

Re-Engineering the future

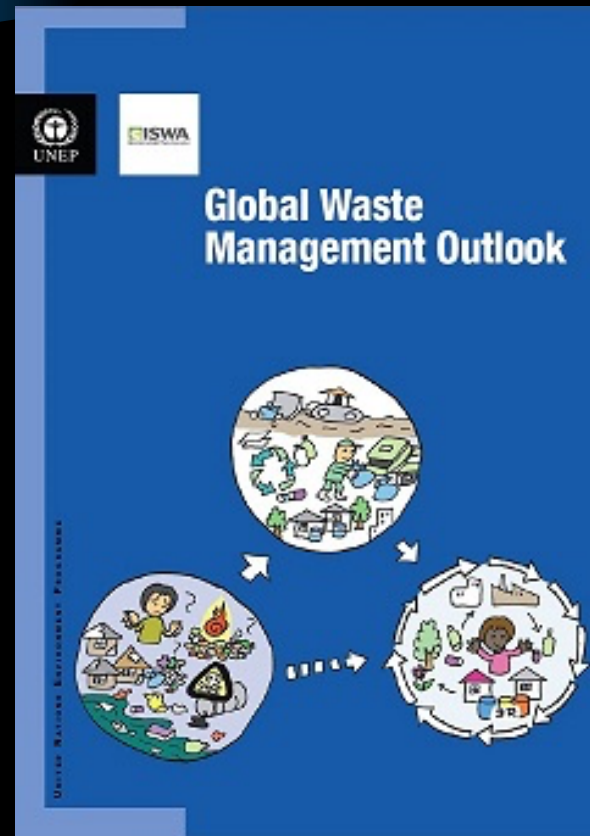
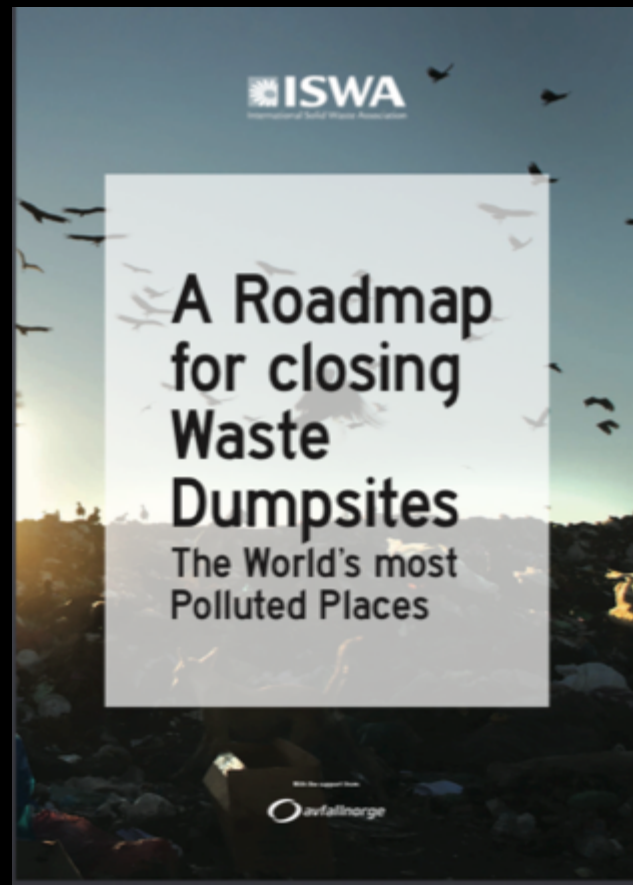
Antonis Mavropoulos

ISWA President

CEO D-Waste

<http://wastelessfuture.com>

1. About ISWA





CIRCULAR ECONOMY:
TRENDS AND EMERGING IDEAS

1

CEMA

CIRCULAR ECONOMY:
CYCLES, LOOPS AND CASCADES

2

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CIRCULAR ECONOMY:
CLOSING THE LOOPS

