

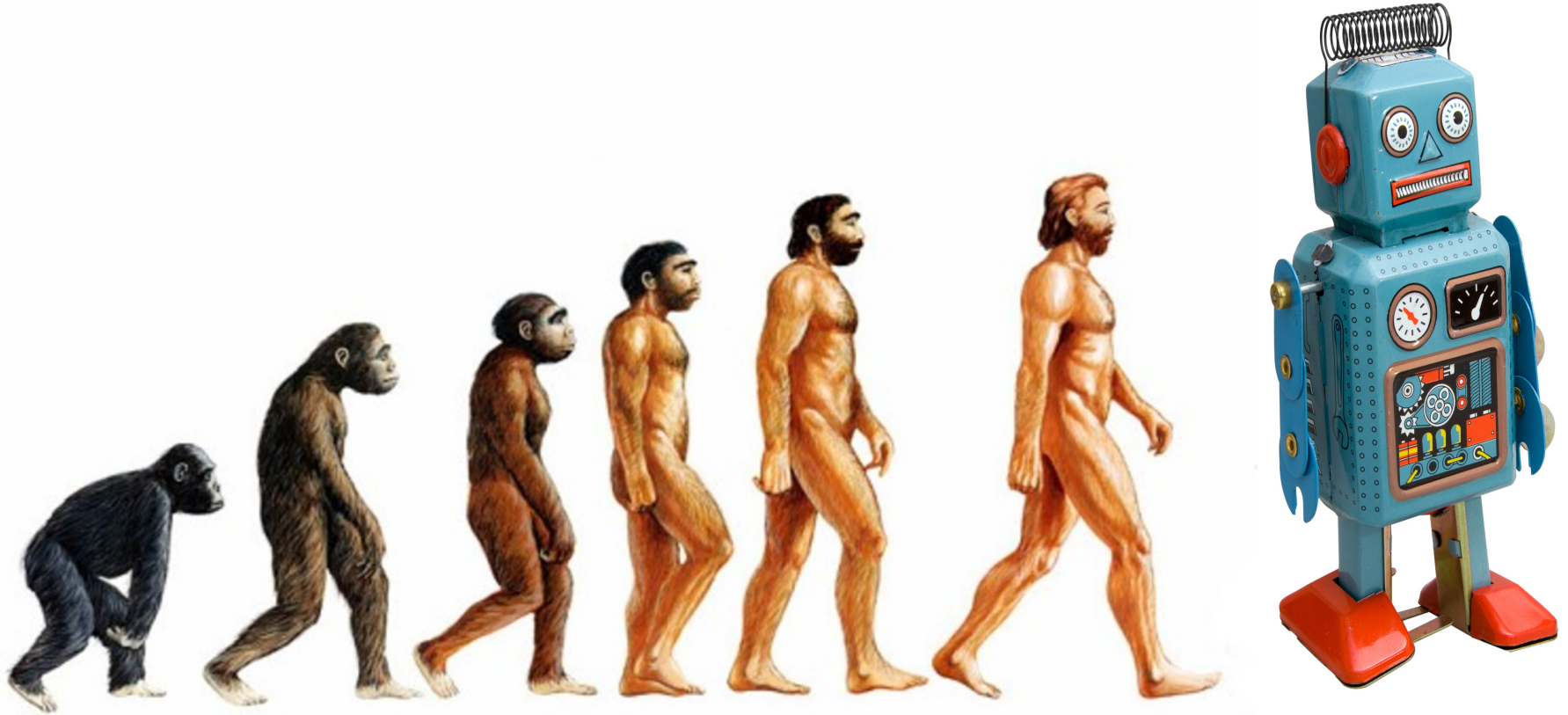
<http://www.halvorsen.blog>



Industrial IT and Automation

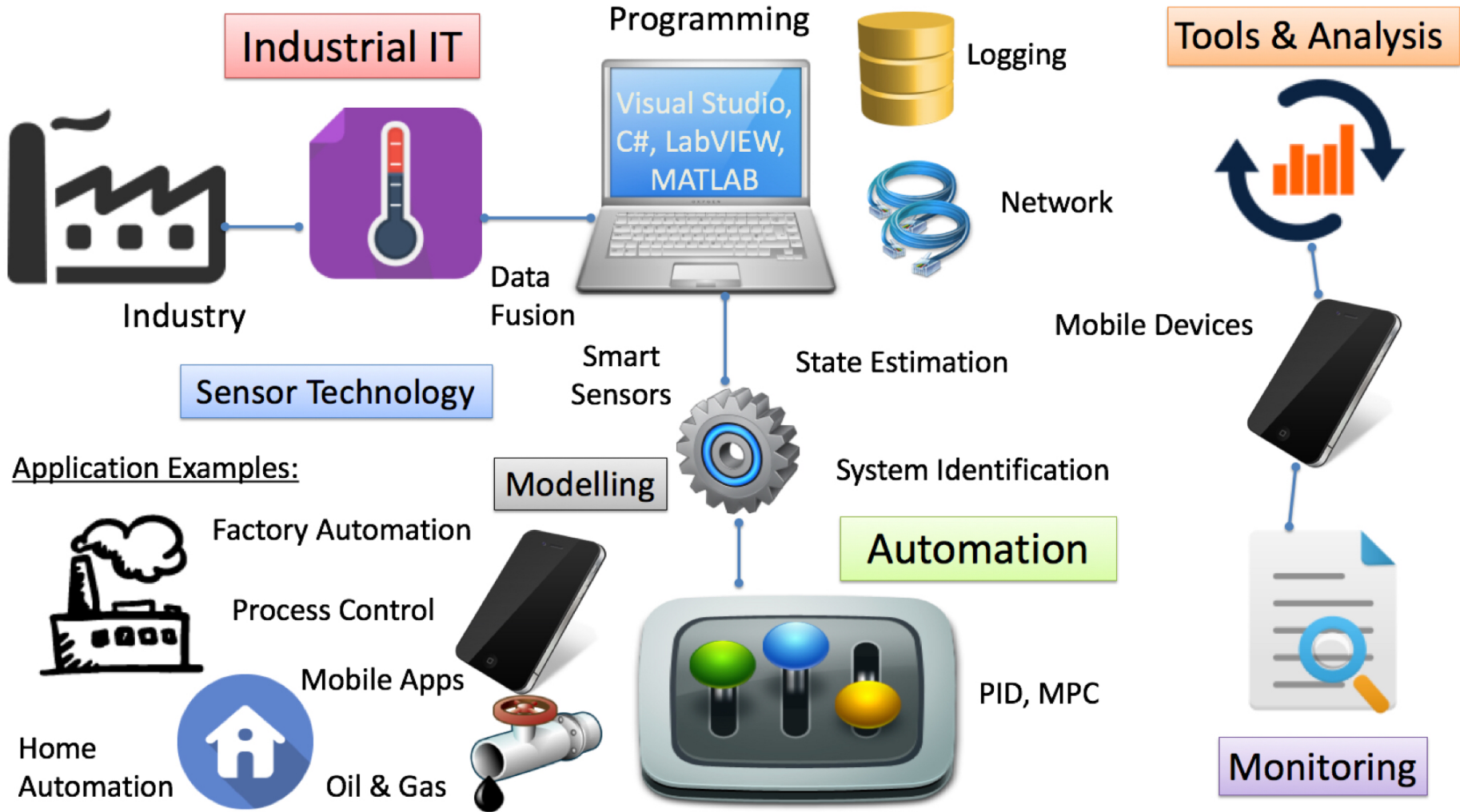
Hans-Petter Halvorsen

Evolution

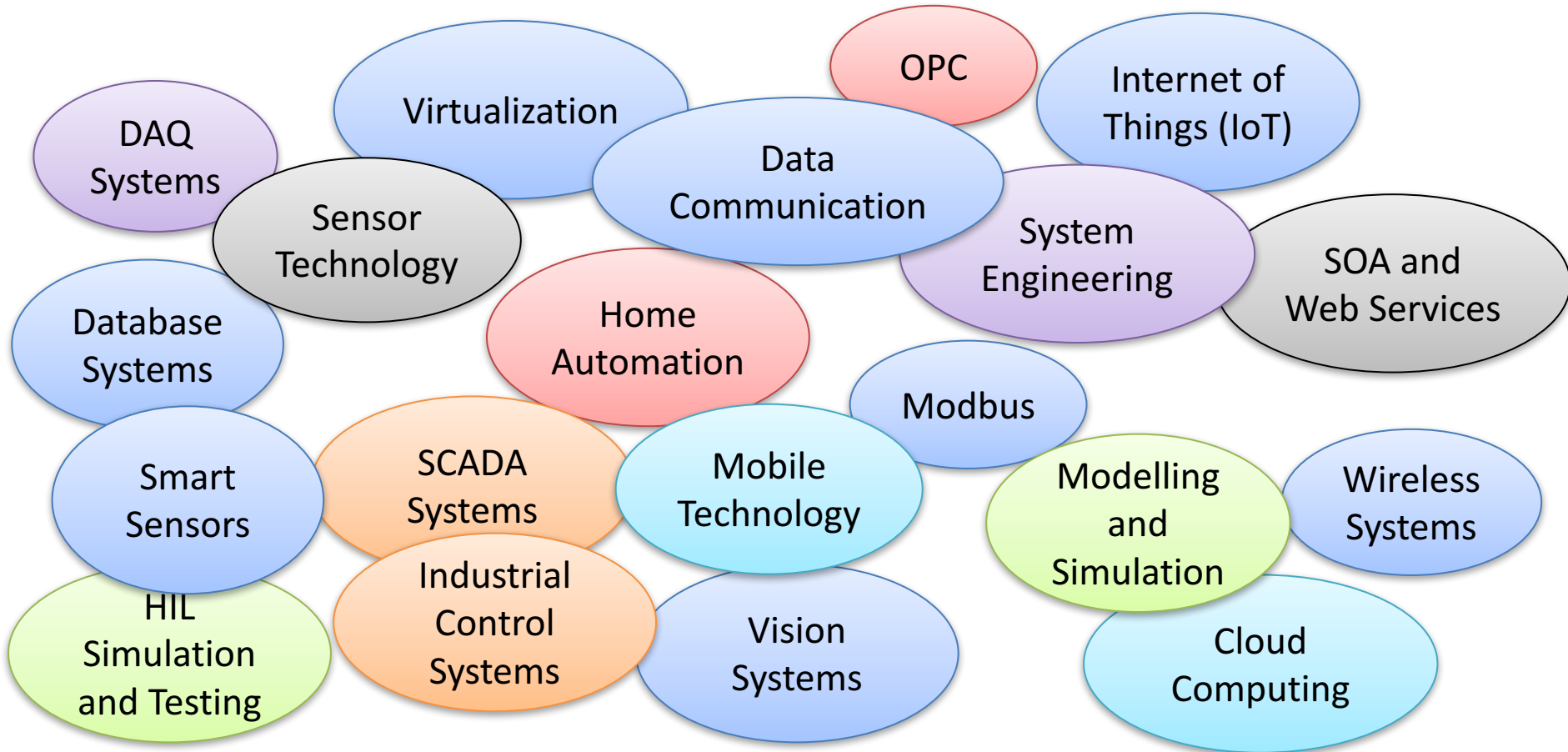


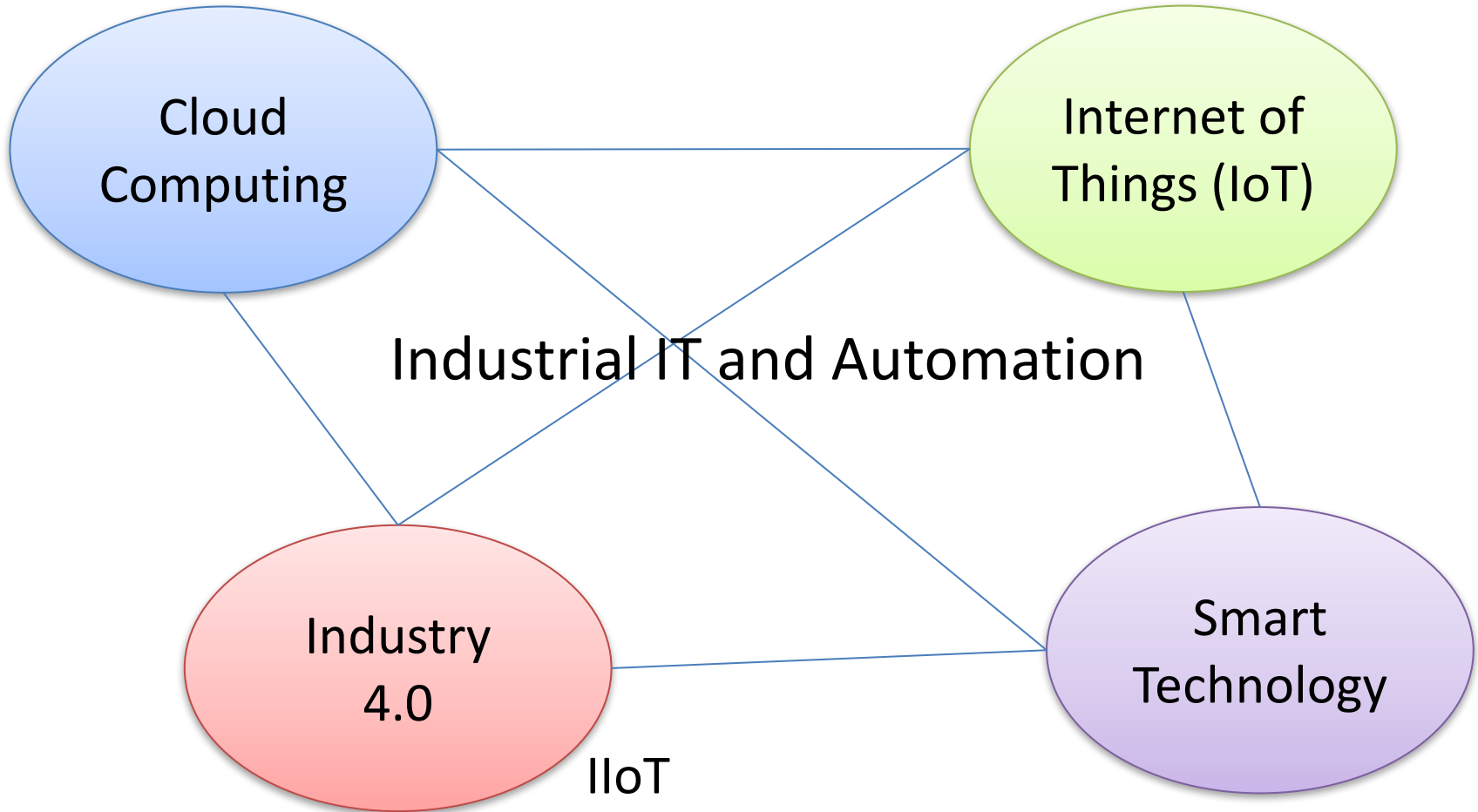
Industrial IT and Automation

- Industrial IT is the integration of Automation and Information Systems across the business.
- You could say Industrial IT is use of IT in industrial applications, everything from Process Control Systems, Sensor Technology, Data Acquiring, Data Logging and Monitoring and Software and Systems Engineering.
- You need to have knowledge of Data Acquisition, Database Systems, Data Communication and Networks, Automation and Control, etc.
- Terms such as Internet of Things (IoT), Smart Technology, Cloud Computing and Industry 4.0 are very popular these days.



