



DESIGN THINKING FOR CONNECTED PRODUCTS AND SERVICES

Bernard Suen
Center for Entrepreneurship
Chinese University of Hong Kong



Center for
Entrepreneurship

DO YOU REMEMBER WHICH BIG EVENT SHOOK THE WORLD IN 2008?

Global Financial Crisis

Source: Oliver Wyman



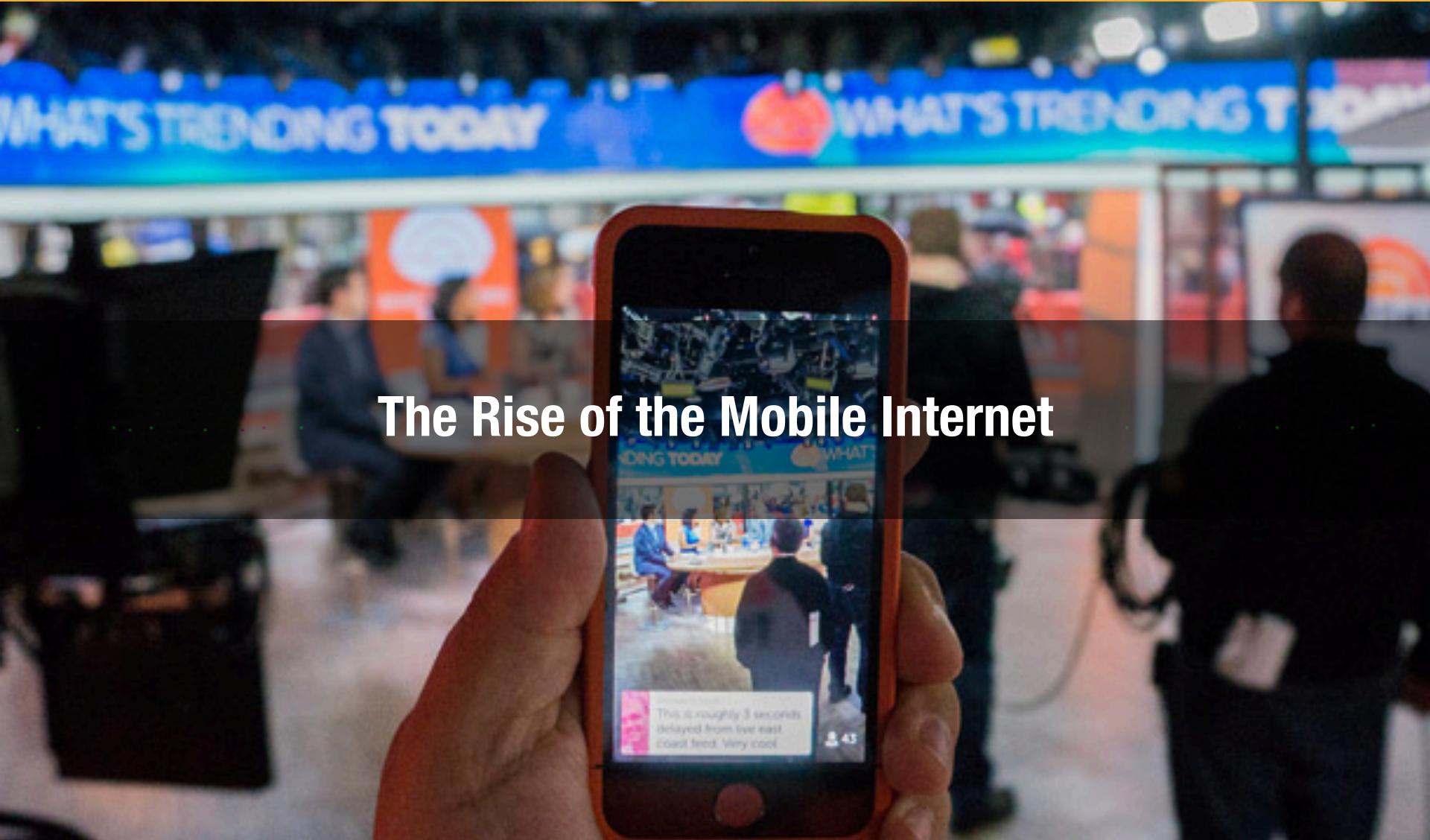
Victims?

Source: Wikipedia

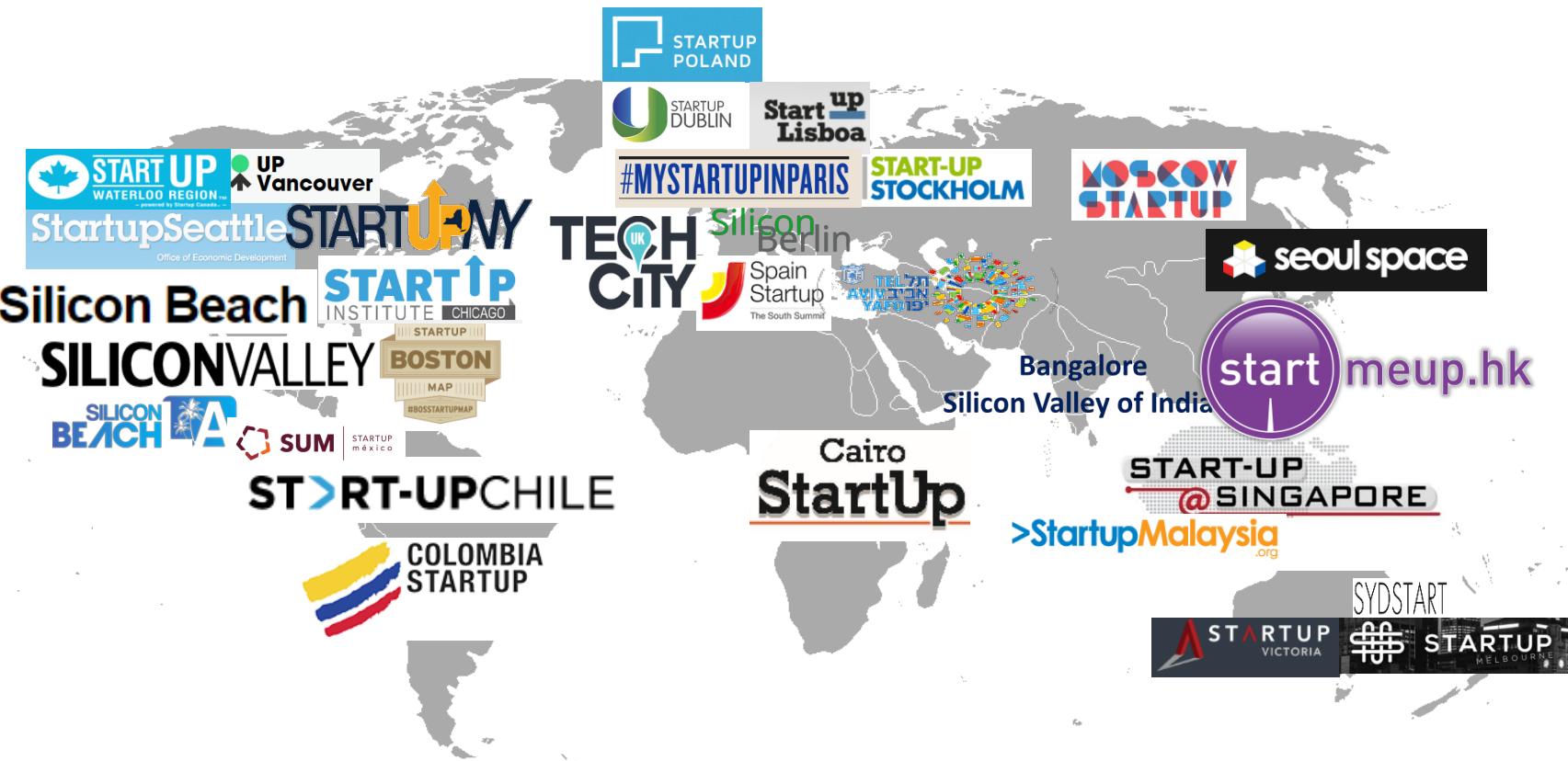
Source: Junpei Abe (Flickr)



The Rise of the Mobile Internet

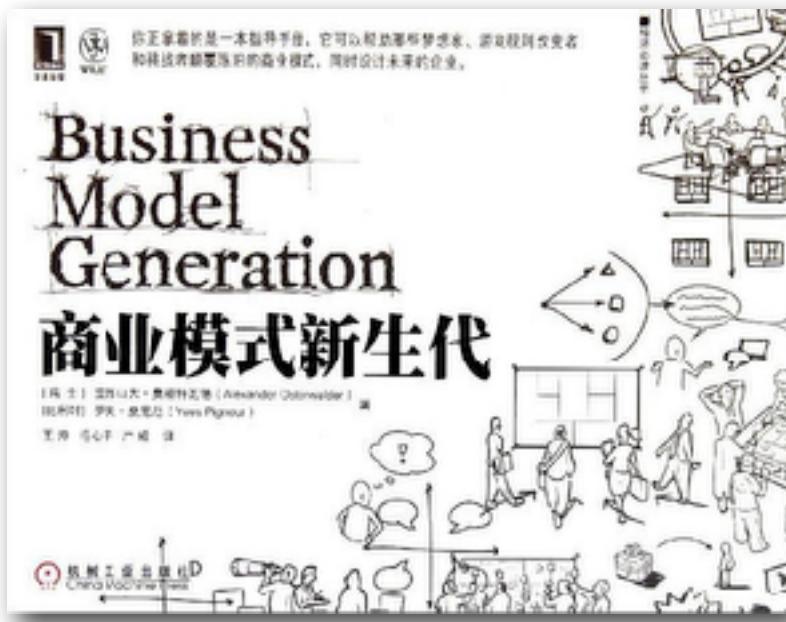


Global Phenomenon



“大眾創業、萬眾創新!”

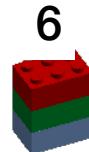
Mass Entrepreneurship
and Innovation!



“互聯網+”
Internet Plus

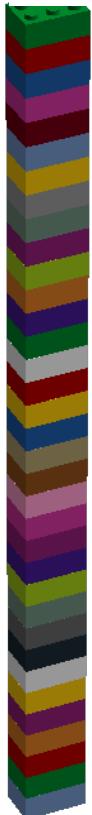
BURGEONING CO-WORKING SPACES ...

> 5618
spaces



2010

48



2016

Source: StartMeUp (InvestHK)



RASHION FARM FOUNDATION

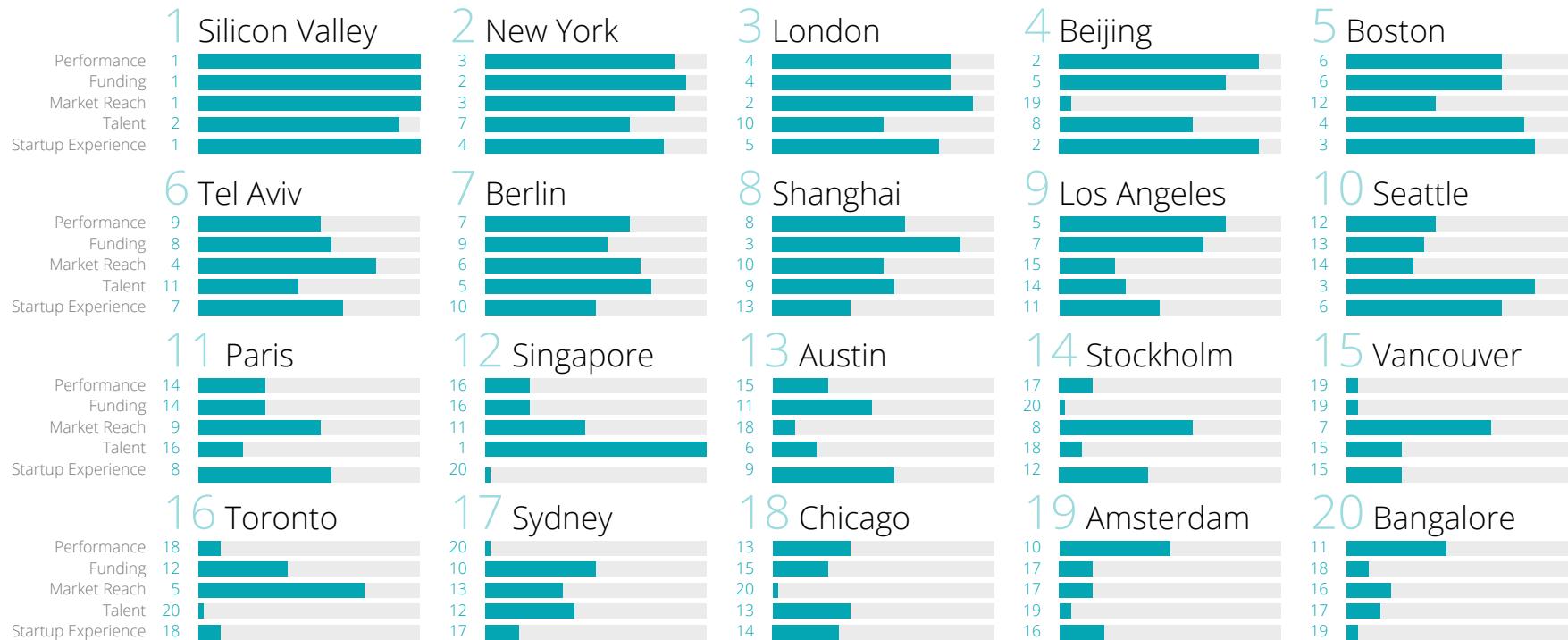


RANKED BY

- **Performance: 30%**
- **Funding: 25%**
- **Market Reach: 20%**
- **Talent: 10%**
- **Startup Experience: 15%**

Startup Genome Global Startup Ecosystem Report 2017

THE STARTUP ECOSYSTEM RANKING 2017



Startup Genome Global Startup Ecosystem Report 2017

“For the past six years, the share of funding going to Asia-Pacific countries grew, while the U.S. share declined. In 2017, VC funding for startups in the United States compared to the Asia-Pacific region were even, with each accounting for 42% of investment value. If we look at the combined years of 2016-2017, as we do in the following chart, the USA is still a bit ahead.

China is the primary growth driver in this shift. In 2014, only 13.9% of current unicorns were from China. In 2017 and 2018 so far, that number has grown to 35%—while for the United States it has decreased from 61.1% to 41.3%. “

Source: Startup Genome Global Startup Ecosystem Report 2018

Technology Sector Growing Twice as Fast as Global Economy

“By any measure, the global technology sector has been growing rapidly, outdistancing most other economic sectors over a sustained period of time. Projections indicate that this growth will continue at its current rate and perhaps even increase.

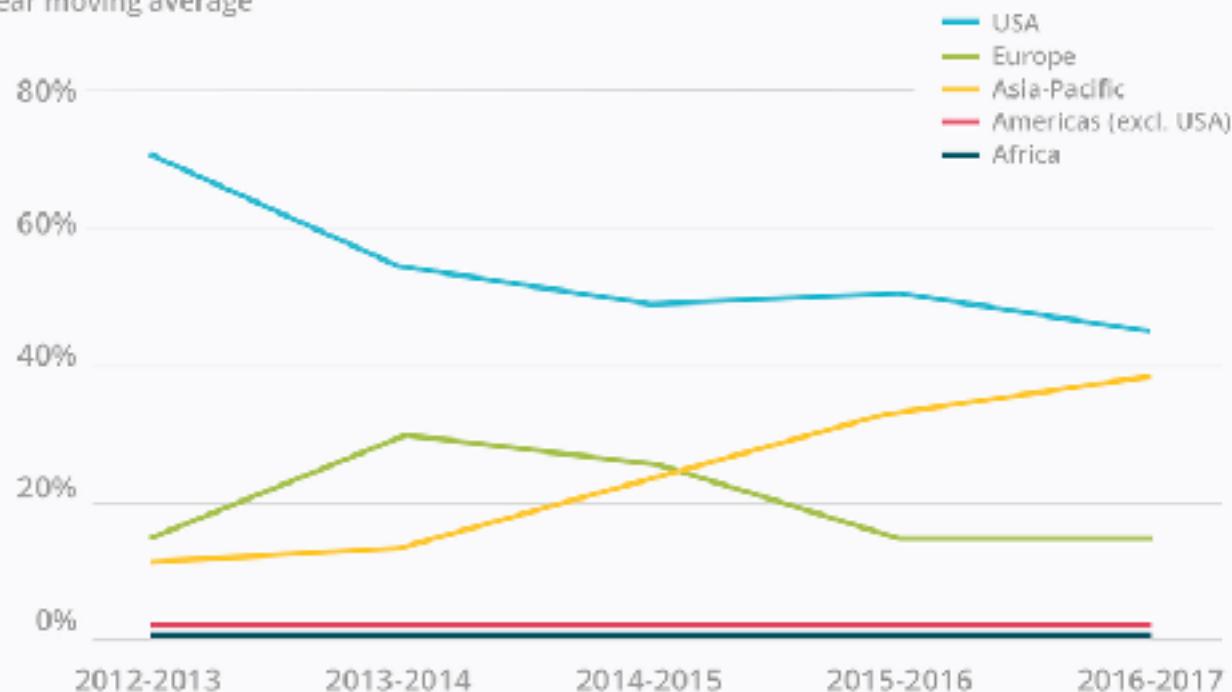
Global gross domestic product today is around \$100 trillion. The technology sector (information and communications technology) is roughly 4.5 percent of that, compared to only 2 percent in 1992. If the pace continues at current growth rates, then the tech sector will be 8 percent of global GDP within the next 15 to 20 years.”

