CEIR | Center for Enterprise Information Research

Identification & Classification of Adoption Supporting Measures for Enterprise Collaboration Systems

CENTERIS - Session 6A

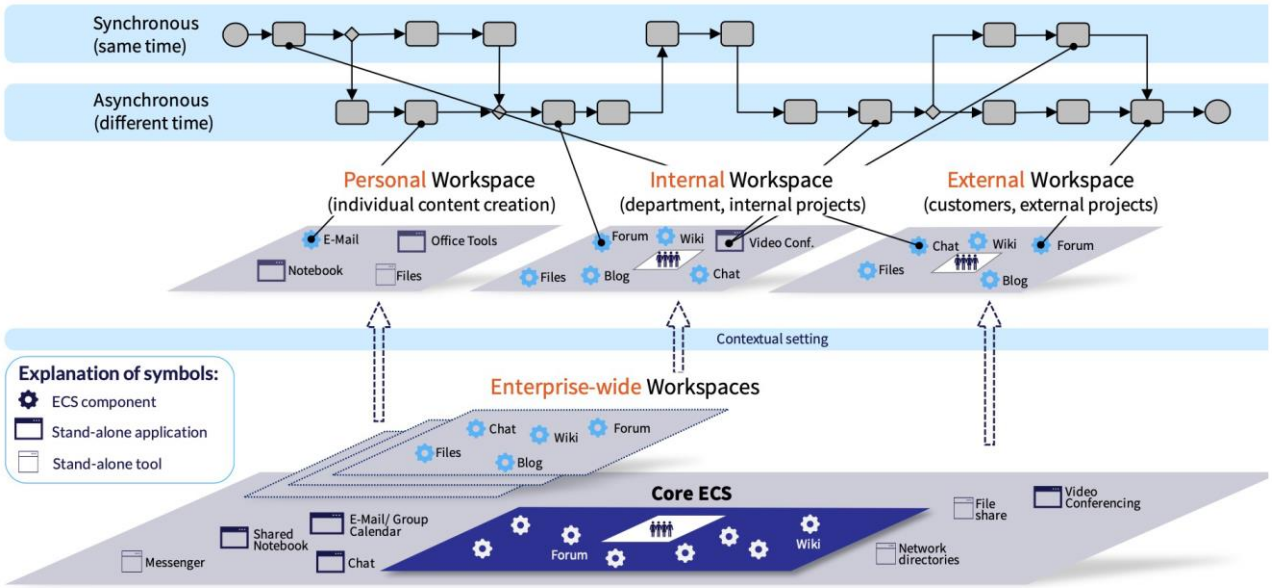
Jens Alberts, Carolin Blankenberg, Susan P. Williams | 2022-11-11

Content of the Presentation

CONTEXT: ENTERPRISE COLLABORATION SYSTEMS (ECS)

ECS are integrated software systems that build on and extend the functionality of earlier generations of collaboration software such as groupware by including social features such as wikis, blogs, reactions, tags etc.

Enterprise Collaboration Systems



Vendors and Commercialised Software

HCL Connections

slack

Confluence

1. Figure adapted from Schubert & Williams (2022a,b)

CONTEXT: THE ADOPTION OF ENTERPRISE COLLABORATION SYSTEMS (ECS)

There are large differences between classical enterprise software like ERP system and ECS designed to support ad-hoc work and collaboration between employees

Determination of Use	▪ **Usage of ERP** systems is relatively strongly **predetermined** (purpose-specific etc.) ▪ In contrast, **ECS** are **open to interpretive flexibility** (broad range of use cases etc.)
Implementation	▪ Implementation of **ERP** systems typically follow a well-defined **project plan** ▪ In contrast, **ECS** implementations frequently follow a **"bottom up"** and rather **experimental introduction approach**
Voluntariness of Use	▪ Using **ERP** systems is usually **mandatory** in organisations ▪ In contrast, **ECS** adoption and use is often **voluntary**

MOTIVATION FOR RESEARCH ON ADOPTION OF ENTERPRISE COLLABORATION SYSTEMS (ECS)

To date limited attention has been directed towards understanding adoption supporting measures for ECS initiated within organisations

- **Studies on adoption** of collaboration software **are primarily focused on specific collaboration tools instead of large-scale integrated ECS** (e.g., enterprise wikis or microblogging)

- **Only few in-depth studies and no longitudinal case studies about ECS** that provide empirically derived insights into adoption approaches for ECS

- **ECS have intensified** in both scale and scope in **recent years**:
  - Many ECS implementations in the past decade by early adopter organisations
  - Second wave of implementations in progress for mid- and late-adopter companies triggered by the COVID-19 pandemic and the Work-From-Home policy initiatives

RESEARCH OBJECTIVE AND RESEARCH DESIGN

The aim of the study is to identify, analyse and classify ASM for ECS from the organisational perspective and the company staff responsible for managing the ECS implementation.

