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## Tools and Methods for Technology-Aided Prototyping of User Experience

### *SINCO Environment as a Pilot*





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A publication of the University of Lapland, Faculty of Art and Design, 2014, Rovaniemi, Finland  
SINCO PLUS Project, 2013 (ESR); Value Through Emotion Project, 2014 (TEKES),

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## PREFACE

This handbook aims to introduce tools and methods for technology-aided prototyping of user experience, and describes their use in service design in a practical way. In this handbook, the pilot case of SINCO (Service Innovation Corner) laboratory, University of Lapland, is used for describing a technology-aided prototyping environment. SINCO is a service design prototyping environment that has been built and developed under the SINCO EAKR-project between 2009 and 2011.

A video guide of the SINCO laboratory in English is available (<http://videoguide.sinco.fi>) as a complement to this handbook. Likewise, showcase videos of the SINCO environment; case projects and blog texts related to the subject; and academic publications related to SINCO are available at <http://sinco.fi>.

This handbook is the result of the SINCO PLUS - ("enhancing service design know-how and developing new applications") follow-up project (ESR). The content was added during the "Value Through Emotion" (Tekes) project. The methods presented in the handbook and their usage have been piloted during case projects at companies and public organizations. Nokia, Lappset Group, Ranua Zoo, KL-Kopio, Pohjois-Suomen media, the advertising agency Seven-1, city of Rovaniemi, Santa Park, Danske Bank, Norrhyd-ro, Lapland Safaris, and KONE have been our partners in this regard. In addition, the methods have been piloted in service design projects and workshops executed with UNICEF, Trafi, Veho, Termo Visio, and Caravankeskus Reatalo among others.

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## INTRODUCTION - Facilitation and Technology in Service Prototyping

Prototyping refers to a concrete method of showing and testing things in practice for understanding, developing, evaluating, and presenting an idea. Prototyping is iterative, meaning it involves repetition of the abovementioned phases. Prototyping can be understood as any representation that supports this purpose.

In service design, the core of prototyping is the user experience of the service, which consists of touchpoints experienced during the service path. In addition to concrete prototypes (e.g. paper mockups), the service prototype is related to the time scope (process or story) and participants in different roles (users, customers, service personnel, etc.). The story or use case of a service often includes elements of drama, which require activity from the participants. Thus, the facilitator or the leader who activates the participants plays a big role because the usage of a service—whether face-to-face or digital—does not happen in a vacuum, and the service landscape experienced by different senses has an important meaning in the prototyping of user experience.

SINCO laboratory is a continuum of the mo-

del workshop tradition of industrial design with the added characteristics of service design. This handbook presents methods of creating simulations for service landscapes practically, as well as exploiting them in co-creation workshops with the participation of different stakeholders, thus enhancing brainstorming. In addition, the book shows examples of creative and rapid usage of different devices and programs at prototyping touchpoints.

Continuous technological development allows for the prototyping of different systems faster and more realistically than before. Therefore, the examples in the handbook aim to demonstrate agile usage principles for existing technology rather than showing the qualities of certain devices or programs. The aim of using technology is to support ordinary mock-up making and drama, activate participants, help prototype service contexts in a quick and iterative manner, enhance the realism aspect where needed, and help understand the possibilities of technology in implementing ideas.

A glossary related to the subject and the literature supporting the methods used in the publication are gathered toward the end of the handbook.





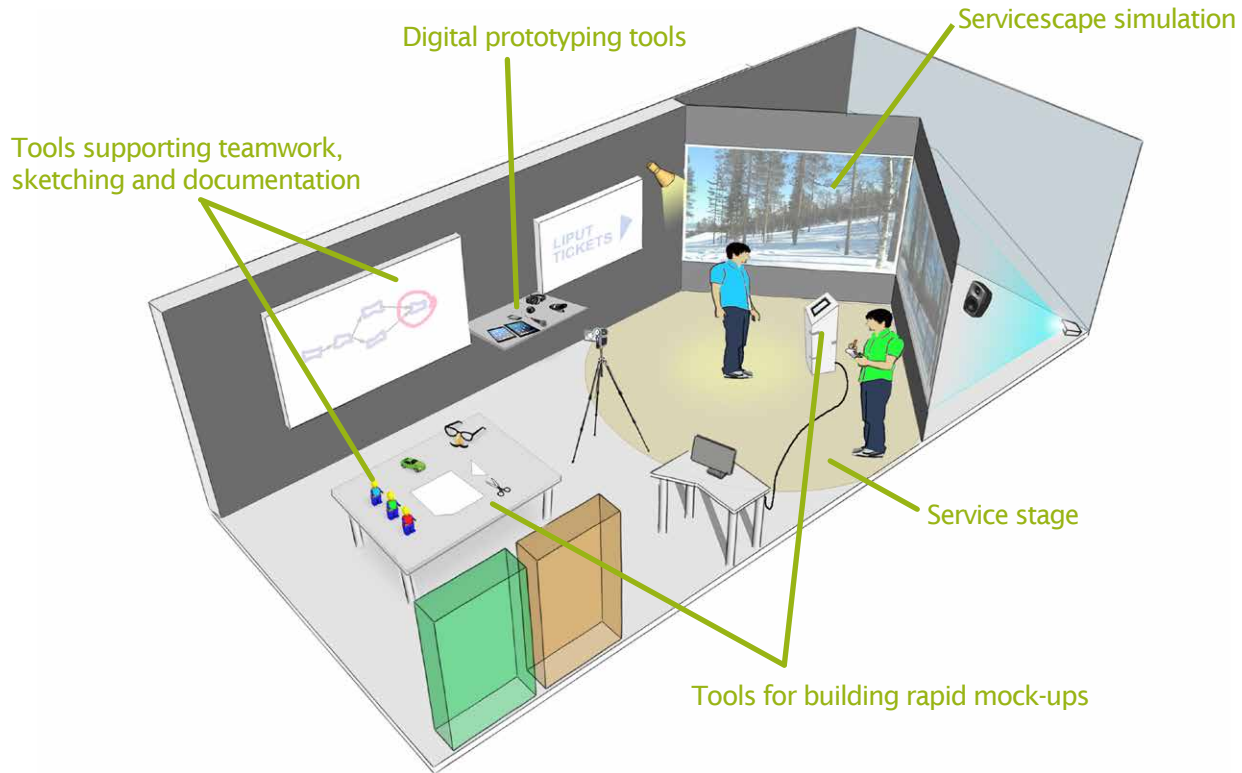
1.

SINCO

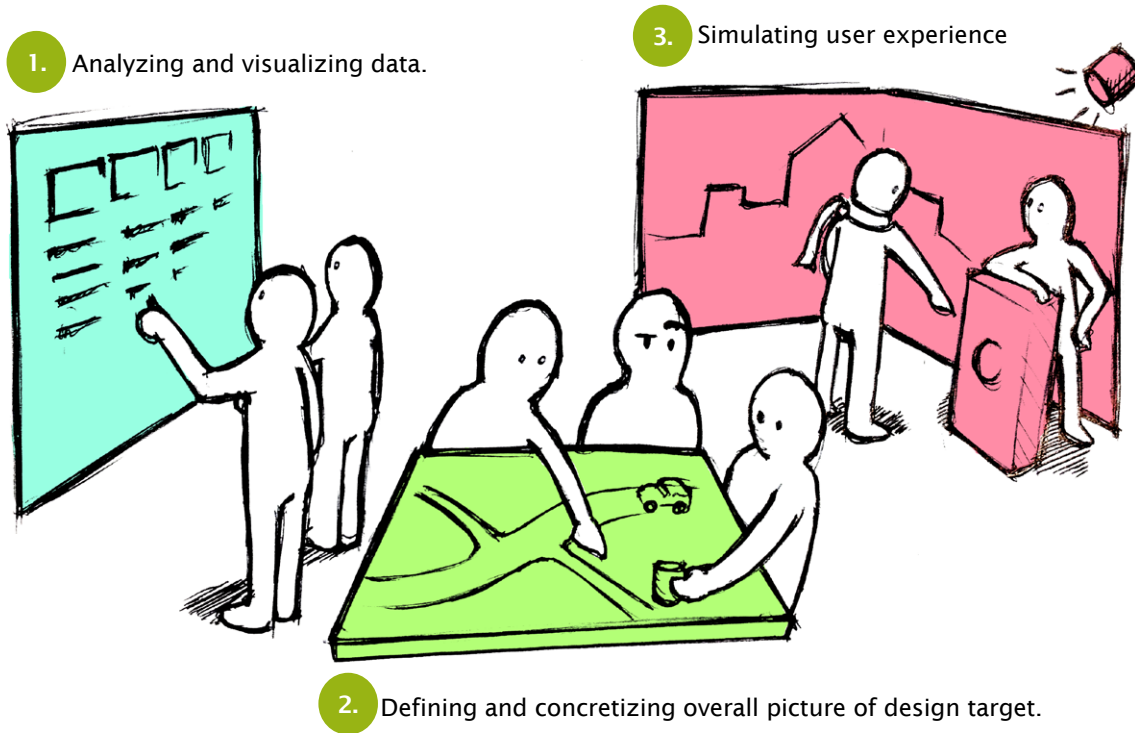
(Service Innovation Corner)

Prototyping  
Environment

SINCO (Service Innovation Corner) is a service design prototyping environment. The used tools and devices therein support the concretization of ideas, testing, and agile co-creation.



## Most Essential Use Cases of SINCO in Service Design



This chapter describes how to build the main segments of SINCO -prototyping environment and what are the essential tools, devices and applications to use. Even though some examples of device models are shown, building the environment doesn't require using the devices from exactly the same manufacturer.

