25th International Conference on Computer Networks

CN2018

INVITATION AND CONFERENCE INFO
The organizers of the CN2018 conference, on behalf of the Silesian University of Technology, Faculty of Automatic Control, Electronics and Computer Science, Institute of Informatics and Polish Academy of Sciences, Committee of Informatics, Section of Computer Networks and Distributed Systems invite scientists, researchers, engineers, industrial people, and students to submit papers for possible inclusion in proceedings of the 25th International Science Conference on Computer Networks CN2018.

Date  June 19-22, 2018
Venue  Silesian University of Technology
       Gliwice, Europe, Poland
Webpage  http://cn.polsl.pl
E-mail  cn@polsl.pl
**SCOPE**

The CN Committee welcomes papers on any computer networks related topics. The main tracks of the conference refer areas as follow:

- **Computer networks** – This track refers to all issues related directly to computer networks. This is the main track of the conference and most of the presented reports refer to this track.
- **Teleinformatics and telecommunications** – All topics connected with computer communication technologies considered in the context of computer networking and informatics are considered in this track.
- **New technologies** – The brand new technologies, even from the edge of contemporarily familiar ones, which could be used while networking, are included in this track.
- **Queueing theory and queuing networks** – In the ‘queueing’ track topics from the wide area of network modeling and analyzing are presented and discussed.
- **Innovative applications** – The CN conference gives also an opportunity to present applications from area of computer networks. Only innovative solutions are taken.

The detailed list of the conference topics is available on the conference website. The presented tracks and detailed topics do not limit the conference scope.
**Preliminary Information**
The conference is of international type. Conference language is English. The main goal of the conference is presentation of current research and application activities in computer networks domain. The CN conference is dedicated for young and experienced researchers as well as for industrial partners, and provides an exchange platform for networks knowledge and know-how.

**Deadlines**
- submission of full papers in English: till January 10, 2018
- work in progress, workshops, special sessions and other submissions: till March 10, 2018

The submission system is available from October 2017.

**Solicited Papers**
Full papers, 10-20 pages, should describe results and original research work not submitted or published elsewhere in one of the main categories listed above. The papers should properly place the work within the field, cite related work and clearly indicate the innovative aspects of the work and the contribution to the field. Papers must be submitted via the conference website in PDF form. Further information is available at the conference website.

**Proceedings**
All accepted papers for regular sessions will be published in the Conference Proceedings by Springer (CCIS series) publisher. The papers are triple-reviewed, double-blind by members of the Technical Program Committee.
All accepted papers for WIP (Work in Progress) session will be published in the Studia Informatica by SUT Press. The papers are double-reviewed, double-blind by members of the Technical Program Committee.
PRESENTING THE PAPER

REGULAR SESSIONS
No poster sessions are expected. Authors may be invited to present their papers at the regular and parallel sessions. Each invited author should make every effort to attend the conference and present his/her paper.

WIP SESSION
We would like to invite you to participate in the WIP (Work in Progress) special session held as a part of the Conference. The goal of this special session is to bring together scientists, researchers, engineers, and students to share their ideas and research results being in progress.

SUBMISSION GUIDELINES
Papers should be prepared in accordance to guidelines for authors to be downloaded from on the CN website. The title, abstract and full paper file should be posted on the CN website.

The CN Organizing Committee looks forward to receiving proposals in response to the call, and is happy to respond to inquiries from interested parties. Questions may be addressed to Committee via e-mail at cn@polsl.pl
The CN conference has been organized by the Institute of Informatics belonging to the Faculty of Automatic Control, Electronics and Computer Science of the Silesian University of Technology every year since 1993. In the year 2018, it is the 11th international edition and 25th edition at all.

The main intention of the conference is integration of national and international scientific and industrial environments, by enabling scientists to exchange information related to research led by them. The Computer Networks (CN) conference is dedicated to all activities related to computer networks.

Our mission is to deliver a common platform for scientists, academics, researchers, students, industrialists, and other people interested in computer networks and involved in their usage and development. The conference allows attenders to exchange and improve their knowledge, experience, and skills. Special efforts are made to allow students participation, too.