Objective 1 — To **identify and describe ASM** in the context of ECS

Outcome 1 — **ASM catalogue** in the context of ECS including their descriptions

Objective 2 — To **analyse and classify** the identified ASM

Outcome 2 — **Categorisation** of ASM

Research Design

- Qualitative inductive coding
- Industry case studies that deal with the introduction of ECS

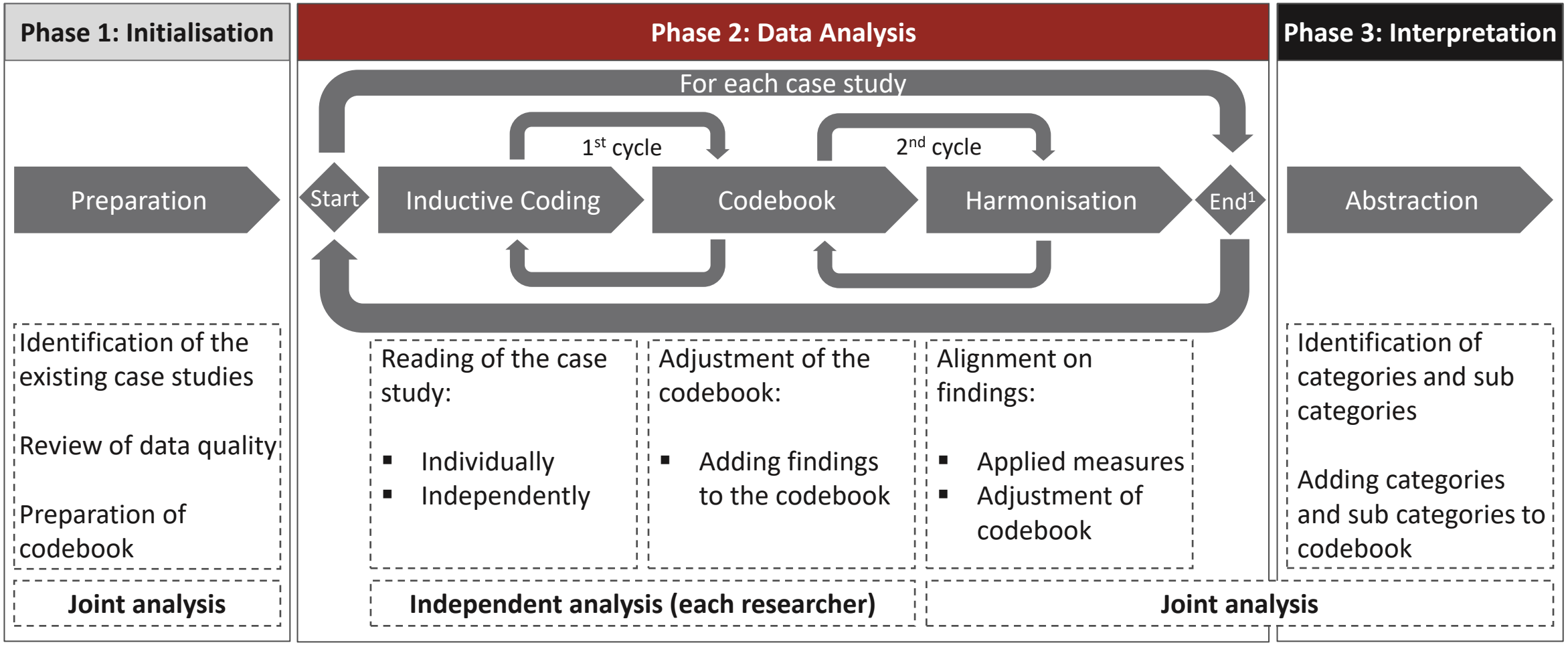
Definition ASM in the context of ECS as supporting strategies, structures, and activities that are applied by an organization during the ECS implementation phase.

1. ASM = Adoption Supporting Measures
2. ECS = Enterprise Collaboration System

Content of the Presentation

METHODOLOGY: QUALITATIVE INDUCTIVE CODING OF INDUSTRY CASE STUDIES

After analysing, coding, and harmonisation of four case studies a stable version of the codebook was reached; two additional cases were analysed to confirm the stability