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CIRCULAR ECONOMY:
CARBON, NUTRIENTS AND SOIL

4

CIRCULAR ECONOMY:
ENERGY AND FUELS

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CIRCULAR ECONOMY:
RESOURCES AND OPPORTUNITIES

6

CEMA



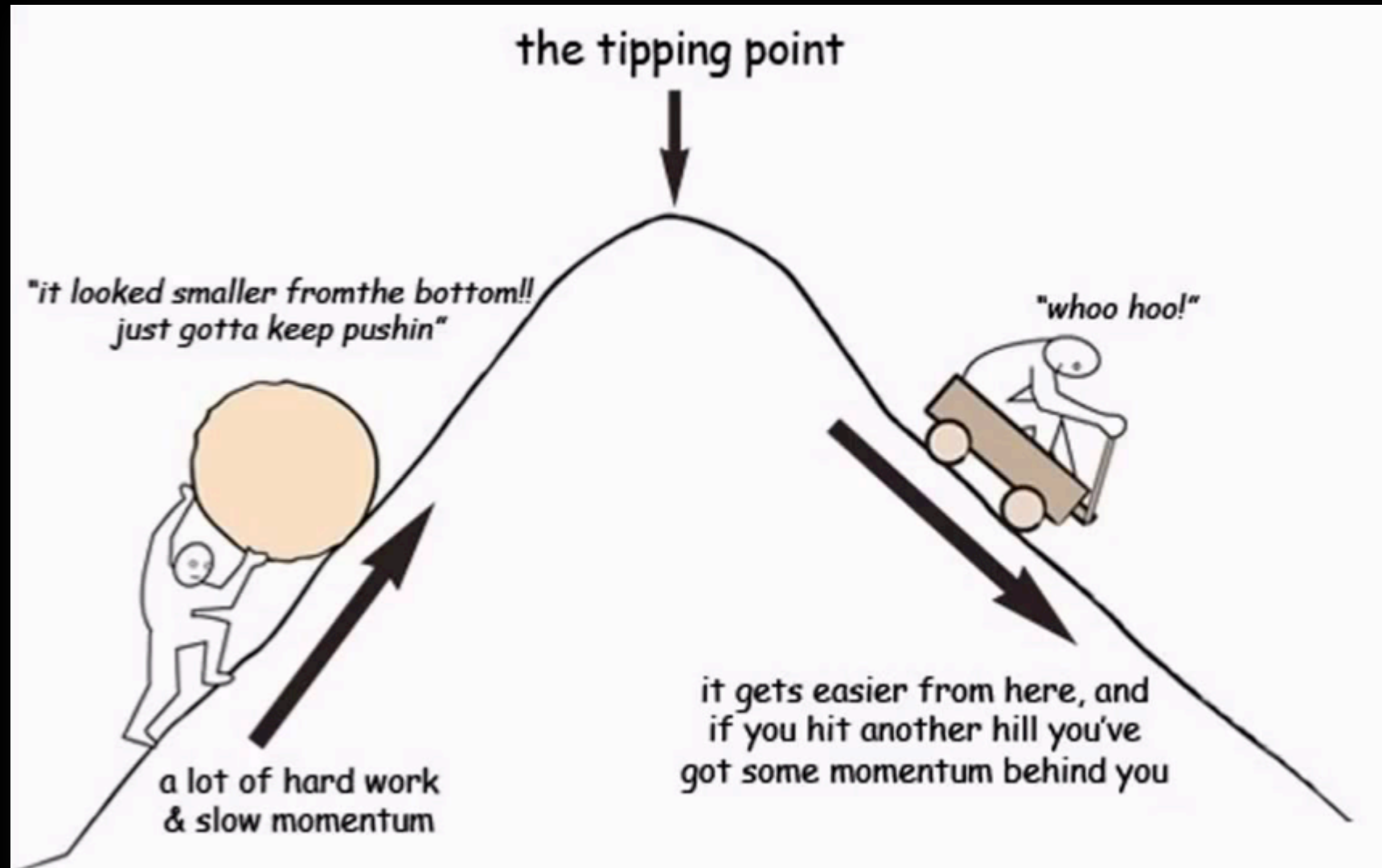
2. A glance into the next 10 years



“Now comes the second machine age.

Computers and other digital advances are doing for **mental power** – the ability to use our brains to understand and shape our environments – what the steam engine and its descendants did for **muscle power**.”

Erik Brynjolfsson, Council Vice-Chair; Director, MIT Initiative on the Digital Economy, Massachusetts Institute of Technology, USA



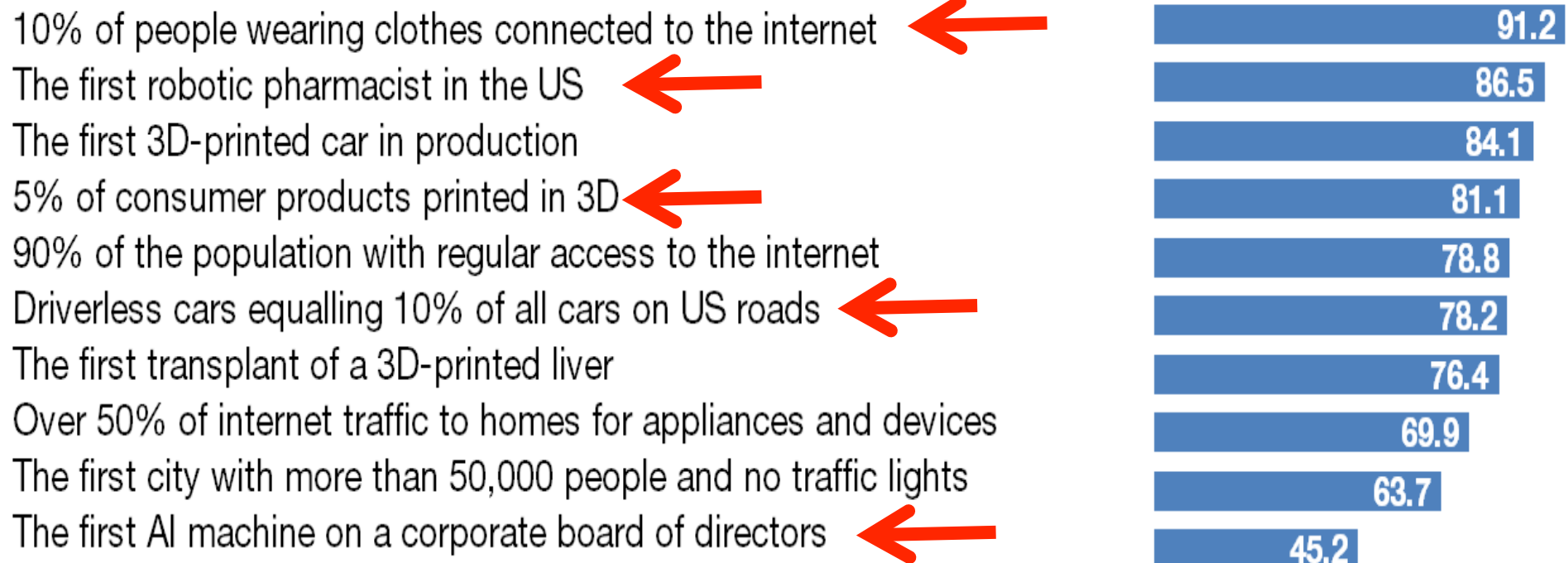
Around 2025...

