



Design Thinking for the SDGs

By Cesar Jung-Harada, Faculty of Architecture



THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院



HELLO

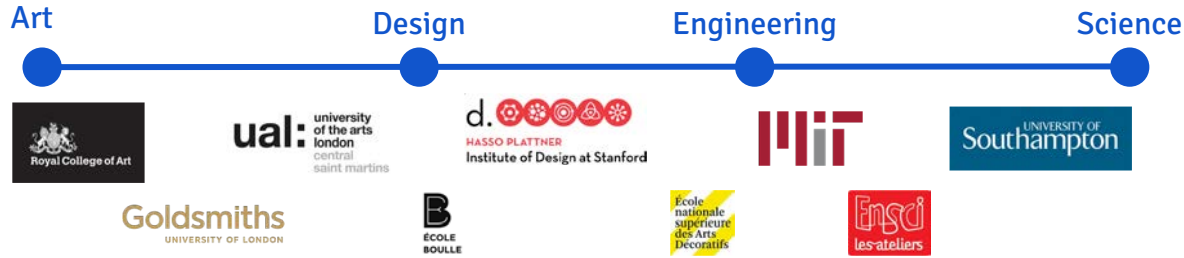
my name is

Cesar

Cesar Jung-Harada

37 y old “he”, French-Japanese, married, 1 boy, 7 y in HK

Studied product and interactive design



I am passionate about ocean innovation and social invention



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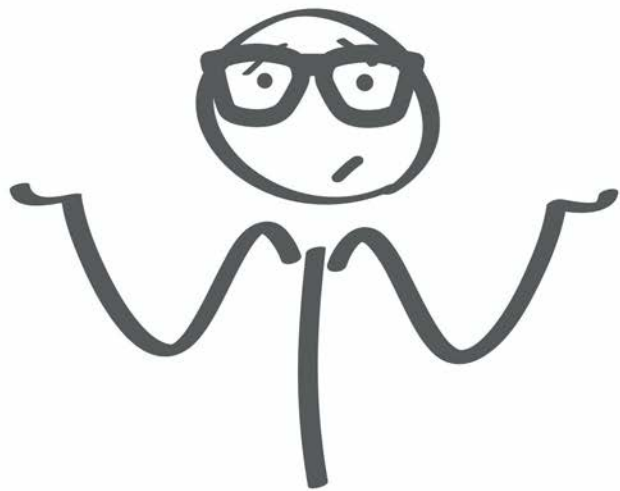
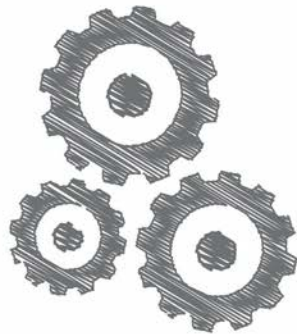
Makerbay.org | Scoutbots.com | Cesarharada.com

