Open Source / Open Standards

Technology Report

Vienna,
November 2021

Open Source / Open Standard Technology Report

3

Dear readers,

Vienna is one of the top ICT cities in Europe. Around 6,200 ICT companies (8 percent of all companies in Vienna) generate annual sales of more than 20 billion euros. 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 achieves especially high marks for innovative strength, comprehensive support for start-ups, and its strong focus on sustainability. Vienna is also at the forefront in several "Smart City" rankings. Enhancing the location's appeal still further are its research and technology-friendly climate, its geographical and cultural proximity to the growth markets in the East, the high quality of its infrastructure, the education system and the highest quality of life worldwide.

With the "Vienna 2030" strategy, the Federal Capital is focusing on those topics in which the city is already particularly successful and aims 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 the hot topics in Vienna is "Wiener Digitalisierung". High-quality digital solutions from Vienna should reflect fairness, transparency, security, and self-determination worldwide. Vienna should represent the city in which digital solutions, that people use in a sustainable and inclusive way, are developed and implemented, along a new digital humanism.

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

Open standards and open source solutions are a basis for the digital sovereignty of Vienna and Europe. Furthermore, this openness is an innovation driver and goes hand in hand with open innovation approaches and guarantees flexibility of the solutions. In addition, it helps to promote and secure interoperability and cooperation. Open source and open standards also have great potential in terms of security and privacy. The City of Vienna is making progress in the use of open source and open standards; many services would otherwise hardly be conceivable.

This technology report provides an overview of current trends and developments in the field of Open Standards/ Open Source, as well as current data and facts about Vienna as a location.

Your Vienna Business Agency

vienna business agency

REACT-EU ALS TEIL DER REAKTION DER UNION AUF DIE COVID-19-PANDEMIE FINANZIERT.

Europäische Union Investitionen in Wachstum & Beschäftigung. Österreich.

Contents

1. Overview

○ Example Linux

A famous example of open source software is the program code of the Linux operating system. Linux is available under the GNU General Public License (GPL) and is one of the largest open source software projects in the world. Originally developed by Linus Thorwald in 1991, it was further developed by numerous programmers and is now available in multiple versions, e.g. as Suse, Debian, RedHat or Ubuntu. Linux is not only available for the home and office are but is also used in mainframes and mobile devices. For example, Android from Google has a Linux kernel.

Numerous related concepts and terms have emerged from the term “open source”, ranging from open content to open innovation; freely accessible music[2], in the area of hardware and up to open access regulations. Some important areas for open systems are:

1.1 Open Source

Open source has become an important topic in the last few years and its influence now extends far beyond the area of data processing. Originally, the term open source was used to describe computer code that is publicly accessible. This normally refers to the program source code in a high-level programming language. Since the code is accessible to everyone, it can be widely used. In most cases, a program can also be changed and used in a different form. Typically, the adapted code can also be distributed and used. Open access and the associated transparency often lead to larger communities of users and developers of such software.

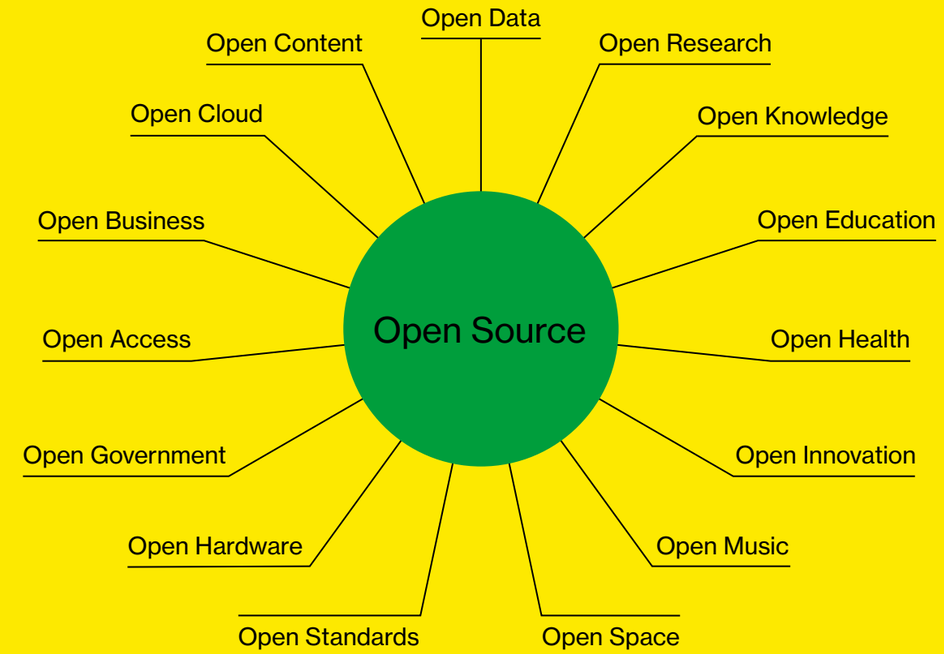
A certain degree of openness has a long tradition in computer science. Collaborative software development has been around since the early 1940s. The error-proneness of software was an important aspect that led to the promotion of open approaches. In addition to the tradition of sharing errors, sources of errors, and bug fixes with others, a tradition of creating free or open software developed. Such software was often maintained by universities. The open source initiative has been committed to the dissemination and protection of the principles of open software for over 20 years.[1]