The co-organizer of the conference is the Committee of Informatics of the Polish Academy of Sciences, Section of Computer Network and Distributed Systems. The conference has also the technical co-sponsoring of the IEEE and the technical patronage of the iNEER. Both organizations support us in keeping conference up to date, in controlling level of its content as well as give us many suggestions, opinions and useful guidance.
The Computer Networks conference was established in 1993 in the Institute of Informatics which belongs to the Faculty of Automatic Control, Electronics and Computer Science of the Silesian University of Technology, Gliwice, Poland. The main originator, organizer and chief of the conference Program Committee was Professor Andrzej Grzywak, the prominent specialist of network systems.

The first five editions of the conference took place in the halls of the Faculty of Automatic Control, Electronics and Computer Science of the Silesian University of Technology. In 1999 the conference was organized as an open event for the first time. The venue was the capital of the Polish Tatra Mountains, Zakopane. Each of the next editions was organized outside Gliwice, always in the mountains regions so far.

From the very beginning, for many years, Ms. Halina Węgrzyn worked actively during the conference organization, becoming the main stem of the Organization Committee. In 2007, prof. Andrzej Kwiecień became the chief of the Technical Program Committee (TPC), whereas dr. Piotr Gaj went in for being in the chair of the Organization Committee.

In 2008 the conference form was changed into international with two official languages: English and Polish, which gave guests from abroad an opportunity to participate. Since then, the number of foreign guests is constantly increasing. Since 2015 the official language is only English.

In the conference history, there were also events not directly connected with the subject of the conference. E.g., in 2009 the special seminar GIT (Geology & Information Technology) was organized. This seminar was connected with the Polish-Norwegian research platform related to geological and IT issues. In 2012, we had a special session ‘Stefan Węgrzyn in Memoriam’. There were some tutorials and workshops e.g., on GSM security, amateur radio, SAP HANA and even on typesetting in LaTeX.
Among the conference TPC members are specialists from various areas of the computer networks domain. Since the very beginning, the number of TPC members is increasing. Only the best specialists in their fields are engaged in the TPC activities. Starting from 16 Polish members, now there are 108 members from 27 countries: Algeria, Australia, Austria, Belarus, Bosnia and Herzegovina, Canada, Chile, China, Colombia, Czech Republic, Germany, Greece, France, Italy, Lithuania, Netherlands, Mexico, Poland, Russia, Slovakia, South Africa, Switzerland, Taiwan, Turkey, Ukraine, UK, USA.

During all these years, the conference has become a platform of knowledge, experience, and achievements, possible to be shared, as well as facilitated in the publications of research and applications results. For many years the conference materials were published by Silesian University of Technology Publishing as ‘Science Copybooks’ in Informatics series, which had been released since 2000 as the ‘Studia Informatica’ (SI, ISSN 1642-0489) series. In addition, based on the conference papers, monographs were also created and published by the Polish WKŁ Publishing House. Moreover, proceedings named ‘Computer Networks’ were created in Communications in Computer and Information Science (CCIS, ISSN 1865-0929) series by Springer Publisher from Germany. The cooperation between CN and Springer continues from 2009. The CCIS series is indexed by DBLP, EI, Scopus and it is submitted for the inclusion in ISI Proceedings and Inspec. However, the availability in the Web of Science database is always up to decision of the service owner and with a delay. The papers published in proceedings of all conference editions since 2009 have been already indexed by the Web of Science database. In the year 2018 the papers will be also published in CCIS series.

We always make a great effort to ensure high level of papers being published. The expected acceptance level in the current edition is approx. 40%.
Program Committee

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Silesian University of Technology
The Silesian University of Technology (SUT), located in Upper Silesia, is one of the most prestigious technical universities in Poland, with over 70 years of tradition in education, research and science.