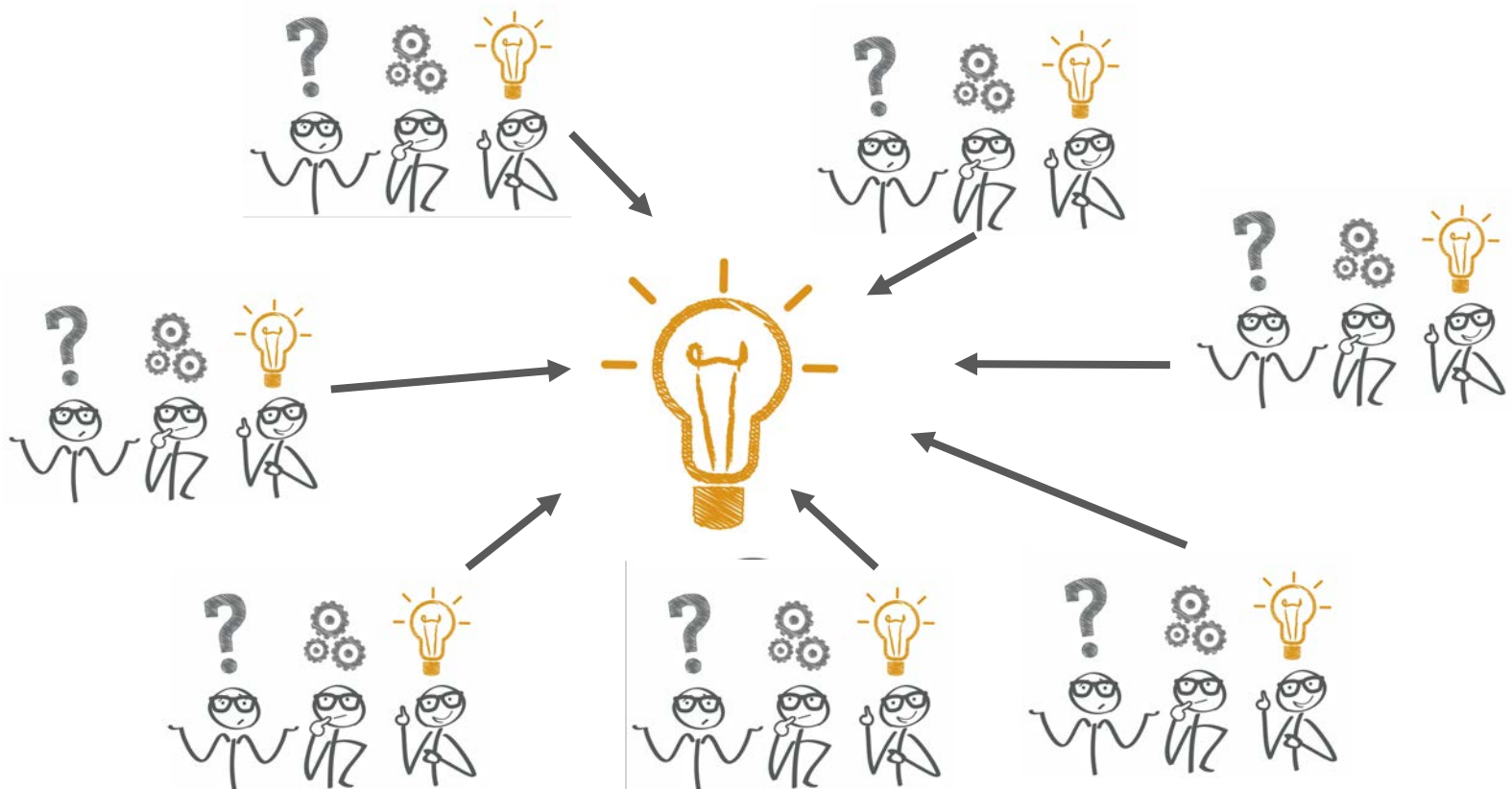
Introduction











Getting diverse people to create something together



George Kembel

Finally: How would you think about the general shape/size



Tom Chi



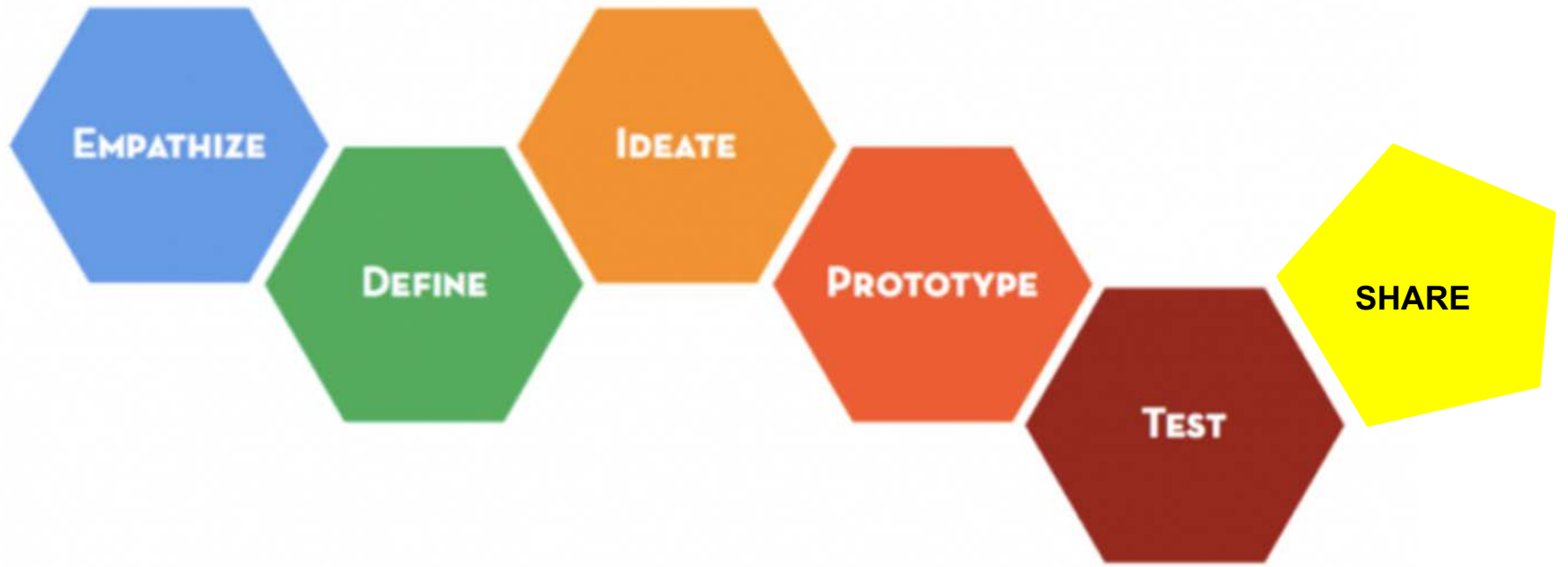
EMPATHIZE

DEFINE

IDEATE

PROTOTYPE

TEST



EMPATHIZE

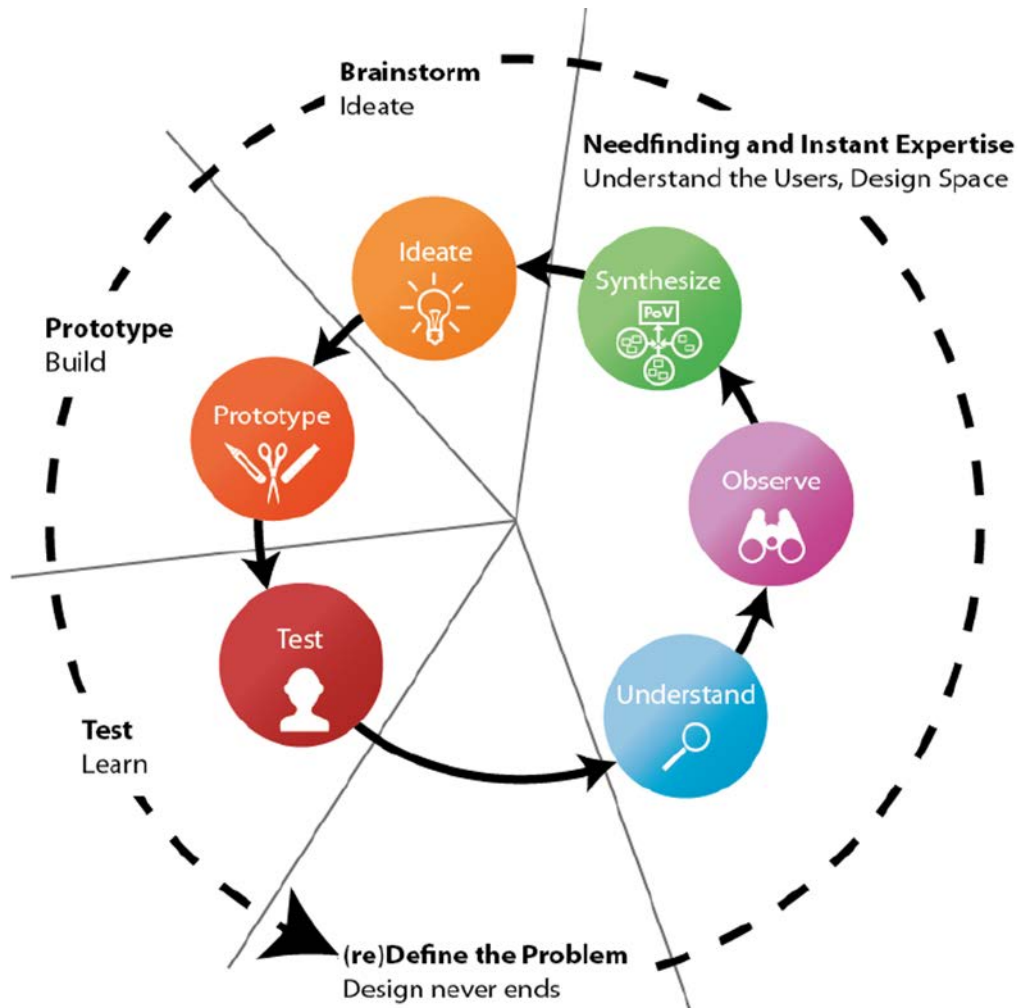
DEFINE

IDEATE

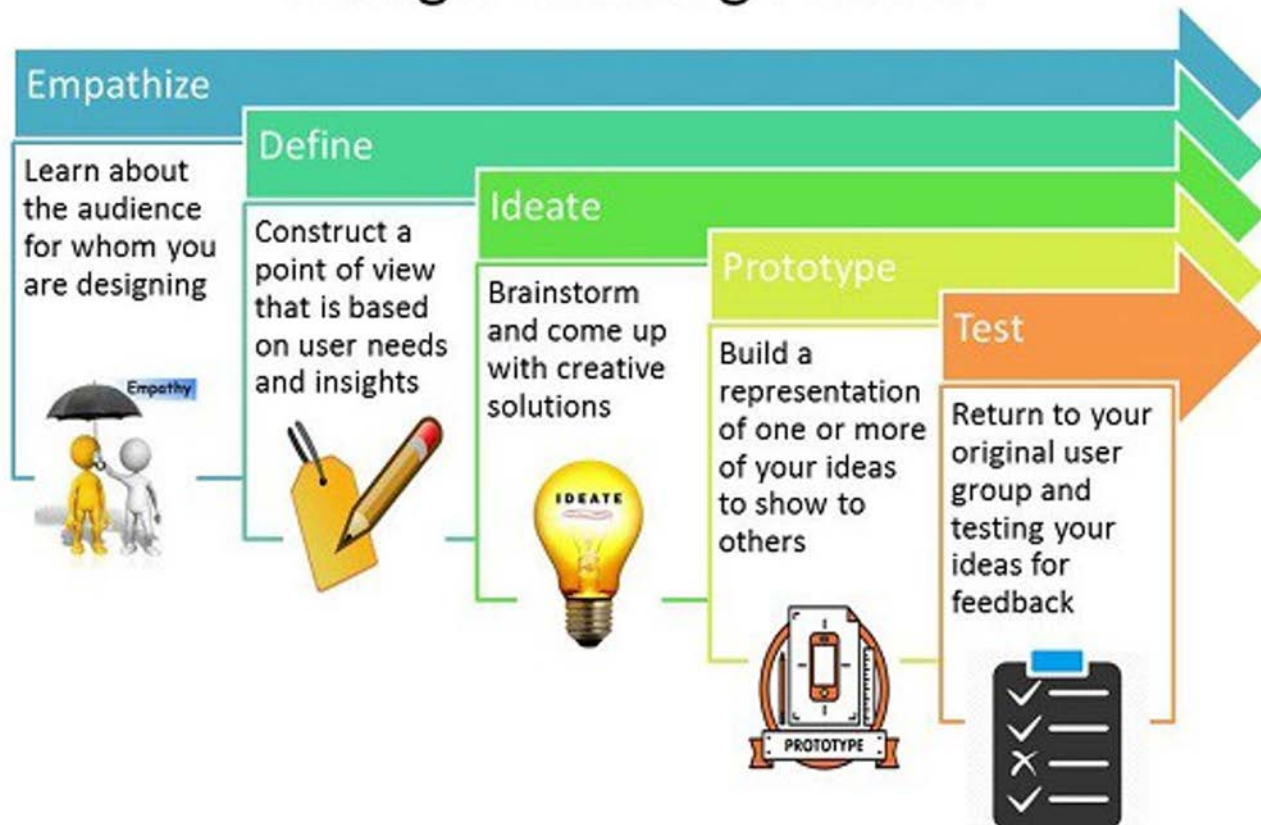
PROTOTYPE

TEST

SHARE

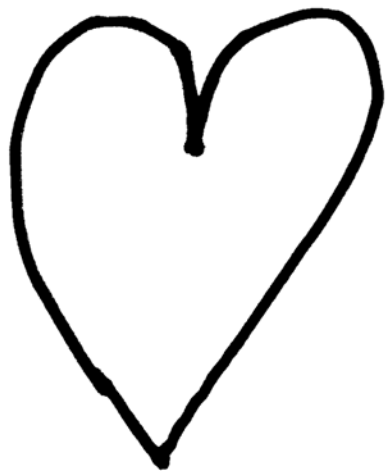


Design Thinking Process

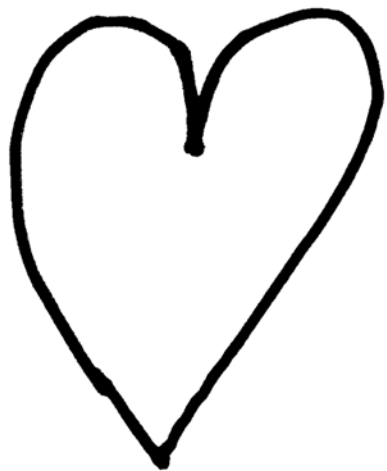


how design feels





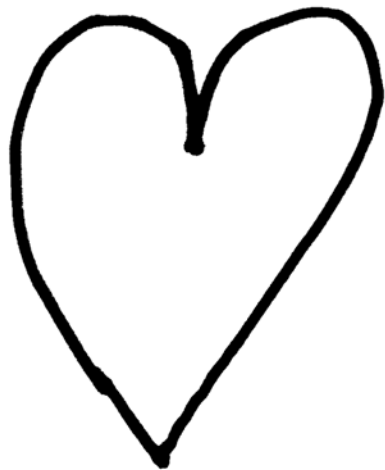
FEEL



FEEL



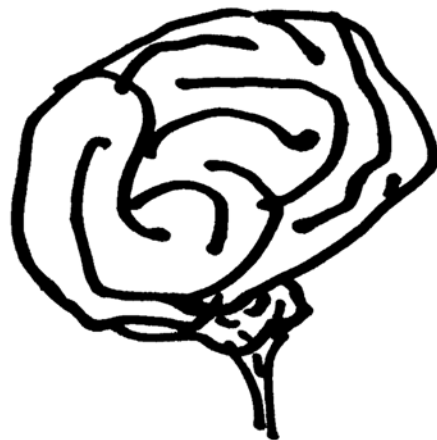
TOUCH



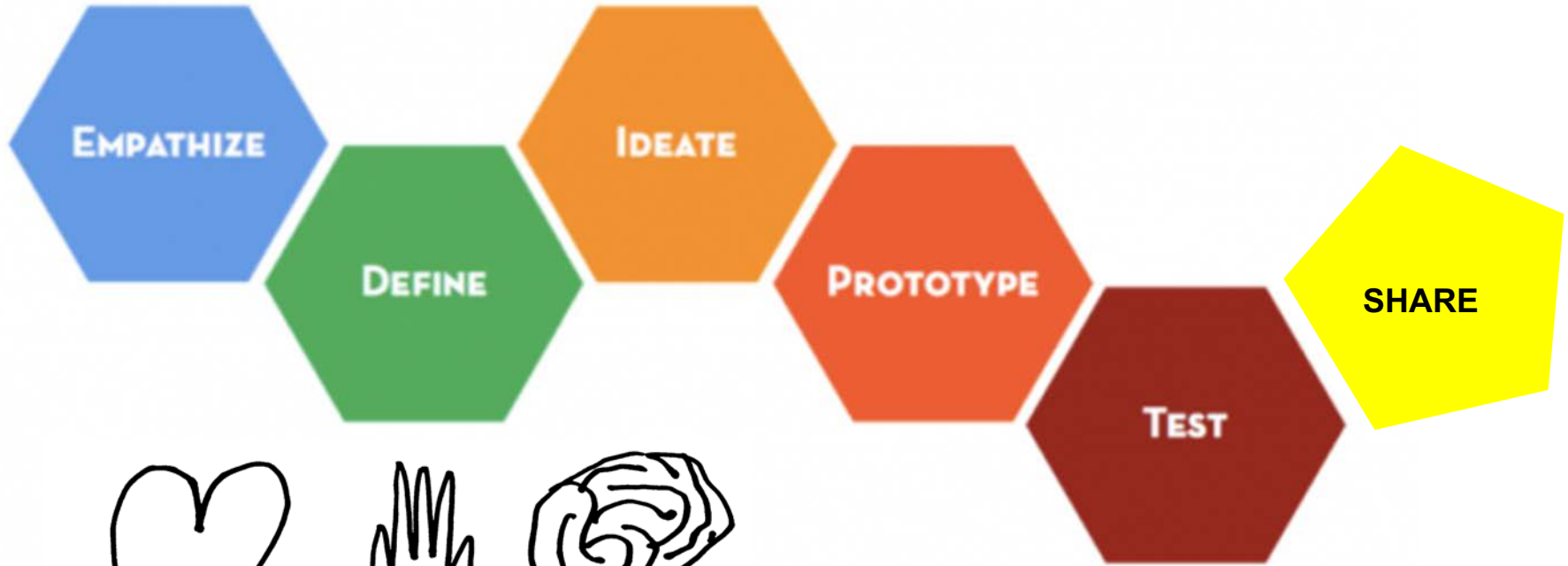
FEEL



TOUCH



THINK



FEEL



TOUCH



THINK

Examples

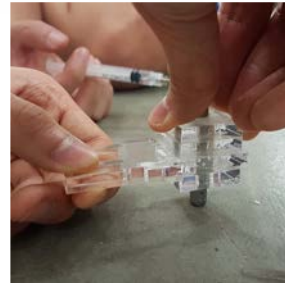
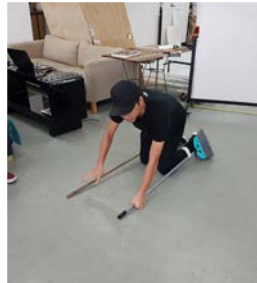
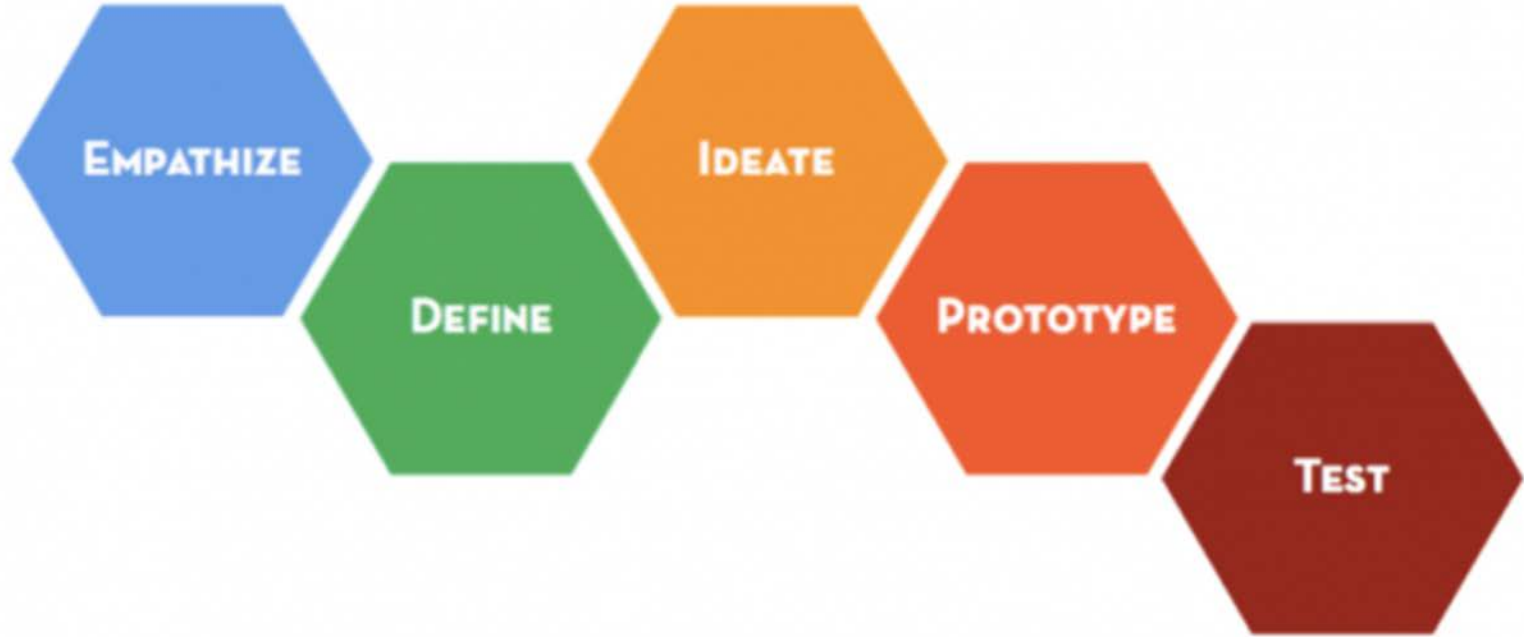


Dog





<https://coconuts.co/hongkong/news/creative-hong-kong-students-build-prosthesis-improve-3-legged-dogs-life-video/>





Refugees



sleep, work, eat,
read...







