Disruptie
SMAACT het best

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Business & IT Trends Institute

About the speaker

Onder- nemer
Onder- wijzer
Onder- zoeker
Onder- manager

inc
I'm in control

Business & IT Trends Institute

NCOI
Onderzoeksinstituut

NTI

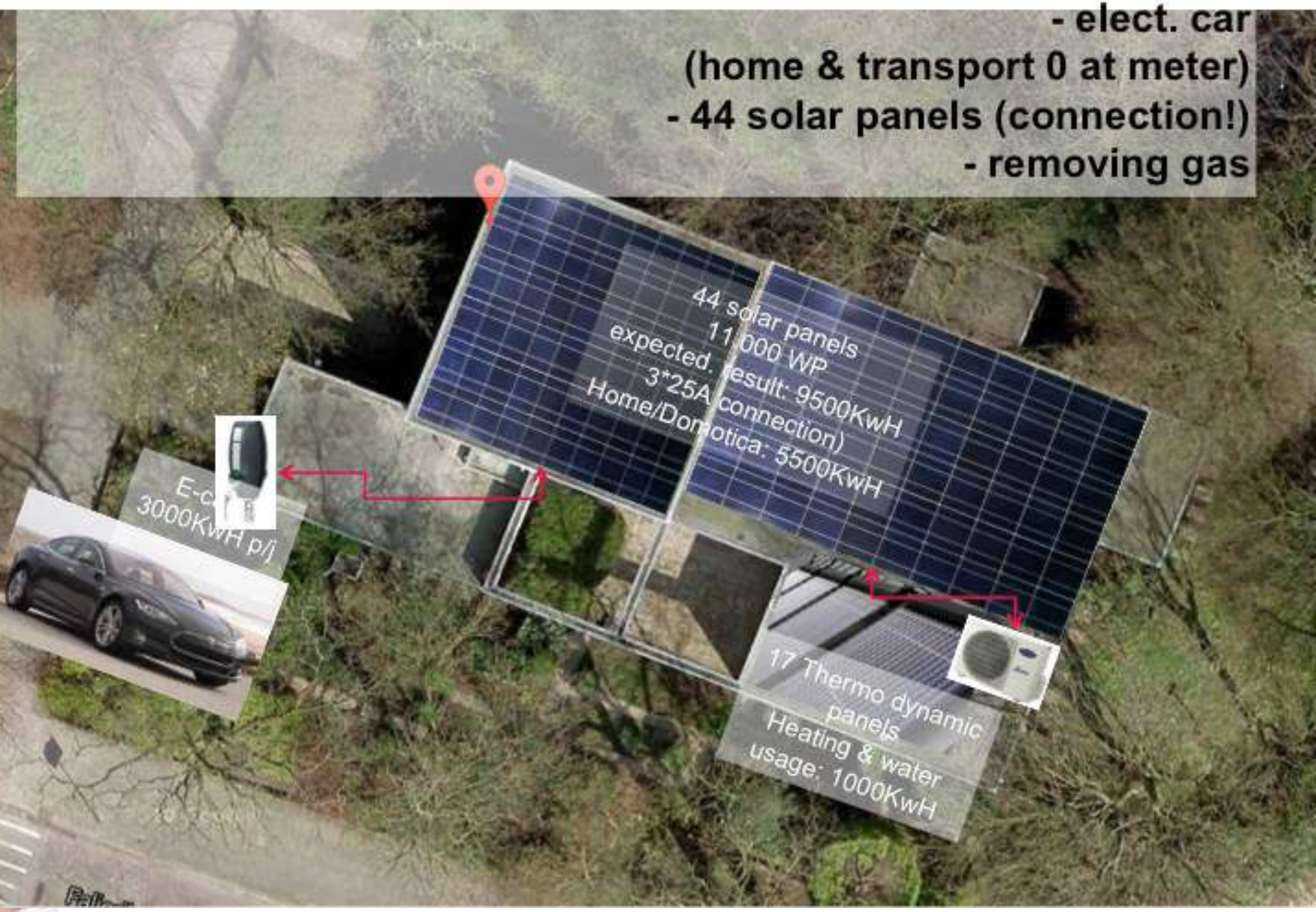
Speakers Academy®
Bringing Knowledge to the World

NOVI

STEDIN.NET

Smart home & sustainable energy(en €):

- elect. car
(home & transport 0 at meter)
- 44 solar panels (connection!)
- removing gas



Assets in average home within 5 years?

Huis bereikbaar op:
2 iPhones & 1iPad

7 Gordijnen Luxaflex
Automatisch op tijd / licht
/ aansturing

1 iRobot stofzuiger

1 iRobot dweil

1 Robomow
maaier

Thermo/hygro
meter

Sturen & signaleren:
- Tijdschema
- Zon op/onder
- Vakantie
- Geofence

Centraal systeem

3 rookmelders

Sturen & signaleren

4 bewegingsmelders
met acties (divers)

4 ruimtes op
Afstand bestuurbare
Verwarming (CV)

6 inbouwschakelaars
overal ter wereld lamp aan/uit
via beweging of smartdevice

6 aanstuurbare
stekker dozen

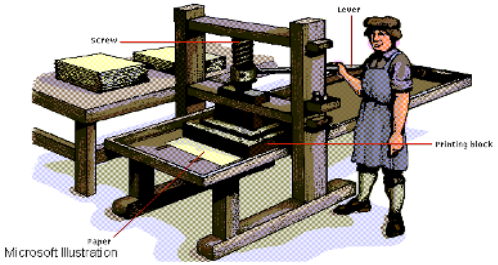
10 sensoren op
Ramen/deuren
Met actie

6 camera's met
vastlegging

When it all was so simple then?

Wat kunnen we leren uit het verleden:Technologie-ontwikkelingen kennen een “S-curve” van ~ 50 jaar

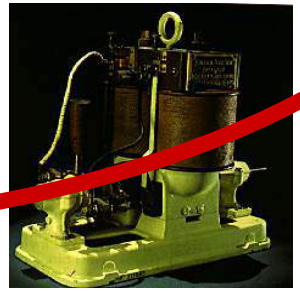
Boekdruk: 1500->1550



Katoen: 1750->1800

Spoor: 1800-1850

Elektromotor: 1820-1870



Computer: 1950-2000

Bronnen: Drucker, Carr (HBR)

“als je de toekomst wilt voorspellen, moet je het verleden bestuderen”

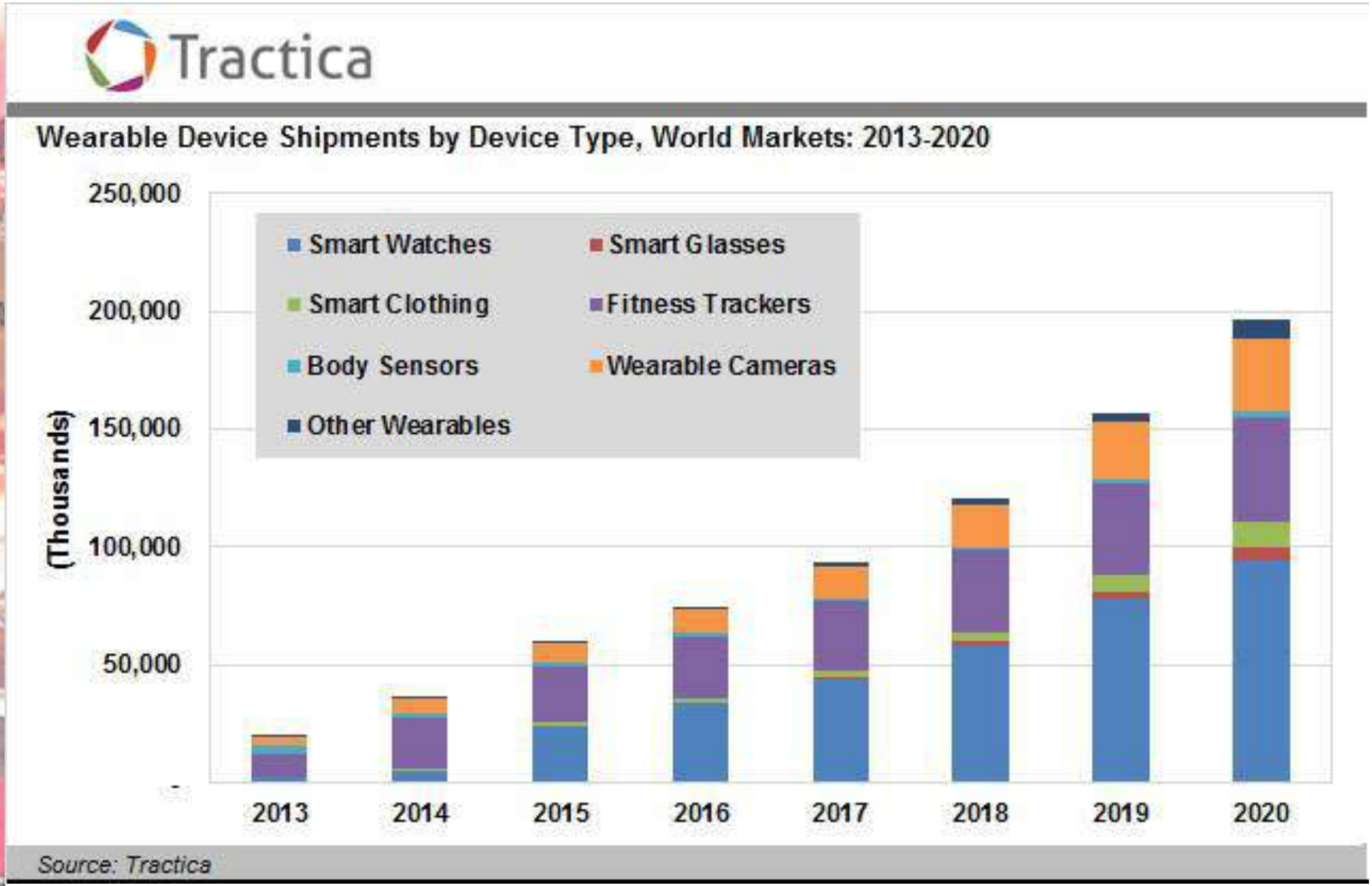
Vraag

Was Cxxxx toen veel eenvoudiger? en waarom?

