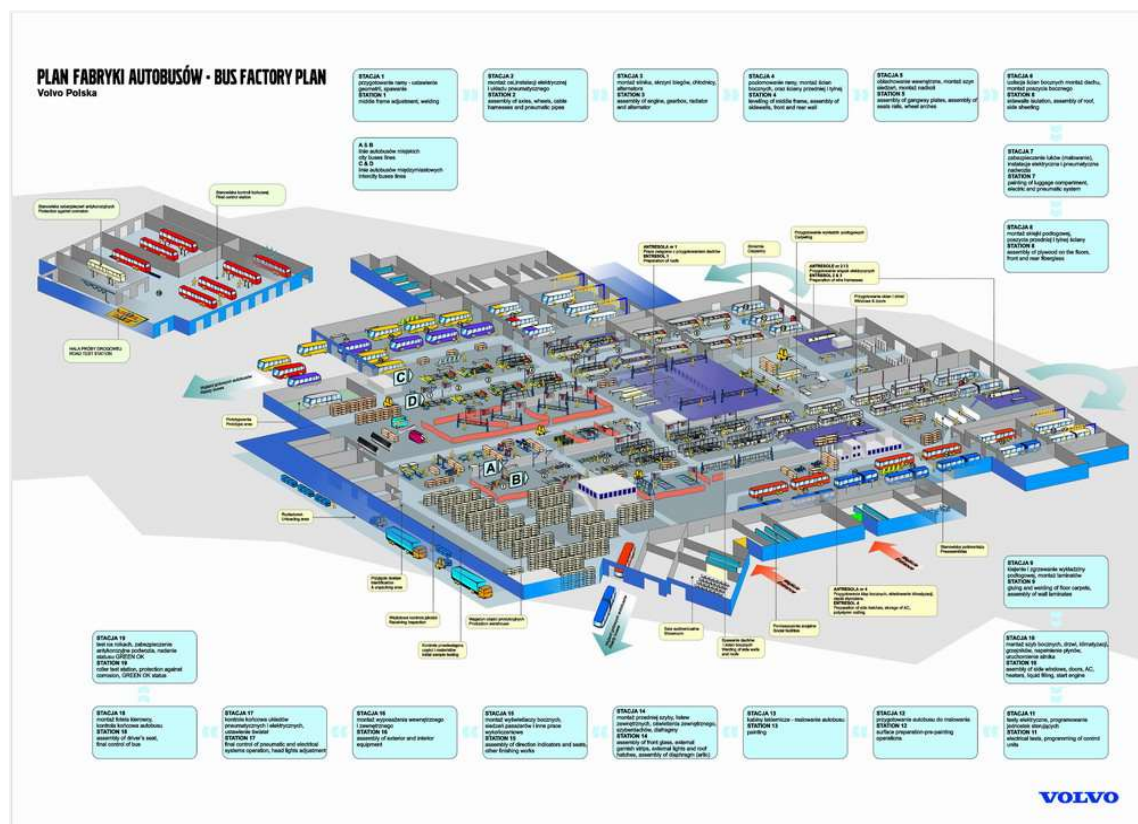


Business Process Improvements – SAP implementation at Volvo Poland Industry (Bus Plant)





Case Study



Objectives:

- To familiarize students with the basic tools and techniques of project management
- To get initial understanding of Production Processes in Bus Plant
- To gather practical experience of how to manage the project as an example of simulation game
- To learn how to work in the project team and getting to know the typical roles in the project

Assumptions:

- Maximally up to 8 teams, each team consists of 4
- Total available time to complete is limited to 90 minutes. As every project the timeline is very aggressive, so it is important to share/delegate activities
- At least one PC with MS Excel is to be provided per Project Team



Case Study



Preamble

Volvo Poland Industry is a part of Volvo Bus Corporation offering complete vehicles, chassis, bodies, solutions for urban transport systems.

The Wroclaw factory is the largest Volvo buses in Europe, where manufacturing of city, intercity and tourist buses is executed. Vehicles from the Wroclaw factory are supplied to markets throughout Europe, and their customers are public transport companies, carriers on the route intercity and international travel agencies.

Volvo provides customers with vehicles combining advanced technology with the highest standards of quality and safety. The company also pays great importance to environmental concerns. Since 2010 the Wroclaw factory produced hybrid buses, which, thanks to significant reductions in emissions and fuel consumption, meet the highest environmental standards.

Wroclawplant is involved in entire supply chain of products ranging from design to construction, adaptation to customers, through manufacturing, to business units and support after the sale.



