Analysis 1 – Technical and didactic readiness of companies

South Bohemian region

Content

Introduction

During the program period, a number of companies were approached regarding augmented and virtual reality technologies. The result of this process was a set of twenty interviewed companies whose responses were analyzed. These results are presented on the following pages.

In the initial phase of the project, emphasis was placed on network development, so a large part of the time was devoted to finding suitable network partners. Many phone calls and meetings with researched contacts followed. Most of them could also be obtained for the network, so the first webinar was organized on June 1, 2021. The speakers were Mr. Klaus Stöttner , CEO of Pool 3, and Mr. Andrej Barguca , co-founder of Virtual Lab , who informed 41 participants about VR training at the webinar "Virtual reality - the future of training". On July 6, an Austrian round table was held under the title " Auf in neue Welten ". Based on various Austrian examples of use, the benefits of VR/AR were discussed together with 35 participants. After the main speeches of Jeremiah Diephuis (FH OÖ Campus Hagenberg) and Florian Hofer (Ars Electronica Center) on VR research perspectives and relevant Ars exhibitions Five application examples were presented to the Electronica Center.

Afterwards, each of the experts supervised a topic table to discuss the example they had brought and answered questions: from low-cost virtual reality in schools to WheelSim VR - e-wheelchair training in virtual reality to "next-generation learning" through 3D animation mixed reality models.

Another approach in the first months was the preparation of a regional analysis. Analyzes were created together with all project partners, and finally the LimeSurvey online survey tool was added . After that, already obtained and suitable partners of the network were approached and asked to fill in the questionnaire. The meeting often included a presentation of the project and filling out a questionnaire. The questions related to general issues of digital transformation (industry 4.0) to specific questions in the area of AR/VR. Finding Upper Austrian companies that use VR/AR in their own company was much more difficult. Many of the requested companies did not respond to our project, canceled it or were simply not interested in it. In addition, the impression that many companies do not realize the importance of VR/AR or do not pay attention to it due to time constraints has been reinforced.

We have overcome many difficulties to successfully implement this regional analysis. Several shutdowns and other restrictions caused by the covid pandemic forced us to improvise and change the plan in some areas. However, thanks to the joint efforts of the project team, we managed to collect and analyze valuable data.

What industry are the company i from?

Automotive
Furniture and wood production
IT
Mechatronics
Other
Plastics

Management, employees and the company's openness to digitization

        We decided to start our survey with general questions about digitization in the surveyed companies. These answers help us understand companies better. Most management is aware of the importance of digitization and brings with it the necessary skills. Digitization is a very important topic for most companies.

The company's management is aware of the importance of digital transformation

Among the company's executives, there are many that we have yet to win over to the idea of digital transformation.	11
Company management supports innovation and the process of digitization and automation, but not everyone has the skills to implement a digital strategy in practice.	3
Company management is able to implement digital transformation into daily operations.	5

Digital transformation is a basic prerequisite for company growth

It is a tactical matter for us, we implement partial projects.	6
It is an important topic, we are preparing for digitization, we are carrying out pilot projects.	5
Yes, that is our most important strategic task	7
We have never heard of digital transformation	1
We are aware of the problem, it is not important to us at the moment	1

The organization already has the necessary digital skills and knowledge to work effectively

We are currently preparing an employee development concept, collecting information on the current state and readiness of employees to work in a data environment	**6**
Currently, our employees already have all the necessary digital skills and knowledge to work effectively in the new situation of the digital environment	**1**
We are not yet concerned with the readiness of employees and their potential development in this area; this topic will probably only be relevant when the digital transformation strategy is implemented	3
We are currently investing in the education and training of our employees in the use of technology and digitization throughout the organization	10

More than 60% of companies support innovation but lack the skills. In general, companies are well aware of innovation and digital transformation. For most companies, digital transformation is the most important task. Most companies invest in the digital skills of their employees. They consider it a high priority.

Operating model, environment for creating digital value and digital management

Do you have a digital strategy in place?

We have developed a digital strategy and are finalizing the integration of systems, processes and data	**3**
We have developed a digital strategy, which we have been concretely implementing for some time	3
We have developed a digital strategy and are implementing the first pilot projects according to it	4
We are working on a digital strategy	8
We have not developed such a strategy	5

What (if applicable) is hindering the implementation of a digital strategy in your company?

Lack of support from management	**2**
Lack of know-how	5
Lack of financial resources	6
Lack of employees	5

Do you expect digitization to radically increase efficiency?

Thanks to digitization, there is an exponential increase in efficiency, we have managed to create and dominate new markets that we serve more or less automatically	**2**
We expect some efficiency gains to show up later	13
We are increasing efficiency many times, the introduced automation is starting to bear fruit	3
We do not expect any major changes	2

Only 25% of companies do not yet have a digital strategy in place. The main reason for not implementing a digital strategy is a lack of funds. The lack of workers and lack of know-how are also important. Most companies (90%) expect to increase efficiency thanks to digitization.

Technology

We asked companies the question "What modern technologies do you use/solve?". And we also wanted to know in which departments.

	IoT	Cyber . Safety	AR/VR	Automation and robotics	Simulation Digital twin	Cloud computing	Big Data	3D printing	RFID/NFC	AI
Production	3	1	1	10	1	1	2	2	4	
Development	4	4	5	3	3	3	1	3		3
Services	3	2	3	3	1	2	2	1	1	1
Health and safety	1		1	1	1					
Marketing	1	1	5	1		3	2			
Trade	1		4	2		1				
HR	1		3	1		1			1	
IT	2	9	4	3		6				

It can be seen that the technology drivers are located in the manufacturing, development, service and IT departments.

When do you plan to implement AR/VR?

