Shelter after disaster management. New approaches by design driven Innovation

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Workshop purpose and aims:
Despite several stakeholders involved in the shelter after disaster management, like academia or the private sector, are focused on the introduction of new products and on direct action, Innovation in shelter after disaster is today more likely to be concerned with improvements in process and more related with facilitation. Design driven innovation (DDI) is increasingly applied on services, changing realities on individual, organizational or societal levels. It has clear potential in shelter after disaster management to lead the sector on interesting and important new directions, achieving breakthrough innovations and transforming the meaning of shelter as a product into a user’s centered service.

The purpose of the workshop is to show a set of techniques from the DDI approach focused on service design projects and apply them in a disaster context to enhance current practices in shelter management.

The aim of this workshop is to establish a direction for the ideation of a new meaning of post-disaster shelter through the unique perspective of the participant through an ongoing value co-creation process.

Theoretical relationship:
Disasters occur and causing destruction and homeless people in the need of shelter. With the aim of assist victims that have lost their homes he first thing that comes to mind is the delivery of thousands of tents or prefabricated units. But post-disaster shelter should be more than this.

Post disaster shelter is one of the most important sectors in Disaster Management. There is a large number of actions, activities and measures that must be carried out before, during and after a disastrous event, including emergency actions in order to save lives in the aftermath of the disaster, and recovery activities once the situation is stabilized- But it also has to include endless measures and activities of mitigation and preparedness, developed with the aim of decreasing vulnerabilities and increasing capacities, trying to reduce the consequences of the disaster. These procedures are interrelated and require a great deal of strategic planning.

Figure 1 Disaster management diagram

\[ t_e = \text{disaster date} \]
\[ t_s = \text{stabilization (start of reconstruction)} \]
\[ t_r = \text{reconstruction date} \]
When a disaster strikes, post-disaster shelter strategies begin with the implementation of emergency plans. Usually, they consist of moving homeless people from an affected area to a safer one, either sheltering them in existing structures: such as public buildings, schools, civic centers, sport facilities, and so on, or in new shelters such as tents, small structures, plastic covers, etc...

![Figure 2 Shelter strategy during the emergency phase](image)

Once the situation has been stabilized the recovery activities can start. Destroyed houses must be rebuild, and damaged ones repaired. This period may last long time. At least 2-3 years, but sometimes it can last more than ten. During this period, homeless people can’t remain in an emergency shelter because living conditions are very limited; there is not enough privacy, comfort or security and its useful time is very short. It could be months, even weeks. Another kind of provisional shelter is needed to fill the gap between emergency and reconstruction. A temporary housing program offers a more durable solution and better living conditions than an emergency shelter. There is a wide range of temporary housing solutions; lodging, rental, prefabricated units, etc...

![Figure 2 Shelter strategy during the recovery phase](image)
The provision of temporary housing is crucial for an effective recovery process. It can provide not only physical protection, but also a certain sense of stability from a psychological point of view. It allows people to regain control over their own lives. People are less vulnerable, and the community can increase their capacities, thus becoming more resilient. From this base point, the community can begin the reconstruction tasks, reducing the recovery time. Once the reconstruction is finished, people can return to their rebuilt permanent homes.

Unfortunately, most temporary housing strategies do not work properly, and this is the real problem in post-disaster shelter management. There are common failures in temporary housing programs:

- In most cases, the recovery strategy hasn’t been well planned. The housing plans are made during the emergency period without enough time, instead of being made in advance as part of the preparedness activities.

![Figure 3 Post-disaster planned strategies enlarge the emergency period](image)

- Many times, decisions are made in a very limited context, with only a few stakeholders, in a top-down approach, without any involvement of the people affected.

![Figure 4 Top-down approach](image)

- Usually, the quality and quantity requirements of shelter are based on feasibility and viability standards, such as lifespan, cost, m2, transport and assembly speed, etc., regardless of desirability, speaking in terms of human feelings or emotions.

![Figure 5 Technocratic approach](image)

- Most designs try to find a universal solution to adapt to any place, without taking into account contextual aspects such as the physical, economic or socio-cultural.
Finally, the housing strategy generally consist in the delivery of a product or artifact, mainly a prefabricated unit designed to fit in a production chain, that hardly contributes to improving the recovery process.