Ja…

Nee…

Trend 1: Architecture of Smart you & me



Vraag

Komen er nieuwe assurance producten (ISAE 34xxx)?

Ja

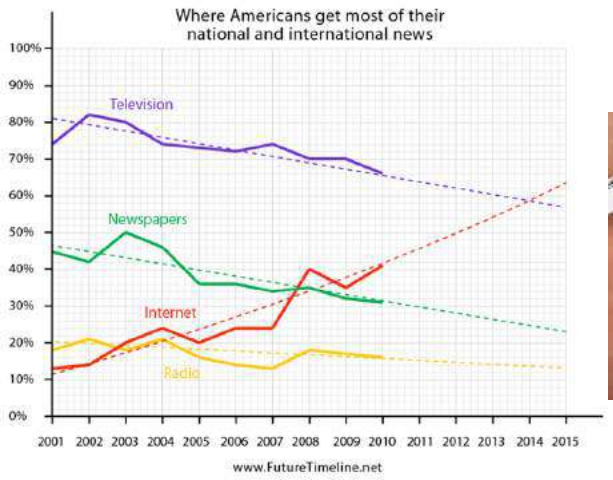
Nee

Bedenk:

Welke assurance producten zie je al ontstaan?

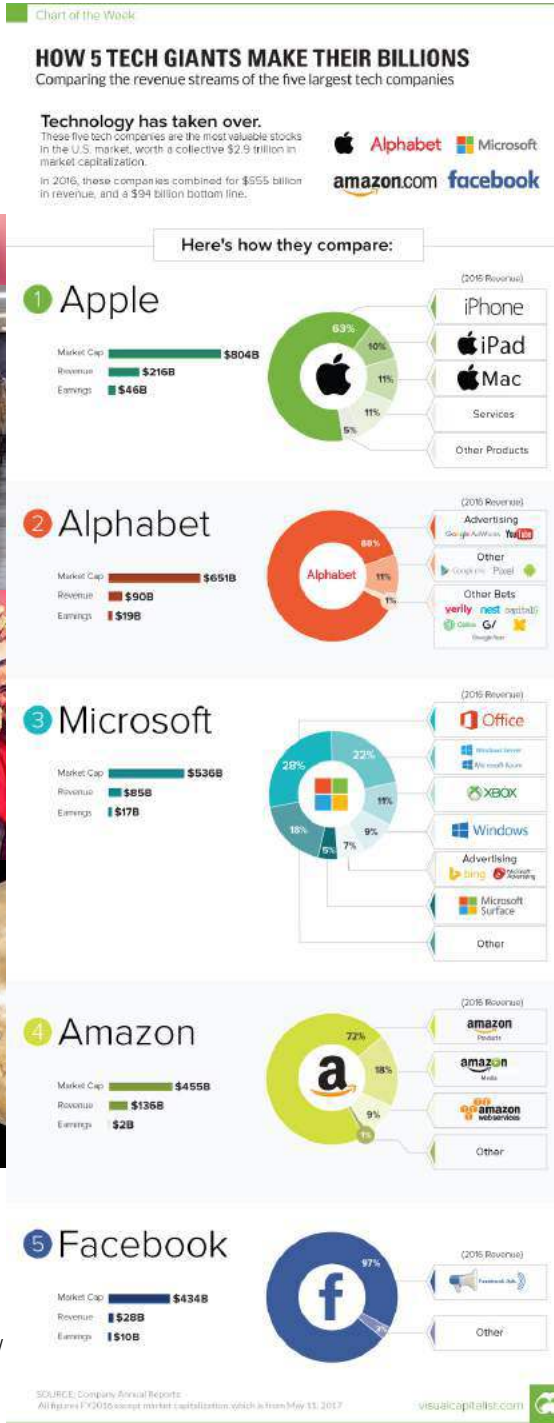
Welke zou je nog kunnen bedenken?

Trend 1: What's went on in 2014-2017



- Internet larger reach than TV
- Google glas publically launched & followed by Hololens
- First solar Airplane around the world (64 meter wing, 12.000 solar cells..)
- Personal DNA sequence < $100
- Memristor technology available (nano technology not based on on/off switch)
- Smart watch is the new gadget (apple)
- Laser guns at U.S.Navy
- India to Mars (camera/ infrared/heatting, ..)
- Elon to Mars….2 times…1 rocket

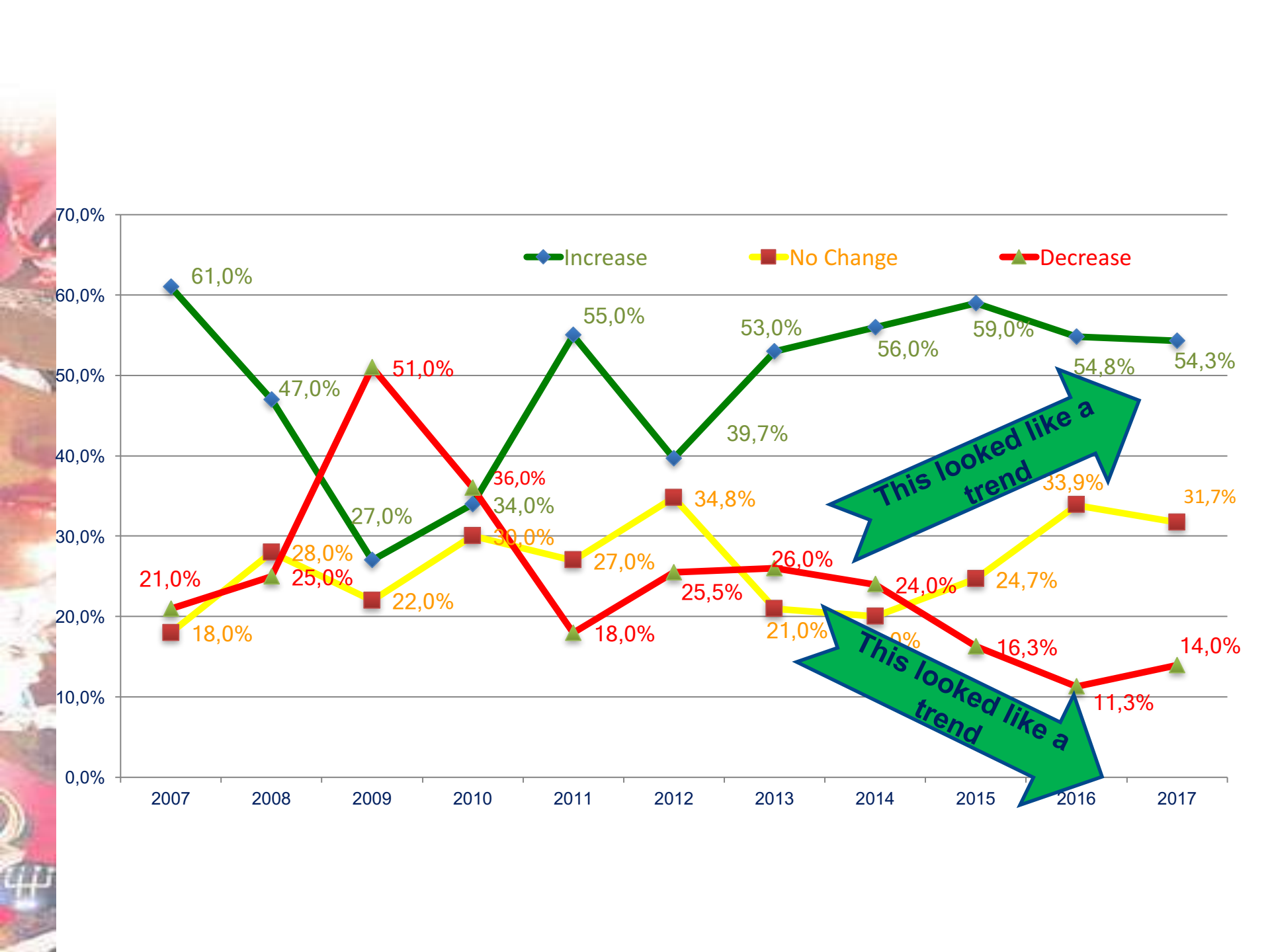
source: timeline.net



source: futuretimeline.net / Gartner /

Trend 2: Companies need time

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Analytics/Business Intelligence	1	1	1	1	1	1	1	1	2	2	2
Application/Software Development (previously Apps developments)	2	3	2	5	4						
Security/Cybersecurity	3	7	8	16	15	28	7	11	8		
Cloud Computing (SaaS, PaaS, IaaS)	4	4	4	2	2	3	5	17			
Customer Relationship Management (CRM)	5	5	6	3	5	5	9	13			
Web Services	6	26	24								
Networks/Communications	7	10	11	10	8	11	9	10	11		
Data Center/Infrastructure	8	6	3								
Collaboration Tools	9	9	13								
Customer/Corporate Portals	10	16	14	8	9						
Outsourcing IT	11	10	19								
Tablets/Smart Phones/ Mobile Devices	12	22	35	37	20	22	20	21	21		
BYOD (Bring Your Own Device)	13	18	25	18	12						
Internet of Things	14	21	19								
Knowledge Management	15	28	23								
Mobile/Wireless Applications	16	20	31	14							
Enterprise Application Integration	17	11	10	11	16	9	18	5	12	32	
Continuity Planning	18	13	21	13	11	14	4	6	3	4	
Social Networks / Media	19										
Identity Management	20	30	31								


70,0%
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
Increase
No Change
Decrease
61,0%
47,0%
27,0%
55,0%
39,7%
53,0%
56,0%
59,0%
54,8%
54,3%
21,0%
25,0%
51,0%
18,0%
36,0%
34,0%
25,5%
26,0%
24,0%
16,3%
11,3%
14,0%
18,0%
28,0%
22,0%
30,0%
27,0%
34,8%
21,0%
24,7%
33,9%
31,7%
This looked like a trend
This looked like a trend
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

Trend 3: IT assurance not in bits but in Atoms

- Phase 1: Media & Information publically available
  Last 20 years: Internet changed publicity…participation was in ‘bits’
- Phase 2: Social Media is hot
- Phase 3: From bits to Atoms
  (digitalizing the physical environment)

Trend 4: IT quality & assurance will have enough to do, from 14% to 18%?

