

TRUST 2016

Program Guide

29 – 30 August 2016
Vienna, Austria



Organized by...



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Welcome to TRUST 2016

Welcome to the 9th International Conference on Trust and Trustworthy Computing (TRUST), held in Vienna, Austria, on August 29th & 30th, 2016. TRUST 2016 is hosted and organized by SBA Research.

Continuing the tradition of the previous conferences, held in Villach (2008), Oxford (2009), Berlin (2010), Pittsburgh (2011), Vienna (2012), London (2013), and Heraklion (2014 & 2015), TRUST 2016 provided a unique interdisciplinary forum for researchers, practitioners, and decision makers to explore new ideas and discuss experiences in building, designing, using, and understanding trust- worthy computing systems.

The conference program of TRUST 2016 shows that research in trust and trustworthy computing is active, at a high level of competency, and spans a wide range of areas and topics. Topics discussed in this year's research contributions included topics such as anonymous and layered attestation, revocation, captchas, runtime integrity, trust networks, key migration, and PUFs.

We received 25 valid submissions in response to the Call for Papers. All submissions were carefully reviewed by at least three Program Committee members or external experts according to the criteria of scientific novelty, importance to the field, and technical quality. After an online discussion of all reviews, 8 papers were selected for presentation and publication in the conference proceedings. This amounts to an acceptance rate of less than one third. Furthermore, the conference program contained keynote presentations by Prof. Virgil Gligor (Carnegie Mellon University, USA) and Prof. Stefan Katzenbeisser (Technische Universität Darmstadt, Germany).

We would like to express our gratitude to those people without whom TRUST 2016 would not have been this successful, and whom we mention now in no particular order: the publicity chairs, Drs. Somayeh Salimi and Moritz Wiese, the members of the Steering Committee, the local Organizing Committee (and especially Yvonne Poul), and the keynote speakers. We also want to thank all Program Committee members and their external reviewers; their hard work made sure that the scientific program was of high quality and reflected both the depth and diversity of research in this area. Our special thanks go to all those who submitted papers, and to all those who presented posters and papers at the conference.

Enjoy TRUST 2016 and Vienna!

Michael Franz (University of California, Irvine, USA)

Panos Papadimitratos (KTH Royal Institute of Technology, Sweden)

Program Overview

MONDAY, August 29, 2016	
10:45-11:30	Registration
11:30-12:30	Lunch
12:30-12:45	Opening
12:45-14:00	Keynote by Virgil D. Gligor (Carnegie Mellon University, UK) <i>Establishing and Maintaining Root of Trust on Commodity Computer Systems</i>
14:00-14:30	Coffee Break
14:30-16:00	Session I: Trust and Key Management "Controversy in trust networks" Paolo Zicari, Roberto Interdonato, Andrea Tagarelli and Sergio Greco (DIMES, University of Calabria, Italy) "Practical Signing-Right Revocation" Michael Till Beck (Ludwig-Maximilians-Universität München, Germany), Stephan Krenn (AIT Austrian Institute of Technology GmbH, Austria), Franz-Stefan Preiss and Kai Samelin (IBM Research Zurich, Switzerland) "Enabling key migration between non-compatible TPM versions" Linus Karlsson and Martin Hell (Lund University, Sweden)
16:00-16:30	Coffee Break
16:30-17:30	Session II: Attestation "Anonymous Attestation Using the Strong Diffie Hellman Assumption Revisited" Jan Camenisch, Manu Drijvers and Anja Lehmann (IBM Research Zurich, Switzerland) "Bundling Evidence for Layered Attestation" Paul Rowe (The MITRE Corporation, US)
17:30-22:00	Conference Dinner
TUESDAY, August 30, 2016	
09.00-10.15	Keynote by Stefan Katzenbeisser (TU Darmstadt & CASED, Germany) <i>DRAM PUFs</i>
10:15-10:45	Coffee Break
10:45-12:15	Session III: Embedded and Hardware security "Runtime Integrity Checking for Exploit Mitigation on Lightweight Embedded Devices" Matthias Neugschwandtner (IBM Research Zurich, Switzerland), Collin Mulliner (Square Inc., US), William Robertson and Engin Kirda (Northeastern University, US) "Sensor Captchas: On the Usability of Instrumenting Hardware Sensors to Prove Liveliness" Thomas Hupperich (Ruhr-University Bochum, Germany), Katharina Krombholz (SBA Research, Austria) and Thorsten Holz (Ruhr-University Bochum, Germany) "An arbiter PUF secured by remote random recongurations of an FPGA" Alexander Spenke (Hochschule Bonn-Rhein Sieg, Germany), Ralph Breithaupt and Rainer Plaga (Federal Office for Information Security (BSI), Germany)
12:15-12:20	Closing remarks
12:20-14:00	Lunch

Monday, August 29, 2016

10:45-11:30 Registration

11:30-12:30 Lunch

12:30-12:45 Opening

12:45-14:00 Keynote**Establishing and Maintaining Root of Trust on Commodity Computer Systems***Virgil D. Gligor (Carnegie Mellon University, UK)*

Abstract: Suppose that a trustworthy program must be booted on a commodity system that may contain persistent malware. For example, a formally verified micro-kernel, micro-hypervisor, or a subsystem obtained from a trustworthy provider must be booted on a computer system that runs Windows, Linux, or Android. Establishing root of trust assures the user that either the system is in a malware-free state in which the trustworthy-program boot takes place or the presence of malware is discovered, with high probability. Obtaining such an assurance is challenging because malware can survive in system states across repeated secure- and trusted-boot operations. These operations do not always have malware-unmediated access to device memories; e.g., memories of bring-your-own devices, such as keyboards, consoles, printers, routers, and system devices such as disk controllers. To date, concrete assurance for root-of-trust establishment has not been obtained on more complex systems than tablets or smartphones. In this presentation, I will illustrate both the theoretical and practical challenges of root-of-trust establishment unconditionally; i.e., without secrets, privileged modules (e.g., TPMs), or adversary bounds. Establishing root of trust is important because it makes all persistent malware ephemeral and forces the adversary to repeat the malware-insertion attack, perhaps at some added cost. Nevertheless, some malware-controlled software can always be assumed to exist in commodity operating systems and applications. The inherent size and complexity of their components (aka the “giants”) render them vulnerable to successful attacks. In contrast, small and simple software components with rather limited function and high-assurance layered security properties (aka the “wimps”) can, in principle, be resistant to all attacks. Maintaining root of trust assures a user that a commodity computer’s wimps are isolated from, and safely co-exist with, adversary-controlled giants. However, regardless how secure isolation may be (e.g., based on Intel’s SGX), wimps must use services of, or compose with, insecure giants. This appears to be “paradoxical:” wimps can counter all adversary attacks but survive only if they use adversary-controlled giants from which they have to defend themselves. I will present a method for the composition of secure wimps with insecure giants, via two examples of experimental systems; i.e., on-demand isolated I/O channels and a trusted display service, which were designed and implemented at CMU’s CyLab.

