



Cloud Computing

Technology
Report

Vienna,
May 2020

Dear readers,

Vienna is among the top five ICT metropolises in Europe. Some 6,200 ICT enterprises generate sales here of around € 20 billion 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 and comprehensive support for startups, as well as for its staunch focus on sustainability. Vienna also occupies top positions in multiple “Smart City” rankings. Further bolstering the location’s appeal are 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.

With its “Vienna 2030” strategy, the Federal Capital is focusing on those topics in which the city is already particularly successful, and thus wants to provide answers to the major challenges of the coming years – from climate change to digitalization. In these areas, Vienna wants to be among the world leaders in the next ten years and develop particularly powerful innovations (“Wiener Lösungen”). One of Vienna’s top issues is “Wiener Digitalisierung”. Cloud computing is a key focus.

In order to optimise 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 these enterprises with targeted monetary funding and a variety of consulting and service offerings.

This technology report provides an overview of the various trends and developments in the field of cloud computing, as well as current data and facts about Vienna as a location.

Your Vienna Business Agency team



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1.1 Definition of cloud computing

Since 2009, there has existed a precise definition – which is now widely accepted – of the term “cloud” by the American National Institute of Standards and Technology (NIST). The NIST definition distinguishes between three service models and four cloud variations.¹ The three service models are:

○ Infrastructure as a service (IaaS):

With this service approach, the provider grants access to virtualised computer hardware resources such as machines, networks, and storage. Customers run their programs or operating systems on these devices. Examples of IaaS include Amazon Web Services and HP Cloud Services.

○ Platform as a service (PaaS):

PaaS is intended for the development of applications. Service providers grant access to operating systems as well as programming and runtime environments. Developers do not need to purchase their own software and hardware. Examples of PaaS include Microsoft's Windows Azure and the Google App Engine.

○ Software as a service (SaaS):

SaaS gives users access to a variety of software collections and application programs which are mostly rented as part of a subscription, such as Adobe's Creative Cloud or Microsoft's Office 365.

The three models are closely linked. An IaaS provider may have several PaaS service providers as customers, which, in turn, could rent their software to SaaS service providers, which then eventually provide this software to the end customers.

Cloud computing has existed for many years and is by no means a new technology. Already in 1995, the German Society of Mathematics and Data Processing, which now belongs to the Fraunhofer Institutes, presented the Groupware BSCW which enabled people to upload their documents online and share them with others.

Cloud computing combines different technological developments from recent years such as ASP (Application Service Providing), New Enterprise Data Centers and select Web 2.0 technologies. Simply put, applications with cloud computing no longer run on local devices, but rather as applications on the Internet. Companies can forgo their own email server and network storage drives and alternatively use the services of a cloud service provider which allows access to the companies' various data. Basically, cloud customers only need a terminal with access to the Internet (PC, notebook, tablet, smartphone), while the server can be located anywhere in the world. In order to ensure the provision of such cloud services, it is particularly important to have a sufficient data transmission rate which can quickly and reliably transmit the required amount of data.

For the first time, cloud computing grants companies flexibility when making decisions and facilitates easier comparisons of service offerings. Companies can choose between purchase or rent options. In particular, SMEs and start-ups with small financial scopes can consequently draw greater benefits.

¹

Peter Mell and Timothy Grace, The NIST Definition of Cloud Computing, NIST 2011

Regarding the different cloud versions, there are four types to be distinguished:

○ Public clouds:

This variant allows access to abstract IT infrastructures for the general public. The providers rent their IT infrastructure to their customers. Investments in computer and data centre infrastructures are therefore no longer necessary.

○ Private clouds:

In this model, only certain companies or specific groups have access to the cloud environment. Hosting and administration are carried out either internally by the company's own data centres or by third parties.

○ Hybrid clouds:

Hybrid cloud solutions offer access to IT infrastructures from both public clouds and private clouds, depending on the needs and demands of the respective user.

○ Community clouds:

Community clouds provide the same access to abstract IT infrastructures as public clouds, but only for smaller user groups that share the costs. This includes several municipal authorities, universities and companies with similar interests.

1.2 Benefits and risks of cloud providers

Cloud service providers basically target the same group as the classic IT service providers – which comprise the bulk of the Viennese IT sector and its economic strength – namely, companies in other or even similar industries, in which IT must be maintained and serviced. Cloud solutions provide customers with many advantages, but they also bring about new challenges. In particular, SMEs, which represent 99% of domestic companies, can benefit from the flexible cost structures offered by cloud products. These products allow them to rent only those tools and services that they actually need and enable for quick responses to new company requirements.

The need to purchase expensive hardware and software licenses has become increasingly superfluous. Long-term capital commitment and the associated business risks are therefore no longer necessary. With the rental model, customers always have the latest version of the software, which is significant when it comes to security matters. Through a clearly defined Service Level Agreement and the transfer of the associated risk, the main responsibility for the smooth operation of a solution no longer rests with the internal IT department, but rather with the provider.

The use of cloud solutions involves certain risks and/or challenges. For corporate users, a fast and stable broadband connection is essential for reliable use. In addition, in order to be able to continue to meet the rapidly increasing demand for cloud solutions in the future, it is essential to push ahead

with the expansion and further development of the corresponding network infrastructure. One of the biggest challenges cloud solutions present for companies is security. Sensitive questions of access rights and storage locations for data are key criteria to be negotiated with cloud providers.

But the challenges do not only lie on the user's side. By failing to adapt their business models, traditional suppliers could face trouble. The demand for traditional services such as server maintenance will continue to decline and threaten the business models of those companies still specialising in these areas.² A major characteristic of cloud computing is that profits are generated primarily through economies of scale. Therefore, the provider requires a higher number of customers or service subscribers compared to the conventional business of handling customers' IT solutions and services on-site.

A recent survey of providers by the Technopolis Group found that data protection and compliance requirements remain a sizeable challenge for 60% of respondents (and a medium-sized challenge for 22%). This is followed by the topics of standardization of internal processes (53%), tailor-made design of service level agreements (49%), information security (49%) and customer satisfaction. Although the clarification of the cloud definition is still an issue for cloud providers (47%), the reduction of reservations about cloud computing is only a big challenge for 28%.³

²

Technopolis Group, Alfred Radauer and Barbara Good: ICT located in Vienna – qualitative analysis of new topics, April 2012, p 8

³

Statista 2019. de.statista.com/statistik/daten/studie/168556/umfrage/herausforderungen-im-cloud-computing-markt/

1.3 Data protection in the cloud

If company data or critical functions such as applications, platforms and infrastructure are transferred to public or hybrid clouds, then naturally the requirements relating to data protection and IT-security are very high. The following aspects are among the most serious risks:⁴

- **Violation of confidentiality and data integrity:**

A localisation of data for data owners in a public or hybrid cloud is no longer easily possible. Therefore, the protection of the data on the infrastructure, platform and application level cannot be ensured by the usual means.