1995-2005
1st phase
Internet

2005-2015
2nd phase
Internet

2015-2025
3rd phase
Internet

Low level of digitalization

Search

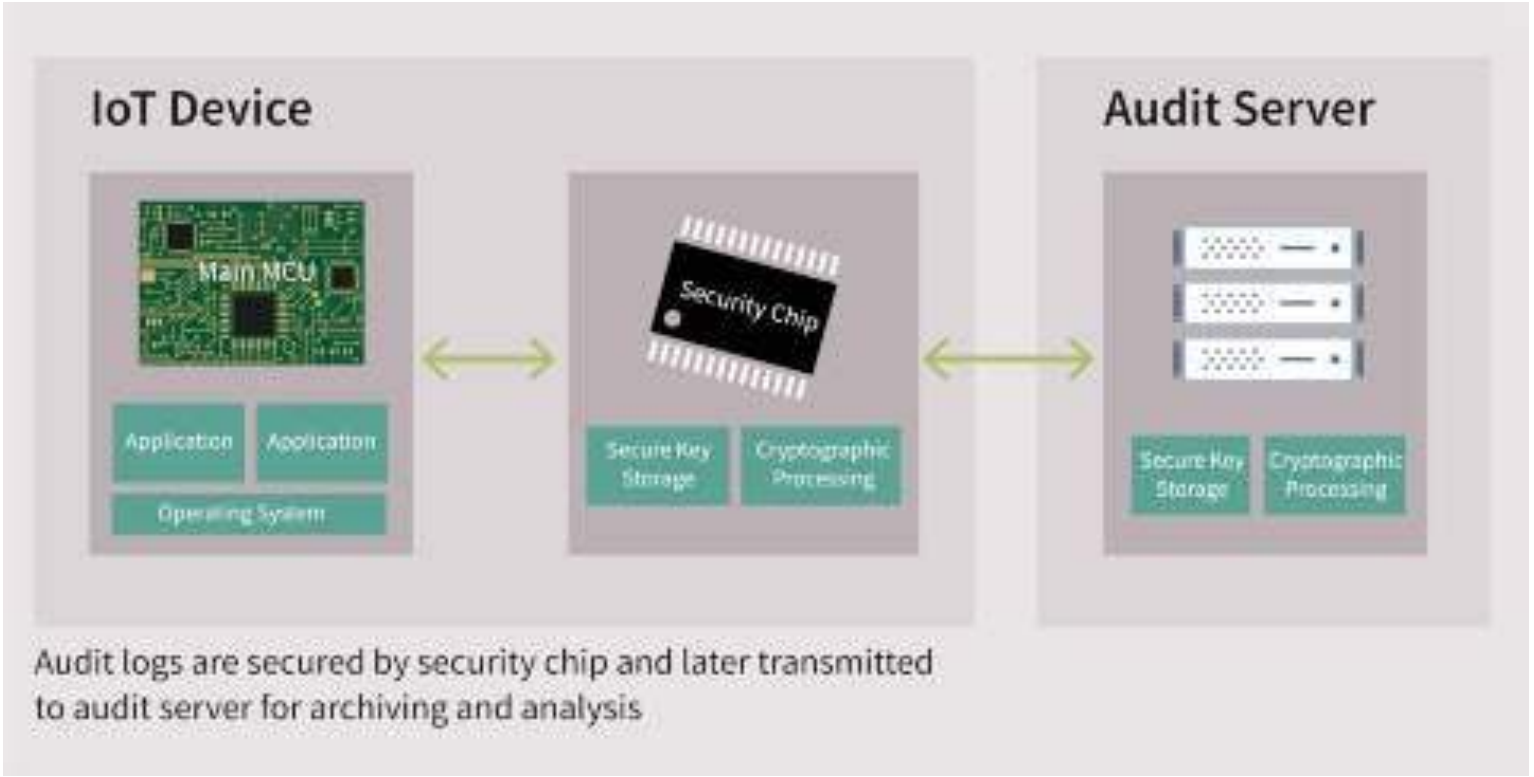
Social

Drivers:
Robotics
Wearables
Smart systems
Smart Cities
Singularity
Quantified self
3D printing

Physical elements are next!
High Level of digitalization

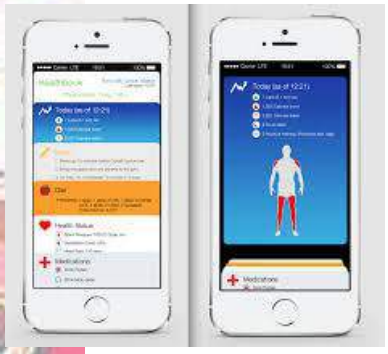
Media / Information
15% of the Economy

Digitalizing the physical environment (production, health care, homes, cities,….)
85% of the Economy

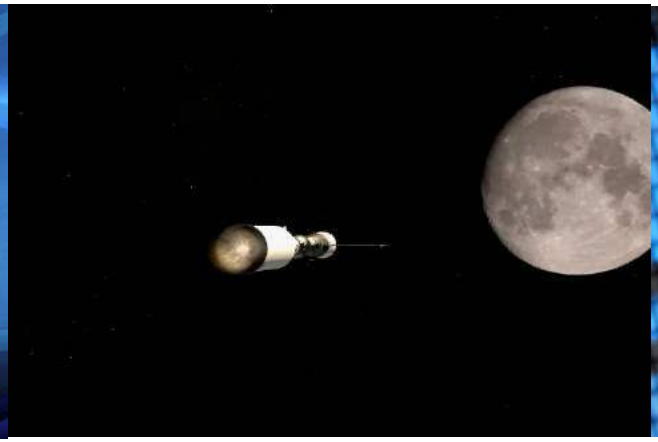


Vraag:
Waar zit de focus van C….. bij IOT?
A) IoT Device, b) secure key storage, c) audit server

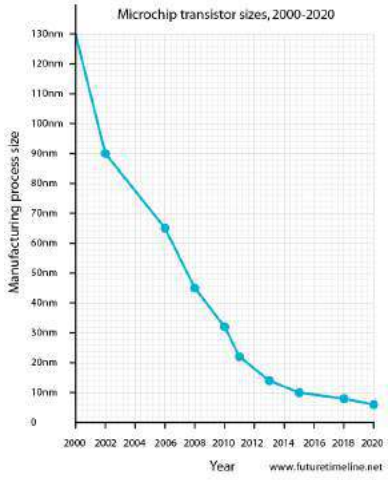
Trend 5: Disruption is started & I(o)T still does matter!



