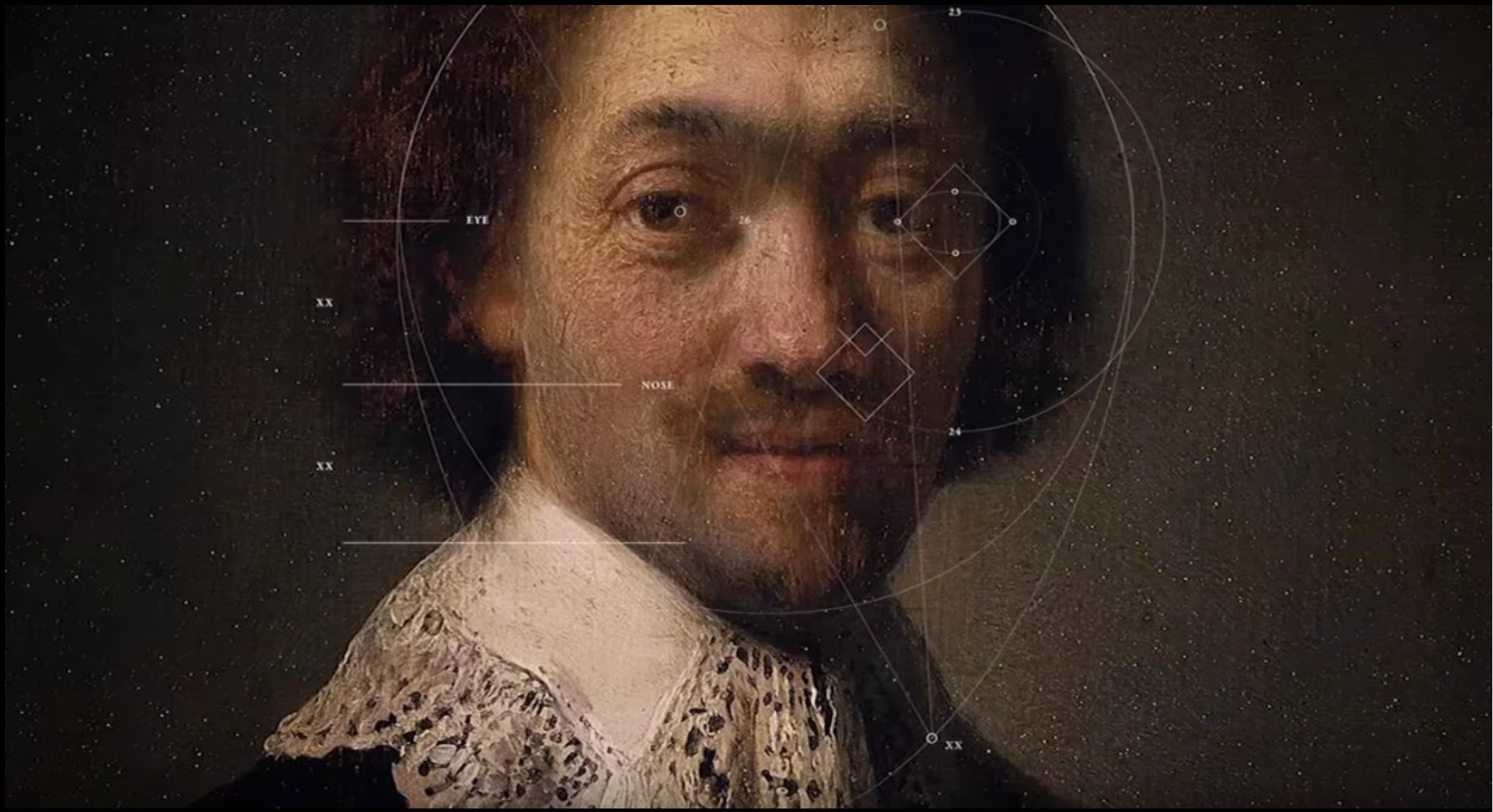
The Next Rembrandt



Source: www.nextrembrandt.com/

eCar Design

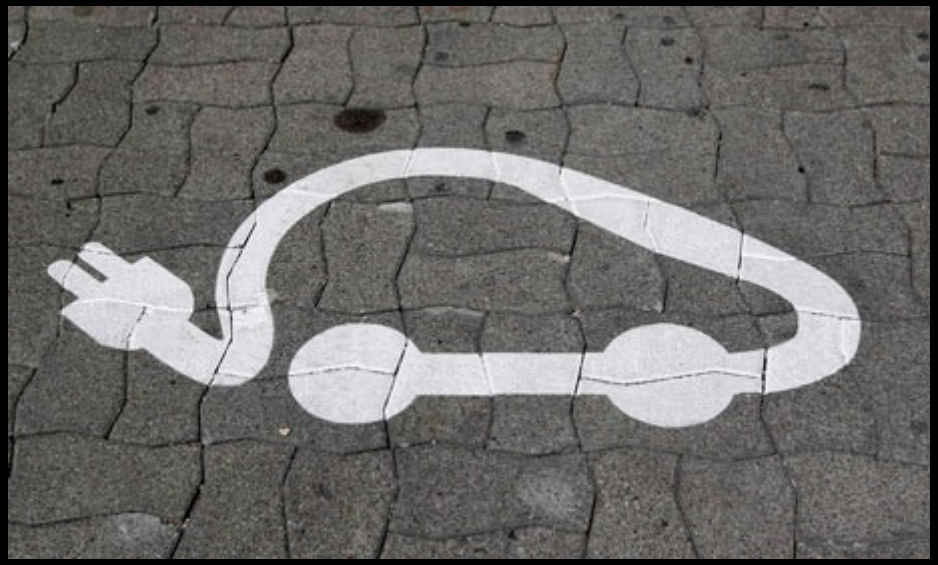
Autonomous Vehicles (1957)

“ELECTRICITY MAY BE THE DRIVER.
One day your car may speed along an electric super-highway,
its speed and steering automatically controlled by electronic devices embedded in the road.
Highways will be made safe - by electricity!
No traffic jams...no collisions...no driver fatigue."

Advertisement from 1957 for "America ’s Independent Electric Light and Power Companies" (art by H. Miller).

