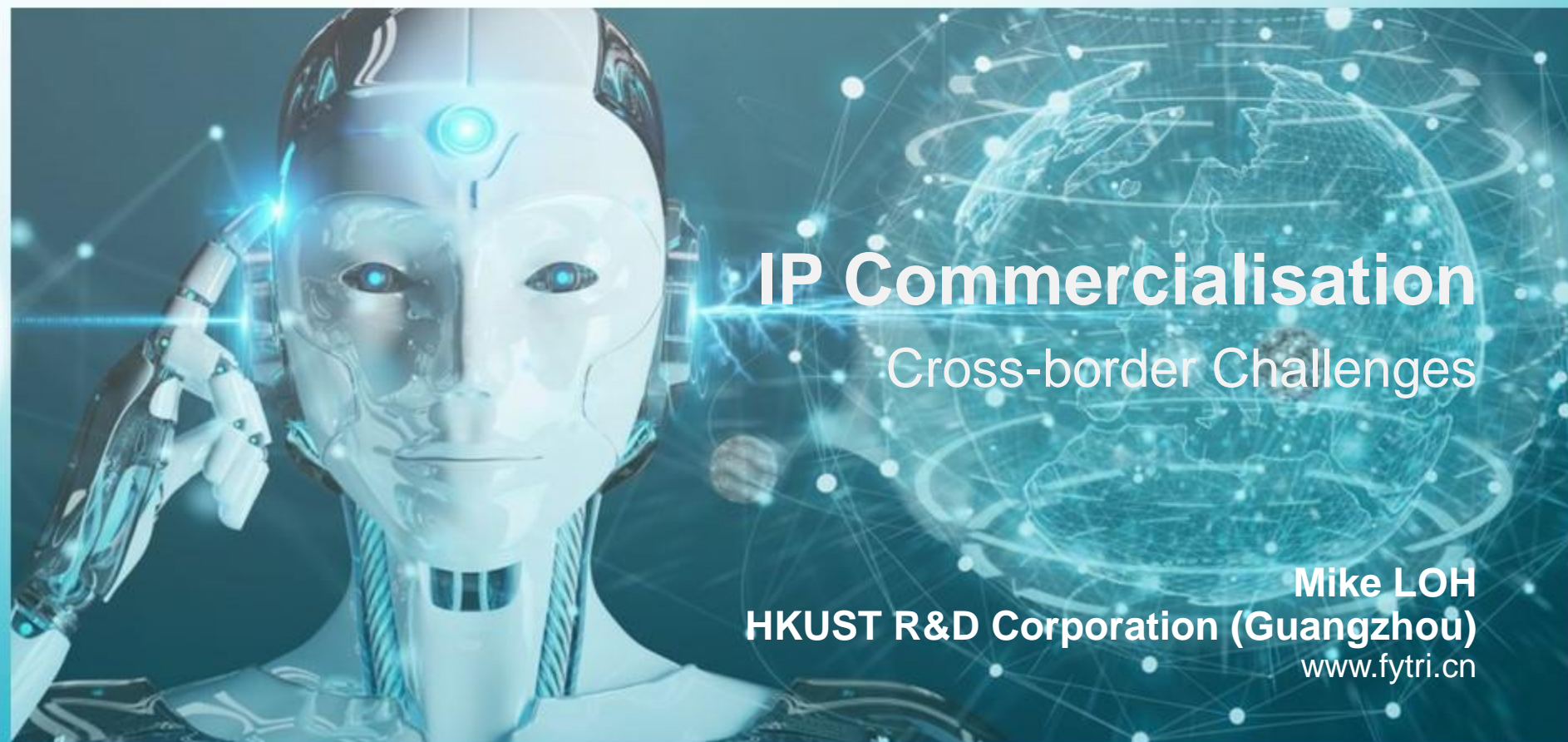


# INTERNATIONAL CONFERENCE ON INNOVATION, TRANSFER AND DIFFUSION OF FOURTH INDUSTRIAL REVOLUTION TECHNOLOGIES (VIRTUAL)

GUANGZHOU, CHINA, 30 JUNE 2022



## IP Commercialisation Cross-border Challenges

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1. Innovation and Technology Transfer
  - Commercialising 4IR Technologies
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3. Crossing Borders, Going Global
  - Protection and Localisation
  - Need for Greater Collaboration

