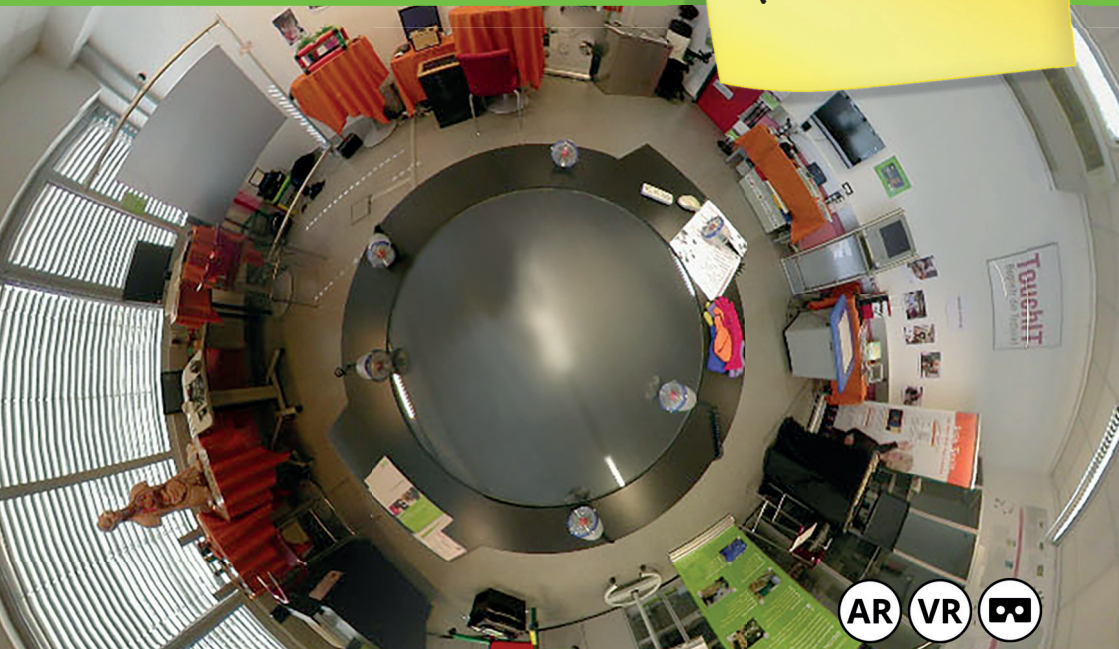


Institute of Information Management

INTERACTIVE MULTIMEDIA EXHIBITIONS AND SHOWROOMS

Digital Media Technologies

TRY THIS
INTERACTIVE
FOLDER!



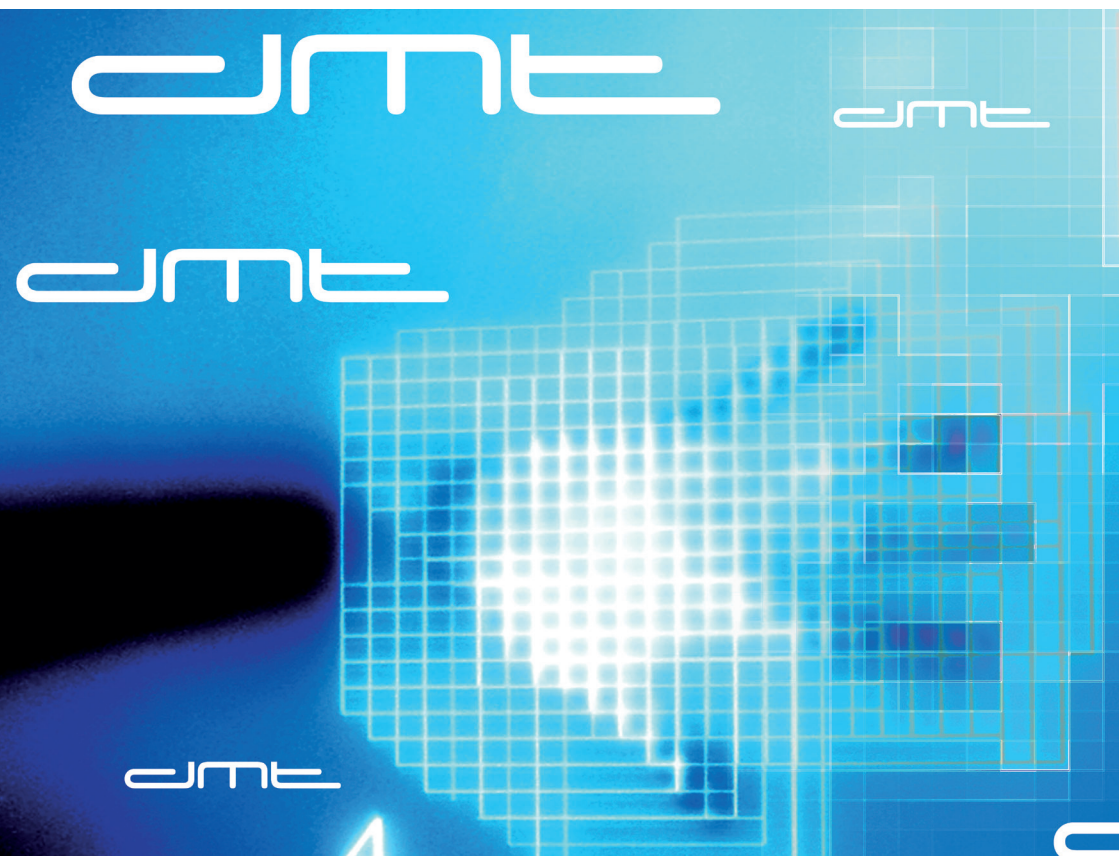
Interactive Folder

This folder contains interactive content. You need a smartphone with a QR code reader/scanner application. Take out your smartphone, scan the QR code and download the app to use this folder.