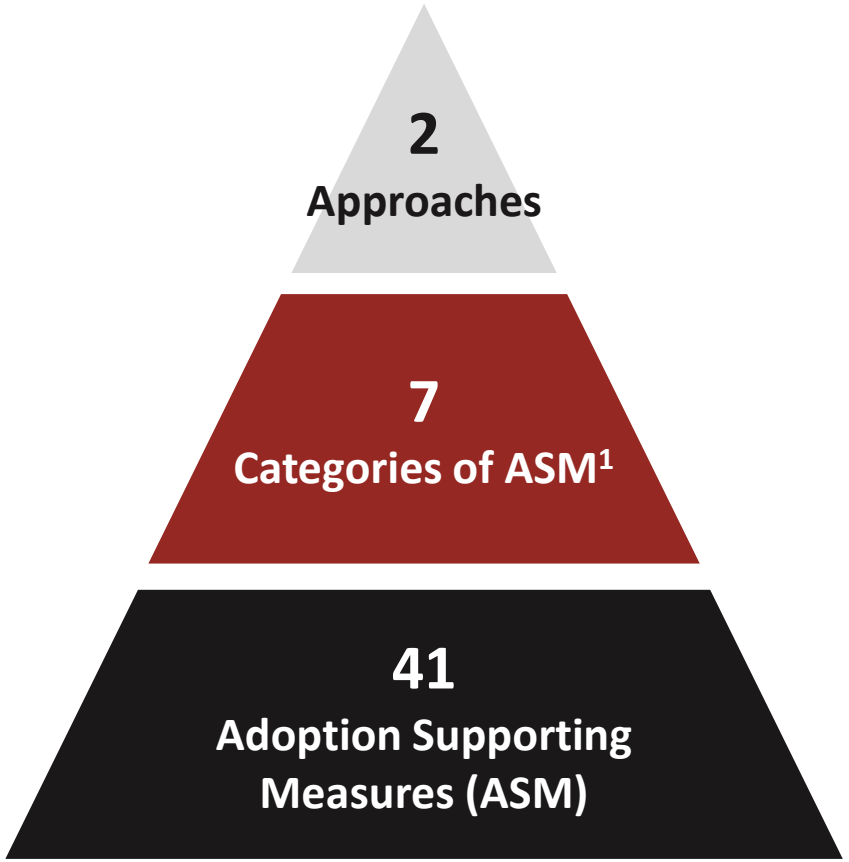


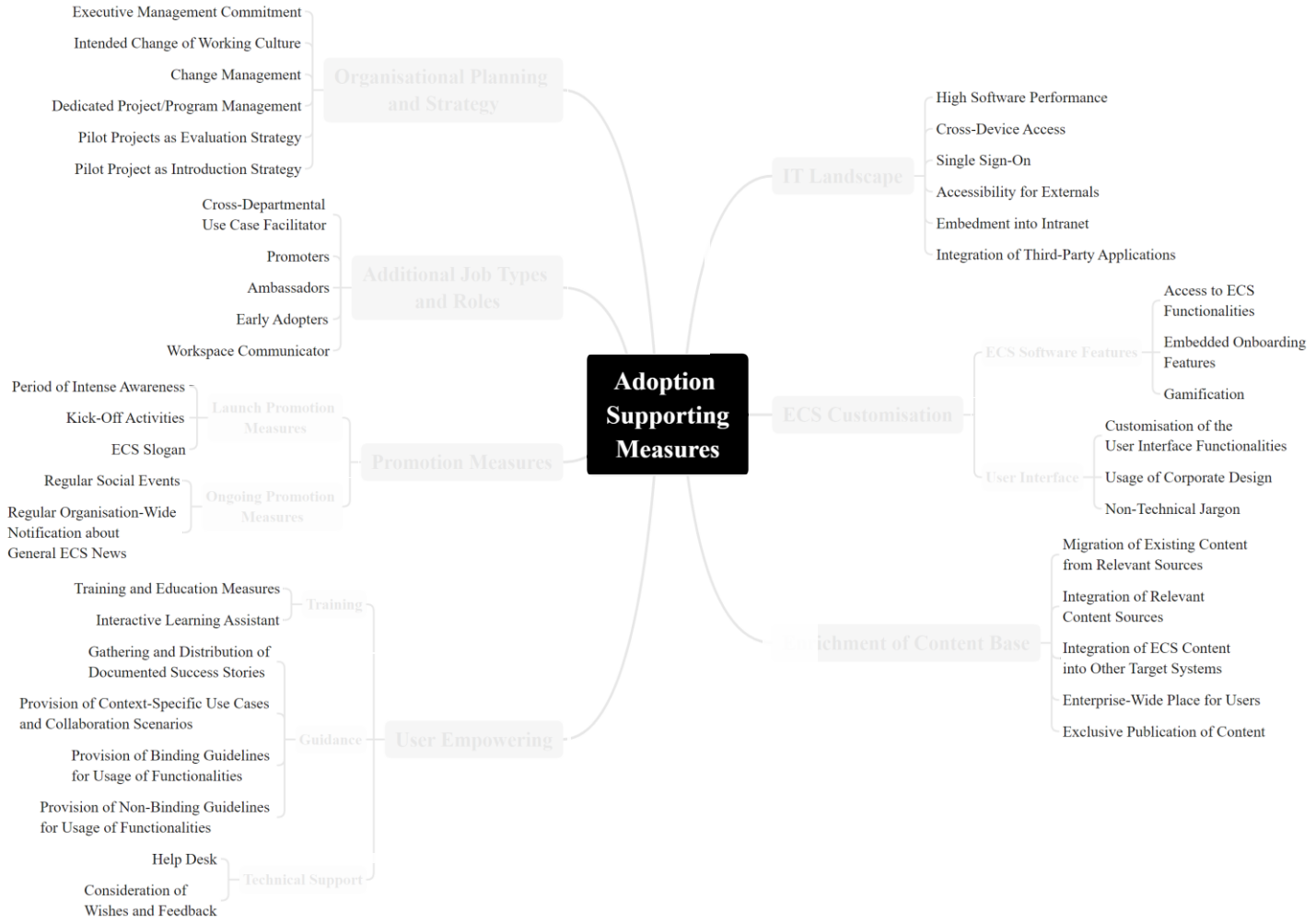
1. End condition; No more codes were added to the code book

Content of the Presentation

OVERVIEW OF OUR RESULTS

We have identified 41 Adoption Supporting Measures for Enterprise Collaboration Systems, which can be divided into 7 categories and 7 subcategories



