Impact Innovations:
Strategy in Creating & Developing High-Impact Innovation

Mohd Shahir Shamsir
Innovation and Commercialisation Centre
Universiti Teknologi Malaysia
Innovation & Technology Management Association

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

ITMA

Impact Innovation Workshop
UTEM
25 Sept 2019

Introduction to Innovation

Innovation vs invention

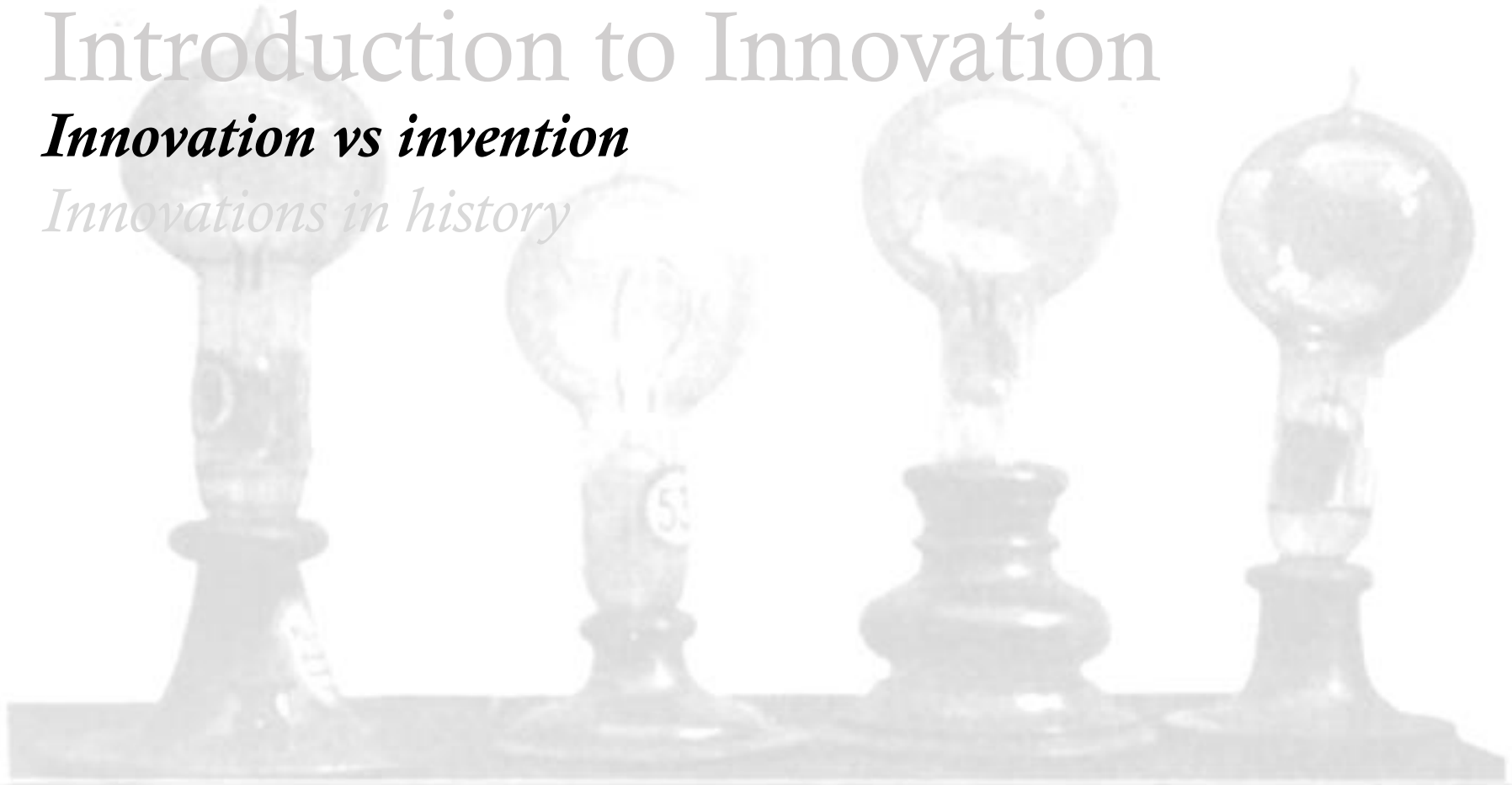*Innovations in history*

Introduction to Innovation

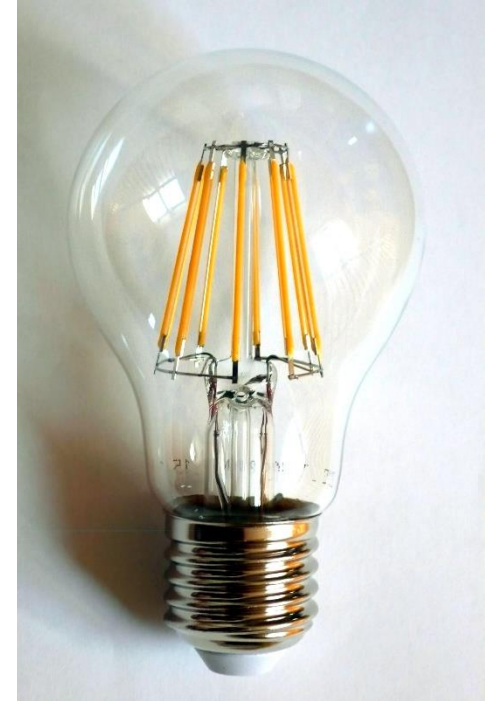## *Innovation vs invention*

Innovations in history

Innovation vs invention

"**Innovation**" is the action or process of making changes in something that has been established in order to improve it.

"Invention" is a act creating something that had not existed.

Idea, Execution, Uniqueness

Value Creation.

circuit breaker

Samsung's component division will make more money off the iPhone X than the Galaxy S8

63 💬

By Chaim Gartenberg | @cgartenberg | Oct 2, 2017, 5:06pm EDT

f 🐦 ↗ SHARE

GOOD DEALS

FINANCE
3 Ways WeWork Board Members Can Pressure CEO Adam Neumann to Step Down

NEWSLETTERS
Facebook May Be Nasty But That's Not the Real Question—Data Sheet

NEWSLETTERS
Climate Week Starts With a Fizzle at the U.N. — The Loop

NEWSLETTERS
Meet Fortune's Most Powerful Women International: The Broadsheet

TECH • APPLE

Google to Pay Apple $12 Billion to Remain Safari's Default Search Engine in 2019: Report

By Lisa Marie Segarra   September 29, 2018

f 🐦 in ✉

The company got off

Most Popular Posts

Why the Repo Market Is Such a Big Deal—and Why Its $400 Billion Bailout Is So Unnerving
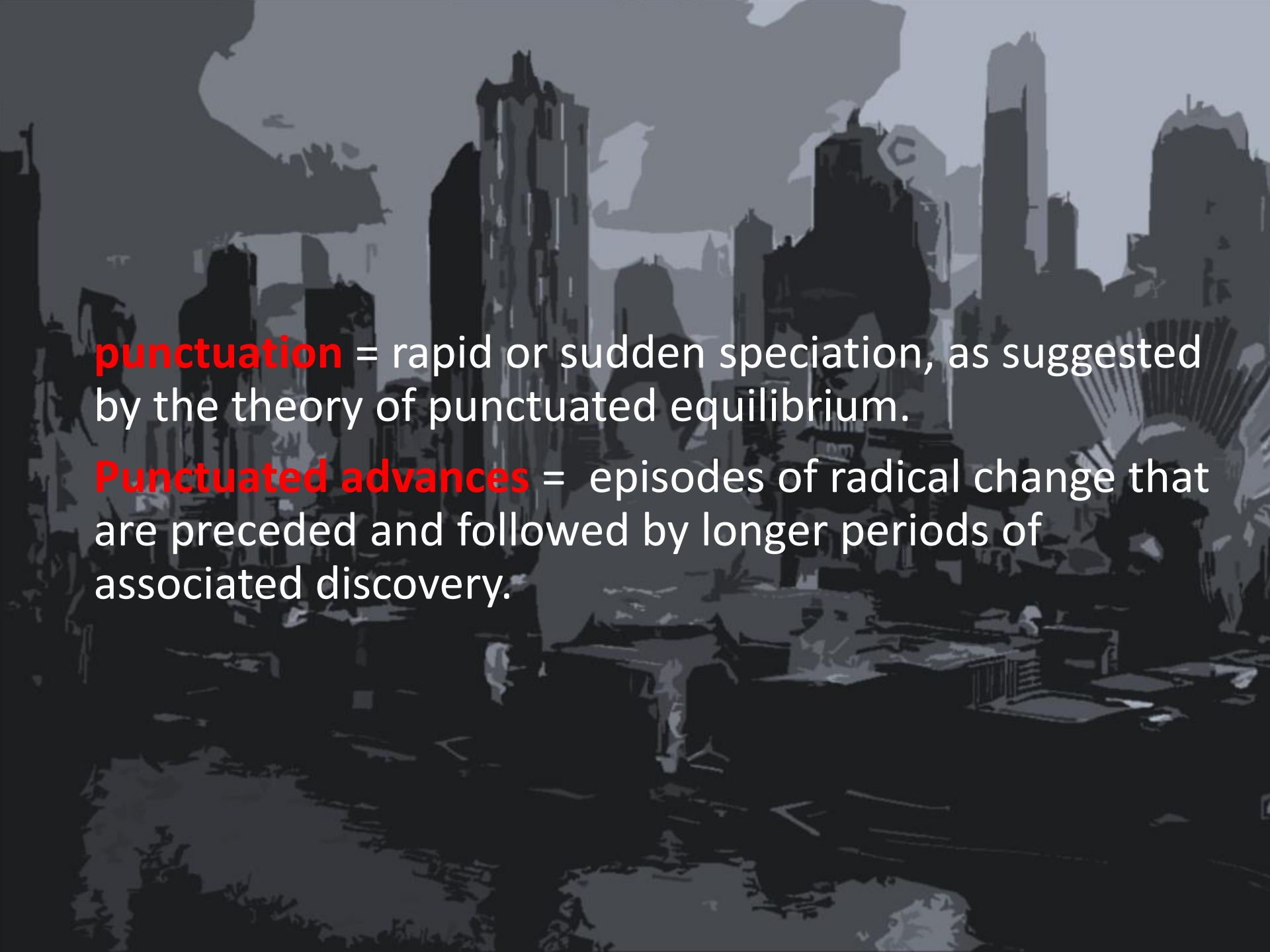Alexander Saeedy

