

VILLE TENHUNEN
IT2014, 5.11.2014

EIKÄ TÄSSÄ VIELÄ KAIKKI...

AGENDA

- Yhteenvetoa
- Eikä tässä vielä kaikki...



LOPPUYHTEENVETO

EIKÄ TÄSSÄ
VIELÄ KAIKKI

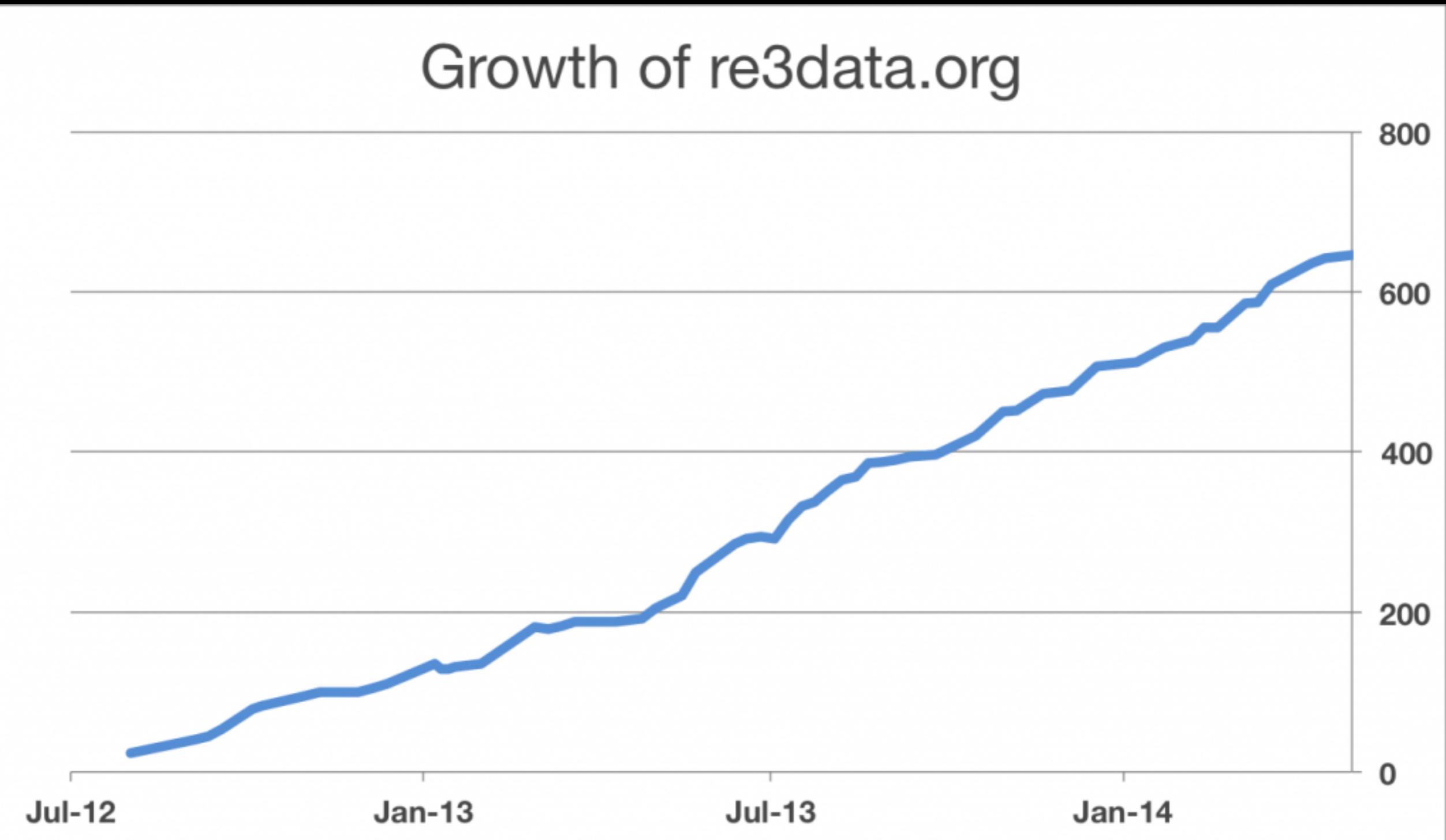
"Knowledge is the engine of
our economy. And data is its
fuel"

