

Copenhagen Institute for **Futures** Studies
Instituttet for **Fremtids**forskning



BEM-VINDOS AO CIFS.
O FUTURO É AGORA.

fast forward >>

Imagining the world next 30 years



Copenhagen Institute for **Futures** Studies
Instituttet for **Fremtids**forskning





Who we are

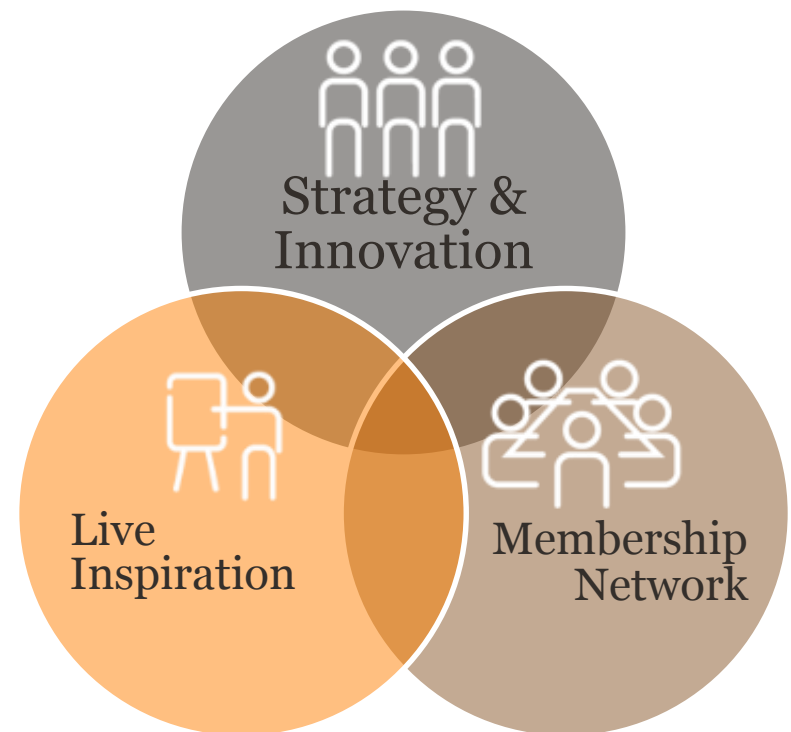




Introducing

An independent, non-profit think tank guiding key decision makers since 1970

- Driving change for corporations, institutions and society
- Strengthening decision-making
- Immediate usability in real world contexts



What we do

Consultancy
projects



Workshops &
Presentations



Magazines &
Members reports





Our time is made of Researchers
and Collaborators with large
experience in business, and they
are located over the world. We
have a solid network of
information and distribution of
knowledge of future matters.

CIFS Brasil



PETER KRONSTRØM
Head of CIFS Brasil



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Associate Partner, Brasil



MARTJE MEINERT
Business Development



FLAVIO FERRARI
Associate Partner, Brasil
Managing Director IPSOS



MARCOS PINOTI
Associate Partner, Brasil
Mechanical engineer, PhD



EDUARDO LEMOS ABADE
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An example of CIFS thinking...

“Before 2005 we must expect China and maybe India to be future competitors and potential markets if we are able to adapt to their political and cultural constraints.”





Future studies & applications

Não é previsão,



Não é astrologia,



Não é ufologia...



Studying the future is human nature



It is a **crucial adaptive capacity** in human social, cultural, political and economic evolution...

Long-term success depends on being prepared for whatever the future has in store.



“America 2000 - this is your future!”

3D Color TV
Wall-Panel

Slide-back Roof

Personal Helicopter &
Roof Landing Area

Moving
Stairway

House-control
Panel



Glass Walls

Dust-free
Floors

Menu Selector &
Microwave Stove

Giant-size
Fruit

Ultrasonic
Laundry

Electrical
Heat Unit

Phono-vision
Receiver



*The future is
already here –
it's just not very
evenly
distributed.*

–William Gibson



But predictions are rarely enough

I am not an
economist, but I do
believe that we are
growing

President George W. Bush, July 2008



Leaders need a solid basis to make good decisions



Uncertainty is the new reality

Understand the **most likely possible futures** in order to make confident decisions.



We are experiencing a paradigm shift

20th Century

- Non-social interaction
- Value in transactions
- Well-defined industries / hierarchies
- Limited information
- Resource abundance

21st Century

- Pervasive social interaction
- Value in relationships
- Industry transformation
- Information abundance
- Resource constraints

Institutions



Communities



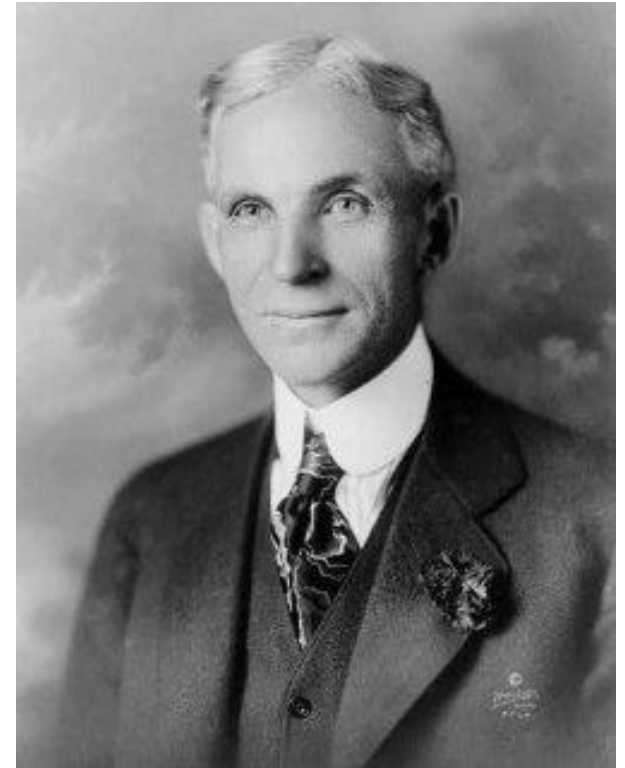
CONTROL



Do customers know what they want?

*“If I had asked people
what they wanted, I
would have made a
faster horse”*

Henry Ford



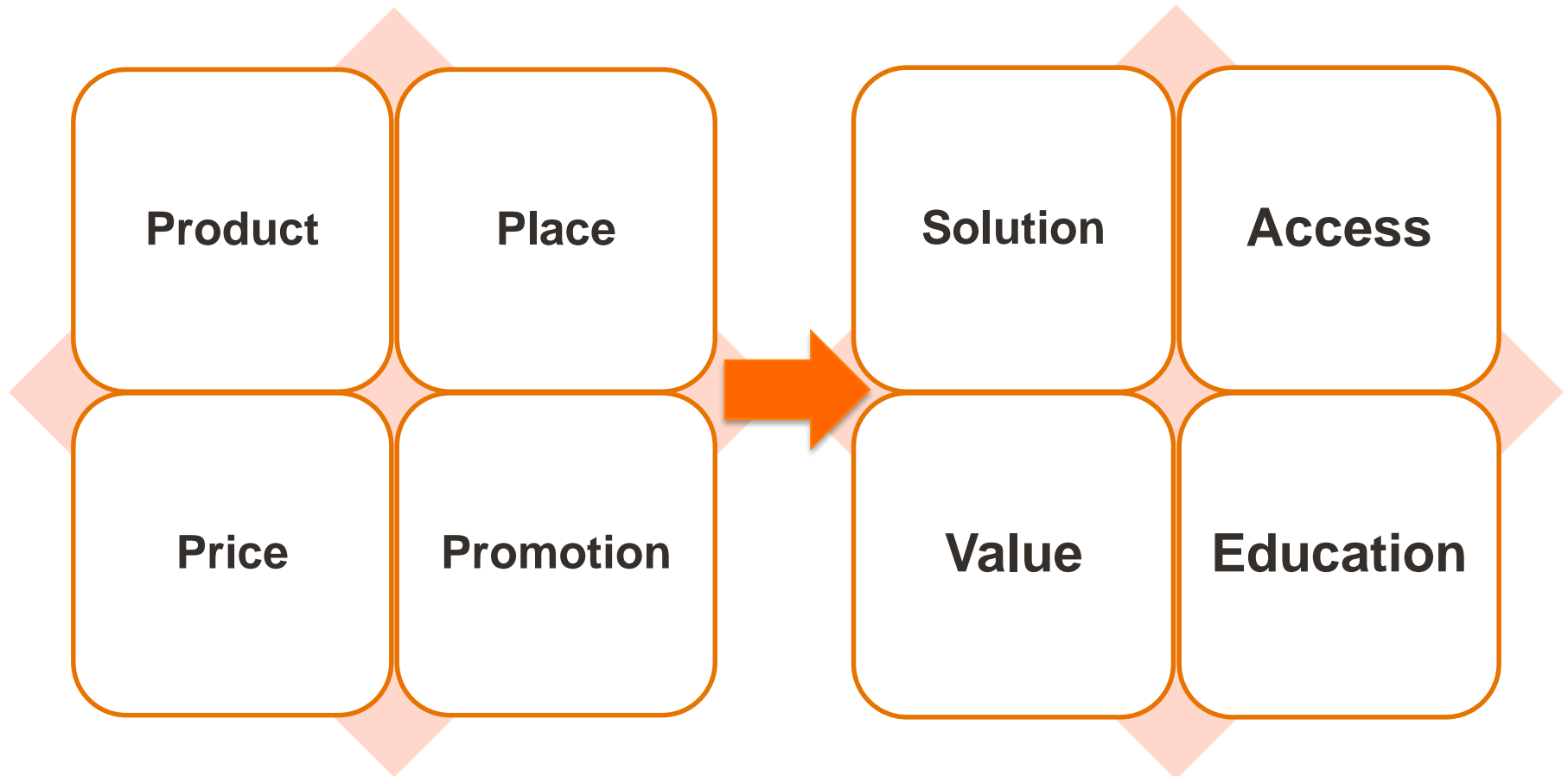


From industrial logic to **Dream Society**

Industrial logic	Dream Society logic
Hierarchy	Community of values
Material needs - comfort	Immaterial needs - dreams and values
Good physical work environment	Good social work environment
Stable	Loyal
A good price	A good story
The rich man	The storyteller
The odd existences	The boring people
Relaxation	Experiences
Production facilities	Communication
Organised - traditional religion	New Age - exciting and different



The 4-Ps are changing: producer-oriented to customer-centric



CIFS toolbox

Megatrends

- Consequences



Scenarios

- Uncertainties



Wildcards

- Nonlinear shifts

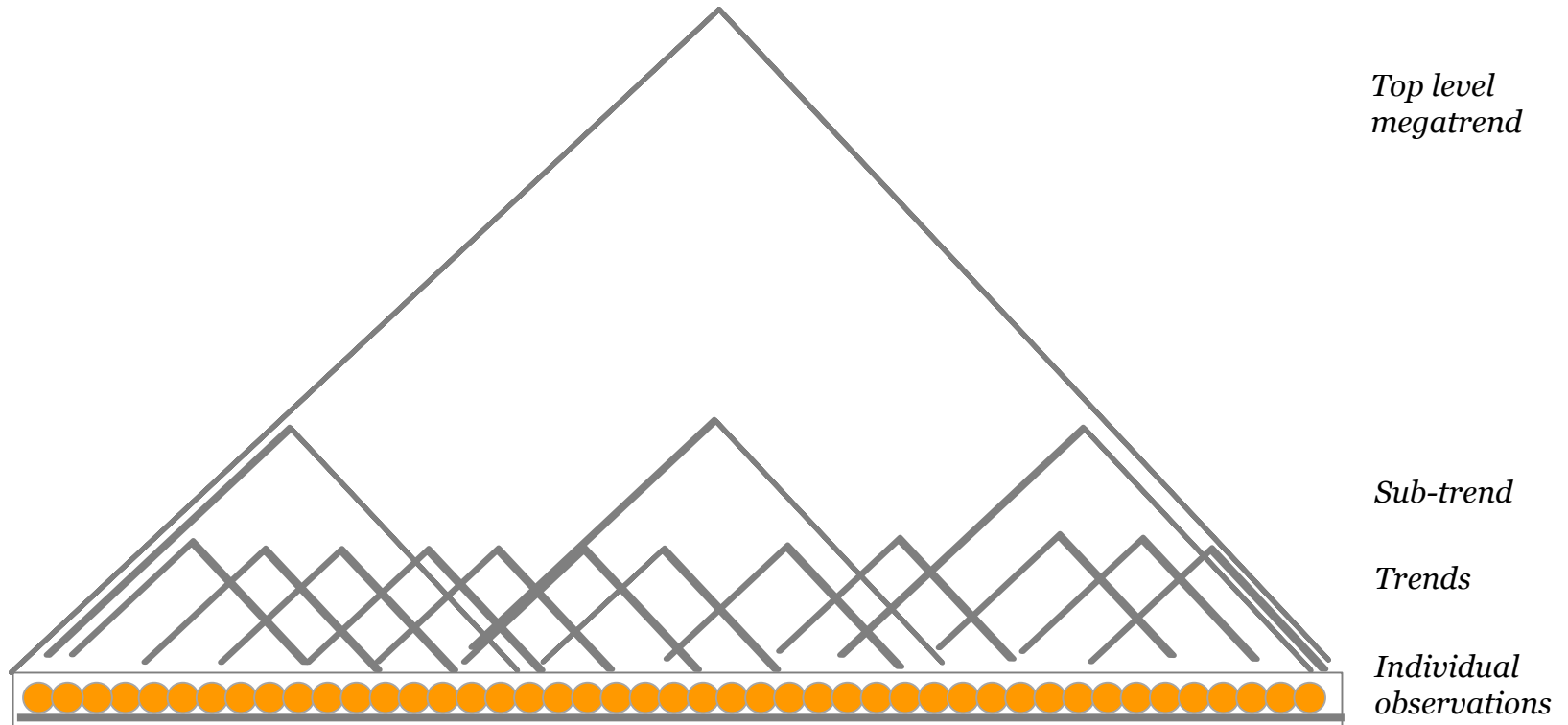




Megatrends



Putting structure on chaos



How megatrends influence the future

- Political
- Economic
- Social
- Technology
- Environmental
- Legislative
- Competitors (new and existing)
- Suppliers and value chain
- Labor market

