



# PERVASIVE 2004

Second International Conference on Pervasive Computing  
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## OPENING ADDRESS

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His style of ostinato, pulsation and the direct vocal expression of emotions – as expressed in the framing chorus “Fortuna Imperatrix Mundi” (“Fortune, Express of the World”) that we have heard - was considered unusual and “modern” in classical music in the first place. Since its premiere in 1937, however, Carl Orff’s theatrically vivid, earthy cantata setting of the medieval poetry of wandering minstrels has gained, and kept an extraordinarily popular status.



Much of what meant to be “modern” in the twentieth century emerged initially from the place where we have the pleasure to meet for a conference – from Vienna. At the fin-de-siècle (the turn-of-the-century, around 1900) an amazing burst of creativity evolved from this city with contributions to linguistic philosophy (Ludwig Wittgenstein), expressive literature (Karl Kraus, O. Kokoschka, Robert Musil), psychoanalysis (Sigmund Freud), music (Arnold Schönberg, Gustav Mahler, Alban Berg), architecture and urban planning (Otto Wagner, Joseph Maria Olbrich or Adolf Loos) and the fine and applied arts (Anton Stark, Gustav Klimt, Josef Hoffmann or Egon Schiele) – to name a few.

It is with great honour and great pleasure that I welcome you to PERVASIVE 2004, the 2nd International Conference on Pervasive Computing !! – a somewhat “modern” branch of research in computer science.

Moreover it is with great appreciation that I am able to welcome you here in Vienna, Austria – short after this city appeared to be world shaking in the fine arts at the fin-de-sciècle around 1900, and even shorter after yet another fin-de-sciècle, the computer science shaking fin-de-sciècle around 2000. We are more than happy to have you all here to present and discuss the most recent research challenges, efforts and contributions in pervasive computing.



In the chronological order of their appearance, the terms

Ubiquitous Computing (Mark Weiser, Xerox PARC 1988)

Calm Computing (John Brown, Xerox PARC 1996)

Universal Computing (James Landay, Berkeley 1998)

Invisible Computing (G. Barriello, UoWashington 1999)

Pervasive Computing (Academia, IBM 1999, SAP 2000)

Context Based Computing (Berkeley/IBM 1999)

Hidden Computing (Toshiba 1999)

Post PC Computing (common sense)

Ambient Intelligence (European Commission, FP5)

Everyday Computing (Georgia Tech, 2000)

Sentient Computing (AT&T, 2002)

Autonomous Computing (IBM, 2002)

Amorphous Computing (DARPA, 2002)

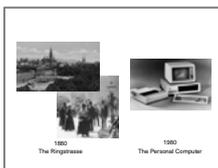
as “modern” terms in computer science have mostly been sniggered at by the established and mature fields in computer science, like coding and information theory, logic and meaning of programs, automata and formal languages, software engineering and algorithms, data structures and information systems.

Nevertheless, this audience here is sufficient empirical evidence, that “modernish” topics like context awareness, autonomy, coordination, sensor-actuator systems, “smart spaces” and “smart appliances”, situative, tangible and attentive interfaces, everywhere interfaces, embodied and spontaneous interaction, have found its place within (or aside) a meanwhile baroque computer science

- pervasive computing is there, pervasive computing is alive – and it is among the most vibrant research fields in computer science today!
- it is not only that a new age of computing has begun, we have already passed the startup phase.

but still sniggering at the pervasive computing has not stopped.

This struggle for acknowledgement of a new, forward-thinking and creative movement against the establishment of the mature has its counterpart in the history of fine arts and in the history of this city. Allow me to highlight this at this very special occasion:



In 1880, Vienna was the home of a confident bourgeoisie, an establishment devoted to order, mannered charm and the grandiloquent facades on the Ringstrasse, Viennas main street surrounding the innermost district and oldest parts of town. Monumental grandiloquence was demonstrated with buildings like the Parliament, the City Hall (Rathaus), the National Theatre (Burgtheater), the University, the Museums of Fine Arts and Natural History, etc. But Vienna at the turn-of-the-century was swiftly becoming something quite different, a test of wills began

emerging between well-behaved traditionalism and liberated modernism. The capital's population increased more than four-fold from less than half a million in the 1850s to over two million by 1910 during the reign period of the Habsburg Emperor Franz Joseph I. While technical and scientific advances followed one another in bewildering succession, the Habsburg empire clung to ideals of stability and the preservation of existing order – the cultivation of the status quo. The city at large was quite oblivious to the fact it was one of the intellectual centers of the world.

