

## Social Information Systems

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### 1 Introduction

Following the classical definition of an information system, users are an integral part as are procedures and (technological) infrastructures (e.g. [36]). Focusing on aspects of users has not only become part of the field of adoption, participation and experience, but also of the field of social informatics [26] and social computing [37]. While the former aim at conceptualizing and measuring causal relationships between the attributes of the information systems, the latter are more concerned with understanding and designing information systems in a cultural context and with applying social mechanisms. Referred to as social information systems, they differentiate from other information systems by their human element [15] and have received increased attention with the advent of social media, social software and social platforms [26].

Various forms of social information systems have emerged with online communities, collaborative technologies, blogs, wikis, and sites for crowdsourcing being among the most well-known. They can be differentiated on whether they support publishing (e.g. Twitter), sharing (e.g. SlideShare), discussing (e.g. Disqus), locating (e.g. Google Places), networking (e.g. LinkedIn) or gaming (e.g. Playfish) [15].

Social information systems have profound implications on the way individuals communicate, be it in private or professional interactions, and the way economic processes are organized. For example, the so-called "Gig-economy" posits that crowdsourcing platforms have the power to change hierarchical coordination towards more market-like and fluid forms where individuals bring in their competencies for specific projects, i.e. "gigs". Social information systems may be seen as the new "glue" among individuals outside as well as inside organizations.

The relevance of this research field has triggered investigations exploring further areas of social

information systems [27]. Besides technical aspects and requirements (e.g. Web 2.0 techniques, semantic interoperability, data analysis and fusion, social analytics), the integration of different stakeholders is an important challenge for social information systems.

There is increasing research on social information systems and related subjects. For example, metatopics in Enterprise Social Network Research are identified in [33] and a literature review on enterprise social networks [34] and social collaboration analytics for enterprise social networks [29] also contribute towards fundamentals and future research topics. In [20] the authors provide a comparative analysis of the acquisition and assimilation of knowledge through social information and communication systems (SICS). In addition, a broad analysis of the information systems research on online social networks is given in [7].

The increasing interest in social information systems motivated the creation of the Social Information Systems mini track as part of the HICSS conference. In the following, the foundations and characteristics of social information systems shall be explained. Then the papers selected for publication with the social information systems mini track shall be presented.

### 2 Definition

Based on broad own research [26] [8] [12] [22], we define Social Information Systems as information systems [2] that support four paradigms: weak ties, social production, egalitarianism, and mutual service provisioning.

1. Weak-ties [13] are spontaneously established contacts between individuals that create new views and allow combining competencies. Social information systems support the creation of weak ties by their ability to create contacts between non-predetermined individuals.
2. Social Production [6] is the creation of artifacts, by combining the input from independent

contributors without predetermining the way to do this. By this means, social information systems can integrate new and innovative contributions not identified or planned.

3. Egalitarianism [31] is the attitude of handling individuals equally. Social information systems highly rely on egalitarianism and therefore strive for giving all participants the same rights to contribute. Egalitarianism in social information systems has the intention to encourage a maximum of contributors and to get the best solution fusing a high number of contributions, thus enabling the wisdom of the crowds [31].
4. Mutual service provisioning: Social information systems overcome the separation of the service provider and consumer by introducing the idea, that service provisioning is a mutual process of service exchange. Thus, both service provider and consumer (or better prosumers) provide services to one another in order co-create value [32]. This mutual service provisioning contrasts to the idea of industrial service provisioning, where services are produced in separation from the customer to achieve scaling effects.

### **3 Capabilities of Social Information Systems**

By supporting the paradigms weak ties, egalitarian decision making, social production, and mutual service provisioning create capabilities [4] that enable new business processes and business models.

#### **3.1 Organizational Extensibility**

The paradigm of weak ties implies that social information systems allow associating persons to organizational units. These persons may originate either from other organizational units or from external. Internal, as well as external stakeholders (e.g., customers, suppliers, shareholder, public administration), have become a fundamental part of social information systems [19] [18]. The paradigm of social production implies that new contributors and service providers can be integrated at run-time.

#### **3.2 Flexible Definition and Control of Tasks**

Social information systems support the paradigm of social production by being able to define new tasks and the workflows for their execution. E.g. Quast [23] defines social information systems as information systems that increase their agility by enabling user

contributions, thus implementing the paradigm of social production. In this way, the emergence of shadow applications should be avoided [24].

#### **3.3 Crowdsourced Decision support**

Social production and egalitarian decision making maximize the data available for analysis. In this way, decision rules can be extracted much more easily than before. Unstructured data at the social level includes a lot of tacit information that could help firms making better business decisions [15]. For example, data from social information system may be used to predict consumer demand and optimize resource allocation [15].

Therefore data conditioning [15] plays a very important role in social information systems. The importance of unstructured information in social information systems is also emphasized in [16]. In [5] the amplifier role of the social media capability is described. Social media capabilities enable knowledge ambidexterity and thus enhances the innovation-based competitiveness.

#### **3.4 Distributed Value creation**

In social information systems, participants may execute tasks associated with both roles producer and consumer. Value creation is not assigned to a certain person. Instead, the participants may choose how much they provide or consume value. In this way, social information systems strive to realize the so-called service-dominant logic of marketing [32].

