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WISSENSCHAFTLICHE BEITRÄGE



Introducing digital technologies in person-related services—Support through Social Service Engineering

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Abstract

The trend towards digitalization has made its way into personal services, promising better service quality for customers and improved working conditions for service providers. However, the implementation of digital technologies remains a major challenge, especially for smaller companies. Building on the results of the SO-SERVE project, this paper presents the concept of Social Service Engineering and its practical application in introducing a digital tool in two daycare centers. The software provided to the employees on tablets was intended to support the information and documentation processes, as the design of internal and external information flows and documentation processes in the daycare centers: 'Digitization Checklists' provide company managers and business unit managers with an overview of the necessary steps for the standardized use of software and hardware within the company. 'Digitization companions' are employees who are readily available to their colleagues as contact persons for questions and concerns about working with the new digital tool. An initial online evaluation with 23 educators from the daycare centers reveals that the digital tool and supporting SO-SERVE tools have improved information and documentation processes, and the work situation of employees. Both educators and parents benefit from the improvements.

Keywords Digitization · Software introduction · Work design · Childcare

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Einführung digitaler Technologien in personenbezogenen Dienstleistungen – Unterstützung durch Social Service Engineering

Zusammenfassung

Der Trend zur Digitalisierung hat die personenbezogenen Dienstleistungen erreicht und verspricht eine bessere Servicequalität für Kund:innen und bessere Arbeitsbedingungen für die Beschäftigten. Die Einführung digitaler Technologien bleibt jedoch eine große Herausforderung, insbesondere für kleinere Unternehmen. Aufbauend auf den Ergebnissen des Projekts SO-SERVE wird in diesem Beitrag das Konzept des Social Service Engineerings und seine praktische Anwendung bei der Einführung eines digitalen Tools in zwei Kindertagesstätten (Kitas) vorgestellt. Das digitale Tool wurde den Beschäftigten auf Tablets zur Verfügung gestellt, um die Informations- und Dokumentationsprozesse zu erleichtern. Dieser Beitrag stellt zwei exemplarische SO-SERVE-Werkzeuge vor, welche die Einführung des digitalen Tools in den Kitas unterstützten: "Digitalisierungs-Checklisten" geben Unternehmens- und Bereichsleitungen einen Überblick über die notwendigen Schritte für den standardisierten Einsatz von Soft- und Hardware im Unternehmen. "Digitallots:innen" sind Beschäftigte, die ihren Kolleg:innen als Ansprechpersonen für Fragen und Anliegen rund um die Arbeit mit dem neuen digitalen Tool zur Verfügung stehen. Eine erste Online-Evaluation mit 23 Erzieher:innen aus den Kitas zeigt, dass das digitale Tool und die unterstützenden SO-SERVE-Werkzeuge die Informations- und Dokumentationsprozesse sowie die Arbeitssituation der Beschäftigten verbessert haben. Sowohl Erzieher:innen als auch Eltern können von den Verbesserungen profitieren.

Schlüsselwörter Digitalisierung · Einführung neuer Software · Arbeitsgestaltung · Kinderbetreuung

1 Maximizing the benefits of digitization

The trend toward digitization has finally arrived in the sector of person-related services (e.g., healthcare, childcare, and sales). Digital technologies are increasingly used, especially as systems for documentation, monitoring, billing, and electronic communication (e.g., Colombo et al. 2020; Burris 2019). Even if the transformation process is somewhat slower in the service sector than in other work areas, digital technologies offer organizations great potential for improvement. Thereby, advances refer not only to the increase of service quality for customers but also to the improvement of working conditions for service providers (Eurofound 2020).

Organizations in the sector of person-related services are under increasing pressure to economize. Thus, there is a high need for effective service design to provide highquality and efficient services to customers (e.g., Wang et al. 2019). At the same time, the increased work demands and their adverse consequences in person-related services point to the requirement of preventive work design (e.g., Aronsson et al. 2017; O'Connor et al. 2018). Digital technologies can be a way to support both customer-oriented service design and employee-oriented work design (Vial 2019; Cascio and Montealegre 2016; Krick et al. 2020).

However, up to 70% of digitization projects in organizations fail (e.g., Barrett and Stephens 2016), especially when technocentric change ignores social and organizational factors (Parker and Grote 2022). As Josh Bersin, founder of Bersin by Deloitte, mentioned, digital transformation is not about technology but about people (Bersin 2019). In other words: "The fact is that it is your people who will fuel—or—thwart your digital transformation" (Kane 2019, p. 46). Therefore, active involvement of employees and customers, a well-organized roll-out, and ongoing communication are indispensable prerequisites for the company's sustainable introduction of digital technologies. They can prevent employees and customers from getting the impression that digital innovation is being 'forced' on them without giving a thought to the end-users, which can lead to resistance and rejection.