You can test the interactive content right now - open the app and catch the picture beneath this text with your camera. All pictures with interactive content are marked with (AR), (VR) or (3D).



<http://goo.gl/LUluo8>

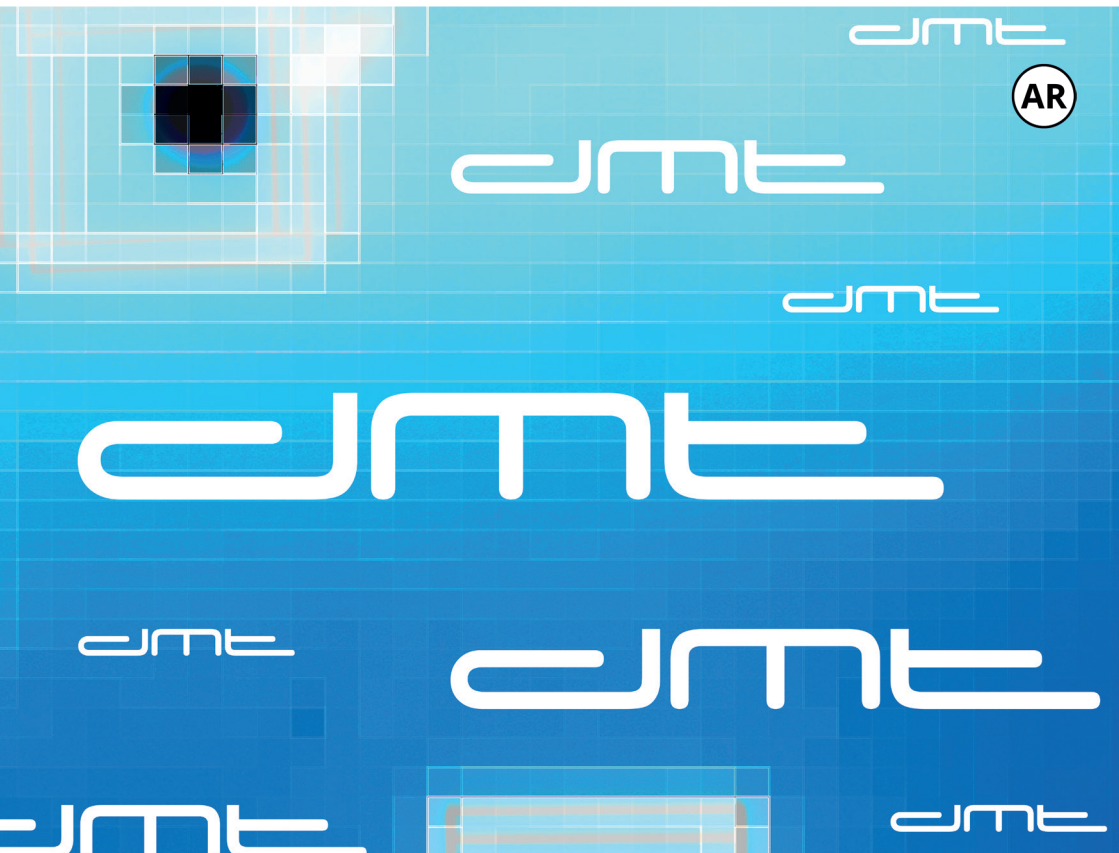




AR stands for Augmented Reality. Our application uses cameras and accelerometers in your smart phone or tablet to augment the live view of the camera with additional data.

VR stands for Virtual Reality. In contrast to AR, VR replaces the real world with a simulated one.

Google Cardboard is a fold-out cardboard smart phone mount that turns any smart phone into virtual reality glasses. For further information visit <https://www.google.com/get/cardboard>.



DIGITAL MEDIA TECHNOLOGIES

The special field Digital Media Technologies (DMT) of the Institute of Information Management at the University of Applied Sciences FH JOANNEUM Graz develops multimedia implementations for different fields of application. The DMT team is active in numerous projects with multimedia interactive installations and stations for museums and exhibitions.

