# Labs: Designing the Future

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# I. Introduction

It is widely recognized that our existing industrial systems are showing their limitations as 20th century constructs in a 21st century context.

James Maxmin and Shoshana Zuboff, authors of *The Support Economy*, argue that organizations in both public and private sectors are increasingly disconnected from the people they serve.[1] They contend that incremental innovation within old organizations will not create the change required to meet growing challenges.

Charles Leadbeater, innovation authority and advisor to former British Prime Minister Tony Blair, concurs. He writes, "In the name of doing things *for* people, traditional and hierarchical organizations end up doing things *to* people."[2]

In this time of major socio-economic and ecological transition, the world needs new approaches to problem-solving beyond the traditional organization. Hence the theme of the 2012 World Economic Forum (WEF) in Davos: "The Great Transformation: Shaping New Models." In positioning this theme, WEF founder Professor Klaus Schwab defined four "musts" to effectively address global challenges:

1. To integrate empowered newcomers in "collaborative power"

2. To cultivate regional and global togetherness

3. To embrace a "stakeholder" rather than a purely quantitative "shareholder" approach to economic development

4. To transition from capitalism to "talentism"[3]

Outside of the traditional organization, participatory, user-centric approaches are gaining prominence in solving problems. Among these approaches is the innovation Lab, or change Lab, a creative environment that employs proven and repeatable protocols to seek disruptive, potentially systems-tipping solutions.

**Section II** of this paper examines the Lab's roots in complexity, networked collaboration and design thinking.

**Section III** positions the Lab as a new class of models focused on problem-solving in a highly experimental environment within a neutral space.

**Section IV** highlights several models of Labs in action. This sampling of Lab-based approaches is by no means exhaustive. Other Lab models operate today, with more being developed in different settings around the world.

**Section V** looks at the increasing importance of Labs in addressing the complex challenges we collectively face in the 21st century.

# II. Labs: Setting the stage

## Where we stand

"We live in a postmodern world, where everything is possible and almost nothing is certain."[4] While this statement was part of a famous address made in 1994 by Vaclav Havel, former President of the Czech Republic, it rings as true today as it did almost two decades ago.

Throughout history, progress has stood on the shoulders of giants – those major thinkers and doers who have paved the way for new possibilities.

Today, despite progress on many fronts, we continue to face daunting global challenges, such as climate disruption, child poverty, growing inequality, global health threats, unstable food and water systems, and inadequate care systems for our aging population.

What *has* changed, however, is our connectedness as human beings. We now live in a world where more than 30% of the population uses the Internet[5] and 87% are mobile phone subscribers.[6] Billions across the globe are "linked in" through various social technologies. We have access not only to information but also to each other, right at our fingertips. The result is a highly dynamic, thriving shared space for ideas, connection and creation.

The voices of citizens are being recognized as increasingly important in decision-making and design processes. Participation has increased the pool of ideas, which in turn has increased the probability of finding transformative ideas. In this new context, it is no longer only up to those regarded as the "experts" to prescribe the future. Rather, it is up to the collective to imagine what is possible.

With many more shoulders on which to stand, the realm of possibilities – actions and solutions – is significantly larger. To quote science historian and popular British broadcaster James Burke, "the easier it is to communicate, the faster change happens."[7] We must leverage this connectedness and speed to accelerate new change outcomes.

## Operating amid complexity

To understand the moments of profound shifts in modern society (that is, change that affects an entire system by transforming basic relationships and behaviours), one must consider the manner in which change-makers worked within the complexity of a specific time and context. In doing so, we take a cue from innovation pioneers, who did not shy away from the challenges they faced.

By its nature, complexity involves having many parts in intricate arrangement. Thus, addressing complexity requires a deep understanding of the interrelationship between the elements of a system.

In the mid-20th century, a number of researchers began developing and experimenting with participatory models that would address group dynamics and the intricate nature of large-scale system failures.[8] These methodologies for changing whole systems aimed to include a greater percentage of the population in the decisions that governed their own welfare.[9] These researchers pioneered the principles we now use as modern social-change theories.

Over the past six decades, their work has laid the foundation for understanding complexity and social action.[10] Psychologist Kurt Lewin's work in group dynamics and organizational development was seminal. His work on action research (a term Lewin coined), experiential learning, and groups prescribed a way to break down the effects and conditions of social action by demonstrating that complex social phenomena could be explored using social experiments. Lewin's work studying people in relation to their environments is considered to be the basis of social psychology.[11] Later, Ludwig von Bertalanffy would contribute to the field of psychology by conceiving of a holistic understanding of systems, helping to support an all-inclusive interpretation of human behaviour.[12] Bertalanffy's view of the world in terms of relationships and integration was unconventional, and with the input of colleagues such as W. Ross Ashby and Margaret Mead, the science of systems theory was born.[13]

W. Ross Ashby established the theoretical principles of cybernetic, complex systems, which informed the work undertaken later by researchers at London's Tavistock Institute of Human Relations.[14] In the 1960s, Eric Trist, a social scientist at Tavistock, identified a critical disconnect: we act like systems in creating large-scale problems, but we act as individuals in trying to solve them.[15] In order to solve these "megamesses," or whole-system problems, Trist and others advocated for getting the "whole system into the room."[16]

Led by Trist and colleague Fred Emery, processes were developed in accordance with existing protocol, such as Solomon Asch's conditions for effective dialogue,[17] and the latest thinking on group dynamics. The result was "open socio-technical systems theory," an alternative model for organizational design that allowed for participative self-managing teams and free-flowing, self-organizing content. This work ushered in a new standard for convening, aimed at gathering in one room the key players representing the whole system in order to drive co-operation and collaboration around critical problems.