Nowadays, SUT educates over 20,000 students at all three levels of study: bachelor, master and doctoral, mainly in the fields of engineering, technology and architecture. Aside from that, the University also offers courses in administration, mathematics, sociology and management, as well as philology and pedagogy. All of these classes take place in modern laboratories and lecture rooms, and are taught by highly qualified university Staff consisting of 1,750 academic teachers, including 164 professors and 341 assistant professors with Ph.D. degree. The Silesian University of Technology was established as a scientific and didactic base in Upper Silesia, the most industrialized region in Poland and one of the most in Europe. The Silesian University of Technology consists of eleven faculties located in Gliwice, where the University is established, as well as two faculties in Katowice and two in Zabrze.

The mission of the Silesian University of Technology, as a prestigious European technical university, is to conduct innovative scientific research, educate highly qualified staff, and influence the development of the regional and local communities.

Wide range of courses and high quality of education are factors that distinguish the Silesian University of Technology among all technical universities in Poland. Its status is further highlighted by academic achievements of outstanding professionals, both at national and international level.
The University is a key player in the fields of innovation and new technologies, thanks to scientific cooperation with various sectors relevant to economy.

**SUT in Numbers:**
More than 3000 people work at the Silesian University of Technology, including almost 2000 academic and research staff. Currently SUT has:

- 21,400 students
- 584 PhD students
- 3,400 employees
- 1,750 academic teachers
- 600 PhD students
- 340 assistant professors with DSc degree
- 165 professors
- 15 faculties
- 58 fields of study
- 1650 other staff
- 165 full professors
- 341 DSc
- Almost 190,000 graduates
The Silesian University of Technology (SUT) was established in 1945 as the scientific and didactic base of Upper Silesia, the most industrialized region in Poland and one of the most in Europe. Its rich, 70-year-old tradition makes it the oldest university in Upper Silesia and one of the oldest in the country.

The inauguration ceremony of the first academic year was held in Gliwice on October 29, 1945. At the time there were 2750 students. Didactic curricula and plans were based on the standards from Lviv Technical University. The academic staff of the SUT comprised almost solely of the former academics from Lviv. In 1945 there were four faculties with almost 200 academic teachers.

- Faculty of Chemistry,
- Faculty of Electrical Engineering,
- Faculty of Mechanical Engineering
- Faculty of Civil Engineering

The excellent teaching staff were one of the strongest assets of the university from the very beginning.

In 2015, the Silesian University of Technology celebrated its 70th anniversary. Seven decades in the history of the university is the period of successive rectors and deans of various faculties, as well as professors, academics, administrative staff and, above all, crowds of students and graduates.

Without talent, creative work and commitment of a wide range of people we would not be able to create and develop one of the largest technical universities in the country.

Silesian University of Technology, as an important opinion-forming institution, from the very beginning was making a significant contribution to the economy of the region and the whole country,
providing innovative solutions and improving the competitiveness of Polish companies. The Silesian University of Technology is located in the center part of the Upper Silesia province, not far from Europe’s well-known capitals like Prague, Berlin and Vienna, which makes SUT a perfect place to meet people from all around the world to share experience and exchange ideas.

The main strength of the University is a wide range of courses and the outstanding quality of training it provides. SUT has invariably been the top of Polish technical universities and it has ranked high in national higher education rankings. Almost 10 percent of top-managers in Poland graduated from SUT. Recently, we have also ranked 4th among higher education schools whose graduates are most sought after by employers.

In addition to teaching and research activities, the Silesian University of Technology has become an important business partner to respond to the challenges of a knowledge-based economy. SUT is a key player in the fields of new technologies and innovations. New ideas and solutions, brought to life at the University, are important factors that help boosting the competitiveness of Polish companies.

Today, Silesian University of Technology is a modern institution renowned in Polish and international scientific communities. 15 Faculties currently educate approx. 22 thousand students, who will soon join the engineering staff of companies operating not only in Upper Silesia, but also outside of the region. The graduates of the Silesian University of Technology are very successful both at home and abroad, taking employment in sectors of key importance to the knowledge-based economy.
The Faculty employs 39 professors and associate professors, over 200 assistant professors, assistants and lecturers. The Faculty collaborates with companies operating in different fields of industry. As a result, numerous projects of our researchers have been successfully implemented and different companies participate in the education process through student industrial placements as well as supervising the students’ theses and organizing training courses where certificates of competence are conferred.