When will the future arrive?

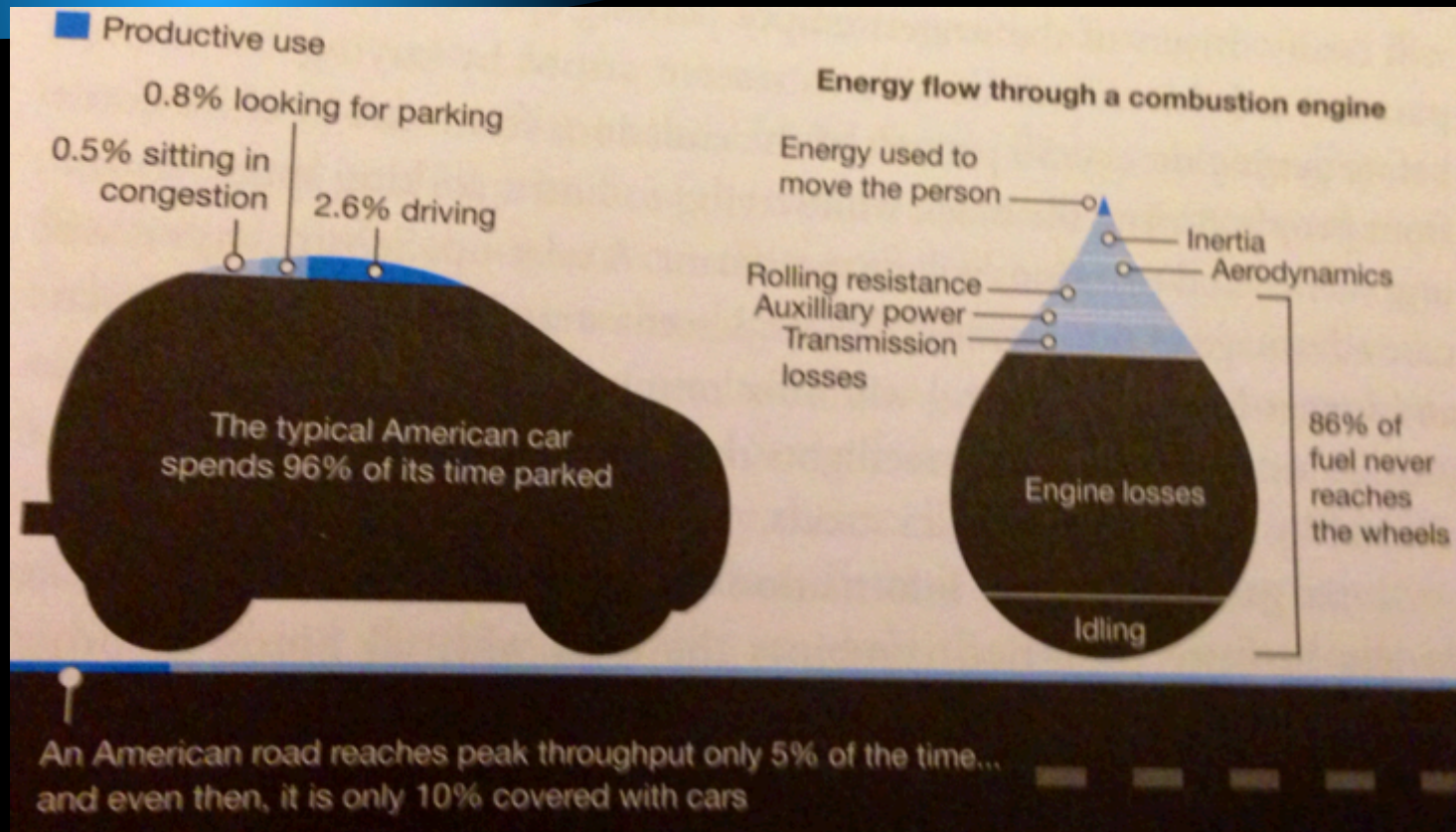
800 technology executives and experts from the information and communications technology sector were surveyed as part of our *Technology Tipping Points and Societal Impact* report

Technology tipping points expected to occur by 2025

Percentage of respondents



Rethink – Remake - Reboot



Source: Resource revolution by Stefan Heck & Matt Rogers, Melcher Media 2014

The rise of driverless cars

Two milestones, one message: fasten your seatbelt!

Antonis
Mavropoulos
September
23, 2016
artificial
intelligence,
Change,
Disruption,
driverless, Fourth
Industrial
Revolution
0



Two important milestones were achieved within recent 15 days.

Milestone 1: *The first driverless taxi fleet is already operational in Pittsburgh.* On September 14, Uber [announced](#) that the world's first Self-Driving Ubers are now on the road in the Steel City of Pittsburgh. As the company explains "We're inviting our most loyal Pittsburgh customers to experience the future first. If a Self-Driving Uber is available, we'll send it along with a safety driver up front to make sure the ride goes smoothly. Otherwise it's uberX as usual...This pilot is a big step forward. Real-world testing is critical to the success of this technology. And creating a viable alternative to individual car ownership is important to the future of cities". Although a human "driver" will still be at the wheel to take control if needed, this milestone sets the

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- Grassroots Innovation Movements: a great new book!
- New report reveals: 750 deaths by dumpsites in six months!
- A Value Chain Analysis tool for informal recyclers
- The cost of waste in a bad place...
- A good intro to Circular Economy available in five languages for free!

