Chapter 3
Joint Work and Information Sharing in the Modern Digital Workplace: How the Introduction of "Social" Features Shaped Enterprise Collaboration Systems

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Background to the Research: Center for Enterprise Information Research (CEIR)

In the first part of this chapter, I will discuss the background to the studies, the structure and nature of Enterprise Collaboration Systems (ECS) and discuss the origin of the word "social" and what it means for ECS. In the second part, I will present findings from a longitudinal research programme on the adoption of ECS, discuss differences in the implementation process and introduce typical forms of use (I will call them "archetypes of use"), which I identified in these studies.

Figure 3.1 shows an overview of the contents of this chapter.

The research presented in this chapter was conducted by the **Center for Enterprise Information Research (CEIR)**, a joint project I co-founded with my colleague Professor Susan P. Williams at the Computer Science Department of the University of Koblenz-Landau. The goal of CEIR is to conduct high quality research in the area of IT-enabled business change and the Digital Workplace (www.ceir.de). The research team working in CEIR is committed to evidence-based research and to translating that evidence into theoretical and actionable outcomes. Figure 3.2 shows an overview of the CEIR research programme on the adoption of ECS.

Since the year 2010, the research group has been collecting field data with the help of a University-Industry Collaboration named **IndustryConnect**. IndustryConnect is a collaboration project between CEIR and a group of practitioners from companies and public agencies, who all use the same, integrated Enterprise Collaboration System (ECS). At the point of writing this chapter, 29 organisations are members of IndustryConnect. The Online Community has 72 members (practitioners, professors, Ph.D. students). The participating practitioners are committed to sharing their

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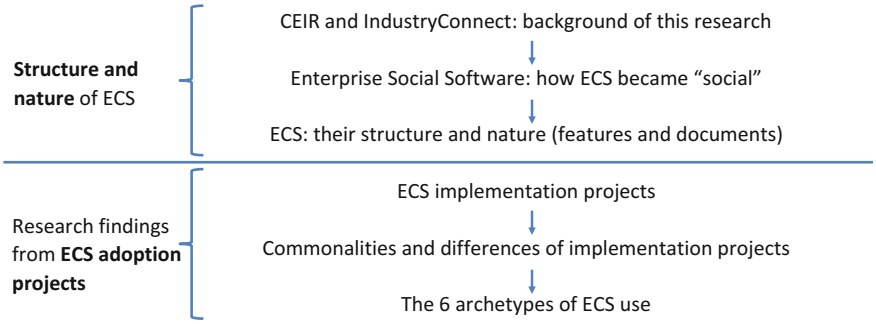