14:00-14:30 Coffee Break

14:30-16:00 Session I: Trust and Key Management**1. “Controversy in trust networks”***Paolo Zicari, Roberto Interdonato, Andrea Tagarelli and Sergio Greco (DIMES, University of Calabria, Italy)*

Abstract: Given the increasing volume and impact of online social interactions in various aspects of life, inferring how a user should be trusted becomes a matter of crucial importance, which can strongly bias any decision process. Existing trust inference algorithms are based on the propagation and aggregation of trust values. However, trust opinions are subjective and can be very different from one user to another. Consequently, inferred trust values can lose significance or even be unavailable if there is a strong disagreement among the original values. In this work, we discuss the trust controversy problem. We analyze to what extent existing trust inference algorithms are robust with respect to controversial situations, and propose a novel trust controversy measure to support trust inference in controversial cases. Experimental results on real world datasets demonstrate that controversial cases should be explicitly taken into account and that the controversy level of inferred trust values is highly related to the prediction error. Our trust controversy measure can serve as an integrated and unsupervised estimator for trust inference accuracy

2. “Practical Signing-Right Revocation”

Michael Till Beck (Ludwig-Maximilians-Universität München, Germany), Stephan Krenn (AIT Austrian Institute of Technology GmbH, Austria), Franz-Stefan Preiss and Kai Samelin (IBM Research Zurich, Switzerland)

Abstract: One of the key features that must be supported by every modern PKI is an efficient way to determine (at verification) whether the signing key had been revoked. In most solutions, the verifier periodically contacts the certificate authority (CA) to obtain a list of blacklisted, or whitelisted, certificates. In the worst case this has to be done for every signature verification. Besides the computational costs of verification, after revocation all signatures under the revoked key become invalid. In the solution by Boneh et al. at USENIX'01, the CA holds a share of the private signing key and contributes to the signature generation. After revocation, the CA simply denies its participation in the interactive signing protocol. Thus, the revoked user can no longer generate valid signatures. We extend this solution to also cover privacy, non-trusted setups, and time-stamps. We give a formal definitional framework, and provide elegantly simple, yet provably secure, instantiations from efficient standard building blocks such as digital signatures, commitments, and partially blind signatures. Finally, we provide extensions to our scheme.

3. “Enabling key migration between non-compatible TPM versions”

Linus Karlsson and Martin Hell (Lund University, Sweden)

Abstract: We consider the problem of migrating keys from TPM 1.2 to the backwards incompatible TPM 2.0. The major differences between the two versions introduce several challenges for deployed systems when support for TPM 2.0 is introduced. We show how TPM 2.0 support can be introduced while still maintaining the functionality specified by TPM 1.2, allowing a smoother transition to the newer version. Specifically, we propose a solution such that keys can be migrated from TPM 1.2 to TPM 2.0, while retaining behavior with regard to e.g. authorization, migration secrets, PCR values and CMK functionality. This is achieved by utilizing new functionality, such as policies, in TPM 2.0. The proposed solution is implemented and verified using TPM emulators to ensure correctness.

16:00-16:30 Coffee Break

16:30-17:30 Session II: Attestation

1. “Anonymous Attestation Using the Strong Diffie Hellman Assumption Revisited”

Jan Camenisch, Manu Drijvers and Anja Lehmann (IBM Research Zurich, Switzerland)

Abstract: Direct Anonymous Attestation (DAA) is a cryptographic protocol for privacy-protecting authentication. It is standardized in the TPM standard and implemented in millions of chips. A variant of DAA is also used in Intel's SGX. Recently, Camenisch et al. (PKC 2016) demonstrated that existing security models for DAA do not correctly capture all security requirements, and showed a number of flaws in existing schemes based on the LRSW assumption. In this work, we identify flaws in security proofs of a number of qSDH-based DAA schemes and point out that none of the proposed schemes can be proven secure in the recent model by Camenisch et al. (PKC 2016). We therefore present a new, provably secure DAA scheme that is based on the qSDH assumption. The new scheme is as efficient as the most efficient existing DAA scheme, with support for DAA extensions to signature-based revocation and attributes. We rigorously prove the scheme secure in the model of Camenisch et al., which we modify to support the extensions. As a side-result of independent interest, we prove that the BBS+ signature scheme is secure in the type-3 pairing setting, allowing for our scheme to be used with the most efficient pairing-friendly curves.

2. “Bundling Evidence for Layered Attestation”

Paul Rowe (The MITRE Corporation, US)

Abstract: Systems designed with measurement and attestation in mind are often layered, with the lower layers measuring the layers above them. Attestations of such systems, which we call layered attestations, must bundle together the results of a diverse set of application-specific measurements of various parts of the system. Some methods of layered attestation are more trustworthy than others especially in the presence of an adversary that can dynamically corrupt system components. It is therefore important for system designers to understand the trust consequences of different designs. This paper presents a formal framework for reasoning about layered attestations. We identify inference principles based on the causal effects of dynamic corruption, and we propose a method for bundling evidence that is robust to such corruptions.

17:30-22:00 Conference Dinner

We will have a **BBQ conference dinner** at the restaurant Augarten, which is located in the center of the same-named park Augarten. The Augarten is a public park of 52.2 hectares situated in the Leopoldstadt, the second district of Vienna. It contains the city's oldest Baroque park.

Meeting point: We will meet in front of the Conference Venue directly after the last session (17.30) to get to the dinner location together (by public transport – the restaurant is located 5 minutes by foot from the subway stop U2 “Taborstraße”).



Conference Dinner location TRUST 2016 – Restaurant Augarten



Tuesday, August 30, 2016

09.00-10.15 Keynote

DRAM PUFs

Stefan Katzenbeisser (TU Darmstadt & CASED, Germany)

Abstract: A Physically Unclonable Function (PUF) is a unique and stable physical characteristic of a piece of hardware, which emerges due to variations in the fabrication processes. Prior works have demonstrated that PUFs are a promising cryptographic primitive to enable secure key storage, hardware-based device authentication and identification. So far, most PUF constructions require addition of new hardware or FPGA implementations for their operation. Recently, intrinsic PUFs, which can be found in commodity devices, have been investigated. Unfortunately, most of them suffer from the drawback that they can only be accessed at boot time. In this talk I will give an overview of DRAM PUFs, which can be accessed during system runtime and are based on individual decay-based intrinsic DRAM PUFs in commercial off-the-shelf systems, requiring no additional hardware or FPGAs. A key advantage of this PUF construction is that it can be queried during run-time of a Linux system.

10:15-10:45 Coffee Break

10:45-12:15 Session III: Embedded and Hardware security

1. "Runtime Integrity Checking for Exploit Mitigation on Lightweight Embedded Devices"

Matthias Neugschwandner (IBM Research Zurich, Switzerland), Collin Mulliner (Square Inc., US), William Robertson and Engin Kirda (Northeastern University, US)

Abstract: Entering the age of the Internet of things, embedded devices are everywhere. They are built using common hardware such as RISC-based ARM and MIPS platforms, and lightweight open software components. Because of their limited resources, such systems often lack the protection mechanisms that have been introduced to the desktop and server world. In this paper, we present BINtegrity, a novel approach for exploit mitigation that is specifically tailored towards embedded systems that are based on the common RISC architecture. BINtegrity leverages architectural features of RISC CPUs to extract a combination of static and dynamic properties relevant to OS service requests from executables, and enforces them during runtime. Our technique borrows ideas from several areas including system call monitoring, static analysis, and code emulation, and combines them in a low-overhead fashion directly in the operating system kernel. We implemented BINtegrity for the Linux operating system. BINtegrity is practical, and restricts the ability of attackers to exploit generic memory corruption vulnerabilities in COTS binaries. In contrast to other approaches, BINtegrity does not require access to source code, binary modification, or application specific configuration such as policies. Our evaluation demonstrates that BINtegrity incurs a very low overhead—only 2% on whole system performance, – and shows that our approach mitigates both code injection and code reuse attacks.

2. "Sensor Captchas: On the Usability of Instrumenting Hardware Sensors to Prove Liveliness"

Thomas Hupperich (Ruhr-University Bochum, Germany), Katharina Krombholz (SBA Research, Austria) and Thorsten Holz (Ruhr-University Bochum, Germany)

Abstract: A CAPTCHA is a challenge-response test often used on the Web to determine whether a Web site's visitor is a human or an automated program (so called bot). Existing and widely used CAPTCHA schemes are based on visual puzzles that are hard to solve on mobile devices with a limited screen. We propose to leverage movement data from hardware sensors to build a CAPTCHA scheme suitable for mobile devices. Our approach is based on human motion information and the scheme requires users to perform gestures from everyday life (e.g., hammering where the smartphone should be imagined as a hammer and the user has to hit a nail five times). We implemented a prototype of the proposed method and report findings from a comparative usability study with 50 participants. The results suggest that our scheme outperforms other competing schemes on usability metrics such as solving time, accuracy, and error rate. Furthermore, the results of the user study indicate that gestures are a suitable input method to solve CAPTCHAs on (mobile) devices with smaller screens and hardware sensors.

