"IMPORTANCE OF PRIVATE & PUBLIC SECTOR COMMERCIALIZATION IN THE GLOBAL ECONOMY"

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NANYANG THE INNOVATIVE POLYTECHNIC

- What is the Environment Like?
- Public vs Private – *Is there a Difference?*
- Type of Mind-set
- How to make RIE Work?
- IP Management & Commercialization
- What Does it Take?

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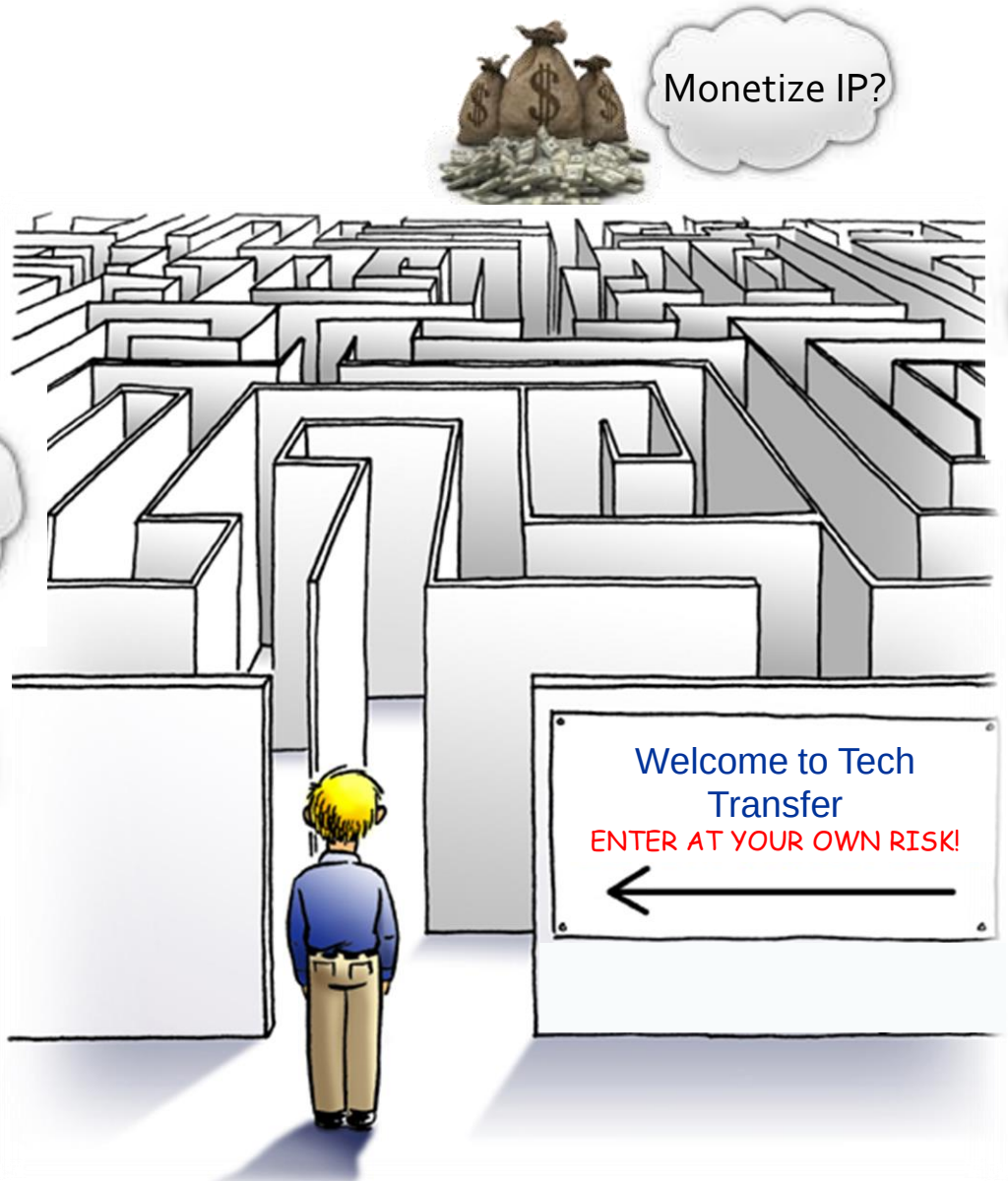
THE INNOVATIVE POLYTECHNIC

We live in a VUCA world!

