The current global approaches that are used to design present complex systems are based on two different and complementary principles, and the resulting design methodologies respectively lead to the definition of Embedded Systems and Internet Systems.

On one hand, embedded systems, having different strong constraints and real-time requirements, are developed starting from formal techniques, in order to allow the designers to specify the system, build a understandable model, and use it to check and validate as early as possible the design process and the system behavior. On the other hand, Internet systems, highly distributed, fully open, featuring a hierarchy of networks and protocols, with mobile and dynamic characteristics, lead to very sophisticated designs, with a set of different layers, that result in best-effort architectures.

This talk will first discuss these two families of systems, describe the main current design methodologies, and present some related methodological solutions. It will then discuss what would be the main interests and properties of a next generation of systems that should be able to integrate these two areas. Finally, it will propose some research topics that should be developed in order to design this important and future generation of advanced systems.