# My Background

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Born in SG, Lived in HK, Working in GZ, China



- Trained in Patent Pool licensing
- Commercialisation of MPEG-4 SLS patent licensing program



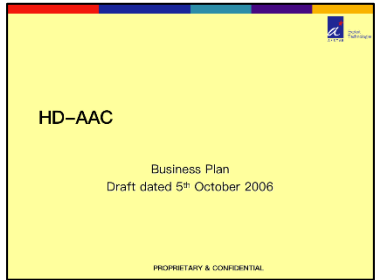
- Setup Industry-Collaborative Projects
- Commercialisation of High-power LED Chips Manufacturing



- Commercialisation and IP management
- Entrepreneurship Platform for the Greater Bay Area regions



# My Journey (2004-Current)



2005-2007 (USD500k)  
音乐编码器  
美国Warner Music



2010-2012 (USD5-10m)  
LED芯片  
中国IDG, MGI, Advanced Materials



2013  
可见光定位系统

2020 (USD1m)  
5G器件  
日本

2015 (USD500k)  
企业物联网  
新加坡NRF, RDV





## Innovation and Technology Transfer

- Commercialising 4IR Technologies
- IP Management and Tech-Transfer Practices

# /01

# Fourth Industrial Revolution (4IR)

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4IR promises to revolutionize several aspects of social and economic life:

- Manufacturing (mass customization),
- Transportation (through drones and driverless cars) and
- Healthcare (personalized medication)

1. Large firms (with more than 250 employees) account for over 98% of all 4IR patent applications to the EPO since 1985
2. Firms with a long history in 4IR patent filings benefit more from the development of 4IR technological capabilities than later applicants
3. Returns from 4IR technological developments may be slow to be cashed in
4. Positive relationship with productivity is stronger for 4IR-related wireless technology and for artificial intelligence, cognitive computing, and big data analytics

*Source: Oxford Academic: Industrial and Corporate Change, Volume 31, Issue 1, January 2022*

# IP Management and Tech-Transfer Practices

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- Proper IP Management
  - Policies on IP ownership, protection and commercialisation
  - Conduct IP landscape analysis, ensure IP interests are properly protected to drive positive social and economic impact (Patent portfolio is not easy to work-around)
  - Inventions and any technical developments are disclosed timely
- Invention Protection
  - An invention needs to be controllable (i.e. through patents, contracts, trade secrets or a combination)
  - Patent filing strategy for a technology should consider protection in countries where the technology will be manufactured, commercialised and where competitors may operate
- Technology Transfer Practices
  - 99% of technologies do not see mass adoption (fact!)
  - Consider technical and market validation funding
  - Inventors are not the best entrepreneurs (naïve, greedy)
  - Tech > Team > BizModel > Timing > Luck



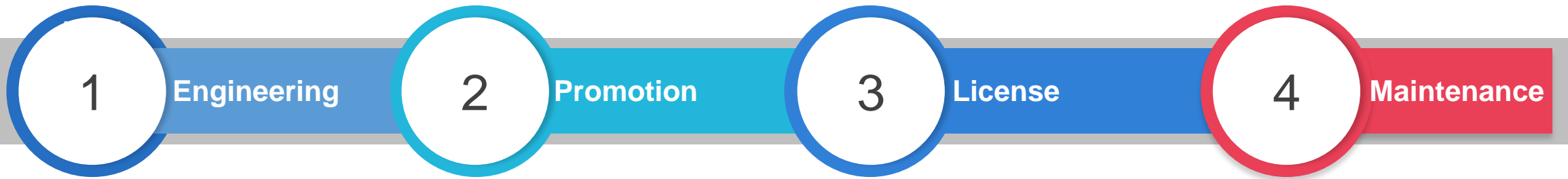
## Challenges for Commercialisation

- Universities to Industry to Multilateral
- Promoting an 'Innovation' Ecosystem

/02



# Patent Lifespan & Monetisation



*Licensee company is granted the rights to manufacture, market and sell products or services developed from the patented technology.*

