

Collaboration for intelligent technologies and healthcare solutions Oulu 20th March 2017

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GE: A heritage of innovation

- Founded by Thomas Edison in 1878
- Only company from the original 1896 Dow Jones index still listed today
- 305,000 employees world-wide operating in more than 160 countries



GE HEALTHCARE

Diagnostic and Interventional
Imaging

Patient Monitoring

Maternal and Infant Care

Anesthesia and Respiratory
Care

Diagnostic Cardiology

Healthcare IT

Life Sciences

Healthcare Consulting

Global Services





GE HEALTHCARE FINLAND

Helsinki site

- Development of Patient Monitoring, Anesthesia, and Clinical Information Systems
- Manufacturing of Patient monitors
- Sales and Marketing

Kuopio site

- Development of Clinical Information Systems

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Healthcare Challenges



Healthcare Trends and Challenges



Old and sick population

- ✓ Life expectancy ↑ 6.7 years over last 31 years, population growing ... more co-morbidities
- ✓ 15% of pop have asthma, hypertension or diabetes ... need medical follow-up

Challenges within the hospital

- ✓ Adverse events occur in 1/3 of all hospitalizations ... 0.5M preventable deaths per year
- ✓ 100M hospital patients per year are either not monitored at all or partially monitored
- ✓ Clinician “alarm fatigue” is a risk to every ICU’s patient every day...ECRI #1 Hazard in '15
- ✓ Hospital acquired infections... kill in US more than car accidents, AIDS and breast cancer combined