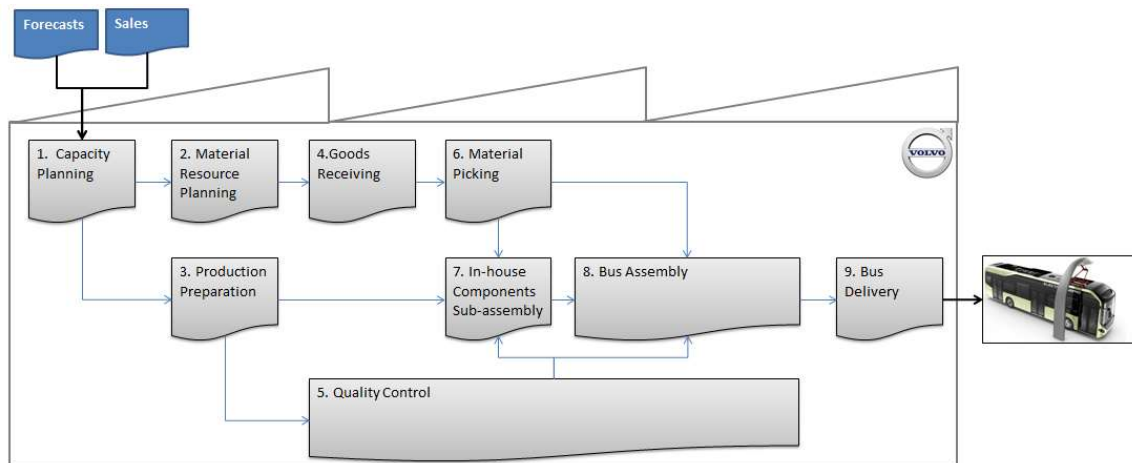
Case Study



Project background

Volvo Poland Industry plans to increase Production capacity from 1000 to 2000 bus units per year. In order to make it happen the company decided to launch Business Process Improvements project, which will be supported by SAP implementation. Steering Committee has been appointed and you and your team have been selected to manage this critical initiative.

Bus Plant Process Map



Current Process Production Cycle per 1 Bus Unit

ID	Activity	Duration (h)	FTE	Worktype
1	Capacity Planning	2	2	White collar
2	Material Resource Planning	4	4	White collar
3	Production Preparation	6	4	White collar
4	Goods Receiving	10	5	Blue collar
5	Quality Control	4	4	White collar
6	Materials Picking	2	8	Blue collar
7	In-house Component Sub-assembly	20	8	Blue collar
8	Bus Assembly	16	48	Blue collar
9	Bus Delivery	2	4	White collar

Additionally estimated costs of the workload are following:

- White collar – 200 PLN/h
- Blue collar – 50 PLN/h



Case Study



Identified Requirements, Development & Value Added

ID	Requirement	Area	Estimated dev (h)	Value added
1	Kanban functionality	Materials Picking	80	Decrease 1 FTE
2	EDI Communication	Goods Receiving	120	Decrease activity cycle by 3h
3	EDI Communication	Material Resource Planning	120	Decrease 1 FTE
4	Just In Sequence	Bus Assembly	160	Must-have to increase capacity to 2000 units
5	Just In Sequence	In-house Component Sub-assembly	80	Decrease activity cycle by 2h
6	Manufacturing Execution Dashboards	Bus Assembly	280	Must-have to increase capacity to 2000 units
7	Manufacturing Execution Dashboards	In-house Component Sub-assembly	80	Decrease 2 FTE
8	Two-step picking	Materials Picking	60	Decrease 1 FTE
9	Planning capacity of workstation	Capacity Planning	30	Must-have to increase capacity to 2000 units
10	Bill Of Material Preparation	Production Preparation	80	Decrease activity cycle by 1h
11	Deviations handling	Material Resource Planning	140	Decrease activity cycle by 1h
12	Customer Adaptation Handling	Production Preparation	80	Decrease activity cycle by 1h
13	Schedule Lines	Material Resource Planning	60	Decrease activity cycle by 1h
14	Planning taks	Capacity Planning	60	Must-have to increase capacity to 2000 units
15	Customer Adaptation Handling	Bus Assembly	160	Must-have to increase capacity to 2000 units
16	Customer Adaptation Handling	In-house Component Sub-assembly	60	Decrease activity cycle by 2h
17	Planning Production Pipeline	Capacity Planning	80	Must-have to increase capacity to 2000 units
18	Direct-deliveries to Production Line	Goods Receiving	100	Decrease 1 FTE
19	Costing	Bus Delivery	80	Decrease 1 FTE
20	Line Routing Preparation	Production Preparation	120	Decrease activity cycle by 1h
21	Invoicing	Bus Delivery	60	Decrease 1 FTE
22	Material Control	Quality Control	20	Decrease 1 FTE
23	Production confirmation	Bus Delivery	60	Decrease activity cycle by 1h
24	Quality Audit	Quality Control	80	Decrease activity cycle by 0.5h
25	Warehouse Good Receiving	Goods Receiving	40	Decrease activity cycle by 2h
26	Just In Sequence	Materials Picking	80	Decrease 1 FTE
27	Production Control	Quality Control	30	Decrease activity cycle by 0.5h