Introduction to Innovation

Innovation vs intellectual property

Innovations in history

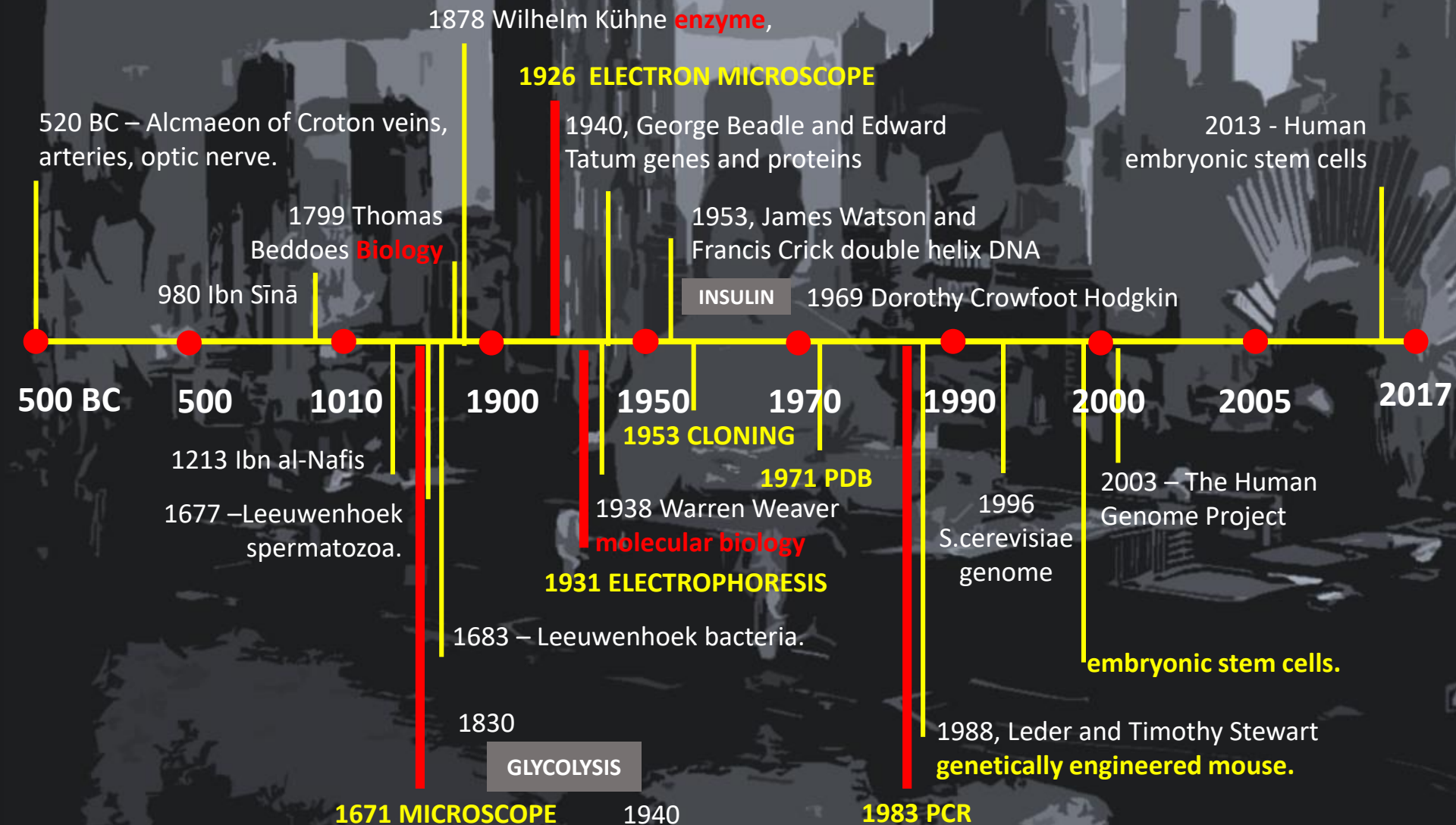Punctuated advances of technology in history

punctuation = rapid or sudden speciation, as suggested by the theory of punctuated equilibrium.

Punctuated advances = episodes of radical change that are preceded and followed by longer periods of associated discovery.

Past

Punctuated progress

1878 Wilhelm Kühne **enzyme**,

1926 ELECTRON MICROSCOPE

520 BC – Alcmaeon of Croton veins, arteries, optic nerve.

1940, George Beadle and Edward Tatum genes and proteins

2013 - Human embryonic stem cells

1799 Thomas Beddoes **Biology**

1953, James Watson and Francis Crick double helix DNA

980 Ibn Sīnā

INSULIN 1969 Dorothy Crowfoot Hodgkin

500 BC **500** **1010** **1900** **1950** **1970** **1990** **2000** **2005** **2017**

1953 CLONING

1213 Ibn al-Nafis

1971 PDB

1677 –Leeuwenhoek spermatozoa.

1938 Warren Weaver **molecular biology**

1996 S.cerevisiae genome

2003 – The Human Genome Project

1931 ELECTROPHORESIS

1683 – Leeuwenhoek bacteria.

embryonic stem cells.

1988, Leder and Timothy Stewart **genetically engineered mouse.**

1830

GLYCOLYSIS

1671 MICROSCOPE 1940

1983 PCR

Past

Now

Now

real time all the time

Now

Future

Now

Future?

meet the team

Discovering new medicines

We began with a focus on bioscience – increasing the understanding of human biology by ingesting the entire compendium of information on human health and biological systems. We are applying this knowledge to pharmaceutical development to bring better medicines to patients faster.

our story

BenevolentAI was founded in 2013 by Ken Mulvany following the sale of Proximagen, a successful biotech business that Ken founded. The experience of running a biotech, a company in an industry entirely reliant on scientific breakthroughs, highlighted the challenges of innovating using a process of scientific discovery that had not largely changed for 50 years.

Artificial Intelligence

Artificial Intelligence + miniaturisation

MIT Technology Review

Topics+   Top Stories   Magazine   Events   More+

Intelligent Machines

Artificial Intelligence Offers a Better Way to Diagnose Malaria

An algorithm for spotting malaria under the microscope could bring accurate, rapid diagnosis to understaffed areas.

by Anna Nowogrodzki   February 10, 2016

For all our efforts to control malaria, diagnosing it in many parts of the world still requires counting malaria parasites under the microscope on a glass slide smeared with blood. Now an artificial intelligence program can do it more reliably than most humans.

