

Entertainment Computing

Technology Report

Vienna, August 2017



Introduction

Dear Readers,

Vienna is among the top 5 ICT metropolises in Europe. Around 5,800 ICT enterprises generate sales here of around 20 billion euros annually. The approximately 8,900 national and international ICT companies in the "Vienna Region" (Vienna, Lower Austria and Burgenland) are responsible for roughly two thirds of the total turnover of the ICT sector in Austria.

According to various studies, Vienna scores especially strongly in innovative power, comprehensive support for start-ups, and a strong focus on sustainability. Vienna also occupies the top positions in multiple "Smart City" rankings. This location is also appealing due to its research- and technology-friendly climate, its geographical and cultural vicinity to the growth markets in the East, the high quality of its infrastructure and education system, and last but not least the best quality of life worldwide.

In order to make optimal use of this location's potential, the Vienna Business Agency functions as an information and cooperation platform for Viennese technology developers. It networks enterprises with development partners and leading economic, scientific and municipal administrative customers, and supports the Viennese enterprises with targeted monetary funding and a variety of consulting and service offerings.

Support in this area is also provided by the technology platform of the Vienna Business Agency. At technologieplattform.wirtschaftsagentur.at, Vienna businesses and institutions from the field of technology can present their innovative products, services and prototypes as well as their research expertise, and find development partners and pilot customers.

The following technology report offers an overview of the many trends and developments in the field of Entertainment Computing. The term Entertainment Computing describes B2C solutions (hardware and software), which can entertain a person in their free time. In the broadest sense, it describes all technologies which can be assigned to entertainment electronics (Consumer Electronics). In this report, we will accordingly include everything from digital film, book, and newspapers, from Smart TV to games.

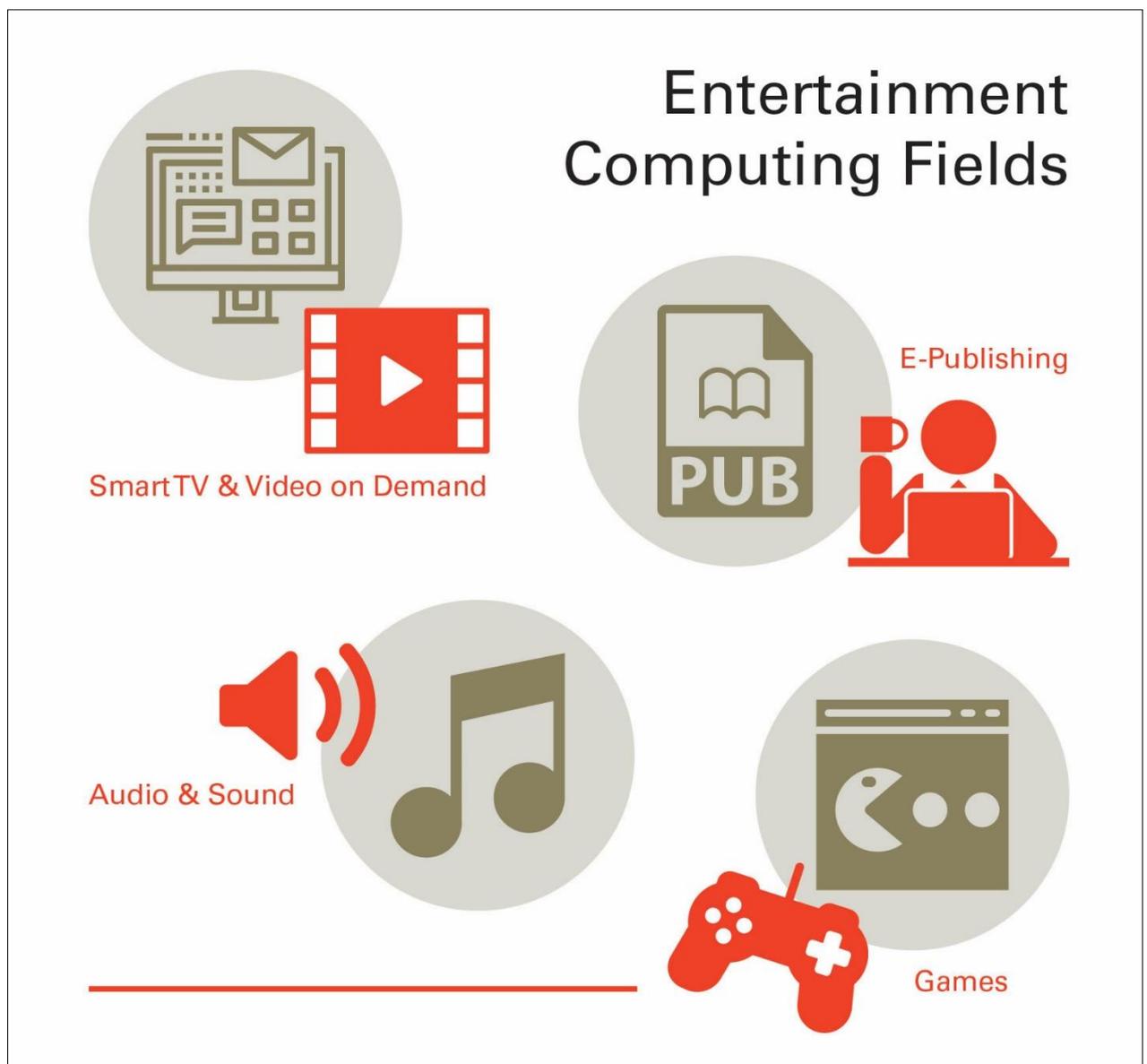
Your Vienna Business Agency team

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1 Entertainment Computing – A definition

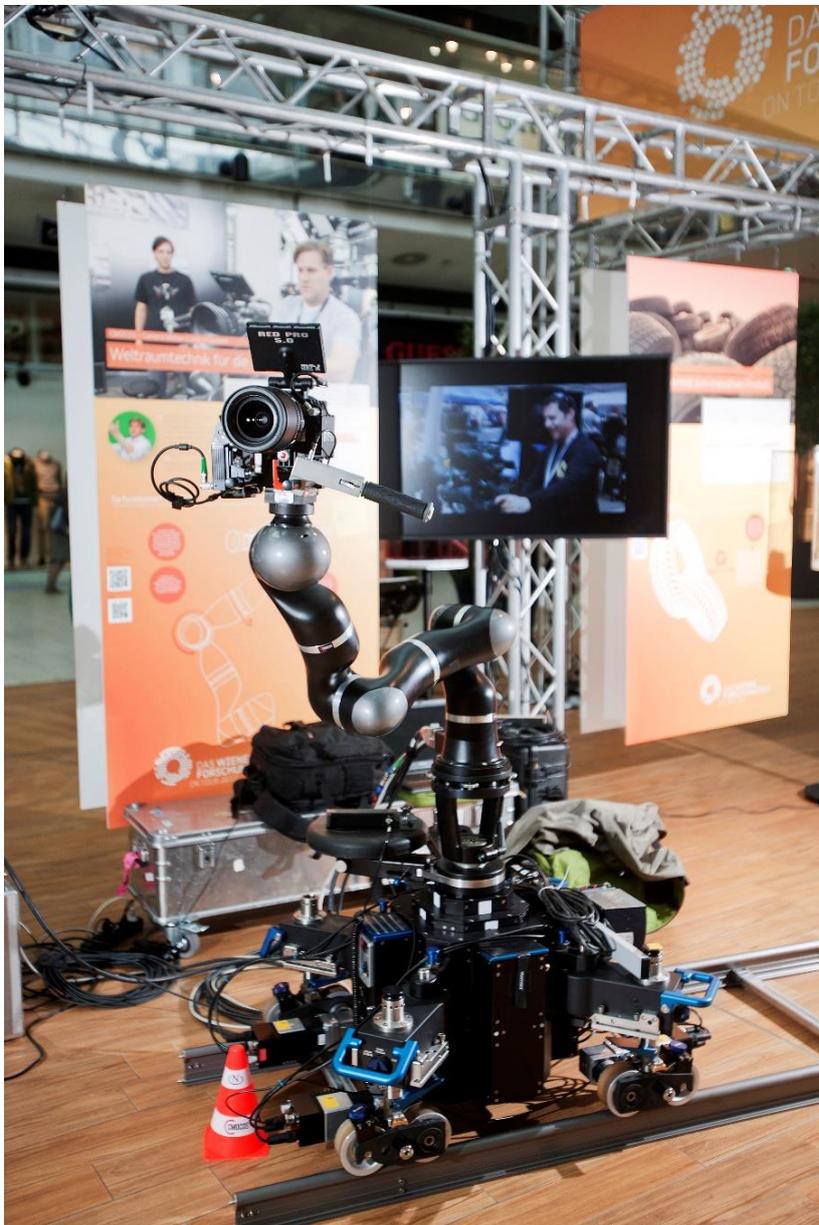
If you look up the term Entertainment Computing on the Internet, you will find a manageable number of definitions, all of which vary significantly from one another. And yet the term “entertainment”, as used in its many forms among different research groups and media companies is a very flexible concept. It is used for pure recreational entertainment and includes the use of various media content along with interaction (games, navigation, information provision), employment programs, measures in the medical and therapeutic field, and in spaceflight for astronauts. The key elements are the technical concepts, computing processes, and devices. These may come from the fields of computer vision, animation, gaming, streaming media, acoustics, as well as virtual & augmented reality.



2 Current state of the technology

2.1 Smart TV, Video on Demand and streaming services

Watching TV – for how many decades did that mean knowing the program schedules of the different channels, to watch their shows either on purpose or two coincidentally enjoy it in the background. Letting it wash over you, or consuming information brought color into everyday life and into the living room. The one constant in this case is the already-programmed TV schedule where only the ever-increasing number of senders suggested a certain type of independent decision-making - which was something that only the video recorder could manage: allowing the viewers to select their own time for viewing. The expenses are manageable: in addition to the fees, the consumer pays, at most, the cable provider and in return must submit to impersonal advertising between and during the shows. “Unlike with the TV, with streaming you are not bound to a preset program. The streaming user is independent in both time and place and can use different devices limited by the provider (TV, PC, tablet, smartphone).”¹



Netflix, Amazon Prime, Maxdome and Skysnap are the most well-known streaming providers on a subscription basis. For a monthly fee of approximately 5 Euro to 12 Euro, films and series can be streamed to a selected device using available Internet. Depending upon the quality of the connection, the content can also be streamed in higher resolutions. The contents cannot be saved long-term. If the subscription fee covers only a portion of the offer, then the requested titles can be borrowed as in a library.

Video on Demand (VoD)-providers are becoming increasingly popular as Internet video libraries. A stable broadband Internet connection is required. Where, when, and on which device films and series will be watched is decided by the consumer. A web browser or the appropriate app for the mobile device which will be used is necessary for this. All the popular services provide apps for Android, iOS, and desktop PCs. Several have recently started providing apps for smart TVs. The combination of VoD and classic TV is very desirable, as Ulrich Müller-Ur, CEO of Flimmit, knows: “VoD offers be a supplement to classic TV. By filling several distribution channels, a stronger knowledge of the product is created and new target groups can be reached. I see linear beaming not as a dying subject, but much more as a flexible hybrid.”

¹ video on demand – streaming-services by comperison (fee-based) <http://www.konsument.at/cs/Satellite?pagename=Konsument/MagazinArtikel/Detail&cid=31889452149>

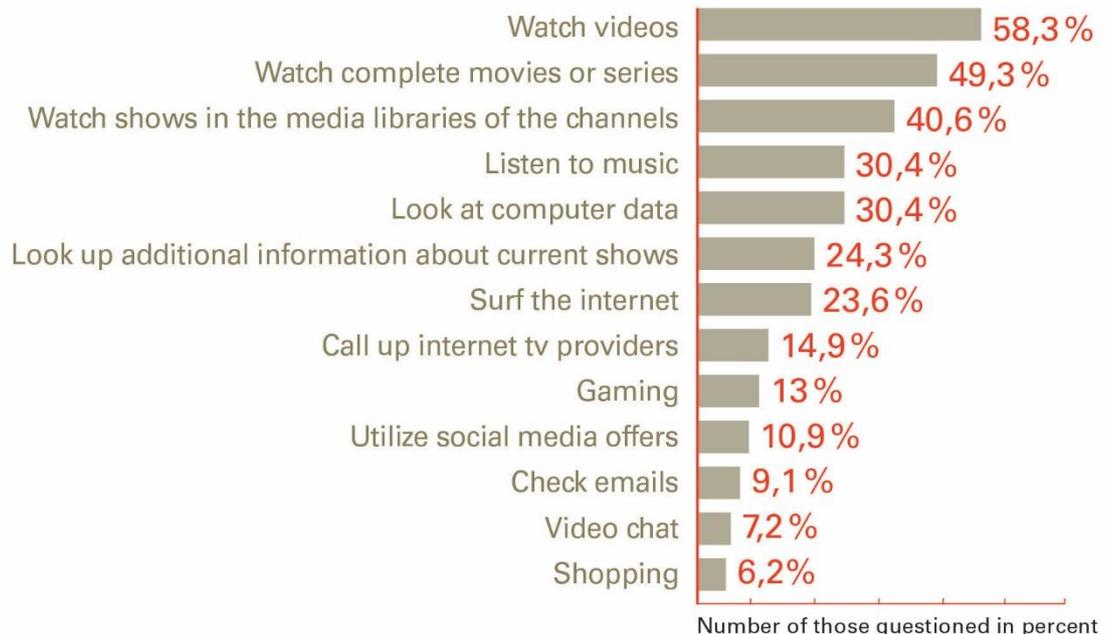
Dietmar Pils of the bitsfabrik also doubts that streaming services will make linear TV completely obsolete: “To be able to enjoy films, series, or music online; independent of TV programs, time, and place; and without needing any local storage place for them, are already very strong arguments in the viewpoint of the consumer, if Internet bandwidth and the contract allows it. This is also the reason why many classic TV channels and providers are considering offering streaming services, or are already there. I do not believe that streaming will completely replace linear TV and radio.”