**R&D Engineering**  
• Patent Applications



**Commercialisation**  
• Searching for Use Case



**Early Adoption**  
• Productisation



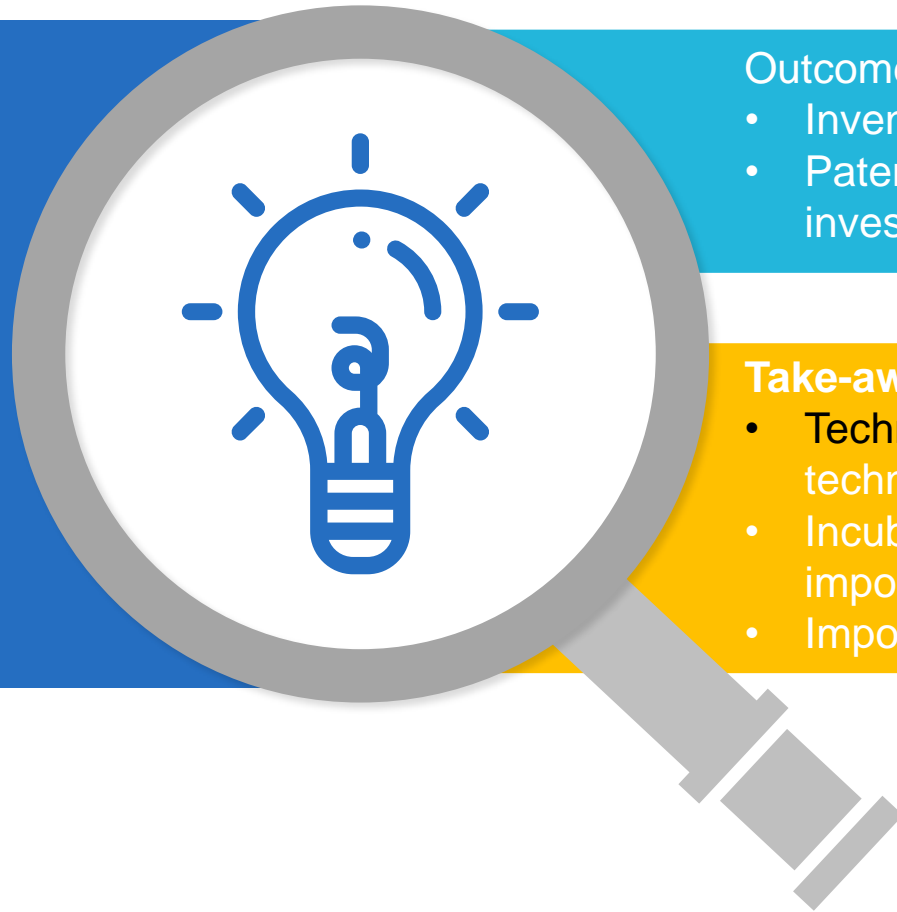
**13-20 Yrs**  
**Mass Adoption**



# Case Study: Patent Pooling

## Adaptive Streaming MP4 Audio Codec

- R&D (2000-2005)
- Applied for 9 US patents, 2 entered into the MPEG-4 SLS standards



### Outcome :

- Inventor recruited to Dolby
- Patent Pool formed, Warner Music invested in 2017



### Take-aways:

- Technology has a lifespan...4G technology reduced the need for SLS
- Incubent MP3 technology is almost impossible to replace
- Importance of Big Brands support



# Case Study: Exclusive Licensing

## High-power LED Chips

- R&D (2005-2010)
- Applied 7 US patents, only 1 is really valuable
- Leadership team is critical for fund raising, core team members is the value of tech



### Outcome :

- Offered 30% shares for USD10M early-stage investment



### Take-aways:

- VC Lead is very important
- Industry timing critical for fund raising
- Other USP: US patent grant, market validation, core tech team...



# Case Study: No Patents

## End-to-End Enterprise IOT Platform

- R&D (2014-2017)
- No patent application, using open-source
- Relied on individual capabilities (CTO)



### Outcome :

- Proof-of-concept achieved seed investment, but not enough for a Pre-A or Series A round



### Take-aways:

- Sizable customer is very critical to build investor's trust
- Startups needed VC's connections
- Patents and Big customers are absolutely needed for fund raising