Fig. 3.1 Overview of this chapter

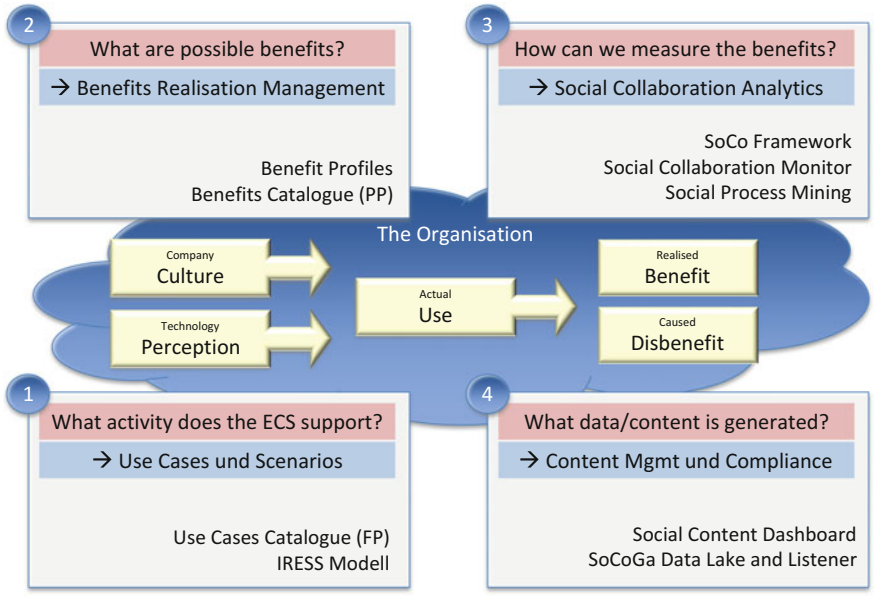

Fig. 3.2 CEIR research programme on enterprise collaboration systems

knowledge and experience about the adoption of their ECS with their peers and with the researchers by means of active participation in workshops, questionnaires and interviews. The data is captured using the eXperience Method for writing research cases on IT implementations (Schubert & Wölfle, 2007). At its heart, the eXperience Method is a *method for data collection*, which means that supplemental methods are required for the *analysis of the data* and thus the generation of research findings from the cases. Over the years, the research team has used eXperience cases e.g. in combination with *grounded theory* (coding approaches) or *cross-case analysis* and has created *in-depth narrative research cases* from them. Whilst eXperience cases capture in-depth information about the reasons and experiences from a tech-

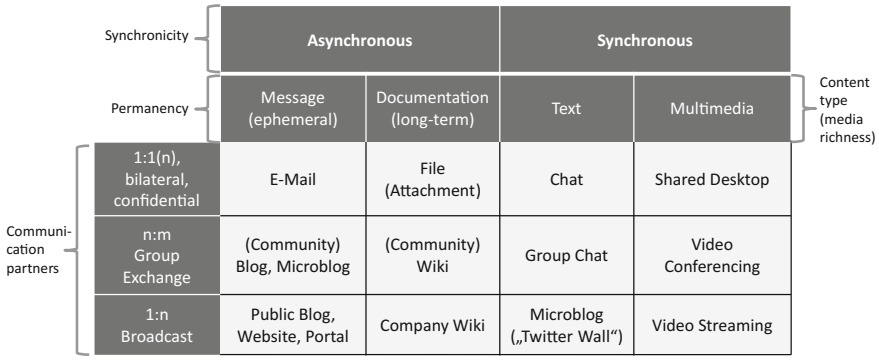

Fig. 3.3 Software components for communication depending on collaboration context

nology introduction project (reasons, participants, processes and systems) they can normally only provide a reflective account at *a point in time*. To address this, the researchers involved in IndustryConnect use eXperience cases along with a *complementary method*—the "milestories" method (Williams & Schubert, 2017).

The longitudinal nature of the IndustryConnect initiative allowed us to study the adoption of a new form of Enterprise Collaboration Systems in depth and over time. The following sections discuss the nature and structure of ECS, their functionality and content and present findings from our research.

Enterprise Collaboration Systems

Enterprise Collaboration Systems (ECS) are socio-technical systems that support employees in their daily work and facilitate functionality for workgroup collaboration. In large companies, the ECS is a commercial integrated software system that bundles many of the required collaborative features into a single system.

ECS provide a range of different features for the Digital Workplace including the support of everyday work activities (commonly known as Groupware) such as group calendars, task management, sharing of documents (files) and functions supporting the joint work on documents. In addition, ECS also support employees in synchronous and asynchronous communication, such as chat, video conferencing or e-mail (Fig. 3.3). Whilst information portals usually contain rather static content (e.g. quarterly reports, background reports on the company), ECS provide an authoring tool for employees allowing them to share content with colleagues and inform them about open issues, work results, activities, ideas or plans.

The increasing use of Social Media and their "social software features" in private life has changed the way people communicate and exchange information and has stimulated expectations on the side of employees regarding the use of similar software features in their workplace (Williams & Schubert, 2015). Large software ven-

