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Data for All

Data for All
Data-driven Public Service Delivery in the North Sea Region

31 July 2023

Co-creation in Vejle

[Design Thinking workshop at partner meeting 13 & 14 June 2023]

From creative processes to data?

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1. Key takeaways

The aim of this document is to share and disseminate insights and key takeaways from the Co-creation workshop held during the partner meeting in June. It elaborates on what Design Thinking is and how artefacts created with the approach, can support the development of a broader, and deeper understanding of challenges in practice[1].

The purpose is to illuminate how Design Thinking can create value within Data for All, not only in the context of workshops but also as an integrated approach and general mindset.

To gain knowledge of the project partners' viewpoints and priorities related to potential challenges in the pilots, the artifacts from the Co-creation sessions are analysed. Written statements, spoken expressions, and visual items constitute the artifacts. The choice and use of words is evaluated, trends analysed, and patterns and themes have been identified in an attempt to discover insights pertinent to Data for All partners.

The following diagram illustrates the data processing flow:

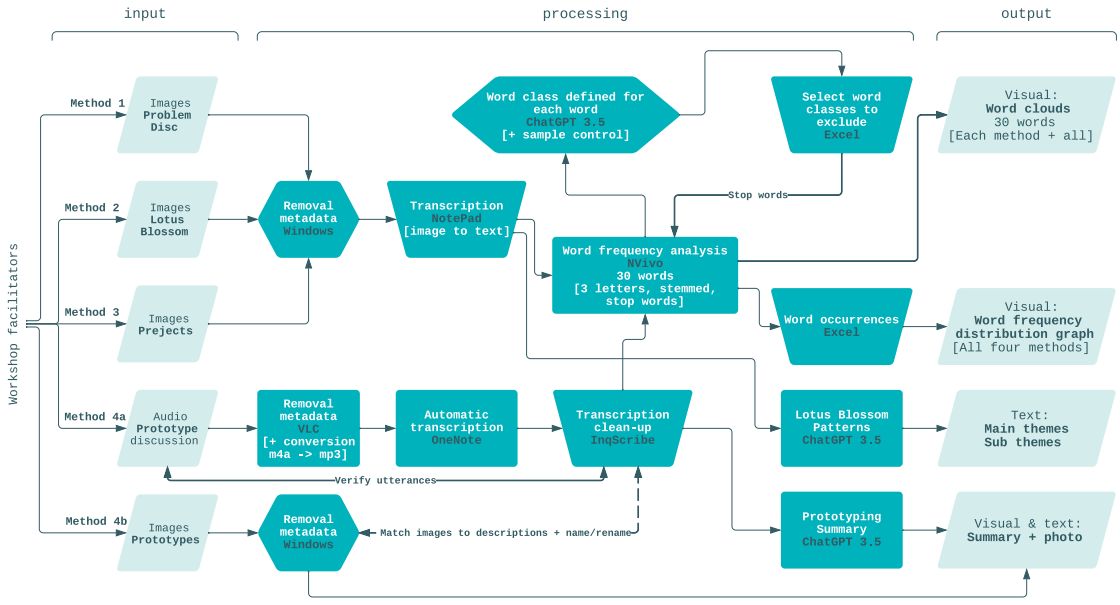

Fig. 1 - Dataflow diagram

2. What is Design Thinking?

Design Thinking[2] is a problem-solving and innovation methodology[3] that emphasises a human-centric approach to create innovative solutions. It stresses the importance of understanding and empathising with the needs and desires of the end-users to address complex challenges effectively. Design Thinking

[1] It's time for design thinking in data projects

[2] Read about: The History of Design Thinking | IxDF (interaction-design.org)

[3] How to: An Introduction to Design Thinking (Plattner, Hasso, Stanford University)

is widely used in various industries[4], including product design, technology, business strategy, and social innovation.

The process of Design Thinking typically involves the following stages:

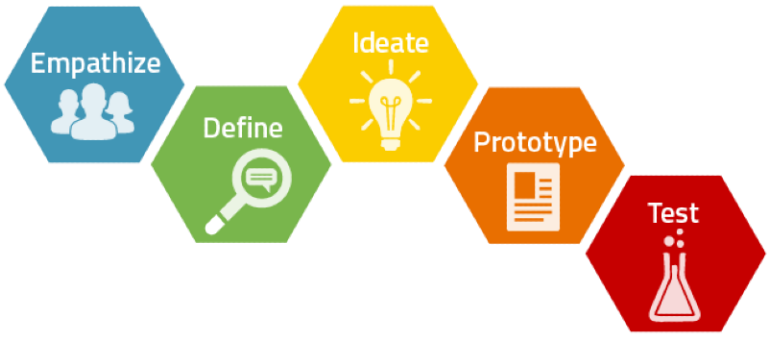

Fig. 2 - Design Thinking stages.