Due to the complex nature of the socio-economic and ecological problems confronting us today, we not only need to borrow from established traditions of getting the whole system in one place, but we also need to embed more pervasive approaches so that innovation and alternative solutions can emerge and develop.

However, in a world defined by disparate and deeply specialized silos and sectors, we tend to select the best solution from known options as opposed to creating integrated solutions.[18] This is because, by and large, we operate within closed, risk-averse environments where human creativity and potential for innovation are stifled. Experimentation with alternative methods, approaches and solutions is not typically part of organizational DNA.

Economist Nathan Rosenberg contends that innovation often originates outside of organizations, in part because successful organizations acquire a commitment to the status quo and a resistance to ideas that might change it.[19]

But we know that innovation is key to creating alternative solutions. As early as the mid-1500s,

it was noted that "necessity is the mother of all invention" (meaning, of course, that difficult situations engender ingenious solutions).[20] According to the Management Innovation Group, innovation is the "modern-day Holy Grail."[21]

So how can we maximize open, creative experiences to promote divergent thinking and produce a greater number of alternative solutions that can respond to present-day complexity?

## The roots of a design revolution

Design for design's sake has been contested from the moment it became an entity in and of itself, as a consumer product or simply an object for display.[22] Advocates for design's accessibility were considered contrarian and on the margins, opposed to the popular view that design was highly curatorial and specialized.

One such contrarian was designer Victor Papanek. In linking design to ecology and society, he was ahead of his time and a major influence on the socially responsible design movement. He called for improved design to better serve communities that did not normally benefit from the work of the Western design studio, like those living with chronic illness or disabilities.[23]

Papanek believed that many designers skirted their social and moral responsibilities by focusing on gadgets, when there was genuine work needed to make the world a better place.[24] In a 1964 lecture at the Rhode Island School of Design, Papanek dismissed commercial design as "the perversion of a great tool." His conviction that "the only important thing about design is how it relates to people" earned him a recent tribute in *The New York Times* as an "early champion of good sense."[25]

In 1968, a young, visionary group of designers, architects and engineers came together to rethink the role of design. They did so in response to a growing need for the tradition to evolve from being craft-based to embracing an industrial-design approach to product and service development.[26] To support their work, the group, which included Papanek and Buckminster Fuller, made an appeal to the newly minted organization, Sitra (then known as the Anniversary of Finnish Independence Fund).

The group called for a new, collaborative form of design, broadening its scope to include system design, computer use, human-factors engineering, applied psychology and anthropology. To arrive at a new definition for this discipline, they sought to bring together a variety of perspectives, including those of technicians, doctors, psychologists and economists.[27]

This cross-disciplinary approach met the needs of Sitra President Klaus Waris – and he funded the group's summer institute, *The Industrial, Environmental and Product Design Seminar* (Helsinki Design Lab 1968). The results yielded a new kind of design: a practice that could more effectively address the problems of its day.[28]

Reflecting this philosophy, in 1972, when American designer Charles Eames was asked about the boundaries of design, he replied, "What are the boundaries of problems?"[29]

Today, several well-known designers are continuing to push the dialogue away from design's focus on consumerism and toward the greater good. One of these designers, Canada's Bruce Mau, believes design thinking is a means to creating "massive change."[30] Architect William McDonough believes that design should be a "cradle to cradle" approach. To him, design is the first signal of human intentions.[31]

Famed Italian designer Ezio Manzini believes designers have a vital role in transitioning modern society to one that is more sustainable, by regenerating certain social and environmental elements. In his view, it is the designer who can build scenarios to stimulate discussion and innovation, inspiring a new world based on consumption patterns and lifestyles that are realistic for the long-term.[32]

In 2008, IDEO President and CEO Tim Brown discussed how design is returning to its roots of fostering breakthroughs, instead of being about objects.[33] Brown argued that in the latter half of the 20th century, design got "small," because it concentrated on the object. With a product focus, design was incremental; it centred on making an object more attractive, easier to use and more marketable. Brown claimed that perhaps what was passing for design wasn't actually all that important.

Historically, design tended to focus on innovation; it sought to affect whole systems rather than to produce single objects. Brown used the example of 19th century British civil engineer Isambard Kingdom Brunel to illustrate his point. When designing the Great Western Railway, Brunel was concerned with designing the best possible journey. But instead of leading off with the locomotive, he zeroed in on the passenger experience of travel.

A positive shift in design takes place when we remove the focus from the object and instead emphasize the approach. This generates attention on systems rather than on incremental or superficial changes. As Brown said, "this is much greater than making something ergonomic."[34]

## Tim Brown: Four big ideas on design and design thinking (TEDTalk, 2008)

Design is human-centered: it starts by understanding culture and context. While it may involve technology and economy, it begins with what humans need or might need.

Learning by making. Instead of thinking in order to build, build in order to think. With human need as the place to start, prototyping becomes the vehicle to progress.

Design is too important to be left to designers. Design should not be considered the purview of a few trained professionals. Rather, it should be a tool that elicits active participation from the community.

Industrial systems have run their course. The design of "participatory systems," where many more forms of value beyond wealth are created and measured, is a major theme for tackling the challenges of the future.

In short, Brown asserts that while "small design" has been used primarily by professional designers to make old objects better or prettier, any group can leverage "big design" as a powerful methodology for scenario planning and modelling desired future states and theories of change.

# New connectivity = New context

Today's paradigm results from the Internet. This all-pervasive communication technology has ushered in a hyper-networked world, one in which we are all connected through space and time. This connectedness is causing a shift away from industrial systems toward participatory systems.

When conceiving of the World Wide Web, creator Tim Berners-Lee envisioned a collaborative, democratic medium that would have few, if any, barriers to entry.[35] The shift from users as passive consumers of information to active creators of information is significant. Clay Shirky, associate arts professor at New York University's Interactive Telecommunications Program, describes the transfer of capabilities from various professional classes to the general public as "epochal."