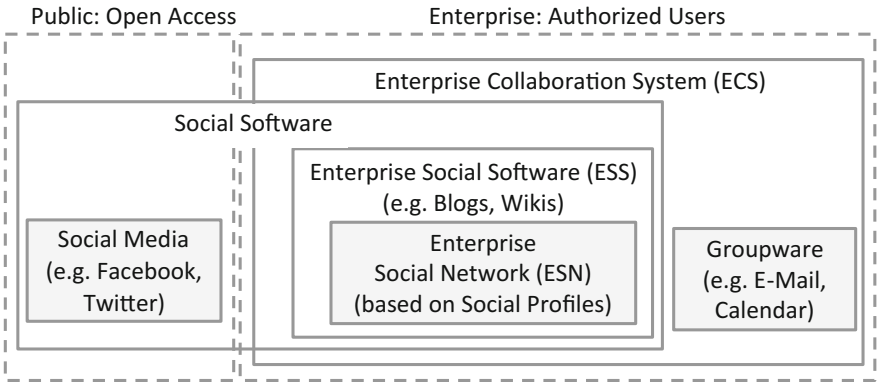

Fig. 3.4 Terminology of enterprise collaboration systems (Schwade & Schubert, 2017)

dors such as IBM, Microsoft and Atlassian have responded to the perceived demand for ***socially-enabled*** software with ***Enterprise Social Software (ESS)*** (e.g. IBM Connections, MS Yammer & SharePoint and Atlassian Confluence & Jira), a special form of collaboration software that provides ***social software features***. Enterprise Social Software (ESS) has become an integral part of companies' Enterprise Collaboration Systems (ECS). Typical social features include subscribing (following) information or people, commenting or tagging contributions, or short expressions such as recommendations or likes. These systems are often equipped with extensive "***awareness features***", which help to recognize new and possibly relevant content. Figure 3.4 shows the terminology in the area of Enterprise Collaboration Systems.

The Evolution of the Word "Social" in Social Software

As laid out above, the word "social" in this context has its origin in Social Media where it is an indication of the features that allow people to engage, interact and share information in a virtual environment. Whilst the use of the word "social" is, without doubt, adequate in Social Media (which are by definition environments for social activity), it has led to some irritation among employees in companies where such "Social Software" was introduced. The workplace is usually not seen as a "social environment" but one that is focused on productivity and "getting the job done". However, not least stimulated by IBM's marketing campaign on "Social Business" in the years following the release of their software product IBM Connections, "Social" became the code word for the introduction of this new type of collaboration software. According to IBM, Social Business is about building and supporting the "human connections" of employees and partners (IBM Corporation, 2011) notwithstanding that the term "Social Business" had already been in use to describe a management style that strives to solve social problems (Yunus, 2008).

Social Features in Enterprise Social Software

The features that make a software "social" are usually centred on the "***Social Profile***" of a user. Social profiles are "***enhanced***" ***user profiles*** that include information that was traditionally only available in the HR record of an employee, such as skills and education, organisational role and affiliation, etc. Depending on the richness of information contained in the social profile, they can be used for expert search. They are also the basis for the so-called "***Enterprise Social Networks***" ***(ESN)***. The social feature "follow" enables users to establish relationships between their own social profile and those of other employees regardless of physical location or organisational affiliation. ESN are an important facilitator for knowledge management in a company because they make skills and competencies transparent (thus addressing the issue of "if my company only knew what it knows"). Whilst ESN are emerging structures and thus represent static content, there is another group of social features that enables a more dynamic interchange of information and increases the awareness of what is going on in the workplace. Software features such as recommend (like), @mention, tag, comment are used to add meta information to content items. These features are quick and easy to use (lightweight) and are powerful ***awareness markers***. The subtle ingenuity is on the receiving end because other users can follow certain content (e.g. a Blog or a whole community) or social profiles (thus specific authors) and receive notifications of new, individually-tailored content in their "***activity stream***" (or in an e-mail newsletter). The activity stream is an awareness feature in social software that allows the user to see alerts to posts, changes, recommendations and other additions or changes to content on the platform. When set up properly, these notifications make the workplace much more information rich and can at best lead to an increased degree of serendipity, that is, the encountering of unexpected useful information. The feature that has the greatest potential for ***user-tailored information integration*** is the activity stream. At the time of writing this chapter, most activity streams are only collecting and displaying activities in their native software system. However, there is also the useful potential to add alerts from other Enterprise Information Systems (e.g. ERP Systems). The collaboration software is a natural candidate for information integration and new integration approaches, and our research group at CEIR is currently investigating and testing integration approaches such as Enterprise Knowledge Graphs (Stokman & de Vries, 1988) or the Social Network of Business Objects (Gewehr, Gebel-Sauer, & Schubert, 2017).