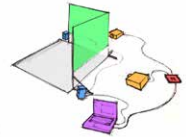
## Space Requirements

As a space, the SINCO environment is a mixture of a negotiation room, workshop, atelier, and studio. Among other things, group size and the space needed for demonstrations influence the space requirements.

To use service landscape simulation devices that are adequately immersive, the minimum required space is  $4 \times 4 \times 2,5\text{--}3$  m (l x b x h) (see picture on next page). In addition, it is good to have a space of about 20–30 m<sup>2</sup> for building mock-ups; ensuring teamwork; and storing props, drama equipment, and digital prototyping tools. For making the space as multi-functional as possible, the use of modifiable, adjustable, and movable furniture and structures is recommended. By painting the walls of the space with dark grey or otherwise reducing their reflectivity, it is possible to reduce the amount of ambient light and increase the contrast of projected pictures.

## Main Segments of Building SINCO:

1. Installing servicescape simulation devices (p. 10)



2. Service stage equipment (p.12)



3. Space for mock-up building (p. 13)



4. Digital prototyping tools (p. 14)

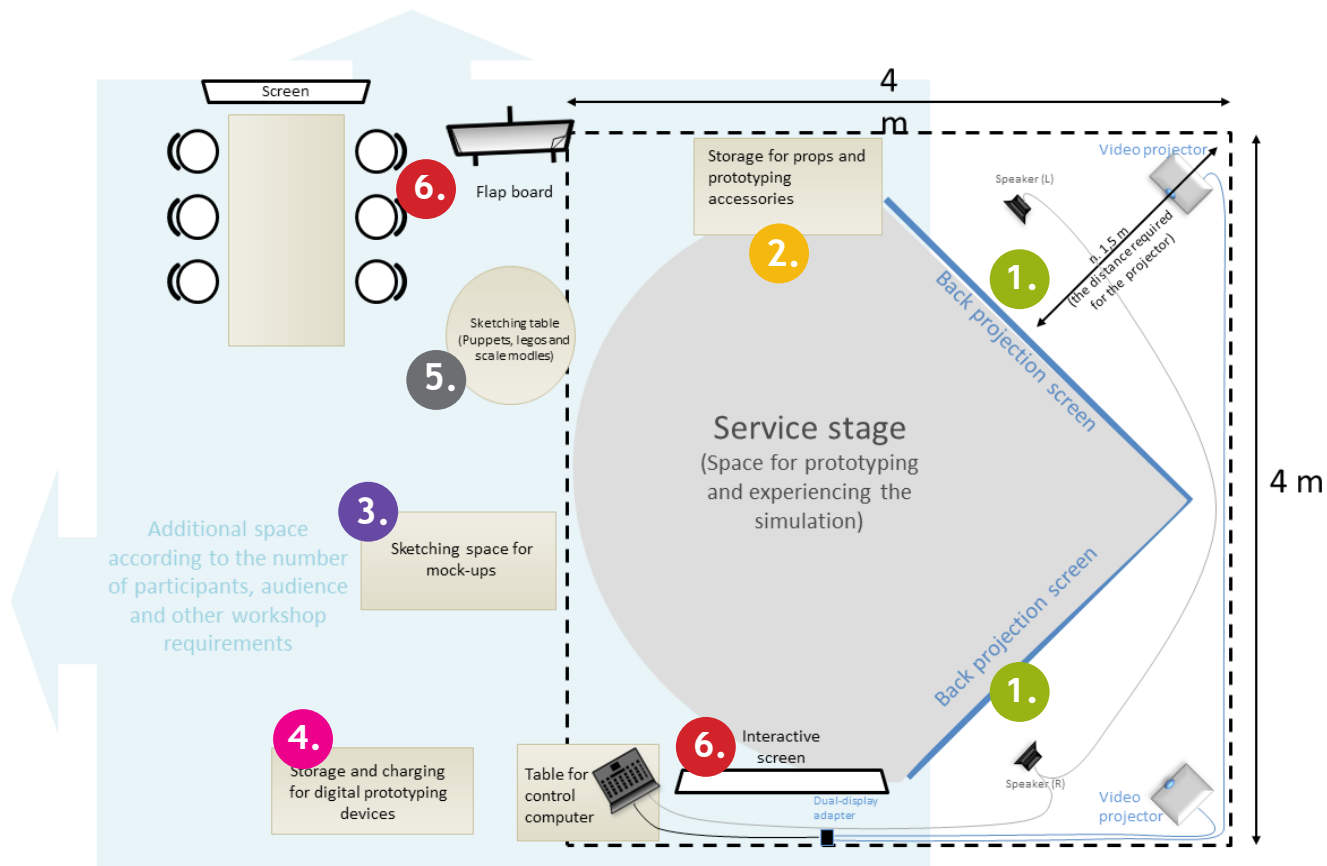


5. Sketching space(p. 15)



6. Tools to support teamwork (s.16)





## 1. Installing Servicescape Simulation Devices

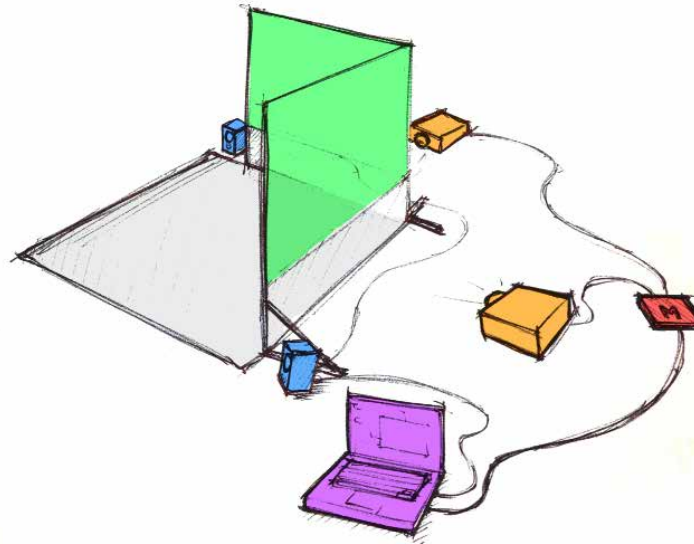
1. Install the back projection screens onto their frames and perpendicular to each other.

2. Place the video projectors behind the screens and attach them to the dual-display adapter. Connect the adapter to the control computer.

3. Place the speakers (L + R) behind both the screens and connect the audio cable to the computer.

4. Install the dual-display adapter drivers on the computer and set the display formed by the projectors as the second display. (see picture on the next page)

5. Check the projector alignment by using a picture with horizontal lines, for example.



### Required Equipment

- Computer
- Programs:  
MS PowerPoint or any other slideshow program that allows free adjustment of slide dimensions.  
Graphics editing program
- Dual-display adapter (e.g., Matrox DualHead2go)
- 2 video projectors (short-throw)
- 2 back projection screens (about 250 cm × 150 cm)
- 2 Screen cables (VGA, DVI, or HDMI, 5-10 m long depending on control computer location)
- A pair of speakers (located behind the screens)
- Audio cable (length according to control computer location)
- PowerPoint remote control
- Adjustable lighting for service stage (white dimmable pair of lights or DMX-controlled RGB lights + control panel)

### Tips:

To minimize equipment costs, you can make a cheap back projection screen by stretching a shower curtain or construction fabric on a wooden frame.

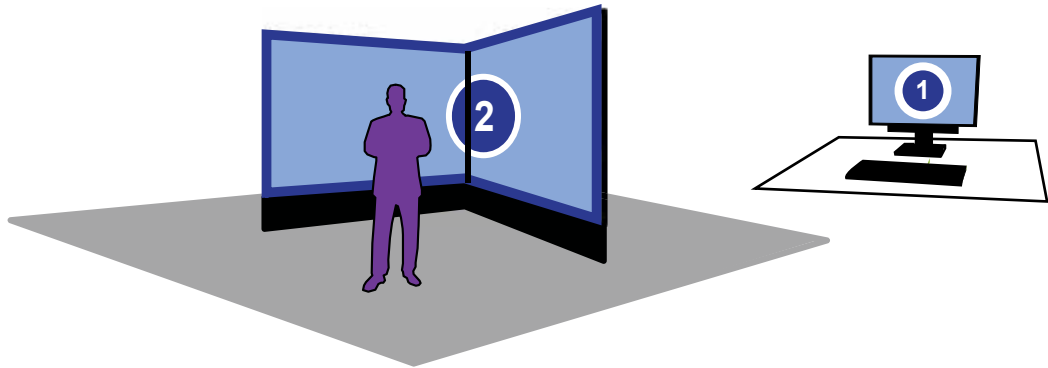
You may shorten the distance between the video projector and

the screens by reflecting the image using a mirror.

If there are several projectors in the space, the installation of a projector control panel (e.g., Philips Pronto), with which you can switch on the projectors using one button, is recommended.

The projectors connected using a dual-display adapter are shown as one wide display on the computer.

Adjust the order of the displays from the settings of the computer according to their location.



## Tips:

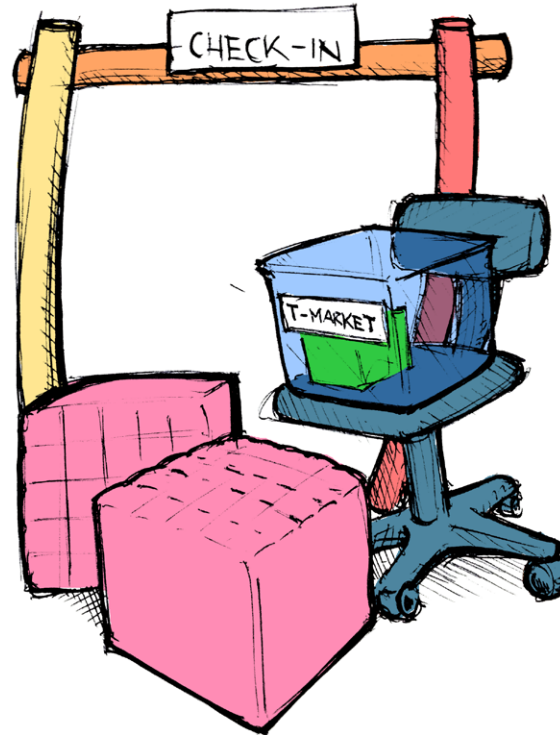
Simulation devices can be installed without back projection screens by using ultra short-throw projectors attached to the ceiling. The background picture can be realized with three projectors as well, by using a tri-display adapter (e.g. Matrox TripleHead2Go).