Source: Startup Genome 2017

INTERESTING INSIGHTS FROM THE STARTUP ECOSYSTEM TRENDS

Concentration of VC Funding in Startups by Region

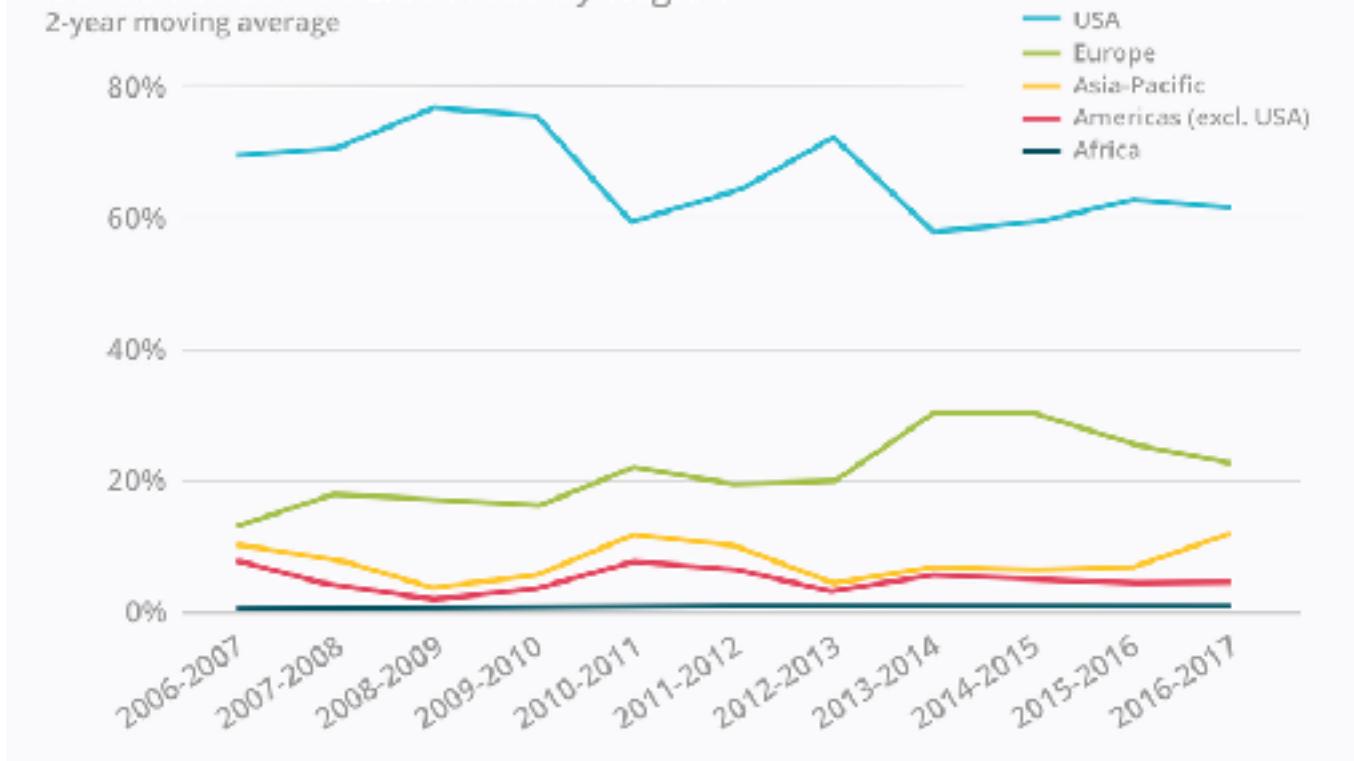
2-year moving average



Startup Genome Global Startup Ecosystem Report 2018

Concentration of Exit Value by Region

2-year moving average



Startup Genome Global Startup Ecosystem Report 2018

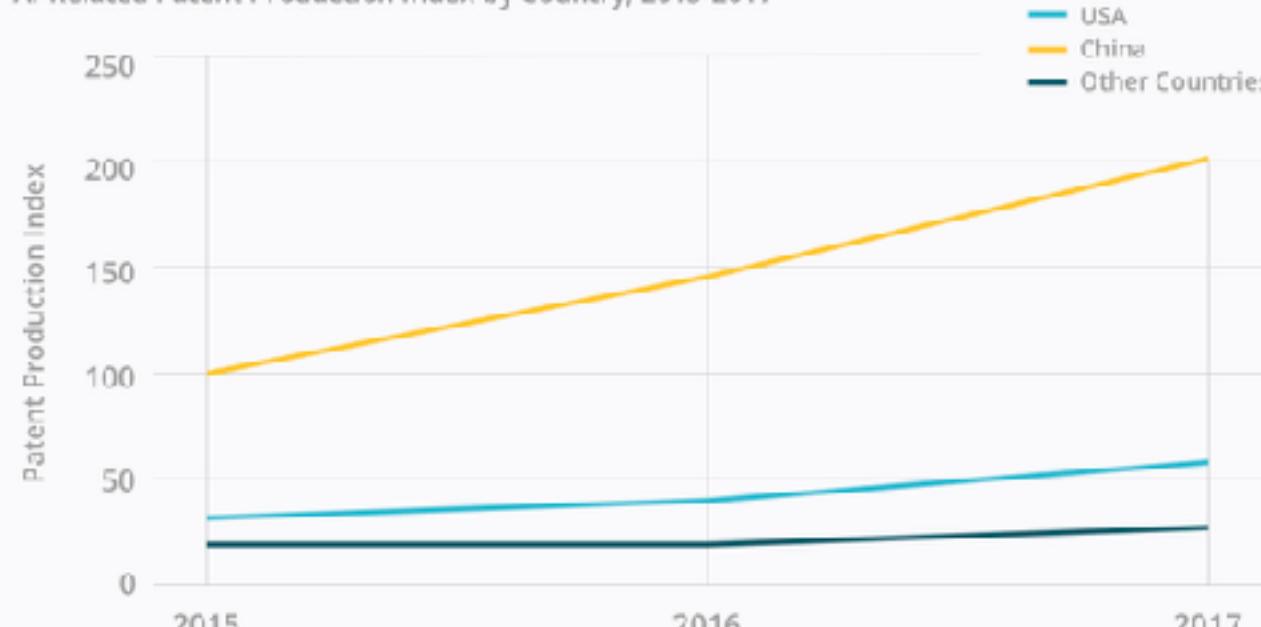
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Source: Startup Genome Global Startup Ecosystem Report 2018

China produced 4 times as many AI-related patent applications in 2017 than the U.S.

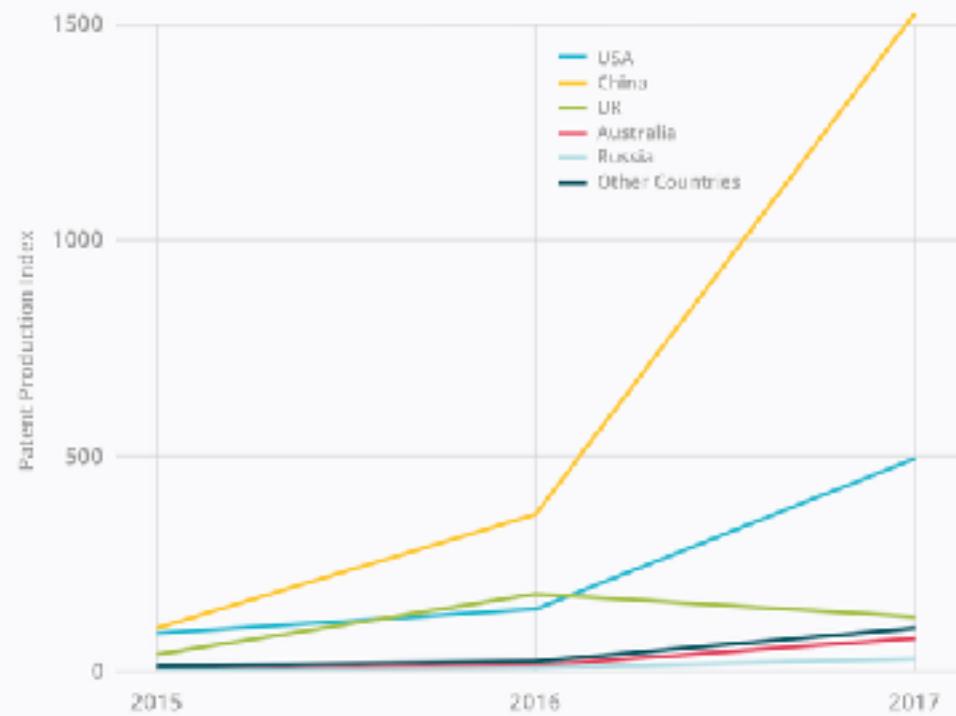
AI-Related Patent Production Index by Country, 2015-2017



Source: Startup Genome Global Startup Ecosystem Report 2018

China produced 3 times as many Blockchain and Crypto-related patent applications in 2017 than the U.S.

Blockchain and Crypto-Related Patent Production Index by Country, 2015-2017



Source: Startup Genome Global Startup Ecosystem Report 2018

Top 4 Countries for AI-Related Patents in 2017

- 1 China**
- 2 United States of America**
- 3 UK**
- 4 Australia**

Source: Startup Genome Global Startup Ecosystem Report 2018

Top 5 Countries for Blockchain Related Patents in 2017

- 1 China**
- 2 United States of America**
- 3 UK**
- 4 Australia**
- 5 Russia**

Source: Startup Genome Global Startup Ecosystem Report 2018


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Showing 1-10 of 600 schools sorted by Subject Rank

Best Global Universities for Engineering



These well-regarded universities from around the world have shown strength in producing research related to a variety of engineering topics. They include aerospace engineering, mechanical engineering, electrical engineering and civil engineering. All rely on the basic engineering concept of using math and science to solve problems. These are the world's best universities for engineering.

Source: U.S. News and World Report, October 2017

#1	Tsinghua University	QS#10
	Beijing	
	#64 – Best Global Universities	
#2	National University of Singapore	QS#7
	Singapore	
	#43 – Best Global Universities	
#3	Massachusetts Institute of Technology	QS#1
	Cambridge, MA	
	#2 – Best Global Universities	
#4	Nanyang Technological University	QS#5
	Singapore	
	#65 (tier) – Best Global Universities	
#5	University of California--Berkeley	QS#11
	Berkeley, CA	
	#4 – Best Global Universities	

MADE IN CHINA 2025



FROM RISE OF CHINA TO THE TRADE WAR

- U.S. and China are trying to mirror each other in terms of economic impacts of the trade war when US\$34Bn worth of tariff were imposed on each other's goods but U.S. has later add another US\$200Bn on July 10th, 2018.
- Initially, China targets soy beans, airplane, automobiles, etc. where as U.S. targets solar panels, steel, consumer goods, communication equipments, IT, robotics, etc.
- U.S. wants China to reduce trade deficit and lower tariff on American goods, cut subsidy on sectors mentioned in MIC 2025, and removes limitation on U.S. companies investment and equity share of Chinese companies.



- Initially ban sales of core components and use of android to ZTE for 7 years because of violation of Iran sanction and later ban removed with US\$1 billion fine and restructure of top management
- Ban sales of ZTE and Huawei phones on U.S. military base retail stores
- Investigate violation of Iran sanction by Huawei

Huawei signals global 5G network leadership intentions



TOM BALL REPORTER

23RD FEBRUARY 2018

+ INCREASE / DECREASE TEXT SIZE -



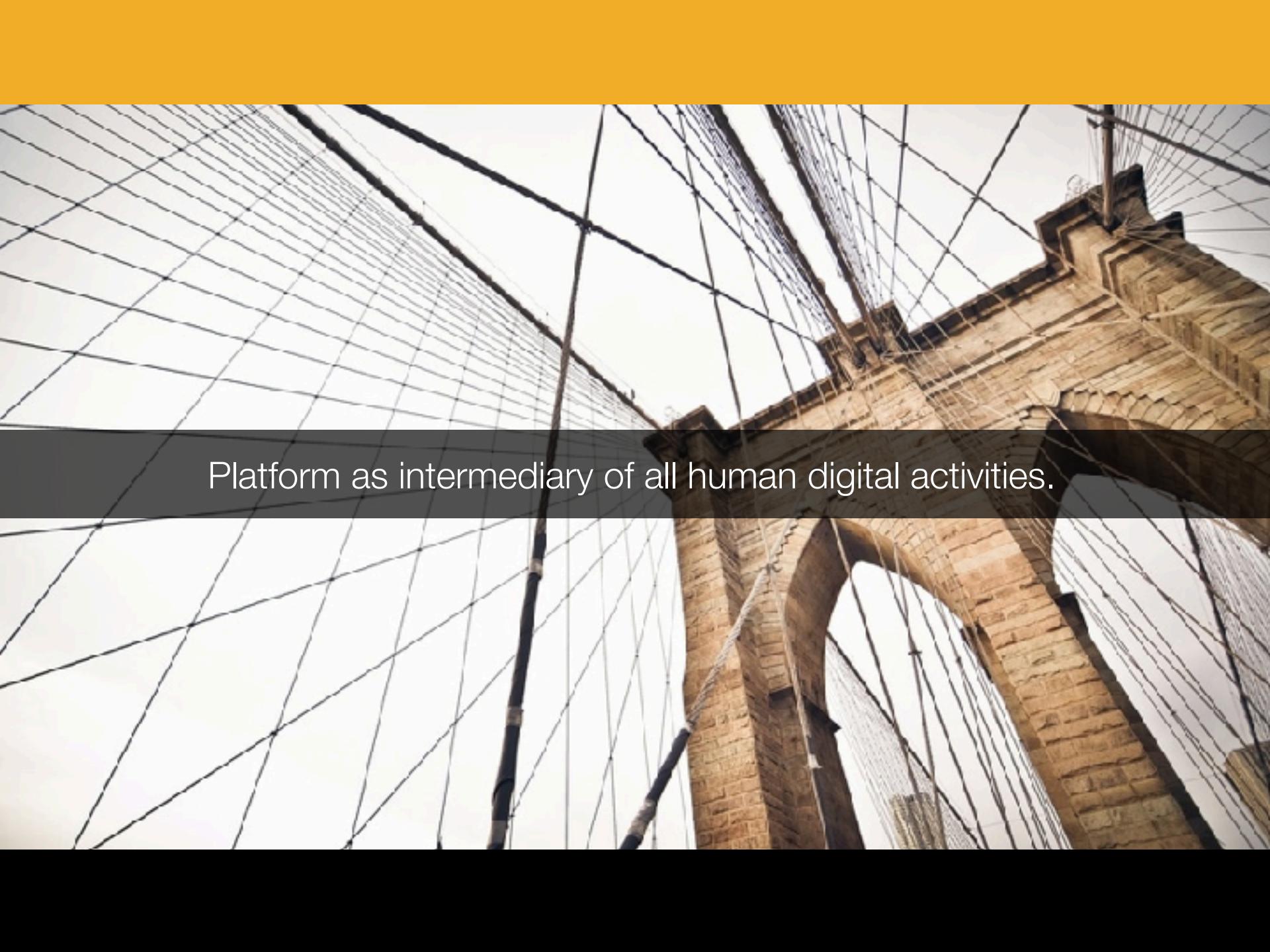
Source: Computer Business Review Feb 2018



Windows



Source: wikipedia.org

A photograph taken from a low angle, looking upwards at the iconic Brooklyn Bridge in New York City. The perspective emphasizes the height of the bridge, with its massive stone towers and intricate network of black steel cables stretching towards the sky. The sky is a clear, pale blue.

Platform as intermediary of all human digital activities.

Who Rules the Platform Will Rule the World

China vs. US – Top Players for Key Verticals



Source: China Internet Report 2018



Industry innovation and disruption comes from technology platforms

Synced

AI TECHNOLOGY & INDUSTRY REVIEW

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A collage of images showing the interior of Amazon Go and Alibaba Tao Cafe staffless shops. The images depict modern, minimalist storefronts with glass windows and doors, and interior views of shelves stocked with products and customer service areas. The collage is overlaid with a blue banner containing text.

AMAZON ALIBABA INDUSTRY UNITED STATES

Amazon Go vs Alibaba Tao Cafe: Staffless Shop Showdown

Amazon and Alibaba's brick-and-mortar-but-no-staff shops offer very different user experiences. To bring you first-hand feedback, Synced visited them.

Source: The Synced, Jan 22, 2018



Chinese Internet Giant Tencent Invests \$70 Million In Healthcare Group DXY

Catherine Shu @catherineshu / Sep 2, 2014

Comment



Source: Tech Crunch, Sep 2, 2014

The New York Times

Amazon Wants to Disrupt Health Care in America. In China, Tech Giants Already Have.