- **Deletion of data:**

In some cases, data must be deleted due to legal regulations. Because the localisation of the data is difficult, there is a risk of insufficient or incomplete data deletion across all platforms and databases in the cloud.

- **Violation of compliance:**

Since in principle data in a public cloud can be processed in all of the world's countries and within all of their specific jurisdictions, the fulfilment of all the applicable legal requirements is a significant task relating to the use of public cloud services.

- **Violation of data protection laws:**

It is not clear in which countries, on which servers, and with what software the data is stored and processed.

Other risks include insolvency of the cloud provider, that third parties – due to insufficient client separation – gain unauthorized access to data or manipulate it, or that a cloud provider's hardware on which customer's data is stored is seized.

Given the complex risk landscape, the legal framework requirements for public cloud and hybrid cloud services are correspondingly high. The question of the applicable law plays an important role here.⁵ Different legal systems can have very different regulations. Since data processing in cloud computing often takes place trans-border, it is equally important to know which national data protection law is to be applied. In most cases, the contract itself is governed by the laws of the state in which the cloud provider is based.

In 2012, the Vienna Business Agency published the helpful guide "Software as a Service – Correct Conclusion of Contracts".⁶ It discusses the general framework of cloud services, as well as the regulations for the used infrastructure, the content, the implementation and the operation of the services and the regulations concerning the availability of cloud services. Aspects that are largely covered in the guide include data protection, IT security, data backup and deletion.

4

Computerwoche 2015.
www.computerwoche.de/a/ratgeber-it-sicherheit.2363872

5

Tobias Höllwarth (Hg.):
Cloud Migration (2013), S. 68ff

6

"Software as a Service – Verträge richtig abschließen".
www.factline.com/fsDownload/SaaS_Guide_EN_07.pdf?forumid=342&v=1&id=5562745



2. Trends in the cloud computing market

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cloud solutions primarily for email (69%), closely followed by data storage on cloud servers (68%). Less frequently, companies use cloud applications to manage customer data (29%) or buy computing power to run their own software (26%).¹¹

Although trends might suggest that the topic of cloud computing is no longer as dominant as in previous years, and has now become part of everyday life – when looking at the importance of SaaS distribution for global players such as Microsoft and Adobe, the global market still sports impressive growth figures as the following data shows.

2.1 International

Revenue from cloud computing worldwide grew from US\$42.8 billion in 2010 to an incredible US\$196.7 billion in 2018 – an increase of nearly 360%. According to forecasts for the coming years, revenue is set to increase by another 80% to US\$354.6 billion by 2022.⁷

By 2019, the global IaaS market was already worth US\$40.3 billion. On an individual level, average annual spending on IaaS by SMEs in Europe and Central Asia amounted to US\$5,900. In terms of market share held by IaaS vendors, the following developments can be noted: Amazon maintained its lead of approximately 33% from Q2 2017 to Q2 2019, while Microsoft slightly improved its market share from 11% to 16%. IBM remained constant at around 8%.⁸ In comparison, the market share figures for leading companies with SaaS between July 2018 and June 2019 were as follows: Microsoft led the field with 16.1%, followed by Salesforce with 14.4%. IBM and Oracle had respective market shares of 3.9% and 2.7% in the same period.⁹

In the EU, the use of cloud computing has grown in recent years. While just 19% of companies used cloud computing in 2014, this figure rose to 26%¹⁰ by 2018. More than every second large company already uses cloud computing, whereas only every fourth small company does so. Businesses use

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Statista 2019.
[de.statista.com/statistik/daten/studie/195760/umfrage/umsatz-mit-cloud-computing-weltweit/](https://www.statista.com/statistik/daten/studie/195760/umfrage/umsatz-mit-cloud-computing-weltweit/)

8

Statista 2019.
www.statista.com/statistics/477277/cloud-infrastructure-services-market-share/

9

Statista 2019.
[de.statista.com/statistik/daten/studie/817910/umfrage/marktanteile-am-umsatz-mit-software-as-a-service-weltweit/](https://www.statista.com/statistik/daten/studie/817910/umfrage/marktanteile-am-umsatz-mit-software-as-a-service-weltweit/)

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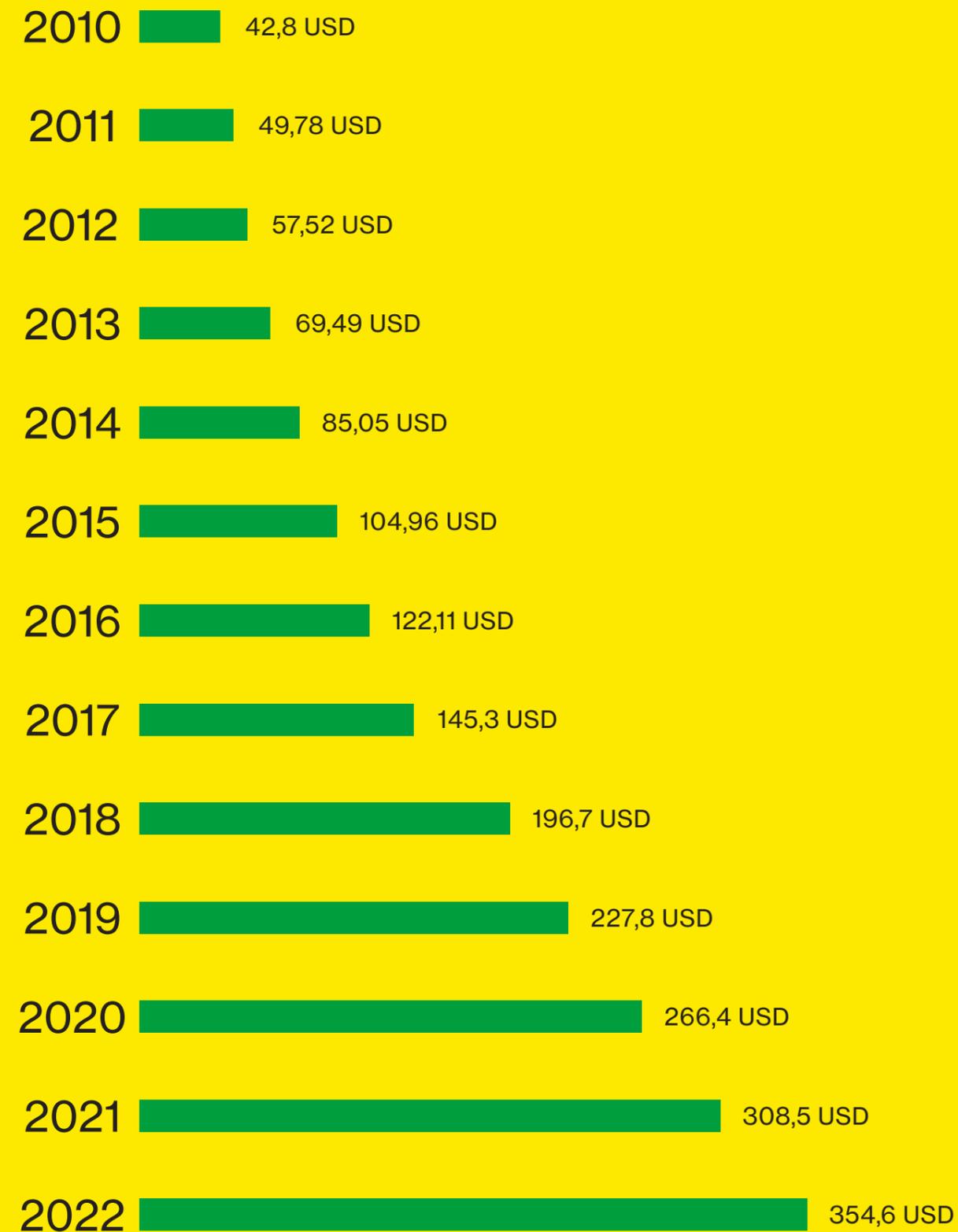
https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_cicce_use&lang=de