Megatrends

Contextual environment

Transactional environment

Marketing

Strategy development

Companies' innovation, strategy and risk management

Business & service development

Human Resources

R&D



How companies use megatrends:

Peter Bisson, Director McKinsey:

- Capture market opportunities
- Test risks
- Spur innovation

Copenhagen Institute for Futures Studies

- Basis for innovation process
- Basis for scenario planning
- Basis for Early Warning Systems
- First step in quality assessment of business and strategy concepts (investment themes)

Matthias Horx, Futurist:

- Better decision making in strategic management
- Quicker and more precise innovation generation



CIFS megatrends



CIFS MEGATRENDS

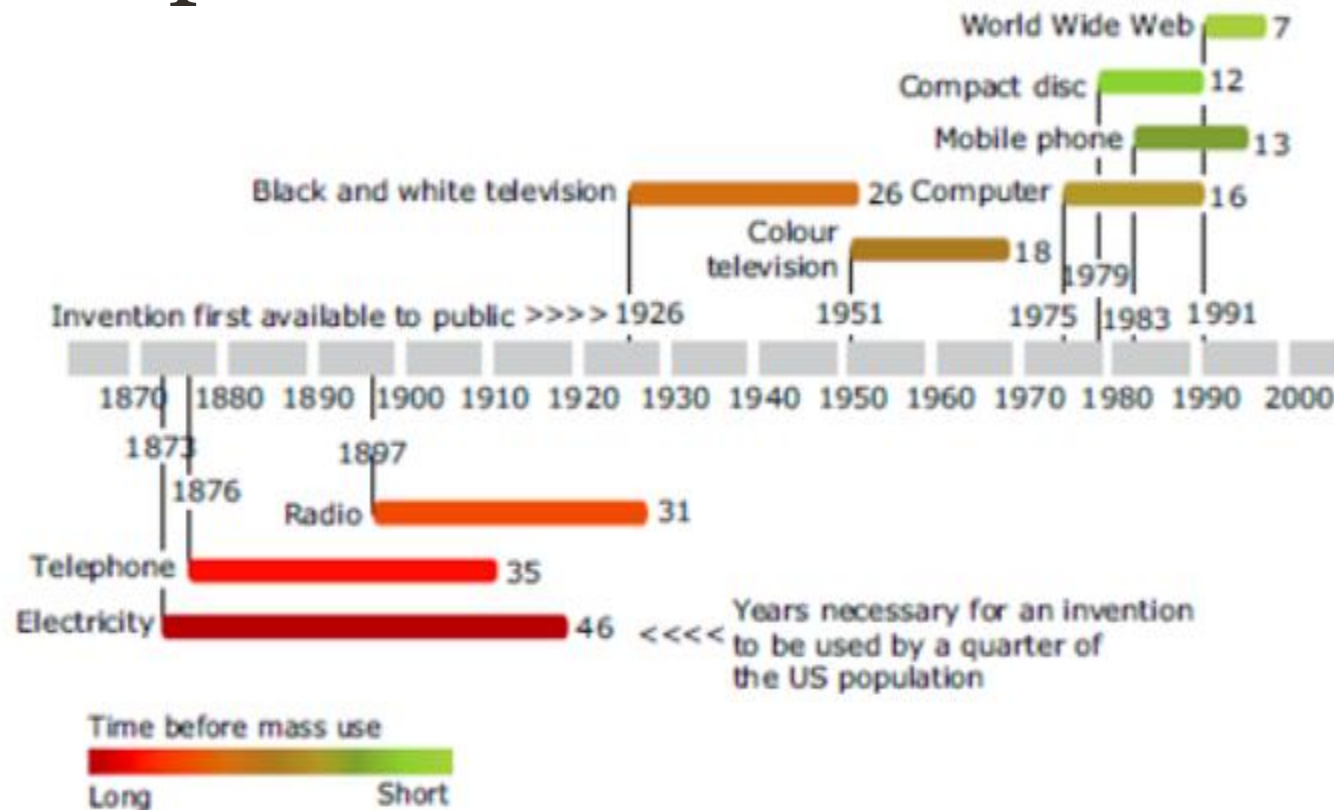


PREFEITURA DE SÃO PAULO

Acceleration & complexity



Acceleration is challenging security in market positions

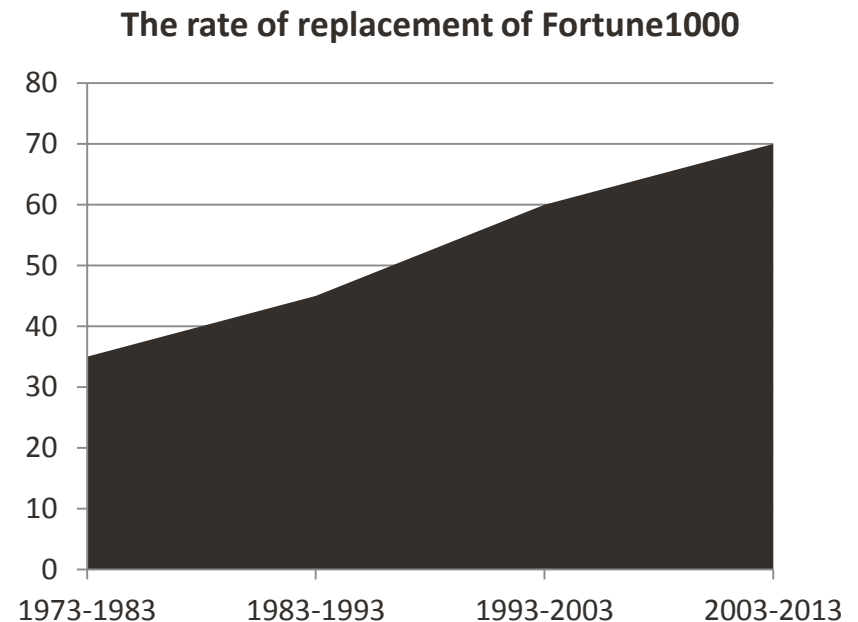


Source: Kurzweil, 2005.



Accelerating pace of change

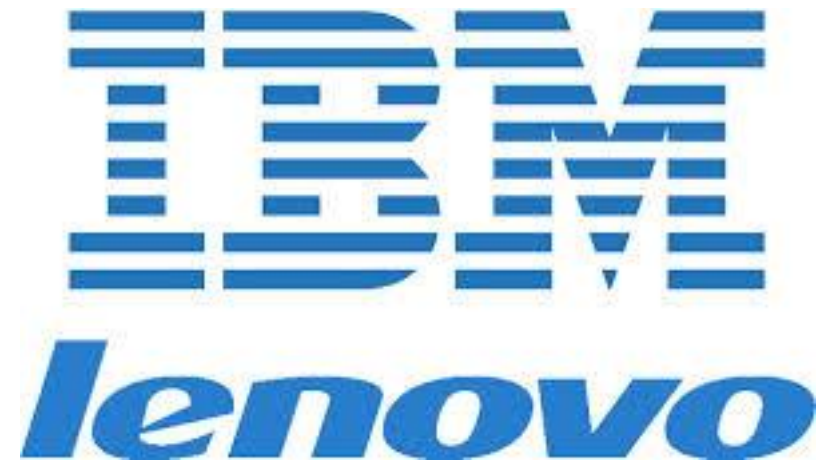
- Exponential rate of IT development – changing faster than mindsets
- Hyper-competition is accelerating creative destruction
- Average time of a stock holding?
- CEOs cannot keep up: **40% of CEOs last less than 2 years**



Source: Nathan Furr, Big Business ... The End is Near: Why 70% of the Fortune 1000 Will Be Replaced in a Few Years. Forbes. 21 April 2011
<http://www.tlnt.com/2010/07/28/so-long-and-farewell-lon-youre-simply-part-of-the-ceo-trend/>



Think.....different?





Exit strategy?

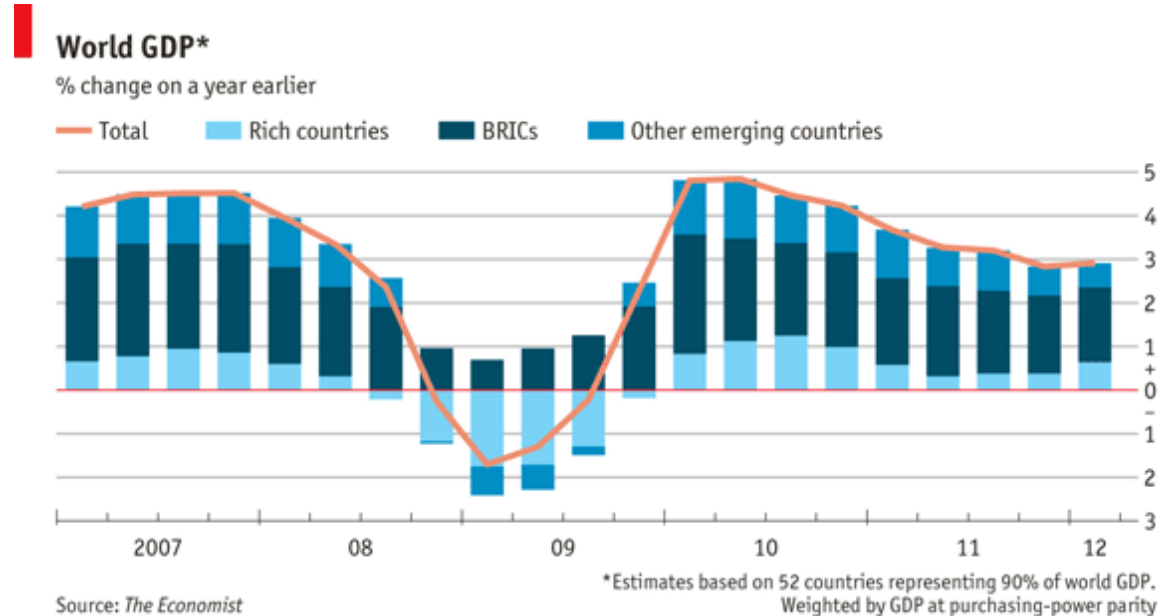




Economic Growth



Resilient markets?



**The
Economist**

NOVEMBER 14TH-20TH 2009

Economist.com

The decline of music piracy
Nigeria gets better
Farmers v greens in America
How drugs are being decriminalised
Bland bosses

Brazil takes off



**A 14-PAGE SPECIAL REPORT
ON LATIN AMERICA'S BIG SUCCESS STORY**

**The
Economist**

SEPTEMBER 28TH-OCTOBER 4TH 2009

Economist.com

The new face of terror
The Breaking Bad school of business
Obama's Iran gambit
On the edge of the helium cliff
E-cigarettes: don't stub them out

Has Brazil blown it?