3. "An arbiter PUF secured by remote random reconfigurations of an FPGA"

Alexander Spenke (Hochschule Bonn-Rhein Sieg, Germany), Ralph Breithaupt and Rainer Plaga (Federal Office for Information Security (BSI), Germany)

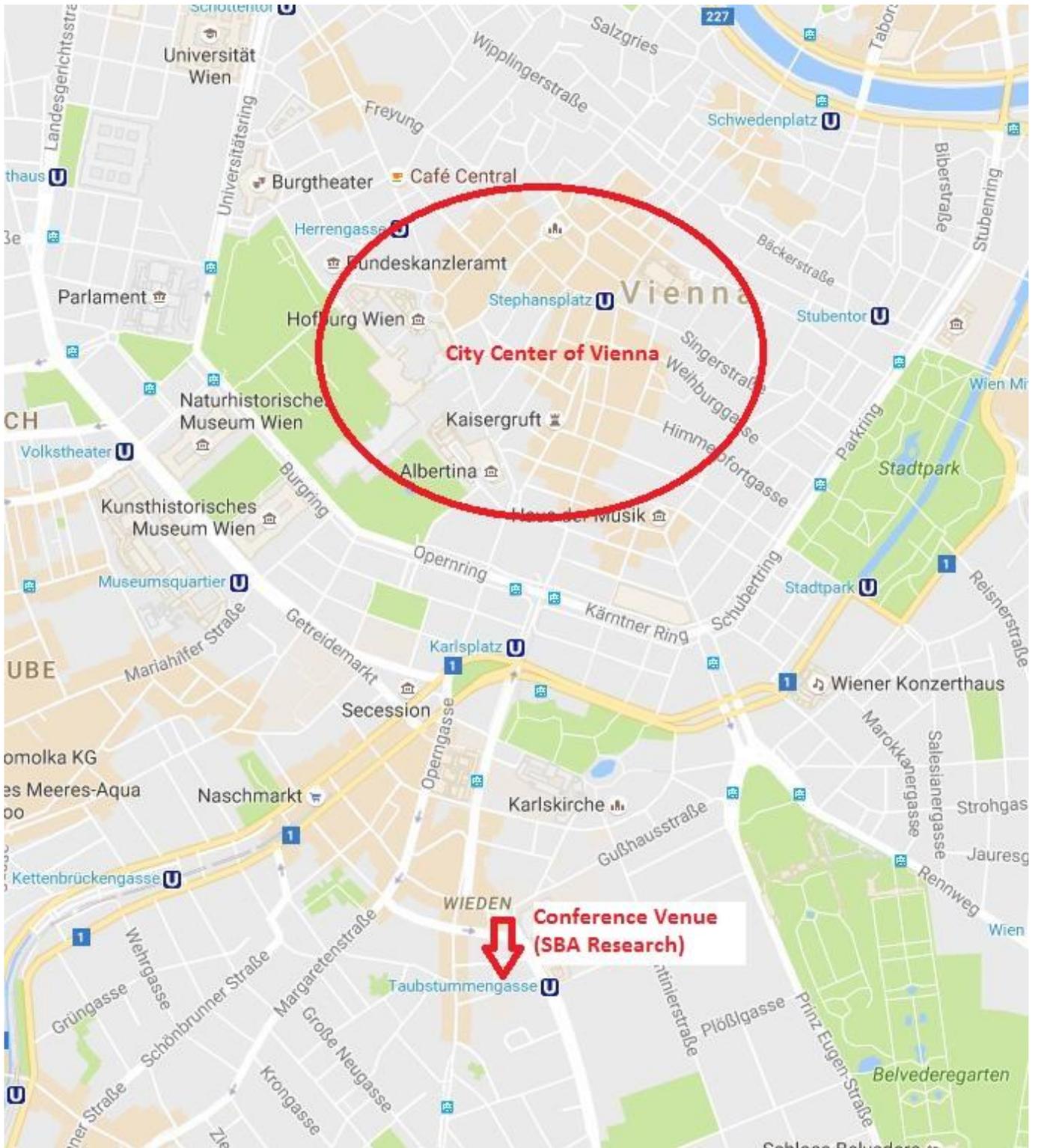
Abstract: We present a practical and highly secure method for the authentication of chips based on a new concept for implementing strong Physical Unclonable Function (PUF) on field programmable gate arrays (FPGA). Its qualitatively novel feature is a remote reconfiguration in which the delay stages of the PUF are arranged to a random pattern within a subset of the FPGA's gates. Before the reconfiguration is performed during authentication the PUF simply does not exist. Hence even if an attacker has the chip under control previously she can gain no useful information about the PUF. This feature, together with a strict renunciation

of any error correction and challenge selection criteria that depend on individual properties of the PUF that goes into the field make our strong PUF construction immune to all machine learning attacks presented in the literature. More sophisticated attacks on our strong-PUF construction will be difficult, because they require the attacker to learn or directly measure the properties of the complete FPGA. A fully functional reference implementation for a secure \chip biometrics" is presented. We remotely configure ten 64-stage arbiter PUFs out of 1428 lookup tables within a time of 25 seconds and then receive one "fingerprint" from each PUF within 1 msec.

12:15-12:20 Closing remarks

12:20-14:00 Lunch

Venue Overview



Map 1 Venue Overview

Conference Venue

Address of the Conference Venue

SBA Research
 Favoritenstraße 16, 1st Floor
 1040 Vienna
 Austria

Directions

How to get from the airport to the city centre

The Vienna International Airport (VIE) in Schwechat is about 20 km away in the southeast of Vienna. Train lines S7 and S2 (suburban railway “S-Bahn”) as well as the City Airport Train (CAT) connect the city center with the airport.

You can also take a taxi for your convenience, a taxi fare is at about 30 Euro. We recommend a pre-booked taxi with airportdriver.at. After the baggage claim, take the left exit and walk left. The driver will wait for you there.

1. City Airport Train / CAT

The CAT takes just 16 minutes nonstop to get from central Vienna to the airport and vice versa. The City Airport Train operates daily from 05.36 a.m. to 23.36 p.m. The City Air Terminal is just 10 minutes from St. Stephan’s Cathedral at “Landstraße - Wien Mitte” station, which can be reached easily by tram, underground, bus or taxi. The price for a single fair is €11.00, the exact timetable and more information can be found here: <http://www.cityairporttrain.com/>

Overview departure time CAT

Departure	Arrival	First suburban railway (departure)	Last suburban railway (departure)	Duration
Wien Mitte	Vienna Airport	04:19 (then appr. Every 30 min)	23:49	25 min
Vienna Airport	Wien Mitte	04:48 (then appr. Every 30 min)	00:18	25 min

2. S-Bahn / suburban railway

The Schnellbahn (S-Bahn) is a low-priced way of getting from Vienna to the airport and back. Price: from € 4.40 (including travel on Vienna public transport). Ticket machines are on the platforms at the airport and at Wien Mitte.

The following table gives a summary of the S-Bahn timetable between “Landstraße - Wien Mitte” and Vienna Airport. To get to the city center you need to take the S-Bahn line “S7” in direction “Floridsdorf”.

