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The “Big Bang” of the Internet in Poland occurred exactly a quarter-century ago, initiated by scientists from the University of Warsaw’s Faculty of Physics

The Internet, a powerful tool for shaping the world and societies, first took root in Poland a quarter-century ago, starting from a landmark email sent from the University of Warsaw’s Faculty of Physics. Today, it can be found in almost every pocket or purse in Poland. How did the Internet explode into the Polish mainstream?

Today marks a beautiful anniversary: the Internet in Poland is celebrating its silver jubilee. On 17 August 1991, a short yet historically significant email was sent from the pavilion in front of the building of the University of Warsaw’s Faculty of Physics on 69 Hoża Street in Warsaw to the DESY laboratory in Hamburg, Germany. In fact, it was not the first electronic mail ever sent in Poland: emails had been used even earlier to communicate within computer networks of various scope. In November 1990, physicists from the PAS Institute of Nuclear Physics in Kraków had received an e-mail from the European Organization for Nuclear Research (CERN) in Geneva that was even sent through one of such networks using the Internet protocol suite TCP/IP. Nevertheless, the email sent from the Faculty of Physics in August 1991 is considered a milestone in that the connection was fully based on TCP/IP and, despite being shared with the international network EARN/BITNET, it was established according to the rules of the modern Internet. The recipient of the first Polish mail sent via the Internet was Jan Sorensen, chief of the Computer Center at the University of Copenhagen.

“Back then, you could establish global connections using many different network protocols, such as BITNET, X.25, and DECnet. The Internet, along with TCP/IP, was by no means an obvious choice. To me, the key characteristics of the Internet were its commonly accessible and free specifications, not to mention the fact that open-source TCP/IP stacks were already available at the time. Back then, the Internet was also very... democratic. You only needed to lease a line from a friend and the two networks formed an internet -- it was small yet very real. I had lived in a totalitarian state for years, so whenever I can, I choose solutions that guarantee freedom,” says Rafał Pietrak, who was then responsible for configuring and testing the Internet connection at the Faculty of Physics.

The transmission of the historic message took place via one of the four communication channels of a line leased to the Polish BITNET network by the telecommunications operator Telekomunikacja Polska. Data was transmitted using a 9,600 bps modem, which was standard speed at the time. The Internet connections people have at home these days are several thousand times faster. The program responsible for routing was KA9Q, which ran on a PC with the operating system MS-DOS. Polish physicists had the European Internet within their grasp in August 1991. In order to obtain access to the global Internet, however, they needed to wait until November.

"Today, it takes just a few seconds to write and send an email to any place in the world. Back then, we had to set up all the hardware and software from scratch. We were familiar with TCP/IP, because we had been using it in the Faculty's internal network for two years. When we received access to the line to Copenhagen, however, we still needed around a week to prepare for the first email exchange," relates Dr. Marcin Gromisz from the Faculty of Physics' Computer Center.

In addition to Rafał Pietrak and Marcin Gromisz, the team from the Faculty of Physics involved in the launch of the first Polish Internet connection included the physicists Wojciech Bogusz (who became the first Polish webmaster after the Faculty of Physics launched its website), Jacek Gajewski, Michał Jankowski, Roman Szwed, and Jerzy Tarasiuk as well as the electronics technician Mariusz Kacprzak.

The development of the Internet in Poland offers an excellent example of the enormous role played by science and engineering in transforming society, not just technologically but also culturally. The scale of the complexity of the theoretical and technical challenges involved in studying the structure of the atomic nucleus and the properties of elementary particles forced physicists to work in large teams that comprised hundreds and thousands of top-notch specialists from many countries and continents. In order to work effectively for many years, groups scattered around the world needed new ways to communicate, ones that enabled their members to exchange information quickly and effectively. It was no coincidence that today's most popular Internet service, namely the World Wide Web, was born at CERN.

In the late 1980s, physicists from Poland were seriously hindered in maintaining permanent contact with teams working at CERN by the information embargo imposed on the countries of the Eastern Bloc by the Coordinating Committee for Multilateral Export Controls (COCOM). In practice, the embargo prevented Polish scientists from accessing what was back then the Internet, namely then EARN/BITNET networks, used chiefly by American universities that worked for the government under military contracts. The embargo was lifted in February 1990 as a result of the political transformations that had taken place in Poland one year earlier and under pressure from the physicists from Warsaw (the Warsaw University's Faculty of Physics) and Kraków (the PAS Institute of Nuclear Physics).

In addition to accomplishing the first Internet connection in August 1991, the physicists from the Faculty of Physics contributed to the creation of the Research and Academic Computer Network (NASK) in April 1991, created the first Polish Usenet group in 1992, and launched the first Polish web server with the Faculty of Physics' website in August 1993. It is also worth adding that the Faculty of Physics started publishing "Donosy," the first Polish information bulletin, two years before the Internet was initiated in Poland. The bulletin continues to be published regularly (www.fuw.edu.pl/donosy/).

Over the years, the Internet in Poland has gradually transformed from a tool for specialists to a service used by millions of people. According to CBOS's figures, the Internet was used regularly in 2015 by around 96% of people aged 18-34 and 86% of those aged 34-44 (Internet users account for 65% of the total adult population). As many as 98% of Polish Internet users have access to the Internet at home and 79% connect to the Internet wirelessly using mobile devices. The average Internet user in Poland spends 13 hours a week online. Among adult Poles, one in two have made at least one purchase online, whereas 44% use online banking and 35% read online newspapers.

The booming popularity of the Internet and the related avalanche of social and cultural changes has astonished not only physicists and IT specialists but also fantasy aficionados. Although older science-fiction series and movies featured many futuristic gadgets, it is hard to find anything reminiscent of today's Internet in terms of functionality even in the productions from the 1970s and 1980s. The messaging devices used in such popular TV series as "Star Trek" and "Space: 1999" only served the purpose of information exchange between two individuals, and the robots in the movie "Star Wars" could only access databases after being physically connected to a relevant computer.

“When we connected to the Internet for the first time in 1991, we were interested only in the technical aspects. No one had any inkling of the scale of the cultural and social phenomena that would emerge from the popularization of the Internet. For that reason, it is even more difficult to predict now what will happen in the future. We can expect data transmission speeds to rise and transmissions to require less and less energy. But does this mean that the life of societies will change as radically as when the first global village emerged? Today, no one can answer this question,” Dr. Gromisz says.

In November 2016, the Faculty of Physics will hold a gathering devoted to the future of the Internet.

Physics and Astronomy first appeared at the University of Warsaw in 1816, under the then Faculty of Philosophy. In 1825 the Astronomical Observatory was established. Currently, the Faculty of Physics' Institutes include Experimental Physics, Theoretical Physics, Geophysics, Department of Mathematical Methods and an Astronomical Observatory. Research covers almost all areas of modern physics, on scales from the quantum to the cosmological. The Faculty's research and teaching staff includes ca. 200 university teachers, of which 88 are employees with the title of professor. The Faculty of Physics, University of Warsaw, is attended by ca. 1000 students and more than 170 doctoral students.

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On 17 August 1991, a first Polish Internet email was sent from the University of Warsaw's Faculty of Physics. The first Polish website was also launched here, in August 1993. The image compares the first and the latest version of our website. (Source: FUW)