So in a nutshell, "***social***" is a term that was adopted from Social Media and describes the view of connected users in modern Enterprise Collaboration Systems. The so-called "***social features***" support workplace collaboration, i.e. the information exchange and coordination among employees and increase the user awareness of what is important and relevant. Table 3.1 shows the most important social content types with likely features and purpose.

Table 3.1 Social content types, their features and purpose

Content type	Social features	Purpose
Social profiles	Tag, follow, pinboard	Enterprise social network
Microblog	Recommend (like), comment	Ephemeral messages (often informal)
Blog	Recommend (like), comment, @ mention, tag, file attachment	Publishing and informing
Wiki	Recommend (like), comment, @ mention, tag, file attachment, versioning	Collecting and preserving information

Social Documents

Social documents are the containers for the content that is generated in Enterprise Social Software. Most ESS offer different possibilities for creating documents or simple messages. Finding the right type of message for a given purpose can be challenging for an inexperienced user. Figure 3.5 shows a possible decision tree for message types depending on the nature (informal, formal, hyperlink), the need for a response (broadcast or bidirectional), and the need to be editable by others (multi-authoring).

Most social business documents are ***compound documents*** that contain an aggregation of different content elements (Hausmann & Williams, 2015). A Wiki page consists of a core item and can be supplemented by attached components such as comments or attachments. It can also have "***social markers***" such as tags, recommen-

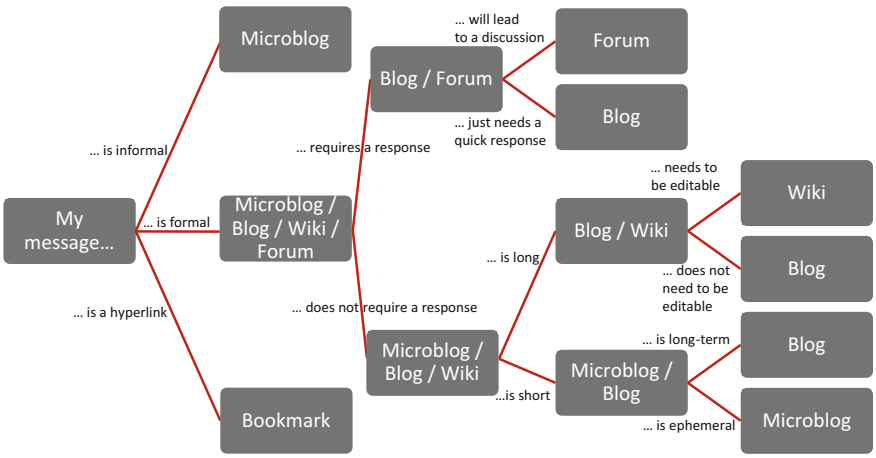

Fig. 3.5 Decision tree for message types in an Enterprise Social Software

dations or @mentions. Wiki pages are organised in a hierarchical structure, in which one Wiki page can have multiple sub Wiki pages. Such aggregations of dependent Wiki pages form a "***collection***".

Does "Social" Lead to Increased Collaboration?

An interesting question for the long-term management of ***social business documents (SBD)*** in ESS is the degree of collaboration that can be observed in the system. It is possible to show the degree of collaboration (employees interacting/engaging with each other) by looking at the components of compound SBDs and analysing the number of users that have interacted with this content.

Figure 3.6 is a screenshot of a dashboard that was developed by the CEIR research team to show the degree of collaboration of communities by looking at the structure and the authors of SBDs (Mosen, 2017). The displayed index of "2.4" indicates that an average of more than two users have worked on the entirety of social business documents in a given community. The right side of the graphic shows the size of SBDs. The larger the circle, the more compound elements are contained in the document. The higher the circle is located on the y-axis, the more users have participated in extending and editing this document. The graphic shows that in some cases more than 11 users contributed to a single SBD.