Place the control computer such that you have free and quick access to it from the service stage while prototyping.

## 2. Service Stage Equipment

The service stage is a space meant for role-playing and experiencing the simulation. The suggestive physical structures and elements built on the stage fulfill the service simulation. Role-play accessories and props make it easier to empathize with the role and enact it with others.

Place a set of role accessories and a selection of multi-functional physical staging elements on the side of the stage so that they can be used in for concretizing different spatial or interactive elements rapidly.



### Tools and Equipment

You can use whichever physical element that you find and that serves the purpose of the props and stage elements.

Examples of multi-functional elements:

- Soft cube seats (e.g., Fatboy)
- Beanbag chairs
- Foam tubes and their joint parts
- Foam board and crinkled cardboard with a film surface suitable for white board markers. These can also be used to build elements for several uses, for example, a 50 × 50 × 50 cm cube for building things, wall standing on its feet, kiosk desk, doorway, computer screen, etc. The elements can then be completed with marked drawings or post-it tags regarding the situation.
- Skateboard or any other kind of board on wheels
- Basic geometrical shapes, for example, as a set of toys (balls, cones, cubes, etc.)
- Stuffed animals and other soft toys

Role accessories (i.a.):

- Different types of scarves
- Safety vest
- Hats, caps, wigs
- Modifiable name tags
- Wheelchair, walking stick



### 3. Space for Building Mock-ups

Build a corner or space near the prototyping environment for building “quick 'n dirty” mock-ups during workshops. The building space is a kind of “non-dusty or smelly” mini version of industrial design workshops.

Place the materials, blanks, and tools so that they can be reached and used easily. Typical mock-ups for prototyping a service experience are for example signs, different types of machines and automats, paper prototypes of user interfaces, and scale models for sketching the overall service picture.

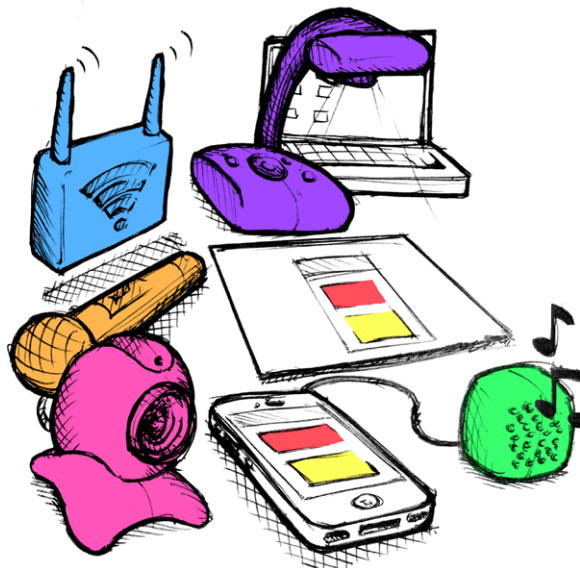


#### Tools

- Cutting board
- Box cutter, scissors
- Masking tape, duct tape
- Hot glue pistol
- Foam board
- Crinkled cardboard
- Flap board or covering paper
- Big post-it tags, markers, pens and pencils
- Makedo building set (including plastic staples and hinges to be used with cardboard and other materials)
- Small LED torches
- Clothespins, cable ties, and steel wire

## 4. Digital Prototyping Tools

Digital prototyping tools are devices that can be used to quickly demonstrate interactive implementations on a service stage, or enrich mock-ups and role-play with audio or video content. The same equipment can be used in the customer understanding phase for collecting material, as well as for the documentation of prototyping workshops. Creative use of existing computer software (PC/Mac) and mobile applications can expand the usage scope of these devices.



### Equipment

- Shared Wi-Fi
- 2nd computer with wlan adapter (besides the control computer)
- Document camera (USB)
- Tablet computer (e.g. iPad)
- Mobile devices that work with Wi-Fi (e.g., iPod Touch)
- Wireless media player for mobile content (e.g., AppleTV or Airserver software)
- USB video camera
- Mini video projector
- Mini speakers
- Microphone
- Extension cords for audio cables
- USB extension cable 10 m
- Audio contact adapters
- Screen cable adapter (mobile device—hdmi/vga etc.)
- Rechargeable batteries and charger
- Makey Makey input set

Software:

- Sending USB camera picture to smartphone (e.g., JumiCam)
- Controlling multiple USB cameras and creating effects on video (e.g., ManyCam)

Mobile applications e.g.,

- Linking paper prototypes (e.g., POP App)
- Drawing program for tablet computer (e.g., Bamboo Paper)
- Sound effects (e.g., Sound

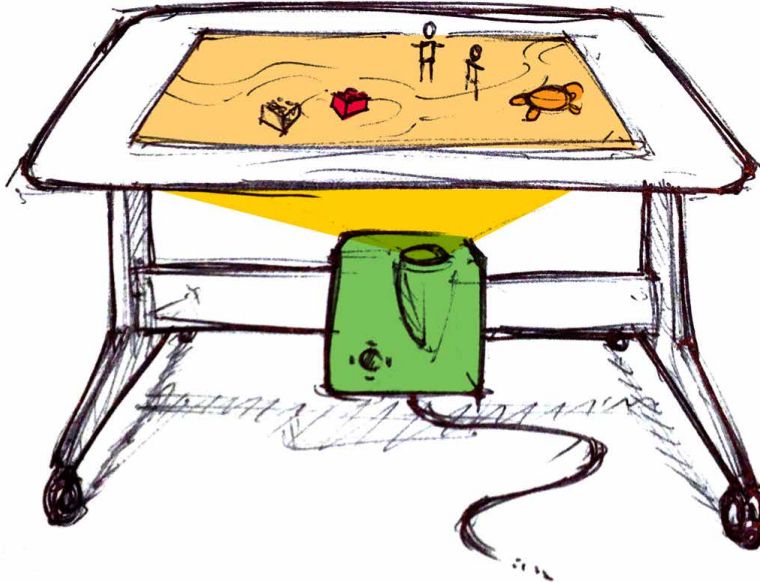
### Tips:

Place the devices on a tool trolley or shelf so that they can put to use quickly. Mark all cables and chargers with name labels. Install a charging point for batteries and radiators.

## 5. Sketching space

Equip the prototyping environment with a table with rolls, which is dedicated to sketching with models, floor plans, and a puppet theater.

By integrating a screen with the table (e.g., picture projected from below), you can take advantage of digital floor plans, diagrams, and other computer graphics in addition to the puppet theater and scale models.



### Equipment

High table with a surface suitable for whiteboard markers.

Optional:

- White plexiglass that can be connected to video projector.
- Video projector used for projecting to the table (projector can be plugged in to 2nd computer or to the service stage control computer)

Equipment used on table:

- Big legos and lego figures
- Toy cars, toy animals, etc.
- Geomac, etc., Building blocks
- Ready cardboard elements and basic forms with a whiteboard coating, e.g., people, houses, etc.

### Tips:

The rolling table, which includes the screen, can be used on the service stage as digital prototyping equipment.

## 6. Tools to support teamwork

Given that the service design process and prototyping workshops generate a large number of comments and ideas, it is good to place near the service stage a note surface that supports group working, such as a whiteboard, flip chart, or an interactive whiteboard. A separate negotiation table and several team working corners can be placed in the prototyping environment to create a more relaxing work atmosphere. For remote meetings and documentation, a fixed webcam or video conferencing equipment should be installed based on need.

### Equipment

- Whiteboard or interactive whiteboard (e.g., Eno or Smartboard)
- Flip chart
- Pens and markers
- Different-sized Post-it-notes
- Papers
- Web camera
- Negotiation corner (e.g., table and chairs/sofas).



### Tips:

The furniture purchased to support the working team should be as adaptable, adjustable, and movable as possible so that it can be used as prototyping elements if needed.

# 2.

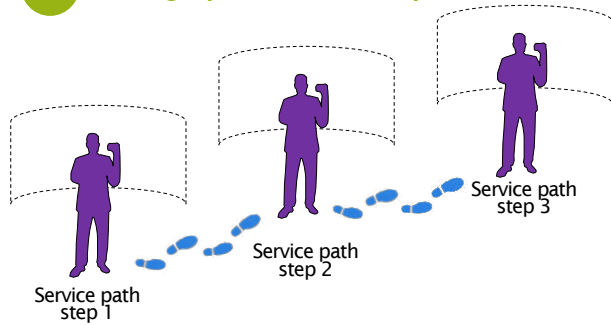
Servicescape  
Simulation

In this chapter, we go through the process of creating a servicescape simulation and controlling it with a Power-Point slideshow. In addition, we present some examples

of conducting ideas and concretizing them quickly as part of the simulation.