In his book, *Here Comes Everybody: The Power of Organizing Without Organizations*, Shirky evaluates the effect of the Internet on modern-day group dynamics. He explains that new technology enables new kinds of group-forming, which changes the way humans form groups and exist within them.[36] The pervasiveness of new forms of social interaction produces profound long-term economic and social effects, since, as Shirky notes, "when we change the way we communicate, we change society."

Society has most certainly changed. Public and private institutions have "opened up" to allow for contribution. Collaboration, transparency and authenticity have not only become a part of the common vernacular, but have become entrenched in the operations of forward-thinking corporations and institutions.

Collaborating across disparate sectors and cultures, or networked collaboration, has increased our capacity to create new combinations. And it is often at the juncture of two or more ideas that innovation flourishes. Canadian innovation centre MaRS Discovery District believes that, although innovation can happen anywhere, it accelerates at unique intersections.

Networked collaboration has allowed us to break down sectors and silos. It has ushered in a refreshed version of the technique of convening the whole system's key players in one room. Today, we invite the full participation of all users through forums such as open source competitions, un-conferences, jams and camps.

Open source competitions have become a popular way to both engage audiences and crowdsource solutions for "wicked problems."[37] Pepsi's Refresh Project, British Columbia's Apps4Climate Action and Ashoka's Changemakers are examples from private, public and social spheres that have resulted in impressive outcomes.

Dell's IdeaStorm and My Starbucks Idea are two examples where customers are invited to co-create their own products and in-store experience. By following the adage that "the customer knows best," these initiatives have led to positive market results, generating both new products and improved public perception. (For more examples, see http://www.openinnovators.net/list-open-innovation-crowdsourcing-examples/).

Supporting this activity are highly architected spaces designed to make interaction easy, efficient and enjoyable. The all-encompassing discipline of web design increasingly centres on making the human-to-technology interaction seamless. The user experience, interaction and interface are all considerations for web designers in order to minimize the technological aspect and maximize the human element. In so doing, design is as much the enabler as it is the product.

Online and offline are becoming increasingly congruous in this sense. Collaborative design has emerged as a practice that enables participation and creation by many in a shared, recursive process.

Authors David Carlson and Brent Richards write about design's return to fundamentalism. In the *David Report*, they contend that design "has become the embodiment of a larger process of creative 'culture mongering' that has become a means to capture ideation, innovation and enterprise and [is] made to stand for cultural identity."[38]

Underpinning this approach is a belief that the whole is greater than the sum of its parts. For Buckminster Fuller, a radical thinker in many communities (design and systems theory among them), including everyone was the key to achieving utopia.[39] Evoking

this idea, Saul Kaplan, founder of the Business Innovation Factory, tweeted in October 2011 that, "Collaborative innovation is a state of mind. A belief that none of us is as smart or capable as all of us."[40]

Above all else, the Internet has opened up access to information, an exponential factor in the continued shift toward decentralized communication and knowledge. Efforts to break down silos, such as architect Christopher Alexander's "pattern language," which gives the non-designers a way to solve large-scale, complex design problems, can be boundless within this communications paradigm.[41]

We continue to see diverse combinations and "mash-ups" as a result of shifting workflow patterns. Our increased desire for multi- and interdisciplinary approaches signals an optimistic shift from single, highly specialized sources to collective sources. With this in mind, the innovation Lab can be considered a product of its time — a place that supports decentralized yet decidedly focused activity, designed for nimbleness, action and inclusivity. The Lab is both a product — and proponent — of open innovation.

# III. Labs: Process and characteristics

Similar to traditional science labs where the scientific method dictates the iterative process by which results are achieved, the newer class of Labs offers a neutral space dedicated to problem-solving in a highly experimental environment. Labs of this nature are sometimes referred to as innovation, change or design Labs.

A major difference with these new Labs, compared to traditional ones, is the focus on diversity of perspectives and skill sets. The team undertaking the process represents a convergence of design, ethnography and business to support both theoretical and real-world application. Structured as a flat rather than a hierarchical model, collaborative action can occur more freely, with everyone having something of equal value to contribute. In a Lab, the whole (that is, the solution) is greater than the sum of its parts (the inputs of individual participants). Proprietary ownership is minimized in favour of objectivity and a commitment to a shared vision. Labs are not the place for silos or ego.

In this way, the work ethic in a Lab mimics that of online collaboration. As Clay Shirky writes, "Collaborative production is simple: no one person can take credit for what gets created, and the project could not come into being without the participation of many."[41]

Design thinking is a practice and philosophy frequently seen in innovation Labs. As a derivative of the engineering design process, design thinking creates links between research discoveries and their adaptation to human needs, evolving from a rationality toolkit to one that focuses on empathy and creativity. Design thinking is essential to create products and experiences that put the user first.

The Lab process starts as a series of questions to articulate the problem in terms of human need, opportunities and desired outcomes, such as healthier lifestyles. After defining the problem, a typical process begins with data gathering and ethnographic research to understand the user space. Also known as fieldwork, members of the Lab will put themselves *in situ* to observe and describe users in their natural environments, capturing relational qualities sometimes missed in interviews and consultations.

In more recent years, digital videography has gained popularity as a tool (in addition to transcription) for capturing human behaviour, thoughts and emotions. Film ethnography, or documentary film, has emerged as a powerful vehicle for storytelling.

Back in the Lab, with the fieldwork data in hand, the core team (along with users) begins to brainstorm through a plethora of techniques, such as mind mapping and creating personas. Much like an engineer's process, this stage is where many ideas are gathered and alternative solutions are created.

