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Special Issue on “Layerless Communications Towards Realistic Vision”

Selected Topics from the Strategic Workshop 2006

Ole Brun Madsen · Marina Ruggieri

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The eight edition of the closed-door Strategic Workshop has been held in Mykonos—Greece on June 2–4, 2006, focusing on a very innovative and debated topic: layerless communications towards realistic vision.

The 2006 edition of the Workshop, similarly to the two editions that have taken place in Italy in 2000 and 2004, has lived the beautiful contrast between a very modern topic and an extremely ancient frame, full of history and monumental signs of a glorious past.

The content of presentations and panel session discussions, together with the viewpoint of session chairs have been gathered, according to a “good habit” established since the 2000 edition of the Workshop.

The Workshop focused on five main areas: 1) the “layerless communications” concept; 2) layerless communications in the *future*; 3) a *realistic vision* on layerless communications; 4) the passage *from dream to reality*; 5) *security, applications and user requirements*; 6) *trust* of layerless communications.

Six papers authored by speakers, panelists and chairs have been prepared to cover the above areas.

The first paper, authored by Chih-Cheng Tseng and Kwang-Cheng Chen, discards the traditional layer-concept to tackle power-efficient wireless ad hoc networks under shadow fading, by identifying distance between a node pair as a sort of random distance to accommodate fading effect. The paper also proposes a critical-node-first based clustering algorithm to organize the shadow faded random network topology into a power-efficient network architecture.

The second paper, authored by Werner Mohr, provides an overview on the different trends and developments of mobile and wireless communications towards future systems. Their application to different usage scenarios for different communication relations between

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humans and machines, the future user-centric perspective, the vision based on an integration of different cooperating access systems in a heterogeneous environment at a packet-based core network are among the topics covered in the paper.

The third paper, authored by Juha Saarnio, Rui Aguiar and Vijaya Kumar, highlights the main conclusions of a panel discussion focused on the passage of layerless communications from dream to reality. An overview of the present and the issues and implication of the jump in the future are dealt with in this short but very dense contribution.

The fourth paper, authored by Satoshi Konishi, Xiaiqiu Wang, Takeshi Kitahara, Hajime Nakamura and Toshinori Suzuki, proposes ultra low-latency mobile networks, where the target value for unidirectional end-to-end latency per IP packet is 10 milliseconds, in order to establish a new communications infrastructure capable of providing next-generation real-time services. A model of such ultra low-latency mobile networks is also introduced, and the results of a feasibility study are presented in the paper.

The fifth paper, authored by Mahbubul Alam and Neeli Prasad, deals with the past, the present and the future of digital home and, in particular, how convergence transforms home networking. A description of the technology adoption trend, the consumer trend and the behavioural trend is provided, also discussing the business impact from consumer demand for “living in real time” and from the convergence of applications, services, networks and terminals.

The issue is concluded by a paper from Ramjee Prasad, that provides to the reader a vision on the future perspectives of layerless communications.

Before leaving the readers to the content of the papers and hoping that they will find in its pages hints and suggestions for new ideas and perspectives, we would like to express our appreciation to the Workshop Program Committee Members, that contribute to render the Workshop a successful event.