11

Eurostat 2018.
ec.europa.eu/eurostat/documents/2995521/9447647/9-13122018-BP-DE.pdf/94ab4a3c-6b58-4db0-af2c-7c839f1d50c6

Revenue with cloud computing worldwide from 2009 to 2018 and forecast until 2022

Revenue in Billion US-Dollars



Source: Statista Research (statista.com)

2.2 National

The demand for cloud services continues to rise in Austria. Between 2014 and 2018, the share of the Austrian population using cloud services rose from 22% to 26% (EU average: 31%). The number of Austrian companies using the cloud almost doubled from 12% to 23% (EU average: 26%) over the same period.^{12,13}

Large companies are especially keen on cloud services. Every second large company makes use of such services whereas only 20.6% of small companies do so. It is remarkable in this regard that large companies in the manufacturing sector use cost-based clouds more frequently (54%) than in the service sector, where only 45.7% do so, while the exact opposite is true for smaller companies where more service providers use cloud services with costs than manufacturing companies.¹⁴

In comparison to the Scandinavian countries, however, Austria still has some catching up to do: In the private use of cloud computing, Denmark took first place at 61% followed closely by Iceland at 60%, while Finland and Sweden led the field in the number of companies using cloud computing with 65% and 57% respectively.^{15,16}

According to Statista, the revenue generated in Austria by cloud computing services already amounted to €655.6 million in 2018. Revenue of €759.4 million is expected for 2021.¹⁷

Over the 2016–2020 period, IDC predicts that spending on cloud services will expand at a compound annual growth rate (CAGR) of 16.1% to total US\$438.50 million in 2020. However, service providers must understand exactly how businesses are transforming in order to be able to offer adequate and efficient cloud services. To facilitate transformation, cloud services need to include an ever-increasing and improving set of industry, branch-specific and functional solutions. Moreover, vendors must be able to offer the best mix of these solutions for each customer's specific needs, as well as a variety of delivery models.¹⁸

12

Eurostat 2018.
<https://ec.europa.eu/eurostat/documents/2995521/9447647/9-13122018-BP-DE.pdf/94ab4a3c-6b58-4db0-af2c-7c839f1d50c6>

13

Eurostat 2018.
ec.europa.eu/eurostat/documents/2995521/9447647/9-13122018-BP-DE.pdf/94ab4a3c-6b58-4db0-af2c-7c839f1d50c6

14

Der Standard 2018.
www.derstandard.at/story/2000089060477/unternehmen-bauen-immer-mehr-auf-kostenpflichtige-cloud-services

15

Eurostat 2018.
ec.europa.eu/eurostat/documents/2995521/9447647/9-13122018-BP-DE.pdf/94ab4a3c-6b58-4db0-af2c-7c839f1d50c6

16

Eurostat 2019.
appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_cicci_use&lang=de

17

Statista 2019.
de.statista.com/prognosen/968191/prognose-zum-umsatz-mit-cloud-services-in-oesterreich

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Austria Cloud Services Market 2016–2020 Forecast and 2015 Vendor Shares (IDC, 2016)

3.1 Framework conditions

The regional economic and political influences are factors not to be underestimated for cloud computing in Vienna. For the most part, IT in Vienna consists of IT service providers whose offerings are significantly affected by cloud technology. Cloud computing occupies a special position here in comparison to other emerging IT trends such as big data or social media, because it concerns most IT companies (or will concern them in the long run) and for the Viennese economy IT offers the greatest opportunities.

In the last few years, technical barriers on both the service provider and customer sides are shrinking thanks to cloud computing solutions, which leave little need for customers to invest in their own IT infrastructure. In general, the experts credit Viennese IT providers with a high level of technical competence and quality. The trust in local providers is significantly high as well.¹⁹

Although many companies now have a cloud strategy, IT service providers still need a clear understanding of which business processes are cloud-ready and which are not. Cloud computing also poses a challenge for traditional IT service providers, who must adapt their offerings to the cloud. Cloud services live primarily from the fact that many customers make use of them. As a result, a service provider must address more customers than with traditional, onsite IT service provision. Revenue increases only slowly with the number of subscribers, but steadily and with higher long-term potential.

Another important aspect for cloud computing is broadband coverage, as the number of mobile devices with Internet connections (smartphones, tablets) is constantly increasing. In addition to 4G technology, which is already well established throughout Austria, Vienna also features ultra-fast fiber optic Internet, which now enables bandwidths of up to 1Gbit/s.²⁰ Viennese provider next layer even offers speeds of up to 100 Gbit/s.²¹

With its recently adopted 5G strategy, Austria is proving that it will continue to invest heavily in the latest broadband technologies and even aims to become one of Europe's leaders in 5G technology. By the end of 2023, it is anticipated that 5G services will be available on all main transport links and by the end of 2025, nationwide use throughout Austria is expected to become reality.

In general, cloud computing is a relevant topic for companies and institutions in the same way that IT topics are. Practically all major players are gathered in Vienna: On the one hand, this applies to the Austrian subsidiaries of large international corporations such as IBM, Microsoft and T-Systems, but also, on the other, to renowned Austrian providers like ITdesign NextLayer, HuemerIT, Bacher Systems and Raiffeisen Informatik, to name but a few. In the spring of 2013, Viennese cloud specialist, SolveDirect, with more than 220 clients and customers around the world, was acquired by the US giant Cisco.

As cloud computing is a topic of great importance for E-Government, and Austria is among the world's leading countries in this area, the Federal Computing Centre – with solutions such as portal.at or data.gv.at – is seen as the biggest IT services centre of the Austrian Federal Administration. The public authorities in Vienna, but also the entire country, are considered as the driving forces behind cloud technology.

