Article

Participatory Design of Participatory Systems for Sustainable Collaboration: Exploring Its Potential in Transport and Logistics

Pieter van Langen [1,*], Gerdje Pijper [2], Pieter de Vries [3] and Frances Brazier [1]

[1] Faculty of Technology, Policy, and Management, Delft University of Technology,
     2628 CD Delft, The Netherlands
[2] Van der Wal, 3534 AM Utrecht, The Netherlands
[3] 4TU Centre for Engineering Education, Delft University of Technology, 2628 CD Delft, The Netherlands
[4] Correspondence: p.h.g.vanlangen@tudelft.nl

Abstract: Challenges involving economic, environmental, and societal aspects necessitate organisations in business networks to collaborate. The scientific problem central to this paper is the difficulty of building sustainable collaborations. The research question is how to support organisations in building sustainable collaborations in their business relationships. This paper presents a new socio-technical approach to this end, i.e., PDPS (an acronym for Participatory Design of Participatory Systems) and explores its potential in a case study. PDPS is a value-based approach to the participatory design of participatory systems. Such socio-technical systems enable people working in different disciplines, departments, and organisational levels to create sustainable relationships supported by distributed information and communication technology. In a participatory system, participants gain trust, engagement, and empowerment to self-organise actions that produce results they could not have achieved alone. Following PDPS, participants collectively explore challenges in their relationship, define a joint value-based mission, and create a continuous process of self-organisation to fulfil this mission. In a case study, PDPS supported two Dutch business partners in solving recurring transport and logistics issues in retail store refurbishment projects. Turning their traditional business processes into participatory ones led to new solutions for sustainable transport and logistics, more joint business, and more profit. PDPS differs from other approaches in its involvement of all participants in a business relationship, its focus on shared values, and its capacity for creating a continuous process of self-organisation to fulfil a joint mission. This paper may support researchers, practitioners, and organisational policymakers interested in building sustainable collaborations in business networks.

Keywords: business networks; collaboration; complex systems; design thinking; participatory design; self-organisation; sustainability; systems thinking; value-sensitive design

1. Introduction

In the world of supply chain management, companies transport, store, distribute, and deliver products [1]. They form business networks, coordinating activities to manage the supply chain and achieve their goals [1]. These socio-technical networks with intertwined social and technical aspects [2] operate in a volatile, uncertain, complex, and ambiguous world [3].

Challenges involving economic, environmental, and societal aspects necessitate organisations in business networks to collaborate, as the complexity of such challenges exceeds the capabilities of an individual organisation [4]. Cross-actor participation, cross-coordination, and cross-sector cooperation are essential [5]. Collaboration entails formal and informal agreements between stakeholders (customers, employees, partners, end-users, citizens, etc.). These agreements are often supported by (virtual) entities to regulate roles and responsibilities [1]. In a collaboration, stakeholders interact and jointly create ways to act or decide on issues according to shared norms [6].

Participatory Design Perspectives On Systems Design

G Psacharopoulos

Participatory Design Perspectives On Systems Design:

Participatory Design Douglas Schuler,Aki Namioka,2017-12-14 The voices in this collection are primarily those of researchers and developers concerned with bringing knowledge of technological possibilities to bear on informed and effective system design Their efforts are distinguished from many previous writings on system development by their central and abiding reliance on direct and continuous interaction with those who are the ultimate arbiters of system adequacy namely those who will use the technology in their everyday lives and work A key issue throughout is the question of who does what to whom whose interests are at stake who initiates action and for what reason who defines the problem and who decides that there is one The papers presented follow in the footsteps of a small but growing international community of scholars and practitioners of participatory systems design Many of the original European perspectives are represented here as well as some new and distinctively American approaches The collection is characterized by a rich and diverse set of perspectives and experiences that despite their differences share a distinctive spirit and direction a more humane creative and effective relationship between those involved in technology s design and use and between technology and the human activities that motivate the technology *Human-Computer Interaction* Andrew Sears,Julie A. Jacko,2009-03-02 Hailed on first publication as a compendium of foundational principles and cutting edge research The Human Computer Interaction Handbook has become the gold standard reference in this field Derived from select chapters of this groundbreaking resource Human Computer Interaction The Development Practice addresses requirements specification desig The Human-Computer Interaction Handbook Andrew Sears,Julie A. Jacko,2007-09-19 This second edition of The Human Computer Interaction Handbook provides an updated comprehensive overview of the most important research in the field including insights that are directly applicable throughout the process of developing effective interactive information technologies It features cutting edge advances to the scientific *Handbook of Engineering Systems Design* Anja Maier,Josef Oehmen,Pieter E. Vermaas,2022-07-30 This handbook charts the new engineering paradigm of engineering systems It brings together contributions from leading thinkers in the field and discusses the design management and enabling policy of engineering systems It contains explorations of core themes including technical and socio organisational complexity human behaviour and uncertainty The text includes chapters on the education of future engineers the way in which interventions can be designed and presents a look to the future This book follows the emergence of engineering systems a new engineering paradigm that will help solve truly global challenges This global approach is characterised by complex sociotechnical systems that are now co dependent and highly integrated both functionally and technically as well as by a realisation that we all share the same climate natural resources a highly integrated economical system and a responsibility for global sustainability goals The new paradigm and approach requires the re designing of engineering systems that take into account the shifting dynamics of human behaviour the influence of global stakeholders and the need