Source: Autonomous Vehicle Technology, RAND Corp., 2014

The Connected Vehicle



- New Interactions between Automakers and Customers / Drivers
- Data generated by Vehicle Sensors (*Connected Vehicle*)
- Big Data Captures and Integrates Vehicle's Data
- Integrated view of the Connected Vehicle
  - Real-time insight of Performance of the Vehicle
  - Analyzing Vehicle in the field to Predict / Anticipate Maintenance
  - Integration of Vehicle Data with Operating Environment Data (Weather, Traffic, Hazardous situations)

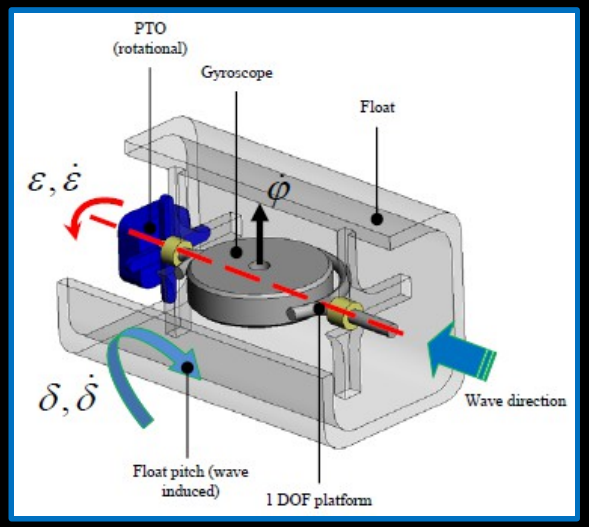
Automatic: *e*Car Services

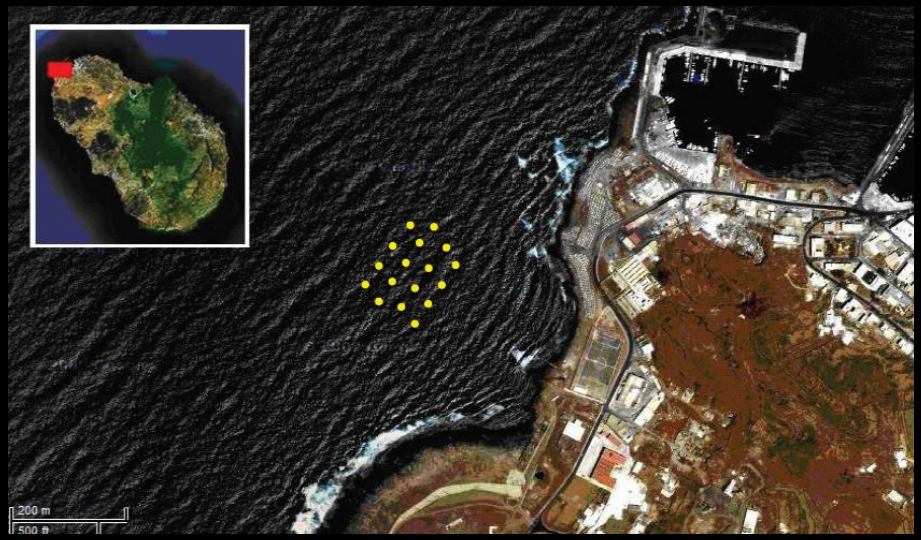
Your car is a computer,
it has data hidden inside it
about your mileage, gas usage, performance, and even its engine health