A 14-page special report

Cracks in the BRIC



BRAZIL
(2011 \$billion US GDP
current prices)

2,481

- VERY HIGHLY PRICED ECONOMY
- POOR INFRASTRUCTURE
- TOO DEPENDENT ON COMMODITY EXPORTS
- HIGHLY PROTECTIONIST



RUSSIA
(2011 \$billion US GDP
current prices)

1,850

- POLITICALLY SUPPORTED OLIGOPOLY
- SHRINKING POPULATION
- TOO DEPENDENT ON OIL AND GAS EXPORTS
- CRUMBLING INFRASTRUCTURE



INDIA
(2010 \$billion US GDP
current prices)

1,603

- INEFFICIENT GOVERNMENT, POOR GOVERNANCE
- MESSY DEMOCRACY, DIFFICULT TO DO BUSINESS
- WORSENING PUBLIC FINANCES
- DEMOGRAPHIC DIVIDEND MAY BECOME LIABILITY CAUSING UNREST



CHINA
(2011 \$billion US GDP
current prices)

7,301

- UNDERDEVELOPED FINANCIAL SECTOR
- UNDERDEVELOPED MARKETS
- RISING WAGES AND LABOUR UNREST DUE TO DWINDLING JOBS
- AGEING POPULATION



LATAM countries: cyclic economies

- >> Crisis followed by high growth rates in some sectors and demolishing of others
- >> LATAM markets: a natural instinct to handle chaos and crisis?
- >> Economic crisis 'the new normal'



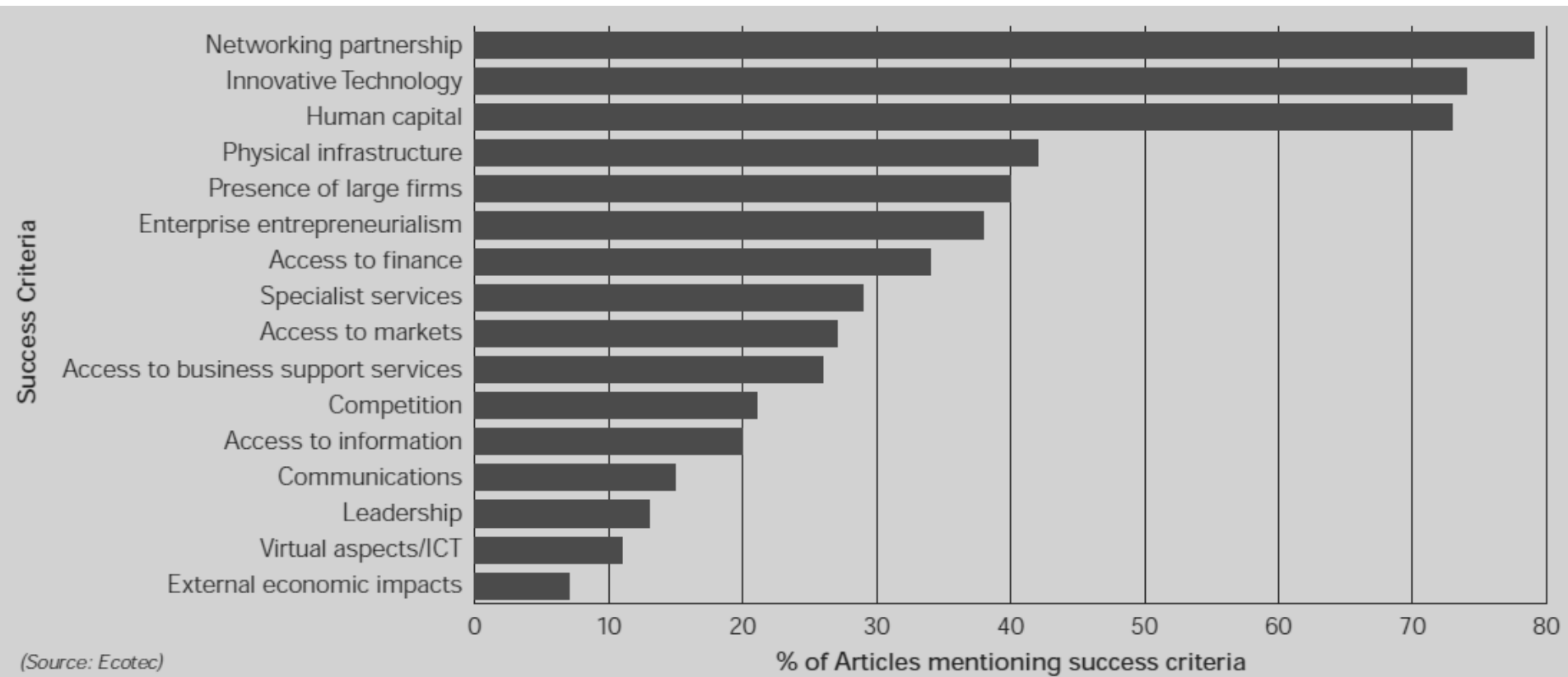




Network society

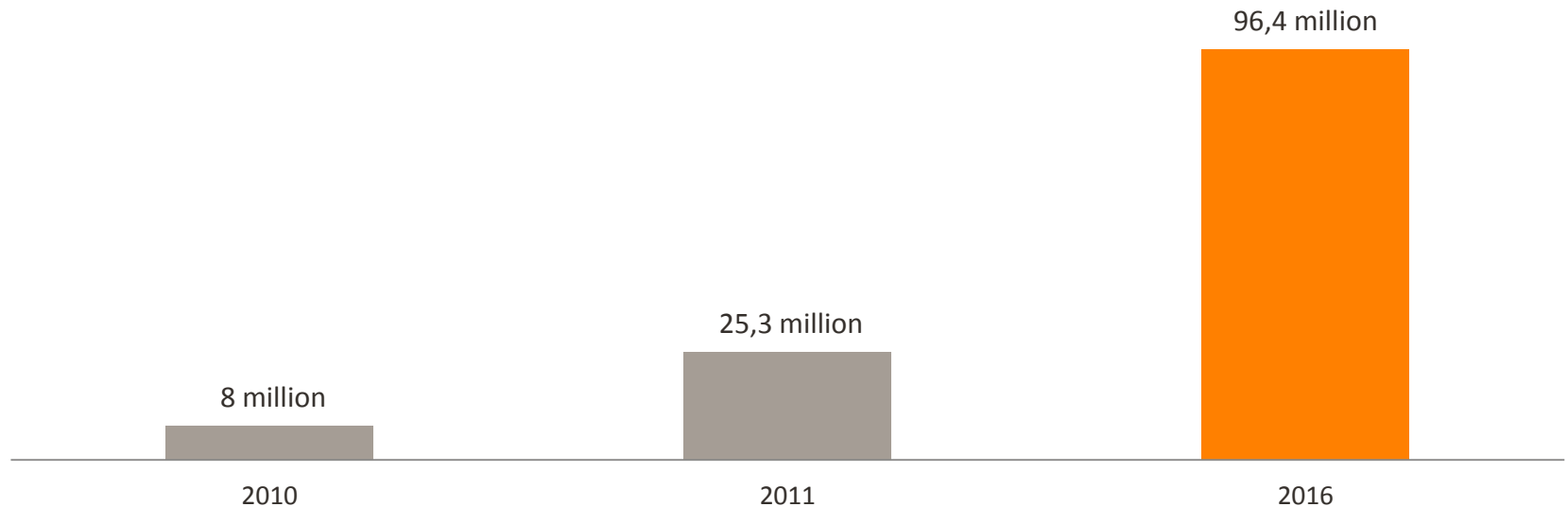
SMS

Critical success factors for business



An explosion in mobile data traffic

Mobile internet users in Brazil



Brazil: social media capital of the world*



80% of 99.2 million internet users use social media

- Global facebook time **-2%**
- Brazil facebook time **+208%**
- **2nd** biggest facebook user group
- **Top 5** for You Tube, Twitter, LinkedIn

And Brazil's internet penetration is still only at 50%

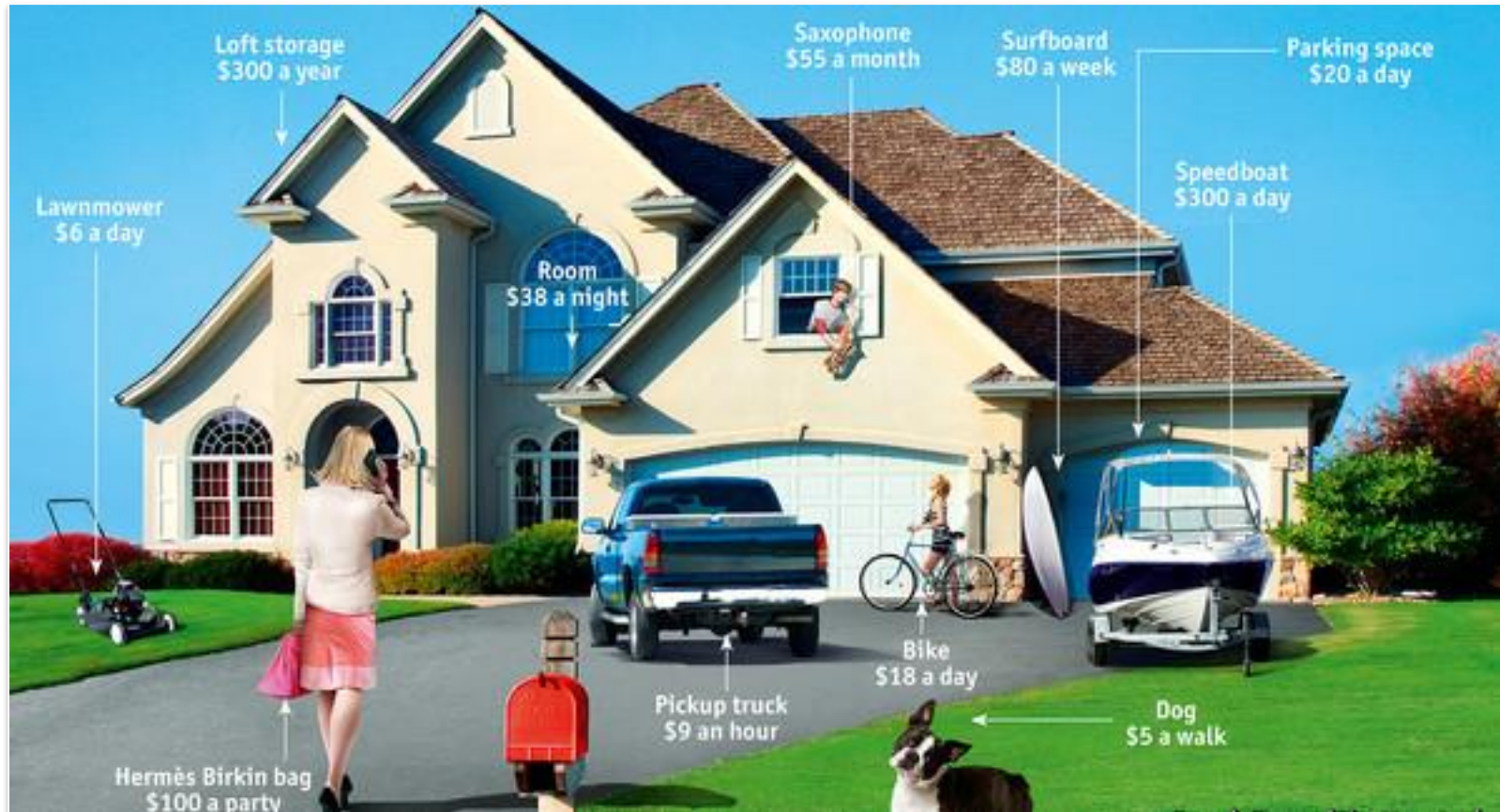
Everyone is talking at once



- World Cup 2010 final – **34+** million social media engagements
- World Cup 2014 – **3bn** engagements on facebook alone



Sharing economy



Source: The Economist (2013)

