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Designing service entanglements: Towards stakeholder-centered perspective in design

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Designing Service Entanglements
towards stakeholders-centered perspective in design

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motivation
service entanglements
approach
interviews
workshops
discussion
mobile computing + social computing
Liquification of product and service offerings by technologies enables information to be more versatile, which leads to increased specializations in the delivery of product and service businesses.

Drivers promoting density:

- Increased liquidity
- Dematerialization
- Unbundleability
- Rebundleability
- Density
Facebook platform supports more than 42 million pages and 9 million apps

There are now more than 42 million Facebook pages and 9 million apps and websites integrated with Facebook, according to a recent amendment to the social network’s filing for an initial public offering.

The number of pages on Facebook with 10 or more Likes has increased by 5 million since Dec. 31, 2011, and the number of apps and websites that integrate Facebook are up by 2 million since that date. These new totals show that Facebook’s platform continues to grow in ways beyond new users. It also shows just how much is competing for users’ attention these days.

Facebook did not provide a category breakdown of the 42 million pages on Facebook. However, in a letter to prospective investors, Facebook CEO Mark Zuckerberg shared that more than 4 million businesses have pages on the site. Other pages on the social network — including many of the most popular ones — are pages for popular figures, movies and sports teams. A large proportion of pages are also likely to be fan-generated community pages. Unclaimed locations also account for some of these pages, although Facebook has been working to eliminate duplicates.

The number of apps and websites connected to Facebook is likely to quickly grow past 9 million. With Open Graph integration proving to be a large source of traffic for third-party apps and websites, we can expect many more blogs and media sites, as well as mobile games and other apps to implement aspects of the platform.

Along with stats about pages and apps, Facebook provided other updated figures for photo uploads, interactions and friend connections in its filing this week. Between Jan. 1 and March 31, there were more than 300 million photos uploaded to the site each day — up from 250 million per day in Q4 2011. Users also generated an average 3.2 billion Likes and comments each day in the first quarter of 2012 — up from 2.7 billion per day in Q4 2011. And Facebook now has more than 125 billion friend connections between its 901 million monthly active users.
MyFitnessPal™
Sync your meals and activities to Fitbit and adjust your daily net calorie goal on MyFitnessPal by the tracker data.
Learn more »

Make your experience with Fitbit even more awesome.

Browse Apps

Lose It!
by FitNow, Inc.
Sync your meals from Lose It! to Fitbit and extend Lose It! food budget by activities from your Fitbit tracker.
Learn more »

MyFitnessPal
by MyFitnessPal, LLC.
Sync your meals and activities to Fitbit and adjust your daily net calorie goal on MyFitnessPal by the data measured by your tracker.
Learn more »

SparkPeople™
by SparkPeople, Inc.
Link Fitbit to your SparkPeople account and you can dynamically share and sync data – including weight, fitness and sleep – to your SparkPeople profile.
Learn more »

What is this?
Browse the App Gallery to discover new websites and applications that will enhance your experience with Fitbit.

Manage your apps
View all »

Want to build something?
Visit the Business Dashboards API Community.
IFTTT lets you create connections between the 92 Channels below.
Popular Automatic Recipes

- **Email my mechanic when the check engine light comes on**
  - by automatic on Feb 20, 2014
  - 89 uses, 6 favorites

- **Turn my house lights on when I get home**
  - by automatic on Feb 25, 2014
  - 69 uses, 16 favorites

- **Log your vehicle's check engine light codes to Google Calendar**
  - by automatic on Feb 20, 2014
  - 411 uses, 41 favorites

- **Log all of my trips to a Google spreadsheet**
  - by automatic on Feb 20, 2014
  - 2,171 uses, 217 favorites

- **Add an iOS reminder when my check engine light comes on.**
  - by automatic on Feb 20, 2014
  - 343 uses, 28 favorites

- **Show my trip summary on Google Glass**
  - by automatic on Feb 20, 2014
  - 38 uses, 7 favorites
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Service Entanglements

- interrelationships between multiple service systems
- entangled services co-produce an experience and a value flow
- not all values and experiences from Service Entanglement are positive

*because entangled services are not designed to be a single system*
Entangled Services: dependent relationship
Entangled Services: featuring relationship

Listening my Spotify music within Uber system
Entangled Services: liaising relationship
A systems approach for the service entanglements – ecology framings

**Soft Systems Methodology** (Checkland, 1989)
- analysis of complex situations where there are divergent views about the definition of the problem
- attempts to resolve “soft problems” where the boundary and structure of problematic situations are fuzzy and not clear

**Information ecology** (Nardi and O’Day, 2001)
- a system of people, practices, values, and technologies in a particular local environment
- in Information ecologies, the spotlight is not on technology, but on human activities that are served by technology

**Ecologies of Artifacts** (Jung, Stolterman, Ryan, Thompson and Siegel, 2008)
- a study of how interactive devices interconnect within a personal life
A systems approach for the service entanglements – ecology framings