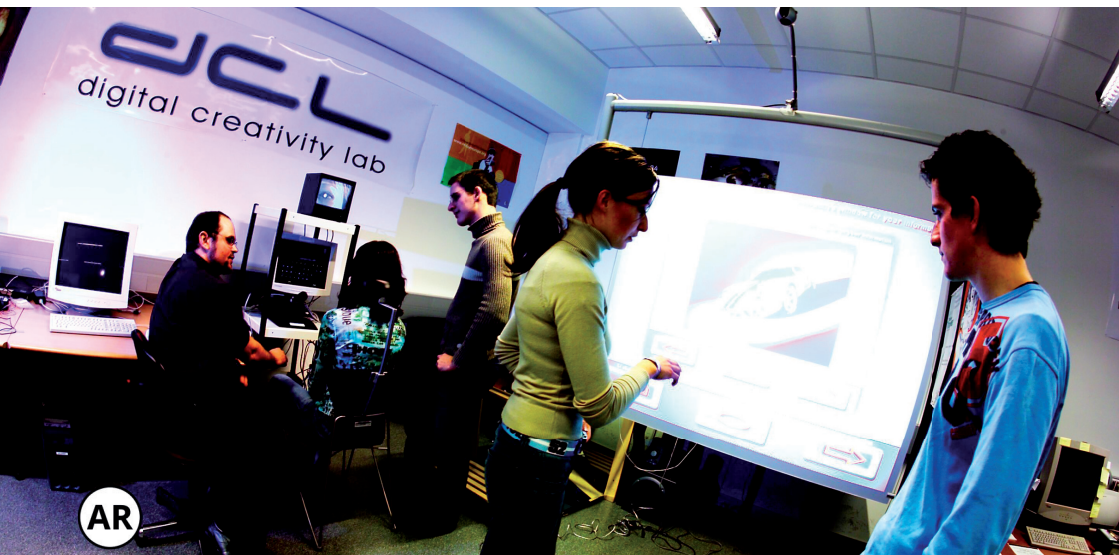
Visit our showroom at the FH JOANNEUM to get a better insight into our work and projects.

Our core competencies focus on usability and accessibility services, the conception, evaluation and implementation of interactive multimedia information products for companies and museums, and the development of mobile applications for smart phones and tablets. Different multimedia and project labs (Digital Media Lab, Digital Creativity Lab, Vision Space Lab, video studio, blue/green box and audio studio) are available to us and to our students.

The quality and innovation of our projects and services have received many national and international accolades: for example, the German Multimedia Transfer Award (1. Place: SPEAKY – the multimedia speaker analysis), the European Top Talent Award (1. Place for mobile applications: Mobile Learning Engine) and the Austrian Multimedia State Prize (1. Place: SPEAKY – the multimedia speaker analysis).

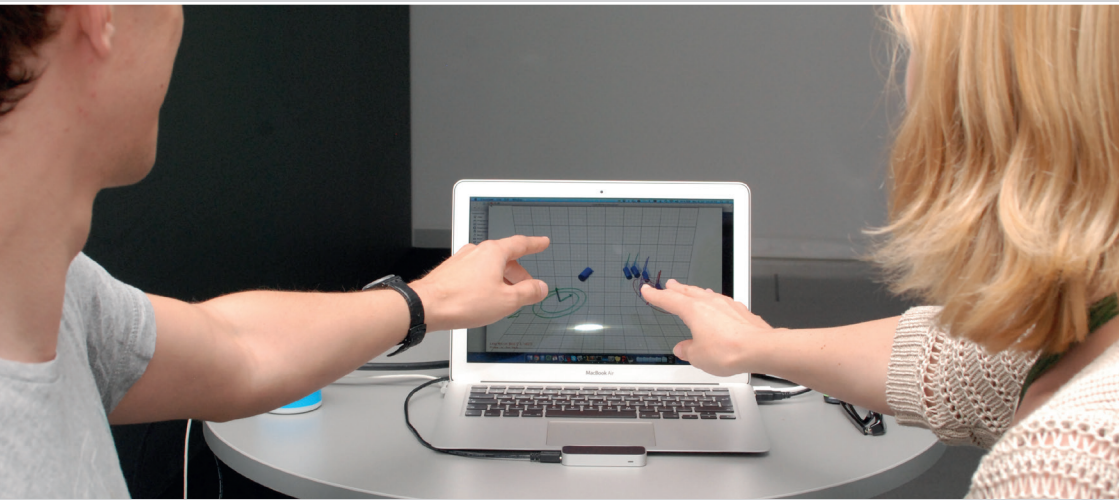
Besides interfaces and exhibits for museums and exhibitions, DMT is involved in the following research and development topics:

- 3D visualization, scan and print
- eCare and Game-Based Therapy
- Multimedia products for Sign Language
- Teaching and further development of teaching methods with multimedia
- Usability and User Experience
- Accessibility

