

"How Long is Your Belt?" Towards a Single Device for Multiple Functions.

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Personal communication and computing devices have become omnipresent: cellular phones, PDAs, MP3 players, still and video cameras. Characteristics shared by all these devices include a shrinking size and expanded performance and functionality. All can be carried by a person on a single belt. However, a suitcase is required for all the chargers, as well as the cables to connect to PCs and all the cradles, earplugs etc. The proliferation of such devices has also resulted in a proliferation of standards: TDMA, CDMA, GSM, GPRS, to name a few in cellular communication, Wi-Fi and Bluetooth. The same can be said of audio, image and video standards.

A novel technology, reconfigurable computing, is emerging from research efforts and start-up companies that can radically alter this situation. It does not aim at eliminating standards, but rather it allows a given device to implement any or all standards and functionality. While in a traditional microprocessor, the hardware structure is fixed and the software determines the desired operation, in reconfigurable systems the hardware structure itself is adapted to fit the intended operation under software control.

This talk examines the impact of reconfigurable computing on pervasive computing systems.