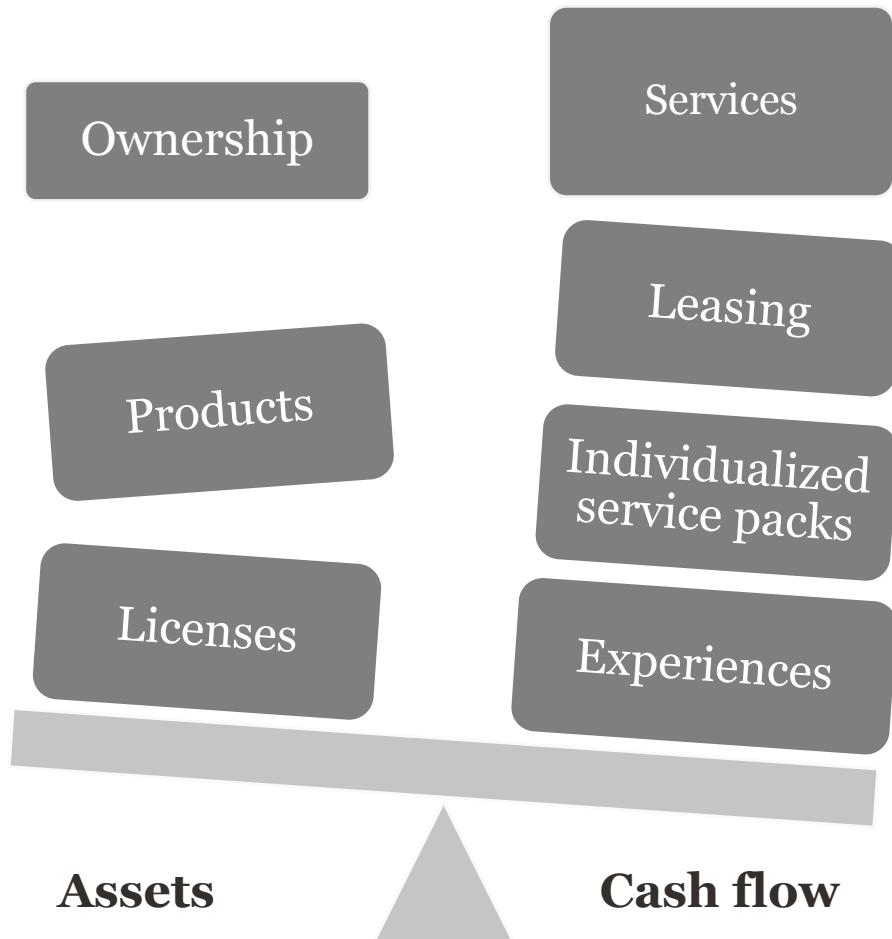


FREEDOM FROM WANT



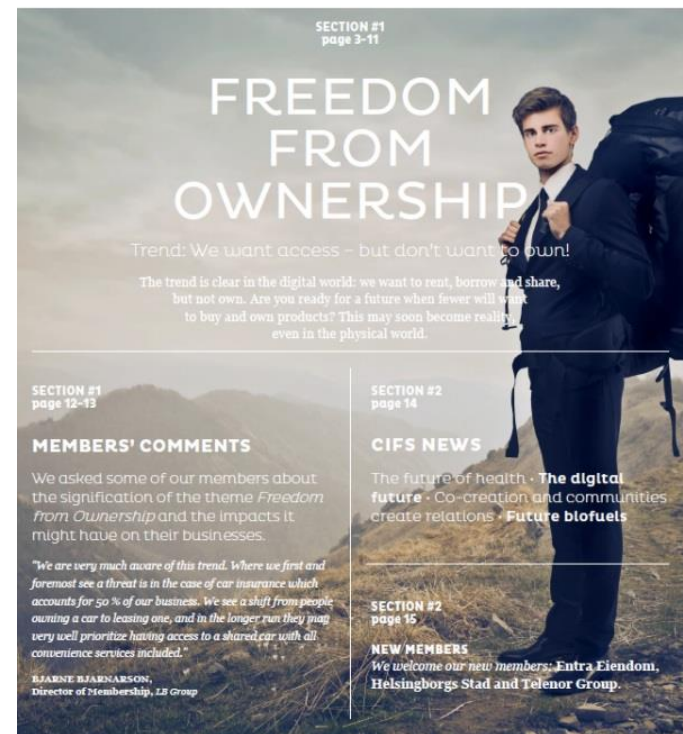
FREEDOM FROM OWNING

From transaction to relation



COPENHAGEN INSTITUTE FOR **FUTURES** STUDIES

Members' Publication #1 2013



And from product to services



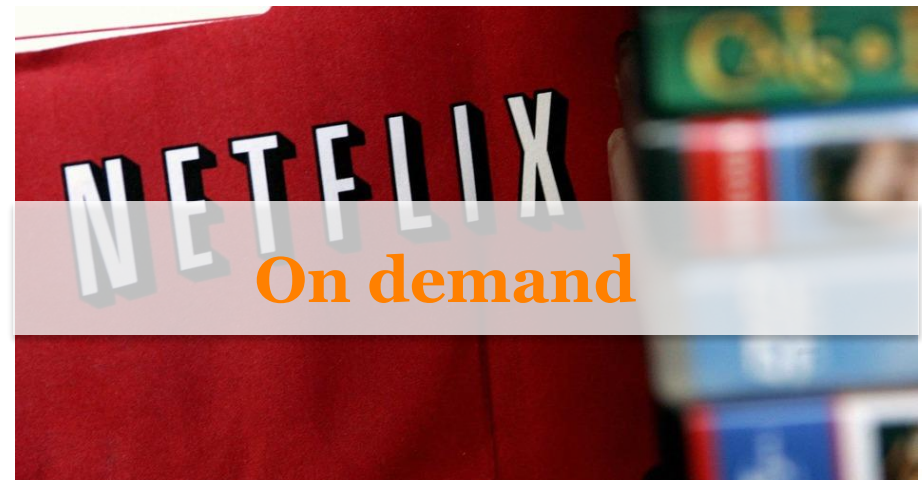
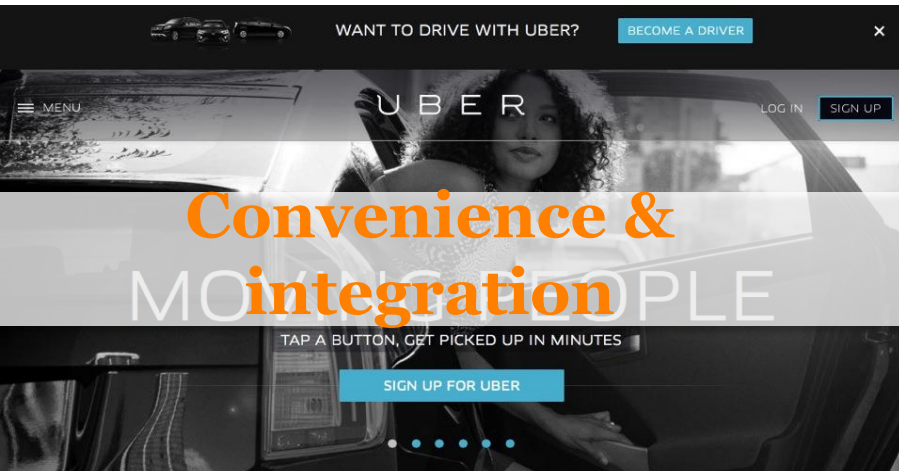
waze



mofibo



The benefits of access over ownership



Welcome to the **Anarconomy**

The benefits of access over ownership



Megatrends

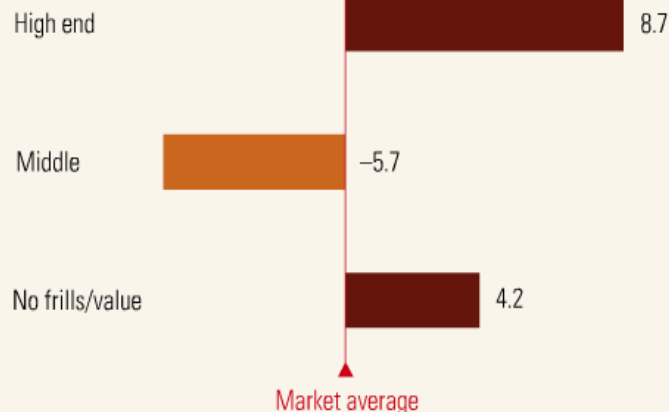




Stay away from the middle market....

Nominal growth of products and services in tier relative to market average for those products and services, 1999–2004, CAGR,¹ %

Tiers



¹ 25 industries or product categories—10 in Europe, 9 in North America, and 6 at global level; growth rate for each tier represents weighted average of industries and product categories studied; CAGR = compound annual growth rate.

- "Über premium"
- The middle position is dangerous
- Discounters

Source: Knudsen, Randel & Rugholm. The Vanishing Middle Market. McKinsey Quarterly 2005/4.



Polarisation: The Fit and the Fat

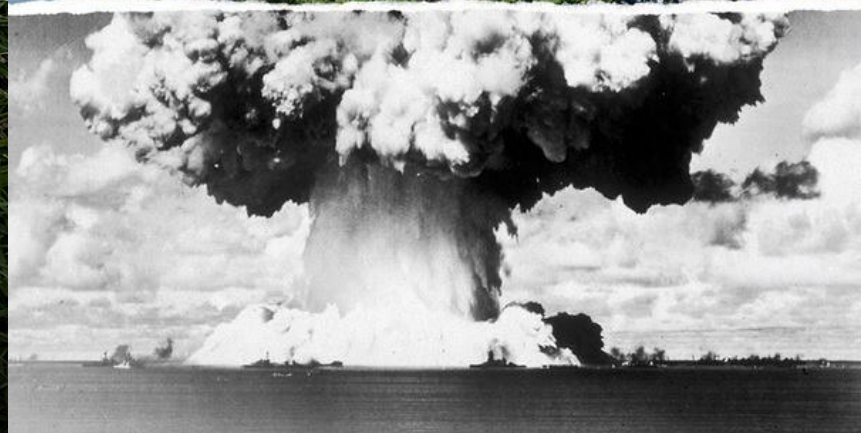


prikk:)

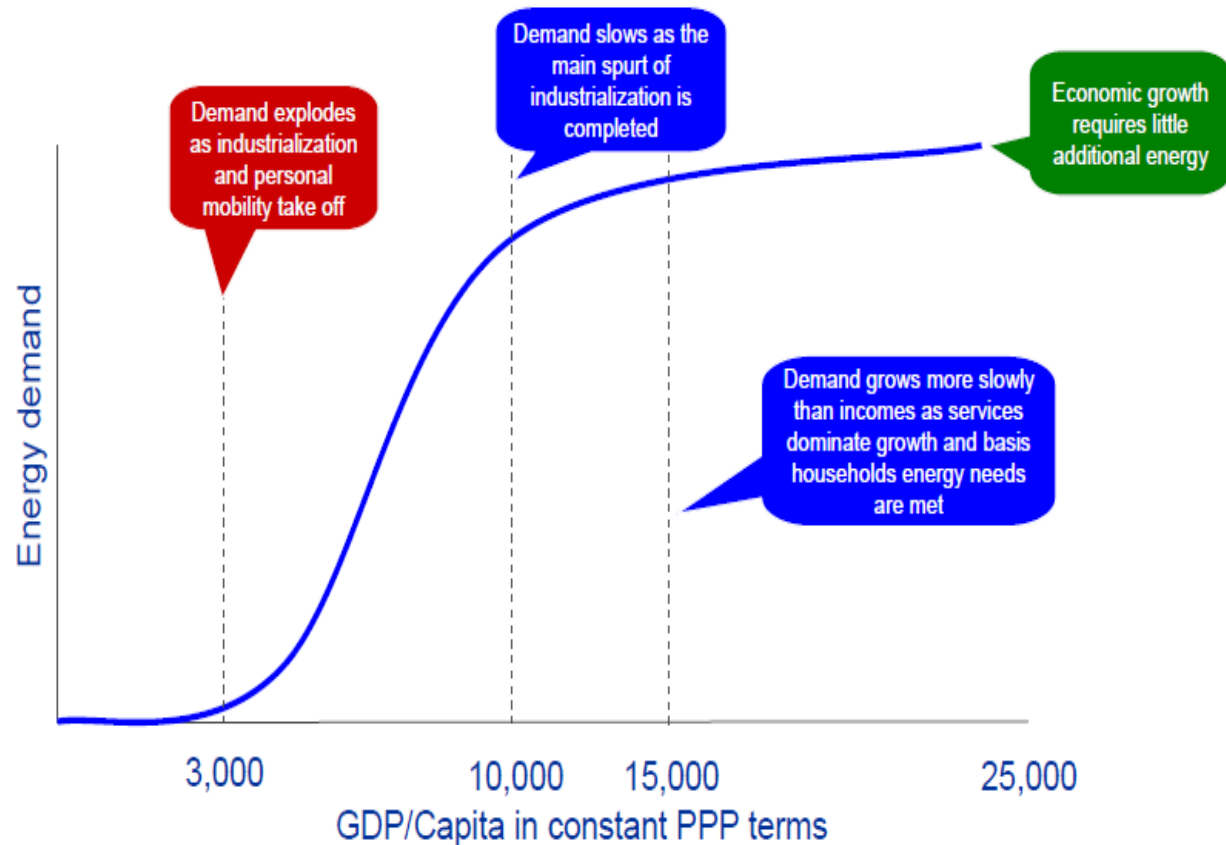




Energy & carbon



Energy demand is set to sky rocket in industrializing countries



	Beyond BRIC
	Per capita GDP in Purchasing Power Parity (2009 est)
Brazil	\$10,100
Russia	\$15,100
India	\$3,100
China	\$6,600
Bangladesh	\$1,500
Egypt	\$6,000
Indonesia	\$4,000
Iran	\$12,500
Mexico	\$13,200
Nigeria	\$2,300
Pakistan	\$2,500
Philippines	\$3,300
Turkey	\$11,400
Vietnam	\$2,900

Source: CIA World Factbook, Shell, US NIC 2009



Balancing energy needs and sustainability



OIL DROPPING TO A PRICE BELOW USD 50 PER BARREL?

NOT A COMPLETELY UNIMAGINABLE FUTURE



Green revolution or black revolution?