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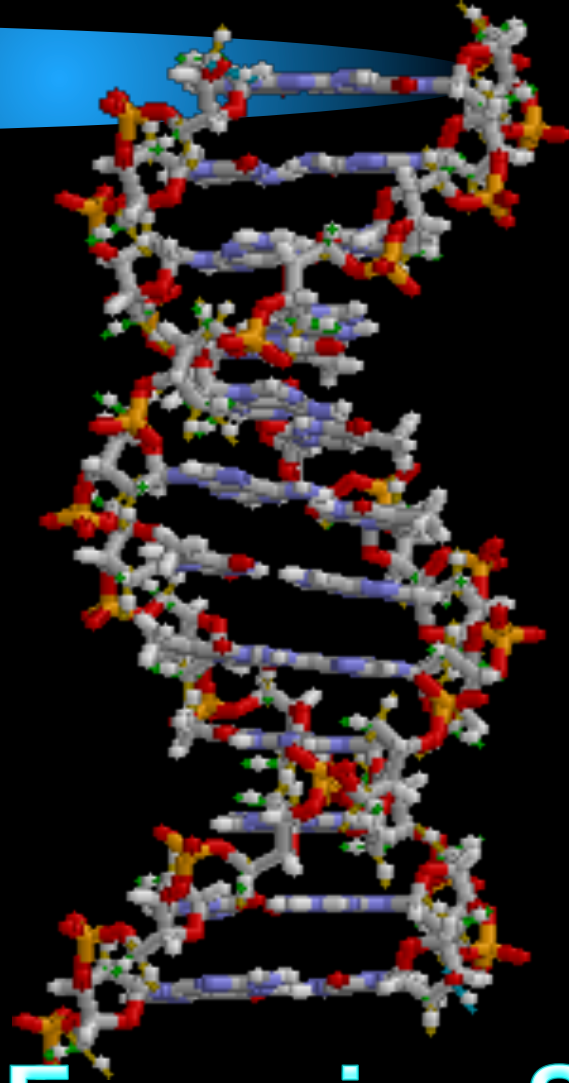


3D printed disruption

VIDEO

[https://www.youtube.com/watch?
v=DF7kvYoOPb8](https://www.youtube.com/watch?v=DF7kvYoOPb8)

The SWM DNA in megacities



Global input - local output

Complex interactions
between stakeholder

Local patterns –
heterogeneity as the rule

The behavioral
component of SWM
becomes crucial

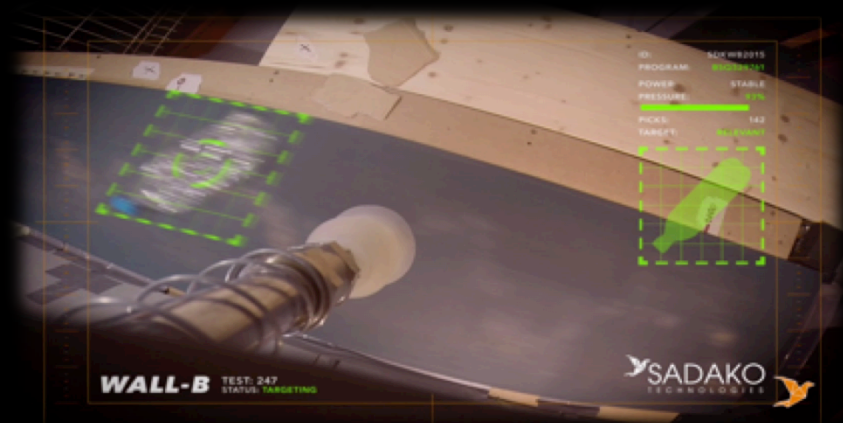
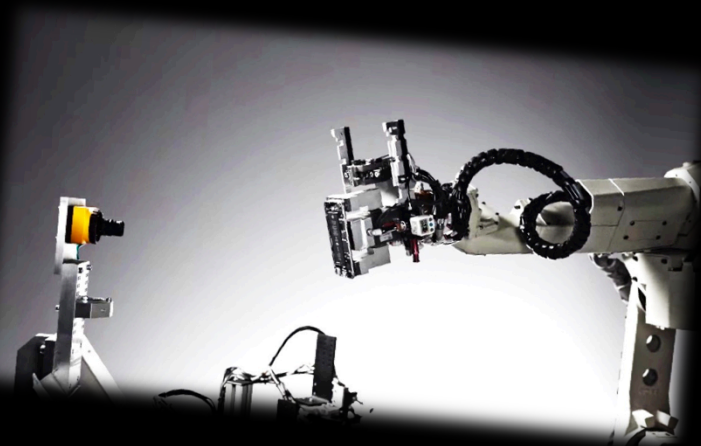
Emerging SWM system

SWM as CAS

A system that as a whole exhibits properties not obvious from the properties of the interconnected parts

- Adaptiveness
- Interconnections
- Emerging properties
- Behavioral dynamics
- Local dynamics
- Bottom – up evolution
- Continuous feedback