Industrial IT and Automation Topics

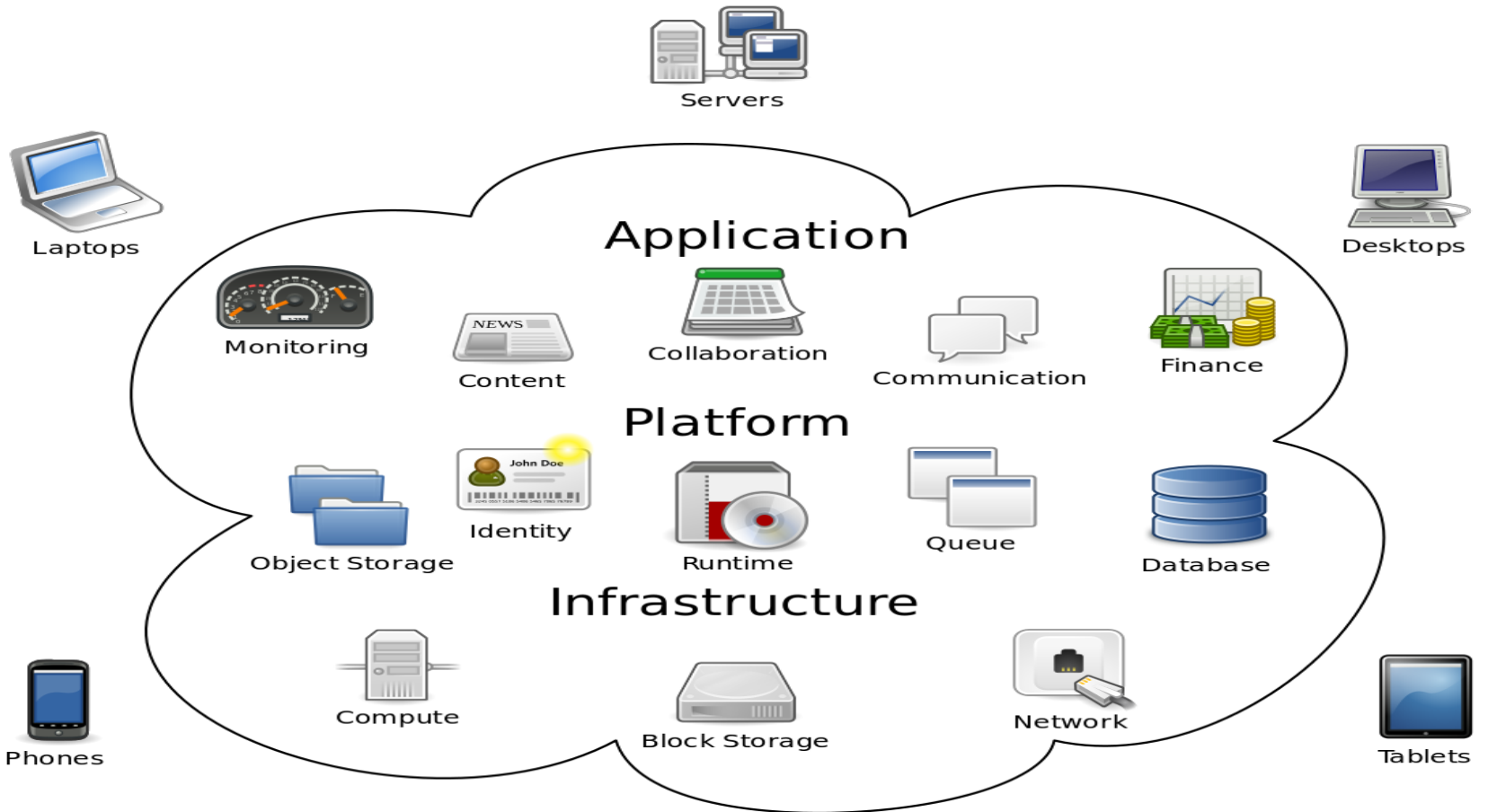






Cloud Computing

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Cloud Computing

Cloud Computing

- Cloud computing, also known as “on-demand computing”
- A kind of Internet-based computing, where shared resources, data and information are provided to computers and other devices on-demand.

https://en.wikipedia.org/wiki/Cloud_computing



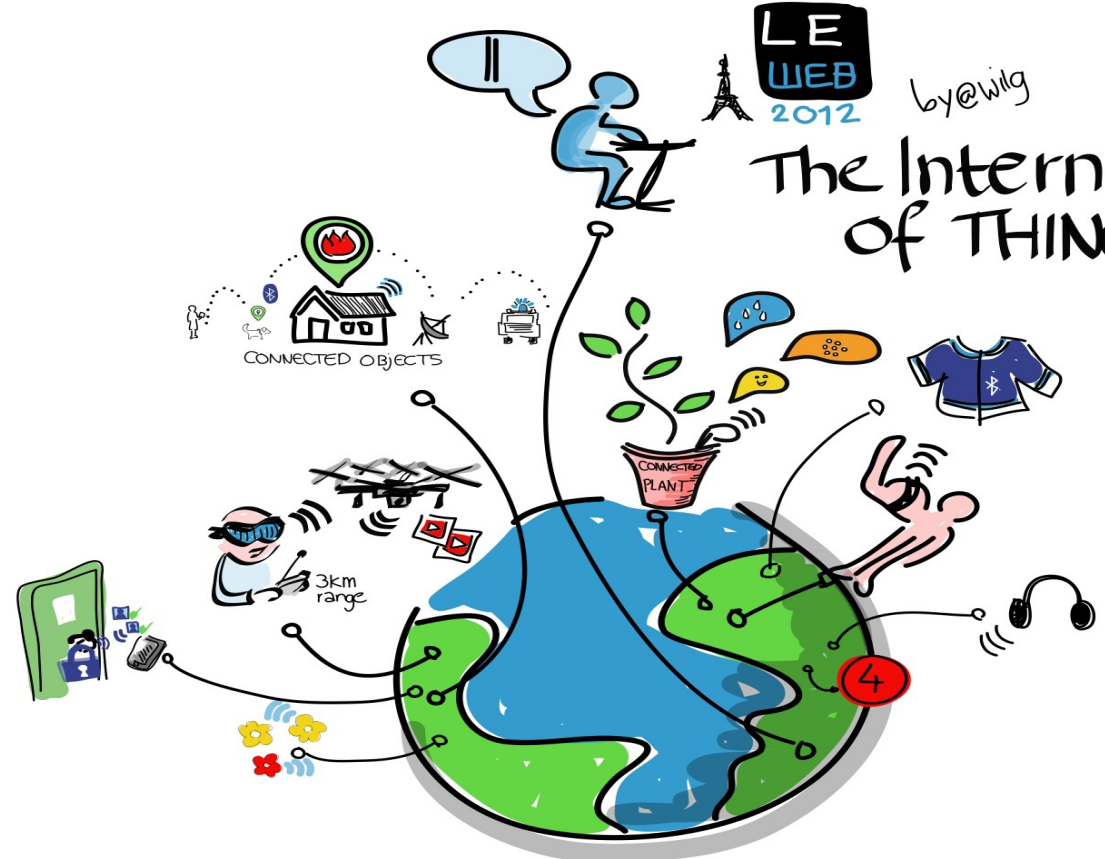
Internet of Things (IoT)