That AI comes inside an automated microscope called the Autoscope, which is 90 percent accurate and specific at detecting malaria parasites.
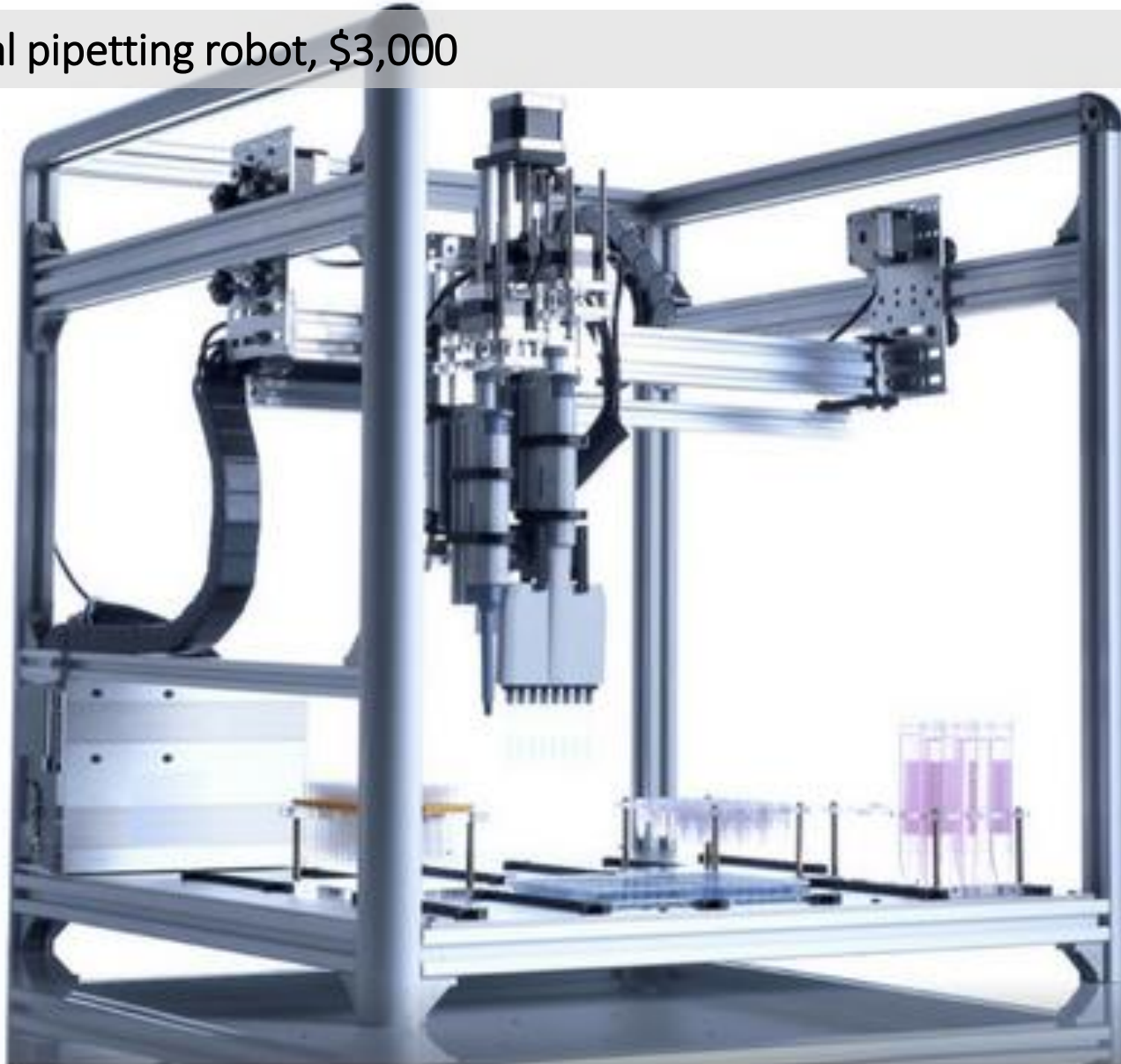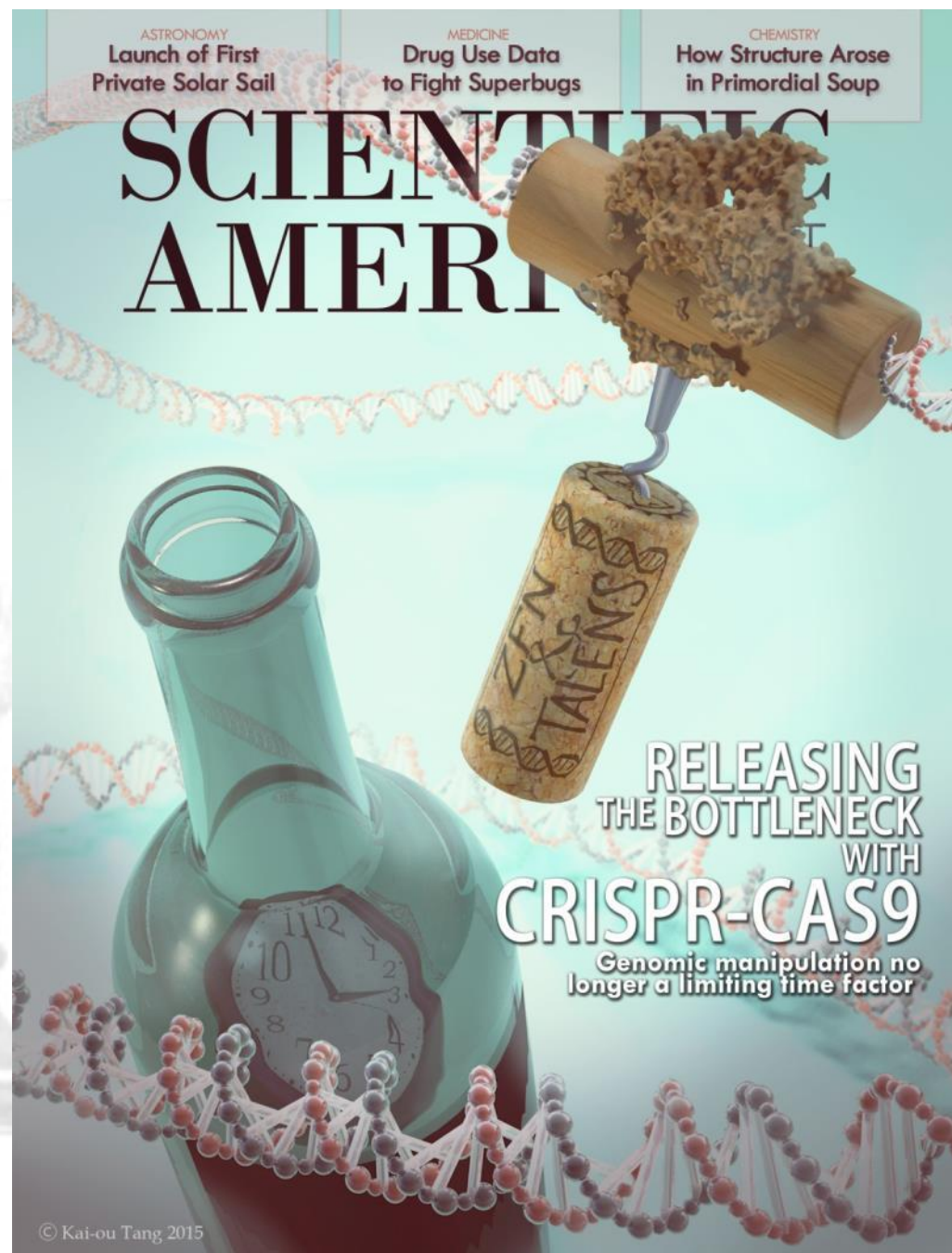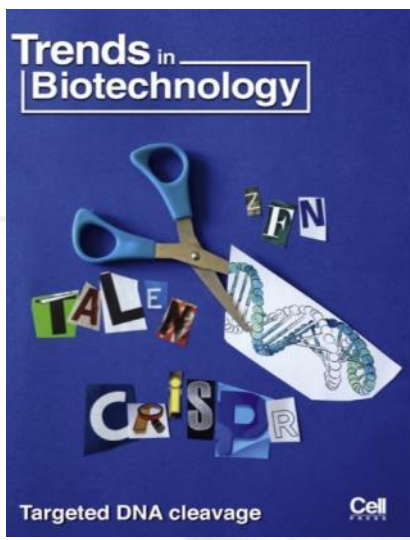
Artificial Intelligence + real time

"Engineering – Life Sciences – Automation" (ELSA)

Automation

Automation + miniaturisation

OT-One; personal pipetting robot, $3,000

GENOME ENGINEERING?

Clustered regularly interspaced short palindromic repeats (CRISPR)

Punctuated progress

2013 Feng Zhang's and George Church's GENOME EDITING

1876 Wilhelm Kühne enzyme

1926 ELECTRON MICROSCOPE

Yoshizumi Ishino 1987 CRISPR

520 BC – Alcmaeon of Croton vein arteries, optic nerve.

1940, George Beadle and Edward Tatum genes and proteins

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1969 Dorothy Crowfoot Hodgkin

500 BC   500   1010   1900   1950   1970   1990   2000   2005   2015

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1988, Leder and Timothy Stewart **genetically engineered mouse.**