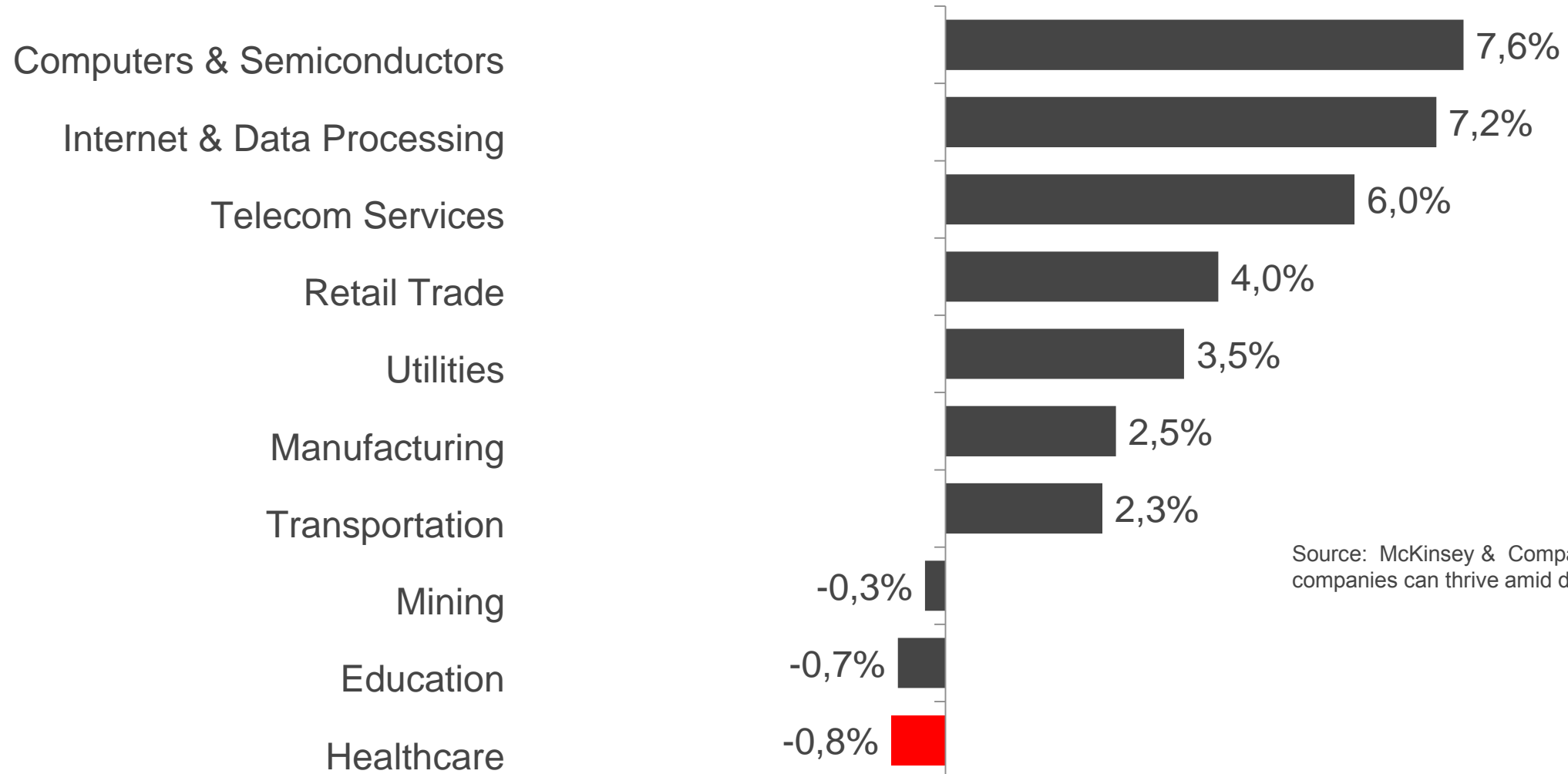
Acute care costs too much

- ✓ Acute Care: 5% of patients, 50% of care givers...80% of resources
- ✓ Length of stay, re-admissions, manual errors... €€€€



Industry productivity ... or lack thereof

Productivity Improvement %, 1990-2010



Source: McKinsey & Company, "How US healthcare companies can thrive amid disruption", June 2014



Solutions with intelligent technologies

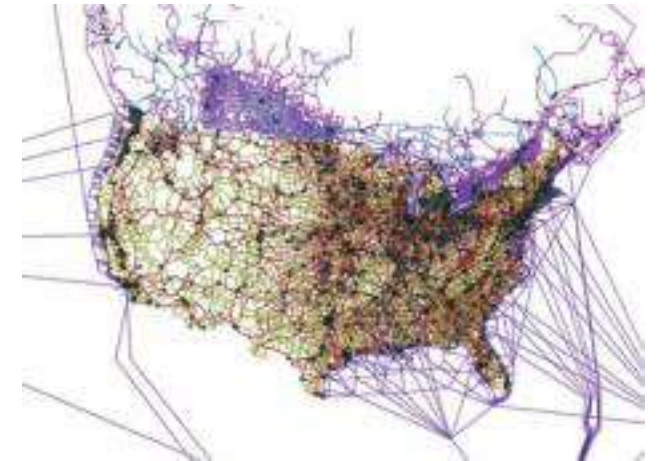


Global Industrial Internet Themes

- The term "industrial internet" was created by GE
- GE was one of the founding members of Industrial Internet Consortium

1 Internet of Things – A living network of machines, data and

2 people Intelligent Machines – Increasing system intelligence through embedded software