Current devices have additional functions, can display more content thanks to a user-friendly surface, and provide higher resolution for the display of Ultra High Definition Videos. This technology was already available in the past as Hbb-TV, but it has been further developed with the increased use of external operating systems such as Android TV or Tizen. Smart-TVs integrate apps from video streaming providers including Netflix or Amazon Instant Video. Additional apps expand the functionality and offer access to YouTube, the Internet browser, and even games. Access to the Internet is required, which is why most TVs are now networked. They are operated with one or two remote controls, which have the necessary functions and buttons for quick access. Voice control is new and popular, although still prone to errors. Microphones are in the remote controls.

Questionnaire for the use of Internet-capable TVs in Austria



QUESTION: Which of the following functions on your smart TV do you use?

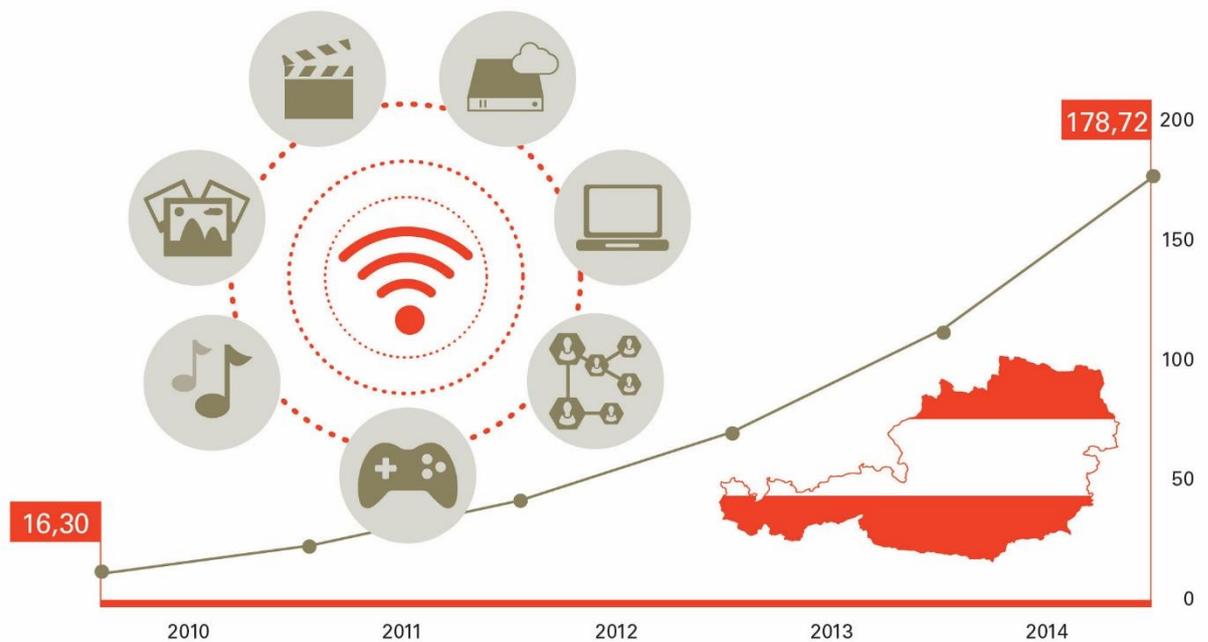


These statistics display the results of a questionnaire among people in Austria who used a smart TV in the year 2014. 40.6% of those questioned indicated that they use their Internet capable TV to watch shows in media libraries.

Source: Statista 2016

But it is not just because of the ever-larger selection of platform providers that videos available through the Internet are becoming increasingly important. With smart phones, videos are available in high quality, full HD resolution which allows it to be quickly loaded onto the Internet and to be shared within seconds with others on social media platforms. YouTube, Vimeo & Co. are very popular, for private as well as commercial short videos. Companies have discovered videos as multimedia channels, where they give their customers a peek into their company. Certain content such as FAQs, operating instructions, team and product presentations, and statements come alive in moving images. This allows the viewer to feel as if they are in the middle of the action. To be able to independently produce videos – message oriented instead of slick optics – opens new business fields in the market. Video producers, storytellers, counselors and trainers, all the way to programmers for new platforms and video technologies, can establish themselves.

Volume of mobile data transferred in Austria per year in million GB



There are many reasons for the sharp increase: the use of instant messaging services, and the transfer of pictures and videos over mobile devices has grown dramatically in Europe since 2013. The main reasons are social networks such as Facebook, Instagram, Pinterest, YouTube & Co. and the network service providers which are offering affordable Internet pricing.

Source: www.fmk.at

2.2 Games – from Second Screen to Virtual Reality



In the beginning, simple computer games flickered on the TV screens of children and in living rooms. Monochrome consoles then replace Gameboy and Co. and game computers à la Commodore 64. Later, on the x86-PC, games with short film sequences followed. Story lines like in the movies with changing scenarios replace the simple jump-and-run games and ego-shooter. Gamers can now dive into a world which is becoming increasingly detailed and realistic.

Just as in many other technical areas, the world of computer games is in the middle of a demographic change. The question is no longer: who is playing what, but on what device, where, and how. Alexander Amon of Sproing Interactive Media GmbH, Austria's largest game developer, notes: "Platform independence is current and extremely important for the future, since practically every target group has several platforms to target. To be represented on all relevant platforms is a basic building block for survival in this field. Smart TVs are, of course, an exciting platform but they will probably only achieve relevance in the coming years."

Max Höffler of IG Computergrafik considers platform independence as important for free to play (F2P) games: "Especially in the field of F2P games, platform independence will continue to become more important to achieve flexible and barrier free multi-device use. Soon, one or the other consumer electronics producer will be sure to attempt an expansion of the games integrated in smart TVs. In the end, the consumers will decide whether streamed games will become the norm on smart TVs."

Browser games, smart phones, and tablets provide new opportunities to gamers and bring them out of their own four walls. Games are played everywhere – to entertain – multimedia content is being consumed wherever desired, and whenever the time is available. This trend is also very present in Austria. According to a poll taken by MindTake Research (June 2015)², 74% use a smart phone for gaming, 26% play on a tablet. 61% of Austrians indicate that they usually play

² <http://research.mindtake.com/de/jeder-zweite-mobile-nutzer-spielt-mobile-games>

mobile games at home, 31% of responders indicate that they play while on the road, 4% at work and 2% while in training. The average time spent playing is 11 hours a month.

Diverse game plug-ins in social media are increasingly filling portions of the screen. Second screen, and even third screen is being discussed: the TV is on in the background, while the mobile device displays additional information or functions as a communications center. The player is not only concentrating on one type of entertainment; several different ones are running in virtual rooms apparently parallel. Entertainment must be either short and amusing or consistently compelling – either as a secondary medium or to structure free time.

Adventure-and simulation games are created from realistic objects located in realistic, three-dimensional rooms and environments. Film sequences in the games are often produced with the same effort as movies. With the use of rendering, objects are added and subtracted – the more realistic, the more effort, as Christoph Dertschei knows, owner of dx3 and 3D designer: “Realism is still not an easy task, and just due to the rendering times alone it is an expensive way to have fun. Especially smaller studios can hardly afford it, or can only compensate using long rendering times. At the same time, standards are constantly rising due to viewing habits. What impressed many people 10 years ago, is, upon closer reflection, often downright laughable today. On the other hand, good results can also be achieved from simple methods. A feel for it is required in this case – especially because, in almost all mainstream productions now, the camera flies four times through each scene just like in videogames.”

In connection with built-in cameras, games are created in mixed realities. In virtual reality, complete arenas can be built which are accurate down to the last detail. Positions and viewpoints can be changed when the GPS and movement sensors on tablets and smart phones are activated. The tablet becomes a steering wheel. In augmented reality, the live image on the camera is also used. The objects created with computer graphics appear in the actual environment on the display screen of the mobile phone. Additional information for buildings, and navigation assistance in public places such as airports are also available.

It is already evident that with the help of VR glasses such as Oculus Rift, Microsoft HoloLense, and Playstation VR, augmented reality (AR), virtual reality (VR) or a combination form, so-called mixed reality, will be strongly represented in one or the other form in the games market.

2.2.1 Gamification

Except for complete and comprehensive games, individual gaming aspects are also implemented in many branches and technologies without necessarily drawing attention to them. Elements and processes typical of games fall under the buzzword gamification increasingly frequently in contexts foreign to games such as office applications, webpages, and smart TVs. Included in this area are experience points, high scores, progress bars, ranking lists, virtual goods, or commendations. Markus Breuer defined the term gamification as: „(...) the use of mechanics typical games outside of pure games with the goal of influencing the behavior of humans.“³

The goal is to increase motivation during activities and processes often perceived as monotonous. Tests have shown that user motivation, learning success, customer loyalty, and data quality improves if not necessarily increases significantly, for instance during the implementation of gamification to increase customer motivation during the payment process at the supermarket register⁴. Areas for implementation and examples include, in addition to burger crafting at fast food restaurants, creative design ideas of user surfaces in industrial facilities (key word: Industry 4.0).⁵ Max Höfferer on gamification: “In certain areas award and comparison mechanisms as well as planning assistance can be implemented in business software solutions. This means a longer and more intensive user connection can be achieved. Product improvements can also be achieved using gamification mechanisms.”

Yet consideration must be given to the fact that gamification does not necessarily make sense in every area of implementation. Gamification is an easily implemented method, especially in the field of user-experience design.

³ <http://sns.cscwlab.de/soziotech/files/downloads/2014/01/Gamification-von-Business-Software-Steigerung-von-Motivation-und-Partizipation.pdf>

⁴ <http://imb.donau-uni.ac.at/gamification/effizienzsteigerung-motivationssteigerung-durch-gamification/>, <http://www.sozio.tech.org/gamification-Steigerung-der-nutzungsmotivation-durch-spielkonzepte/> and <http://www2.tu-ilmenau.de/zsm/Bezahlprozess>

⁵ <http://www.faz.net/aktuell/feuilleton/gamification-ist-spielen-das-neue-arbeiten-12796856.html>

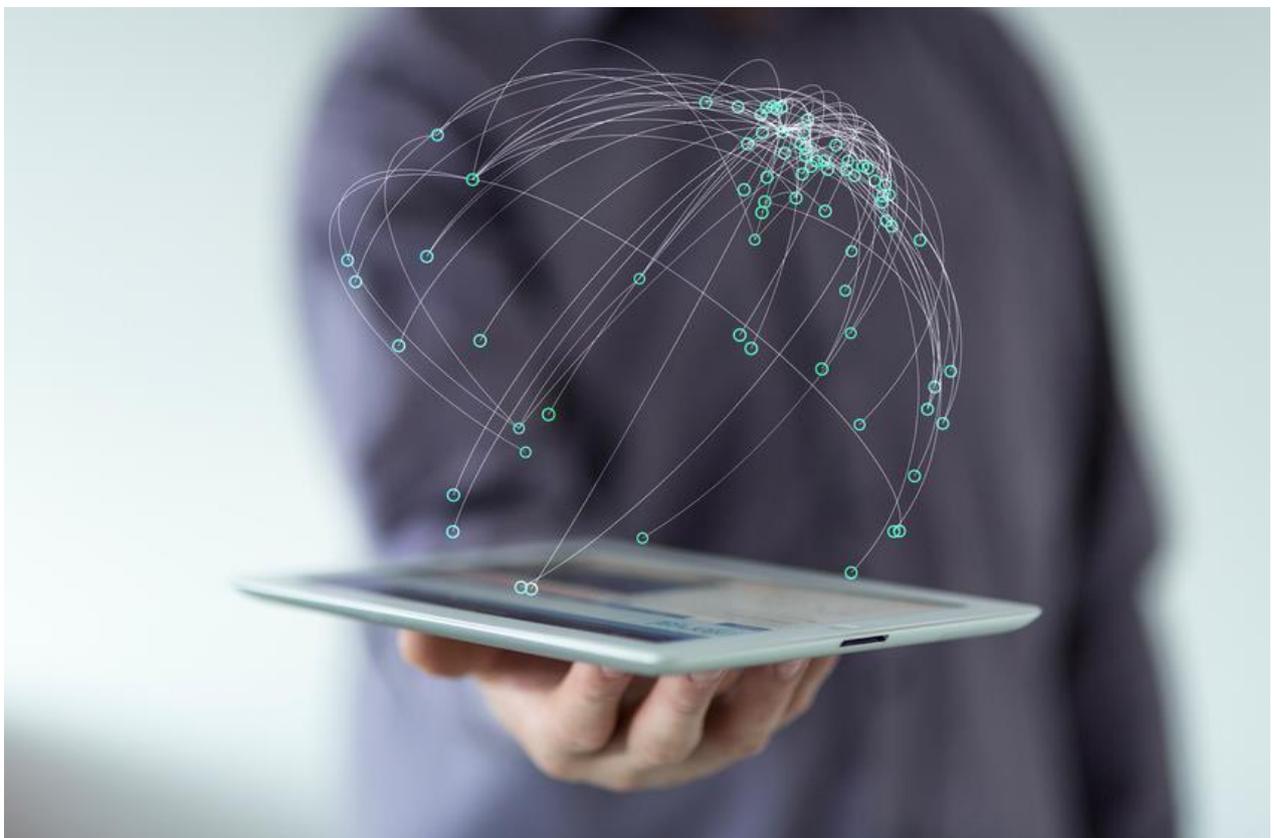
2.2.2 Serious Games

Serious Games are games, simulations, and learning programs which were not developed just for entertainment purposes. Their core function is to transmit knowledge. An authentic and believable, but also entertaining learning experience is in the center of the area of interest – genre, technology, platform and target group vary. The separation between this and a purely entertaining game is often difficult, since the consumer determines the use and application. Serious Games can also be played with others. The exchange of knowledge can occur during active communication. Content can be distributed as initial information for an upcoming assignment, or can be gathered during the game.⁶

One of the first uses of Serious Games reaches back to 1958 with the first digital flight simulator. Current application areas: health and movement therapy, politics, culture, advertising, security, military, product development as well as youth and adult education⁷.