Source: www.automatic.com

CleanTech Design

Wave4Energy



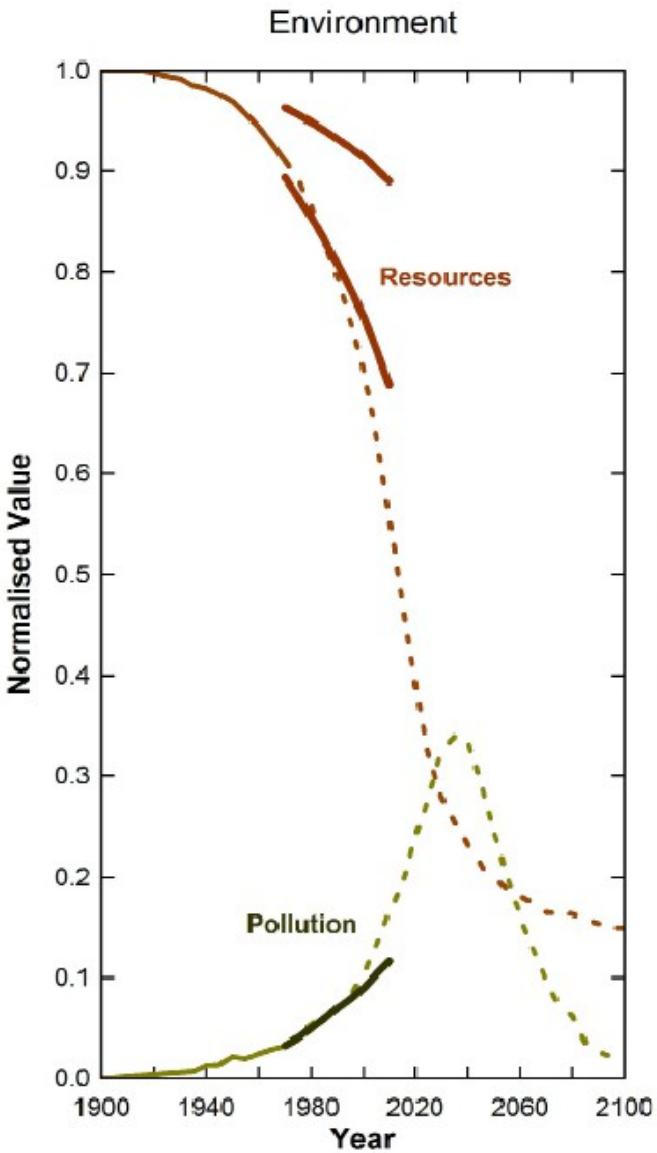


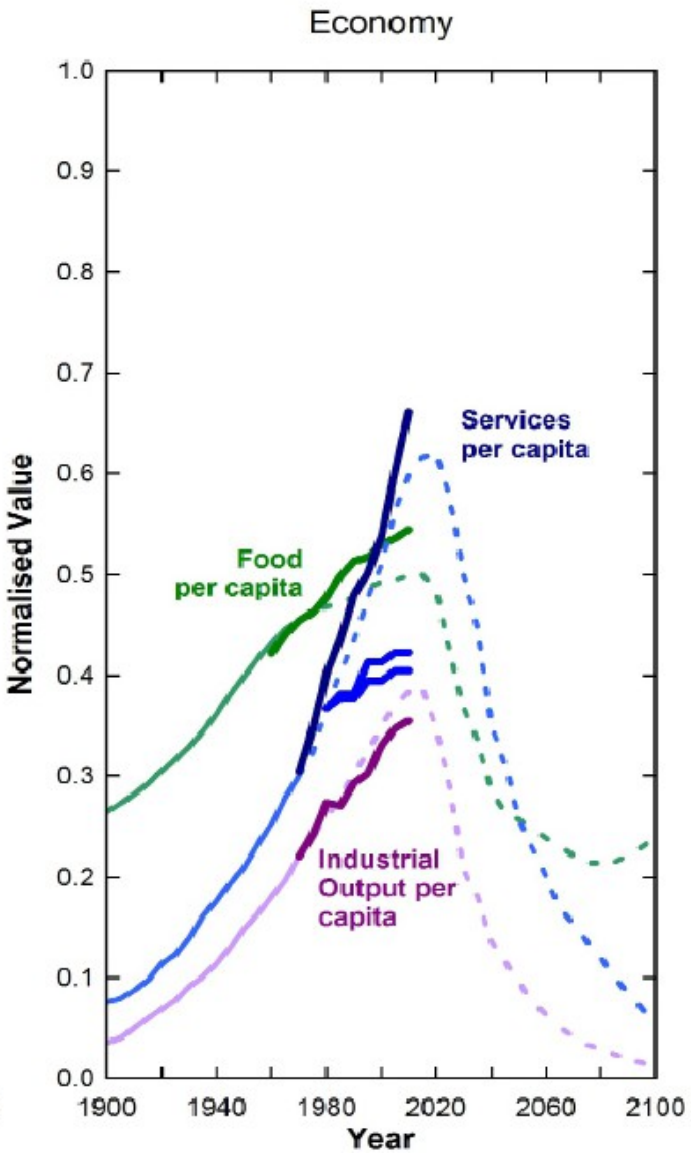
"By the Inertial Sea Wave Energy Converter (ISWEC)
the Sea Waves' mechanical power at the axis
is converted in electricity by a Power Take Off"

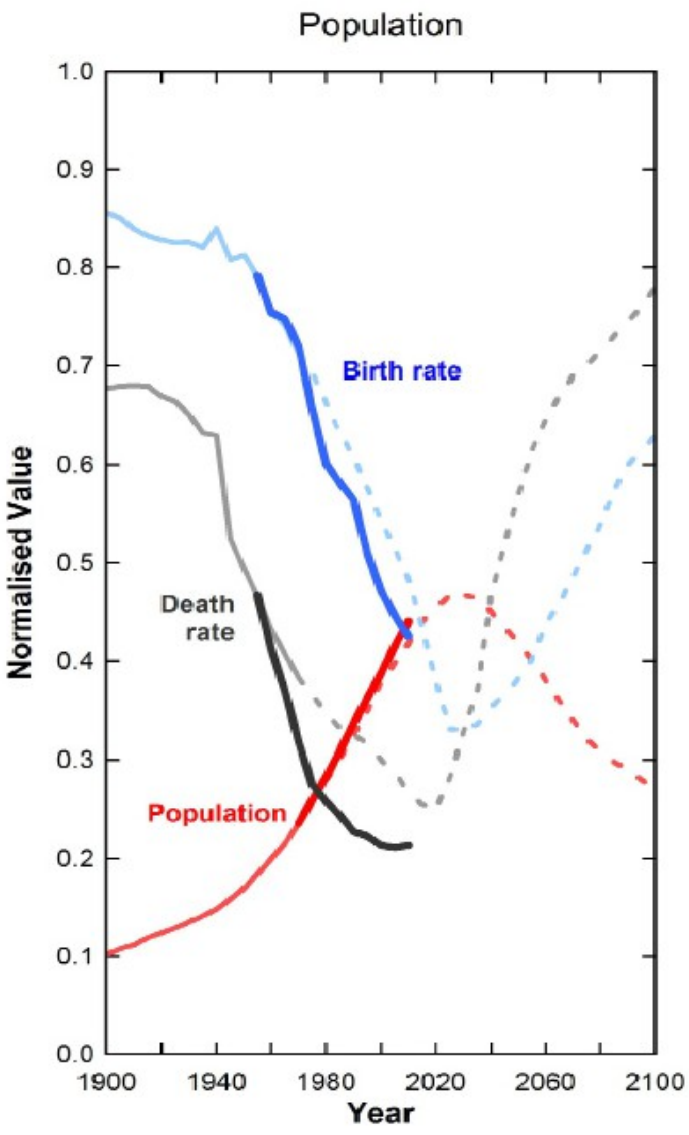
Source: www.waveforenergy.com

Club di Roma

The Limits to Growth scenario (Club of Rome, 1972) vs Historical Data



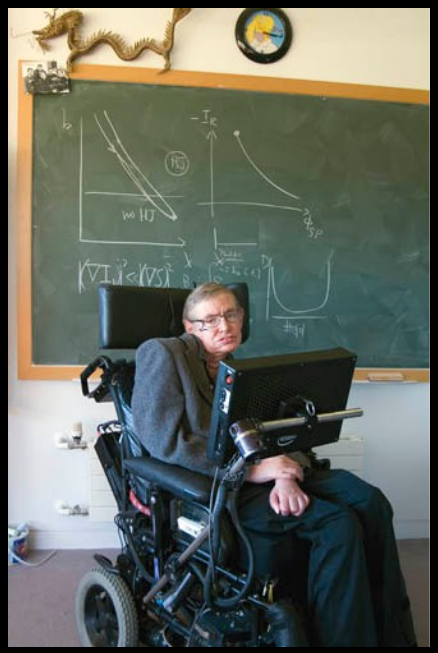




Source: G.Turner, "Is Global Collapse Imminent?", Research Paper n.4, August 2014, University of Melbourne

Design4All

e-Accessibility



Stephen Hawking
(Oxford, 1942 -)

make ICT accessible to all
meeting a wide spectrum of people's needs
in particular any special needs.