Most computer centres for cloud solutions and their safe operation also have their headquarters in Vienna. In particular in Floridsdorf, Vienna's 21st district, a cluster of computer centres has formed which includes companies such as Siemens, IBM, Raiffeisen Informatik and Interxion. This is due to good infrastructure and the availability of reliable electricity, a major component for a computer centre. The computer centres of the Upper Austrian cloud provider Fabasoft moved to Vienna in 2013. The IT service provider ANEXIA, which maintains an office in Germany, also operates a computer centre in Vienna.

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<https://blog.magenta.at/2019/04/05/gigacity-wien/>

21

<https://www.nextlayer.at/>

The high quality of living that Vienna offers should also not be overlooked in this context. In the 2019 rankings published by renowned British magazine "The Economist", Vienna took first place for the second year in a row (in other rankings already much more often) and is thus deemed the most liveable city in the world. In the areas of stability, education and infrastructure, Vienna was even able to achieve a maximum score over cities like Sydney and Vancouver.²²

3.2 Activities of associations & companies

EuroCloud Austria is the association for the Austrian cloud computing industry and represents local cloud providers in the Pan-European EuroCloud network. In turn, the EuroCloud Europe association represents the interests of the European cloud computing industry relating to European policy and assists them in establishing technological partnerships and business relationships at an international level.

EuroCloud Austria and the Vienna Chamber of Commerce have been awarding the "Austrian Cloud Seal of Quality" to Austrian companies since 2018. This is a certificate which verifies that all company data is stored solely on Austrian servers. In order to receive this designation, companies must undergo a strict test procedure. In addition to the storage location, things such as data protection and the companies' technical infrastructure are also relevant in the examination.²³

Noteworthy and annually recurring cloud events in Vienna include the EMC Forum from Dell, the Fabasoft egovday and the IBM Think Summit. The Cloud native computing machine learning Day, during which such topics as the effective use of cloud resources were discussed, celebrated its debut last year. The Austrian Computer Society (ACG) also offers regular topical working groups to promote contact between the scientific community and the provider companies as potential developers of university concepts. The working groups are organized in cooperation with Microsoft Austria and the Austrian Institute of Technology (AIT). UBIT, a group of the Austrian Federal Economic Chamber, represents the interests of the IT industry and regularly hosts a "Club IT" on various topics, including cloud computing.

Together with the City of Vienna, the Vienna Business Agency has been a partner in the FIWARE Foundation²⁴ since 2017. FIWARE²⁵ is a curated framework of open source platform components which can be assembled together and with other third-party platform components to build Smart Solutions faster, easier and cheaper. A simple yet powerful API (FIWARE NGSi) enables the integration of components and provides the basis for the interoperability and replication (portability) of smart solutions. The FIWARE Community is an independent Open Community whose members are committed to materialise the FIWARE mission, that is: to build an open sustainable ecosystem around public, royalty-free and implementation-driven software platform standards that will ease the development of new Smart Applications in multiple sectors. "The FIWARE-based platform smartdata.wien²⁶ is used for Smart City projects in the fields of energy, buildings and mobility. It creates an Open Urban Data Platform for the integration of IoT real-time data in the data lake and for data exchange between public and private partners", says Brigitte Lutz, Data Governance Coordinator of the City of Vienna.

3.3 Education, research & occupational profiles

The range of university studies on cloud computing offered in Austria is still extremely low, with just the University of Applied Sciences Burgenland offering a dedicated study program. Most universities of applied sciences (Hagenberg, Wr. Neustadt, Technikum Wien and St. Pölten) only offer courses which are integrated into other degree programmes with different focuses. That being said, cloud computing has been a relevant research topic for quite some time. In Vienna, the University of Technology and especially the Institute of Software Technology and Interactive Systems have been leaders in research on cloud computing. Furthermore, the Faculty of Computer Science at the University of Vienna also deals with cloud computing.

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Kurier 2019.
kurier.at/chronik/wien/wien-wieder-als-lebenswerteste-stadt-ausgezeichnet/
400595609

23

"Gütesiegel Austrian Cloud – meine Daten bleiben rot-weiß-rot" 2017.
www.wko.at/branchen/information-consulting/unternehmensberatung-buchhaltung-
informationstechnologie/it-dienstleistung/austrian-cloud.html

24

<https://www.fiware.org/foundation/>

25

<https://www.fiware.org/>

26

<https://smartdata.wien/>



Cloud computing at Viennese universities:

- Prof. Schahram Dustdar, TU Wien (Vienna University of Technology): Application-based elasticity
- Dr. Ivona Brandić, TU Wien: Autonomous resource allocation & energy efficiency
- Prof. Edgar Weippl, University of Vienna and Secure Business Austria (SBA): Cloud security
- Prof. A Min Tjoa, TU Wien: Enterprise/business aspects of clouds
- Prof. Gerti Kappel, TU Wien: Cloud modeling
- Prof. Eva Kühn, TU Wien: Dynamic load balancing in clouds
- Prof. Siegfried Benkner, Uni Wien (University of Vienna): Clouds in computational science
- Prof. Erich Schikuta, Uni Wien: Cloud cost models
- Prof. Stefanie Rinderle-Ma, Uni Wien: Cloud process execution

Certain work tasks that were previously carried out by one or more workers could become obsolete due to the use of cloud computing. However, cloud computing is not a total job killer. In fact, the new technology also creates entire new professions which are slowly being shaped and becoming ever-more necessary. Examples include cloud infrastructure designers and data scientists. Both professions combine traditional IT fields with a completely new area.²⁷

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Computerwelt, Top1001, 2013, page 150-152

The benefits that cloud computing brings also wield influence on the software industry's business models and the way in which private and corporate customer solutions relate to them. More and more providers are heading away from traditional licensing models to the cloud-based services, including international companies such as Microsoft and Adobe. One example from Vienna is *haude electronica*, founded in 1996.²⁸ In September 2010, the company published the cloud solution "ProSaldo.net" as an alternative to the standard ProSaldo series programme which requires installation on a computer. With monthly billing, customers can choose between three different plans.

In addition to the evolution of the sales model on the provider side, cloud computing offers many benefits for corporate customers. The following examples of Vienna as a cloud location should demonstrate how wide the scope of cloud services is and the possibilities for domestic providers to succeed internationally:

Fabasoft is an Upper Austrian company with its headquarters in Linz. Its cloud activities, however, occur mainly in Vienna where its computer centres can benefit from proximity to the Vienna Internet eXchange (VIX). VIX is Austria's most important Internet node, operated by the central computing service at the University of Vienna since 1996.