This paper is intended to provide managers with guiding principles and examples for successfully introducing digital technologies in organizations that offer person-related services. Building on the results of the SO-SERVE project, the Social Service Engineering (SO-SERVE) concept is therefore presented (see Friedrich et al. 2021). The paper focuses on two exemplary SO-SERVE tools developed to support the introduction of new digital technologies into organizations and maximize the likelihood of success in technology roll-out: Procedural *Digitization Checklists* and *Digitization Companions*. The tools demonstrate the practical application of Social Service Engineering in introducing digital technologies, using childcare as an example.

2 Social Service Engineering (SO-SERVE)

2.1 General approach and principles

Social Service Engineering is a general framework that supports all kinds of innovations and changes in organizations that offer person-related services. These innovations and changes include the introduction of new (digital) work tools and changes in work processes, as well as innovations in customer service and customer relationships. By providing subordinate principles for Social Service Engineering and an online tool kit with step-by-step instructions, the concept offers orientation for socio-technical change processes.

The interdisciplinary concept of Social Service Engineering was developed in the SO-SERVE (BMBF/ESF) project. The project's starting point was the necessity to combine the disciplines of work psychology and service engineering to improve person-related services for both employees and customers. The technology-driven approach of service engineering aims to design high-quality, efficient, and customer-oriented services or service systems. As service engineering primarily considers the customer's perspective of service characteristics, working conditions and employees' demands in person-related services might be neglected. Therefore, work psychology brings the employee perspective, and thus, the 'Social' aspect to the approach of Service Engineering. Work psychology aims at a preventive, humane design of person-related service work. Humane or decent work means that it promotes learning and personal development as well as physical and mental health by respecting the criteria of human-centered design, such as avoiding over- and underchallenging tasks, providing skills variety, autonomy, task identity, task significance, and job feedback (e.g., ISO 6385:2016; ISO 10075-2:1996). Social Service Engineering combines theoretical approaches, methods, and tools from work psychology and service engineering to generate synergies from the collaboration of both disciplines.

In sum, Social Service Engineering assumes sustainable corporate success is only possible through employee-oriented decent work design in conjunction with service design that considers economic aspects and the wishes of service recipients and users. The SO-SERVE principles (adopted from Friedrich et al. 2021¹) for the design of humane and efficient person-related services are derived from this basic idea. As overarching guidelines, they also apply to the introduction of digital technology.

Principle #1: Service design and work design are realized together.

The key premise of Social Service Engineering is that there is an interplay between the working conditions of employees and the service quality of customers, which can influence satisfaction on both sides and thus contribute to the company's success. For this reason, joint design of service and work is essential.

Principle #2: Social Service Engineering focuses on the time for empathic and meaningful interaction.

Interaction between people represents the core value of person-related services. Only appreciative personal interaction and attention ensure that person-related work meets the demands of service recipients or service users, as well as the professional standards of service providers. Time must be provided for this interaction.

Principle #3: Social Service Engineering considers the circumstances of all actors in the network (e.g., service provider, service recipient, stakeholders).

Social Service Engineering considers aspects that might influence the behavior or experience of the actors in the person-related service situation, including organizational (e.g., time available, technical equipment), emotional-motivational (e.g., expectations of the interaction), cognitive (e.g., qualifications, competencies in using the technology), and social aspects (e.g., social norms).

Principle #4: All network stakeholders are encouraged to participate actively in the work and service design.

The knowledge and experience of service providers, service recipients, and stakeholders with the service are utilized to determine which processes are not optimally designed and to implement design processes. In the development and introduction of digitization measures, the early involvement of future users avoids possible undesirable consequences.

Principle #5: The organization's goals are clearly defined and aligned.

Well-defined goals support the design process by facilitating the prioritization and selection of design measures (selection and evaluation function), the coordination of actors toward common goals (motivation function), and the monitoring of intermediate and final results (control function). The objectives are coordinated to promote each other, and design measures do not contradict each other.

Principle #6: Design measures address problems at their source.

Condition-related design measures focus on the improvement of the circumstances of the service delivery (e.g., by optimizing workflows and improving software usability). Individual-related design measures aim at improving how employees deal with given circumstances (e.g., by time management or software user training). Individual-related measures are only used when technical or organizational measures have been exhausted or are not suitable for elim-

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Table 1 Assessment methods and fields of action

Tab. 1	Erhebungsmethoden	und Handlungsfelde
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Assessment methods	Resulting fields of action (FOA)
Document analyses (76 coded documents)	1. Internal and external information flows, documentation
Written employee survey on perceived working conditions and consequences	processes
of strain $(N=63)$	2. Role definition
Partially standardized individual interviews with employees and managers	3. Idea and change management
(N=12)	4. Qualification and initial training
Partially standardized group interviews with employees and managers $(N=4)$	5. Work process design
Written survey on satisfaction with communication with parents/relatives	6. Cooperation with external parties (stakeholders)
(N=178) and employees $(N=40)$	7. Social relations between employees
Process modeling using BPMN notation language	8. Monotonous work demands in some work areas
Stakeholder analysis	9. Work breaks and break room design
Touchpoint analysis	10. Occupational health and safety

inating the problem (see EU OSH legal framework on the introduction of measures to encourage improvements in the safety and health of workers at work: Council Directive 89/391/EEC 1989).