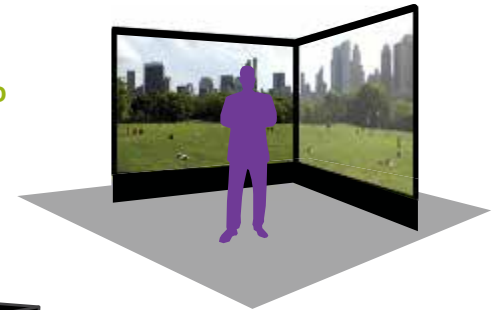
### 1. Photograph the service path



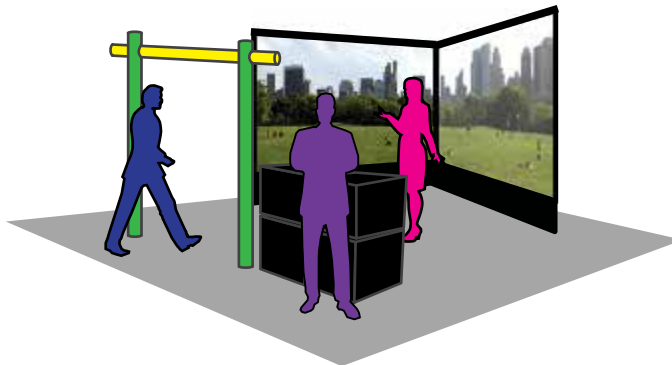
### 2. Insert the pictures to Powerpoint slideshow and add ambient sounds



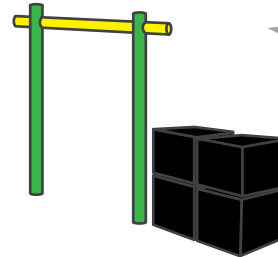
### 3. Finish simulation appearance on the service stage



### 5. Start prototyping and guide simulation progress



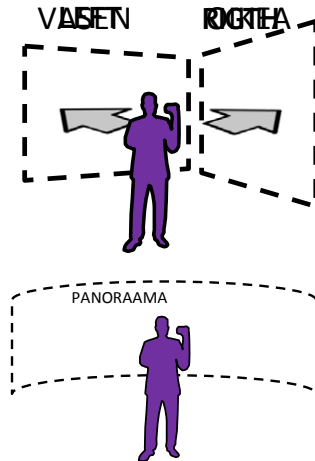
### 4. Add physical prop elements



## 1. Photographing a Service Path

Take a picture of each scene in the service path from the user perspective.

Take separate pictures from the left and right, or take one panoramic picture.



### Tips:

Exploit your smartphone's (e.g., iPhone) panorama feature to take extended background pictures.

You can also combine several pictures into one panorama picture by using relevant software (e.g., PhotoStitch).

Internet image search services and other open data such as Google Street View allow for quick creation of backgrounds for the simulation.

Please note the author's copyright in the case of a commercial or public presentation.

Place the pictures in a horizontal line at about 1/3 of the distance from the bottom to the top to create a natural scene of a person standing on the SINCO stage.

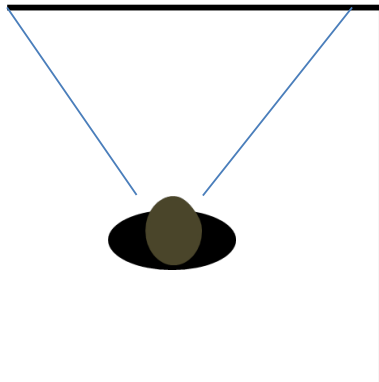


### Picture-taking method a)

#### Combined front and side views

The first screen works as the front view or shows, for example, the wall in 1:1 scale. The second screen makes the space bigger by showing the side view.

Scene of a wall or some other surface



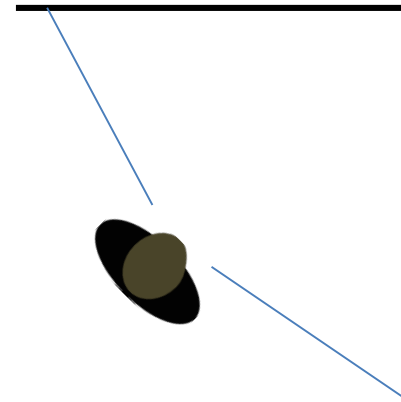
Second picture shows the surface continuity in perspective



### Picture-taking method b)

#### Wide scenery over both screens

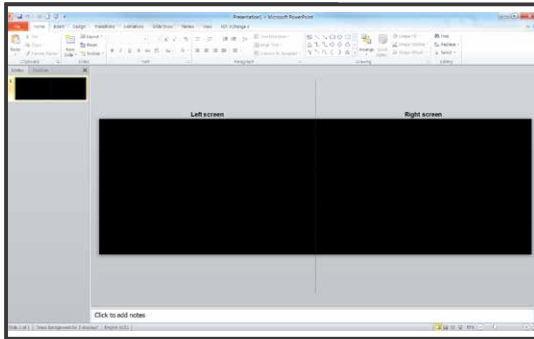
Panorama picture, for example, of the scene from farther distance.



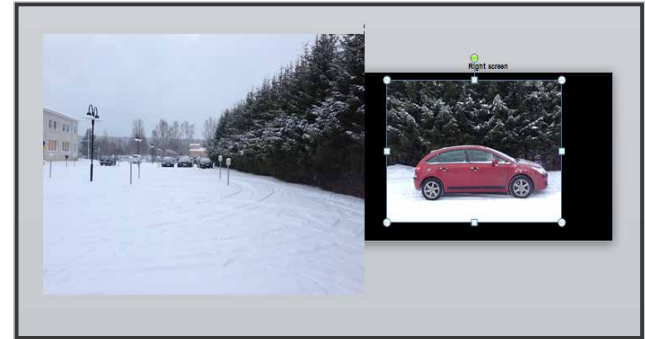
Farther scenery (panorama)



- 1 Open the SINCO PowerPoint base



- 2 Add pictures to the slideshow and position them to fill the entire area in use.



- 3 Add pictures of each scene in the respective slides in the same order as that of the service path.



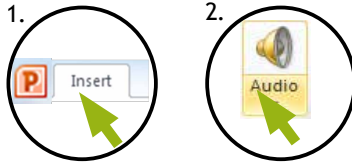
## Note:

The width of the slideshow should be 2 x the aspect ratio of the video projector in use.  
For example, two video projectors with aspect ratios of (1280 x 800 pixels) 16:10 require PowerPoint slideshows of 32:10 aspect ratio. Set this from page setup > page size > 32 x 10 cm.

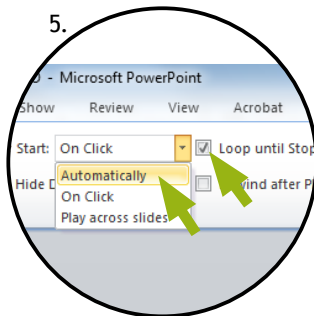
## Tips:

In PowerPoint Master Slide view, you can create the centerline between pictures, as well as other helpful guides and notes.

#### 4 Add ambient sounds to each slide



Set the added sound to start automatically and to loop, if needed.



#### 5 Test simulation appearance on the service stage by playing the PowerPoint presentation.

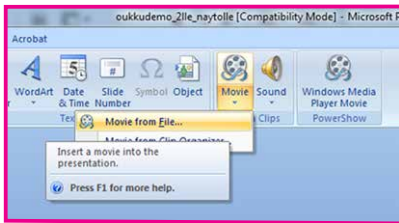


#### Tips:

Use free ambient banks from the Internet (e.g., [freesound.org](http://freesound.org)). Smartphone recorders are often good enough for recording ambient sounds from suitable places e.g., a journey.

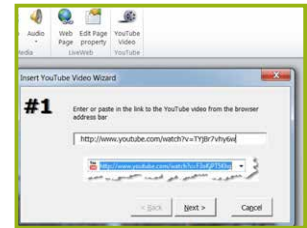


A wireless PowerPoint remote lets you control the simulation from the service stage.



You can add videos to the PowerPoint presentation and scale them to the preferred size. (Insert --> Video: from file) Set automatic start and looping, as done for the ambient sounds.

After installing a PowerPoint add-on called "Insert YouTube video," you can embed Internet video URLs into your slideshow.



**Example of video usage:**  
A short looping video clip demonstrates motion by side (e.g. rolling view of a forest)

**Example of Video usage:**

Embedded YouTube video concretizes the onscreen idea of skiing jumps.

**Tips:**

Consider when to use the videos, so that they do not disturb the prototyping exercise. Using a video on one entire screen makes possible the demonstration of a service where movement dominates the service landscape and user experience (e.g. view from a train window). With video, you may first give a sample of the desired experience (e.g. theatre performance or skiing downhill) and continue analyzing and ideation with still images. With a smaller-scale video, you can concretize, e.g., TV commercials or monitor displays.

You can add storytelling and interaction to the simulation via creative use of PowerPoint's basic features such as animation effects and text tools. By timing the effects or clicking the slideshow, you can create situations that feel realistic to the test participants.

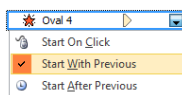
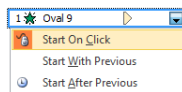
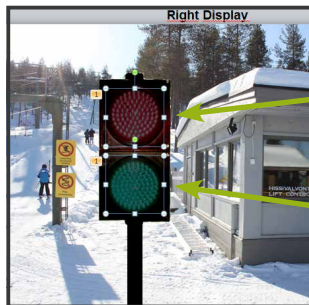
### Example of animation use:

Traffic signal changing from red to green.



Semi-transparent black circles are drawn on the traffic lights shown in the background.

The upper circle is animated to appear with a click, and the lower circle disappears simultaneously.



### Presentation:

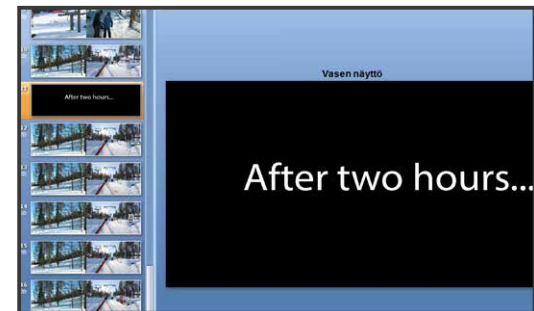


Click



### Transition slide use:

You can express the changing of time or assign tasks to the test persons.