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By SARAH LYNN and PAUL HIGGINS JUN. 21, 2018

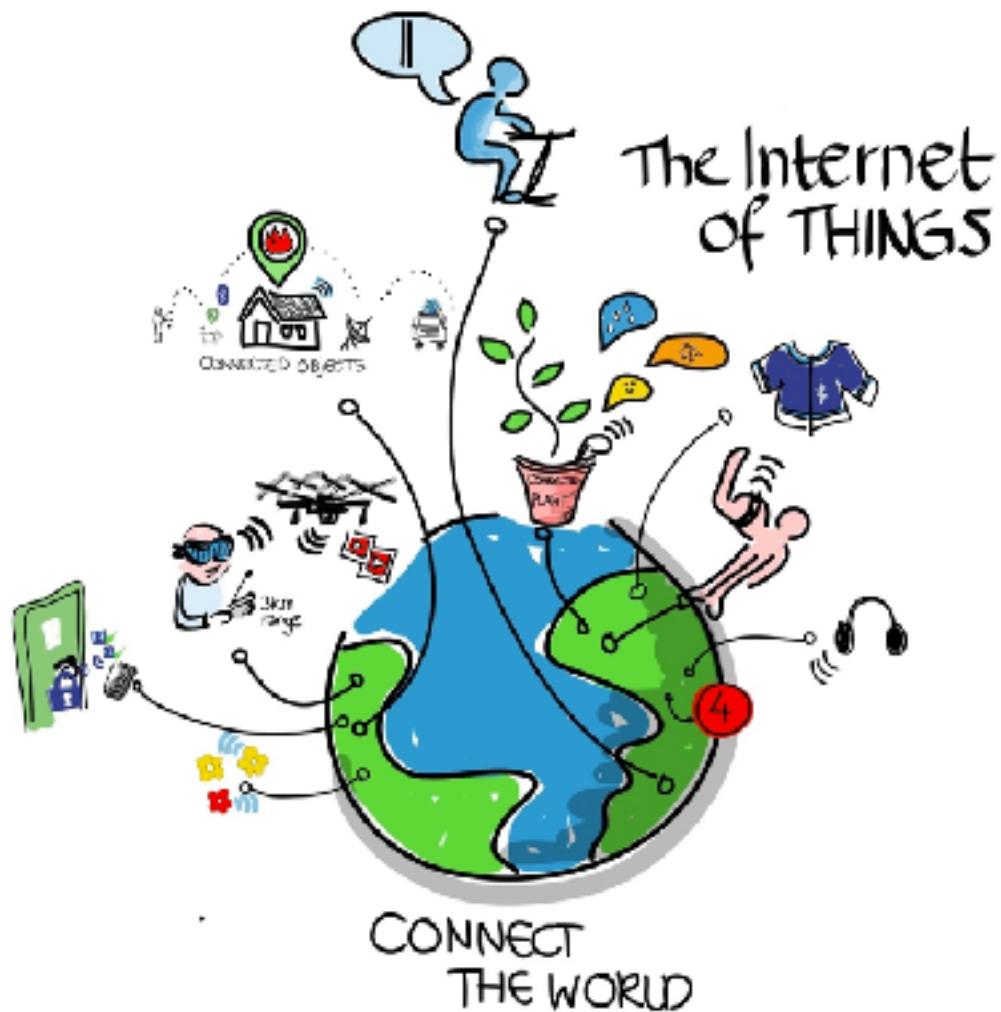


Source: The New York Times, Jan 31, 2018

**NEW TECHNOLOGIES KEEP EMERGING, BRINGING
ALONG DRASTIC CHANGES IN OUR CAREER AND LIFE**



CLOUD COMPUTING - BIG DATA - ARTIFICIAL INTELLIGENCE

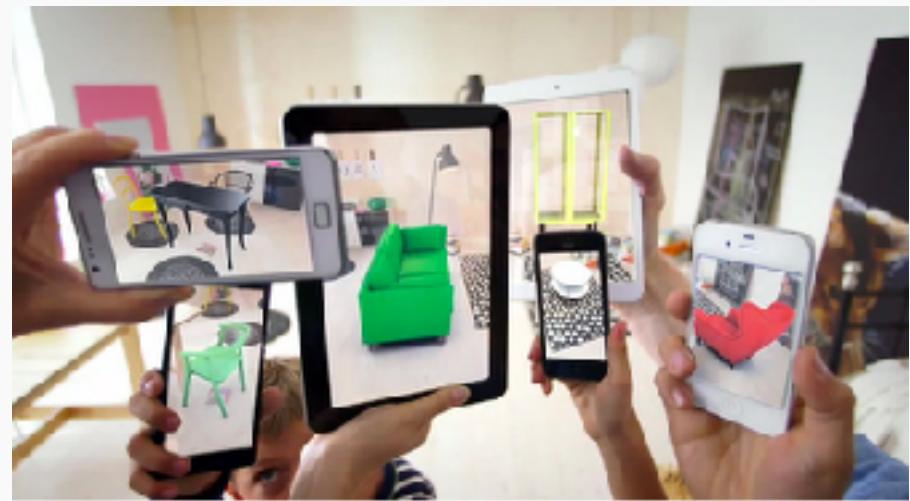


INTERNET OF THINGS



VIRTUAL REALITY

AUGMENTED REALITY



Source: Wikipedia



BLOCKCHAIN - BITCOIN

ARTIFICIAL INTELLIGENCE, BLOCKCHAIN, CLOUD COMPUTING, BIG DATA

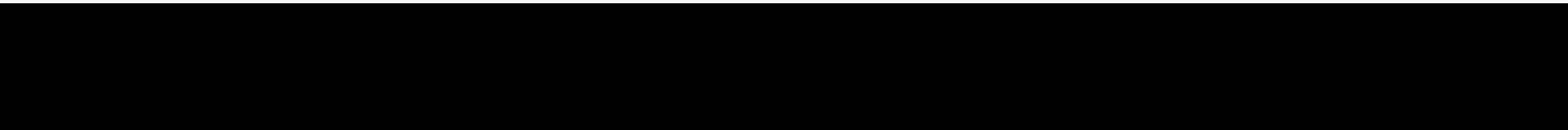
The ABCD of Emerging Infrastructure
for Global Politics, Trade and Finance

“WINNERS TAKE ALL”

PLATFORMS CROSSING BOUNDARIES AND TERRITORIES TO DISRUPT THE STATUS QUO







AT THE HEART OF THE PLATFORM IS SOFTWARE



ESSAY

THE WALL STREET JOURNAL.

Why Software Is Eating The World

By Marc Andreessen

August 20, 2011

This week, Hewlett-Packard (where I am on the board) announced that it is exploring jettisoning its struggling PC business in favor of investing more heavily in software, where it sees better potential for growth. Meanwhile, Google plans to buy up the cellphone handset maker Motorola Mobility. Both moves surprised the tech world. But both moves are also in line with a trend I've observed, one that makes me optimistic about the future growth...

RELATED VIDEO



Groupon Investor Marc Andreessen: 'No Tech Bubble'

In an interview with WSJ's Kevin Delaney, Groupon and LinkedIn investor Marc Andreessen insists that the recent popularity of tech companies does not constitute a bubble. He also stressed that both Apple and Google are undervalued and that "the market doesn't like tech."

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Intelligent Machines



Nvidia CEO: Software Is Eating the World, but AI Is Going to Eat Software

Source: MIT Technology Review, March 12, 2017

Jensen Huang predicts that health care and autos are going to be transformed by artificial intelligence.



ENTERPRISE | MEDIA | GOOGLE

No, Data Is Eating the World

Netflix and Google are still disruptive companies -- but no longer primarily because of their software.

BY DRIES BUYTAERT | JAN 7, 2015, 10:27PM EST



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**CROSSING BOUNDARIES AND
TERRITORIES TO DISRUPT
THE
STATUS QUO**



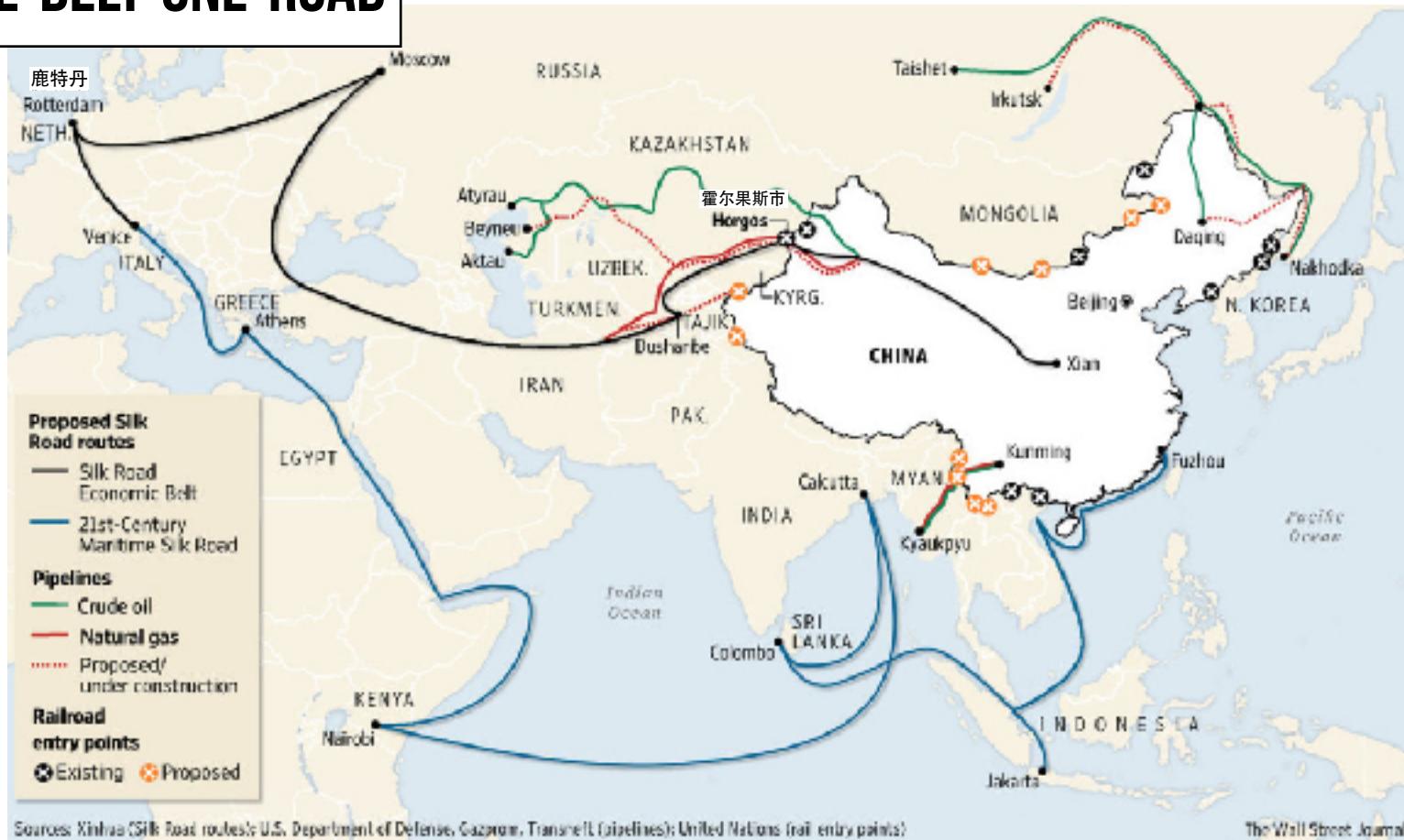


**BESIDES THE RAPID TECHNOLOGICAL AND SOCIAL CHANGES, THERE ARE
OTHER SEVERE CHALLENGES**



**GLOBALISATION RECEDES
LOCALISM TAKES OVER**

ONE-BELT-ONE-ROAD



GREATER BAY AREA

Guangdong-Hong Kong-Macao Bay Area





Can we cope with these changes?

**WHAT DO OUR STUDENTS NEED TO SURVIVE
AND SEEK FULFILMENT IN SUCH A WORLD?**



Search...



Student Loans

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Data

Science, Technology, Engineering and Math: Education for Global Leadership



"STEM" EDUCATION COMES TO THE RESCUE.

"[Science]" is more than a school subject, or the periodic table, or the properties of waves. It is an approach to the world, a critical way to understand and explore and engage with the world, and then have the capacity to change that world..."

— President Barack Obama, March 23, 2015

推動 STEM 教育

發揮創意潛能

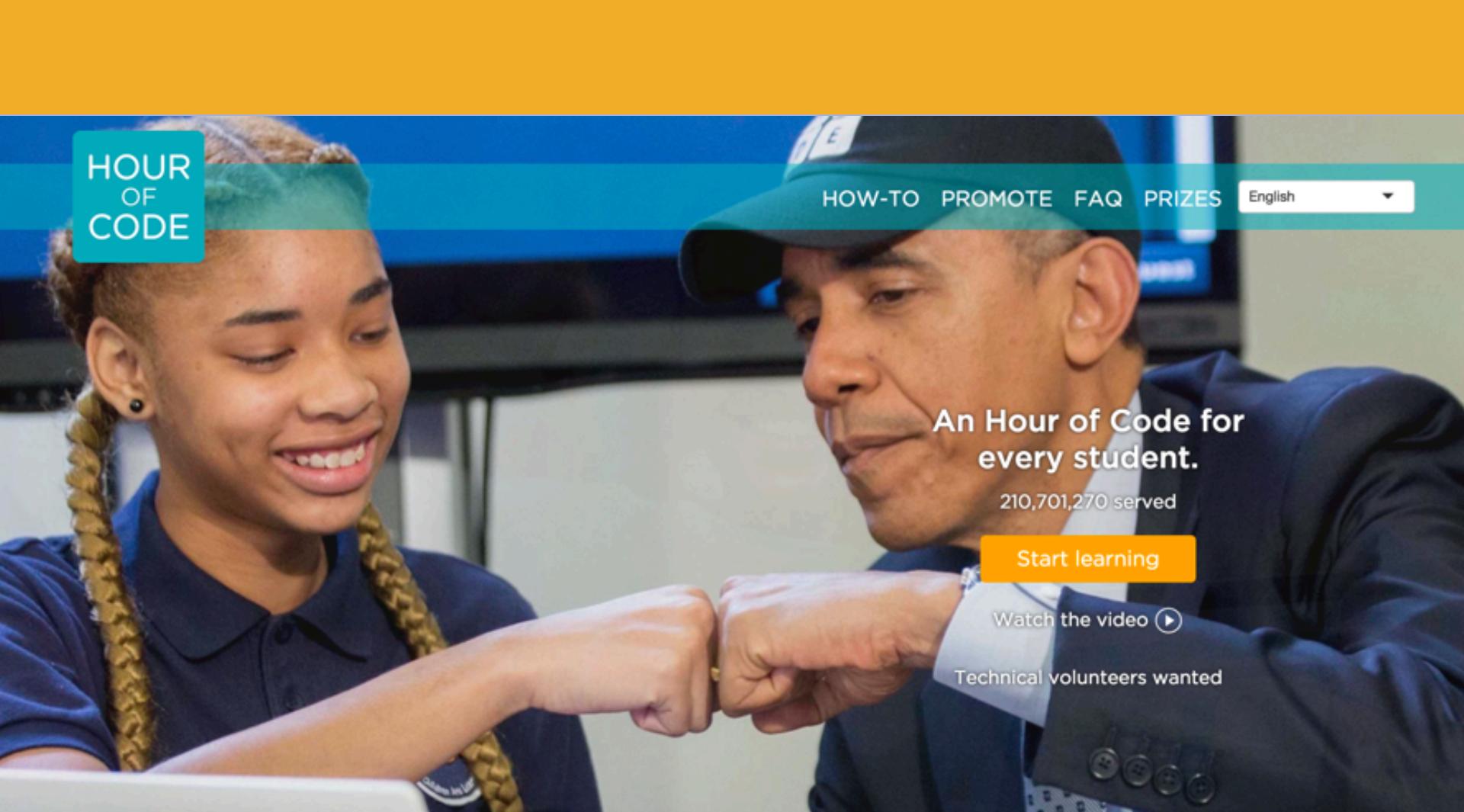
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課程發展議會
2015年11月

RESPONSE FROM THE HKSAR

November 2015



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Q&A 58



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「編程一小時」The Hour of Code HK – 讓大眾免費體驗的編程工作坊

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Hour of Code

2015.01 - Present



Hour of Code offers an opportunity for students to try computer science for one hour. It originates in the US and is organised by Code.org which is a non-profit organisation dedicated to expand computer science education. In one week in December 2013, 15 million students tried an hour of

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Create stories, games, and animations
Share with others around the world



A creative learning community with **12,847,273** projects shared

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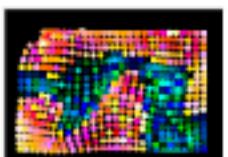
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[Speed Drawing: N...](#)
by taffygirl13



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by -MarzBarz-



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by Time_Tripper



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by Blackswift



[Bird](#)
by umannmann2002

Featured Studios

First Code Academy



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Our Full Summer Schedule

Age 6-8

Age 9-11

Age 12-14

Age 15+

Class	Class Code	Start Date	Time	Price	Location	Slots
Start from Scratch: Animation and Games	AT0615A	2015/06/15	9:30AM to 11:30AM	HKS4,920	Wanchai	closed
Start from Scratch: Animation and Games	AT0622P	2015/06/22	4:00PM to 6:00PM	HKS4,920	Wanchai	closed
Junior Inventors of Hardware	AT0622P2	2015/06/22	1:00PM to 3:00PM	HKS4,920	Wanchai	closed
Junior Inventors of Hardware	AT0629A	2015/06/29	9:30AM to 11:30AM	HKS4,920	Wanchai	closed
Junior Inventors of Hardware	AT0629P	2015/06/29	4:00PM to 6:00PM	HKS4,920	Wanchai	closed
Junior Inventors of Hardware	AT0706P	2015/07/06	4:00PM to 6:00PM	HKS4,920	Wanchai	closed
Start from Scratch: Animation and Games	AT0713A	2015/07/13	9:30AM to 11:30AM	HKS4,920	Wanchai	closed

Bitesize

Home > KS3 > Computer Science > Computational thinking

Introduction to computational thinking

Before computers can be used to solve a problem, the problem itself and the ways in which it could be resolved must be understood. Computational thinking techniques help with these tasks.



Revise



Test

< 1 2 >

What is computational thinking?

