

# Design of Enterprise Social Media: Recommendations from a Case Study

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**Abstract.** Enterprise social media (ESM), such as wikis, blogs, or social networks, have rapidly spread across organisations. They offer unique means to support knowledge management, knowledge creation, or internal communication, especially in distributed work environments. While most work focuses on what ESM can be used for, there is little research so far on how ESM themselves should be further developed. Based on the results of a case study at a German enterprise, we come up with recommendations for designers who seek to support the development of ESM.

**Keywords:** Enterprise social media · design · case study.

## 1 Introduction

Enterprise social media (ESM), such as wikis, blogs, or social networks, have rapidly spread across organisations. With respect to knowledge management, ESM provide open and inexpensive alternatives to traditional implementations [40], facilitate knowledge creation in organisations [41], and support knowledge management practices, support the resource “knowledge”, as well as help in overcoming knowledge management barriers [1].

Even though ESM have become increasingly widespread in today’s organisations [5, 33], there is evidence that penetration of ESM inside enterprises is still low [5] and that social networks mainly reflect existing hierarchies and do not help to overcome organisational silos [31]. Thus it may still be argued that the understanding of the role that ESM play in organizational life is in its infancy [25]. In addition, little focus has been given to organisations overall use of social media [17].

Our research has three objectives:

- To understand the requirements of today’s organisations and what ESM can be used for
- To derive recommendations how to develop ESM further
- To apply ESM in practice

In this paper, we focus on the second objective. Looking at literature, there is little research on how to develop ESM further. With respect to wikis, semantic enhancements have been discussed (e.g., [20]). It has also been shown how social

networks [37] and blogs [24] can be integrated into existing ERP systems. On a more general level, implications for designers who seek to support reciprocity have been derived [29]. Mostly, however, ESM are used “as is.”

This paper is organised as follows. In the next section, ESM are introduced. Then we describe our approach. This is followed by our recommendations how to develop ESM further. A summary of the major points concludes the paper.

## 2 Enterprise Social Media

Enterprise social media (ESM) can be defined as Web-based platforms that allow workers to (1) communicate messages with specific co-workers or broadcast messages to everyone in the organisation, (2) articulate a list of co-workers with whom they share a connection, (3) post, edit, and sort text and files linked to themselves or others, and (4) view the messages, connections, text, and files communicated, articulated, posted, edited and sorted by anyone else in the organisation at any time of their choosing [25].

ESM possess a range of affordances [41, 26] (see Table 1 for an overview). An affordance describes the property of an environment relative to the people. It determines the actions people can perform in this environment. You could thus describe an affordance as “perceived action possibilities” [19].

At the centre is the individual or the group [11]. Capabilities to communicate with each other are essential in social media. What social media distinguishes from other media is not only that people, relationships, content and reviews are visible to the users of an application, but also that they offer insights into the communicative actions of other people and that the traces of these communicative actions are and remain visible [11, 38]. Visibility and persistence in turn are prerequisites for someone to expand the circle of people, networks or contents, of which learning is possible [25].

**Table 1.** Affordances of Enterprise Social Media.

Affordance	Description
Association	Establish relationships between people, between people and content, and between content
Identity	Present your own person
Reputation	Social standing of a person
Editability	Create and modify content (as often as you like)
Recombinability	New content can be built on already existing content
Collaboration	Common editing of content
Persistence	Contents are retained
Visibility	Make behaviour, relationships, content, and ratings visible

Association describes the relationships between people (e.g., in form of contact lists as part of public profiles), between people and the content they have created (e.g., as explicit reference to the author of a wiki article), and between

content (e.g., by creating respective links) [11, 38]. Such associations may not only be made by the users themselves but also by means of algorithms.

Identity describes to what extent users reveal themselves [22]. This can be done consciously (e.g., when users show their name, picture, interests, or responsibilities in a public profile) or unconsciously (e.g., over their comments). With what characteristics users describe themselves depends firstly on how they see themselves, and secondly how they want to be perceived by others [14, 27].