2017-2019

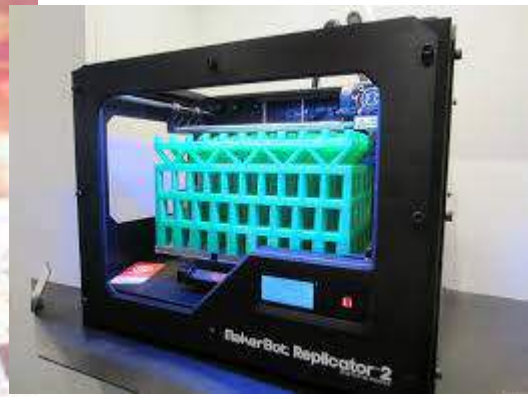



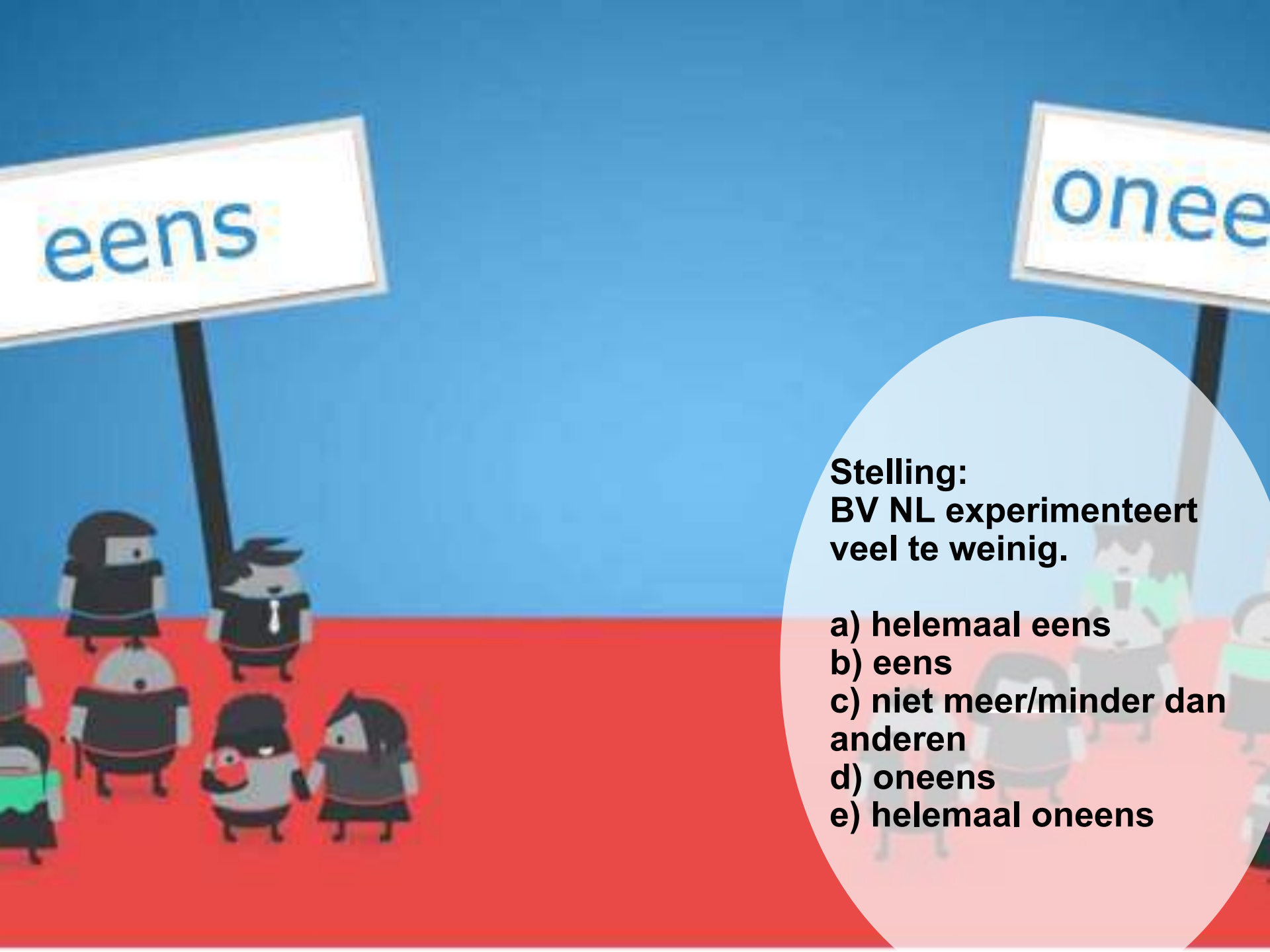

- Comeback Virtual Reality
- 1st phase Masdar city (Abu Dhabi) ready: first complete green technology city, zero waste/carbon
- First moon tourist (Dennis Tito was in 2001 first space tourist)
- Batteries 10x longer & faster charged & in smart devices (based upon lithium -ion)
- 3d printing consumer product.
- 10 nanometre chips in mass production (Moore's law ends)



sources: FutureTimeline, Gartner, BITTI.nl

Are you experimenting with?

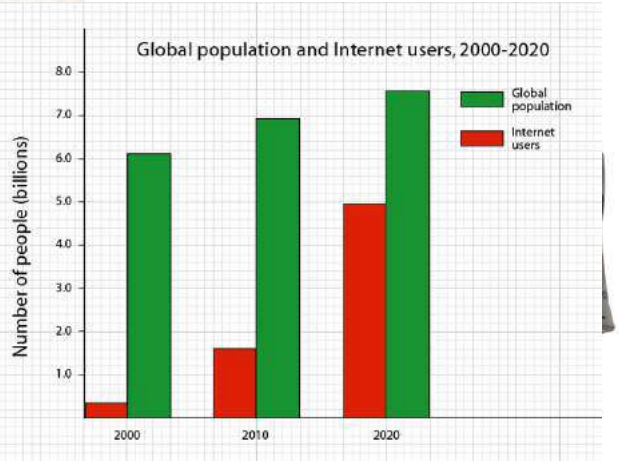




Stelling:
BV NL experimenteert veel te weinig.

a) helemaal eens
b) eens
c) niet meer/minder dan anderen
d) oneens
e) helemaal oneens

2020-2030



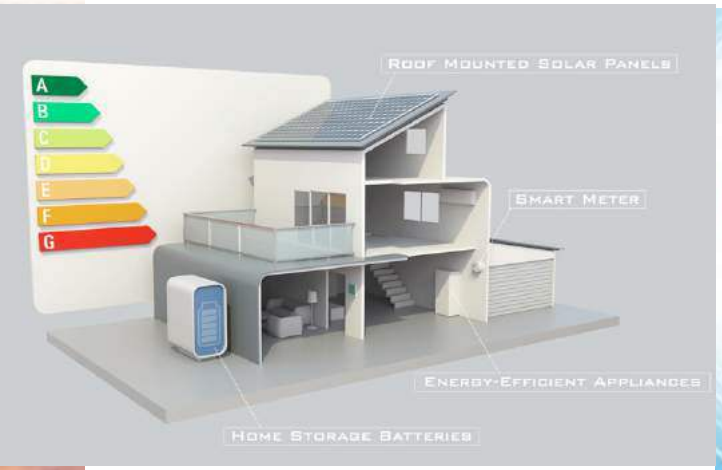
2G 1992 **3G** 2001 **4G** 2011

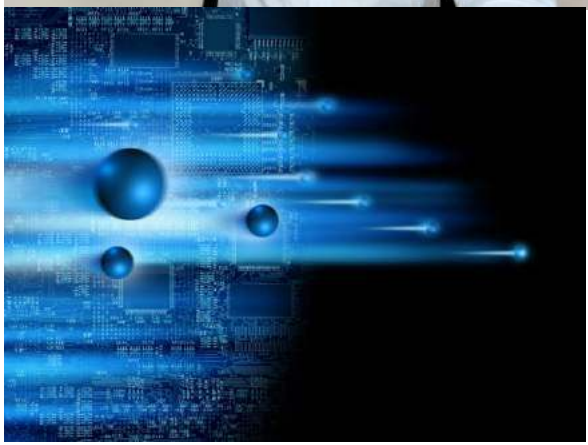
5G 2020

- Internet has 5 biljoen users.
- 5G available
- Texting by thinking
- Energy net is completely intelligent
- > 10,000…. drones worldwide
- Games real-life (e.g. 3d)..
  & bigger / more intelligent than Google.
- Human A.I. becomes reality
- Groceries without seeing someone

sources: FutureTimeline, Gartner, BITTI.nl

2030-2040



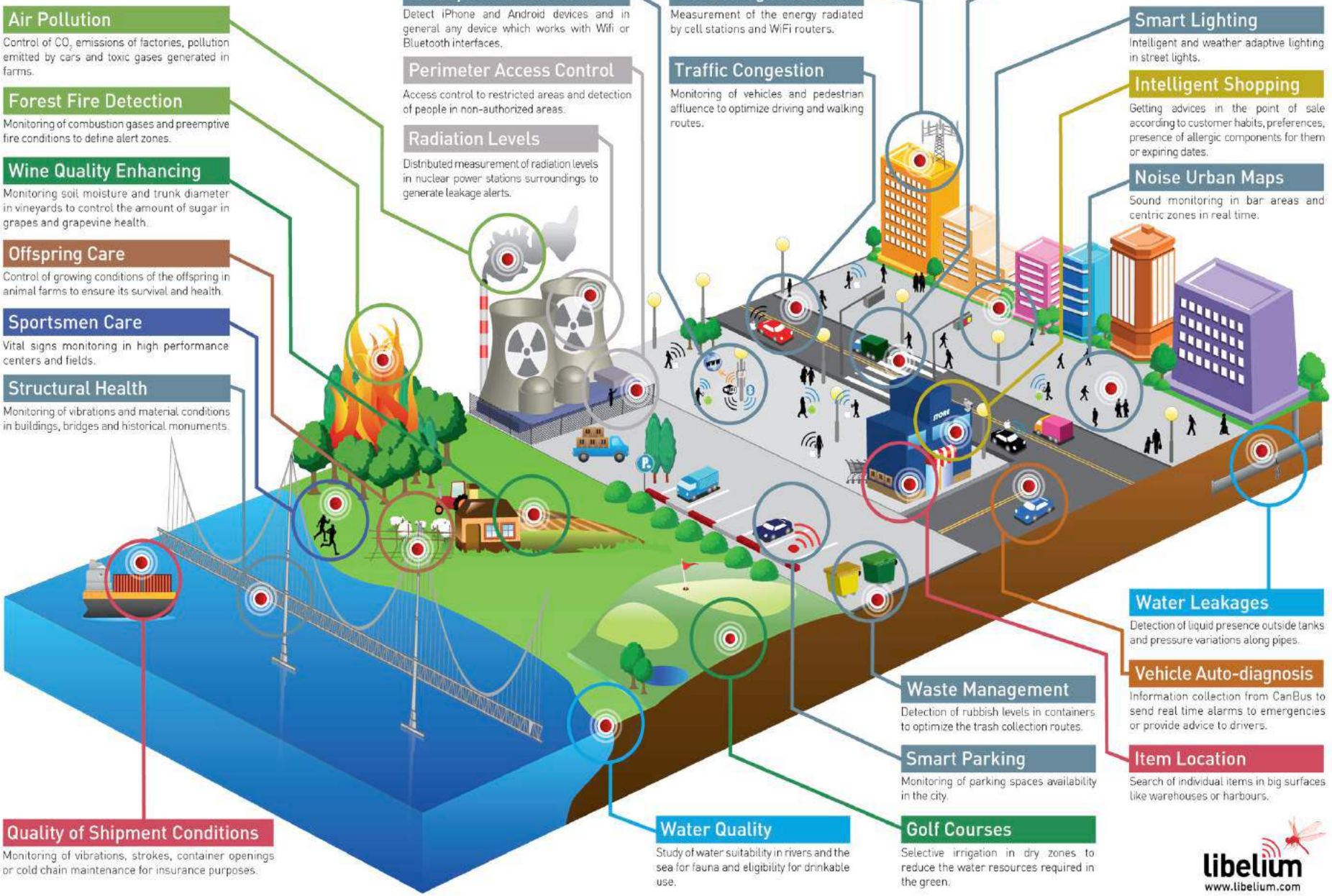


- Smart Grids realised in all western countries
- Most cars will be plug in electric
- AI is normal usage within organisations
- Super fast ‘crime-scene investigation‘
- New rols: avatar manager, body part maker, waste data handler
- Quantum computers anywhere
- Old computers will receive the 03:14:07 UTC on Tuesday, 19th January 2038 Bug

bronnen: Futuretimeline, Gartner, Wikipedia, BITTI.nl

Stelling:
Assurance is niet meer nodig in 2030?
JA, Nee

Libelium Smart World



Air Pollution
Control of CO_2 emissions of factories, pollution emitted by cars and toxic gases generated in farms.

Forest Fire Detection
Monitoring of combustion gases and preemptive fire conditions to define alert zones.

Wine Quality Enhancing
Monitoring soil moisture and trunk diameter in vineyards to control the amount of sugar in grapes and grapevine health.

Offspring Care
Control of growing conditions of the offspring in animal farms to ensure its survival and health.

Sportsmen Care
Vital signs monitoring in high performance centers and fields.

Structural Health
Monitoring of vibrations and material conditions in buildings, bridges and historical monuments.