### **4 Types of Social Information Systems**

Social information systems are a rather broad phenomenon that comprises many different types. Specific topics such as the use of social software in business process management [28] or in information systems design [25] emerged. Therefore, social information systems can be assigned to different types.

#### **4.1 Enterprise 2.0**

Enterprise 2.0 [21] comprises the use of social information systems within enterprises to foster communication and innovation. Enterprise 2.0 is defined as the use of social software like wikis and blogs within enterprises [21]. In this way paradigms such as weak ties, social production, egalitarian decisions are realized. A similar approach is enterprise social networks [34]. For example, the use of enterprise social networks for re-engineering business processes is evaluated in [3].

## 4.2 Social Business Process Management

In social business process management (SBPM) [28] social information systems are both used to enhance the business process management lifecycle [10] and to transform business processes. In the business process management lifecycle, the use of paradigms such as weak ties and social production opens up new knowledge sources to improve business processes and increase the acceptance of the processes in daily operations.

Social information systems are also used in business processes to provide additional functionality and to improve the integration of stakeholders. Examples are the externalization of quality reviews in platforms and multi-sided markets [11] such as Airbnb. By using egalitarian decision mechanisms external resources can be handled effectively on platforms and multi-sided platforms. Thus, the crowdsourcing of quality assurance enables the resource management of these platforms. In this way, it is possible to externalize the provisioning of resources by providing decision support concerning the properties and quality of services and products offered. By applying a recursive approach, i.e. by applying to evaluate reviews by other users, the quality of reviews may be improved.

## 4.3 Social Customer Relationship Management

The use of social information systems in CRM is called Social CRM [1] [35]. In this way, the reach of CRM is extended by using weak ties and the additional sources for customer related decisions are opened up. Social information systems allow identifying (potential) customers with similar interests and purchasing habits. Many customer-related decisions benefit from analyzing customer reviews and ratings. In [30] four functions within enterprises are identified that may profit from enterprise 2.0: customer-relationship-management, customer service, marketing and sales and customer participation in development. An important example is the use of customer support sites created from user input.

## 4.4 Social Business Intelligence

Social business intelligence [9] is the use of data from social information systems as a source for analytics to support business-related decisions. By using egalitarian decisions, social information systems extend significantly the amount of data available for analysis. Especially approaches such as machine learning and deep learning benefit from the availability of large datasets [14].

## 5 Objective of the Minitrack

The advances in research make it promising to further improve the exchange of ideas, concepts, technologies, empirical results etc. on social information systems.

The objective of the mini track “Social Information Systems” is to promote the scientific exchange on social information systems. The mini track shall explore how social information systems are designed, implemented, operated and improved. It shall also contribute to the understanding regarding the interaction with their environment and the impact on economic coordination structures.

The mini track seeks papers that explore how social information systems are designed, implemented, operated and integrated. Possible topics are:

- New methods for developing and understanding social information systems
- Impact of weak ties, social production, egalitarianism and mutual service provisioning
- Businesses processes enabled by social information systems
- Link of social business processes and other business processes
- Modeling of social processes for social information systems
- New technologies and architectures for social information systems
- Data creation and analytics within social information systems

## 6 Accepted Papers

Seven papers were submitted to the Minitrack “Social Information Systems”. Three of them were accepted after a rigorous review process with two phases.

The paper “The Role of Social CRM in Social Information Systems: Findings from Four Case Studies” from Olaf Reinhold and Rainer Alt was reviewed outside the minitrack and investigates the concept of social information systems using a customer relationship management (CRM) perspective. Drawing on existing research, it demonstrates similarities and differences between social information systems and social CRM implementations by the examination of four cases studies. The results show benefits and requirements for the adoption of social information systems and demonstrates that on one hand, social information systems provide new means for CRM by promoting the creation and fostering of relationships between business and the market. The authors also show that companies need to further integrate social media,

CRM, and Social CRM from an inside-out and outside-in perspective for realizing the opportunities identified.

In their paper "Understanding the Effect of Social Media Overload on Academic Performance: A Stressor-Strain-Outcome Perspective" Lingling Yu, Chenling Shi, and Xiongfei Cao investigate the adverse consequences of social media overload from a pedagogical perspective. To understand the phenomenon and its underlying mechanism the authors develop a research model based on the stressor-strain-outcome framework. The poor academic performance of students is caused by three kinds of overload (i.e., information, communication, and social overloads) that influence the two psychological strains (i.e., technostress and exhaustion) of students. The paper is based on results from a study of 249 Chinese social media users in universities. The authors also find that communication and social overloads do not significantly affect exhaustion. This study augments social media literature by identifying a broader classification of social media-related overload among university students. It also investigates the exact mechanism of excessive social media use in an educational environment

Finally, the paper "Social Media, Rumors, and Hurricane Warning Systems in Puerto Rico" from Lily D Bui presents a case study describing the role that social media information plays in Puerto Rico's hurricane early warning system. Disaster warning systems are a form of risk communication that allows national, state, and local actors to prepare for, respond to, and understand disaster risk. The paper also emphasizes the affordances and limitations of decentralized, heterarchical communication forms around disasters for federal, state, and local-level emergency management authorities. The case highlights differences in the perception of social media information around disasters by emergency management authorities and by community members both before and after Hurricane Maria in 2017.

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