Unconventional, often risky, thinking is encouraged to enable bold ideation. Rapid prototyping allows the group to learn by *doing*, rather than to learn by *thinking*. Importantly, prototyping enables the team to see and feel a physical object to begin early-stage feasibility planning. Failure is embraced; prototypes that do not "work" are part of the process to find those with potential.

Prototypes are generally tested in the real world before being finalized so that users have a say regarding their practicality and viability. In the Lab, solutions are created *with* rather than *for* the end-user, to increase the likelihood of adopting the final product.

In the creative process of a Lab, goals are understood as moving targets and are achieved through an evolving and self-correcting process. Questions allow participants to challenge old notions and frame and re-frame the problem. Measures of success are organically prescribed and iteration is key. The success of a Lab project is not defined by a pre-determined set of metrics; rather, it is defined by the actualization of the aspirations and desires of the end-users and beneficiaries.

The following chart shows obvious differences between a traditionally structured organization and a Lab. Of note is how all of the Lab's characteristics follow the spirit of open source and design.

| Traditional organization | Lab |
|---|---|
| Hierarchy | Collective |
| Static | Dynamic |
| Singular (expert) focus | Multi-disciplinary |
| Risk-averse | Open to failure |
| Operations-oriented | Systems-approach |
| Market-driven | User-centric |
| Production outcomes | Social change outcomes |
| Linear | Iterative |
| Prescribed success | Conditional success |

# IV. Labs: Case studies

## Lab Models in Practice

IDEO and IDEO.org
(Palo Alto, CA)

Participle
(London, UK)

MindLab
(Copenhagen, Denmark)

Helsinki Design Lab
(Helsinki, Finland)

InWithFor
(Adelaide, Australia)

● Other active lab models
throughout the world.
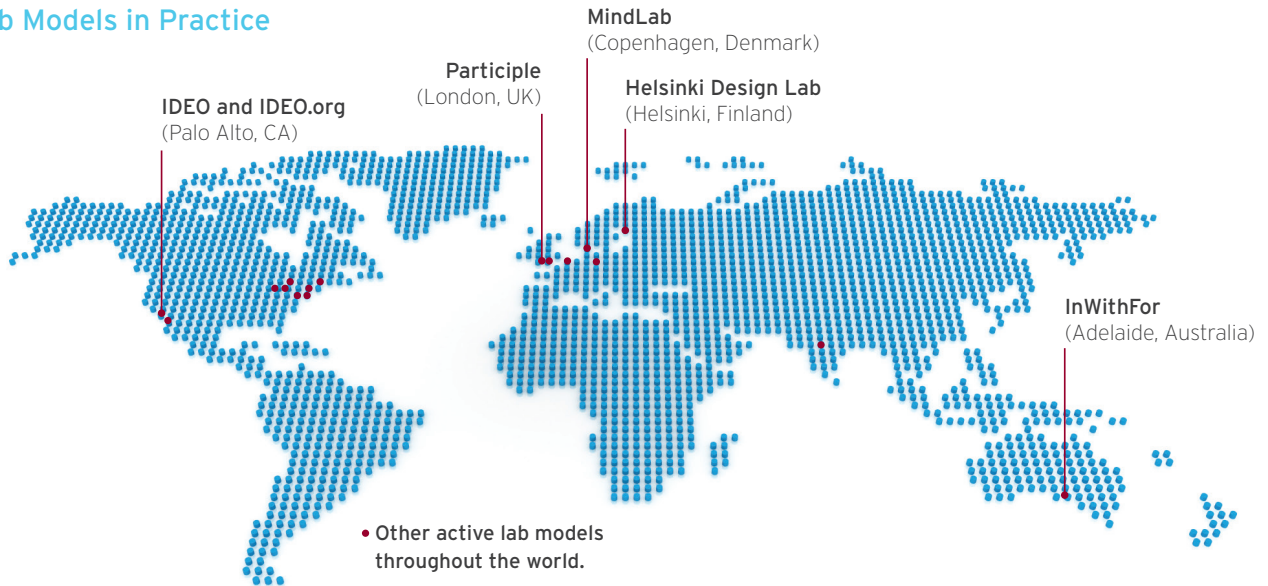
- **Bold Futures** – Berlin, Germany
  http://bold-futures.com/en
- **Broken City Lab** – Windsor, ON
  http://www.brokencitylab.org/
- **Business Innovation Factory** – Providence, RI
  http://businessinnovationfactory.com/
- **d.school** – Stanford, CA
  http://dschool.stanford.edu/
- **The Finance Innovation Lab** – London, UK
  http://thefinancelab.ning.com/
- **Forum for the Future** – London, UK & New York, NY
  http://www.forumforthefuture.org/
- **Futurelab** – London, UK
  http://www.futurelab.org.uk/
- **Harvard innovation lab** – Cambridge, MA
  http://i-lab.harvard.edu/
- **Helsinki Design Lab** – Helsinki, Finland
  http://helsinkidesignlab.org/
- **IDEO** – Palo Alto, CA
  http://www.ideo.com
- **IDEO.org** – Palo Alto, CA
  https://www.ideo.org
- **Insight Laboratories** – Chicago, IL
  http://www.insightlabs.com/
- **Institute without Boundaries** – Toronto, ON
  http://www.institutewithoutboundaries.com/
- **InWithFor** – Adelaide, Australia
  http://www.inwithfor.org/
- **MindLab** – Copenhagen, Denmark
  http://www.mind-lab.dk/en
- **MIT AgeLab** – Cambridge, MA
  http://agelab.mit.edu
- **MIT Media Lab** – Cambridge, MA
  http://www.media.mit.edu
- **NESTA** – London, UK
  http://www.nesta.org.uk/
- **OASiS** – Bhopal, India
  http://sites.google.com/site/oasisorgindia/Home
- **Participle** – London, UK
  http://www.participle.net
- **slowLab** – Amsterdam, Netherlands
  http://slowlab.net/
- **Social Innovation Lab for Kent (SILK)** – Kent, UK
  http://socialinnovation.typepad.com/silk/
- **Sustainable Food Laboratory** – Hartland, VT
  http://www.sustainablefoodlab.org/

Design has such a broad field of reference that there is no universal language or unifying convention. This section does not aim to provide a definitive compilation of approaches or Labs. Rather, it offers a sample of promising practices and project profiles from around the world. Note that organizations using these approaches do not necessarily refer to themselves as "Labs" – they may use terms such agencies, consultancies or design firms.

