# Knowledge Sharing in the Networked World of the Internet of Things

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# FACTANK

#### Carla Hesse - Stanford historian:

"Knowledge is no longer that which is contained in space, but that which passes through it, like a series of vectors, each having direction and duration yet without precise location or limit....

"In the future, it seems, there will be no fixed canons of texts and no fixed epistemological boundaries between disciplines, only paths of inquiry, modes of integration, and moments of encounter."

# What the Internet of Things will do to/for you

- Expands the building blocks of knowledge
- Balloons the places where knowledge originates
- Changes the processes of creating knowledge
- Changes your capacity to gain knowledge
- Changes your ability to dispense knowledge
- Changes the value of knowledge
- Changes the velocity of knowledge creation

#### So ... knowledge managers are now in:

- The data / computer science business
- The artificial intelligence / algorithms business
- The augmented reality business
- The virtual reality business
- The Taxonomies 2.0 business
- The media analytics business
- The social outreach and input business

Networked knowledge in organizations A four-part harmony

- 1. Networked individuals
- 2. Networked information
- 3. Networked workplaces
- 4. Networked enterprises

Networked knowledge in organizations A four-part harmony

### 1. Networked individuals

#### Networked Individualism The move to looser, far-flung networks



Networked knowledge in organizations A four-part harmony

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- 2. Networked information

### The nature of networked information



- Pervasively generated
- Pervasively consumed
- Personal via new filters
- Participatory / social / spreadable
- Linked / scaled

- Continually edited / context changed
- Real-time / just-in-time
- Timeless / searchable
- Given meaning via networks & algorithms

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#### Traditional "fishbowl" --- Networked "switchboard"

- All work in same room
- Densely-knit, direct connections
- Most interactions within a small group
- Frequent contact; recurrent interactions
- Long-tie duration
- Mentoring by co-located workmates
- Repetitive tasks, deskilling
- Power array: top of the hierarchy

- Each works separately
- Sparsely-knit, not know each other
- Many people contacted in multiple workplaces
- Variable, changing frequency of contact
- Switching with multiple ties
- Less mentoring, harder to learn tacit knowledge
- Multiple tasks, added skilling
- Power array: Betweenness Centrality

### Networked work: Balance sheet

#### <u>Assets</u>

- Surfaces extra information
- Applies talents where needed
- Multiple perspectives on solutions
- More fluid and nimble
- Potentially more innovative

#### <u>Debits</u>

- Trust
- Focus
- Coordination
- Loyalty
- Extra effort
- Institutional memory lapses

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Knowledge value moves from stocks to flows – <u>The Power of Pull</u> – John Hagel, John Seely Brown, Lang Davison

The return on assets (ROA) for U.S. firms has steadily fallen to almost one-quarter of 1965 levels





especially on edges (firm/industry/region/gen Y,..)

Networked knowledge in organizations ... Enabled by four tech revolutions

- 1. Internet / broadband
- 2. Mobile
- 3. Social networking and media
- The emergent Internet of Things

#### **Our inspirer**



#### Our 'news peg'



# Survey 6 – 2013-4

#### PewResearch Internet Project

Â	U.S. POLITICS		MEDIA & NEWS	SOCIAL TRENDS		RELIGION		INTERNET
PUBLICATI	ONS	TOPICS	PRESEN	TATIONS	INTEF	ACTIVES	KEY I	NDICATORS

#### The Web at 25

On March 12, 1989 (25 years ago), Tim Berners-Lee wrote a paper proposing an "information management" system that became the conceptual and architectural structure for the Web. He eventually released the code for his system—for free—to the world on Christmas Day in 1990. It became a milestone in easing the way for ordinary people to access documents and interact over a network of computer networks called the internet—a system that had been around for years.

#### http://bit.ly/OgpZkS

#### Digital Life in 2025

<u>The Internet of Things Will</u> <u>Thrive by 2025</u>

Net Threats by 2025

AI, robotics and the future of jobs

Killer apps in the gigabit age

Cyber attacks likely to increase

# November 25–January 13 2,551 respondents

- 19% research scientist
- 10% authors, editors, journalists
- 9% entrepreneurs, biz leader
- 8% tech developers
- 8% activists
- 7% futurists, consultants
- 2% legislators, lawyers
- 2% pioneers

### Digital Life in 2025

This is an **open-ended question** allowing you to make your own prediction about the role of the Internet in people's lives in 2025 and the impact it will have on social, economic and political processes. Good and/or bad, what do you expect to be the *most significant overall impacts* of our uses of the Internet on humanity between now and 2025?