GLYCOLYSIS

1671 MICROSCOPE   1940   1983 PCR

Punctuated impact
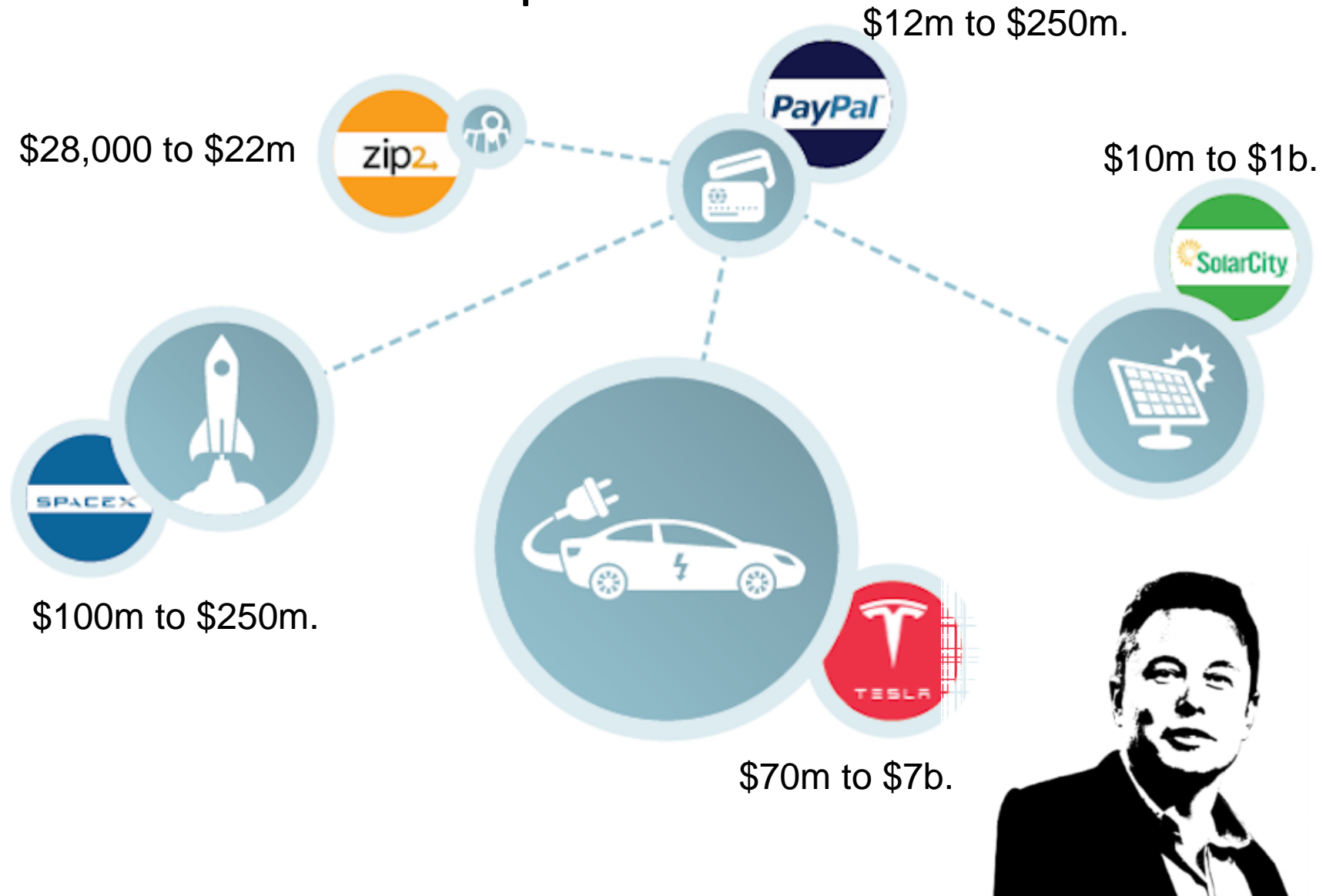
$28,000 to $22m

$12m to $250m.

$10m to $1b.

$100m to $250m.

$70m to $7b.

How to be innovative and generate income

Commercial economy vs knowledge economy

Generating income from the knowledge world

Innovation and commercialising your core competency

How to be innovative and generate income
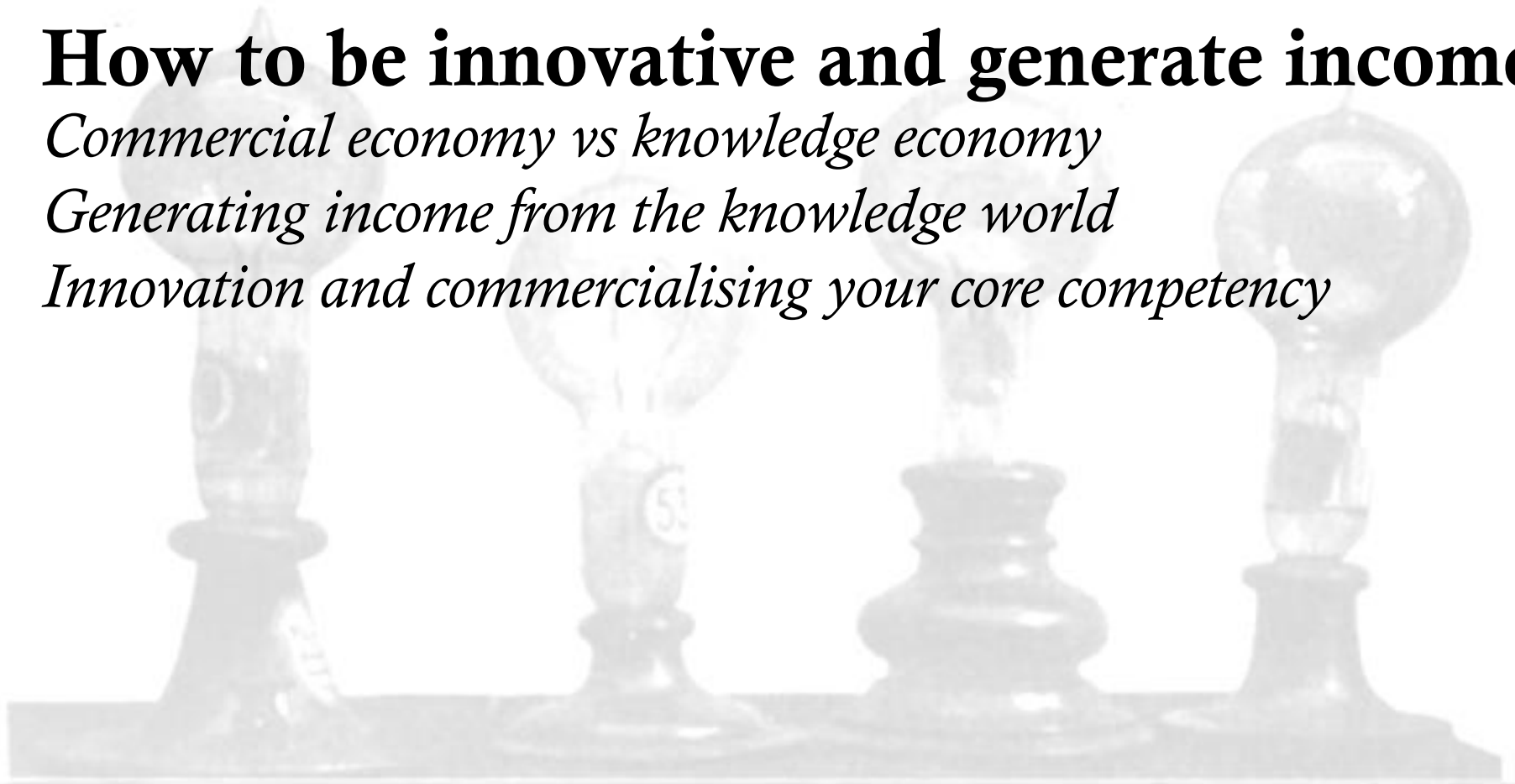
Commercial economy vs knowledge economy

Generating income from the knowledge world

Innovation and commercialising your core competency

Malaysia
Education
Blueprint
2015-2025
(Higher Education)

MINISTRY OF
EDUCATION
MALAYSIA

Malaysia Education Blueprint 2015-2025 (Higher Education)

Learned Values-Driven Talent

Outcomes

1. Holistic, Entrepreneurial and Balanced Graduates
2. Talent Excellence
3. Nation of Lifelong Learners
4. Quality of Graduates
5. Financial Sustainability

Enablers

6. Empowered Governance
7. Innovation Ecosystem
8. Global Prominence
9. Globalised Online Learning
10. Transformed HE Delivery

Initiative C1

Strengthening technology transfer offices

Technology transfer offices (TTOs) play an important role in stimulating technology transfer from academia to industry by providing a set of end-to-end support services (see Exhibit 7-8)[4]. TTOs in Malaysian HLIs, however, need to be strengthened. Officials frequently lack the capabilities to support the end-to-end commercialisation process, or are experienced in industry but lack an understanding of science and technology. In addition, limited training opportunities are available to officials.

ENHANCING UNIVERSITY
INCOME
GENERATION,
ENDOWMENT & WAQF

UNIVERSITY TRANSFORMATION PROGRAMME, PURPLE BOOK

Exhibit 5

Seven main potential sources of income for universities

Universities can explore new ways of generating income from the sources shown below:

1 Academic and Research Programs

Education and Training Programmes
- Academic Programmes
- Specialist and CPD courses
- Industry & executive training
- Online learning & MOOCs
- Conferences and seminars
- Twinning programmes

Research and Commercialisation of Ideas
- Research funding & grants
- Industry-sponsored research
- Intellectual property, patents, licenses, royalties
- Company spin-offs & commercialisation of R&D products and IPs
- Consulting & other services
- University start-up companies

7 Fundraising

Public Donations
- Club/group memberships
- Public campaigns
- Crowdfunding

2 Asset Monetisation, Retailing and Services

Rental and Lease of Facilities
- Conferences, seminars & convention centres
- Sports & recreational facilities
- Laboratories

Unlocking of Assets
- Science park development
- Property development
- Land and property leasing

Retailing and Services
- Shops
- Food & Beverages
- University Press
- University services

6 Waqf

Waqf Contributions
- Corporate al-waqif
- Alumni al-waqif
- Public al-waqif
- Waqf Irshad (Government)

3 Financial Management Activities & Investment

Project Financing
- Raising debt/bonds & equity
- Asset sale & leaseback arrangement

Investment
- Investment returns (including on endowment and waqf)
- Financial products (e.g. shares, bonds or fixed income products