Taken in sum, the case studies offered in this section exhibit many commonalities but represent unique approaches. Each of the studies employs a user-centric lens, meaning the end-user is a critical participant throughout the process. The case studies all draw from the Rational Design Model,[43,44] which consists of a series of stages informed by research and knowledge in a predictable and controlled manner. While these stages are sequential, they are also overlapping and self-referencing, so should be considered fluid and intuitive rather than rigidly ordered.

# Sitra and Helsinki Design Lab: Strategic design for Finland's future

## Sitra

Founded out of the Bank of Finland in 1967 to mark the anniversary of Finland's independence, Sitra was transformed in 1991 into an independent fund that reports directly and only to the Finnish Parliament. Its primary focus was business development and venture capital investments in technology-based enterprises. In 2004, Sitra underwent a major transformation under the leadership of Finland's Prime Minister, Esko Aho, as a profound re-evaluation of Finnish policies, objectives and values was needed in order to address the challenges of the 21st century. Later, during his four-year term as Sitra President, Aho would position Sitra as an "active agent of change," producing broad systemic change across all levels of society, economy and the environment.

Upon his arrival in 2004, Aho added active research programs to the investment branch of Sitra, which resulted in a broad project range from healthcare to the mechanical industry. By 2009, the Sitra team consisted of over one hundred researchers, scientists, lawyers, architects and administrators, working in a multi-disciplinary manner across projects within one or more program. Led by an executive director, each program runs for approximately five years and is staffed by teams of five to 10 people.

Marco Steinberg, former professor at Harvard's Graduate School of Design, joined Sitra in 2008 to establish an internal design team. Under Steinberg's stewardship, Strategic Design – a new approach for thinking, doing and achieving – would become "Finland's new approach for problem solving."[45] At the heart of every project, Strategic Design allows government leaders to see the "whole architecture" of a systemic challenge in order to achieve more holistic results.

## Helsinki Design Lab

In 1968, Sitra sponsored *The Industrial, Environmental and Product Design Seminar*, the first coming together of visionaries from multiple disciplines to broaden the scope of design and its potential for solving complex problems.[46] The seminar was the antecedent to the Helsinki Design Lab (HDL), a Sitra-powered initiative to continue pushing the boundaries of design's role in moving society beyond what was inherited from 18th and 19th century systems. HDL creates the "source files" for strategic design, with their "recipes" open for anyone to use and reformulate as needed.

> Governments (and large organizations) face tremendous transformational challenges if they wish to remain viable in the future. The challenge today is to develop pathways to systemic and strategic improvements that affect how decisions are made. To successfully effect improvement, governments need to engage in the monumental task of redesigning both the boundaries of complex problems and the ways they deliver solutions. - HDL Mission

HDL has three parts:[47]

1. **A website (helsinkidesignlab.org):** This global platform serves to share work and case studies done in similar key areas.

2. **An invite-only event:** *HDL Global* is a mass symposium that convenes leaders from various disciplines, with the aim to continue evolving design and its role in current paradigms.

3. **HDL studios:** HDL occasionally develops its own experiments to seek solutions for current problems faced by the Finnish government. For these sessions, called "studios," HDL convenes leading strategic designers and content experts.

### Project profile: Low2No

The built environment poses the largest threat to the stability of our climate and critical decisions must be made around the future of urban development.[48] Low2No is an ambitious multi-stakeholder project undertaken by Sitra in an attempt to rethink urban development on matters from energy efficiency to total sustainability. Not only did Sitra want to achieve the Finnish government's commitment to the EU to reduce carbon emissions by 2020, but it also intended to take an additional step and address the profound systemic shifts needed to position Finland as a sustainability leader.[49]

To pilot a potential zero-carbon built environment, Sitra advocated for a site the size of one city block (three-quarters of a hectare) in Jätkäsaari. It proposed a mixed-use development plan for residences, offices, schools, sports facilities, commercial areas and green spaces to eventually house up to 16,000 people and offer 6,000 jobs.[50] Jätkäsaari sits on 100 hectares of reclaimed land — a result of the relocation of Helsinki's port facilities. Part of the city block will include a new facility for Sitra headquarters.

To attract the best ideas in sustainable architecture, energy efficiency and city-building solutions, Sitra launched Low2No as an international competition in sustainable development design. To ensure the response would elicit strategic and systemic insight, the team convened sustainability experts Matthias Schuler and Jean Rogers to focus the challenge around critical questions. The winning concept will be used to develop Sitra's new complex in Jätkäsaari.[51]

## IDEO: Human-Centered Design for products and services

Product-innovation and design firm IDEO holds the belief that conventional problem-solving methods can be too linear, binding and analytical, thereby missing the human elements of intuition and inspiration. In order to design true consumer experiences, IDEO set out to codify an approach that would focus on designing human-centric products and services.[52]

"Design thinking" became the term synonymously used for IDEO's problem-solving method and prevailing philosophy, now adopted by many. The process, a system rather than a series of steps, consists of three interrelating parts: inspiration, ideation and implementation. In 2008, IDEO, along with its partners, created a toolkit to codify design thinking to make the process more accessible. The result is the Human-Centered Design (HCD) Toolkit,[53] a guide to design that measures equally the emotional and functional qualities of an idea.