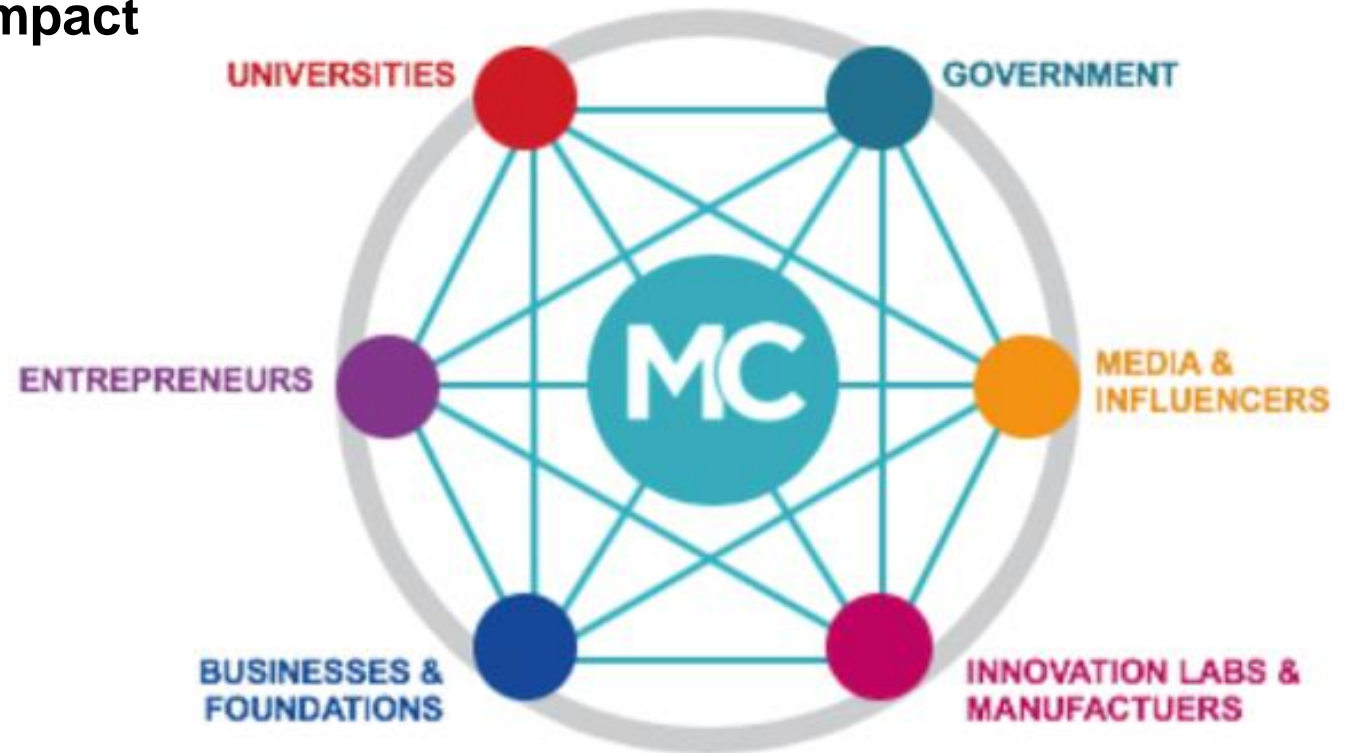


# 'Innovation' Ecosystem

## Research › Innovation » Economic Impact

'Knowledge-based, highly productive and competitive economy' built on innovation, research, science and technology:

- more research funding and start-up incubators
- proper intellectual property (IP) management and technology transfer processes
- access to industry and venture capital to support the adoption of new technology



MassChallenge is a non-profit organization dedicated to supporting innovation and entrepreneurship through collaboration and development.  
( <https://masschallenge.org/> )



## Crossing Borders, Going Global

- Protection and Localisation
- Need for Greater Collaboration

/03

# Innovation Protections

If you don't see a problem with this question, you need this class!



5/29/2014

Madhusudan Rao .D.V.