The term “open”, however, does not mean that software is free or owned by everyone, nor that everything is allowed. Rather, use, distribution and changes are subject to special license regulations. Much of the open source software is actually free to use, with restrictions sometimes placed on commercial use. An important aspect of open source code is the promotion of trust in software, especially regarding security and data protection. A good example of this aspect was the discussion about the Corona app for contact tracing in 2020.

1
The Open Source Initiative opensource.org is a globally active non-profit organization based in the USA. It offers, among other things, a comprehensive directory of various open source licenses, e.g. BSD, CERN Open Hardware, Educational Community, Fair, GNU, Lucent, Mozilla, OSL and many more.

2
de.wikipedia.org/wiki/Freie_Musik

Open Source und derived terms

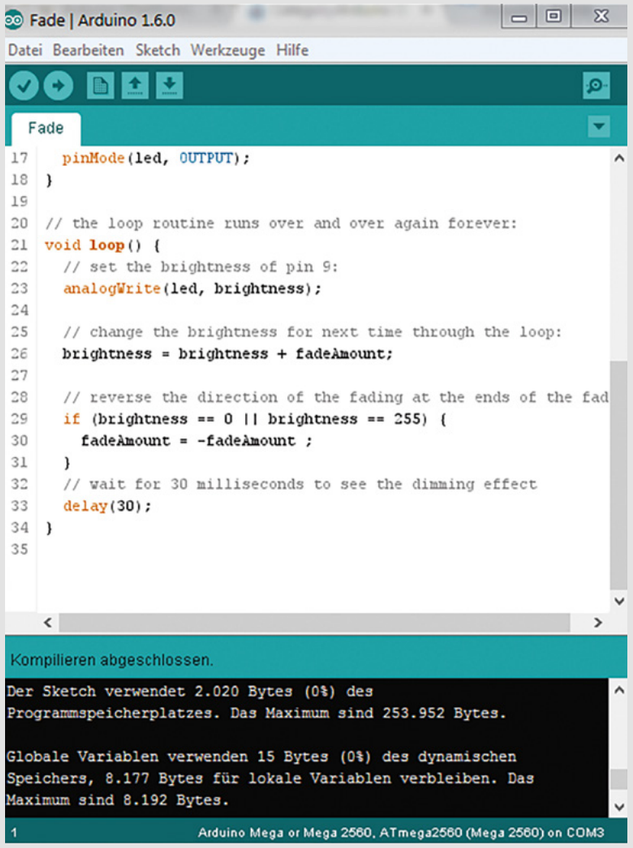


1.2 Open Hardware

Open (or “free”) hardware is historically strongly linked to the do-it-yourself movement. The aim was to transfer the success and enthusiasm of the early open source software movement to the hardware sector. Initially, the focus was on simple computer architectures. A particularly well known example is the Arduino project, which is primarily geared towards device control or cyber-physical systems.[4] The simple computer board can be used as a control unit for interactive systems. Similar to numerous open software projects, there is a very large community of hardware and software developers. The projects and applications implemented with Arduino are also often openly accessible and are constantly being further developed. Although the platform initially addressed the hobby sector, it is now also being used professionally and offered by professional manufacturers.