> "Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology and the requirements for business success."
> – Tim Brown, President and CEO, IDEO

Inspiration, ideation and implementation are the three components in the system of design thinking. In the Toolkit, these are reflected as "hear, create, deliver," which are achieved by understanding human desirability, technical and organizational feasibility, and business viability (as shown in Figure 1). In detail, these can be described as follows:

- **Desirability** is understood by *hearing* what humans need and want through ethnographic research (that is, observation and story collection).

- **Feasibility** is created through an iterative process of prototyping, extracting themes and opportunities, prototyping once again, and arriving at solutions.

- **Viability** of a solution is benchmarked against technical requirements. Beta tests are run outside of the Lab in real-world scenarios to assess the solution's dependability and thoroughness. (Note that delivery of the solution involves understanding fiscal realities, assessing sustainability and planning for implementation.)

**Figure 1: IDEO's Human-Centered Design model**



Source: IDEO. http://www.ideo.com/about.

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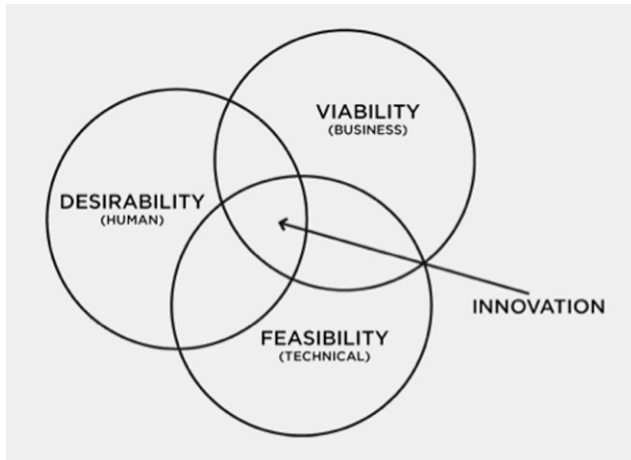
### HCD's expansion: IDEO.org

In 2011, IDEO founded IDEO.org (https://www.ideo.org), a non-profit arm that uses HCD to eradicate poverty around the world. Project areas include water and sanitation, agriculture, health, financial services, gender equality and community building. IDEO also launched OpenIDEO (http://www.openideo.com/), an online platform to crowdsource ideas and create solutions through the HCD process. HCD was built as a scalable process and is available online.

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### Project profile: Nurse Knowledge Exchange for Kaiser Permanente

In 2005, managed-care consortium Kaiser Permanente enlisted IDEO to help substantially improve patient care in hospitals. IDEO and Kaiser Permanente worked closely together to better understand the process of nurses' shift changes, a major challenge to continuous care.

By undertaking ethnographic research in four hospitals, teams observed that both information and time were lost during the shift changes. Moreover, the teams remarked how patients felt the process excluded them from their own care. Shift changes were not the only aspect studied. The teams also looked at "other elements that might affect hand-

off, including staffing, bed management, transport and different nursing roles." They found that each nurse had his or her own way of prioritizing and communicating information. In response, IDEO and Kaiser Permanente created a framework that highlighted the key issues to design for: schedules, software, information hand-offs and patient interactions.[54]

Nurses, doctors, patients and hospital administrators all participated in the brainstorming process, which resulted in prototypes that were tested for three weeks in a single hospital unit, during every shift change. Changes to the prototypes were made based on direct feedback from the nurses who used them.

The result is the Nurse Knowledge Exchange, a visual system that allows nurses, patients and patients' family members to report on the status of the patient. The system has reduced time away from the patient from forty minutes to twelve minutes, on average. It covers not only medical information such as dosage tracking, but also less tangible information about the patient's overall well-being, such as his or her emotional state.

Kaiser Permanente has implemented the co-developed program in every ward in 35 hospitals, and has reported improved patient safety and a reduction in preparation time. They report the program has received praise by the Institute of Healthcare Improvement as a "best practice" in healthcare. The HCD process was so successful that, in 2006, Kaiser Permanente opened its own innovation centre in Oakland, California, complete with a prototyping space and a full-scale clinic.[55]

## MindLab: The process model for public services

MindLab is a cross-ministerial innovation unit that involves citizens and companies in processes to create new solutions for society. In 2002, MindLab was created as a five-person organization, founded by the Danish Ministry of Economic and Business Affairs, to act as an innovation incubator within government.

MindLab views itself as a "professional project organization" and has conducted over 300 workshops, both for the Ministry as well as for a broad range of public and private institutions. A

made-in-Denmark model, MindLab draws heavily on user-centred design. In its fifth year of operation, it hired professional researchers to help qualify its methodology. This was part of a revisioning strategy that MindLab undertook as it grew to include more staff and two additional "parent" ministries (Taxation and Employment).

Their methodology, entitled "process model," is a seven-stage set of innovation processes. These are based on five years of cumulative insights as informed by experiences of citizens and companies. The advice and contributions to the ministerial projects are based on this process model; in some cases, MindLab only intervenes at certain stages, whereas in others, it undertakes the whole project.

## The process model

The process model[56] is a seven-stage process (Figure 2):

1. **Scoping and project design:** Create an informed base of the perceived problem. Using a "problem tree," the positioning of the problem is analyzed and assessed.

2. **Learning about the users:** Ethnographic research is undertaken to understand the problem from "the eye of the beholder." Cultural probes are created that reflect aspects of daily life, attitudes and values that may not be captured in interviews.

3. **Analysis:** Personas or archetypes are created to give life to a particular population segment and to embody one or more potential solutions.

4. **Idea and concept:** A brainstorm matrix as well as design games are used to rapidly generate ideas, enabling the team to elicit unexpected thinking and visualize commonalities between perspectives.

