STARTS

Innovation at the nexus of

Science, Technology, and the ARTS

A perspective on innovation at the confluence of knowledge and creativity
How crossovers with the Arts can make European industry more competitive

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Innovation: From 20th to 21st century

20th century	21st century
Specialisation	**+ Transdisciplinarity (no silos!)**
Knowledge: R&D	**+ Creativity**
Technology: standardisation	**+ Services: ecosystems**

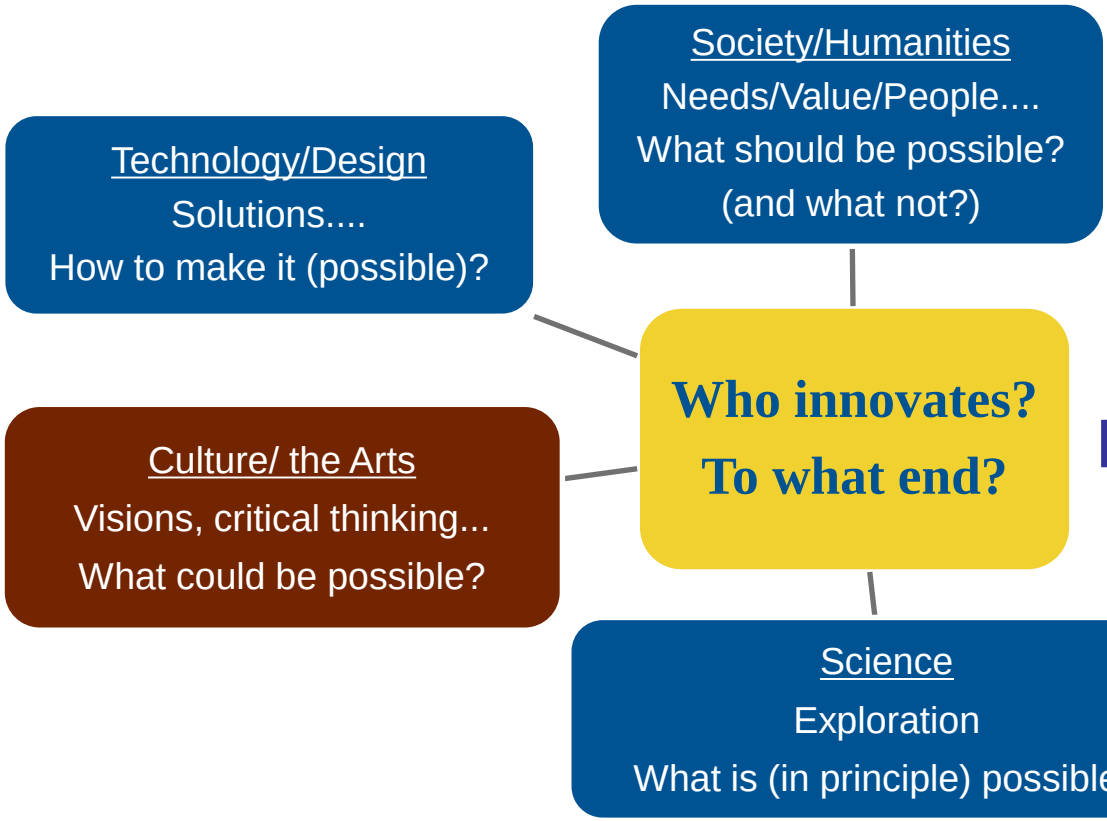
Recognition of the role of Science in innovation

"Everything we know about history, technology, and economic theory tells that an increase of this magnitude [in GDP] would not have been possible in the absence of science-based technological change".
(Paul Romer: 'New Growth Theory')

Innovation is as much about creativity as it is about transfer of scientific knowledge

"It's commonly believed that engineers dominate Silicon Valley and that there is a correlation between the capacity for innovation with education in maths and science. Both assumptions are false! Many in Silicon Valley have degrees in the Arts."
(Vivek Wadhwa, Harvard)

(Open) Innovation in the 21st century



Radically different products and services

Human-centred innovation

Co-creation

Social innovation

Entrepreneurial spirit

Enthusiam in the new

Urban/regional regeneration

.....