Neelie Kroes, EC

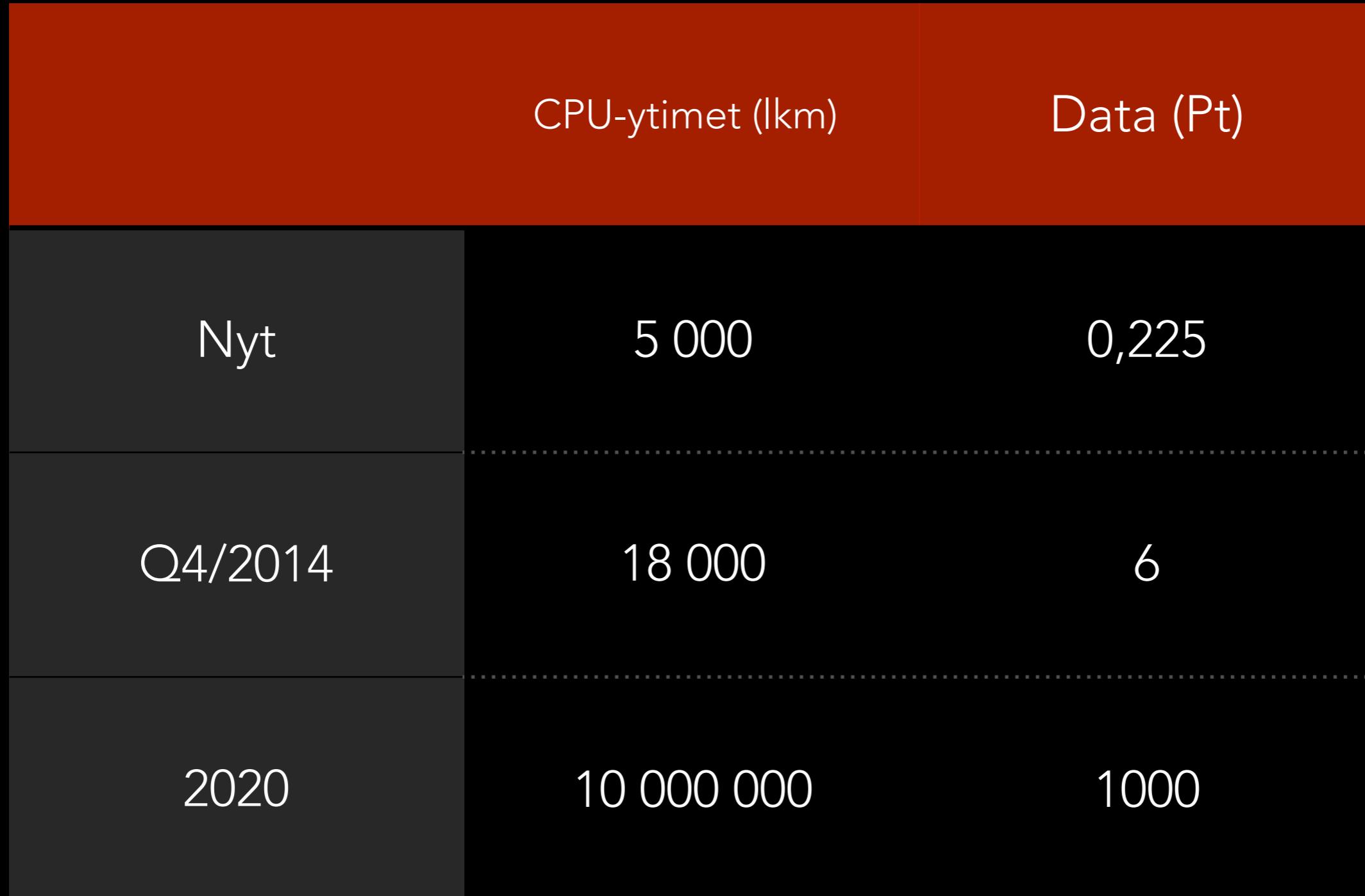


MÄÄRÄT KASVUSSA

Growth of re3data.org



EGI (European Grid Infrastructure) Federated Cloud

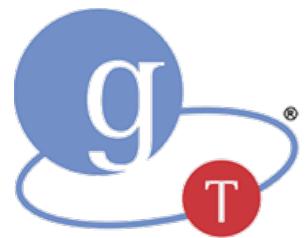


(Huom! Uusi palvelu, luvut eivät sisällä EGI:n muita resursseja)