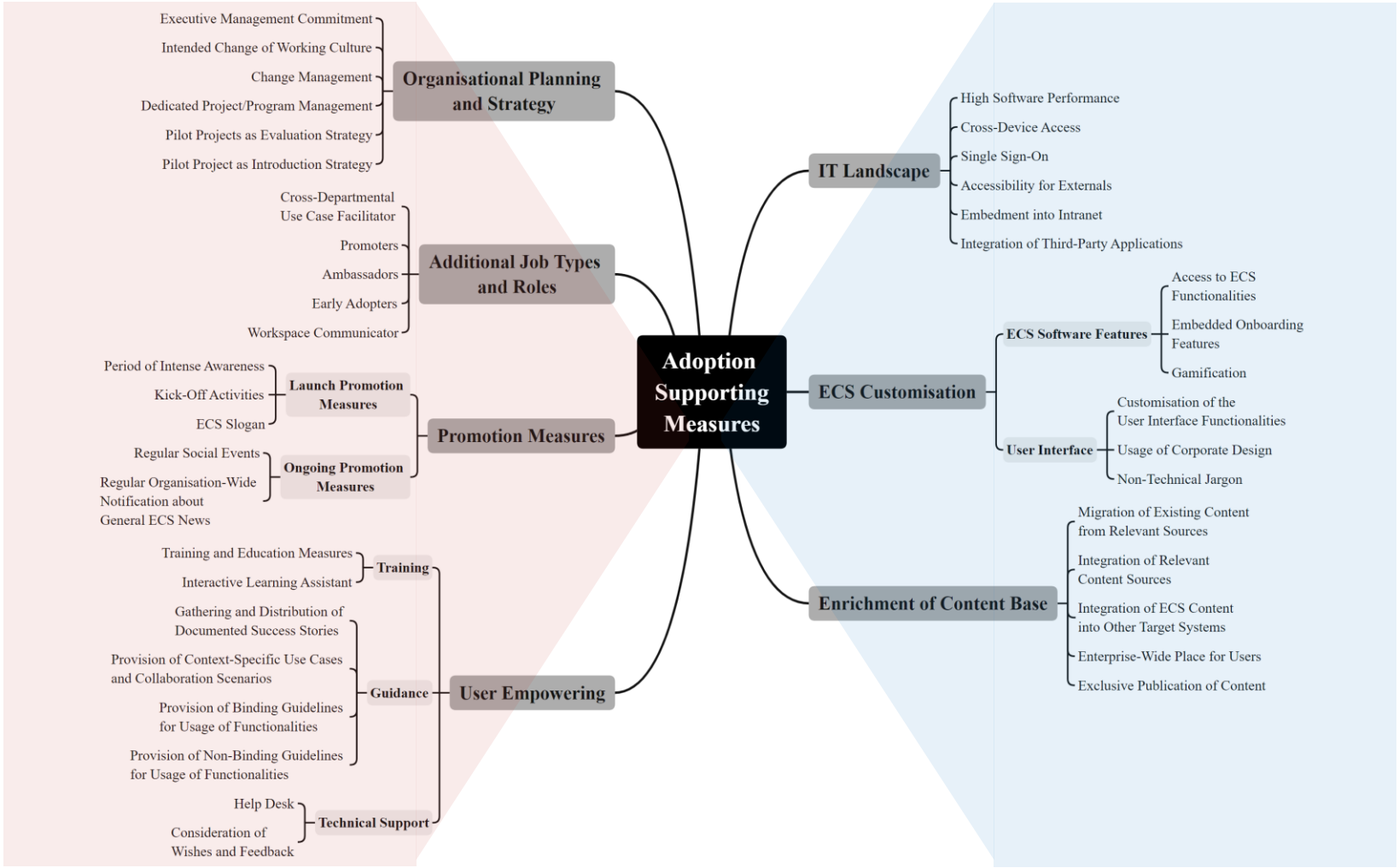


1. Additional 7 subcategories

OVERVIEW OF OUR RESULTS

Two general adoption approaches are revealed regarding the adoption of ECS in the case organisations:
1) An organisational and people oriented approach and 2) a technical and system oriented approach

Organisational and people oriented approach:
4 Categories[1]
24 Approaches



Technical and system oriented approach:
3 Categories[2]
17 Approaches

1. Additional 5 subcategories
2. Additional 2 subcategories

OVERVIEW OF ADOPTION SUPPORTING MEASURES

All 41 adoption supporting measures are described in more depth in the Appendix of the paper

Appendix A. Catalogue of Adoption Supporting Measures

Adoption Supporting Measure	Description
Access to ECS Functionalities	The ECS in general provides a range of functionalities and services, that can be selectively enabled by the system administrator. If, for example, users feel more convenient with a subset of accessible functionalities, their adoption can be positively influenced through a restriction of the functionalities.
Accessibility for Externals	People outside the organisation can get access to the ECS. The extended access for external users increases use cases of the ECS with a positive influence on the adoption. For example, a workspace for exchange with users from suppliers of a company is created.
Ambassadors	A group of designated employees who develop, evaluate, and communicate ECS use cases with stakeholders on the operational and departmental levels. This positively influences the ECS adoption through an increased elaboration of personal use cases with stakeholders. Ambassadors are doing this voluntarily and are designated by the organisation. They are specially trained for this role and participate in an accompanying social program, which is an incentive to carry out this role.
Change Management	Defined and monitored measures of change management are taken as a complement to support the wider changes in work practices for the user through the ECS. User adoption is positively influenced by change management initiatives since the introduction of this type of software is often accompanied by potentially far-reaching changes in work practices. For example, a change management process is initiated and financed by the organisation to address potential constraints and reservations of the users.
Consideration of Wishes and Feedback	The users have the possibility to report wishes for and feedback about the ECS to a central entity, which considers these requests for the improvement of the system. This influences the adoption of the ECS positively as the users are more encouraged to actively participate in the improvement of the system. Thus, the users have a more positive attitude to the system as their needs and problems are taken into account. For example, the users can report problems and feedback with the help of an electronic form.
Cross-Departmental Use Case Facilitator	A group of designated employees who develop, evaluate, and communicate ECS use cases on a cross-department basis. The facilitators guide the elaboration of concrete use cases for managerial stakeholders to encourage a positive impact on the adoption as the use cases are more tailored to the organisational context. For example, a facilitator works together with specialists and management on the strategic and the tactical level to coordinate new cross-departmental use cases.
Cross-Device Access	Users can access the ECS across multiple operating systems which increases the possibilities of usage and positively influences its adoption. For example, the ECS can be accessed via native applications on mobile devices as well as from desktop and other devices.
Customisation of the User Interface Functionalities	The functionalities and graphical user interface within the ECS are customised to the organisations' needs. For example, by adding additional buttons to the interface for special functionalities that are common within the organisation. This positively influences the adoption of the ECS as users only need one entry point and it simplifies the way users can access the (different) systems.
Dedicated Project/Program Management	The organisation determines dedicated management for the ECS implementation. This management oversees the wider ECS related projects/program. Management mechanisms are then in place to support the implementation of the ECS with the allocation of resources when they are required. Thus, user adoption is influenced positively as complications during the implementation and the launch of the ECS could be solved quickly and give the user more confidence in the system. For example, a dedicated project manager reacts without delay to an ECS malfunction during the implementation phase, enabling various relevant actors to be coordinated quickly to fix the situation.
Early Adopters	A group of users who use the system earlier than others either in a pilot study or immediately after the system launch. They may participate voluntarily or be purposefully selected by the project owners/organisation. Early adopters take a pioneering role and set an example of how the ECS can positively influence their daily work which encourages other users to adopt the system.
ECS Slogan	The ECS has its own dedicated slogan, claim, motto, or similar, which sends a clear message to users and has high visibility for them. Through the long-term meaning of the slogan or similar, the ECS gets an identity with a positive influence on the adoption. For example, a slogan expresses the intended change in the work philosophy of an organisation that is fostered through the ECS.
Embedded Onboarding Features	The ECS has embedded software features that make the onboarding of new users more convenient. By lowering the barriers for users, the ECS adoption is positively influenced. For example, a tour guides through the basic ECS functionalities for new users.
Embedment into Intranet	The ECS is integrated and embedded into the existing intranet of the organisation. This places the ECS in a prominent position and gains a high level of awareness with a positive influence on the adoption.