Computers can be used to help us solve problems. However, before a problem can be tackled, the problem itself and the ways in which it could be solved need to be understood.

Computational thinking allows us to do this.

More Guides

[Introduction to computational thinking](#)

[Decomposition](#) >

[Pattern recognition](#) >

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**WILL “STEM” AND COMPUTATIONAL THINKING BECOME OUR
STRONG SUIT?**

Google's AI Wins Fifth And Final Game Against Go Genius Lee Sedol

DANIEL METZ BUSINESS 03.16.16 6:01 AM

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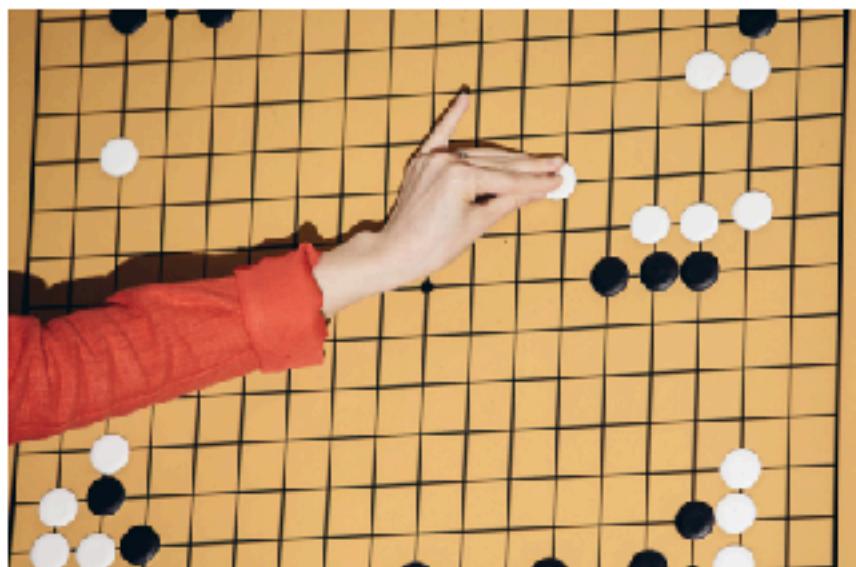


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GOOGLE'S AI WINS FIFTH AND FINAL GAME AGAINST GO GENIUS LEE SEDOL



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Microsoft Bets Its Future on a Reprogrammable Computer Chip
2 DAYS

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大姐大

文化 遠見 雜誌 天下文化

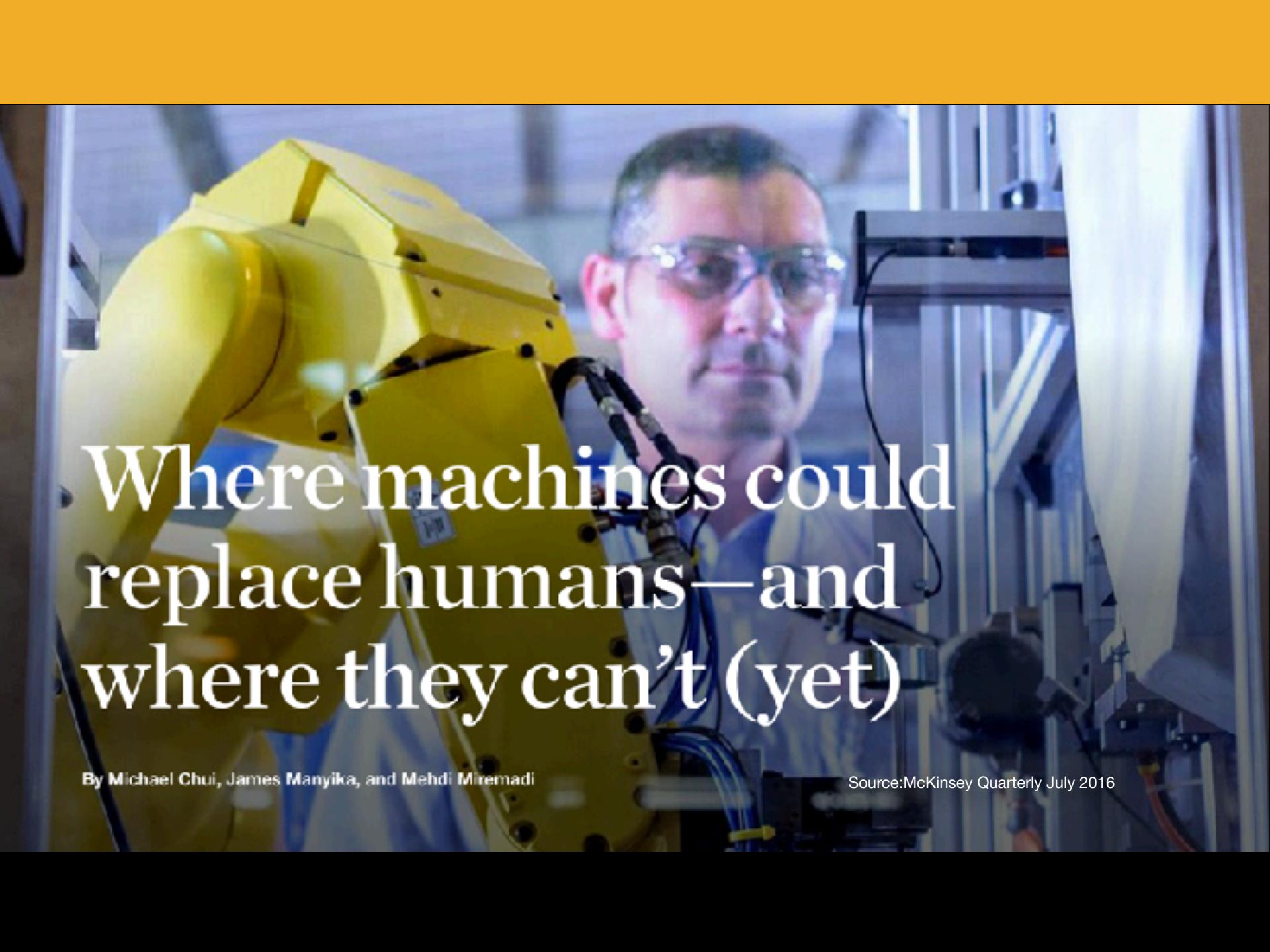
見 雜誌 天下文化

文化 遠見 人工智慧
來了

天下

所以这样延伸下去



A photograph showing a man with glasses standing behind a large yellow robotic arm in an industrial environment. The man is looking towards the camera. The background shows other industrial equipment and structures.

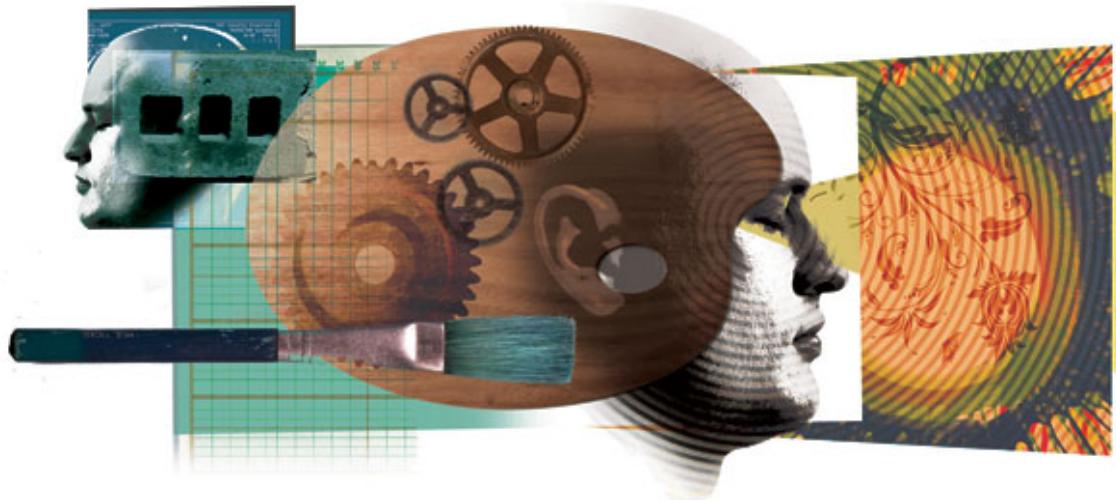
Where machines could replace humans—and where they can't (yet)

By Michael Chui, James Manyika, and Mehdi Miremadi

Source: McKinsey Quarterly July 2016

UNBOXED

Let Computers Compute. It's the Age of the Right Brain.



Margaret Riegel

By JANET RAE-DUPREE
Published: April 6, 2008

右脑时代来临!

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—Tom Peters, author of *In Search of Excellence*

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WITH NEW
MATERIAL

A
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NEW
MIND**



**WHY RIGHT-BRAINERS
WILL RULE THE FUTURE**

DANIEL H. PINK

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Is the Right Hemisphere the Next Big Thing?

by Tom Davenport | 12:14 PM April 10, 2008

右脑是否下一个大浪？

No. That's my answer, and I'm sticking to it. That's been my answer since I read Daniel Pink's *A Whole New Mind* back in 2005. Pink raised the idea that we residents of the Land of the Free and the Home of the Brave should give up on left-brain activities—in part because we can't compete with the Indians and the Chinese—and pursue only our right brain, creative sides. I had hoped that this idea had been abandoned, but now Janet Rae-Dupree has *revived it*.

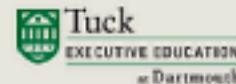
Rae-Dupree's *New York Times* article is titled, goofily, "Let Computers Compute: It's the Age of the Right Brain," and goes on to assert:

Source: Harvard Business Review

Why Good Leaders Make Bad Decisions

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Why Good
Leaders
Make Bad
Decisions

by Andrew Campbell
and Sydelle Finkelman

Nine Things Successful
People Do Differently

FEATURED PRODUCTS

The surprising thing Google learned about its employees – and what it means for today's students

By Valerie Strauss December 20, 2017  Email the author



(Marcio Jose Sanchez/AP)

"In 2013, Google decided to test its hiring hypothesis by crunching every bit and byte of hiring, firing, and promotion data accumulated since the company's incorporation in 1998. Project Oxygen shocked everyone by concluding that, among the eight most important qualities of Google's top employees, STEM expertise comes in dead last. The seven top characteristics of success at Google are all soft skills: being a good coach; communicating and listening well; possessing insights into others (including others different values and points of view); having empathy toward and being supportive of one's colleagues; being a good critical thinker and problem solver; and being able to make connections across complex ideas."

“No less a force in global business than IBM found, in a global study (conducted in **2010**) of more than **1,500 CEOs** from **60 countries** and **33 industries**, that the most important skill for successfully navigating our increasingly complex, volatile, and uncertain world is none other than **creativity**.”

Source: Fast Company March 28, 2013)

“No less a force in global business than IBM found, in a global study (conducted in **2010**) of more than **1,500 CEOs** from **60 countries** and **33 industries**, that the most important skill for successfully navigating our increasingly complex, volatile, and uncertain world is none other than **creativity**.”

Source: Fast Company March 28, 2013)

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STEM to STEAM: Resources Toolkit

Whether you are looking for resources on integrating science, technology, engineering, and math or on infusing the arts to transform STEM into STEAM, these curated compilations will help you plan different approaches to integrated studies.

ORIGINAL PUBLISHED: MAY 21, 2014 | UPDATED: JANUARY 20, 2016

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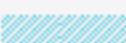
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Turn STEM to STEAM with the Design Thinking Process

 METHODS/APPROACHES2 years ago  Tracy Hare

2 Comments

As I gear up to team-teach a STEAM course for the first time next semester, I've been thinking about what it really means to integrate all of these disciplines together. What does it really look like to teach in a collaborative environment where the focus is process, not product? How do I encourage the use of the 4 Cs while maintaining the integrity of my art curriculum?

Trying to find some answers, I've stumbled upon too many articles and resources arguing that the arts should be a "small a" in STEAM. Or, even worse, that exclude the arts because the authors feel they don't hold the same weight as the other subjects. This conundrum not only pops up in the STEM/STEAM conversation, but also with initiatives like Project-Based Learning and Makerspaces. Art can be a powerful tool in these collaborative frameworks. As art teachers, we should take



Flipping the Art Room

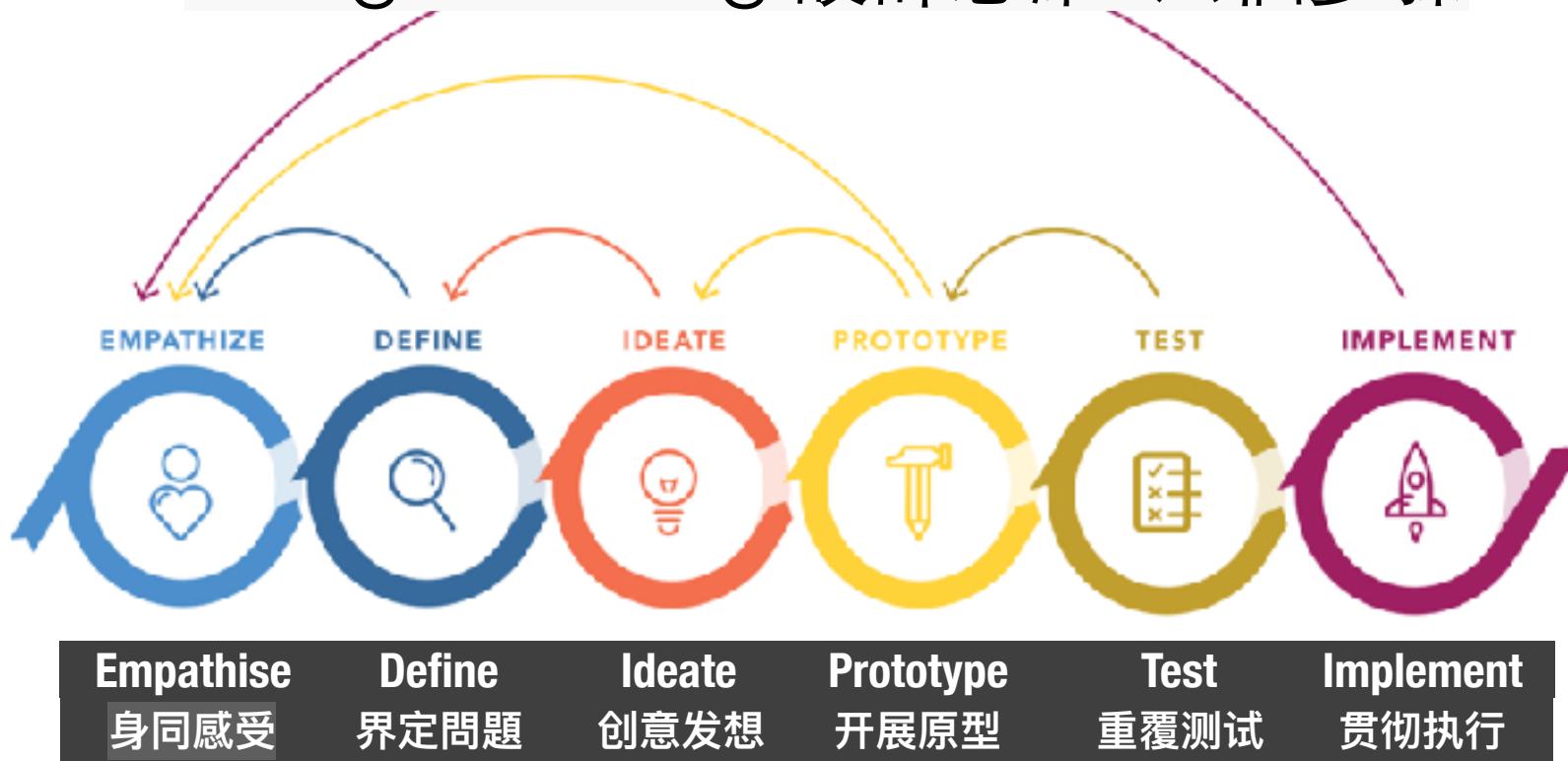
Flipped teaching allows you to spend class time doing what you do best: teaching!

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WHAT IS DESIGN THINKING?



Design Thinking 設計思維: 六個步驟



SOURCE: DESIGN THINKING 101 NNGROUP.COM

在这过程当中要回答几个重要问题



谁人的问题?谁人的需要?问题情境怎样形成?有那些持份者?用甚么产品或服务去满足需要?去解决问题?为何要满足这需要和解决这问题?当中能创造甚么价值?



怎样去满足需要?有没有关键的技术?如何找资源?如何建立系统把资源启动起来?如何突出解决方案,比其他方案更有竞争力,拿到更多的资源?



如何定价?生产多少?如何平衡成本及增长、创造经济性及非经济性——例如社会和环境的价值?

Adapted from IDEO Design Thinking Toolkit

The STEAM Journal

Volume 3
Issue 1 *Sediment*

Article 11

November 2017

Creating STEAM with Design Thinking: Beyond STEM and Arts Integration

Danah Henriksen
Arizona State University

DESIGN THINKING

Design Thinking in Education: Empathy, Challenge, Discovery, and Sharing

As a model for reframing methods and outcomes, design thinking reconnects educators to their creativity and aspirations for helping students develop as deep thinkers and doers.

