



Electronic Markets on networked media

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Dear readers,

This issue of *Electronic Markets* is our third double-special issue. Following this short tradition, the constellation of two special themes is used to reflect on the relationship between the two fields. In the present case, these are the areas of “Digitalization and the media industry” and the “Economics of grids, clouds, systems, and services”. At first glance, the former is linked with the (re)evolution of a specific industry, while the latter represents cross-domain topics associated with the evolution of a technological potential that is applicable in many industries. In fact, we named the insight that digital technologies have the power to transform the media industry a truism in last year’s first editorial and showed that the shift from analog to digital technologies is also accompanied by a shift from decentralized resources and activities towards more networked and centralized platforms (Alt and Militzer-Horstmann 2017). These networked systems are often based on grids, clouds and services. While grids typically denote distributed systems that work together, clouds involve the use of remote (virtual) resources, which in turn offer functionalities as service, i.e. on a per-use-basis.

From local to networked

Computing based on grids, clouds and services has profoundly changed the media sector with an accelerating speed of change. This has become well known in the music industry where innovation cycles have constantly shortened: Since the introduction of music CDs in the mid-1980s, their sales surpassed the sales of traditional vinyl discs within approx.

five years only. Before, the analog sound storage medium existed - in different formats and materials – more or less since 1877, when Thomas Edison invented the phonograph. The same applies to magnetic audiotape, which has been available for storing audio data since the 1940s. This local nature of storing data on carrier media, such as discs or tapes, began to change at the end of the 1990s when large music collections in the MP3 format became available online via platforms, such as Napster, iTunes and others. Instead of buying physical media, users now started to download audio files onto their devices and content became accessible from anywhere.

Obviously, this process of virtualization has continued. Instead of buying and owning music – as well as other media, such as eBooks or DVDs – users now have the possibility to stream this content and consume it for a limited time. On-demand streaming is the latest development in this regard and pioneers, such as Spotify and Netflix have grown to important cloud-based players in the media industry (Oppitz and Tomsu 2018). For example, Spotify was founded in 2006 and offers its streaming service since 2008. Already in the beginning of this decade Spotify reached a market share of more than 50% of the music business, in particular in Scandinavian countries. Today, the company has more than 140 million active users and carries over 30 million songs.¹ In contrast, the video streaming service Netflix grew from a traditional DVD rental business model founded in 1997. It stepped on the video-on-demand model in 2007 and now claims to have a total of 118 million subscribers (Molla 2018) and some 5000 titles at the end of 2016 (Clark 2018). In 2013, the company started to produce their own content series and increased this number to some 126 titles in 2016 (Koblin 2018). Other prominent tech companies, in particular Google, Apple, Facebook, and Amazon (also known as GAFA), have since embarked on the production of own TV series and contribute to a further step in the digital transformation of the media industry. More or less all of these business models follow pricing schemes that no longer rely on purchasing, but on using digital media content.

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¹ <https://press.spotify.com/us/about/> (accessed Jan 3., 2018)

The inroads made by these tech companies have had implications for traditional media organizations, such as book, music, or news publishers. They are still searching for suitable sustainable digital business models to cope with the digital transformation and to meet the changing media consumption habits on behalf of the users. The result is that media value chains have changed from being focused on separate media products towards an ecosystem of highly networked media products and processes. Some key actors along the stages of a publishing process (see Alt 2017, 94) are shown in Fig. 1 with providers of media services (e.g. Ebsco, GAFSA, ResearchGate, SpringerLink or Scopus), electronic platforms (e.g. Aries Systems Manager, Clarivate Analytics, Issuu or Joomag) and various network providers. The latter enable a content- and context-aware processing of media objects and aim to safeguard quality of service and experience for the end user (e.g. Grafl et al. 2013). Thus, networked media are user-centric and comprise the interplay of actors in a network, a service and an end user environment (Koumaras et al. 2011, 371).

