



Faculty of Design

2013

## The product service ecology: Using a systems approach in design

Forlizzi, Jodi

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# Designing Service Entanglement

: holistic approach to new pattern of complexity in service design

*prepared by*

Eunki Chung

*acknowledgements*

Jodi Forlizzi, John Zimmerman

Carnegie Mellon School of Design / HCII

*prepared for*

Relating Systems Thinking & Design 2013, Oslo, Norway

# Designing Service Entanglement

: holistic approach to new pattern of complexity in service design

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*a journey of a thousand miles begins with a single step* [Lao-tzu]

# Service Entanglement research

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# Service Entanglement research

**UPMC Technology Development Center** health information visualization service

**Carnegie Mellon University** interaction design graduate student

**Service Design teaching** at school of business & dept. of techno-art

**Ridibooks** (e-book service startup) e-book reading & gifting experience

**Samsung Electronics** appstore & cloud services for mobile devices x multi-platforms

**Mobile App Startup** cartoon viewer + content distribution/advertising patent

**Apple** retail experience + roadmap

**Non profit organization** north korean teenage defectors' self-reliance

**Bain & Company** m&a (post-merger integration) strategy

**18th Medical Command, U.S. Army** medical sergeant (surgery assistance, readiness management)

**European Union Chamber of Commerce** investment matchmaking

2013

2008

받은 편지함 (63개 메시지)

삭제 정크 답장 모두 답장 전달 새로운 메시지 메모 해야할 일

검색

보낸 사람	제목	받은 날짜
Hyunjung Baek	4주레포트	08. 07. 29 오후 04시 08분
Dongkyu Kim	Fwd: 4th Weekly Report_K	08. 07. 30 오전 09시 06분
박희정	Apple News Clippings_July 30	08. 07. 30 오전 09시 50분
Hyunjung Baek	Fwd: At Google... Work or Leisure? You decide	08. 07. 30 오전 10시 48분
IS&T News	Apple IS&T Newsletter: July, 2008	08. 07. 31 오전 09시 00분
박희정	Apple News Clippings_July 31	08. 07. 31 오전 09시 39분
Hyunjung Baek	사진	08. 07. 31 오전 10시 10분
Angeline Tan	AirPort Extreme Base Station available in Korea	08. 07. 31 오후 12시 57분
Steve Park	보도자료 Sample	08. 07. 31 오후 06시 10분
박희정	Apple News Clippings_Aug 1	08. 08. 01 오전 10시 00분
박희정	Apple News Clippings_Aug 4	어제 오전 09시 55분
Steve Jobs	MobileMe	오늘 오전 08시 25분

보낸 사람: Steve Jobs <sjobs@apple.com>  
 제목: **MobileMe**  
 날짜: 2008년 8월 5일 오전 08시 18분 03초  
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The launch of MobileMe was not our finest hour. There are several things we could have done better:

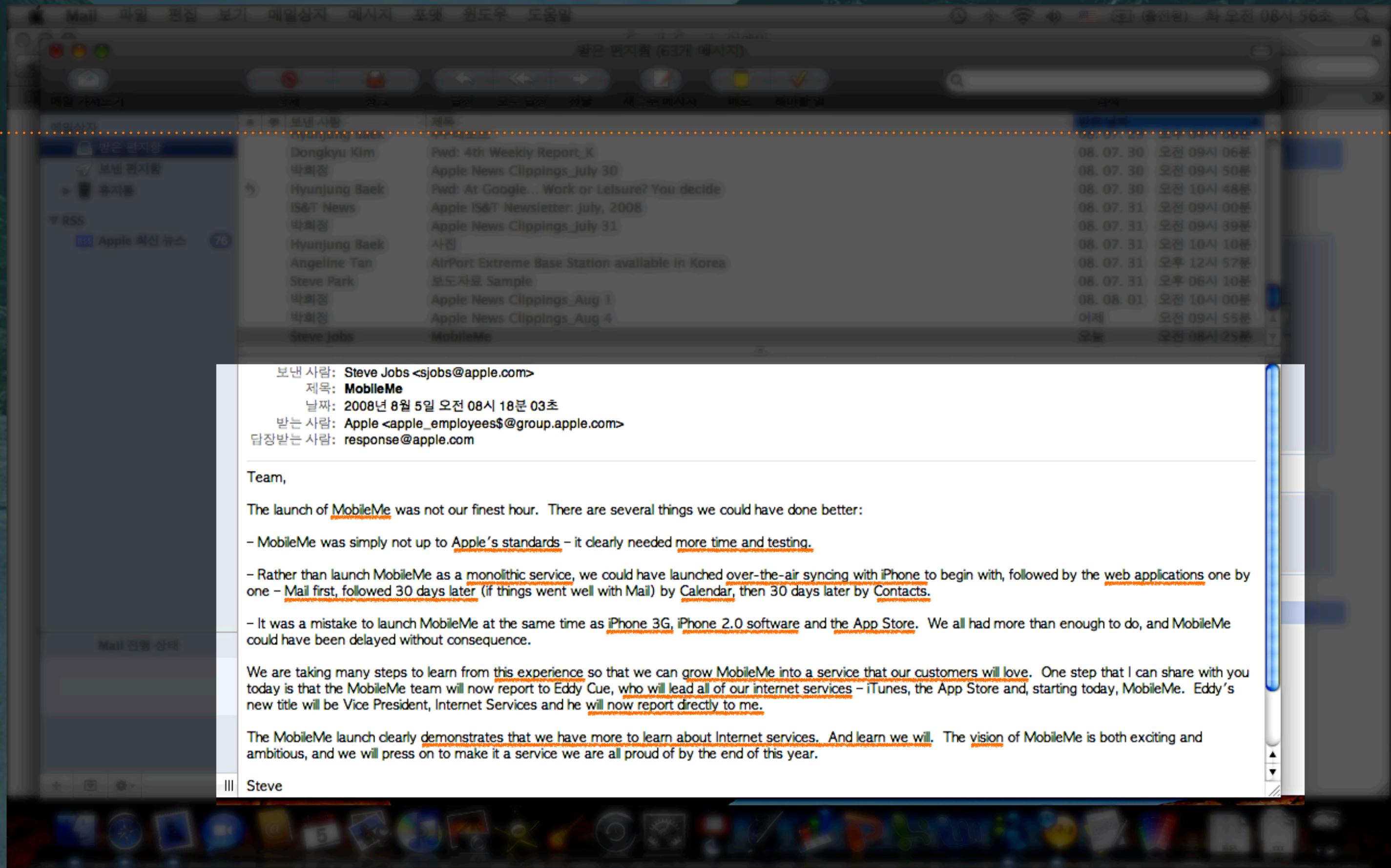
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The MobileMe launch clearly demonstrates that we have more to learn about Internet services. And learn we will. The vision of MobileMe is both exciting and ambitious, and we will press on to make it a service we are all proud of by the end of this year.

Steve





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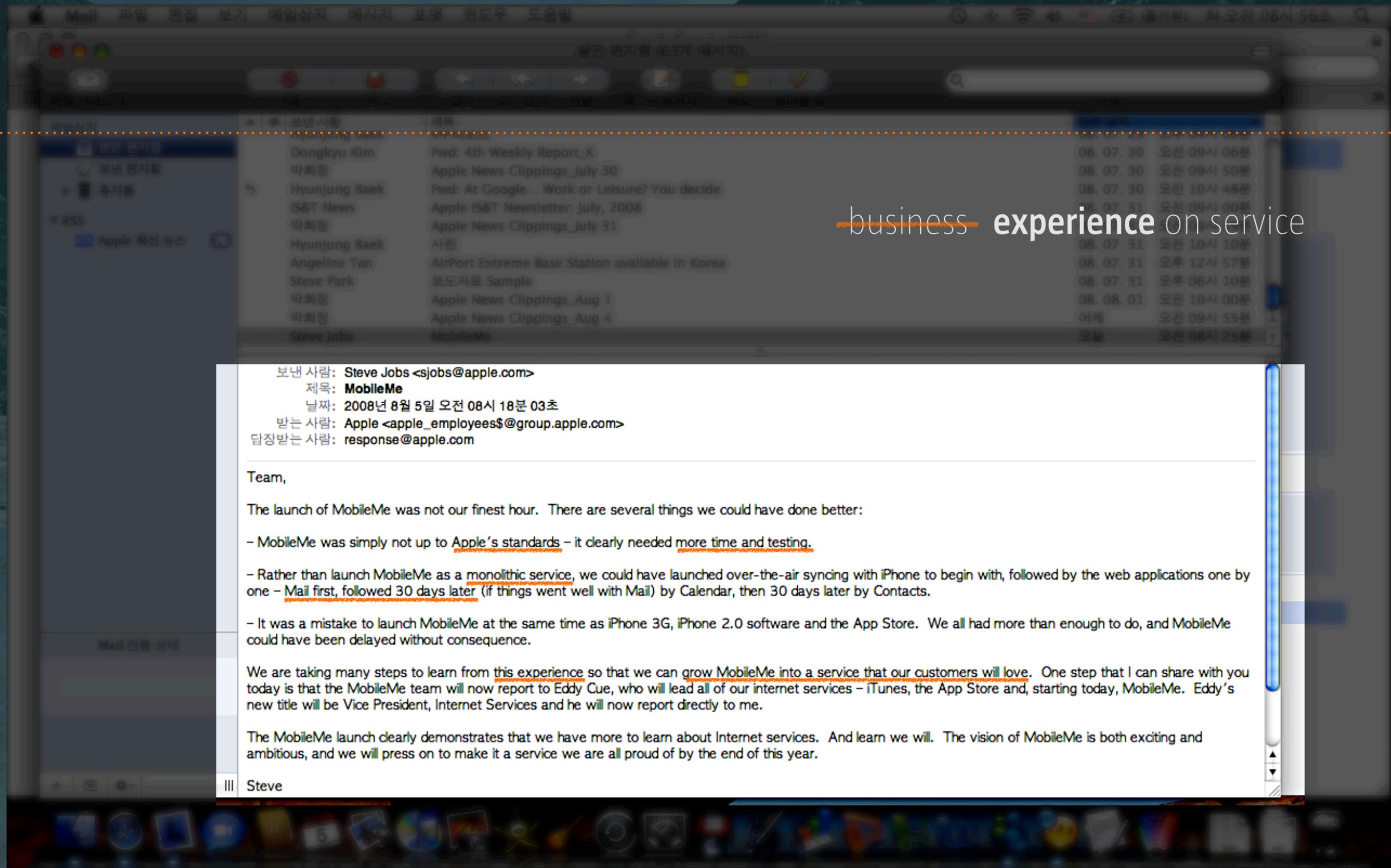
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business experience on service