	From the Airport		To the Airport	
	Vienna Airport	Wien Hauptbahnhof	Wien Hauptbahnhof	Vienna Airport
First train	6:33 (then every 30 minutes)	06:41	06:11 (then 30 minutes)	06:27
Last train	23:03	23:21	22:11	22:27

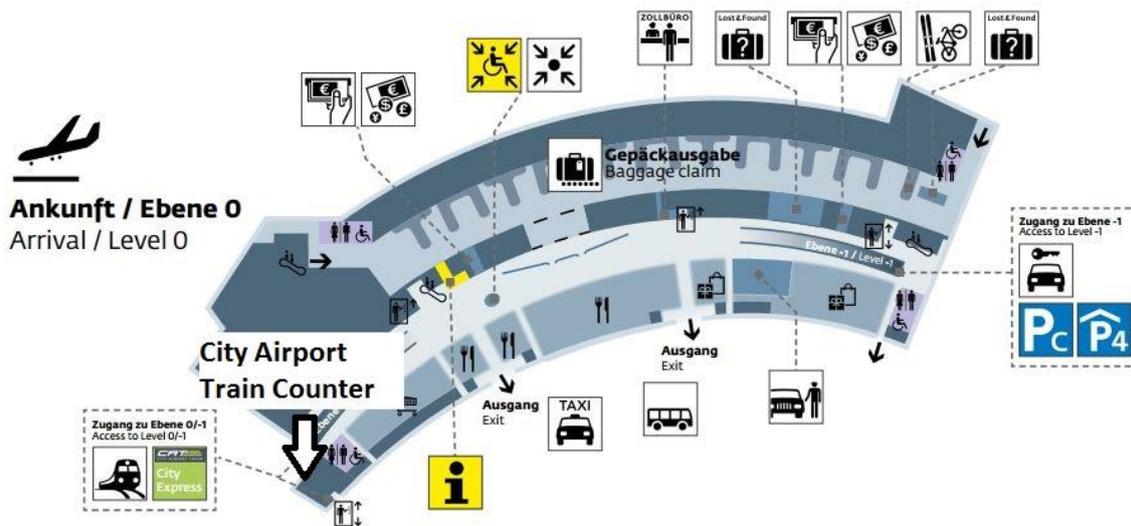
3. ICE/Railjet long-distance train

The ICE or Railjet departs approx. every 30 minutes from Vienna to the airport or from the Airport to Vienna. In Vienna it stops at two train stations “Wien-Hauptbahnhof” and “Wien Meidling”. From “Wien Hauptbahnhof” you can take the red undergroundline (U1) direction “Leopoldau” and get out at the stop “Taubstummengasse”.

The following table gives an overview of the timetable.

	From the Airport		To the Airport	
	Vienna Airport	Wien Hauptbahnhof	Wien Hauptbahnhof	Vienna Airport
First train	6:33 (then every 30 minutes)	06:41	06:11 (then 30 minutes)	06:27
Last train	23:03	23:21	22:11	22:27

Vienna Airport Map



Map 2: Vienna Airport Map

How to get from the airport directly to the Conference Venue

Address of the Conference Venue:

SBA Research
 Favoritenstraße 16, 1st Floor
 1040 Vienna
 Austria

Choose a connection from before, either the CAT or the S-Bahn (see information before) to get from the airport to the venue. The closest underground stop is “Taubstummengasse” (U1). The maps 4 and 5 showing the walking distances can be found on page 5.

If you decide to take the CAT to get to the Conference Venue:

The last stop is “Landstraße - Wien Mitte” (1). Get out there and take the green underground line (U4) in direction “Karlsplatz”. (2) Then you can either walk to the conference venue (exit “Resselpark”) or change to the red

underground line (U1), direction “Reumanplatz” and get out at “Taubstummengasse” (3) then follow the signs to the exit “Floragasse” the venue is on the right side when you exit (big round doorway). See map 3 on page 4.

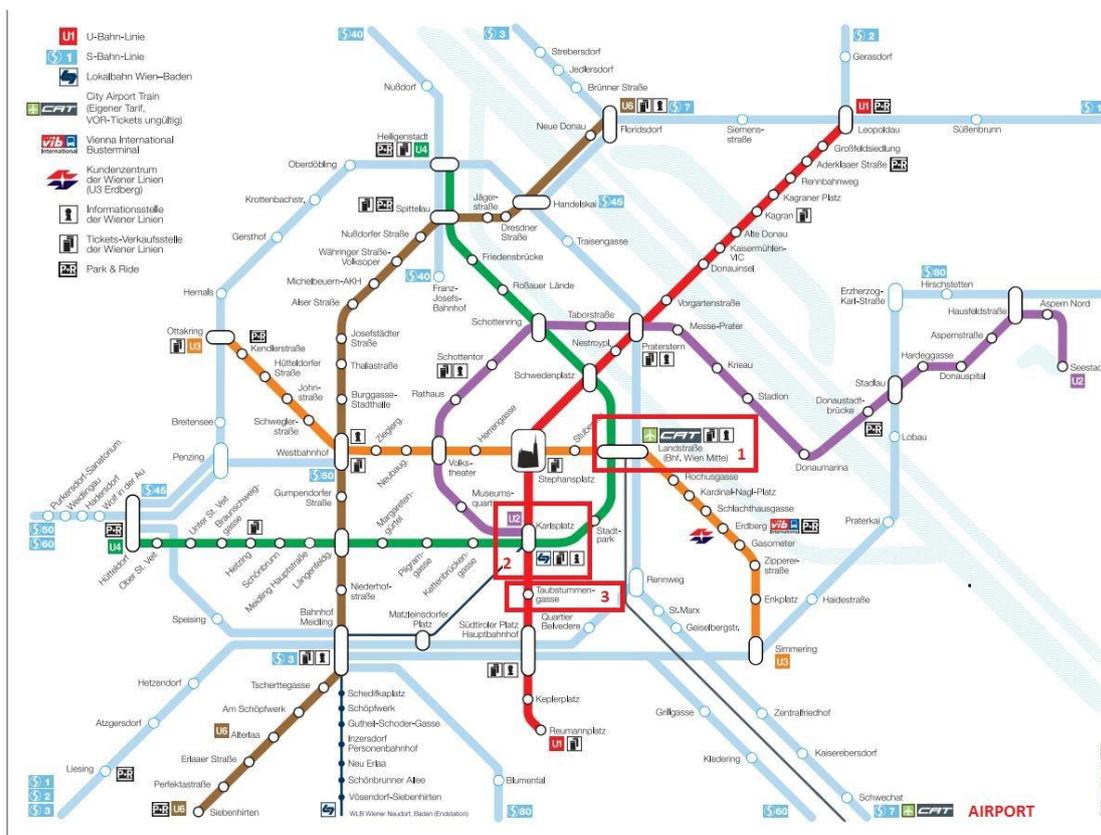
If you decide to take the S-Bahn to get to the Conference Venue:

Get out at the stop “Praterstern” (1) and take the red underground line (U1) in direction “Reumanplatz”. Get out at “Taubstummengasse” (2) then follow the signs to the exit “Floragasse” the venue is on the right side when you exit (big round doorway). See map 6 on page 6.

If you decide to take the ICE/Railjet to get to the Conference Venue:

Get out at “Wien Hauptbahnhof” (1) and take the red underground line (U1) direction “Leopoldau” and get out at the stop “Taubstummengasse” (2), the venue is on the right side when you exit (big round doorway) See map 3 on page 7.