Where & How to Start?



Monetize IP?

Technology trend?

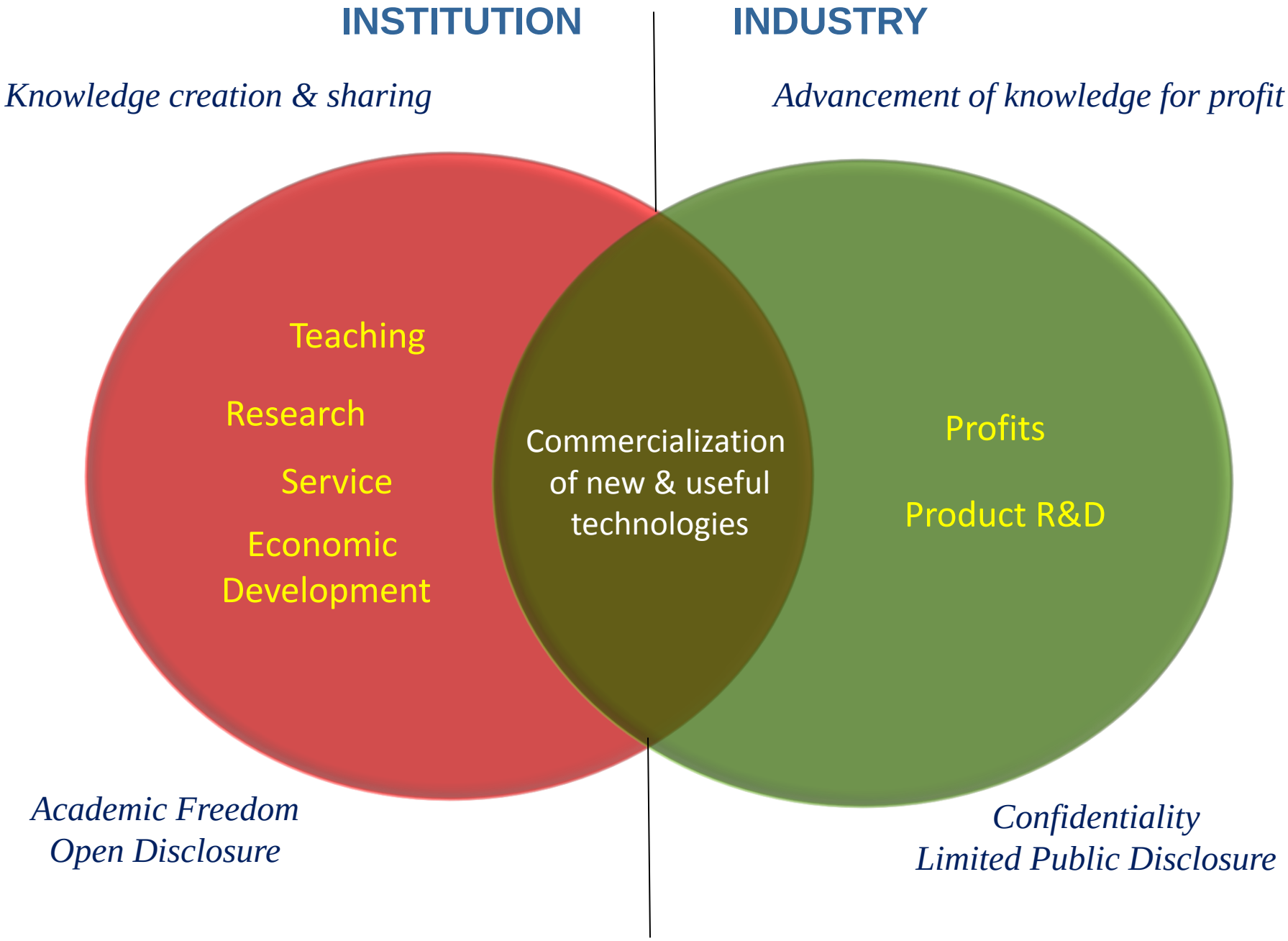
Research & capability development?

Market requirement?

Stakeholders' expectations?

Regulations & standards?

Business Development?