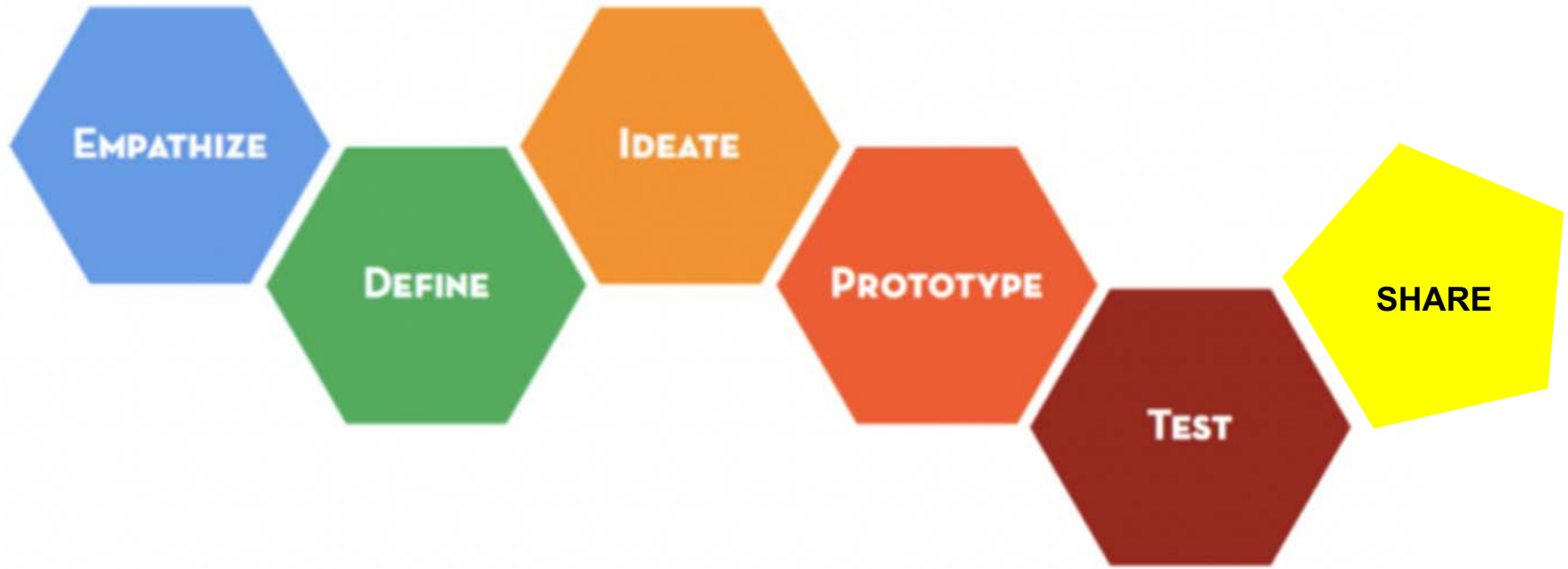












<http://www.a4unify.org>

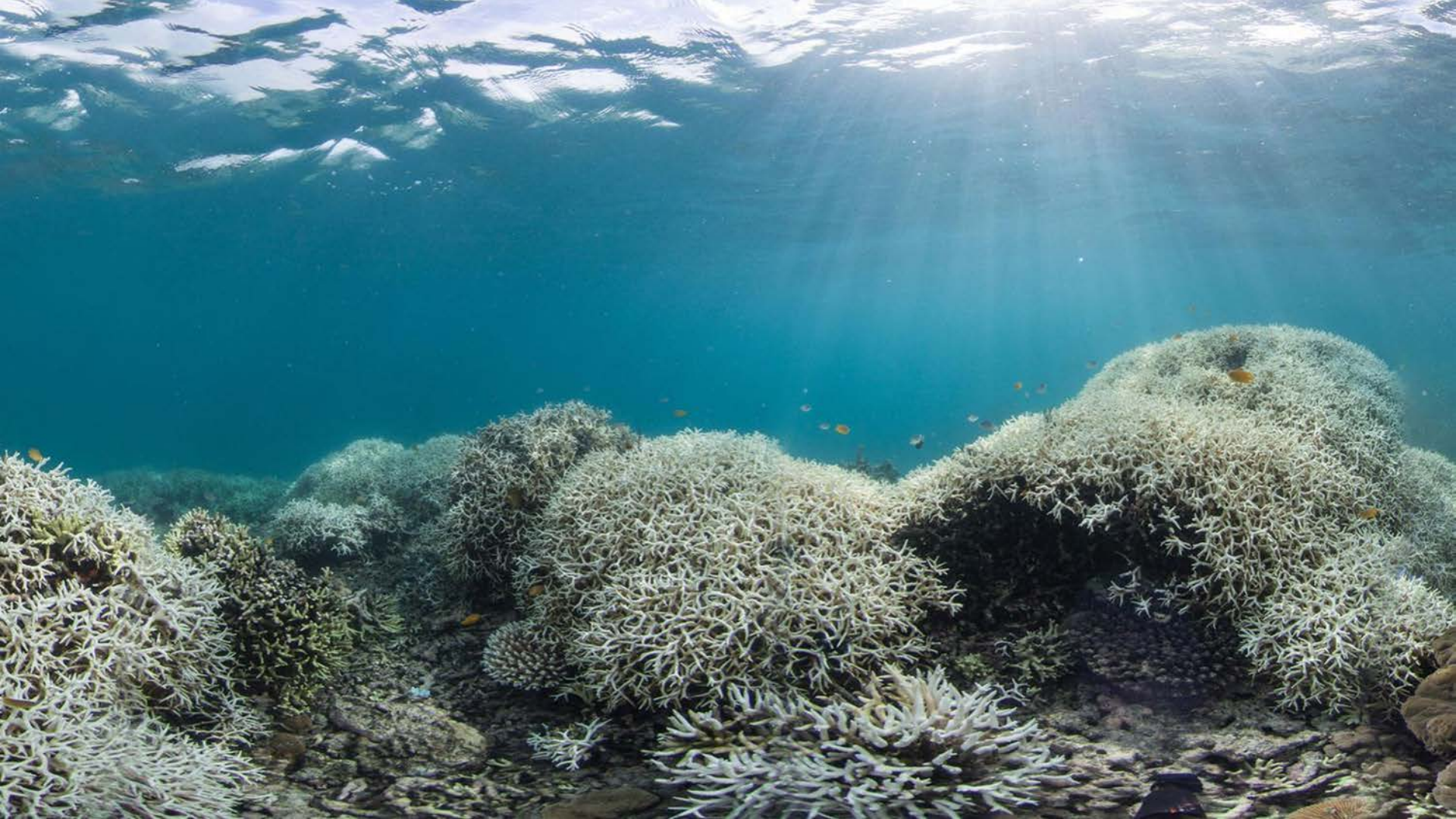
Manual Count

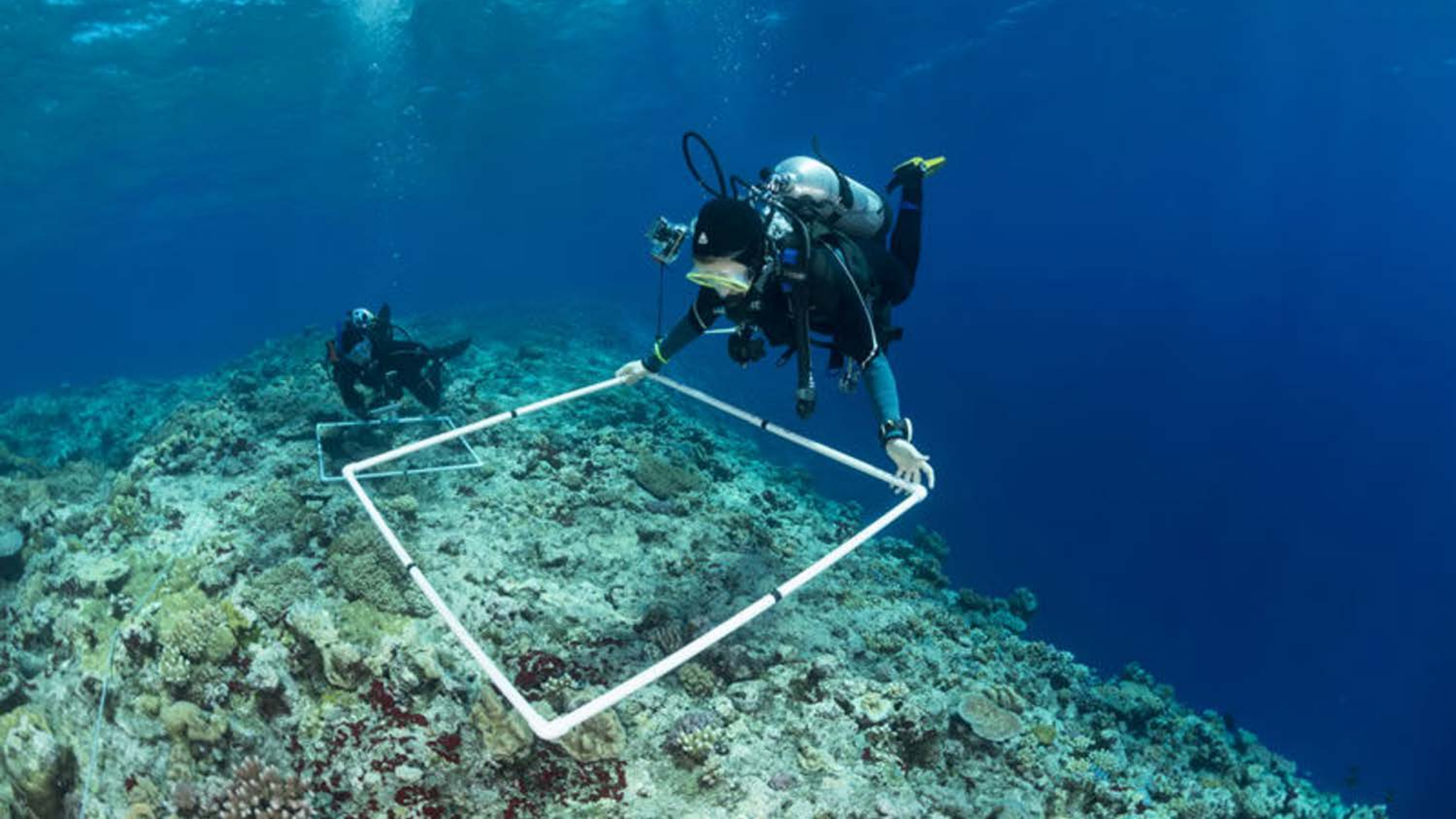




Coral Reef

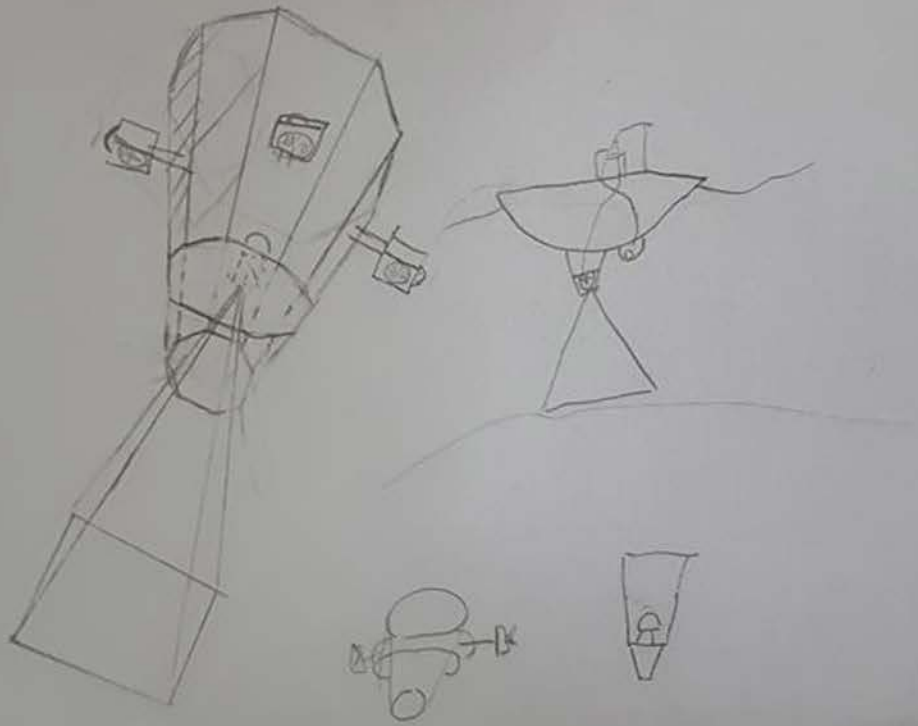






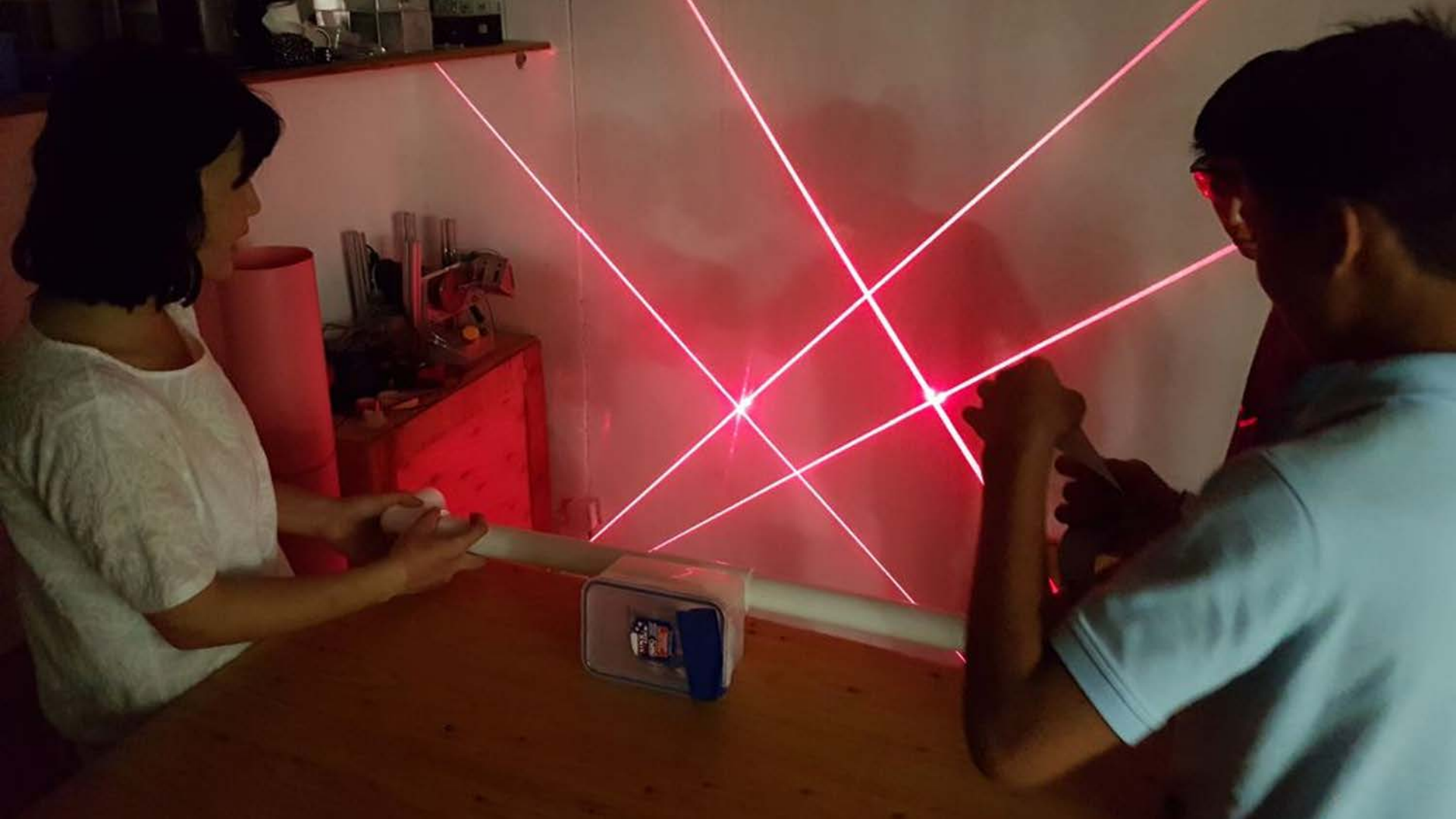




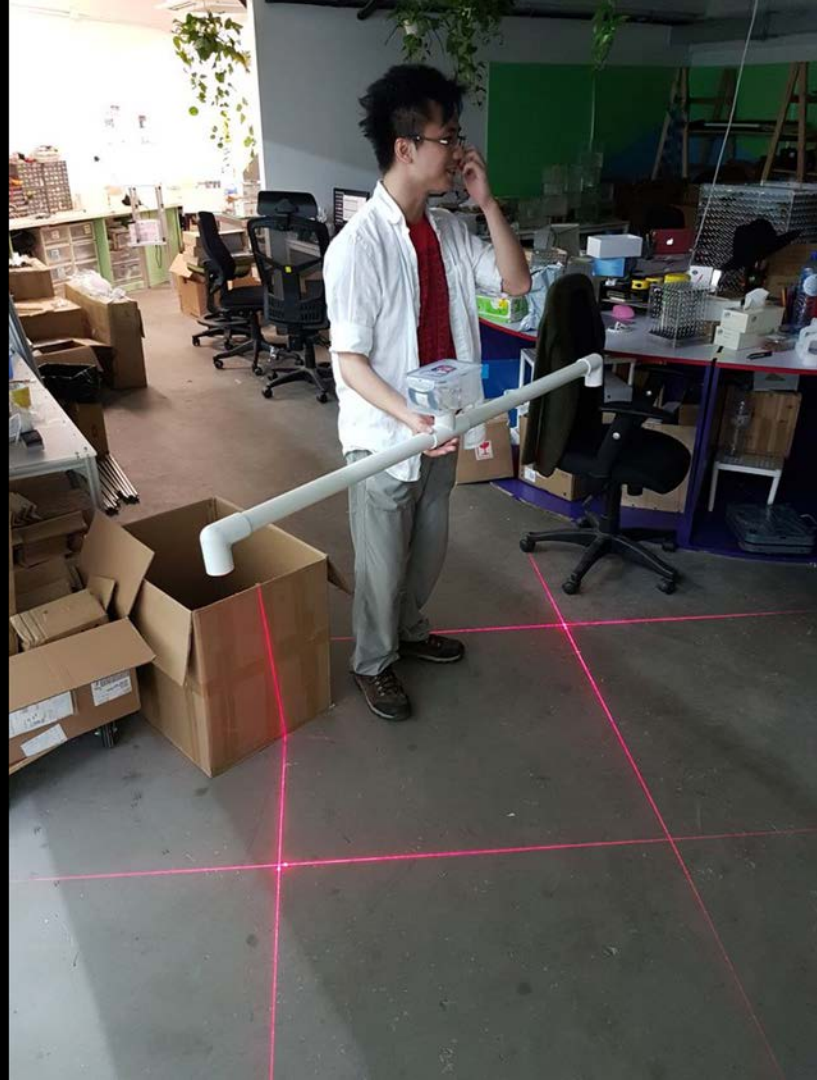








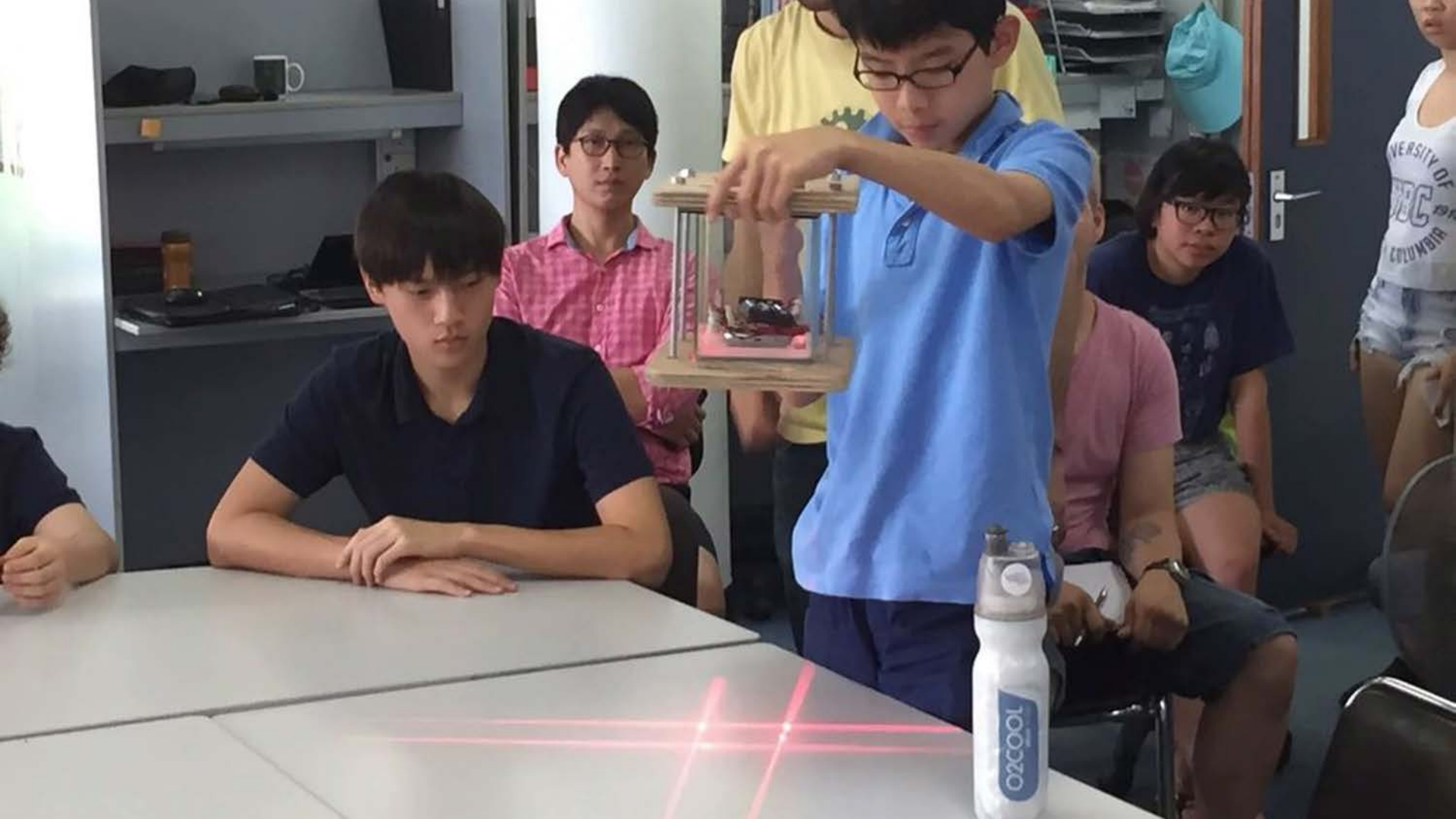










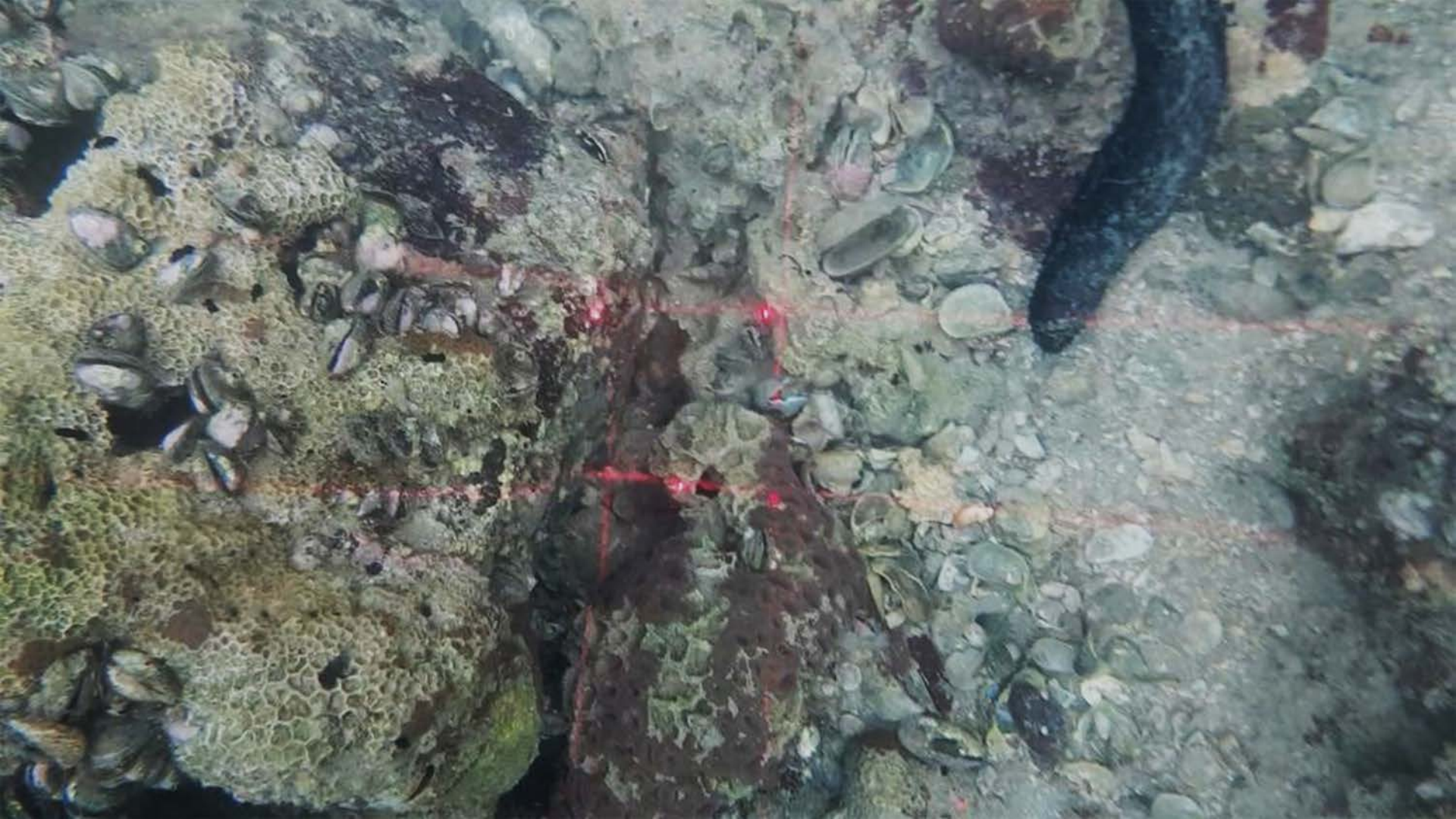




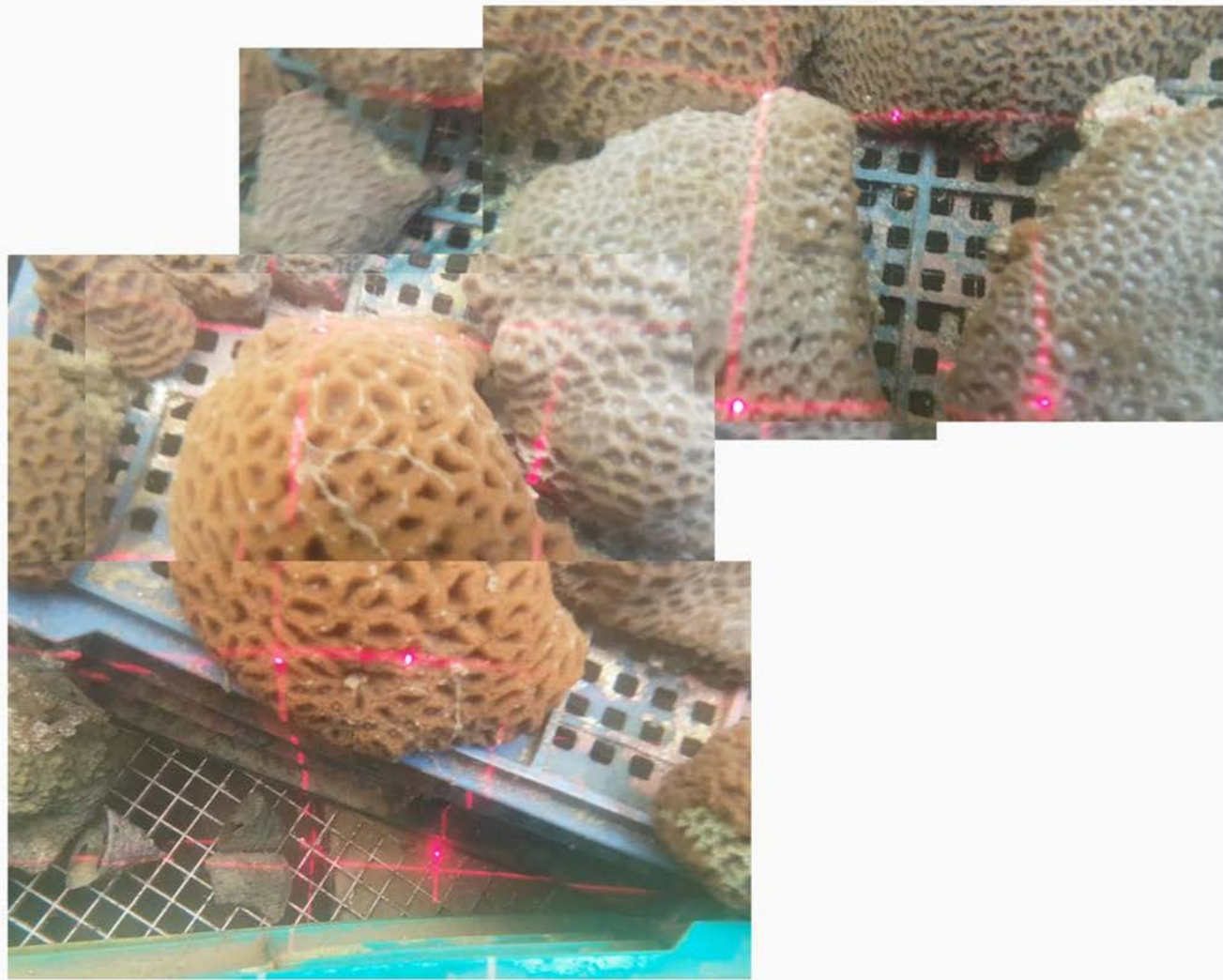