4 Corporate Alliances for Business Ventures

Joint Ventures
- JV partnerships, PPP
- Joint marketing of products/services
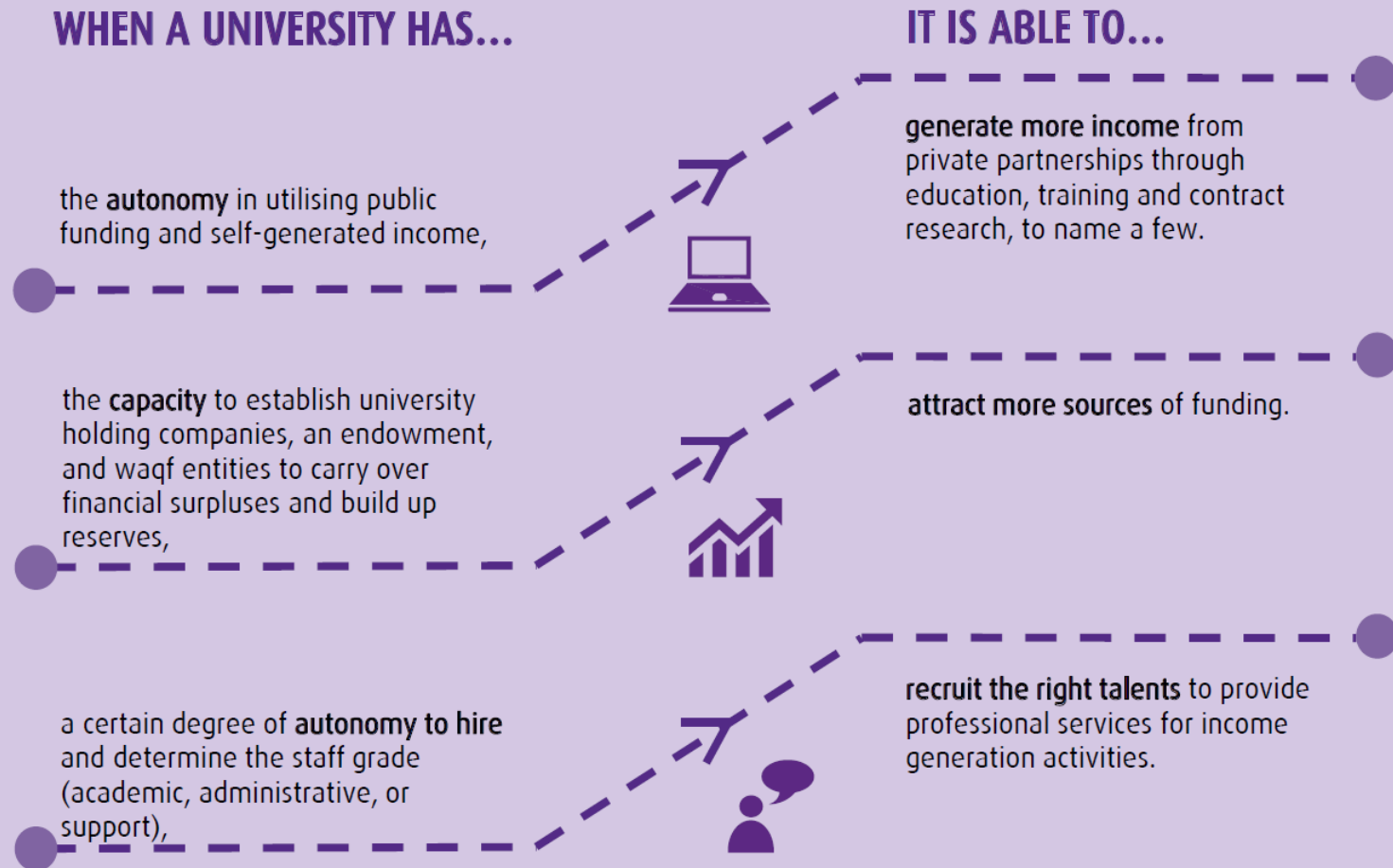- Co-branding

5 Endowment

Philanthropy
- Corporate donors
- Alumni donors
- Public donors

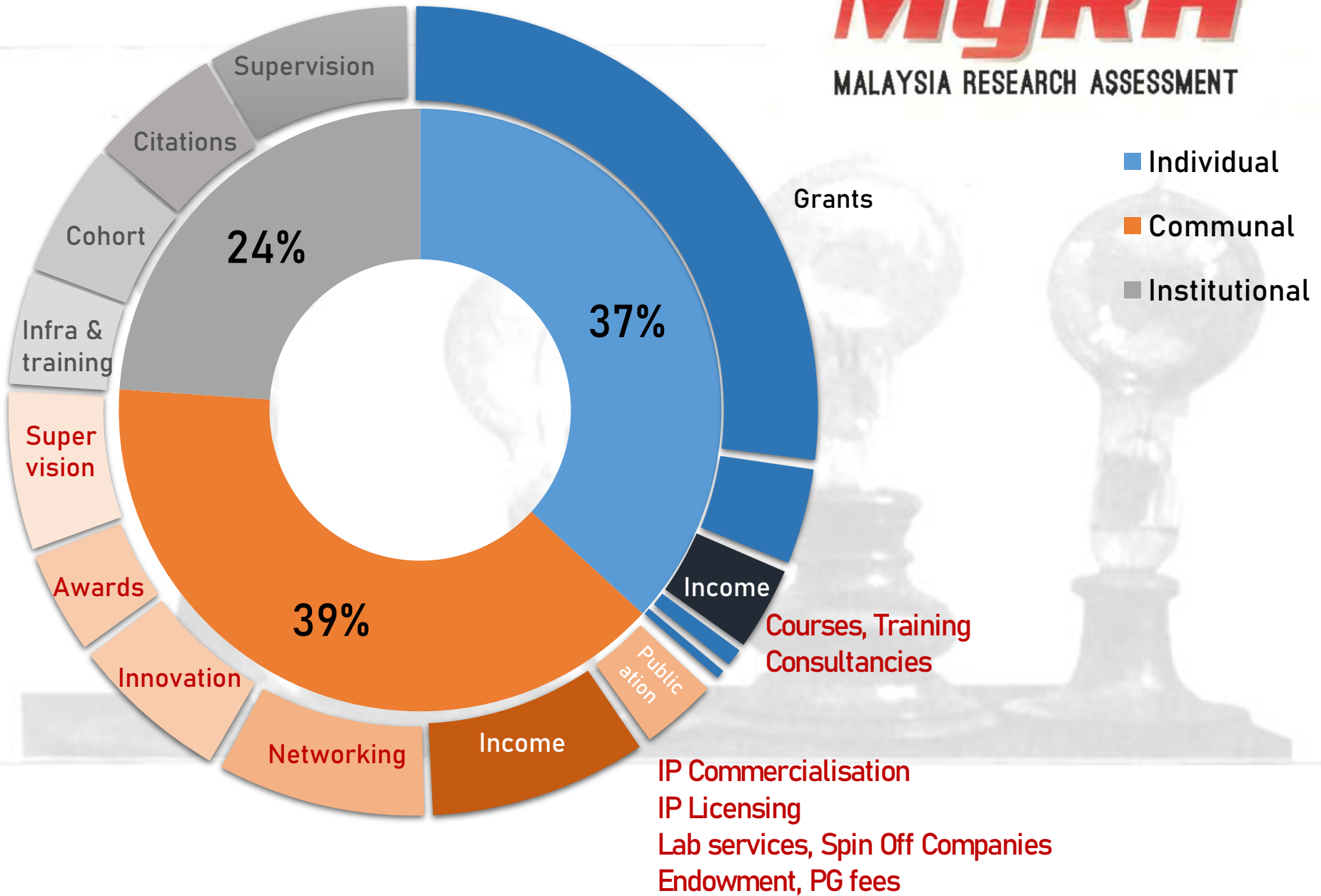**Government**

Autonomy as a key enabler for successful income diversification

University autonomy is a pre-requisite for the successful implementation of income diversification strategies. As public universities are given greater autonomy, they should be able to establish a conducive environment for successful income diversification and generation, hence creating additional income.

WHEN A UNIVERSITY HAS...

the **autonomy** in utilising public funding and self-generated income,

the **capacity** to establish university holding companies, an endowment, and waqf entities to carry over financial surpluses and build up reserves,

a certain degree of **autonomy to hire** and determine the staff grade (academic, administrative, or support),

IT IS ABLE TO...

generate more income from private partnerships through education, training and contract research, to name a few.

attract more sources of funding.

recruit the right talents to provide professional services for income generation activities.

MyRA®
MALAYSIA RESEARCH ASSESSMENT

Donut chart with outer ring categories and inner ring percentages:

- Individual (blue): 37% — Grants, Income
- Communal (orange): 39% — Supervision, Awards, Innovation, Networking, Income, Publication
- Institutional (grey): 24% — Supervision, Citations, Cohort, Infra & training

Income (Individual): Courses, Training Consultancies

Income (Communal):
IP Commercialisation
IP Licensing
Lab services, Spin Off Companies
Endowment, PG fees