Adoption Supporting Measure	Description
Enterprise-Wide Place for Users	An enterprise-wide place for general information regarding the ECS usage is made available to all users. It serves for user exchange, self-information, and self-support which positively influence the adoption of the ECS. For example, an open-access, enterprise-wide user workspace is provided to all users which is moderated by the IT department of the organisation.
Exclusive Publication of Content	Content is published exclusively in the ECS. The adoption is positively influenced as this is an incentive for users to access the ECS and they get more familiar with the system. For example, parts of the internal communication are published in the ECS like management announcements.
Executive Management Commitment	The executive management explicitly and publicly supports the ECS. The management support demonstrates long-term engagement of the ECS within the organisation. This signal provides the users with the confidence that it is worth working with the new ECS which leads to higher adoption of the ECS. For example, the commitment is expressed through video messages from the Board of Directors or the sponsorship of internal promotion measures.
Gamification	Gamification aspects are integrated into the ECS, which introduces the user to functionalities in a playful approach or encourages more intensive usage of functionalities. For example, users are awarded badges for certain achievements like the number of files uploaded in the ECS.
Gathering and Distribution of Documented Success Stories	Success stories of ECS usage are gathered, documented, and distributed to the users. These stories provide an orientation for other users on what could be done with the ECS. For example, users identify new use cases for themselves when reading success stories and adapt their usage with the ECS.
Help Desk	The organisation provides a central contact point for users which assists with technical and non-technical problems of the ECS. Through the assistance of experts, the users get their ECS problems resolved on time. This positively impacts the adoption as users feel more supported. For example, an organisation has a help desk with a telephone hotline to which users can reach out in case of any issues related to the ECS.
High Software Performance	The ECS has a high software performance leading to short response and loading times for the users. The high performance is perceived as convenient by the users with a positive impact on the adoption. For example, the user waiting times for searching and accessing work relevant data are very low so that the user can work smoothly and feels supported by the ECS in his everyday work.
Integration of ECS Content into Other Target Systems	ECS Content is integrated into the target systems via interfaces. The content remains within the ECS. The adoption is positively influenced by an increased awareness of users for ECS content. For example, the website of the organisation shows content of a specific ECS workspace.
Integration of Relevant Content Sources	Relevant content from other sources is integrated into the ECS via interfaces. The content is not necessarily stored within the ECS but remains in the source system. The adoption is positively influenced by the enrichment of ECS content. For example, an organisation-wide user directory is integrated into the ECS as a directory service so that users could easily search for user information without leaving the ECS.
Integration of Third-Party Applications	Functionalities of third-party tools and services are integrated into the ECS. This increased integration of applications in the ECS is a benefit as users do not have to switch systems so often and therefore their adoption is increased. For example, the CRM system of the organisation is integrated and embedded into the ECS.
Intended Change of Working Culture	Besides the implementation of the ECS, the organisation is also proactively striving for a change in work practices and work culture toward a digital workplace. These intended changes support the new work practices with an ECS and have a positive impact on the user adaption. For example, the organisation is aiming for a digital workplace for each employee and the ECS is seen as an important enabler for this.
Interactive Learning Assistant	A learning service for ECS users is embedded into the software. It enables ECS users to interactively learn about the system functionalities positively influencing ECS adoption. For example, the set-up of a new workspace supported by an interactive learning assistant highlights important configuration options in the software and makes this process more convenient for the user.
Kick-Off Activities	Accompanying measures are taken to promote the launch of the ECS to users. The measures lead to higher awareness about the ECS in the organisation with a positive influence on the adoption. For example, a roadshow with stops in each business unit of the organisation is held.
Migration of Existing Content from Relevant Sources	Relevant content from other sources is imported as a one-time migration in the ECS. The adoption is positively influenced as ECS begin as empty shells. Thus, the provision of existing content encourages the employees to access and actively search the new system. For example, users find the content in the ECS from a former intranet system that is replaced by the ECS.
Non-Technical Jargon	The terminology for features and functionalities and similar follows the language of the users' domain. This increases the orientation for users within the ECS and therefore the adoption. For example, technical jargon is avoided.