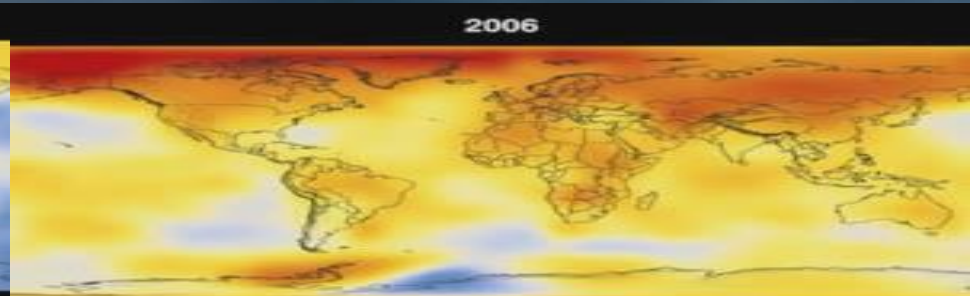


Sustainability

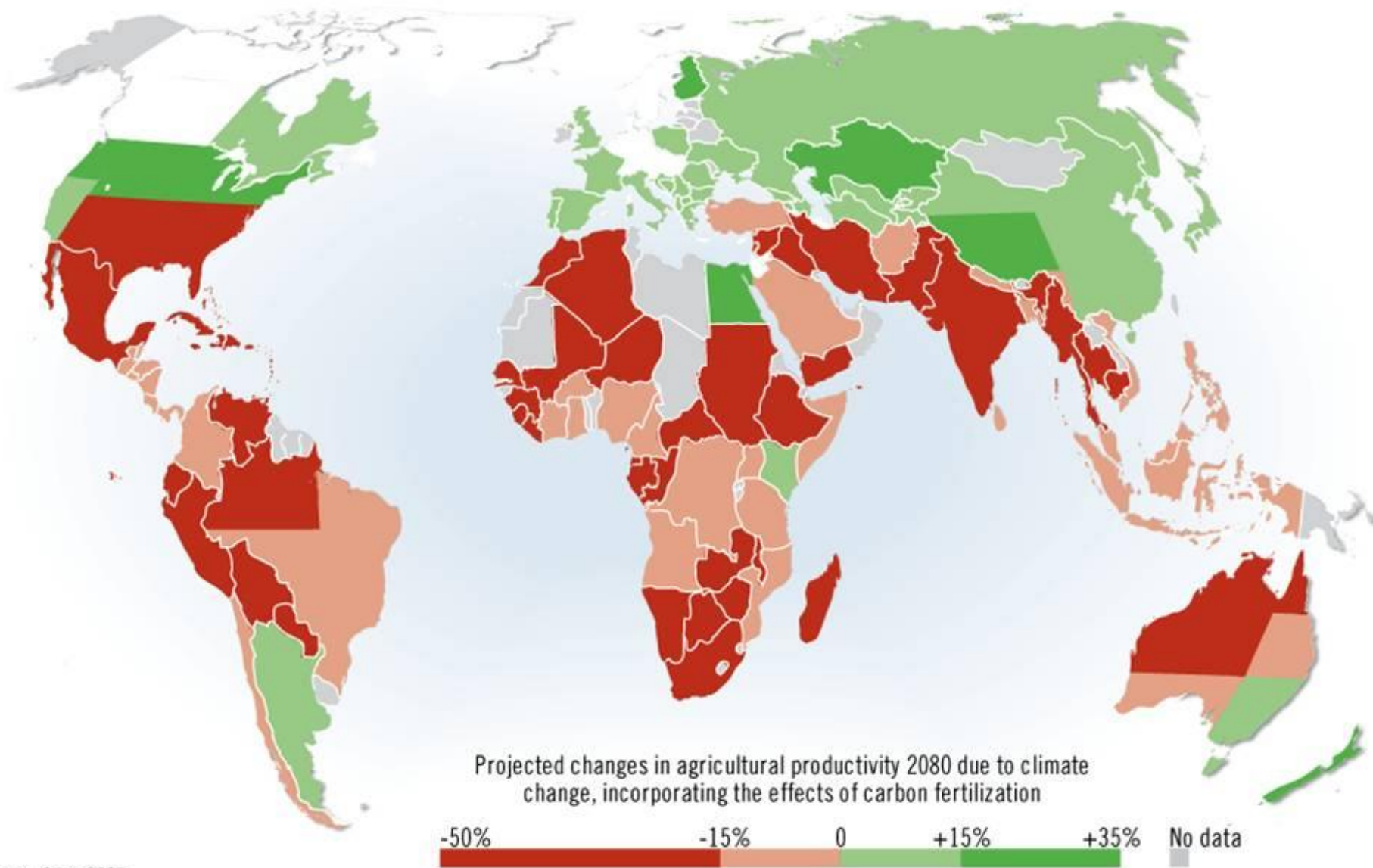




Climate change – a reality beyond the bottom line



PROJECTED CHANGES IN AGRICULTURE IN 2080 DUE TO CLIMATE CHANGE



9,000,000,000
for dinner





Water

Water equals food and prosperity



Urbanization threatens water

Shanghai



Beijing



Los Angeles



China's South to North water transport project



Floodwater gushing through the Danjiangkou reservoir, on the middle section of the south-north water transfer project, in Wuhan, Central China
July 27, 2010



Water: part of the product



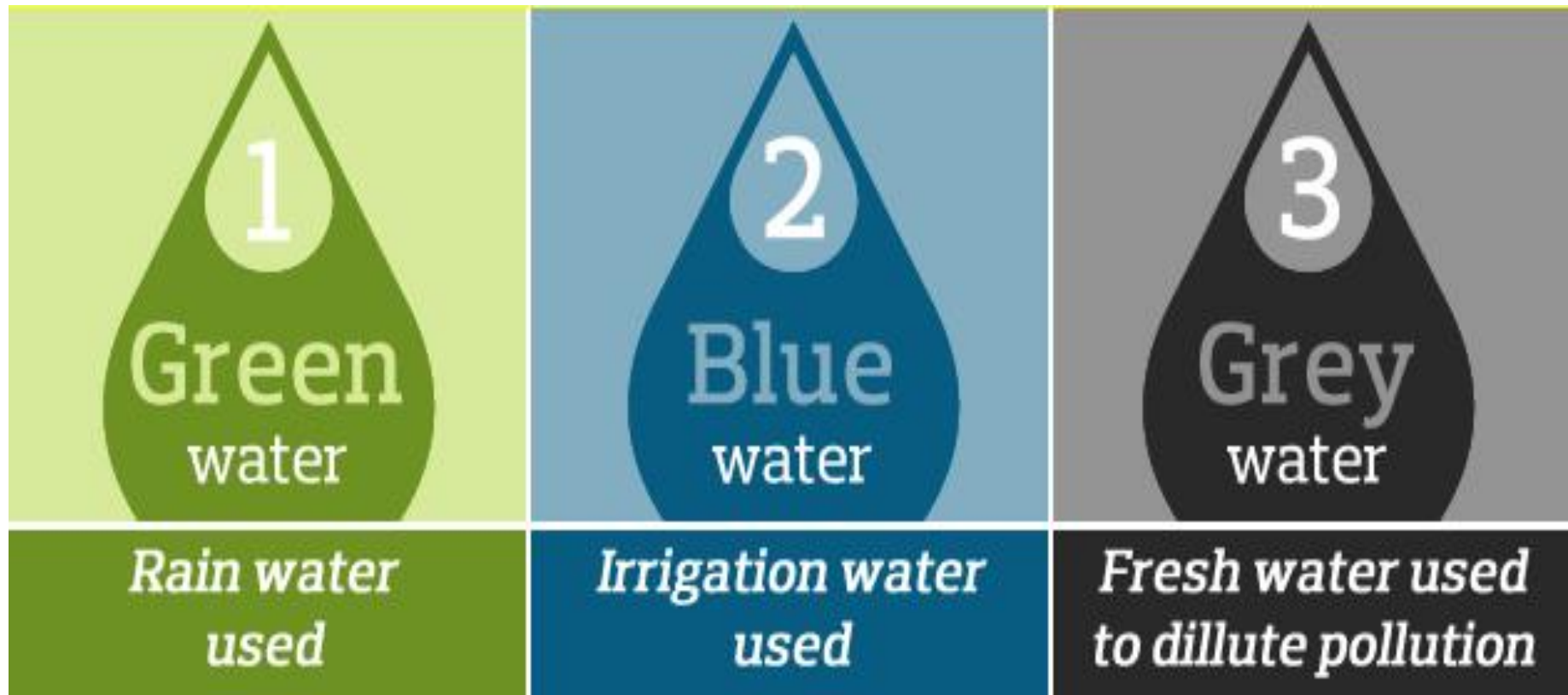
- Lagging behind carbon as a priority for food retailers and manufacturers
- Imminent direct and severe impact on the supply chain
- Only the most progressive are beginning to target embedded water in their products
- We can see that ‘water footprinting’ will be the next issue after carbon



The perfect storm

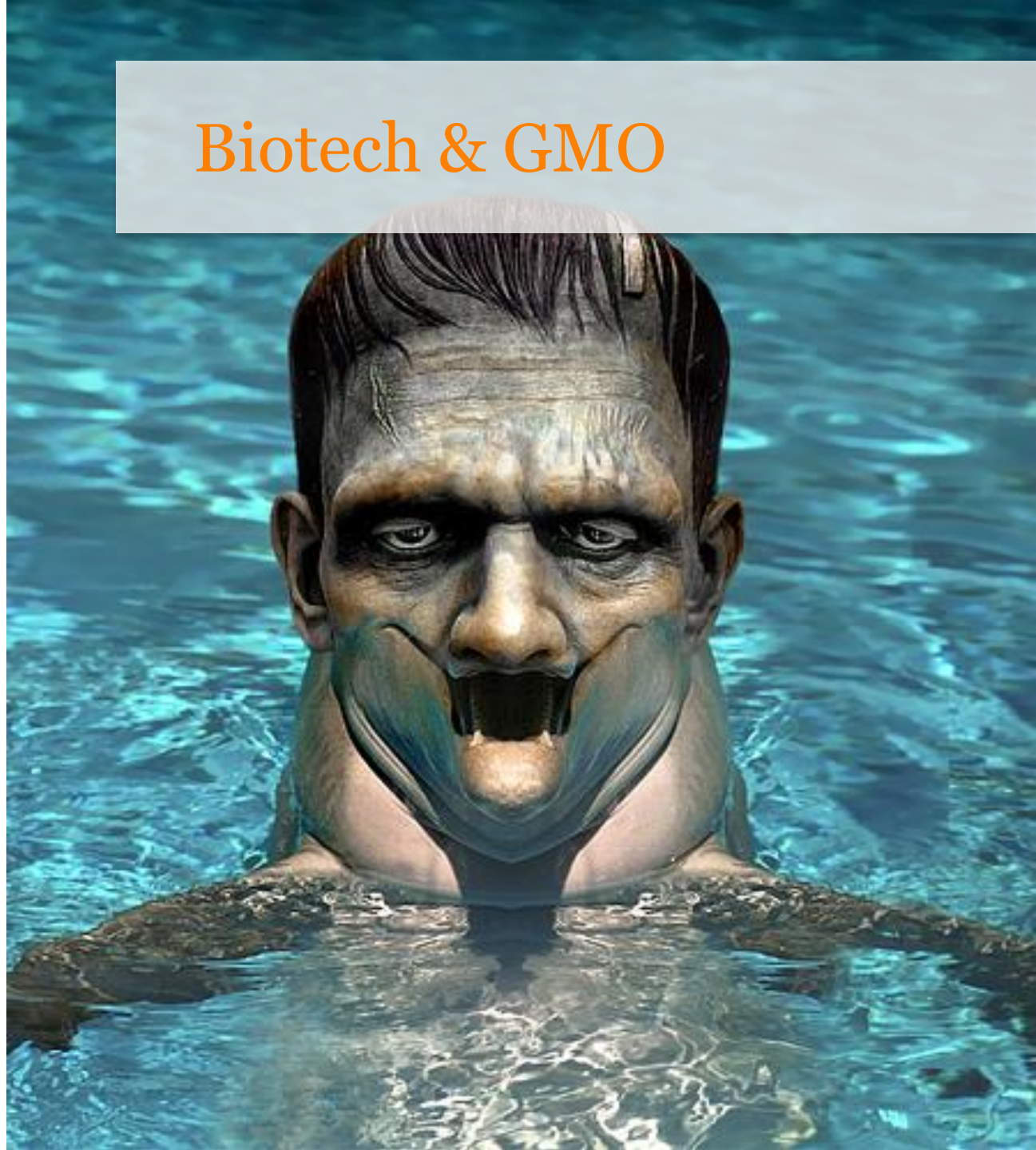


A water footprint?





Biotech & GMO



India turns to biotech and GMO

“It is important to apply biotechnology in agriculture. The success achieved in cotton must be used to make the country self sufficient in rice, wheat, pulse and oilseed production.”

India's Minister of Finance



GMO – an evolving dialogue





Technological development

Future tech will facilitate further...