How to be innovative and generate income

Commercial economy vs knowledge economy

Generating income from the knowledge world

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Their world

Knowledge Economy

Commercial Economy

Knowledge Economy
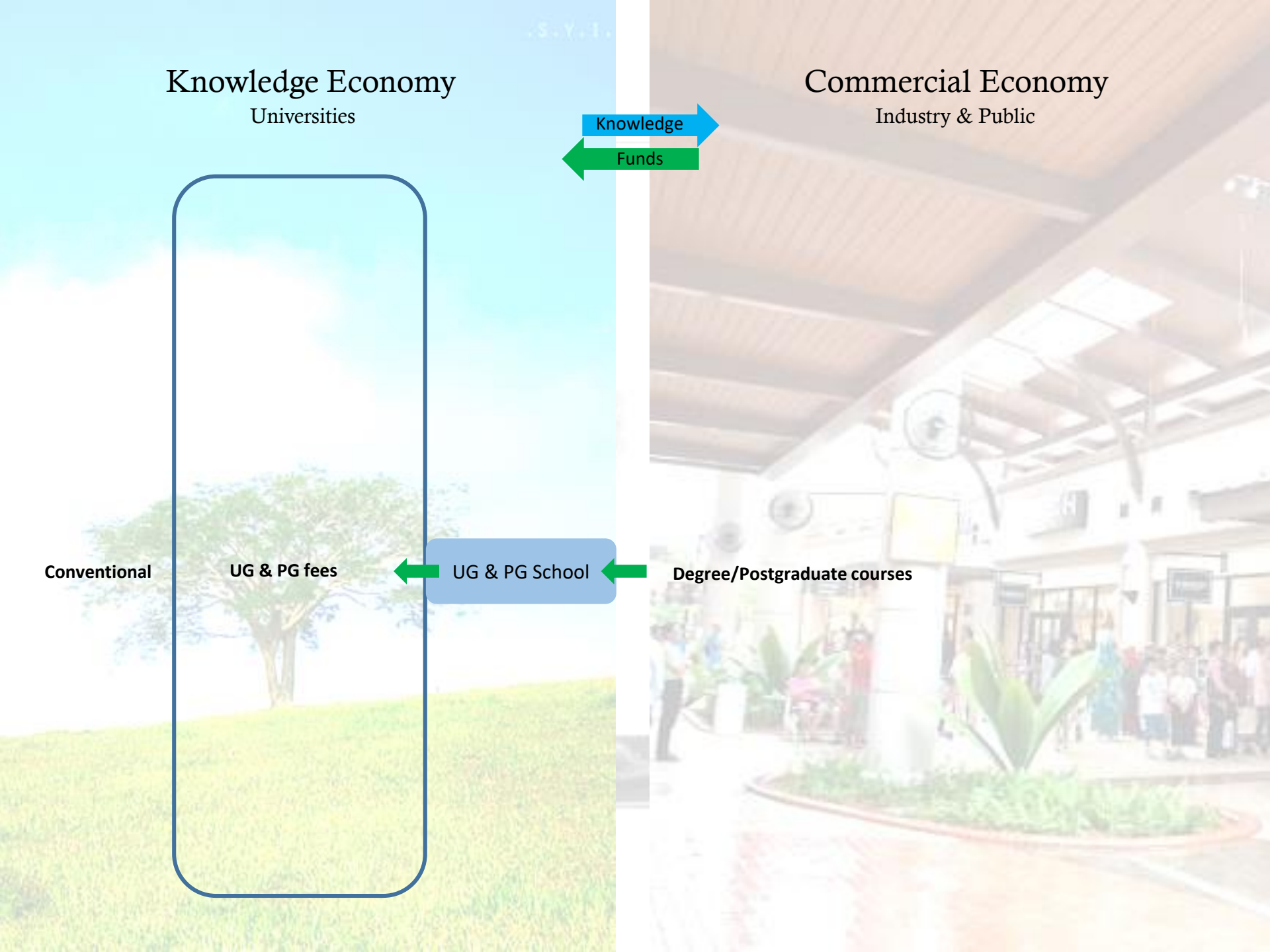### Universities

Commercial Economy
Industry & Public

Knowledge →

← Funds

Conventional   **UG & PG fees**   ← UG & PG School ←   **Degree/Postgraduate courses**

Knowledge Economy
Universities

Commercial Economy
Industry & Public

Knowledge →

← Funds

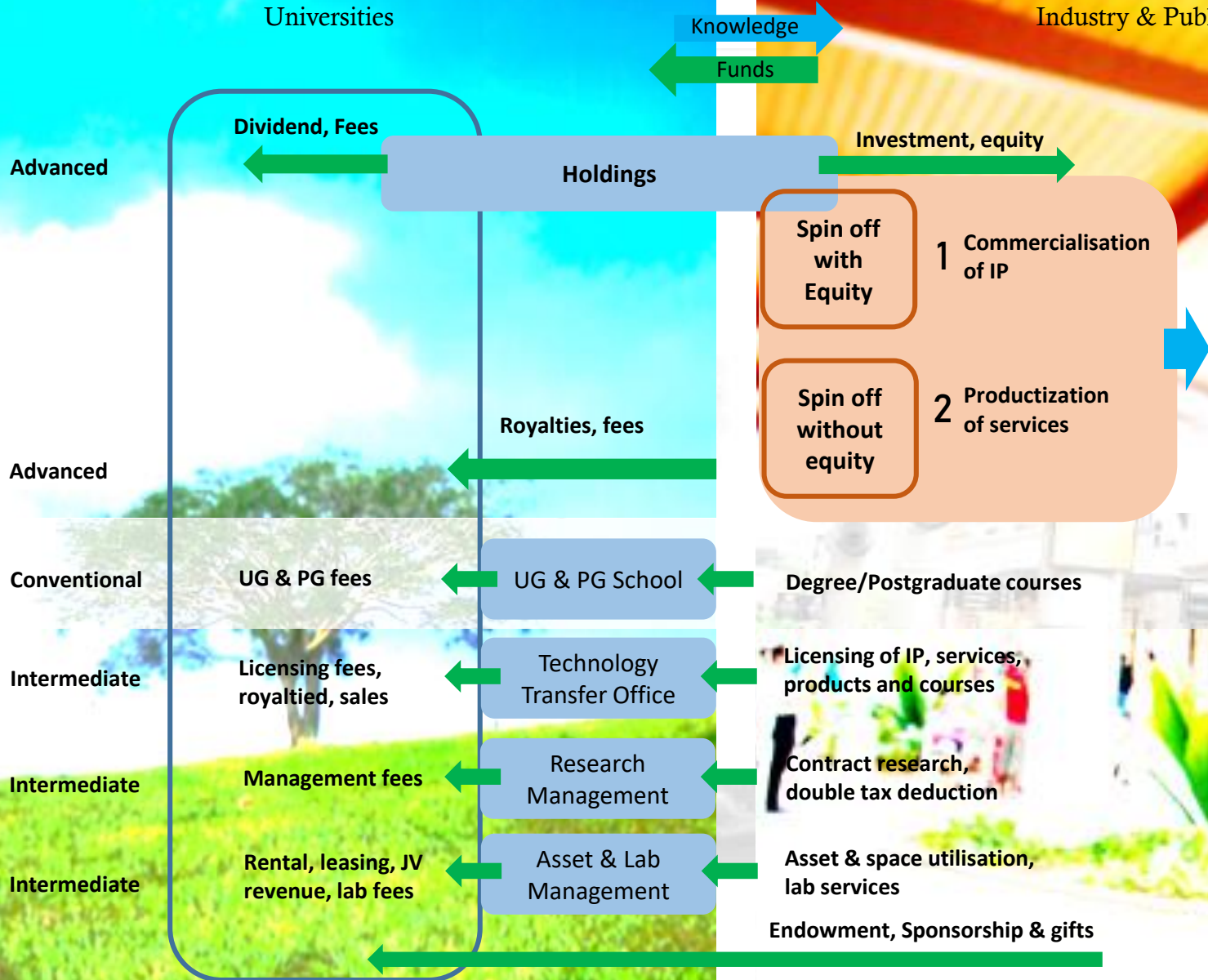| Conventional | UG & PG fees | UG & PG School | Degree/Postgraduate courses |
Intermediate	Licensing fees, royaltied, sales	Technology Transfer Office	Licensing of IP, services, products and courses
Intermediate	Management fees	Research Management	Contract research, double tax deduction
Intermediate	Rental, leasing, JV revenue, lab fees	Asset & Lab Management	Asset & space utilisation, lab services