The nature of social software does not fit every kind of company culture. Due to its innate focus on "sharing" and "engaging", the software requires employees to actively engage with each other and share information openly. In the second half of this chapter, I present the findings from implementation projects (with a focus on the software adoption). The data was provided by the 29 user companies of the initiative IndustryConnect and was documented and analysed in longitudinal in-depth case studies.

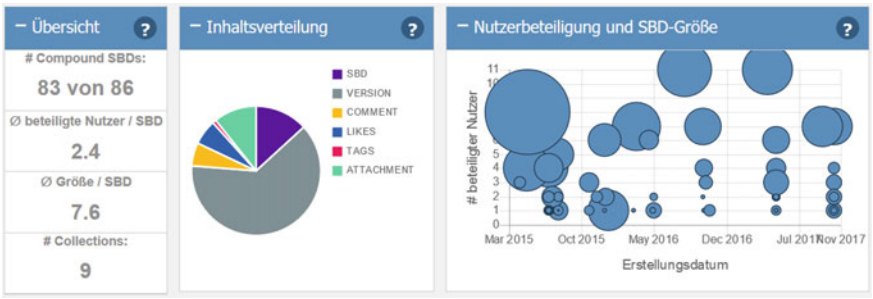

Fig. 3.6 Content Dashboard showing compounds and "collaborativity" of social business documents (Mosen, 2017)

Commonalities of ESS Implementation Projects

ESS implementation projects differ from *ERP implementation projects* mostly in terms of their much longer adoption phase. Whilst ERP software supports well-defined business processes, ESS provides interpretive flexibility (Doherty, Coombs, & Loan-Clarke, 2006) for the user, which means that the actual use of the software is dependent on the purpose and the proficiency of the user.

Structured guidelines (or "models") for the implementation of *ERP Systems* have existed for more than two decades. The most well-known methodology is the Architecture of Integrated Information Systems (ARIS) developed by the team of Professor Scheer at the University of the Saarland (Scheer, 1999). Within our CEIR research programme, we aimed to provide similar guidance for the *implementation of ECS*. The result was the IRESS model (Identification of Requirements for Enterprise Social Software), which helps to identify collaboration needs, to define Use Cases and Collaboration Scenarios and to conduct a structured software comparison based on software features (Glitsch & Schubert, 2017) (Fig. 3.7).

ARIS and IRESS are similar on a meta level because the implementation of both software types, ERP Systems and Enterprise Collaboration Systems, follows the same general steps of an IT project (c.f. Fig. 3.8). The implementation begins with the initial analysis of requirements, followed by the evaluation of commercial software

Organisation	**Use Cases**	Knowledge sharing Internal employee communication Project organization Document management Workshop organization	Team organization Event organization Idea and innovation management Internal communications Management accounting	Human resource management Sales opportunity and quotation Software development ...
	Collaboration Scenarios	Administering documents Alerting to news Conducting a meeting Conducting a poll Conducting a survey Organizing a meeting	Creating meeting minutes and tasks Discussing topics Documenting information Enriching information Finding an expert Joint authoring	Posting news Rating information Retrieving information Sharing files Sharing information ...
	Actions	**Person, Social Business Document, ...**	Search Edit Rate Label	Clarify Share Notify ...
Software Support	**Collaborative Features (C^4)**	**Communication** Asynchronous text message Asynchronous voice message Blogs Broadcast Chat Comments, annotations Discussion forums Message boards Microblogging Unified Communication Video conferencing	**Cooperation/Collaboration** Markup of changes Ratings, rankings Screen sharing/shared desktop Shared authoring Shared workspaces User profiles Workspace awareness	**Content Combination** Collecting feedback Content collection Content management Content subscription Data aggregation Data integration Document management Linking Pointers or references to content Search Tagging, Folksonomies Visualization of tags	**Coordination** Document and version control Graphical flow Group calendar, deadline planning Polls and voting Presence awareness Reminders, triggers, alerts Resource planning Roles Shared tasks User directories Workflow support
	Software Components	Workspace Blog Wiki	Forum Tasks Files	Calendar Microblog	

Fig. 3.7 IRESS framework—identification of requirements for enterprise social software (Glitsch & Schubert, 2017)

