RECENTLY COMPLETED PROJECT EPIC DEVELOPED NEW SOLUTIONS FOR THREE DIFFERENT CODE CLASSES:

TURBO CODES, LDPC CODES AND POLAR CODES EXCEEDING STATE OF THE ART

November, 2020

VILLACH, AUSTRIA — EPIC project developed a framework and created a database to evaluate and drive FEC techniques as key enablers of practicable beyond 5G wireless Terabit/s solutions. Beyond-5G applications are expected to require wireless data rates in the Tb/s range in a power envelope in the order of some Watts. In the past, progress in microelectronic silicon technology driven by Moore's law was an enabler of large leaps in throughput, lower latency, or lower power. Now we have reached a point where microelectronics can no more keep pace with the increased requirements from communication systems, especially in respect to energy efficiency for wireless transceivers, which have tightly constrained power and energy budgets.

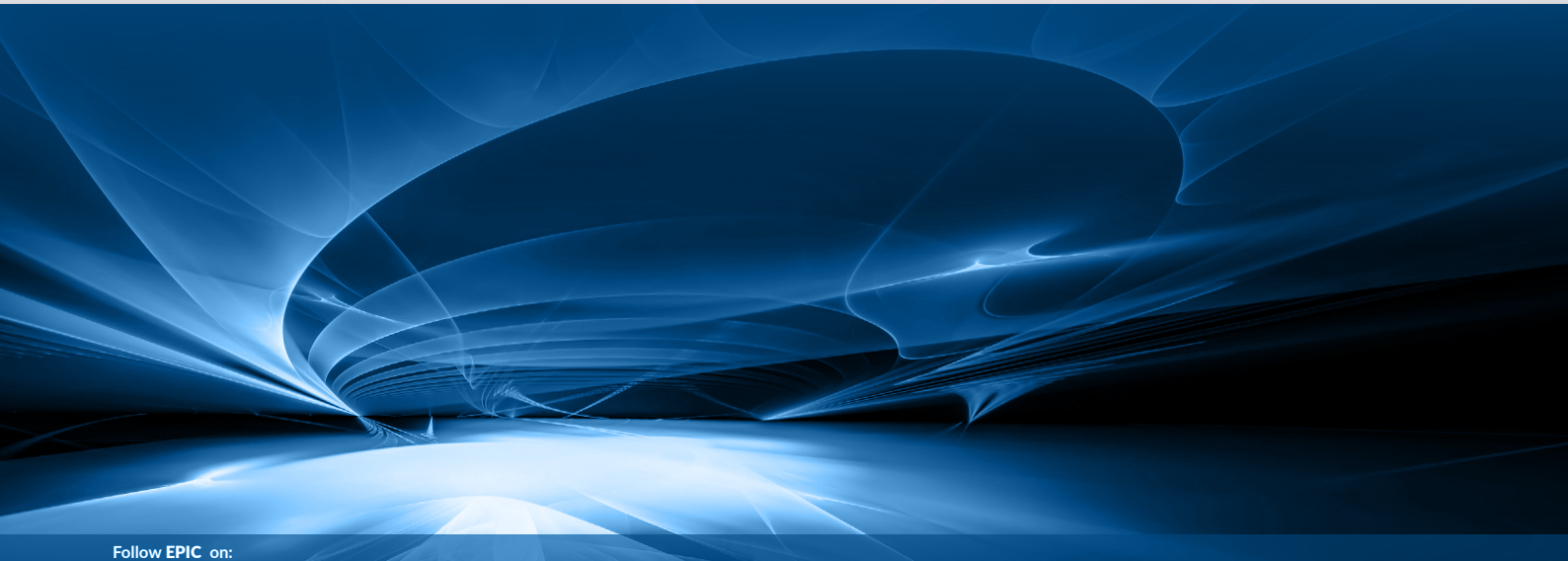
The complexity of implementing advanced FEC schemes to operate at Tb/s data rates is a huge challenge. To achieve outstanding communications performance, advanced channel coding schemes are mandatory. Turbo-, LDPC-, and Polar Codes are the most promising channel coding schemes known today. However, these solutions come along with large implementation challenges, especially when targeting stringent power constraints.

The EPIC project addressed these challenges and developed implementation-ready FEC technology for Turbo-, LDPC-, and Polar codes that meet the cost and performance requirements of future wireless Tb/s use-cases. EPIC methodology differentiates itself by combining code construction, decoding algorithm design and architecture/implementation in a holistic way so that optimization over larger domains are feasible. The project has designed a thorough and detailed design framework based on EPIC Design Space Exploration (DSE). This approach, which is novel and disruptive, has leveraged the partners to develop unrivalled codes, encoder and decoder architectures. We demonstrated world-leading performance by providing an order of magnitude performance improvements with respect to 5G systems and by delivering next generation FEC classes.

Under the coordination of Technikon in Austria, this Horizon 2020 project brought together eight partners from seven European countries. Technikon is a private research service and engineering company in Austria managing multinational cooperative research teams and spotlighting outstanding European based innovation.

For more information about the EPIC project, visit our website or contact the coordinator directly:

Web: https://epic-h2020.eu
Contact: Dr. Klaus-Michael Koch
Office: TECHNIKON Forschungs- und Planungsgesellschaft mbH
Burgplatz 3a, A-9500 Villach, AUSTRIA
PHONE: +43 4242 233-5571
E-MAIL: coordination@epic-h2020.eu



Follow **EPIC** on:

The EPIC project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 760150.