From Twisted Pair to Global Broadband: IEEE Milestone for ADSL Celebrated in Antwerp

IEEE Benelux Section Life Member Affinity Group

In a fitting tribute to a technology that silently underpins our digital lives, a historic breakthrough in broadband communication was formally honored on 4 September 2025. An IEEE Milestone was unveiled at Nokia Labs in Antwerp, Belgium, celebrating the development of the pioneering Asymmetric Digital Subscriber Line (ADSL) system. The ceremony, presided over by IEEE President Prof. Dr. Kathleen Kramer and Region 8 Director Prof. Dr. Dušanka Bošković, was attended by over 200 former project collaborators and IEEE members, marking a celebration of Belgian innovation.

The story begins not in the 1990s, but in 1881, with Alexander Graham Bell's patent for twisted-pair cabling to prevent interference in telephony. This humble copper wire became the global standard for voice communication, creating a vast installed base. The Belgian connection runs deep; Bell's father-in-law: Gardiner Hubbard, together with Francis Welles, co-founded the "Bell Telephone Manufacturing Company" in Antwerp in 1882.

Over a century later, this same network presented both a challenge and an opportunity. While the internet was emerging, data speeds over copper wires were painfully slow. At the accompanying symposium, ADSL pioneer Martin De Prycker narrated the journey of a small, intrapreneurial team within the company (later part of Alcatel and Nokia). They envisioned a radical idea: to squeeze megabits of data through the kilohertz-rated copper lines designed only for voice.

Their success was not guaranteed. The team's strategy was a masterclass in innovation: creating an agile "Virtual Company" within the larger corporate structure, pivoting from a focus on Video-on-Demand to the exploding internet market, and designing dedicated supporting chips early on. A key

victory was winning the crucial JPC contract, which established their ADSL product as a global, interoperable standard. Today, the ability to stream high-definition video, conduct video calls, and use bandwidth-heavy online applications traces its origins back to this breakthrough.

The IEEE Milestone citation reads: “Asymmetric Digital Subscriber Line (ADSL) Enabling Broadband Internet, 1993-1997. In 1997, Alcatel’s A1000 ASAM product revolutionized broadband Internet access by providing multi-megabit per second downstream speeds over ubiquitous but decades-old and ill-conditioned subscriber telephone lines. A team based in Antwerp, Belgium began development of the product in 1993. The combination of ADSL technology, innovative signal processing, cutting-edge silicon integration, and a revolutionary architecture brought affordable broadband Internet to nearly one billion people worldwide.”

This IEEE Milestone stands as a testament to a Belgian team that saw the future not in tearing up the old, but in brilliantly reimagining it, turning the world's telephone lines into the on-ramp for the global internet.

For more information on this IEEE Milestone, please visit:
https://ieeemilestones.ethw.org/Milestone-Proposal:ADSL