Source: http://www. howardguest.co.uk

Loccioni Apoteca

Cobots
Collaborative Robots

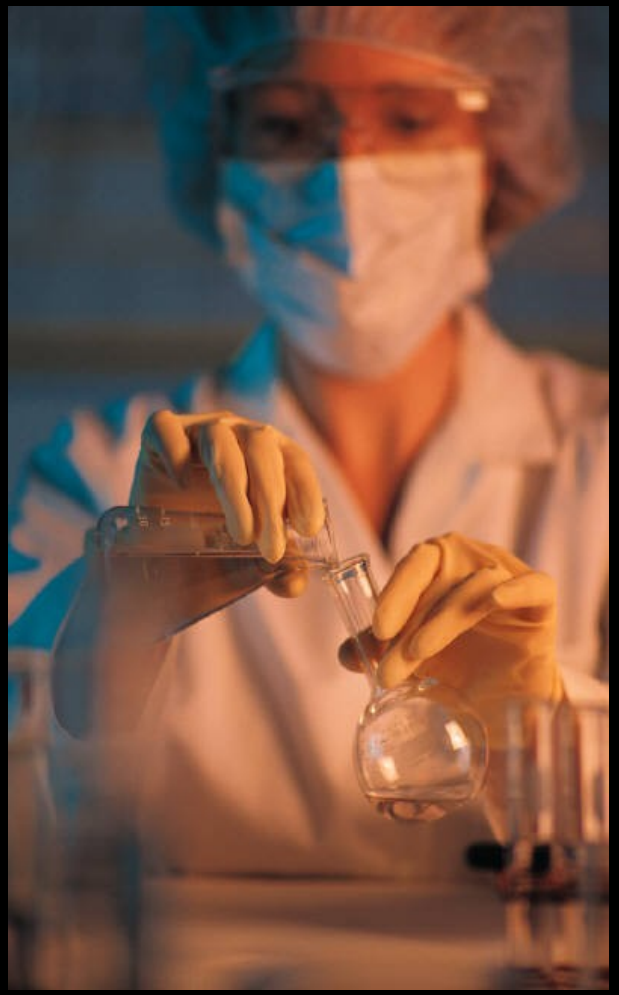
Robots intended to physically interact with humans in a shared workspace
(in contrast with other industrial robots,
designed to operate autonomously / with limited guidance

Radical change in Human-Machine Interaction (HMI)
Safety issues: ISO/TS 15066:2016 specifies safety requirements for Cobots

APOTECAchemo

Good, clean and fair.

The first fully automated system for the preparation of cytostatic drugs. The system prevents any form of contamination, in total safety for technicians and patients.



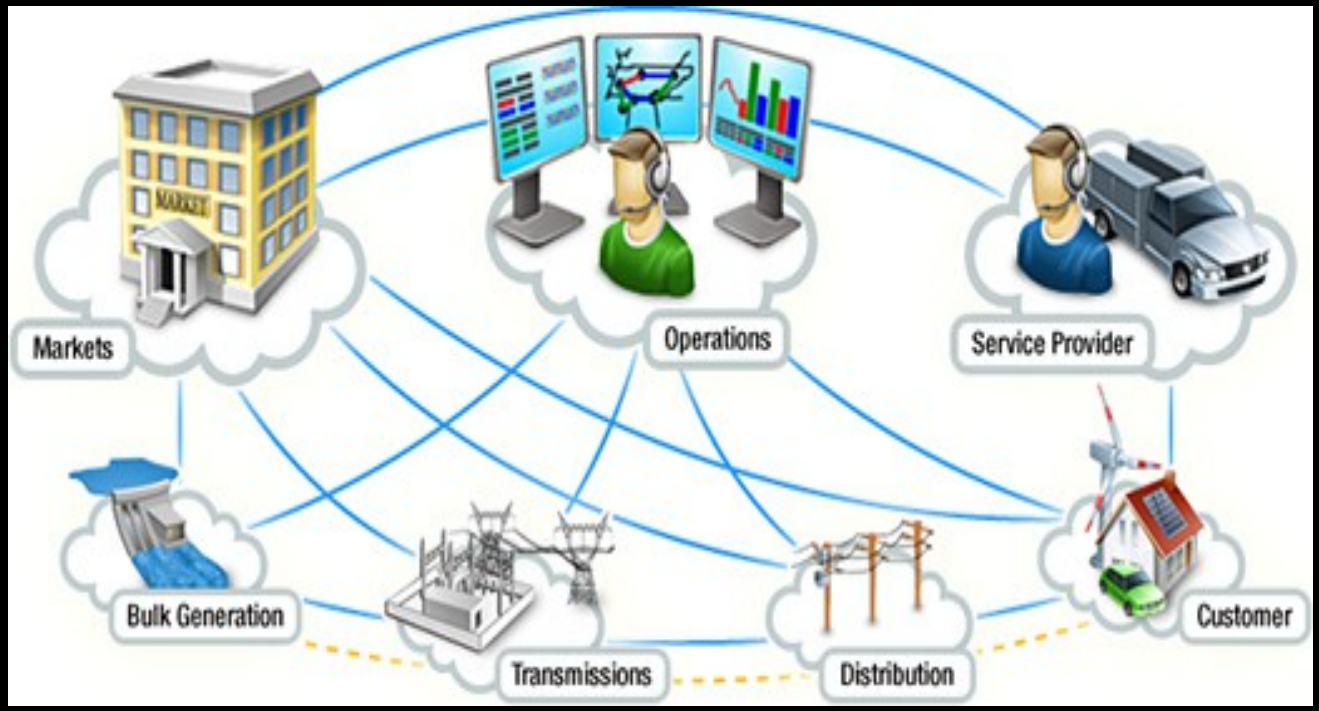
APOTECA chemo

Source: humancare.loccioni.com

CC BY NC ND

Community Grids

Smart Grid: a Complex System based on Energy + Information!



- Standardized Architectural Concepts
- Data Models and Protocols
- Interoperability, Reliability, Security and Evolvability
- New Measurement Methods and Models (to Sense, Control and Optimize)
- Needed Skills
  - METROLOGY: Metering, Wide Area Monitoring (SynchroPhasors, Phasor Measurement Unit, PMU), Power Conditioning, Building Energy Management, Electricity Storage
  - STANDARDS: Interoperability, Cyber-Security, Information & Communication Technologies

Source: nist.gov, 2012

Vandebron: Energy KM-zero

Holland's indep.prod. (up to 1 million customers potentially)

- Type of contract (1, 3 years)
- How much power you need
- Select producer!

(each described by own page, e.g.
Farmers Kadijk, northern Holland, have
a single wind turbine, produce power
for 600 households, 28 cents / Kwh)

- Subscribe online, self-service!
- **Producers** can get a higher price because bypass the utilities
- **Consumers** save money because bypass mark-up utilities
- Individuals pay exactly the price established by producers
- Vandebron charges a flat subscription fee / month (10 Euro) to each side
- Business case for investing in sustainable production

Vandebron interests aligned with customers: when customers save energy,
it can sign up more customers for each producer,
which increases its subscription fees

Source: www.fastcoexist.com, vandebron.nl

Loccioni Leaf Community

La Leaf Community, un progetto inaugurato nel 2008, rappresenta la prima comunita' integrata completamente ecosostenibile in Italia realizzata dal Gruppo Loccioni ad Angeli di Rosora (AN) in collaborazione con un network di imprese e di associazioni di eccellenza (tra le quali la Legambiente e il Kyoto Club). La Leaf Community accoglie migliaia di visitatori ogni anno rappresentando un esempio per istituzioni, universita', comuni, imprese, scuole, un modello di progetto territoriale, un laboratorio visitabile nel cuore delle Marche