Reputation describes the social standing of users [22]. A user's reputation is influenced, for example, by the number of high-quality articles he or she publishes in a wiki or blog, or how many times he or she answers the questions of others.

Editability describes both the possibility that users not only create content but also that they can revise it after its publication [11, 22, 38]. By this, three things can be achieved [38]:

- Control of external representation (e.g., with what attributes to describe yourself in your personal profile);
- Creation of target group specific content (e.g., blogs are created with respect to a readership);
- Improvement of the quality of information (by constantly revising the content and by having others participating, e.g., in the form of comments or, in wiki articles, as co-authors).

Content does not always have to be created from scratch but can be assembled from existing content (including content from other authors). This is called recombining [13] or replicability [6].

In collaboration, several users are grouped around a theme to edit it together [11]. Wiki articles represent a good example. Persistence means that communication remains accessible in the same form as the original display after an author has finished his or her work [38]. Finally, visibility means that social media allow users to make their behaviours, knowledge, preferences, and communication network connections visible to others in the organisation [38].

### 3 Methodology

We conducted a single case study. The goal is to gain a holistic understanding of the object under investigation, that is, the introduction of an enterprise social network (ESN) at the German company Festo. The basis is a detailed, empirical description of the situation [12, 39]. Holistic means that we consider the four following different perspectives:

- Contribution of ESM: Here we follow a distinction found in organisational development. In general, you can distinguish between increasing efficiency (e.g., maintaining / increasing flexibility, advancing willingness to innovate / to change) and improving quality of working life (e.g., ability to work in a team / to cooperate, more participation in consulting and decision processes) [35]. An alternative would have been to consider different use cases.

However, one main characteristic of ESM is that they are highly undefined and recombinant, that is, they can be employed for many different use cases, which may also change over time [32].

- Context: Considering experiences from other disciplines, such as organisational research [2, 34] or Artificial Intelligence [8], we argue that there needs to be a better understanding of the context in which ESM are applied. To describe context, we employ the Cynefin sense-making framework [23, 36]. It consists of five domains, that is, simple, complex, chaotic, complicated, and disorder. It also defines different movements between the domains. Cynefin has been applied to different domains, such as agile software development [30], homeland security [4], or biomedical research [21].
- Process: We adopt a lifecycle model originally developed for communities of practice and which distinguishes the five phases definition, start-up, operation, development, and close [18, 28].
- Users: Analogous to organisational development, we distinguish between different levels, that is, the individual, team, and organisation level [10]. Besides readers and authors, the individual level further contains leaders (due to their importance for ESM adoption) and administrators (of the ESN used at the German enterprise).

To collect and analyse the data a mixed-method approach is employed [3], that is, interviews, online surveys, and content analysis. In addition, the authors (who lead the Connect! program and also manage several communities) collected their experiences [16].

### 3.1 Festo AG & Co. KG

Festo ([www.festo.com](http://www.festo.com)), founded in 1925, is an independent family-owned company based in Esslingen, Germany. It is one of the leading companies in the field of automation technology. Festo offers products, systems and services for electric, pneumatic and servo-pneumatic drive and control technologies. The company employs around 20,100 people and posted 2017 sales of EUR 3.1 billion. Production takes place in eight countries. Apart from Germany, these are Bulgaria, Brazil, China, India, Switzerland, Czech Republic, and Hungary.

### 3.2 Connect!

In February 2013, Festo started a project called *Connect!* whose main objective has been to determine what positive effects (if any) introducing an enterprise social network (ESN) has for Festo. (We consider ESN a type of ESM. Other types are wikis or blogs.)

At the outset, the following hypotheses were formulated:

- (Urgent) questions can be answered throughout the organisation.
- Colleagues with similar interests can be more easily identified.
- Valuable information can be more easily detected.

- Overall, the productivity increases.
- Relationships between colleagues across departmental, regional, or country borders are strengthened.