2.3 E-Publishing - E-books and digital newspapers and magazines

E-books are now available for every device for every operating system. Individual hardware with passive crystal displays are becoming increasingly similar to printed paper in terms of readability. They are not and are perfectly connected with their platform supplier. The advantage of e-books in the readers: an entire library of virtual books and magazines will fit on a light-weight device which is easy to transport. If it is not readily available, the user can check their smart phone or PC and continue reading at the exact spot where he/she was previously at. In addition, there are also lookup functions, translation services, and background information which are embedded in the e-books. Service providers utilize usage behavior of the readers and suggests similar titles. “Thousands of books fit on the e-reader; reading in the dark is more



⁶ http://www.b-i-t-online.de/daten/BIT_Innovativ_28_Auszug.pdf#

⁷ <http://homepage.ntlworld.com/bleep/SimHist8.html> , <http://mediawiki.htw-berlin.de/w/index.php?title=Serious-Games&oldid=8964#Geschichte> and <http://mediawiki.htw-berlin.de/w/index.php?title=Serious-Games&oldid=8964#Geschichte>

comfortable than ever before thanks to energy-efficient background lighting; and thanks to the new water resistant devices you can even read in the bathtub or at the beach without any worries.”⁸

The flipside: practically every provider has developed their own e-book format in an attempt to legally protect the contents from being distributed and copied without authorization. Compatibility with other devices is extremely rare – providers are focused on building out their own platforms, since they have already invested sizable amounts in their development. Unfortunately, it is not possible at this time to loan out e-books, to give them away, or to sell them. A diverse number of copyright solutions ensures this (DRM = Digital Rights Management)⁹. The important thing is, just as with video streaming providers, to read the offer carefully before committing it. While it is true that there are free e-book formats, they are difficult to load onto the reader. E-books have a variable line break; this allows the font size to be changed at any time, thereby assuring easy readability without unnecessary scrolling. In contrast, data in PDF format are generally not displayed well, since this format does not allow variable scaling of the page.

Apple and Amazon have started making the entry into publishing easier for authors. Those who text for a hobby can also quickly and easily place the text on the associated platform and publish them themselves. Special publishing service providers have been established for academic texts, they also process the sales. All portals conform to the valid book price agreement, which also applies to online sales. Generally, the price for the digital version of a book is 10 to 20% less than the printed version. Publishing and media houses who want to provide electronic versions of newspapers and magazines generally tread their own path. Although Apple and Google offer their own respective operating platforms and stores for this purpose, most rely on their own apps which they have developed to ensure an optimum level of readability. This also allows them to upsell add-on features, extra product, and special subscription systems.

3 Market situation in Austria

3.1 The market for streaming services and Video on Demand

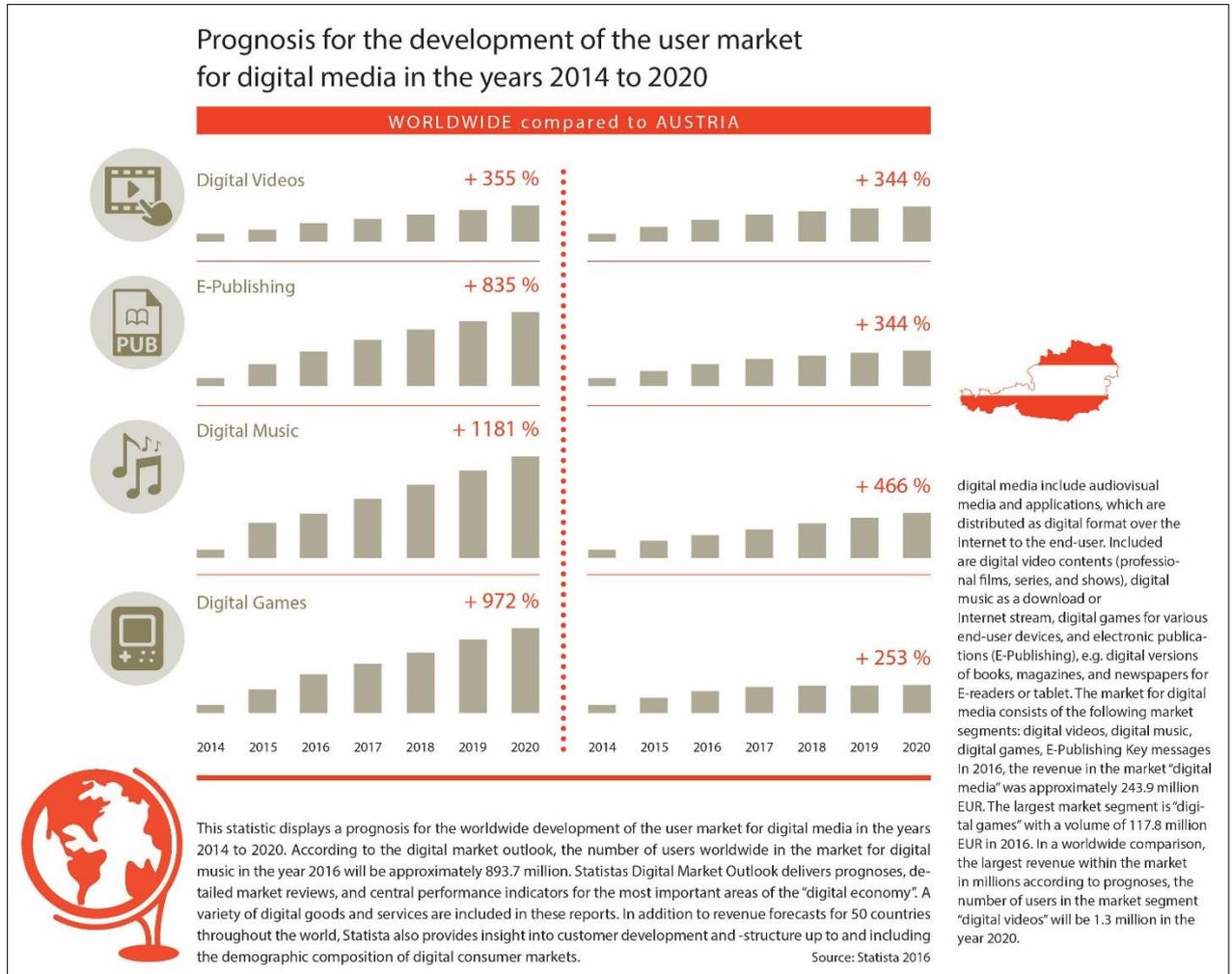
Online video libraries are now offered by several streaming services. Because of licensing/technical reasons, they are expanding slower in Austria and therefore have a smaller selection of films and series to offer than in the USA. Netflix – very popular and widely distributed in the USA – was one of the first platforms to start up in Austria. The main difference is in the payment model. Netflix is only available by monthly subscription, while other providers offer series and movies either in addition to or exclusively for a rental fee. Borrowed movies, depending upon the provider, can be stored locally. This has the advantage that you are not tied into an Internet connection when you want to watch the movie. The quality is generally dependent upon the respective device – ultra HD and 4K resolutions are available. This dramatically increases the amount of data which must be downloaded from the Internet in real time. For movie buffs and those who enjoy series, flat fees are suggested with no volume limitations.

Flimmit is an Austrian version of Netflix. It focuses on Austrian productions in order to give local film producers an additional opportunity for innovative sales and distribution, according to Müller-Uri: “Especially when competing with international providers it is important to highlight their unique selling proposition, thereby allowing them to claim their market segment. Since the video-on-demand market is not a competitive, but rather an expansion market, there is still room for alternative products. The most important thing in this branch is to work with few resources as efficiently as possible while always maintaining state-of-the-art. This creates a chance to speak to a special target group using Austrian contents, which may not enjoy the same level of visibility with international providers.”

This is how Müller-Uri sees the future of Video on Demand in Austria: “The streaming market is continuing to develop – based on technical advances and the rising demand for it – in Europe as well as Austria. For our country technology, it is very important that Austrian companies which are developing streaming technologies locally, thereby providing jobs and know-how in a growing market, remain in the country. Austrian companies should not back away from international comparisons. Along with strategic partnerships, technical know-how is a deciding factor.”

⁸ <http://www.konsument.at/cs/Satellite?pagename=Konsument/MagazinArtikel/Detail&cid=318893797016> (fee required)

⁹ E-Book-Portale – Reader reloaded (fee required) <http://www.konsument.at/freizeit-familie/e-book-portale>

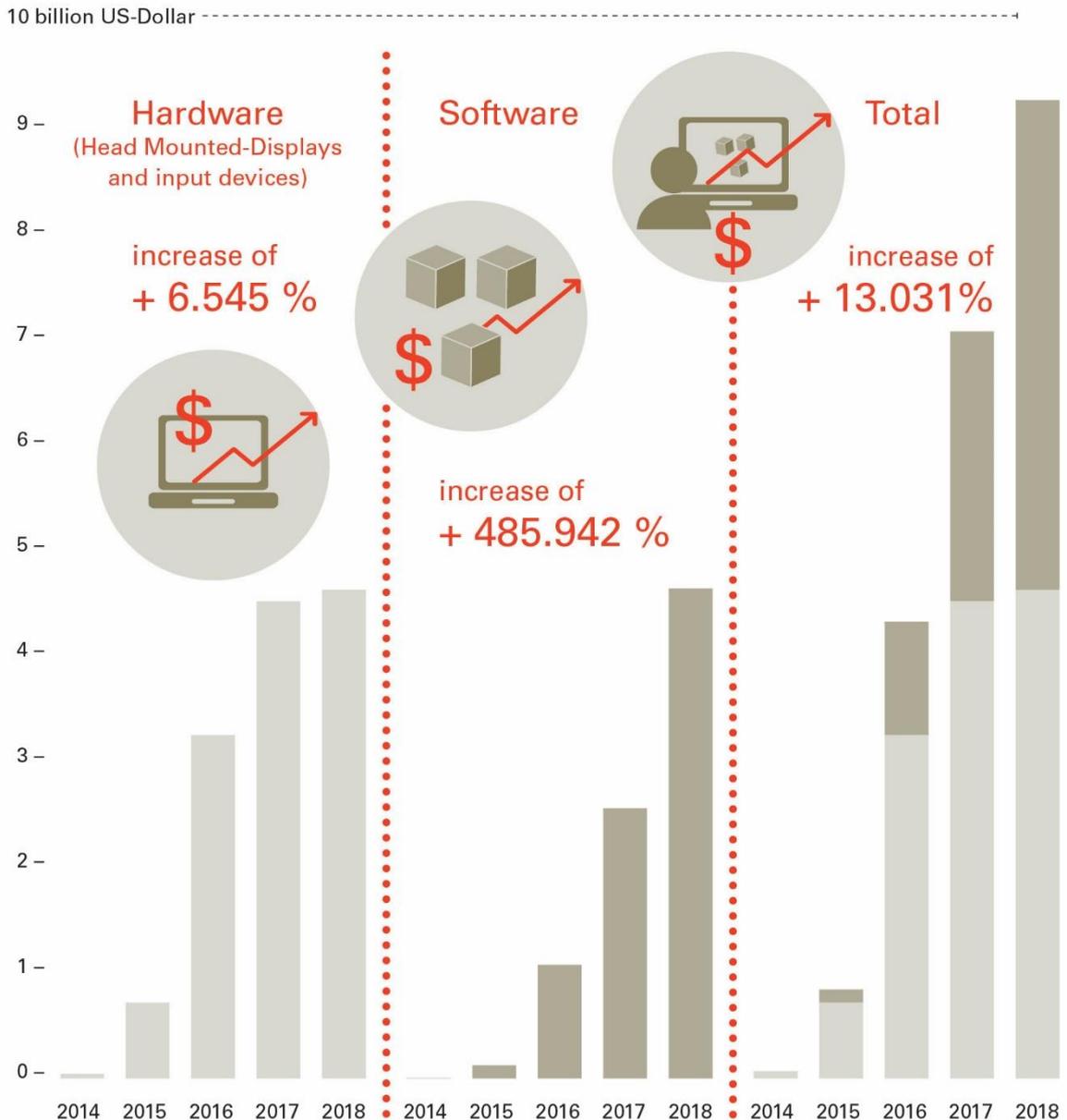


Streaming platforms are becoming increasingly interesting for game developers, as Alexander Amon, PR Manager of Sproing Interactive Media GmbH, is aware of: "thanks to Smart TV and a monthly fee, games can be easily streamed on your own TV. The hardware required to play current and future games well is not located in your own living room but rather with the service provider of the cloud service. Updating the hardware is not necessary in this case. There are two reasons that are preventing the widespread use of this. First, a large bandwidth is required which is not available throughout Austria yet. This is an area that must be improved upon everywhere except, perhaps, in Vienna. Second, games on Smart TVs are current. This is probably also due to the low amount of usage, "reused" games from other platforms – so Smart TVs cannot be classified as innovation leaders now."

