

Short guide for implementation of VR and AR projects

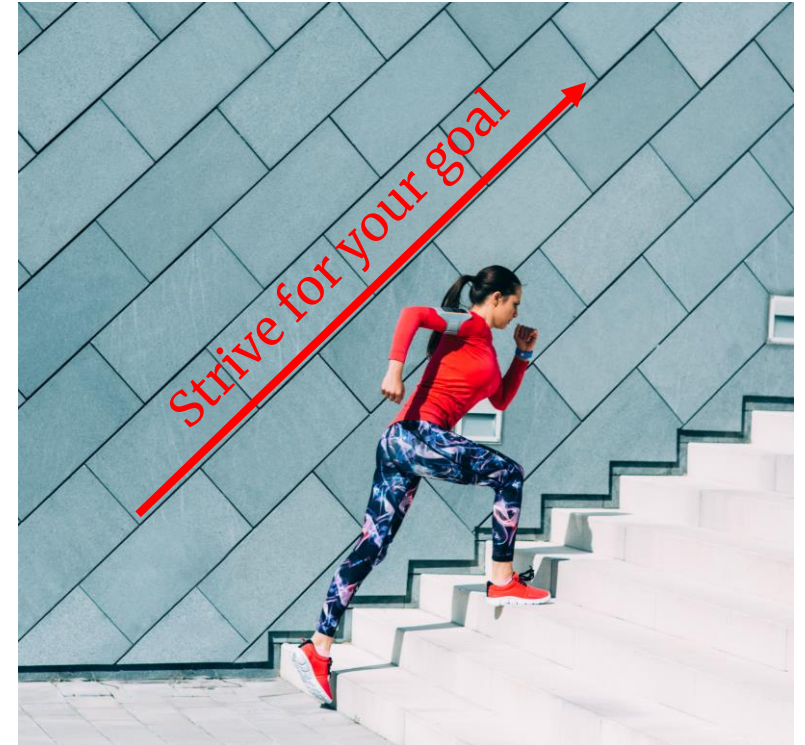
Content

- Define the aims & scope of the project
- Define the project content
- Calculate ROI & choose the user community
- Collect the input for your AR/VR project
- Evaluate the first results (beta version)
- Debugging & Evaluation
- Develop the VR & AR utilization sequence



Define the aims and scope of the project

- This step defines the costs & project duration time
- Applications like marketing (e.g. AR effect on a business card) are faster to realize as complex training & quality assurance sequences
- Define whether you want to add information in real world AR or it is better to build VR space; in general VR projects are more expensive
- Define if you want to use the AR/VR app exclusively or share with your customers
- How much content is needed? And who will collect it?
 - if you collect CAD data (e.g. from your suppliers) by yourself and deliver it to the company that implement AR/VR application it will significantly reduce the project costs



Define the project content

- Try to brainstorming with your team (as well as company that implement your AR/VR application) what would be the content like
 - how much CAD data you really need?
 - how big should be the VR space?
 - how much training scenarios you would like to develop?
 - describe the scenarios/application cases as detailed as possible (slight changes will not lead immediately to high increase in costs)
 - How much equipment do you need? → 10, 20 or 100 VR glasses; influence strongly the project costs
 - Do you want to offer training for your employee in Multi User VR space
 - e.g. 10 people can interactively exchange in the VR space



Evaluate the acceptance of the project

- The company who implement the AR/VR project, may show you some examples or even give you some VR glasses to test in your company
→ This could be beneficial in order to evaluate the acceptance of this technology in your team; if the people don't cope well with the novel technology, then the project may be threatened
- Workshop and questionnaire could be beneficial for the project at this initial stage