Hans-Petter Halvorsen

LE
WEB
2012

by@wig

The Internet of THINGS



CONNECT
THE WORLD

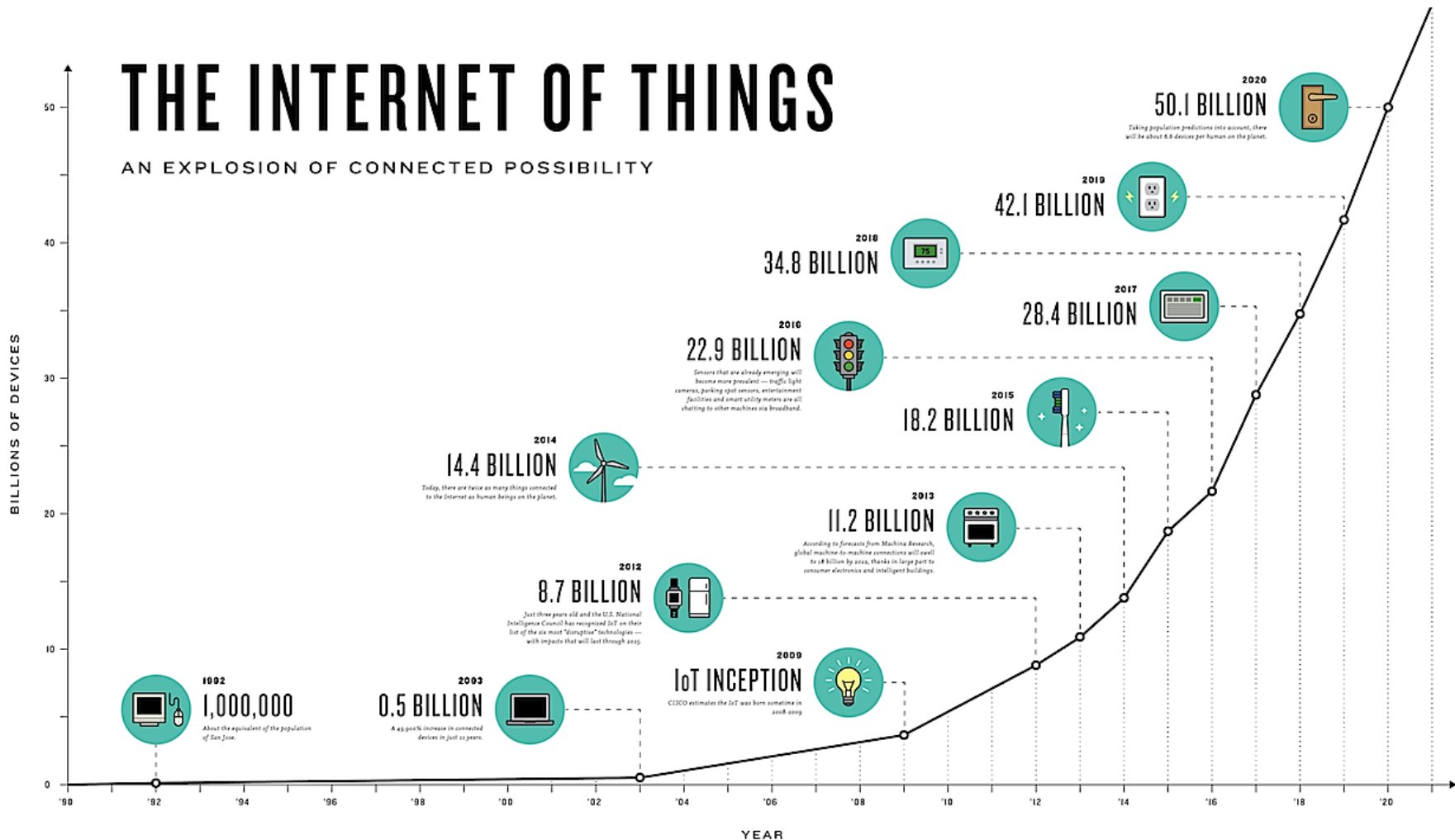
Internet of Things (IoT)

- The Internet of Things (IoT) is the network of physical objects—devices, vehicles, buildings and other items which are embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data.
- The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit.