3.2 The game market

Though unfortunately it is not always visible, Austria has a very vibrant, internationally recognized gaming scene. Sebastian Resl of Vienom describes the Austrian gaming scene as follows: "The scene may be small, but it is definitely active and lively. It doesn't always have to necessarily be the large companies that are internationally successful. The Austrian game development market consists, in my opinion, of a few midsize companies (e.g.: Sproing, Bongfish, Socialspiel, Spielwerk, etc.) which have successfully made the leap as a service provider for investors; and many very small studios. The small studios often start out as a project specific collaboration of freelancers or young idealists, who are hoping to successfully make an entry into the genre"

Prognosis for worldwide sales with virtual reality in the years 2014 to 2018 (in billions US-Dollar)



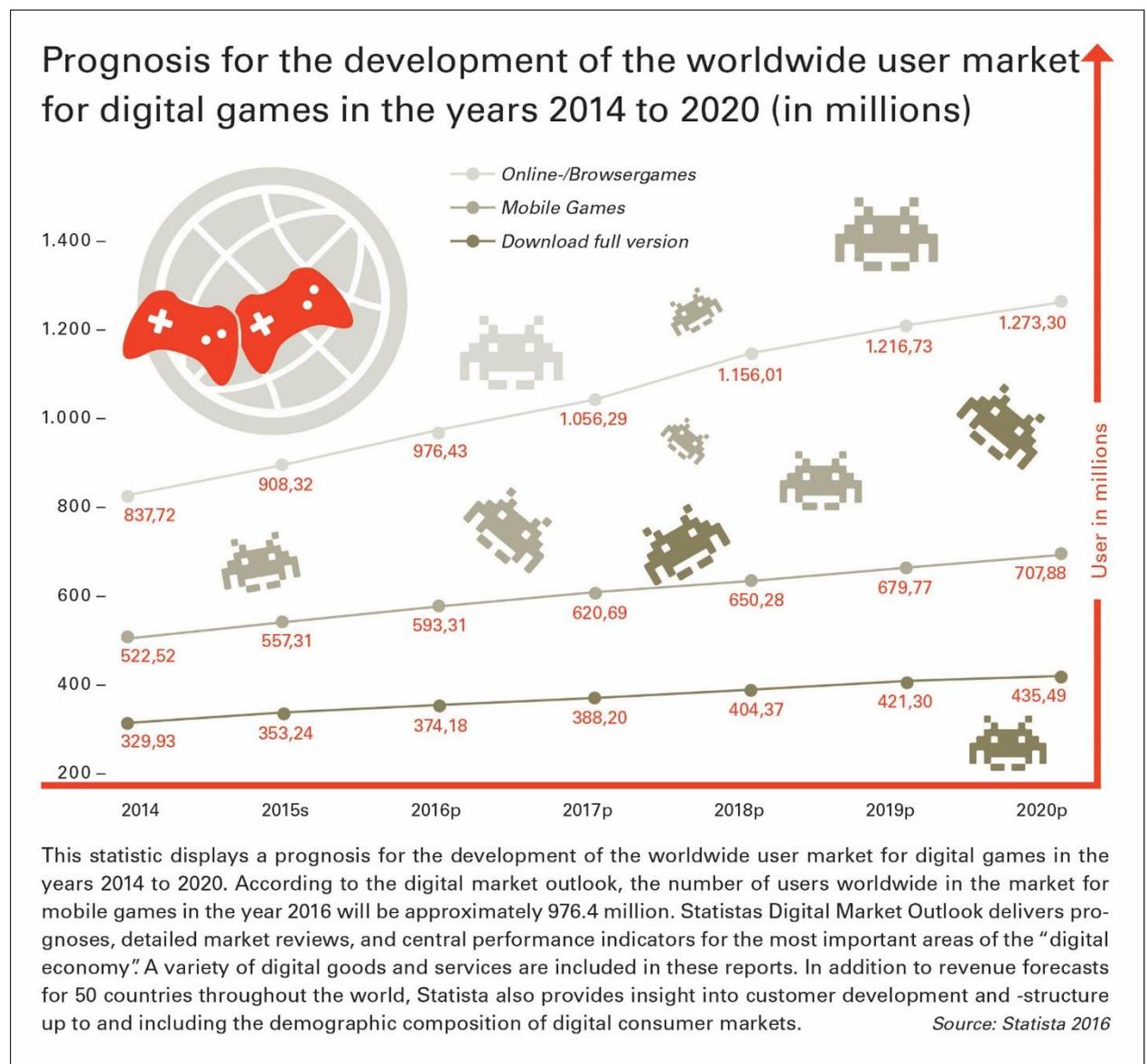
This statistic forms a prognosis for the worldwide sales including virtual reality through the year 2018. Per the source, sales including virtual-reality hardware and software will be approximately \$4.3 billion U.S. in 2016.
Source: Statista 2016

Virtual and augmented reality will be the impetus for the future of game development. Alexander Amon of Sproing is aware of this: "Virtual reality will definitely be a dominant topic, because many large manufacturers (HTC, Oculus, Sony, etc.) are bringing the hardware to market. They are also doing this in combination with augmented reality, as the just-introduced Sulon Q by AMD is attempting. Especially at the universities, this is where a dynamic of its own in the section of educational games will probably." In addition, he also sees growth potential in the mobile game market and in the

connection of mobile devices: “We will also see a lot of movement in this area, including in the fields of gamification in everyday life, e.g. reward systems for using several devices by the same manufacturer.”

Max Höfferer also sees augmented reality and virtual reality as the way of the future, especially at serious games: “The combination of augmented and virtual reality has the potential to change games and other moving image formats long-term. Working together with serious games, the learning environment, both in school and professionally, could be completely redefined.

Sebastian Resl of Vienom has some advice for young developers: “For game development, I would recommend the following: first develop the simplest base mechanics and when these function perfectly, then expand the game. Aim for brave topics which have not yet been covered. And of course, marketing, marketing, marketing.” Max Höfferer add: “Increasingly more best practices are being developed in Austria for serious games and educational games. The growing trend in the field of e-sports will also continue. Based on the infrastructure required, and independent of borders, this voyage seems to be going in the direction of ‘Games-as-a-service’ i.e. ‘Cloud-gaming’.”



3.3 E-Publishing market

According to a study performed by MindTake Research (March 2015)¹⁰, 52% of all Austrians read e-books. The favorite device for this is an e-book reader, 51% of Austrians read their e-books on one (the most popular device is Amazon's Kindle). The tablet is in second place for hardware, 39 use one to read their e-books. In third place is the smart phone with a respectable 24%. 71 percent of the people questioned indicated that they purchased their e-book reader online, only 29% purchased them in brick-and-mortar stores. Three e-books were used very often by Austrian consumers, 22% of responders only read free e-books, 43% spend a maximum of €10 per month, while 22% spend up to €20 per month. The most popular method was downloading e-books from Amazon.

In the online newspaper market, the Kronen Zeitung has the most readers in Austria. According to a study by MindTake Research¹¹ (June 2015), krone.at is read by 32% of Austrians, 17% read the online version of the Kleinen Zeitung (kleinezeitung.at), 16% derStandard.at, and 15% the online newspaper of the free publication Heute (heute.at). Online paid subscriptions are not widespread in Austria, 86% of those questions indicated that they do not have any paid online subscriptions. The favorite way to read online newspaper is on the laptop (50%), with the smart phone (41%), and with the desktop computer (38%). Only 28% use a tablet to read online newspapers. If an online newspaper is read on a mobile device, then the app for the Kronen Zeitung leads with 14%, the app for the Kleinen Zeitung is used by 9%, and that of the Standard by 7%.

4 Science and research

The goal of the research group Entertainment Computing of the **University of Vienna** is to develop a preventative care system. It would use body condition sensors to track items such as sleep, activities, and food intake. Another goal is to develop a communications system for stem cell patients which will inform the patients in an easy to understand way about their treatments, and will reduce costs.

There are also entertainment computing concepts in space travel. Working together with the Eindhoven University of Technology, TNO Human Factors & Delft University of Technology and the DESC Space Flight/Microgravity University of Amsterdam, the European Space Agency (ESA) has developed entertainment and occupational programs for astronauts.

At the **Danube University Krems** the center for applied game research was created. Questionnaires are in the middle of the center related to carrying over current results in the research and testing of interactive visual/participative media and virtual worlds to the professional practice. Emphasis is placed on the areas of media and game design, as well as education and upbringing. The Center for Applied Games Studies offers a variety of educational programs, which are divided into the headings of Game Studies, media education, and trans-medial media design. The Center for Applied Games Studies also has a research and development branch, which can also relate to education. In this way, the team of the Center for Applied Games Studies has, among other things, accompanied the iterative design process of the well-known physics adventure game Ludwig by the development company ovos. A module for user centered design is also offered.

The working group Visual Computing of the **Austrian Computer Society (OCG)** deals with the support and expansion of the field in research and industry in the fields of industrial quality control, medical image processing and visualization, measurement, robotics, multimedia systems, Virtual Heritage, special effects in movies and TV, and computer games.

The research group Media Computing of the **St. Pölten University of Applied Sciences** deals with the conceptualization, design, and implementation of interactive systems. The key areas include human computer interaction and game design.

¹⁰ <http://research.mindtake.com/de/ebooks-auf-dem-vormarsch-52-prozent-lesen-elektronische-bucher>

¹¹ <http://research.mindtake.com/de/zeitungs-apps-bei-mannern-beliebter-als-bei-frauen>

The competence center **Acoustic Sensing & Design (ASD)**, headquartered in Graz, is sponsored within the framework of COMET – Competence Centers for Excellent Technologies by the Vienna Business Agency as well as by the Austrian Research Promotion Agency (FFG), the Austrian Ministry for Transport, Innovation and Technology (bmvit), the Federal Ministry of Science, Research and Economy (bmfwf), the Styrian Business Promotion Agency (SFG) and the state of Styria. The project runs through the middle of 2017, a follow-on project is planned. New sound design technologies are at the center of the project, along with improved signal processing and design transfer, as well as innovative sensors and in-and-output systems. The companies “**AKG Acoustics GmbH**” and “**Speech Processing Solutions**” from Vienna are also taking part. All the competencies are combined in this project, which are necessary for successful recognition and design of background noises. This creates a large innovation potential for affordable and intelligent acoustics, and the active design of improved audio listening.

5 Education situation in Austria

Many educational institutions offer courses and training in media and game design. The selection is large and begins from early education up through university completion. The gaming field, like app development, is narrow and connected with the diverse information technology field of study. There are also independent institutions, which list their focus and direction is aiming towards the artistic/medial areas. In terms of computer graphics and 3-D visualization, Austria is in the top of its field internationally – as young entrepreneurs and experts alike are happy to report. The postgraduate mentoring in the diverse networks functions well, and guarantees a transfer of know-how from the laboratory to the street. Austrian game developers are just as successful internationally, as the providers of new video technologies.

Universities offer courses with emphasis on gaming-, media design- and visualization. For instance at the University of Vienna and the Technical University of Vienna (TU Wien) the course Media Informatics and Visual Computing, at the University of Applied Sciences Technikum Vienna – Game Engineering and Simulation, at the Alpen-Adria-University Klagenfurt – Applied Informatics, at the St. Pölten University of Applied Sciences – Media Technology, the University of Applied Sciences Burgenland – Information Media Communication, the University of Applied Sciences Joanneum in Graz – Software Design, the Salzburg University of Applied Sciences – Information Technology & System-Management as well as the educational programs MultiMediaArt and MultiMediaTechnology, the University of Applied Sciences Vorarlberg – InterMedia, the University of Applied Sciences Upper Austria – Media Technology and Design as well as Digital Arts, and at the University College of Teacher Education Carinthia – educational subject Information Technology – secondary level general education.

The federal higher technical institute **Spengergasse** offers two types of school. The educational track Media – Gamedesign teaches competencies for designing individual development processes of the game and being able to implement them. The focus of this educational program is on the design components. In Media Design – Animation, the visualization of the moving and storytelling image is the focal point of the education. The classes offered range from Stop-Motion-, 2D- and 3D-Animation to Realfilm and the possibilities for combining them all for numerous applications in the fields of film, TV, and new media. Both educational paths are geared for youth ages 14 and up, last 10 semesters, and finish with graduation and diploma testing.

The **SAE-Institute** offers two educational programs: The Game Art Animation Program and the Game Art & 3D Animation Diploma teach the manufacture of realistic 3D assets, characters, and fantasy world, along with implementing them in a variety of game engines. By using complex work assignments from the field of game development, the students will learn to develop increasingly complex 3-D models and will also learn the optimization of them for their use on a variety of platforms.

The company **News on Video** also offers an educational program for video journalists. The education is mainly journalism, contents are taught along with conception and manufacturing. The use of different digital cameras and the use of the Final Cut program are explained. Student will also learn how reports are designed for different areas and formats. As of October 2009, students have had the opportunity to finish their education with the title, “Akademic Video-Journalist”. In support of this, News on Video has established an educational program in cooperation with the Institute for Journalism and Media Management at the **University of Applied Sciences Vienna**.

The **Austrian Journalism Training Association** (KfJ) in Salzburg and the **fjum** in Vienna offer educational programs for (Video-) journalists in focused seminars as well as in apprenticeships. The modular Journalism Training in Salzburg is barely one year long, while fjum offers a two-year postgraduate master degree.

6 Events in Vienna

The **GAME CITY** transforms the City Hall in Vienna every year into an internationally recognized hotspot for video gaming. With 78,000 visitors, the 2015 event set a new record. GAME CITY combines the display and the testing of actual game titles with discussion and consultation about handling computer games and media competencies. A special wienXtra-Kinderzone is available for families and children four years and over within the framework of GAME CITY. The symposium F.R.O.G. is also held, attended by international experts.

Within the framework of **F.R.O.G. – Future and Reality of Gaming**, current topics in the field of gaming were made available to the general public. The event opened with the Critical Play Workshop, in cooperation with the Academy of Fine Arts Vienna, and was rounded off with the FROG Student Day, organized by the Danube University Krems. The event was financed by the Federal Ministry of Families and Youth, the City of Vienna, and the Danube University Krems. The event itself was conducted by Playful Solutions. With the motto “inter/play”, the interactions and interplay between the different game worlds, the formal play of children and adults, as well as the informal games of our society in everyday activities were in the foreground.

At the **VIECC Vienna Comic Con** board games and role-playing activities were displayed which use mobile devices for communication, guidance, and for displaying game information. The visitors had the opportunity to try the games out in the convention halls.

Austrian media days are coordinated and held by Mannstein Zeitschriftenverlag in Vienna every year in the fall. As the Congress of the Austrian media branch, many different topics are discussed ranging from business to technical requirements for the media.

Fjum (Forum Journalismus und Medien Wien) is an association in Vienna, which offers continuing education in media and organizes numerous local events (e.g. media Innovation Day), as well as supporting international events. For example, in 2016 the supported the GEN Summit in Vienna which 600 international experts from the field of media.