Knowledge as a Commons

Trust

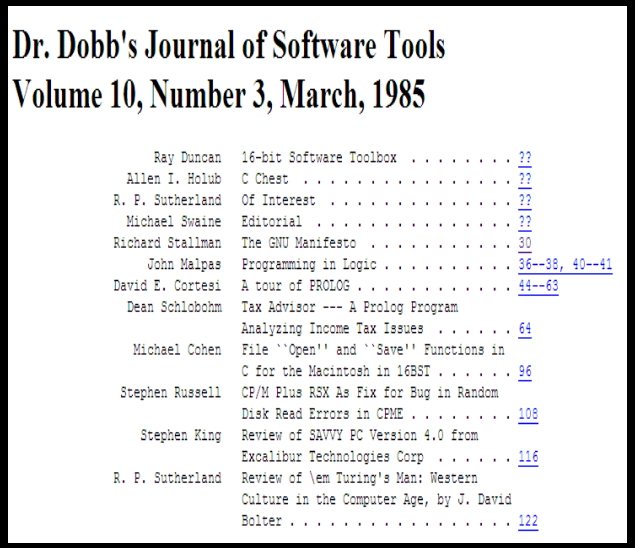
Confidente:
dal latino *confidens* -entis, part. pres. di confidere
"*confidare in qualcuno, aver fiducia*"

"Il software libero si riferisce alla liberta' di poter eseguire, copiare, distribuire, studiare, cambiare e migliorare il software"

1985: Free Software (GNU Manifesto)

Free Software
is a matter of the
users' freedom to
run,
copy,
distribute,
study,
change and improve
the software.

Richard M. Stallman
(New York, USA, 1953 -)



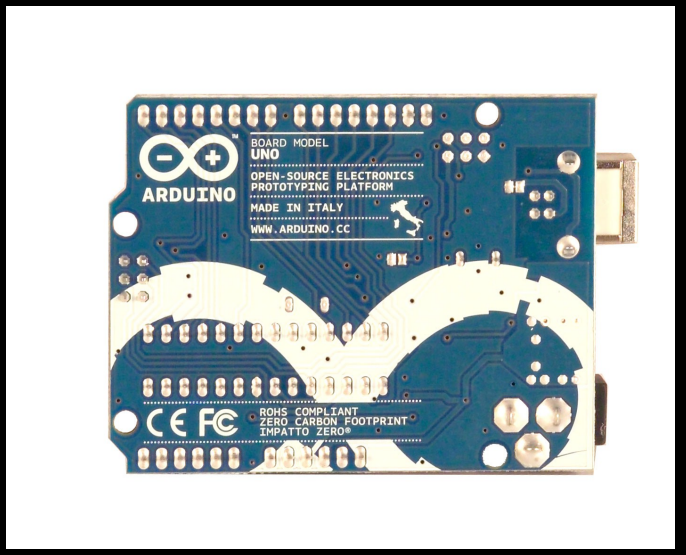
Dr. Dobb's Journal of Software Tools
Volume 10, Number 3, March, 1985

Ray Duncan	16-bit Software Toolbox	??
Allen I. Holub	C Chest	??
R. P. Sutherland	Of Interest	??
Michael Swaine	Editorial	??
Richard Stallman	The GNU Manifesto	30
John Malpas	Programming in Logic	36--38, 40--41
David E. Cortesi	A tour of PROLOG	44--63
Dean Schlobohm	Tax Advisor --- A Prolog Program Analyzing Income Tax Issues	64
Michael Cohen	File ``Open'' and ``Save'' Functions in C for the Macintosh in 16BST	96
Stephen Russell	CP/M Plus RSX As Fix for Bug in Random Disk Read Errors in CPME	108
Stephen King	Review of SAVVY PC Version 4.0 from Excalibur Technologies Corp	116
R. P. Sutherland	Review of \em Turing's Man: Western Culture in the Computer Age, by J. David Bolter	122

Source: www.fsf.org - http://boycottnovell.com/wp-content/uploads/2009/03/richard-stallman-young.png

2005: Open Source Hardware

Massimo Banzi

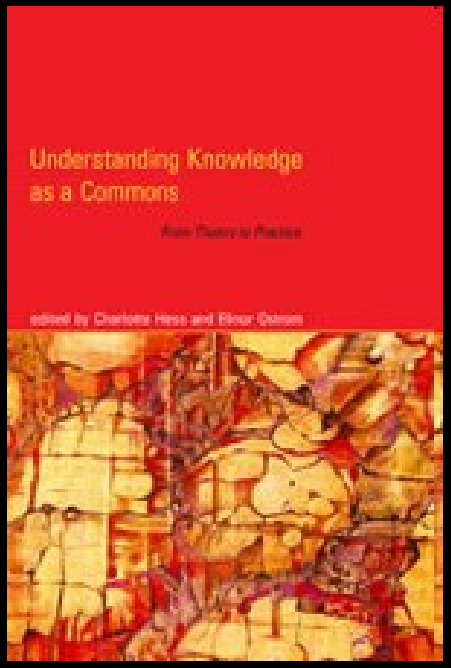


"Arduino nasce nel 2005 ... quando insegnavo all'Interaction Design Institute di Ivrea ...
... io proposi il nome "molto Eporediese" di Arduino, come il bar dove andavamo a bere l'aperitivo."
"Betabook, il manuale di Arduino", Massimo Banzi, fondatore del progetto Arduino

Source: www.arduino.cc

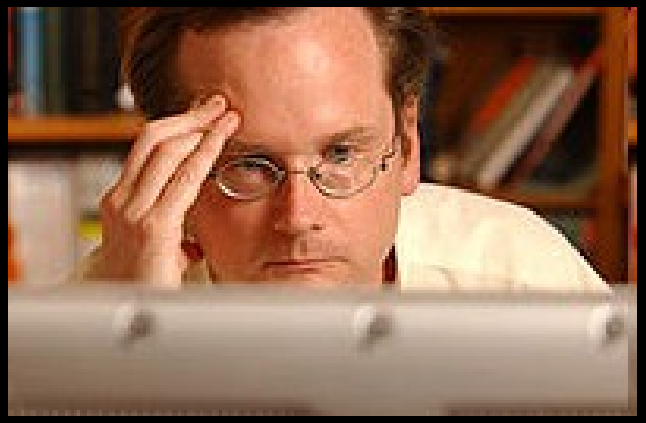
2006: Understanding Knowledge as a Commons

