

Sengkang Health

SingHealth

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SELF-REG

KIOSK

EXPERIENCING **A CARDBOARD HOSPITAL -PATIENT-CENTRED** PLANNING & PROTOTYPING

The team would like to acknowledge all our SKH colleagues who were involved in this project.



INTRODUCTION & BACKGROUND

As part of Sengkang Health's (SKH's) hospital building project, space was set aside at the construction site office for mock-ups of the architectural floor plans in the third quarter of 2014. Initial simulation efforts involved staff walkthroughs of the main functional areas in the Sengkang General and Community Hospitals, which were modelled in the mock-up space using plaster walls.

Subsequently, the Sengkang team was tasked to develop a systematic and robust simulation methodology, for SKH's Specialist Clinics in particular, with the following aims:

- Convert the mock-up site into a prototype of a typical Specialist Clinic floor at minimal cost;
- Use materials that allow for quick and economical reconfiguration of the mock-up site for this exercise and subsequent ones. Repeated building and tearing down of plaster walls to simulate different space configurations was not cost-effective;
- INTERS
- Facilitate the simulation of patient journeys and work processes in real time, with some visualisation of furniture and equipment within spaces;
- Go beyond the validation of spatial requirements to gain empathetic insights into the needs and experiences of different patient groups;
- Co-create a patient-centred Specialist Clinic experience with internal stakeholders and potential users (i.e., residents in the Northeast region).

PROBLEM STATEMENT

With construction of the SKH hospitals still in progress, the challenge was to create a simulation environment and process that was sufficiently realistic to elicit user needs and planning insights. Traditionally, infrastructure and process planning is based on existing workflows, standard operating procedures and abstract floor plans, which present several problems:

- Most staff are not experienced or educated in reading blueprints. Hence, visualisation of three-dimensional spaces is severely limited, leading to an over-reliance on existing knowledge, rather than experimentation;
- Patient feedback on plans and processes is severely limited without an experiential context;
- Processes and workflows cannot be tested or validated in real-life settings;
- Coordination issues between user groups are under-emphasised in the conventional planning process, where user requirements tend to be gathered in functional silos;
- Simulation materials (e.g., the use of plaster walls to demarcate spaces) are costly to set up and tear down. They also lack flexibility for on-the-spot reconfiguration of spaces.



METHODOLOGY

The simulation methodology was developed in April 2015 and involved:

- Identification and articulation of common patient scenarios in the Specialist Clinics. The scenarios depicted patient journeys within and between departments on a typical floor of the Specialist Clinics;
- Role-playing of these scenarios using patient and caregiver personas to empathetically deduce patient expectations, needs and emotions. Personas were based on typical patient and caregiver profiles, informed by a half-day observation at Singapore General Hospital's (SGH) Specialist Outpatient Clinics. All role-players were given the freedom to make decisions, behave and respond to unfolding interactions and changing circumstances in the course of these scenarios; they were asked to immerse themselves in their personas and to experience the emotions of their patient journeys;
- Inviting residents from the community to role-play patients or caregivers. SKH staff played their professional roles;
- Physical set up of a typical Specialist Clinic floor at the site office using movable cardboard furniture that could be flexibly configured. This provided some measure of realism and a concrete sense of spatial dimensions. Physical spaces were demarcated according to actual floor plans.

50 attendees spent half a day role-playing the scenarios assigned to them. Participants described and critiqued their physical and emotional experiences at all critical touch points in the simulation with respect to the People, Objects, Environment, Messages and Services encountered. Factors that benefited patient experience and pain points in the

patient journey were distilled with recommendations for improving infrastructure, interior design, facilities and

the Specialist Clinic simulation

Special credit to Butternmilk Cardboard Studio

 Table 1: Comparison between Conventional Table Top Exercise and Immersive Prototyping Methodology

Conventional Table Top Exercise	Immersive Prototyping Methodology
Discussion is based on blueprints and existing knowledge	Participants can be present as subjects within the environment and do quick experiments
Use existing recommended standards to gauge space adequacy	Assistive devices (e.g., wheelchairs) can be used to test interiors and work flows
User requirements tend to be gathered in functional silos	Simulated patient journeys serve as a common language and reference for all stakeholders
Discussions focus on functionality and existing processes	Discussions focus on patient experience

RESULTS

The simulation surfaced several strategic issues for further refinement of patient experiences and processes in the Specialist Clinics, including:

services.

- The optimal mix of technology-enabled automation and human touch points. While technology could reduce reliance on limited manpower, human interactions would still be critical at certain touch points for reassuring care delivery (e.g., doctors' face time with patients should not be compromised by technological interfaces);
- Adequate, not confusing, patient choice. For instance, where automation (e.g., registration kiosks) is efficient and effective, alternatives (e.g., manned counters) should be less prominent;
- Productive use of waiting time by empowering patients to participate in their care (e.g., self-administered weight and blood pressure measurements, urine collection, nose swabs);
- Dynamic, non-linear scheduling of service stations in the patient journey to minimise waiting time and optimise usage of resources;
- Ergonomic design of processes and facilities for informed, reassuring service delivery (e.g., intuitive way finding, assurance that one has arrived at the correct service point, adequate information on waiting time and queue order for patients to manage their activities);
- Coordination of service providers (e.g., staff are cognizant of the services and their sequencing logic in a patient itinerary) along the patient journey so patients can be ably assisted at every touch point.

The methodology also resulted in cost savings as spaces could be reconfigured without building or tearing down plaster walls.

CONCLUSION

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There is a growing realisation in healthcare that services and spaces should be designed to be human-centred. Operational efficiency, while advantageous to care providers, is not a sufficient condition for reassuring, informed and holistic care. The simulation methodology adopted by SKH allowed these elements of patient experience to be tested and validated empathetically by participants, with several advantages:

- Rapid prototyping at an early stage before large-scale resources are committed to implementation. Through this exercise, participants gained first-hand experience in prototyping and recognised its value in hospital planning;
- Shifting of service mindsets from paternalistic to empathetic care. Through role-playing, planners and professionals re-oriented their perspectives to the needs and preferences of patients and caregivers.



- Participants were able to anticipate user needs and identify planning blind spots. This was also the first time SKH engaged residents in the planning process;
- Focus on experiential, not just operational, solutions. The methodology provided a common language and platform for stakeholders to share and validate ideas, due to their shared identity as patients and caregivers. These ideas were focused on creating positive experiences, instead of the functional solutions typical of table-top exercises;
- Interim validation of plans. The simulation translated architectural plans into a form which participants unskilled in reading blueprints could validate and make sense of.

As the hospital planning progresses, such low-cost, low-risk and iterative experimentation could be integral to changing culture and shaping mindsets for inclusive and participative innovation.

Illustration of Simulation Methodology Scenario: Elderly patient accompanied by child to the Specialist Clinics for follow-up visit



Age: 70 Marital Status: Widower **Occupation:** Retiree Language: Dialect only **Social Economic Status:** Stays in 3 room HDB flat with only son; qualifies for Medifund

Caregiver Persona Age: 40 Marital Status: Single Occupation: Fast food restaurant worker Language: Dialect and Mandarin **Highest Education: O Level Social Economic Status:** Earns \$1,500/month

Patient journey of the day: Registration -> Assessment -> Wait -> Consultation -> Treatment -> Medication Reconciliation -> Medical Social Services -> Diagnostic Radiology