As a consequence, the resulting social fabric shall Festo make more resilient in times of economic crises.

The technical basis forms a product called Social Sites from Sitrion. It is an add-on to Microsoft SharePoint and provides the necessary functionality (e.g., the means to write posts / to ask questions, an activity stream that shows all post / questions in a chronological order, and the possibility to follow communities, colleagues, and topics).

Social networking at Festo means that users can found communities for a department (e.g., to improve information flow), a project (e.g., to improve project management), or for a specific topic (e.g., to foster information exchange between experts). Requests for new communities are submitted by an electronic form. In addition to the name of the planned community, its objectives, the approximate number of members, the type of community (team, project, or topic), the names of at least one community manager (i.e., the colleague who will be in charge of the community), and the name of a manager that supports the community must be specified. The project team will examine the application and may request additional information. Upon approval, a SharePoint site can be supplemented by the corresponding functions and the new community managers are invited to a respective training.

Currently, with the migration to Office 365 Social Sites is being replaced with Microsoft Teams.

### 3.3 Design of Case Study

Two questionnaires were sent out at intervals of one year to allow a before-after comparison. Addressed were all users of Connect! worldwide. In questionnaire 1 all questions were asked in English, in questionnaire 2 a German questionnaire was also offered. Both questionnaires were tested and approved in each case by the data protection officer and the works council. Anonymity of participants was ensured. Table 2 provides an overview of the two surveys and the two interviews.

**Table 2.** User feedback.

	Survey 1	Survey 2	Interviews 1	Interviews 2
Participants	77 (response rate 10% of about 800 users)	63 (response rate 5% of about 1300 users)	10	10
Target group	all users	all users	5 Employees 5 Managers	10 Managers
Origin	all Festo companies	all Festo companies	5 HQ 5 companies	2 HQ 8 companies
Time	July/August 2014	July/August 2015	June 2015	April/May 2018

The first survey took place from 28 July 2014 to 11 August 2014. 77 colleagues participated, which corresponds to a response rate of roughly 10% (in August 2014 approximately 800 colleagues were member in one or more communities). Participants came from all six communities that existed at that time.

The second survey took place from July 27, 2015 to August 28, 2015. 63 colleagues participated, which is a response rate of 5% (in August 2015 the membership in communities had doubled). Out of those who participated in the survey, 3 were less than a month, 21 between 2 and 6 months, 24 between 7 and 12 months, and 15 more than 12 months member in a community. Participants came from 20 different communities (out of 32 who existed at that time).

The questionnaire is divided into five parts: the (subjectively) perceived benefits for a user, the community and for Festo form the first three questions. The fourth question deals with the possible barriers of use. For each question between four and eight statements are formulated and users can rate these statements along a 5-point Likert scale (“strongly agree”, “agree”, “neither agree nor disagree”, “disagree”, “strongly disagree”). At the last, the fifth question, the participants are able to leave a comment. Table 3 gives the statements participants evaluate regarding the benefits for individual users.

**Table 3.** Evaluating the benefits for individual users

How do you evaluate the benefits of Connect! for individual users?
Communication with colleagues has become easier
Social networking allows me to expand my professional network
Social networking allows me to promote my work-concerned initiatives
It has become easier to find experts in the organisation
Problems can be solved faster
Awareness about and finding of relevant information has been improved
I now discover information of which I did not know it exists

We conducted two series of interviews. In the first series, taking place in June 2015, a total of ten people from four different departments were interviewed. Five of these ten coming from the Headquarter and five of sales companies from Europe and America. Five participants (coming from HQ and companies) were members of the management. The second series of interviews were held in April and May 2018. Ten managers from nine different countries took part. The focus was on how ESM can support managers in their tasks. In both cases, participants were addressed directly. Participation in the interviews was voluntary. Interviews have been semi-structured and open. They were conducted either in person or by telephone.

