

System of Systems and the Geography of Computing

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Abstract

System of systems is a collection of systems that pool their resources and capabilities together to create a new, more complex system which offers more functionality and performance than simply the sum of the constituent systems. For example, a car is a complex system made up of over 40 electronic systems for airbag deployment, cruise control, entertainment, braking, etc. Similar examples are all around us – from mobile devices to gaming consoles to home electronics. In the Internet of Things (IOT) era, all these systems are interconnected either to the home, to the city or to the cloud. This connectivity brings system-level challenges include partitioning, communications protocols, IP selection, software bring-up, hardware-software verification, reliability, safety, and more. The electronic systems that make up the IOT generate huge amounts of data, and data is useful only when we compute on it and share it. When the dimensions of design range from few nm to thousands of kilometers, geography of computing is key. This presentation talks about innovation in system of systems, its context in the Internet of Things era, and the geography of computing in terms of data and energy.

Biography

Jaswinder S. Ahuja is a Corporate Vice President and the Managing Director of Cadence Design Systems in India. Jaswinder heads Cadence's India Field Operations and the India Operating Region. He is also responsible for Global Customer Support and Education Services. Jaswinder is a founding member and the current President of the VLSI Society of India (VSI) and is on the Executive Council of the Indian Electronics & Semiconductor Association (IESA). He served as IESA Chairman in 2007–08. Jaswinder has a B.Tech in Electronics Engineering from IT-BHU, Varanasi and an MS in Computer Engineering from Northeastern University, Boston, USA. He also holds an Executive MBA from Stanford University, USA.