Projects Community

CONTESTS CLASSES PUBLISH Let's Make...

Laser Quadrat for Coral Reef Mapping

By cesar harada in Lasers 2,249 23 1 Featured

Published Jun 19th, 2016 BY-SA Stats

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CATEGORIES

- Circuits
- Lasers

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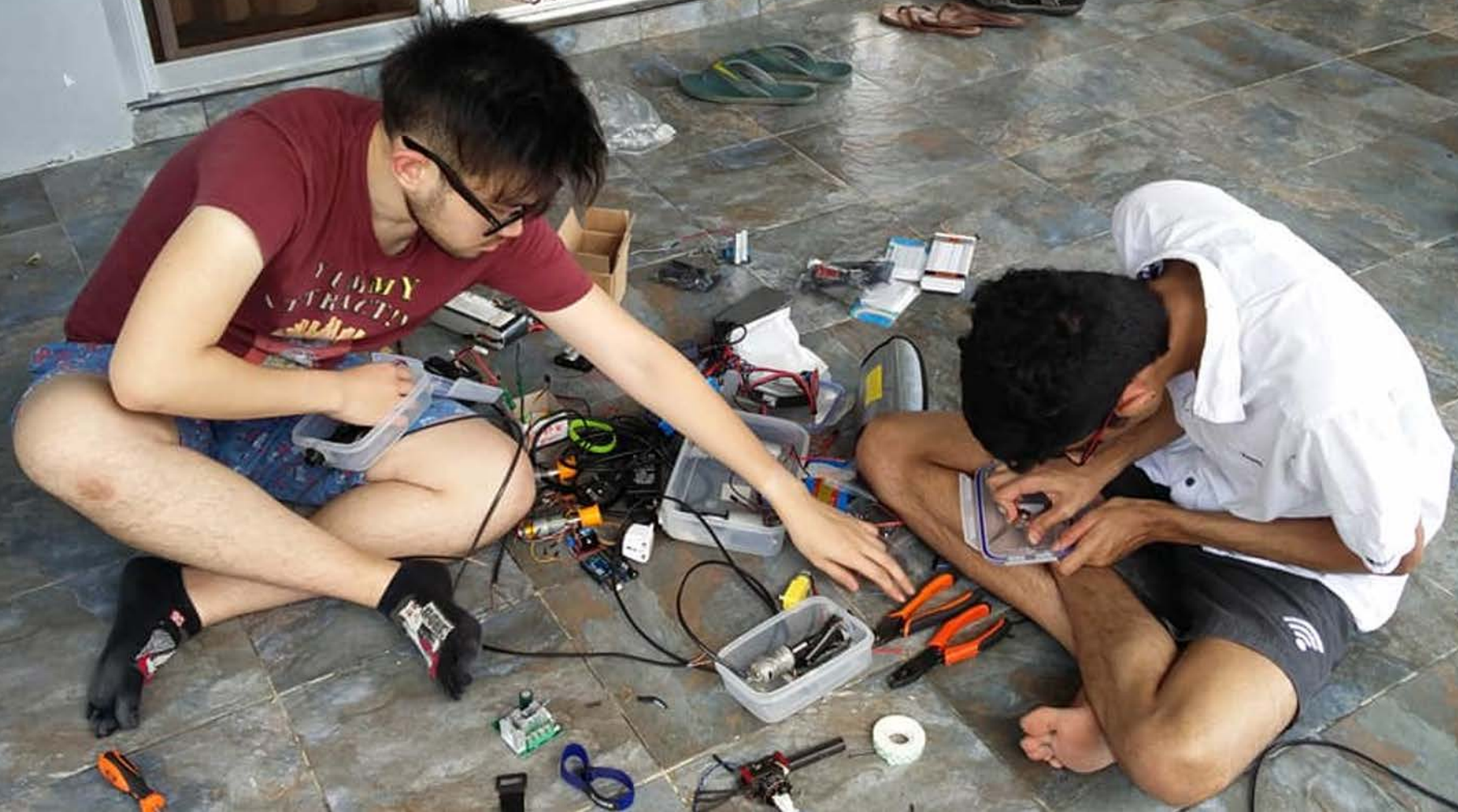
KEYWORDS

- Ocean
- Coral
- Reef
- Quadrat
- HK
- Mapping
- Cesar
- Harada
- Conservation
- Laser
- Citizen
- Science

