Summary:

This presentation introduces the emerging research areas enabling programmability within the network including network virtualization, network functions virtualization, next-generation service overlay network (NGSON), software defined network (SDN), etc. and discusses the standardization of these technologies.

These fields of research are considered very important for realizing the future Internet worldwide and have not only been promoted in academia, but have also been rapidly commercialized and have triggered standardization activities in several standardization bodies. We discuss the recent research direction towards merging and extending them into enabling "deep programmability" within the network where we reserve multiple "slices" of computational, storage and network resources across the world and enable deep programmability inside these slices. This allows us to design, deploy and experiment with new communication technologies in each slice without interference between slices. We expect that a series of these international research activities eventually formulate the standardization of federating various technologies emerging from all over the world.