
Volunteering Service Engineering. A reference model for the introduction of digital tools for non-profit organizations

Mike Freitag*

Fraunhofer IAO, Nobelstraße 12, 70569 Stuttgart, Germany.
E-mail: mike.freitag@iao.fraunhofer.de

Oliver Hämmerle

Institut für Arbeitswissenschaft und Technologiemanagement,
Universität Stuttgart, Nobelstraße 12, 70569 Stuttgart, Germany.
E-mail: oliver.haemmerle@iao.fraunhofer.de

Claudia Dukino

Fraunhofer IAO, Nobelstraße 12, 70569 Stuttgart, Germany.
E-mail claudia.dukino@iao.fraunhofer.de

* Corresponding author

Abstract: The digital transformation has far-reaching effects on the work and organizational processes of the future. Non-profit organizations are also affected by digital transformation and should systematically pursue it. This contribution introduces a reference model and describes it in more detail. The approach places particular emphasis on the use of digital tools with strong involvement of volunteers. It is based on concepts of service engineering and design thinking, promoting cooperative and interactive collaboration among volunteers. The application of this model was validated in the context of volunteer work at the VDI Württembergischer Ingenieurverein e. V. The use case illustrates both the requirements that volunteers have for a modern non-profit organization and the implementation of a requirement through the development of a custom app at VDI.

Keywords: Service Innovation, Non-Profit-Organization, Service Engineering, Innovation Management, Design Thinking, Eco System

1 Introduction

There are numerous studies (Dufft & Kreutter 2018; IW Consult 2018; Haus des Stiftens 2020; Freitag 2021) on the status and development of digitization in non-profit organizations in Germany. These studies describe the empirically determined status of digital technology usage and the identified need for change regarding digital transformation. The IW Consult study (2018), which surveyed over 250 representatives from non-profit organizations, already demonstrates the high importance of digitization

for non-profit organizations. 80 percent consider it very important or rather important. However, in contrast, only slightly more than a quarter of the surveyed organizations feel well prepared to leverage digital transformation for themselves. To address this potential for improvement, this article presents a reference model that helps non-profit organizations gradually develop their digital solutions.

This paper is a short version from the article last year (Freitag, Hämmerle 2023) and focuses on the ease of use for NPOs to leverage the experiences gained from it.

2 Reference model

This paper focuses on introducing a reference model for ideation, selection, and implementation of digital tools by volunteers in non-profit organizations. The emphasis here lies on generating ideas for new digital offerings and managing interfaces between paid staff and volunteers. The goal is to ensure the participatory involvement of volunteers in the digital transformation of NPOs. The procedural model combines digitalization approaches for non-profit organizations (Beier 2018; Haus des Stiftens 2020; Bork & Tahmaz 2021), service engineering approaches (Freitag & Schiller 2017; Meyer 2020; Freitag et al. 2021), and design thinking (Plattner 2009). It focuses on the structured integration of volunteers into the service development process. Insights and experiences gained in service engineering can be transferred and adjusted in a simplified form if necessary. Based on this, the conceptual procedural model of Volunteering Service Engineering is briefly introduced.

The procedural model depicted in Figure 1 comprises five steps in the introduction of digital tools for non-profit organizations. An important objective is to ensure the participatory involvement of volunteers in the digital transformation. This starts with strategy, continues with ideation, and concludes with the implementation of digital tools. Examples of tools include software solutions, apps, or collaborative tools.

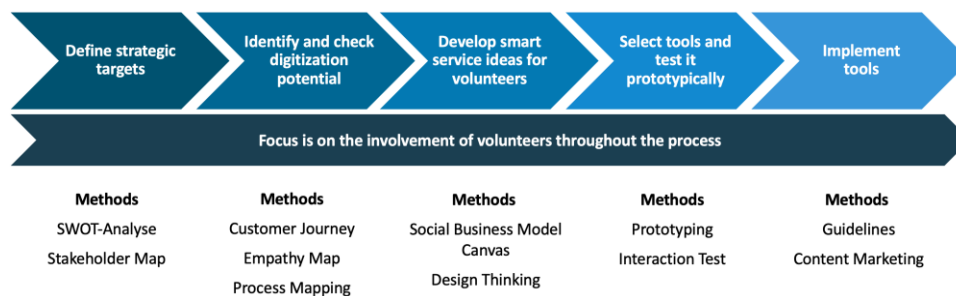


Figure 1 Volunteering Service Engineering (Freitag & Hämmerle 2023)

Step 1: Define strategic targets

In the first step, the strategic objectives of the non-profit organization are defined. Objectives may include expanding the volunteer base, engaging younger members, or enhancing digital support for volunteer work. The following methods can be used:

- SWOT analysis or
- Stakeholder Map.