Add new keyword

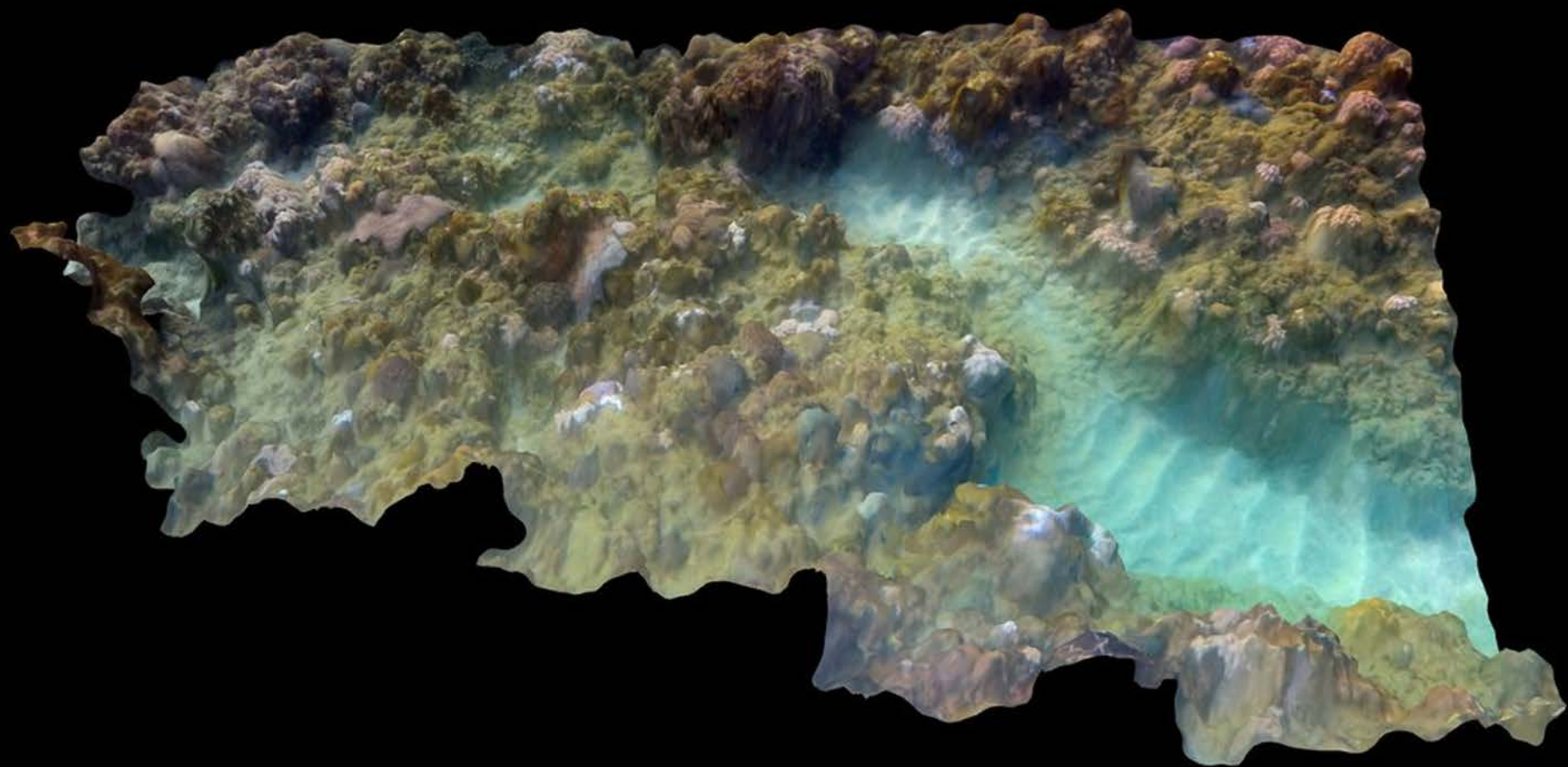
Remove All Keywords







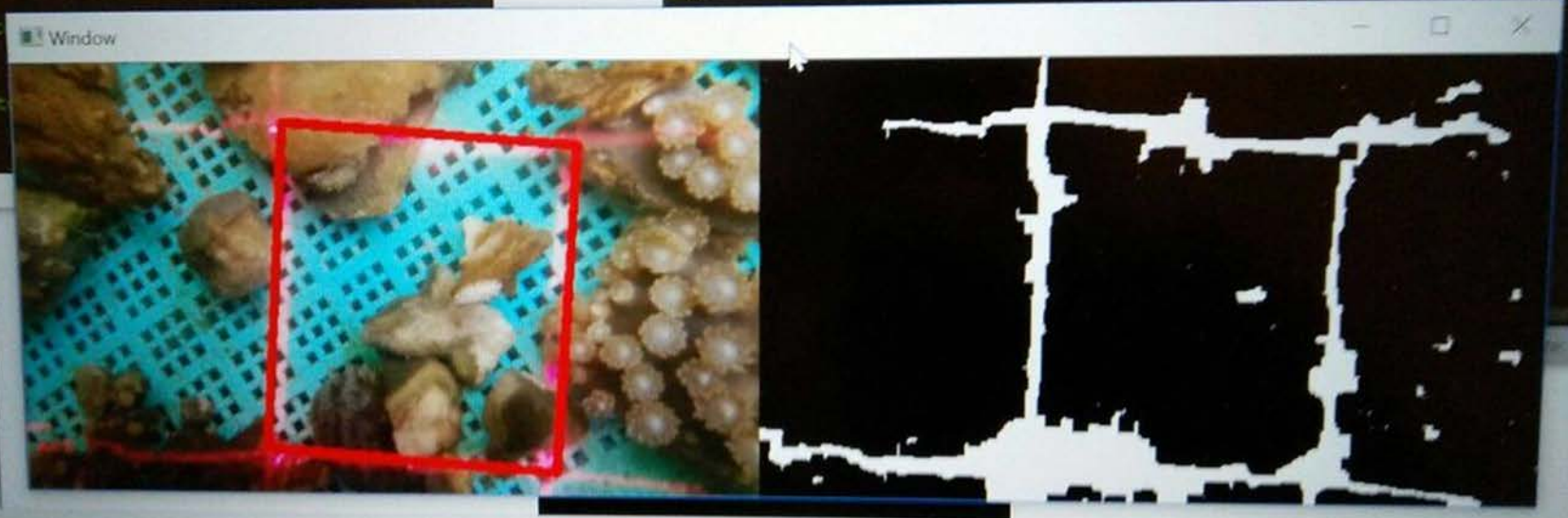




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igprepro.py
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image
/* imgpre
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27     if (cv2.contourArea(cnt) >= 10000 and cv2.contourArea(cnt) < 100000)
28         rect = cv2.minAreaRect(cnt)
29         box = cv2.boxPoints(rect)
30         box = np.int0(box)
31         cv2.drawContours(image, [box], 0, (0,0,255), 5)
32
33     # cv2.drawContours(image, contours, -1, (0,255,0), 5)
34
```



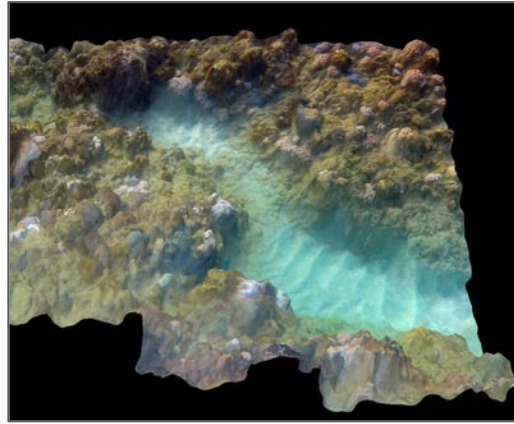
maxresdefault.jpg



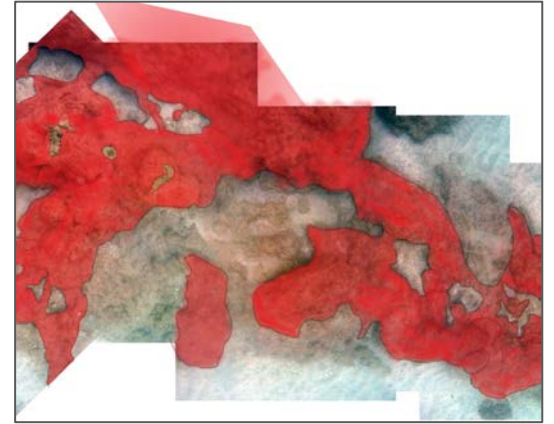
ovo



1. Map



2. Stitch



3. Analyze

Scoutbots Coral Reef Mapping Robot Goal

10x more accurate

GPS positioning offer accurate positioning

Laser quadrat provide scaling and depth information

50x faster

Deploy quicker and cover larger area in a short time

Highly repeatable using same mission waypoints

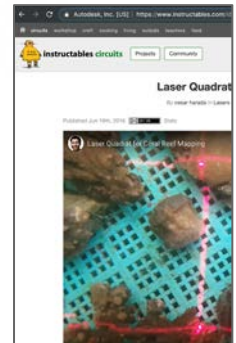
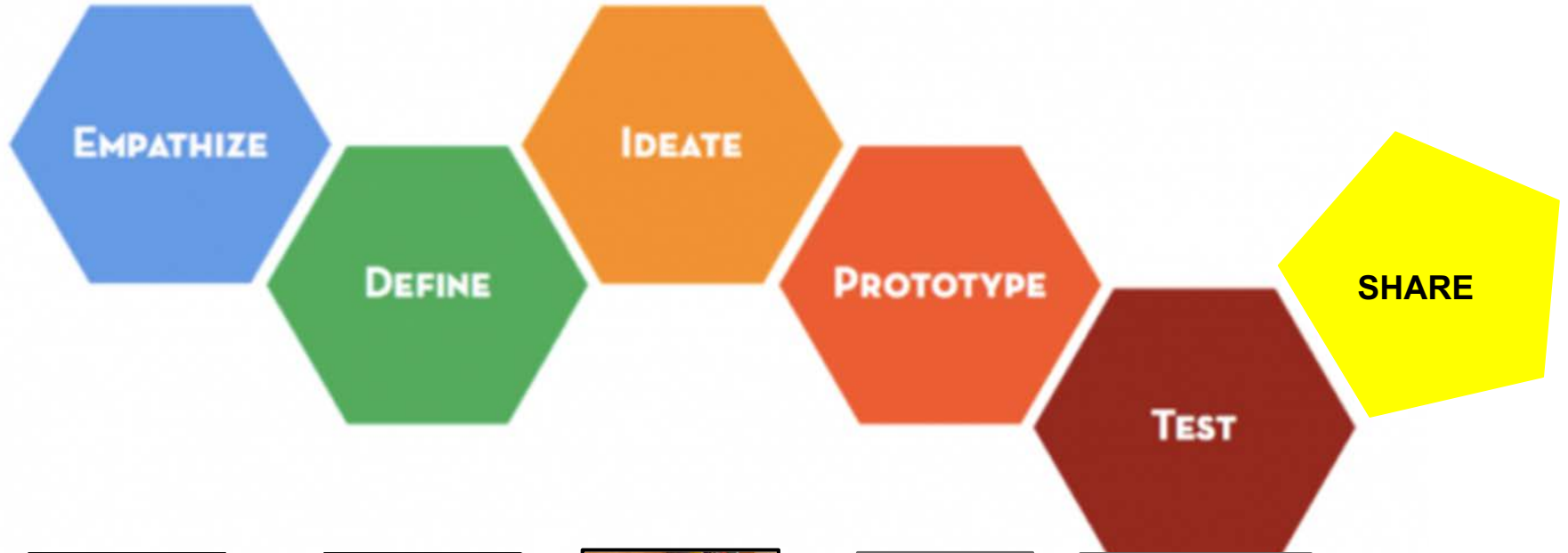
200x cheaper

Modular design , adaptable to variety or propulsion & frame material

Combination of open source software/hardware & local natural materials

10 x 50 x 200 = 100,000x better



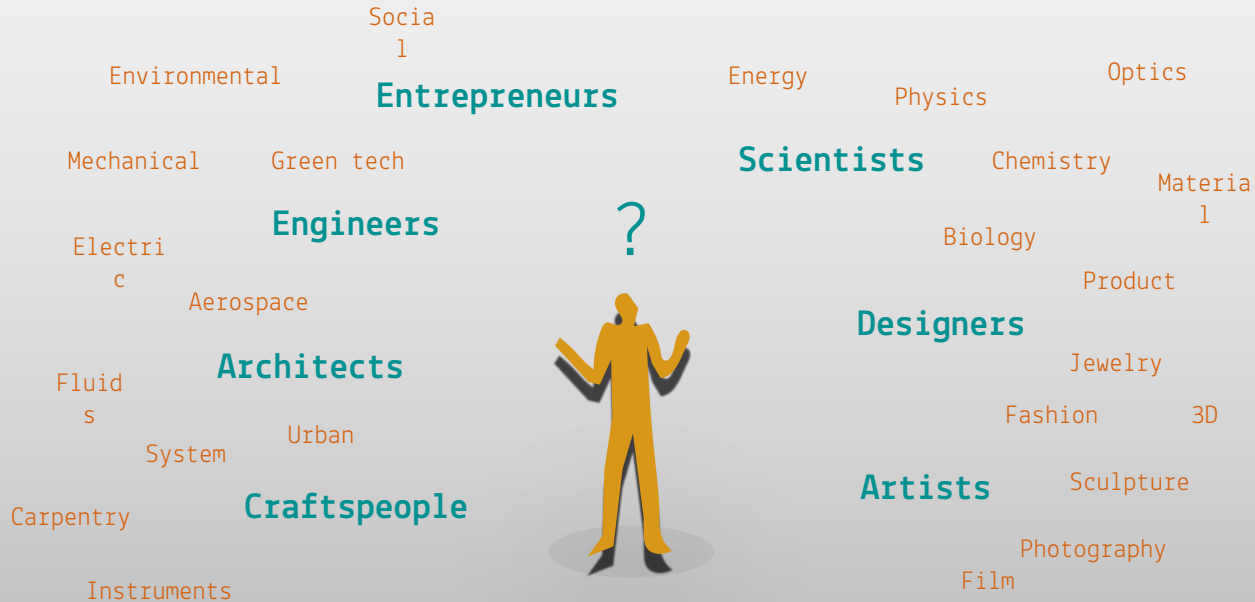


Scale



MakerBay

Problem: Where can we innovate things in Hong Kong?

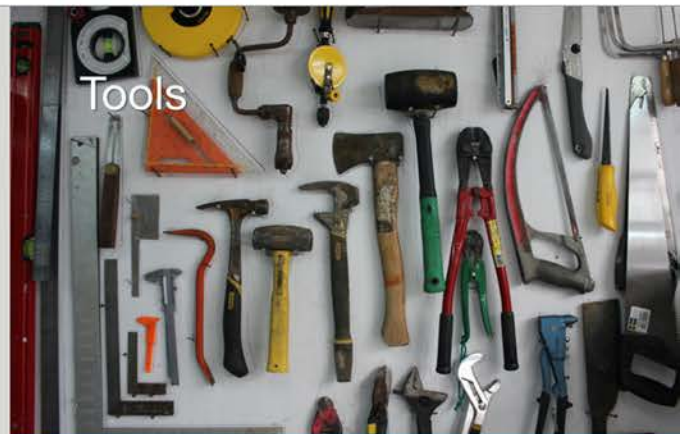
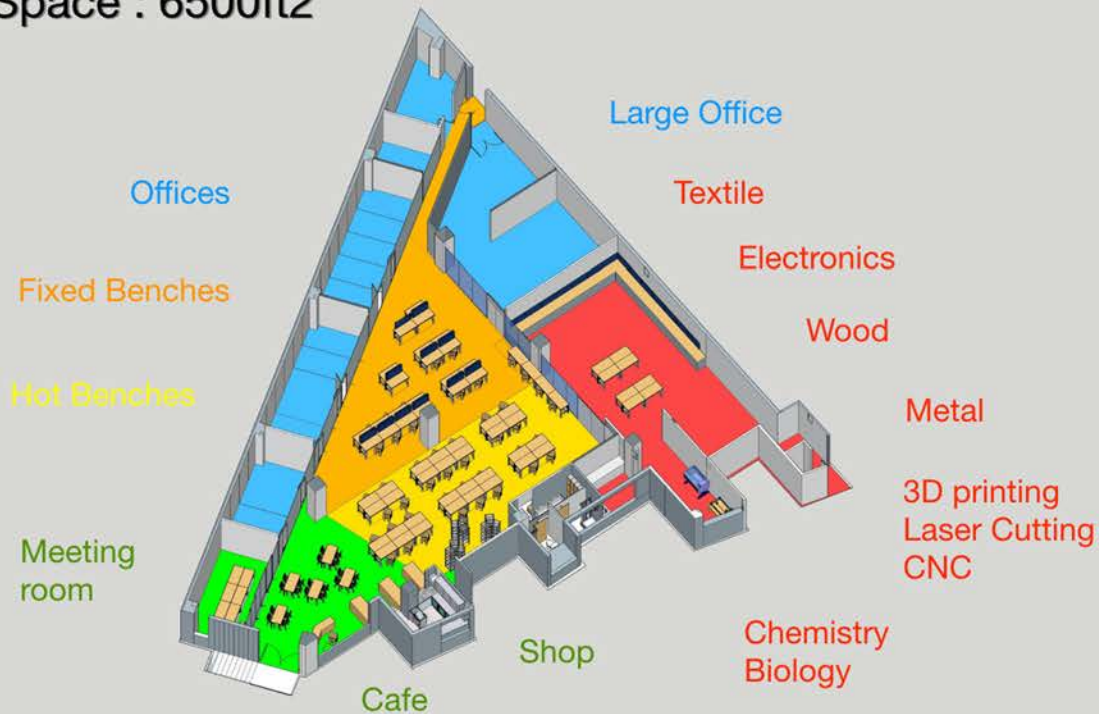


Creative community, space, tools, services



MakerBay

Space : 6500ft²



Tools



Community

Get Appropriate Training



Projects

Education

Membership

MakerBay Network Map 🔍 ☰

203 views ☆

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MakerBay Branches

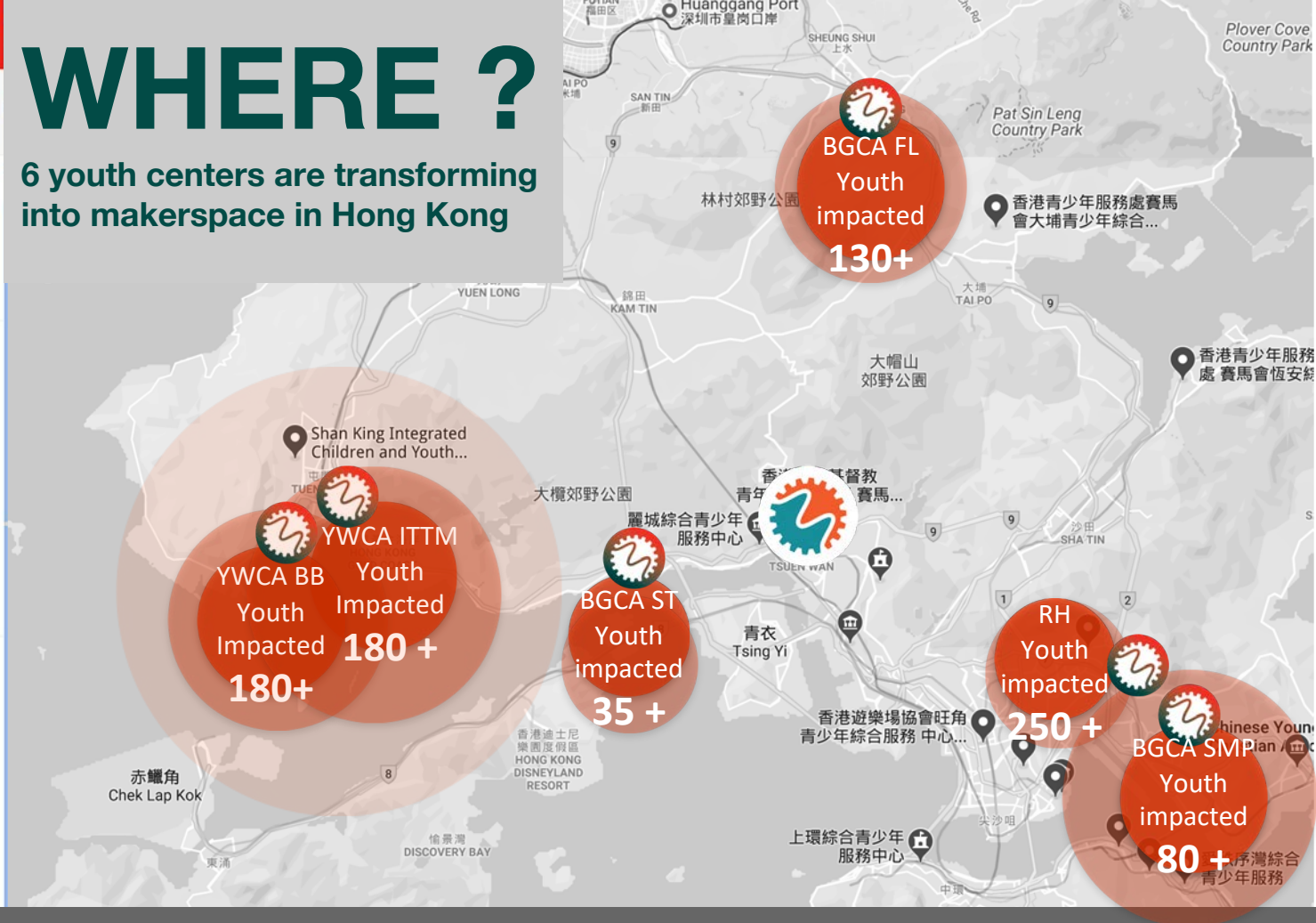
- MakerBay Tsuen Wan
- MakerBay Central

Youth Centres

- BGCA, JC SAU MAU PING C&Y ISC
- BGCA, SHAM TSENG C&Y ISC 香港小童群...
- BGCA, JC FANLING C&Y ISC
- Hong Kong YWCA Jockey Club Butterfly Ba...
- Hong Kong YWCA On Ting Yau Oi Commun...
- The Chinese Rhenish Church Hong Kong S...

WHERE ?

6 youth centers are transforming into makerspace in Hong Kong



YOUTH, TEACHERS, SOCIAL WORKERS AND YOUTH WORKERS



TRAINED
200 +
IMPACTED
1500 +

Maker skills set and Maker mindset, Design Thinking



#PVC

#WOODWORK

#SEWING

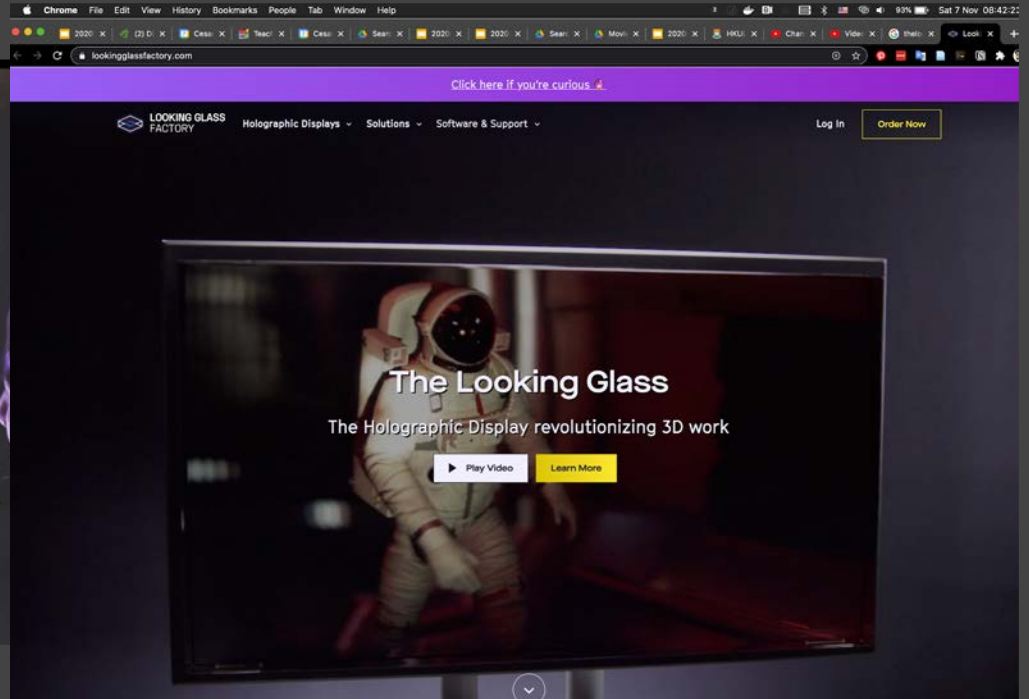
#3D PRINT

#LASERCUT

#ROBOTIC

#DESIGN THINKING





<https://lookingglassfactory.com/>

ReFuture

ReFuture | #Refugee
#DesignThinking During one day, Hong Kong refugees, asylum seekers and volunteers meet, share their stories and work together with Design Thinking method and Rapid Prototyping...



MakerBay Admin
August 21, 2020



Marine Litter Detective | #Ocean #Electronics

Do you know where marine litter comes from? A lot of litter generated on land actually ends up in the ocean, but how? WWF-Hong Kong, in...

MakerBay Admin
August 21, 2020



SUSTAINABLE DEVELOPMENT GOALS

- Goal 01: No Poverty
- Goal 02: Zero Hunger
- Goal 03: Good Health and Well-being
- Goal 04: Quality Education
- Goal 05: Gender Equality
- Goal 06: Clean Water and Sanitation
- Goal 07: Affordable and Clean Energy
- Goal 08: Decent Work and Economic Growth
- Goal 09: Industry, Innovation and Infrastructure
- Goal 10: Reduced Inequality
- Goal 11: Sustainable Cities and Communities
- Goal 12: Responsible Consumption and Production
- Goal 13: Climate Action
- Goal 14: Life Below Water
- Goal 15: Life on Land
- Goal 16: Peace and Justice Strong Institutions
- Goal 17: Partnerships to achieve the Goal



"V Ladder" Coral Reef Mapping Robot – Prototype and test

<https://www.facebook.com/cesar.hz>