Principe #7: The design of person-related services is built on a shared value base of trust and transparency.

A trusting collaboration in which all actors can participate constructively forms the basis for designing the personrelated service. Shared values are translated into transparent design processes and horizontal negotiation processes. These processes require management practices in which hierarchical control and top-down approaches are reduced to a minimum.

Principle #8: Person-related work and its design require a shared mindset across the team and the organization.

The service mindset reflects a service organization's basic attitude toward providing services. A shared service mindset can create certainty of action in everyday and exceptional situations for employees. It is concerned both with the goals aimed at in the provision of services and with how these goals are achieved. The role of the service recipient is also the subject of the service mindset. The service mindset should be developed in participation with the employees to ensure that it is supported and implemented in their day-today work.

2.2 Methodological approach for the development of Social Service Engineering

In the SO-SERVE project, one of the first steps in the cooperation of work psychologists and service engineers was assessing working conditions and service processes in two use cases—childcare and elderly care. The service institutions involved in the project were two childcare centers (with 60 employees and 6 managers) and an outpatient and inpatient elderly care facility (with 37 employees and 4 managers). Research methods included quantitative and qualitative methods (e.g., surveys, interviews, and process analyses; see Table 1). The assessment revealed several challenges calling for solutions (e.g., information management and diffusion of responsibilities). Together with the results of a literature review, these challenges were carved out as fields of action (FOA) for collaborative design approaches (see Table 1).

Based on the assessment results, suitable SO-SERVE tools for analyzing and designing person-related services were selected and subsequently adapted or further developed. Both scientific disciplines and the two use case facilities were involved in the iterative process.

An online toolkit with step-by-step instructions was compiled to make the SO-SERVE analysis and design tools available to practitioners. An overview of the tools in the toolkit and their implementation context in the SO-SERVE project is provided in Table 2.

2.3 Applying Social Service Engineering in the use cases

As the design of the internal and external information flows and documentation processes (FOA 1, Table 1) turned out to be especially challenging in childcare and elderly care, this paper focuses on this selected field of action. However, although the field of action was significant for both use cases, more detailed analyses with the SO-SERVE tools, e.g., Fishing for Causes, and Service Information Flow Map (see Table 2), revealed different causes for the problems in the use cases. Regarding the childcare centers, the chosen information channels for internal and external communication were inappropriate, and the growing administrative burden was no longer manageable without (digital) support. As a solution to the problem in the childcare centers, software was introduced to support information and documentation processes. Regarding the elderly care facilities, problems in FOA 1 were primarily caused by an unclear distribution of tasks within teams and between different levels of the company. For clarifying all roles in the company, e.g.,

Table 2 Overview of analysis and design tools^a in SO-SERVE

 Tab. 2
 Übersicht der Analyse- und Gestaltungswerkzeuge^a in SO-SERVE

Tool	Short description of output/use	Primary FOA (No.) Focus of tool Context
Service Information Flow Map	Visualization of service processes, touchpoints, and information management measures	1 Analysis CC, EC
Digitization Checklists for company managers/business unit managers	Overview of the steps that need to be taken before employees can work with digital technologies	1 Design CC
Canvas Corporate Guidelines for Digital Work	Definition of specifications for the standardized handling of software and hard-ware within the company (e.g., data privacy, responsibilities)	1 Design CC
Handout Digitization of Work Pro- cesses	Recording of the most important information on the use of software and hard-ware for employees (e.g., goals, use in everyday work)	1 Design CC
Digitization Companions	Establishment of a central point of contact where information about the tools, their application/handling, and related difficulties can be requested	1 Design CC
Role Model Canvas	Overview of role characterization and role definition (e.g., purpose, tasks, differentiative features)	1; 2 Design CC, EC
KANBAN Board Idea Management	Structured collection of ideas for improvements and transparent presentation of change processes	3 Design EC
Idea Managers	Establishment of a position for idea management (planning, collection of ideas, selection of appropriate ideas, follow-up of implementation)	3 Design AP
Digital Board Processes and Files	Knowledge management system, including core process descriptions linked to relevant files and documents	4 Design CC
FAQ for Person-related Services	Overview of frequently asked questions by employees or customers and their answers in an accessible place	6 Design CC
Role Play PLUS	Creating a shift in perspective to reflect and understand the behaviors and needs of all interaction partners in face-to-face and digital interaction	6, 7 Design CC
Participatory Workplace and Break Room Design	Setting up workstations for work with digital tools and creating spaces for undisturbed breaks in cooperation with employees	9 Design CC, EC
Fishing for Causes	Visualization of problem causes identified through problem analysis in various cause areas (e.g., service work, corporate culture, organization)	Overarching Analysis CC, EC
SO-SERVE SWOT Analysis	Overview of strengths, weaknesses, opportunities, and threats concerning both employees and customers with the subsequent derivation of targeted strategies	Overarching Analysis CC, EC
Questionnaire—Screening of Work Characteristics	Employee evaluation of a wide range of work characteristics, with a colored background indicating needs for corporate design activities	Overarching Analysis CC, EC