Endowment, Sponsorship & gifts

Knowledge Economy
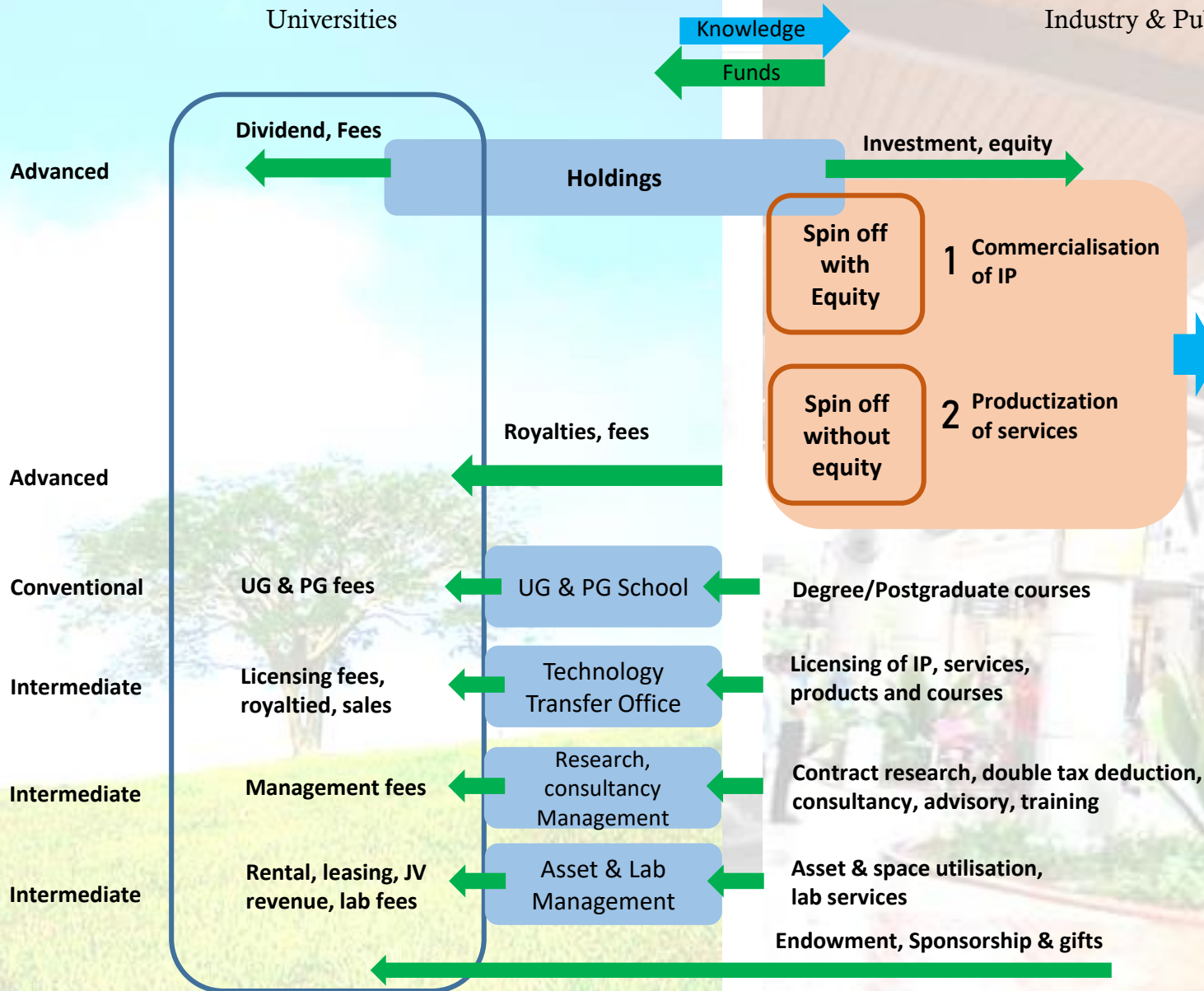## Universities

Commercial Economy
Industry & Public

Knowledge →

← Funds

Advanced

Dividend, Fees
←

Holdings

Investment, equity →

Spin off with Equity

1 Commercialisation of IP

Spin off without equity

2 Productization of services

Advanced

Royalties, fees
←

Conventional

UG & PG fees ←

UG & PG School ←

Degree/Postgraduate courses

Intermediate

Licensing fees, royaltied, sales ←

Technology Transfer Office ←

Licensing of IP, services, products and courses

Intermediate

Management fees ←

Research Management ←

Contract research, double tax deduction

Intermediate

Rental, leasing, JV revenue, lab fees ←

Asset & Lab Management ←

Asset & space utilisation, lab services

Endowment, Sponsorship & gifts
←

The Durianscape - Malaysia's Startup Ecosystem

presented by MaGIC — Malaysian Global Innovation & Creativity Centre

Government Agencies

MaGIC · MDEC · MoF · TEKUN · MATRADE · MyIPO · Credit Guarantee Corporation CGC · MDV · MTDC · PNB Permodalan Nasional Berhad · mavcap investing in tomorrow · ISKANDAR MALAYSIA · KORIDOR UTARA · AIM · MCMC · MIDA

TECHNOLOGY PARK MALAYSIA · CCM · AKGS · KKMM · Cradle · EAST COAST ECONOMIC REGION · MODAL PERDANA · Cyberview Sdn. Bhd. · AIM · SIRIM · KPDNKK · FAMA · PROTECHCORP · TERAJU · SME CORP MALAYSIA · KHAZANAH NASIONAL

Education

UTM · INSKEN · MMU Multimedia University · UNIVERSITY OF MALAYA · UNIVERSITI MALAYSIA KELANTAN

Media

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Coworking Spaces

APW · unit.my · the CO. · Startup Hub · Work Palette · GrowRichLabs · THE CANVAS NETWORK · THE NEST · werk [at] bangsar · The Engine Room @ Centrio · sebelas · PAPER + TOAST · SENTRO · IMPACT HUB · FLUENT SPACE · MaGIC · HIDEOUT · MakeSpace · NOOK · BLACK-N-WHYT · InCube8

Events & Community

1AES · Startup Weekend · WebComp KL · StartUp · GBG Malaysia Google Business Groups · Startup Mamak · TeAM

Corporate

celcom · Microsoft · Tune Talk · Google · TM · Maybank · digi

Venture Capital

QuestMark · 500 · GOBI PARTNERS · CREATIVE · TEAK CAPITAL PARTNERING FOR GROWTH · INTRES · MODAL PERDANA · mavcap · MOC Capital · ANGEL'S GATE · ARDENT CAPITAL · Cradle Seed Ventures · startup nation · CATCHA GROUP

Grants

PNS Perbadanan Nasional Berhad · TERAJU · SME BANK · Cradle · BSN · MDV

Social Entrepreneurship

tandemic · asli · IMPACT HUB · SCOPE · AIM · BRITISH COUNCIL · 1M4U · myHarapan

Incubators

MTDC · MAD INC · TECHNOLOGY PARK MALAYSIA · SCOPE

Accelerators

MaGIC ACCELERATOR PROGRAM · Maybank INNOVATION CENTRE · 1337 ACCELERATOR · DISTRO DOJO MALAYSIA · WatchTower & Friends · RE · Tune LABS · INFINITE VENTURES

How to be innovative and generate income

Commercial economy vs knowledge economy

Generating income from the knowledge world

Innovation and commercialising your core competency

Commercialisation & monetization

Evolution of commerce. The What?

JENIS PRODUK OEM YANG KAMI TAWARKAN

Kilang Oem Termurah Di Malaysia

FARMASUTIKAL & PIL KESIHATAN

FORMULASI & JUS MINUMAN

KOSMETIK & KECANTIKAN

SUPPLIMEN & NUTRISI TENAGA

Whatsapp Sekarang

Whatsapp Sekarang

Whatsapp Sekarang

Whatsapp Sekarang

Creating your ~~business~~ Brand

Practical
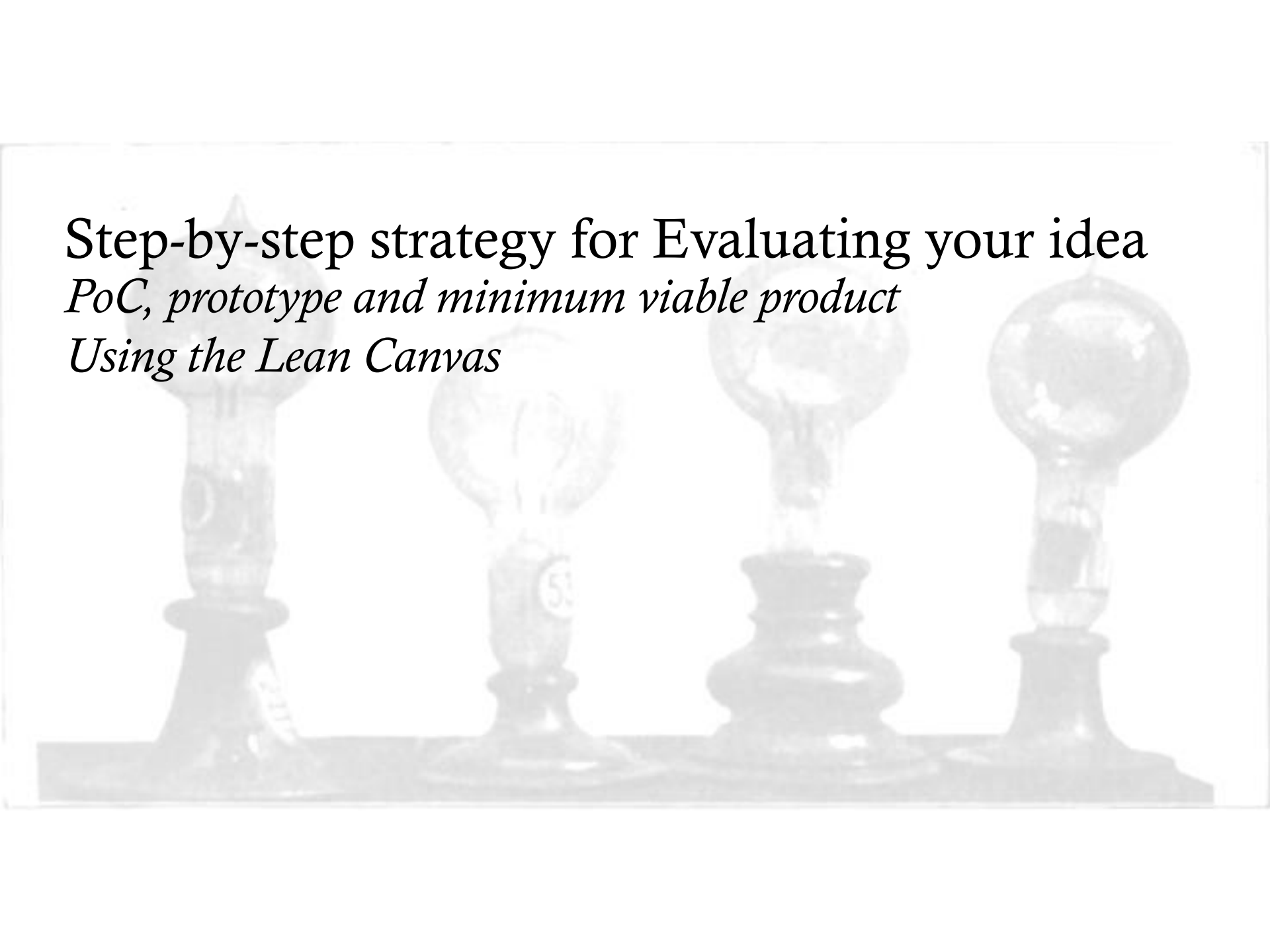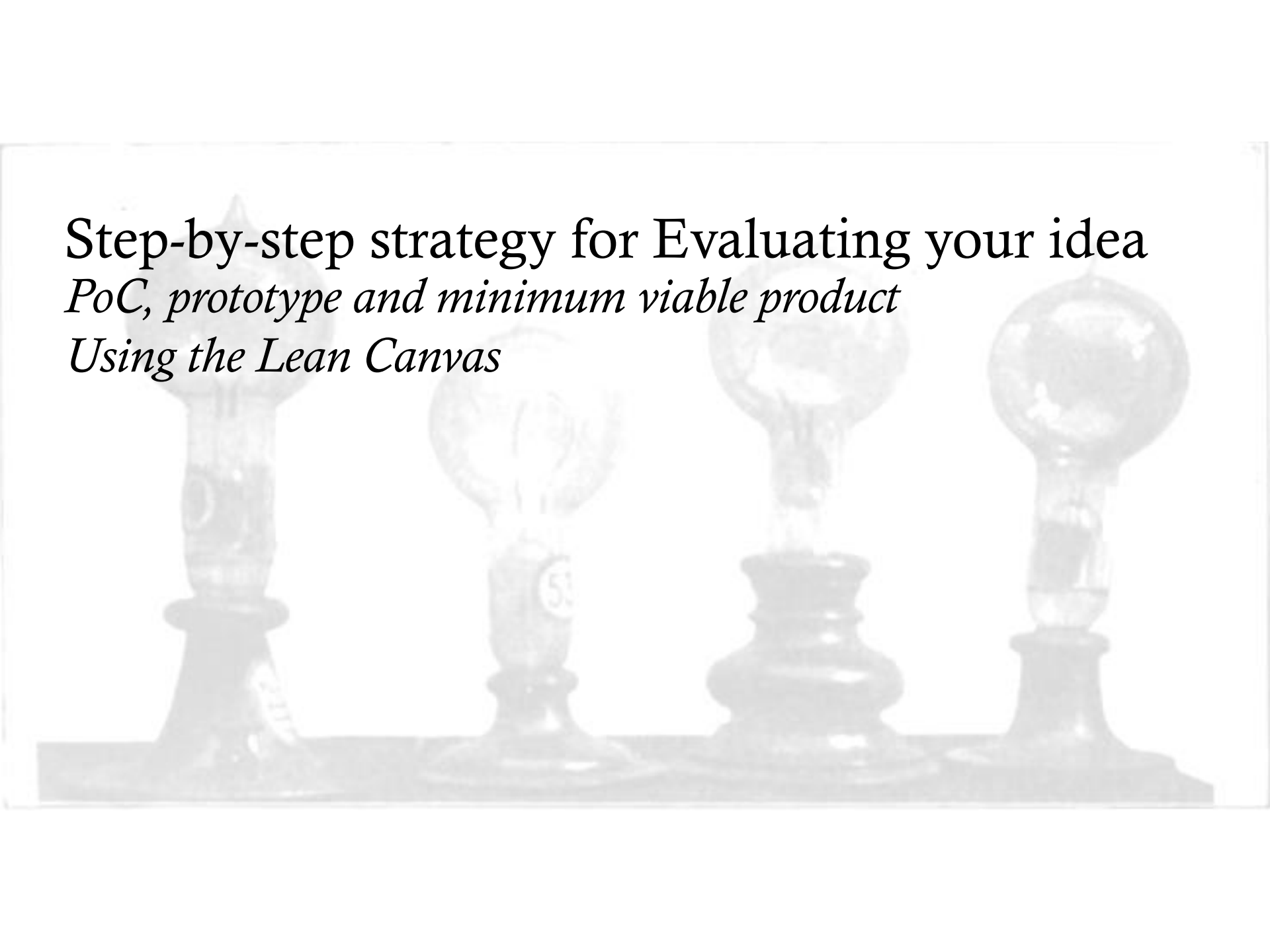
Unconventional innovations