for system integration The text is a reference point for scholars engineers and policy leaders who are interested in broadening their current perspective on engineering systems design and in devising interventions to help shape societal futures **The Routledge Companion to Games in Architecture and Urban Planning** Marta Brković Dodig,Linda N. Groat,2019-11-25 The Routledge Companion to Games in Architecture and Urban Planning aims to identify and showcase the rich diversity of games including simulation games game like approaches game scenarios and gamification processes for teaching learning design and research in architecture and urban planning This collection creates an opportunity for exchange and reflection on games in architecture and urban planning Theoretical discussions descriptive accounts and case studies presenting empirical evidence are featured combined with reflections constructive critical analysis discussions of connections and various influences on this field Twenty eight international contributors have come together from eleven countries and five continents to present their studies on games in architecture and urban planning pose new questions and advocate for innovative perspectives Urban Play and the Playable City: A Critical Perspective Yoram Chisik,Ben Schouten,Mattia Thibault,Anton Nijholt,2022-02-17 *Routledge International Handbook of Participatory Design* Jesper Simonsen,Toni Robertson,2013 Participatory Design is about the direct involvement of people in the co design of the technologies they use Embracing a diverse collection of principles and practices aimed at making technologies tools environments businesses and social institutions more responsive to human needs this is a state of the art reference handbook for the subject The Routledge International Handbook of Participatory Design brings together a multidisciplinary and international group of experts to discuss the pivotal issues in participatory design Information Systems Development for Emerging Public Sector Cross-sector Collaborations Kayvan Yousefi Mojir,2018-09-28 Information systems IS seem prevalent in modern societies and have resulted in the rapid digitalisation of different societal sectors One application domain of IS is emergency response which is responsible for delivering essential services to save lives and minimise environmental damage in both small frequent and large scale emergencies Specific IS applications are in turn used in emergency response to support such aspects as decision making communication information sharing and the dispatching of resources Public sector cut backs and a lack of professional resources have affected emergency response at the same time as natural disasters e g forest fires tsunamis storms terror attacks and wars in the Middle East leading to mass migration have intensified in recent decades At the same time frequent small scale accidents continue to occur on a regular basis both in urban and sparsely populated areas As a result emergency response actors first responders are often placed under severe pressure An emerging trend in response to these challenges both in Sweden and internationally is to create cross sector forms of collaboration by combining alternative resources from various sectors Such collaborations are relatively new and involve heterogeneous stakeholders Therefore the thesis objective is to explore IS related opportunities challenges and needs aimed at supporting heterogeneous actors in emerging cross sector collaborations in emergency response in order to enable and facilitate future