Elinor Ostrom
Indiana University
(1933 - 2012)
2009 Nobel Prize for Economics



E.Ostrom, "Understanding Knowledge as a Commons", MIT Press, 2006

2001: Creative Commons



Lawrence Lessig
(Rapid City, SD, USA, 1961 -)
Harvard Law School

Source: creativecommons.org

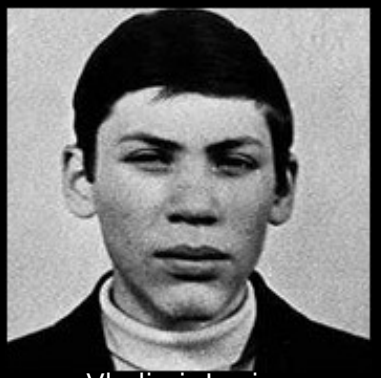
Ethical Hackers

Hackers' Ethic

Linus Torvald
Linux
1991

Robert Morris
Internet Worm
1988

Kevin Mitnick
Condor
1979



Vladimir Levin
10.7 M$ Citibank hack
1994

Work Ethic

Money Ethic

Network Ethic

- Passion
- Freedom
- Social Values
- Openness
- Activity
- Responsibility
- Creativity

Source: Pekka Himanen, "The Hacker Ethic: and the Spirit of the Information Age", Random House, 2001

hacker

n [*hack* skillful repair of a computer program +*er*]
(1976): an expert at programming and
solving problems with a computer
(*Webster's Dictionary*)

Ethical Hackers?

The New York Times

Review: ‘Mr. Robot’ Debuts on USA

By ALESSANDRA STANLEY JUNE 23, 2015

Credit Sarah Shatz/USA Network

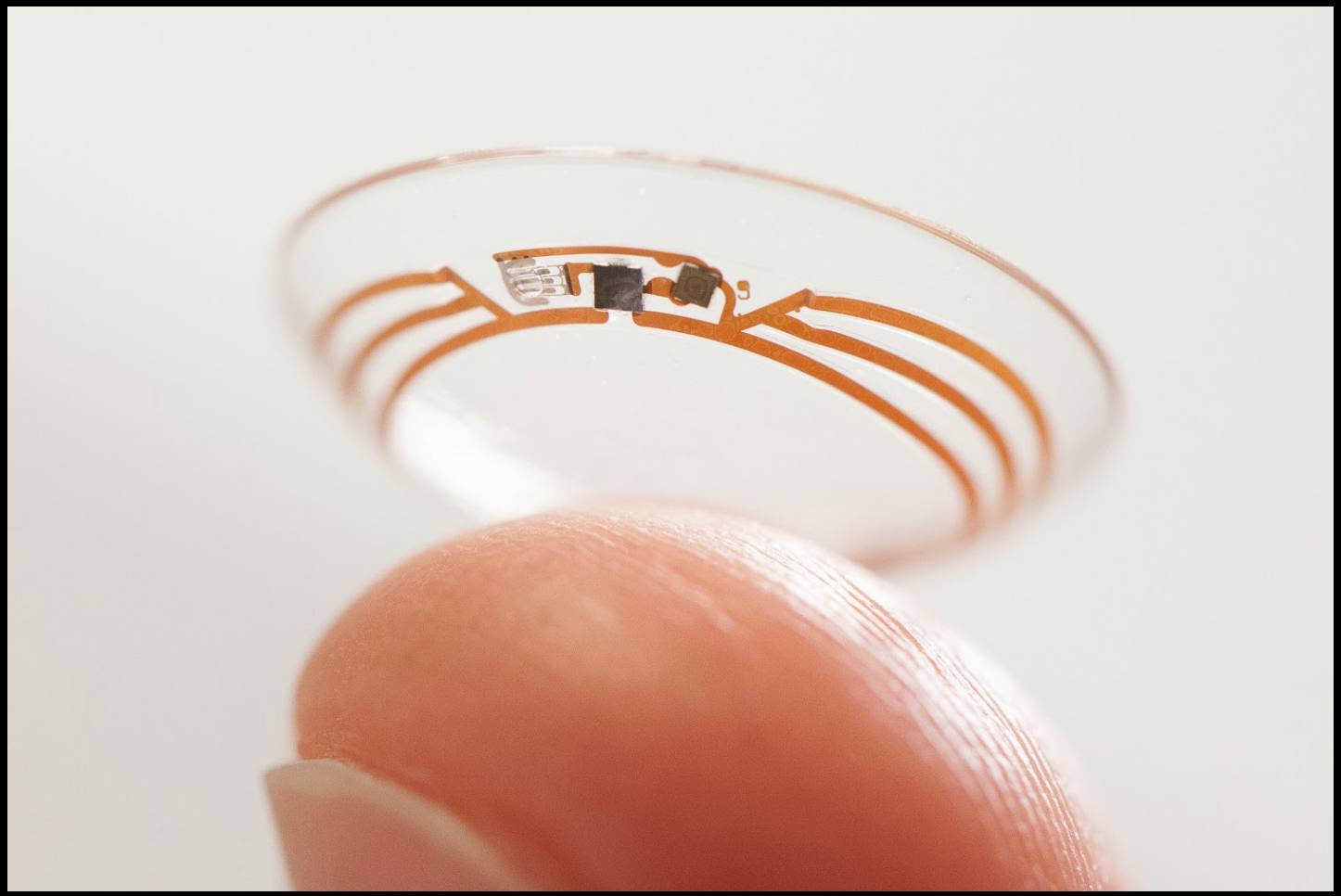
Rami Malek as Elliot in "*Mr. Robot*."