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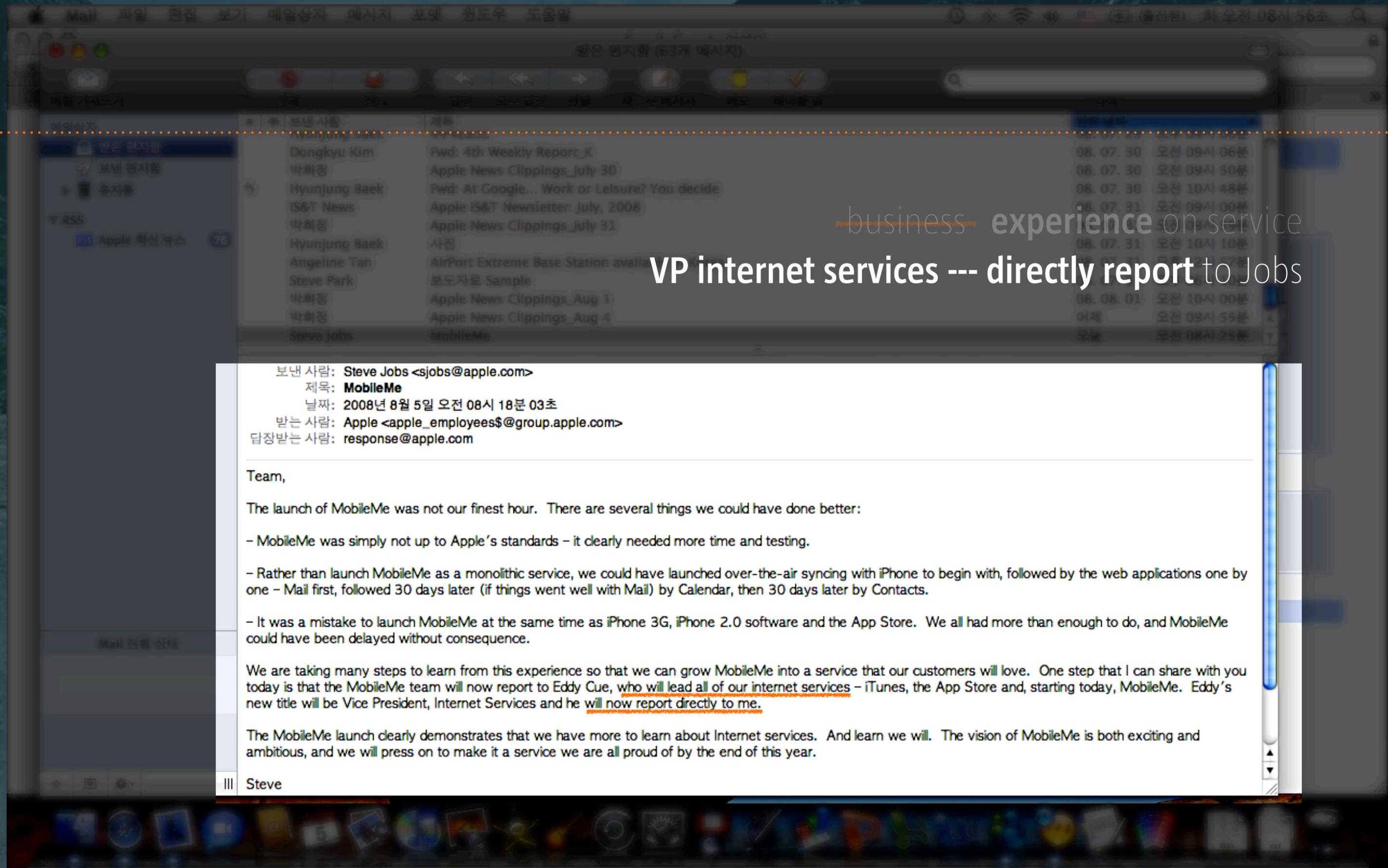
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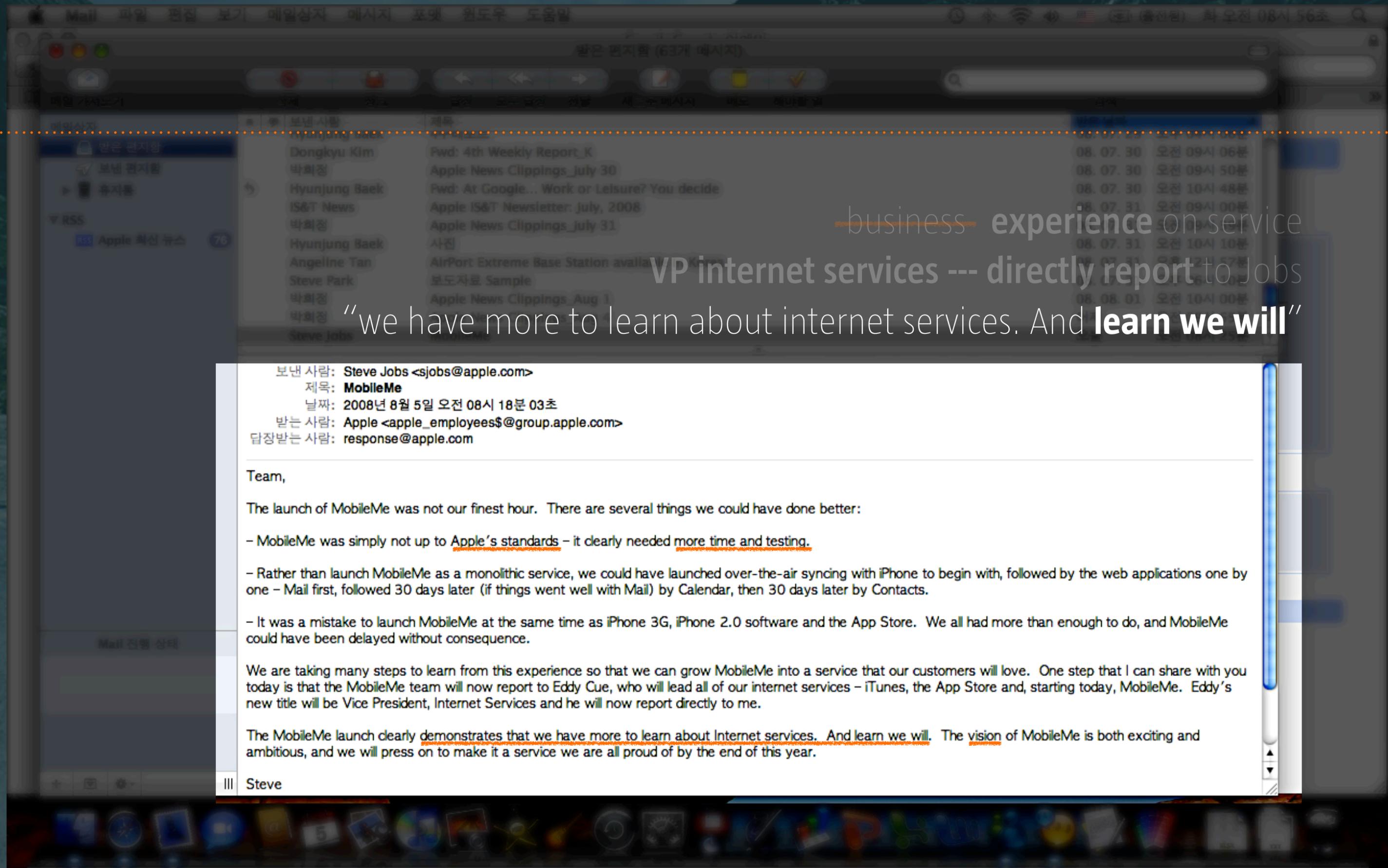
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# Research on Services

~~product~~ services

~~business~~ experience on service

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# Research on Service Entanglement

product

combination + relation + orchestration of {product, system and services}

business experience on service

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# Service Entanglement

---

**Service Entanglement** results from **multiple interlinked service systems**.

These can be both physical and digital.

- | Entanglement encompasses **people\*, products, services and systems**.
- | Entangled services are **codependent**.
- | Entangled services **collectively shape an experience** and **create value** for **people and systems**.
- | **Not all values and experiences** from Service Entanglement **are positive**.

*: because the services are often superposed and not designed to be a single system*

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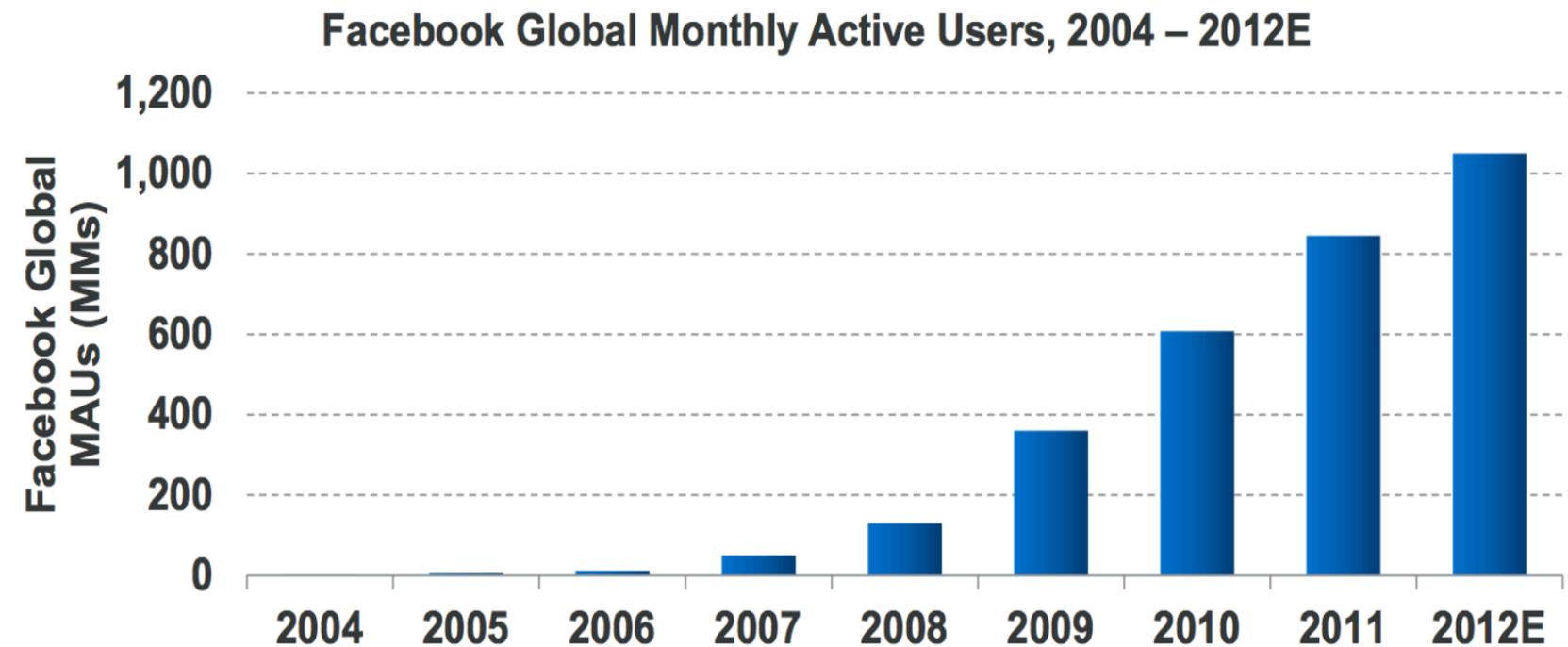
*: because the services are often superposed and not designed to be a single system*

*becoming more conscious of qualities and patterns of relationships among interlinked service systems*

# Why?

Digital services are pervasive in people's life more than ever. Networks among digital services has become not only increased by its number, but denser and stickier in terms of quality.

Digital services are more than just networked, but *entangled*.



Source: Facebook, 2012E MAUs are KPCB estimates.

# Why?

## Facebook platform supports more than 42 million pages and 9 million apps

COMMENT SHARE Tweet Brittany Darwell • Apr 27th, 2012 Applications, Facebook, Featured, Pages

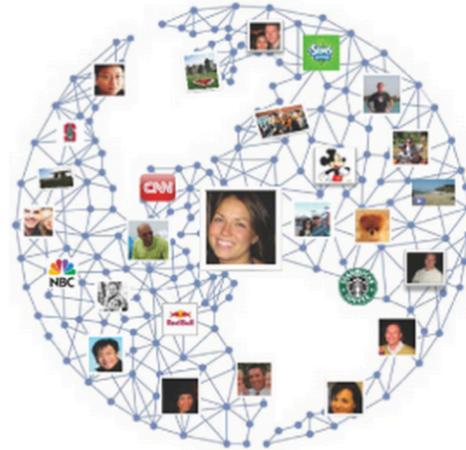
There are now more than 42 million Facebook pages and 9 million apps and websites integrated with Facebook, according to a recent [amendment](#) to the social network's filing for an initial public offering.

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](#).

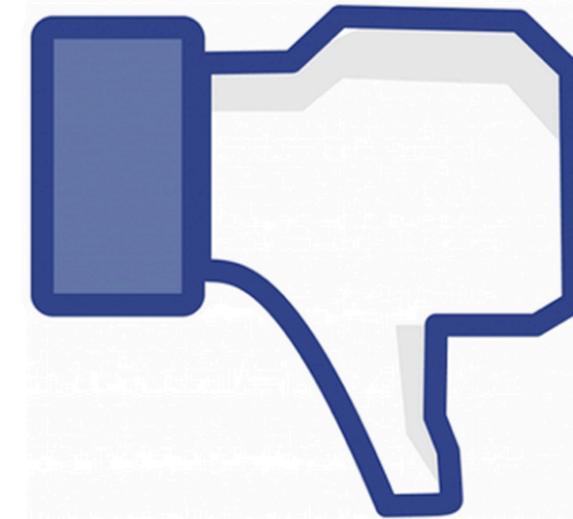
The number of apps and websites connected to Facebook is likely to quickly grow past 9 million. With Open Graph integration proving to be a [large source of traffic](#) for third-party apps and websites, we can expect many more blogs and media sites, as well as mobile games and other apps to implement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



## GIZMODO

TOP STORIES



FACEBOOK

### A Facebook Bug Pretty Much Took Down the Entire Internet

Casey Chan

If you thought the Internet freaked out for a little bit and every site you went to was down, you're not alone. Major websites were down: CNN, Huffington Post, ESPN, Gawker, The Washington Post, BuzzFeed, etc. were all broken. Why? Because of a glitch with Facebook.