A modular storyboard is created to communicate the narrative of the idea, parts of which can be moved around to test different sequences before anything is finalized.

5. **Test of new concepts:** Creating a prototype enables the team to assess whether the solution is worth developing, based on its functionality and whether it will impact behaviour as expected.

6. **Communication of results:** Solutions are presented by showcasing the users' own voices to generate the desire to translate the results into action.

7. **Measuring:** The team undertakes impact measurement post-implementation.
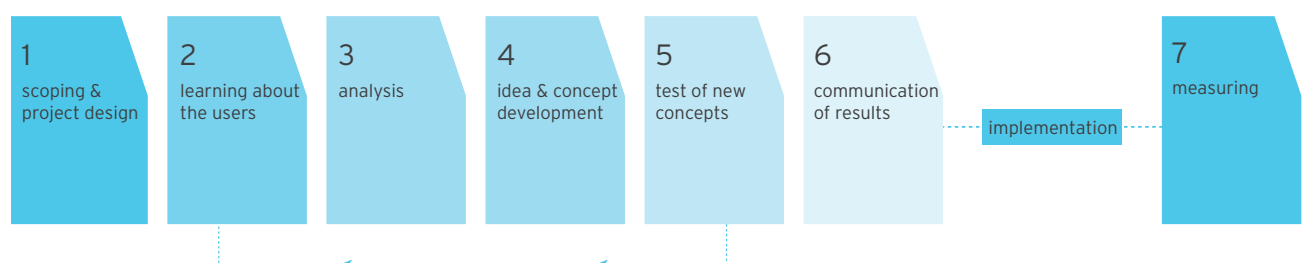
## Project profile: Away with the Red Tape – A better encounter with government

Away with the Red Tape[57] is an attempt by the Danish government to put the citizen (and deregulation) at the top of their agenda. The project aims to eliminate poor government service, such as outdated and unnecessary rules, and simplify complicated administrative procedures, such as online assessments, found to be dense and unintuitive.

In collaboration with the Danish Tax and Customs Administration (SKAT), the Danish National Board of Industrial Injuries and the Danish Commerce and Companies Agency (DCCA), three separate studies with youth were undertaken to understand how to improve their experience with the public sector.

MindLab interviewed nine taxpayers and seven victims of industrial injury all under the age of 30, as well as seven young business owners who work without assistive staff. It also spoke with relevant experts. To counter frustration with red tape, MindLab developed a set of possible solutions that

**Figure 2: MindLab's process model for citizen-centred design**



| 1 scoping & project design | 2 learning about the users | 3 analysis | 4 idea & concept development | 5 test of new concepts | 6 communication of results | implementation | 7 measuring |

Source: MindLab. http://www.mind-lab.dk/en/methods.

would improve the encounters of these three groups of young people with the public sector:

- **Solution Type 1:** Explore the transparency of casework so that those involved know what to expect, and misunderstandings and frustration can be reduced.
- **Solution Type 2:** Digitizing information alone does not suffice; it is crucial to think about its usability so that users not only have access, but they become self-reliant.
- **Solution Type 3:** Personal contact with citizens (that is, face-to-face meetings) can increase their long-term self-reliance. Not even the best IT solution can replace this.
- **Solution Type 4:** Building strategic alliances means looking at the other stakeholders (aside from caseworkers) with whom citizens may interact, and ensuring they are contributing the right information at the right time.

## Participle: Transformation Design for public services

In 2004, Prime Minister Tony Blair stated his desire to have public services "redesigned around the needs of the user, the patients, the passenger [and] the victim of crime."[58] In response, the Design Council, the United Kingdom's national body to promote design and architecture for public good, created an entity called RED. The mission of RED, a self-proclaimed "do-tank," was to tackle social and economic issues through design-led innovation.

Under the leadership of Hilary Cottam, the RED team set out to understand the application of design and design thinking to public services in order to help the government rethink the way to structure public services. Their ultimate goal was to build a better system.

In collaboration with other groups, RED studied several complex problems to help develop techniques, processes and outputs that would "transform" previously intractable social issues such as illness prevention, management of chronic disease, elder care, rural transportation, energy conservation, crime recidivism and public education.

In 2006, RED published the foundational report on Transformation Design that described the theory and process of design application to public services. Soon thereafter, however, Cottam felt that RED wasn't fulfilling its potential, largely due to constraints imposed by government affiliation. In 2007, Cottam, along with innovation authority (and former RED colleague) Charles Leadbeater and entrepreneur Hugo Manassei (former director at NESTA), fused a decade's worth of work in innovation and design to establish a new venture called Participle. Participle embraces a vision of the public realm as "redefined, redelivered."[59] Using RED's Transformation Design toolkit, Participle hopes to create the next generation of public services in the UK, essentially redefining the welfare state as initially conceived by Sir William Beveridge in 1942 in his landmark report, *Social Insurance and Allied Services*, and as implemented by the Labour Party in 1945.[60]

### The six characteristics of a Transformation Project are identified as follows:

Defining and redefining the brief

Collaborating between disciplines

Employing participatory design techniques

Building capacity, not dependency

Designing beyond traditional solutions

Creating fundamental change

Beveridge's original concern in 1942 had not been the services themselves, but how to build a more socially cohesive and fairer nation. Over time, though, Beveridge no longer thought the welfare state could deliver this. In a third report by 1948, Beveridge expressed fatal flaws with his initial thinking – namely that he had failed to account for the latent power of the citizen. Beveridge feared that his original reforms were encouraging individuals to focus passively on their needs. So much so, that he never used the term "welfare state," preferring the phrase "social services state," which he believed highlighted the individual's duties.[61]

Beveridge 4.0 is Participle's manifesto and legacy. Through their work, they aim to realize the welfare state that Beveridge had envisioned – one in which citizens are active participants in the making of their society.