Image credit: https://www.pngegg.com/

And is often characterised by the following principles:

- Human-Centricity: Placing the end-users or customers at the core of the problem-solving process.
- Collaboration: Encouraging cross-disciplinary teams to work together, fostering a diverse range of perspectives and ideas.
- Iteration: Emphasising rapid prototyping and testing to continuously improve solutions.
- Creativity: Encouraging out-of-the-box thinking and the exploration of unconventional ideas.
- Bias towards Action: Prioritising doing and testing over endless analysis and planning.
- Empathy: Developing a deep understanding of the emotions, needs, and motivations of the people involved.

Design Thinking is a flexible and iterative process, allowing teams to adapt and refine their approaches as they learn from the feedback and experiences of their users. By focusing on human needs and experiences, it helps organisations develop innovative and meaningful solutions to real-world problems.

3. Why Design Thinking in Data for All?

Design Thinking is an excellent approach for Data for All, as it aligns perfectly with the project's goals and objectives. Data for All seeks to democratise access to data and make them more accessible, useful, and understandable for all stakeholders involved. Design Thinking principles can enhance the effectiveness and success of the project:

- Empathise with stakeholders: Design Thinking starts with understanding the needs and challenges of users and stakeholders. In Data for All, this would involve empathising with various

[4] Design Thinking Improves Your Data Science

groups, such as policymakers, researchers, businesses, and the public, to comprehend their data requirements and how data insights can best serve their specific needs.

- Human-centered data solutions: The primary focus of Data for All is to ensure that data is accessible and beneficial to all, regardless of their technical background. Design Thinking emphasises human-centered design, which means crafting data solutions that are user-friendly, intuitive, and cater to the specific needs and skill levels of different users.
- Iterative Data Design: The iterative nature of Design Thinking is especially relevant for data projects. By creating iterative prototypes and feedback loops, Data for All can continuously refine its data access platforms, visualisations, and tools, ensuring they align with user requirements and remain up-to-date with evolving data needs.
- Collaboration among multidisciplinary partners: Design Thinking encourages collaboration among professionals from diverse backgrounds. In the context of Data for All, this could mean bringing together data scientists, policymakers, and subject matter experts to collectively design data solutions that address a wide range of user needs effectively.
- Creativity in data presentation: Design Thinking fosters creativity, which can be applied to data visualisation and presentation. By creatively displaying data insights, Data for All can make complex information more understandable and engaging for all stakeholders, encouraging broader participation and data-driven decision-making.
- Prototyping data access solutions: In Data for All, Design Thinking can be used to create early prototypes of data access platforms and tools. These prototypes can be tested and refined based on user feedback, ensuring that the final data solutions are efficient, user-friendly, and meet the diverse needs of the target audience.
- Continuous improvement of data access: Data for All's objective is to democratise data access continually. Design Thinking promotes a culture of continuous improvement, encouraging the project partners to gather feedback and iterate on data access solutions to remain relevant and effective as technology and user needs evolve.

By integrating Design Thinking principles into Data for All at all levels, we can create data solutions that are not only comprehensive and technically sound but also user-friendly, accessible, and capable of empowering stakeholders from all walks of life with valuable data insights.

If you feel inspired, and want to become more familiar with Design Thinking in practice, there are many free resources online – e.g: Open HPI, edX, or IDEOU.

4. Frequency & Clouds

Word frequency

The objective of this investigation is to see if the words used and the frequency with which they are used in the various Design Thinking (DT) sessions might reflect a change in focus among the participants as the work on defining the challenges progresses.

The thirty most used words[5] by the participating partners have been identified in the statements made

[5] Words with minimum three letters, excluding abbreviations (d4a), determiners (the, this etc.), conjunctions (and, but etc.) interjections (yeah, yes etc.), prepositions (about, between, for etc.) and ”data” in ”Data for All”.

in each session, starting with the Problem Disc, followed by the Lotus Blossom, the Prejects and finally prototyping.

To assess a potential shift, words that are repeated across all four methods are identified[6]: "Create", "Data", "Project", "System" and "Use". Their frequency in % of the thirty most used words per session is compared.