'Artists put ideas and values into physical forms [and/or processes]'
Olafur Elliasson

Iphone: competitive edge needs more than just technology

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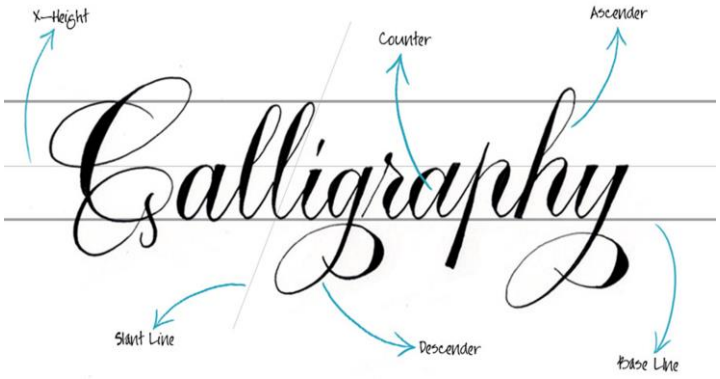
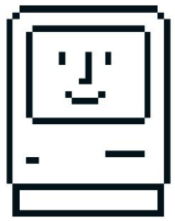
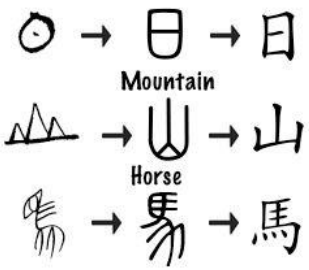
"The reason that Apple is able to create products like iPad is because we try to be at the intersection of technology and liberal arts, to be able to get the best of both."

"I think our major contribution [to computing] was in bringing a liberal arts point of view to the use of computers."

Steve Jobs, CEO, Apple





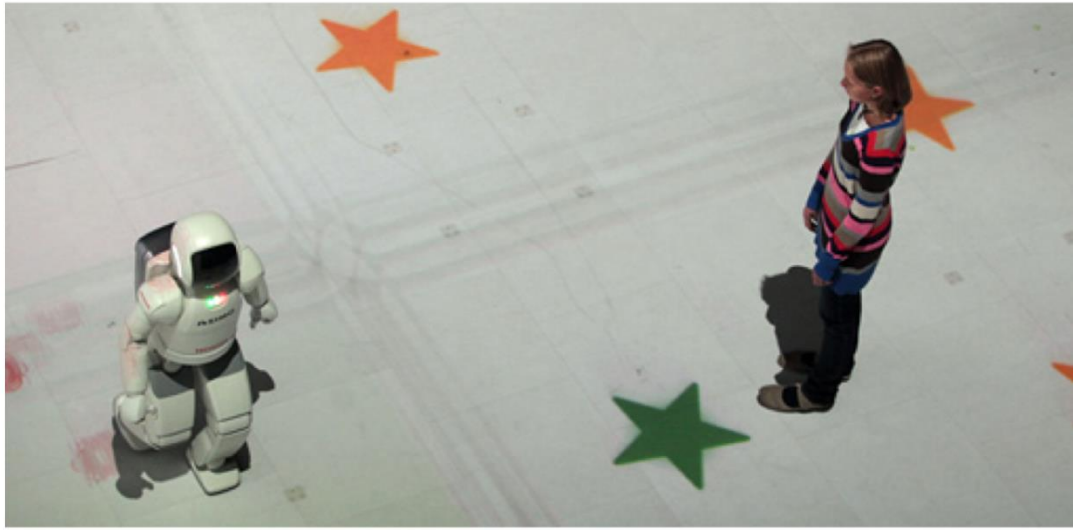


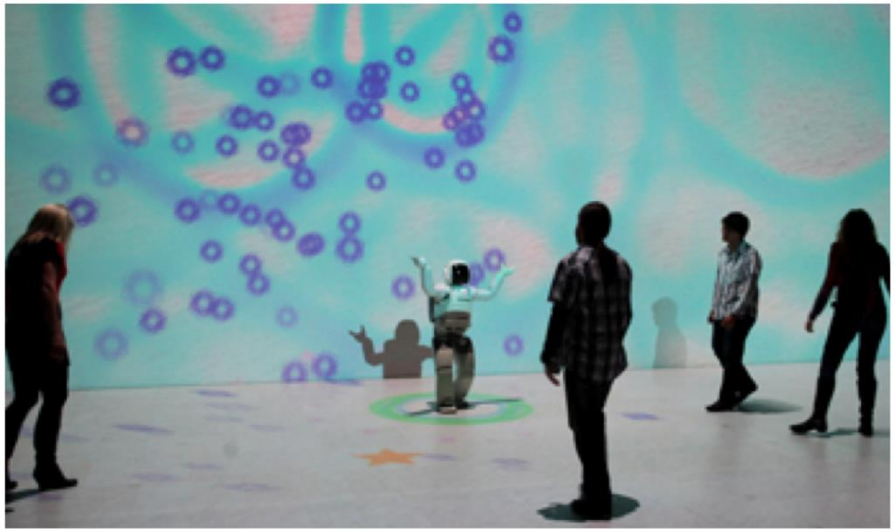
The Iphone intertwines seamlessly:

Technology
Services (Apps-Itunes)
Design
Interfaces

Artist help invent means to communicate

Honda works with Ars Electronica Futurelab to find new ways for the communication between humans and robots.