The Internet will become 'like electricity' less visible, yet more deeply embedded in people's lives for good and ill "A Day of Glass" - Corning <u>https://www.youtube.com/watch?v=jZkHpNnXLB0</u>

#### The Internet of Things Will Thrive by 2025

The evolution of embedded devices and the Internet/Cloud of Things —As billions of devices, artifacts, and accessories are networked, will <u>the</u> <u>Internet of Things have widespread and</u> <u>beneficial effects</u> on the everyday lives of the public by 2025?

#### Future of Internet of Things

Yes – widespread and beneficial

No

83%

17%

#### The Internet of Things Will Thrive by 2025



It's the next revolution. <u>Upsides:</u> enhanced health, convenience, productivity, safety, and vastly more useful information. <u>Downsides:</u> privacy challenges, over-hyped expectations, tech complexity, lagging human adaptation to new realities.

#### The rollout



#### Check on baby – wearable monitor



#### Get most of your meds – pill sensor



#### Monitor family member





# Heat your home efficiently – smart thermostat



#### Make sure oven is off – smart outlets



#### Track down lost keys - tags





#### Keep your plants alive



#### COMMUNITIES

20000

#### Streets clean



# Parking



#### **Pollution warnings**



### Share your findings – 'aircasting'



#### ENVIRONMENT

Antes

#### Track water



#### Help protect wildlife



# Get advanced warning – mudslide detection



#### Know the variables



Lil Bee

myhomealerts: Life is good! We're busy working. [Moderate #bumblebee #activity detected (Pulse Count 133)] divr.it/1XTCbf #auto









#### Stop the bleeding



#### Industry and logistics

#### Maintain and repair



#### Stop guessing



#### Monitor



Smart Structures Inc is the global leader in wireless Embedded Data Collector (EDC) solutions used to determine pile capacity and integrity in real-time.

Smart Structures' <u>technology</u> and <u>solutions</u> improve the quality of bridge pilings and deep foundations while <u>reducing</u> the overall foundation costs. This is accomplished through our field-proven <u>SmartPile@</u> <u>EDC technology</u> that is embedded in every concrete pile and accessed wirelessly during installation and post-installation. Through simple-to-install sensors and easy-to-use software, the effort and time required to test piling during driving has been significantly reduced.

When applied to every pile during construction, it is possible today to drastically improve the overall quality of the foundation and, more importantly, reduce the cost of the structure by reducing the design overbuild (AASHTO LRFD resistance or phi). SmartPile™ EDC Training Program >

#### Latest News

- <u>Smart Structures EDC</u>
   <u>Operator Recertification</u>
- <u>Smart Structures in the</u> <u>Concrete Zone at The Big 5</u> <u>Saudi Show</u>

DADICE to partner in

#### Keep track of your assets





# Hopeful theses

- 1) Information sharing over the Internet will be effortlessly interwoven into daily life.
- Artificial intelligence, augmented reality, wearable devices, and big data will make people more aware of their world and their own behavior – especially aid in health care.
- The spread of the Internet will enhance global connectivity that fosters more planetary relationships and less ignorance.
- 4) An Internet-enabled revolution in education will spread more opportunities, with less money spent on real estate and teachers.

#### Downbeat theses

- The realities of this data-drenched world raise substantial concerns about privacy and people's abilities to control their own lives. The level of profiling and targeting will grow and amplify social, economic, and political struggles.
- 2) Dangerous divides between haves and have-nots may expand, resulting in resentment and possible violence.
- 3) Abuses and abusers will 'evolve and scale.' Human nature isn't changing; there's laziness, bullying, stalking, stupidity, pornography, dirty tricks, crime, and those who practice them have new capacity to make life miserable for others.

### Downbeat theses (con't)

- 4) Pressured by these changes, governments and corporations will try to assert power as they invoke security and cultural norms.
- 5) Humans and their organizations may not respond quickly enough to challenges presented by complex networks.
- 6) There will be complicated, unintended consequences: 'We will live in a world where many things won't work and nobody will know how to fix them.'

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- The networking with 'frenemies' business

### Be not afraid