FOA Field of action, Contex = Implementation contex, CC Childcare, EC Elderly care, AP Application in practice pending

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of nursing specialists, nursing assistants, coaches, and care management, the *Role Model Canvas* tool was applied. As to the use of digital technologies in elderly care, the company has already been working successfully with nursing software and mobile devices for planning and administra-

tion tasks in outpatient care (including tour planning, duty scheduling, and care documentation).

Since this paper is aimed to show how SO-SERVE can support the introduction and use of digital technologies, the use case of childcare will now be described in more detail.

Our analysis of work conditions and service processes in the childcare centers showed that the information needs of employees and customers are not satisfactorily met. The internal and external information flows proved to be complex, inefficient, and prone to error. For example, there were double structures of analog and digital documents and about 70 paper lists in every institution (e.g., meal attendance list, registration and deregistration list, pick-up permission list, and children's allergy list). Sticky notes were written to pass information to the parents or among the team. For this purpose, the notes were stuck to children's backpacks, childcare group books, or paper lists. The sticky notes have not proven to be a reliable means of conveying information, as some of the notes got lost. Further, the high number of messages on information boards in the childcare centers led to information overload among parents.

The software introduced in the childcare centers to redesign information flows and documentation procedures was made available for employees on tablets. It offers two main modules: An administration module to facilitate the management of internal information flows and an external communication module enabling digital communication between educators and parents. In the course of improving information management through the internal communication module, the paper lists and documents were checked for redundancy and transferred to the digital system. Among many other new features, the daily registration and deregistration of children were digitally simplified so that employees can now register and deregister children with one click in the system. Digital (de-)registration eliminated the need to manually search for names on a paper list and look for the paper list itself when a colleague has it in use. The registration data is automatically captured and merged into a digital overview for the childcare center managers. In addition, all educators have access to all information about a child at any time, from a child's daily attendance in the childcare center, contact information about the child's parents, relevant characteristics of the child, and pick-up permits, to organizational details.

The software's external communication module allows childcare members to communicate digitally with the children's family members so that information can be passed on properly. This way, family members only receive relevant information, and do not have to search through the information boards at the childcare centers to see if there is anything useful. Reciprocally, family members were enabled to pass on information to the childcare centers conveniently. If children cannot attend their scheduled stay at the childcare center, e.g., due to sickness or vacation, family members can easily unregister them through the digital system. As a result, fewer calls that otherwise distract employees from their childcare duties arrive in the childcare center.

The results of a written online survey with 23 educators from the two childcare centers (response rate: 35%) demonstrated an improvement in the work situation of the employees in the childcare centers by using the software. The educators reported that child-related administrative and documentation tasks can be completed more conveniently, quickly, and with better quality. As a consequence, it was stated that using the software allows educators more time for pedagogical work with the children. The quality of the selected software, e.g., suitability for tasks, controllability, and error tolerance (see EN ISO 9241-110), was rated high. The implementation process, supported by the SO-SERVE tools, was evaluated positively overall. The efficient organization was highlighted. Only the participation of the employees in the implementation process, 'from the selection of the software to the roll-out,' was rated somewhat lower since the top management made the software selection without involving the employees.

To sum up, the digital system facilitated the processes in both childcare centers. Nevertheless, the use of SO-SERVE tools was required to prepare both managers and employees for the practical implementation of the digital system. Two of the SO-SERVE tools are presented as examples in the following sections.

3 Steps to success—The SO-SERVE Digitization Checklists

Small and medium-sized companies usually have few additional resources to introduce digital tools (Ingaldi and Klimecki-Tatar 2022; Eller et al. 2020). Therefore, they sometimes tend to forget or skip necessary planning and implementation steps when introducing digital technologies. For this reason, two procedural checklists were developed as part of the SO-SERVE toolkit to ensure that the operational requirements for digital work are met before employees start working with the tool. One checklist is to be worked through by the company managers, and the other by the business unit managers.