The Faculty carries out research into automation, robotics, system analysis, signal conversion, analysis, synthesis and system design, electronic and telecommunications systems, microelectronic technologies, digital signal conversion, theoretical and applied computer science, software, databases, design and construction of computer equipment, basis and techniques of creating computer networks.

The Faculty has had outstanding achievements in scientific research, both theoretical and practical, as well as research and development projects. These include:

- the formulation of new steering algorithms (adaptive, predictive and changeable), significant contribution to the creation and modification of the existing methods of adjuster design
- the opening of the Signal Process Laboratory, the Specialized Integrated Circuit Design Laboratory, the creation of the FUZZY-FLOU system, which is used in the decision making process, drawing up and implementation of the steering system for the sheet metal etching process at Columbus Steelworks in the RSA
- the creation of program modules which guarantee the safety of information in computer systems, modules for hospital computer systems, systems of vocal communication with the computer for the blind user, an algorithm visualization system, the computerization of town councils.
STRUCTURE:
- Institute of Automatic Control
- Institute of Electronics
- Institute of Informatics

FIELDS OF STUDY:
- Automatic Control and Robotics
- Biotechnology
- Electronics and Telecommunication
- Informatics
- Information and Communication Technology
- Automatic Control, Electronics, Telecommunication and Computer Science (in English)

THE INSTITUTE OF INFORMATICS

The Institute of Informatics is a part of the Faculty of Automatic Control, Electronics and Computer Science, one of the thirteen faculties of the Silesian University of Technology (SUT). The Institute consists of six divisions: Computer Graphic, Vision and Simulation (DCGVS), Computer Networks and Systems (DCNS), Informatics Devices (DID), Microinformatics and Automata Theory (DMAT), Software (DS), and Theory of Informatics (DTI).

The origins of the Institute can be found in the former Chair of Electrical Engineering Fundamentals at the Faculty of Electrical Engineering, where in 1956 a Division of Control Theory was created, headed by Dr Stefan Węgrzyn. The Division conducted research in the theory of automatic control and fundamentals of control and system design measurement. On October 18, 1961, the Division was transformed into the Chair of Control Theory and, at the same time, at the Faculty of Electrical Engineering a unit of Automatic Control was formed. That set the basis for the new Faculty of Automatic Control, formally established on December 30, 1963.

Originally, the research addressed automation, control theory and dynamics of electric circuits, but with time it evolved to new areas such as: analogue and digital technologies, digital systems, peripheral devices of digital systems, programming of digital systems, and many others. The worldwide and domestic regional developments in the area of computer
science and industrial automation caused the issues of control systems design and programming for digital systems to become the main target of scientific and educational activities of the Chair, which in turn led to renaming the Faculty to the Faculty of Automatic Control and Computer Science on June 26, 1972, and starting a new course programme in computer science.

On September 18, 1975, the Institute of Real-Time Computer Science was founded, which performed its teaching and research activities until 1977, when the Faculty of Automatic Control and Computer Science was reorganised once again through the integration of the Institute (Professor S. Węgrzyn as the Director) with part of the Institute of Industrial Automatic Control and Measurement (Professor Jerzy Siwiński as the Director).

In 1984 the Faculty changed its name into the Faculty of Automatic Control, Electronics and Computer Science, and the Institute of Real-Time Computer Science into the Institute of Informatics, which better corresponded to their research areas.

From 1994 until 2000 Professor Andrzej Grzywak was the Director of the Institute and during this time the scientific research topics widened, including computer networks, databases, multimedia systems, and computer systems security. This was in turn reflected in the changes of teaching programmes, curricula and the introduction of specialisations.

In the years 2000 till 2017 the Director of the Institute has been Professor Stanisław Kozielski, who is specialising in databases and computer architecture. Since 2017 the Director is Professor Andrzej Polański, expert in bioinformatics and biostatistics.

In May 2009, the Faculty of Automatic Control, Electronics and Computer Science obtained accreditation for the following five years entitling the Faculty to lead the studies in the field of informatics which are within the range of responsibility of the Institute of Informatics. The accreditation was issued by the State Accreditation Committee which is the state body evaluating the quality of teaching and verifying compliance with the requirements for higher education degree programmes.

