear change management strategy based on our advice	Might be forced to cut functionalities of problem cases
Lack of support from Visual Components	Medium (They normally provide sufficient support)	High (If they are not supported, they will not know how to use the software)	To have monthly meetings to let Atos know if there will be a change in the software	The only feasible solution would be to switch to a different software product
Visual Components changes or removes features of the software	Low (Most of the updates include only adding new features and not remove them	High (Prototype is crucial for client to get a proper overview)	To have monthly meetings to let Atos know if there will be a change in the software	The only feasible solution would be to switch to a different software product

Figure 3 Risk Analysis Table

6. Conclusion & recommendations

Conclusion

Based on the research results and careful consideration of the advantages and disadvantages of the described alternatives, it is recommended to choose alternative 1: Visual components and go with the essential license version. In the consideration between the different alternatives and licensing options for the decisive factors where the differences in visual appearance and the pricing.

Although Flexsim had a lot of possibilities and just like Visual components it is user-friendly, ATOS specifically mentioned that the visual appearance is especially important, visual components stands out far above Flexsim in this aspect and is therefore advised as the 3d software to choose. Having such an 3d simulation software helps with the digital transformation of the current process and shows that is a company that leads and not follows other companies, as the use of this software is progressive.

Furthermore, it is advised for ATOS to start with the essential version of visual components, this since the price is another point that is important for the company. This does mean that it is not possible to make use of functions as importing own models and multiple VR possibilities. But besides that, all the functions important to ATOS are in the essential version. When working with the essential version does not meet all the needs of ATOS' clients it can always be considered to upgrade the license, this is a conclusion that only can be decided later.

Recommendations

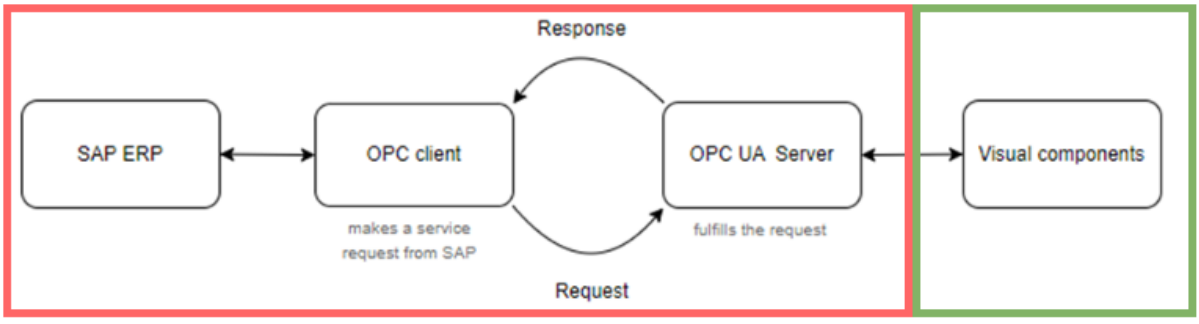
Looking at the bigger picture, the main goal of Atos is to receive a finalized and usable product. During this assignment we finalized the first part of this project – we have selected and tested software which can be used by Atos and would help them improve their business in building a future proof solution with the following pointers:

1. **Management of Risks:** While working on the project and evaluating the software, the team identified risks that could come up later in the duration. For this, the team has provided appropriate mitigation steps.
2. **Effective Project Management:** The advised implementation plan is written describing the steps Atos would need to take to experiment with our solution. This would help in managing the scope and shaping their approach for the next steps of the project.
3. **Time Management**: Our solution will be playing a significant role in helping the Atos demo engineers to evaluate out different use cases for streamlining their different manufacturing processes.
4. **Managing the growing demand:** Lastly, with the growth of VR in the business and IT domain, both advised software's include the functionality of viewing use cases using VR. Thus, our advised solution helps Atos to remain a market leader.

The next logical step would be to connect the chosen software with SAP using an OPC connection. This part of the assignment is out of our scope, but this could be a follow-up project for other Fontys students who have the required knowledge. This will finalize the project and will deliver a finished usable product.

Following up on the made project there are possibilities for follow-up projects that can be conducted by Fontys.

In the current project, the 3d simulation software has been selected and this part of the final implementation (see figure below paragraph) in the BTIC (Business technology innovation center) is done (except for the creation of the different demos). A follow-up project could involve the design and creation of the red highlighted part in the figure below. After that, this project could merge its outcomes with this project and deliver a working implementation for ATOS.



Another follow-up project could be the creation of the 30/40 separate demo cases ATOS needs. Only this would not be a project suitable for Fontys since this would not have enough depth for a school assignment. To ensure this ATOS should contact Fontys, or other forms of education which are not as research based.

As part of the project, several demos have already been recreated within the 3D simulation software. These demos can be used as reference and a starting point for making other demos. The functions used in these demos can be copied and used in new demos. The demos that are made during this project can already be used by ATOS to show the possibilities of such a 3D simulation software. This can be done in the same way as that ATOS showed the MVP of this project at the SAP-fire event (see image below).