4. A Wasteless Future is realistic!

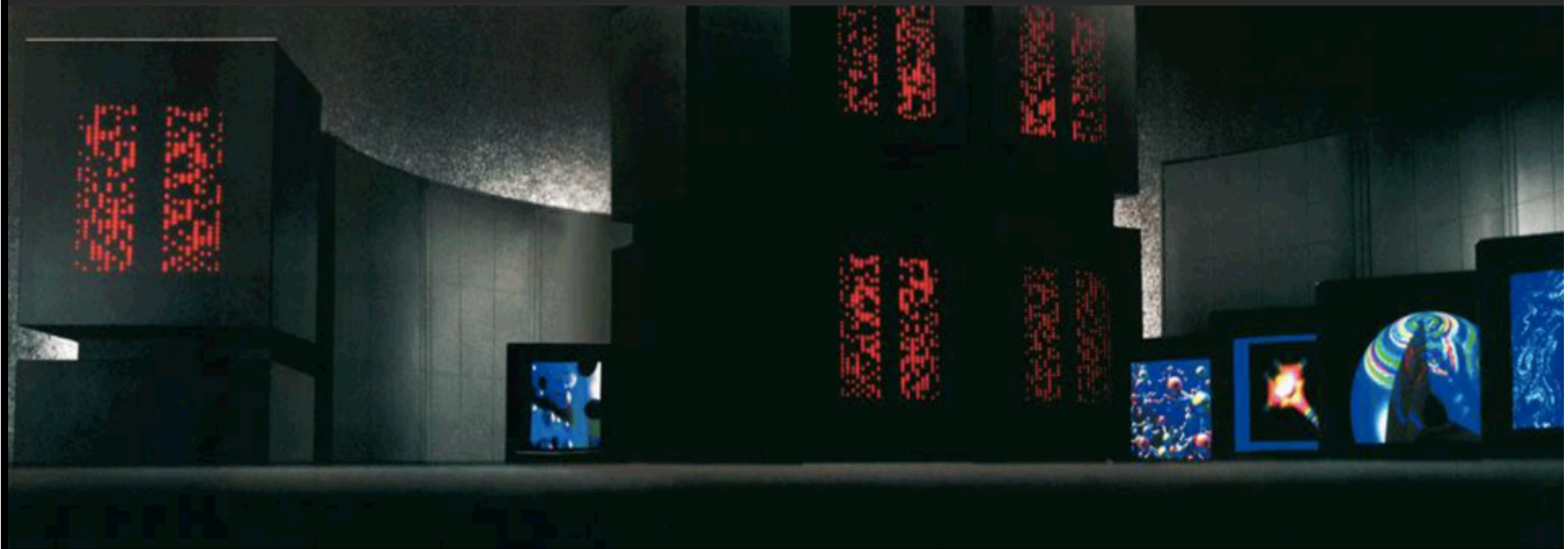


Some thoughts for your future

- Raising the ambition
- About skills
- Learning environment
- Useful Vs Trendy

Yes you can!





The Connection Machine, the first computer optimized for AI. © Thinking Machines Corporation, 1989. Photo: Steve Grohe.

The great question of the 21st century: Whose black box do you trust?

[Edit post](#)

Published on September 13, 2016 | Featured in: [Editor's Picks](#), [Media](#), [Social Media](#), [Technology](#)