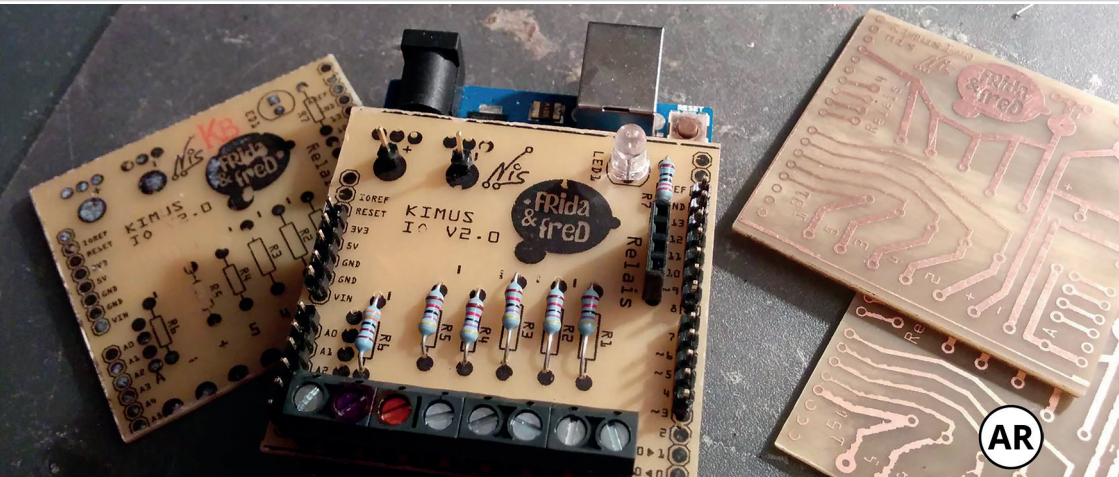




Carriage simulator, Lipizzaner Stud Piber



Finger training with Leap Motion



Arduino Shield - I/O Board



Video production



Audio production



MULTIMEDIA DEVELOPMENT & PRODUCTION

Whether single exhibits or the realization of an entire exhibition, the special field Digital Media Technologies is your competent partner in the area of multimedia development.

ALTERNATIVE INPUT DEVICES - TANGIBLE USER INTERFACES

Mouse and keyboard are not the right input devices for every purpose. We use alternative input devices based on our extensive experience in developing and applying new input devices for different scenarios. The DMT team works with innovative, specially designed input devices depending on whatever interaction is needed for a project. We use reliable interface technologies to realize the connection between hardware and software.

WEBSITE CREATION

We are a partner for web hosting solutions and create websites as well as specific modules for web applications. The DMT team therefore opens up the possibilities to connect your exhibit to the web. Let your visitors take a look at their last visit on a personalized webpage by automatically uploading images from an exhibit to your website.

USER TRACKING

DMT uses established technologies, like Radio-Frequency Identification (RFID), and other technologies to optimize exhibitions and therefore deepen the overall experience of your visitors. With these technologies it is possible to identify crowd pullers and to analyze an exhibition's strengths through the analysis of statistical data.

AUDIO AND VIDEO

The DMT team produces videos for interactive installations and websites as well as advertising and project videos in our own studios. In order to guarantee the highest quality, our video equipment is up to date. For example, we have a fully equipped green box. Besides normal HD video cameras, we also have the opportunity to produce stereoscopic videos (real 3D).

In a specially designed speaker cabin we record audio of the highest quality. Voice can be recorded in this cabin with optimal sound and without noise.

We offer a wide range of services in the field of 3D. In addition to simple 3D models and visualizations we plan, design and also produce interactive virtual scenes and worlds, games and simulations. In addition, we use the latest technologies and approaches for the interface between man and machine.

USABILITY ENGINEERING AND USER-CENTERED DESIGN

Interfaces between users and computers need to offer problem-free operation of devices. The serviceability of these human computer interfaces - whether less or more accessible - is termed 'usability'. DMT investigates the serviceability of hardware and especially software with various methods, to achieve usability at the best. We emphasize user-centered design, this means our focus is always on the end user while designing and developing a software or hardware solution.

Multimedia Development

RFID AND NFC - MANY FIELDS OF APPLICATION

Radio-Frequency Identification (RFID) and Near Field Communication (NFC) are often used in our exhibits. These technologies allow to automatically identify objects by using electromagnetic fields to transfer data. This offers many fields of applications for hands-on exhibits.

PAINT WALLS

Put on your painter suit and color walls! RFID readers are hidden in the paint buckets and walls - the brushes are equipped with RFID tags. With this technology, it is possible to paint the walls with the chosen color. The exhibit was developed in cooperation with the Graz Children's Museum Frida & freD for the travelling exhibition 'Archinature'.

BUILDING A HOUSE

This exhibit is another development in cooperation with the Graz Children's Museum Frida & freD for the travelling exhibition 'Archinature'. Children get to know the process of building a house by placing the required tools and machines on a property.

GRAZ FAIRY TALE TRAIN

While the Graz Fairy Tale train is on its track, audio will be automatically played and stations will be switched on by default. This is possible because the locomotives are equipped with RFID readers and RFID tags are mounted along the trail. The project was realized in cooperation with the Graz Children's Museum Frida & freD.