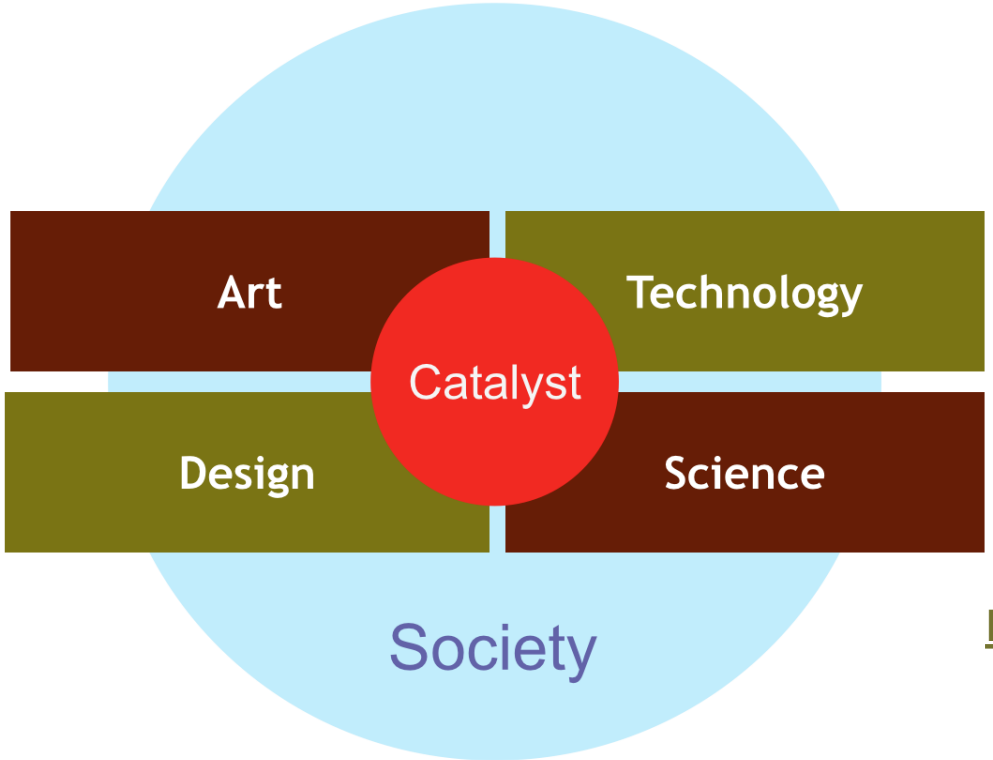




Artist help invent signalling systems

Daimler works with Ars Electronica Futurelab to explore new ways to communicate with autonomous cars.

Innovation at confluence of knowledge & creativity



Design/Technology thinking:
creative solutions
Sense for the feasible

Art/Science thinking:
creative questions
Sense for the possible

3D printing and Arts:
Melting arts, craft, industry and DIY

European Commission

Nick Ervinck, artist

Nick Ervinck's collaboration with Materialise, a 3D printing company has been pushing the boundaries of 3D Printing.

He has been challenging the company's engineers with his intricate designs.

Studio Unfold, Artisan Electronique

Miniature production centre: a digital potter's wheel connected to a 3D ceramic printer.

As a virtual cylinder spins on a computer screen, the user cuts away and elaborates its shape by passing his or her hand through a laser.

When satisfied with the final form, the user can submit the customised model to a digital archive, which then supplies the 3D printer with geometric instructions.