It is important to highlight that Solution Architect provided only estimated development. Based on analogical estimation here comes the estimation pattern for project split by phases:



Waterfall deployment (Phased)	Estimate benchmark
Plan	10%
Analyze	15%
Design	15%
Build (Development)	30%
Test	20%
Deploy	10%

100%

Example:

If Development is estimated for 24 hours, Plan and Deployment will take 8 hours each, while Analyze and Design will consume 16 hours each and finally Test: 16 hours, which make a total of 80 hours as a work package.



Case Study



Activity 1 – Calculate Business Case

Taking into account that Average Weighted Cost of Project Team is 300 PLN please calculate project business case as payback period. In order to arrive at final value please calculate:

1. Project costs
2. Project added value (cost savings by new production volume)

The **payback period** is calculated by counting the number of periods it will take to recover the cash invested in a project (yearly or monthly or daily)



Case Study



Activity 2 – Manage Project Scope

Steering Committee informed you that project budget has been reduced to 2M PLN due to economy downturn. For the budget calculation still use Average Weighted Cost of Project Team is 300 PLN.

Additionally your Solution Architect highlighted that certain requirements touches more than one Business Process meaning that they can be either fully implemented or rejected completely e.g. Just-In-Sequence cannot be implemented partially only for one Area.

Moreover two critical processes as Quality Control and Bus Delivery today are not supported by any IT tool and it is a must to implement system to execute Business processes. Additionally it turned that EDI technology cannot be implemented.

Your task is to reduce the project scope by setting following priorities:

- Must-Have requirements are Priority 1 Requirements
- All others have to be evaluated in terms of their value added vs. implementation cost. You need to fit to the budget.
- Out-of-scope requirements (due to technology or budget feasibility)



Case Study



Activity 3 – Project Team & Tasks Delegation

According to the scope of the project some key IT resources need to be secured in order to execute all phases of the project smoothly and build a reliable time plan.

For this scale of the project it is essential to build IT team consisting of following IT roles covering all areas of the project (for the easiness of calculation it is assumed that one role is covering the effort of one phase, which does not happen in the real projects and next activities):

Lead IT role	Main engagement in
Project Manager (PM)	Plan
Business analyst (BA)	Analyze
Solution Architect (SA)	Design
Developer (D)	Develop and Deploy
Tester (T)	Test

Your task is to:

1. Estimate the IT effort in working hours needed to deliver all business requirements. Consider all IT roles in the project and % engagement of each role. Assume that finally agreed development is 1980 hours and we use analogical benchmarks to arrive at effort per phase
2. Request IT resources to fit in proposed time plan. Assume there is one Project Manager for the project. You have to request a proper number of business analysts, solution architects, testers and developers (Full time equivalents). Point out your team.

Waterfall phases duration:





Case Study



Activity 5 – Project Budget

Project budget has been established using following details:

- Price List for Volvo IT Roles for 2016

Role	Rate [PLN/h]	Location
Project/Test Manager (PM)	300	PL
Business Analyst (BA)	200	PL
Solution Architect (SA)	300	PL
Developer (D)	250	PL
Tester (T)	200	PL
Solution Architect (SA)	700	FR