AR

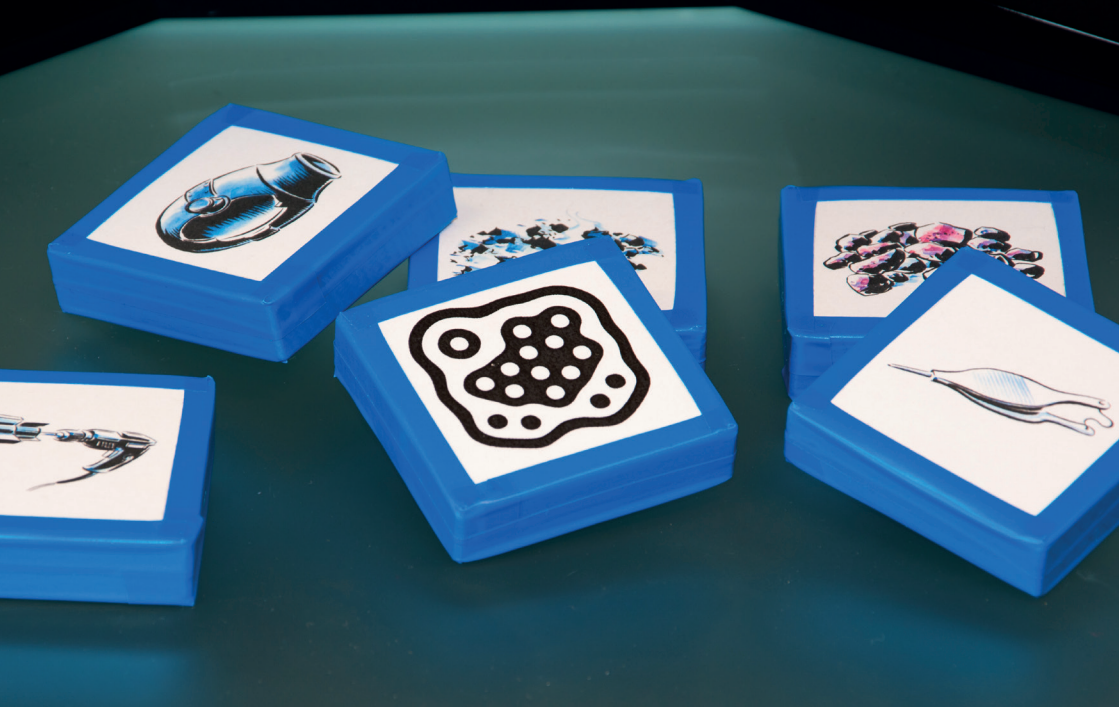


Building a House





Over the Edge of a Plate - Cooking Game (Zotter chocolate manufactory)



Master of Steel (voestalpine)

TANGIBLE USER INTERFACES - FIDUCIALS

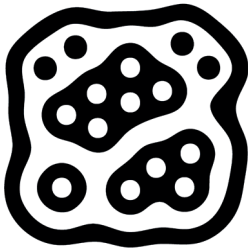
It is important for us to make exhibits tangible and a real experience. Fiducials are a good way to implement these goals. Users can interact with exhibits by placing objects onto a glass plate. Special fiducial markers are applied to objects (a fiducial marker is pictured on this page), these objects are placed on a glass sheet and a camera underneath the surface recognizes the fiducials (ID, position, rotation) and, with this information, the software can match the fiducials to the connected objects.

OVER THE EDGE OF A PLATE - COOKING GAME

In cooperation with the Graz Children's Museum Frida & freD, we developed an interactive exhibit with the subject 'Where does our food come from?' for Zotter chocolate manufactory. Children can cook various meals by choosing different ingredients (regional or imported goods).

MASTER OF STEEL

The manufacturing process of steel is playfully reenacted by this game. The exhibit was developed in cooperation with the Graz Children's Museum Frida & freD and voestalpine for the travelling exhibition 'Archinature'.



ZEBRA - EDUCATIONAL GAME

This game handles the subject 'Healthy Nutrition'. It gives a hands-on overview of sensory characteristics of food (for example salty, sweet, bitter, sour, umami) and the different food categories. This game was developed in cooperation with the Health Perception Lab (Laboratory for Health and Sensory Research) at the University of Applied Sciences FH JOANNEUM.



'Various institutes of FH JOANNEUM are involved in the project Health Perception Lab. The institutes of Information Management and Dietetics and Nutrition worked together on an educational game about health and food. I personally enjoyed the co-operation between the two different institutes and the active exchange of know-how.'

Mag. Dr. Manuela Konrad, Institute of Dietetics and Nutrition, FH JOANNEUM

REALIZATION OF MASTER PLANS

Besides single exhibits, we also realize complete multimedia exhibitions. For example, the DMT team created 20 exhibits for the permanent exhibition of the Natural History Museum, which was opened in 2013, in cooperation with Graz Children's Museum Frida & freD, bogner.cc and the Universalmuseum Joanneum.

One pivotal point for exhibitions with many multimedia exhibits is the ability to monitor and control all the exhibits from a central point. For this purpose, we developed a scalable client-server software solution, called xCocos. You can find more about this system in the section 'EXHIBITION MANAGEMENT TOOL'.

Like the permanent exhibition at the Natural History Museum, exhibitions can consist of various exhibits with different technologies. With an especially developed framework for the permanent exhibition, single exhibitions can be created in a consistent way. With the development of numerous multimedia exhibits and our monitoring and controlling software we can offer in-a-box solutions.

In the following you find some of the exhibits of the permanent exhibition.

WORKBENCHES

The company Ansperger constructed and built various mechanical exhibits for the Natural History Museum in Graz. We created seventeen computer exhibits to explain the different work benches with pictures, audio and video. Several technologies were applied to achieve this aim, such as RFID, microcontrollers, etc.

ELEVATION MODEL OF STYRIA

The Elevation Model of Styria at the Natural History Museum Joanneum Quarter three-dimensionally shows Styria on a scale of 1:37,500 with a size of 6 x 6 meters. This historical elevation model has been extended by a multimedia orchestration for the permanent exhibition of the Natural History Museum, in cooperation with Graz Children's Museum Frida & freD, bogner.cc and the Universalmuseum Joanneum.

The production contrasts the history of the relief with current geographic techniques, in particular the geographic information system (GIS), a computer system to store various geographical data. GIS data of Styria is directly visualized on the historical elevation model.