In the interview, questions like “What benefits do you perceive in using Connect! (for individual users, teams, and the organisation as a whole)?”, “What topics are suitable for ESM?”, “To what extent have procedures been changed (i.e., do users work differently than before)?”, or “How do you measure the success of ESM?”.

In content analysis as well as looking at our own experiences, we tried to identify usage patterns. This has been an ongoing task.

## 4 Recommendations for ESM

In the following, we discuss selected findings from each data collection method.

### 4.1 Surveys

In both surveys, almost 80% of the participants either agreed or strongly agreed to the statement that Connect! facilitates the exchange of experiences. On the other hand, however, in the second survey a fear of information overload was expressed (in the first survey it was not mentioned). This reflects in our view the difference between the two roles author and reader. While from an author's point of view a social network facilitates the distribution of information, from a reader's point of view this additional information adds to the already existing workload.

To alleviate this effect, ESM could recommend for which users or communities a post could be relevant (thus, an author could mention them explicitly) or which posts / questions a user should turn his or her attention to [9]. A similar mechanism has been implemented for so-called urgent requests in TechnoWeb, a Siemens-internal crowd sourcing method [42].

### 4.2 Interviews

In the first interview series, we inquired about the context in which the communities operate colleagues are a member of. However, responses were rather generic and mostly centered around the sharing of information (see above). We therefore turned to literature to see whether some recommendations can be derived.

In a complex context, users need to probe, sense, and respond [23, 36]. The characteristics of complex systems are non-linear relationships, where small actions can lead to unpredictable events. There is no clear correlation between cause and effect. Probing means that actions are performed in the sense of "trial and error". With respect to ESM it could mean that new (or changed) functionality is first evaluated by a smaller group of users or in certain communities before it is made generally available. Sensing would mean that management of the Connect! program monitors whether how the new functionality is received. Additionally, "test" users can share their impressions in the respective communities. Responding means that functionality that receives positive feedback is made available to other communities as well.

This recommendation is related to one result from the second interview series. Here it was pointed out repeatedly, that ESM have to be easy to use. It was mentioned several times that if something does not work the first time, people will not give it a second chance. This view may be extreme, but it underlines the need to test new functionality first with a limited group of users.

It is also noteworthy that several participants of the second interview series did not distinguish between ESM (such as Connect!) and external social media (e.g., LinkedIn). For them it is more important with whom to share information and not so much on what platform. The latter question is more of a nuisance. From a tool perspective, platforms like Connect! could thus offer different channels through which information can be shared. LinkedIn (or any other external platform) could be such a channel.

### 4.3 Content Analysis

We noted that hashtags are only used sporadically. In the training sessions, they were introduced as means to facilitate information filtering. When asking users why they do not use hashtags, two points came up repeatedly.

- People who mainly use messaging apps like WhatsApp, are not used to hashtags. They have not experienced their benefits in practice.
- Most people view past conversations in Connect! as hardly relevant anymore. Hence, there is limited need to search for older posts or to filter them.

Nevertheless, we consider hashtags still to be helpful, especially in use cases where customer requirements or applications with Festo products are discussed. Here it is beneficial to turn to past conversations. We therefore recommend that ESM should actively propose hashtags to authors (e.g., [7]).

It has been interesting to see that hardly any question remained unanswered and that for some communities this is the main use case. In addition to urgent questions (see above), it may be worthwhile to introduce additional kinds of questions.

### 4.4 Own Experience

Especially at the beginning of Connect! there were repeated requests whether people can participate anonymously in a community or to use an alias. The main argument was that people would be more willing to engage in conversation when there was no danger of looking ignorant or uninformed. We always declined such requests. Our main argument has been that people will engage when they perceive a benefit, otherwise they won't. In the meantime, however, we could imagine one use case where anonymous participation is an option. In case of (potentially) controversial topic (e.g., company strategy) then people may indeed think twice before sharing an opinion.