Developers at Gawker said that the glitch

FEB 7, 2013 7:57 PM 0 Share +1 Like 1.2k

AdChoices

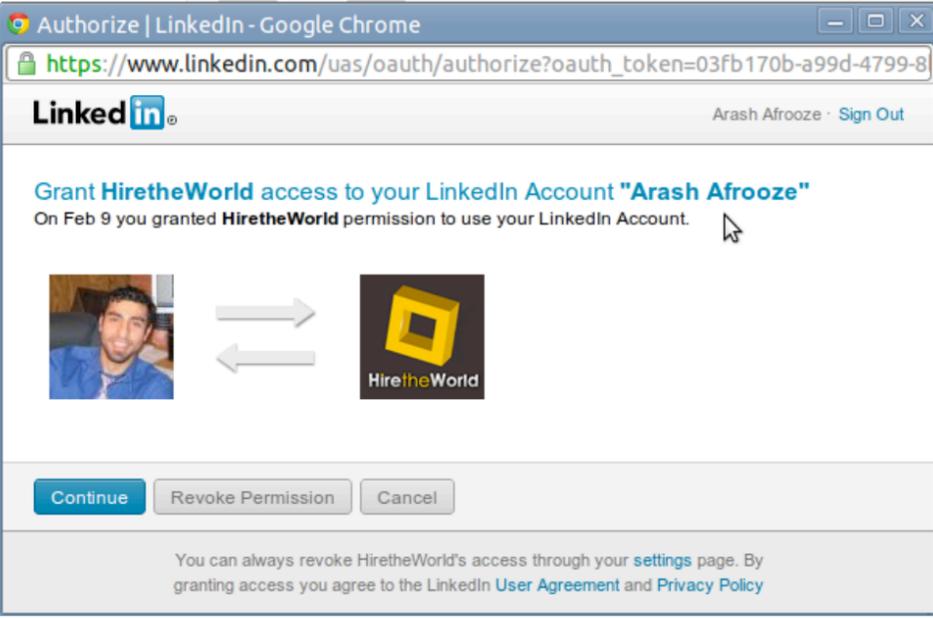
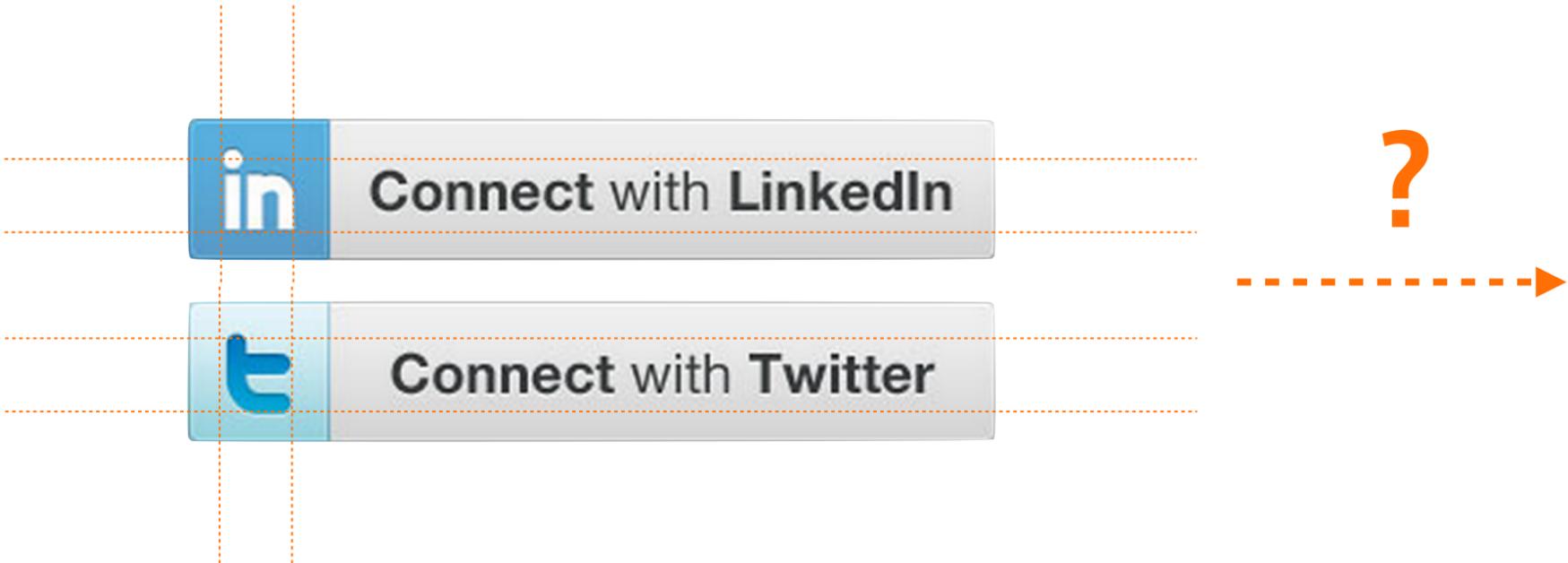
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# Service Entanglement for interaction designer



## Study of Service Entanglements

Dropbox

Evernote Trunk

**Facebook Connect**

Facebook Home

Fifty Three & Moleskin

**Fitbit Apps**

**Flipboard**

Google Now

**Google Wave**

**IFTTT**

**iTunes in Starbucks**

Linkedin

Pinterest

SmartThings

**Square**

**Uber**

...

## Interview with in-house designers

Traditional services  
adopted or disrupted by technology services

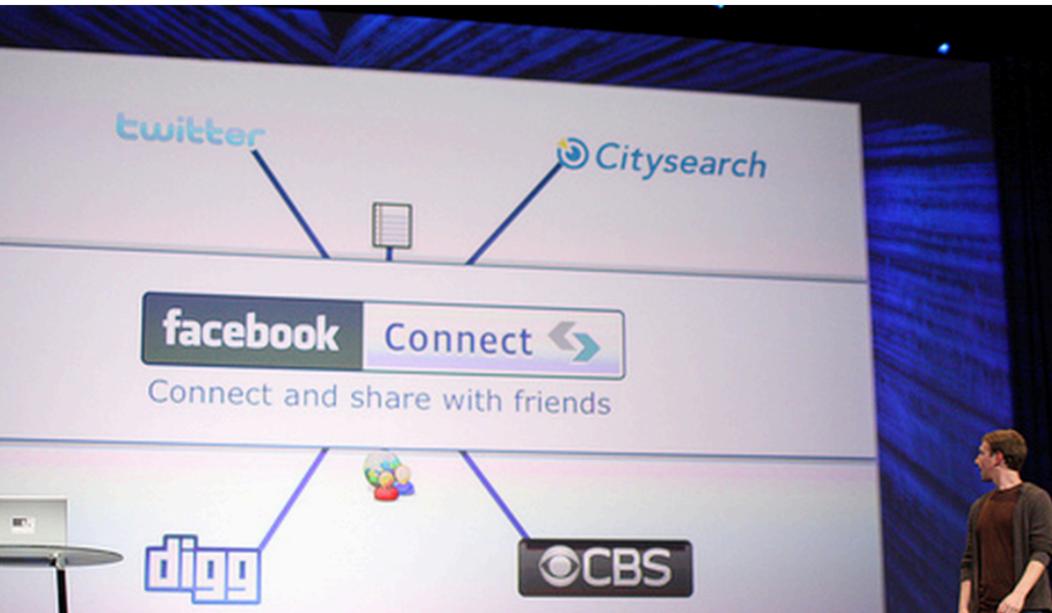
- Healthcare
- Retail
- Public

Technology-based services (corporate)

Technology-based services (startup)

Manufacturing companies  
making device to service expansion

# Facebook Connect



Request for Permission

www.facebook.com/connect/uiserver.php?app\_id=144042852310083&method=permi...

**f Request for Permission**

ScoreBig is requesting permission to do the following:

- Access my basic information**  
Includes name, profile picture, gender, networks, user ID, list of friends, and any other information I've shared with everyone.
- Send me email**  
ScoreBig may email me directly at morganb@gmail.com · Change
- Post to my Wall**  
ScoreBig may post status messages, notes, photos, and videos to my Wall
- Access my data any time**  
ScoreBig may access my data when I'm not using the application
- Access my profile information**  
Birth:ay and Current City

Report App

Logged in as Morgan Brown (Not You?)

**Allow** **Don't Allow**

# Fitbit Apps

fitbit Products **STORE** Dash

## 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

 <b>Lose It!</b> by FitNow, Inc. Sync your meals from Lose It! to Fitbit and extend Lose It! food budget by activities from your Fitbit tracker. <a href="#">Learn more &gt;</a>	 <b>MyFitnessPal</b> 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. <a href="#">Learn more &gt;</a>	 <b>SparkPeople™</b> 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. <a href="#">Learn more &gt;</a>
 <b>Balance Rewards</b> by Walgreens Sync a Fitbit One, Ultra or Zip	 <b>Microsoft HealthVault</b> by Microsoft Link your accounts now to share	 <b>Digifit</b> by Digifit, Inc. Link Fitbit and Digifit, and your

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

**Manage your apps** [View all >](#)

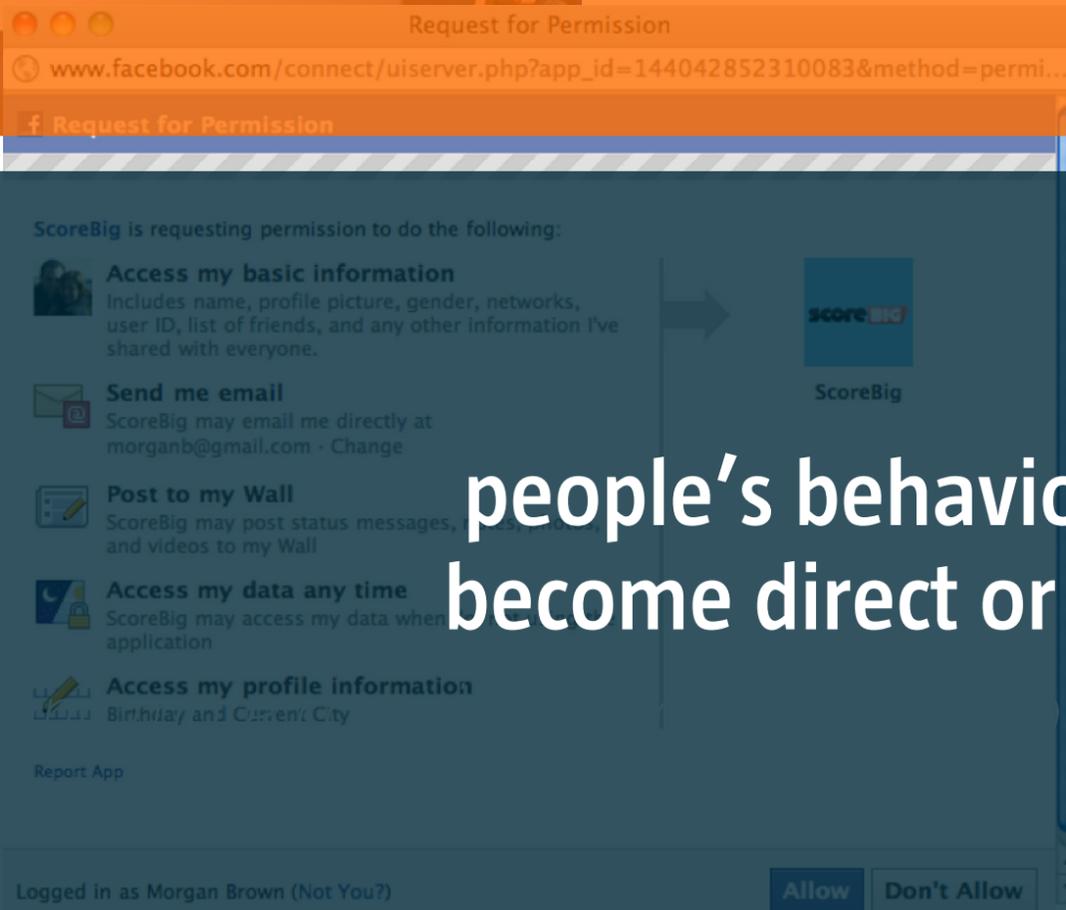
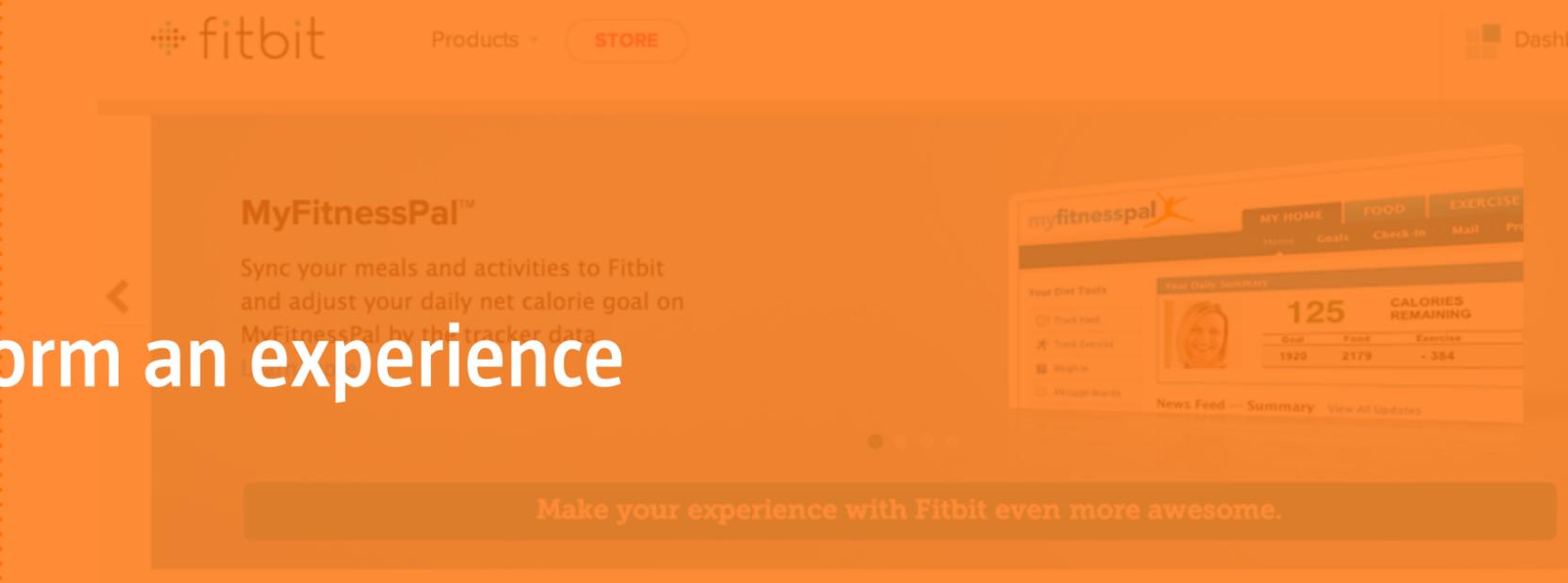
**Want to build some...**  
The **Fitbit API** allows developers to interact with Fitbit data in their own applications, products and services.