By [Sesile Wise](#)

February 5, 2016



Photo credit: Scott McLeod via Flickr (CC BY 2.0)

New Designs for School

Design Thinking Infiltrates K-12 Education

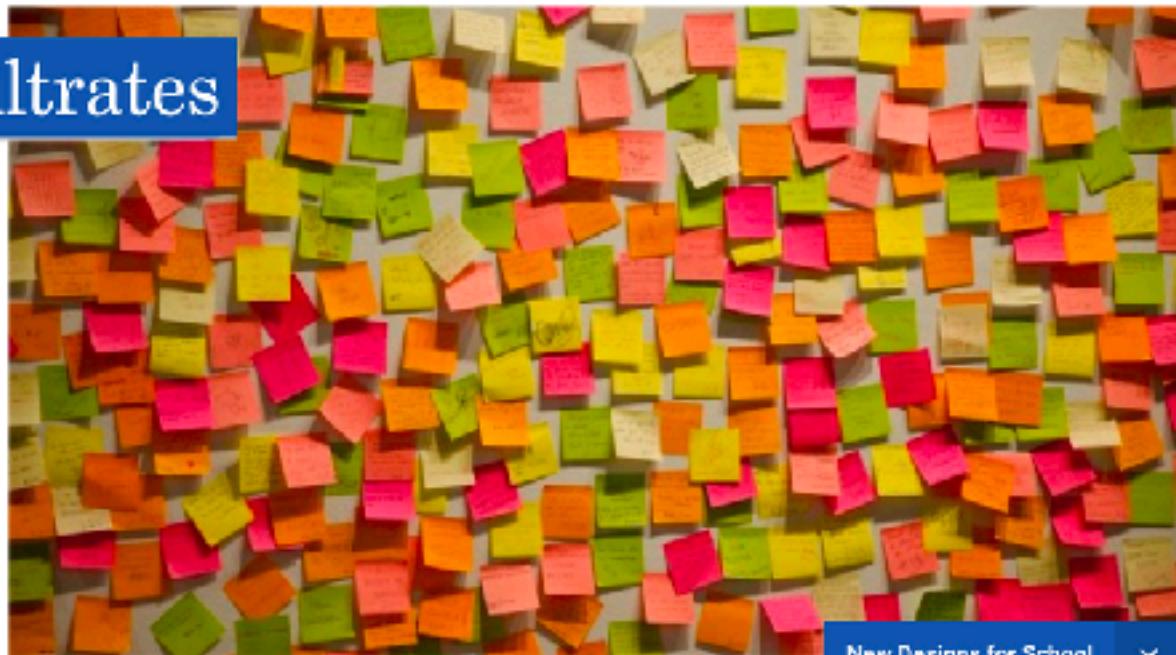


Michael Nehoff
Educator & Student
Advocate in Friant, CA

July 23, 2015

Topics

Design Thinking



New Designs for School



MAP

Navigate a map of schools, programs, and resources around the world.

SCHOOLS & PROGRAMS

Browse the directory of schools and programs that teach design thinking.

RESOURCES

Browse the directory of tools, services, and research related to design thinking in schools.

DesignThinking inSchools^{K12}

Design thinking is a powerful way for today's students to learn, and it's being implemented by educators all around the world. This site is a directory of schools and programs that use design thinking in the curriculum for K12 students.

 Search Search Schools & Programs Resources



趙永佳：中學教育「職業化」 裝備青 年覓理想

2018年1月15日 星期一

“..最近教育大學一個研究團隊完成一項大型研究項目（註），提出「中學教育職業化」（vocationization of secondary education）概念，以求在21世紀社會及經濟變遷下裝備本港同學面對升學及就業挑戰。他們提出幾項建議，值得在這裏為大家總結一下作參考。

首先他們認為要加強科技教育。不過他們所強調的科技教育並不是傳統的狹義工藝傳授或一般理科課程，而是現代的設計思考（design thinking）訓練，重視以人為本，為各種議題尋求解決創新方案；並以個案研習方法，以求令同學學會決策、解難、溝通等科技素養（technological literacy）...”

趙永佳教授是香港教育大學社會學講座教授、香港研究學院聯席總監

FROM STEM TO STEAM
FROM COMPUTATIONAL THINKING TO DESIGN THINKING

LET'S TAKE A BREAK



The surprising thing Google learned about its employees – and what it means for today's students

By Valerie Strauss December 20, 2017  Email the author



(Marcio Jose Sanchez/AP)

"In 2013, Google decided to test its hiring hypothesis by crunching every bit and byte of hiring, firing, and promotion data accumulated since the company's incorporation in 1998. Project Oxygen shocked everyone by concluding that, among the eight most important qualities of Google's top employees, STEM expertise comes in dead last. The seven top characteristics of success at Google are all soft skills: being a good coach; communicating and listening well; possessing insights into others (including others different values and points of view); having empathy toward and being supportive of one's colleagues; being a good critical thinker and problem solver; and being able to make connections across complex ideas."

中國P2P平台接連倒閉，投資者赴北京抗議遭打壓

CAO LI, 艾莎, 蔡曉黎

2015年8月10日



THE 21ST SKILLS FOR NURTURING ENTREPRENEURS, INNOVATORS AND MAKERS



We're taking teaching and learning *Above & Beyond*

Today's students are moving beyond the basics
and embracing the 4C's — "super skills" for the 21st century!



Caring

Having empathy toward others in a way that enables one to look at problems from other people's perspectives



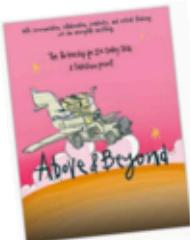
Communication

Sharing thoughts, questions, ideas, and solutions



Collaboration

Working together to reach a goal — putting talent, expertise, and smarts to work



For more 4C resources from the Partnership for 21st Century Skills, including the animated film ABOVE & BEYOND by Peter H. Reynolds & FableVision, journey to www.p21.org/4Cs



Critical Thinking

Looking at problems in a new way, linking learning across subjects & disciplines



Creativity

Trying new approaches to get things done equals innovation & invention



Courage

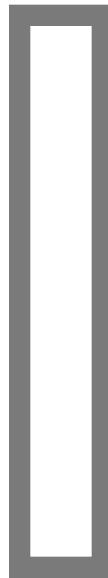
Daring to experiment beyond one's comfort zone and to assume leadership and responsibility



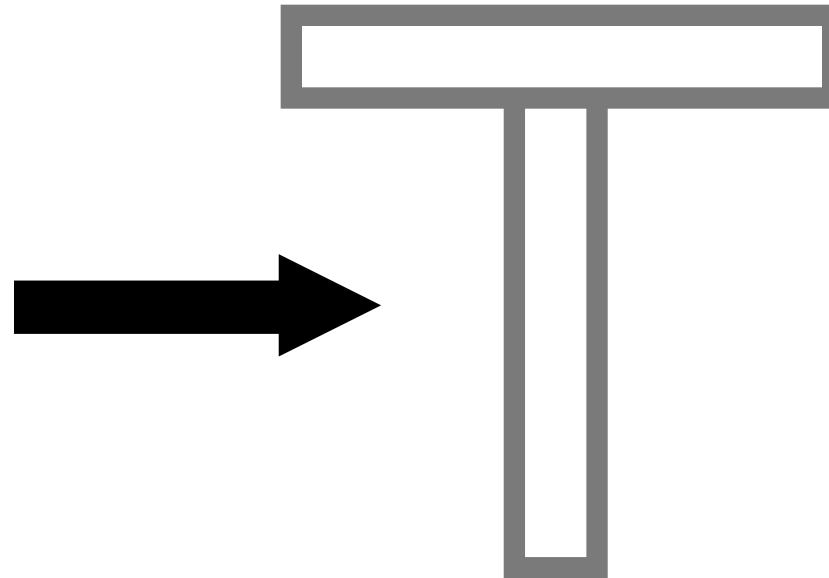
PARTNERSHIP FOR
21ST CENTURY SKILLS



**I-Shaped Talent of
the Industrial Age**



**T-Shaped Talent of
the Network Age**



The Power of an Interdisciplinary Team



Strategy



Share on Facebook



Tweet on Twitter

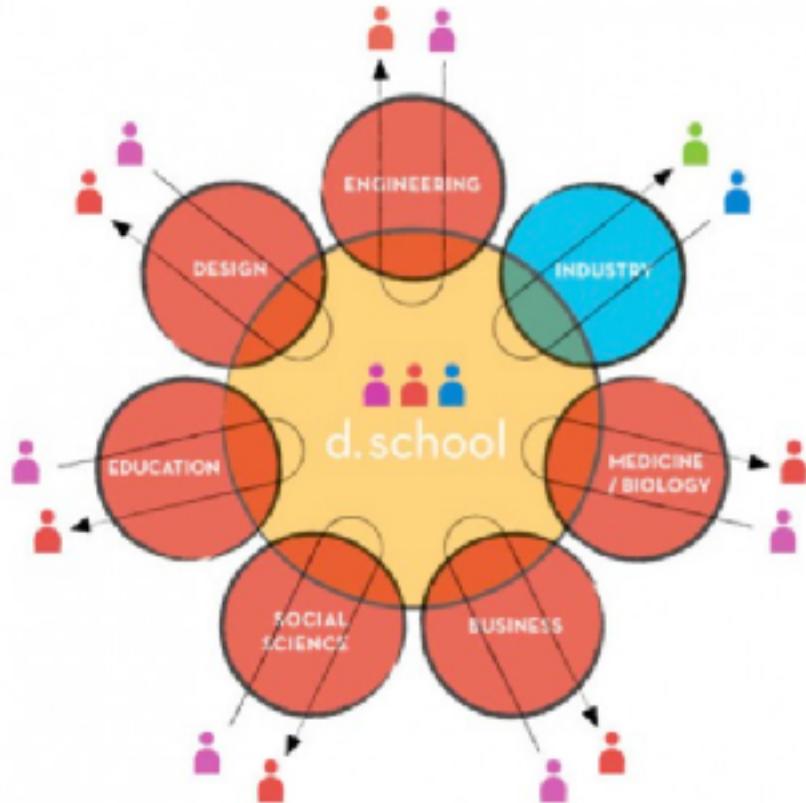
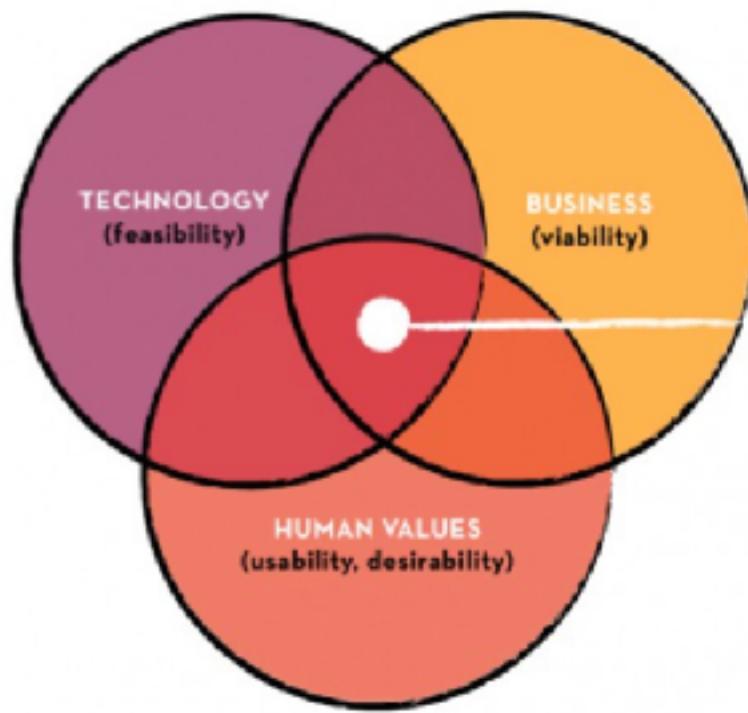
IDEO CEO Tim Brown: T-Shaped Stars: The Backbone of IDEO's Collaborative Culture

By [morten t. hansen](#) - January 21, 2010

IDEO is a world-leading design firm, with offices in Palo Alto, San Francisco, London, Boston and Shanghai, among other places. Consistently ranked as one of the most innovative companies in the world, IDEO is famous for its method of innovation based on intense cross-disciplinary project work. To pull this off, the company has long practiced the art of collaboration and the development of a certain kind of talent: T-shaped people.

In the interview to follow, IDEO CEO Tim Brown talks about this radically different approach to talent management.

What's a T-shaped person?



Source: Stanford d.School







SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION

in the Development of the Innovation and Technology Ecosystem of Hong Kong

“... Innovation and scientific research, as well as the ability to solve complex problems nowadays require multidisciplinary training and possession of so-called “T-shaped” knowledge. However, over two-thirds of HKDSE students took only two Electives, comparing poorly to an average of four subjects in addition to Languages and Mathematics previously (under the HKCEE8 system). The narrowed knowledge base seriously weakens the foundation required for articulation into post-secondary education. “

--- Extracted from the Executive Summary

BRIGHT SIDE

Inspiration ▾

Creativity ▾

Wonder ▾



Finland Will Become the First Country in the World to Get Rid of All School Subjects

Source: Bright Side website

FROM COMPUTATIONAL THINKING TO DESIGN THINKING

FROM STEM TO STEAM

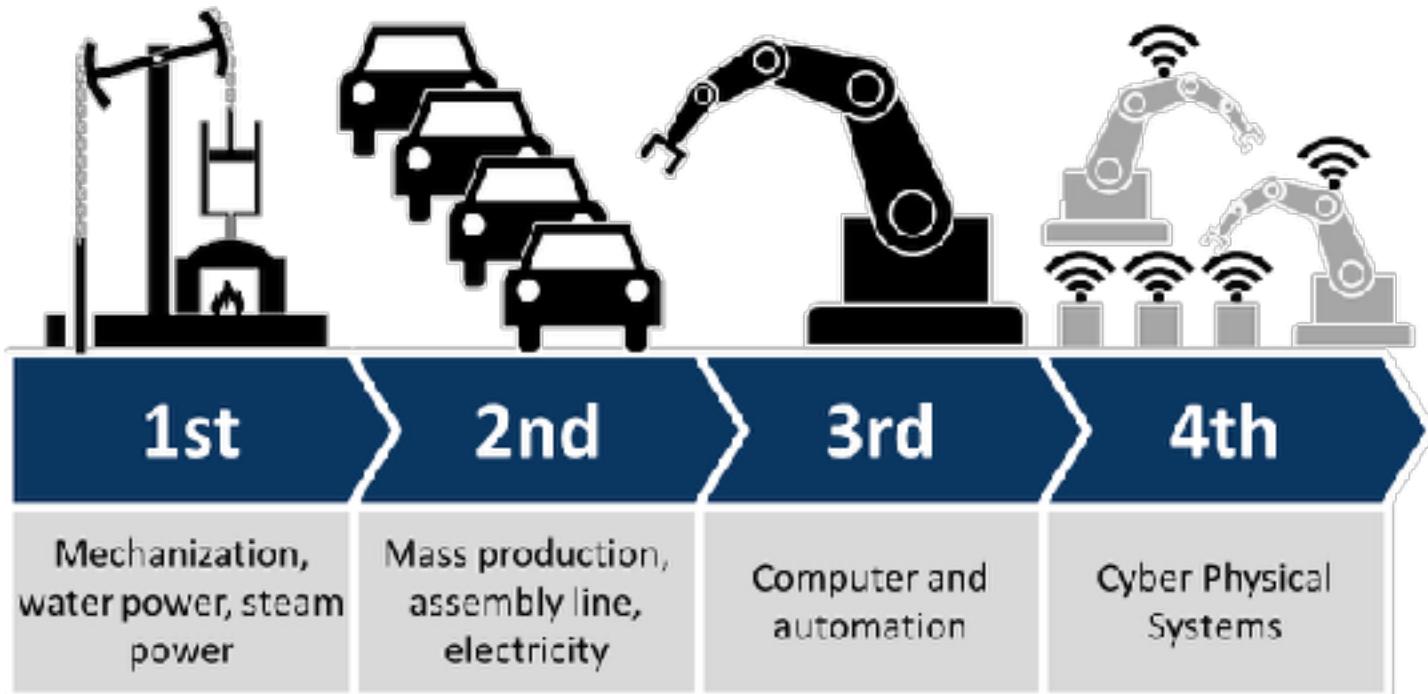
FROM 4Cs TO 6Cs

FROM I-SHAPED TO T-SHAPED

What are the implications of these shifts for COM5961?