https://en.m.wikipedia.org/wiki/Internet_of_Things

THE INTERNET OF THINGS

AN EXPLOSION OF CONNECTED POSSIBILITY





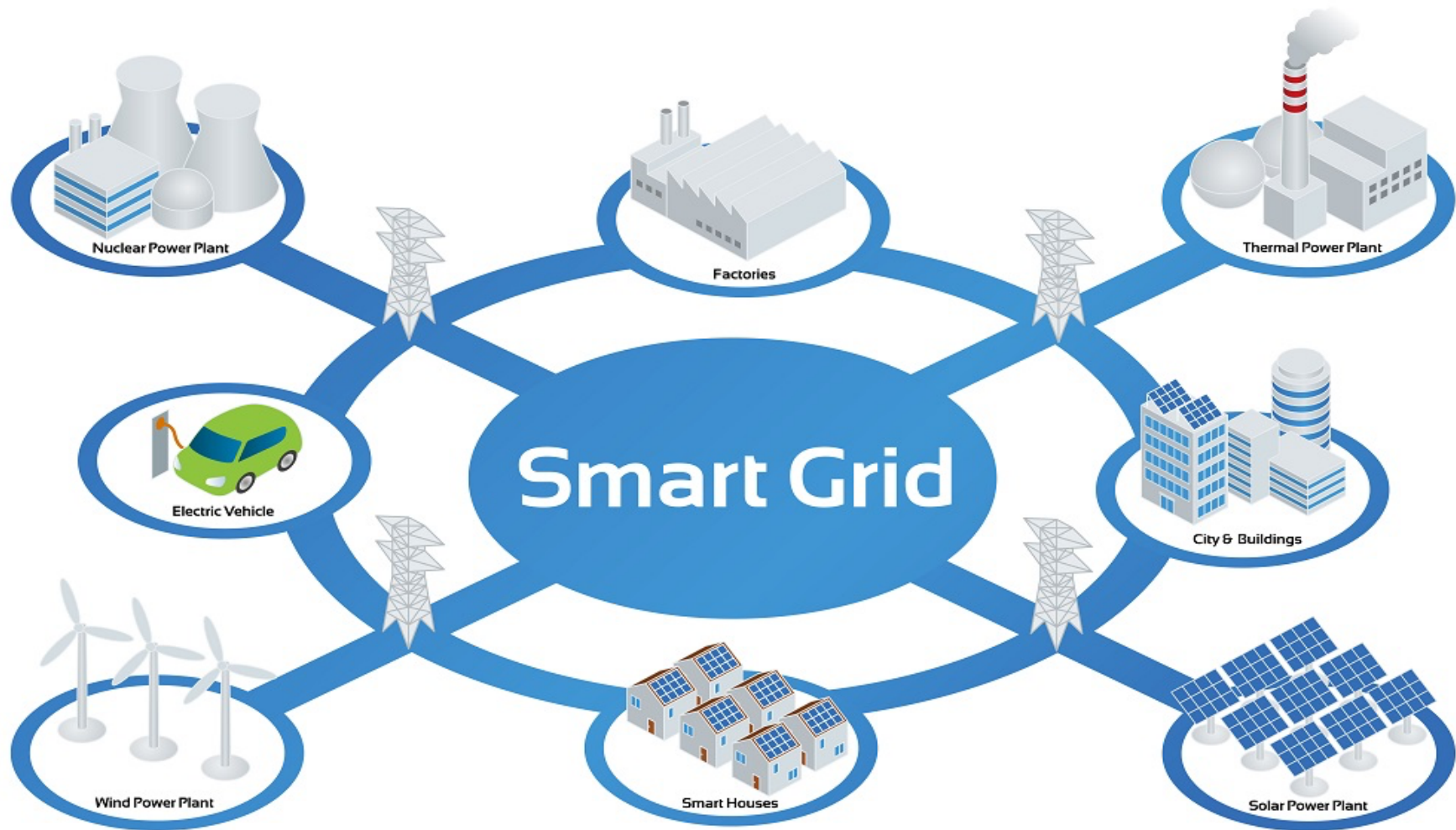
Smart Technology

Hans-Petter Halvorsen

Smart Technology

- Smart Phones and Smart Watches
- Smart Sensors
- Smart Houses, Smart Home, Home Automation
- Smart Factories
- Smart Cities
- Smart Grid
- ...

- Internet of things



Smart Grid

- Electricity is a resource that must be used as soon as it is produced, you cannot store it in large quantities.
- Smart Grid is the collective term for a new generation power grid, where one makes use of new communication technologies to exploit energy infrastructure better.
- Smart Grid is characterized by different systems and components which have in common that they have merged with the Internet.



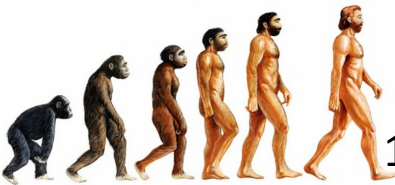


Industry 4.0

Hans-Petter Halvorsen

Industry 4.0

- “We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another.”
- “In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before.”



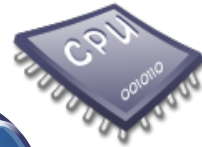
1930

The first Computer
The Turing
machine, 1936

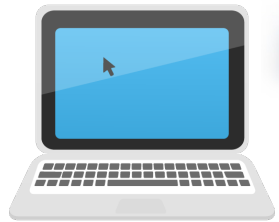


Internet,
1968-91

The
Microprocessor,
1971



1976: Apple I



PC, 1981
(IBM)

1984: Macintosh

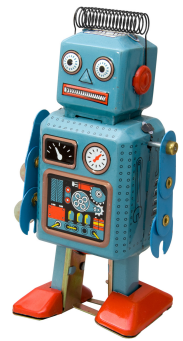


World
Wide Web,
1989-93

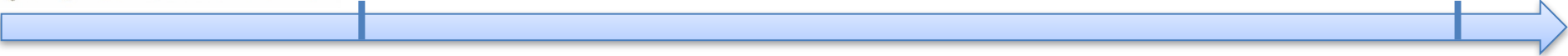
Smartphone, 2007



Internet
of Things
(IoT)
and
Industry
4.0



2016



Industry 4.0

- A “Buzz Word”?
- “Same shit – new wrapping”?