3.1 Objectives of the Digitization Checklists

Checklists are powerful tools to remind people of essential steps to achieve goals, especially in complex situations. The purpose of the two SO-SERVE checklists is to give an overview of the steps needed to be taken at the company management level and business unit levels (e.g., teams, facilities, branches) when introducing digital technologies. Before employees start to work with the new digital tool, the checklists should be completed. The implementation process can be carried out systematically, targeted, and efficiently by going through the checklist routine. Fig. 1 Checklist 'Company Basics for Work with Digital Tools'. (Modified from "Checkliste Rahmenbedingungen für digitale Arbeit". This work is licensed under the Creative Commons Attribution 4.0 International License (http:// creativecommons.org/licenses/ by/4.0/). This work is attributed to Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze, & Christian Zinke-Wehlmann. The original version can be found here: https://innovation. so-serve.de/methoden)

Abb. 1 Checkliste "Company Basics for Work with Digital Tools". (Modifiziert von "Checkliste Rahmenbedingungen für digitale Arbeit". Dieses Werk ist lizenziert unter der Creative Commons Attribution 4.0 International License (http:// creativecommons.org/licenses/ by/4.0/). Diese Arbeit wird Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze & Christian Zinke-Wehlmann zugeschrieben. Die Originalfassung finden Sie hier: https://innovation.so-serve. de/methoden)

Done x	Content
Participation	Involving people, creating trust
	Obtain wishes about the purposes and application areas of the software and hardware from managers, employees, and customers (e.g., childcare: parents; elderly care: patients, relatives)
	Provide opportunities for managers, employees, and customers to voice ideas, questions, and concerns about software use
Organization	Clarifying processes and responsibilities
	Describe the objectives of using the software and hardware from the company's perspective for managers, employees, and customers
	Develop a data privacy concept or expand an existing data privacy concept
	Provide an administrative instruction on data privacy for managers/employees
	Provide a data privacy statement for customers
	Assign access rights for individuals or groups/work teams
•	Define areas of responsibility and duties for technical, content-related, and organizational issues; delegate them to the business unit level if necessary
	Define company-wide operating guidelines for handling software and hardware
	Designated use and application areas of software and hardware
	□ Internet use (e.g., installation of apps, online research)
	□ Inclusion of new hardware in inventory
	Secure storage of mobile devices
	Handling of hardware loss or damage
	Policy for internal and external digital communication, netiquette
	Develop customer guidance
	Support for customers e.g., in the form of FAQ or naming of a contact person
	Terms of use and netiquette
Qualification	Building user competencies
	Examine the qualification needs in the business units for managers and employees
	Plan qualification measures for the handling software and hardware for managers and employees (estimate additional costs, if necessary)
	Organize knowledge transfer within the company for learnings, tips, and tricks in using the software
	Provide practical software user guides for customers
Communication	Creating transparency
	\ensuremath{Inform} the responsible persons in the $\ensuremath{business}$ units about the above points
	Inform customers about the above points that are relevant to them

The project management required for introducing digital technologies in organizations must deal with numerous issues, e.g., data protection, responsibilities, competence development, and corporate guidelines for using digital tools. The checklists allow managers to consider the organization's context when addressing these issues, enabling a company-specific approach. Furthermore, the checklists prevent incorrect or divergent use of digital technologies across teams and departments, often resulting from project management failing to communicate the software's usage and benefit (Forstner and Nedbal 2017).

3.2 Making the Digitization Checklists work

The basic idea of the Digitization Checklists is to use four success criteria that have proven their worth in the context of work design (based on Gilbert et al. 2020). For practical application, the four criteria are underpinned by concrete work steps that have been included in the Digitization Checklists depicted below.

- Participation: Employees, managers, and external stakeholders are continuously involved in the phases of planning, implementation, and evaluation of design measures. There are opportunities for continuous exchange about design measures in the company.
- Organization: Design measures' preparation, implementation, and follow-up are systematic and well-structured. Organization includes defining objectives, processes, tasks, responsibilities, and schedules.
- Qualification: The responsible persons and all other persons involved have the necessary competencies or are en-

Fig. 2 Checklist 'Start Working Digitally in Business Units'. (Modified from "Checkliste Start ins digitale Arbeit". This work is licensed under the Creative Commons Attribution 4.0 International License (http:// creativecommons.org/licenses/ by/4.0/). This work is attributed to Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze, & Christian Zinke-Wehlmann. The original version can be found here: https://innovation. so-serve.de/methoden) Abb. 2 Checkliste "Start

Working Digitally in Business Units". (Modifiziert von "Checkliste Start ins digitale Arbeit". Dieses Werk ist lizenziert unter der Creative Commons Attribution 4.0 International License (http://creativecommons. org/licenses/by/4.0/). Diese Arbeit wird Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze & Christian Zinke-Wehlmann zugeschrieben. Die Originalfassung finden Sie hier: https://innovation.so-serve.de/ methoden)