A 100 years later, in August 1980, the "Personal Computer" was exposed to this city, and since then, the *"personal computer was quite oblivious to the fact it was one of the "intellectual" centers of the world."*



But back to the 1890ies: While the Viennese society remained rigid and unchanging, its urban subculture of coffeehouse-poets, cabaret-artists and backdoor-painters was aspiring to break through the complacency of intellectual life. This complacency and the gap between actuality and what was presented by and in the city is often quoted as the reason why psycho-analysis needed to be invented in this city.



Much like the call for papers for HUC 99, the International Symposium on Handheld and Ubiquitous Computing in 1999 (out of which turned a series of conferences dedicated to Ubiquitous Computing) came as a wake-up call to "personal computing" – the wake-up call to the arts in fin-de-siècle Vienna came in 1897. Growing out of a dissatisfaction with the traditional practices of the then established art community "Künstlerhaus" and after facing censure by a governing panel, a coalition of progressive artists and designers seceded to form the progressive and forward-looking Vereinigung bildender Künstler (Association of Visual Artists) Österreichische Secession, the Vienna Secession – with Gustav Klimt as their president. Their

unifying aims were to awaken Austrian art from its slumbering provincialism by promoting the living artist (for the first time in Vienna) and encourage cultural exchanges with the foremost contemporary artists on an international level. Driven by an extraordinary creative genius the art epoch "Vienna Moderne" (1895-1930) evolved.



With Gustav Klimt, painter, draughtsman and graphic artist and driving force of the Viennese Modernism, shaped the group and developed its policy.



Their first art exhibition of the Secessionist's opened a year later, and Gustav Klimt designed the accompanying exhibition poster and the cover art of the exhibition catalogue.

His poster depicts the fight of Theseus and the Minotaur, as the symbol for the conflict between the new ideals and the establishment, and as a symbolic representation of the Secessionist's departure from the Künstlerhaus – and you know how this fight ended!

I leave it to your phantasy to interpret the relation among baroque computer science and pervasive computing in terms of the symbols of this artwork.

Theseus's victory is protected by the gaze of Pallas Athena, in the red dress with a lance at the right border of the poster. Athena became the protector and figurehead of the Secessionists. Note the intentional and provocative empty space in the center of the poster, an expression of simplicity in shape and ornament of all the artwork in the "Vienna Modernism".

What Klimt completed as his exhibition poster, was not what the Viennese Society became to see: instead, this poster was presented to the public. I could now ask the audience whether



you have found out about the difference, and if not, I could have gone back and could have shown you Klimts original again, and then the public poster, and ask again, and go back ... but I am not doing this ;-) !



The second art exhibition of the Secessionist's was already given in the new exhibition facility, the Vienna Secessionist Building (still fully functional as a kunsthalle), designed by Joseph Maria Olbrich. It was simple in shape and in ornament as compared to the other buildings of the Ringstrasse. The influence of classic Greece was evident in its roof – an iron sphere of gilded laurel leaves – and the temple like facade. But the motto above the main entrance proclaimed the buildings contemporaneity: “Der Zeit ihre Kunst, der Kunst ihre Freiheit!” – “to every age its art, to art its freedom”.



The group also issued its own journal entitled “Ver Sacrum” (“Heiliger Frühling” or “Sacred Spring”), which was intended to attract the attention of a broad international public. With “Ver Sacrum” the Secessionists were extremely well received by critics and the public alike.



The Secessionist's aim of making art an integral part of life and living made many artists dedicate themselves to all fields of applied arts. The aim for the “**Gesamtkunstwerk**” (the “total artwork”) lead to the unification of art and the re-evaluation of the role of craftsman and designers. The understanding of an artist dedicated to the Gesamtkunstwerk was *“to impress beauty upon every aspect of our lives, that the artist should no longer simply paint pictures, but rather create whole rooms, or even whole dwellings, with wallpapers and furniture as well as paintings”*.

A 100 years later, similar aims were articulated upon the Computer of the 21<sup>st</sup> Century by Marc Weiser.