Quality of Shipment Conditions
Monitoring of vibrations, strokes, container openings or cold chain maintenance for insurance purposes.

Smartphones Detection
Detect iPhone and Android devices and in general any device which works with Wifi or Bluetooth interfaces.

Perimeter Access Control
Access control to restricted areas and detection of people in non-authorized areas.

Radiation Levels
Distributed measurement of radiation levels in nuclear power stations surroundings to generate leakage alerts.

Electromagnetic Levels
Measurement of the energy radiated by cell stations and WiFi routers.

Traffic Congestion
Monitoring of vehicles and pedestrian affluence to optimize driving and walking routes.

Water Quality
Study of water suitability in rivers and the sea for fauna and eligibility for drinkable use.

Smart Roads
Warning messages and diversions according to climate conditions and unexpected events like accidents or traffic jams.

Smart Lighting
Intelligent and weather adaptive lighting in street lights.

Intelligent Shopping
Getting advices in the point of sale according to customer habits, preferences, presence of allergic components for them or expiring dates.

Noise Urban Maps
Sound monitoring in bar areas and centric zones in real time.

Water Leakages
Detection of liquid presence outside tanks and pressure variations along pipes.

Vehicle Auto-diagnosis
Information collection from CanBus to send real time alarms to emergencies or provide advice to drivers.

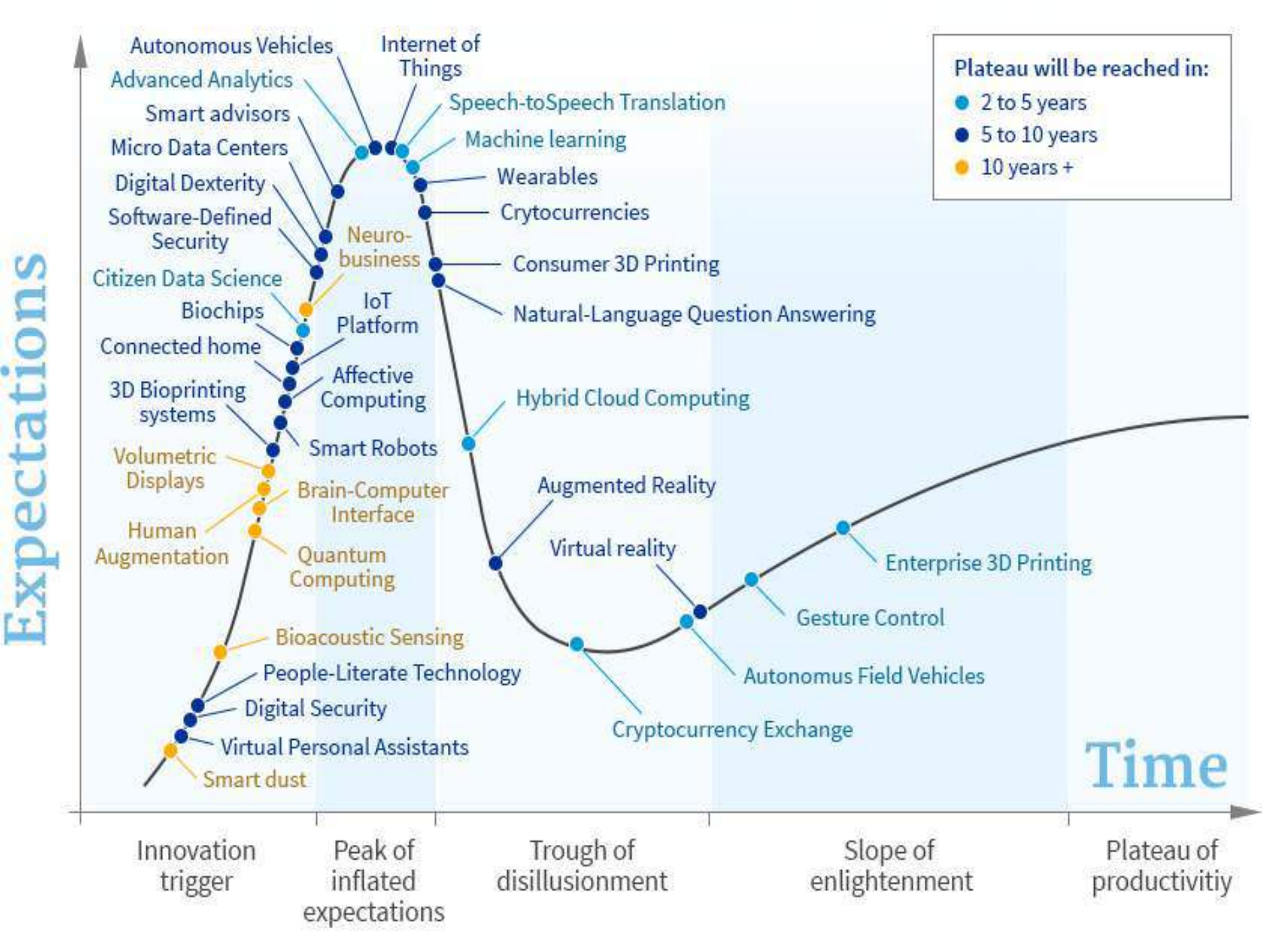
Item Location
Search of individual items in big surfaces like warehouses or harbours.

Waste Management
Detection of rubbish levels in containers to optimize the trash collection routes.

Smart Parking
Monitoring of parking spaces availability in the city.

Golf Courses
Selective irrigation in dry zones to reduce the water resources required in the green.

libelium
www.libelium.com


Expectations
Time
Plateau will be reached in:
2 to 5 years
5 to 10 years
10 years +
Autonomous Vehicles
Advanced Analytics
Smart advisors
Micro Data Centers
Digital Dexterity
Software-Defined Security
Citizen Data Science
Biochips
Connected home
3D Bioprinting systems
Volumetric Displays
Human Augmentation
Bioacoustic Sensing
People-Literate Technology
Digital Security
Virtual Personal Assistants
Smart dust
Internet of Things
Speech-toSpeech Translation
Machine learning
Wearables
Crytocurrencies
Neuro-business
Consumer 3D Printing
IoT Platform
Natural-Language Question Answering
Affective Computing
Hybrid Cloud Computing
Smart Robots
Brain-Computer Interface
Quantum Computing
Augmented Reality
Virtual reality
Enterprise 3D Printing
Gesture Control
Autonomus Field Vehicles
Cryptocurrency Exchange
Innovation trigger
Peak of inflated expectations
Trough of disillusionment
Slope of enlightenment
Plateau of productivitiy

BIG DATA STORYMAP

EMC²

CURRENT STATE

BI/DW CHALLENGES

- Batch oriented, inflexible, high latency
- Brittle & labor intensive
- Performance & scalability challenged
- Aggregated, silo'd, structured data

BUSINESS CHALLENGES

- Rigid architecture impedes immediately available business opportunities
- Retrospective reporting doesn't guide business decisions
- Social, mobile, or machine-generated data insights not available
- Aggregation destroys valuable insights

TRADITIONAL TOWN

DATA WAREHOUSE

ETL

BUSINESS INTELLIGENCE

BUSINESS MODEL MATURATION

BUSINESS MONITORING

BUSINESS INSIGHTS

BUSINESS OPTIMIZATION

DATA MONETIZATION

BUSINESS METAMORPHOSIS

FUTURE STATE

- Big Data analytics continuously drive business innovations
- Real-time insights optimize operations and boost profits
- Unprecedented customer insights improve products and user experience

Value Creation City

BIG DATA VALUE CHAIN "MILE"

PRODUCT DEVELOPMENT

PROCUREMENT

MANUFACTURING

FINANCE

SALES & MARKETING

DISTRIBUTION

CUSTOMER EXPERIENCE

Continuously Refine Analytic Models

Publish Insights in Apps

Operationalize Big Data

Acquire & Prepare Data

Capture new Business Requirements

Measure Decision Effectiveness

Implement Big Data Infrastructure

Incorporate Insights into apps

Define data strategy

Build analytic models

Identify targeted business initiatives

Determine required insights

VALUE JOURNEY

CONDUCT DATA SCIENTIST TRAINING & CERTIFICATION

VOLUME

VARIETY

VELOCITY

Records Terabytes

Transactions Petabytes

Tables, Files

Structured

Unstructured

Semi-Structured

Real-Time

Near Real-Time

Batch

DEEP DATA

DIVERSE DATA

FAST DATA

BIG DATA RIVER

Risk of Not Preparing for BIG DATA...

- Competitors Innovate Faster
- Profits & Margins Degenerate
- Market Share Declines
- Missed Business Opportunities

Big Data concepts by William Schmarzo
Visualization concept by Mark A. Lawson and Glenn Steinhandler

Big data scientists rollen

Big Data Check rollen (e.g. Facebook)

MODERN DATA SCIENTIST

Data Scientist, the sexiest job of 21th century requires a mixture of multidisciplinary skills ranging from an intersection of mathematics, statistics, computer science, communication and business. Finding a data scientist is hard. Finding people who understand who a data scientist is, is equally hard. So here is a little cheat sheet on who the modern data scientist really is.