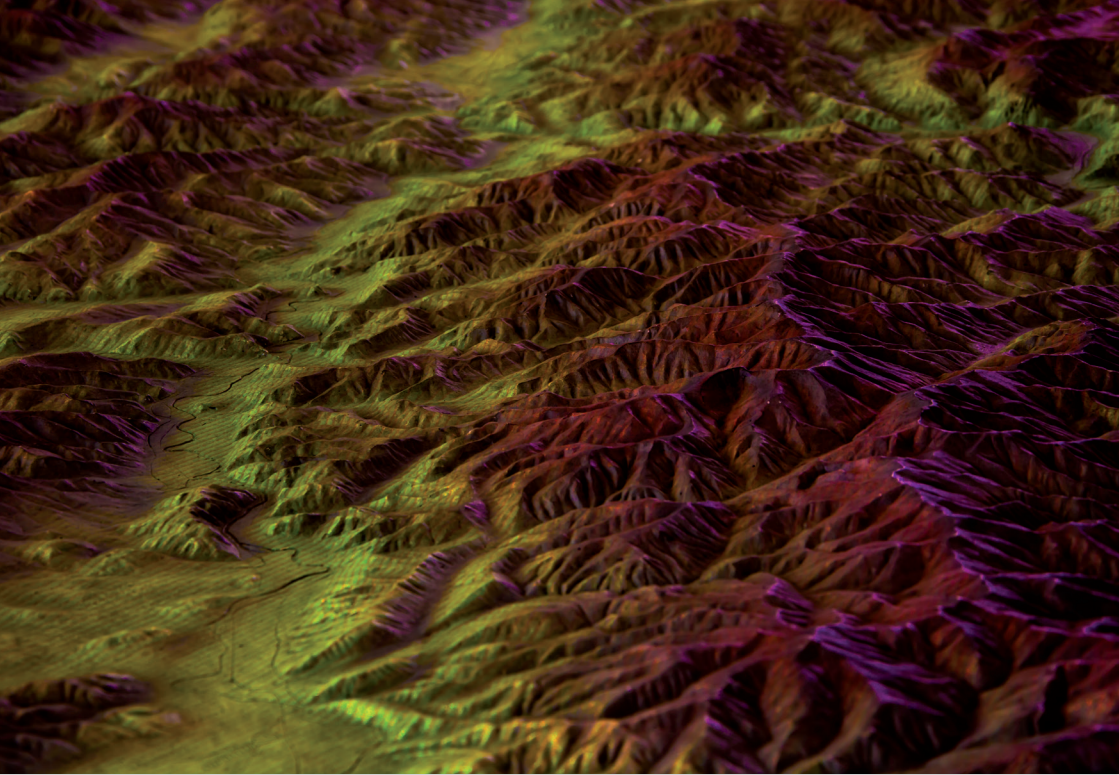
3D MODELS

In addition to our multimedia development we are also engaged in 3D modelling and printing. We created 3D prints of crystals for the Natural History Museum.

'Since the opening of the Graz Children's Museum Frida & freD in 2003 we have developed over 200 interactive multimedia exhibits in cooperation with the Institute of Information Management.

Due to the good and close collaboration of our curators and the members of the DMT team we consistently create new possibilities of hands-on knowledge transfer for our visitors.'

Mag. Jörg Ehtreiber, Director FRida und freD,
Children Museum Graz, President of Hands On!
International Association of Children in Museums

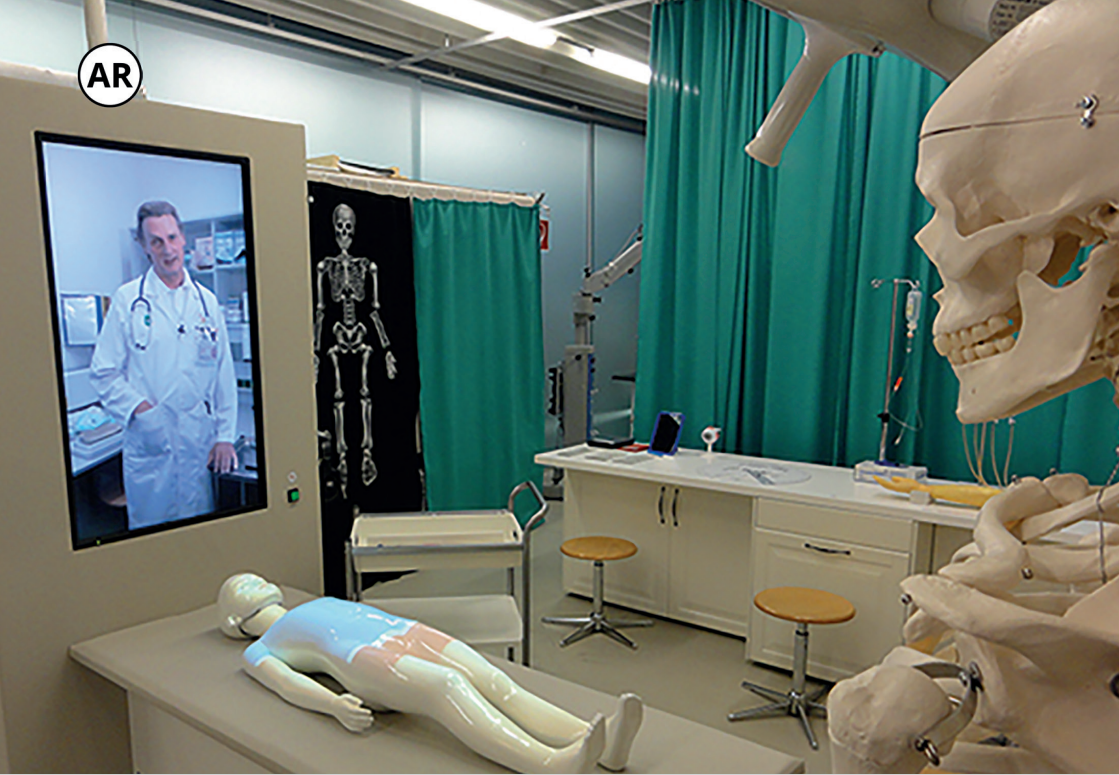


Elevation Model of Styria (Close Up)