INSTITUTION
INDUSTRY
Knowledge creation & sharing
Advancement of knowledge for profit
Teaching
Research
Service
Economic Development
Commercialization of new & useful technologies
Profits
Product R&D
Academic Freedom
Open Disclosure
Confidentiality
Limited Public Disclosure

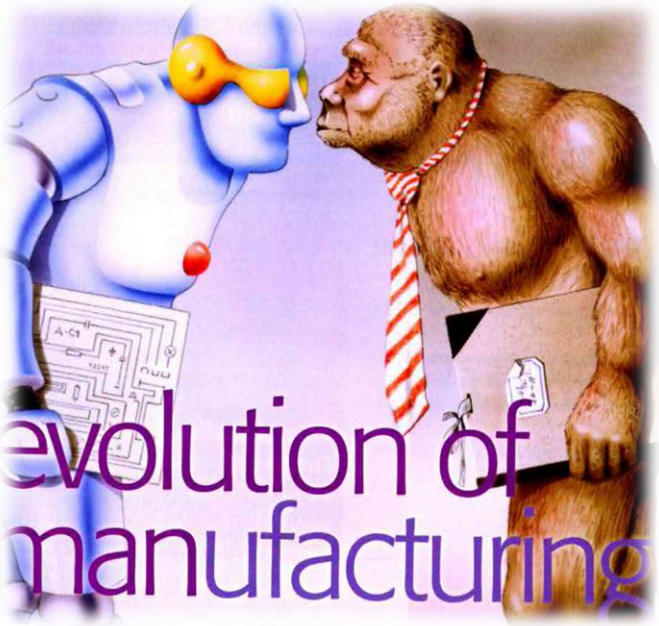
Progressive Economic Restructuring

Skills Intensive → Technology Intensive → Knowledge-Intensive → Innovation & Enterprise →

