

## A POWERFUL LTE TURBO-CODE DECODER - ENABLING COMPONENT FOR NEXT GENERATION MOBILE TECHNOLOGY

### Problem and solution

Mobile Communication is one of the key technologies of modern information societies. Increased mobile communication and services require an ever increasing data throughput. Therefore, the next generation of wireless systems needs to provide for higher data rates greater than 16 Gbps, shorter delays (latencies), and even greater capacity. To meet the challenges of such future high throughput wireless systems an LTE Turbo-Code Decoder (Forward Error Correction – FEC) is required that has the capabilities to deliver these very high data rates being compliant with the mobile broadband standard specifications.

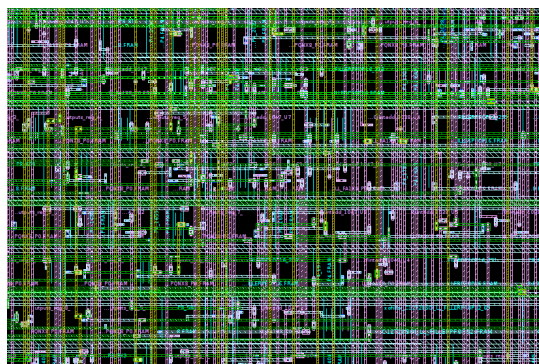
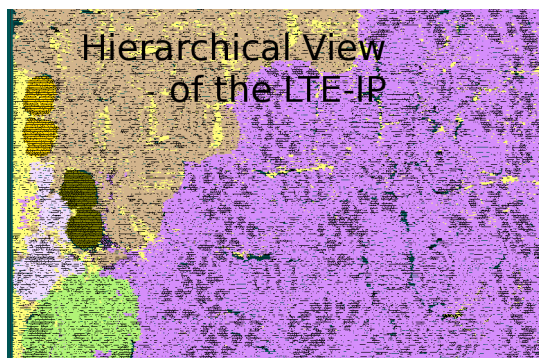
To make their existing solution future proof CREONIC teamed up with the University of Kaiserslautern in order to develop a cutting-edge LTE Turbo-Code Decoder solution within a technology transfer experiment of the TETRACOM project. The major technical advantages of the achieved new LTE Decoder solution are the small chip size, which leads to less energy consumption and an extended battery life. The higher throughput (> 1Gbit/s) enables mobile internet connection with a seamless user experience due to short response times and fast downloads. The architecture is highly scalable to fit perfect to the target application (e.g. base station or mobile device). The near ideal communications performance allows for a reliable communications even at places with poor network coverage. This decoder (see the figure above) is a near to marketable solution and will become a future product of CREONIC.

### The role of the DIH:

The Microelectronic Systems Research Group at the University of Kaiserslautern transferred more than 250 PY of experience and knowledge in designing and verifying high throughput channel decoders to CREONIC. This upskilled the engineering capacities of CREONIC significantly facilitating them to offer highly competitive solutions on the market.

### Impact

The LTE solution is one major step to enhance CREONIC’s product portfolio towards a complete set of solutions of forward error correction cores. This provides CREONIC with the significant competitive advantage to serve its existing and new customers with highly sophisticated solutions. It is expected that CREONIC will increase its number of employees by 50% and its revenues by 20% until 2020 thanks to this TTP.



**End User:** Creonic (SME, DE)  
**Technology provider:** University of Kaiserslautern  
**DIH:** University of Kaiserslautern