Digital Agenda

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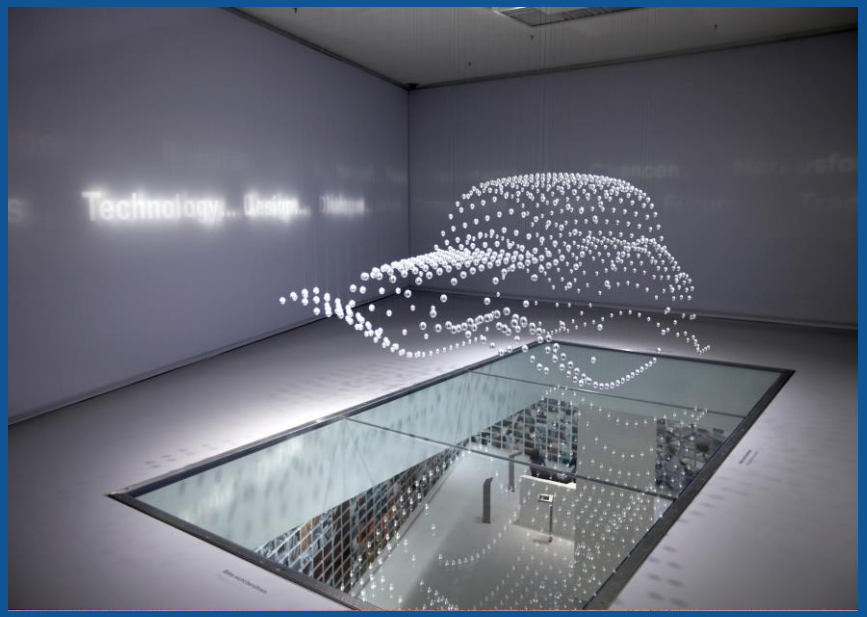
Art+Com and BMW
Kinetic Sculpture, 2008

The form-finding process in car design



714 metal spheres suspended from the ceiling on thin steel wires
They are animated with the help of mechanics, electronics and code to simulate a car shape.

The form-finding process in car design as five seven-minute choreographed sequences covering the design process of five iconic cars from the company's past and present.

- **The installation starts in a chaotic state. No form or design idea has yet been found.**
- **The spheres move individually creating an impression of spatial white noise.**
- **Slowly the first geometric forms emerge, loosely relating to the contours of the vehicle.**
- **In the following sequence, a succession of competing forms intersect with each other, one displacing the next.**
- **The final shape of the vehicle emerges from this process.**

US and EC are reacting

G. H. Öttinger (in answer during EP hearing):

"Artistic creativity and critical thinking are essential for innovation in today's digital world. Already, highly innovative companies thrive on a strong link between artists and their engineers; Daimler has set up a lab exploring futures of urban transport with artists..... ".

112TH CONGRESS
1ST SESSION

H. RES. 319

Expressing the sense of the House of Representatives that adding art and design into Federal programs that target the Science, Technology, Engineering, and Mathematics (STEM) fields encourages innovation and economic growth in the United States.

IN THE HOUSE OF REPRESENTATIVES

JUNE 21, 2011

(1) Integration of artists in technology development will increase innovative capacity.

→ **H2020 should facilitate integration of artists in H2020 innovation actions**

(2) Education **needs to produce a knowledgeable AND creative workforce.** Creativity is a skill that can be acquired through training in the Arts.

→ **Our education needs cross-sectorial curricula of technology with the Arts**

Digital Agenda

H2020 initiative
STARTS == S&T+ARTS

European Commission

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STARTS - Innovation at the nexus of **S**cience, **T**echnology and the **ARTS**

Initiative of EC in DG CONNECT in Research/innovation and education.

- Promote inclusion of artists in H2020 projects
- Fund residences of artists in technology and of scientists in art institutions.
- Promote cross-sectorial curricula (technology- the Arts) in higher education

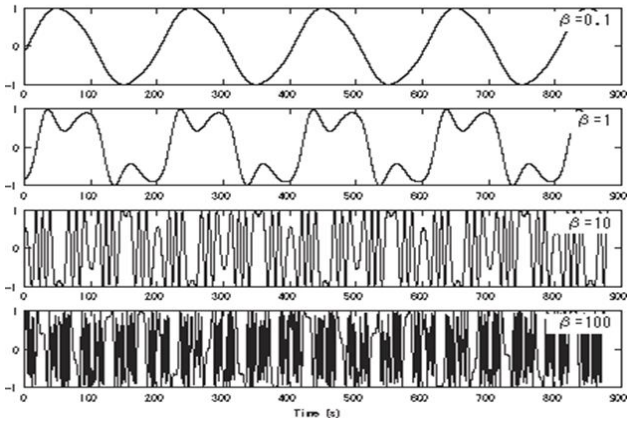
STARTS prize – A European Union prize that gives visibility to innovation rooted in links with the Arts

- Artistic exploration where appropriation by the Arts has altered use, deployment or perception of technology
- Collaborations of industry/technology with the Arts that open new pathways for innovation.

(each category winner will be awarded 20.000Euros)

Digital Agenda

MUSIC AND ICT



The audio industry is rooted in the desire of an artist's - John Chowning, Stanford - to compose electronic music.

Eduardo R. Miranda, Plymouth University

Bio-computer Music explores the potential of the bio-computer, an interactive musical computer based on living organic components (Physarum polycephalum) cultured on a circuit board.

Most sounds we record and reproduce today (including synthesized voices) are rooted in this discoveries (another ingredient is FFT)

It evolved into what is now called DSP (digital sound processing)