Informatici Senza Frontiere
Open Hospital - IT4Africa

Source: www.informaticisenza frontiere.org

Google Contact Lens

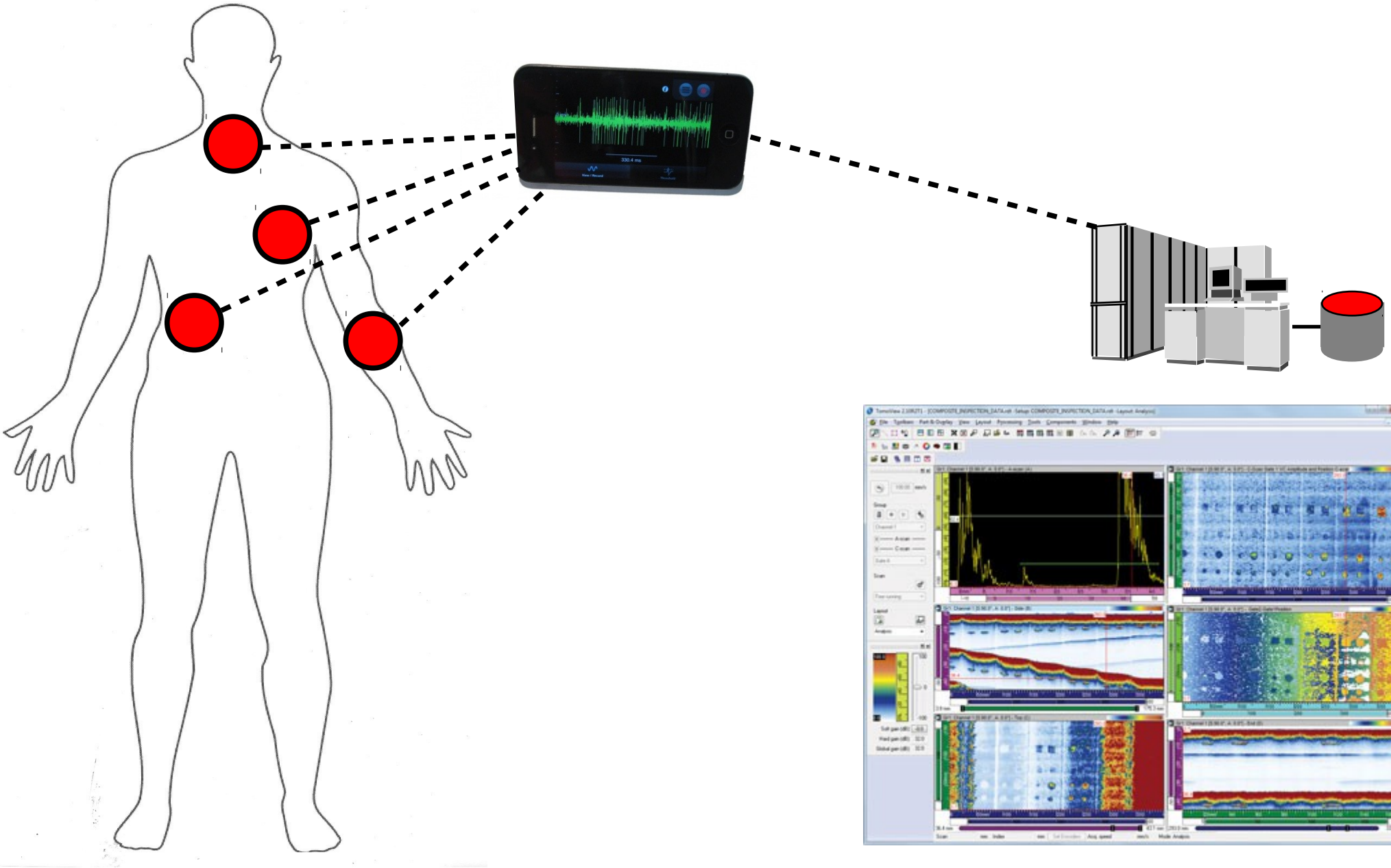
Google Smart Contact Lens



"Contact lens ... to measure glucose levels in tears ...
using a miniaturized glucose sensor and a tiny wireless chip
... make the measurements available to the wearer and their doctor"

Source: Google Official Blog 16 January 2014

in-vivo Monitoring via WBAN (Wireless Body Area Network)



Robot Warrior

Unmanned Aerial Vehicles (UAV)
Drones

Environmental Monitoring / Surveillance / Attack ?

Source: "Google Earth Shows U.S. Drones at Pakistani Base?", Wired, February 2009

Unmanned Ground Vehicles (UGV)

Autonomous Weapons with Sensors

Source: "Autonomous Military Robotics: Risk, Ethics, and Design", US Department of Navy, Office of Naval Research, California Polytechnic State University, December 20, 2008

NOW / No Robot War

...
Therefore, We, the undersigned,
ask the United Nations to issue a resolution on the
Prohibition of the Use of Robots in War
and to establish immediately,
a moratorium on the development and use of these technologies,
with a view to total abolition.

Rome, 4 November 2010

Source: http://www.norobotwar.org

AI Weapon Moratorium?

Artificial intelligence experts sign open letter to protect mankind from machines - CNET - Mozilla Firefox

File Modifica Visualizza Cronologia Segnalibri Strumenti Aiuto

Politecnico di Torino | Artificial intelligence e...

www.cnet.com/news/artificial-intelligence-experts-sign-open-letter-to-protect-mankind-from-machines/

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CNET › Tech Culture › Artificial intelligence experts sign open letter to protect mankind from machines

Artificial intelligence experts sign open letter to protect mankind from machines

The Future of Life Institute wants humanity to tread lightly while developing really smart machines.

by Nick Statt @nickstatt / January 11, 2015 4:10 PM PST

Source: www.cnet.com - robocop.com

AI Weapon Moratorium?

"The key question for humanity today is
whether to start a global AI arms race
or to prevent it from starting.
If any major military power pushes ahead with ***AI weapon*** *development,*
a global arms race is virtually inevitable ..."

From the letter presented at the
International Joint Conferences on Artificial Intelligence (IJCAI)
Buenos Aires, 28 July 2015

Source: Sebastian Anthony, 27 July 2015, ArsTechnicaUK

The Precautionary Principle

The Precautionary Principle

"When an activity raises threats of harm to human health or the environment,

precautionary measures should be taken

even if some cause and effect relationships are not fully established scientifically.

In this context the proponent of an activity,

rather than the public,

should bear the burden of proof.

The process of applying the Precautionary Principle must be

open, informed and democratic and must include potentially affected parties.

It must also involve an examination of the full range of alternatives,

including no action."

The "Wingspread Statement on the Precautionary Principle", Wingspread Center, Racine, Wisconsin, USA, January, 1998

Source: Environmental Research Foundation, January 21, 2008

Service Design

Service Design
(Systemic Design!)