related IS development To achieve this a user centred approach was applied A baseline study was performed followed by three case studies on co location of actors co operative use of resources and semi professionals as first responders by performing interviews focus groups participant observation Future Workshops an exercise and an after action review The thesis is based on case study research and qualitative research methods Sociotechnical systems theory the sociotechnical ensemble view and network governance were used as the analytical framework As part of achieving the thesis objectives experiences from applying user participation in the context of cross sector collaboration are also presented as part of the results A context specific framework developed to systematise and explore various important aspects of cross sector collaboration in emergency response is also described The results of this thesis indicate that the needs for IS in cross sector collaborations vary from simple smartphone applications to manage alarms positioning and the dispatching of new resources to more sophisticated tools for sharing and viewing incident data The results also indicate that these collaborations have the potential e g resource redundancy pooled competencies to increase total capacity to improve Swedish emergency response if supported by adequate IS IT support The major challenges are organisational economic and juridical and the most prominent are ambiguities in actors tasks and responsibilities and how to prioritise between ordinary work and new first response tasks They must be addressed to enable certain IS functions e g information sharing and positioning of resources The results also highlight several institutional factors e g mutual interest between members collective problem solving secrecy aspects which are believed to play a key role in the success or failure of the collaborations and which must be adressed in the development of IS support The actors also have substantial basic needs for training e g fire extinguishing first aid and emergency supplies e g fire extinguishers healthcare kits Applying user participation also faced challenges the major one being the development of a future cross sector collaboration in a context that does not yet exist and involving stakeholders from resource strained organisations in doing so The stakeholders and sometimes also the primary end users are partly unknown and tasks are undefined As a response to these challenges a combination of activities based on multiple design groups scenario based Future Workshops focus groups the context specific framework a practical exercise and an after action review was provided The framework which was used to support data collection and user participation includes 15 dimensions each intended to represent important aspects of cross sector collaboration The thesis major contributions are the identified opportunities challenges and need as a sociotechnical ensemble and generated and from several studies thus being comparable The thesis more theoretical contributions is the combined application of the sociotechnical ensemble view and network governance where the studied collaboration forms are characterised as a hybrid form of networks and more traditional government mechanisms and where it is pointed out that network governance lacks explicit IS IT aspects In a wider perspective the research fields of IS and political science may cross fertilise each other when studying emerging cross sector collaboration in the public sector Identified user participation challenges relevant to the cross sector collaboration context suggestions on

how they can be handled and the context specific framework are contributions that can be used in practical user centred IS development in similar contexts Informationssystem IS anv nds idag i de flesta verksamheter inom respons och r ddningsomr det t ex f r beslutsst d kommunikation informationsutbyte och resurspositionering Fel i systemen kan bidra till misslyckad samverkan vid r ddningsinsatser som i sin tur kan riskera m nniskors liv och orsaka skador p milj och infrastruktur vid s v l sm frekventa olyckor som storskaliga h ndelser kriser och katastrofer Budgetnedsk rningar brist p professionella resurser naturkatastrofer t ex skogsbr nder stormar och terrorattacker r n gra exempel p utmaningar som har intensifierats under de senaste decennierna Samtidigt forts tter frekventa sm skaliga olyckor att intr ffa b de i urbana och i glesbygdsomr den D rf r r responsakt rerna ofta under h rd press Ett s tt att hantera utmaningarna b de i Sverige och internationellt r tv rsektoriella samverkansformer som i sin tur involverar ofta heterogena samh llsresurser Samarbetskontexten r f rh llandevis ny och de involverade akt rerna och deras behov delvis ok nda Avhandlingen syftar d rf r till att utforska IS relaterade m jligheter utmaningar och behov f r att st dja heterogena akt rer inom nya tv rsektoriella framv xande samverkansformer i svensk respons och r ddning F r att utforska detta anv ndes en anv ndarcentrerad ansats D rf r genomf rdes en bakgrundsstudie och tre fallstudier p samlokalisering av akt rer sambruk av resurser och semi professionella som f rstainsatspersoner genom att utf ra intervjuer fokusgrupper deltagande observation Future Workshops och en vning med f ljande After Action Review Avhandlingen bygger d rmed p fallstudieforskning och kvalitativa forskningsmetoder Socioteknisk systemteori begreppet socioteknisk ensemble och network governance teori anv nds som forskningens analytiska ramverk Som ett led i att uppfylla syftet presenteras dessutom erfarenheter fr n anv ndarmedverkan i kontexten tv rsektoriell samverkan som ett delresultat samt ett kontext specifikt ramverk utvecklat f r att systematisera och utforska olika viktiga aspekter av tv rsektoriell samverkan i respons och r ddningsverksamhet Avhandlingens resultat visar att behoven av IS i tv rsektoriella samverkansformer varierar fr n enkla smartphoneapplikationer f r larmhantering positionering och utryckning av nya resurser till mer sofistikerade verktyg f r informationsdelning och gemensamma l gesbilder Resultaten pekar ocks mot att med r tt IS st d har samverkansformerna potential t ex i form av resursredundans gemensam pool f r kad kapacitet f r att f rb ttra svensk r ddningsverksamhet De stora utmaningarna r organisatoriska ekonomiska och juridiska De mest framtr dande r otydligheter i akt rernas uppgifter roll och ansvar och hur man prioriterar mellan sitt befintliga arbete och nya f rstainsatser Utmaningarna m ste l sas f r att m jligg ra IS funktioner till exempel vid informationsdelning och resurspositionering Resultaten belyser ocks explicit flera institutionella faktorer t ex gemensamt intresse och m l kollektiv probleml sning sekretesshantering som tros ha en nyckelroll i samverkansformernas realisering och som m ste hanteras i utveckling av relaterat IS st d Akt rerna har ocks grundl ggande behov av tr ning t ex brandsl ckning f rsta hj lpen och utrusning t ex brandsl ckare sjukv rdskit Till mpningen av anv ndarmedverkan visade ocks p utmaningar varav den fr msta var att utveckla framtida tv rsektoriell samverkan i ett sammanhang som nnu inte existerar och att involvera intressenter fr n organisationer