MATH & STATISTICS

- Machine learning
- Statistical modeling
- Experiment design
- Bayesian inference
- Supervised learning: decision trees, random forests, logistic regression
- Unsupervised learning: clustering, dimensionality reduction
- Optimization: gradient descent and variants

PROGRAMMING & DATABASE

- Computer science fundamentals
- Scripting language e.g. Python
- Statistical computing package e.g. R
- Databases SQL and NoSQL
- Relational algebra
- Parallel databases and parallel query processing
- MapReduce concepts
- Hadoop and Hive/Pig
- Custom reducers
- Experience with xaaS like AWS

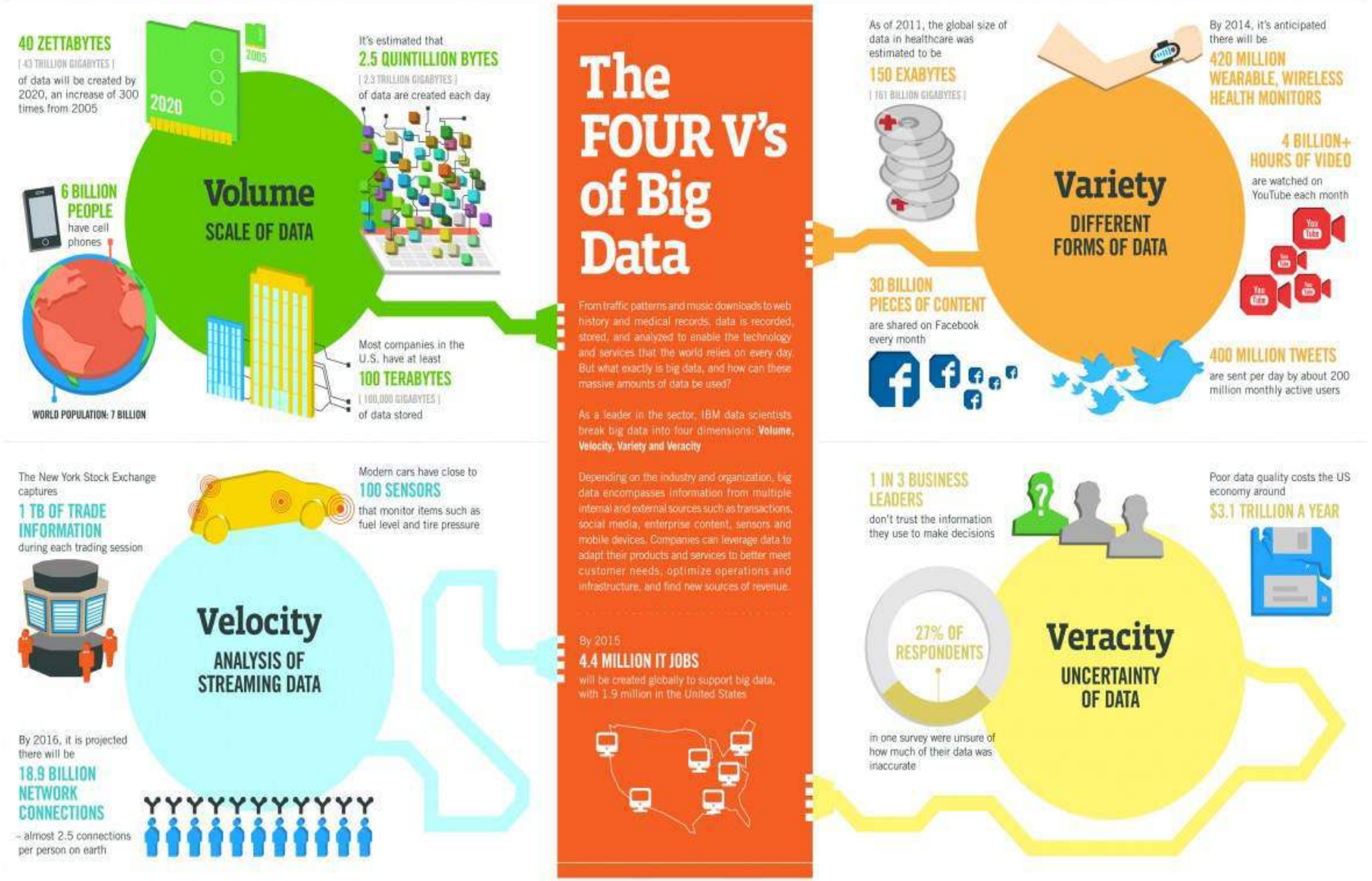
DOMAIN KNOWLEDGE & SOFT SKILLS

- Passionate about the business
- Curious about data
- Influence without authority
- Hacker mindset
- Problem solver
- Strategic, proactive, creative, innovative and collaborative

COMMUNICATION & VISUALIZATION

- Able to engage with senior management
- Story telling skills
- Translate data-driven insights into decisions and actions
- Visual art design
- R packages like ggplot or lattice
- Knowledge of any of visualization tools e.g. Flare, D3.js, Tableau

4 V's in Big Data



Sources: McKinsey Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPTEC, QAS

IBM


What Happens in an Internet Minute?
639,800 GB of global IP data transferred
20
New victims of identity theft
47,000
App downloads
61,141
Hours of music
20 million
Photo views
3,000
Photo uploads
204 million
Emails sent
$83,000
In sales
320+
New Twitter accounts
100,000
New tweets
1,300
New mobile users
100+
New LinkedIn accounts
135
Botnet infections
6
New Wikipedia articles published
277,000
Logins
6 million
Facebook views
2+ million
Search queries
30
Hours of video uploaded
1.3 million
Video views
And Future Growth is Staggering
Today, the number of networked devices
=
the global population
By 2015, the number of networked devices
= 2x
the global population
In 2015, it would take you 5 years
IP
to view all video crossing IP networks each second
Vraag:
Welke kansen biedt big data voor de Cxxx?

Who's Generating Big (IoT) Data

Social media and networks

Scientific instruments

Mobile devices

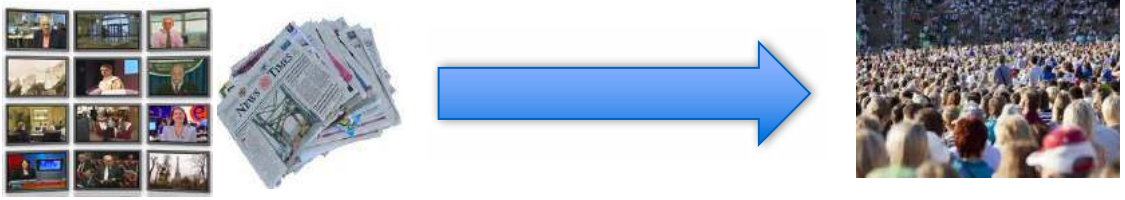
Sensor technology and networks

- The progress and innovation is no longer hindered by the ability to collect data
- But, by the ability to manage, analyze, summarize, visualize, and discover knowledge from the collected data in a timely manner and in a scalable fashion

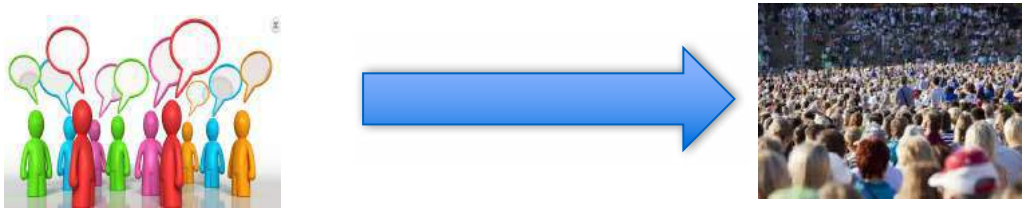
The Model Has Changed…

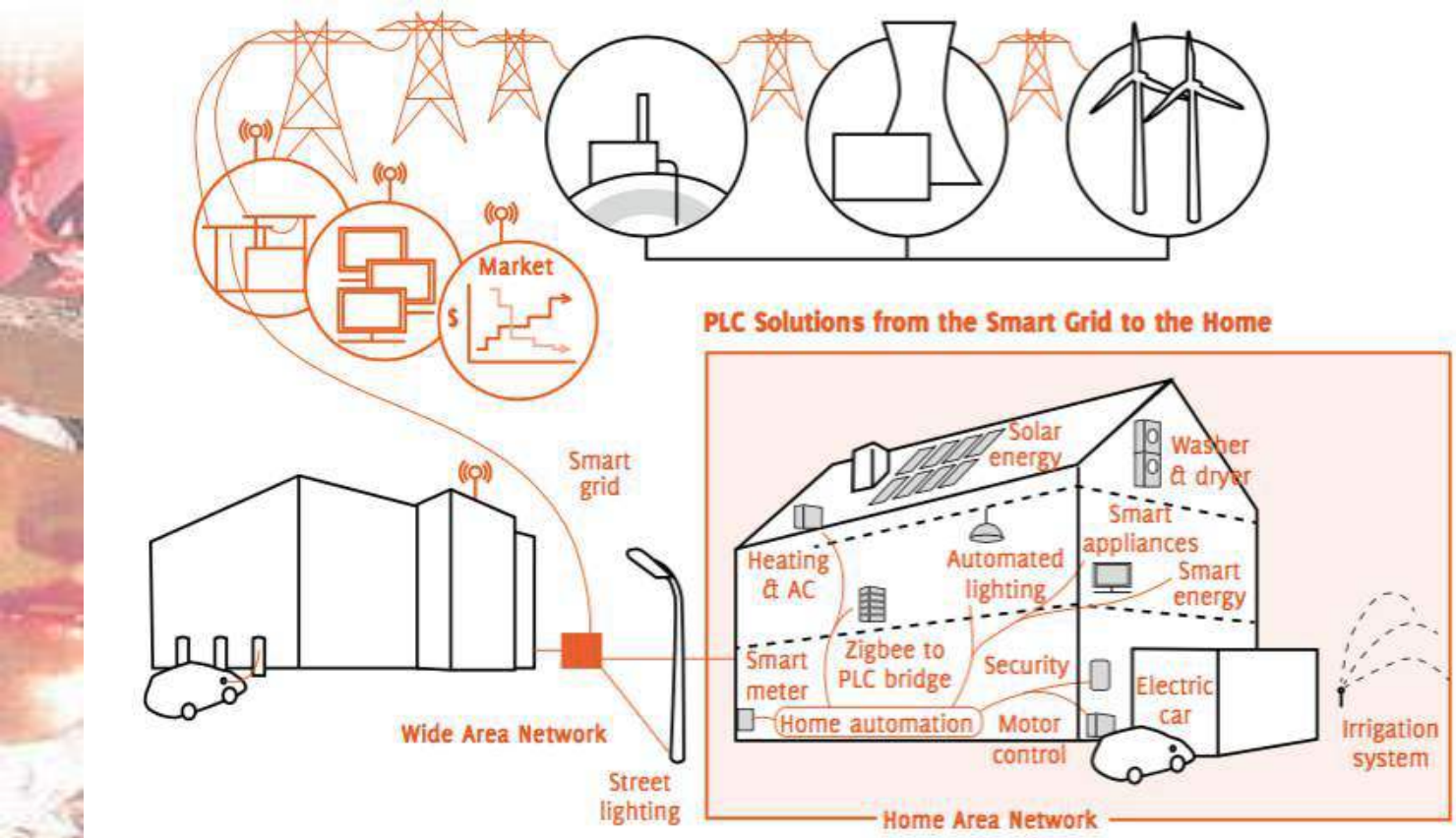
- **The Model of Generating/Consuming Data has Changed**