D	0
Done x	Content
Participation	Obtain wishes for ceftware implementation from husiness unit amplevees
	Provide opportunities for business unit employees to voice ideas, questions,
	and concerns about software use
	Consider the wishes, ideas, questions, and concerns of employees collected by the company management and within the business unit
	Consider the wishes, ideas, questions, and concerns of customers collected by the company management
Organization	Clarifying processes and responsibilities
	Determine the scope of the software and hardware roll-out within the business unit (complete or partial roll-out: for all employees/tasks or for selected employees/tasks)
	Set and prepare the ${\color{black} start}\ {\color{black} date}$ of the software and hardware ${\color{black} roll-out}\ within the business unit$
	Implement the $\ensuremath{company policies}$ for the use of software and hardware within the business unit
	Define team-specific guidelines and responsibilities for handling software and hardware within the business unit
	 Access rights (assignment of user accounts)
	Specifications and responsibilities for data input
	Responsibilities for data maintenance
	Labeling of mobile devices
	Responsibilities and policies for mobile device charging
	Secure storage and charging locations for mobile devices; labeling of these locations
	Set up the basic structure of the system
	Data mask/basic data
	□ Folder structure and naming of folders
	User Accounts
	Designate contact persons for employees on technical, organizational, and content-related issues
	Designate contact persons for customers on technical, organizational, and content-related issues
Qualification	Building user competencies
	Schedule external training courses (offered by the software provider) and/or arrange internal training for business unit employees
	Prepare the trainings (including employee information and employee scheduling)
	Provide training manual/information material
	□ Offer follow-up training (if necessary)
	Organize $knowledge \ transfer$ within the business unit for learnings, tips, and tricks in using the software (e.g., by setting up the role 'Digitization Companion')
Communication	Creating transparency
	Distribute all relevant information on the digitization of work processes within the business unit
	□ Scope and start date of the software and hardware roll-out
	Company guidelines for handling software and hardware
	Team-specific guidelines and responsibilities
	Administrative instruction on data privacy
	Training measures
	Distribute all relevant information on the digitization of service processes among the customers
	□ Scope and start date of software usage
	Guidance on software handling
	Data privacy statement of the company
	 (Technical) support for customers
	Terms of use and netiquette

abled by training to implement/use the design solutions. All persons have a common understanding of the goals and functioning of the design solutions.

 Communication: All participants are informed in a suitable and timely manner about the reason, objective, process, and results of design measures.

Checklist 'Company Basics for Work with Digital Tools' The checklist provides the management with an overview of the steps required for the standardized use of software and hardware in the company (Fig. 1). The checklist also includes steps to prepare for the use of the software by customers. These steps apply when the software is used for internal and external communication and organization processes. The customer-related steps can be skipped if the software relates exclusively to internal processes.

The company managers work through the checklist. When each item has been checked off, the 'green light' can be given for introducing the new software or hardware in the business units.

Checklist 'Start Working Digitally in Business Units' The checklist is aimed at managers in the business units (e.g., teams, facilities, branches). It supports the responsible persons in taking the necessary organizational steps before and during the introduction of new technology (software and hardware) for employees in their business unit and customers (Fig. 2). The customer-related steps can be skipped if the software relates exclusively to internal processes.

The business unit managers work through the checklist. When each item has been checked off, the 'green light' can be given to work with the new software or hardware.

4 With a 'guide on the side'—The Digitization Companions

Many organizations invest a lot of time and effort in preparing the introduction of digital tools: the right software and hardware are selected, data protection issues are clarified, and employees are informed and given comprehensive training. However, our experience shows that once the 'green light' is given, many employees feel left alone with questions, concerns, and problems, which can negatively impact the acceptance and frequency of the use of digital technology. To ensure that employees find support in dealing with digital tools in everyday work, the design measure of Digtization Companions was used and tested in the project. The method can be implemented in organizations with little effort and has proven very useful.

In the SO-SERVE online toolkit, Digitization Companions are described as employees who are available to their colleagues as contact persons for questions and concerns about working with the new digital system, and who support the business unit managers in the implementation. When a person actively asks for advice or support, a meeting with the Digitization Companion is arranged.

Since the role of a Digitization Companion is less that of a teacher ('sage on the stage') and more that of a facilitator ('guide on the side'), the concept shows some similarities with related approaches such as coaching and mentoring (see Hilali et al., 2020; Kirk and King 2022). However, the concept focuses on the knowledge transfer 'on demand' between colleagues and therefore represents a particularly low-threshold, on-site solution for organizations to qualify employees for using new digital tools.

4.1 Objectives of Digitization Companions

Digitization companions are useful when introducing new digital tools and after the tools have been successfully established. They support the development, maintenance, and sustainable use of (digital) skills through purposeful learning relationships among colleagues. As experts in the work processes and conditions in their childcare center, Digitization Companions are not only quickly available to answer questions but also provide their colleagues with precise and tailored advice and support.