- Assuming all project resources are located in Poland for the time being

Role	Rate/h	Plan		Analyze		Design		Development		Test		Deploy	
		hours	cost	hours	cost	hours	cost	hours	cost	hours	cost	hours	cost
Project/Test Manager (PM)	300	80	24 000	140	42 000	160	48 000	240	72 000	100	30 000	80	24 000
Business Analyst (BA1)	200	80	16 000	280	56 000	110	22 000	80	16 000	25	5 000	25	5 000
Business Analyst (BA2)	200	80	16 000	280	56 000	110	22 000	80	16 000	25	5 000	25	5 000
Solution Architect (SA1)	300	0	0	160	48 000	320	96 000	80	24 000	20	6 000	20	6 000
Solution Architect (SA2)	300	0	0	160	48 000	320	96 000	80	24 000	20	6 000	20	6 000
Developer (D1)	250	0	0	0	0	40	10 000	560	140 000	40	10 000	160	40 000
Developer (D2)	250	0	0	0	0	40	10 000	560	140 000	40	10 000	160	40 000
Developer (D3)	250	0	0	0	0	40	10 000	560	140 000	40	10 000	160	40 000
Developer (D4)	250	0	0	0	0	40	10 000	560	140 000	40	10 000	160	40 000
Tester (T1)	200	0	0	0	0	0	0	40	8 000	200	40 000	50	10 000
Tester (T2)	200	0	0	0	0	0	0	40	8 000	200	40 000	50	10 000
Tester (T3)	200	0	0	0	0	0	0	40	8 000	200	40 000	30	6 000
Tester (T4)	200	0	0	0	0	0	0	40	8 000	200	40 000	30	6 000
Tester (T5)	200	0	0	0	0	0	0	40	8 000	200	40 000	0	0
Tester (T6)	200	0	0	0	0	0	0	40	8 000	200	40 000	0	0
TOTAL		240	56 000	1 020	250 000	1 180	324 000	3 040	760 000	1 550	332 000	970	238 000
												TOTAL PROJECT COSTS	
												1 960 000	

- Current involvement of roles per week during Analysis Phase is: Project Manager-20h, Solution Architect-40h, Business Analyst-40h

During Analysis phase a lot of disturbances have been encountered. Discussions with business stakeholders are very difficult and it is hard to have final agreement regarding solution within preliminary assumed time. During discussion with team Project Manager received recommendation from business analysts to prolong Analysis phase for 4 weeks (involvement of all team members will stay the same as during Analysis Phase).

It also appears that one of Solution Architect planned to be involved in the project is sick and will not be able to take part in the project. After seeking of replacement of this team member within organization it is identified that the only solution architect with appropriate skills level is available in another site (France) what may affect budget due to higher rate per h.

What will be the new cost of analysis phase after prolongation, including new solution architect appointment? How will change total cost of project?



Case Study



Activity 6 – Manage Project Risks

The business environment is very dynamic. There are a lot of organizational changes in VPI, which may lead to Steering Committee changes. It is very likely that SC Chairman leaves the company soon. There are also other critical projects and initiatives that are very possible to be prioritized soon and that includes SAP technical upgrade project, which may cause that SAP implementation in VPI is postponed to the next year (until the technical upgrade is ready, no point to implement old version of SAP now).

The project performance is also influenced due to the fact that Project Manager is not experienced in SAP implementations as well as Solution Architect takes part in several other initiatives and is not fully dedicated to this project itself. This cause medium impact on project activities and the probability of this negative influence is also medium in both cases (PM and Solution Architect).

Project resources required for solution development are located in Poland and the project budget for build phase is calculated according to Polish rates. However it is probable that development team in India can be involved and take over tasks from Polish team (currently colleagues in India are fully booked but it is possible that their workload is reduced soon), which may cause that total cost of development is reduced by 40%. This is a good opportunity for savings in project budget.

Your task is to identify at least five project risks/project opportunities and analyze them according to the below pattern:

- list the risks/opportunities
- evaluate probability and severity
- prioritize the risks/opportunities

Propose a risk owner and a risk response for the most critical risks (high priority).

Use the table provided in the excel file.



Case Study



Activity 7 – Manage Project issues(not included in initial hand-out)

- **Issue #1(after 45 min)**

Project Manager is sick. He is unable to drive project activities for some time (5 minutes). He needs to delegate his tasks (30 seconds).

PM Governance team points out person who will pretend sickness.



Case Study



- **Issue #2 (after 60 min)**

VPI Management considers reprioritizing the projects and there is a risk that SAP implementation is stopped or postponed. Project Manager organizes a meeting to present why and how important is his project.

PM Governance team points out person who will prepare short presentation (2 minutes to present 3 reasons to continue the project).



Case Study



- **Issue #3 (after 75 min)**

Development team will be sourced from India. This will reduce total cost of build phase by 40%. Recalculate the project budget (still use average weighted cost as blended rate) and decide on how to manage the savings.



Case Study



Activity 8 – Manage Lessons Learned

- **Lessons Learned**

Business Process Improvements project, based on SAP implementation is now over. Good practice at the end of every project is to create a project final report, which should be prepared by Project Manager and presented to Steering Committee. The goal of this activity is to go through all previous project activities and conclude this simulation game.

Please analyze project results and prepare lessons learned from this project based on following information:

- Results achieved
- Results not achieved
- Positive experiences
- Negative experiences
- Lessons learned (in order to avoid done mistakes)

Take a look at the VBC Plant Case Study objectives, written at the beginning of this document and try to explain what you learnt from this case study.