The frequency of the word "Data" demonstrates that it is the primary focus (indicated by the red trend line) throughout all sessions. It decreases significantly as the workshop proceeds – showing that other perspectives become gradually relevant.

The word "Use" is consistently the most frequently used word in all sessions. "System" appears to be relevant while identifying the problem, significant throughout the Preject session, and becomes as significant as "Use" during the prototyping session.

Key takeaways: The word frequency distribution[7] suggests that the workshop participants are becomming increasingly conscious of the importance of user-centeredness.

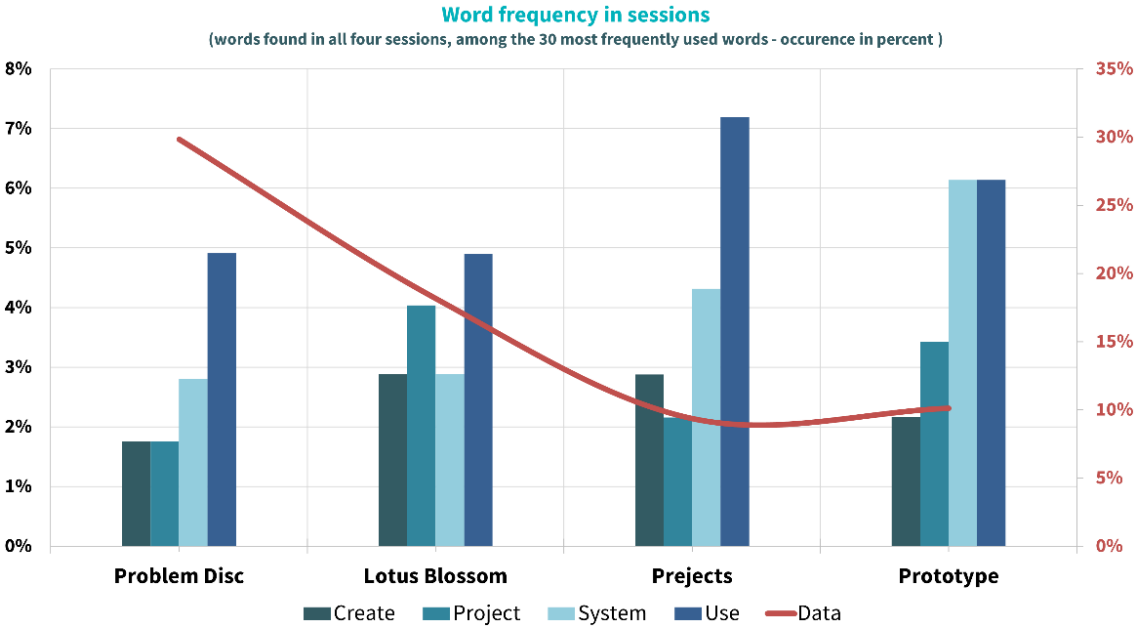

Fig. 3 - Word frequency graph

	Create	Data	Project	System	Use
Problem Disc	2%	30%	2%	3%	5%
Lotus Blossom	3%	18%	4%	3%	5%
Prejects	3%	9%	2%	4%	7%
Prototype	2%	10%	3%	6%	6%

Fig. 4 - Word frequency table

[6] Source: Word_Frequency_Query_Results_All30.xlsx

[7] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3117575/

Word clouds

Word clouds[8] using the thirty most used words during each DT session are generated to provide a visual overview. This includes a word cloud representing all four methods and another for the prototyping session. The 5 most used words are highlighted.

The words in the clouds are displayed in different font sizes, where the most frequently occurring words are in larger fonts.

Fig. 5 - Word cloud all methods

All Methods

- Problem Disc
- Lotus Blossom
- Prejects
- Prototyping session

Top 5:
data, users, use, system, need, project

Problem Disc

Top 5:
data, lack, use, different, value

Fig. 6 - Word cloud Problem Disc

Fig. 7 - Word cloud Lotus Blossom

Lotus Blossom

Top 5:
data, users, use, value, project

[8] Word clouds generated in NVivo – with stemmed words.

Prejects

Top 5:
users, data, use, need, system

Fig. 8 - Word cloud Prejects

Prototyping session

Top 5:
data, system, use, users, need

Fig. 9 - Word cloud Prototyping

5. Patterns & Themes

In the following are listed significant patterns and themes identified by ChatGPT 3.5 among each group's statements from the Lotus Blossom session. Same method is used to extract main aspects from descriptions provided during the prototype discussions.