Elevation Model of Styria (Universalmuseum Joanneum)

AR



Interactive Med Doll



Game-Based Physiotherapy / Vision Space Lab

ELECTRONIC CARE & TRAINING

For several years, the focus of the research and development activities of the special field Digital Media Technologies has been on the development and evaluation of applications for the health and therapy area. In cooperation with, or on behalf of companies, hospitals, museums, and socio-educational institutions, we have developed training applications, teaching and learning applications, treatment and testing programs and information applications for children and adults.

The overall objective of our projects in the health sector is to support patients and physicians anywhere and at any time.

For example, patients receive a movement therapy that motivates and creates fun, and, at the same time supports the healing process.

These training applications can not only be applied in hospitals, nursing homes and physiotherapy centers, but also directly at the patients' homes. The training can be specially adapted to individual patients depending on the movement therapy (physiotherapy, occupational therapy).

BODY EXPLORER

Through interaction with an adapted mannequin, visitors learn more about their own bodies. By touching eight different areas on the doll's torso, video clips of the relevant parts of the body are shown. In addition, using tangible objects, which are provided with special bar codes, more information is obtained in the form of video clips for this exhibit.

INTERACTIVE MED DOLL

The Med Doll allows visitors to interact with a child-sized doll. The doll is equipped with sensors or RFID readers in seven places and responds to provided medical devices such as a stethoscope, an otoscope or magnifying glasses.

At the beginning of each sequence the doll gives a brief explanation of what kind of pain it has. Depending on the type of pain children start looking for the right instrument and place. If the child chooses the wrong instrument, a doctor appears on the screen and informs that this instrument is not the right one. Once the right tool is held in the corresponding place, the doctor explains the disease and the type of treatment.

GAME-BASED PHYSIOTHERAPY

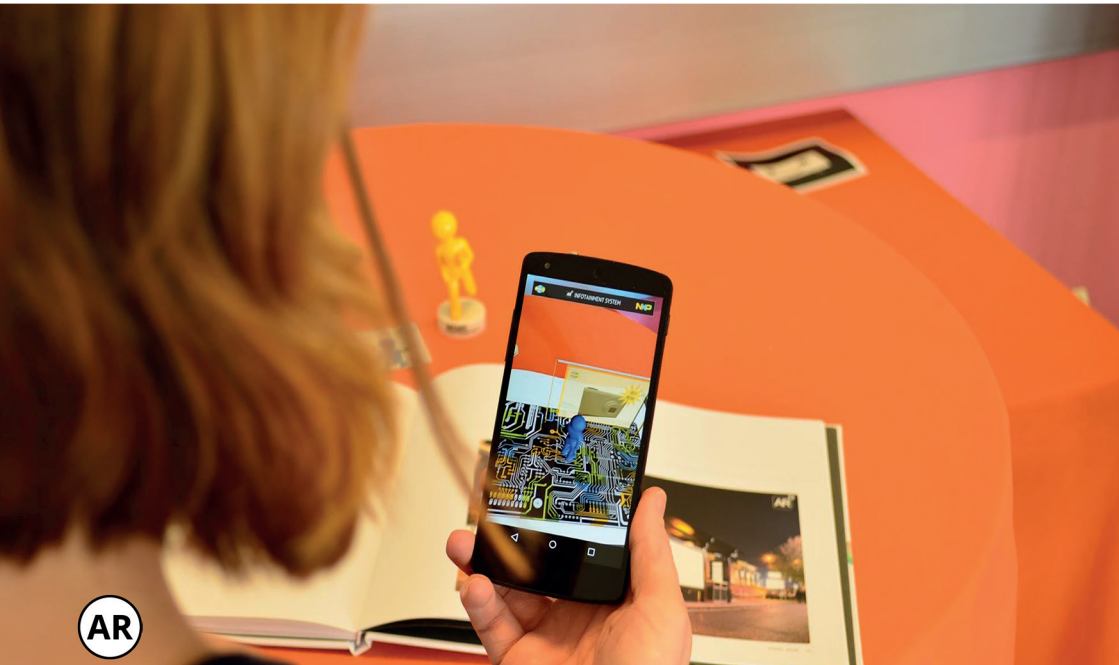
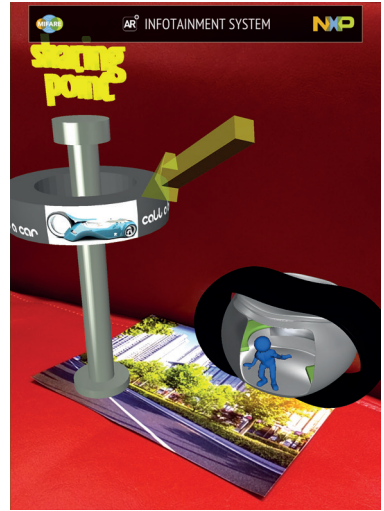
The project Game-Based Physiotherapy is based on a cooperative agreement between the two institutes of Physiotherapy and Information Management at the University of Applied Sciences FH JOANNEUM. The goal of this collaboration is to provide a motivating and effective computerized treatment option for young patients who suffer from spinal problems (such as scoliosis). Since the required therapeutic exercises require a high degree of self-awareness and body control, a special 3D input device is used, which exactly forwards the transaction data to a connected computer. This device can detect even the slightest movements of patients in a virtual three-dimensional space.