The "Fabasoft Folio Cloud" solution, which was presented in 2010 and has since won multiple awards, is a public cloud which is available as SaaS in 22 languages and can also be used on mobile devices.²⁹ With the project "Radio Blind Power", the company took first place at the 2013 EuroCloud Austria Awards in the category "Best Case Study Commercial Sector".³⁰ The Swiss integration radio "Radio Blind Power" uses Folio Cloud for barrier-free, company-wide collaboration with visually impaired people. For example, blind journalists can quickly write and submit their contributions to the radio

editors on the go. Radio Blind Power has been using this solution, which is also available as a mobile app, since October 2012.

Emasos is a Viennese manufacturer of business software with a focus on ERP (enterprise resource-planning). The company, with its rental software "Emasos IQ", has all the business functions ERP, CRM, BI and DMS integrated and aims to save users the necessity of switching between different interfaces and the need to search for information. According to the company, *Emasos* has invested in development for several decades. *Emasos IQ* was developed from the very beginning for the cloud and all types of terminal devices. It therefore also runs on various mobile devices and is supposed to be used as a rental software from the cloud by 95% of all its customers. If necessary, the software can be hosted in-house.

Amazon Web Services (AWS), will open a site in Vienna in 2020. The new location will help to better serve the strong Austrian demand for AWS solutions. Startups will be networked by AWS with local and international players on the scene.

In June 2015, *e-shelter* opened its first computer centre in Vienna and thus also its first computer centre in Austria.³¹ The computer centre floor space from the first construction phase amounts to approximately 2,800m². The data centre is planned with up to three stages of construction and will have a final overall area of 8,400m². Total development costs are expected to reach €140 million in the final stage.

"An excellent infrastructure is the cornerstone of the ongoing digital transformation. Our computer centre in Vienna is joined together with our data centres in Germany and Switzerland. There is therefore a central Internet and cloud hub not only for Vienna, but also for Central and Eastern Europe", said Rupprecht Rittweger, founder and CEO of *e-shelter*, at the opening.

e-shelter plans, builds and operates high-availability computer centres, whose infrastructure ensures the highest standards of physical security and operational reliability. The company operates a total of around 90,000m² of computer centre space spread over eight locations, of which 60,000m² are located at its headquarters in Frankfurt am Main, Germany – which is Europe's largest single computer centre. *e-shelter* customers include financial services and telecommunications companies as well as IT and cloud service providers. As part of NTT Communications Corporation, *e-shelter* provides access to 140 computer centres worldwide.

Since 1996, The Vienna Internet eXchange (VIX) has been operated by the central computing service of the University of Vienna. It represents a neutral peering-infrastructure for academic networks (NRENs), content providers and Internet service providers (ISPs) and content delivery networks in Austria and Central and Eastern Europe as well as serving as an exchange for the national and international Internet traffic. As a founding member of the Euro-IX association, VIX has always adhered to European best current practices in the development of new technologies and now also offers remote-peering opportunities for participants from different regions who do not wish to operate their routers in Vienna.

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Technopolis Group, Alfred Radauer and Barbara Good: ICT based in Vienna. Qualitative analysis of new topics (April 2012), p 76.

29

Fabasoft.
<https://www.fabasoft.com/de/produkte/fabasoft-folio>

30

EuroCloud Austria 2013.
<https://www.eurocloud.at/news/detail/news/eurocloudaustria-award-2013/>

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www.e-shelter.de/de/ntt

The objective of the Vienna Business Agency is the continuous development of international competitiveness by supporting Vienna-based companies and their 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 to complete their research and development projects with both individual consulting and monetary funding. Depending on requirements, they receive information about sponsorships, financing opportunities, possible development partners, research service providers, or research infrastructure.

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 also 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.

Founders Labs³²: Free intensive training over several weeks to get started.

All funding programs of the Vienna Business Agency can be found here:

<https://viennabusinessagency.at/funding/programs>

With the alphabetical listings³³ on the following pages, we provide you with an overview of selected businesses from Vienna which offer research services in the field of cloud computing.