Underground Map CAT



Map 3: CAT: Airport - Conference Venue

- 1 Get out at “Landstraße - Wien Mitte” and change to U4 (“Hütteldorf”)
- 2 Get out at “Karlsplatz” and walk or change to U1 (“Reumanplatz”)
- 3 Get out at “Taubstummengasse”

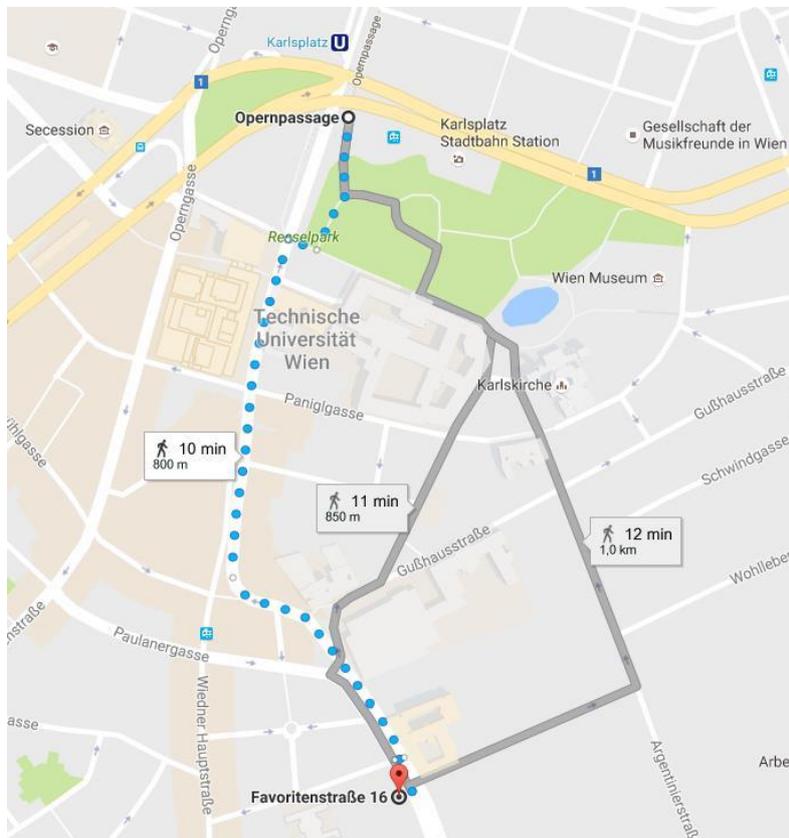
Walking Distances

Stop „Taubstummengasse“ to the conference venue:



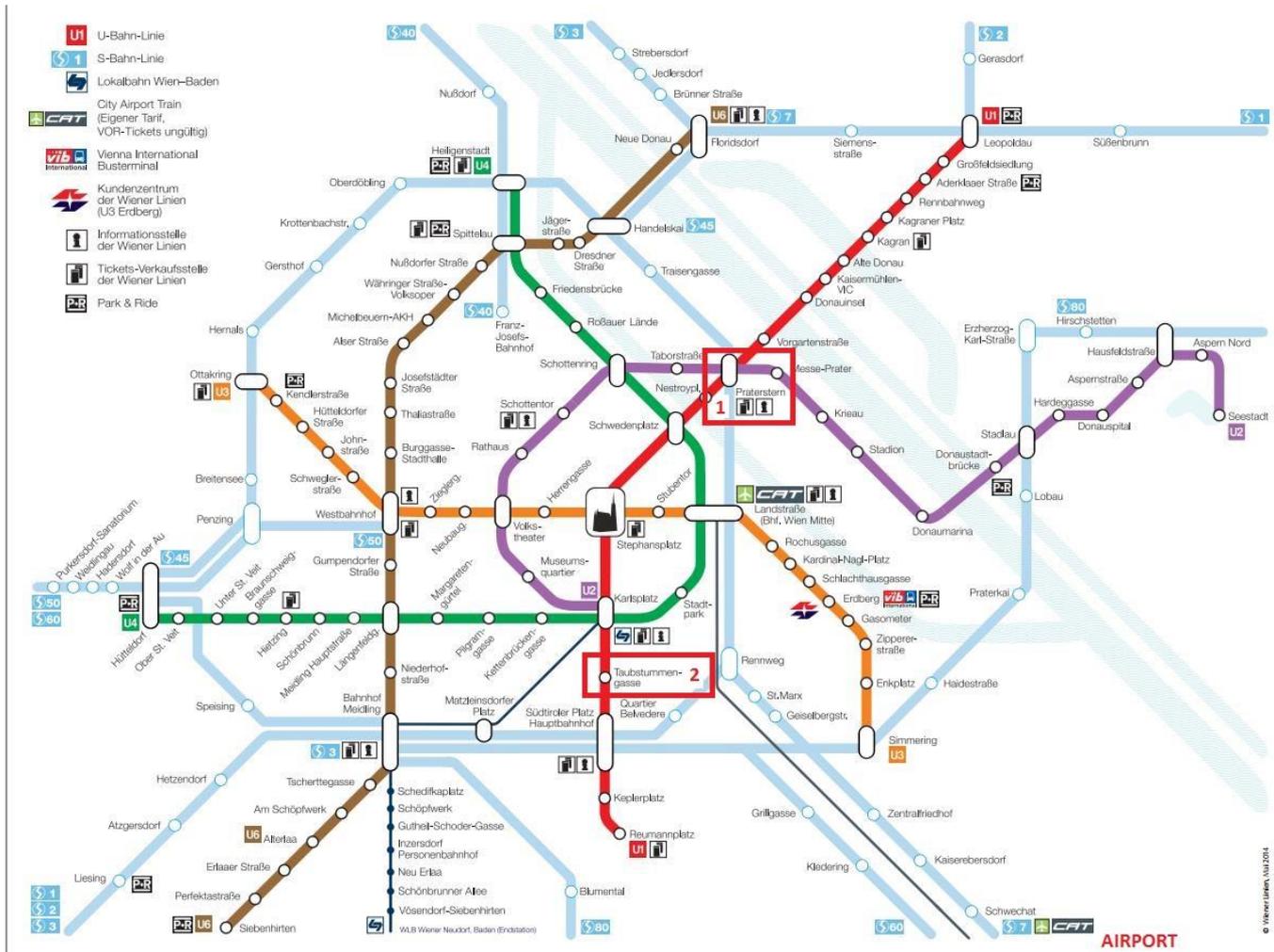
Map 4: Taubstummengasse (U1) to Conference Venue

Stop “Karlsplatz” to the conference venue:



Map 5: Karlsplatz (U1/U4/U2) to Conference Venue

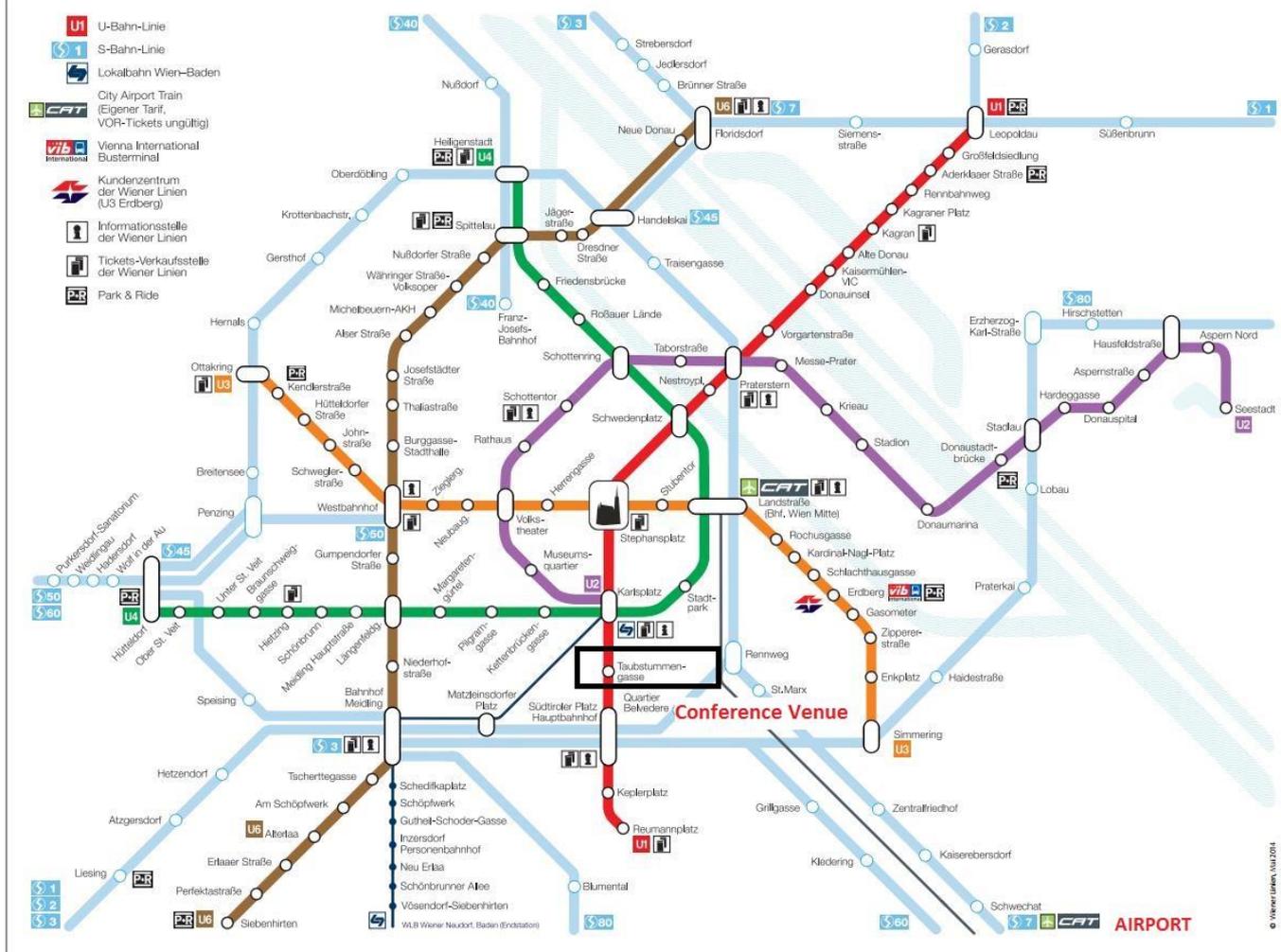
Underground Map S-Bahn



Map 6: S-Bahn: Airport -> Conference Venue

- 1 Get out at "Praterstern" and change to U1 ("Karlsplatz")
- 2 Get out at "Taubstummengasse"

Public Transport



Map 7: Public Transport Vienna

The underground trains (U-Bahn) run from about 5.00 am in the morning to about midnight. The underground trains run around the clock on Friday and Saturday and on the eve of public holidays!

Welcome to Vienna!

Useful Information



Tourist Information

1st district, city centre Albertinaplatz, corner of Maysedergasse

Daily from 9.00 am to 7.00 pm

Vienna International Airport,
Schwechat Arrival hall

Daily from 7.00 am to 10.00 pm

Emergency Numbers

Fire service	122
Police	133
Ambulance/ rescue	144
Emergency doctor	141
European emergency	112

Opening hours shops in Vienna

Shops are usually open Mon - Fri from 9.00 am - 6.30 pm, Sat until 5.00 pm or 6.00 pm; some shopping centres are open until 8.00 pm or 9.00 from Mon-Fri. Shopping is available on Sundays and holidays at the large railway stations, at the airport and in the museum shops.

Drugstores are open from Monday to Friday from 8.00 am - 6.00 pm, usually without a lunch break, and on Saturday from 8.00 am - 12.00 noon. Outside of these times, a 24-hour drugstore standby service is available throughout the city. Details of the nearest open drugstore are posted at every drugstore. For telephone information, call the number 1455.

WIFI in Public Transport

In Vienna there are 10 WIFI Hotspots available in the public transportation systems. These are set up near the information offices in the following metro stations:

- Südtiroler Platz/Hauptbahnhof (U1, red line)
- Karlsplatz (U1, red line/U2, purple line/ U4, green line)
- Stephansplatz (U1, red line/ U3, orange line)
- Praterstern (U1, red line/U2, purple line)
- Schottentor (U2, purple line)
- Westbahnhof (U6, brown line/ U3, orange line)
- Landstraße (U3, orange line/ U4, green line)
- Erdberg (U3, orange line)
- Meidling (U6, brown line)
- Floridsdorf (U6, brown line)

Public Transport Tickets

24-, 48- & 72-hour-ticket



24-hour-ticket € 7.60
48-hour-ticket € 13.30
72-hour-ticket € 16.50

About

- ticket is valid for 24, 48 or 72 hours from validation
- valid on all public transport services in Vienna

Vienna Weekly Ticket



Weekly ticket (Monday-Sunday) € 16.20

About

- ticket is valid for one week, from Monday to Sunday during this week it can be used for as many rides as you want

Single Trip



Single Trip € 2.20

About

- can be used to travel once in one direction and are valid from the time they are punched in a validating machine
- you may change between tram, bus and underground as often as you like, but without interrupting travel

Tickets are available

- at the Vienna transport Authority's ticket offices
- ticket machines
- tobacconists
- online: <https://shop.wienerlinien.at/>

About Vienna

Vienna is old, Vienna is new – and so diverse: from the magnificent Baroque buildings to “golden” Art Nouveau or the latest architecture. Vienna is packed with imperial history; at the same time it has exciting contemporary museums, lively eating and a vibrating nightlife, but also many quiet corners to explore.

Few cities can boast the imperial grandeur of Vienna, once the centre of the powerful Habsburg monarchy. Lipizzaner stallions performing elegant equine ballet, the angelic tones of the Vienna Boys' Choir drifting across a courtyard and, outrageously opulent palaces.

Walk in the footsteps of the Habsburgs, visit the splendid baroque Schönbrunn or Belvedere Palaces, or stroll along the magnificent Ring Boulevard to take a look at the heart of the former vast Habsburg Empire, the Imperial Palace. Get a sense of the luster and glory of the old empire by visiting St. Stephen's Cathedral, the Spanish Riding School, and the Giant Ferris Wheel at the Prater, as well as the sarcophagi in the Imperial Vault.

Visit Empress Sisi's former summer residence. This baroque complex contains an enchanting park, the Palm House, the Gloriette and a zoo. Spend an entire day at Schönbrunn: visit the show rooms with a "Grand Tour with Audio Guide," admire the splendid Bergl Rooms, and stroll through the “Labyrinth.” Schönbrunn Zoo in Vienna is the oldest existing zoo in the world and has been named Europe's best on three occasions. Each year more than two million visitors come to see the panda baby, new-born elephants and many other rare animals.

Beautiful and celebrated Empress Elisabeth has long since become a cult figure. The Sisi Museum in the Imperial Apartments of the Imperial Palace compares the myth and the facts. Among the highlights are numerous personal objects once owned by Elisabeth as well as the most famous portraits of the beautiful empress.

The Spanish Riding School is only a few steps away from the Sisi Museum and will be celebrating the 450th anniversary of its first written mention with gala performances on Heldenplatz in 2015.

Emperor Franz Joseph officially opened Vienna's Ringstrasse on May 1, 1865. Vienna is celebrating its 150th birthday in 2015 with numerous events and exhibitions. The most beautiful boulevard in the world not only rich in sights, it also has large parks, important monuments, and much more. About 800 buildings line the boulevard today. Additional sights on the Ringstrasse, aside from the many opulent buildings, include the black-gold lattice fence in front of the Hofburg, the world's longest fence from the age of Historicism, the 5.5-meter-tall Pallas Athene statue in front of the Parliament, and the “Rathausmann”, a statue of a man on the tower of City Hall.

The University of Vienna is the second oldest German-speaking University in the world. The building on the Ring was erected in the style of the Italian High Renaissance. The first university in Vienna had already be founded in 1365, but elsewhere in the city. That's why the 650th birthday of the most important educational institution in the country will be celebrated in 2015.