Tim O'Reilly [in](#)fluencer
Founder and CEO, O'Reilly Media

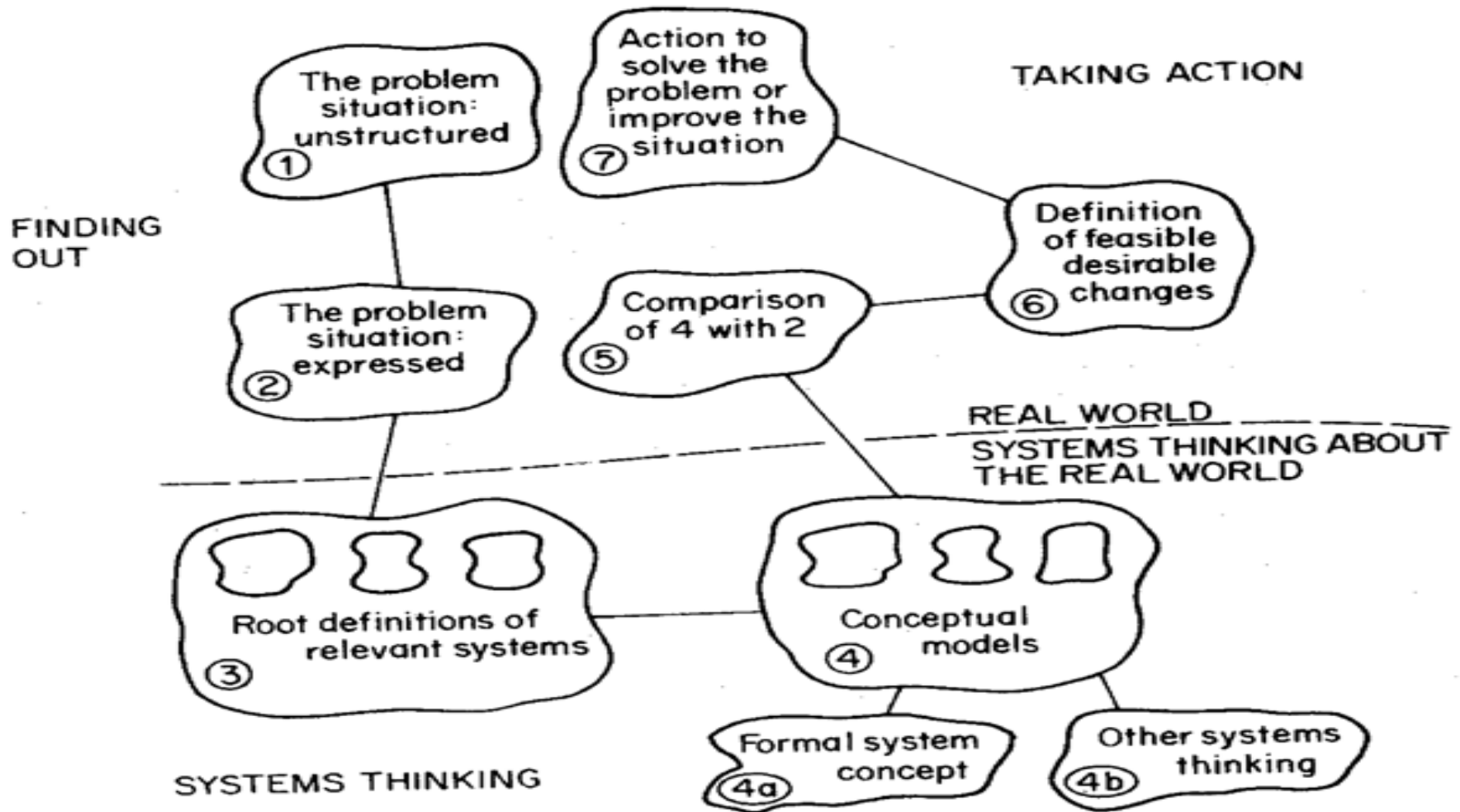


ASIMO...

“It is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception and mobility”

Hans Moravec

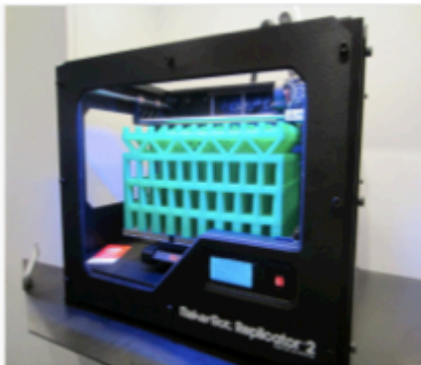
“The main lesson of thirty-five years of AI research is that the hard problems are easy and the easy problems are hard... As the new generation of intelligent devices appears, **it will be the stock analysts and petrochemical engineers and parole board members who are in danger** of being replaced by machines. The gardeners, receptionists, and cooks are secure in their jobs for decades to come”,
Steven Pinker



The core component

SYSTEMIC THINKING

11 search results for: 3D printers



3D printers for plastic recycling in space!

Antonis Mavropoulos, September 12, 2016, 3D printers, NASA, Plastics, space, Space waste, 0

Tethers Unlimited, a company that develops advanced technologies to enable transformative capabilities and dramatic cost savings for special missions, has been...



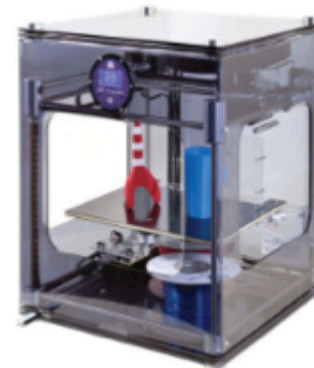
Print your food & manage your food waste with 3D printers...

Antonis Mavropoulos, May 18, 2016, 3D printers, 4th Industrial Revolution, food, 0

Few days ago I published a blog about 3D printers and their impacts to recycling and waste management. But...

0 likes

[Read more](#)



Henry Ford Vs 3D printers: a fight that will redefine "recycling"

Antonis Mavropoulos, May 6, 2016, 4th Industrial Revolution, Waste Prevention, Zero waste, 0

I consider 3D printers as one of the Game Changers that will transform the waste management and recycling industry

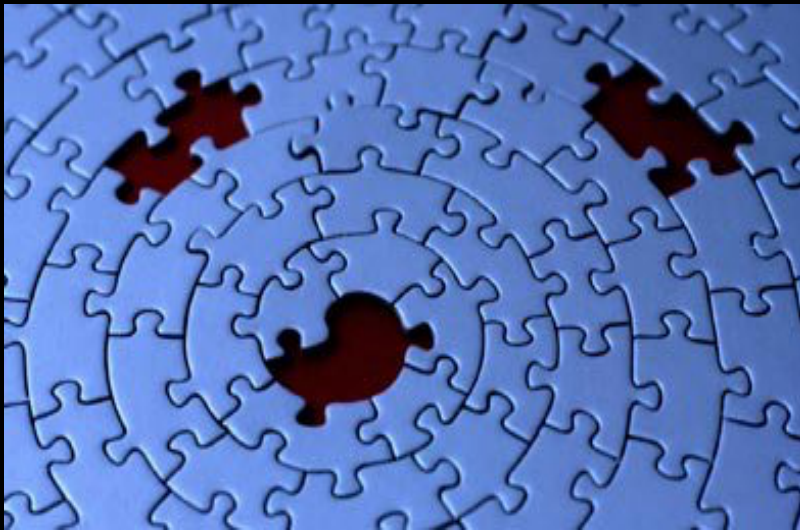
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3 key skills