Companies in the Field of Cloud Computing

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
ABAX INFORMATIONSTECHNIK	ABAX Informationstechnik is one of the leading domestic IT specialists. Its portfolio ranges from physical security to cloud services. In the latter area, they offer data centre automation and backup solutions.	Thurngasse 10 1090 Vienna T +43 050850 office@abax.at www.abax.at
ACSN	The company acsn operates in several IT areas. Besides offering device repairs as an authorised service partner of numerous manufacturers, it also offers personalised cloud services including professional consulting.	Wurmbachstrasse 42/4 1120 Vienna T +43 1 90 81 935 office@acsn.at www.acsngroup.eu
ACP HOLDING AUSTRIA	ACP features a wide range of services within the IT sector. Their cloud portfolio includes the provision of virtual servers and applications, backups and the possibility of a complete operation of their own IT with 24-hour support. Depending on your requirements, you can choose between public clouds, private clouds and hybrid variants.	Wagenseilgasse 3 1120 Vienna T +43 1 89 19 30 info@acp.at www.acp.at
ANEXIA	ANEXIA was founded as a classic Internet service provider and is an international company with offices in cities like Vienna, Munich and New York City. It offers customers solutions in the areas of software development, cloud computing and managed hosting.	Hofmühlgasse 3 1060 Vienna T +43 50556 www.anexia.com/de/en
ANGELSTONE MEDIA	AngelStone Media offers services in several areas. Its portfolio ranges from data management to software development up to website development. In the area of cloud solutions, services are offered from cloud consulting to implementation or migration up to productive support.	Jordangasse 7/4 1010 Vienna T +43 664 42 30 007 office@angelstone-media.com www.angelstone.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
ATOS	Atos is an international IT service provider and offers solutions in the field of public administration. Customers can turn to the company in many matters: from IT harmonisation and administrative governance to security applications and outsourcing. Its cloud services include several cloud variants such as a digital hybrid cloud as well as application transformation and migration services. The company has more than 40 years of experience.	Siemensstrasse 92 1210 Vienna T +43 50618-0 austria.at@atos.net at.atos.net
A1 TELEKOM AUSTRIA	A1 Telekom Austria is Austria's largest telecommunications provider. The company is also operating in cloud computing. With its solution A1 Cloud Connect, local company networks are seamlessly connected with cloud services. With A1 Cloud Connect, customers also have direct access to MS ExpressRoute and can use familiar Microsoft services such as Microsoft Azure or Office 365.	Lassallestrasse 9 1020 Vienna T +43 506640 impresum@a1.at www.a1.net/cloud-computing-plattform
BACHER SYSTEMS	Bacher Systems concentrates on IT security and IT infrastructure and offers comprehensive services from a single source: from consulting and concept development to the implementation of IT solutions and customised operational support. The company also offers its own enterprise cloud platform. Bacher Systems works closely with leading IT manufacturers and always keeps its IT solutions and services up to date.	Clemens-Holzmeister-Strasse 4 1100 Vienna T +43 1 60 12 60 info@bacher.at www.bacher.at
BEC	BEC has many years of experience in the IT sector. In addition to firewall software, its services include backup solutions and cloud services. In the area of cloud services, the company supports its customers holistically: from analysis and planning to the implementation of cloud services.	Mariahilfer Strasse 53 1060 Vienna T +43 1 66 26 523 office@bec.at www.bec.at
BOLEGO IT-SERVICES	The company BOLEGO IT-Services offers a wide range of products. In addition to outsourcing and training services, the company also offers cloud computing services.	Vorgartenstrasse 204/6 1020 Vienna T +43 1 36 86 888 150 office@bolego.at www.bolego.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
CASC	CASC sees itself as a full-service partner. All IT matters can be outsourced to the company. In the area of cloud services, the company offers cloud storage for example. Depending on their requirements, customers can choose between several options.	Seeböckgasse 33/1 1160 Vienna T +43 1 92 40 528 office@casc.at www.casc.at
CISCO AUSTRIA	CISCO, a globally operating company, offers a broad portfolio. In addition to its focus on networks, it also offers several solutions in the cloud sector: From private clouds and hybrid clouds to multicloud software and services.	Handelskai 94–96 (Millennium City) 1200 Vienna T +43 1 24 03 06 000 reception-vienna@cisco.com www.cisco.at
DEISER COMPACT-COMPUTING	Deiser Compact-Computing features an extensive range of IT products. In addition to presentation technology and IT relocation services, the company also offers cloud services. This includes, for example, an in-house file server that enables access to data from any location. At the same time, the data is anonymised by encryption to ensure a high level of security.	Wichtelgasse 20 1160 Vienna T +43 1 36 19 797 office@deiser.cc www.deiser.cc
DEXTRA DATA SOLUTIONS	Dextra Data Solutions offers cloud solutions as well as various IT services. This includes SDE (Secure Data Experience) and VRS (Virtual Server). The company's computer centre is located at Interxion in Vienna, which guarantees a high security level including fire protection.	Franz Josefs Kai 39/32 1010 Vienna T +43 1 36 16 61 655 office@dextra-data.at www.dextra-data.at
DROOM!	The company DROOM! is characterized by a very broad product portfolio in the IT area. In addition to training courses and services in the IT security area, cloud solutions are also offered: From data storage, encryption and transfer through to final inspection – their offer is demand-oriented, secure, flexible and cost-efficient at the same time.	Flötzersteig 141/1 1140 Vienna T +43 681 10 709 212 office@droom.at www.droom.at
EDV-DESIGN INFORMATIONS-TECHNOLOGIE	With its in-house solution "CloudiA", EDV-Design Informationstechnologie features a comprehensive range in the field of cloud computing. In addition to backup solutions, the company also offers the option of leasing computing power and network capacity. EDV-Design emphasises that all data is stored exclusively in its data centre ODC21 in the 21st district of Vienna.	Giefinggasse 6 1210 Vienna T +43 1 29 221 650 office@edv-design.at www.edv-design.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
E-SHELTER	The company e-shelter is one of the leading providers of data centre services in Europe. It enables people to store their IT and network systems in its highly secure data centres. Several cloud solutions are offered to people as well. e-shelter has 10 further locations besides Vienna such as in Amsterdam, London and Frankfurt.	Computerstrasse 4 1100 Vienna T +43 1 66 16 86 800 info@e-shelter.com www.e-shelter.de
FIGULI CONSULTING EDV DIENSTLEISTUNGEN	Figuli Consulting EDV Dienstleistungen offers IT consulting services in the areas of networks, servers and smart homes. Customers are also supported in cloud solution issues.	Rembrandtstrasse 19/2 1020 Vienna T +43 2683 35 089 office@figuli.com www.figuli.com
FH CAMPUS WIEN	Die FH Campus Wien verfügt über ein Kompetenzzentrum IT-Security sowie den berufsbegleitenden Masterstudiengang IT-Security. Außerdem gibt es ein Cyber Security Team, welches sich mit Pentesting, Ethical Hacking, Capture-The-Flag-Wettbewerben und Kryptographie-Challenges beschäftigt.	Favoritenstraße 226 1100 Wien T +43 1 606 68 77-6600 office@fh-campuswien.ac.at www.fh-campuswien.ac.at/de/
GADHOF	Gadhof's portfolio covers several areas in the IT sector, including user training, security solutions and web design. With regard to cloud computing, customers can, for example, use various IT resources and backup solutions.	Alfred-Adler-Strasse 11/2/22 1100 Vienna T +43 676 97 80 033 office@gadhof.com www.gadhof.com
HÖLLERS BÜRO FÜR IT-DIENSTLEISTUNGEN	Höllers Büro für IT-Dienstleistungen is characterized by an extensive range of cloud solutions: Various cloud services such as "Dream Cloud" or public clouds are offered. In addition to hosting, the company also offers housing, which enables people to outsource their own hardware thus helping them to save costs.	Lehnergasse 5 1150 Vienna T +43 1 715 78 70 office@hoellers-buero.at www.hoellers-buero.at
HUEMER DATA CENTER	The Huemer Data Center offers standardised high-security data centre services from Austria. Whether housing, hosting, managed service or on-site operational support: customers determine the degree of cooperation and thus receive an efficient transfer of their applications and systems to the cloud based on their needs.	Leonard-Bernstein-Strasse 10 (Saturn Tower) 1220 Vienna T +43 1 26 33 770 office@huemer-dc.com www.huemer-dc.com