EDELLEEN KANSAINVÄLISEMPÄÄ



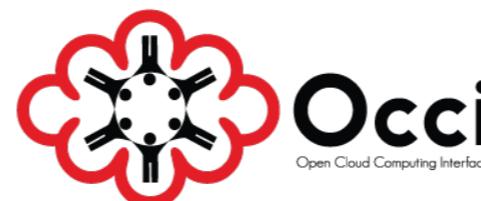
OpenAIRE



iRODS



INVENIO



EU Brazil Cloud Connect
EU Brazil Cloud Computing for Science



Research Data Sharing
without barriers



ARVOKAS AVOIMUUS

27 % OF THE PRODUCTS
AND 19 % OF THE PROCESSES
DEVELOPED OR INTRODUCED
DURING THE LAST THREE YEARS WOULD HAVE
BEEN **DELAYED OR ABANDONED**
WITHOUT ACCESS TO ACADEMIC RESEARCH.

Citizen science, crowd science

Internet of things,
internet of everything

IOT, INTERNET OF THINGS, LAITTEIDEN INTERNET

- Verkkoon liitettyjen laitteiden määrä kasvaa voimakkaasti, verkkokapasiteetin tarve jatkaa kasvuaan
- Tallennettavan datan määrä kasvaa entisestäänkin
- Automatisoidut tavat tehdä asioita
- Valtaosa verkkoon kytketyistä laitteista on mobiileja
- Tietoturva ja -tietosuojakykyiset uudelle tasolle



"There also are currently about 50 billion to 60 billion sensors in the world."

"By the year 2020, only seven years from now, Pendse said, technologists think there will be 50 billion smart devices, and 200 billion sensor devices, talking to each other, doing tasks for us, doing some thinking for us."

Professor Ravi Pendse, Wichita State University, 2013 (The Wichita Eagle)
<http://www.kansas.com/2013/01/19/2643201/billions-of-sensors-power-wichita.html>



"From 2005 to 2020 digital universe grows **300x** to 40 000 exabytes (5.2 TB per person)"

"By 2020 **35%** of digital universe will contain information that might be valuable if analyzed"

Christian Verstraete, CTO, HP, 2014



"1 trillion (10^{12}) is projected number of connected machines and devices by 2022"