7 Success Stories from Vienna



7.1 Smart-TV, Film & Digital Signage

The Austrian provider **Flimmit** is at the starting gate as of March 2015. The platform specializes in Austrian productions, which are seldom seen with large international service providers. In addition, movie packages are available which offer a financial advantage. The subscription offers access to a reduced selection. The video coding which is necessary for providing videos with different levels of quality to a variety of devices using as little bandwidth as possible, was developed in Austria. The Austrian Broadcasting Corporation (ORF) is involved in Flimmit with approximately 25%, which should ensure an increase in the amount of Austrian productions which are offered.¹²

Even the telecommunication provider **A1**, with its products A1 Videothek and A1 TV, **3** with 3Film and 3MobileTV, **UPC** mit UPC on demand, and Horizon Go offer online video libraries to their customers. All three also provide a selection of TV channels, available only to their customers, as an Internet stream and available for monthly package prices. The offer varies significantly and is viewed more as an add-on feature to the respective mobile phone contract. Prerequisite our mobile devices or an in-house set-type box belonging to the user, which usually also functions as a video recorder.

Mediaconsult offers consultation to their customers about Storytelling. It is especially important in the case of short Internet videos to tell a compact story.

In the multimedia fields, the app from **Tonio** allows information from radio and TV stations, as well as music labels, to be sent directly to a smart phone. The mobile device is triggered when the microphone is activated by high-frequency tones which cannot be heard by the human ear. The Tonio function can also be integrated into other apps. These include: websites, tickets, gift certificates, pictures, subtitles, music covers, video streams, e-books, data's messages on Facebook, quiz questions, apps, or raffles.

ImFUN, a system by **Interactive Media Solutions GmbH**, projects interactive contents on all types of surfaces. An integrated camera recognizes movements and enables direct interaction with the projected elements. Completely

¹² http://flimmit-magento-static.s3.amazonaws.com/media/presse/150320_Flimmit_Pressemappe.pdf

branded, interactive games and one-of-a-kind effects can be displayed in this manner on floor surfaces. Touchscreens and interactive walls furnished with multitouch technology complete the portfolio of the company.

With “Talking Tom” and “Talking Angela”, characters of the series “Talking Friends”, which was produced for an app, **arx anima animation studio** has created figures which have found popularity across the pond. After integrating, they were featured in a music video by Disney.¹³ The animation studio, which specializes in the development of film, Vfx, Tv, advertising, and games, has presented their work in movie theaters, on national and international TV, at festivals, on the Walt Disney interactive channel, at the London Royal Opera House, and at the 2012 Olympic Games in London.

NINC! In addition to video and film production, this company also offers services in the field of web design and 3-D visualization.

The portfolio of **SPECTRUM TRICKFILM-Studios** contains 3-D visualization; rendering: DVD production. Computer animation: VFX, cartoons, comics, caricatures. Trick film, Animation: Animation, trick film, modeling, CGI, 3 D, and postproduction.

Cliptease the Studio Q KG, is a production company and a design studio for motion design and animation. Motion Design, also referred to as Motion Graphics, is the creation of moving images in different media using methods from graphic design, typography, 2D- and 3D-animation and sound design. The studio, which is in the Vienna Museum Quarter, stages branded TV spots, image and web videos, develops corporate designs for moving images, and creates the visual appearances for TV formats and media.

7.2 Games

Game developers and organizations can be registered on the platform **Games Austria**.

Indiegame.at is a nonprofit network by and for the Austrian game developer community. The goal is to strengthen their own support system, to increase awareness, and to network creative talents. Indiegame.at is an open platform for all Indie game developers, game studios, interest groups, and interested people.

The Association **SUBOTRON**, for the promotion of electronic gaming culture, is, as the name already indicates, a point of contact and meeting place for the promotion of theoretical and practical discourse on the topic of “digital games”. The shop, which is in Vienna’s Museum Quarter, in addition to offering a broad palette of special items for the video gaming culture from around the world, also offers a varied assortment of other products relevant to pop-culture which are closely related to gaming culture.

With nearly 100 employees, **sproing** is one of the largest game developers in Austria, and has been since 2001. The company is based on the three columns of experience, creativity, and quality. With over 50 console games, an entire row of free to play titles, they mainly serve international customers.

GAMINSIDE GmbH links their idea for success to so-called Gamified Loyalty: by linking playful elements to the motivation of the customers, the engagement of the user is increased. Mechanics such as points (virtual currencies), status, levels, achievements & badges, appointments, countdown, discovery, luck & lottery, challenges, progression, surprise, epic goals, swiftness, and many more can be implemented. The Viennese company offers a complete package to gain customer loyalty.

Ori and the Blind Forest is a Jump’n’Run game, which was developed by **Moon Studios** and marketed by Microsoft Studios (U.S.A.). The games graphics are reminiscent of classic anime’s such as Princess Mononoke. It garnered a lot of attention nationally and internationally and won numerous awards.

The Game-Developer by **Cliffhanger Productions Games GmbH** are known for the combination of innovative gameplay concepts with established genres and brands. They Cliffhanger-Team has already gathered experience with

¹³ http://www.ots.at/presseaussendung/OTS_20120706_OTS0028/walt-disney-records-outfit-7-engagieren-animationsstudio-mit-regisseur-aus-wien-fuer-neues-disney-animations-kurzfilmprojekt-bild

several international market-leading developers, including Rockstar Games and Ubisoft. The game **AErena** (PC/Mac, and Mobile) is one of the few Austrian games which was published by the South Korean Telekom and in southeast Asia.

Since 2004, **ovos** has been creating digital adventure worlds, which are supposed to convey contents through fun and enthusiasm. The core team consists of 20 people with the most diverse educational backgrounds, including experts in the fields of architecture architects, Japanese studies, information technology, and artists. This interdisciplinary base provides continuous inspiration. The company has also received many awards. They were awarded the Austrian multimedia state prize, along with the 2013 Summit Award from the United Nations, for the physics adventure **Ludwig**. The development of Ludwig is accompanied by a research project sponsored by Sparkling Science.

Greentube Internet Entertainment Solutions GmbH, is a leading developer and provider of gaming solutions on the Internet and mobile devices. With over 400 employees, the game division of Novomatic focuses on casino games such as slot game machines, table games, and video poker, as well as bingo and poker in addition to online games.

Well connected in the Vienna gaming scene is the small game studio **Bloodirony Games**, which prescribed a grant for mobile Indie games for itself and produces its own games. Their flagship is the mobile game Shooting Stars.

Vienom conceptualizes, produces, and publicizes games with a focus on riddle and logic games for all current platforms. In addition, webpages and web applications are developed for well-known customers, e.g. for the 'Kunsthistorisches Museum' Vienna and the Austrian Chamber of Commerce.

Socialspiel is a mobile phone game studio headquartered in Vienna. It was founded in 2010. They develop free-to-play mobile games exclusively for the Korean game market.

7.3 E-Publishing

The Digital Publishing Service by the company **evolaris** delivers print media quickly and cost efficiently to digital devices. The contents are provided to the consumer quickly and in a cost-efficient manner. Evolaris can take over the entire production, or can use a web-based service to create the digital publications and make them available. Evolaris is a competency center for mobile communication and interactive media. For more than 10 years, the independent research and development facility has been supporting companies in the process of implementing the Internet, mobile devices, and the applications connected with them, and accomplishing this in a goal-oriented and income-producing fashion. Over half of the financial volume is produced from contracts from private companies, the remainder are won in a competitive manner in response to request for tenders within the framework of public research programs.

Qidenus Technologies is a young Viennese company, which specializes in the development and production of book scanning robots. The company accompanies and supports the customers during large projects.

Treventus Mechatronics GmbH was founded as a spinoff company from the Technical University of Vienna in 2006. They are active in the field of development and manufacturing of modern scanning robots. The customers are offered not just the product of the scanning process, but also a selection of the content and access to it on the WWW as additional services. Anything desired can be scanned. This includes books, documents, newspapers, magazines, conference transcripts, folders, maps, and many other things which can be digitalized. In recognition of its developments, in 2007 the company was awarded the 200,000 Euro Grand Price of the European Information and Communication Technology Awards.

Bringing off-line content online is a major point in the portfolio of **RAUM3 print.web.mobile**. The agency transforms, with the assistance of CMS-guided web solutions, magazines, books, manuscripts - any desired document - into a digital version for iPad and iPhone. In addition, the team supports with the analysis and distribution of the texts.

Sign language is an important tool which allows deaf people to communicate. The demand for translations and synchronization, especially in the field of entertainment, has increased so quickly that studio productions alone are not enough to process these quantities of data. **Signtime GmbH** developed with SiMAX a software system that recalculates spoken text so that it can be passed on in sign language by an animated avatar rather than by a person. The avatars are

interchangeable and can display emotions and body language. Processing by the software is cost-effective and fast. TV companies deliver their show as input and receive the synchronized translation in sign language as an animated video with the avatar. Signtime has also developed a mobile game for sign language. By using avatars, you can play the game 'Memory' with moving images on your tablet or smart phone.

To maintain contact with customers, and to guide attention to a product, it is important to regularly load content onto the web. This is not a problem for subject experts – and **Alice Interactive** Digital has developed publishing solutions which will make publishing and digital channels easier for those who do not want to get involved with the technical aspect. With the company's own system 'PageStrip' the company provides a platform which customers can upload data to, without needing to use any complicated coding. The data which is entered is processed by the system and is available not only as an iPad app, but can also be used – with the same layout and functions – to distribute information on the web, on Facebook or on smart phones.

Read.it is an app developed by **Tailored Media** which provides the opportunity to read newspapers and magazines online based on a flat rate model. Favorite magazines can be leisurely read on a tablet or smart phone using the app while new magazines can be discovered.



8 Services Offered by the Vienna Business Agency



The objective of the Vienna Business Agency is the continuous development of international competitiveness by supporting the Vienna-based companies and its innovative strength, as well as a sustainable modernization of the business location. To achieve this, the Vienna Business Agency provides free consultations to all entrepreneurs in Vienna on the topics of business creation, business location or expansion, business support and financing. Furthermore, networking contacts in the Viennese economy are also made available.

The Vienna Business Agency supports and helps businesses complete their research and development projects with both individual consulting and monetary funding. Depending on requirements, they will receive information about sponsorships, financing opportunities, possible development partners, research service providers, or research infrastructure, according to their needs.

The Vienna Business Agency sees itself as a network of the Viennese ICT industry and supports businesses with consultations, as well with distribution and networking among themselves. Events and workshops on topics from the field of ICT are held regularly.

Additionally, the Vienna Business Agency helps company relocations or internationalization services. Help is provided to business founders and young entrepreneurs in the start-up area. Free workshops and training sessions on topics of everyday business are offered as well as small, affordable office spaces.

9 Businesses in Vienna

The alphabetical listing¹⁴ on the following pages will provide you with an overview of selected business and research organizations in Vienna in the field of games, interactive solutions, film, animation, camera systems, smart TV, streaming services, digital signage, digital publishing and sound & audio.

An overview of Vienna technology businesses is also provided by the Vienna Business Agency's Technology Platform. At technologieplattform.wirtschaftsagentur.at, Vienna businesses and institutions can present their innovative products, services and prototypes as well as their research expertise and find development partners and pilot customers.



¹⁴ This list provides no claims to completeness

Company	Since	Staff	Description	References	Contact	Website	E-Mail
Games & Interactive Solutions							
Bloodirony Games GmbH	2015	1	Bloodirony is a small Viennese game studio which is dedicated to the promotion of independent mobile games and produces its own games. They are working on the first prototypes for the future of casual and multiplayer mobile games: HTML 5 games for Facebook Instant Messenger and similar platforms. Their recently developed chatbot enables them to rapidly release content to the future players, ideal for A/B testing. You can already use it to try out Bloodirony Games' first attempts at HTML 5 Games on mobile and desktop. Bloodirony Games also founded the monthly Vienna GameDev Meetups, where up to 100 creative game development enthusiasts meet once a month.	Release of Shooting Stars! for iOS (July 2015), Android (August 2015) and Steam (January 2016). The game was an impressive hit, with over 50 reviews on websites, in print media, and on YouTube channels; in total it reached more than 35,000 players. Nominated for the Content Award.	Bloodirony Games GmbH Auhofstrasse 92/6A A-1130 Vienna Tel +43 676 9436448 Contact person: Michael Hartinger	www.bloodirony.com	office@bloodirony.com
Cliffhanger Productions Games GmbH	2006	7	Cliffhanger Productions Games GmbH is a service provider in the entertainment software field, specialising in the development and production of complex graphical PC and console games. The game developers are known for combining innovative gameplay concepts with established genres and brands. The Cliffhanger team has already gained experience with several leading international developers such as Rockstar Games and Ubisoft.	The game Aerena is one of the few games that has been published by South Korean telecommunications companies and in south-east Asia. It is also about to be launched in China and other countries. Another of their games is Shadowrun Chronicles: Boston Lockdown .	Cliffhanger Productions Games GmbH Mariahilfer Straße 103/1/25 A-1060 Vienna Tel +43 660 6113048 Contact person: Michael Paeck	www.cliffhanger-productions.com	michael@cliffhanger-productions.com
doorfortyfour OG	2013	2	Independent game studio doorfortyfour develops games for PC and mobile, mobile apps and assets, and also offers graphics services.	They have developed the following products: MarZ Rising (game), Flavourit (app), TileWorldCreator (asset), Particle ProfX (asset).	doorfortyfour OG Bäuerlegasse 29 / 33+34 A-1200 Vienna Tel +43 699 18027720 Contact person: Marc Egli	www.doorfortyfour.com	mail@doorfortyfour.com
Greentube Internet Entertainment Solutions GmbH	1998	136	Greentube Internet Entertainment Solutions GmbH is a leading developer and provider of casino gaming solutions for the internet and mobile devices and is part of the Novomatic group.	They focus on casino games such as slots, table games, bingo, or video poker . Also offer mobile games , the Novosdk toolkit and the online marketing platform Greentube Pro .	Greentube Internet Entertainment Solutions GmbH Wiedner Hauptstrasse 94 A-1050 Vienna Tel +43 1 90171 Contact person: Thomas J. Graf	www.greentube.com	office@greentube.com
Interactive Media Solutions GmbH	2007	1	Interactive Media Solutions specialises in the development of innovative interactive products and applications, with a focus on information, entertainment, and advertising. Their products imFun, imTable, imWall Multitouch, and imWall Vertical Vision offer interactive floor projections, multitouch tables, interactive walls, and vertical ballet.	They developed an interactive window display for Erste Bank , and provided interactive projections and multitouch tables featuring special football content for the UEFA Champions League final at London's Wembley Stadium. They also design interactive shows with gesture-controlled presentations for company trade fair appearances.	Interactive Media Solutions GmbH Liebhartsalstraße 22/B2/8 A-1160 Vienna Tel +43 1 2342626618 Contact person: Daniel Dobler	www.im-solutions.com	dobler@im-solutions.com
Mi'pu'mi Games GmbH	2009	25	Mi'pu'mi is an independent game development company, run by developers with over 10 years of experience. They have experience working on large productions and new technologies.	Among other things, they developed the Mind Gamers Challenge for Red Bull ; they are working on the games Hitman and The Lion's Song .	Mi'pu'mi Games GmbH Hollandstraße 10/47 A-1020 Vienna Tel +43 1 5047517 Contact person: Gregor Eigner	www.mipumi.com	info@mipumi.com