Another advantage of the participative method is that it can improve employees' digital skills as well as communication and team cohesion. In addition, the workload created by the digitization project is distributed among several people, which can reduce the workload of managers.

4.2 Making the Digitization Companionship work

In the SO-SERVE project, the role of a Digitization Companion was taken on by two to three educators per institution. The Digitization Companions in the childcare centers served as contact persons for technical questions (e.g., software handling and operating problems) and content-related questions (e.g., shared storage location). For the implementation of the method, we followed the four success criteria (see Sect. 3.2).

Participation: The method offered the chance to involve the employees in the qualification process. Since the success of Digitization Companionship largely depends on the commitment of the Digitization Companions, the role should be assumed voluntarily. That's why the childcare managers asked the team who could imagine supporting the roll-out process as a Digitization Companion. In both childcare centers, two to three educators promptly came forward to take on this task. The Digitization Companions were technically experienced and had a positive attitude toward the software introduction.

Fig. 3 A role description canvas of a Digitization Companion. (Modified from "Einführung der Rolle der Digitallots:innen". This work is licensed under the Creative Commons Attribution 4.0 International License (http:// creativecommons.org/licenses/ by/4.0/). This work is attributed to Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze, & Christian Zinke-Wehlmann. The original version can be found here: https://innovation. so-serve.de/methoden) Abb. 3 Ein Canvas zur Beschreibung der Rolle von Digitallots:innen. (Modifiziert von "Einführung der Rolle der Digitallots:innen". Dieses Werk ist lizenziert unter der Creative Commons Attribution 4.0 International License (http:// creativecommons.org/licenses/ by/4.0/). Diese Arbeit wird Julia Friedrich, Kristin Gilbert, Ulrike Pietrzyk, Vanita Römer, Anne Steputat-Rätze & Christian Zinke-Wehlmann zugeschrieben. Die Originalfassung finden Sie hier: https://innovation.so-serve. de/methoden)

The role of a 'Dig	gitization Companion' y Bear Childcare	
What is the purpose of the	Digitization Companion?	
The Digitization Companion supports managers and colleagues in the childcare centers in introduc- ing and using digital tools. The Digitization Companion passes instructions and information from the management to the team, e.g., about planned actions and new functions of the digital tool.		
Who supports the Dig	itization Companion?	
The management [contact details], the software provider [contact details] and the Human Resources Department [contact details] are supporting the Digitization Companion.		
 Primary tasks Being the contact person for the team for questions about the software and hardware (e.g., functions, content design) for entering new child profiles and changing child-related data for correcting false child registration times Being the contact person for the management when introducing new processes or features or modifying existing ones when passing on information to the team 	 Exchange of information Passing on information from the team to the management, e.g., when digital documentation needs corrections or when the hardware is broken Passing on information from the management to the team Formats: oral communication (regular meetings, door-to-door conversations); written communication (leaving a note in the software or the analog mailbox) 	
 Responsibility and permissions A Digitization Companion is approachable in the role during his/her working hours; there are no fixed consultation times A Digitization Companion is allowed to cor- rect child-related documentation data auton- omously A Digitization Companion decides when to schedule tasks autonomously Allocated time: approx. 2 hours/week 	 Skills Technical: Use of hardware and software (+ administrative area), spreadsheet use Organizational: time management, independently coordinating the role with pedagogical work Social: openness to others, communication skills, ability to explain technical issues, will-ingness to help even in stressful situations 	
No! Checking battery levels and correction Registering and deregistering al Checking if children have been	rect storage of tablets II children registered/deregistered by other employees	

Organization: The main aspect of organizing Digitization Companionship is to ensure role clarity through role definition. Role clarity means that everybody knows the responsibilities and tasks of Digitization Companions. Role definition refers to the process of specifying and documenting all components of a role (see Table 3). In terms of a participatory approach, management representatives, employee representatives, and future role owners should take part in the role definition. In the childcare centers, a role description canvas (see Fig. 3) was completed collaboratively.

The depicted example of the role description canvas (Fig. 3) was initially created by the childcare company management and further detailed by each childcare center management. It is important to regularly update the role definition because as the team's skills grow in using the tool,

the Digitization Companion's responsibilities may change over time. The role definition canvas can subsequently be reused in other organizational units or software projects.

An important aspect of organizing the role is the time made available to the Digitization Companions. As they voluntarily assume the role in their organization in addition to their job responsibilities within their regular working hours, it is crucial to allocate sufficient time for the role and reduce other duties accordingly. This is especially important in the preparation and start-up phase of the technology introduction when data entry is pending. In the childcare centers, the workload was about three to four working days in the first three to four weeks and an average of two hours per week later. Care was taken to double staff the role to

Table 3	Components of the role definition of a Digitization Companion
Tab. 3	Bestandteile der Rollendefinition von Digitallots:innen

Components	Central questions about the role components
Vision	What is the Digitization Companion important for?
Primary tasks	What are the Digitization Companions' main tasks? What is the Digitization Companion not responsible for?
Support	Who can ask the Digitization Companion for help? Who supports the Digitization Companion?
Responsibilities and per- missions	Where is the Digitization Companion authorized to make decisions?
Information exchanges	What information does the Digitization Companion need to share (and with whom)? What information does the Digitization Companion rely on (and from whom)?
Competences and skills	What competencies (e.g., knowledge, soft skills) are required to perform the role of a Digitization Companion?

reduce the workload of individual employees and to compensate for absences due to illness.