Automation



Co-creation



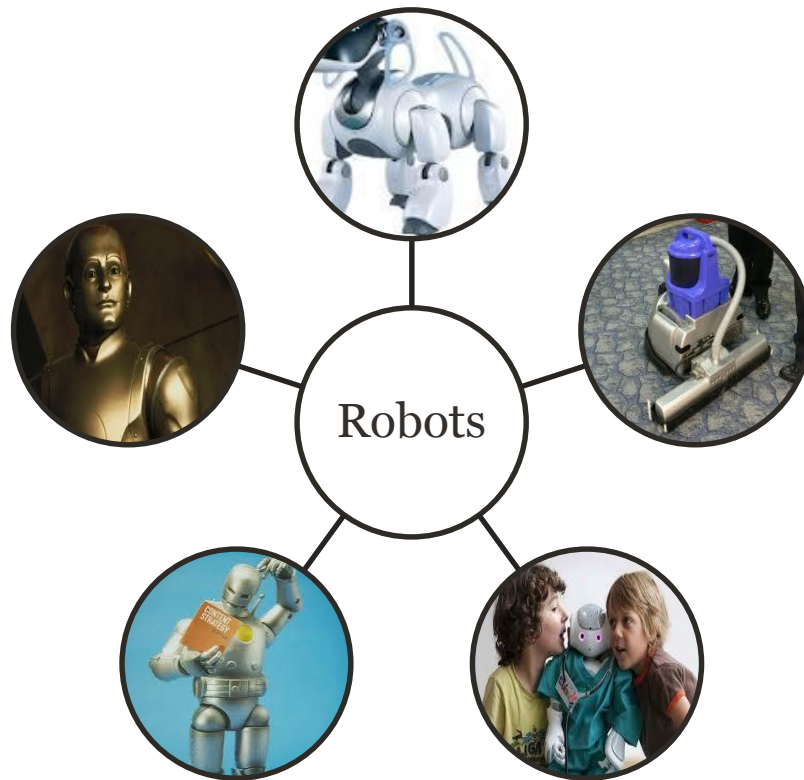
Ideation



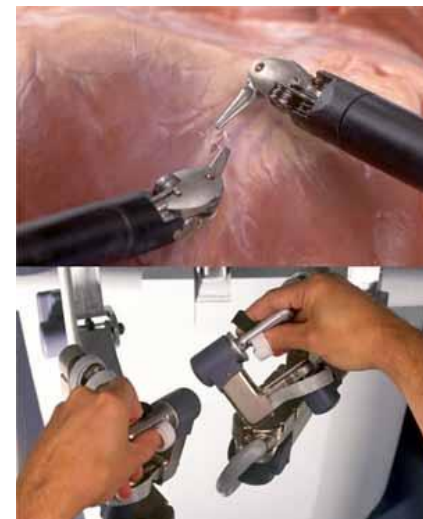
Mediation



Automation obsoletes both skilled and unskilled jobs



What need will there be for surgeons and taxi/bus drivers?



Automated decision making and big

Brief History of IBM Watson



Big data will bring bigger benefits for suppliers and consumers....

**Individualized
services & marketing**

Predictive services

But....

Individual privacy?

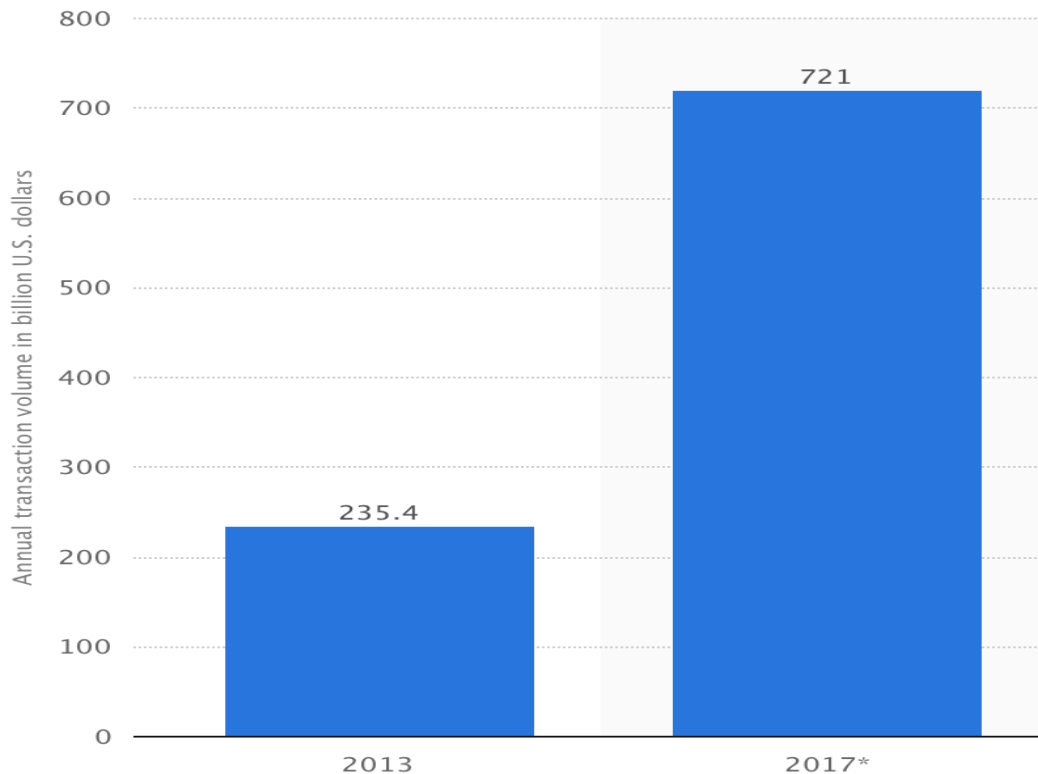
Consumer trust?

Regulatory issues?



The future of payments is mobile

Global mobile payment transaction volume toward 2017 (USD bn)



19% of Brazilian consumers are willing to try mobile payments

- 7% Mercadolibre sales
- 15% PayPal sales
- 5-10% Groupon sales



Information & Communication technology



Better computers (actual development)

- *Moore's law, classical version*: The density of transistors on a chip doubles every 24 months.
- *Moore's law, new version*: The power of a chip (calculations per second) compared to its price every 18 months.
- *Kryder's law*: The memory of a hard disk compared to its price doubles every 18 months.
- *Nielsen's law*: The bandwidth of internet access is increased 50 % every 12 months; a doubling every 20-21 months.

Every 10 years we get roughly 20 times the capacity for 1/5 the price



... in theory

2004:

- Dell Inspiron 6000
- \$ 1.100 (~ \$ 1,500 i 2014)
- 2.13 GHz (32 bit single core)
- 2 GB RAM
- 40 GB hard disk

2014:

- Dell Inspiron 15
- \$ 300
- 1.4 GHz (64 bit dual core)
- 4 GB RAM
- 320 GB hard disk



Other advances

- Computers become better at sensing and interpreting their surroundings
- More wearable electronics
- A lot more 'cloud' services
- Big Data
- The internet of things





Production





Health & medicine



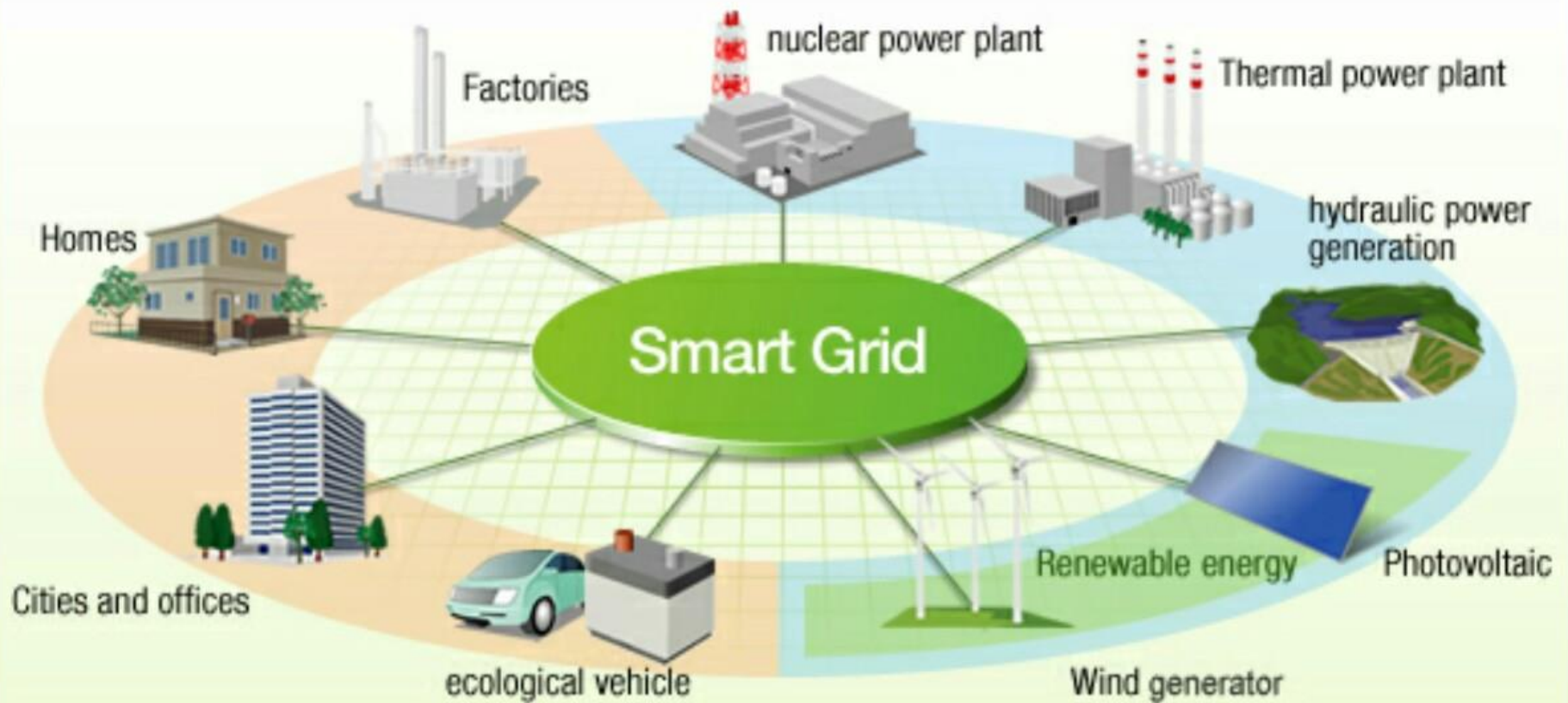
IBM Watson: Milestones in Healthcare

“In less than 3 seconds, Watson can sift through the equivalent of about 200 million pages, analyze the information, and provide precise responses.”





Energy & climate





Infrastructure

Smarter Cities: Turning Big Data Into Insight

City Planning and Operations

\$1 Trillion

global annual savings could be attained by optimizing public infrastructure.

Source: McKinsey

\$57 Trillion

in infrastructure investments will be needed between 2013-2030.

Source: McKinsey

Transportation Analytics

50 Hours

of traffic delays per year are incurred, on average, by travelers.

30 Billion

people all over the world travel approximately 30 billion miles per year. By 2050, that figure will grow to over 150 billion miles.

Cloud is driving cities in their digital transformation.

Water Management

60%

of water allocated for domestic human use goes to urban cities.

\$14 Billion

in potable water is lost every year because of leaks, theft and unbilled usage.

Source: World Bank

37,000

cloud experts support IBM's industry team alone.

Open Cloud

\$6 Billion

has been invested by IBM in more than a dozen acquisitions to accelerate its cloud initiatives.

IBM Intelligent Operations software is designed with cities, for cities, to provide the tools to monitor, visualize and analyze vital city services such as water and wastewater systems, transportation, infrastructure planning, permit management and emergency response.





Security

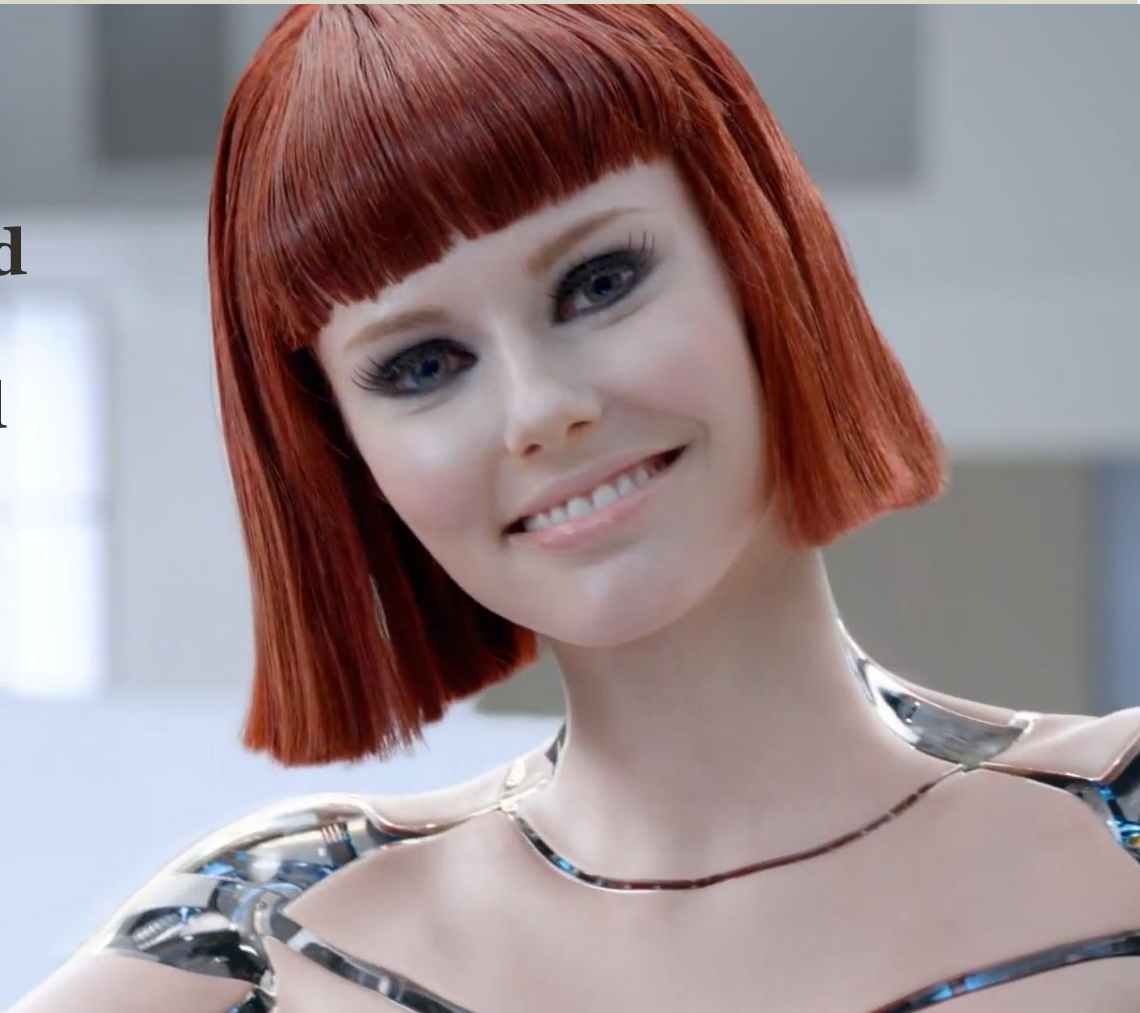


Robotics



Robots:

Computer-controlled machines that through sensors and actuators are able to physically interact with their surroundings



Types of robots

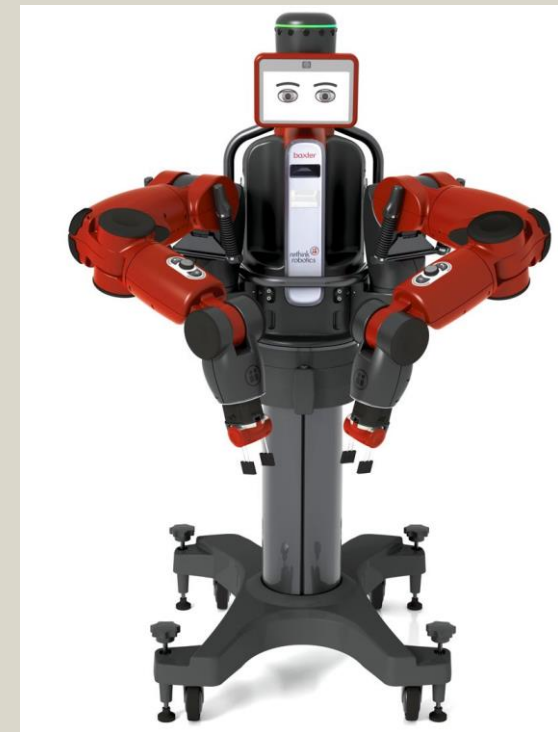
Remote



Specialised



Generalised



Robot basics

- Better intelligence, better sensors
- UN: The cost of robot labour drops to 1/5 every 10 years
- Oxford: 47 % of all jobs are automated in 20 years
- Robots will in particular move into service jobs
- Robots are generally becoming better at working with people – and with other robots
- Exoskeletons: ‘wearable robots’





Production & trade

Baxter: A
versatile
robot at
\$25,000





Consumption & service





Health & medicine



© JUDE EDGINTON





Energy & climate





Infrastructure





Security

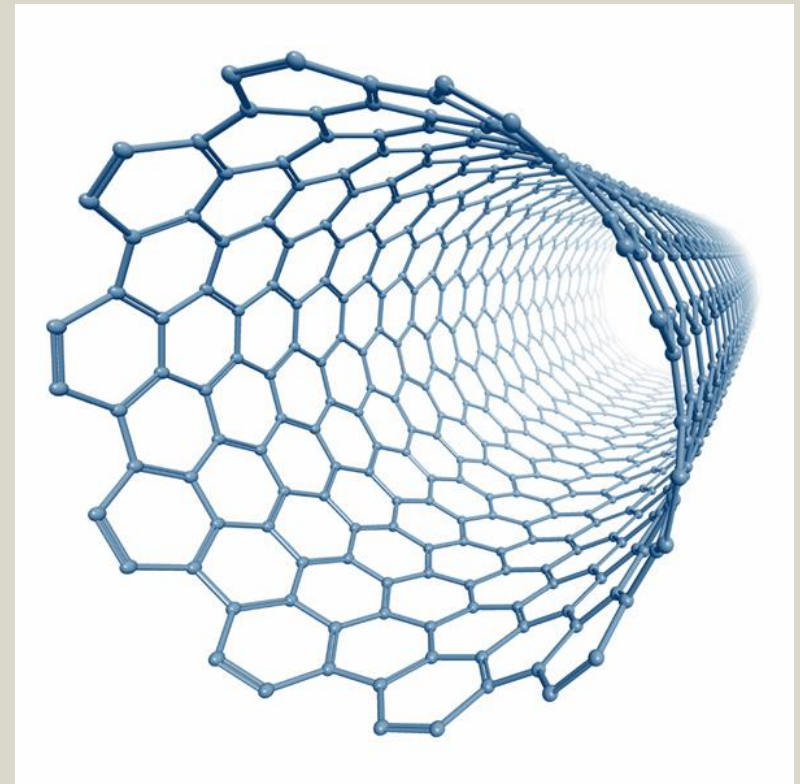


Advanced materials



Artificially created materials with unique properties

- **Nanomaterials**
- **Smart materials**
- **Strong and light materials**
- **Biomimetic materials**





Nanomaterials: aerogel





Biomimetics





Production & trade



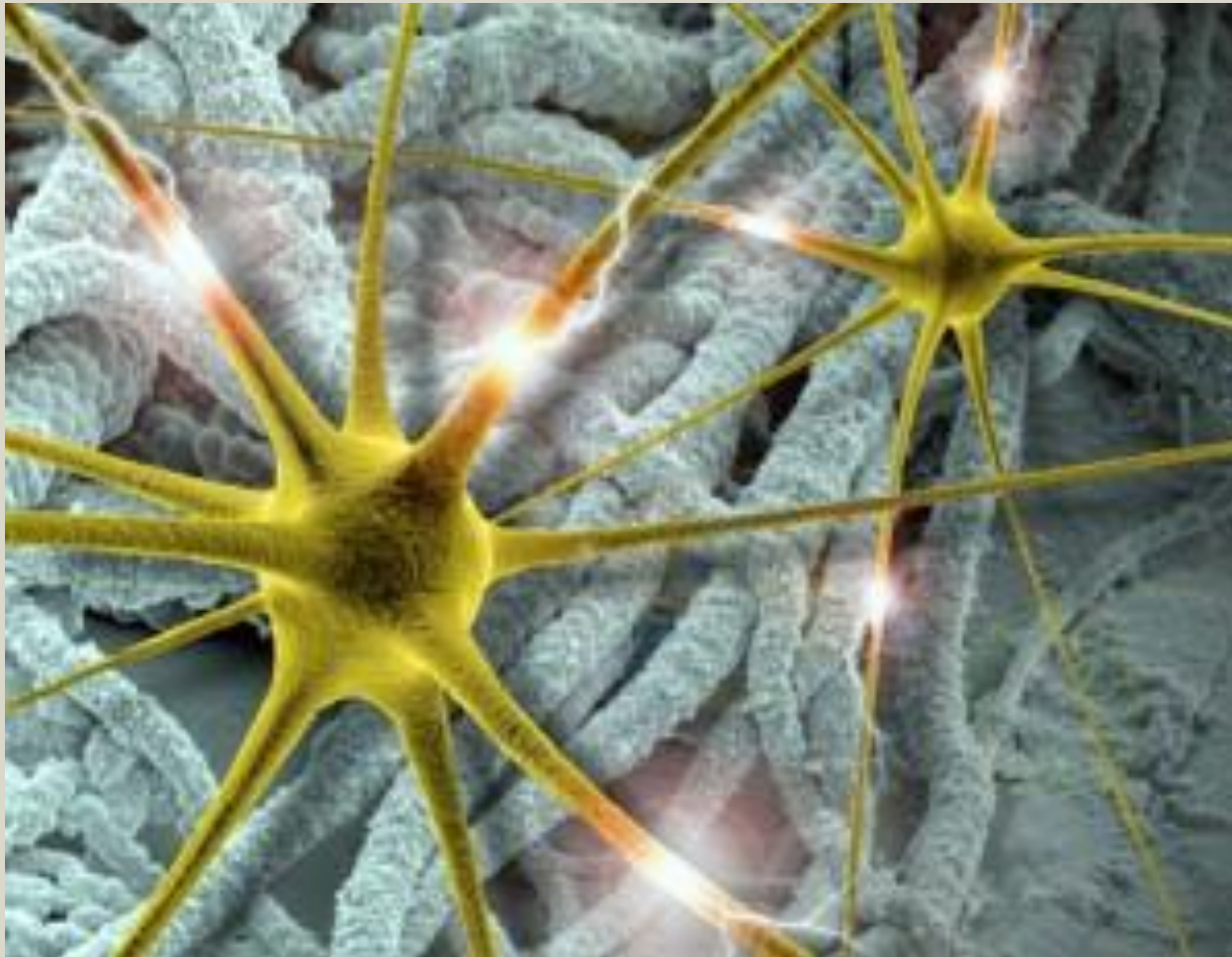


Consumption & service



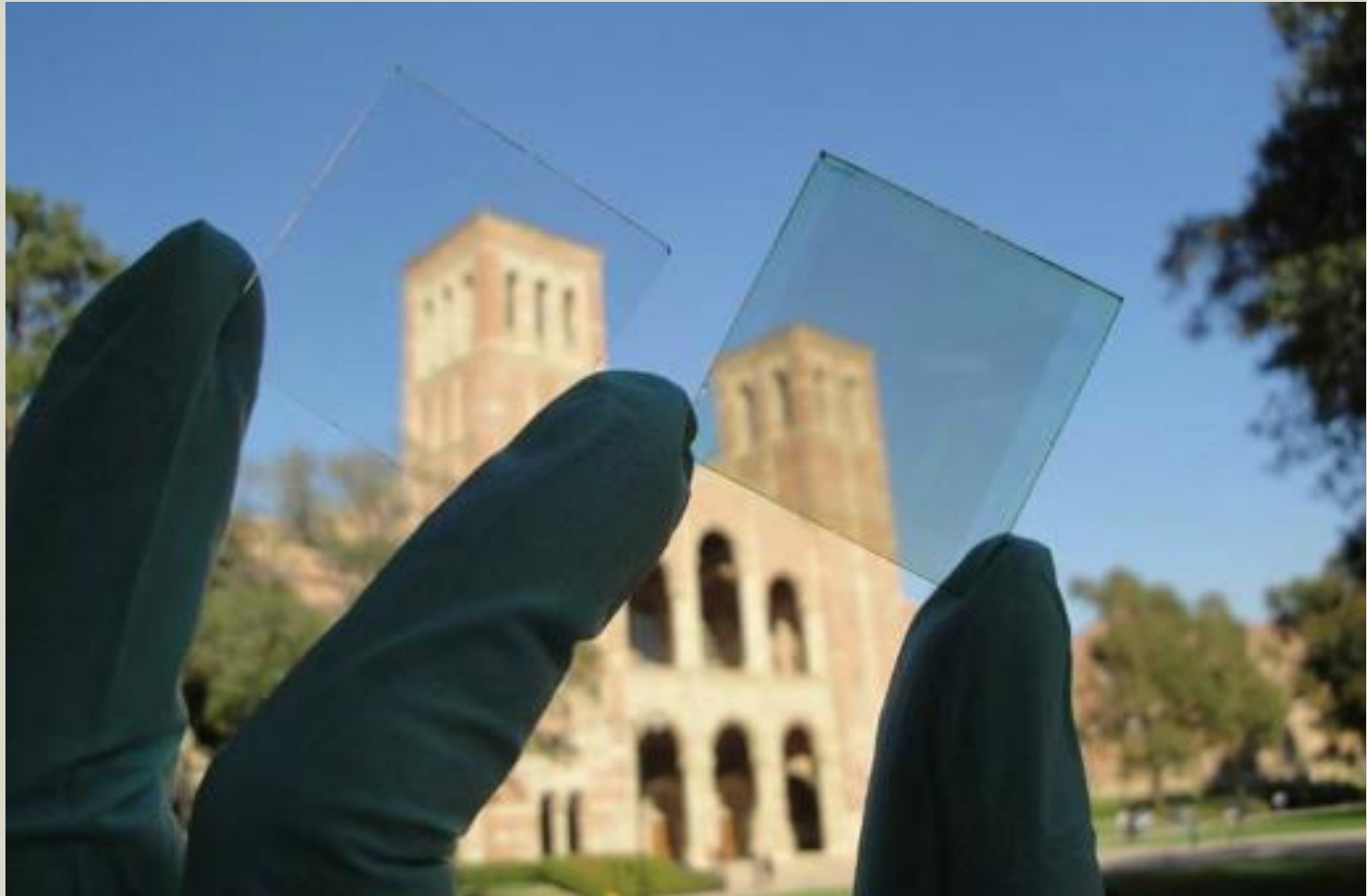


Health & medicine





Energy & climate





Infrastructure

By 2030, NASA would like to see planes that **burn 60 to 70 percent less fuel**, pollute less and are quieter than 2005 models.

Scientists say achieving those goals calls for **lightweight materials**, better aerodynamics, **new kinds of fuels** and alternative aircraft configurations.