Company	Since	Staff	Description	References	Contact	Website	E-Mail
ovos media GmbH	2004	20	ovos' main focus is on developing learning games, although they also develop apps without a learning game approach. Right from the start in 2004, ovos has been convinced that people pick up new content best when they have fun doing so. All its projects are developed around this belief. With applications by ovos, users can learn about any topic that the client wishes in an entertaining and playful way.	Winner of the Content Award in 2013, as well as of several international awards for their learning game Ludwig . Mobile games for the Austrian Federal Ministry of Agriculture . Augmented reality app for aspersn Vienna's Urban Lakeside and Volkswagen , as well as apps for post.at , OMV , Goethe Institut , Öbf , OeNB , T-Mobile , REWE , and more.	ovos media gmbh Schottenfeldgasse 60/36-38 A-1070 Vienna Tel +43 1 89033890 Contact person: Jörg Hofstätter	www.ovos.at	office@ovos.at
SimyLife Gamification GmbH	2016	3	Manufacturer of the mobile game controller SimyBall and creator of educational gaming apps aimed at reducing stress. To achieve this, vital parameters captured on the buttons (e.g. pulse, skin conductance, and skin temperature) are incorporated into a fascinating gaming experience. The company also offers corporate training and seminars with a stress management seminar it has developed.	Using the SimyBall mobile game controller and educational gaming apps based on proven stress prevention training concepts, you can control games e.g. on the "Nintendo Wii" through movement interactions. Thanks to the special gameplay, a targeted training programme is covertly completed and an integrated virtual coach gives personal feedback on the player's wellbeing.	SimyLife Gamification GmbH Kirchberggasse 24/4 A-1070 Vienna Tel +43 650 6338854 Contact person: Marcel Aberle	www.simyball.com	office@simy.life
skilled Events and New Media GmbH	2006	7	skilled Events and New Media is mainly involved with services and activities in the field of interactive entertainment. In addition to programming web applications such as Flash games, CMS-based homepages, or web-based infotainment applications, they are also involved in app development.	Developed the "Pfitschi Gogerln" (table football) game for Wien Energie and SK Rapid , and the Wien Energie Fernwärme Game (district heating game), to name two examples. They developed an Android app for Telering , and apps for Samsung's mobile operating system "bada" for Ö3 , Krone , and ÖAMTC .	skilled Events and New Media GmbH Olympiaplatz 2, Top 1 A-1020 Vienna Tel +43 1 2640053 Contact person: Stefan Baloh	www.skill3d.at	office@skill3d.at
SPROING Interactive Media GmbH	2001		Sproing is Austria's leading computer and video games developer and, since 2014, also a game publisher. As one of a small number of independent studios, Sproing focuses on the development of multiplatform games, with more than 60 games created since 2001 on all kinds of platforms. Building on this experience, their journey to become one of the most significant players in free-to-play games began in 2010.	Current games: Nonstop Chuck Norris (iOS, Android), Quarantine (Steam), Asterix & Friends (iOS, Android, browser), Skyrama (browser), Panzer Tactics HD (PC, iOS)	SPROING Interactive Media GmbH Fernkorngasse 10 A-1010 Vienna Tel +43 1 6043028 Contact persons: Johanna Schober and Harald Riegler	www.sproing.com	office@sproing.com
VIENOM OG	2011		As an IT services provider, Vienom develops numerous products, from mobile applications, databases and database visualisations to guides for museums and games design. In the games industry, Vienom designs, implements, and publishes mostly puzzle and brain games for all current platforms.	Products developed for e.g. the Kunsthistorisches Museum Vienna and the Austrian Economic Chambers, Vienna Chamber of Labour , and the Institute for Advanced Studies Vienna (IHS) .	VIENOM OG Margaretenstraße 106/1 A-1050 Vienna Tel +43 699 11956914 Contact person: Sebastian Resl	www.vienom.com	office@vienom.com

Company	Since	Staff	Description	References	Contact	Website	E-Mail
Networks, Associations & Academic Institutions in the Games Industry							
Entertainment Computing Group (University of Vienna)	2011		The research group focuses on basic and applied research in the areas of computer games and gaming technologies, process gamification or serious games (principles and applications), in real-world scenarios. In this capacity the group has been involved in numerous third party funded projects, together with commercial or industrial partners. The research group works highly interdisciplinary, often involving experts from other scientific areas, examples here are psychology, well care, media science, medicine, arts, german studies, sociology, and more. Together with colleagues from clinical psychology they have started a virtual reality lab as early as 2012, and researched various effects beneficial for cognitive behavior therapy.	Past projects include, e.g. the EU-project Preventive Care Infrastructure based on Ubiquitous Sensing (PRECIOUS) , a project about fostering healthy living behaviours, or the FFG project Integrating Entertainment and Reaction Assessment into Child Cancer Therapy (INTERACCT) , a medical app-based diary for children after a stem cell transplantation, featuring a gaming world, encouraging stories, a creature lab, and more. In other projects they designed gamification elements for web pages, or algorithms for condensing large point clouds to be used in VR scenes.	University of Vienna Faculty of Computer Science Entertainment Computing Group Währinger Straße 29 A-1090 Vienna Tel +43 1 427778701 Contact person: Helmut Hlavacs	https://cs.univie.ac.at/ec/research/showcases/	
UAS Technikum Wien	1994		The Game Engineering and Simulation Technology Masters programme equips students with suitably comprehensive technical, economical, and legal expertise in the field of computer and video game development. Their studies thereby prepare them equally well for the creative fields of game development and game design, the more economically-oriented game producing or the thrilling field of computer simulation and visualisations. The programme provides a balanced combination of industrial development work and science, which can also form a foundation for working in research.	Current projects for 2017 are Bubblegum Base , a 2D multiplayer real-time strategy game for up to 4 players; Drone Racer , a multiplayer racing game, where the player steers drones past obstacles; Teal , a turn-based multiplayer strategy game with simultaneous twists.	UAS Technikum Wien Höchstädtplatz 6 A-1200 Vienna Tel +43 1 333 40 77-0 Contact person: Alexander Hofmann	https://www.technikum-wien.at/studium/master/game_engineering_und_simulation/	alexander.hofmann@technikum-wien.at
Games Austria	2013		Games Austria is an initiative to strengthen the games industry in Austria. The non-profit association aims to promote the development of games and their developers, focussing primarily but not exclusively on digital games. In more detail, its objectives fall into the categories of: promoting exchange and communication within the developer community, youth development and further education, promoting diversity within the developer community, national and international networking, critical analysis of digital games, and the medium of games in general.	The platform is the organiser of the Central European Games Conference , among other things.	Games Austria Association for promotion of game development Herzgassee 2A/12 A-1100 Vienna	http://gamesaustria.com	office@gamesaustria.com
IG Computergrafik	2005		The Computer Graphics Association – is an independent association representing companies, sole traders, institutions, and organisations within the fields of animation, CGI films and computer games. It is an open and independent association which creates a single platform for the animation, CGI, and computer gaming industries, as well as being a contact partner and a voice for politics, media, and those interested in the industry. They provide contact with educational establishments (unis, technical colleges, etc.) and track the growth and structuring of the computer graphics industry.	Their work includes image improvement in target groups and in public, building communications and knowledge networks inside & outside the industry, connecting the computer graphics industry with relevant "convergence industries", interlinking companies to promote business relations, transferring expertise, and resolving questions and problems relevant to the industry (usage rights, subsidies, etc.).	TU Wien Association for promotion of Austrian animation, CGI film and computer games industries c/o Institute of Computer Graphics and Algorithms Favoritenstraße 9 / 186 A-1040 Vienna Tel +43 664 2125332 Contact person: Max Höflerer	www.igcomputergrafik.at	gremium@igcomputergrafik.at
SAE Institute Vienna	1987	35	Over 40 years ago, the SAE Institute was founded in Sydney, Australia with the vision of conveying technical understanding to students and thereby giving them an immediate and successful start in the creative and media industries. Today, the SAE Institute network comprises 28 countries across 6 continents, with over 50 institutions. The SAE curriculum was carefully created in consultation with leading practitioners in the industry in order to meet the needs of an international creative media sector. Close contact is maintained with the media industry all over the world. At the same time, the industry-oriented training allows students to enter the job market and work on professional productions straight away.	In addition to the Diploma and Bachelor study programmes (Bachelor of Arts & Bachelor of Science), students can also join the Masters study programme (MA & MSc). These are offered in conjunction with the renowned Middlesex University in London .	SAE Gesellschaft für Ausbildung von Tontechnikern Ges.m.b.H Linke Wienzelle 130A A-1060 Vienna Tel +43 1 961 0303	www.sae.edu	bildungsberatung@sae.edu
SUBOTRON	2004		SUBOTRON is the meeting point for the "digital games" theme in Vienna's MuseumsQuartier and organises lectures, workshops, social meetings, and exhibitions. With the "academy" event series, the eponymous association has established itself as an Austrian centre of excellence in the game studies arena. "Pro games" promotes practical, creative-entrepreneurial know-how relating to company founding, product development, future markets, financing models, sales and marketing strategies, training opportunities, interfaces with other industries, and internal networking within the gaming industry.	As a long-standing independent representative of interests on the games scene in Austria, SUBOTRON provides an important platform for knowledge transfer and networking to both those within the creative industries and others with a general interest. Here, digital games are discussed in terms of science, art, pedagogy, and socio-politics and made easily accessible to a wide audience.	SUBOTRON Association for the Promotion of Electronic Games Culture MuseumsQuartier / Q21 Museumsplatz 1 A-1070 Vienna Contact person: Jogi Neufeld	http://subotron.com	office@subotron.com

Company	Since	Staff	Description	References	Contact	Website	E-Mail
Film, Animation & Camera Systems							
arx anima animation studio GmbH	2014	28	The animation studio specialises in film, VFX, TV, advertising, and games.	Work by arx anima has been displayed in cinemas, on national and international TV, at festivals, on the Walt Disney Interactive channel, at the London Royal Opera House, and at the 2012 Olympic Games in London. arx anima counts Walt Disney and gaming giant Outfit7 among its clients, as well as a long list of advertising, VFX, and games clients.	arx anima animation studio Wehrgasse 9/2 A-1050 Vienna Tel +43 1 9437216 Contact person: Christoph Staber	www.arxanima.com	mail@arxanima.com
Dynamic Perspective GmbH	2011	7	Dynamic Perspective deals with the development of unmanned aerial vehicles (UAVs) with image-stabilising camera components for the civilian market (TV/film/surveying). Branches in the United Kingdom and the USA.	Their camera systems are particularly used for aerial filming in film and television. Their product DynaX5 is a lightweight 5-axes gyro-stabilised camera gimbal. Their DP Copter is the first Class I UAV to be officially approved by Austria's aviation authority "Austro Control" for commercial film & TV productions.	Dynamic Perspective GmbH Wehlstrasse 29/Stiege 1/Hof Top 1 A-1020 Vienna Tel +43 1 2810028 Contact person: Peter von Borcke-Morawitz	www.dynamicperspective.com	office@dynamicperspective.com
emotion3D GmbH	2011	5	EMOTION3D provides clients with analysis and automated precise comprehension of 3D surroundings (e.g. 3D environment analysis in vehicles). Based on state of the art 3D depth sensors, image processing, and machine learning, EMOTION3D has developed customised solutions which prepare 3D environment data and supply them at a level of abstraction which allows the client easy operation of their applications and products.	emotion3D has developed applications for Intel, BMW, OVT, Vienna Technical Museum , etc.	emotion3D GmbH Gartengasse 21/3 A-1050 Vienna Tel +43 1 2933263 Contact person: Florian Seitner	www.emotion3d.tv	office@emotion3d.tv
Friendly Fire Communications GmbH	2004	12	Friendly Fire's conceptual approach combines 3D animation, character design, VFX, motion graphics, and new technologies (VR, SR) to form creatively sophisticated visual worlds.	Commercial clients: national and international advertising agencies and film productions. In the arts: Bavarian State Opera, Biennale, Linzer Klangwolke .	Friendly Fire Communications GmbH Margaretenstrasse 41-43 A-1040 Vienna Tel +43 0 676 844036100 Contact person: Klaus Fekesa	www.friendlyfire.at	frontdesk@friendlyfire.at
mspp / Multimedia Support Armagan & Walter Zeller OG	2004		mspp is a creative agency and digital media producer. The company's portfolio includes 3-D visualisation, rendering, post production, web design, user interface design, and multimedia design, including production for film, advertising, and digital media and DVD development.	In the field of animation and smart video, their clients include Voith Siemens, Inovatools, Bucher emhart glass, and Beko .	Multimedia Support Armagan & Walter Zeller OG Stutterheimstraße 16-18/2.Stiege/ Büro 3.01 A-1150 Vienna Tel +43 1 789061271 Contact person: Walter Zeller	www.mspp.com	office@mspp.com
NINC! - webdesign:video:3D OG	2009		As a creative office and studio for film and design, NINC! is an imaginative melting pot of filmmakers, photographers, architects, and "creative nerds". The creative studio, located in Vienna's seventh district, emphasises the open working style of the agency. In addition to commercial activity, the team are constantly bringing non-profit productions and their own projects to life.	NINC! develops applications for ÖBB, paysafecard, WOMAN Magazine, ARE - Austrian Real Estate, ZAMG, Citizen-Science.at, Global2000, MUSA Vienna, fashiontv, medianet, TedX , etc.	NINC! - webdesign:video:3D OG Lindengasse 36 A-1070 Vienna Tel +43 1 94219391 Contact person: Philipp Hummer	www.ninc.at	office@ninc.at