med anstr ngda resurser f r att genomf ra detta Intressenterna ibland ven de prim ra slutanv ndarna r delvis ok nda och uppgifterna r odefinierade Som ett s tt att hantera utmaningarna genomf rdes en kombination av aktiviteter som baserades p multipla designgrupper scenariobaserade Future Workshops fokusgrupper ett kontextspecifikt ramverk en vning och en After Action Review samt det kontext specifika ramverket Ramverket som anv ndes f r att st dja datainsamling och anv ndarmedverkan inneh ller 15 dimensioner som r t nkta att representera viktiga aspekter av tv rsektoriella samverkansformer Avhandlingens fr msta bidrag r de identifierade m jligheterna utmaningarna och behoven som en social ensemble och som genererade och j mf rbara ur flera studier Avhandlingens mer teoretiska bidrag r den kombinerade till mpningen av sociotechnical ensemble och network governance d r de studerade samverkansformerna lyfts fram som en blandform av n tverk och mer traditionella styrmekanismer och d r det p pekas att network governance saknar explicita IS IT delar I ett st rre sammanhang kan forskningsf lten IS och statsvetenskap kan komplettera varandra vid studier av framv xande tv rsektoriell samverkan i offentlig sektor Relevanta utmaningar vid anv ndarmedverkan i kontexten f rslag p hur de kan hanteras och det kontext specifika ramverket r bidrag som kan anv nds i praktisk anv ndarcentrerad IS utveckling i liknande sammanhang   Current Perspectives on Participatory Design Moran,1997-07-01 Participatory design is increasingly practiced around the world in a variety of culturally specific ways Though differences abound the practitioners share a fundamental respect for the people who use technology and for their right to have a direct influence on decisions that affect their lives For some this sort of participation is one step toward a goal of greater workplace democracy for others it is a crucial aspect of worker empowerment In any case though not a fully accepted part of system development practice participatory design has become part of the discourse in fields like human computer interaction This special issue offers differing but overlapping perspectives on where participatory design has traveled since its inception in Scandinavia It reflects a range of theoretical perspectives and socio political settings All four papers not only scrutinize the goals and agendas of those who practice participatory design but also reveal important cultural differences Such cross cultural comparisons are especially relevant given participatory design s current focus on the institutional and organizational contexts of design and use This special issue is intended to contribute to further cross disciplinary discussions and collaborations   **Systems Engineering in Public Administration** Hinrich E. G. Bonin,1993 The complexity of large systems in public administration progresses in terms of both quality and quantity year after year Mastering complex systems is therefore assuming an increasing dominance in this area Learning to master evolving systems needs at least a foundation in science and engineering know how The relationship between the professionals such as system engineers viewing from the outside and the beneficiaries such as public administration officials using the computer systems on the inside is therefore of prime importance if the many problems are to be solved This book does not attempt to provide definitive answers but rather aims to give shape to our visions and ideas and to stimulate further discussion and research   **Routledge International**