Security



Biotechnology





Biotechnology

Any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific use.

- **Genetic technology:** A common term for molecular techniques used to change the genetic makeup of an organism..
- **Bioinformatics:** Using large quantities of biological data e.g. to identify individuals or their heredity and to better understand the unique strengths, weaknesses and needs of individuals and population groups.
- **Bioprocesses:** Industrial processes that use microorganisms for producing or transmuting various materials, e.g. fermentation processes or decomposition of waste with bacteria or algae. This also includes using enzymes to promote processes.



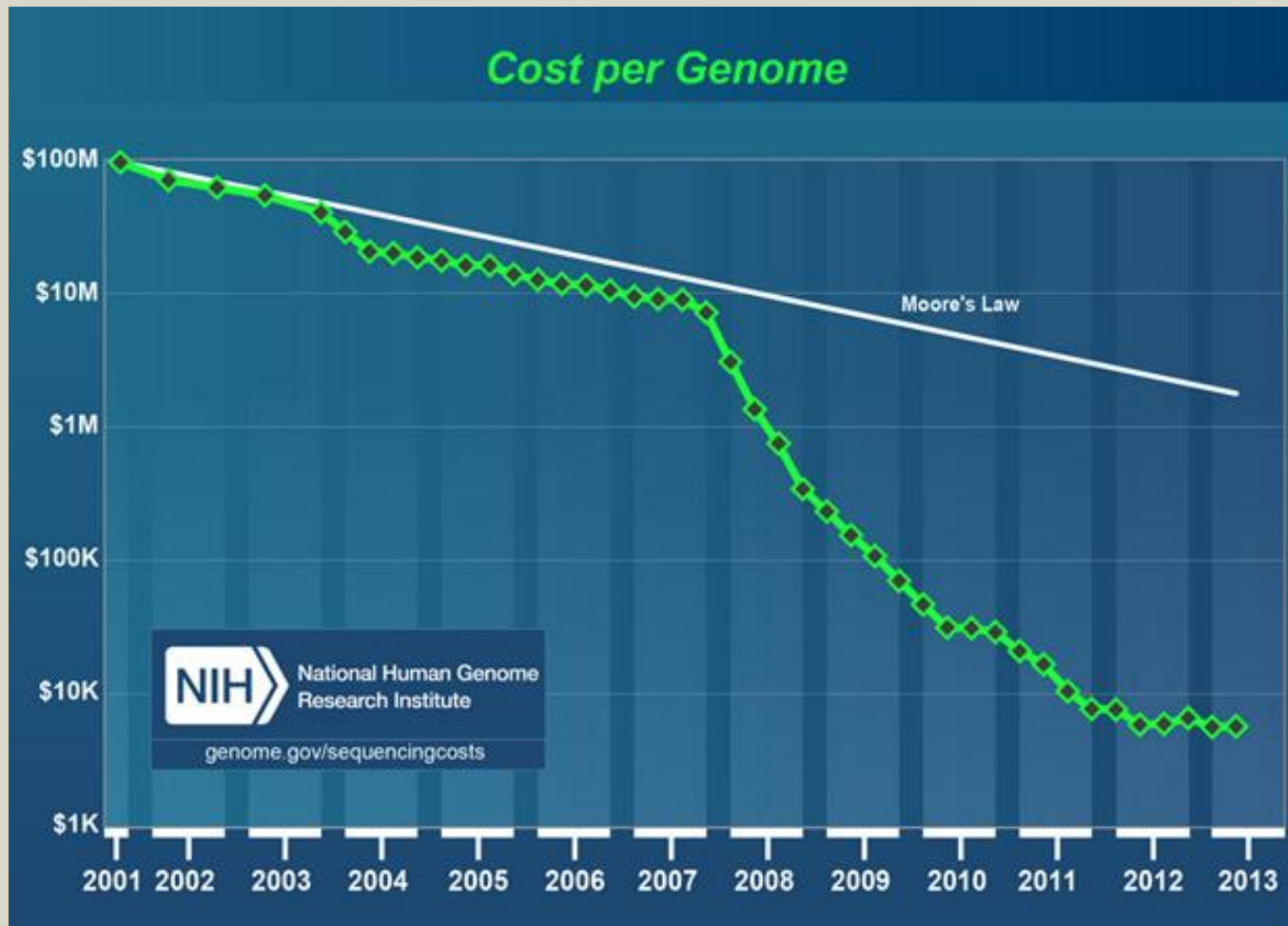


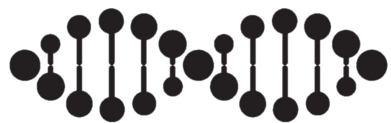
Ethical objections





Declining costs





Production & trade



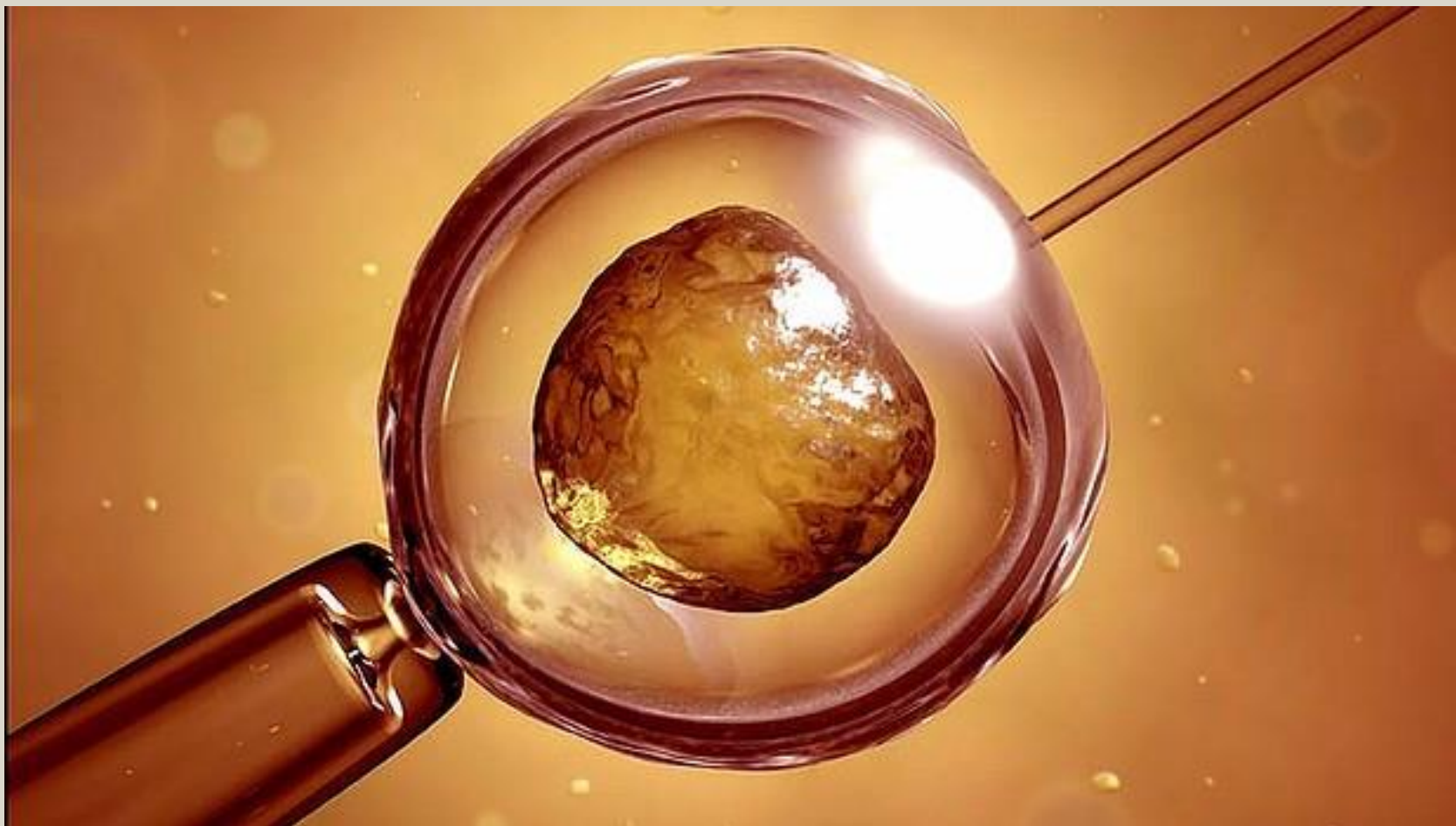


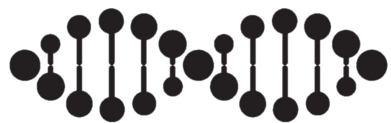
Consumption & service





Health & medicine



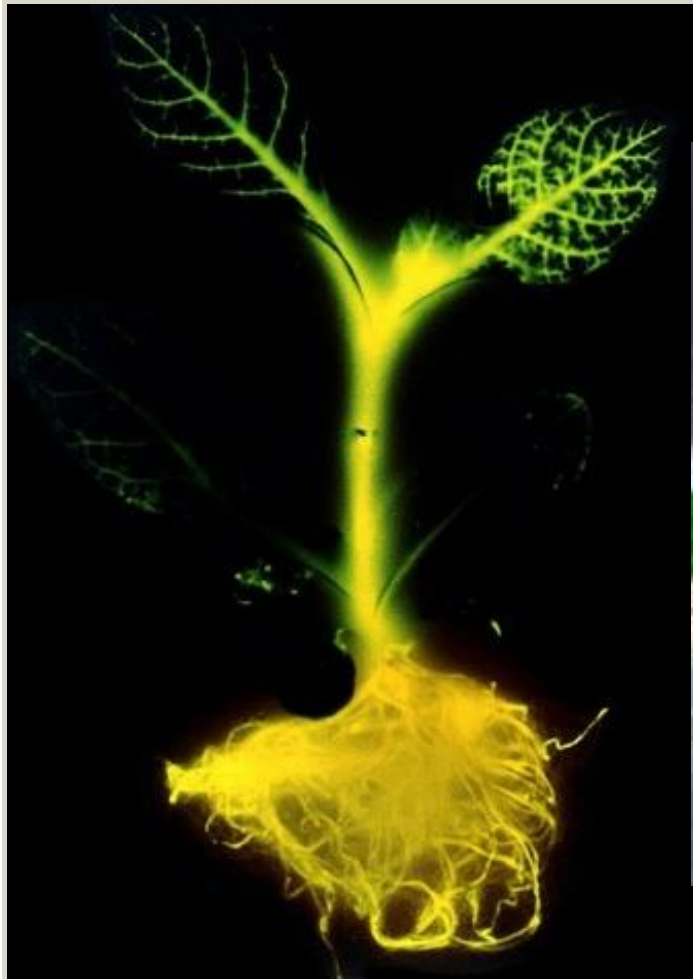


Energy & climate





Infrastructure





Security





Full sequencing of your genome for under USD1,000



First autonomous robot trucks on highways; must have human drivers in cities



25 % of the world's electricity derives from sustainable sources



Most new major buildings have windows with built-in solar cells



Several major cities erect digital billboards with built-in face recognition



Several major cities ban digital billboards with built-in face recognition



The majority in the West have replaced the family doctor with a computer doctor



50 % of households in the West have 3D printers



The MARS ONE project sends the first colonists to Mars

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

2025

2026

2027

2023

2024

2025



New commercial window glass can turn on and off transmission of light



Free GMO trade agreements between US and EU



Luminescent GMO trees as street lighting in several New York streets



First cloned kidney is implanted in a human patient



Bendable smartphones and tablets hit the market



First fully autonomous robot surgeon performs surgery on a human being



Computers at USD1,000 have capacity comparable to a human brain



Genetically engineered
Methuselah mouse turns
10 years old



Textiles with advanced
chameleon technology
on the consumer market



School children can get
robot animals to ride on
to school



Authorities finally give
up censoring the internet

MARS ONE gives up on
sending more colonists
to failed Mars colony



A 120 years old human
being runs a marathon

2028

2029

2030

2031

2032

2033

2034

2035

2036

2037

2038

2039

2040



Terror attack with
genetically modified
virus



The farm industry is a net producer
of energy because of bioenergy from
urine and excrement

The demonstration fusions
power plant DEMO begins
operation



50 % of present-day
job types are wholly or
mostly automated



The first cloned child is
born



Robocop for real



75 % of cars worldwide
are fully autonomous
robot car



Wrap-Up



Projects & Partners

Copenhagen Institute for **Futures** Studies
Instituttet for **Fremtids**forskning



Megatrends & Scenario Workshops



“A must for everyone who needs to assess the impact that innovation will bring to the future and make a plan for it.”

Marcelo Nunes Alves Costa, Gerente de Negócios, Cesar

“I am much more comfortable using these tools. Understanding megatrends, we can achieve the scenario we want for our company.”

André Werlang Bonugli, Planejamento e Estratégia da Inovação, Braskem



EMBRAER



Center for Futures Studies
for Fremtidsforskning



Cases:



changing
diabetes®

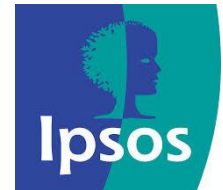


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