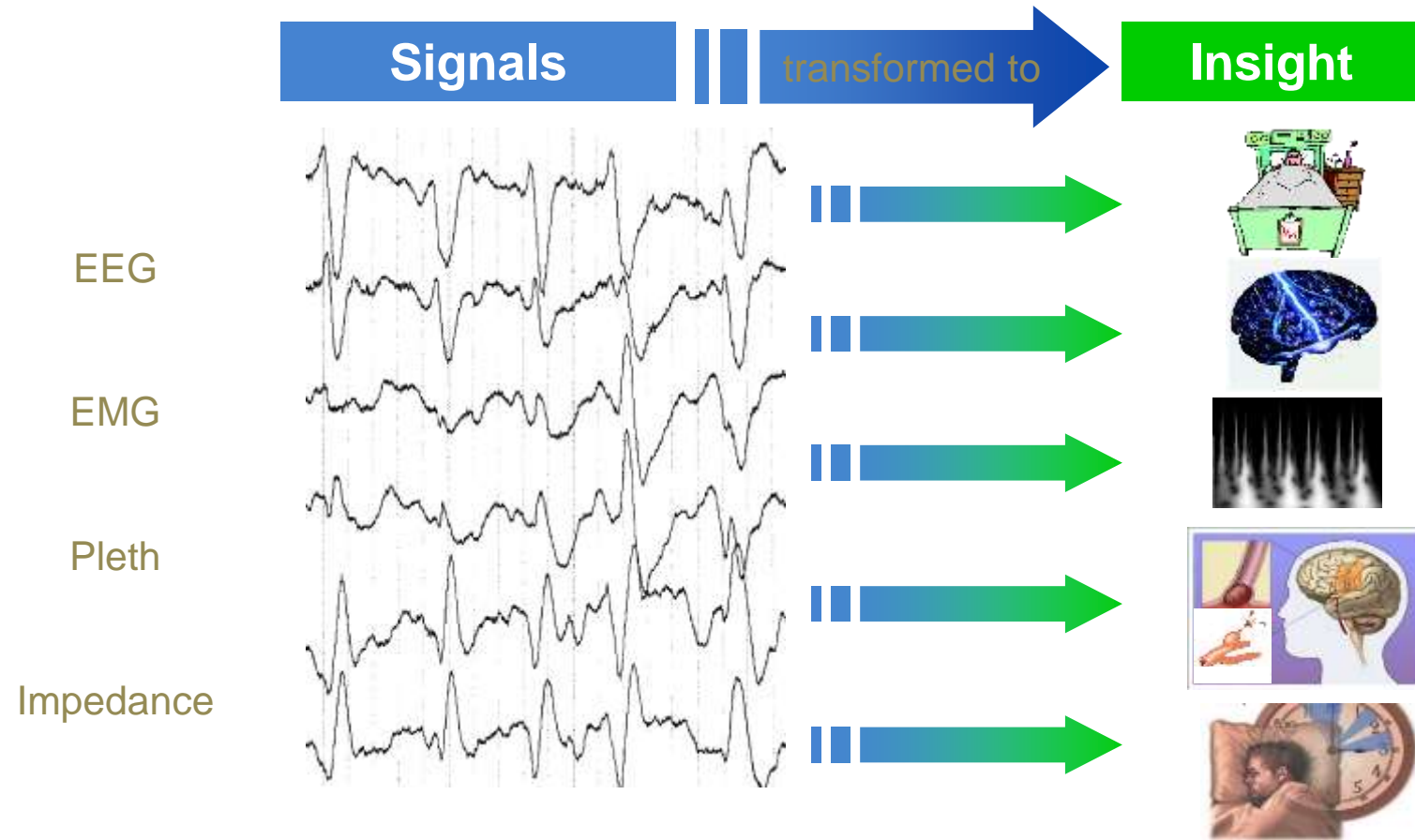


3 Big Data – Transforming massive volumes of information into intelligence



4 Analytics – Generating data-driven insights, enhancing performance










In past TEKES projects, various successful globally selling analytics-based products have been created, in collaboration with VTT, university hospitals, smaller Finnish companies

- Knowledge-based (rather than data driven) approach

The value to customers is huge

Connected machines could eliminate up to \$150 billion in waste across industries

Industry	Segment	Type of savings	Estimated value over 15 years (Billion nominal US dollars)
 Aviation	Commercial	1% fuel savings	\$30B
 Power	Gas-fired generation	1% fuel savings	\$66B
 Healthcare	System-wide	1% reduction in system inefficiency	\$63B
 Rail	Freight	1% reduction in system inefficiency	\$27B
 Oil and Gas	Exploration and development	1% reduction in capital expenditures	\$90B



Digging into the customer needs





We plan to collect and analyse data sent through the system to improve understanding of different patient groups and risk factors so that treatments can be appropriately individualised; and to enable learning that allows healthcare teams to work as effectively as possible.

Can you develop innovative wireless, wearable technology that can be coupled with intelligent analysis software to monitor patients in the ward and at home? Five academic hospitals have received over €5 million to challenge industry to help reduce death and disability from undetected deterioration and are keen to hear from you...

OUR PARTNERS

Pre-Commercial Procurement of Innovative Solutions



- EU funds the prospective users: the five hospitals
- The users (hospitals) guide the development using a funnel-shaped procurement model
- Suppliers (industry) develop new solutions in direct cooperation with the healthcare institutes
- Promotes early dialogue between the industry and the healthcare institute to optimize the solution



Urgent Need for Predictive Analytics

Emergency Care



Perioperative Care



Intensive Care



Perinatal Care



Subacute Care



Early detection of patient deterioration => Timely intervention => Outcome & cost effects