The Application of
Human-Centric Ideas and Methods
to Services

Selling Performance instead of Goods

From Scale to Scope

CASE STUDY: A CLINIC SPACE

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

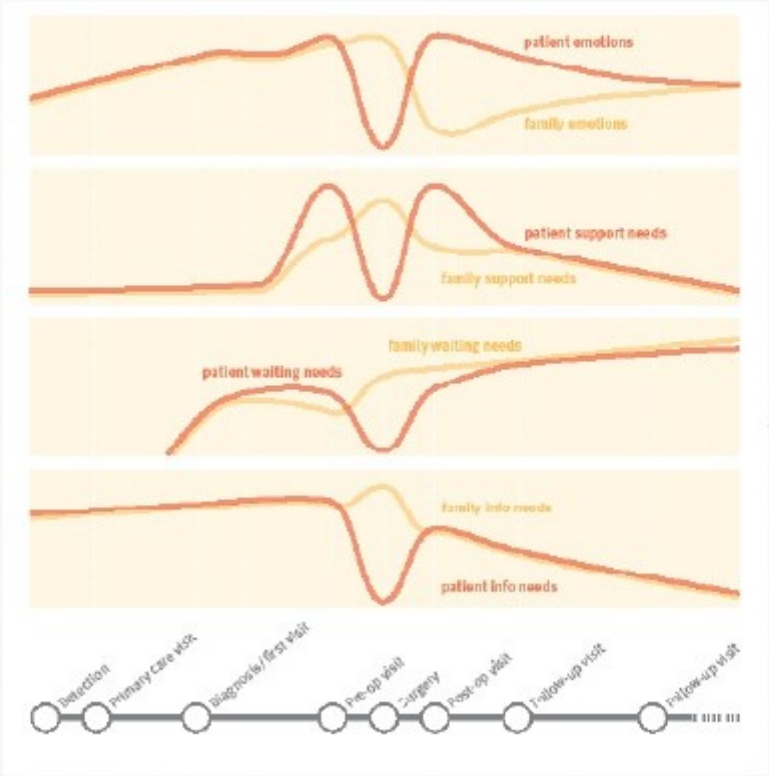
Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Definition Patient Journey

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

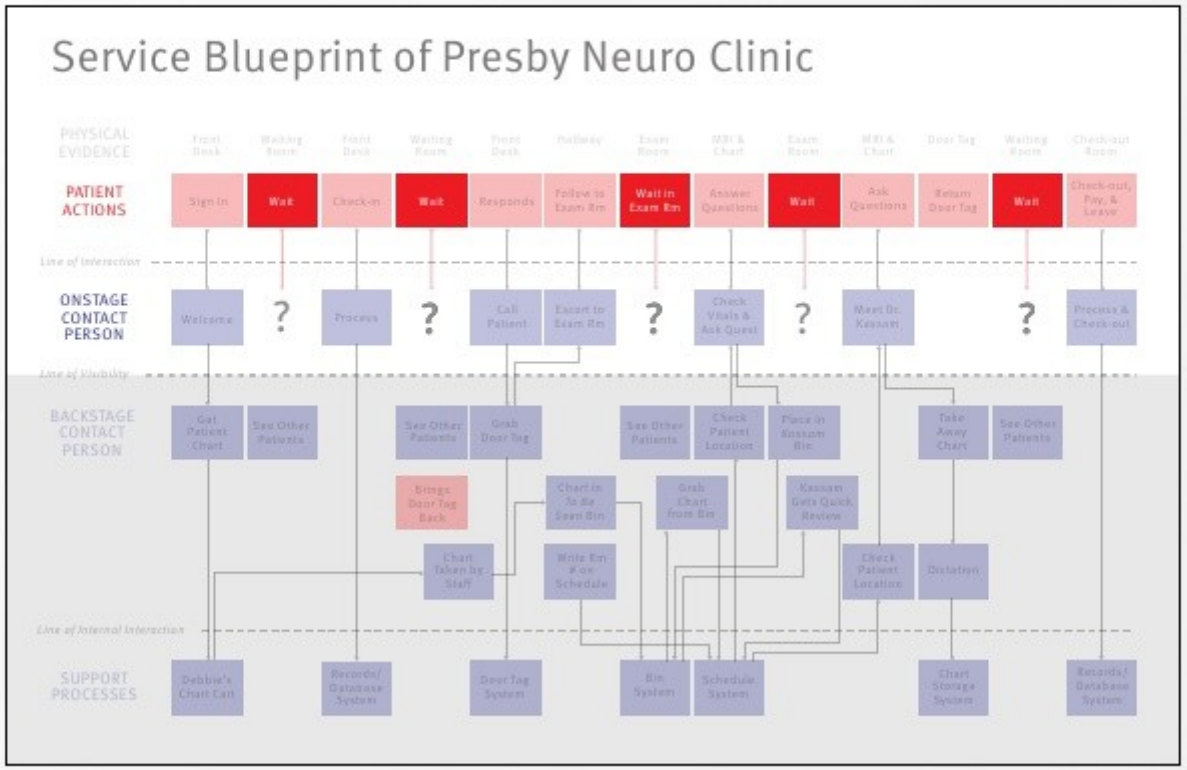
Definition Needs and Emotions



32

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Definition Holistic Delivery System



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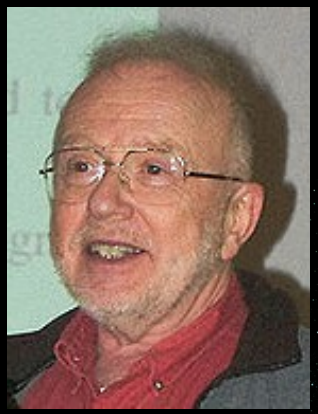
Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Source: J.Code, J.Hegeman, From Product to Services, a Service Design Crash Course

Star Wars

1985: Computers and War



David Parnas

1984, SDI, Strategic Defense Initiative

"... an example of social, ethical and professional responsibility in refusing ... the work of the (SDI) panel ... in his concern with public education ... for the public interest..."

Terry Winograd, 1987
CPSR President, Presents "1987-Norbert Wiener Award" to David Parnas

Source: Communications of the ACM, December 1985 (Vol. 28, No. 12)

Zuckerberg

Qual e' la domanda?

Barcelona, Mobile World Congress 2016

Hubble Space Telescope

"La piu' sublime, la piu' nobile
tra le Fisiche scienze
ella e' senza dubbio l'Astronomia.
L'uomo s'innalza per mezzo di essa
come al di sopra di se medesimo,
e giunge a conoscere la causa
dei fenomeni più straordinari..."

Giacomo Leopardi
Storia dell'Astronomia (Introduzione)
Recanati, Settembre 1813 (15 anni)

Desiderio
dal lat. de-sidera, mancanza (*de*) di stelle (*sidera*, da *sidus*, *sideris*).
Sentire la mancanza delle stelle, appetire qualcosa che manca.

Bubble Nebula - NGC 7635
7,100 light-years from Earth
Constellation Cassiopeia

Source: NASA

Hubble Space Telescope, Low Earth Orbit: 560 Km, Speed: 27.000 Km/h, 13,2 x 2,4 m (1990-2020)
National Aeronautics and Space Administration (NASA) + European Space Agency (ESA)

Source: NASA

Eric Whitacre's Virtual Choir

'Lux Aurumque' Virtual Choir,
Eric Whitacre, 2010
https://www.youtube.com/watch?v=D7o7BrlbaDs