Already implemented	**9**
Within a year	1
Till five years	0
In more than five years	0
Implementation is not planned	4

What technologies do you use?

virtual reality (VR)	**8**
Augmented Reality (AR)	6
Mixed Reality (MR/XR)	3

Most companies are involved in virtual reality. Then there is augmented reality, and at the moment, the fewest companies are dealing with mixed reality.

How long have you had your VR/AR device? When did you purchase them?

Purchased in the last 2 years	**3**
Purchased within the last 6 years	4
Purchased more than 6 years ago	1

Most of the companies that answered this question have been involved in AR/VR technology for several years. Within this answer, we can divide companies into three groups.

What or who led you to the purchase decision?

Management
Marketing, market
Enthusiasm for the cause
Needs clients
Interest in technology

The motivations for investing in VR/AR technologies are very different. Not all survey participants explained their motives in more detail. Currently, many companies seem to be still in the experimental phase with new technology. It is also interesting that travel restrictions during the corona motivated investments in technology.

What kind or types of VR/AR headsets do you have?

As you can see below, the majority, 41% to be exact, use a computer with outdoor monitoring. The remaining 59% is split evenly between a PC with internal monitoring and a standalone headset.

PC with outdoor viewing (HTV Vive, Oculus Rift,…)	6

PC with internal tracking (Windows Mixed Reality, HTC Cosmos,...)	4
Separate headsets (Oculus Quest)	5

What computers do you use for VR? (Laptops/desktops/is the performance sufficient?)

Notebook	**7**
Desktop PC	6

How did you fund VR/AR?

Own resources	**10**
Grants	1
Loans	1
Gifts	0

Most of the respondents financed VR equipment from their own resources. The remaining companies took a loan to purchase the technology or purchased AR/VR as part of a grant.

Who oversees VR/AR implementation for you?

Internal expert	**8**
External consultant	4

Most respondents integrated their VR solutions with an in-house specialist. The rest had the support of an external consultant.

What software are you using?

Custom development	**5**
Contract development	2
Commercially available	5
We are still looking	10

Most companies are still looking for suitable software. Part of the companies rely on their own development, and the other group uses commercial products like Neos FTW. They most often use UNITY to develop their own SW.

Do you think VR training is more effective than other options?

A strong majority here clearly spoke in favor of the effectiveness of VR. 7 out of 8 respondents are convinced of this.

Companies without VR experience

A total of 10 of the participating companies have not yet implemented a VR solution.

Are you planning to implement VR/AR?

No	7
Yes	3

What activities do you plan to use VR/AR for?

Production (process training)	1
Development (visualization , simulation , testing)	2
Service (training processes , remote connection)	2
In the area safety and security health at work (training on right and wrong procedures)	0
Marketing (employee benefits , communication with customers)	1
Business (visualization , virtual meetings , training , services)	3
HR (soft skills training)	0
Different	0

Companies that plan to use VR/AR want to use it for business (visualization, virtual meetings, training, services) purposes.

Why don't you plan to use VR/AR?

Financial investment	2
Insufficient technology	2
Complexity implementation	2
Without added values	5
Insufficient human resources	1
Different	0

7 companies do not plan to use VR. This is because they see no added value. It is too big a financial investment for two companies. And the implementation is too complex.

Are you currently registering any demand from employees or customers?

No	7
Yes	4

Most currently see no demand from employees or clients to implement VR/AR.

Are you considering working with partners on new innovative solutions and products for your or other companies?

No	3
Yes	7

Value attitudes towards AR/VR

	I definitely agree	I rather agree	I rather disagree	I definitely disagree	Not applicable
AR/VR opens up many new possibilities for the economy.	10	5	3	0	2
AR/VR opens up many new possibilities for education.	12	4	1	0	3
The use of VR/AR should be taught in schools.	7	7	4	0	2
The benefits of AR/VR outweigh the cost/effort.	6	6	4	0	10
AR/VR is too controversial for the health of its users.	1	3	9	3	4
AR/VR is relatively easy to use.	2	11	4	1	2
I have a general interest in VR/AR.	10	6	1	1	2
The main purpose of AR/VR is entertainment/gaming.	3	0	7	6	4
In the next three years, I will probably be using VR/AR in my work.	6	4	3	3	4

This matrix consists of nine questions focused on multiple aspects of respondents' perception of AR/VR technology. The results were analyzed based on the number and percentage of the entire sample.

	I definitely agree	I rather agree	I rather disagree	I definitely disagree	Not applicable
AR/VR opens up many new possibilities for the economy.	50%	25%	15%	0%	10%
AR/VR opens up many new possibilities for education.	60%	20%	5%	0%	15%
The use of VR/AR should be taught in schools.	35%	35%	20%	0%	10%
The benefits of AR/VR outweigh the cost/effort.	30%	30%	20%	0%	50%
AR/VR is too controversial for the health of its users.	5%	15%	45%	15%	20%
AR/VR is relatively easy to use.	10%	55%	20%	5%	10%
I have a general interest in VR/AR.	50%	30%	5%	5%	10%
The main purpose of AR/VR is entertainment/gaming.	15%	0%	35%	30%	20%
In the next three years, I will probably be using VR/AR in my work.	30%	20%	15%	15%	20%

Summary

Most of the companies interviewed have a general interest in AR/VR. However, it should be noted that half of the companies have not yet introduced VR/AR. Most of the companies surveyed strongly agree that AR/VR opens up many new opportunities for business. All companies interviewed are aware of the potential of VR/AR for business. Likewise, most companies surveyed strongly agree that AR/VR opens up many new opportunities for education. All interviewed companies are aware of the potential of VR/AR for education. They consider it essential that VR/AR is taught in schools. For the majority of companies interviewed, the benefits of AR/VR are greater than the effort required for implementation or the financial burden.