Industry 4.0 is the new buzzword for the combination of industry and the current Internet of Things (IoT) technology is Industry 4.0.

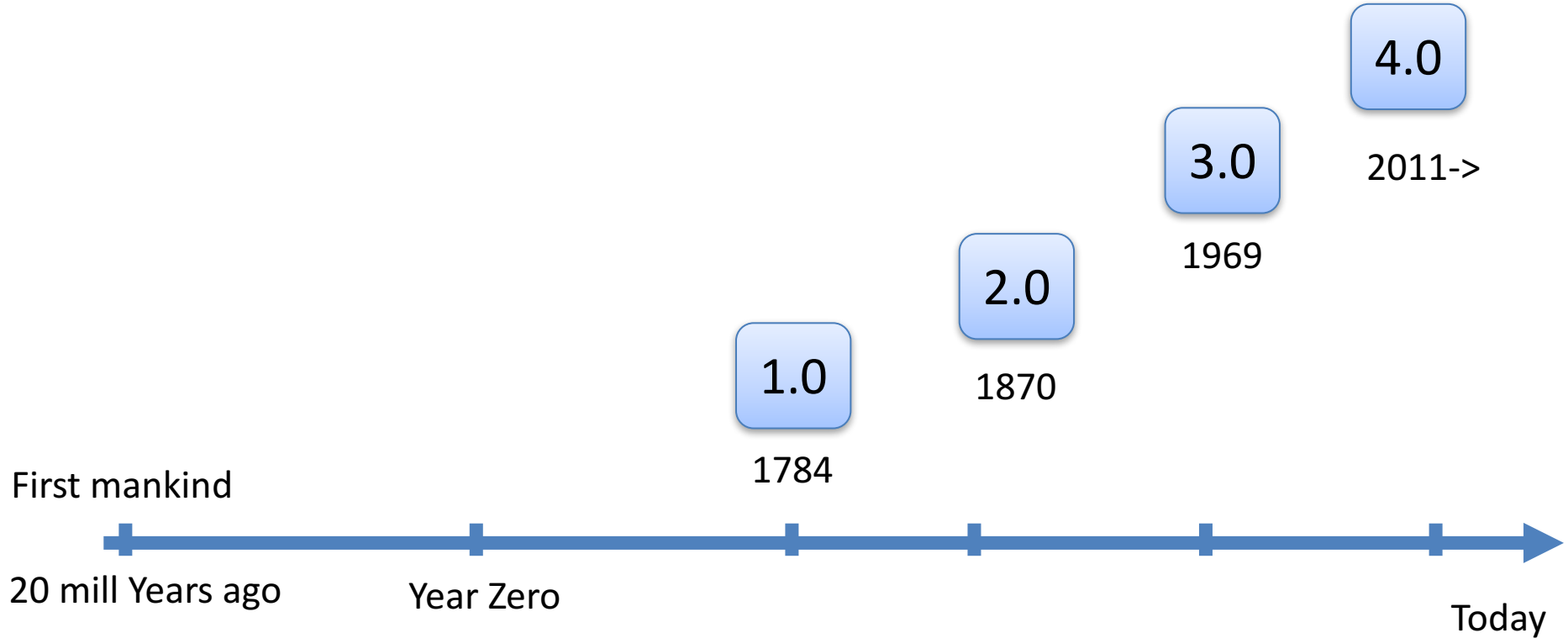
Industry 4.0

- First things first – this isn't a new technology. Nor is it a business discipline.
- It is in fact a new approach to achieve results that weren't possible 10 years ago thanks to advancements in technology over the past decade.
- Some will also tell you that it's in fact the fourth industrial revolution.