Adoption Supporting Measure	Description
Period of Intense Awareness	The usage of the ECS receives much attention for a certain period which makes the staff of the organisation aware of system with positive influence on the user adoption. For example, a group of users identifies ECS use cases with major benefits for their business operations and communicates it to co-workers leading to a widespread word of mouth recommendation.
Pilot Project as Introduction Strategy	Before an organisation-wide launch of the ECS, a test phase is conducted under real-world conditions. The findings made during the test phase are incorporated into the adjustment of the software with a positive impact on the adoption. For example, the ECS is tested with a limited number of departments in the organisation.
Pilot Projects as Evaluation Strategy	A comprehensive technical evaluation of ECS solutions from different vendors took place before the actual launch to select the software with the best fit for the organisation. During the evaluation, the requirements of different stakeholders are considered with a positive impact on the adoption as the chosen ECS fits the needs of the stakeholders most.
Promoters	A group of users who actively promote the new system within their organisation. They are doing this voluntarily and act informally. They have identified the opportunities and benefits of the new system on their own. For example, a leading manager has identified use cases within the ECS that enhances office operations and communicates this to other managerial personnel via an informal blog post.
Provision of Binding Guidelines for Usage of Functionalities	Binding guidelines and instructions for the usage of the ECS functionalities are defined by the organisation. The adoption is positively influenced because the ECS users are more aware and confident of what is expected to be done, for example, naming conventions for workspaces.
Provision of Context-Specific Use Cases and Collaboration Scenarios	Use cases and collaboration scenarios are developed and communicated as part of the ECS introduction to show the opportunities for ECS usage within the given specific context(s) of the organisation. The articulation of developed use cases and collaboration scenarios has a positive impact on the ECS adoption of users. For example, the circumstances of a business unit are considered when use cases for them are developed leading to better operability for the users of the department.
Provision of Non-Binding Guidelines for Usage of Functionalities	Guidelines for the usage of the ECS functionalities are defined by the organisation, but these have a non-binding character. Adoption is positively influenced because users have a higher degree of confidence about which features should be used and how in the interest of the organisation. For example, users feel encouraged to actively use tags even if it is not their content.
Regular Organisation-Wide Notification about General ECS News	Notifications are sent to the (potential) users of the ECS on a regular basis to make them aware of recent general information about the ECS. This increased awareness has a positive impact on the ECS adoption as the system is kept in mind the (potential) users even if they do not actively use the ECS. For example, regular newsletters are sent.
Regular Social Events	Regular social events are organised that promote the ECS within the organisation. These events have a positive impact on the ECS adoption. For example, an award for best workspaces is granted and celebrated.
Single Sign-On	ECS has single sign-on software features, which allows a more convenient authentication procedure for the users with a positive influence on the ECS adoption. For example, a user is automatically logged in to the ECS application when doing the authentication for the operating system of a device.
Training and Education Measures	Various ECS training and education measures are provided to the users of the ECS. The completing and following of the materials increase the empowerment of the users of the ECS with a positive influence on the adoption. For example, courses and tutorials are provided as learning material for new users.
Usage of Corporate Design	The ECS user interface appearance is aligned with the organisation's corporate design. This leads to better identification of users with the ECS and higher adoption. For example, the colour schema of the organisation is strictly used for the design of the user interface.
Workspace Communicator	A group of users who actively contribute to the development of workspaces in the ECS. Also, they communicate collaboration-related content with workspaces. The scope of a workspace communicator is determined, for example, fixed to a regional or business unit. For example, a workspace communicator shares the benefits of a specific ECS use case within his allocated business region.

References

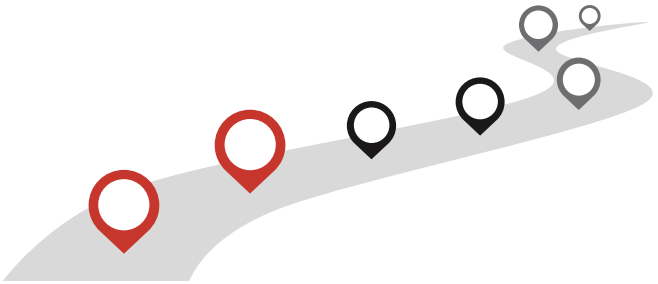
[1] Schubert P, Williams S. IndustryConnect: WI-Forschung mit und für die Praxis. HMD - Praxis Der Wirtschaftsinformatik 2020;57:189–204.
[2] Leonardi PM, Huysman M, Steinfield C. Enterprise Social Media: Definition, History, and Prospects for the Study of Social Technologies in Organizations. Journal of Computer-Mediated Communication 2013;19:1–19.
[3] Schwade F, Schubert P. Social Collaboration Analytics for Enterprise Collaboration Systems: Providing Business Intelligence on Collaboration Activities. 50th Hawaii International Conference on System Sciences, Waikoloa, HI, USA: 2017, p. 401–10.

CONCLUSION AND PLANNED FURTHER RESEARCH

The findings set an important milestone in our long-term research on adoption of collaboration technologies that will be further enriched in the future to provide new and useful insights for practice and research

Implications:

- **For practice**: Identified ASM, categories, and descriptions can be used to better plan the adoption of an ECS
- **For academia**: Contribution to the body of knowledge about software adoption and collaboration software as baseline for future research



Limitations:

- **Categorisation** currently in a stable state but will **never be finished**
- **Further interpretation** of ASM **out of scope** (e.g., effectiveness of the ASM was not evaluated)

Outlook and planned further research:

- Study part as of a **long-term research programme** on collaboration technologies and the digital workplace
- **Deepening analysis** towards, for example, the sequencing of measures, success and failure of specific measures

Thank you for your attention!