The findings might enable us to obtain insights into each group's views and perspectives, allowing us to develop a more comprehensive understanding of the prevalent focus areas at the time of the work-shop.

6. Group #1 - Data Governance and Processing

Lotus Blossom themes

Data Sharing and Value Creation

- Showcase the value of data sharing to actors of the territory.
- Identify producers of potentially valuable data in the territory.
- Identify data needs of potential value creators/users.
- Create value for data creators/users and others.

Common Understanding and Governance

- Reach a common understanding of open data.
- Involve decision-makers and ensure their inclusion.
- Implement education for responsible data processes.
- Establish governance rules and define participation in rule definition.

Smart City and Interoperability

- Work with open data as a municipality for the benefit of the territory (community).
- Identify use cases for interoperability in smart cities.
- Bring together various departments to collaborate on data utilisation.
- Combine smart solutions related to mobility, city, region, and climate.

Mandate and Responsibility

- Give mandate and responsibility to executives.
- Consider theory, reasoning, and morality.
- Ensure awareness of the users of the data and their role in fulfilling information/data needs.
- Allocate a budget to support data-related initiatives.

Prototype

Fig. 10 - Prototype Grp #1

The group is discussing the use cases and showcases of smart city systems. They are emphasising the importance of reusing existing systems and achieving interoperability. They are developing a standard system with extensions, including AI and open interfaces. Data governance and correct data flow are crucial. The goal is to create a perfect relationship between humans, machines, and data, leading to innovation and value creation. They are acknowledging the challenges of interoperability and maintainability. Governance and best practices are being highlighted, along with the need to connect and optimize engagement for a networked system.

7. Group #2 - Sustainable Business Models

Lotus Blossom themes

Data Management

- Data update and data quality.
- Ownership of the system and data.
- Clear knowledge of the current system and its processes.
- Educating users about the system.

Long-Term Strategy

- Importance of long-term strategy.
- Building a functioning and transparent project structure.
- Securing long-term funding and investment structure.
- Implementation plan and change management.

User Value and Engagement

- Creating value for users.
- Ensuring user participation and adoption of the system.
- Transparency, trust, and purpose as important values for users.
- Fruitful stakeholder network and co-creation to define user needs.

Uncertainty and System Integration

- System survival beyond five years.
- Funding, value, and system integration uncertainties.
- Marketing and communication about the system.
- Anchoring the system in the company or municipality.

Prototype

Here, the focus is on understanding the needs and values of users in the context of sustainable business models. The group emphasises the importance of a practical, hands-on approach that is easy to use and close to the user. The key to success is the system itself, which should be safe, cost-effective, and pioneering, providing value and support for users. Co-creation and thinking outside the box are essential, with a relaxed environment to foster innovative ideas. Gathering user needs and involving them through interviews, workshops, and surveys are suggested methods. The group acknowledges the challenge of anticipating future needs and proposes incorporating best practices and prototyping/testing to adapt along the way. The "Vested Way" is recommended as a structured co-creation process.

Fig. 11 - Prototype Grp #2

8. Group #3 - Identification of High Quality, Valuable Data Sources

Lotus Blossom themes

Emphasising responsible data practices and collaboration

- Creation of neutral data spaces to work in.
- Risk analysis and best practices.
- Map all the stakeholders and activate them in dialogues.
- Ensure political decisions and obligations to support data-driven business models.

Data management and access

- Continuously update data to ensure relevance and reliability.
- Use data spaces and standardised datasets to streamline data management and access.
- Provide data via national infrastructure.
- Implement appropriate security measures to safeguard privacy while publishing accurate data.

Collaboration and communication

- Define the role and position in the value chain of data-driven services.
- Facilitate communication through mailing lists, events, and direct contact.
- Establish a free platform used by municipalities.
- Advocate for a centralised push in API creation on every level.