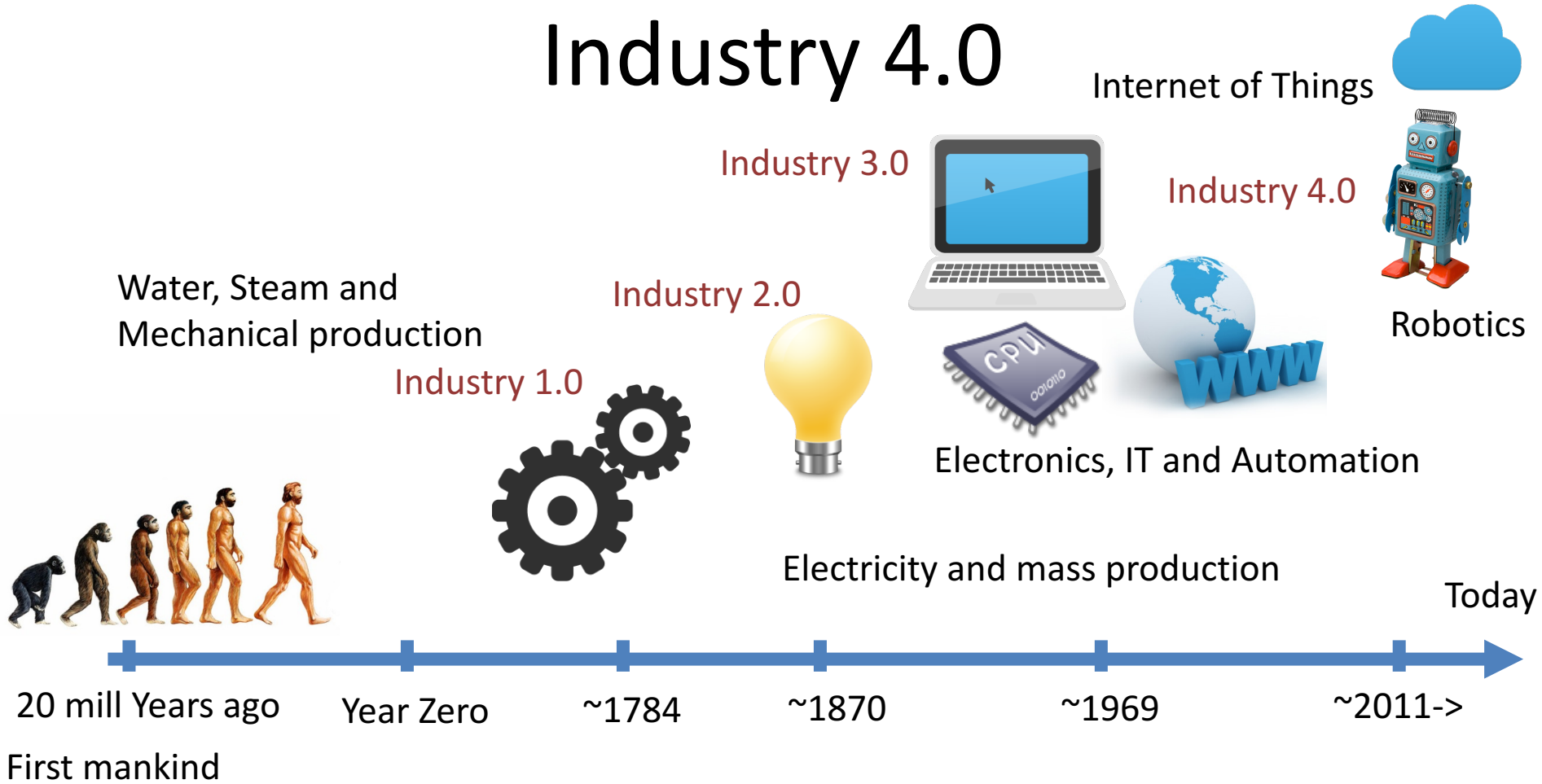
Industry 4.0

- The First Industrial Revolution used water and steam power to mechanize production.
- The Second used electric power to create mass production.
- The Third used electronics and information technology to automate production.
- Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.





Industry 4.0



Industry 4.0



Navigating the next industrial revolution

Revolution	Year	Information	
	1	1784	Steam, water, mechanical production equipment
	2	1870	Division of labour, electricity, mass production
	3	1969	Electronics, IT, automated production
	4	?	Cyber-physical systems

Industry 4.0

The fourth industrial revolution

Industry 4.0

The fourth industrial revolution

- 1.0: Mechanization of production using Water and Steam Power.
- 2.0: Mass production with the help of Electric Power.
- 3.0: The Digital Revolution. From Analog to Digital Devices and Signals. Use of Electronics and IT to further Automate Production

“1.0”

The Industrial Revolution

- The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840.
- This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, the development of machine tools and the rise of the factory system.
- Textiles were the dominant industry of the Industrial Revolution

https://en.m.wikipedia.org/wiki/Industrial_Revolution

“1.0”

The Industrial Revolution



A Watt steam engine. James Watt transformed the steam engine from a reciprocating motion that was used for pumping to a rotating motion suited to industrial applications

“2.0”

Electrical Power

- The electrical industry started with introduction of electric lighting in 1882.
- Throughout the 1880s and 1890s, growing economic and safety concerns lead to the regulation of the industry.
- Once an expensive novelty limited to the most densely populated areas, reliable and economical electric power has become a requirement for normal operation of all elements of developed economies.

“3.0”

The Digital Revolution

- The Digital Revolution, known as the Third Industrial Revolution, is the change mechanical, and electronic technology to digital technology which began anywhere from the late 1950s to the late 1970s with the adoption and proliferation of digital computers and digital record keeping that continues to the present day.
- From Analog to Digital Devices and Signals.
- Use of Electronics and IT to further Automate Production

https://en.m.wikipedia.org/wiki/Digital_Revolution

Industry 4.0

The fourth industrial revolution

A “Smart Factory”

https://en.m.wikipedia.org/wiki/Industry_4.0

Industry 4.0 Background

- The term was first used in 2011 in Germany
- In October 2012 a Working Group on Industry 4.0 presented a set of Industry 4.0 implementation recommendations to the German federal government.
- The high-tech strategy document outlined a plan to almost fully computerize the manufacturing industry without the need for human involvement.

Industry 4.0

- Industry 4.0 is not just about digitizing and improve existing processes.
- It is also about developing new business models.
- We are talking about an Internet-driven revolution.
- Digitization will hit all industries and will be the basis for its future competitiveness.
- Adopting algorithms, robots and application of big data analysis will over the next 10 years can change not only the industry but the whole social development.

The Fourth Industrial Revolution: what it means, how to respond



<http://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond>





Industrial Internet of Things (IIoT)

Hans-Petter Halvorsen

Industrial Internet of Things (IIoT)

- Another word for Industry 4.0
- IoT – Consumer oriented, Smart Home Solutions, etc.
- IIoT – Industrial use of IoT Technology
- "The main difference is that where consumer IoT often focuses on convenience for individual consumers, Industrial IoT is strongly focused on improving the efficiency, safety, and productivity of operations with a focus on return on investment,"



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