Challenges of networked media

In networked media the dynamics within the publishing process have changed profoundly. In the traditional world, mass media publishing houses acted as intermediaries (or gatekeepers) to information. They not only collected and distributed information, but also filtered, selected, interpreted and commented information. In networked world, information systems are being used along the entire publishing process, which means that content is mostly available in digital format and may also be processed automatically. As shown in Fig. 1, media formats have grown where user environments are present at both ends of the publishing process. These “prosumers” not only read, but also comment and share content, which involves end users more closely in more steps of the publishing process. Platforms, such

as social media, have created services that allow user-generated content (UGC) and the tailoring or personalization of content depending on the users’ context (i.e. preferences, location). These platforms are the key to content that is created by everybody and that is distributed to everybody. They take over typical functions of media companies, i.e. the collecting, selection, interpretation, commenting and distribution of information. Algorithms have become widespread to automatically combine content based on the user’s preferences and also on suggestions from their network. Past interests determine future interests, which tends to confirm existing opinions and positions.

Electronic platforms for collaboration, publishing and distribution often go in hand with modularized content that is linked with semantic web technologies. Modularization is known as “the process of separating content into discrete topics and storing them for reuse as modules in an appropriately capable content management system or database” (Haramundanis 2009, 151). Annotating these pieces of content with tags from ontologies is an important requirement for automatically creating bundled content from different sources. The power of modularization or disaggregation has become known some 25 years ago in the e-commerce literature. Rayport and Sviokla (Rayport and Sviokla 1994, 145) stated that “In the marketplace, however, content, context, and infrastructure can be disaggregated to create new ways of adding value, lowering costs, forging relationships with nontraditional partners, and rethinking ‘ownership’ issues.” This impact was observed in the transformation of

- value creation structures, which due to reduced transaction costs lead to dis- and re-intermediation effects and the emergence of new actors, networks or ecosystems (Sarkar et al. 1995). Some examples were mentioned in the section above.
- value creation processes based on the changed dynamics in publication processes. This includes new forms of creating, storing, distributing, sharing, or using media. For

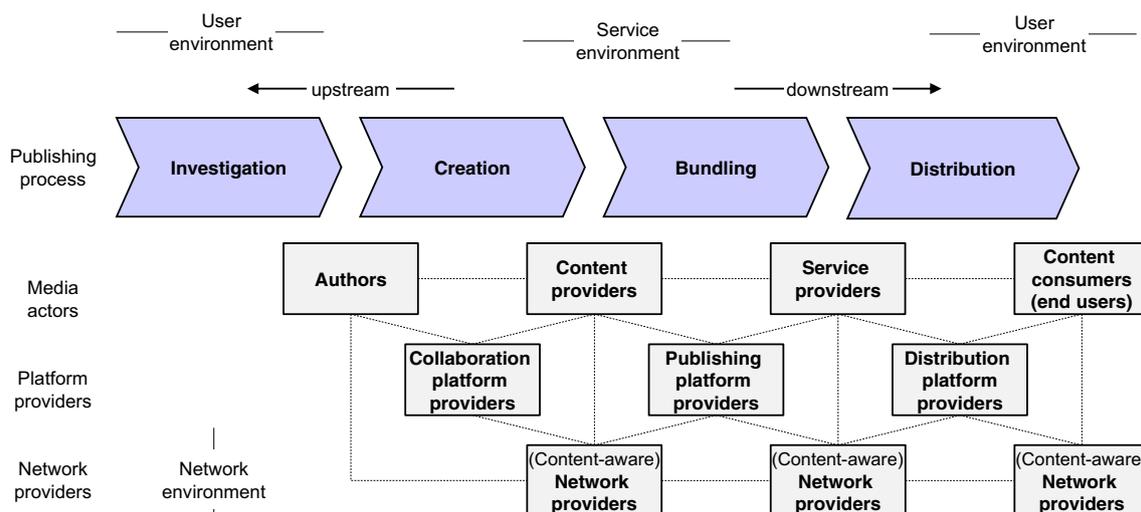


Fig. 1 Actors in networked media

example, writing processes (creation process stage in Fig. 1) need to consider creating chunks of content that are conceptually linked and follow standards for categorization based on predefined metadata, editing and graphics (Haramundanis 2009, 152).