Prototype

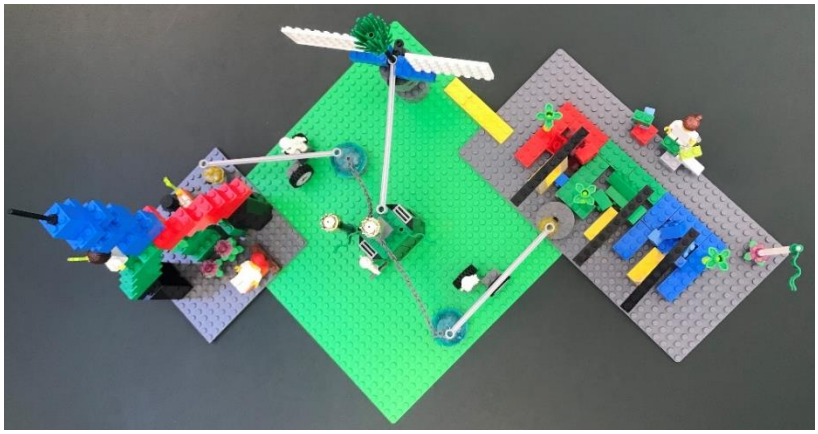

Fig. 12 - Prototype Grp #3

The group is focusing on the data generation, management, and utilisation process. They are highlighting three main components: data generation, institution center, and data users. The process involves digitalisation, data preprocessing, establishing protocols and standards, and ensuring effective communication between data generators and users. The goal is to gather and publish high-value data in a way that is accessible to end users. The visualisation includes distinct colors representing different data sources, with unstructured data being transformed into valuable data for end users. The importance of a nationalised approach and standardised data sharing is being emphasised. The system relies on green energy and includes automated processes or bots to ensure smooth operations. While the system is well-organised, there is recognition that data accessibility can be disrupted if there are breaks in the chain. Preprocessing and infrastructure are necessary for structuring the data. The repository mentioned is currently private.

9. Group #4 - Compliance with National and International Standards

Lotus Blossom themes

Collaboration and Partnership

- Host events and organise awareness campaigns.
- Foster exchange opportunities and cooperation between organisations.
- Establish connections with universities and similar institutions.
- Facilitate networking and enlarge networks through consortia and established networks.

Knowledge Sharing and Development

- Build a dictionary and develop guidelines for best practices.
- Provide specific training and online courses.
- Create an online knowledge platform for sharing information and solutions.
- Offer guidance and support to organisations, including SOS.

Funding and Budgeting

- Hire competent consultants for expertise and advice.
- Seek funding through various sources, including local, regional, and EU programs.
- Simplify regulations to streamline the process.
- Strategically revise expenses and prioritise projects.

Empowering Small Organisations

- Educate and create awareness among small organisations.
- Support their involvement in projects and innovation regarding data sharing and standardisation.
- Reduce bureaucracy and limitations on side projects.
- Provide funding and budget opportunities to enable their growth and development.

Prototype

Fig. 13 - Prototype Grp #4

This group envisions a sustainable and user-friendly data system for small organisations. It emphasises collaboration, standardisation, and resource pooling. The model includes components such as a data hub, a bridge for idea exchange, and a control tower for monitoring and security. The complexity of the system is acknowledged, but the group aims to simplify and prioritise. They highlight the importance of communication, user involvement, and maintaining a pleasant work environment. Challenges include ensuring data accessibility and avoiding system failure, represented by alarm signs and maintenance aspects. The metaphor of feasting on the skeleton represents helping struggling organisations.

10. Group #5 - Intuitivity and Interactivity of Web Frontend

Lotus Blossom themes

User-Centric Approach

- The group emphasises the importance of understanding end-users' problems and needs.
- Interviewing end-users and different stakeholders to gather insights and feedback.
- Designing the frontend to make it easier for private users (novices) to access complex content.
- Conducting surveys and sending specific invitations based on user interests.

Data Organisation and Presentation

- Categorising data into main themes (mobility, environment, climate, energy, etc.).
- Displaying data related to the main question or topic of interest.
- Using info boxes and avoiding displaying all data simultaneously.
- Providing explanations for each dataset and indicating data source and reuse.

Iterative Design and Feedback

- Seeking feedback from users, different stakeholders, and entrepreneurs/innovators.
- Testing prototypes and gathering feedback to make improvements.
- Incorporating feedback and making changes to the design accordingly.
- Exploring other systems and designs for inspiration and ideas.

Emphasis on Learning and Collaboration

- Learning from other design examples, including games for children.
- Avoiding common pitfalls such as shouting at colleagues, publishing mistakes, and using outdated methods.
- Collaboration between designers, researchers, and users to ensure a successful design.
- Considering critical success factors in relocations and learning from successful businesses.