Vienna is one the most musical cities in the world. This is partly due to the vast number of great composers and musicians who were born here or lived and worked here. Visiting Austria's capital therefore means experiencing the works of Mozart, Haydn, Schubert, Beethoven, Johann Strauss and many others in venues like the Staatsoper and Musikverein. The music of Bach and Händel continues to be performed in Vienna's historic churches today, and Vienna's Collection of Ancient Musical Instruments, paired with a visit to the Haus der Musik, takes you deeper into the texture of music and how it is created. Venues for classical music are augmented by some great clubs and live rock and jazz places.

The Mercer Study has chosen Vienna as the world's number one most liveable city for the sixth time in a row in 2015. More than half of the metropolitan area is made up of green spaces. 280 imperial parks and gardens enrich the cityscape. In spring, 400 species of rose bloom in the Volksgarten alone. The nearby recreation areas of Prater, Vienna Woods and Lobau invite visitors to go on walks, day trips, hikes and bicycle tours. Vienna has a total of 2,000 parks.

St. Stephen's Cathedral is the symbol of Vienna. Construction commenced in the 12th century. Today, it is one of the most important Gothic structures in Austria. Stephen's Cathedral is located directly in the city centre, at the religious and geographical heart of Vienna. It's giant Pummerin bell features on television as it rings in the New Year.

It's hard to imagine a more liveable city than Vienna. This is a metropolis where regulars sit in cosy coffee houses and offer credible solutions to the world's chaos over the noble bean; where Beisl'n (bistro pubs) serve delicious brews, wines and traditional food; where talented chefs are taking the capital in new culinary directions; and where an efficient transport system will ferry you across town from a restaurant to a post-dinner drink in no time at all. It's safe, it has lots of bicycle tracks and it even has its own droll sense of humour.

Vienna is a city where postmodernist and contemporary architectural designs contrast and fuse with the monumental and historic. The MuseumsQuartier is a perfect example, with modern museum architecture integrated into a public space created around former stables for the Habsburgs' horses.

Twentieth-century designs are little short of inspiring, while contemporary Vienna is constantly being given new and exciting infrastructural designs such as the new Twin City Liners boat landing and the enormous Hauptbahnhof.

Vienna also hosts several international events such as the famous opera ball that takes place every year in February, which is taking place in the Vienna State Opera. The Life Ball, one of the biggest AIDS charity events worldwide also takes place in Vienna and is held in front of the city hall. Each Life Ball is attended by stars, designers and politicians from all over the world such as Bill Clinton, Katy Perry and Charlize Theron and Jean Paul Gaultier. In 2015 Vienna was celebrating not only one but three anniversaries; 150 years Ringstrasse, 450 years of the Spanish Riding School and 650 years University Vienna. Furthermore Vienna hosted the 60th Eurovision Song Contest in May 2015.

Sources: Vienna Info, Lonely Planet

Tips from a Local

Here you can find some restaurant tips from a local!

Watch out because some of them are very crowded places, so it may be a good idea to reserve a table before you go there.

Restaurants

- **Flatschers:** The best steak in town. Steaks starting at € 25 without side dishes. Super-professional personnel. <http://www.flatschers.at/>, Kaiserstraße 121, 1070 Vienna
- **Brickmakers:** Smoked barbecue, Cider and one of the best beer collections I know in Vienna. Meat is smoked 13 hours before serving. <http://www.brickmakers.at/>, Zieglergasse 42, 1070 Vienna
- **Toma tu Tiempo:** Spanish tapas just as good (or even better) than in Spain. Good collection of Spanish wines. <http://www.tomatutiempo.at/>, Zieglergasse 44, 1070 Vienna
- **Grünspan:** Restaurant with classic Austrian dishes of very high quality, but not as expensive as the other restaurants in the first district. <http://www.plachutta.at/de/gruenspan/>, Ottakringer Straße 266, 1160 Vienna
- **Schweizerhaus:** Restaurant where they have the famous “Stelze” (part of the pig’s leg). They also have drought Budweiser beer. Awesome beer garden. <http://www.schweizerhaus.at/>, Prater 116, 1020 Vienna
- **Wratschko:** Viennese atmosphere, delicious Viennese food. (no website) Neustiftgasse 51, 1070 Vienna

Cocktail Bars

- **Ebert’s Cocktail Bar:** In my opinion, the best cocktails in town. They also have a cocktail school where you can learn how to mix awesome cocktails yourself. <http://www.eberts.at/>, Gumpendorfer Straße 51, 1060 Vienna
- **The Sign:** Equal in quality, but way better-looking cocktails than in Ebert’s. <http://www.thesignlounge.at/>, Liechtensteinstraße 104-106, 1090 Vienna
- **Dino’s American Bar:** One of the old and classic American cocktail bars in Vienna. Awesome cocktails (try the Whiskey Sour with white of egg). <http://www.dinos.at/>, Salzgies 19, 1010 Vienna
- **Barfly’s:** Another old and classic American cocktail bar. It is inside a hotel. Huge collection of Whiskey and Rum. <http://www.castillo.at/en/>, Esterzahygasse 33, 1060 Vienna (Hotel Fürst Metternich)

Bars and Pubs

- **Känguruh:** Awesome bar that has a collection of about 300 beers (mostly Belgian, German and Austrian). <http://www.kaenguruh-pub.at/>, Bürgerspitalgasse 20, 1060 Vienna
- **Wein & Co:** Elegant bar, great opportunity to taste a huge collection of Austrian and international wines. Dress up elegant if you go there. <https://www.weinco.at/filiale/wien-mariahilfer-strasse-9321>, Mariahilfer Straße 36, 1070 Vienna
- **Hawidere:** (Hawidere = an Austrian way of greeting a good friend), extremely cozy and friendly Austrian pub in the 15th district. Good selection of beers, also Burgers and other things to eat. <http://www.hawidere.at/>, Ullmannstraße 31, 1150 Vienna

Cafés

- **Café Josefine:** Young, fresh and small café in the 8th district of Vienna. Awesome coffee, breakfast and small things to eat. <http://cafejosefine.at/>, Laudongasse 10, 1080 Vienna
- **Café Sperl:** Traditional Austrian café with a nice garden. <http://www.cafesperl.at/>, Gumpendorfer Straße 11, 1060 Vienna

Cultural Program

Taking place from September 29-30, 2016

Here you can find concerts, exhibitions and sightseeing trips taking place during your stay in Vienna.

Tourism Information Vienna:

Here are some websites that provide further information and suggestions for you stay in Vienna:

<http://www.wien.info/en>

<http://www.lonelyplanet.com/austria/vienna>

<https://www.viennasightseeing.at/en/>

http://www.viennaticketoffice.com/home_en.php

If you need any assistance concerning the booking of sightseeing tours, concerts or exhibitions please do not hesitate to contact the conference office.

Austrian Dinner Show

A musical and culinary journey through Austria.

A musical journey from the mountains of Tirol, the charming lakes of the Salzkammergut, and from the romantic Danube Valley to imperial Vienna awaits the visitors of the "Austrian Dinner Show". Traditional folklore tunes and colorful dances, a spirited "Landler" from the Alps, romantic arias from Salzburg and famous Waltzes and Operettas from Vienna, the highly talented musicians of the ensemble, excellent vocal soloists and spirited dancers will enchant with their performance of the musical treasures of Austria. Between each dinner course, the visitors experience an exciting program divided into 3 entertaining show scenes. During dinner, typical Viennese music will be played live.

Date: Mo. 29th September 2016, 8 p.m.