### Tips:

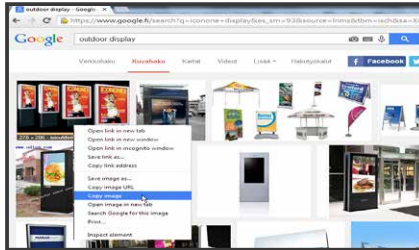
You can add sound to the animations.

Using Motion Paths animations, you can move individual objects or the entire background.

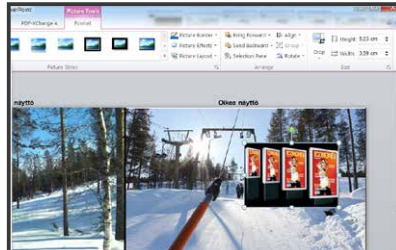


Simulation works as an agile platform for introducing ideas into the service landscape. You can copy-paste pictures from the Internet to a PowerPoint

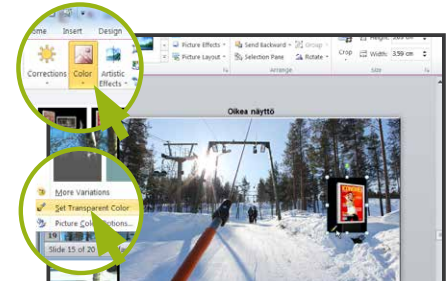
to demonstrate an idea in the service landscape. You can demonstrate ideas roughly in the simulation as well using PowerPoint's drawing, pictures, and text features.



1. Searching for pictures related to an idea from the Internet.



2. Adding and positioning a picture in a PowerPoint presentation.



3. Marking and adding transparent color using the pipet tool.



Drawing with PowerPoint's drawing feature (e.g. parking lot gate).



Writing with PowerPoint's text tool (e.g. text on a sign)

## Tips:

You can modify the presentation while prototyping with the test persons. Thus, the participants can see their ideas appearing automatically on the background screen.

You can add pictures and text that demonstrate different ideas outside the presentation area and drag them to the stage when needed.

You can create multiple copies of the background slide, thus allowing you to document different possibilities on different slides.

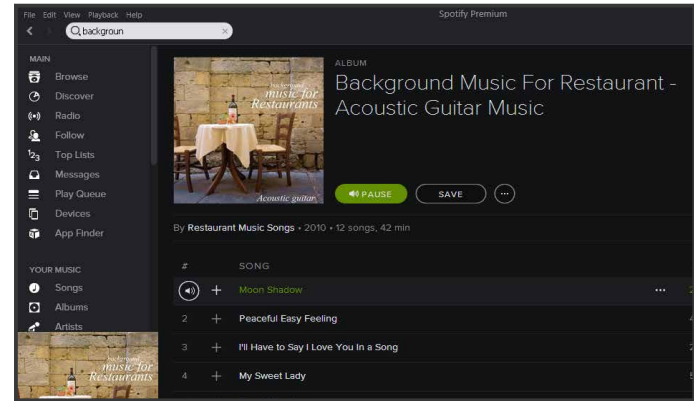
Take advantage of the "note" field in PowerPoint!



You can create quick demonstrations of ideas during the workshop by presenting overlapping audiovisual content with other applications.

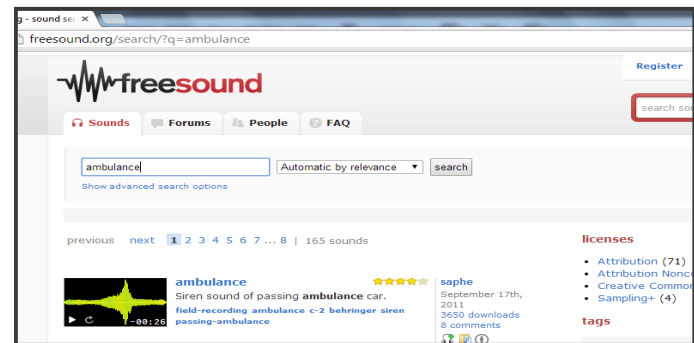


To quickly demonstrate an idea or a design challenge, you can use sound by using the control computer to play sounds from an ambient bank or any Internet-based music service.



**Using a Live microphone to make public announcements or demonstrate voice activation:**

Activate the microphone using the audio set-up of the control computer's operating system. (In Windows, "Listen to this device"). This directs the microphone output to the attached speakers. With dedicated software you can apply different voice effects on the fly (e.g., echo, heights, and so on).







# 3.

Making Quick  
Prototypes on  
Service Stage

On the service stage, you can demonstrate, using physical props and character models, the elements that limit the space, as well as the items and interfaces that the user is interacting with. A quick suggestive demonstration (so-called “quick and dirty” prototyping) is often adequate in such scenarios for generating the information needed in the workshop.



To build the prop elements, you can use any material possible (look for examples of useful equipment on pages 12–16). In later iterations of the design process, similar to user testing of a concept, the physical props and character models can be modified to be more realistic. This is important, especially, if the items are part of the service experience development or of the service touchpoints under planning.



Cube chairs, foam sticks, and foamboard are prop elements that can be used in multiple ways on the service

At times, real physical elements are required to be used. For example, if you are prototyping an exhibition stand, you may use existing roll-ups, accessories, and packages. The elements related to flavors and odors are best de-

monstrated using real products or surrogates. (e.g. microwave pizza or soup to demonstrate a dinner, scented candles or tarry wood as a fire source)

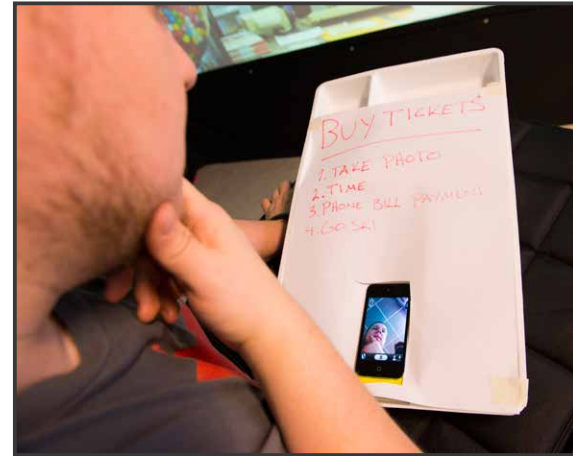


#### Notice:

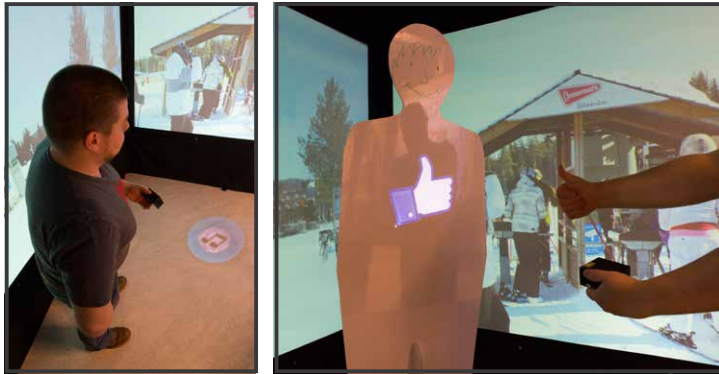
At times, the physical elements need to be approximated roughly to ensure that ideation moves further as opposed to details of the physical elements being evaluated.



A smartphone embedded to a cardboard is used to demonstrate the picture-taking feature of a ticket machine and to prototype the user experience

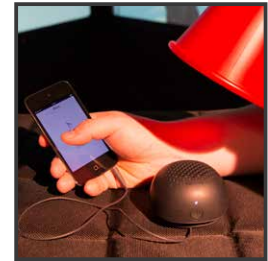


The prototype of a magazine order terminal was fabricated using foamboard, a carpet knife, hot glue, and an iPad. A red led light worked as the driving license reader. An interactive interface demonstration was prepared using PowerPoint and saved as pdf file in the iPad.

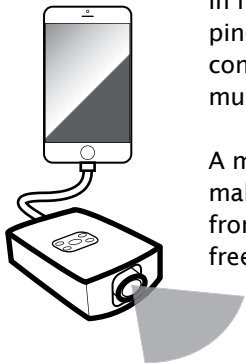


With mini speakers, you can demonstrate sounds

originating from a certain point. Sounds significantly influence the acceptability of an idea (e.g., ringing Christmas cards or sound feedback in an interface). Sounds that originate from one point are efficient in role-play props (e.g., dog barking).



A mini video projector can be used to reinforce the physical elements. You can use digital material such as the company logo or well-known symbols. A video projector that can be used in hand is much more favorable for prototyping, especially for demonstrating interactive content and moving pictures, as well as testing multiple optimal possibilities



A mini projector attached to a mobile device makes it possible to quickly search content from the Internet (e.g. YouTube) and move freely with the projector during the workshop.

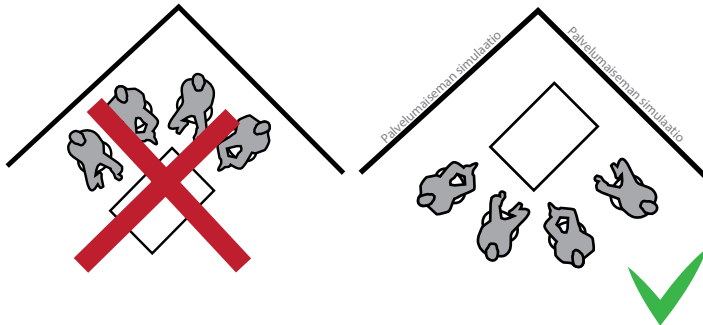


By streaming a live view from the USB camera (e.g., using VLC Media Player's Capture-feature), you can prototype services that utilize video conferencing technology, for example, remote-controlled park gym.