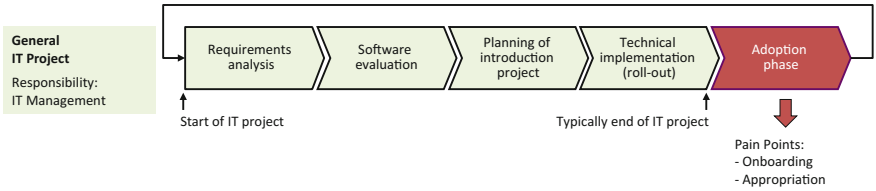

Fig. 3.8 The general IT project is similar for ERP systems and enterprise collaboration systems

packages, the signing of a (licence) contract, planning of the actual implementation project and the final technical implementation (roll-out).

Whilst ERP systems typically involve intensive training before the actual go-live, ECS are frequently made available ("installed") and then gradually rolled-out ("adopted"). ERP systems need to be fully functional from day one after their go-live because they support mission-critical business processes and even short downtimes can harm a business. Collaboration systems, on the other hand, aim at improving work efficiency (i.e. a non-mission critical support function) and their adoption may (and does) need longer time.

The analysis of the implementation projects of our IndustryConnect members shows that the ECS is sometimes almost "dormant" in the company, offered to employees for "voluntary use" and their introduction might require (but does not always get) "accompanying measures" to motivate the users to actually use the software. In some cases, we could observe a trial phase during which they are made available only to selected user groups in the company. In general, ECS tend to have a very long "adoption phase", some of our case companies reported to be still in the adoption phase five years after go-live (Williams & Schubert, 2015). After go-live, the responsibility of an ECS project is normally handed over from the IT Department to a specialised team, the "Enterprise Collaboration Team".

Figure 3.9 shows the typical steps of the *adoption phase* in an ECS implementation project. After go-live, companies gradually provide employees with their user accounts, inviting them to join the platform (onboarding). The onboarding process is sometimes supported by a basic user training, often with the help of exemplary use cases for best practice. This phase is normally followed by a gradual appropriation during which users are exploring the features of the software and finding their way as how to best use the software to fulfil their everyday tasks.

Most ECS implementation projects are characterised by a decline in use during the adoption phase sometimes almost leading to the discontinuation of the platform operation. At this point, some user companies reported a "restart" of their collaboration project, following a more structured and guided approach the second time. The adoption phase ends when the tool becomes an integral part of the digital workplace and users have appropriated it for their own purposes. A similar chronological sequence was identified in a study by Riemer, Overfeld, Scifleet, and Richter, (2012) and was visualised in the SNEP model.

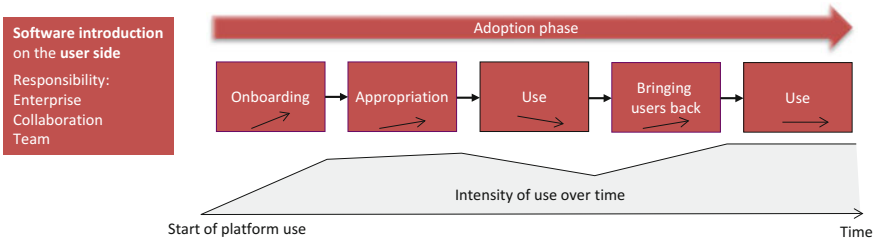

Fig. 3.9 Typical steps of the adoption phase in an ECS implementation project

Table 3.2 Companies starting with different features have different concerns

Companies starting with…	Typical concerns	Functional areas
Social profile (to build up an ESN)	Finding out what my company knows, "working out loud"	Human resources
Wikis	Collective writing availability of information, preserving information collectively	Information and quality management
Blogs	Workforce better informed about what's going on	Management, internal communications, service
Activities	Task management, coordinating project activity and ideation	Organisation, project management
Microblogs	Quick exchange of questions and ideas	Internal communications

Differences in ESS Implementation Projects

The analysis of our longitudinal cases involving 29 early adopters of large-scale, integrated ECS with the aim of creating a "Social Business" shows that there are differences in the approaches that the companies take which, as a consequence, lead to differing outcomes. An important influencing factor is the *initial reason* or motivation (aims/goals/expectations) for the introduction of a socially-enabled ECS. It could be observed that the "seed functionality", i.e. the first functionality that stimulated the use of the platform, impacts on the adoption and the way employees perceive the platform. Table 3.2 shows some "typical" paths into ESS adoption that could be observed in our real-world projects.

