IP-BASED TV TECHNOLOGIES, SERVICES, AND MULTIDISCIPLINARY APPLICATIONS

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The move to Internet Protocol (IP)-based content delivery services has challenged the television industry by allowing high-quality television content to be delivered using the Internet, wired and wireless, private and public. The new convergence paradigm is already playing out its disruptive role as "television" is now associated with both a personal and social experience using an ecosystem of devices. The unidirectional flow of content from an operator to a device has thus morphed into a much richer combination of real-time on-demand web and user generated content complementing traditional programming.

With more and more platforms such as tablets, connected TVs, smartphones, andtraditional and IP-enabled set-top boxes available for content distribution and consumption, the TV experience is geo-localized, and time and place shifted, and combines video streaming, social networking, micro-blogging, and widgets. And it is wireless and mobile, with phenomenal growth predicted in the next few years.

Hence, while critics have announced the death of television, with this special issue we intend to show that not only is television alive, but it has given life to many novel architectures for networks and middleware, improvements to the reliability of the connected information nodes, new distribution models to maximize the performance in wireless environments, as well as user-centric experience research, social television, transmedia storytelling, and user interface research. Essentially, research on television has moved from focusing on the traditional linear delivery model to studying comprehensive end-to-end and top to bottom strategies. It has moved away from the current design silos and the balkanization of devices and services, and now addresses the comprehensive and intelligent use of the multiscreen.

As a result, television convergence research is being renewed to investigate the advances that will be necessary in networking and user experience. Ubiquitous television provides a significant challenge for the next generation networks, especially wireless, the future viewing devices, the "screens," the software platforms, and the user interfaces. Significant questions need to be answered: how to manage content delivery networks, protect commercial and personal content, design efficient distribution architectures, enhance visual perception, and maximize the quality of experience. The articles in this Feature Topic (FT) focus on the recent changes in the Internet as the new television delivery medium and how these changes reshape the IP-based television of the future.

The three articles chosen after an extensive review (which have been selected out of 24 submissions in a two-round peer review process) embody how the changes in television consumption of the recent past have challenged platforms and infrastructure. They focus on mainly two areas, a storytelling platform and channel switching performance, which are of great importance for the future of the "new television."

In the first article, entitled "Storisphere: From TV Watching to Community Story Telling," the authors describe a web-based collaborative video content workspace for members of a community to compose and share video stories, using desktop or mobile devices. Storisphere is well aligned with the evolution of user-generated content moving into socially connected storytelling that is emerging as a strong current to recreate communities around video content.

In the next two articles, "A Survey of Channel Switching Schemes for IPTV" and "Mitigating IPTV Zapping

Delay," the authors rightly recognize the importance channel switching time has on the user experience of IPTV systems and over-the-top services. In the current evolution toward "content changing" — with access to many different types of content and the availability of powerful search and recommendation engines — the reduction of the delay when switching from one program to another across providers will become essential, as the "channels" of the future will not be in the hundreds but most likely almost boundless. Both articles review the infrastructure and network challenges that impair channel change, and provide solutions that could be applied.

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