3
commons.wikimedia.org/w/index.php?curid=27179850

4
www.arduino.cc



Source: Von Wlanowski – Eigenes Werk, CC BY-SA 4.0, commons.wikimedia.org/w/index.php?curid=40298501

1.3 Open Standards

Open standards refer to standards which are freely available and easy to use. In particular, the specifications of the standards are accessible and public or non-profit organizations are often responsible for maintaining the standards. Similar to open software, open standards are free of legal clauses or technical restrictions that hinder their use. They can be coordinated or further developed independent of individual providers.[5]

○ Example

Established examples of open standards are TCP / IP as an Internet or network protocol standard, XML as a markup language or document standard or POSIX as an interface for application programming.

1.4 Open Data

Open data refers to data that is made available for free use as raw data in a standardized and machine-readable form. The term Open Government Data refers explicitly to the public sector. The USA, Australia and Great Britain were pioneers in Open Government Data – i.e. the provision of administrative data by public bodies for use by citizens, business, and science.

With the advent of advanced machine learning methods, freely accessible data has become an important resource for software solutions. See also the technology report “Data-4Good”.[6]

5
For a more precise definition, see, for example, the Free Software Foundation Europe at fsfe.org/freesoftware/standards/def.de.html. It largely corresponds to the formulation of the Geneva Declaration of 2008, which was signed by numerous organizations.

6
wirtschaftsagentur.at/fileadmin/user_upload/Technologie/Factsheets_T-Reports/Technologiereport_Data4Good_DE_WEB.pdf

2.1 FIWARE – an example of open source and open standards

The FIWARE platform was created as part of a large-scale initiative by the European Commission for a "future Internet", the European Future Internet Public-Private Partnership. The aim was to create a series of easy-to-use service interfaces that serve as context interfaces. These interfaces were subsequently standardized as NGSI-LD by the European Telecommunications Standards Institute (ETSI) on the proposal of the European Commission.[7] This standard provides an information model and a programming interface. The designation NGSI refers to the original claim to provide the next generation of Internet interfaces. The original main area of application of the standard was various integrated systems or cyber-physical applications, e.g. in the area of smart cities, the Internet of Things (IoT) or in the area of the manufacturing industry (I4.0). The FIWARE Open Source Community currently manages a number of useful resources on that.[8] FIWARE resources can be found on Github.[9]

The Vienna Business Agency has been working on the topic for a long time in close coordination with the City of Vienna and regularly organizes FIWARE community meetings as well as events and workshops. If you are interested in the topic, please contact Bernhard Schmid: schmid@wirtschaftsagentur.at

Vienna is an example of how FIWARE's solutions help cities to realize their digital vision, to advance the development of intelligent solutions faster, easier, more interoperable, and more affordable, while following an open source approach that avoids brand loyalty (see also 12 FIWARE and Open Data in Vienna).

The Vienna Business Agency has been a member of the FIWARE Foundation together with the City of Vienna since 2017.[10] Brigitte Lutz, Data Governance Coordinator for the City of Vienna, recently became a member of the Board of Directors of the FIWARE Foundation: "We have trusted in the potential of FIWARE for years, because from our point of view open source technologies and the use of open standards are the future!"

2.2 Other applications

2.2.1 Open Access

An important trend in publication is free access to (scientific) writing and other media content on the Internet. Especially in the academic field, free access to publications is playing an increasingly important role, which is also especially supported by many funding institutions such as the Austrian Fund for the Promotion of Scientific Research (FWF) or the European Commission in the EU Research Framework Program. In the academic field, a distinction is made between the gold and green models. The former describes publications in an open access medium, e.g. an open access journal. The green model describes the additional publication of a preprint or similar at a university institute or a private website.

In addition to simple and inexpensive access to the publication, Open Access models are important to enable the verifiability and the reproduction of scientific results. They also support citation, accelerate scientific cooperation, and allow a quick check of the content and qualitative relevance of a publication.

2.2.2 Open Content

The term open content is mostly used in connection with content that can be used freely from a copyright point of view, i.e. it can be used and distributed free of charge. Apart from content that is specifically published as open, this can also happen through the expiry of protection periods. Similar to open software, different license models, that provide different degrees of freedom in using or changing and distributing content, can be used. An important and widely used license for various types of content is the Creative Commons license.[11] However, it is not suitable as a license model for software.