**Product Service Ecology**  (Forlizzi, 2007, 2013)

- the system of products and services is the central unit of analysis
- dimensions of the products and services within the system help describe how social behavior evolves within the system
A systems approach for the service entanglements – ecology framings

**Product Service Ecology: Benefits**

- Understand how problematic situations are linked to the physical and social environment in which they take place
- Consider the broader implications of the solution to be put into place
- Train designers in using their judgment in rectifying a problematic situation

Forlizzi (2007, 2013)
Product Service Ecology: Approach

- Bridge conventional scientific and design disciplines
- Create a meta design, not a design of one product or system
- Focus on creating value
- Leverage approaches and models from service design

Forlizzi (2007, 2013)
A systems approach for the service entanglements – ecology framings

**Service Entanglements**

Dubberly (2013)  
Forlizzi (2013)
motivation
service entanglements
**approach**
interviews
workshops
discussion
understanding service entanglements

interviews

7 senior design consultants
11 senior in-house designers

liquefying service entanglements

coadesign workshops with exploratory tools

5 co-design workshops with 9 design + HCI students
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<table>
<thead>
<tr>
<th>in-house design</th>
<th>role</th>
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</thead>
<tbody>
<tr>
<td><strong>domain of service</strong></td>
<td></td>
</tr>
<tr>
<td>P1 Internet of Things (IoT)</td>
<td>Co-founder and CEO</td>
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<tr>
<td>P2 Healthcare Provider (General Hospital)</td>
<td>Senior Service Designer</td>
</tr>
<tr>
<td>P3 Healthcare Device and Solution Manufacturing</td>
<td>Senior Service Design Consultant</td>
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<tr>
<td>P4 Social Commerce</td>
<td>VP, Global Design Group</td>
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<tr>
<td>P5 Internet Search</td>
<td>Interaction Designer</td>
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<tr>
<td>P6 Personal Wellness Product and Service</td>
<td>Senior Product Designer</td>
</tr>
<tr>
<td>P7 Social Network</td>
<td>Product Designer</td>
</tr>
<tr>
<td>P8 Mobile Public Transportation</td>
<td>Senior UX Designer</td>
</tr>
<tr>
<td>P9 Online Marketplace for Accommodations</td>
<td>Interaction Designer</td>
</tr>
<tr>
<td>P10 Internet Search</td>
<td>Interaction Designer</td>
</tr>
<tr>
<td>P11 Public Library</td>
<td>Executive Director</td>
</tr>
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<table>
<thead>
<tr>
<th>professional design firm</th>
<th>role</th>
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<tbody>
<tr>
<td><strong>company</strong></td>
<td></td>
</tr>
<tr>
<td>P12 Independent Consulting</td>
<td>Owner, Interaction Designer</td>
</tr>
<tr>
<td>P13 Experience Design Consulting</td>
<td>Design Director</td>
</tr>
<tr>
<td>P14 Social Innovation Design Education</td>
<td>Founder</td>
</tr>
<tr>
<td>P15 Innovation Strategy Consulting</td>
<td>Managing Partner</td>
</tr>
<tr>
<td>P16 Design Consulting A, SF</td>
<td>Interaction Design Director</td>
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<tr>
<td>P17 Design Consulting A, Austin</td>
<td>Experience Design Director</td>
</tr>
<tr>
<td>P18 Design Consulting B, Chicago</td>
<td>Interaction Design Lead</td>
</tr>
</tbody>
</table>
a. growing needs for understanding influences of external systems

“It is challenging because it (designing healthcare solutions for general hospitals) involves larger stakeholders. We need to know regulations, policies, and stakeholders’ strategic positions to the current changes in healthcare. It requires design team quick design decision-making because there are so many uncertainties. It causes extra iterations in design execution because we don’t know what will exactly happen in the complex landscape.”

– P8 (service design, healthcare solutions)
What third party application information to be displayed in the Timeline was defined in meetings with product managers in charge of partnerships with the application categories. We had a lot of discussions on how much and what kind information from music or game apps we want to show in relation to portions of personal postings.

– P4 (interaction design, social media)
b. systems orientation to tame interdependencies with internal/external systems

“API level design features should be more consciously designed, rather than engineered day to day. At first it didn't seem to be important. But I realized when you really want to design the whole experience well, you need to envision high-level future of how our systems should interface with our third party applications right.”

- P7 (product and interaction design, wearable solutions)
c. designing for multiple systems has not been a conventional design practice

“Working tightly with the Customer Support team was very helpful for identifying important interdependencies that would rise in the future. It helped me think of impacts when changes made by customers or hosts. **Voice of Customers glued many independent designs of customer-side and host-side into a seamless one – we found having CS team in our daily scrum very useful in this sense.**”

– P1 (interaction design, online lodging marketplace)
c. designing for multiple systems has not been a conventional design practice
- maybe we need a new design approach to address the design issues from entanglements

“As we shift our focus from developing medical solutions to health solutions, we found the hardest part we face everyday is capturing and resolving issues from interdependency of systems. The interdependency lies in many different legacy (health information) systems, care practices, facilities and associated policies.”