Timely transmission of a patient to a care unit of a higher acuity

Detection of a risk for organ failure

Detection of increased severity of an organ dysfunction

Detection of a risk for a patient's deterioration

Un-planned transmission to the ICU

Prevention of readmission of a discharged patient

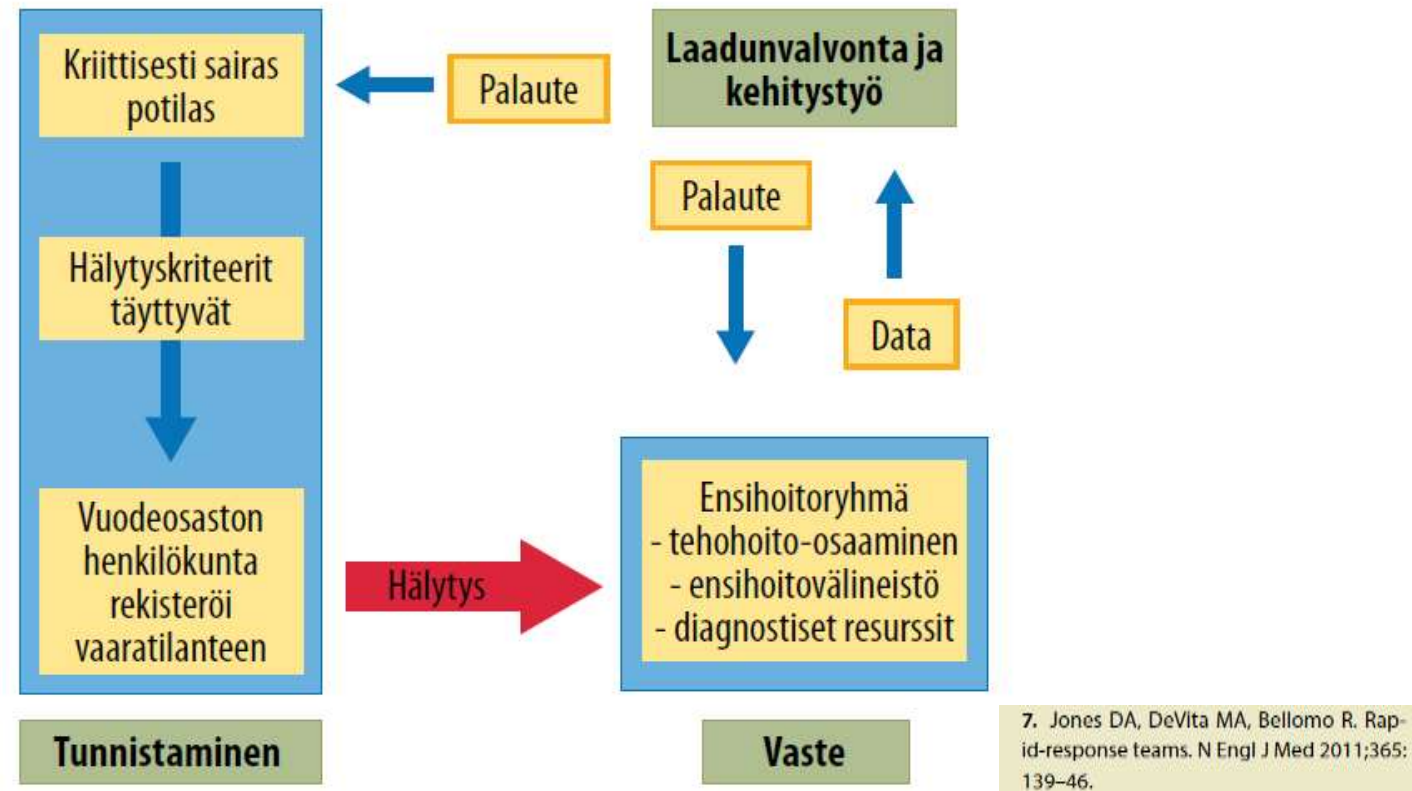
Prevention of readmission of a patient discharged to the ward

Prevention of readmission of a patient discharged to home



Tutkimusten valossa paras tapa vaikuttaa vuodeosastolla elottomaksi menevän potilaan ennusteeseen on ehkäistä koko tilanne

Sairaalansisäinen ensihoito on tullut jäädäkseen



FastWorks

Collaborative development with customers



Let's do this together

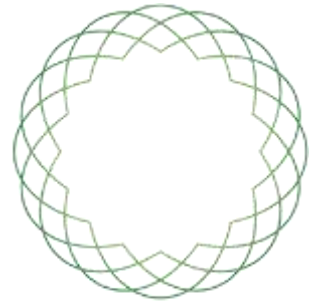


IoT platforms and cloud computing

Igniting the next industrial revolution by connecting minds and machines

GE Digital: \$1B investment over 3 years

- Launched in 2011
- Silicon Valley location, expanding
- Strategy for talent acquisition & growth



Predix

The collage features three news articles:

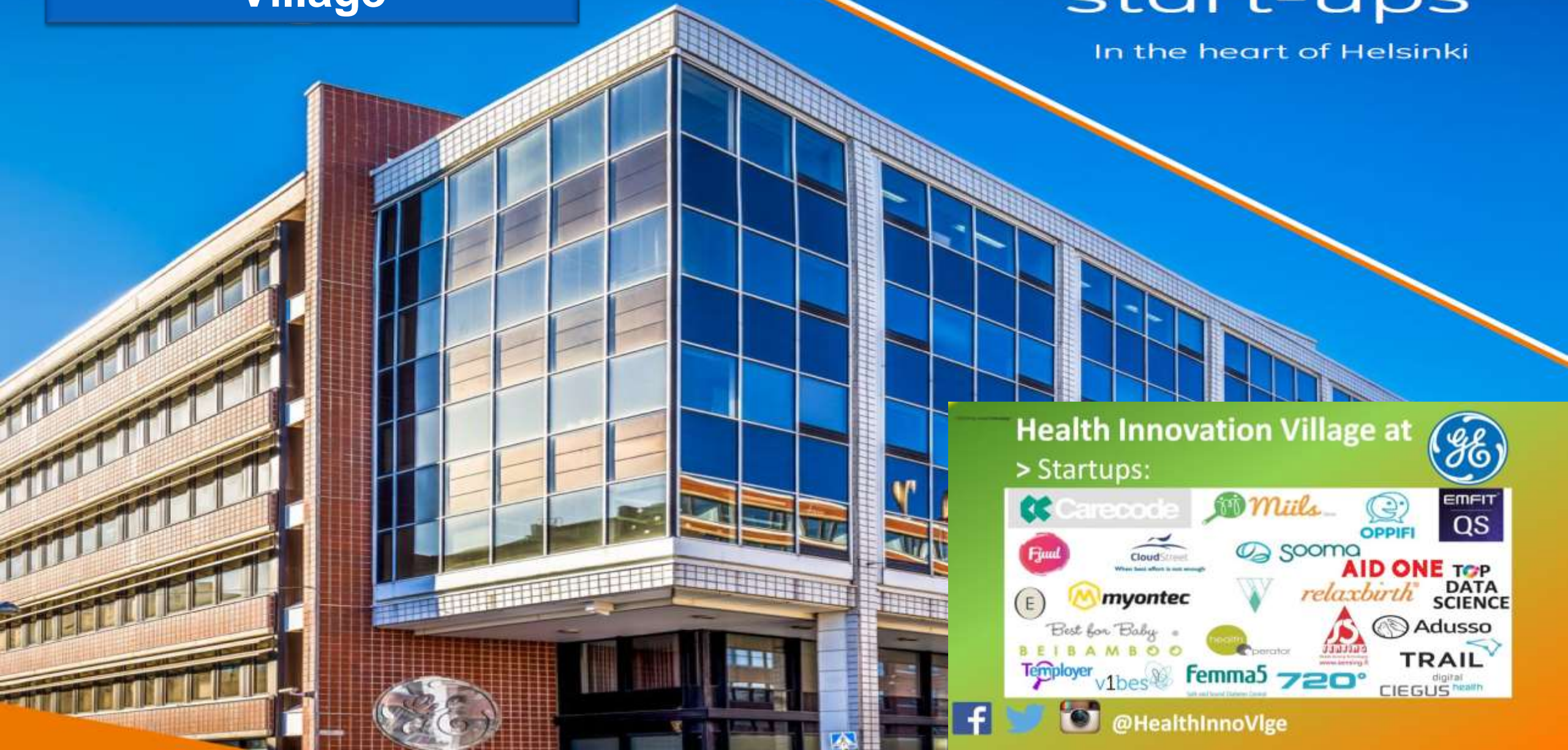
- The New York Times:** "Looking to Industry for the Next Digital..." by Steve Lohr, published November 20, 2012. It features a photo of Bill Ruh and Sharda Paul.
- CIO Journal:** "GE Hopes the Industrial Internet will Mean the End of Downtime" by Rachael King, published November 20, 2012.
- CIO Network:** "The Industrial Internet: Even Bigger Than Big Data" by Bill Ruh, a guest post written by Bill Ruh, VP and Global Technology Director at General Electric.



Health Innovation Village

Hotspot for start-ups

In the heart of Helsinki



Health Innovation Village at



> Startups:



@HealthInnoVlge