Today we built and tested our latest prototype for our #Coral #Reef #Mapping #Robot. "V Ladder": Simplification towards more efficiency. 5 underwater



Berrybot A.I Youth Competition, at Wyng Foundation

The Wyng Foundation organized a very cool student competition to introduce them to AI. MakerBay helped mentor the students working on their



Holm Glad School

MakerBay is very honoured to be one of the educational partners of the Jockey Club 'Learning by Doing' Academy (LBD) of Holm Glad No.2 Primary...

MakerBay's clients and partners

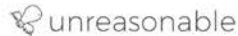
THELANECRAWFORDJOYCEGROUP



Major European Bank



Big 4 Consulting Group



Corporations



STAMFORDAMERICAN | HONG SCHOOL KONG

Education



香港賽馬會
The Hong Kong Jockey Club



InvestHK
The Government of the Hong Kong
Special Administrative Region



U.S. Consulate General Hong Kong and Macau



CONSULAT GÉNÉRAL DE FRANCE
À HONG KONG



Government
Non-Profit



Media



社企民間高峰會
Social Enterprise Summit

Youth
Organizations

Our Global Footprint

Norway

MakerBay led a workshop in Innovation for Marine Spatial Planning for the University of Bergen.



Estonia

MakerBay is mentoring a young innovator competition in Tallinn. The topic is about environmental technology innovation and entrepreneurship.



China

MakerBay is showing around China's innovation industry to Norwegian innovators. They are interested to manufacture and sell in China.



USA

Harvard University professors came to MakerBay to work with MakerBay on the future of STEM education. This time, Harvard graduate students have invited MakerBay to present their most recent development at its annual Asia Conference in March 2020.



France

MakerBay led the "Aquathon", - 2 workshops in Brest and Paris to develop ocean Innovations.



Cambodia

In Cambodia MakerBay co-lead DakDam Labs, an incubator for 10 local agriculture innovation startups, with Impact Hub Phnom Penh



Philippines

The Mind Museum (Philippines Science Museum) hires MakerBay to mentor innovators to develop environmental technologies and run the Maker Faire.



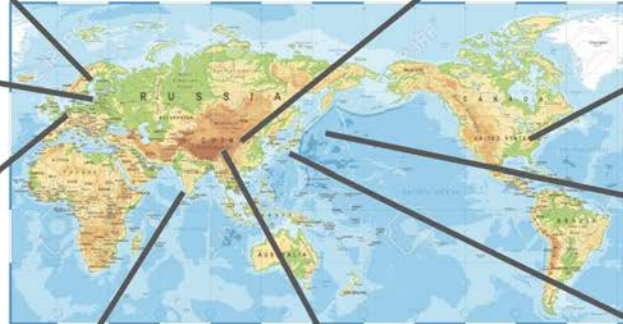
Japan

MakerBay took several groups of HK youth to Japan to meet local innovators and learn best practices to bring back to Hong Kong.



Taiwan

The TEDx community invited MakerBay to share about our progress, mentor local startups in Taoyuan and meet the President of Taiwan as we" as several other govt officials





ប៉ុន្មានថ្ងៃចុងក្រោយពួកគេបានធ្វើការផ្ទាល់ជាមួយកសិករ



ដាក់ដំ



ដាក់ដំ



National Institute of
Posts, Telecommunications
and ICT



現在就開始學習新技能吧！



木工 Woodwork



金工 Metalwork



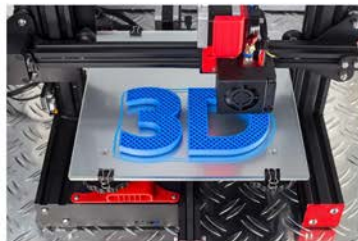
縫紉 Sewing



電腦數控切割 CNC Fabrication



鐳射切割 Laser Cutting



三維打印 3D Printing



<https://makerbay.net/impact-maker/>

查看即將舉辦的工作坊



Ocean Plastic





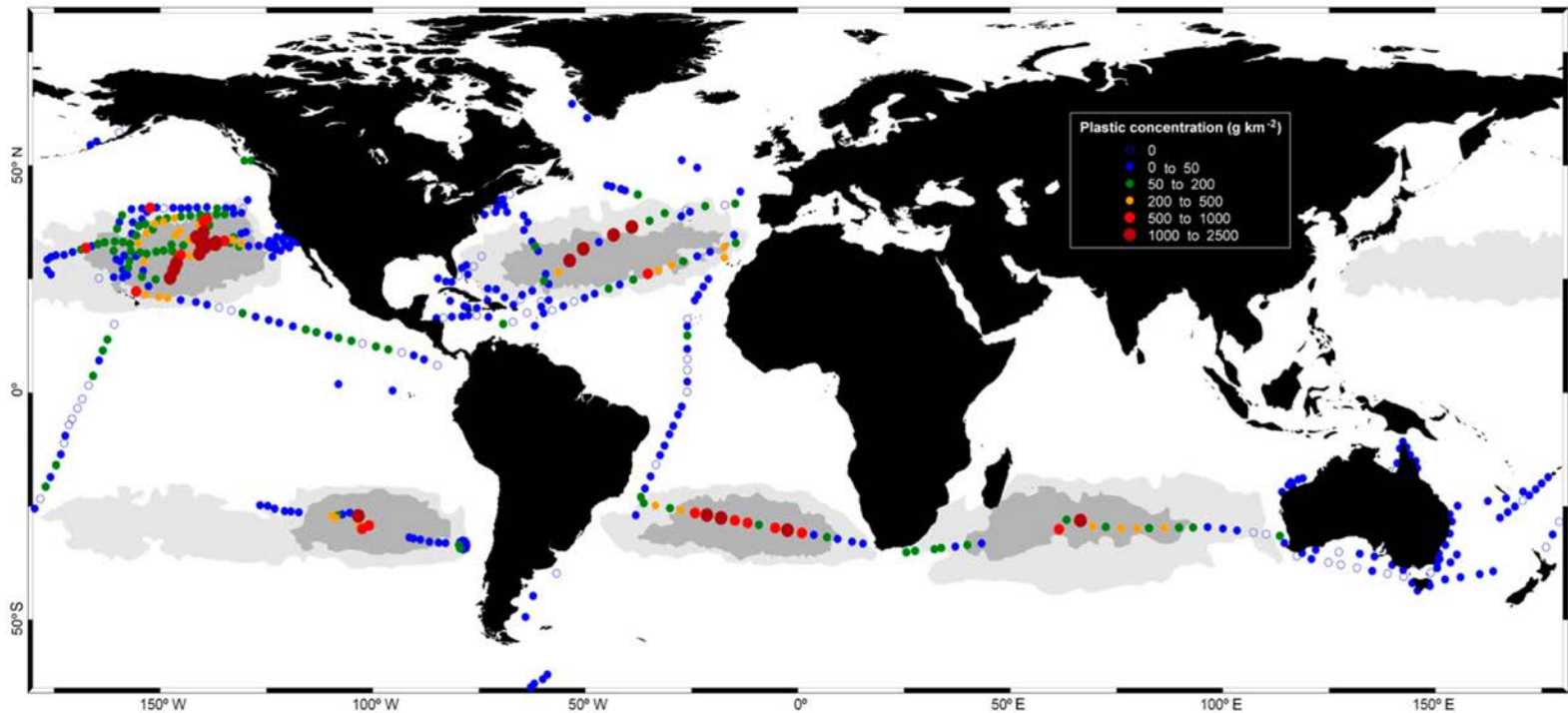


Fig. 1. Concentrations of plastic debris in surface waters of the global ocean. Colored circles indicate mass concentrations (legend on top right). The map shows average concentrations in 442 sites (1,127 surface net tows). Gray areas indicate the accumulation zones predicted by a global surface circulation model (6). Dark and light gray represent inner and outer accumulation zones, respectively; white areas are predicted as nonaccumulation zones. Data sources are described in *SI Appendix, Table S1*. Plastic concentrations along the Malaspina circumnavigation and a latitudinal gradient are graphed in *SI Appendix, Figs. S4 and S5*.



<http://explorationsarchives.ucsd.edu>

Trawler



<http://www.futurity.org>

Manual Count



<http://www.mapresources.com>

Transect

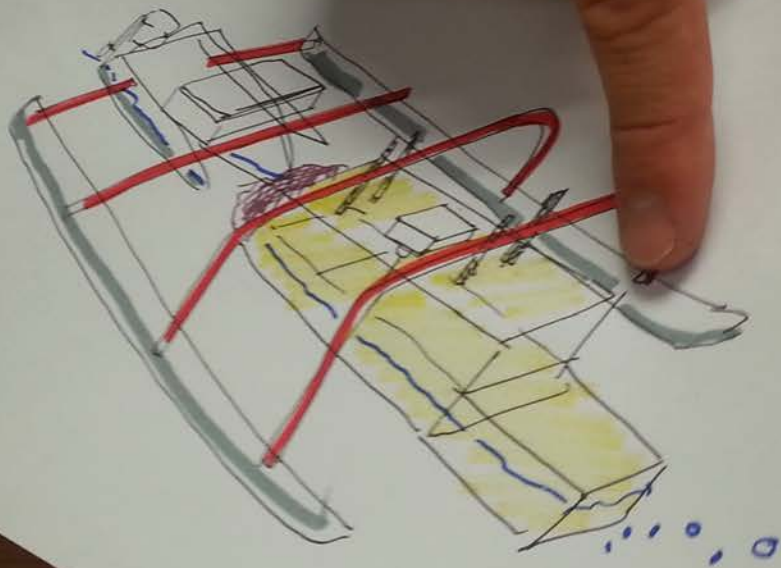