In 2013, the Faculty of Automatic Control, Electronics and Computer Science received the highest possible evaluation from the Polish Accreditation Committee. The evaluation covered Faculty development strategy, an internal system of quality assurance, the level of scientific
research, national and international cooperation, training of Ph.D. and postgraduate students, material resources and a system of financial support for students and doctoral students. This is another extremely high evaluation of the activities of the Faculty, following recently granted scientific category (A) by the Research Units Evaluation Committee.

The educational activity of the Institute comprises several types of studies: undergraduate or 1st level (B.Sc.), graduate or 2nd level (M.Sc.), and postgraduate or 3rd level (Ph.D.), led either as stationary full-time or part-time studies. At present the number of students of computer science at the 1st and 2nd level, for both full-time and part-time studies, reaches almost 1,400.

Thanks to the modern curriculum of studies and modern equipment of laboratories, a graduate of the Computer Science faculty is prepared for construction, design and research works in all industry branches that use computers, in particular in the electronic computer industry and its various applications, especially those which require deep knowledge of computer science. The studies give scientific, theoretical and experimental foundations needed for the software design, construction and exploitation of microcomputers, computers, large computer systems and computer networks. Graduates can be employed in research centres, in institutions and firms that create and use computer hardware or software, in design companies that develop projects on the computerisation of certain aspects of life, in specialised computer science domains of the majority of modern institutions, in computing centres, and in scientific research institutions of various industrial branches. They may also find jobs in secondary schools and posts in the Polish Academy of Sciences leading work in the field of construction, programming, and new applications of computers.

In the year 2007 teaching activities performed by the Institute of Informatics underwent a significant change in order to make them follow the Bologna Declaration principles, which required reorganisation of existing programmes which were valid for students who started their education before October 1, 2007.
Gliwice is a city with a rich history of over 760 years. Located on the crossing of important European traffic routes, it is a buoyant center of economy, commerce and science, where over the past few years companies from the sector of advanced technologies have been developing particularly dynamically. We take pride in the historic center of the city, with the preserved medieval street layout and the enchaining Market Square. Gliwice is a place where tradition, multicultural heritage, science and pioneering hi-tech solutions merge, creating a unique climate of a great place to live.

For the last years Gliwice has become one of the most modern cities of Upper Silesia. Its strengths are its favorable location, advanced economy, comprehensive development of science and education, as well as rich cultural, sports and recreation life. Gliwice is located in the southwestern part of Poland, within the territory of the Province of Silesia. It occupies the surface area of 134.2 km² and has the population of over 170 thousand. This gives in the 17th and 18th position, respectively, on the list of the largest Polish cities. Simultaneously, it constitutes a part of Silesia Metropolis (14 cities) - the largest urban organism of this part of Europe, inhabited by ca. 2 million people.

**History**

Settlements in the vicinity of Gliwice appeared as early as in late Paleolith (ca. 9-8 thousand years B.C.), which can be confirmed with e.g., excavations in Ligota Zabrska, Sośnica, Szobiszowice, Wójtowa Wieś and Dzierżno; however the documented history of the town and settlements which presently belong to its territory begin in the 13th century. At that time in the place where Gliwice is located today there was a trade settlement functioning on the trade route Wrocław – Kraków, which before 1276 was granted with municipal rights from Władysław, the Prince of Opole. Apart from trade, Gliwice citizens were engaged in craftsmanship, e.g. production and sales of beer and hop. The medieval town was surrounded with earthen embankments and a moat fed from the Ostropka river. Their former course is indicated by the today streets of
Dolnych Wałów and Górnych Wałów. Around 1431 fortifications were built with two gates: the Bytom (White) Gate and the Racibórz (Black) Gate. Since 1281 Gliwice and its surroundings constituted a part of the Piast Duchy of Bytom, and in the period 1322-1342 the town was even the capital of the sovereign Gliwice Duchy, governed by Prince Ziemowit (Siemowit).