○ Example

Probably the most famous example of open content is the online encyclopaedia Wikipedia with its various sister projects such as Wikimedia. Other well-known examples are the online map OpenStreetMap or the online image archive Flickr. Academic institutions, such as the European Southern Observatory, often make content available according to the open content model, although in the research area the boundaries between open access and open data are often blurred.

7
de.wikipedia.org/wiki/NGSI-LD

8
www.fiware.org

9
github.com/Fiware

10
www.fiware.org/foundation

11
A good overview of Creative Commons and the associated license models is provided by de.creativecommons.net/was-ist-cc

3. Openness and sovereignty

3.1 Example GAIA-X

In recent years, the topic of open systems has gained in importance from the point of view of sovereignty. Due to the increasing flood of information in all areas of life, not only the dependency on IT services increases, but also above all the question of control over services, hardware and software components, or IT infrastructure arises. Government and private organizations are increasingly trying to exert sufficient influence and control over their IT. Open systems, i.e. open software and hardware, but also open interfaces can play an important role in terms of maintaining one's own sovereignty.

A central aspect is the open source code of software, which, with the help of a potentially large number of users, allows gaining certainty about the trustworthiness, security and precise function of the software. Open systems also make it easier to avoid becoming dependent on individual products. In addition to the openness of the code, open source software and open interfaces are important to ensure the interoperability of the software. This can be of central importance for older systems ("legacy software"), as they are often established in the public sector or in large companies.

Common standards for application programming interfaces (APIs) and data models are at the heart of platforms and digital infrastructures and enable the interoperability and portability of solutions. To be able to survive on the market today, new intelligent services and solutions must be able to communicate securely with other services and devices and to run through a large number of infrastructures and systems in the process. By being able to publish and use data in a standardized way, to combine their solutions with other – already developed and widely available – applications or software parts, or to create such solutions for different customers with relatively low adaptation costs, technology users and providers can promote new business models, create open ecosystems, and support public administrations in the implementation of their goals.

GAIA-X is currently the most extensive project for a European data strategy. It pursues the vision of a digital ecosystem based on a federated European data infrastructure. Gaia-X pursues the creation of a trustworthy, sovereign and secure infrastructure in order to improve the transparency and attractiveness of digital services in Europe. An important goal is the reduction of dependencies on individual products, improved control over the locations of the infrastructure components and clear regulatory framework conditions for storage, operation, access, etc.

GAIA-X should not be a monolithic software project, but an open digital ecosystem that offers space for companies and business models from Europe. In September 2020, 22 organizations founded the non-profit GAIA-X European Association for Data and Cloud. The association aims to promote international cooperation between interested companies. In addition, national GAIA-X hubs should help bundle the user side.

More than twenty working groups are working on the technical implementation of the project. Important cornerstones of the GAIA-X design are

- the implementation of secure federated identity and trust mechanisms,
- sovereign data services that guarantee the source and recipient of the data as well as access and usage rights,
- easy access to the available providers and services, e.g. through federated catalogues,
- the integration of existing standards and much more.

Further technical details are available on the associated website.[12] The OSSBIG association, which is generally dedicated to the topic of open data, is also a central Austrian contact for GAIA-X.

○ Examples

The TU Wien pilot factory[13] heads the Austrian-German consortium EuProGigant[14] for the lead project GAIA-X in the production environment. It is one of the first industrial projects with practical implementation of the GAIA-X principles. One goal of the project is the self-orchestration of value creation and learning ecosystems for the smart and confident use of data in production. Sensitive production data remains in the possession of the data supplier.

The City of Vienna is also involved in GAIA-X, for example in the "Smart City" domain. Smart city data platforms are the central element for intelligently networking various technical systems.[15]

12 www.data-infrastructure.eu

13 www.pilotfabrik.at

14 euprogigant.com (see also technology report "Data Sharing in Production")

15 Perspectives from GAIA-X for Smart Cities are presented in the document "GAIA-X and European Smart Cities and Communities" (July 2021): vlocavis.blob.core.windows.net/$web/Gaia-X%20SCC%20white%20paper%20v21.07.pdf

software as part of another (commercial) software. In such a case, purchasing a license for software that is freely available is an option. From the point of view of a manufacturer, this represents an alternative distribution and use channel for the software.