# Facebook Connect

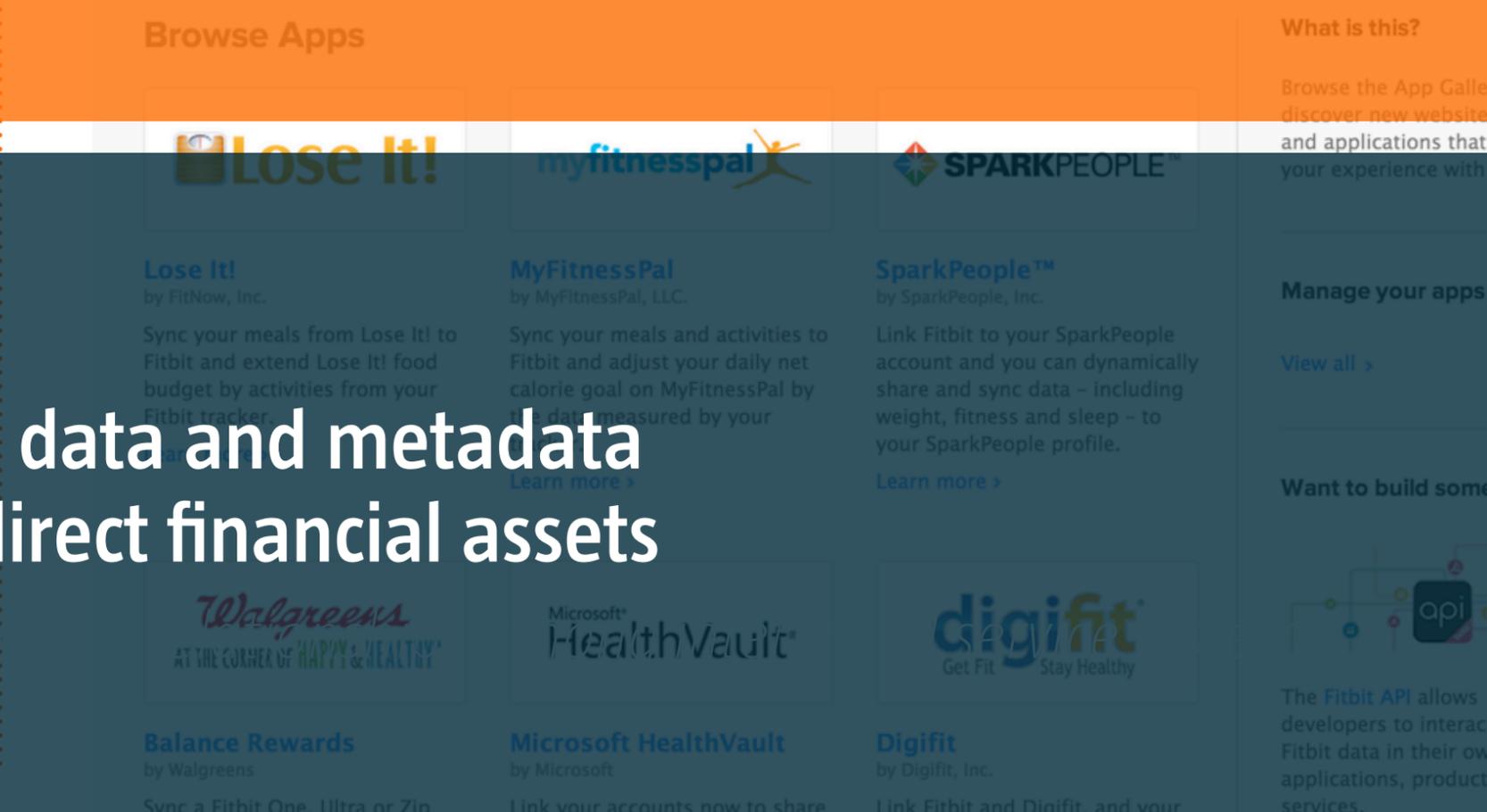
# Fitbit Apps



multiple services form an experience

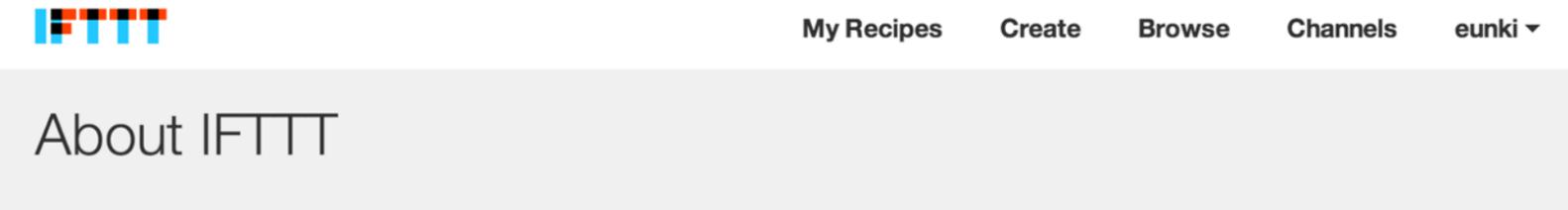


people's behavioral data and metadata become direct or indirect financial assets



# IFTTT

# Uber



## About IFTTT

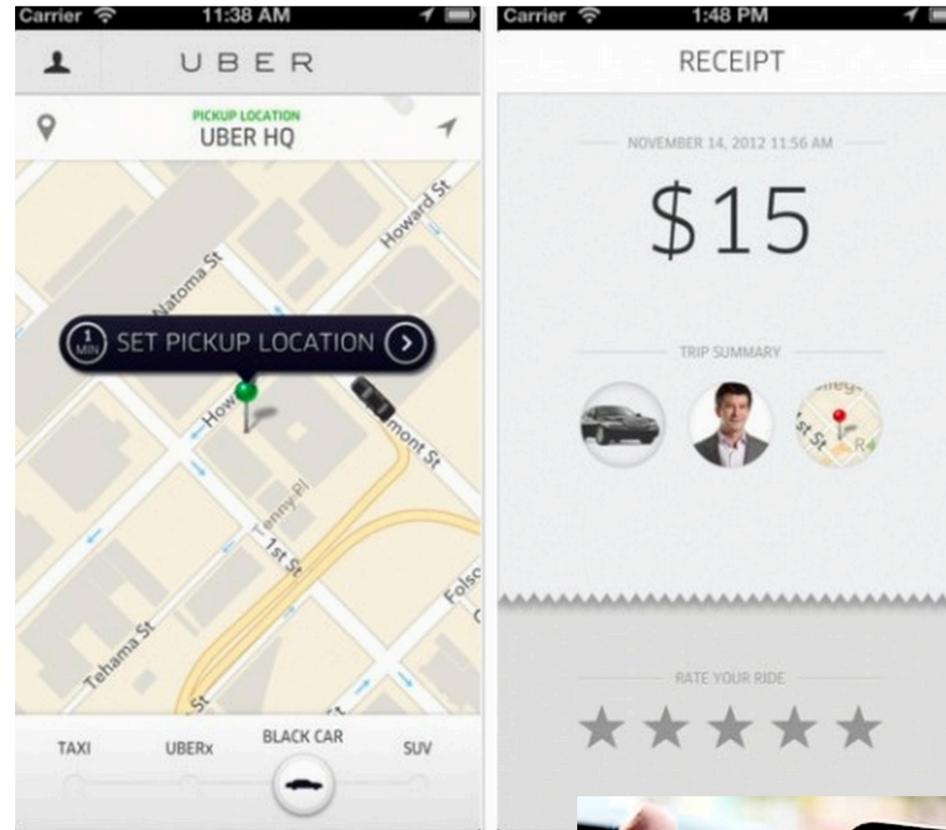
**What is IFTTT?** IFTTT is a service that lets you create powerful connections with one simple statement:



IFTTT is pronounced like "gift" without the "g."

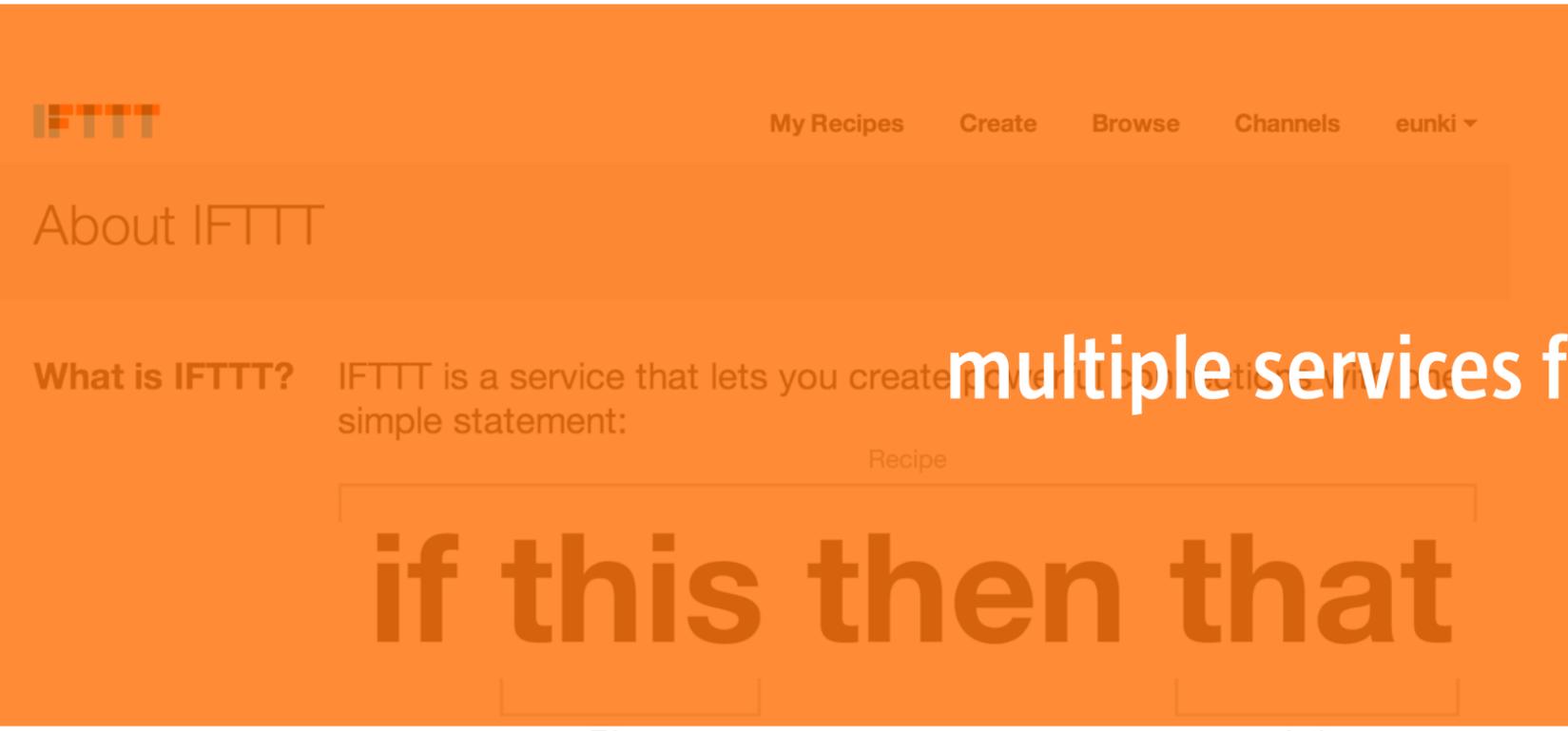
## Channels

Channels are the basic building blocks of IFTTT. Each Channel has its own Triggers and Actions. Some example Channels are:

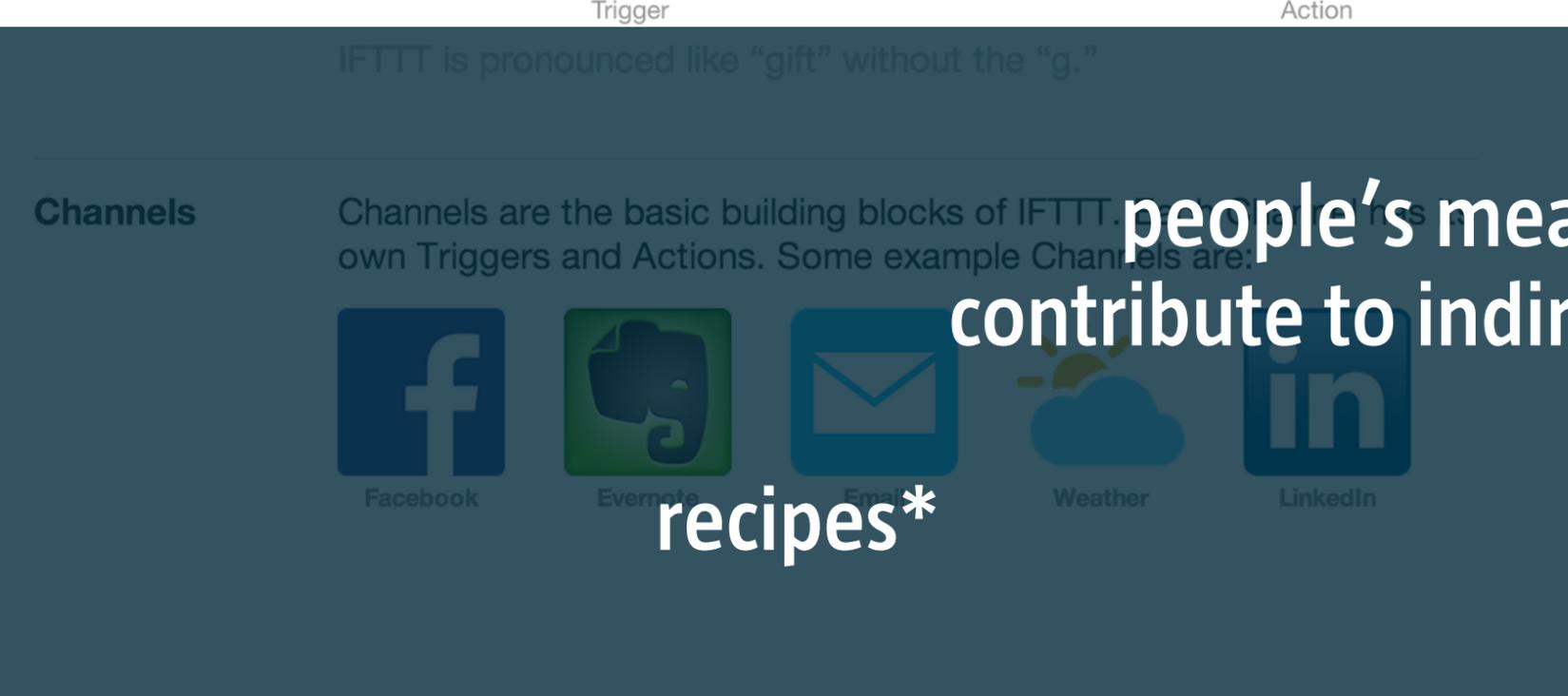
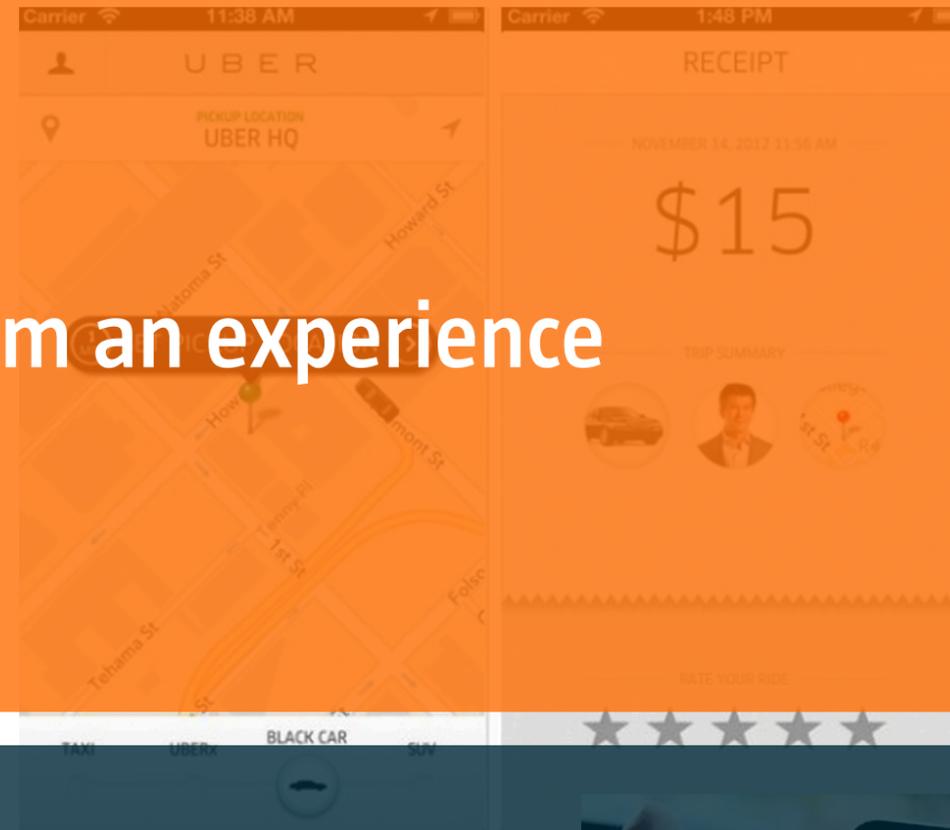


IFTTT

Uber



multiple services form an experience



people's meaningful data\*  
contribute to indirect financial assets

recipes\*

ratings on trustfulness\*



# Flipboard

# Google Wave

The screenshot shows the Flipboard mobile app interface. At the top, it displays the time as 6:55 PM and the battery level at 96%. The main content is organized into a grid of sections:

- Flipboard** (your social magazine)
- Facebook**: "Add your Facebook account..."
- Twitter**: "A Great Way To Commemorate An Old Friend <http://bit.ly/aQQFR2>" by Mohammed Yassin.
- Inside Flipboard**: "meet the team! <http://farm5.static.flickr.com/>"
- FlipTech**: "Support @ablegamers, a charity for videogame accessibility, by GameLife"
- FlipStyle**: "Fab Ad: Gisele Bündchen for Roberto Cavalli: Hip, hip, hooray!" by FabSugar Australia.
- FlipPhotos**: "Oil spill in Dalian, China - <http://b.globe.com/bLqKU7>" by The Big Picture.
- FlipEats**: "Sometimes in life you have to choose, even though the decision" by Adam Roberts.
- FlipTrip**: "ROADSIDE ATTRACTIONS" featuring "STANDIN' ON THE CORNER PARK, WINSLOW, ARIZONA" and "RT @TravelWriting: It's a girl my lord in a flatbed Ford.... RT" by Gadling.

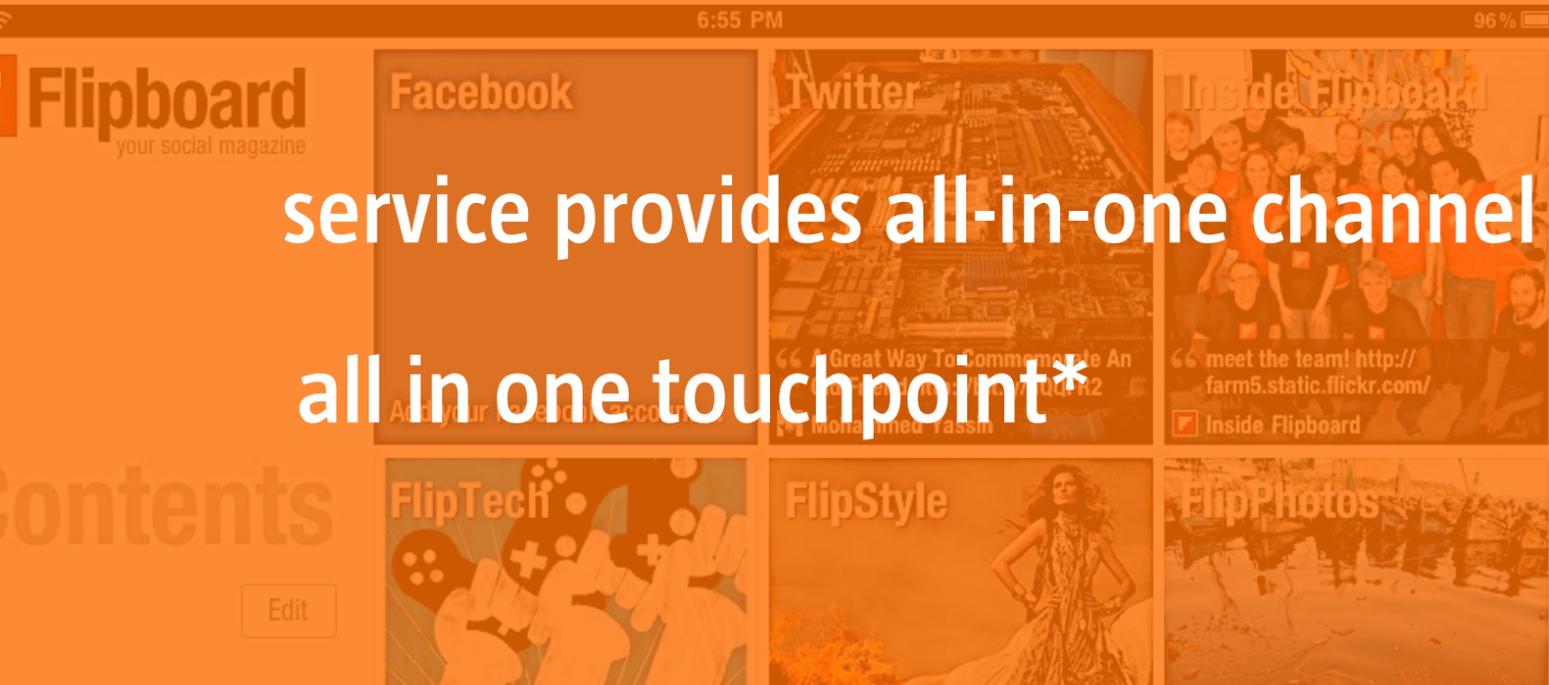
At the bottom right, there is a button labeled "+ Add a Section".

The screenshot shows the Google Wave web interface. The browser address bar displays "http://wave.google.com/". The main content area is divided into several sections:

- Navigation**: Includes links for Inbox, Active, All, By Me, History, Spam, Settings, and Trash.
- SEARCHES**: Includes "To Do's" and "Triathlon".
- FOLDERS**: Includes "Apartment".
- Contacts**: Lists contacts such as Anna-Christina, Gregory, Jens, Lars, Narelle, Steph, Alec, Andrew M, Ben, and Casey.
- Inbox 1 - 17 of 27**: A list of messages with details like "Dinner and board games", "Snapshots!", "BBQ on Sunday!", "Sushi time?", "Hey Steph", "Wayward music player?", "See what turned up on my front lawn yesterday!", "It's Movie Time!!!", "Pics from a walk in Sydney...", "Gallery opening this Thursday", "Any tips for combating jet-lag?", "The Castle (Mandatory Fun)", "Say, here are some photos from the Kokoda track.", "Favorite Place to Travel - Poll", "Who wants to see transformers?!", and "Offsite pics!".
- Snapshots!**: A section for sharing and viewing snapshots, including "Desert Antelope", "Toucan Too", "Dawn Tree", "Winter Leaf", "Autumn Arvo", and "Old Creek".