Step-by-step strategy for Evaluating your idea
PoC, prototype and minimum viable product
Using the Lean Canvas

Step-by-step strategy for Evaluating your idea
PoC, prototype and minimum viable product
Using the Lean Canvas

Proof of Concept & Prototyping

Practical?

Proof of Concept (POC)	Prototype	Minimum viable product (MVP)
a small exercise to test the design idea or assumption.	to visualize how the product will function	a version of a product that has just enough features to stay viable.
demonstrate the functionality	**a working interactive model of the end product that gives an idea of the design**	**only has the core functionality**
verify a certain concept or theory that can be achieved in development.	a first attempt at making a working model that might be real-world usable	simple and well-polished, without any bugs or other problems
a model of just one product's aspect	**a working model of several aspects of the product.**	Test user desirability
	Test tech feasibility	
	Low vs High fidelity	

Who is your target audience for your product?
What are you trying to validate?

A Business Model Canvas

Case study and practical

Business Model Canvas -
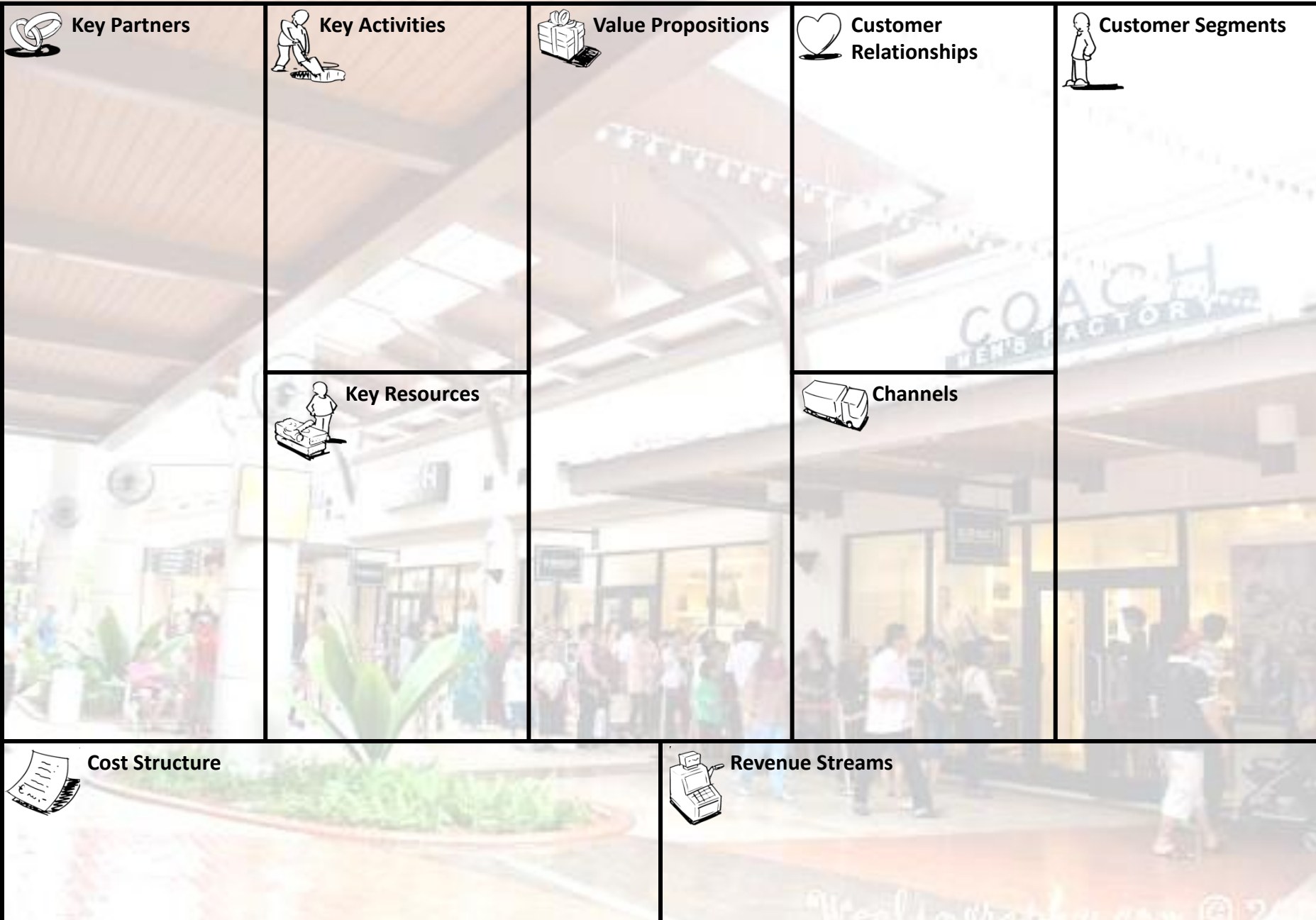
Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		**Channels**	

Cost Structure	Revenue Streams

A ~~Business~~ Lean Model Canvas

Case study and practical

Lean Canvas

Problem

Top 3 problems

Solution

Top 3 features

Key Metrics
Key activities you measure

Unique Value Proposition

Single, clear, compelling message that states why you are different and worth paying attention

Unfair Advantage
Can't be easily copied or bought

Channels
Path to customers

Customer Segments

Target customers

Cost Structure

Customer Acquisition costs
Distribution costs
Hosting
People, etc.

Revenue Streams

Revenue Model
Life Time Value
Revenue
Gross Margin

PRODUCT

MARKET

Speaker's Background & Credits

Director Innovation and Commercialization Centre (ICC)

Member of Innovation and Technology Management Association (ITMA)

Former Deputy Director for Research University Secretariat, Research Management Centre 2012-2017

Credit

Prof Samsilah Roslan, President ITMA Malaysia for providing materials for the slides.

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