Old Model:



New Model:

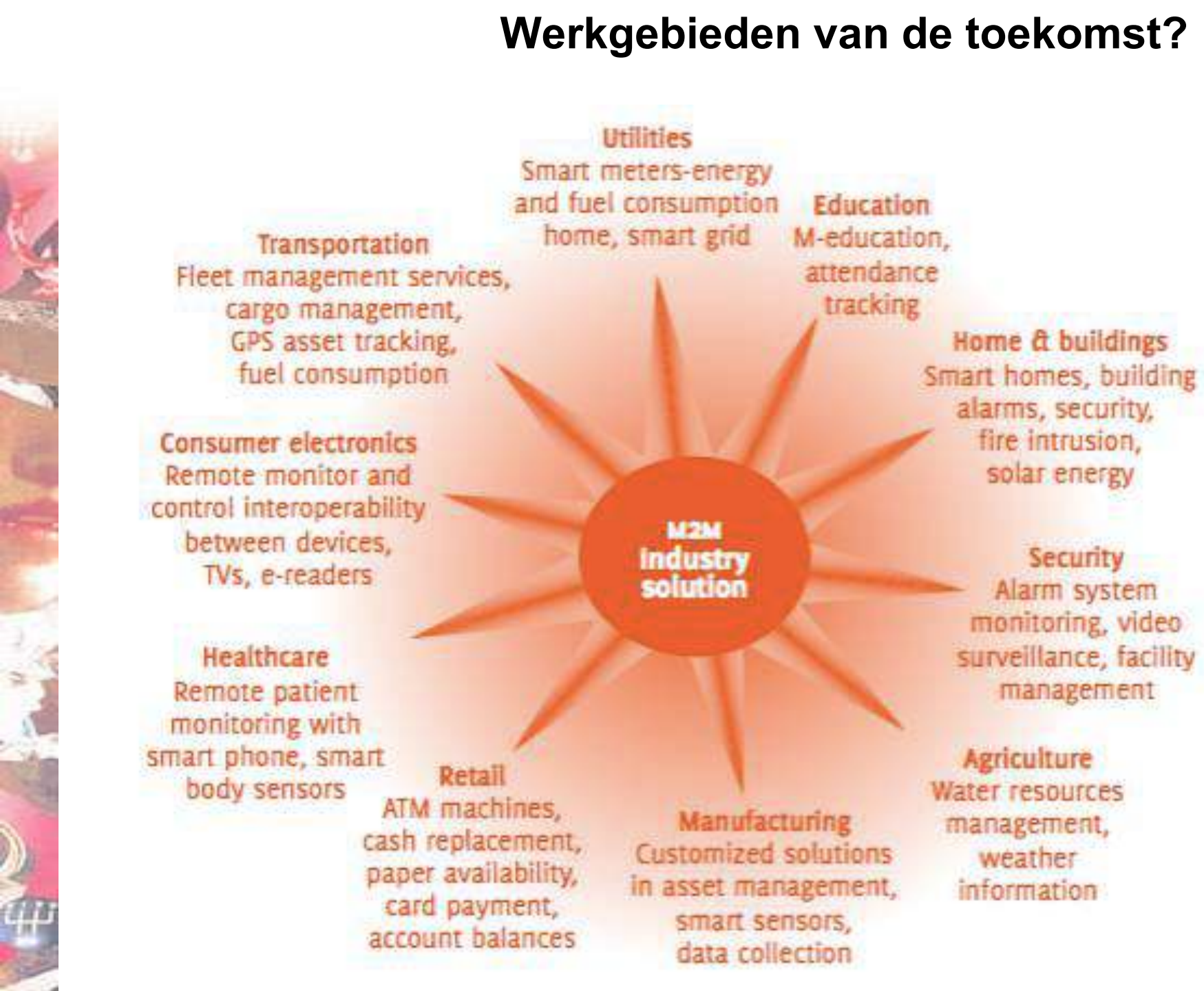




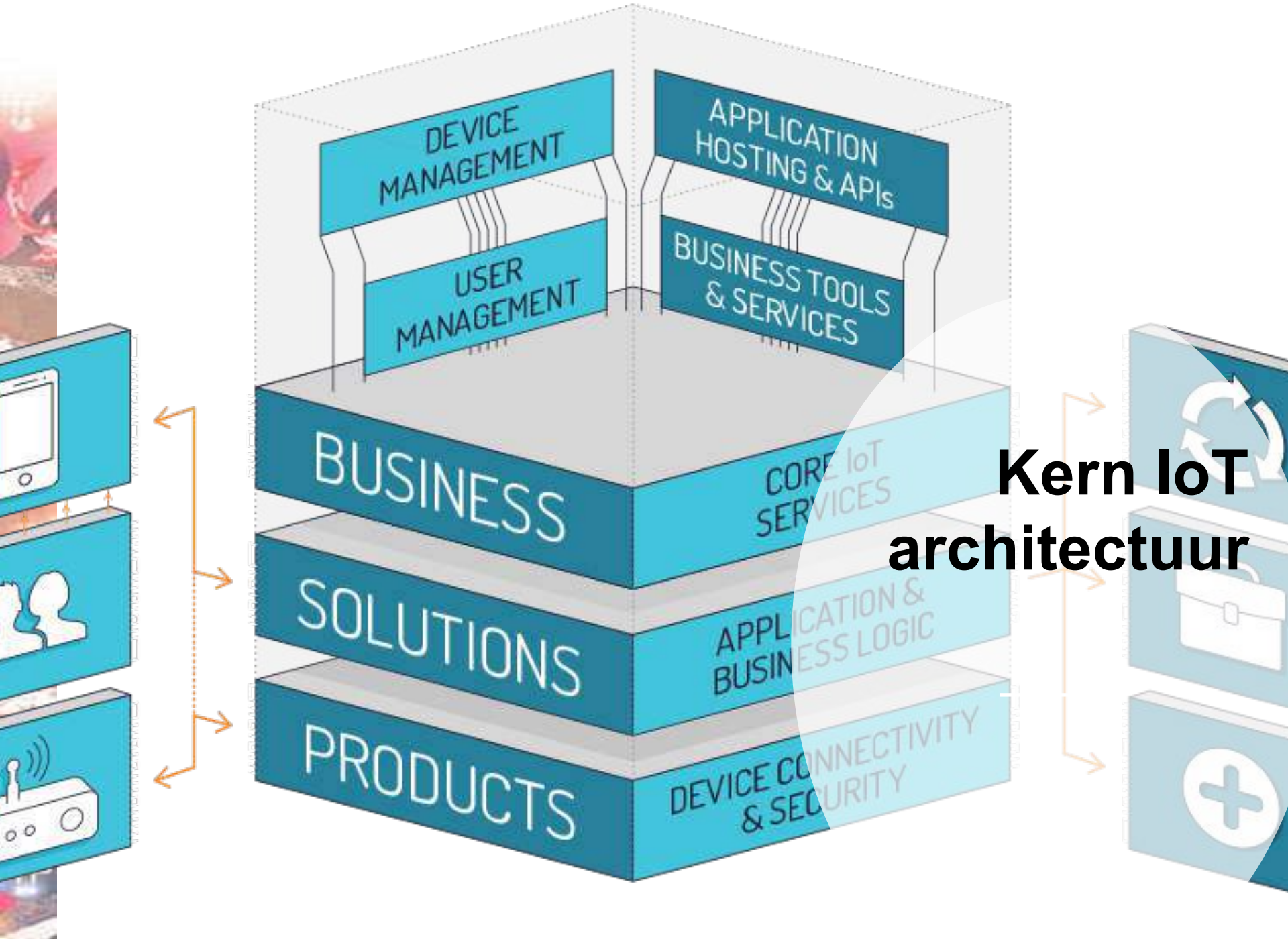
De wereld wordt steeds leuker?
Ja / Nee

Testen, Kwaliteit en assurance worden steeds moeilijker → Cloud Risk? Ja, Nee, anders

Werkgebieden van de toekomst?