- Extra Features/Open Core: Open source software can of course also be expanded with chargeable features. One example is the widely used web platform Wordpress, for which extensive adaptations and expansion systems as well as layouts etc. are offered.
- Training and certification: In large open source projects and platforms, there is an opportunity for training, further education and personnel certification.
- Marketplace/Platform: Another way to achieve commercial success with open source software is to act as a marketplace for third parties. One example is the Android operating system for mobile devices, for which numerous companies offer software. The platform operator earns income from shares in sales or fees for services, etc.
- Further models: the sale of advertising, partnerships with sponsoring institutions (e.g. public sector), coverage of software costs by communities (e.g. Mozilla), donations, advance orders or crowdfunding.

4.1 How can you earn money with open source or open standards?

Since many open source models are not based on a fee for the actual software, the question arises of how money can be earned with it. On the software usage side, the focus often lies on saving costs compared to proprietary software. From the perspective of a software company or an IT service provider, there are various possible starting points for successful open source business models:

- Software-as-a-Service (Open SaaS)/Hosting: In principle, it is possible to offer open software as a service to third parties for a fee or to act as a fee-based data processor using open software. Before using open source software as a service, however, it should be checked whether this is possible through the respective license agreement. Many older open source software licenses do not cover this aspect, which could result in a certain legal uncertainty.
- Support services/professional services: Even if an open software itself is free, its use can imply a lot of effort. Numerous companies therefore offer support in adapting or maintaining open software. Consulting services are often combined with programming services and, if necessary, implementation or server services.
- Dual licensing: Often an open source license (e.g. GPL) excludes the commercial use of an open source

In general, the margins for Open Core, hosting, and marketplaces are higher (approx. 60–80 percent) than in professional services (approx. 20–40 percent). If the market penetration is good, the open core and marketplace are easier to defend and typically more scalable than for example consulting models.

4.2 Market trends

Just a few years ago, open source software was often viewed as a special or research topic and investors showed relatively little interest in open source business models. At least since the takeover of the provider RedHat (www.redhat.com), which specializes in open solutions, by IBM for US $ 32 million, open source software has proven to be a robust trend. At the end of 2020, ResearchAndMarkets.com estimated annual growth (CAGR) at 21.75 percent with a projected volume of US $ 66.84 billion in 2026. Important positive factors for this growth are the accessibility of the code to all companies, and often they lower costs compared to proprietary solutions. Unsurprisingly, it is above all the consulting segment that dominates the open source services.

The trend towards cost considerations over the entire software lifecycle and efforts to reduce the total cost of ownership of software support the movement towards open source software. In addition, the trend towards shorter time-to-market is also leading to increased interest in open source solutions.

Even before the strong interest in cloud-based solutions, Europe had held important open source positions, for example with MySQL, SUSE or Canonical. While a recently strengthened dynamic was strongly supported by the USA, there are also signs in Europe of an increased trend towards open source. For example, the Eclipse Foundation – one of the largest non-profit open source organizations – decided to move to Belgium and Canada.[16] However, it can be stated critically that European-driven open source projects have often led to commercial exploitation in other regions.

A good representation of the commercially oriented European open source software landscape can be found on the "The Open Source Business Forum" website.[17] As in previous years, the European Commission has created its own open source software strategy for the years 2020–2023.[18] The strategy is also supported by an Open Source Program Office of the Commission and aims to improve the sharing and dissemination of open software.

16 www.derbrutkasten.com/events/socialtech-data4good-by-wirtschaftsagentur-wien

17 landscape.o4b.org

18 ec.europa.eu/info/departments/informatics/open-source-software-strategy_en

5. Open Source Activities in Vienna

16

5.1 FIWARE and Open Data in Vienna

Open interfaces play a major role for IT in Vienna. There are numerous activities related to FIWARE, for example at the Vienna University of Technology and at the Technikum Wien. The City of Vienna has also used FIWARE methods in the IoT area and for smart city applications. The Orion Context Broker was used to implement the urban data platform smartdata.wien.[20]

The Vienna Business Agency has been involved in the EU project CEFAT4Cities together with the FIWARE Foundation since April 2020. The project aims to create a technology that enables citizens to use multilingual services for the eGovernment/ Smart City area. Existing FIWARE developments are used and expanded.[21]