Archetypes of ECS Use

The initiative IndustryConnect (Williams & Schubert, 2017) provided an ideal data source for the analysis of "archetypes" of ECS use. Eight years after the introduction

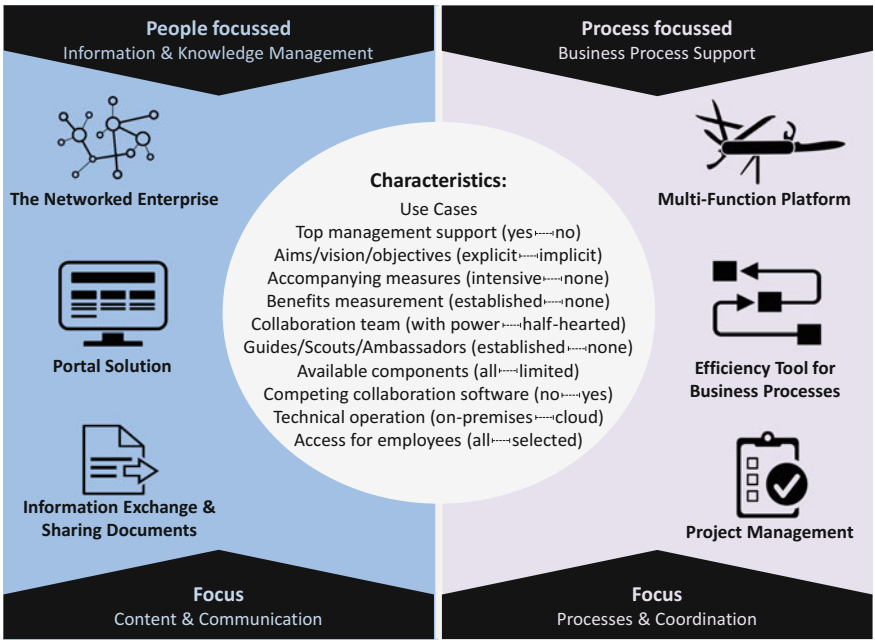

Fig. 3.10 Archetypes of ECS Use

of the commercial Enterprise Collaboration System IBM Connections, the CEIR team performed a cross-comparison among the *actual forms of use* of this particular ECS in the early adopter companies. The cross-comparison showed that even though the 20 companies had been using exactly the same integrated ECS, there are remarkable differences in the actual use of the system. The differences can be traced back to the specific context of the business (industry sector), historical path (e.g. motivation/pain points for starting the project, previously used collaboration software) and, interestingly, the nature of the implementation project (resources dedicated to the introduction). The analysis suggested six distinctive "archetypes of use", which are presented in the following.

The six archetypes were identified by examining the actual ECS use or in other words the "Use Cases" (Schubert & Glitsch, 2016) that are supported with the help of the ECS in the organisation. The centre of Fig. 3.10 shows the characteristics of the implementation projects that were analysed in the study. The findings show that the ***actual use*** of the integrated ECS and thus the emerging archetype(s) can be largely explained by three phenomena: (1) The ***industry sector*** (=the products and business activity of the organisation), the (2) ***IT situation*** at the point when the decision was made to implement the ECS (e.g. existing collaboration software) and the (3) existing ***company culture*** (e.g. a general openness or scepticism towards sharing ideas and knowledge).