Pattern recognition

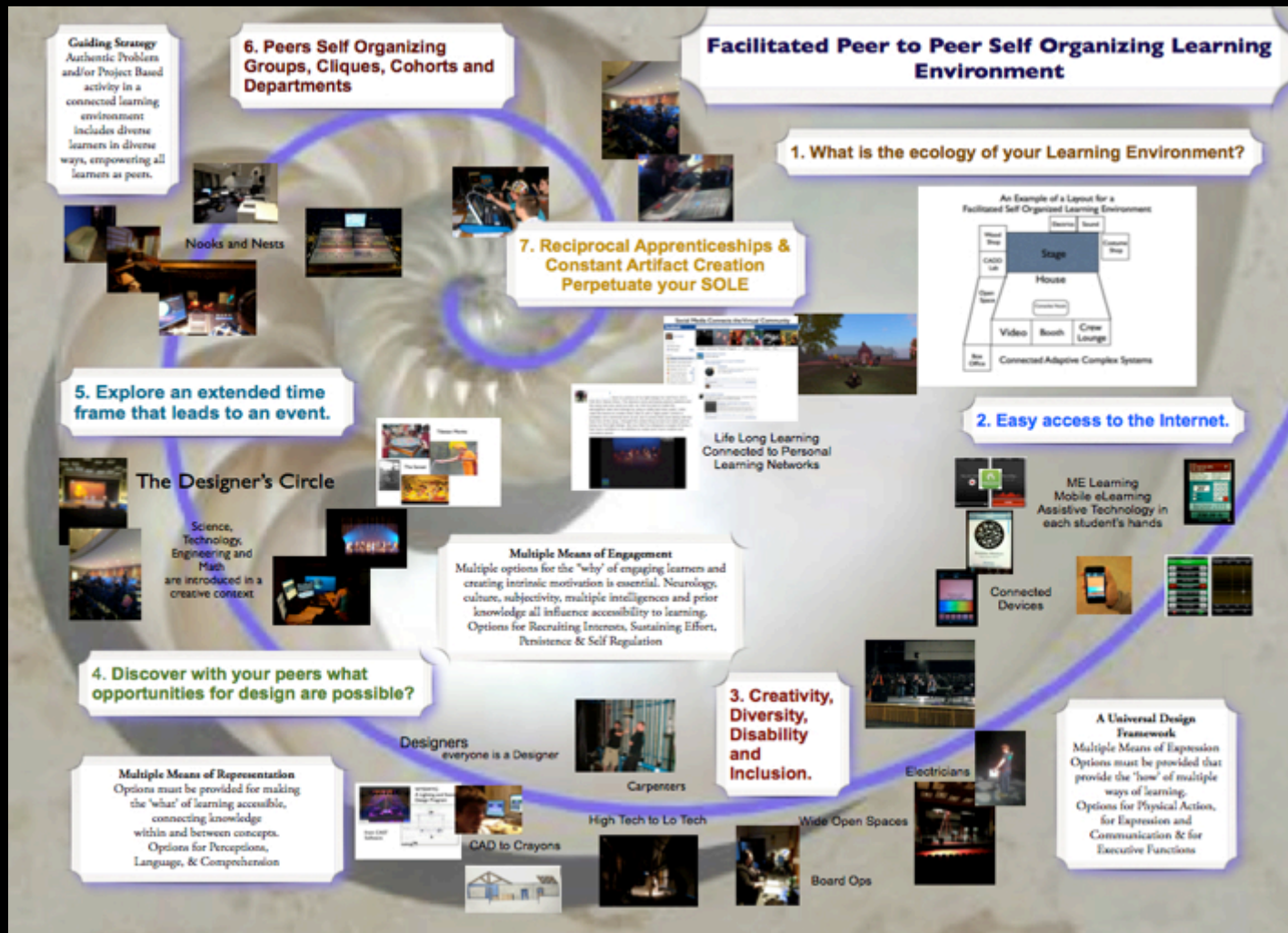


Ideation - creativity



Communication skills

Learning Curves and Environment



Why Garbagemen should earn more than Bankers

Antonis Mavropoulos
April 24, 2016
Garbagemen,
Human Rights,
markets, recycling,
waste
management
0
[EDIT](#) →



In many cases, during my lectures, I use to say that waste management is like good health. You don't appreciate it unless you miss it. This is a slogan I use to highlight both the importance of garbage collection for the quality

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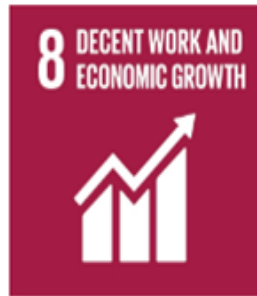
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SUSTAINABLE DEVELOPMENT GOALS



Endless effort...



ISWA

ORGANISATION

- About ISWA
- The General Assembly
- The Board
- The General Secretariat
- Technical Profile
- Regional Development Networks
- International Cooperation
- ISWA History

ISWA GROUPS

- Working Groups
- STC
- Task Forces
- WM&R Editorial Group
- Young Professionals Group**
- ISWA European Group

ISWA AWARDS



ISWA Young Professionals Group

The Young Professionals Group (YPG) was founded by young enthusiastic professionals from around the world in the field of waste management in 2013. Its aim is to bring about new ideas and initiatives that address the challenges in waste management through engagement with wider society. In addition, the YPG strives to make global connection to people, ideas and knowledge more accessible. By being a member of the YPG, you are part of this drive of change and are faced by and creating an enormous amount of opportunities for young people.