Company	Since	Staff	Description	References	Contact	Website	E-Mail
"QUADRATMETER" HOLLENSTEIN & RINGER OEG	1996	2	Quadratmeter Hollenstein offers drawn and CG 2D and 3D animations, compositing, title design, and storyboards.	Their customers include Servus TV , film productions, and print media (Wiener Zeitung).	QUADRATMETER OEG Waaggasse 1 A-1040 Vienna Tel +43 664 3032373 Contact person: Dietmar Hollenstein	www.mhoch2.com	office@mhoch2.com
Robimo	2015	4	The Robimo (Robots in Motion) GmbH is a spinoff from the Entertainment Computing research group from the University of Vienna. Robimo thus does not focus on one single product, but rather combines many different topics they have researched on in the past. This includes the creation of their own multicopters (drones), which they use for film projects, data acquisition, or 3D reconstruction projects. All multicopters have licences from the Austrian flight administration. Further Robimo also creates Virtual Reality showcases and applications, computer games and apps, or web projects with a strong focus on gamification. Robimo has also developed its own image classification technology for mobile devices.	Previous projects involve the 3D reconstruction of an Austrian fixed-rope climbing route in a mountain area by using drone images, filtering large point clouds coming from laser scanners to be used in realtime VR applications, a VR experience including seven scenes for teaching children how to behave on busy streets, gamified web projects for study programs at universities, and more.	Robimo GmbH Clusiusgasse 1/19 A-1090 Vienna Tel +43 699 12257526 Contact person: Helmut Hlavacs	www.robimo.at	office@robimo.at
Sign Time GmbH	2008	15	The SiMAX product, developed in-house, is a system that translates text into sign language semi-automatically. The output is an animated video (cartoon). It is primarily used to translate text from websites into sign language (barrier-free communication). However, films for TV and web, loudspeaker announcements, user instructions, and other consumer information could also be translated into sign language.	Sign Time counts the City of Vienna , Deutsche Bahn , Landschaftsverband Westfalen Lippe , various international museums, and numerous private companies – both domestic and abroad – among their clients.	Sign Time GmbH Schottenring 33 A-1010 Vienna Tel +43 660 1001012 Contact person: Georg Tschare	http://signtime.media	office@signtime.media
SPECTRUM Trickfilm GmbH	1996	2	This company's range of services spans 3D visualisation and rendering: DVD productions; computer animation: VFX, cartoons, comics, and caricatures; cartoon films and animation: animation, cartoon films, modelling, CGI, 3D, and post-production.	Their clients include ORF , ATV+ , PulsTV , and more.	SPECTRUM Trickfilm GmbH Missindorfstraße 29/26 A-1140 Vienna Tel +43 1 9670145 Contact person: Alexander Noelle	www.spectrumtrickfilm.com	office@spectrumtrickfilm.com
STUDIO Q KG (Cliptease)	2012		They have implemented numerous projects under their "Cliptease" brand. Cliptease is a production company and design studio for motion design and animation.	Portfolio includes ORF , ATV , PULS4 , Red Bull TV , Filmhaus , Frames , Manner , Eucerin , Generali , Nivea , Raiffeisen , etc.	STUDIO Q Rotenturmstraße 14/DG/30 1010 Vienna Tel +43 1 3645860 Contact person: Michael Svec	http://www.studioq.at/	office@studioq.at
ZONE Media GmbH	2008	16	For over 20 years, ZONE has been providing conceptual design, production, and distribution of moving images. An experienced team provides everything within one company - from consulting through conception, editing and direction, motion design, and production, to distribution. In the past few years, ZONE has won numerous awards for its high-class productions, including the Austrian Slate Award for Corporate Film 2011/2015, the golden Prix Victoria 2012/2014, the Cannes Corporate Media & TV Award 2013/2015, and the ART&TUR – Silver Rooster Award 2012.	In the art and culture sector, they look after buildings such as the Belvedere , the 21er Haus , the MAK – Museum for Applied Arts , the Leopoldmuseum , and the Biennale Venezia . In the economic sector, their clients include OMV , Kapsch , Andritz , BIG – Bundesimmobiliengesellschaft , Erste Bank , Raiffeisen , IKEA , Al , etc.	ZONE Media GmbH Neubaugasse 40 A-1070 Vienna Tel +43 1 5263973 Contact person: Holger Reichert	https://zonemedia.at	office@zonemedia.at

Company	Since	Staff	Description	References	Contact	Website	E-Mail
Smart TV, Streaming Services & Digital Signage							
bitsfabrik GmbH	2014	8	In addition to developing apps for iOS, Android, and Windows 8, apps for smart TVs also play a significant role. The range of offerings is completed with website adaptations for mobile devices and omni-channel solutions. bitsfabrik provides all project elements out of a single company, beginning with conception, through design and development on different platforms, to QA and release management for mobile applications. Throughout the process, their priority is a tailored technical solution focussing on user experience. For digital signage solutions, bitsfabrik draws on expertise from their partner sklera.tv.	References from the smart TV and streaming industry include the SimpliTV mobile app and the Flimmit on demand streaming app. From the HbbTV industry (standard among various smart TV platforms, merging television and online content), the PULS 4 HbbTV app.	bitsfabrik GmbH Schönbrunner Schloßstrasse 5/11 A-1120 Vienna Tel +43 664 5108786 Contact person: Dietmar Pils	www.bitsfabrik.com	office@bitsfabrik.com
LINEAPP GmbH	2014	4	The patented and award-winning technology from LINEAPP facilitates direct wireless audio transmission between devices – without any internet or server. No additional hardware is required and as such, infrastructure which is already present (devices, WiFi) can be used. The company specialises in the fields of broadcasting, audio streaming, and event communication. Customers can choose between the two products LINEAPP FLUX and LINEAPP CAST. FLUX serves as a substitute for intercom and walkie-talkie functions. CAST is an audio streaming software that can be used on smartphones as an optimal and cost-effective substitute for interpreting facilities, and to support those with hearing difficulties.	Examples of use: Interpreting services for diverse national and international conventions such as 4Gamechanger Festival Vienna . Audio transmission at diverse major events such as the WKO UBIT-Messe in the Vienna Hofburg. Awards: Recipient of the “ Best New Technology Startup 2016 ” award at the Event Technology Awards in London and repeat nominee for the “ Best Conference Technology ” award at the Event Technology Awards in 2017. Other awards: eAward, trend@venture	LINEAPP GmbH Mariahilfer Straße 101/1/21 A-1060 Vienna Tel +43 676 9479434 Contact person: Alexander Kränkl	www.lineapp.pro	sales@lineapp.pro
mquadr.at software engineering & consulting GmbH	2000	30	mquadr.at is the leading European tech company for digital self-care & customer experience solutions in the telecommunications sector. Their core competencies are user-friendly self-service tools for automating customer support processes and consulting on the installation of E-care systems. All of their software is developed in-house at their headquarters in Vienna.	Their clients include upc cablecom (quick and easy set-up of internet, digital TV, and telephone services), A1 Telekom Austria (service centre, bandwidth optimiser, internet software, WiFi assistant), Deutsche Telekom (internet software package, quick start DVD), Finecom Telecommunications AG (WiFi optimiser), Hutchison Drei Austria (3 internet manager), Raiffeisen Informatik (connection manager), Swisscom , Telefónica Germany , etc.	mquadr.at software engineering & consulting GmbH Albertsgasse 35/15 A-1080 Vienna Tel +43 1 5054050 Contact person: Tanja Klärner	www.mquadr.at	office@mquadr.at
Nous Wissensmanagement GmbH	2006	22	The multimedia agency Nous, with subsidiaries in the USA and Denmark, originally made its mark through exhibition guides and apps for art and culture institutions, but has since gone on to also establish itself in the streaming industry.	Portfolio in the app and streaming industry includes the Ö1 App , ORF TVThek , Puls 4 Streaming App , NDR Radio App , and the Vienna State Opera . Without being bound by time and location, opera fans can access performances by the Vienna State Opera through streaming. In addition to the new brand, a comprehensive live and on-demand portal was created, which pushes the limits of technical possibilities: The platform offers a unique live-streaming experience in Full-HD or in 4K Ultra-HD quality with second-screen apps for subtitles or musical scores for reading along. Users are offered two live streams: a long shot or a director's version, along with an extensive on-demand archive. In addition, opera, ballets, and concerts are presented in top quality on smart TVs and mobile devices for the first time.	NOUS Wissensmanagement GmbH Ullmannstraße 16 A-1150 Vienna Tel +43 1 2365891 Contact person: Wolfgang Schreiner	www.nousdigital.net	info@nousdigital.net
Österreichische Rundfunksender GmbH & Co KG (ORS)	2004	108	The ORS was formed in early 2005 from the ORF's broadcasting technology. The ORF owns 60 percent of it and Medieur Sendeanlagen GmbH of the Raiffeisen group 40 percent. In the past few years, the ORS group has developed the network operator into a “digital content gateway” and is a reliable partner guaranteeing perfect “content transmission” via cable, IP, satellite, and antenna.	simpli services GmbH & Co KG, a subsidiary company of the ORS, was founded in 2012 for the distribution of the TV product simpliTV . In 2015, ORS comm participated in the video-on-demand platform Flimmit .	Österreichische Rundfunksender GmbH & Co KG Würzburggasse 30 A-1196 Vienna Tel +43 1 8704012680 Contact person: Sandra Bacher	www.ors.at	office@ors.at
R.I.C.S. EDV-GmbH (Research Institute for Computer Science)	1998	4	R.I.C.S. has years of experience in developing tailored and efficient web and security solutions. Their services include a digital signage solution, with which clients can easily and cost-effectively manage their data, regardless of location. Their partners are Microsoft, Kaspersky, and sklera.	Portfolio includes a HbbTV-ready hotel info channel for Avita Resort and a digital signage info channel for in4me .	R.I.C.S. EDV-GmbH Schönbrunner Schloßstraße 5, Top2 A-1120 Vienna Tel +43 1 5353953 Contact person: Manfred Wöhrl	www.rics.at	office@rics.at

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sklera KG	2015		sklera offers a cloud solution for creating presentations and transmitting them onto any screen. With sklera's digital signage software, any computer or TV device can be turned into a digital poster display. The intuitive software allows the user to create and manage autoplaying presentations with images, videos, and websites, and transmit them onto any screen of their choosing.		sklera KG Schönbrunner Schloßstraße 5/2 A-1120 Vienna Contact person: Thomas Strauß	www.sklera.at	info@sklera.at
Snapscreen Application GmbH	2016		Snapscreen recognises apps on your smartphone and links them directly with a TV device to support user engagement. The technology by Snapscreen recognises the TV programme within one second and provides the viewer with information and functionalities about the current programme. At the same time, the viewer can network with other viewers. Snapscreen works with live TV, DVDs, TV archives, Netflix, etc.	Examples of use include apps for sport-betting, live sport screening, and TV apps.	Snapscreen Application GmbH Mariahilfer Straße 93/24 A-1060 Vienna Contact person: Thomas Willomitzer	www.snapscreen.com	wilo@snapscreen.com
THISPLAY	2013	1	Thisplay offers innovative solutions for interactive presentation systems. Their portfolio ranges from interactive mirrors and communicative display windows to multimedia exhibition designs.	Their customers include Voest Alpine , KTM , and the Zoom Children's Museum .	THISPLAY e.U. Grosse Mohrengasse 25/2-5 A-1020 Vienna Tel +43 1 9691643 Contact person: Irina Ulrike Andel	www.this-play.com	contact@this-play.com
Digital Publishing							
23°	2016		23° brings demography, ecology, and policy indicators in a database together onto a single platform and prepares the information infographically so that it can be immediately reused - in-house or in publications. Through their services, 23° doesn't just make time-consuming indicator research easier: with 23°, anyone can optimise workflows for handling data, from collecting business-relevant information to publishing individual interactive reports. The multi-disciplinary team at 23° combines skills from the fields of user experience, graphics, software development, behavioural science, communication, and economics.	In 2016, 23° was awarded the Content Award in the "Upcoming" category and the Special Award from Infoscreen , and also won an award in the "Ideas" category at the open4data Challenge . Furthermore, after successful participation at the start of the IP Hackathon, 23° is now a part of the INITS Start-Up Incubation Programme. 23° works with Reporters Without Borders , the City of Vienna , and the Forum for Journalism and Media in Vienna (fjum), among others.	23 degrees OG Kettenbrückengasse 23/2/1 A-1050 Vienna Tel +43 699 17275937 Contact person: Johannes Jäschke	www.23degrees.io	office@23degrees.io
Alice Interactive GmbH	2010	5	With its "pagestrip" software, Alice Interactive offers a digital publishing solution which makes it easy and efficient to structure content and publish it online. No programming knowledge is needed to create a final product which is HTML5, automatically responsive, and optimally accessible on all devices. Specific applications include digital magazines, corporate presentations, business reports, and much more.	Their customers include Kurier , voestalpine , Belvedere , Silhouette , and Egger & Lerch .	ALICE INTERACTIVE GMBH Löwengasse 18/13c A-1030 Vienna Contact person: Georg Kaindl	http://pagestrip.com	frontdesk@pagestrip.com
evolaris	2000	30	The company brings print media onto digital devices. Contents are made available to consumers quickly and cost-efficiently. evolaris can take over the entire production or provide a web-based service for creating digital publications.	Partners from the digital publishing industry include Kleine Zeitung and the Styria Media Group .	evolaris Spittelberggasse 3 II/6 A-1070 Vienna Tel +43 316351111 Contact person: Christian Kittl	www.evolaris.net	office@evolaris.net