Even though the advantages of open software such as lower costs, open interfaces, etc. are obvious, they are not always easy to implement for the public sector. Often many legal questions arise, e.g. with regard to procurement or liability. The City of Vienna has recognized the potential of open source software primarily as a driver of innovation. With the "Open Source Initiative®", Vienna relies on cooperation in the software sector, even across organizational boundaries, and in this way also tries to avoid a "vendor lock-in".[19]

"Open source software is an important innovation driver behind many current technology trends, for example deep learning and artificial intelligence. Cooperation across organizational boundaries is only possible with open standards and algorithms, which are also propagated through the spread of OSS. The strategic use of OSS is therefore important for the city of Vienna", says Klemens Himpele, CIO of the city of Vienna.

Vienna is very active in the field of open data and makes several hundred data records publicly available.[22] This includes information about one-way lanes, real-time information from the Vienna Transportation Authority Wiener Linien, historical aerial photographs, measured data on air pollutants or WiFi locations. The site also offers tools for processing open data, e.g. for use in the statistics software R or for converting the data into other formats.

5.2 GAIA-X at the City of Vienna

The city of Vienna also[23] takes GAIA-X considerations for data services into account, e.g. for the urban data space of Vienna. The aim here is the development of a technical and methodological ecosystem to accelerate the data-driven digital transformation in Vienna while maintaining sovereignty over the data, as well as the use of open innovation principles, open standards and open source software.

Contact persons:

Brigitte Lutz
Municipal Directorate
of the City of Vienna
brigitte.lutz@wien.gv.at

Nikolaus Reisel
MA 01 – Wien Digital
nikolaus.reisel@wien.gv.at

19 digitales.wien.gv.at/projekt/open-source-software-oss

20 stp.wien.gv.at/smartdata.wien/gis

21 A brief overview is provided by www.digitalcity.wien/fiware-unterstuetzt-die-lebenswerteste-stadt-der-welt

22 digitales.wien.gv.at/open-data

23 GAIA-X for the City of Vienna – Digital Vienna

5.3 Meetings and events

Vienna offers a wide range of events and user groups on various open software systems, including the following:

- Linux User Group Austria24 The Linux User Group offers support on Linux, for example through mailing lists, documents and events. The group is active in Vienna and other Austrian cities.
- Python User Group25
- Vienna R User Group26
- Viennajs – Vienna Javascript User Group27
- Vienna PHP Community28
- WordPress Vienna Meetup29
  FIWARE Community Meetings

24 ubuntu-austria.org

25 www.meetup.com/PYUGAT

26 www.meetup.com/ViennaR

27 viennajs.org

28 www.meetup.com/viennaphp

29 wpvienna.com

6. Services of the Vienna Business Agency

The objective of the Vienna Business Agency is the continuous development of international competitiveness by supporting both Vienna-based companies and their innovative strengths, and the sustainable modernization of the city as a business location. To achieve this, the 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 Green Tech & Social Tech industry and supports businesses with consultations, as well with distribution and networking among themselves. Events and workshops on topics from the sustainability sector are held regularly.

Additionally, the Vienna Business Agency helps with company relocations or internationalization services. Assistance 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.

Founders Labs[30] support aspiring entrepreneurs and founders with a two-month, part-time program to help them get started.

All funding programs of the Vienna Business Agency can be found here: viennabusinessagency.at/funding/programs

30 viennabusinessagency.at/startup-and-grow/lets-talk-founding-1/founders-labs

7. Companies in Vienna

In the alphabetical list[31] on the following pages, we offer you an overview of selected companies from Vienna that offer services in the field of Open Source/Open Standards.