If you are under the age of 35, working in the field of waste management, what are you waiting for? Join ISWA, join the YPG! If you are interested, please contact [ypg\(at\)iswa.org](mailto:ypg(at)iswa.org).

www.iswaypg.org

<http://www.iswa.org/iswa/iswa-groups/young-professionals-group/>

Blog



The Internet of Garbage Tucks!

Antonis Mavropoulos, October 4, 2016, Internet of Trucks, Optimisation, routing, Sensors, waste collection, 0

For sure my readers know that I strongly believe that the future of waste collection are the hybrid models...

0 likes

[Read more](#)



Grassroots Innovation Movements: a great new book!

Antonis Mavropoulos, September 27, 2016, Grassroots, Inclusive growth, Innovation, New Technologies, Social Innovation, 2

Whenever I deal with innovation, I insist that technical innovation will be useless or even harmful if we can't solve the

3 likes

[Read more](#)



New report reveals: 750 deaths by dumpsites in six months!

Antonis Mavropoulos, September 20, 2016, Closure, Developing countries, Dumpsites, Health problems, 0

This is a preview of the new ISWA's report "A Roadmap for Closing Waste Dumpsites, The World's most Polluted

2 likes

[Read more](#)



A Value Chain Analysis tool for informal recyclers

Antonis Mavropoulos, September 13, 2016, David Wilson, Informal Sector, Bami, 0

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Name

Email

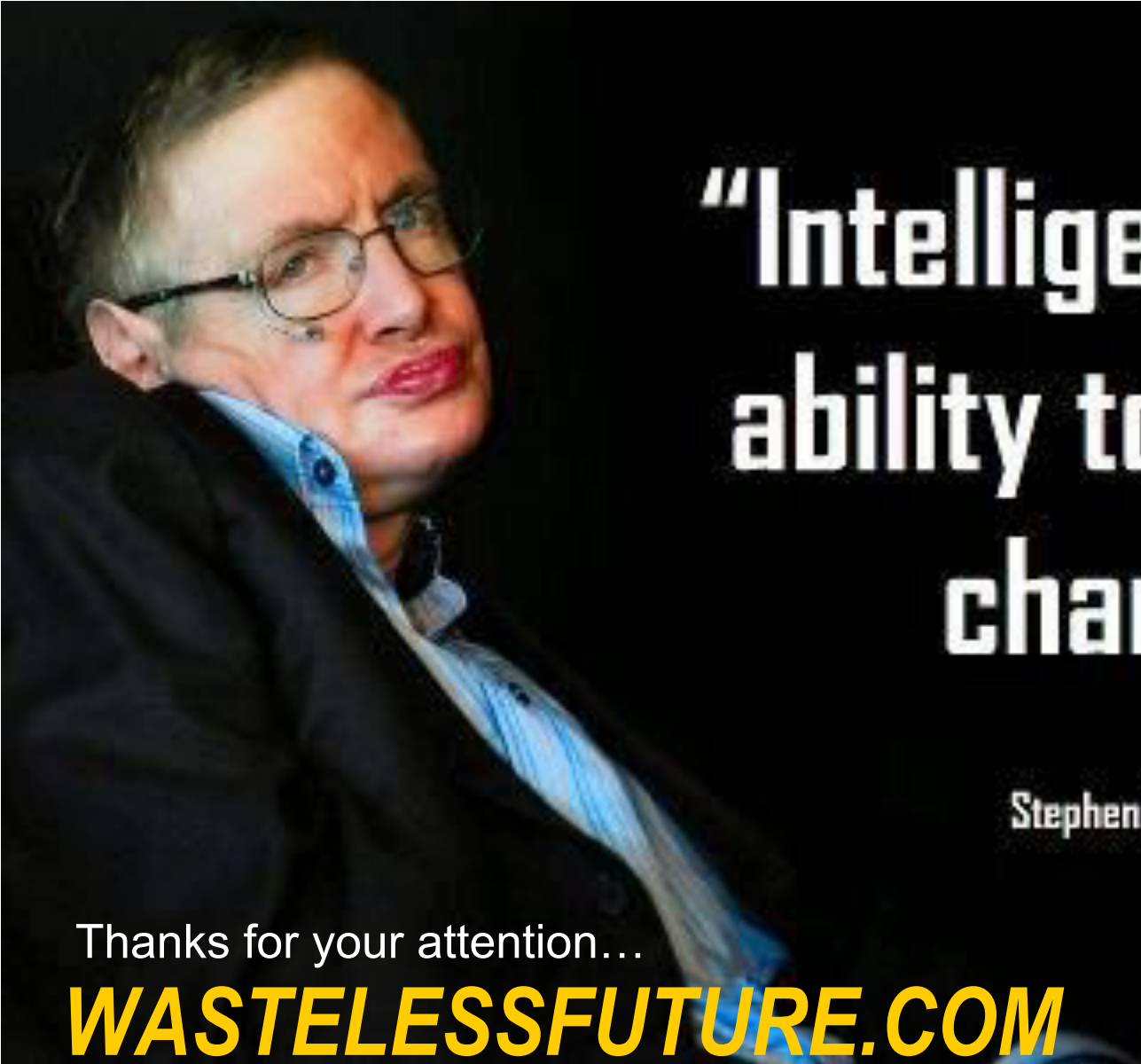
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Tags

3D printers

amavrop@gmail.com

ALWAYS OPEN FOR NEW IDEAS

A photograph of Stephen Hawking, wearing glasses and a dark jacket over a light blue shirt, looking thoughtfully to the right. The background is dark.

“Intelligence is the
ability to adapt to
change.”

Stephen Hawking

Thanks for your attention...

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