Weiser vision can be reread on the left hand side: "*The understanding of a computer scientist dedicated to the "Gesamtcomputer" is to impress computing upon every aspect of our lives, that the computer scientist should no longer simply build personal computers, but rather create whole rooms, or even whole dwellings, with wallpapers and furniture as well as personal computers.*"



The Secessionists had to find Viennese manufacturers that shared their high standards and objectives to consistently execute their quality designs. To this end, Koloman Moser (1868-1918), one of the secessionists, and Josef Hoffmann cofounded the association of artists and craftsmen "The Wiener Werkstätte", a direct offshoot of the Vienna Secession. Its philosophical underpinning was the principle of the Gesamtkunstwerk, the integration of all related design elements into a single aesthetic statement.



The applied arts produced during the early years of the Werkstätte are remarkable for their geometric refinement and elegant simplicity, as is expressed in this piece of Kolo Moser.



Kolo Moser created the poster of the 13th art exhibition of the Vienna Secession in 1902. In appreciation of the pioneering spirit of the "Vienna Secession" for the new, I have chosen the artwork of Kolo Moser to stand as a symbol for PERVASIVE 2004.

Related Information and Sources:

[www.aeiou.at](http://www.aeiou.at)

[www.artsmia.org/modernism/](http://www.artsmia.org/modernism/)

Pervasive Computing, at the confluence of technological progress and the growing availability of miniaturized and embedded information and communication technologies, is well on its way to define a whole new era of computing.

Autonomous, ad-hoc networked, wirelessly communicating and spontaneously interacting computing devices and environments are appearing in great number. Information appliances and objects of everyday use have started to deliver services adapted to the person and the context of their use. The nature and appearance of computing has started to be hidden in the fabric of everyday life, invisibly networked, and augmenting environments to form a pervasive computing landscape, in which the physical world becomes merged with a "digital world".

With the call for papers for PERVASIVE 2004 we aimed at putting focus at the challenges posed by the emerging new models of computation and communication, the evolving new paradigms of interaction and coordination, and even the new styles of system design. In an overwhelming response, 278 submissions were received for consideration in the PERVASIVE 2004 program – 212 for the paper track, 49 for the hot spot paper track, and 17 for the video paper track. A program committee of 30 leading scientists, together with the help of external expert reviewers, shaped the PERVASIVE 2004 scientific program which you now hold in your hands. I am truly honored by having had the opportunity to work with such a fabulous group of scientists to select the very best contributions (12.7% acceptance), and to assemble a program that reflects the richness of pervasive computing research, but also the breathtaking and vibrant evolution this research area takes.

On behalf of all our  
conference chairs,  
the program committee,  
the reviewers,  
all the authors of submissions,  
the presenters,  
the organization teams  
at the University of Linz and  
the Oesterreichische Computer Gesellschaft,  
our Sponsors  
(The Austrian Ministry of Transport, Innovation and  
Technology together with the FIT-IT Embedded Systems  
Programme,  
Siemens,  
ONE,  
the province of Upper Austria and  
the cities of Linz  
and Vienna)  
and all the people who have helped in making this event  
happen, I am proud to present you PERVASIVE 2004.

See the Doctoral Colloquium and get in touch with the  
communities best PhD candidates. Be part and actively involved  
in one of the seven topical workshops. Learn about the state of  
the art in one of the technical tutorials. Become inspired by  
outstanding key notes, delivered by Bernhard Grainmann on  
"Brain Computer Interfaces" and by Hiroshi Ishii on "Tangible  
Bits". Find the most recent pervasive computing research results  
in the collection of high quality papers, technical notes, late  
breaking contributions (hot spot papers), video papers and live  
demonstrations. Aside the conference venue in this very  
historical place – the Hofburg palace – enjoy the City Hall  
reception on Wednesday evening, and the unique video night in  
the main festival hall of the University of Vienna later that

evening. Use the opportunity for informal conversation on Thursday evening during the Conference Banquet at the marvelous Schönbrunn palace.

I wish to thank all the people and organizations for their selfless efforts to make all this happen!

We warmly welcome you at PERVASIVE 2004 in Linz and in Vienna. We wish you a successful conference and a pleasant stay in Austria!