The analysis and assessment of the strengths, weaknesses, opportunities, and threats of non-profit organizations using SWOT analysis (Kofler 2018) is a widely used method to present the current state. Particularly, aspects of strategy, the competencies of paid staff and volunteers, as well as the IT infrastructure should be included.

In a Stakeholder Map (Kofler 2018), the visualization of all internal and external stakeholders of a non-profit organization and their desires and relationships with each other is performed.

Step 2: Identify and check digitization potential

The NPO, together with all stakeholders, identifies existing digitization potentials and prioritizes them. The following methods can be applied:

- Customer Journey,
- Empathy Map, or
- Process Mapping.

A Customer Journey Analysis (Kofler 2018) examines all phases in which paid staff and volunteers come into contact with the offerings of the non-profit organization. The focus is on analyzing individual touchpoints and their relevance to the overall satisfaction of paid staff and volunteers.

To create a detailed profile of paid staff and volunteers and their perspective, the Empathy Map method (Kofler 2018) is suitable. For this purpose, the feelings and desires of the target groups are recorded and can thus influence the design of the service.

Using the Process Mapping method (Hofmann 2020), the activities or work steps necessary for service provision in a non-profit organization are listed and correlated with each other. The visualization of processes provides the basis for optimizations.

Step 3: Develop smart service ideas for volunteers

In this phase, new ideas for digital solutions for and with volunteers are developed. The following methods can be applied here:

- Social Business Model Canvas, and
- Design Thinking.

The Social Business Model Canvas (Existenzgründungsportal 2023) is a clear representation of the business model of a non-profit organization. The representation is intended to support non-profit organizations in the conception and reflection of their business model, serve as a basis for discussion, and as a starting point for Design Thinking (Plattner 2009). Central to this is an understanding of possible issues faced by both staff and volunteers. The Design Thinking process is iterative and involves repeatedly going through various phases with the aim of developing alternative solutions

to the issues. Based on the multitude of ideas, one idea is then selected and focused on in the final two phases.

Step 4: Select tools and test it prototypically

From the selected idea in step 3, several offerings are now chosen as prototypes from different providers. It is important that non-profit organizations do not develop their own software, but rather purchase existing software from the market. This is the only way to achieve cost-effective and stable solutions. After the selection, the digital prototypes from multiple providers should be promptly tested and evaluated by future users. The following methods can be applied here:

- Prototyping, or
- Interaction testing.

Prototyping (IEEE Computer Society/Software & Systems Engineering Standards Committee 2018) can be used to validate the requirements for the software and identify any previously unconsidered ones. Prototyping is particularly important to assess how well, for example, a software meets the needs of volunteers. With prototyping, ideas are made tangible. It is an experimental process to test ideas and concepts with users.

In a broader understanding, interaction refers to the mutual interaction and relation between individual actors or systems, such as in interpersonal or human-technology interaction. Interaction thus goes beyond communication – it also consists of the situation-dependent actions of all participants. It is the central moment where the value of the personalized service of a non-profit organization is created.

The offering or prototype with the best performance from the test is selected and then implemented throughout the entire non-profit organization.

Step 5: Implement tools

The developed, evaluated, and improved digital provider solution will be rolled out and implemented throughout the entire NPO. The following methods can be applied here:

- Action guides, and
- Content Marketing.

An action guide is a concise written description for carrying out specific processes or dealing with certain situations, which assists all participants in the non-profit organization in executing processes appropriately or handling certain situations competently. Action guides focus on a limited subject area, providing guidance and showing concrete options for action.

The term Content Marketing (Patrutiu Baltes 2015) refers to a marketing process within a communication strategy, where relevant and valuable content is created aimed at a specific target audience of volunteers. The goal is to attract potential members through this content.

3 VDI Württembergischer Ingenieurverein e. V. – a use case

This reference model was implemented in practice at the VDI Württembergischer Ingenieurverein e. V. In a first step, strategic goals were defined in a workshop. Two central focal points emerged in particular: increasing attractiveness for young students and professionals, and promoting online collaboration and networking during the COVID-19 pandemic. Based on this foundation, a quantitative data collection and analysis were carried out in the second phase of the model, with a total of 30 questions answered by 845 members (Gutmann & Schäfer 2021). Ideas were then generated by volunteers in step 3 based on this survey. In step 4, a provider was selected to configure an app for volunteers. This app was then implemented throughout the VDI Württembergischer Ingenieurverein e.V. in step 5. Detailed information can be found in Freitag and Hämmerle (2023).