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
HUEMER IT SOLUTION	Huemer iT-Solution supports its customers in building a strong and future-proof IT infrastructure through analysis, planning, consulting and implementation. Thanks to the integrated service portfolio and the close cooperation with well-known manufacturers, server, storage, network and virtualization projects are realized in a time- and cost-efficient manner.	Leonard-Bernstein-Strasse 10 (Saturn Tower) 1220 Vienna T +43 1 26 33 770 office@huemer-it.com www.huemer-it.com
HUTCHISON DREI AUSTRIA	The telecommunications provider Hutchison Drei Austria (often just called "Drei") also offers cloud solutions. With its own solution DreiCloud, customers can store their data securely and flexibly in Austrian data centres and access it at any time. Customers can choose from different alternatives according to their own needs.	Brünner Strasse 52 1210 Vienna T +43 660 30 30 30 www.drei.at
HXS	HXS features a wide range of IT services. In addition to security and support solutions, HXS also offers cloud computing services. In addition to hosting services, file sharing and virtual servers are also part of their cloud portfolio.	Millergasse 3 1060 Vienna T +43 1 34 41 344 office@hxs.at www.hxs.at
IBM AUSTRIA	IBM Austria has a diverse portfolio in the field of cloud computing. It ranges from cloud databases to cloud management and cloud security. Customers can also use services in many other IT areas, such as IT security and data analytics.	Obere Donaustrasse 95 1020 Vienna T +43 1 21 14 50 gsc@at.ibm.com www.ibm.com/ibm/at/de/
INTERXION ÖSTERREICH	Interxion is a leading European provider of cloud data centre services for colocation and operates a total of 45 data centres in 13 European cities. The energy-efficient data centres are built in a standardised design and offer the highest level of security and availability for running business-critical applications. With its Cloud Connect service, the company enables secure and high-performance VLAN interconnections with various cloud solutions, depending on the customer's needs.	Louis-Häflinger-Gasse 10 1210 Vienna T +43 1 29 036 360 vienna.info@interxion.com www.interxion.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
INTRIX	INTRIX offers Uniconta, a 100% cloud-based ERP system. Uniconta is an accounting program that covers all business areas, from financial accounting to project management. In addition, the software is characterised by its modular structure, which allows individual customisation.	Mauerbachstrasse 19/3 1140 Vienna T +43 664 10 17 355 office@intrix.at www.intrix.at
IPAX	IPAX provides various solutions in the field of cloud computing. Customers can choose between hosting options or housing options depending on what is needed. Basic cloud storage is also in their portfolio.	Barowitzkagasse 10/2/2/11 1190 Vienna T +43 1 36 70 030 office@ipax.at www.ipax.at
ITAREX	ITAREX features a broad range of IT solutions. In addition to comprehensive consulting, the company also offers cloud services. This includes, for example, the cloud-based office software MyOffice, which enables work at a high level of security regardless of location. Virtual servers are also available for rental.	Schweglerstrasse 20/5 1150 Vienna T +43 507880 office@itarex.com www.itarex.com
ITDESIGN	ITdesign is an independent service provider on the Austrian IT market. Its primary goal is to provide high quality consulting in order to optimally guarantee the profitability, future security, availability and functionality of the IT landscape. In the field of cloud computing, the company creates and implements cloud and security strategies according to the customer's requirements.	Anton Freunschlag-Gasse 49 1230 Vienna T +43 1 69 933 9907 office@itdesign.at www.itdesign.at
IT-WORLD	The company IT-world provides various services in the IT sector. In the cloud area, for example, they offer outsourcing or data backup. All data is exclusively stored in Austria.	Brunner Strasse 29/6/2 1230 Vienna T +43 720 273 3700 office@it-world.eu www.it-world.eu

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
IXOLIT	IXOLIT offers SaaS. This includes the software IXOPAY as a PCI-certified payment platform for white label customers and enterprise merchants as well as IXOCREATE as a content management framework with which content can be published on web applications.	Mariahilfer Strasse 77-79 1060 Vienna T +43 1 35 30 505 info@ixolit.com www.ixolit.com
KAPPER NETWORK-COMMUNICATIONS	KAPPER NETWORK-COMMUNICATIONS offers services in IT security and data protection as well as cloud services. This includes virtual server solutions, data versioning and backups. Apps also allow mobile access to data at any time.	Alserbachstrasse 11/6 1090 Vienna T +43 5 90800 info@kapper.net www.kapper.net
KAPSCH BUSINESSCOM	Kapsch BusinessCom – a company of the Kapsch Group – is one of the leading ICT service partners in Austria, Central and Eastern Europe with more than 1,200 employees and annual revenues of almost €318 million. Kapsch BusinessCom operates worldwide with its own subsidiaries in Austria and with companies in the Czech Republic, Slovakia, Hungary, Romania and Poland. The company's complete solution portfolio covers both information technology and telecommunications. It offers highly specialised data centres and storage solutions in its own Kapsch cloud.	Wienerbergstrasse 53 1120 Vienna T +43 50 81 10 kbc.office@kapsch.net www.kapschbusiness.com
MEINDL & PARTNER – IT NETWORK MANAGEMENT	Meindl & Partner – IT Network Management is characterised by its holistic IT services which support customers in all relevant phases: from consulting, to implementation and optimisation up to product support. In the field of cloud computing, decentralised server systems in various forms as well as mail servers are offered.	Castellezgasse 31/11 1020 Vienna T +43 664 30 07 662 info@itnetwork-meindl.at www.itnetwork-meindl.at
MICROSOFT AUSTRIA	Microsoft is one of the world's leading manufacturers of software, services and solutions and is divided into several business groups. With Azure, Microsoft offers a growing collection of integrated cloud services for analytics, computing, databases, mobile devices, networks, storage and the Internet.	Am Euro Platz 3 1120 Vienna T +43 1 61 06 40 www.microsoft.com/de-at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
NAGARRO AUSTRIA	Nagarro has a comprehensive product portfolio in the IT sector. With regard to cloud services, they offer cloud strategy consulting, cloud integration and migration as well as cloud application development.	Am Europlatz 2 1120 Vienna T +43 1 40 95 890 info.at@nagarro.com www.nagarro.com/de
NESSUS	NESSUS offers various cloud servers for a fixed monthly price. IaaS and VMware Cluster are also offered. The company's Vienna data centre covers a total area of 700m ² and is ISO27001 certified.	Fernkorngasse 10/3/501 1100 Vienna T +43 1 33 600 006 support@nessus.at www.nessus.at
NETAPP	NetApp, a globally operating company, features a wide range of cloud computing solutions. They offer various cloud storage solutions such as Azure NetApp files, data services such as Cloud Sync, cloud controls such as the Cloud Manager as well as Cloud Insights and Cloud Analysis.	Am Euro Platz 2 1120 Vienna T +43 1 36 76 81 13 128 info-de@netapp.com www.netapp.com/de
NEXT LAYER	next layer counsels business customers on the procurement, construction, maintenance and operation of network and server infrastructure and sees itself as a partner in the conception of individual network and server solutions. In the field of cloud computing, they offer cloud services such as SaaS or IaaS. Customised solutions can also be developed if needed.	Siemensstraße 90 1210 Wien T +43 1 517070 kontakt.at@siemens.com new.siemens.com/at/de.html
PAWAQ	In addition to IT and programming support with Zimbra Collaboration, Pawaq also provides SaaS, which enables companies to offer personalised e-mail solutions directly from the cloud according to the respective requirements. More than 5,000 companies, including international brands such as Dell and Vodafone, already rely on Zimbra.	Lerchenfelder Strasse 26/2 1080 Vienna T +43 1 23 65 078 office@pawaq.com www.pawaq.com
PC-WEB: WEB UND IT-LÖSUNGEN	The company pc-web has a broad portfolio in the IT sector. With regard to cloud computing, the company offers file hosting and sharing as well as hosted infrastructure, which enables companies to outsource their local IT infrastructure and thus save costs. The hosted infrastructure can be adapted or scaled if required.	St.-Ulrichs-Platz 4/2/1 1070 Vienna T +43 1 89 06 095 support@pc-web.at www.pc-web.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
PINGUIN-SYSTEME.AT	Pinguin-Systeme.at takes care of the planning, procurement, installation and maintenance of IT equipment. In the field of cloud computing, the company provides cloud infrastructure as well as its own Cloud-Store, which enables companies to externally store their data securely as well as reliably.	Engerthstrasse 257 1020 Vienna T +43 1 89 00 667 office@pinguin-systeme.at www.pinguin-systeme.at
PUASCHITZ IT	Puaschitz IT offers services such as IT consulting and IT support as well as various cloud solutions: With its own Cloud software, data from devices can be stored and synchronised with each other. Moreover, they also offer a virtual workstation, by which the entire Windows environment can be operated on a Vienna server.	Linzer Strasse 372/3/5 1140 Vienna T +43 1 93 0 94 office@puaschitz.at www.puaschitz.at
RAIFFEISEN INFORMATIK	Raiffeisen Informatik has a broad product portfolio: In addition to IT consulting and security services, Raiffeisen Informatik also provides cloud solutions. This includes data centre services, which can be used to outsource sensitive business data and store it securely on external servers.	Lilienbrunnengasse 7-9 1020 Vienna T +43 1 99 39 90 info@r-it.at www.raiffeiseninformatik.at
SAP AUSTRIA	Since its foundation in 1972, SAP has become the leading provider of enterprise software through innovation and growth. The company's cloud computing offerings include an in-house cloud platform, an analytics cloud and cloud ERP.	Lassallestrasse 7b 1021 Vienna T +43 1 28 82 20 info.austria@sap.com www.sap.com/austria/index.html
SHM CONSULTING + MEDIA	shm consulting + media is characterised by its comprehensive consulting services. Moreover, it also develops websites, applications and mobile apps. In the cloud sector, it offers comprehensive and individual solutions for hosting online projects or outsourcing IT infrastructure.	Donaufelder Strasse 188/1/21 1220 Vienna T +43 1 30 55 979 info@shm-consulting.eu www.shm-consulting.eu