– P9 (service design, healthcare provider)
motivation
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workshops: liquefying service entanglements
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key ideas in the co-design workshop design
key ideas in the co-design workshop design

dematerialization

increased liquidity  unbundleability

rebundleability
key ideas in the co-design workshop design

a. meta-design: sensitizing designers to the boundaries of multiple systems
b. enable unbundling and rebundling service systems through exploratory tools
c. use everyday material than digital tools
d. use sample experience: travel to other country
exploratory tools:
a) Unbundling
exploratory tools:
a) Unbundling
exploratory tools:
a) Unbundling
exploratory tools:
b) Rebundling
exploratory tools:

b) Rebundling
exploratory tools:
b) Rebundling
co-design workshop

- 9 design + HCI students to recall their recent travel experience
- deconstruct / reconstruct a travel experience with services and other artifacts they interacted during the journey
- 90 minutes + take home // 5 sessions
## Co-design Workshop: Participants

<table>
<thead>
<tr>
<th>Session</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>P1 (f, 26); HCI graduate student</td>
</tr>
<tr>
<td>W2</td>
<td>P2 (f, 25); Communication Design graduate student</td>
</tr>
<tr>
<td>W3</td>
<td>P3 (f, 28), P4 (f, 26), P5 (m, 25); Interaction Design graduate students</td>
</tr>
<tr>
<td>W4</td>
<td>P6 (m, 23); Product Design undergraduate student</td>
</tr>
<tr>
<td>W5</td>
<td>P7 (f, 28), P8 (f, 25); Interaction Design graduate students</td>
</tr>
</tbody>
</table>
### Co-design Workshop: Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>5 min.</td>
</tr>
<tr>
<td>Decostructing</td>
<td>Solo: 40 min. / Group: 60 min.</td>
</tr>
<tr>
<td>Reconstructing</td>
<td>Solo: 20 min. / Group: 30 min.</td>
</tr>
<tr>
<td>Post-workshop interview</td>
<td>30 min.</td>
</tr>
</tbody>
</table>
co-design workshop: deconstructing with unbundler
co-design workshop: deconstructing with unbundler
co-design workshop: deconstructing with unbundler
co-design workshop: reconstructing with rebundler
co-design workshop: reconstructing with rebundler
co-design workshop: reconstructing with rebundler
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workshop findings
discussion
a) Unbundling

(W5) Participants sketched how services are interconnected and clustered
a) Unbundling

(W3) Participants annotated how an interaction with one service triggered another interaction with others.
a) Unbundling

- successfully sensitized entangled services

P1: “I feel like everything was connected with Gmail and Google Calendar. It was a busy trip with teammates and there were lot of things to coordinate. When I found a lunch or dinner place at Yelp, I immediately turned on Google Calendar and put the info there so my teammates could know where I will be.” – dependent services

P6: “(describing a line connecting Instagram and Facebook) We usually took photos with Instagram app. When I want to share pictures at my Facebook timeline, I used Facebook Photo sharing button in the Instagram.” – featuring services

P2: “Including me, people traveled to IxDA used Whatsapp because it is free of charge. So this (Whatsapp) connects to Google Map and Calendar because we frequently exchanged our schedule and location info for where to eat, where we stay and where people are at during the conference.” – liaising services
b) Rebundling

(W4) In this rebundling, participant highlighted an interconnection of Rdio, a music streaming service and Zipcar, a rental car service
b) Rebundling

(W5) Participant illustrated a rebundled future service concept integrating four services that are unbundled at the deconstructing activity.
b) Rebundling

attached to the user-centered perspective

P1: “I want a calendar that automatically updates my status to all other services and team members. It can also give me wise recommendations of places to eat or visit. I don’t want to use emails for doing this.”

P4: “Sharing photos after trip was complicated. We created a sharing folder at Dropbox and three of us threw all photos we took there. I wanted to post some of photos we took at Facebook, not all of them. I had to switch between Dropbox and Facebook many times for this.”

P5: “I feel like Linkedin and IxDA conference websites can be more connected. I switched the Linkedin App and the conference website a lot on my phone to get to know people I met during the conference day.”
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Promises of taking systemic perspectives for designers: interrelationship as a new design material
Challenges of taking systemic perspectives for designers

- identifying values-in-use (O)
- identifying values-in-exchange (x)

- current interaction designers might have been too much fixated to a user’s perspective in design of an experience by the training

- For design of entangled services, taking stakeholders-centered perspective could be beneficial: identifying and designing value flows intersecting multiple service systems and customer’s experience of systems
we may need a better service model from a systemic designer’s perspective

(2016) designer grow multiple / distributed systems

(1984) service blueprint operation manager optimization control monolithic systems
from perfecting a single artifact/system
to flourishing ecologies
from single user - system interaction
to multiple people - systems interrelationship
Designing Service Entanglements

towards stakeholders-centered perspective in design

thanks to,

Jodi Forlizzi
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Jamin Hegemen, Adaptive Path
Kyle Vice, Philips Healthcare
18 interviewee designers

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