After the death of the last Bytom Piast in 1354 the Bytom Duchy, and Gliwice with it, was divided between the Cieszyn and Oleśnica Princes. In the period 1429-1431 for a short time the town was a seat of a troop of Hussites, commanded by Michał Korybutowicz. Since 1526 together with the whole Silesia, Gliwice found itself under the imperial sceptre of the Habsburgs. In 1558 Emperor Ferdinand leased it together with the castle property to Friedrich von Zettritz (Cetrycz). Soon after that, during the Thirty Years’ War, Gliwice was besieged and conquered several times (e.g. in 1623 it was plundered by the Lisowczycy troops, in 1626 the town defended itself against the Danish army of Ernest Mansfeld, and in 1645 it was conquered by the Swedish troops under general Torstenson). In 1683 King John III Sobieski stopped in Gliwice for while on his way to Vienna.

In the 17th and 18th century, from the city of a typically trade and craftsmanship nature, making a living on the production and sales of beer, Gliwice transformed into a centre of cloth manufacture, which declined after the Silesian wars between Prussia and Austria. As a result of these wars, in 1741 Gliwice with a large part of Upper Silesia was incorporated to Prussia, to the established Toszek-Gliwice county.

At the end of the 18th century industry started to develop in Gliwice. At that time the director of the State Mining Authority in Wrocław was count Friedrich Wilhelm Reden (1752-1815), called “the father of the Upper Silesian industry”. Upon his initiative the Gliwice Steelworks (and more precisely the Royal Cast Iron Foundry – Königliche Eisengießerei in Gleiwitz) were launched, closely bound with the Royal Coal Mine “Queen Luise” in Zabrze and the Kłodnica Canal as the route of transport of raw materials and products.

When the Upper Silesian Railways reached Gliwice in 1845, next steelworks, mechanical, machine and chemical plants were coming into being in Gliwice. In 1848 a Wrocław-based mercantile family Caro began the construction of “Hermina” Steelworks in Łabędy, and twenty years
later Salomon Huldschinsky constructed a pipe rolling mill in Gliwice. In 1852 Wilhelm Hagenscheidt constructed the Wire and Nail Factory; boiler factories “Leinveber und Co.” and “Oberschlesische Kesselwerke B. Meyer”, Adolf Henning’s machine factory, the glassworks in Nowa Wieś, the chemical plant “Gleiwitzer Chemische Fabrik Dr. Hiller”, the fireclay plant “Stettiner Chamotte Fabrik AG” were operating in the city, as well as numerous brickworks, sawmills, mills, food industry plants. In 1901 the “Gliwice” Mine was established (the first output in 1913), and in 1917 the first coal was extracted in the “Sośnica” Mine.

Simultaneously the city started to develop civilisationally. In the early 19th century the moats were covered, the municipal embankments were levelled and the fortifications were demolished. New streets and quarters came into being to the north and west from the medieval city centre. In 1816 the first grammar school and numerous primary schools were established. In 1826 the first printing office opened, and next the first bank (1851) and gas plant (1854). In 1894 Gliwice (together with Bytom) as the first city in Upper Silesia was equipped with a municipal railway – trams (initially these were steam traction trams, and since 1898 – electric trams). In connection with the electrification of the industrial part of Upper Silesia, progressing after the year 1897 (opening of the power plant in Zabrze), in 1897 the company of OEW (Oberschlesische Elektrizitäts Werke) was established. In 1901 water was supplied to the city from the water intake “Zawada”, and in 1906 the sewage system was installed. At the end of the 19th century several banks operated in Gliwice. The city enjoyed a buoyant social and cultural life. German (Philomaths 1866, Masonic Lodge 1887, Upper Silesian Museum Society 1905) and Polish (“Sokół” Gymnastics Society, St. Aloysius Society 1896, “Harmonia” Polish Society 1898) associations operated simultaneously. German press (most of all “Der Oberschlesische Wanderer” since 1828, “Die Gegenwart” since 1848, “Die Oberschlesische Volksstimme” since 1875) and Polish press (“Opiekun Katolicki” since 1898, “Głos Śląski” since 1903) was published. In 1899 the “Viktoria” municipal theatre was founded, and in 1905 – a museum.