Herbert Cornelius, Intel, 2014

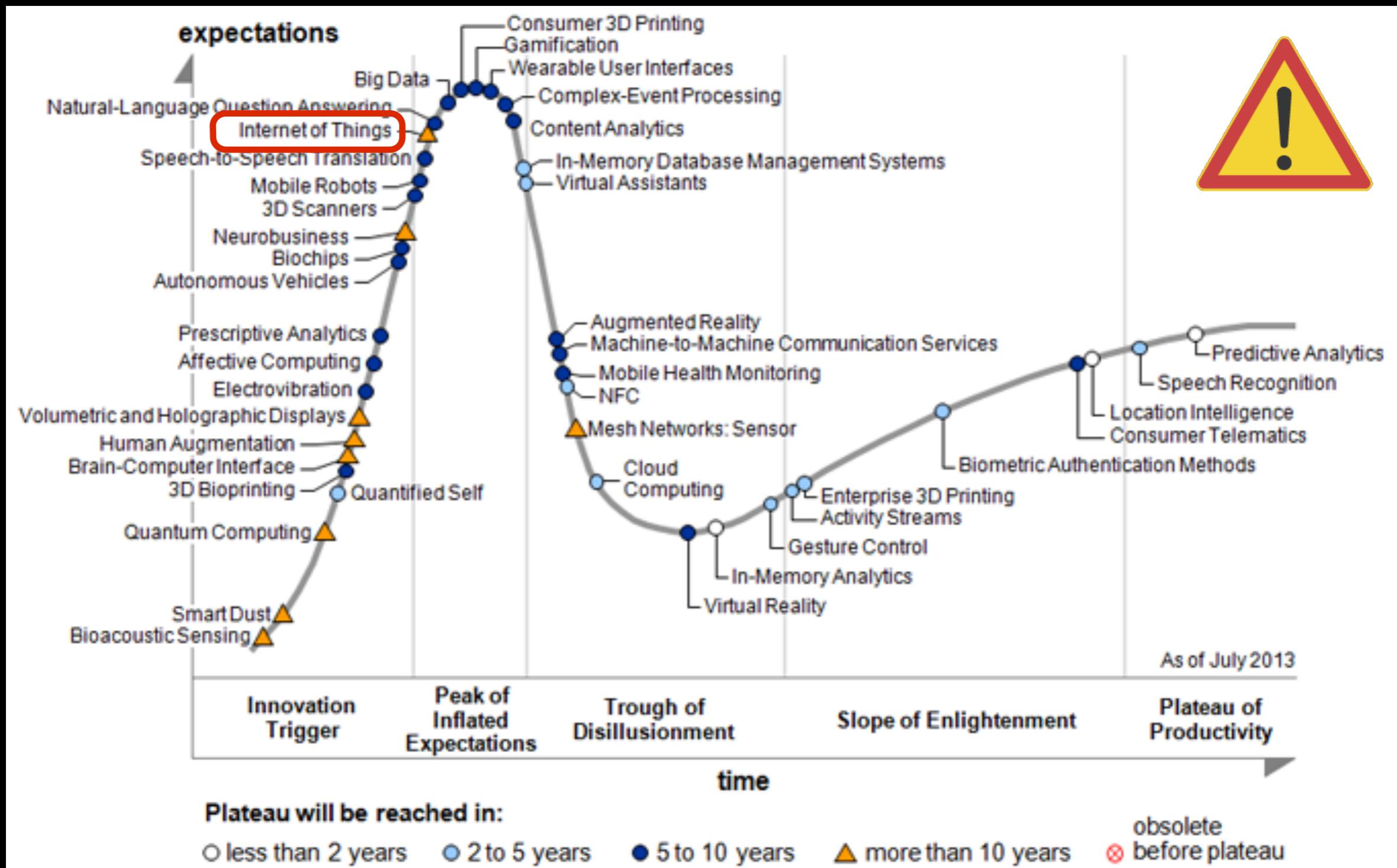
- * Surface area of the Earth is $510\,072\,000 \text{ km}^2$, 1 trillion devices means $1\,960$ devices per km^2 .
- * Population density in Finland is approximately $17,64$ people per km^2



The Internet of Everything is a \$19 trillion global opportunity over the next decade: Private-sector firms can create as much as \$14.4 trillion of value while cities, governments and other public-sector organizations can create \$4.6 trillion.

<http://internetofeverything.cisco.com/>

HYPE CYCLE OF EMERGING TECHNOLOGIES



Source: Gartner August 2013. <http://www.gartner.com/newsroom/id/2575515>

MUUTTUVAAT PALVELUMALLIT - PILVESTÄ SUMUUN?



http://commons.wikimedia.org/wiki/File:Misty_morning.jpg

UUSIA AMMATTEJA, UUSIA KOMPENTENSSEJA

- Data scientists
- Data engineers

THIS IS BIG

"A computer program has successfully managed to fool a bunch of researchers into thinking that it was a 13-year-old boy named Eugene Goostman. In doing so, it has become the first in the world to have successfully passed the Turing Test."

Gizmodo

TUTKIMUSDATAN ARKKITEHTUUREISTA

If you want your digital
data to survive, start
today!

Pirjo-Leena Forsström, CSC, #EGICF14



NÄINKÖ SE KÄY?

OPENNESS,
ACCESS ETC.

PRESERATION

USERS SERVICES

DMP

METADATA
CATALOGUE

COLLABORA
TION

UPLOAD,
DOWNLOAD

SHARING,
PUBLISHING

COMPUTING

ANALYTICS

SEARCH

SERVICE Z

INFRASTRUCTURE SERVICES

PID
SERVICE

STORAGE

ACCESS

SERVICE X

INTEGRATED SERVICES

PUBLICATION
SERVICES

PROJECT
MGMT

FINANCIAL
SERVICES

INTERNAL
SERVICES

SERVICE Y

DATA SECURITY

Tutkimuksen IT-arkkitehtuuri
tutkimuksen mahdollistajana vai
rajoitteena?

VILLE.TENHUNEN@HELSINKI.FI