Qualification: A Digitization Companion needs special skills to perform the role successfully. In the SO-SERVE project, the Digitization Companions have acquired the necessary technical qualification for their role both by participating in the software provider's introductory training course and by subsequently familiarizing themselves with the functions and use of the software. For this purpose, they were provided with the technical resources a few weeks earlier than their colleagues, including login and administrative access rights to the software. It has become apparent that Digitization Companions require not only technical expertise but also social and organizational skills, such as bundling tasks and being open to colleagues' wishes. These skills should either already exist in the digital pilots or be developed accordingly. Concerning knowledge management, it is worthwhile for several Digitization Companions to network within their institution and across institutions to reflect on and optimize their roles and areas of responsibility.

Communication: The role description (see Fig. 3) should be made accessible to all team members well in advance of the roll-out. In the SO-SERVE project, the role description canvas was posted in the break room to inform employees. Additionally, it was made available digitally on the intranet and as a note to the team in the software. It is also important to create transparency about the additional time resources of the Digitization Companions in the team to prevent discord and increase acceptance, for example, by anchoring the times required to perform the role in the duty roster.

5 Conclusion

Current demographic, economic, and global changes are increasing the already high work demands on employees in person-related services. In these turbulent times, preventive work design can help maintain employees' ability to work, keep absenteeism and turnover low, and motivate engaged and efficient work. Humane work design is therefore not only essential for employee satisfaction, health, and safety but also a prerequisite for achieving economic goals and satisfying customers (Bräunig and Kohstall 2013).

As simple as the connection between employee and customer satisfaction may seem, it is sometimes challenging to convince practitioners of the importance of work design. Work design is often seen as a rather dry and less important task. However, work design should not be regarded as an obligatory, independent activity in the company but as a proactive part of the company's strategic planning processes to achieve the company's goals. To support this challenging requirement practically, we have developed useful tools for practitioners within the SO-SERVE project. The tools emerged as a result of the SO-SERVE principles presented. The main principle of Social Service Engineering is that design measures must always meet the criteria of both employee-oriented work and customer-oriented service. Social Service Engineering is thus a multidisciplinary approach to the design of (digital) transformation processes in organizations, as called for by Verhoef et al. (2021). It is now up to the service organizations to put the approach into practice, guided by the SO-SERVE principles and using the supporting SO-SERVE tools.

The SO-SERVE tools are mainly conceptualized for condition-related work design, in line with the Social Service Engineering principle #6. It is true that managers must ensure that the necessary individual-related measures are realized, such as qualification and training for technology use. However, implementing condition-related measures to improve the underlying critical working conditions remains indispensable. We believe that person-related measures that stand alone and do not go beyond 'motivation and selfoptimization training' can have a frustrating effect on employees—especially for employees exposed to particularly high work demands for which no improvement measures are taken.

In the SO-SERVE project, we have addressed digitization in organizations as a work design and service design measure. However, digital technologies themselves require accompanying design measures during their implementation process. Therefore, work psychologists accompanied the digitization process in the project to develop tools facilitating the transformation for employees and managers. Specifically, the tools depicted in this paper create an organizational frame for implementing digital technologies. The two checklists help to set the conditions for using the new system by giving an overview of the preparatory steps and processes. With the second condition-oriented tool, the Digitization Companions, a point of contact for employees is installed within the business units. This approach has proved so useful that we can well envisage offering a similar contact point for parents, made up of parent representatives.

As a practical part of the project, the SO-SERVE tools were used to successfully support a software and hardware implementation project in two daycare centers. The reported experiences with the SO-SERVE tools were very positive, but their thorough evaluation is currently pending. Initial evaluation results have already shown that the project's goal of gaining more time for pedagogical work with the children through the use of the internal communication tool of the software has been achieved. However, introducing the software in the daycare centers tied up many personal and financial resources. When the educators started using the software, they even felt that the extra time they needed to operate it contradicted the software's actual goal of giving them more time for pedagogical work with the children. Fortunately, this disadvantage has been overcome by the time-saving effect after the familiarization phase, and other daycare centers are currently following the project daycare centers with the software implementation.

To conclude, Social Service Engineering provides service companies with a framework to improve working conditions and employee satisfaction, as well as service quality and customer satisfaction, even in times of change.

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