Prototype

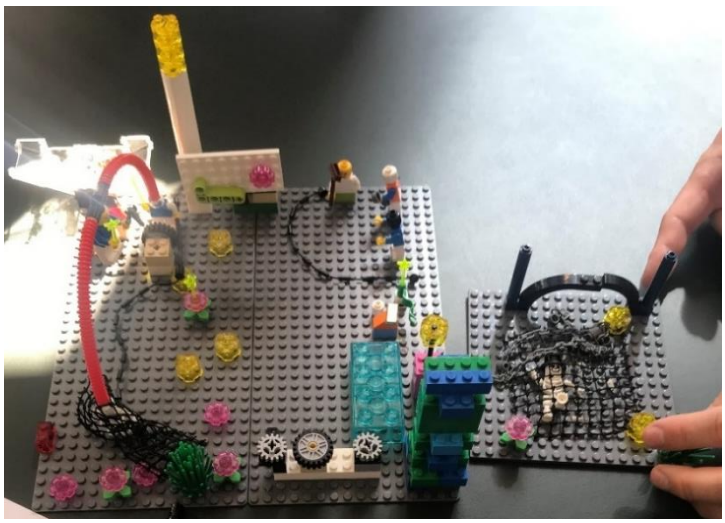

Fig. 14 - Prototype Grp #5

The group's goal is to increase the web front ends' intuitivity and interaction. Accessibility, user experience, and creating a setting where successful as well as struggling businesses may exchange ideas and knowledge related to expansion and relocation are prioritised. Their pilot in Data for All, attempts to dismantle obstacles and promote the usage of open data. By using the Enlightenment Tower as a metaphor, they seek information sharing to create user-friendly interfaces based on interviews with many stakeholders. Experiences and sharing ideas can be mediated via various medias, such as papers, Q&A sessions, podcasts, or videos.

11. Group #6 - Engagement of Stakeholders

Lotus Blossom themes

Leveraging Existing Networks

- Existing business networks are seen as allies and trusted sources.
- National cluster organisations and business organisations can be used to reach out to companies.
- Building personal relationships and using personal networks can facilitate trust and engagement.

Demonstrating Benefits and Best Practices

- Incorporating science knowledge, data trails, and testimonials to prove the value of sharing data.
- Showcasing how companies similar to them benefit from data sharing.
- Highlighting the potential impact of best practices and testimonials.

Personalised Approach

- Approaching decision makers on a personal, direct level to gain trust and involvement.
- Using specific data to answer their questions and address their concerns.
- Finding individuals, they trust and using personal connections.

Communication and Media Strategy

- Developing suitable information materials to educate decision makers.
- Controlling the project message and using various media channels.
- Hiring professional communication teams to formulate the right message.
- Utilising media channels for efficient and effective communication.

Prototype

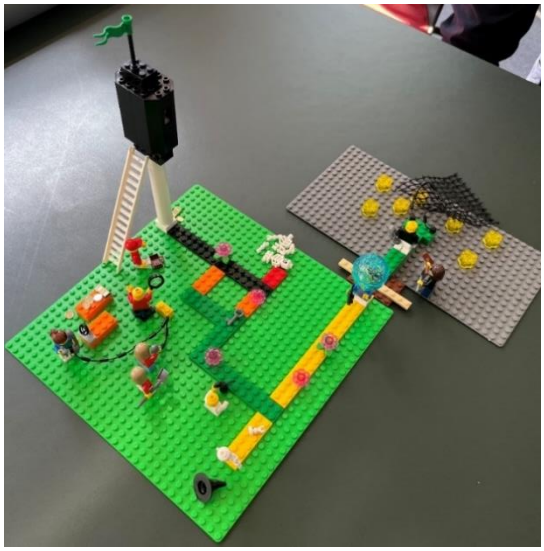

Fig. 15 - Prototype Grp #6

Group #6 is focused on formulating the right message for their stakeholders. They see it as a process of fishing for messages until they find the perfect one. They have a communication professional on their team to help in crafting the message. Once they find the right message, they start their journey, encountering innovative ideas along the way but also facing potential obstacles. Their stakeholders, who are currently confined to a limited perspective, need to be brought out of their box. Communication and clear messaging are essential, using available resources to guide the stakeholders towards the desired outcome. The involvement and trust of stakeholders are crucial, and gaining their trust requires sharing the right message that helps them understand and join the broader perspective. The group employs communication tools and the support of stakeholders to carry the message forward and create a collaborative process of co-creation. The media and methods for communication are yet to be determined but will play a significant role in connecting the stakeholders and facilitating the exchange of information.

12. List of figures