After the plebiscite and the division of Upper Silesia in 1922 the city remained in Germany. At the end of the 1920s an idea of creating an Upper Silesian tricity comprising Bytom, Gliwice and Zabrze emerged; however, due to the global economic crisis it was never implemented.
Despite the crisis, in the 1930s Gliwice developed to the extent never observed before. The construction of an airport, the modernization and reconstruction of the railway hub, the commenced construction of the Gliwice Canal and the motorway, changed the image of the city.

On the eve of the outbreak of the World War II, a group of officers from a special SS troop commanded by lieutenant Naujocks, pretending to be Silesian insurgents, took control of the broadcasting unit of the Gliwice radio station at Tarnogórska street. This act was to constitute one of the pretexts justifying the declaration of the World War II by Hitler and it went down in history as the so-called “Gliwice provocation”.

During the World War II the whole economy was oriented towards military production. Men were called to arms, therefore at each major factory there were labour camps, and there were 4 branches of the camp Auschwitz III Monowice in the city and around it. It should be mentioned that as early as in 1939 in the nearby Nieborowice a transit camp for Polish soldiers, Silesian insurgents and activists of Polish organisations was established. The soviet army took over the city on 24 January 1945 and after the decision of the Potsdam conference Gliwice found itself within the Polish territory.

The Gliwice of today is one of the most buoyantly developing centres in the Upper Silesian conurbation, the Silesian “technopolis” (since 2005 Gliwice has been the member of the World Technopolis Association, an organisation of cities with industrial traditions, administering dynamic academic and scientific centres). The development of the city is based on new technologies (i3D, Future Processing, Infinitive Dreams, Flytronic, Software Interactive), automotive industry (the GM Manufacturing Poland Sp. z o.o. plant) and logistics (Segro Business Park Gliwice, Tulipan Park Gliwice, Diamond Business Park Gliwice and Panattoni Park Gliwice). Since 1945 Gliwice has also been an important scientific centre, with the Silesian University of Technology, one of the largest technical universities in Poland, as its flagship. In the city there also operate the Gliwice School of Entrepreneurship and the Teachers Training College, as well as numerous specialist research institutes, research units of the Polish Academy of Sciences (Institute of Theoretical and Applied Informatics of the Polish Academy of Sciences, Institute of Chemical Engineering and Centre of Polymer and Carbon Materials).
ADDITIONAL INFORMATION

REGION GEOGRAPHY

Silesian (Śląskie) Voivodship is situated in the southern part of Poland. It borders the following voivodships: Opolskie, Łódzkie, Świętokrzyskie and Małopolskie as well as the Czech Republic and Slovakia.

The area of the voivodship, covering over 12 294 km2, constitutes nearly 3,9% of Poland, whereas the number of inhabitants - 4 830 000, comprises 12,5% of the whole population of Poland. It is the most densely populated voivodship in Poland - 1 square km inhabited by 393 people (the country's average - 124).

Śląskie Voivodship covers an area of varied landscape stretching from The Beskid Śląski and Żywiecki chains, through Pogórze Śląskie to the woodlands of Śląska Lowland and the urbanized area of Śląska Upland. The eastern part of the voivodship is a part of the picturesque Krakowsko-Częstochowska Upland.

ECOLOGY

Generally, the region is industrial and has an industrial traditions. However, for more than the last ten years, much has been done in the Śląskie Voivodship in the scope of the environment and nature protection. The improvement in the environment quality is the result of the pro-ecological actions taken by the economic entities, self-governmental administration as well as by implementing the improvement plans, negotiated with the governmental administration, using the new technologies.

Forests constitute 31,7% of the total voivodship area, at country's average 28,4%. The most densely wooded counties are: Tarnogórski (51,6%), Lubliniecki (51%), Żywiecki (50,8%). The greatest woodland areas are situated alongside the Mała Panew river in the Beskidy mountains and north-west of Rybnik. The nature of Śląskie Voivodship is preserved in seven national parks and 59 wildlife reserves.
**WEATHER**

The climate of Śląskie Voivodeship is described as transitional between the warm marine climate of Western Europe and a continental climate from the East. Above the region, masses of wet air from the Atlantic and very dry air from the continent collide. It causes a great variability of the weather from day to day and significant differentiation of particular seasons during consecutive years. The climate of the region is characterized through the influence of uplands and mountains, by the following: heavy rainfalls and the great variance of local climatic conditions.