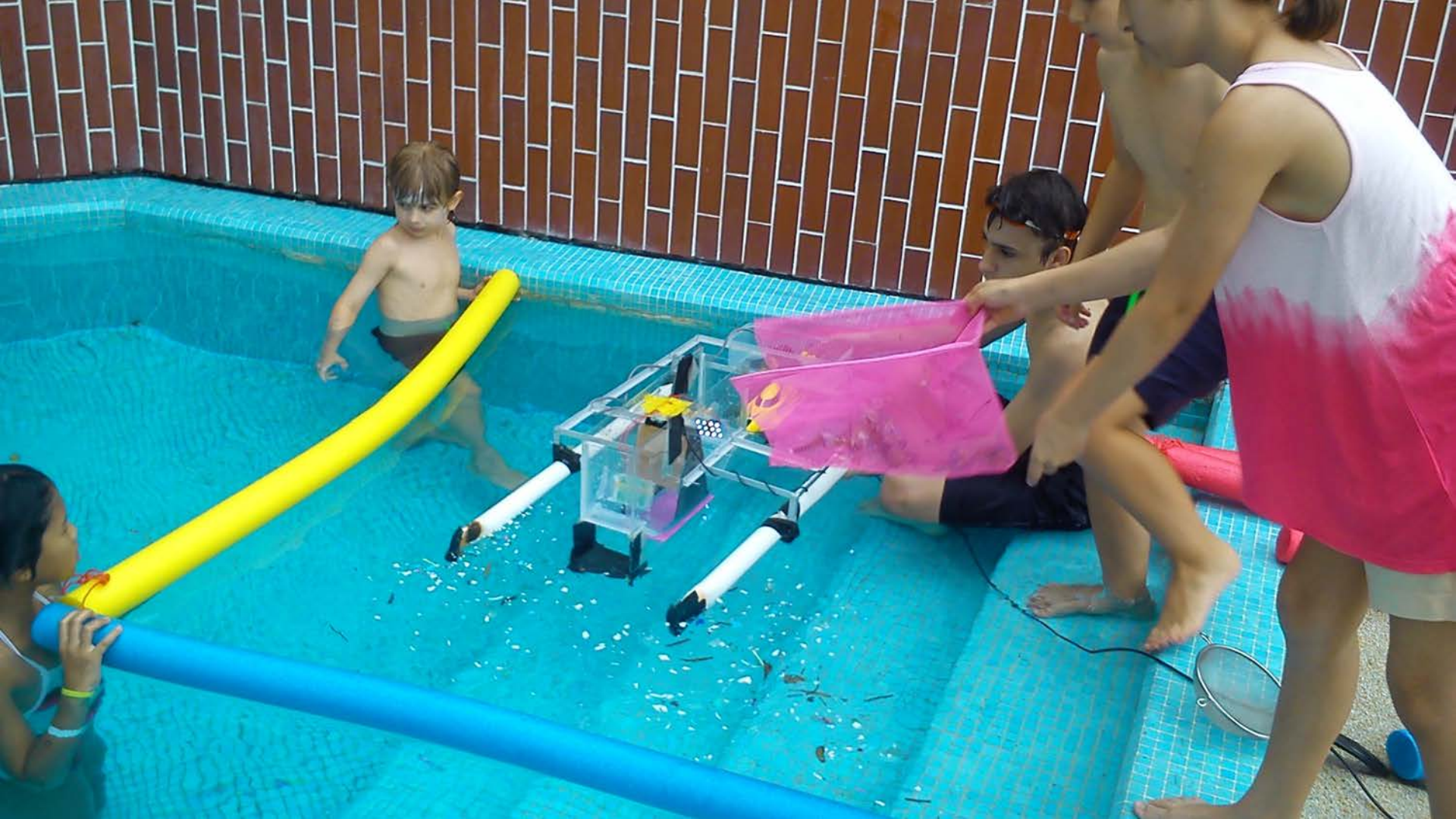




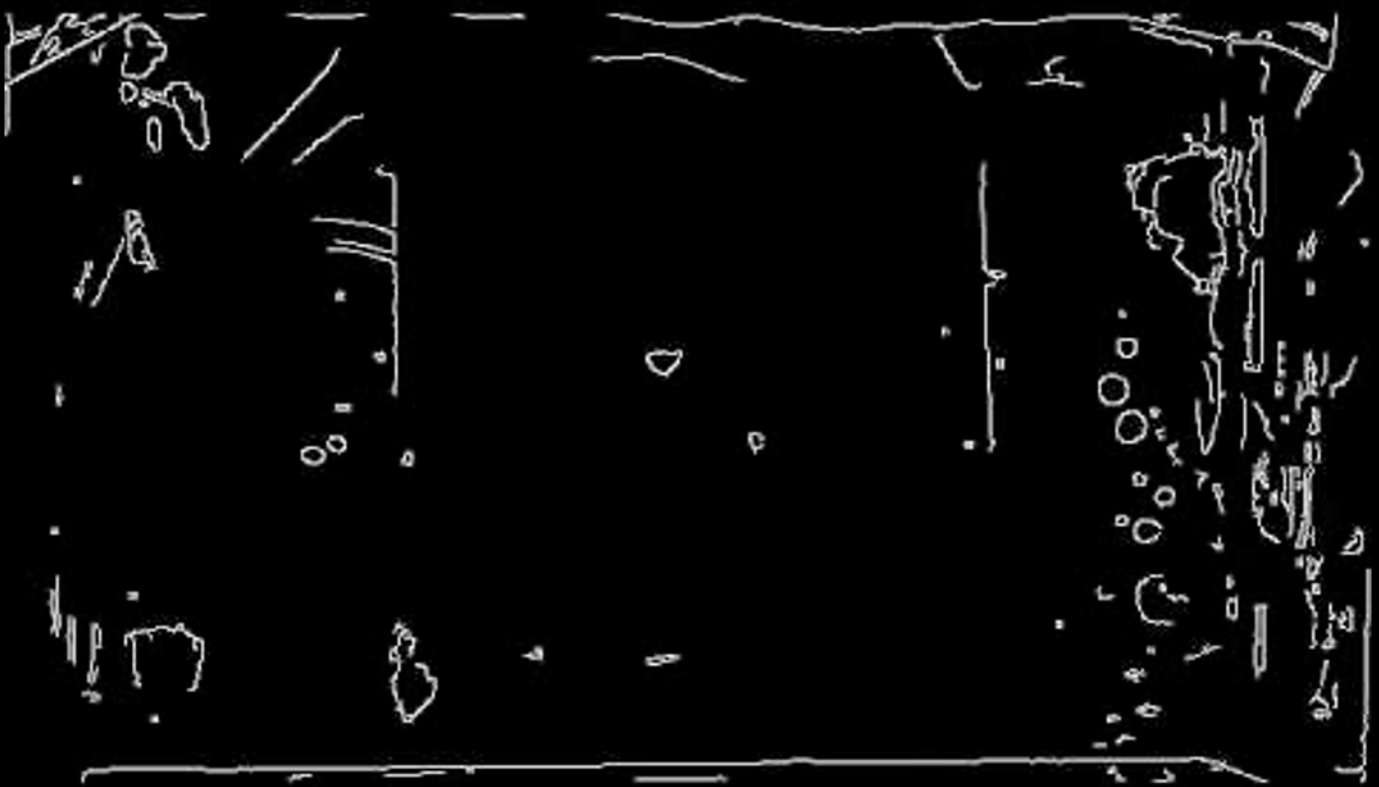














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Fashion

Ocean Plastic Sensor by Hector Hatrick

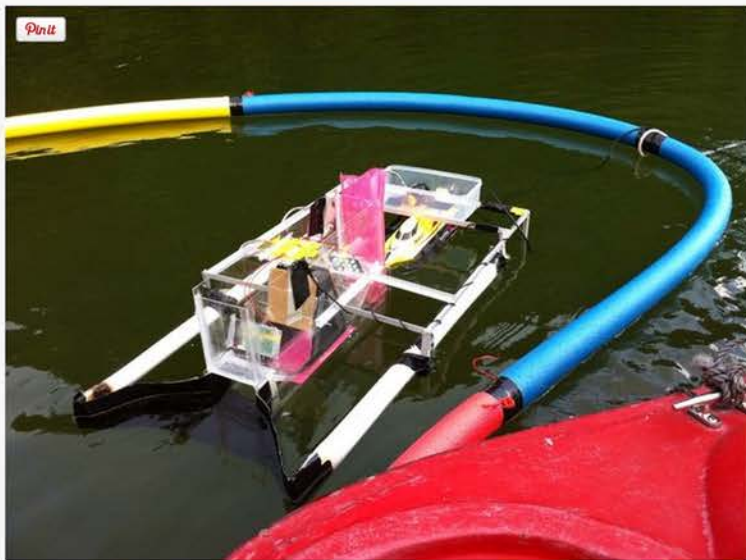
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The Harbour School Hong Kong Johnson

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How to make a vibrating Lego-Bot
by AiyanaCampbell



Smart home automation webserver on OpenWRT

717



Radio-controlled toy helicopters and used the rotor blades to power the vehicle. They tested the improvised method in their hostel's swimming pool before putting the experimental ClearBot to work at sea, Gupta says.

"A bunch of locals were looking at the robot and they really liked it because they could deploy it wherever they wanted, rather than take a whole morning to clean the seas near the beach," says fellow team member, Ahmed Abbas Alvi, a mechanical engineering student and product developer.



When I saw this system for the first time, I knew it was the one. We are not necessarily looking for Nobel Prize-winning scientific breakthroughs. We are looking for solutions that can help mankind
Dr Hayden So Kwok-hay, project supervisor



Documentary follows couple's six-day Hong Kong trash tour



Enjoy brokerage fees as low as 0.01% and HKD time deposit rates as high as 5% p.a.*

HSBC Learn more



www.clearbot.dev/



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UNPREDICTABLE WORLD



Sidhant Gupta
Ahmed Abbas Alvi

Dr Hayden So





HKU

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Bachelor of Arts & Sciences



AppliedAI



Design +



FinTech

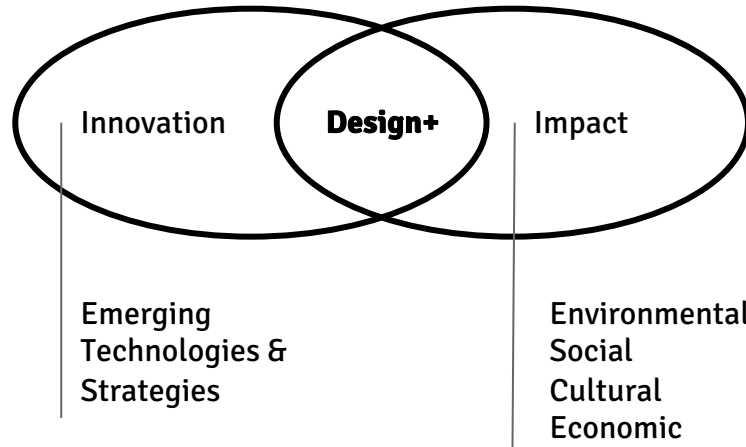
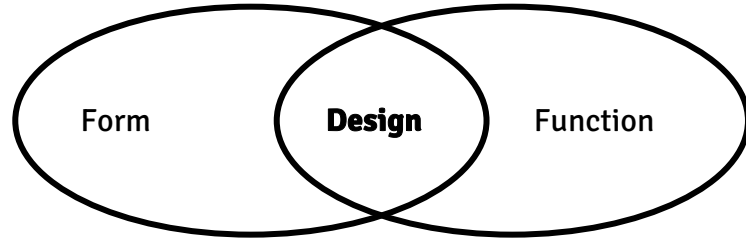


Global Health & Development

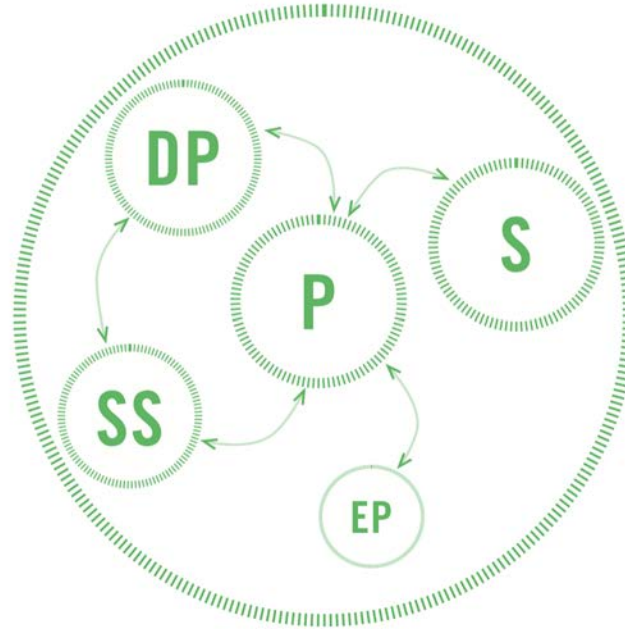
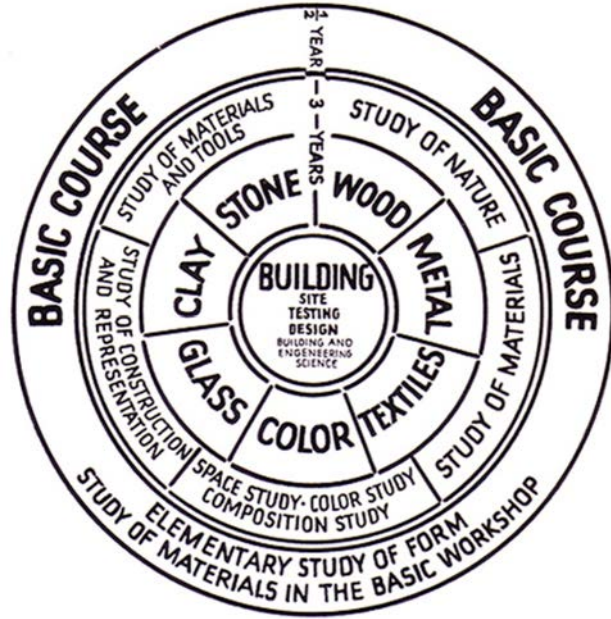


Social Data Science

What is Design+ BASc and how is it different from a traditional design training?



What is Design+ BASc and how is it different from a traditional design training?



- P PROBLEM
- S STUDENT
- DP DESIGN PROFESSIONAL
- SS SUBJECT SPECIALIST
- EP ESTABLISHED PROFESSIONAL

On the left, Traditional Bauhaus educational model of Masters teaching a sequence of basic courses leading to disciplinary specificity.

On the right, the BASc Design+ model is focusing on problems that are collectively addressed by students, designers, specialists, and professionals.

What is the structure of the course?

First Year of Study

First Semester courses

- Ideas (6 credits)
- Representation (6 credits)
- BASc Course (6 credits)
- Core University English course (6 credits)
- Common Core course (6 credits)

Second Semester courses

- Design+ Studio 1: Ideation (6 credits)
- Contemporary issues in design (6 credits)
- English language enhancement course (6 credits)
- Common Core course (6 credits)
- Common Core course (6 credits)

Second Year of Study

First Semester courses

- Material science and engineering (6 credits)
- 2nd Major / Minor course (6 credits)
- 2nd Major / Minor course (6 credits)
- BASc Course (6 credits)
- Chinese language enhancement course (6 credits)

Second Semester courses

- Data for interdisciplinary innovation (6 credits)
- Research for innovation (6 credits)
- 2nd Major / Minor course (6 credits)
- 2nd Major / Minor course (6 credits)
- 2nd Major / Minor course (6 credits)

Third Year of Study

First Semester courses

- Design+ Studio 2 – Rationale (12 credits)
- Extended interdisciplinary co-supervised project 1 (6 credits)
- 2nd Major / Minor course (6 credits)
- BASc Course (6 credits)

Second Semester courses

- Design+ Studio 3 – Process (12 credits)
- 2nd Major / Minor course (6 credits)