# Flipboard

# Google Wave

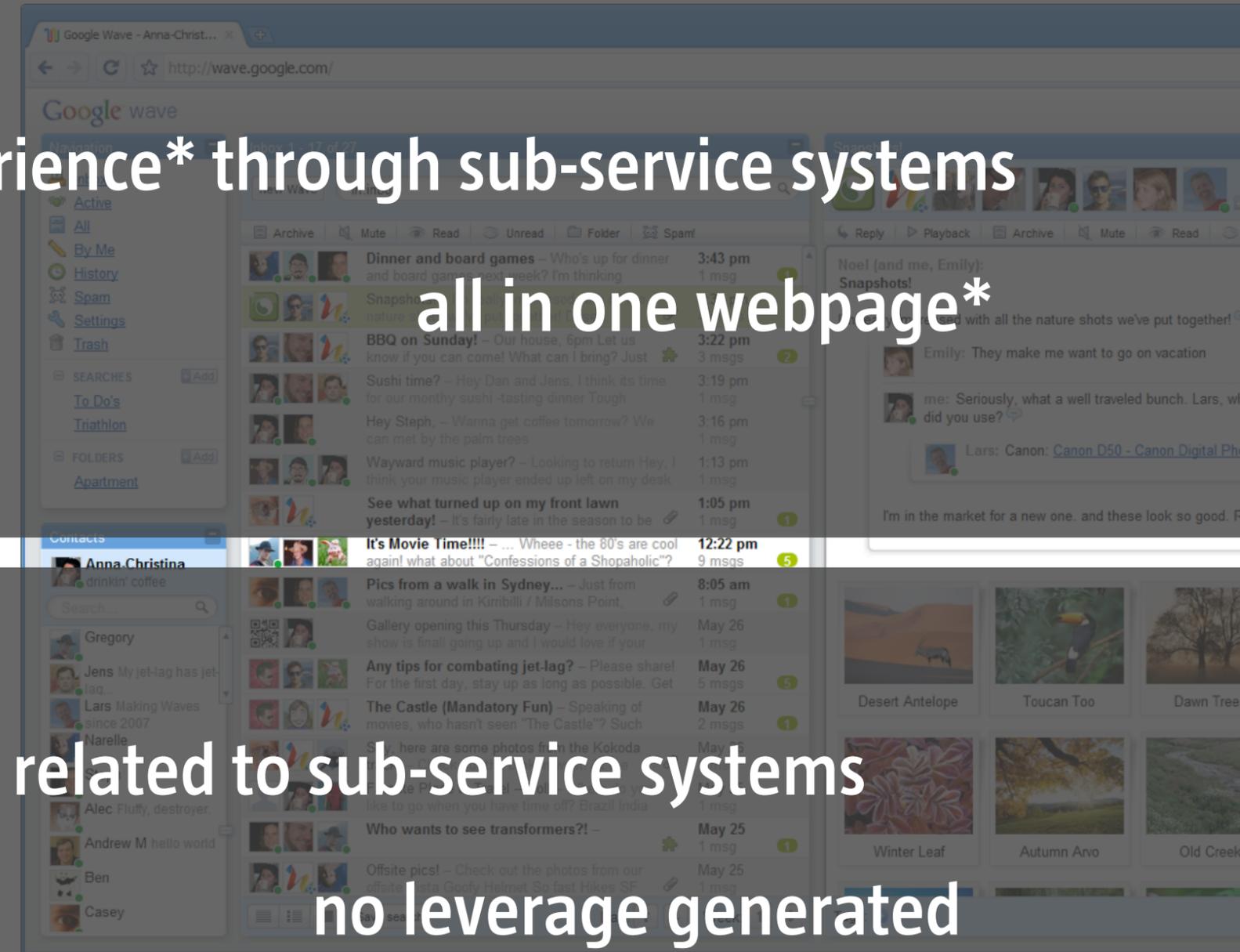


service provides all-in-one channel experience\* through sub-service systems

all in one touchpoint\*

service aims to generate leverage\* related to sub-service systems

+ leverage towards media partners\*



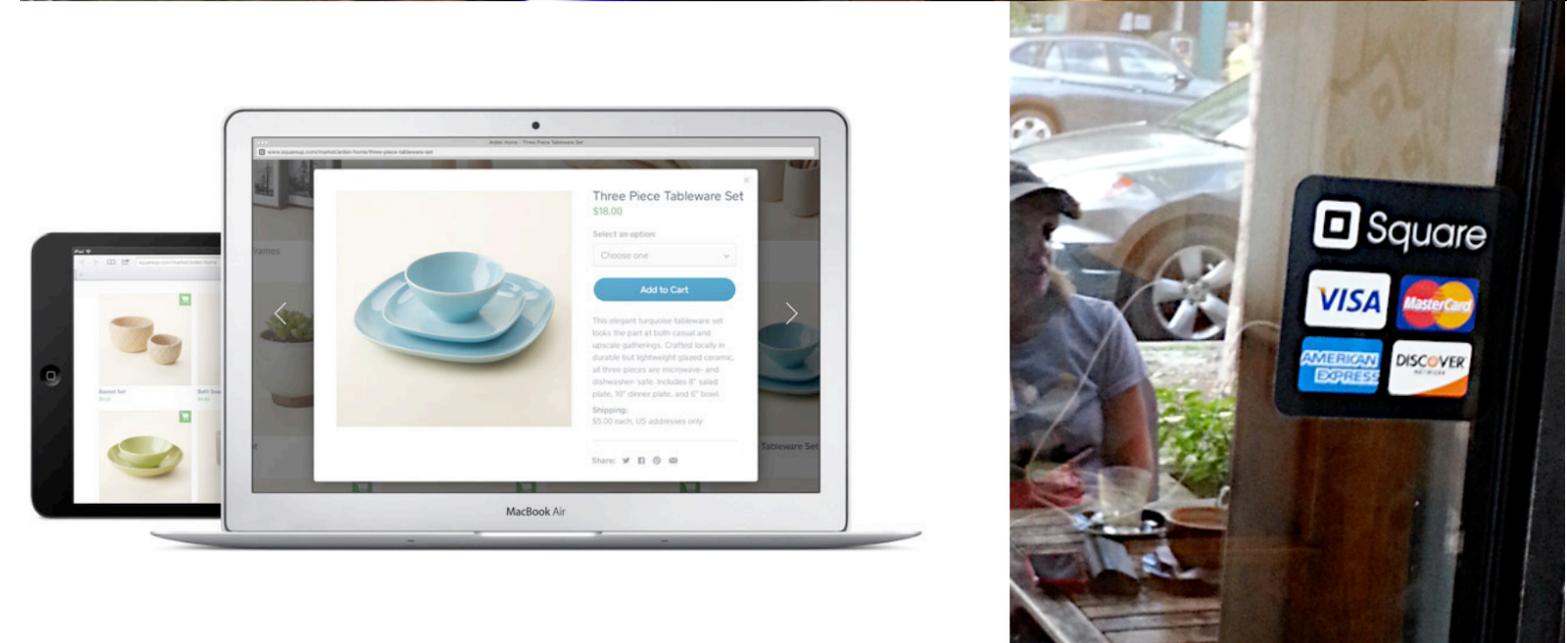
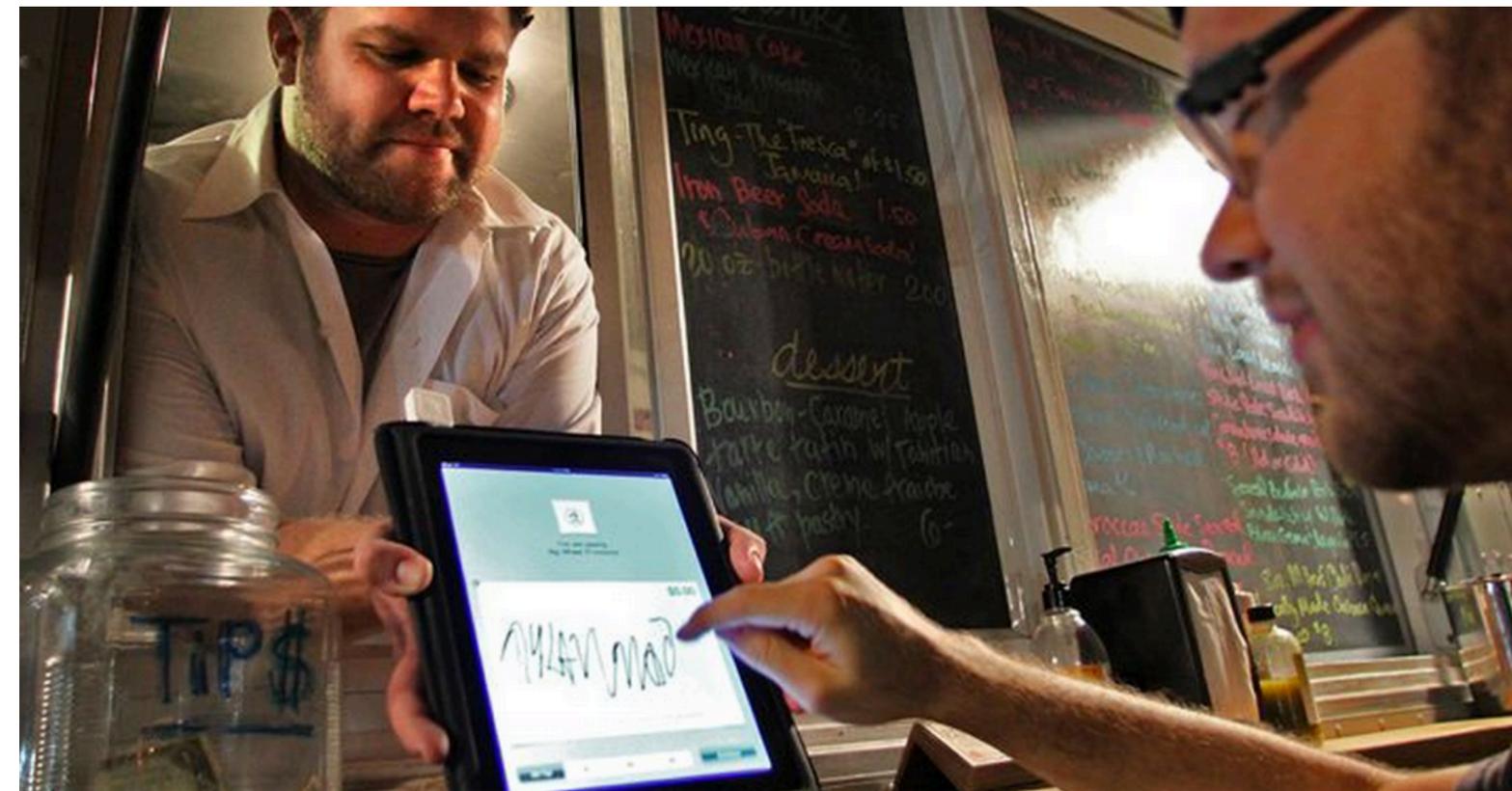
all in one webpage\*

no leverage generated towards Google family services\*

# iTunes in Starbucks



# Square



# iTunes in Starbucks

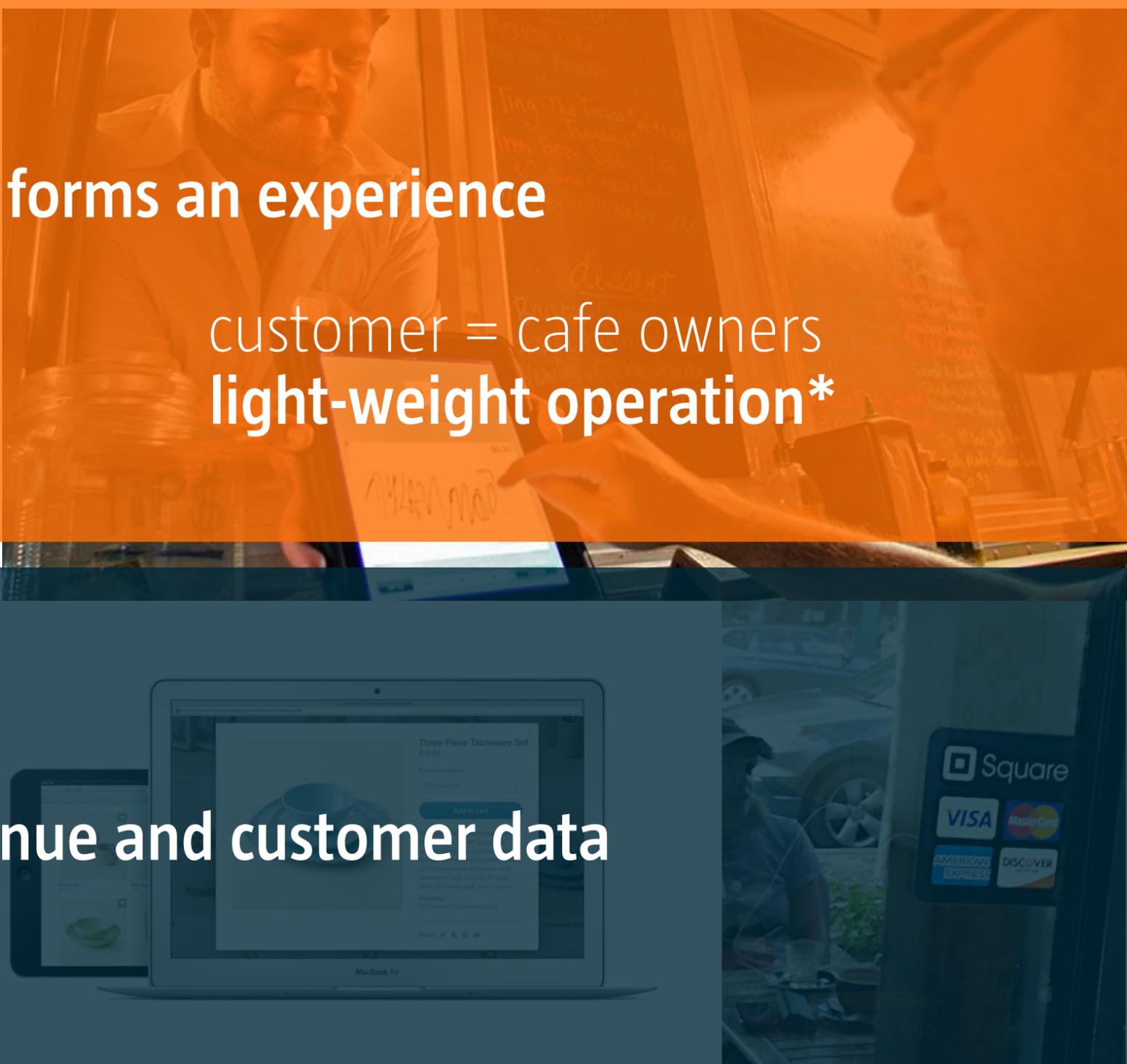
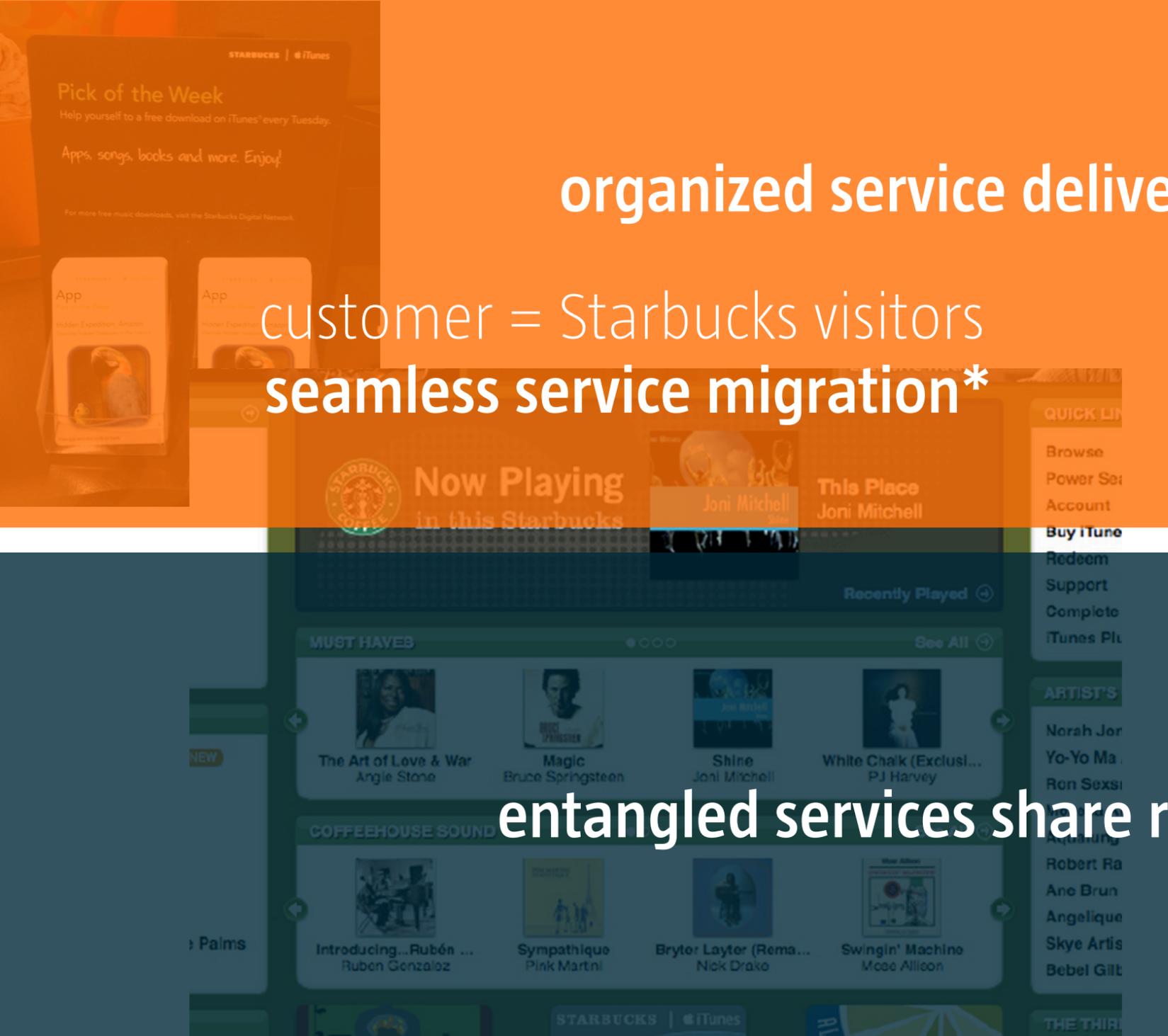
# Square