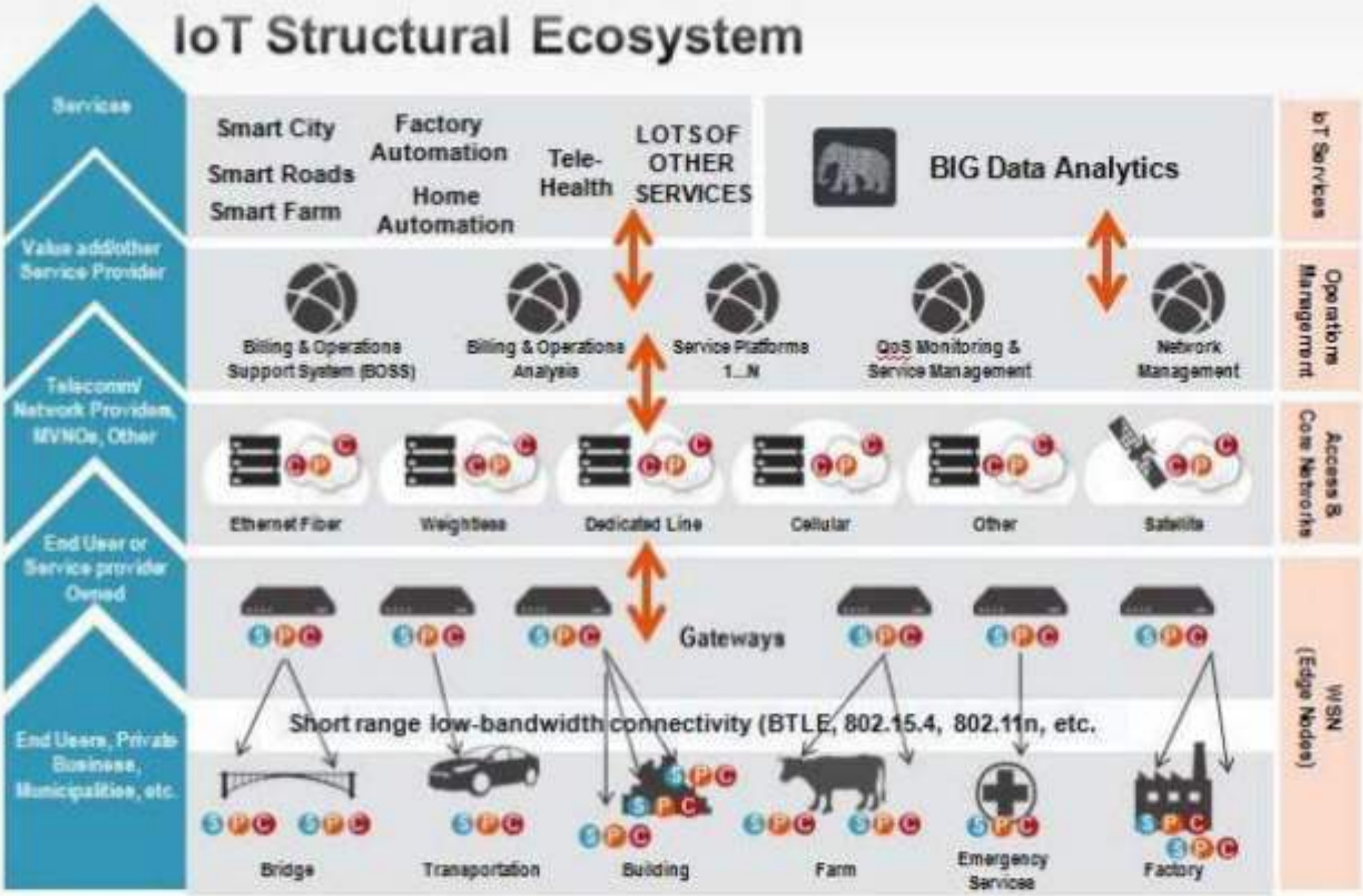


IoT functionaliteiten



Kern IoT architectuur

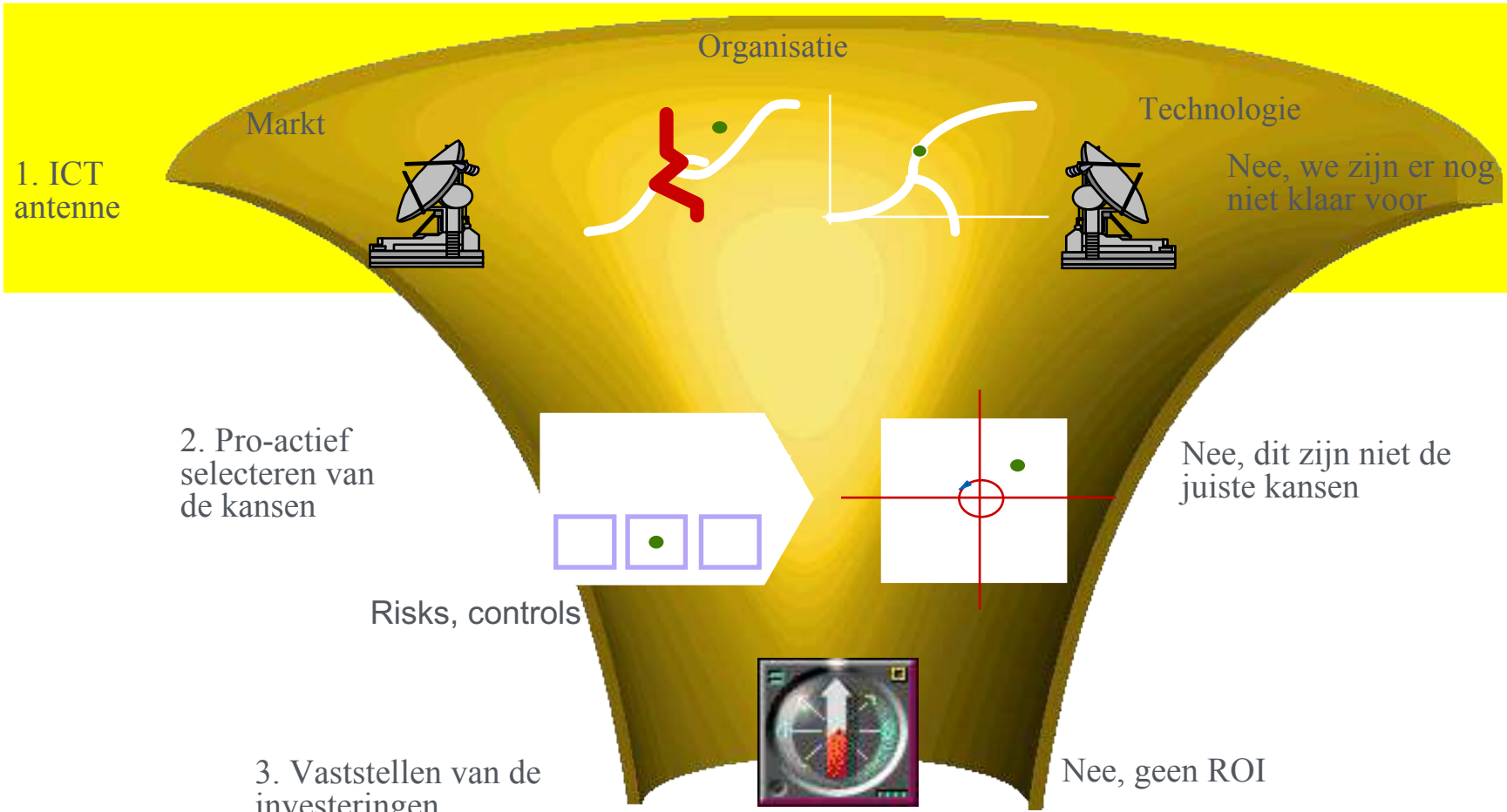
IoT Structural Ecosystem



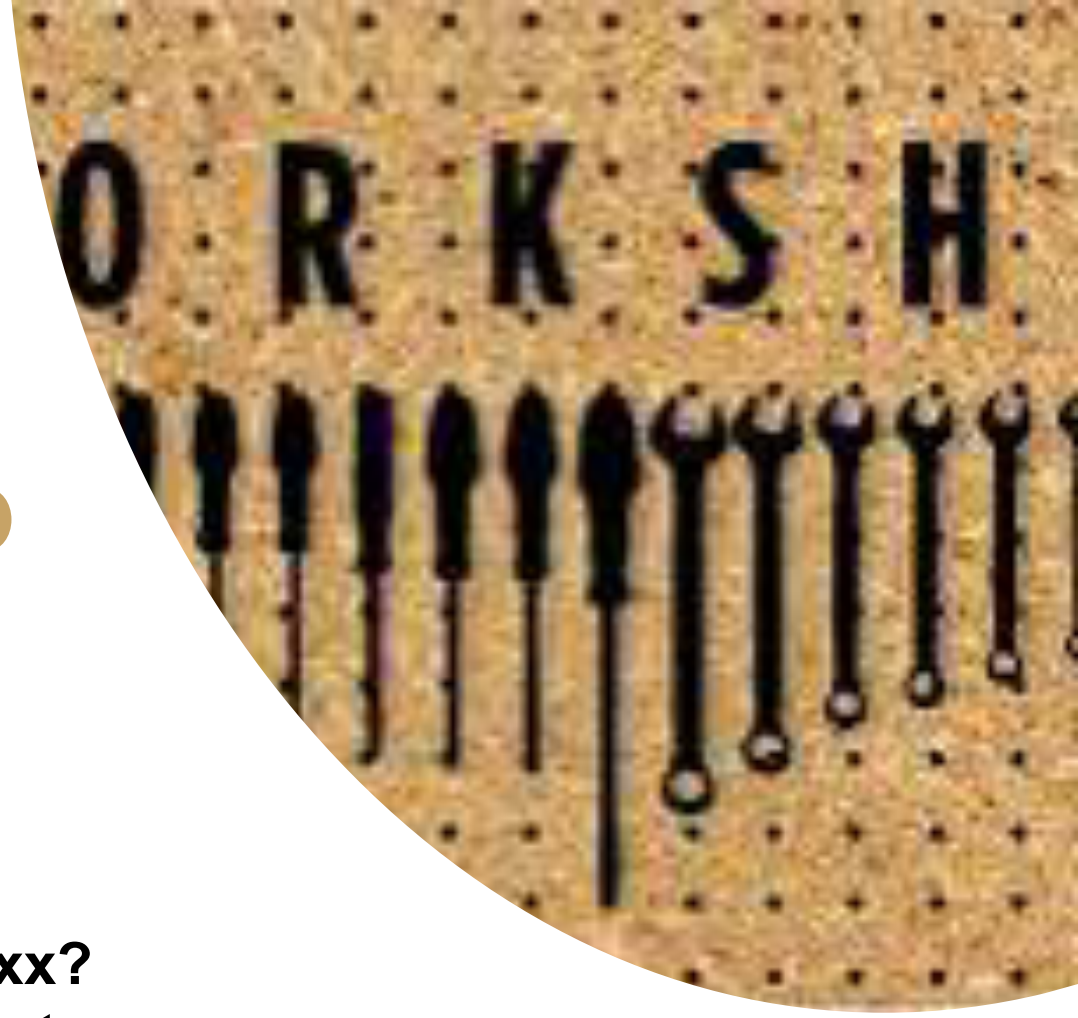
Vraag:
ISACA moet investeren op IoT?
Ja,
Nee
Weet niet

Discussie:
Op welke terreinen zou ISACA moeten investeren in IoT?

Op tijd investeren in de juiste technologie is een kwestie van gefundeerde keuzes …



Waar staan we en wat gaan we doen?



Discussie,
Wat betekent dit voor Cxxx?
(denk aan verhalen Big Data,
Blockchain en IoT)

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