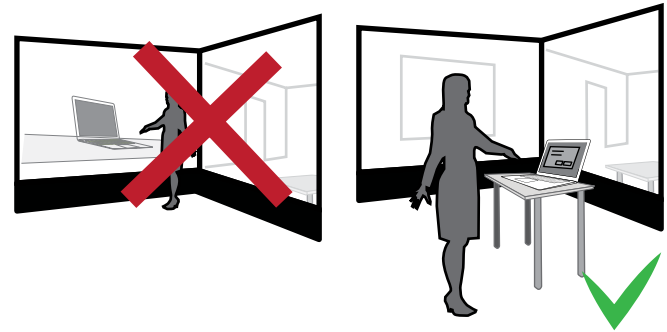
Here, we have collected some of the best practices and tips for building prototypes in the SINCO environment.

### 1. Create a servicescape simulation for users

A servicescape simulation involves the creation of the experiential context for an operational environment. It plays a key role in recreating the atmosphere of a situation. A theatre stage with stage props, which enhance a viewer's understanding of a play's context, is analogous to a service landscape. The function of a service landscape is the same, i.e., enhancing the understanding and internalization of the context. However, this function is for participants, not for the "audience." The participants should operate in the stage so that the servicescape simulation can fulfill their sight completely. In this case, the simulation plays the greatest role in a user's understanding and internalization of the context.

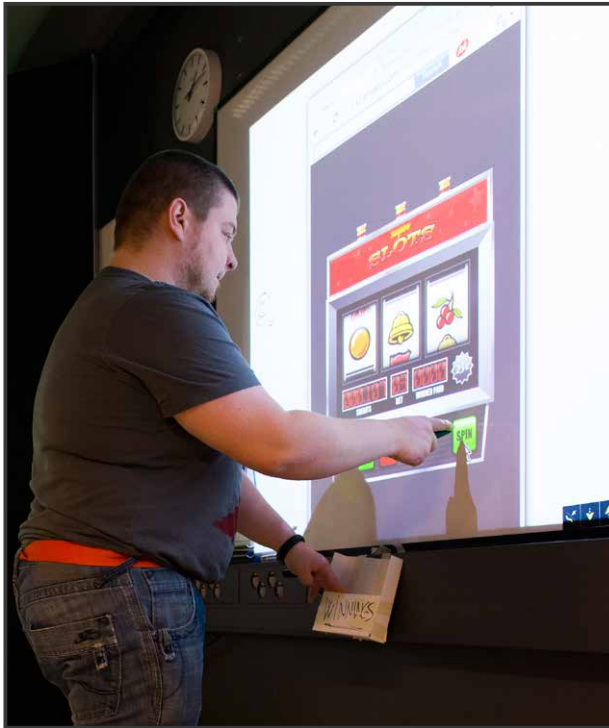


### 2. Place the physical interaction on the stage



It is easy to add digital material that demonstrates the ideas in a service landscape simulation, but it is important to place the elements that require the most physical interaction on the stage. Examples of such elements are computers or ticket machines used by customers. It is good to embed pictures and audio material that demonstrates the context and atmosphere on the background screen, as well as the ideas that do not involve physical interaction (e.g. signs) or items that you do not need physically. The elements you see in the background can be extended with rough interactive physical props (e.g., bus benches seen in the simulation can be substituted on stage with a few chairs).





A flash-based game from the Internet is an easy example of how to use digital content as an interaction prop.

### 3. Benefit creatively from existing applications and contents

Exploit the content and applications that are freely downloadable from the Internet. Use different kinds of devices creatively, even analog ones. Instead of trying to just explain or draw an idea, you can demonstrate it in a using a YouTube video or an existing web interface that operates in the same way. You can fill annotate your idea on top of the content projected on a whiteboard. Use technology, existing content, and self-built elements creatively .

#### Notice:

Always bear in mind the aim of prototyping and recognize the times when adding fidelity using technical devices is relevant. Use the simplest possible devices in other cases, for example, a quick cardboard model. If your vision of using technology is too narrow, it can lead you to a too narrow way of demonstrating ideas, thus disrupting creative thinking.

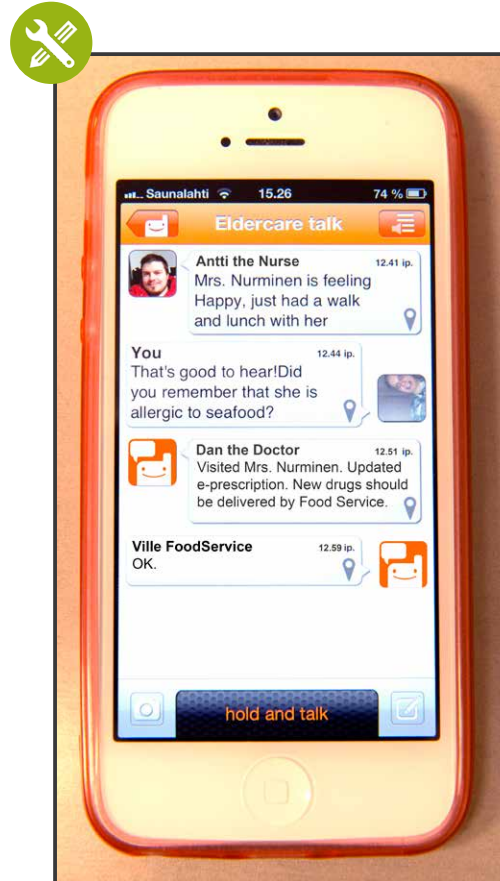
Let technology be a helping hand in building prototypes, but do not let it limit your ideation ability and imagination!

The benefits of digital material lie in its ease of use, speed, and repeatability from the demonstration, content creation, and editing viewpoints.

Tablet computer as a traffic sign



Tablet computer as a piano



A walkie-talkie mobile application was used to demonstrate an idea of the information system which aims to enhance the communication of nursing staff taking care of elderly people at their homes.

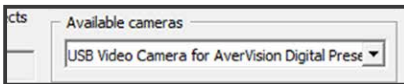
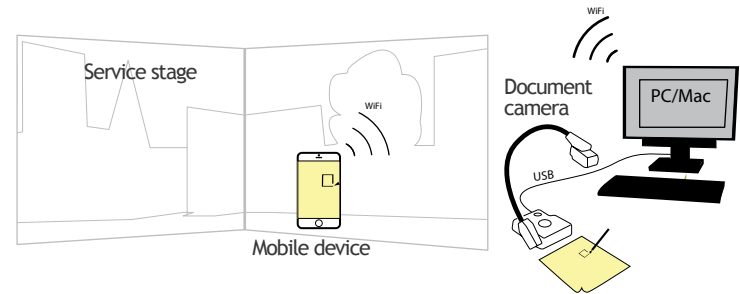


# 4.

## Technology in Early Ideation of User Interfaces

Paper prototyping with a document camera allows for the experimental development of early mobile service ideas along with the service landscape simulation. The image sent from the document camera to a mobile device over a Wi-Fi connection allows for functional mobile application testing without intervention and disturbing the test user.

The mobile device is required to have a remote-viewing application (e.g. Jumi Cam), and the computer needs the compatible software for PC/Mac (e.g. Jumi Controller), which transmits the USB document camera view onto the mobile device.



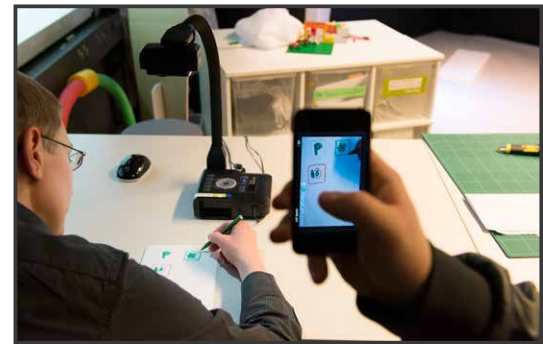
1

Turn on the PC/Mac broadcast application (e.g. Jumi Controller). Select a camera to use, and configure the connection settings.



2

The computer name is displayed in the mobile application. Make the connection.



3

Position the sheet of paper within the document camera's viewfinder, and test the operability.

4

Start paper prototyping either with a paper prototype prepared earlier or with empty papers to ideate simultaneously.

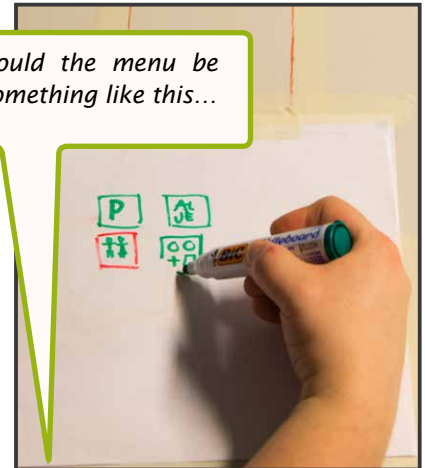
Assign a task to the test user on the service stage, and ask the user to think aloud. An example of the task could be “How could the mobile device help/facilitate/enhance/inspire this situation”? Based on generated ideas, draw (or ask another participant to draw) examples of the interface onto the document camera. Repeat the use case from the beginning several times, and when the interface structure is ready, you can take pictures of each scene using the document camera.