Companies in the field of Open Source/ Open Standards

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
RESEARCH		
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY	AIT continues to develop software that is made available as open source. In addition to activities in the energy sector, see previously TU greenergylab, the Data Science and AI department is particularly active, e.g. with Recogito, a leading online platform for collaborative document annotation.	Griefinggasse 4 1210 Vienna T +43 505 50-0 www.ait.ac.at
TECHNICAL UNIVERSITY OF VIENNA	The Vienna University of Technology has covered open source software for many years. The research work ranges from various open source systems and tools to aspects of political economy on open source. TU Wien also heads the Open Data Platform, which advocates open data platforms for research in the energy sector.	Karlsplatz 13 1040 Vienna www.tuwien.at
UAS TECHNIKUM WIEN	The UAS Technikum Wien frequently hosts events about open source, e.g. the Linux weeks. Students and graduates often create software that is made available as open source code. will.	Höchstädtplatz 6 1200 Vienna T +43 1 333 40 77-0 www.technikum-wien.at
VRVIS CENTER FOR VIRTUAL REALITY AND VISUALIZATION RESEARCH GMBH	VRVis is Austria's leading research institute in the field of visualization and virtual reality. VRVis regularly develops software that is also made available to the public, for example in the area of life science / neuroscience, where VRVis regularly publishes open source code that was created as part of basic research projects. The highly efficient visualization framework Aardvark, which is used for many industrial projects, is now open source and available on Github.	Donau-City-Straße 11 1220 Vienna T +43 1 908 98 92 www.vrvis.at

31
This list makes no claim to completeness

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
INTERMEDIARIES		
NET IDEA	The Open Source Guide gives an overview of the largest open source projects and communities across Austria. It is provided under the Netidee brand by the Internet Privatstiftung Austria based in Vienna. Netidee offers project funding, grants and information that is used to promote the Internet in Austria. This also includes the topic of open source.	Internet Private Foundation Karlsplatz 1/2/9 1010 Vienna www.netidee.at
OPEN SOURCE EXPERTS	The experts group Open Source is an action of the professional association for management consulting and information technology of the Austrian Chamber of Commerce. It offers a platform for IT experts who have special knowledge and offers in the field of open source projects and would like to make it easier for Austrian companies to use open source software.	Wiedner Hauptstraße 63 1045 Vienna T +43 5 90 900 3540 www.oseg.at
OSSBIG – OPEN SOURCE SOFTWARE BUSINESS INNOVATION GROUP	The OSSBIG association has set itself the goal of strengthening Austria as a business location by spreading the open source model in companies and in public administration. It strives to position the open source model among top decision-makers and promotes cooperation between private and public large users. Another important focus of the association is the support of GAIA-X.	c/o Business Design OG Rechte Wienzeile 29/8 1040 Vienna T +43 664 545 15 94 www.ossbig.at
BUSINESSES AND ORGANIZATIONS		
AHOI E.U. – WIKIAHOI & WEBAHOI	With the help of the open source software “Semantic MediaWiki”, Ahoi eU offers everything a company needs to create a wiki (platform for the simple documentation of all relevant internal company content). This includes consulting, setup, configuration and hosting.	Große Schiffgasse 18/Top 2 1020 Vienna T +43 676 919 57 27 www.wikiahoi.at
ALLADIN-IT GMBH – BUSINESS INFORMATICS	Alladin-IT offers a platform (modular end-to-end solution for operators, OTTs and companies) to monitor the user experience with end customers and in your own network	Hebragasse 2/6 1090 Vienna A +43 1 890 57 39 www.alladin.at
ATOS IT SOLUTIONS AND SERVICES GMBH	Atos is the European market leader for cybersecurity as well as cloud and high-performance computing.	Siemensstraße 92 1210 Vienna T +43 506 180 www.atos.net/de-at/austria

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
AWS AMAZON WEB SERVICES	Amazon Web Services is a cloud computing provider also based in Vienna that was founded in 2006 as a subsidiary of the online mail order company Amazon.com.	Am Kohlmarkt 8–10 1010 Vienna www.aws.amazon.com
COMPRISE GMBH	COMPRISE offers digital technology products and IT solutions (including 360 ° Open Source Support) based on more than 20 years of experience in the manufacture and development of many complex IT systems from numerous industries.	Wiedner Hauptstraße 76/2/6 1040 Vienna www.comprise.world
CONSOL AUSTRIA SOFTWARE GMBH	ConSol accompanies customers from the conception through implementation to the efficient operation of globally distributed monitoring platforms.	Leopold-Ungar-Platz 2 1. Stock – Stiege 2 (Square One) 1190 Vienna T +43 1 997 13 92 www.consol-software.at
MARKUS ANGERMANN – ANGERMANN IT-SERVICES	Angermann IT-Services offers practice-oriented EDP services and IT services with a focus on the development and optimization of high-performance websites combined with verifiable, efficient search engine optimization.	Wohllebengasse 12–14/6.01 1040 Vienna T +43 699 200 809 81 www.angermann.at
OPEN7 COMMUNICATION GMBH	Open7 makes open source software accessible to companies of all sizes by specifically selecting it, partially expanding it and advising on how to use it optimally.	Ungargasse 64–66/2/208 1030 Vienna T +43 664 143 73 34 www.open7c.com
RED HAT AUSTRIA	Red Hat is the world’s leading provider of open source technologies for companies based in Vienna.	Millennium Tower, 26th floor Handelskai 94–96 1200 Vienna T +49 89 205 07 10 www.redhat.com
TWENTYREASONS BUSINESS SOLUTIONS GMBH	Twentyreasons business solutions GmbH offers consulting, development and implementation of tailor-made CRM software solutions based on SugarCRM Community Edition (SugarCRM CE).	Wienerbergstraße 11 1100 Vienna T +43 1 890 836 10 www.twentyreasons.com

