Title: "Deeply Programmable Network"; Emerging Technologies for Network Virtualization and Software Defined Network (SDN)

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Abstract:

This presentation introduces the recent trends in network virtualization and software defined network (SDN). We expect these trends to help establish sustainable communities to meet challenges of today’s and tomorrow’s communication infrastructures. These infrastructures, in turn, will support various human activities and thus contribute to the creation of human-oriented technologies.

Research and development in these fields are considered as "high growth areas" for realizing the future Internet worldwide. We observed that these research areas have not only been promoted in academia, but that some of them have also been rapidly commercialized and have triggered standardization activities in several standardization bodies, such as ITU-T for the network virtualization framework, ETSI for network function virtualization and ONF for openflow.

This presentation gives an overview of various research activities on network virtualization and SDN in the world, clarifies the difference and the close interaction between them, and discusses the recent research direction towards merging and extending them into enabling "deep programmability" within the network. It also introduces global scale international joint research trials such as "slice around the world" among US, South America, Europe, and Japan. In these trials, 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 these series of international activities to eventually formulate the standardization of federating various technologies emerging from all over the world.