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
SMILE-IT	Smile-IT is a small consulting company with many years of experience in cloud computing (among other areas). The company supports its customers in integrating cloud services into their operations. In a three-step process consisting of assessment, evaluation and the creation of proposals, the individual needs of each customer are addressed.	Barnabitengasse 9a/21 1060 Vienna +43 660 55 85 258 office@smile-it.at www.smile-it.at
TETHIS IT	tethis IT is a certified data protection expert and offers workshops on DSGVO. In the area of cloud computing, backup solutions for the protection of sensitive data are provided.	Schimmelgasse 3 1030 Vienna T +43 1 35 30 404 christian.toller@tethis-it.at www.tethis-it.at
TIMEWARP IT CONSULTING	TIMEWARP IT Consulting provides various cloud solutions such as private clouds or hybrid clouds based on Microsoft cloud platforms. In addition, server housing is also offered so that companies can accommodate their IT systems externally.	Diefenbachgasse 5/7 1150 Vienna T +43 1 41 91 414 office@timewarp.at www.timewarp.at
T-MOBILE AUSTRIA	In addition to mobile communications, Internet and TV solutions, the telecommunications provider T-Mobile Austria also offers cloud services. With MagentaCloud, customers can securely store their data on the cloud with various devices. Depending on their own needs, they can choose between three packages.	Rennweg 97-99 1030 Vienna T +43 676 20 33 33 www.magenta.at
UPSTREAMNET COMMUNICATIONS	upstreamNet Communications wants to give companies the opportunity to concentrate on their core competencies and therefore offers the possibility to place their own server in one of their data centres. The data centres have the highest security standards so that compliance with the security and individual access regulations, which are defined by the customer himself, can be guaranteed.	Lilienbrunnigasse 7-9 1020 Vienna T +43 1 21 286 440 office@upstreamnet.at www.upstreamnet.at

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
VISION ³	In addition to IT consulting, vision3 also offers services in the cloud area. In "ownCloud" data can be stored on Dropbox or Google Drive. The advantage of the server is that it is located in Austria. The high security level of the server is achieved through an encrypted connection between server and client as well as an additional encryption of the files on the server.	Barnabitengasse 9/25 1060 Vienna T +43 676 94 92 987 office@vision3.at www.vision3.at
WIDDER	Widder offers customers holistic IT solutions. The focus of the company lies in the areas of computers, network & communication technology, Internet presence and support of business processes through applications. In the cloud area, the company scores particularly well due to its Austrian data centres and its high security standards. Besides Microsoft Office 365, the company also offers the Microsoft software Azure.	Ruckergasse 30-32 1120 Vienna T +43 1 81 205 440 office@widder.at www.widder.at
WIWODI	WIWODI stands for Wiener Wolken Dienst (Viennese Cloud Service) and offers the following services: collaboration services for SMEs, such as Zimbra Collaboration (mail, calendar, contacts, tasks, communication), ticket system for processing service requests, and Open Project Server – ProjectManagement, Nextcloud and OnlyOffice. Additional services include entire virtual data centers with consumption-dependent billing, own hosting control panel (especially for resellers and full-service agencies) and the company's own spam filter. resellers and full-service agencies) and the company's own spam filter.	Lerchenfelderstrasse 36/2 1080 Vienna T +43 1 23 65 078 info@wiwodi.at www.wiwodi.at
1UP IT SOLUTIONS	In addition to IT security services, 1UP IT Solutions also provides cloud services in its portfolio. This includes file sharing and backup options according to modern security standards. 1Up cooperates with numerous larger companies such as Microsoft, Lenovo or Dell EMC.	Heiligenstädter Lände 29/2 1190 Vienna T +43 1 99 71 199 100 www.tup-it.com
SHM CONSULTING + MEDIA	shm consulting + media offers comprehensive consulting services as well as development of websites, applications and mobile apps. In the area of cloud computing, extensive and individual solutions are offered, such as hosting of online projects or outsourcing of own IT infrastructure.	Donaufelder Strasse 188/1/21 1220 Vienna T +43 1 30 55 979 info@shm-consulting.eu www.shm-consulting.eu



Technology reports are available on the following topics:

- Big Data and AI
- Cloud Computing
- E-Government
- E-Health
- E-Commerce
- Internet of Things
- HR-Tech
- Enterprise Software
- Entertainment Computing
- IT-Security
- Mobile Computing
- FinTech
- User Centered Design
- Visual Computing

The digital versions can be found at www.viennabusinessagency.at/technology/let-s-talk-innovation/digital-technologies/

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The present activities of the Vienna Business Agency in this cooperation agreement are part of the IC3 project. Information and networking are co-founded by the European Fund for regional development as part of the "IC3 Innovation by Co-Operation, Co-Creation and Community Building" project. Additional information on the <http://www.efre.gv.at/en/IWB/EFRE> funding Programme.

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