We were interested in what people really mean when they press the like-button. Social Sites distinguishes between posts and questions. For questions, you can specify different answering options. In a small experiment, the authors published five posts in a three-month period (March to May, 2018) have been formatted as questions. Depending on whether readers found the post to be useful, wanted to say thanks for the information, did not necessarily agree with the content, liked it, or simply wanted to acknowledge having read it, they were



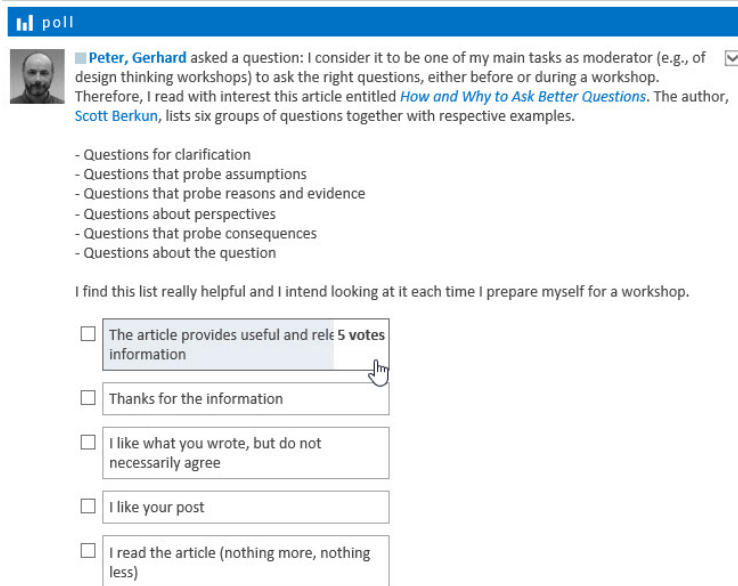


Fig. 1. Feedback possibilities.

encouraged to click on the respective answering option (see Figure 1 for a sample post).

Table 4 summarises user feedback. Nine times people considered the posts to be “useful information,” three liked it, and each of the remaining three options (thanks for the information, I do not necessarily agree, and I’ve read it) was selected once. This is certainly not conclusive evidence, but it gives a first indication that “like” may not be enough.

Table 4. Possible interpretations of “like”.

Date	Useful information	Thanks for info	I do not necessarily agree	I like it	I’ve read it
March	1			3	1
April	2		1		
April	1				
May		1			
May	5				

## 5 Conclusion

The objective of *Connect!* objective has been to determine what effects introducing an enterprise social network (ESN) has for Festo. First and foremost, user

mostly benefit from the possibility to share information quickly and that colleagues can be reached faster. The latter has also a positive effect on knowledge acquisition as questions got answered faster.

In this paper, we have derived recommendations how to develop ESM further. They are based on the results of a longitudinal case study, in which data have been collected over a four-year period.

A limitation of this study is that it only considers enterprise social networks. Thus a next step is to see whether the recommendations derived equally apply to wikis and blogs. Another limitation is that the study has been carried out at one enterprise only. Experiences from more enterprises are needed.

It can be argued that the users at Festo only have experience with a relatively old system (i.e., it has not changed since its introduction in 2013) and therefore the conclusions drawn may be obsolete when using a state-of-the-art platform like Microsoft Teams, Yammer, or SAP Jam (at Festo we have practical experience with all three). However, differences are marginal and none of them contains the functionality suggested in this paper.

One of the four perspectives was process. We found no indication that depending on the phase a community is in additional or other functionality is needed. However, as one of our next steps we will examine whether different key performance indicators (KPIs) are needed or whether the same KPIs need to be interpreted differently. For instance, user engagement may be judged differently in the start-up phase than in the operational phase (where the number of lurkers may be higher).

It can be expected that data privacy will be a major driver for future enhancements. For instance, the General Data Protection Regulation (GDPR) of the EU establishes a “right to explanations” [15]. For instance, a social network should be able to explain why a user should connect with someone else (and on what data this recommendation rests). In addition, user data could be stored in distributed locations using blockchain technology [43].

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