To ensure this inclusivity, Participle designs services *with*, not *for*, the people who use them. Participle operates on an asset-based approach, focusing on a broad range of resources and capabilities.

## Project profile: Southwark Circle

Southwark Circle is Participle's pilot "Circle," the first of many projects in their portfolio on aging that operates by combining public, private and voluntary contributions to meet seniors' needs and desires for help with practical tasks, stronger social networks and a renewed sense of purpose.[62]

A membership organization that provides on-demand help (through phone and web) with life's practical tasks, Southwark Circle seeks to help individuals "enjoy [their] hobbies and interests with others in the community."[63] Whether for a television repair or a game of cards, members are matched with local neighbourhood helpers who have signalled their expertise or interest in a given area.

Characteristic of a transformation project, Southwark Circle was co-designed and tested with more than 250 seniors and their families, and developed by Participle. Since launching in May 2009, it has worked with hundreds of people who continue to shape its evolution. The Southwark Circle community believes that people, rather than organizations, can be each other's solution – an asset-based approach. This organization is now touted by many as a model for Britain's future services.[64]

## Transformation Design offshoot: InWithFor

InWithFor, an organization that "solves social problems and improves problem-solving," was founded by Chris Vanstone and Dr. Sarah Schulman. As a design consultant at RED, part of the UK's Design Council, Vanstone co-authored the Transformation Design report, and eventually became a senior designer at Participle. Schulman spent time working on policy development to reduce social problems such as teenage pregnancy and drug use. She found that while the top-down approach was reforming practice, it wasn't re-shaping people's lives.[65]

What concerned Schulman was policy's inability to connect with people themselves; instead, it shaped people's behaviour through structures and systems. At the same time, Vanstone felt that design was successful at putting the person first, but rarely achieved policy change.

Fusing their skill sets, they developed an approach called "Working Backwards." Rooted in Transformation Design, Working Backwards employs similar steps to achieve impact, and is grounded in the belief that all solutions must be built with equal weight given to design and policy.

# V. Looking ahead

Ours is an increasingly complex, interconnected world. The challenges we face — for instance, ensuring sustainable food and water resources, removing disability-related employment barriers and developing age-neutral living spaces — are systemic, transcending any discrete industry, geography, discipline, gender or age.

We require renewed commitment and unprecedented collaboration to address these challenges. Ad hoc efforts may yield fleeting results, but lasting change requires deliberate, repeatable, participatory approaches that build from experimental failures and successes to achieve solutions that are specific to the recipients' needs.

Complex problems cannot be solved by individual entrepreneurs working independently, or even by teams of like-minded specialists. We must engage multi-sectoral expertise in an evidence-based, design-driven approach, to advance solutions to these seemingly intractable challenges.

**This is where Labs come in.**

British social pioneer Geoff Mulgan, former Chief Executive of the Young Foundation and current CEO of NESTA (National Endowment for Science, Technology and the Arts), highlighted the need for a disciplined approach to social innovation in his TEDTalk amid the 2009 global financial crisis:

"We know our societies have to radically change. We know we can't go back to where we were before the crisis. But we also know it's only through experiment that we'll discover exactly how to run a low-carbon city, how to care for a much older population, how to deal with drug addiction and so on. And here's the problem: in science, we do experiments systematically...in society, there's almost nothing comparable, no comparable investment, no systematic experiment, in the things capitalism isn't very good at, like compassion, or empathy, or relationships or care."[66]

As Lab models continue to emerge, we will continue to experiment, to learn from our mistakes, to collaborate across sectors and disciplines, and to work toward potentially systems-tipping answers to our most daunting challenges.

This is our time and our opportunity to collectively address the evolving systemic challenges of the 21st century. We invite you to join us.

# Glossary

**Action research:** A reflective process of actively participating in a change project whilst conducting research.

**Collaborative design:** A process that involves design team members, content experts and solution experts to co-creating together, minimizing review and repetition.

**Complexity:** A state of having many parts in intricate arrangement.

**Crowdsource:** Rooted in decentralization, crowdsourcing puts an open call to source a task to a group of people or community (crowd); this contrasts with the traditional route of sourcing a task to a specific individual.

**Design thinking:** As a style of thinking, design thinking is generally characterized by the ability to combine *empathy* for the context of a problem, *creativity* in the generation of insights and solutions, and *rationality* to analyze and fit solutions to the context.

**Ethnography:** A qualitative research method to observe and understand cultural phenomena, people and their environments. Also referred to as fieldwork.

**Human-Centered Design:** A design philosophy that measures equally the emotional and functional qualities of an idea.

**Lab:** A place which provides one with opportunity to experiment, observe, or practice in a field of study.

**Networked collaboration:** Refers to collaborative problem-solving enabled by web-based platforms.

**Open innovation systems:** Systems that allow external users as well as internal stakeholders to provide input. It can refer to the process of businesses, organizations, governments and/or online platforms. Also referred to as participatory systems.

**Open source:** Refers to a method and philosophy that promotes free redistribution and broad access to an end product's design and implementation details.

**Process model:** A design process characterized by seven distinct stages.

**Prototyping:** The building of early sample models to test a concept, process or theory.

**Rational Design Model:** An approach characterized by a prescribed series of stages informed by research and knowledge, and structured in a predictable and controlled manner.

**Systems theory:** A view of the world in terms of its interrelated parts and environments and the relational quality they hold between one another.

**User-centred design:** A design philosophy and process in which the needs, wants and limitations of the end-users of a product are given extensive attention at each stage of the design process.

**Transformation Design:** A design process created by the RED team, of the UK's Design Council, to codify a new approach to public service design.

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