*Yes, exactly like this!  
So now I press the Par-  
king lot icon...*

*In here I would like to see the  
free parking lots and the near-  
est toilets...*

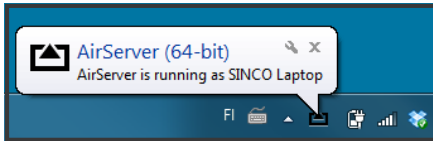
*Could the menu be  
something like this...*



In remote UI sketching process, you can replace a document camera with using a tablet computer's screen mirroring as follows:

1

Turn on the desktop application (e.g., AirServer) to enable receiving a screen view from the mobile device.



2

Start screen mirroring (Airplay) in the tablet computer (iPad). Select the target computer.



3

As the screen is mirrored on the computer screen, maximize the image. Open a drawing program on the tablet computer.



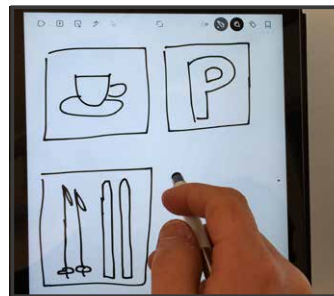
4

Start a remote desktop viewing application (e.g., JumiCam > Desktop) in the test user's mobile device (e.g., iPhone).



5

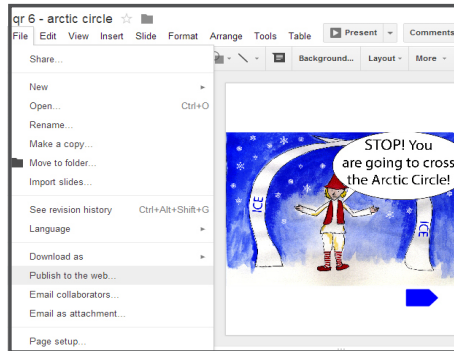
The interface sketched with the tablet computer is shown on the test user's mobile device.



You can create quick and high fidelity UI prototypes with Google Docs (or similar environment) and view them through URL link. With QR codes you can link the user interface demos in physical prototyping environment.

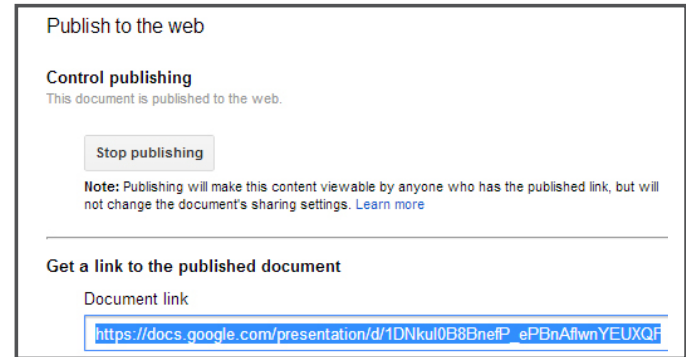
1

Create a file for a UI prototype using Google Presentations.



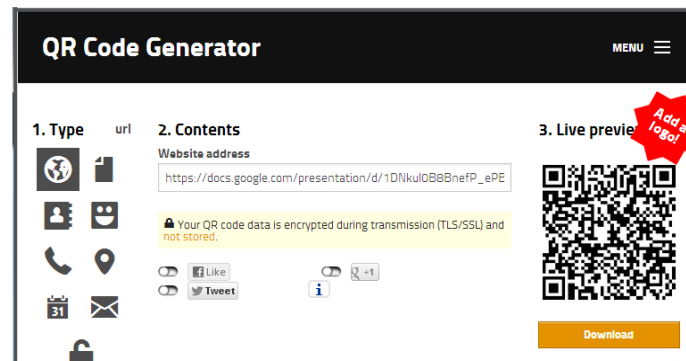
2

Copy the unique URL that points to the file of the created interface.



3

Paste the URL in the URL field of the QR-code generator. Download the generated QR code and print it or open the code on the tablet computer.



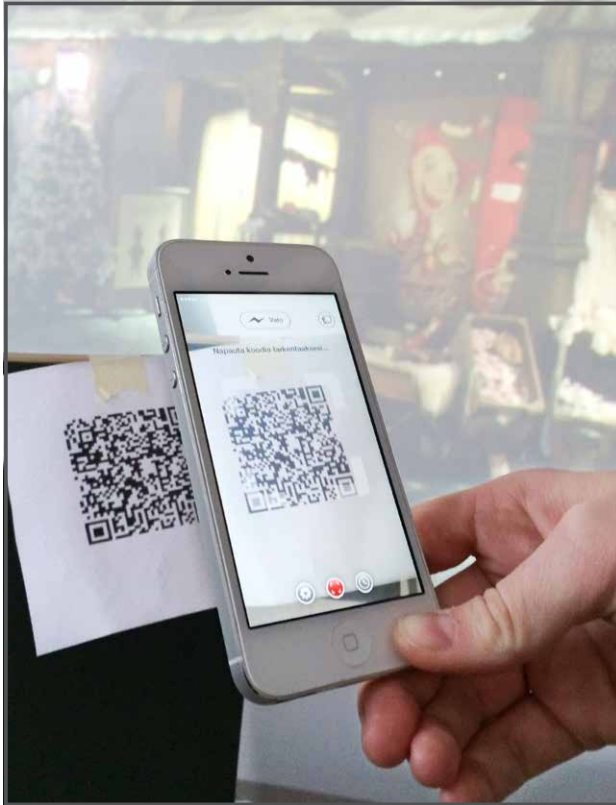
### Tips for using Google Docs:

Create interactive user interfaces by creating links to other slides in the file or to open other web. You can quickly increase fidelity of the prototype by embedding Youtube videos or copy-pasting images.

In the same way, use the public url link feature in Google Sheets and Forms in order to use tables and forms as UI prototypes.

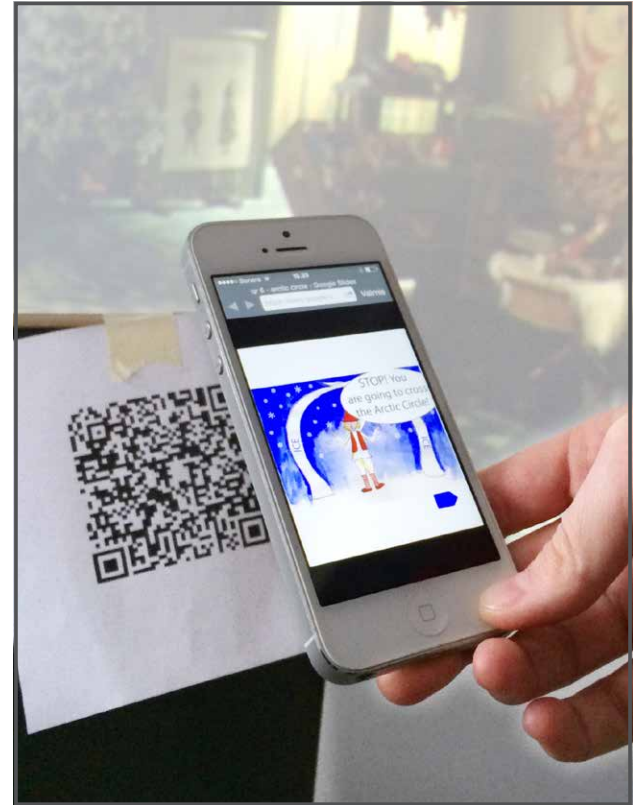
4

After the QR-code is printed, you can read it using a QR-code reader application.



5

The QR-code reader opens the prototype page. You can modify the prototype by editing the Google Docs file.



5.

Facilitating  
SINCO  
Workshops

The length of servicescape simulation (number of PowerPoint slides) can vary considerably depending on the nature of the service under development. In the simplest cases the prototyping of a service path from the customers' perspective may consist of only 1–3 simulations of venues (e.g., restaurant). Then, physical prototyping elements, as well as interaction situation walkthroughs involving drama, are emphasized. In other cases, it could be essential to simulate tens of different venues for prototyping the customer

experience of a service concept (e.g. adventure tourism services). In some cases, service development (e.g. merely Web or mobile services) is not tied into any certain venue. In such cases, for example, the target group's typical user scenarios or the broad impact of a service on the lives of the target group can be concretized using service landscape simulation. For instance, in location-based mobile service prototyping, servicescape simulation allows for the demonstration of activities in various locations.

## Service path walkthrough using simulation



1

Briefing about starting points, roles, and tasks.

Depending on the goals of a prototyping session, the participants can be given a service path simulation that they need to go through either by being themselves or by empathizing with the roles of different target groups. If the aim is to determine a person's subjective intuitive reactions and emotions, user information and other necessary details of a prototype must be personalized (for example, you can change the first name in a user interface to the user's first name, the test person's real friends' names can be added in the friend recommendation functions, etc.).

Respectively, if you want, for example, to test a placement or attractiveness of a product in a store, make sure that the test person doesn't already own the particular or corresponding product. If needed, replace the product with another product which enables to test the same emotional effect (e.g. impulse buy). You can collect all the personalizing information before starting the prototyping session to be able to fluently personalizing the prototype for the test person.





Unloading equipment from the bus is hard. What if the price of a group ticket includes a person that welcomes you and assists with such tasks...

Okay, let us do it again in a way that Matti assists and he is recognizable by his yellow vest...

2 Participants recognize the development targets as role play progresses, and the facilitator coordinates the rapid ideation



3 The ideation and development targets are listed on the whiteboard at appropriate intervals.



4 The participants are led forward along the service path by directing the background presentation.



5 The director can represent impulses using animations or media elements to create an impression of events that start automatically.

## 1. Prepare well for the workshop

Conducting a successful SINCO workshop requires good preparation. The tools and equipment required for concretization need to be ready to use and handy.

1. Test the operability of the background simulation, created using PowerPoint, in advance and be prepared to quickly produce new versions of the slides and other files.

2. Open the sites containing the most frequently used material sites ready for the In separate web browser tabs so that they are immediately available (e.g. freesound.org, YouTube and Google).