**We need to empower future T-shaped talents
to excel in a world connected with
smart cities, products, services, and systems**

HARDWARE: INDUSTRY 4.0 AND IoT



Source: Wikipedia Commons



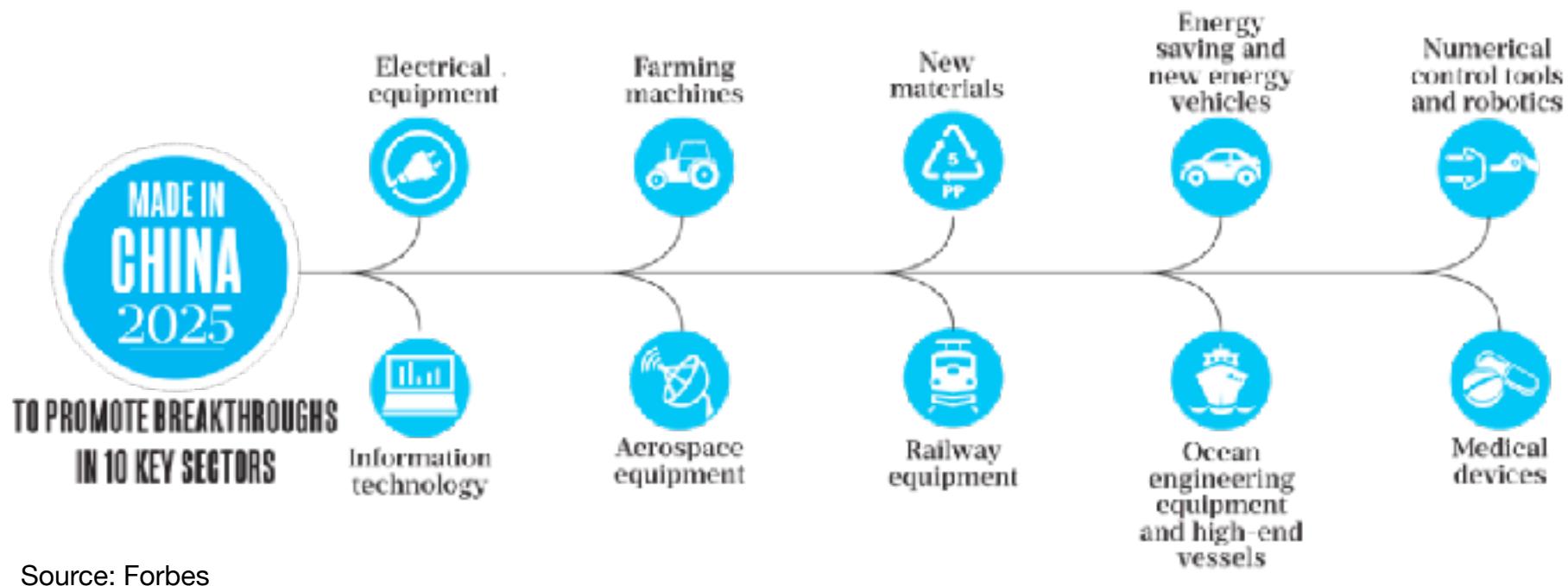
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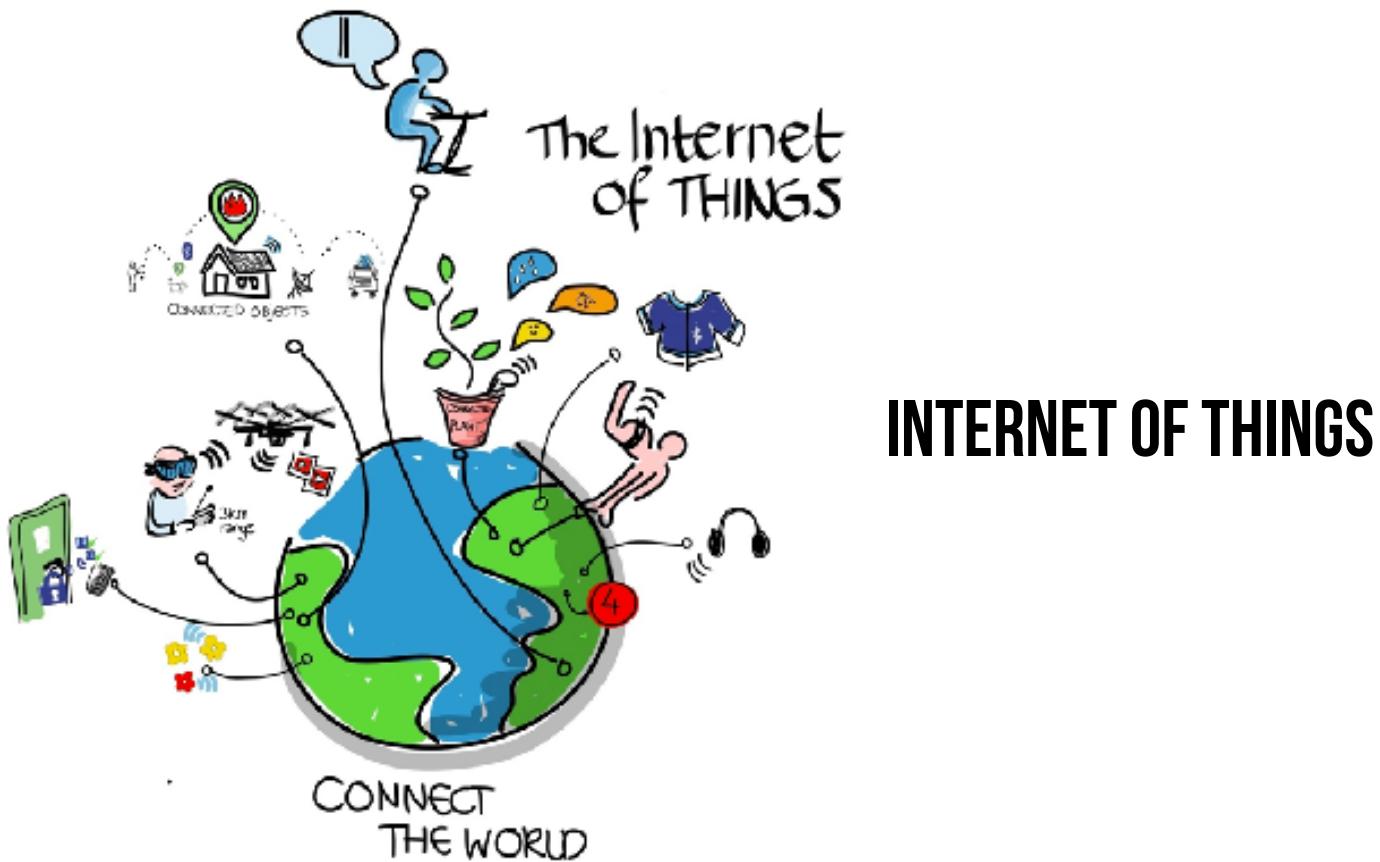
**MADE IN
CHINA
2025**

Industry 4.0

Source: china.org.cn



Source: Forbes



B-TO-B TO B-TO-C



Amazon Echo Dot



Apple HomePod



Source: Xiaomi Smart Home



ome

Source: portal gda (Flickr)

Source: Wikipedia Commons



ARTWORK: CHANDRAKIRAN PAUL, DISTER

COMPETITION

How Smart, Connected Products Are Transforming Competition

by Michael E. Porter and James E. Heppelman

FROM THE NOVEMBER 2014 ISSUE

Source: Harvard Business Review



HARVARD | BUSINESS | SCHOOL



FACULTY & RESEARCH



FACULTY

RESEARCH

FEATURED TOPICS

ACADEMIC UNITS

FIND

Faculty, publications, topics



ARTICLE | HARVARD BUSINESS REVIEW

How Smart, Connected Products Are Transforming Competition

by Michael E. Porter and James E. Heppelman

PRINT SHARE EMAIL

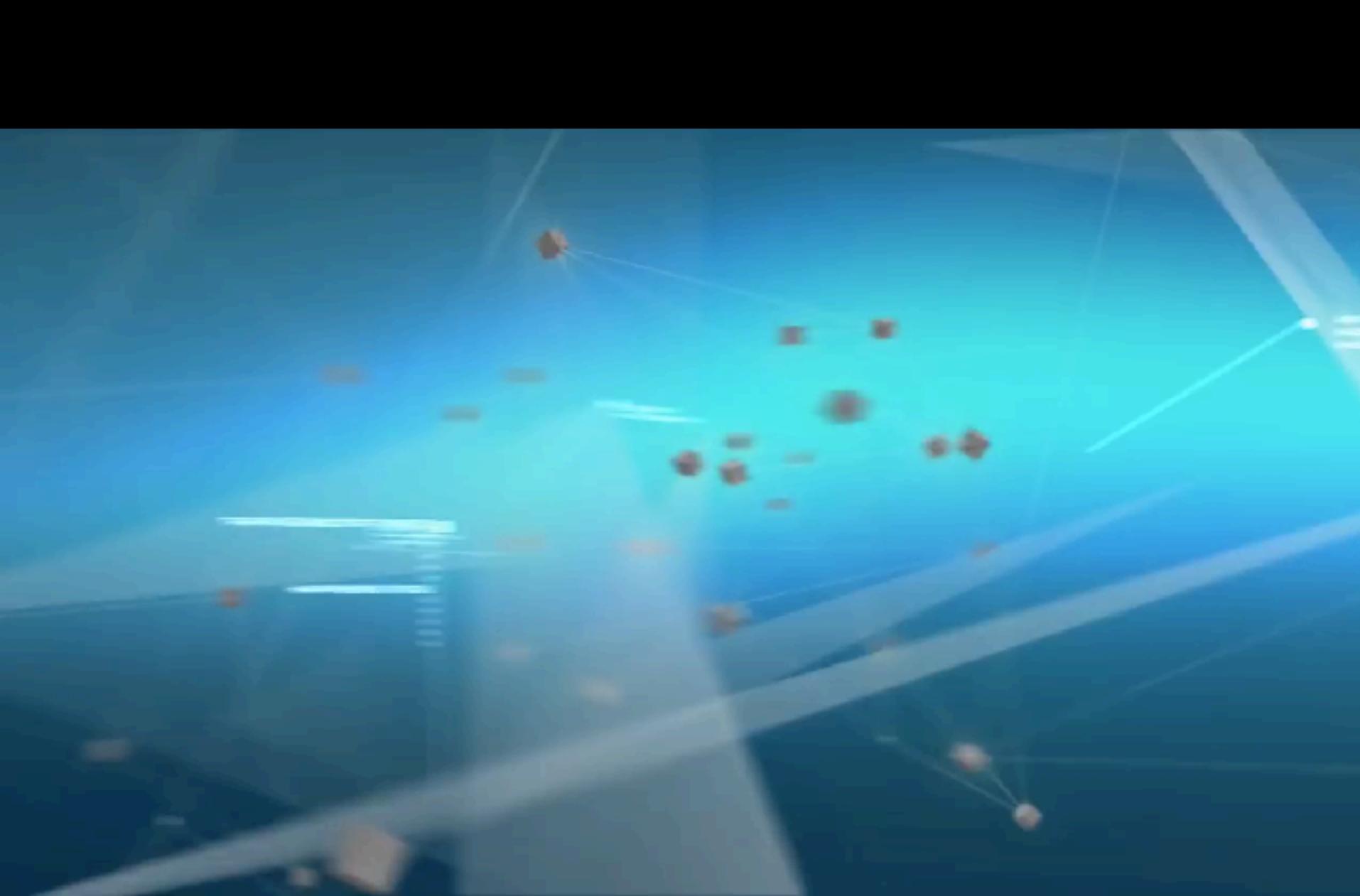
About the Author



Michael E. Porter
Strategy

[VIEW PROFILE](#)

[VIEW PUBLICATIONS](#)

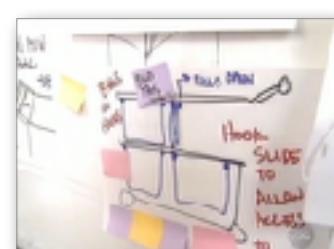
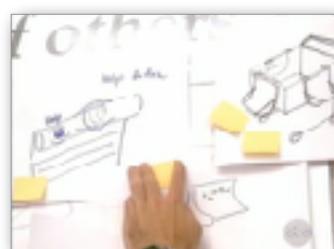
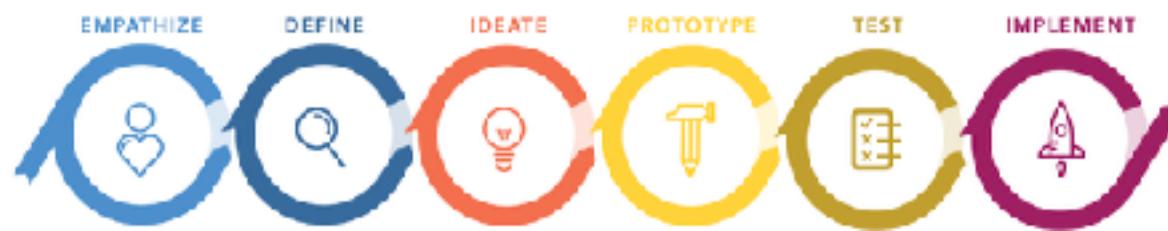


HOW DESIGN THINKING CAN MAKE A DIFFERENCE IN SUCH A WORLD WE'RE LIVING IN

A wire shopping cart filled with fresh vegetables like a zucchini, yellow squash, and tomatoes.

Case 1: Redesigning the Shopping Cart

Source: IDEO





谁人的问题?谁人的需要?问题情境怎样形成?有那些持份者?用甚么产品或服务去满足需要?去解决问题?为何要满足这需要和解决这问题?当中能创造甚么价值?



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如何定价?生产多少?如何平衡成本及增长、创造经济性及非经济性——例如社会和环境的价值?

Adapted from IDEO Design Thinking Toolkit

USER EXPERIENCE AS A JOURNEY

A blurred background image of a train interior. Rows of grey seats are visible, with some passengers' heads and shoulders in the distance. The overall atmosphere is soft and out of focus.

Case 2: Redesigning the Train Interior

Source: IDEO



Acela for Amtrak

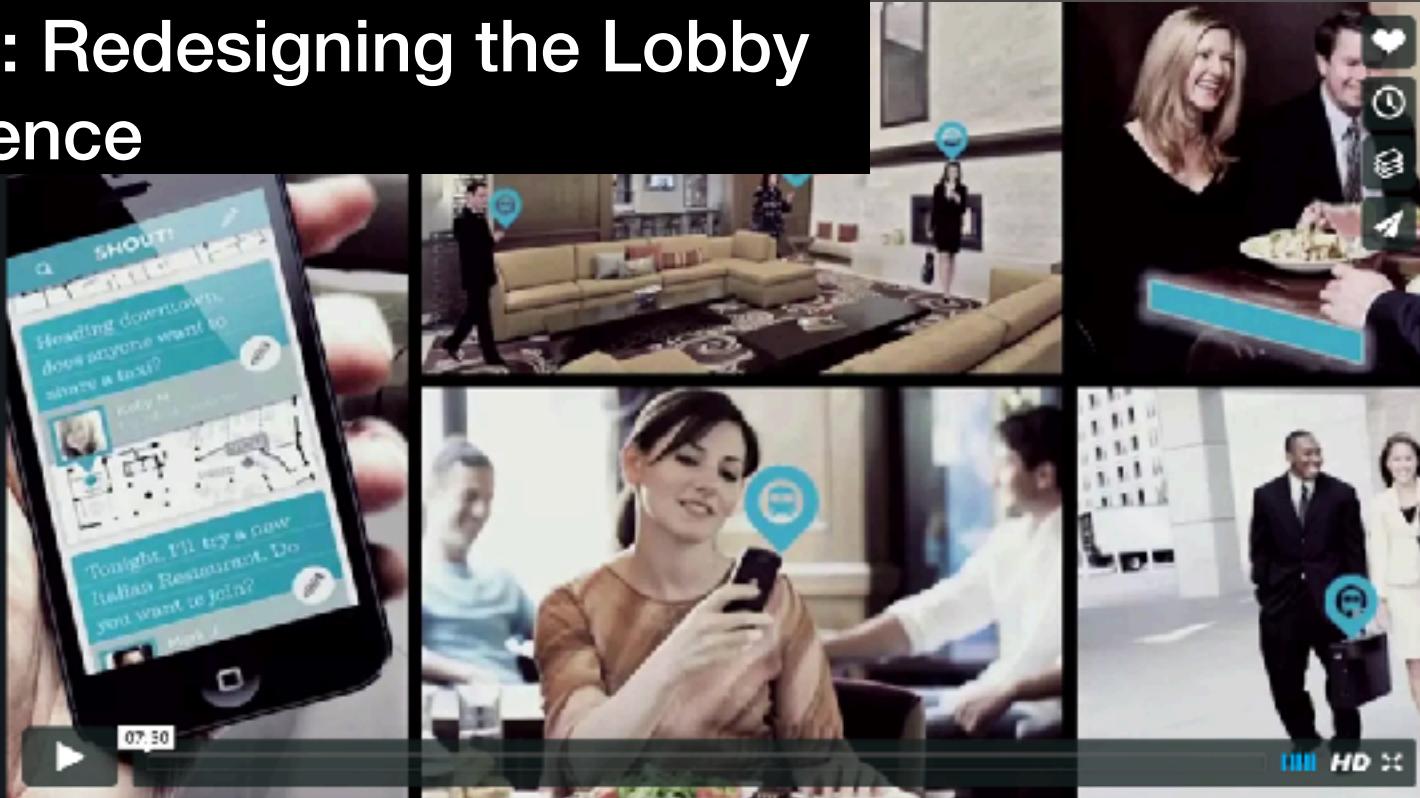
Interiors for high-speed train

- 
1. Learning (about routes, times etc.)
 2. Planning
 3. Starting
 4. Entering
 5. Ticketing
 6. Waiting
 7. Boarding
 8. Riding
 9. Arriving
 10. Continuing (on their journey).

Source: IDEO

HOW TECHNOLOGY AND DATA ADDS VALUE TO THE CUSTOMER EXPERIENCE

Case 3: Redesigning the Lobby Experience



Exploring the Hotel Experience of the Future with Marriott Hotels

Source: MIT Mobile Experience Lab



FIELD STUDY OBSERVATION AT THE HOTEL

We noticed a desire for customer autonomy, contextualized experiences, and public privacy.

Source: MIT Mobile Experience Lab



Source: MIT Mobile Experience Lab

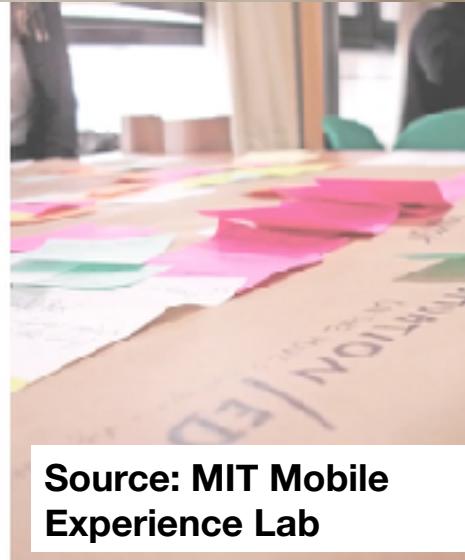
avid social explorer

Gen Y travelers seeking personalized yet serendipitous experiences, good company to share them with, and the ability to capture and celebrate them.



bored lobbygoer in transition

Anyone using the lobby as a meeting place or gathering point, looking to pass the time and avoid awkwardness.