70's  80's

90's

>2000



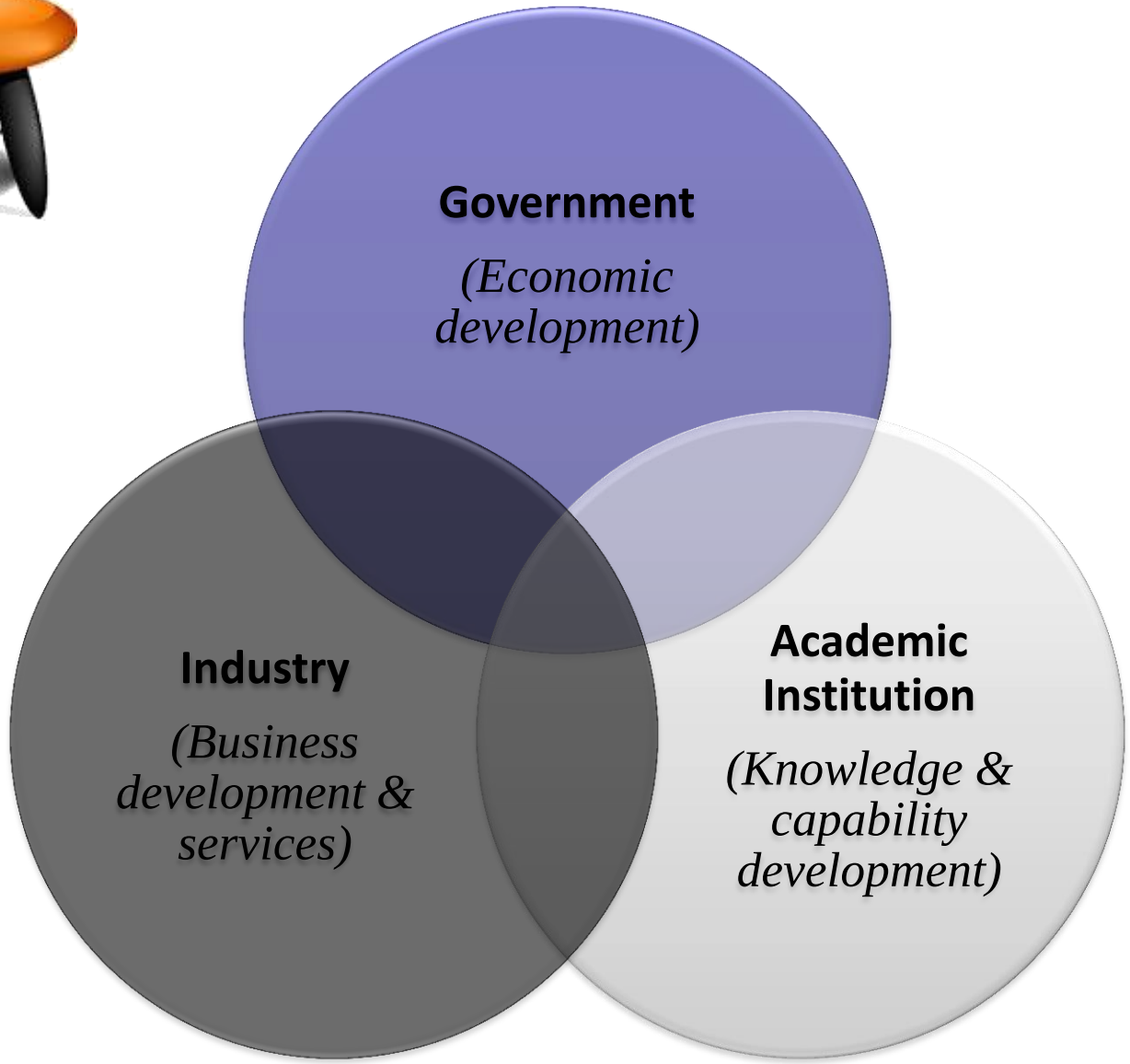
Brawn to Brain-based

- Aerospace
- Energy
- Chemicals
- Electronics
- Environment & Water
- Healthcare
- Information Technology
- Logistics & Supply Chain
- Media & Entertainment
- Medical Technology
- Pharmaceuticals & Biotech
- Digital & Precision Engineering
- Telecommunications

Drivers for Innovation

To Do Things Better & Differently with Positive Outcome

- ✓ Push for new markets
- ✓ Strive for higher productivity
- ✓ Product & service innovation
- ✓ New capabilities
- ✓ Attract talent & develop trained manpower


Government
(Economic development)
Industry
(Business development & services)
Academic Institution
(Knowledge & capability development)

7 Schools	Engineering	Business Management
	Information Technology	Health Sciences
	Interactive & Digital Media	Design
	Chemical & Life Sciences	

Pre-employment Training

Continuing Education Training

Innovation & Enterprise

Internationalization

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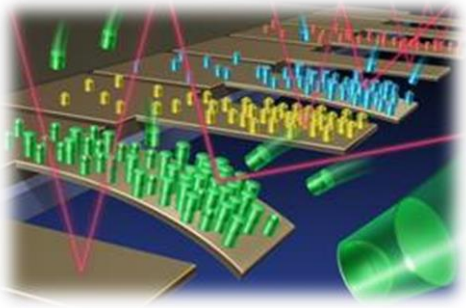
Education Philosophy