Table 3.3 People focussed archetypes of ECS Use (left side)

People focussed: "Information and Knowledge Management"
Information Exchange and Sharing Documents
This archetype describes a situation, in which employees use the ECS mostly as an exchange platform for information that is needed to do their jobs. Typical use cases for this archetype are inter-employee communication (e.g. in discussion forums) and the sharing of files—activities that some companies describe as "Knowledge Management" **Typical Use Cases** • Inter-employee communication (e.g. in discussion forums) • File sharing
Portal Solution
The Portal Solution represents a situation, in which the ECS is mostly used as a central access point for information on specific topics of interest for employees. It is the "gateway" to internal information provided by the internal communications department as well as by fellow employees. In this group, we typically find ECS platforms that were introduced to replace outdated Intranet solutions by a more participatory "Social Intranet" **Typical Use Cases**: • Corporate communications (making information centrally available) • Internal communications • Internal information organisation and exchange in a department
The Networked Enterprise
The Networked Enterprise is the archetype closest to the original vision of IBM at the time of launch of their product "IBM Connections". It describes a situation in which employees in a (frequently) globally distributed (large) organisation have access to information-rich social profiles, actively follow each other and the software is bridging groups, departments and even countries thus making work in this organisation a truly global experience with exchange of information and ideas **Typical Use Cases**: • Expert Search • Knowledge Management • Ideation • Plus: Potentially all Use Cases for Portals and Information Exchange

As can be seen in Fig. 3.10 the six archetypes were assigned to two groups. The three archetypes on the left are ***people focussed*** supporting mostly "Information and Knowledge Management" and have an emphasis on "Content and Communication". The second group on the right side is ***process focussed*** leaning more towards "Business Process Support" and has its emphasis on "Processes and Coordination". The six archetypes are described in Tables 3.3 and 3.4.

It is important to note that the archetypes are not mutually exclusive and that their characteristics overlap in practice; one organisation is likely to assign their ECS to more than one archetype. However, the archetypes are a useful lens for the discussion of aims and objectives in an ECS introduction project. The archetypes have

Table 3.4 Process focussed archetypes of ECS Use (right side)

Process focussed: "Business Process Support"
Project Management
This archetype describes a situation, in which the main use of the ECS is for project management. This archetype has a focus on classical group work such as project planning, ideation, meetings and minutes and tasks assignment. The platform is, to a large extent, used for the coordination of information, people and tasks **Typical Use Cases** • Project support • Joint work on documents • Audit planning • Quality management • Employee suggestion systems
Efficiency Tool for Business Processes
This archetype describes a situation, in which the organisation is using the ECS for selected and sometimes very business-specific business processes **Typical Use Cases** • HR Management • Event Management • Store management • Workshop organisation • Exchange of information and files with external partners
Multi-Function Platform
The Multi-Function Platform integrates data and functionality from different business software systems and gives a uniform access to different functional areas of the company. Like the Portal Solution, it serves as a central entry point but in this case, it goes beyond mere access to information also providing certain functionality for workflows or business processes (e.g. working time recording or approval of orders in the procurement system). The activity stream (as an awareness feature) is an important element of the Multi-Function Platform because it shows events from the integrated software systems (e.g. a request to approve an order) Typical use cases for this archetype are the general exchange of information and ideas, access to information that is spread over multiple information systems and most importantly, the integration of other applications (e.g. the HR module and the sales database of the ERP System) **Typical Use Cases** • Special: Integration of other applications (e.g. the HR module and the sales database of the ERP System) • Access to information that is spread over multiple information systems • General exchange of information and ideas • Potentially all other Use Cases in the other two archetypes on this side

been through a process of review and evaluation with our participating organisations. Each of the organisations was clearly able to identify the current state of their ECS project and assign their organisations to one (or more) of these archetypes.

Conclusions

A limitation of the current body of ECS research is that it contains few in-depth, longitudinal empirical studies enabling us to understand and theorize about the degrees of similarities (and differences) in use across contexts and how they are being achieved (Monteiro & Rolland, 2012).

Our research has shown that even with the same kind of Enterprise Collaboration System, organisations develop different ways of using this software and there is a broad range of different Use Cases depending on industry, culture and existing IT infrastructure.

In addition, for most organisations, the Digital Workplace comprises a range of different collaboration software with redundant functionality. Their use is mostly voluntary and organisations rarely make one or the other software mandatory. The problems that arise from this "freedom of choice" are manifold and the proficiency in the use of social software in companies will still be improving remarkably in the years to come.

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