Source: MIT Mobile Experience Lab

PROBLEM STATEMENT:

How might we make marriott guests
feel like **nodes within a network**
while encouraging
interactions in the lobby space?

**Source: MIT Mobile
Experience Lab**

HOME

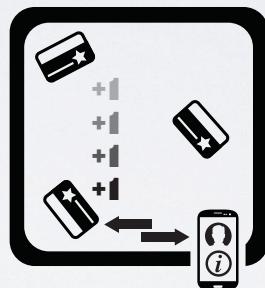


Joins loyalty program, creates a profile & installs phone app.

LOBBY



Given physical loyalty card on check-in — stores profile info, points & doubles as room key.



(Can be done in lobby or room)
Set availability via orientation of card. (Lobby only) Loyalty points awarded to cards at the same table. Table lights up to show activity, interests shown on table & lobby display map. Profiles added to app network.

ROOM

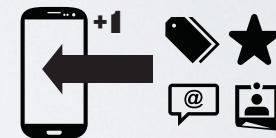
BOOKING

CHECK-IN

MEETUP

RETURN

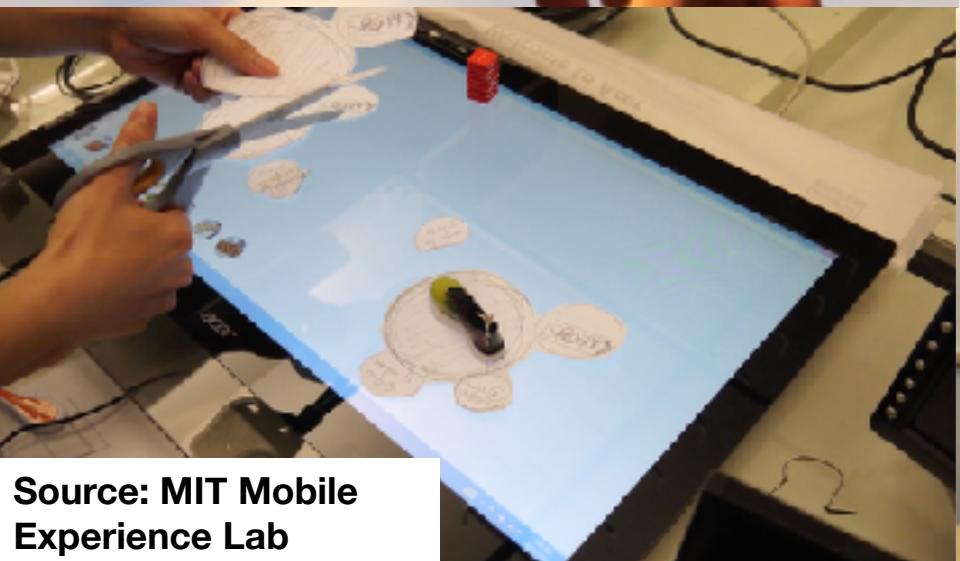
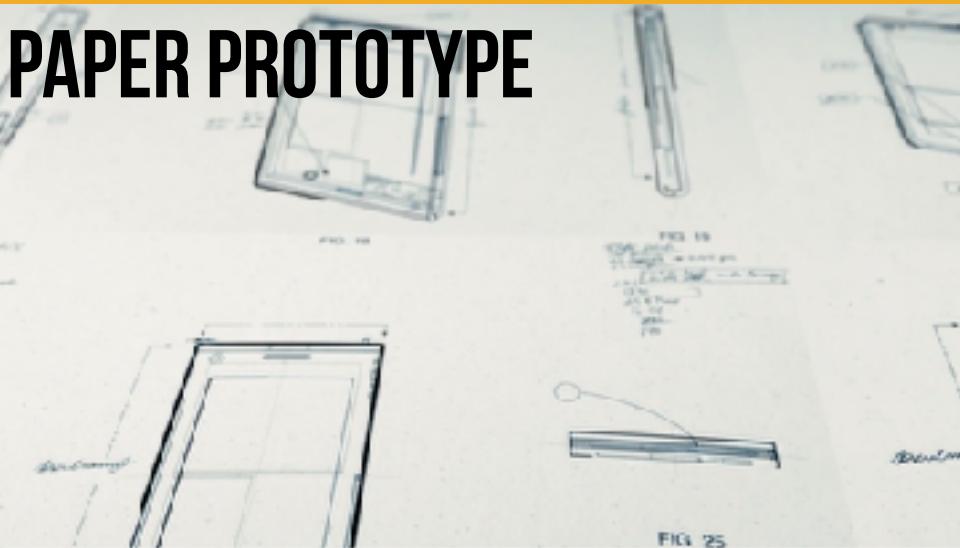
INTERACTIONS OUTSIDE HOTEL



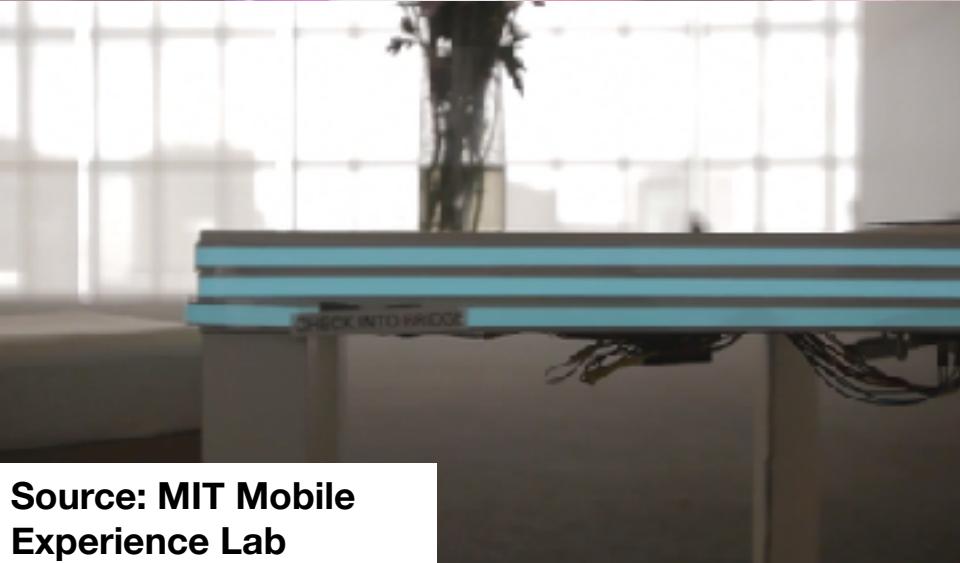
Prompted by app to tag places visited, ratings & social media for points — added to in-app database of recommendations.

Source: MIT Mobile Experience Lab

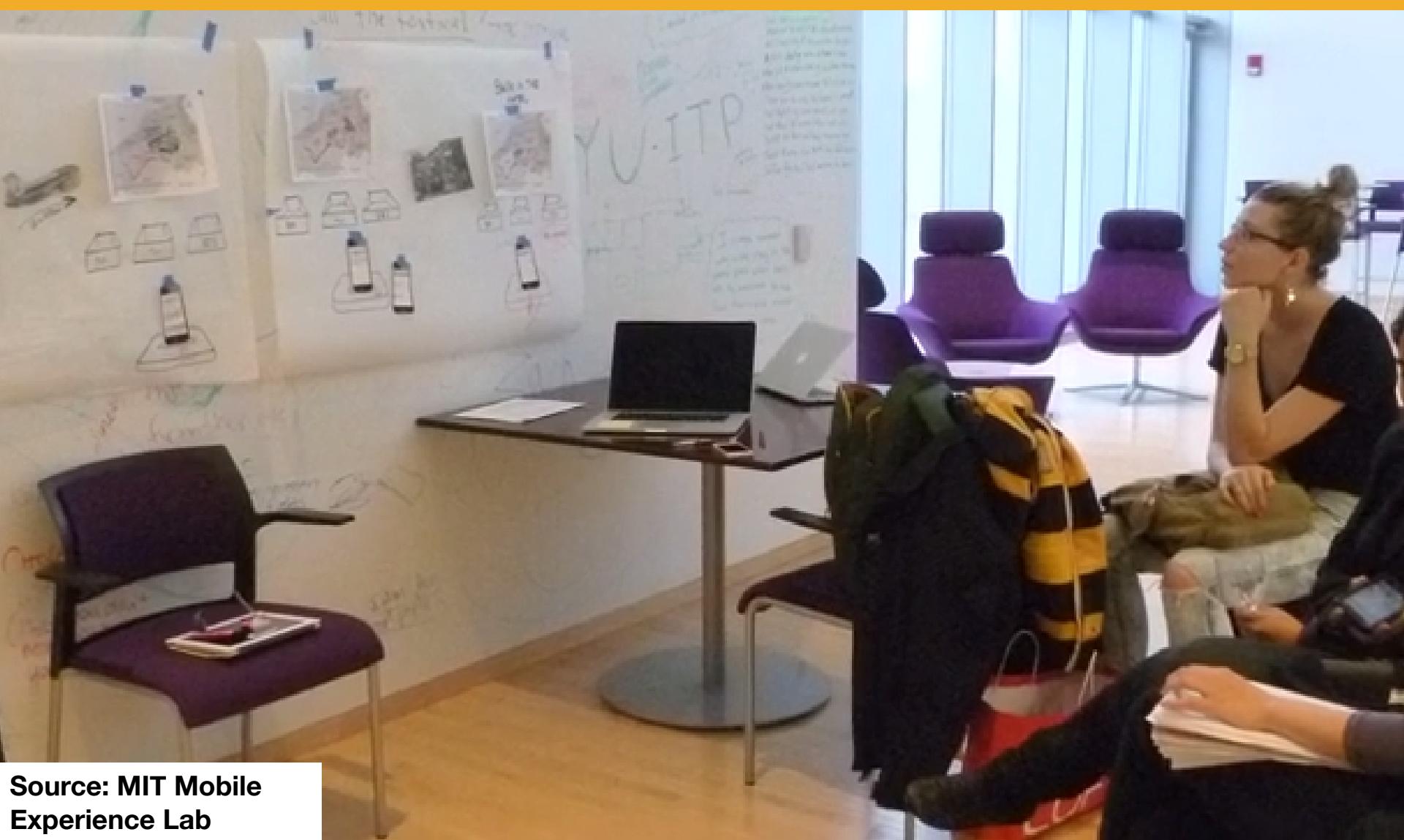
SKETCH AND PAPER PROTOTYPE



Source: MIT Mobile Experience Lab

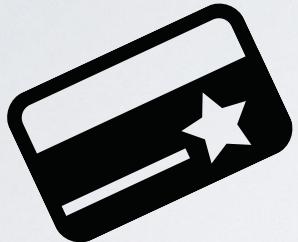


Source: MIT Mobile
Experience Lab



**Source: MIT Mobile
Experience Lab**

THE CARD



room key
point counter
status symbol

THE TABLE



the social hub

THE APP



shared memory
social networks
recommendations

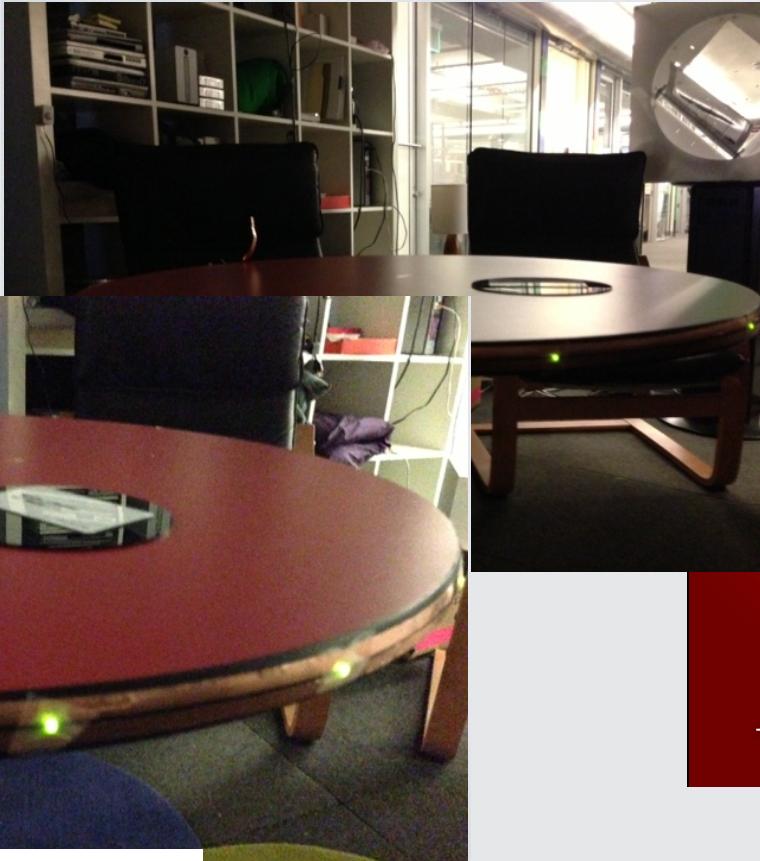
LOYALTY

INTERACTION

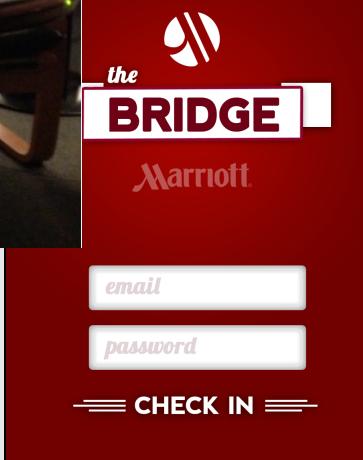
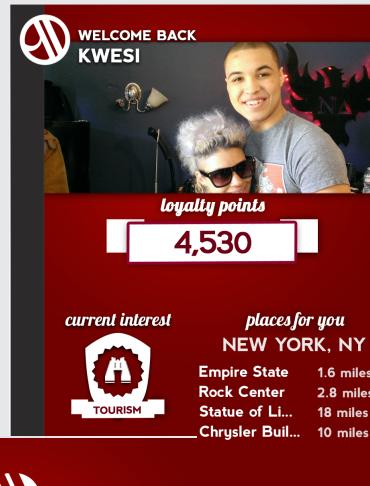
DATA