Jens Alberts*
(Research Assistant)

Jens Alberts is currently working as a research assistant with the Enterprise Information Management Research Group and the Center for Enterprise Information Research (CEIR) at the University of Koblenz

Carolin Blankenberg
(Research Assistant)

Carolin Blankenberg is currently working as a research assistant with the Enterprise Information Management Research Group and Center for Enterprise Information Research (CEIR) at the University of Koblenz

Prof. Dr. Susan P. Williams
Professor for Social Informatics

Sue Williams is Professor of Enterprise Information Management at the University of Koblenz, Germany. She is a founding member of the Centre for Enterprise Information Research (CEIR) and joint coordinator of IndustryConnect, a university-industry research community. Sue's research examines complex sociotechnical change and the design, use and consequences of new technologies in organisational contexts. An interdisciplinary researcher her work investigates emerging information infrastructures and the ways that platforms for enterprise collaboration are transforming organisational work and the digital workplace.

CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies 2022

Identification and Classification of Adoption Supporting Measures for Enterprise Collaboration Systems

Jens Alberts*, Carolin Blankenberg, Susan P. Williams

Center for Enterprise Information Research, University of Koblenz, Universitätsstr. 1, 56070 Koblenz, Germany

*Corresponding author: jalberts@uni-Koblenz.de

Content of the Presentation

REFERENCES

- Bullinger-Hoffmann A, Koch M, Möslein K, Richter A. Computer-Supported Cooperative Work – Revisited. I-Com 2021;20:215–28.
- Greeven CS, Williams SP. Enterprise Collaboration Systems: An Analysis and Classification of Adoption Challenges. Procedia Computer Science 2016;100:179–87.
- Greeven CS, Williams SP. Enterprise collaboration systems: addressing adoption challenges and the shaping of sociotechnical systems. International Journal of Information Systems and Project Management 2017;5:5–23.
- Grudin J. Groupware and Social Dynamics: Eight Challenges for Developers. Commun ACM 1994;37:92–105.
- International Labour Organization. Teleworking during the COVID-19 pandemic and beyond. 2020.
- Schubert P, Wölfle R. The eXperience Methodology for Writing IS Case Studies. Americas Conference on Information Systems (AMCIS), 2007, p. 1–15.
- Schubert P, Williams S. IndustryConnect: WI-Forschung mit und für die Praxis. HMD - Praxis Der Wirtschaftsinformatik 2020;57:189–204.
- Schubert P, Williams SP. Enterprise Collaboration Platforms: An Empirical Study of Technology Support for Collaborative Work. Procedia Computer Science 2022;196:305–13.
- Schubert, Petra; Williams, Susan P. (2022): Enterprise Collaboration Platform Configurations: an Empirical Study. In: Proceedings of 20th European Conference on Computer-Supported Cooperative Work. Coimbra, Portugal: European Society for Socially Embedded Technologies (EUSSET). S. 1-17.

METHODOLOGY: CASE STUDY COMPANIES

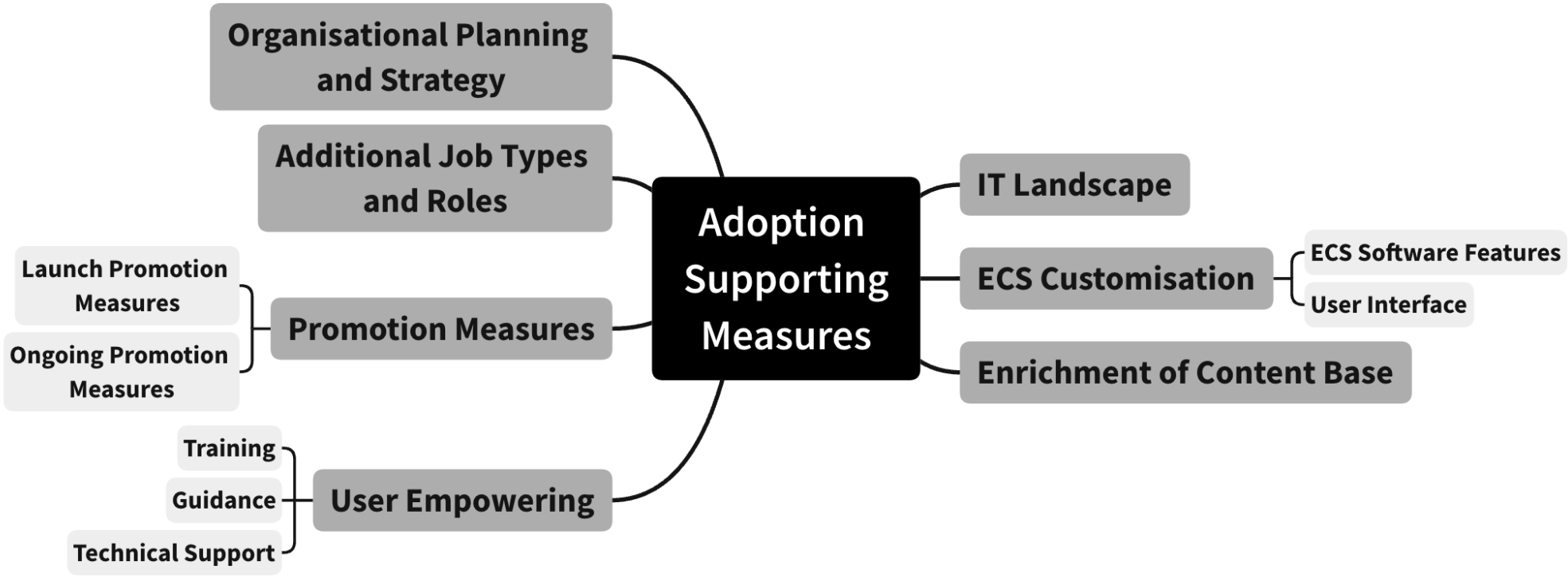
The research is based on the data from six case studies that are conducted with the eXperience methodology of Schubert and Wölfle (2007)