Venue: Wiener Rathauskeller
Rathausplatz 1
1010 Wien

Price: 61€

Contact +43-1-274 90 46

information: office@dinnershow.at
www.austriandinnershow.at

Exhibitions

Monet to Picasso. The Batliner Collection

Under the title "Monet to Picasso", the Albertina exhibits its vast holdings of paintings from the period of Modernism, which are primarily made up of works from the Batliner Collection. The epochs covered by this reinstallation of the museum's permanent collection range from Impressionism and Fauvism to German Expressionism, the Bauhaus, and the Russian avant-garde; the presentation concludes with works by Picasso.

JIM DINE. I NEVER LOOK AWAY

The Albertina is showing 60 of Jim Dine's fascinating self-portraits, a representative selection from the 80-year-old artist's generous donation to the museum that presents him in a great number of his many facets. This group of works makes possible an independent, intense, and surprising dialogue with the artist and his output.

Here, Dine's diverse experiments with a wide range of techniques and materials address themes including youth and old age, intimacy and extroversion, seriality, and creativity on paper. And not insignificantly, these self-portraits open up new insights into a supposedly familiar oeuvre.

Landscapes and People

Whether as atmospheric art photography or framed by a socio-political context, whether for scientific documentation or as idealised Heimat photography - landscapes and their inhabitants have always been in the focus of a great many photographers. This exciting and diverse theme is taken up by the second presentation of works from the Albertina's Photographic Collection, in which over 100 masterpieces provide an overview of central trends of photographic history while spanning an arc from well-known artists of the 19th century to contemporary figures.

Date: daily, 10 a.m. - 6 p.m.
Venue: Albertina
Albertinaplatz 1
1010 Wien
Contact information: +43 1 534 83 0
info@albertina.at
www.albertina.at

Sightseeing

Vienna Ring Tram

You can get to know Vienna's wonderful boulevard, the Ringstrasse around the Old City, in comfort from the Vienna Ring Tram – all year round, daily from 10.00 am to 5.30 pm.

Inside the wagons (31 seats), LCD screens inform you about the highlights along the route, supplemented with information in several languages over the headphones. Duration: 25 minutes; tickets can be purchased on board the tram and at the advance sales outlets of Wiener Linien Boarding and alighting point on Schwedenplatz

Date: daily from 10.00 am to 5.30 pm on the hour and half hour

Venue: Schwedenplatz
1010 Wien

Contact information: <http://www.wienerlinien.at>

Ticket price: 9€

Vienna at First Glance - Guided Walk

Comprehensive introduction to the most important sights of Vienna's historical center.

Meeting point: Tourist-Info, 1., Albertinaplatz / Ecke Maysedergasse

As of 3 people, irrespective of weather conditions, duration: 1 1/2-2 h, excluding admission fees, no booking required.

Date: daily, 2 p.m.

Contact information: +43 1 489 96 74
d.office@wienguide.at
www.wienguide.at

Ticket price: 16€

Guided Tours Spanish Horse Riding School

including Stables

A unique tour of the Spanish Riding School takes you to the different "stations" which account for the special charm of this institution. The Winter Riding School, a gem of baroque architecture; the Summer Riding School, one of Vienna's quietest and unexpected spots; the Stallburg, Vienna's most significant Renaissance building with the stables of the Lipizzaners.

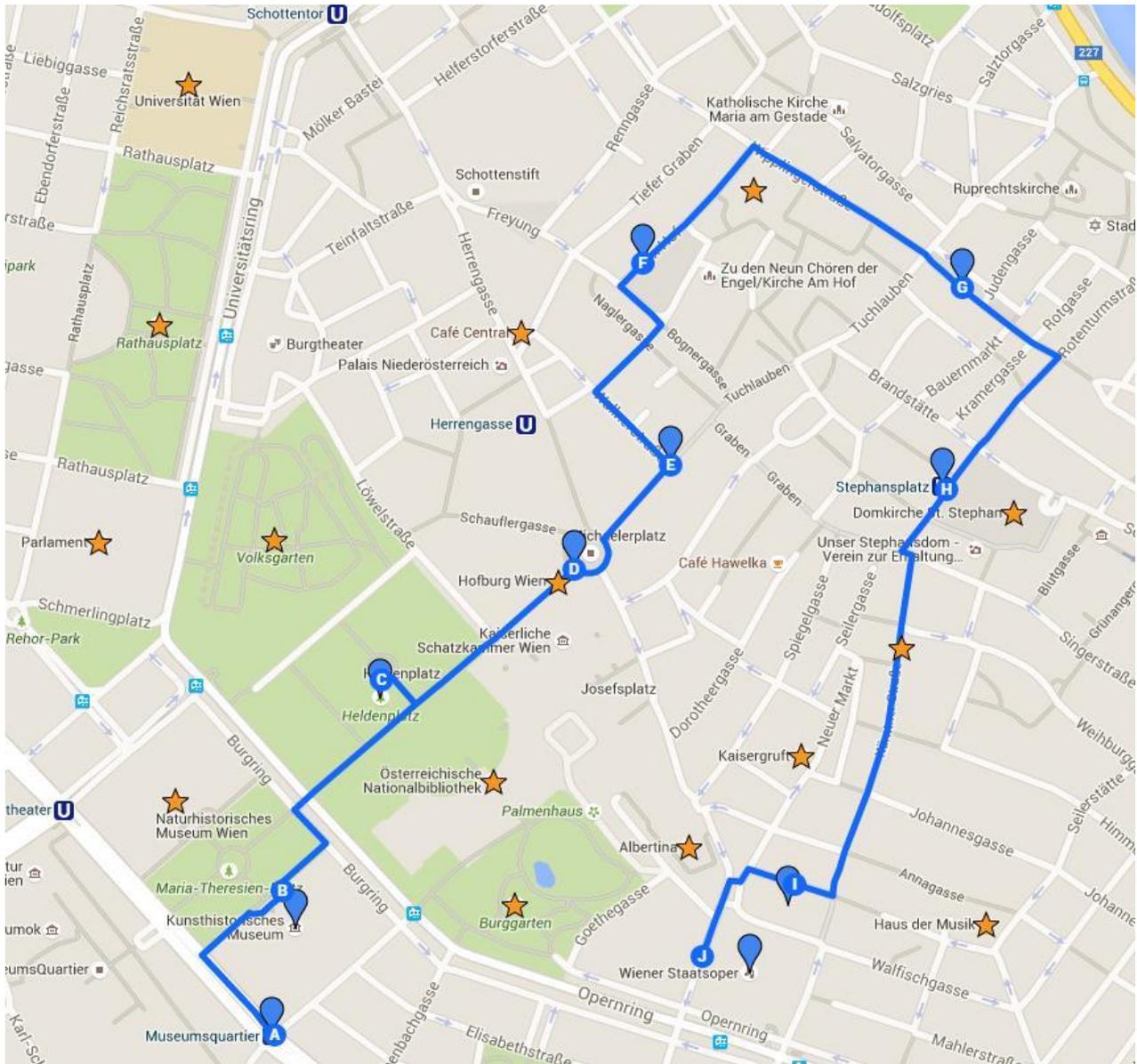
Date: Monday – Sunday at 2, 3 and 4 p.m.

Venue: Spanish Riding School (Spanische Hofreitschule)
Michaelerplatz 1 (Besucherzentrum)
1010 Wien

Contact information: +43-1-533 90 32
www.srs.at
office@srs.at

Ticket price: 18€

Exploring Vienna by yourself – Vienna's Inner City



- A) Museumsquartier
- B) Kunsthistorisches Museum (Museum of Art History)
- C) Heldenplatz
- D) Michaelerplatz
- E) Kohlmarkt
- F) Am Hof
- G) Hoher Markt
- H) Stephansplatz (St. Stephens Square)
- I) Hotel Sacher Wien
- J) Wiener Staatsoper (Vienna State Opera)

Conference Office / Contact

If you need any support, please do not hesitate to contact us.

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