Losing our house is one of the most traumatic experience we can have. Homeless people are a risk group for mental illness such as depression, PTSD and even alcoholism. Experience shows that units designed as permanent houses, with the highest quality standards, are not enough for affected people to resume their normal lives. That is because they need more than a place to live. They need a home to build or rebuild relationships with other people and with the environment. They need to regain hope.

Post-disaster shelter management requires an innovative human centered approach to overcome the old technocratic approaches. We are talking about bottom-up participation processes, about standards based on requirements of desirability in terms of feelings and emotions, about designs adapted to different socio-cultural contexts and, finally, we are talking about temporary housing strategies that contribute to the community recovery process.

Design methodologies are comparatively different from technocratic in content, process and tools.

- In design, innovation becomes the centerpiece of strategy.
- Commensurating the feasibility, viability and desirability dimensions, design process can achieve a comprehensive picture of what a user really values in products and services, proposing new value configurations to create or innovate meaningful experiences.
- Design process and its tools emphasize innovation by collaboration, facilitation, argument and a multiplicity of views.
- Design can break through established boundaries and reconceptualize models, questioning existing assumptions, to frame things differently.

Design innovative methods are seen as a powerful toolset to deal with such wicked problems. Applied to shelter after disaster management, they can change realities at the individual, organizational or societal, and therefore strategically, helping the sector to satisfy the user desires throughout the recovery process in an integrated user experience.
Workshop approach:

This workshop proposes the change of meaning of housing in disaster management, reframing the context from the pre-disaster situation to a post-disaster situation.

In a first step, participants investigate the original context where the product (the house) is normally used. What a house is, from the user’s point of view (how is it perceived), how the user interacts with it, with other people and with the environment, and why it is really necessary for the user.

Decomposing the house into the activities developed in it and analyzing the user behavior, we will try to discover the user’s real desires in terms of feelings and emotions.

![Figure 8 Stage 1; understanding the primary context](image)

In a second step, participants try to unveil the underlying abstract values that make the user feel at home and then try to find the most important values to maintain the sense of home in a post-disaster situation (new context).

![Figure 9 Stage 2; Reframing the context](image)

In the last step, participants try to redefine, from this value conceptualization process, the meaning or purpose of temporary housing in the new context frame. Once the context has been reframed, it is possible to think about how to satisfy the user desires (not as a product, but as a service) and, therefore, define what kind of service should be provided to improve the user experience.

![Figure 10 Stage 3; Redefining the mining](image)

Takeaways for the participants:

Despite the brevity of the workshop, participants become aware of the complexity of the shelter sector in post-disaster management and realized the potential of design methods to generate innovative approaches to solve this kind of wicked problems.
Participants see how design can involve many stakeholders from different fields and with different points of view, expanding the context from which the problem arises, looking for new insights.

An interesting finding by the participants is how, taking into account the users' point of view, desirability becomes a key piece in the puzzle solution.

Another interesting finding is how feelings and emotions can be verbalized through the process of conceptualization and abstraction, so that deeper values can be uncovered, and users' true desires can be achieved.

Participants also realize that, in order to understand user behavior and discover new meanings, it is not so important what people do or how they do it, but the why of what they do.

Finally, through design-driven innovation and its powerful toolset, participants can develop their own vision of a possible alternative solution that can be proposed to people.

Results and final reflections for consideration:

Houses shape and configuration are very different all over the world, depending on the climate, culture, local resources, the economy, the level of development, etc. The number of rooms, dimensions, windows or facilities depends on local customs. A house also hosts many functions such as resting, eating, sleeping, playing, working, protecting, cooking, caring for children, maintaining family unity or facilitating contact with family and friends. But housing context changes after a disaster and also housing requirements. To reduce the traumatic consequences of disasters other concepts come to mind more related to people’s feelings and emotions and the feeling of being at home. Safety, security, love, sharing, sense of belonging or self-realization are strong desires related to why people need to establish relationships with each other and with the environment.

“Recovery is neither revival in economy, nor rebuilding houses. (…) What shape the recovery processes are relations: relations between human being and nature, relations between people, relations between ourselves and those we lost, including our ancestors, relations between our lives and local cultures and histories.”

Uchiyama, 2011

In conclusion, the basic function of temporary housing should be to facilitate relations between people and between people and their environment, so that their desires can be satisfied. It should not simply be a product, but a human-centered service, capable of improving the user experience during the recovery process. This is an interesting starting point to obtain significant outputs in the definition of an innovative strategy in post-disaster shelter management.