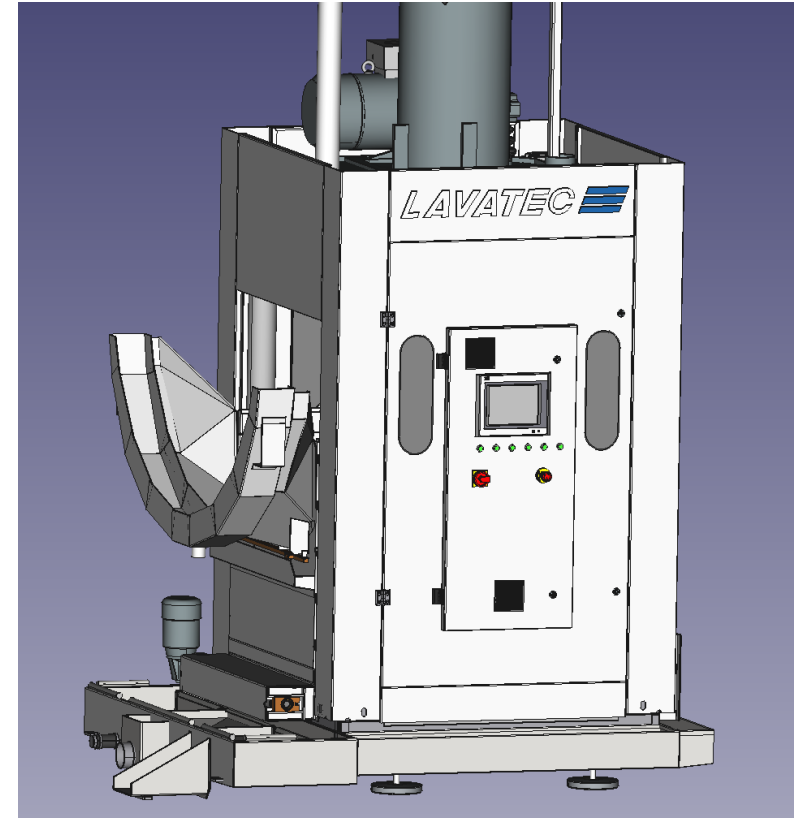


Calculate the ROI

Project costs/savings through project	Sum in €	Remarks
Implementation (daily rates, programming etc.)	20000 - 80000 € (calculate with average of 50000 €)	Depends highly on project complexity
VR/AR equipment (+ replacement material) for a group of 10 people	6000 €	12-15 equipment units are needed (400 € per unit)
Additional material (e.g. hygiene masks)	2080 € per year	30-40 € per unit
Initial training	2000 €	including traveling costs
Administrative performance	1000-4000 € per year	Especially AR app is accompanied by high updating costs in Android or Apple app stores
Savings in marketing & training (you replace older form of training)	2000-10000 € per year	Roughly estimated

Collect the input for your AR/VR project

- The VR and AR space is built up from CAD data
- Check which data you can collect from your own company or your suppliers (e.g. laundry machine equipment)
- In the most cases only outer shell of the machine or its parts are needed
→ CAD data of outer shells are less critical from the view of data protection
- If you have the necessary skills and time resources you can built up some special CAD objects by yourself (e.g. via FreeCAD or SketchUp <https://www.youtube.com/watch?v=9puDrgHzGoQ>)



Debugging & Evaluation

- Initial training of the project coordinator (involve further not IT-savvy person would make sense)
- Systematic evaluation of the application under realistic conditions (training office with certain WiFi quality, testing with several employees...)
- Try already at this stage to document all obstacles in handling the VR/AR systems (e.g. do you need an additional intro to clarify the tasks?)
- Further systematic evaluation of the optimized VR app versions is necessary; try to simulate utilization sequence in the later evaluation steps

Develop the VR & AR utilization sequence

- If the app is finished, a short field study under realistic conditions is necessary to set the utilization workflow e.g. for a VR training
- Different questions should be addressed at this stage:
 - How should I prepare the equipment for trouble-free training?
 - How should I coordinate the training and supervise the people?
 - What will be the troubleshooting like?
 - How I would clean the equipment and ensure the hygienically safe workflow?
 - How I should document and evaluate the training success?
 - Which marketing measures should one define regarding the utilization of novel VR technology in the company?



Presenting „VR laundry” app developed by Hohenstein

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