COMPANIES	DESCRIPTION	CONTACT/WEBSITE
WIENER DIGITAL MANUFAKTUR GMBH	WDM (Wiener Digital Manufaktur) is a successful full-service online agency that deals with open source CMS and portal solutions, among other things.	Karlsgasse 7 1040 Vienna T +43 1 228 88 10 50 www.wienerdigitalmanufaktur.at

A large number of Viennese companies that are active in the field of open software can also be found in the open source directory of the UBIT and the WKO. Company ABC delivers over 240 entries.[32]

32
firmen.wko.at/suche_ubit

Design
seitezwei.com

Producer, Production site
Print Alliance HAV Produktions GmbH
2540 Bad Vöslau

printed according to the Austrian Ecolabel criteria for printed matter (UZ 24), UW-Nr. 715

Klimaneutral Druckprodukt ClimatePartner.com/

REACT-EU ALS TEIL DER REAKTION DER UNION AUF DIE COVID-19-PANDEMIE FINANZIERT.

Europäische Union Investitionen in Wachstum & Beschäftigung. Österreich. E F R E

The Project “Fit für die Zukunft” contributes to the development of corporate research and innovation activities in Vienna, encourages cooperation and awakes enthusiasm for research and innovation among young Viennese. Additional information on the www.efre.gv.at/en

The information in this document is subject to change without notice. The Vienna Business Agency does not assume any liability for mistakes or typesetting and printing errors.

Media owner, Publisher
Vienna Business Agency.
A service offered by the City of Vienna.
Mariahilfer Strasse 20
1070 Vienna
www.viennabusinessagency.at

Contact
Bernhard Schmid
Technologie Services
T + 43 1 25200-521
schmid@wirtschaftsagentur.at

Text and Editing
eutema GmbH
Lindengasse 43/13
1070 Vienna

Photos
Vienna Business Agency/Alexander Chitsazan
Vienna Business Agency/Karin Hackl
Vienna Business Agency/Klaus Vyhnalek

Technology reports are avialable on the following topics:

- Additive manufacturing
- Assistive Technologies
- Big data and AI
- Blockchain
- Cloud Computing
- Data4Good
- Digital Planning, Building and Operation
- e-commerce
- e-government
- e-health
- Enterprise Software
- Entertainment Computing
- FinTech
- Food
- Green Building
- HR-Tech
- Intelligent automation and robotics
- Intelligent production
- Internet of Things
- IT-Security
- Mobile Computing
- Prototyping – from conception to product
- Rainwater in the city
- Sustainable urban logistics
- Technologie erleben
- Urban Energy Innovations
- Urban Mobility
- User Centered Design
- Visual Computing

The digital version can be found at viennabusinessagency.at/technology/lets-talk-innovation/digital-technologies

REACT-EU ALS TEIL DER REAKTION DER UNION AUF DIE COVID-19-PANDEMIE FINANZIERT.

Europäische Union Investitionen in Wachstum & Beschäftigung. Österreich.

The Project “Fit für die Zukunft” contributes to the development of corporate research and innovation activities in Vienna, encourages cooperation and awakes enthusiasm for research and innovation among young Viennese. Additional information on the www.efre.gv.at/en

vienna business agency

Contact

Vienna Business Agency.
A service offered by the City of Vienna.
Mariahilfer Strasse 20
1070 Vienna
viennabusinessagency.at