- Case Company 1 is a global automotive supplier with headquarters in Germany (400.000 employees worldwide).
- Case Company 2 is the European Business Unit (6.300 employees) of a global electronics manufacturer (31.500 employees worldwide).
- Case Company 3 is the German business unit (1.100 employees) of a global chemical product manufacturer (17.000 employees worldwide).
- Case Company 4 is the parent company of the previously described company headquartered in the Switzerland
- Case Company 5 is a German municipal service centre for personnel and pension scheme affairs (100 employees).
- Case Company 6 is an international expert services company primarily for inspection of motor vehicles with headquarters in Germany (35.000 employees).

1. The number of employees refers to the time of the case studies which took place from 2016 to 2020.

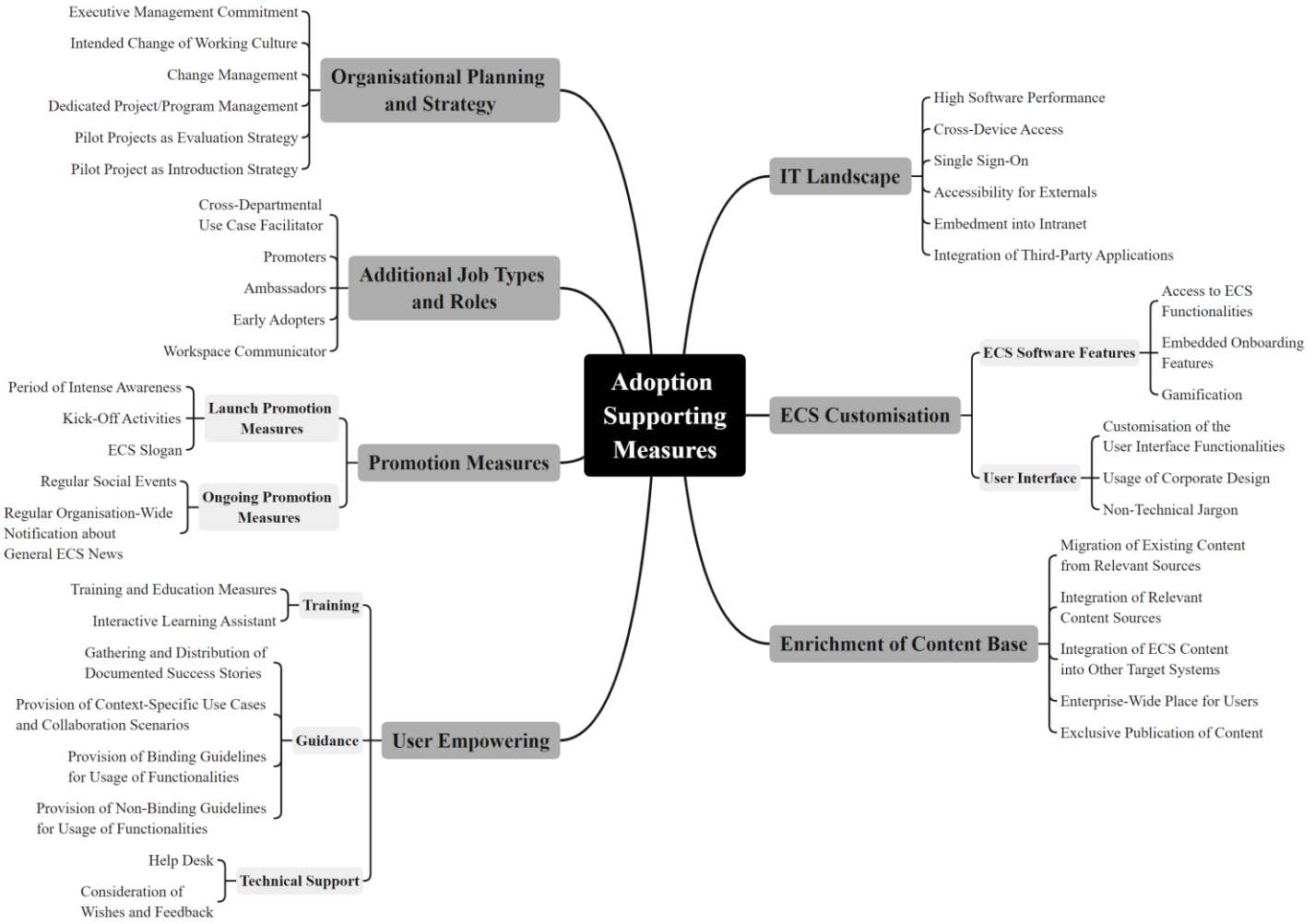
BACKUP: OVERVIEW OF CATEGORIES

In total, 7 categories and additional 7 subcategories are derived



BACKUP: OVERVIEW OF ADOPTION SUPPORTING MEASURES AND CATEGORIES

In total, 41 adoption supporting measures, 7 categories, and 7 subcategories are derived from the analysis



BACKUP: SCHEMATIC STRUCTURE OF THE EXCEL SPREADSHEET

The cases are analysed as line items in the Excel Spreadsheet in two main blocks: the context information and the single adoption approaches

	Context Information[1]	Category 1							
		Adoption Approach 1				Adoption Approach 2			
		Description				Description			
		Applied	Objective	Successful	Comment	Applied	Objective	Successful	Comment
Case 1									
Case 2									
Case 3									