Mobile Solutions

NXP SEMICONDUCTORS: SMART CITY

NXP is a semiconductor manufacturer with their core competences in radio frequency, power management, interface, security and digital processing. In the course of the 'NXP Smart City 2034' project, we created virtual and augmented reality applications in cooperation with NXP. The AR application shows future application possibilities in different augmented reality scenarios. Users can experience this interactive app by holding their smartphone or tablet over the NXP book.

Besides the AR application, users can explore different rooms in a virtual reality. With the help of head-mounted displays, rooms can be experienced in 3D and, moreover, it is possible to interact with objects using NFC technology.



Mobile Solutions

SAUBERMACHER: SARA & ROB

In cooperation with Saubermacher and taska, we created interactive books for smartphones and tablets. The adventures of Sara & Rob are available for Google Android and Apple iOS.

Saubermacher is an Austrian company in the field of waste management. The books tell a humorous example of how to separate waste in a correct way.

Children are not only able to thumb through the book, but also discover many things themselves. Some objects on the pages are brought to life as soon as they are touched. The books not only offer the story, but also contain a mini game, a puzzle and a scrap book.



‘Saubermacher was founded with the requirement of daily contributions to an environment worth living in. Ecological education is very important for us. In cooperation with the FH JOANNEUM we developed the interactive book series Sara & Rob. The 4th edition was released in 2016.’

Prok. Mag. Bernadette Triebel-Wurzenberger,
Saubermacher Dienstleistungs AG



Interactive Multimedia Exhibitions and Showrooms

EXHIBITION MANAGEMENT TOOL

Our eXhibit Control and Configuration System (xCocos) is a scalable client-server software solution that monitors and controls installations and assists maintenance tasks from a central point. Exhibits can be automatically started in the morning and may be shut down in the evening. The system gives an overview of all multimedia exhibits and their state.

- Configuration of installations
- Monitoring of computers and exhibits (shown in the screenshot below)
- Remote control of computers and exhibits
- Analysis of statistical data and usage patterns of exhibits

How to present exhibits in an interesting and meaningful way? How to engage visitors? How to guide them to exhibits they are interested in? How to transport the message of the exhibition?

All of the aforementioned issues are very challenging tasks.

Big Data can be collected in various ways if interactive computer-based exhibits are used in museums. For example, in one exhibition we used magnetic cards. 'Show me the Money' was developed in cooperation with the Zoom Children's Museum Vienna and Graz Children's Museum Frida & freD and it is all about money. Visitors get a 'bank card' with which they can 'earn' and spend money in many exhibits.

This gives us the chance to track information such as how much money is earned or spent, how much time is spent at the single exhibits, which is the favorite exhibit, etc. It is also possible to visualize the visitor flow in one exhibition. This way we are able to analyze and compare an exhibition in different locations and museums respectively.

XCOCOS Overview Stations Logout

xCocos - Luft - Klima

Stations



Information: - Started Installation UID 1

State	Station	Actions
	K11.1 [172.16.254.39] Klima_Tiere	Stop Reboot VNC
	K13.1 [172.16.254.40] Klima_Verkehr	Stop Reboot VNC
	K2.1 [172.16.254.30] Klima_Wetter_Abstimmung	Stop Reboot VNC
	K3.1 [172.16.254.31]	

100%

- ✖ 0 Client(s)
- 📶 0 Client(s)
- 📶 0 Client(s)
- ✔ 17 Client(s)
- 🔧 0 Client(s)

Refresh status

Further Information

DIGITAL MEDIA TECHNOLOGIES WEBSITE

<http://dmt.fh-joanneum.at>

INTERACTIVE MULTIMEDIA EXHIBITIONS AND SHOWROOMS

<http://exhibits.fh-joanneum.at>

ELECTRONIC CARE & TRAINING

<http://ecare.fh-joanneum.at>

DMT FACEBOOK PAGE

<http://www.facebook.com/DigitalMediaTechnologies>

DMT YOUTUBE CHANNEL

<https://www.youtube.com/user/fhJoanneum-DMT>

Partners

In most instances our exhibits are realized in close collaboration with our longtime project partners:



Institute of Information Management

The Institute of Information Management stands for practical and interdisciplinary Bachelor and Master degree programs at the interface between IT and businesses.

In the Institute of Information Management students are trained to become experts who are able to work in management positions in IT and communication technologies. Business, science and administration are incorporated in their fields of activity.

In interdisciplinary courses students learn a practice- and problem-oriented approach in the fields of information technology and enterprise development.

For further information please visit the Information Management websites:

Bachelor degree program
<http://www.fh-joanneum.at/ima>

Master degree program
<http://www.fh-joanneum.at/aim>



Contact and Information

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