- media products and services, since the costs of producing and distributing digital media are substantially below the costs for physical media products (Bhattacharjee et al. 2009). For example, the authors expect that due to technologies, such as collaborative recommender systems, matching and technologies for digital rights management (DRM), “the ‘business of music’ is rapidly morphing into a ‘business of search’.” (Bhattacharjee et al. 2009, 139).
- infrastructures, since networked media involve various providers of media marketplaces, platforms and networks. Along the publishing process, an increasing amount of data is generated, collected and processed to allow high levels of personalization and quality of experience (Koumaras et al. 2011).

Similar effects were observed in a recent special issue of *Electronic Markets* in the field of academic publishing (Ponte et al. 2017). Additional challenges for the media industry in general emerge from the data involved in networked media. Following their nature, the term of “big data” seems useful for a more in-depth discussion. Depending on the source, various “V”s have become known to characterize this phenomenon (Aker and Fosso Wamba 2016, 178): Volume refers to the growing quantity of data, velocity to the speed of collecting, processing and analyzing data, variety to the various types of data, and veracity to the reliability of data sources. While solutions for handling volume (e.g. distributed storage solutions, such as Hadoop), velocity (e.g. realtime monitoring solutions, such as Senseware), and variety (e.g. content curation solutions, such as Curata) are increasingly gaining sophistication, the dimension of veracity still raises many open questions. In fact, the notions of “fake news” and “alternative facts” have emphasized that networked media are prone to manipulation from various sources. The networked nature allows erroneous or false data – whether intentional or not – to spread quickly and influence decision-makers as well as the public in general. Media no longer inform, but tend to disinform.

Existing solutions for veracity assessment are typically based on text mining techniques and pursue two paths (Conroy et al. 2015): On the one hand, content is analyzed using linguistic approaches that check keywords, user patterns and writing style to assess the probability that deceptive content is included. On the other hand, network approaches use linked data to establish knowledge graphs across the sources that are included in a certain information and aim at identifying patterns of fraudulent behavior and trustful sources. Similar to all networked forms of organization, the existence of trust is a key requirement in networked media. If the technological developments enable the easy - even

automatic - creation of publishing services (e.g. blogs, news sites, journals), mechanisms for determining their trustfulness need to be in place. These mechanisms may comprise “veracity assessment” tools or services as well as a stricter regulation of content providers. In any case, the “truth dimension” is an advantage of many traditional media organizations, who could leverage this asset to master the digital transformation.

Articles of present issue

This leads us back to the two special themes included in the present issue. Each section comprises three papers, which emerged from tracks at various academic conferences. They are introduced in a separate preface from the guest editors. The first set of papers is a compilation from the section emerged from GECON, the “Conference on the Economics of Grids, Clouds, Systems, and Services”. In their preface the guest editors, José Ángel Bañares from the University of Zaragoza and Jörn Altmann from Seoul National University, emphasize many non-technological aspects, such as the design of pricing and operation models as well as the need for trust and at least some regulation. The second set of papers originates from tracks on “Digital Media” held at the European Conference of Information Systems (ECIS) and the Pacific Asia Conference on Information Systems (PACIS). As elaborated in more detail in the preface of our guest editors Thomas Hess from the University of Munich and Ioanna Constantiou from Copenhagen Business School, the papers address the relationship between media channels, the question of revenue models for content providers and investigate new forms of consumer behavior. All submitted papers underwent the usual review process at *Electronic Markets* and we are much obliged to the guest editors for handling this proves.

A cordial thank you also goes to the reviewers that were involved in both present special issues as well as to all guest editors and reviewers that were active in 2017. The list of all reviewers and guest editors from last year, which is presented at the end of this editorial, clearly shows that an academic journal like *Electronic Markets* is a true community effort! We truly appreciate your dedication for advancing research. In particular, this applies to one of the early contributors to *Electronic Markets*, who now decided to step down as Senior Editor. Professor Rolf Wigand from the University of Arkansas at Little Rock, has been a member of the editorial board since 1999, an Associate Editor since 2009 and a Senior Editor since 2012. During his time at *Electronic Markets* he served as reviewer and editor for over 100 papers and authored another ten. We are indebted to his contribution and wish him all the best for this “active retirement”. Rolf will be succeeded as Senior Editor by Ioanna Constantiou, who has been an Associate Editor at *Electronic Markets* since 2012. We appreciate her commitment to our journal and are honored that she joined the Senior Editors’ team.

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