organized service delivery\* forms an experience

customer = Starbucks visitors  
seamless service migration\*

customer = cafe owners  
light-weight operation\*

entangled services share revenue and customer data



# Exploring typology of Services Entanglements: systems perspective

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## **– *how entangled service systems get codependent each other?***

what are the leading and supporting constituents of co-dependent relationship?

how co-produced value is distributed across the constituents?

density of relationships? [single, handful, plenty of]

openness of connections? [unique, limited, unlimited, inscrutable]

## **– *how entangled service systems' experience are orchestrated?***

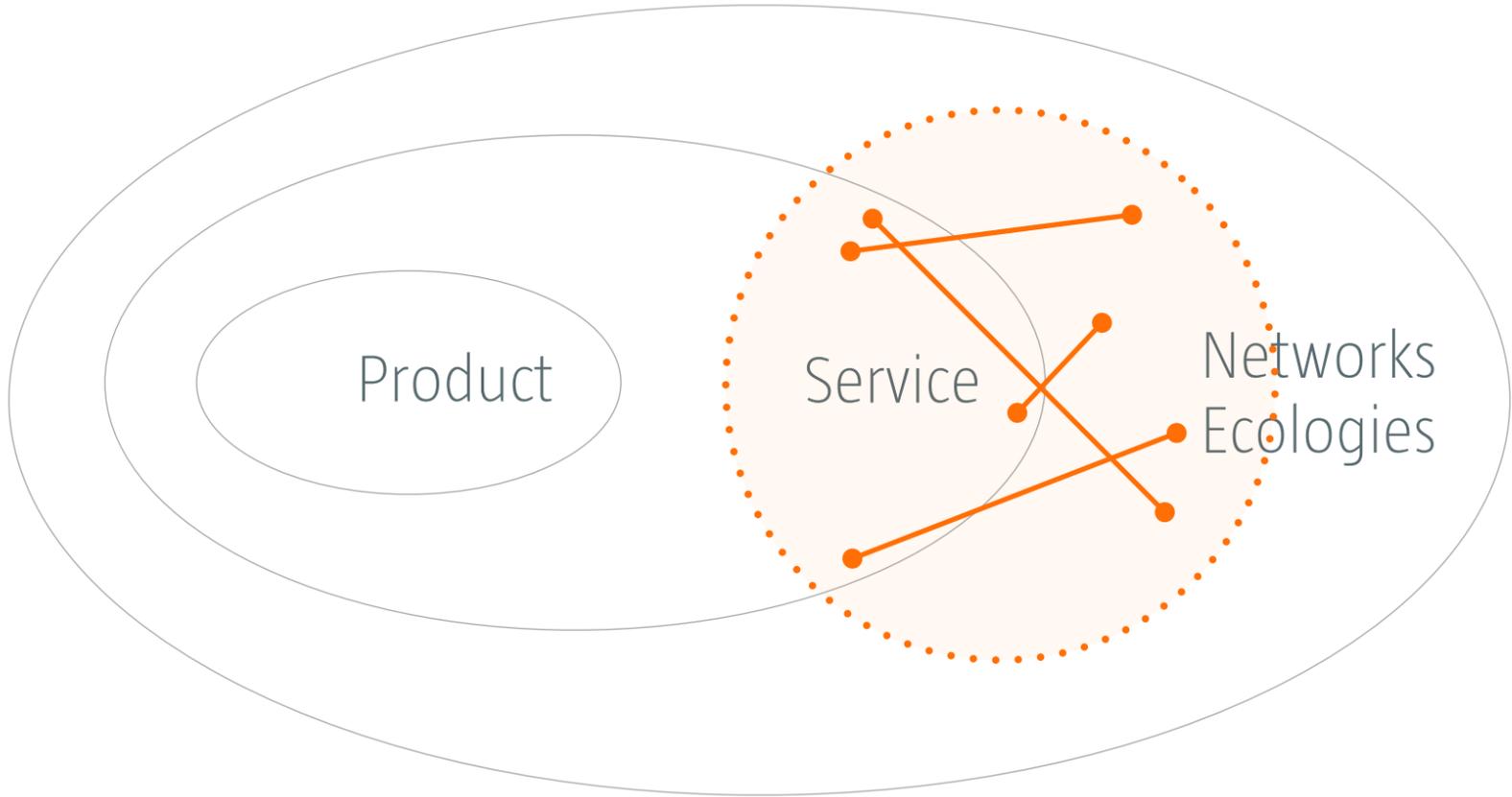
who are the stakeholders of designing the intersections of systems?

how are project and task ownerships distributed across the stakeholders?

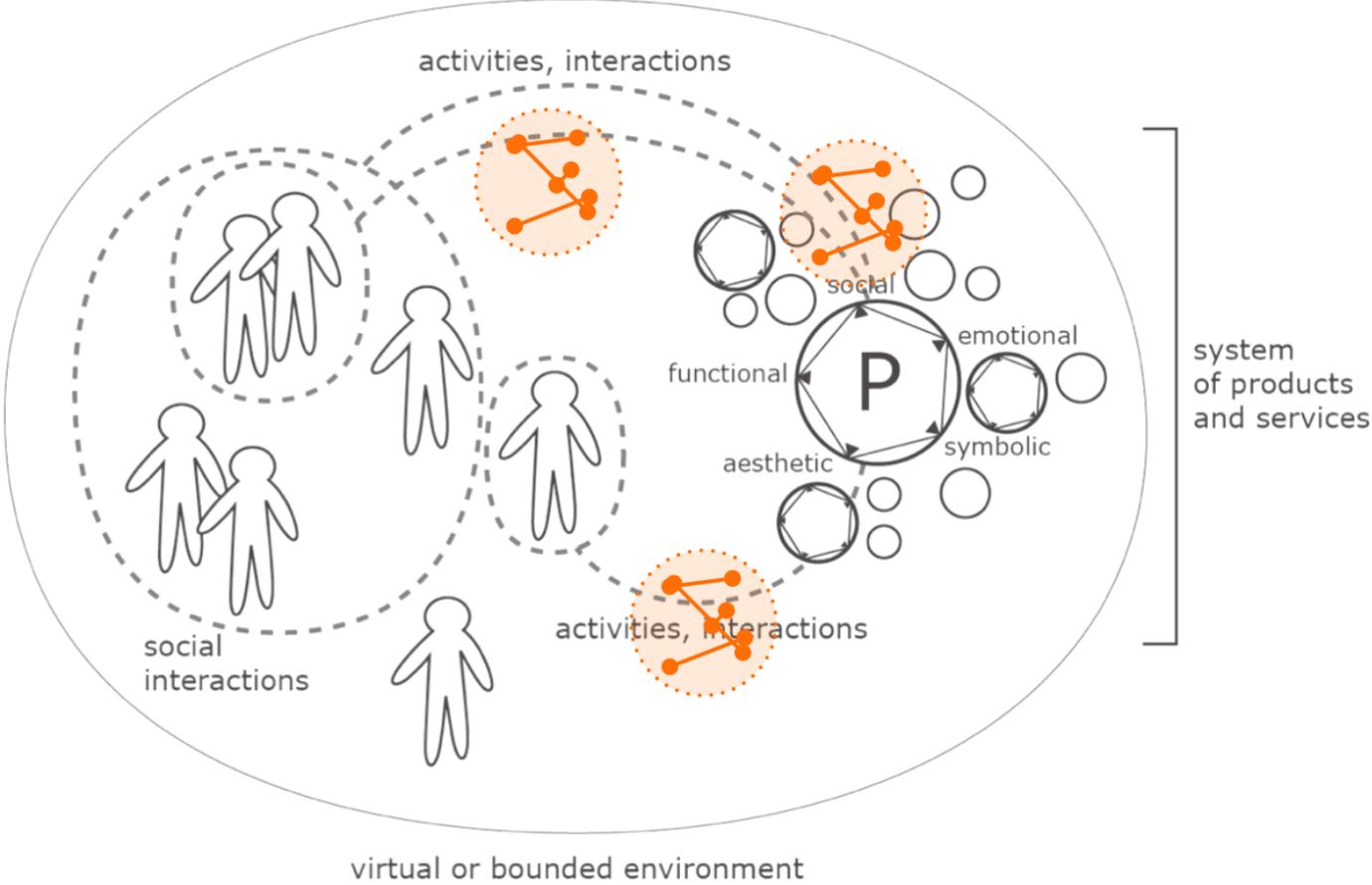
what are the barriers of interfacing, layering and polishing systems intersection?