3. Place the required prop elements such as cube chairs and cardboard elements on the service stage.

4. Ensure that the building equipment for the physical character models are ready to use and the materials are easy to obtain.

5. Keep the digital prototyping equipment ready to use. Please sign in to the programs and systems that you think you might use during the workshop. Make sure that the device batteries are charged.

6. Plan and prepare workshop documentation such as

video recording or photographing. Assign the task of note taking in advance.

7. If multiple persons are taking part in facilitation of a workshop, assign the roles and tasks beforehand. The main tasks to be assigned are guiding the workshop, building prototypes, supporting participants, and documenting results.

8. Consider the number of the participants when you decide the venue and structure of the workshop.

## 2. Warm up, participate, and commit

Prototyping makes it possible to test services without high costs and material investment. Compared with a mere conversation, prototyping works as an illustrative, solution-focused communication tool. It allows different parties to identify with the feeling of testing and assessing the solutions created by the target user group. Prototyping often creates communication among participants from different professions. Employees, contractors, and other stakeholders who participate in prototype building feel a sense of ownership toward the generated ideas. This makes it easier to take the idea forward and to commit the company to the development process.

At the beginning of the workshop, it is important to go through the goals, as well as the levels of roughness and reality in the prototypes. This helps in not only effectively taking advantage of the limited workshop time but also ensures that the participants evaluate the correct factors in the prototypes. Furthermore, it is advisable to agree on the workshop rules and playful sanctions for the infringement of these rules, (e.g. throwing a soft toy).

Activating the participants to take roles, play the customer, and build a mock-up spontaneously can be difficult for beginners, and it requires an atmosphere of trust and indulgence. Therefore, it is important to develop warm-up exercises before the workshop. Activating the participants after a meal or a coffee break to raise their alertness level is important as well.

### **Tips for SINCO-workshop warm-up:**

- A good warm-up exercise helps you release tension, orients you toward creative work, and allows you to get through to the participants
- In the best case a good warm-up supports all learning styles (visual, auditory, and kinesthetic)
- Defeating the technology monster is sometimes necessary: you can start with mere role play and add technology devices step-by-step. If the participants aren't familiar with

the devices, you can let them try the devices first. As an example a bodystorming training, which is not related to the workshop topic, but everyone is familiar with, such as withdrawing money at ATMs. (One of the persons is a user, one is automatic, one is a bank, etc.).

- an Activating SINCO staging an a role-play exercise is not serious, and it does not relate to actual concept development. It can be related to participants' perception of the world, a topical issue, or a sport that is known to all, such as a ski jumping (e.g. helmet camera video from YouTube as background and the participants "jump"!).
- Also, for example, the sauna as a simulation with a stage and a soundscape is a relaxing warm-up.
- A Google Street View journey to a participant's work or home address or to some comfortable place known by all is a good activator, too.



## 3. Concretize lot and quickly

The basic rule of prototyping is to concretize anything at all. It is better than concretizing nothing. It doesn't matter whether a "snowball" is made from crumpled paper, a ski using a floor brush as a handrail, or a post-it note that temporarily hides something from the service landscape.

As soon as a participant presents an idea verbally, try to give it a concrete and ask, "Is this what you meant"? In most cases, the quickest and simplest method of concretizing is to ensure that the idea can be evaluated.

Each prototype that demonstrates a user experience will ultimately produce one of the following conclusions:

- a) Idea is good—Let us add it to the final solution (or build a more refined prototype based on said idea).
- b) Idea does not work—It is not worth developing further, at least in this context.
- c) Idea cannot be evaluated—Let us concretize the idea better, so that we can evaluate its operational functions.

Note that quick concretization was not adequate to arrive at a decision in only one of the three aforementioned scenarios. Thus, often, the quickest and the coarsest prototype is sufficient.

## 4. Be aware of the situation—Personalize and adapt

As a facilitator, keep yourself posted at all times. Treat peoples misunderstandings and situational comedy as an ideation resource. Moreover, you may deliberately create unexpected surprises for participants, for example, showing a "wrong" servicescape simulation. Concretize the "crazy" ideas as well because they can unexpectedly lead to viable innovation. Read the situation and be ready to be flexible with the structure, if the work process or brainstorming takes an unexpected path, i.e., a favorable direction for the client. The same prototyping method is not necessarily applicable to all cases, and all development tools are not always needed. Finally, for the client, the results are more important than the process.

## 5. Summarize workshop - Benefit from participants

During prototyping workshops, often, many ideas and experiential walkthroughs help the participants to take advantage of tacit knowledge. Take advance of the participants' perceptions during the workshop summary or during selection of the concepts that will be developed further. Let them first draw and present their own conclusions, for example, to post-it notes. You may either combine these ideas first in pairs or combine the ideas directly as the joint workshop conclusions (Me-We-Us or OPERA-method).

6.

## Glossary and Literature

**Cardboard Model**

Quick model made of cardboard. Check Mock-up.

**Co-Creation**

An approach where various methods and practices are used for developing services using the efforts of different stakeholders such as customers, customer service personnel, subcontractors, and decision makers.

**Concept**

An overall product, service, or business model. In the design field, the notion of a concept is also understood as an unimplemented draft. A service or product that has been produced can also be called a concept, that is, it is being produced following a certain concept.

**Customer Understanding**

The phase of a design process or the subdivision of design knowledge that reveals problems in the service experienced by target customer groups. In addition, it reveals motivational factors, wants, wishes, and aspirations related to the industry or service.

**Director**

The person that controls role-playing and the progression of computer-generated simulations. Often, the same person acts as the facilitator.

**DMX**

Digital MultipleX, a digital serial protocol used for remotely controlling lighting using a computer.

**Facilitate**

Planning, guiding, and activating people in a workshop's co-creation processes. For successful and goal-oriented performance, it is good to facilitate workshops.

**Facilitator**

A person that assists the operations of group work in workshops by helping and encouraging people.

**Interactive**

Interactive, e.g., tool or element that can be influenced by users.

**Iteration**

One repetition of a sequence of work phases (e.g. ideation-testing-development).

**Iterative**

Way of working in which process steps are repeated multiple times on purpose in order to develop the case in each during each round.

**Mobile Device**

A smartphone, laptop, tablet or some other kind of a product which is connected to Internet with which applications can be used.

**Mobile Service**

A service that can be used by a mobile device.

**Mock-up**

A quickly and roughly made model that presents features that are essential to its functions.

**Multimedia**

Presentation that utilizes photographs, computer graphics, video and sound.

**Paper Prototype**

Illustration of a user interface (UI) drawn on paper.

**Prototype**

Any tangible display format that represents an idea.

**Prototyping**

Build, illustrate, try out and/or test something by the help of a prototype.

**Prototyping Element**

A single part of a service prototype e.g. a set piece, mock-up, paper prototype or a sound.

**Prototyping Session**

A walk through of a service prototype.

**Rear Projection**

Video projection behind the fabric in a way that the picture is seen from the other side of the fabric.

**“Quick’n dirty”**

A working principle in which prototype is built roughly and quickly at a sufficient level for concretising the idea which is being tested and experienced.

**Roleplay**

Going through the service situation by emphasizing in different roles of the stakeholders or testing a certain role as itself.

**Screen Display Adapter**

A machine that shares one screen view to two or more screens through a display cable.

**Service Concept**

Preliminary description of a new service package. Check Concept.

## **Service Landscape**

The service environment experienced by the customer, which is transmitted through the physical, spatial and sensory factors.

## **Service Path**

Sequences of events that a customer has experienced in different phases of the service.

## **Service Prototype**

An experiential illustration of a new service. It includes all the elements with which suitability of the service can be tested with a user and other stakeholders. E.g. simulation of a service landscape + physical props + user interface prototypes + roleplaying the interactive situations.

## **Service Stage**

An area which is dedicated for roleplaying, drama and props in SINCO environment and which is bordered by simulation backgrounds of service landscapes.

## **Short Throw Projector**

A video projector that forms a large image from a short distance.

## **Simulation**

Imitation of the reality with various methods. E.g. computer-aided methods.

## **Simulation of Service Landscape**

Staged presentation of the service environment by using rear projected images and sound in SINCO environment.

## **SINCO - Service Innovation Corner**

Service design prototyping environment developed in University of Lapland.

## **Technology Aided**

Method that utilizes computers, electronic devices and intelligent communication technology.

## **Thinking Aloud**

Method where a test person tells aloud what he / she thinks (feels, does, looks for, hesitates etc.) during the test situation.

## **Touchpoint**

Elements in service through which the service is experienced. According to Saffer (2007) touch points can be divided in four different categories: spaces, objects, processes and people.

## **Workshop**

Functional opportunity where persons take part in target-specific and concrete working. In the workshop objectives and end results are good to be defined.



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service**innovation**corner

***Technology-Aided Prototyping of User Experience - SINCO Environment as a Pilot*** is a handbook for service designers, interaction designers, user experience development teams, and parties that develop their working premises.

The handbook collates methods piloted by the Faculty of Art and Design, University of Lapland, between 2009 and 2014. The prototyping environment and equipment presented in the handbook belong to a laboratory concept that uses IT solutions available during the projects. The laboratory concept enables quick demonstration of various service paths and service environments. The presented methodological examples guide users toward new and agile ways of exploiting existing technologies, hardware, and applications for concretizing intangible service ideas, and as supporting tools for facilitating co-creation workshops. The handbook presents ways to create simulations for service landscapes practically, as well as exploits them in co-creation workshops with the participation of different stakeholders, thus leading to enhanced brainstorming and analysis. In addition, the handbook includes examples the use of mobile devices and applications.

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[www.ulapland.fi](http://www.ulapland.fi)

Leverage from  
the EU  
2007–2013



European Union  
European Social Fund



European Union  
European Regional Development Fund