Nowadays television means more than the passive consumption of broadcast content. Television sets are equipped with modern computer technologies and provide manifold opportunities for accessing content interactively and on-demand. Personal devices such as the Smartphone can be used as a second screen to show additional information, to chat with others and interact with the content on the main screen. Additionally, new technologies like gesture or audio recognition are being integrated in current market technologies. These enable new ways to control and interact with content. Beyond simply watching television, the TV set now provides new opportunities for using home-related services including online gaming, visualization of energy consumption, home security or support for healthy living. The TV set is thus becoming a high-tech platform for on-demand media consumption which integrates a variety of home computing services.

The ubiquitous nature of current home technologies requires interdisciplinary perspectives for designing new value adding services. Interweaving developments in novel technologies, findings from empirical studies, and user-centered design helps us to shape these services. Designing for such an environment with a multiplicity of interconnected devices requires multi-faceted research that explores people’s needs with regards to technological feasibility. It needs to explore the limitations and opportunities of novel interaction between people, their practices, innovative technologies and new content formats.

The special issue addresses novel interaction concepts that connect different devices and interfaces. For instance, a tablet computer can be used as a secondary screen for remote control or for twittering and chatting, when related to the TV content. From a design-oriented view, new concepts which add value for the user need to be evolved in a more integrated manner, e.g. accessing internet services on TV or making content accessible on various devices. Additionally, new interface technologies such as gesture and audio recognition offer new opportunities to interact with iTV functionalities. Such an integrated platform provides manifold opportunities for the research community to design value-adding technologies and services. Besides investigating new interaction technologies, further research may provide an integrated perspective on how new interfaces could better be linked to new content formats. New interactive services need to combine intuitive and easy to use technologies with on-demand forms for interactive storytelling. In any case, social studies are of high relevance and help us understand how new services such as these are used in daily life.

The papers in this special issue address TV-related design concepts and present empirical studies that explore how users interact with interconnected services. Attention has been strongly focused on the usage of alternative control and interaction mechanisms, whereby three of the papers present technological concepts for using hand gestures or secondary devices to interact with video content. Louise
Barkhuus, Goranka Zoric, Arvid Engstöm, Javier Ruiz-Hidalgo and Nico Verzijp present a new interaction mode for panoramic live video. Users can trigger commands by making gestures in mid-air with their hands. Dezfuli Niloofar, Mohammadreza Khalibeigi, Jochen Huber and Max Mühlhäuser present a hands-free interaction concept: users can interact with content on TV by tipping the palm of their hand with their fingers. Regina Bernhaupt and Michael M. Pirker present insights from using the smartphone as an alternative control device, and in their paper they also summarize guidelines for the design of interaction modes with companion devices.

In comparison to traditional forms of TV, reception might be possible with other, alternative, approaches. Lizzy Bleumers, Wendy van den Broeck, Bram Lievens and Jo Pierson present a new technology called 360° TV. It enables users to watch video dynamically in 360°, similar to the view of a cameraperson who moves freely. Two other papers help to understand how media center systems and related technologies such as smartphones are integrated into the social practices of households. Benedikt Ley, Corinna Ogonowski, Jan Hess, Tim Reichling, Lin Wan and Volker Wulf investigate how TV and social media are being used in daily practice. Results from a long-term study in a living lab setting provide insight into the effects that internet-enhanced television sets and smartphones have on the life in 16 households. Cédric Courtois, Lieven de Marez and Pieter Verdegem present empirical insights regarding the role of technology in audiovisual media consumption. They identified relevant patterns regarding watching television, expanding the practice by using multiple devices and replacing the television by Laptop.

The papers in this special issue provide insight into novel TV-related technologies for the living room including alternative interaction concepts such as interacting with TV content by hand gestures, new viewing modes and empirical studies of media usage. Two of the papers provide detailed understanding of the current practice of TV- and video reception on various devices. Media center systems provide valuable opportunities for more flexible, on-demand and integrated services. Results also show how watching TV is replaced or enriched by new consumption and interaction modes on secondary devices. Investigating the practice shows several implications on how new technologies are embedded in daily practice of households, and how actually used there. For further design cases we need to understand the implications of technologies used in daily life in the various types of households. We also need to find new ways of co-designing more closely with users, in order to identify needs directly and to explore how prototypes are adapted in the households.

From our point of view, designing for the living room provides great potential for further investigation. In the future, TV most likely will become an integrative platform for all kinds of interactive services, e.g. for healthy living, home control and easy-to-access community functions. Novel services and interaction concepts need to address a contextualized, well-adjusted functional design by considering the characteristics of TV as a shared screen. Further work may explore new design perspectives on how users can be supported with new multimodal interfaces and with functionalities for social exchange within and between households.

Relevant research areas for further work include:
- **Multimodal interaction concepts and interfaces:** In further work we need to explore multimodal interfaces that are connected to the TV. Physical artifacts, new forms of interaction between available devices and the combination of them provide an interesting design space. Also of interest are novel approaches of proxemic interactions for the home, concepts that recognize the context and adapt the interface semi-automatically. It also is of importance to design new forms of interaction for different devices considering the characteristics of user types and their requirements in various contexts (family usage, within home usage, on the way usage etc.).

- **Functionalities for social exchange:** Currently, existing market technology, such as a Facebook plugin for Smart TVs, is straightforward implemented as standalone functionality. In further research we need to find novel concepts that make use of the TV as a shared display in the living room, e.g. by displaying content that is merged from different profiles, favorites, and likes that are related to a household profile. The design of new community approaches also needs to support the cooperation and the media exchange between households in a more active, easy to use and playful manner. Thereby a user-centered design that considers personal and community modes as well is of high relevance. All in all we need to investigate into a better integration of social networks and into the design of different views on data.

- **TV as integration platform:** TV becomes an integration platform for any kind of services. In further work the TV as a public shared display can be connected to other sensors/actors in the home and visualize any home related information services, e.g. energy consumption, or to support health and well-being. For such an approach it also becomes more and more important to support and guide users to pre-select and recommend media content and services that address certain needs.

- **Methodological investigation:** The design of new services and interaction concepts needs to be better linked to the practice of usage in households. We need to investigate new methods and tools for co-designing in practice (Living Lab). Such continuous forms of co-designing should support different stakeholders in an interdisciplinary manner. We need to shift practice based research from a 'single-user study design' to a more long-term exploration of how the technologies are suitable for use in daily household routines. Such processes need to be better supported by tools that support user-user and user-developer cooperation in a long-term manner.

Eight submissions were received for this special issue: seven manuscripts were invited and revised versions of highly rated papers were presented at EuroITV 2012 in Berlin. A further paper was an extended version of a full paper presented at EuroITV 2013 in Como. Each manuscript was evaluated again by two reviewers. Based on these reviews, six manuscripts were invited to resubmit. After another round of improvements, we finally accepted all six papers for publication.

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