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QIDENUS TECHNOLOGIES GMBH	2005	29	Qidenus Technologies is a Viennese company that specialises in developing and producing book-scanning robots. During in-house development, great care is taken to ensure that the books are not damaged when scanned.	Austrian National Library, Austrian State Archives, Hessian State Archives Marburg, Diocesan Archives of Vienna, Archive of the Catholic Military Bishop for the German Bundeswehr, Archive of the Salzburg Archdiocese, ICARUS - International Centre for Archival Research, Diocese of St. Pölten, Evangelical Church H.B. Vienna, Royal Library of Belgium, Royal Library of Denmark, National Library of Abu Dhabi, National Library of Norway, Library of Alexandria, National Library of Poland, National Library of Azerbaijan and more.	Qidenus Technologies GmbH Modecenterstrasse 22, Office 4, 4. Stock, TOP 401-408 A-1030 Vienna Tel +43 1 2362 433 Contact person: Sofie Qidenus	http://www.qidenus.com	digitise@qidenus.com
section.e new media gmbh	2014	4	section.e and its team are responsible for the New Media unit at the Viennese agency section.d. All aspects of digital and classical communication are handled, from digital publishing, through web design and e-shops, to online videos and the execution of comprehensive online and social media campaigns.	Clients include STRABAG, Airfield, BIPA, Kika Leiner, Josko , etc. Winner of the Best of Corporate Publishing Award 2015, reddot design award, German Brand Award 2016, and many more.	section.d new media gmbh Praterstraße 66, Top 5 A-1020 Vienna Tel +43 1 71324320 Contact person: Peter Treibenreif	http://www.sectione.at	office@sectione.at
STRG.AT GmbH	2008	21	From the original individual software developments, STRG.AT has built a core competency around digital media and the processes of digital transformation. Today, STRG.AT is one of the most significant players in the field of digital media technology and is expanding its activity further into the corporate field. STRG.AT provides concept design and strategies for the digital transformation. The company's products include a framework for digital asset management, semantic web and data-driven publishing.	STRG.AT is responsible for the online versions of the Salzburger Nachrichten, OE24, Kurier, NÖN , and many more. In addition to the usual notable media companies, firms such as the Bank-Austria and the ÖAMTC have also been convinced by their abilities.	STRG.AT GmbH Gumpendorfer Straße 132/9 A-1060 Vienna Tel +43 1 5265629 Contact person: Jürgen Schmidt	www.strg.at	office@strg.at
Tailored Media GmbH	2010	24	Tailored Apps offers tailored mobile solutions from a single provider. Whether your project is an app, web app, mobile website, or hybrid apps, they take care of it from conception to a successful publication. You will not receive isolated solutions from them, but rather an integrated system. The experts at Tailored Apps will look after your project from its conception to successful launch.	Within the digital publishing industry, they implemented the read.it app for the German PVG Presse-Vertriebs-Gesellschaft (press distribution association), where users can subscribe to over 200 magazines. Furthermore, they have developed apps for the Austrian daily newspapers DiePresse and the Kleine Zeitung .	Tailored Media GmbH Heiligenstädterstraße 31 A-1190 Vienna Tel +43 1 8902845 Contact person: Maximilian Nimmervoll	www.tailored-apps.com	office@tailored-apps.com
TREVENTUS Mechatronics GmbH	2006	11	TREVENTUS Mechatronics GmbH was founded as a spin-off from the Technical University Vienna. It deals with the development, production, and marketing of solutions for the mass digitalisation of bound documents (e.g. books, brochures, booklets, etc.). TREVENTUS has now been successfully installed on more than 100 ScanRobot® book scanners worldwide (status: January 2012), making TREVENTUS a market leader in the field of automated book digitalisation.	Their clients include numerous international libraries and archives, such as the Brazilian Institute of Agronomic Research, University of Prince Edward Island (Canada), National Archives of Colombia, National Library of the Czech Republic, Bavarian State Library, National University of Educational Planning & Administration (India), Trinity College Library (Ireland), Meteo Operation Center (Japan) , and many more.	TREVENTUS Mechatronics GmbH Siebenbrunnengasse 17/2 A-1050 Vienna Tel +43 1 8903510 Contact person: Christoph Bauer	www.treventus.com	sales@treventus.com
Wildfire™ Digital Publishing Office (Robert Ladkani)		1	Wildfire™ Digital Publishing specialises in consulting services and the implementation of high-class digital publications, digital magazines, and e-books. Wildfire™ develops individual HTML5 publishing solutions, as well as cross-platform solutions that can be adapted for not only desktop PCs, but also tablets and smartphones.	Their clients include American Express, IKEA, Bank Austria , and the Medizin Populär health magazine.	Wildfire™ Büro Westbahnstraße 28 Stg. 3 /Top 4 A-1070 Vienna Tel +43 1 9674024 Contact person: Robert Ladkani	http://www.wildfire.co.at	office@wildfire.co.at

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Sound & Audio							
information.io gmbh (Tonio)	2015	1	Tonio is a spin-off from radio channel LoungeFM. With its technology, sounds become intelligent. Using an inaudible code interwoven with the audio signal, transmitters such as TV or radio stations, can transmit information. Smartphones and tablets can decode this signal and present it appropriately. This can be used with the Tonio app or an app which is integrated with the Tonio functionality. The Tonio function can also be integrated into other systems. These include websites, tickets, vouchers, images, subtitles, music covers, video streams, e-books, Facebook status updates, quiz questions, apps, or competitions.	At present, Tonio is used by radio broadcasters radioeins (Berlin), by Kronehit , and by LoungeFM .	information.io gmbh Gonzagagasse 19/14 A-1010 Vienna Tel +43 676 3728844 Contact person: Florian Novak	www.tonio.com	office@tonio.com
LOCOSONIC GmbH	2015	2	Locosonic links sounds, music, and stories with a defined location (location based audio information). They create soundscapes, which can be used by mobile device users. Their mission is to expand people's perception of their immediate surroundings using soundscapes and through this, to facilitate an emotionally moving and inspiring new experience of the environment.	They provide e.g. soundscapes in Vienna for the inner city and the Ringstraße.	LOCOSONIC GmbH Schwindgasse 7/6 A-1040 Vienna Tel +43 1 962325540771 Contact person: Wernfried Lackner	https://locosonic.com	wernfried@locosonic.com
MIKME GmbH	2014	2	Mikme GmbH develops simple, flexible, and innovative overall solutions in the audio field. Its first products are the Mikme Microphone (cordless microphone and audio recorder) and the Mikme Audio App, a recording application. The Mikme is a portable audio recorder which can record studio-quality sound. The microphone works alone, via USB, or wirelessly.	Awarded best Austrian Startup 2015 by the Austrian Federal Economic Chamber, winner of the Futurezone Awards 2015 in the Audio category, winner of the Mercur Award 2015, IKT/Technical Innovation Award from the Vienna Economic Chamber, TOP 16 Startup Pioneers 2015, TOP 5 Hardware Startup at Tech Open Air Berlin 2015.	MIKME GmbH Spittelauer Lände 12 / Stadtbahnbogen 335 A-1090 Vienna Tel +43 676 3762010 Contact person: Philipp Sonneleitner	www.mikme.com	philipp@mikme.com
phonicscore GmbH	2012		App for advertising and managing digital sheet music. The perfect tool for learning and practising the piano, guitar, violin, trumpet, clarinet, etc.	The app was awarded the Innovation Award by the Vienna Economic Chamber in 2013.	phonicscore GmbH Am Heumarkt 7/39 A-1030 Vienna Tel +43 680 2401291 Contact person: Thomas Buchstätter	www.phonicscore.com	office@phonicscore.at
Play.fm GmbH	2008	1	With Play.fm, users can discover new music from all over the world and connect with DJs and music labels. They can listen to DJ mixes, radio shows, podcasts, and live recordings from clubs and festivals - and all for free. The music on Play.fm is not gathered using algorithms, but rather selected by music fans.	Play.fm was awarded the German App Star Award, Multimedia & e-Business Award, Vienna Leader Web 2.0, and Mercur Innovation Award.	PLAY.FM GmbH Brunnengasse 51/15 A-1160 Vienna Contact person: Georg Hitzenberger	www.play.fm	office@play.fm
Kickinger Soundbranding GmbH (Raven and Finch)	2013	2	Raven and Finch is an Austrian music agency with bases in Vienna and Salzburg. Raven and Finch helps brands to use music and sound to increase their visibility and to improve the usability of their user interfaces through sound.	The company's clients include Adidas , Audi , Bogner , Edelweiss , Porsche Bank , Loop , Swarowski , etc.	Kickinger Soundbranding GmbH Kaiserstraße 78 A-1070 Vienna Tel +43 1 9971967 Contact person: Maximilian Kickinger	www.ravenandfinch.com	office@ravenandfinch.com

Company	Since	Staff	Description	References	Contact	Website	E-Mail
Record Bird GmbH	2015	1	Record Bird provides information on new and upcoming music releases from over 4 million bands and artists of differing genres worldwide. Users can find out before anyone else when their favourite artists release new music, and share news directly with friends.		Record Bird GmbH Marxergasse 24/2/2.02 A-1030 Vienna Tel +43 660 4745938 Contact person: Andreas Mahringer	www.recordbird.com	andreas@recordbird.com
sofasesion GmbH	2014	5	Play live sessions with other musicians very easily via your browser. Create and record new songs together. All that is required to make music with a computer with internet, a valid sofasesion account, and the right browser software - both free - and an instrument or a microphone.	Winner of the Born Global Champion 2016 Award from the Austrian Economic Chambers.	sofasesion GmbH Guglgasse 8/B33 A-1110 Vienna Tel: +43 1 2365153-0 Contact person: Helmut Herglotz	www.sofasesion.com	contact@sofasesion.com
sonostream.tv gmbh	2012		Sonostream is an independent online provider offering the world's best concerts and operas to music fans from all around the globe at the address Sonostream.tv. The company works together with major music organisations - leading concert organisers, opera houses, cultural associations, and established radio and television stations.	Collaboration with the Musikverein Vienna , Theater an der Wien in the Vienna Chamber Opera, the Munich Philharmonic Gasteig , the Grafenegg Festival , the Styriarte Festival , the Malmö Opera , the Arnold Schönberg Center in Vienna , the Austrian Parliament , the International Hans Gabor Belvedere Singing Competition , the Bertelsmann Foundation , the Hilde Zadek Singing Competition , Warner Classics , and the Park Hyatt Vienna , as well as with state radio and television stations such as ORF (Austria), SWR (Germany), and the BBC for the 2015 "Cardiff Singer of the World Competition".	sonostream.tv. gmbh Am Hof 5/15 A-1010 Vienna Tel +43 699 11700739 Contact person: Samantha Farber	https://sonostream.tv	info@sonostream.tv
Soundtrack Unlimited GmbH	2005	3	Soundtrack Unlimited designs music, sound, and 3D audio experiences for films, companies, and media - for commercial purposes and interdisciplinary projects.	Clients of Soundtrack Unlimited include Red Bull Media House , Servus TV , ORF , ARTE , ZDF , and many more.	Soundtrack Unlimited GmbH Florianigasse 31/1 A-1080 Vienna Tel +43 1 4026782 Contact person: Markus Pöchingner	www.soundtrackvienna.at	office@soundtrackvienna.at
StreamUnlimited Engineering GmbH	2005	26	StreamUnlimited develops IoT technology and streaming audio multi-room solutions. Their product scope comprises engineering services, hardware modules, and software solutions (embedded SW and apps). Their products include Streaming Audio, Multiroom Audio, Voice Assistant, Chromecast built-in, WiSA - Wireless Active Speaker Modules, BeagleBone Wi-Fi Audio Cape, Internet of Things (IoT), user interface & apps, StreamConnect - Wireless Connection Wizard, and CDs.	Recipient of the Export Award 2017 from the Austrian Trade Agency. Partnerships with Japanese audio company Onkyo , British company MQA , or THX .	StreamUnlimited Engineering GmbH Gutheil-Schoder-Gasse 10 A-1100 Vienna Tel +43 1 60101 2586 Contact person: Markus Rutz	www.streamunlimited.com	info@streamunlimited.com
Vienna Symphonic Library GmbH	2000	19	Vienna Symphonic Library GmbH is a research-oriented company based in Vienna, specialising in the development of music software and sample libraries. Since the company's founding, over three million samples have been recorded and published - among them, every instrumental sound from the Symphonic Orchestra including the choir, as well as instruments that are primarily used outside the orchestral sphere (e.g. guitars, saxophones, exotic percussion instruments).	Well-known TV and film soundtrack composers such as Danny Elfman, A.R. Rahman, Alan Silvestri, Alexandre Desplat, and many others use the products to produce mock-ups of their orchestral film scores, and even combine the virtual-orchestral sounds with the live recordings of the real orchestra in the final mix. For this purpose, a separate recording studio, the Synchron Stage Vienna, was founded in 2016. Numerous productions have already been developed there for international clients such as Hans Zimmer, Rupert Gregson-Williams, Lorne Balfe, Sven Faulconer, Cheng Yuan, Marius Ruhland, and Ralf Wengenmayr. The list includes video games, cinema and TV films (incl. Inferno , The Crown , Lego Batman , Ghost in the Shell , Genius , Bullyparade - The Film), as well as a range of TV advertisements (incl. for Porsche , Mercedes , Volvo).	Vienna Symphonic Library GmbH Engelshofengasse 2 A-1230 Vienna Tel +43 1 6176343 Contact person: Herbert Tucmandl	www.vsl.co.at	office@vsl.co.at
Xarion Laser Acoustics	2012	10	XARION Laser Acoustics is a provider of unique, laser-based acoustic sensors. The membrane-free optical microphone uses an IP-protected operating principle: It recognises the sound using its ability to change the speed of light.	In 2017, XARION received the Born Global Champion Award from the Austrian Economic Chambers for its services on an international level. Partners include Cern , Frequentis , and Fraunhofer . It most recently acquired Apple as a client.	XARION Laser Acoustics GmbH Ghegastraße 3 A-1030 Vienna Tel +43 1 90760760 Contact person: Balthasar Fischer	www.xarion.com	opticalmicrophones@xarion.com

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