***: from unexplored messs towards organized complexity***

# Why Service Entanglement is helpful



model by Hugh Dubberly (2013)

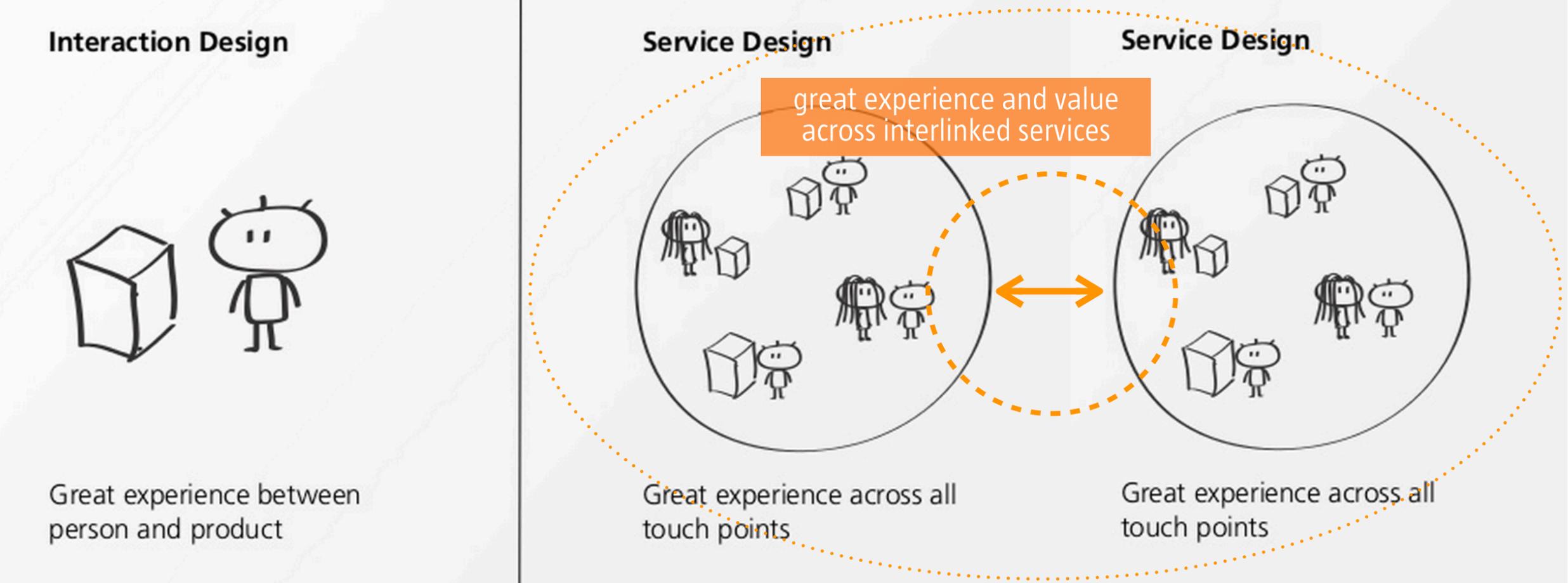


Product Service Ecology (Jodi Forlizzi, 2013)

# Why Service Entanglement is helpful

Services now create experience and value in more complex way than a single product or service system does.

Current Interaction and Service Design practice and research do not really focus at multiple service/business entities interrelations



*Service Design – Interaction Design Perspective, Jamin Hegemen, Adaptive Path, 2011*

# What Service Entanglement can do

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- 1. Service Entanglement helps concrete understanding on Service Ecology: as a world-view**
- 2. Service Entanglement provides a point of view to assess current landscape of service ecology in Service Design project: as an approach for better problem solving**
- 3. Service Entanglement can inspire designers to think of a meaningful codependency in New Service Creation and Development: as an approach for problem seeking + perturbation**

# Discussions

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**Systemic perspective of Interaction Design**

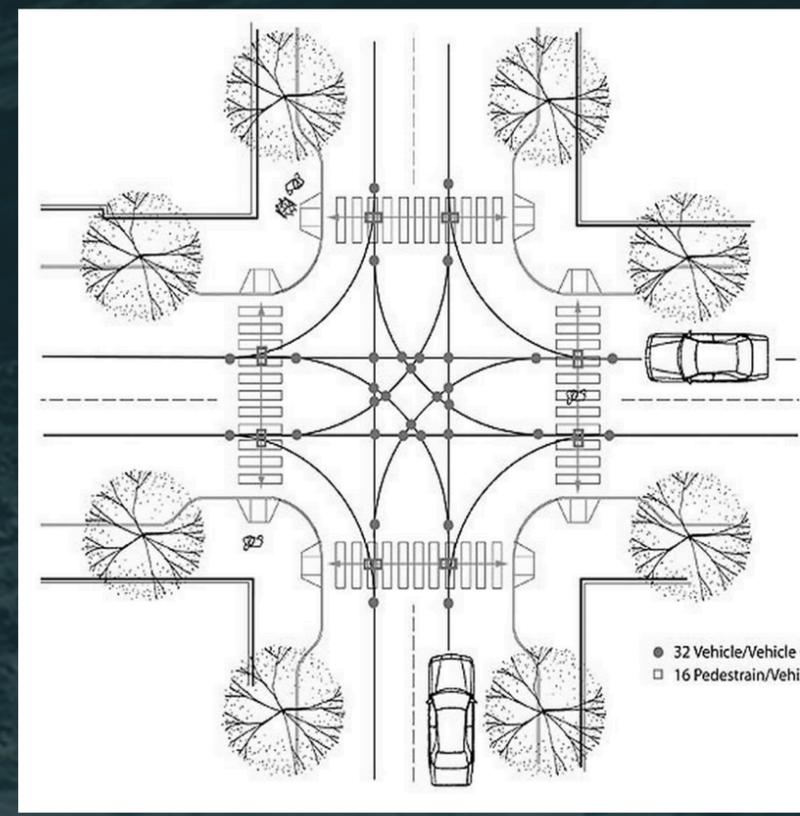
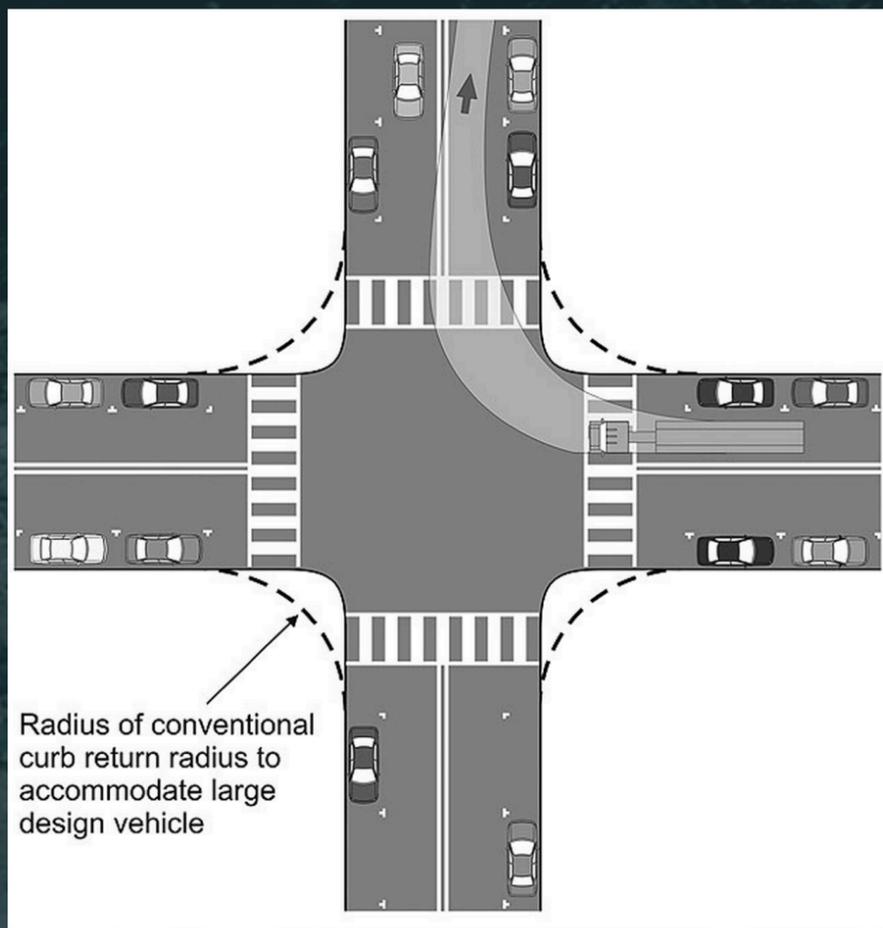
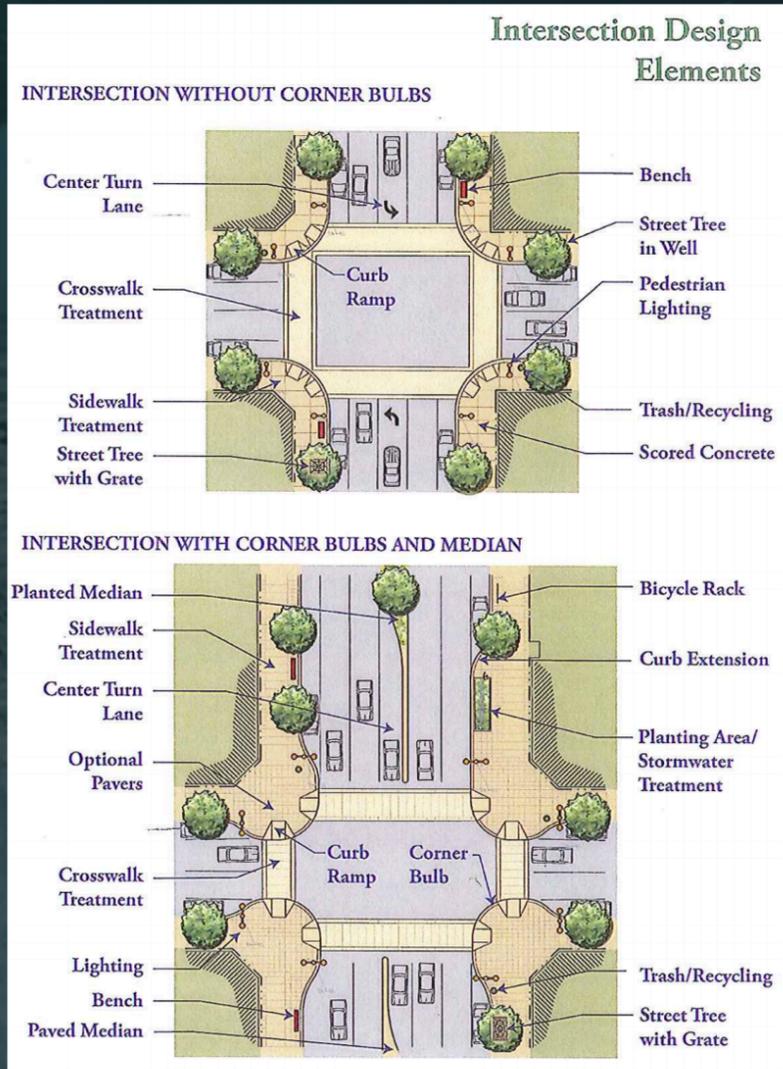
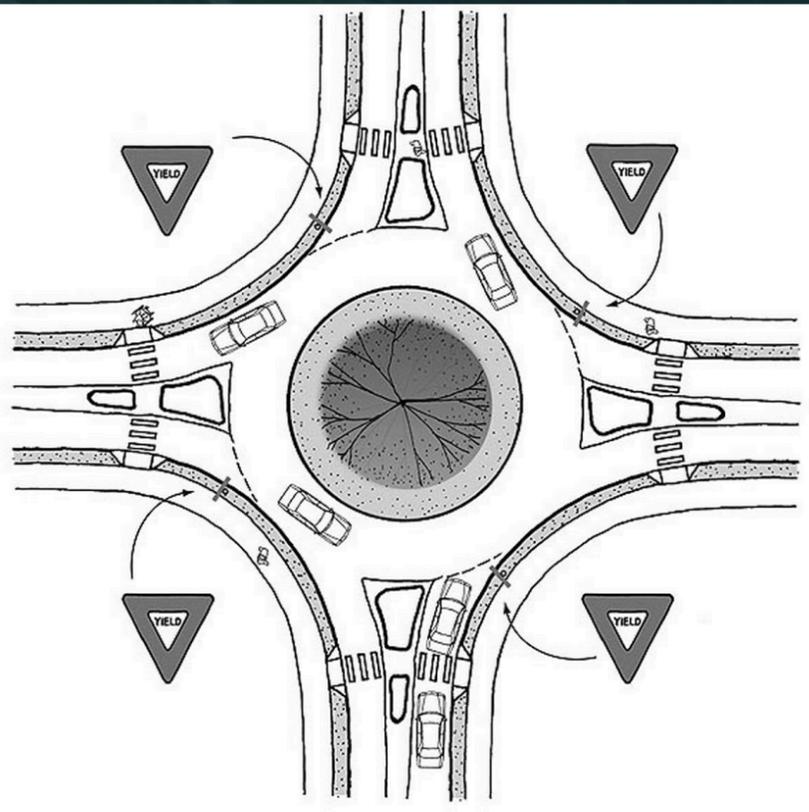
**Systemic perspective of Service Design**

**Design perspective of Service Business Strategy**

**Design perspective of Service Management, Marketing and Evolution**

**Service perspective of understanding Design\***

- How the study of Service Entanglement can advance discussion of Service Element in Design concept?
- If designers are not totally in service relationship, what would it be the proper description of it?  
(ex. designers creating a service startup using open APIs from certain systems)



Quantum entanglement is kind of romantic.  
Two particles with an entangled fate,  
no matter the distance between them...



Yet the mystery of their fate is necessary.  
When you determine the value of one of them,  
the wavefunction collapses and entanglement ends.



Do you love me?



Is there a right answer  
to this question?



# Designing Service Entanglement

: holistic approach to new pattern of complexity in service design

*prepared by*

Eunki Chung

*acknowledgements*

Jodi Forlizzi, John Zimmerman

Carnegie Mellon School of Design / HCII

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