- 2nd Major / Minor course (6 credits)
- Common Core course (6 credits)

Fourth Year of Study

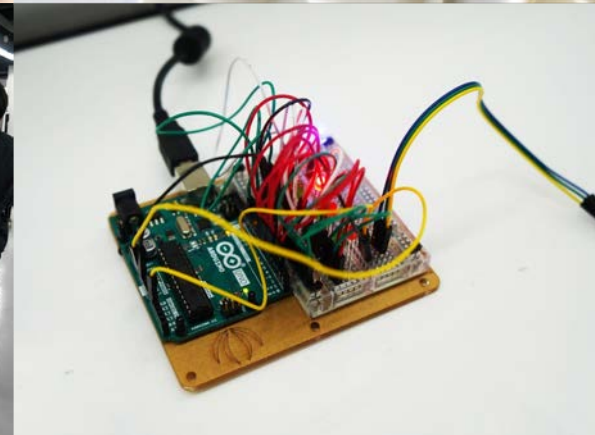
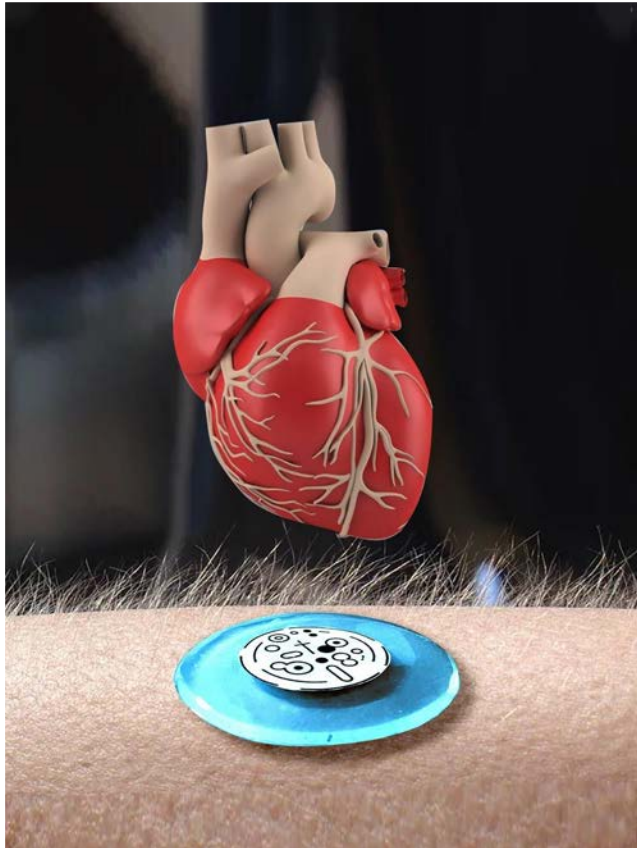
First Semester courses

- Design+ Studio 4 – Masterclass (12 credits)
- 2nd Major / Minor course (6 credits)
- 2nd Major / Minor course (6 credits)
- BASc Course (6 credits)

Second Semester courses

- Design+ Studio 5 – Capstone (12 credits)
- Interdisciplinary processes and applications (6 credits)
- Extended interdisciplinary co-supervised project 2 (6 credits)
- 2nd Major / Minor course (6 credits)
- or
- Elective course (6 credits)

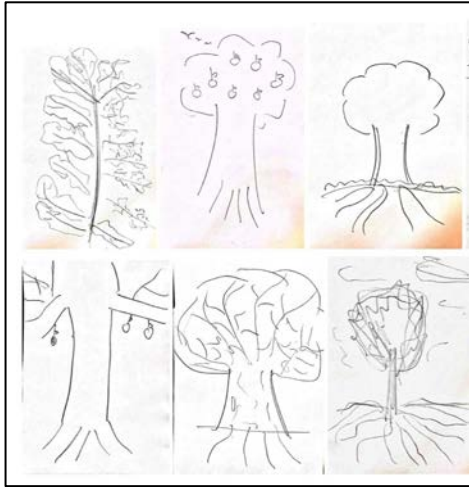
Ngoc Anh Duy Huynh



“Save my plant”, by Winnie Heung



“The Tree Project”, Fergal Tse



Reachable Machine

No Roots 43 Image Samples

No Branches 20 Image Samples

Branches 31 Image Samples

Training

Model Trained

Advanced

Epochs: 50

Batch Size: 16

Learning Rate: 0.001

Reset Defaults

Under the hood

Preview

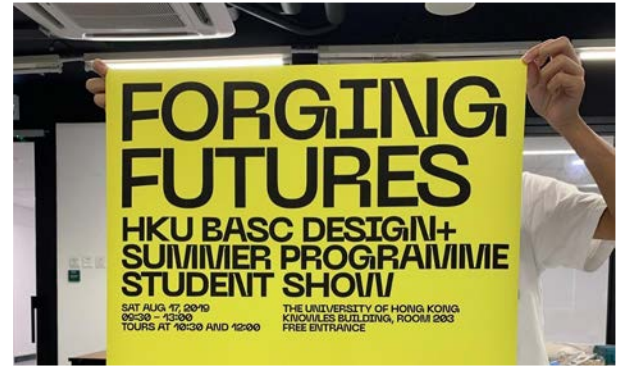
Export Model

Output

- Big Trunk
- Small Trunk 10%
- Deep Roots
- No Roots 20%
- No Branch...
- Branc... 10%

Graphic Design + AI + Psychology

“Peace Bao”, by Candy Chan, Audrey Lam, Hughson Wong



Can Design embody our future morals? Design + Safety

Sustainable Leadership Course - ALL BASc DESN9002

Chrome File Edit View History Bookmarks People Tab Window Help

notion.so/cesarjungharada/DESN9002-Sustainable-Leadership-Course-b1ea07b6f887403f8b692d153daf5b236

DESN9002 Sustainable Leadership...

DESN9002 Sustainable Leadership Course

- Projects & Teams
- People
- Program
- References
- Tags
- Q&A

Introduction

"Leadership" often conjures up images of hierarchy, the top down power that creates unnecessary tension beat and environmental destruction. In a society that is increasingly connected, and evolving ever rapidly, this form So, what kind of leadership do we need to guarantee humans are best able to care for and support each other come from? How will we adapt and evolve the current conception of leadership towards a more sustainable wo Leadership?"

It is clear that our generation has the duty to reinvent leadership and implement it in society overall. The Unive questions galvanising strong domain knowledge in science, technology, finance, design and social sciences.

More: [Kane and the world needs a new generation of leaders that understand empathy, interpersonal skills, which is creative, resilient, adaptable, and highly innovative. Such qualities are better learned by](#)

Open innovation

Internal technology base

External technology base

Other firm's market

Licence, spin out, divest

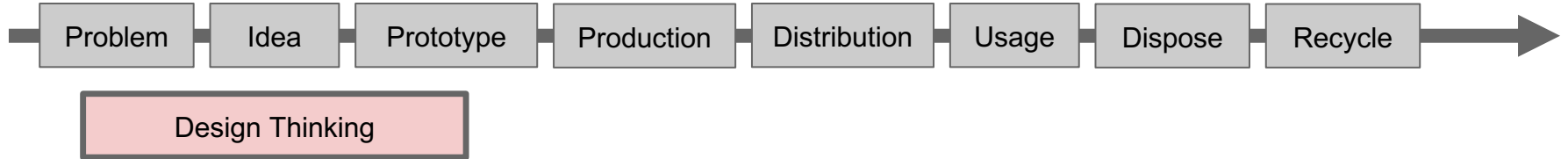
Our new market

Internal/external venture handling

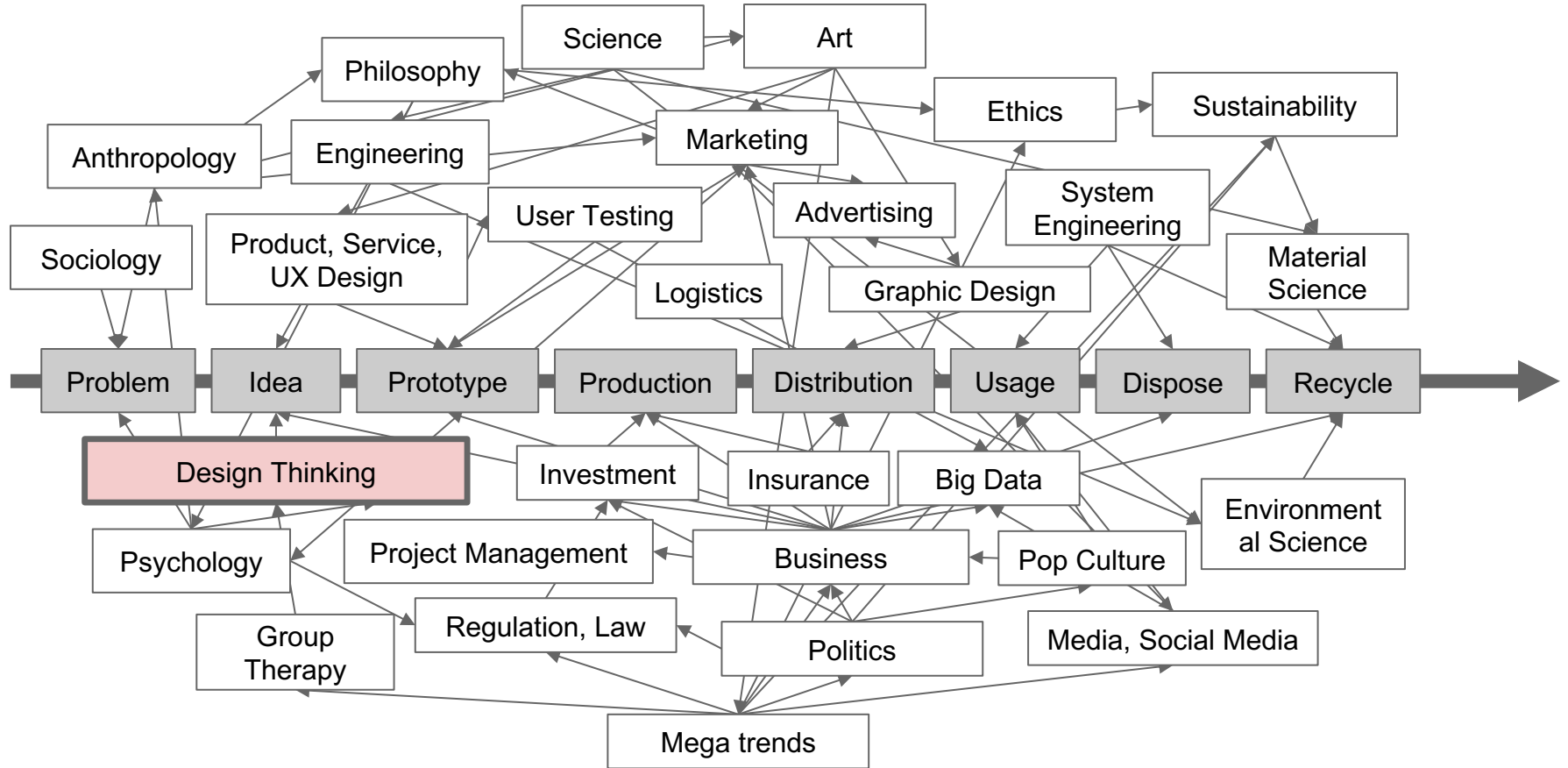
Our current market

Future

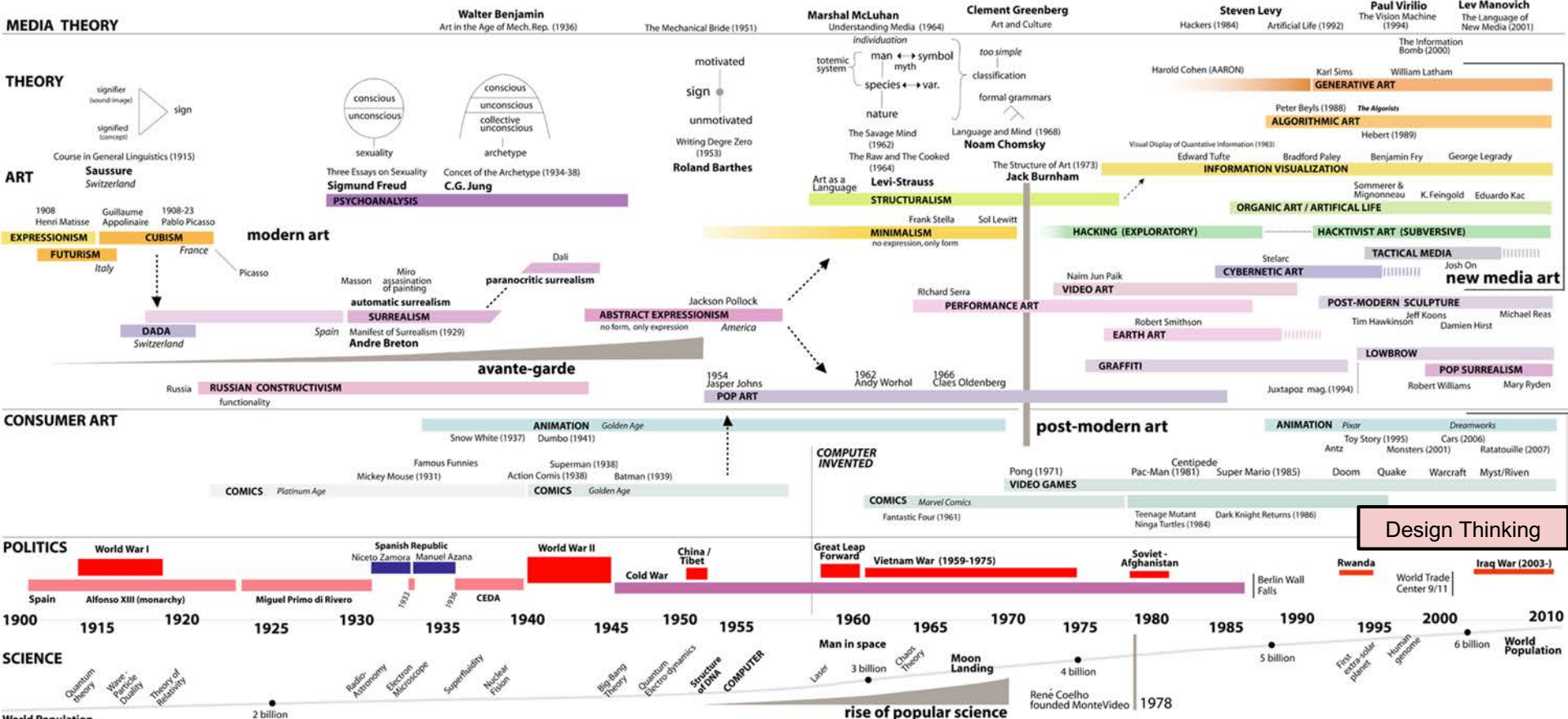
Product Lifecycle



Product Lifecycle



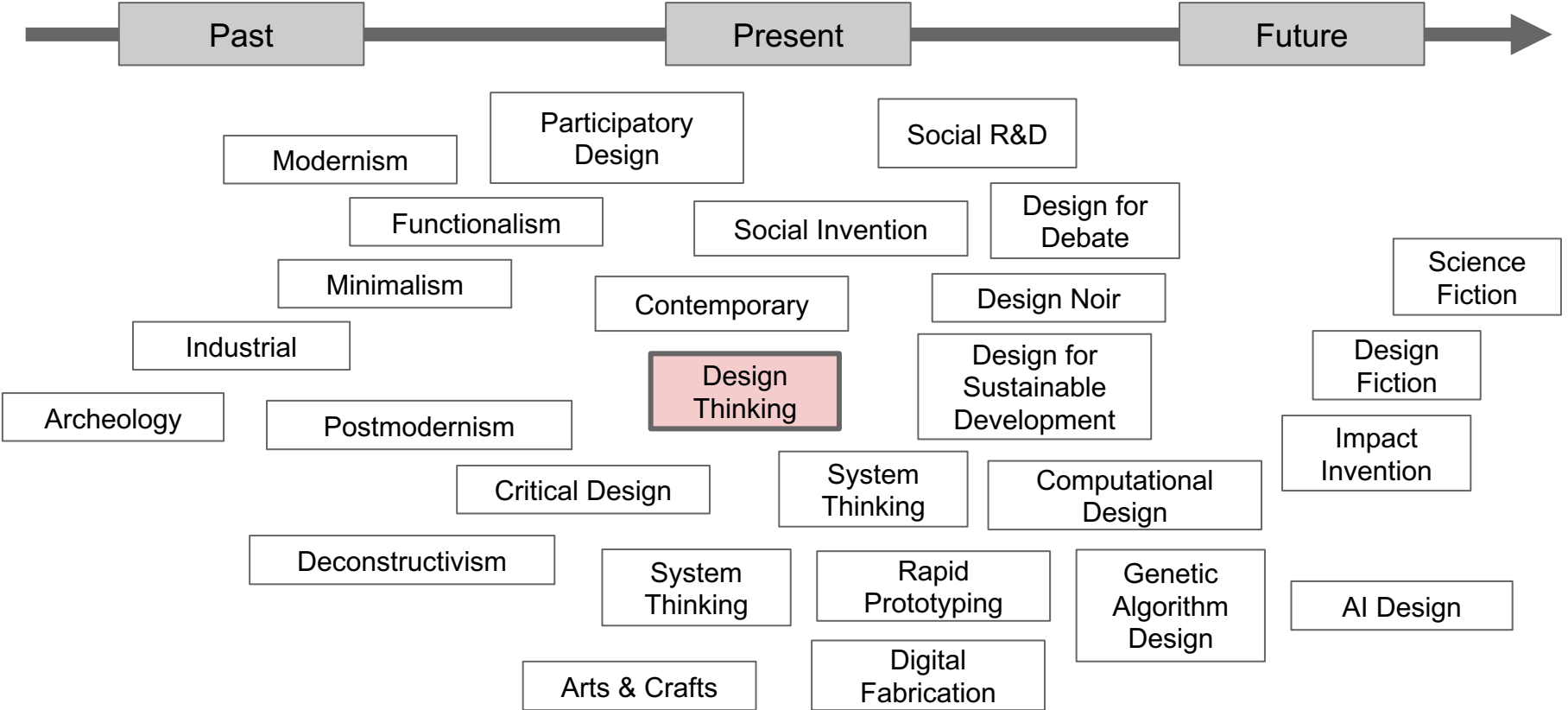
History of Art & New Media

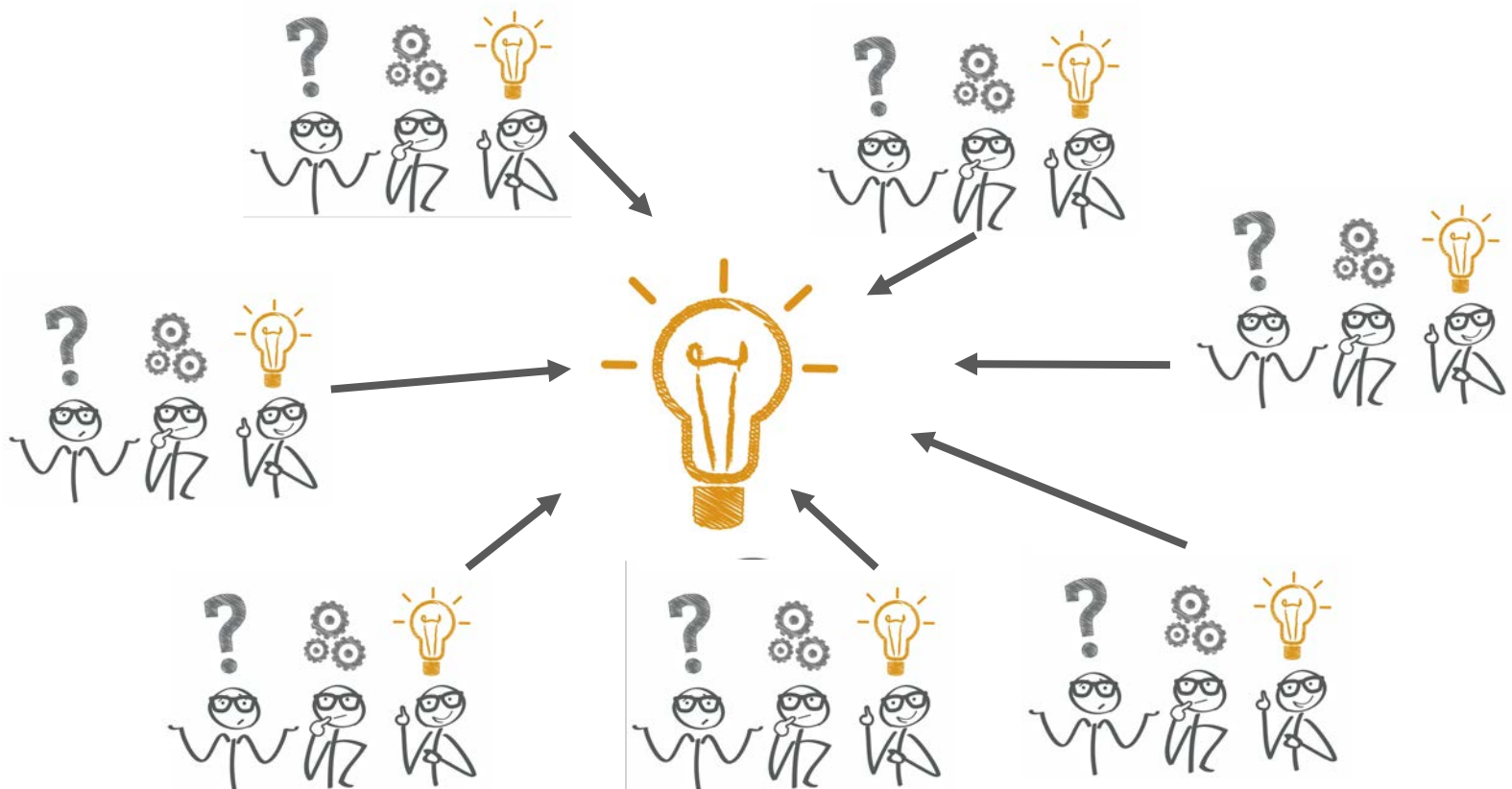


Design Thinking

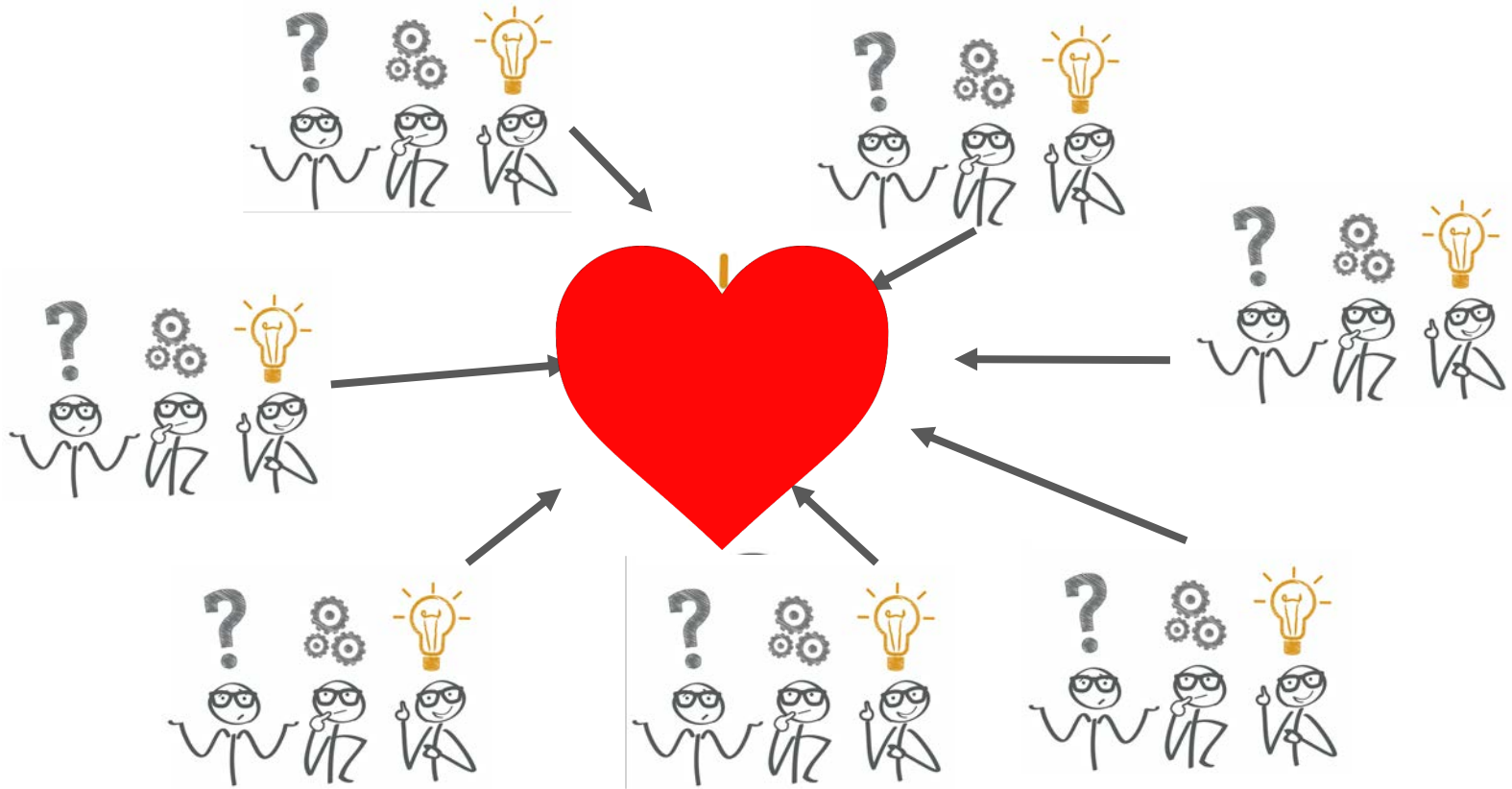
Timeline of 20th. Art and New Media

Design as a tool to create in a specific “time zone”

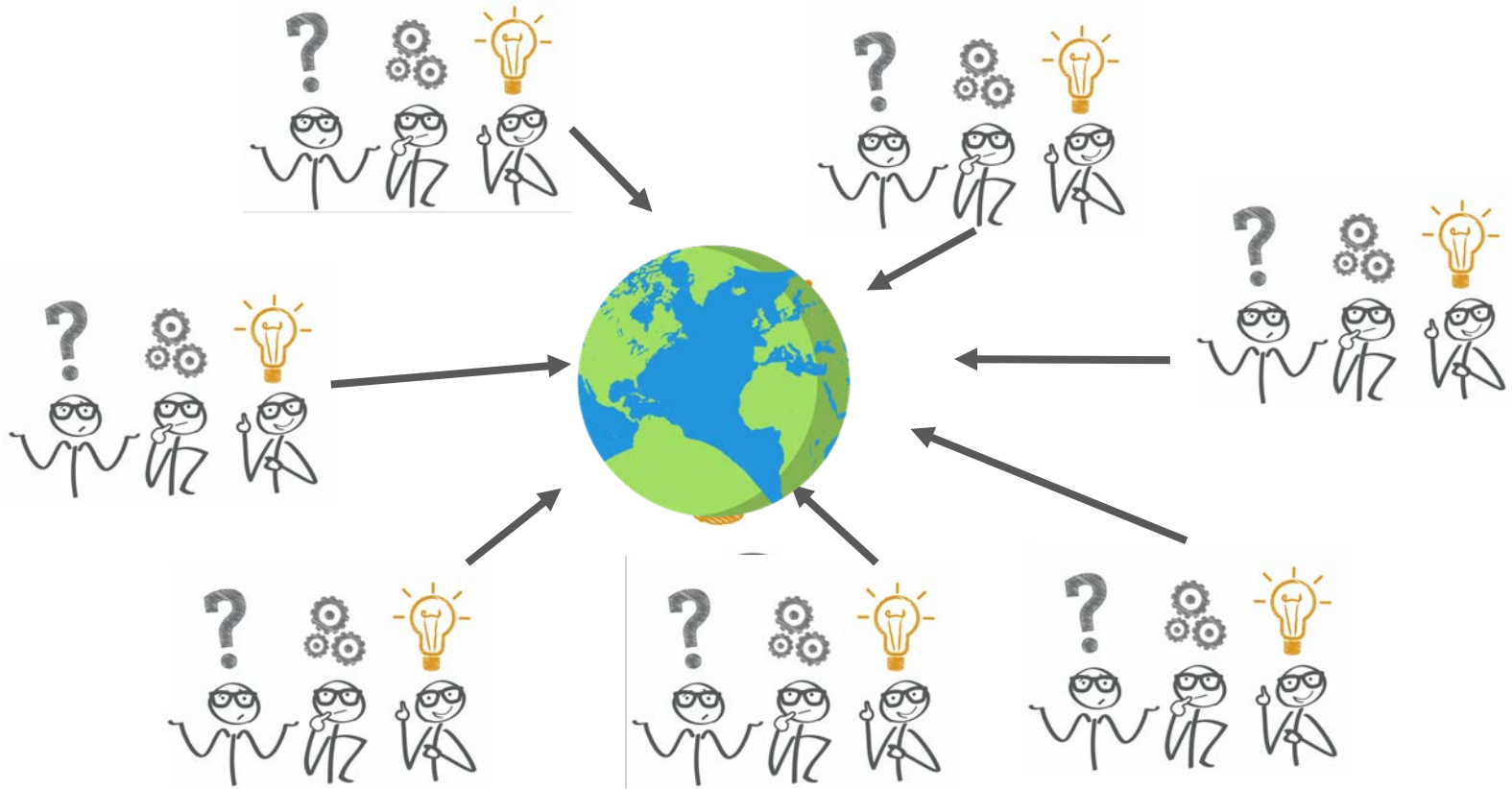




Getting diverse people to create something together



Getting diverse people to create something together



Getting diverse people to create something together

EMPATHIZE

DEFINE

IDEATE

PROTOTYPE

TEST

LEARN



BE SURE
TO WASH YOUR
HANDS AND ALL
WILL BE WELL

COVID-
19

RECESSION

CLIMATE
CHANGE

BIODIVERSITY
COLLAPSE

MACKEY
mackaycartoons.net



**Conclusion:
Local - Global
Speculative -
Real**

Cesarharada.com

Makerbay.org

Design+ HKU

contact@cesarharada.com

+852 9610 7593