The central and western parts are the warmest. In the region, January is usually the coldest month of the year, and July is usually the warmest. In Śląskie Voivodship western winds prevail, whose speed does not exceed 5 m/s.

**ELECTRIC DEVICES**

Voltage in Poland is 230V, 50Hz. The plugs of type CEE 7/5 socket (type E) are used in the majority of European.

**TIME**

Poland is on Central-European Time, one hour behind Greenwich Mean Time. From the end of March to the end of October daylight-saving time is in effect.

**CURRENCY**

The Polish złoty (złoty, zł, PLN) is the currency of Poland. It is divided into grosses (grosze, gr). There are 10, 20, 50, 100, 200 and 500 złoty banknotes, while the coins are 1, 2, and 5 zlotys.

**HOW TO REACH THE VENUE?**

The suggested airports and the distance to the conference venue:

- Katowice (KTW) 50 km [http://www.katowice-airport.com](http://www.katowice-airport.com)
- Wrocław (WRO) 177 km [http://airport.wroclaw.pl](http://airport.wroclaw.pl)

There are also many direct trains from various Polish and foreign cities. There are two highways crossed by Gliwice: A1 and A4.
INTERESTING PLACES

MARKET SQUARE

The central point of Gliwice Old town, presenting to this day the medieval building structure. The main building is the Town Hall, around which one can admire tenement houses with arcades built between the 15th and 17th centuries. The characteristic place in the Market Square is the fountain with the sculpture of Neptune designed by Johannes Nietzsche. The Market Square is the favorite meeting place for the inhabitants and tourists alike. Numerous cafés and galleries create a pleasant atmosphere. This is also the place of numerous artistic events.

GLIWICE RADIO STATION

Department of the Museum in Gliwice. Made of larch in the year 1935, it is the highest wooden construction of the type in Europe (111 m). The place of the German provocation in 1939, which preceded the outbreak of World War II. Presently a museum with the exhibition of historic radio transmitters and telecommunication equipment.
The former Zetritz manor, called the Piast’s Castle, today is one of the departments of the Museum in Zamek Piastowski Gliwice. Ages ago it was also used as an arsenal, a prison and a grange. The remains of the medieval defensive walls are preserved in the vicinity.

The church was soon rebuilt and extended. To the west side of the nave body there adheres a quadrilateral cloister building, with an internal cloister garth. From 22 to 23 August 1683 King Jan III Sobieski had a brief sojourn in the order priory, while on his way to relieve the besieged city of Vienna.
The church was built in the years 1886–1900 and is considered to be the most outstanding example of Neo-Gothic temple in Silesia. The church boasts the Rieger-Mocker organs, the best in Silesia, therefore, it is the venue for numerous recitals and concerts. In 1992 the church was raised to the rank of a cathedral.

**ST. PETER AND PAUL’S CATHEDRAL**

The most exquisite green park in the city center of the area of 6.3 ha, where you can have a rest after a long working day, walk with children or admire beautiful bowery compositions. Visit to the Municipal Palm House is a must – over 6,000 exotic plants from all over the world and many species of freshwater ash are to be seen there.

**FREDERIC CHOPIN PARK**
The original gothic Town Hall was built in the 13\textsuperscript{th} century as the seat of municipal authorities. The present, classical building dates back to the 15th century. It is used for formal functions. There are marriage hall, session and conference halls inside.

**MUNICIPAL PALM HOUSE**

A green oasis in the city centre. It is the third largest facility of that type in Poland. Erected in the 19th century, the Palm House is presently home to over 6,000 specimen of bora and fauna. Citruses, spices (pepper, cinnamon, cardamom) and exotic palms and cacti, originating from Australia, Africa and both Americas can be admired here. The tour takes about 1.5 hours.
THE CAMPUS AREA

This booklet has been prepared by the CN Organizing Committee with the permission of:
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