Source: MIT Mobile
Experience Lab

TABLE



Source: MIT Mobile
Experience Lab



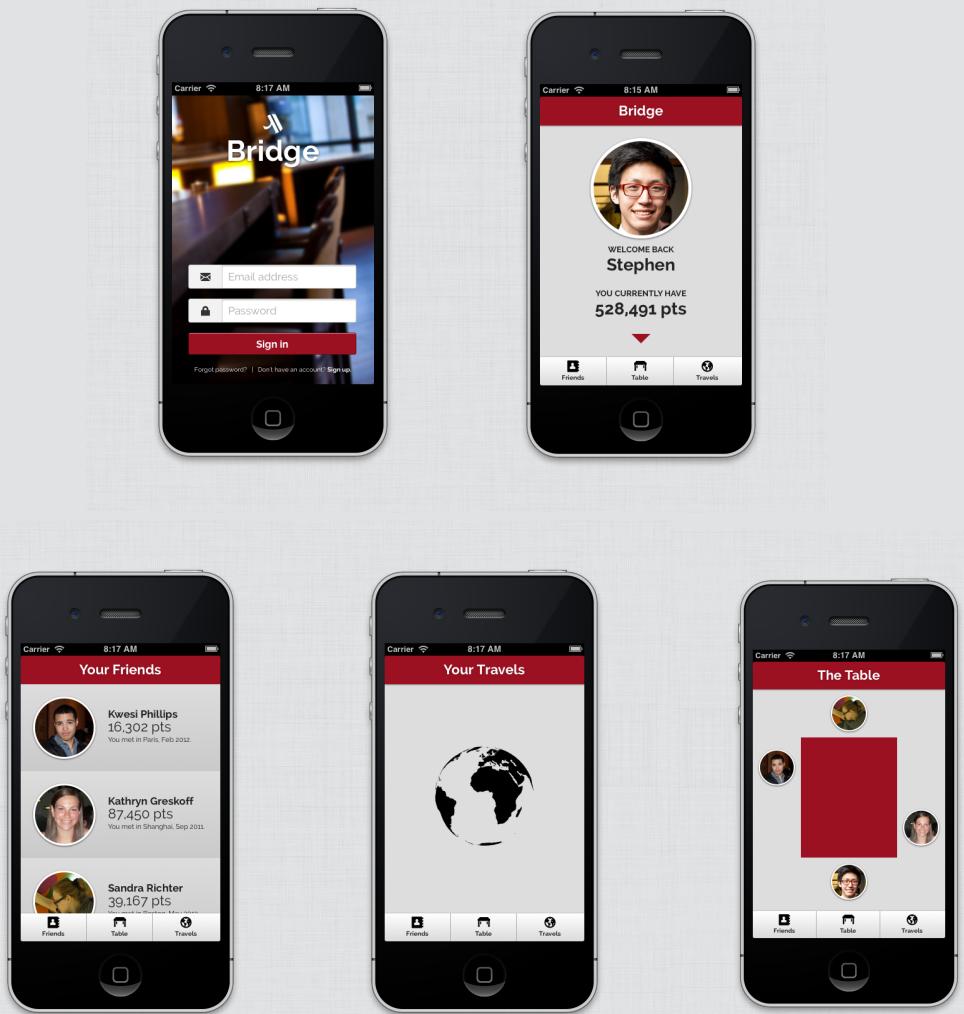
APP

CARD



MOCK-UP DIGITAL EXPERIENCE

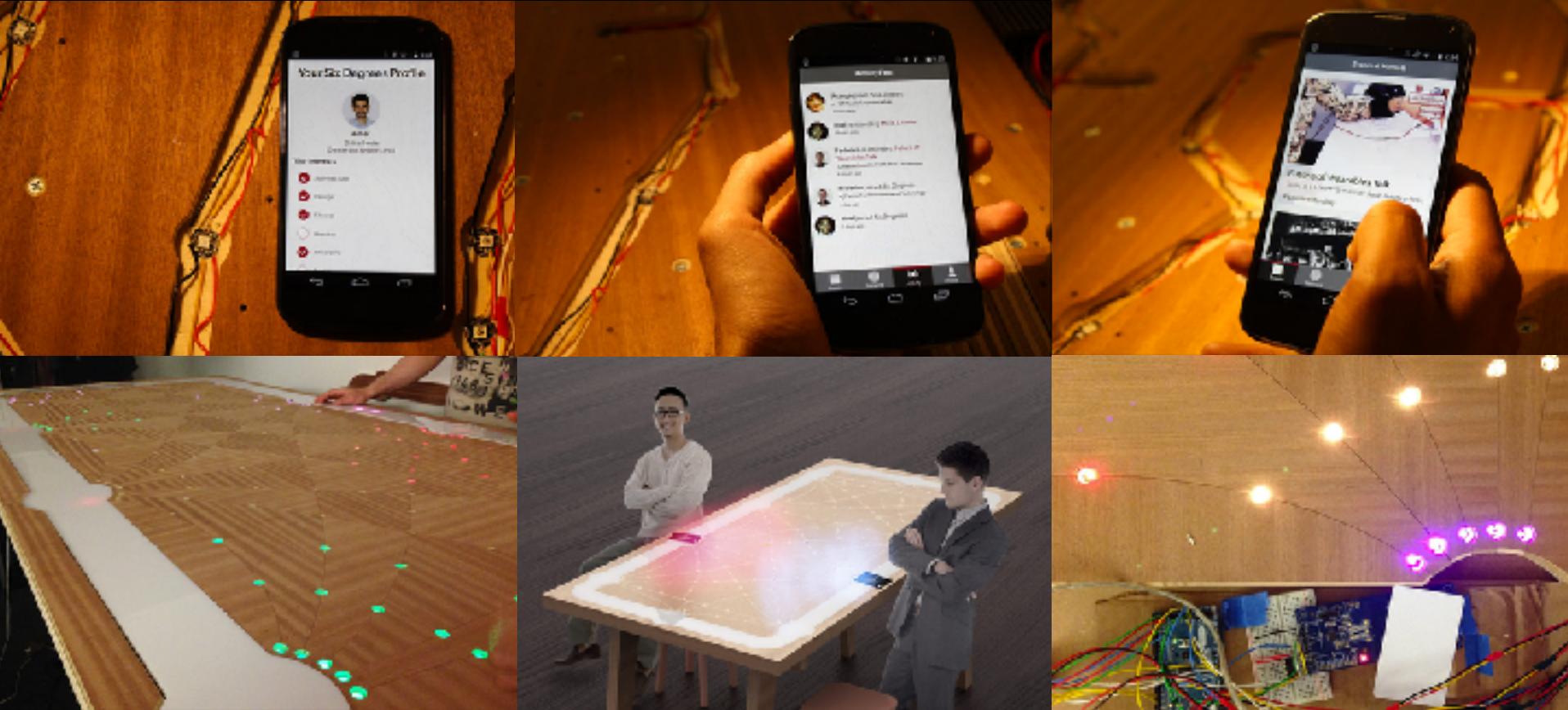
Source: MIT Mobile
Experience Lab





ROLE PLAY PHYSICAL EXPERIENCE

Source: MIT Mobile Experience Lab





MARRIOTT **SIX DEGREES**

A social network for the connected lobby



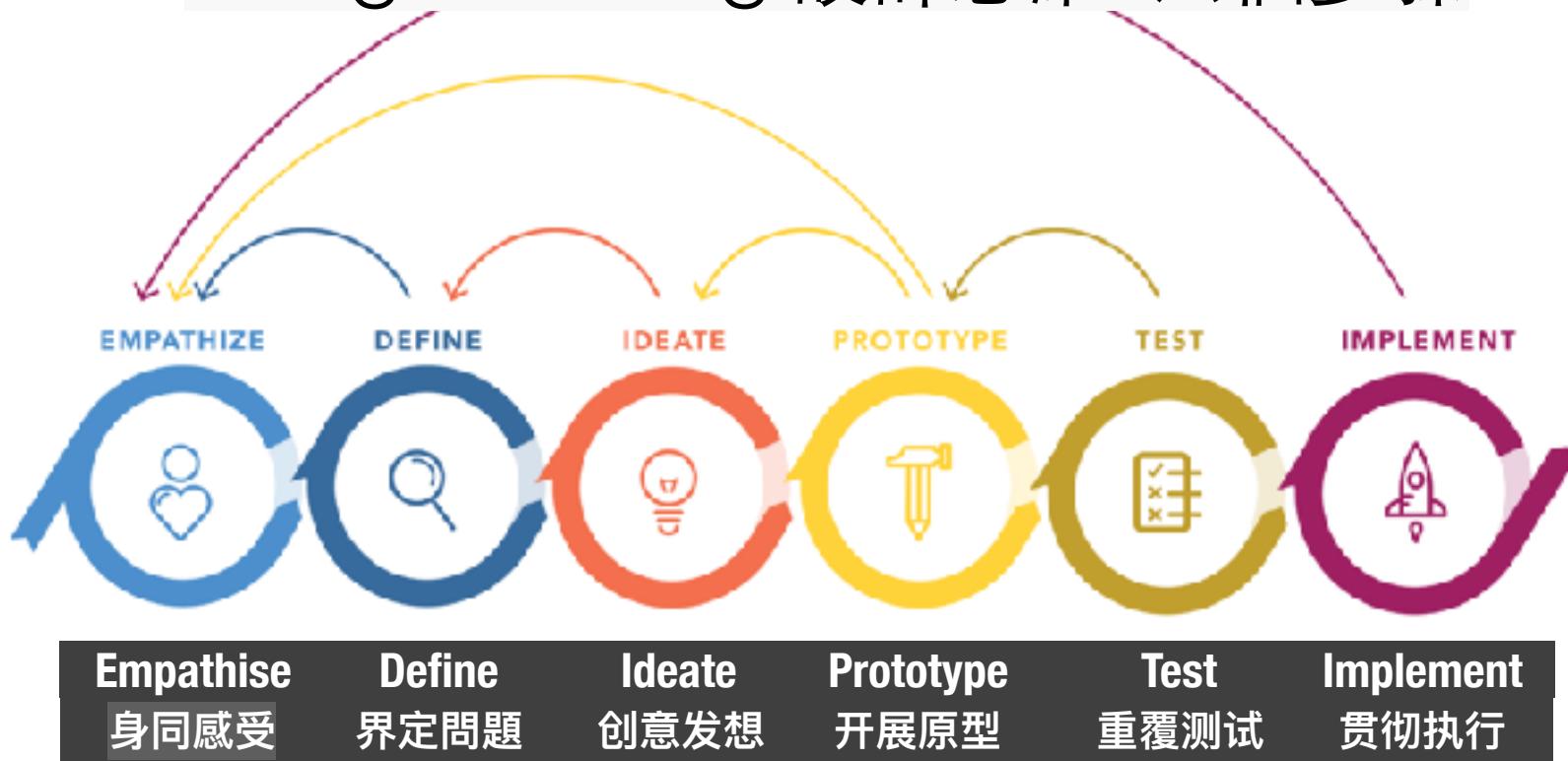
Six Degrees is a prototype social network designed for the hotel lobby by the [MIT Mobile Experience Lab](#) in collaboration with [Marriott Hotels](#).

Through Six Degrees, guests can discover how they are connected to one another, and can socialize with one another in events planned by Marriott. The platform is designed to highlight the connections that already exist between guests, while encouraging new connections to form.

Source: Marriott

WHAT HAVE WE COVERED?

Design Thinking 設計思維: 六個步驟



SOURCE: DESIGN THINKING 101 NNGROUP.COM



谁人的问题?谁人的需要?问题情境怎样形成?有那些持份者?用甚么产品或服务去满足需要?去解决问题?为何要满足这需要和解决这问题?当中能创造甚么价值?



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Adapted from IDEO Design Thinking Toolkit



THE PROBLEM STATEMENT (关注who, what and why):

了解用户体验、痛点及你可创造的独特价值。



THE SOLUTION (关注how, and how much):

建立组织、社群系统、不断创新的科技平台，及持续具扩展性的商业模式。

EXPERIENCE OF USING

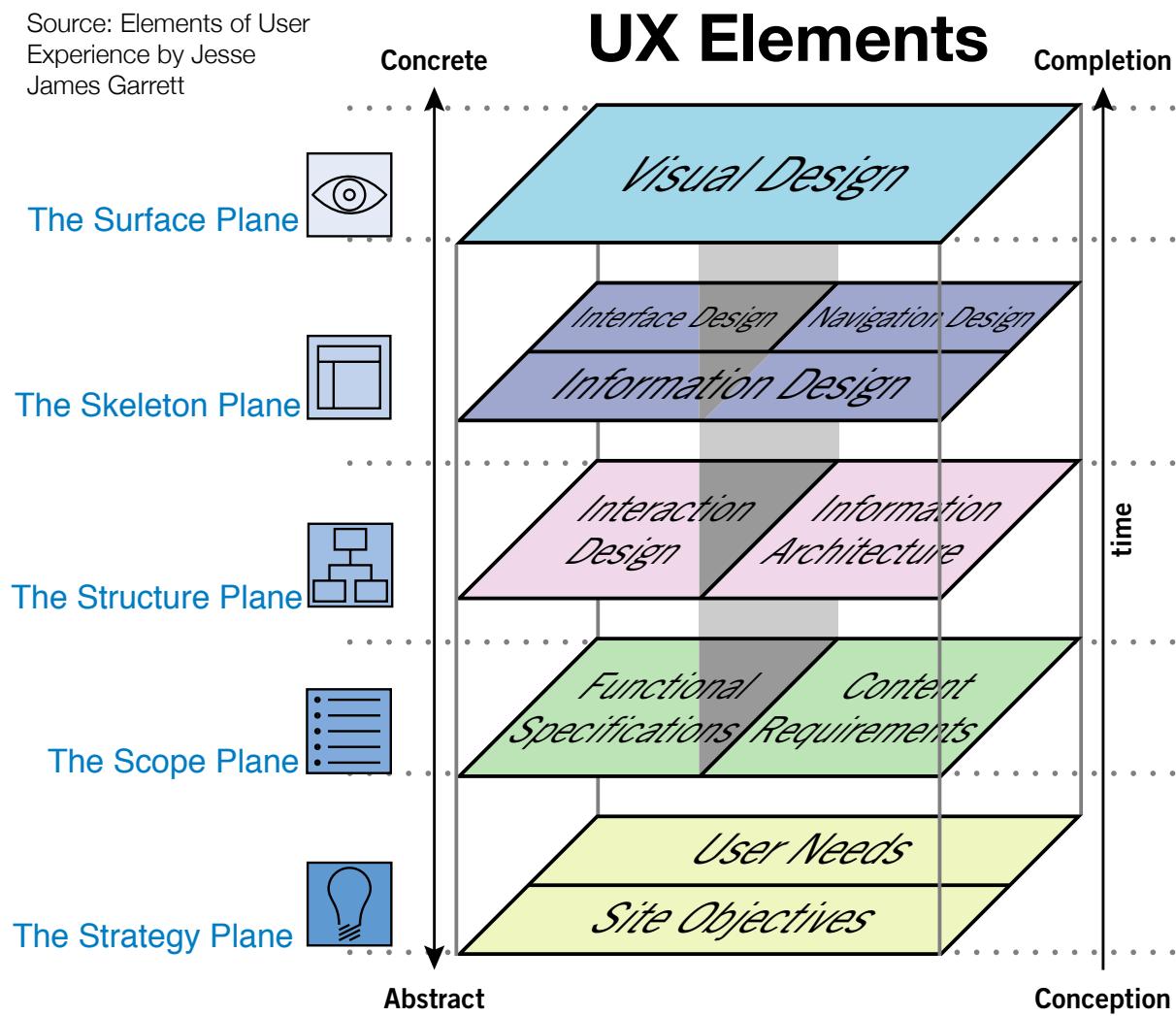


DESIGN "X"

THE EXPERIENCE IS A JOURNEY



Source: Elements of User Experience by Jesse James Garrett



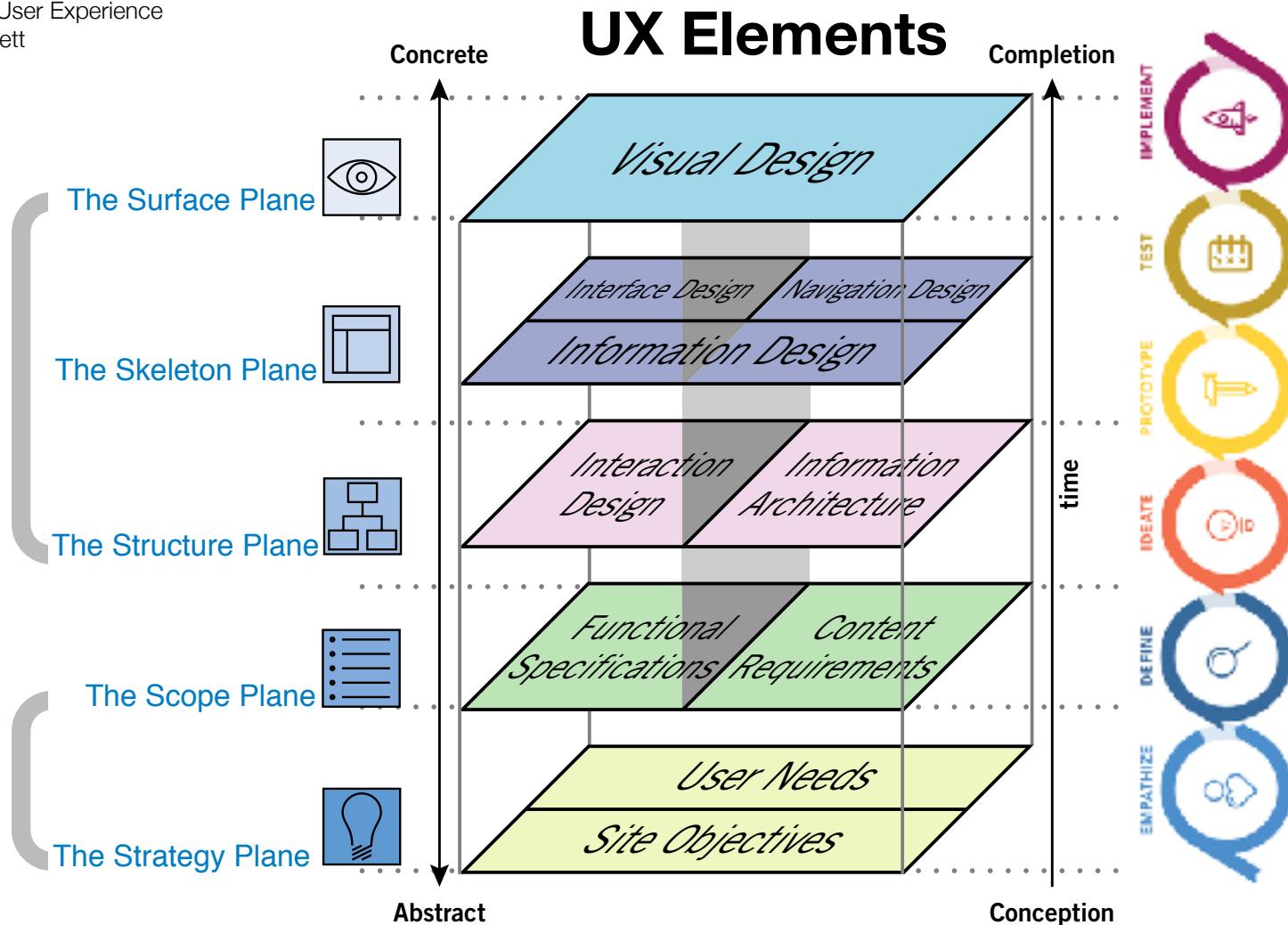
Source: Elements of User Experience
by Jesse James Garrett

Problem Solution

how and
how much

Problem Definition

who, what,
and why



ASSESSMENT CRITERIA

- **Coding problem sets: 50%**
- **Final project: 50%**

REFERENCE LINKS

1. Difference between Engineering and Design Thinking?

[https://www.youtube.com/watch?](https://www.youtube.com/watch?time_continue=20&v=q7LRxKHda08)

[time_continue=20&v=q7LRxKHda08](https://www.youtube.com/watch?time_continue=20&v=q7LRxKHda08)

2. Elements of UX

<https://www.youtube.com/watch?v=82y9Ygn28y0>

3. Shaping the Future of IoT

<https://www.youtube.com/watch?v=ibdm1zU6G3Q>

THANK YOU FOR YOUR TIME!