4



# Crossing Borders

## Tech Export:

- Data Restriction
- Tech Restriction



## Tech Import:

- Gov. Embracement
- Gov. Protection

Uber





# Greater Collaboration & Commercialisation

Report: Innovation for Hong Kong's Upward Social Mobility, HKUST Business School 2022

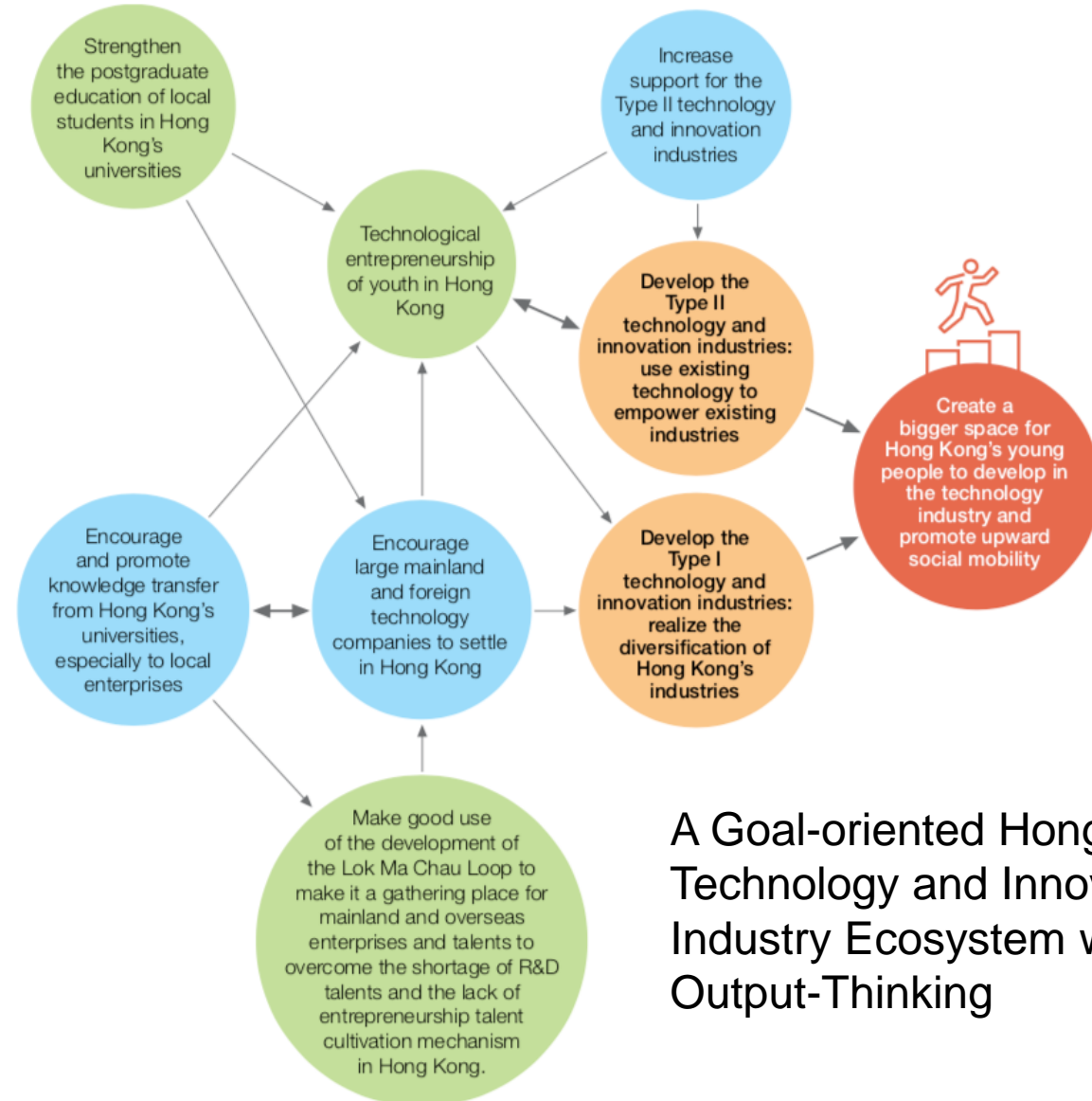
Prof. XU Yan, Mr YU Chun

- Hong Kong is losing the momentum for economic growth.
- If young people have no hope for the future, Hong Kong will have no future.
- Combine the strength of partner cities in the Greater Bay Area

“Global Innovation Index 2020”

- Hong Kong is ranked 11th overall
- But 54th in “Knowledge and technology output”

www.hkust.edu.hk



A Goal-oriented Hong Kong Technology and Innovation Industry Ecosystem with Output-Thinking



# Embrace Technology, Ready to Adapt & Adopt.

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