4 Summary

To successfully manage the digital transformation of non-profit organizations, a strategy and process model for the transformation are crucial, enabling members to be effectively informed, mobilized, and engaged. This requires a targeted and accessible approach, with a strong emphasis on involving volunteers and utilizing digital tools. The presented process model is based on Service Engineering and Design Thinking approaches, aiming to promote collaborative and interactive cooperation among volunteers. The process model was tested and validated using the case study of an engineering society in the Stuttgart region. It was found that digitalization in the virtual volunteering sector had already been extensively explored, and a survey conducted at the VDI Württembergischer Ingenieurverein identified significant areas for action. Among the volunteers' expressed desires was an organization-specific app with an event calendar and messaging tool. This was successfully implemented based on the requirements, facilitating increased engagement of young volunteers as well.

Acknowledgements

The research and development project DigiLab NPO is funded by the Federal Ministry of Education and Research (BMBF) under the program "Innovationen für die Produktion, Dienstleistung und Arbeit von morgen" (Innovations for Production, Services, and Employment of Tomorrow) with the funding code 02L18A230 and is supervised by the Project Management Agency Karlsruhe (PTKA).

References and Notes

Beier M. (2018). Digitale Strategien für Nonprofit-Organisationen Anfang des 21. Jahrhunderts. In: Vilain, Michael Wegner, Sebastian (Ed) *Crowds, Movements & Communities?! Potentiale und Herausforderungen des Managements in Netzwerken*. Baden Baden: Nomos, pp. 101-118.

- Dufft N., Kreutter P. (2018). Digitalisierung in Non-Profit-Organisationen. Strategie, Kultur und Kompetenzen im digitalen Wandel. In: Berndt R, Kreutter P, Stolte S (Ed) Zukunftsorientiertes Stiftungsmanagement. Wiesbaden: Springer Gabler, pp. 105–115.
- Existenzgründungsportal (2023). Social Business Model Canvas. Accessed January 15, https://www.existenzgruendungsportal.de/Redaktion/DE/Downloads/DE/Checklisten-Uebersichten/Businessplan/17_Social-Business-Model-Canvas.html
- Freitag, M. (2021). Studie Digitale Transformation von Non-Profit-Organisationen – Status quo und Handlungsbedarfe, Stuttgart: Fraunhofer IAO.
- Freitag M., Hämmerle O. (2023). Volunteering Service Engineering in Non-Profit-Organisations. In: Alfnes E, Romsdal A, Strandhagen JO, von Cieminski G, Romero D (Ed) IFIP Advances in Information and Communication Technology, International Conference on Advances in Production Management Systems, APMS 2023. Trondheim: Springer, 689: pp. 471 – 483.
- Gutmann O., Schäfer PM. (2021). Auf dem Weg in eine digitale Zukunft – Erfahrungen des VDI Württembergischer Ingenieurverein e. V. In: Freitag M (Ed) Studie Digitale Transformation von Non-Profit-Organisationen – Status quo und Handlungsbedarfe. Stuttgart: Fraunhofer IAO, pp. 17–26.
- Haus des Stiftens (2020). Digital-Report 2020, Non-Profits & IT, abgerufen am: 30.03.2022 unter: <https://www.hausdesstiftens.org/wp-content/uploads/Digital-Report-2020.pdf>.
- Hofmann M. (2020). Prozessoptimierung als ganzheitlicher Ansatz. Mit konkreten Praxisbeispielen für effiziente Arbeitsabläufe. Wiesbaden: Springer Gabler.
- IEEE (2018). Systems and software engineering — Life cycle processes — Requirements engineering. Computer Society/Software & Systems Engineering Standards Committee. Genf: ISO/IEC/IEEE 291148.
- IW Consult (2018). Digitalisierung in NGOs. Eine Vermessung des Digitalisierungsstands von NGOs in Deutschland. Accessed February 30, 2022. https://www.iwconsult.de/fileadmin/user_upload/projekte/2018/Digital_Atlas/Digitalisierung_in_NGOs.pdf.
- Kofler T. (2018). Das digitale Unternehmen – Systematische Vorgehensweise zur zielgerichteten Digitalisierung. Berlin, Heidelberg: Springer.
- Meyer K (2020) Vom Service Engineering zum Social Service Engineering – Anforderungen an die Schnittstelle zwischen Dienstleistungsentwicklung und Arbeitswissenschaft. In: Zeitschrift für Arbeitswissenschaft 74: pp. 52-58.

Patrutiu Baltes L (2015) Content marketing - the fundamental tool of digital marketing.
Bulletin of the Transilvania University of Braşov. 8: 57 No. 2.

Plattner H, Meinel C, Weinberg U (2009) Design-thinking. Landsberg am Lech: Mi-
Fachverlag, 2009.