Encyclopedia of Women Cheris Kramarae,Dale Spender,2004-04-16 For a full list of entries and contributors sample entries and more visit the Routledge International Encyclopedia of Women website Featuring comprehensive global coverage of women s issues and concerns from violence and sexuality to feminist theory the Routledge International Encyclopedia of Women brings the field into the new millennium In over 900 signed A Z entries from US and Europe Asia the Americas Oceania and the Middle East the women who pioneered the field from its inception collaborate with the new scholars who are shaping the future of women s studies to create the new standard work for anyone who needs information on women related subjects   Conference Proceedings ,2002   *Third Space, Information Sharing, and Participatory Design* Preben Hansen,Ina Fourie,Anika Meyer,2021-06-18 Society faces many challenges in workplaces everyday life situations and education contexts Within information behavior research there are often calls to bridge inclusiveness and for greater collaboration with user centered design approaches and more specifically participatory design practices Collaboration and participation are essential in addressing contemporary societal challenges designing creative information objects and processes as well as developing spaces for learning and information and research interventions The intention is to improve access to information and the benefits to be gained from that This also applies to bridging the digital divide and for embracing artificial intelligence With regard to research and practices within information behavior it is crucial to consider that all users should be involved Many information activities i e activities falling under the umbrella terms of information behavior and information practices manifest through participation and thus methods such as participatory design may help unfold both information behavior and practices as well as the creation of information objects new models and theories Information sharing is one of its core activities For participatory design with its value set of democratic inclusive and open participation towards innovative practices in a diversity of contexts it is essential to understand how information activities such as sharing manifest itself For information behavior studies it is essential to deepen understanding of how information sharing manifests in order to improve access to information and the use of information Third Space is a physical virtual cognitive and conceptual space where participants may negotiate reflect and form new knowledge and worldviews working toward creative practical and applicable solutions finding innovative appropriate research methods interpreting findings proposing new theories recommending next steps and even designing solutions such as new information objects or services Information sharing in participatory design manifests in tandem with many other information interaction activities and especially information and cognitive processing Although there are practices of individual information sharing and information encountering information sharing mostly relates to collaborative information behavior practices creativity and collective decision making Our purpose with this book is to enable students researchers and practitioners within a multi disciplinary research field including information studies and Human Computer Interaction approaches to gain a deeper understanding of how the core activity of information sharing in participatory design in which Third Space may be a platform

for information interaction is taking place when using methods utilized in participatory design to address contemporary societal challenges This could also apply for information behavior studies using participatory design as methodology We elaborate interpretations of core concepts such as participatory design Third Space information sharing and collaborative information behavior before discussing participatory design methods and processes in more depth We also touch on information behavior information practice and other important concepts Third Space information sharing and information interaction are discussed in some detail A framework with Third Space as a core intersecting zone platform and adaptive and creative space to study information sharing and other information behavior and interactions are suggested As a tool to envision information behavior and suggest future practices participatory design serves as a set of methods and tools in which new interpretations of the design of information behavior studies and eventually new information objects are being initiated involving multiple stakeholders in future information landscapes For this purpose we argue that Third Space can be used as an intersection zone to study information sharing and other information activities but more importantly it can serve as a Third Space Information Behavior TSIB study framework where participatory design methodology and processes are applied to information behavior research studies and applications such as information objects systems and services with recognition of the importance of situated awareness   **Participatory Design** Susanne Bødker,Christian Dindler,Ole S. Iversen,Rachel C. Smith,2021-11-30 This book introduces Participatory Design to researchers and students in Human Computer Interaction HCI Grounded in four strong commitments the book discusses why and how Participatory Design is important today The book aims to provide readers with a practical resource introducing them to the central practices of Participatory Design research as well as to key references This is done from the perspective of Scandinavian Participatory Design The book is meant for students researchers and practitioners who are interested in Participatory Design for research studies assignments in HCI classes or as part of an industry project It is structured around 11 questions arranged in 3 main parts that provide the knowledge needed to get started with practicing Participatory Design Each chapter responds to a question about defining conducting or the results of carrying out Participatory Design The authors share their extensive experience of Participatory Design processes and thinking by combining historical accounts cases how to process descriptions and reading lists to guide further readings so as to grasp the many nuances of Participatory Design as it is practiced across sectors countries and industries   **Design Issues** ,2017 The first American academic journal to examine design history theory and criticism Design Issues provokes inquiry into the cultural and intellectual issues surrounding design Regular features include theoretical and critical articles by professional and scholarly contributors extensive book reviews illustrations and a section for reader response Special issues concentrate on particular themes such as artificial intelligence product seminars design in Asia and design education   **ACM Transactions on Computer-human Interaction** ,2002   **Information Services & Use** ,1995   DIS2000 Wendy Anne Kellogg,Daniel Boyarski,2000   *ECOOP ...* ,1998   *Validating Information Systems*

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