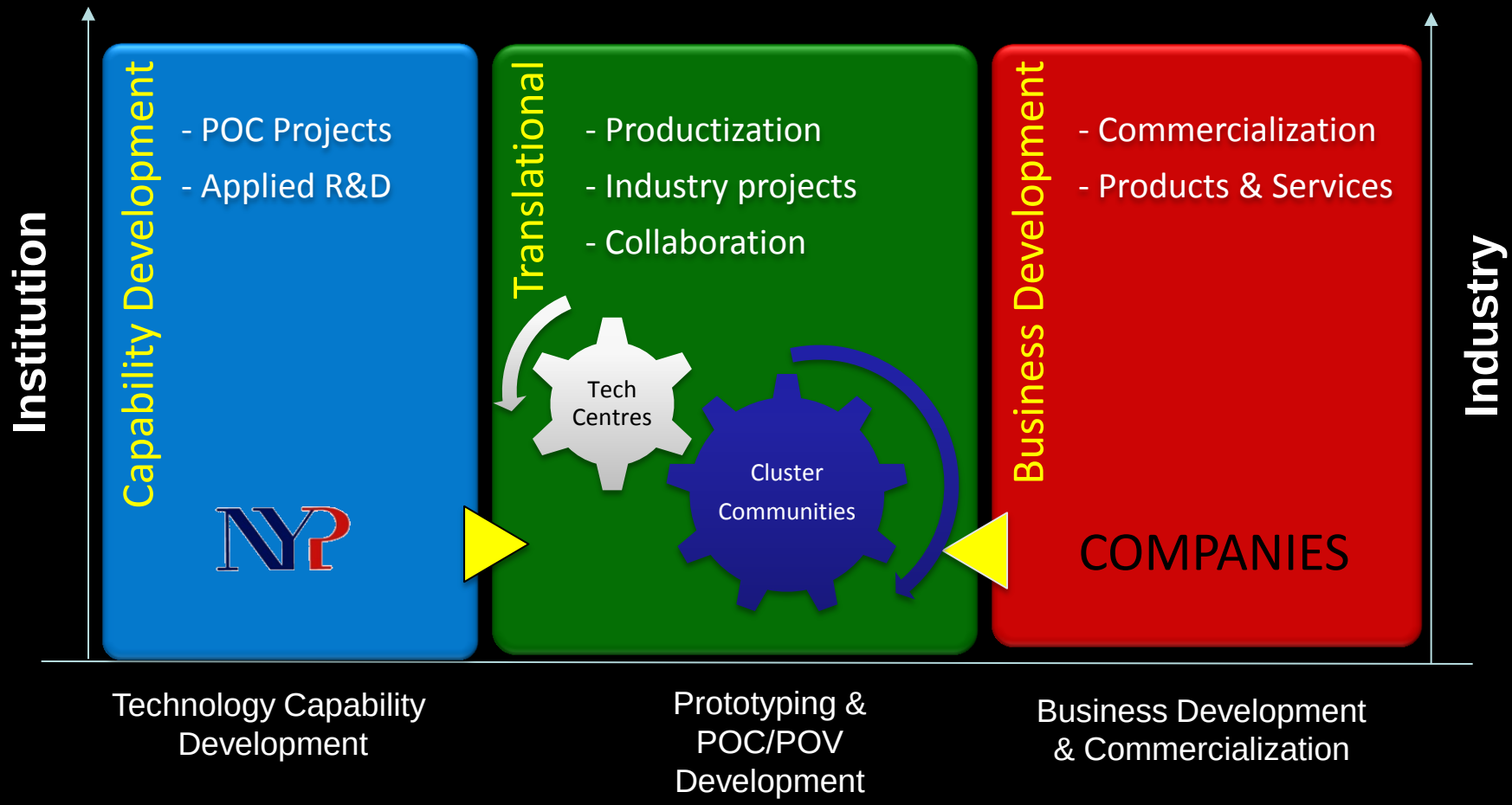
1) Teaching & Training
   - *Emulate & integrate real-life industrial environment*
   - *Enhancement of knowledge & upgrading of skill-sets*

2) Industry Collaboration & Partnership
   - *To encourage innovation, teamwork & sharpen problem solving skills.*
   - *Offer value-add services, develop customised solutions*

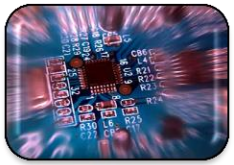
3) Capability development
   - *Investment in manpower & technology to remain relevant & current*



Industry Engagement



Enabling Platforms – *Specialist Technology Centres*


Embedded Technology Centre


Wireless Technology Centre


Imaging Technology Centre


IC Design Centre


Security Technologies & Applications Lab


RF Test and Measurement Lab


Industrial Design Centre


Rapid Prototyping Centre


Engineering Design Centre


Control Engineering Centre


Biomedical Engineering Hub


Smart Assistive, Health & Lifestyle Lab

Centre for IT Innovation

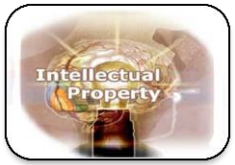

Green ICT Solutions Centre


Open Source Solutions Lab


Interoperability Verification Test Lab


IP Convergence Lab

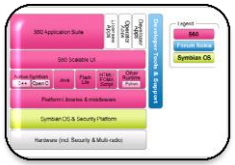

Centre for integrated Media & Telematics



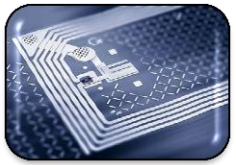
Centre for Technology Innovation & Commercialisation


Centre for Business Innovation


International Business Resource Centre


Software Innovation Centre


Info Security Centre


RFID Centre

DIFFERENTIATOR = “One-Stop” Solution Provider **+** Borderless Work Culture

“Lab to Market” Value Chain

“Selling Our Ideas”

CTIC Centre for Technology Innovation & Commercialisation

Ideas & Concepts

- *IP generation & protection*
- *Portfolio mgt & IP training*

Translational Development

- *Prototypes, POC*
- *Productization*

To Market

- *IP-infused projects*
- *IP licensing & sales*
- *Business development*

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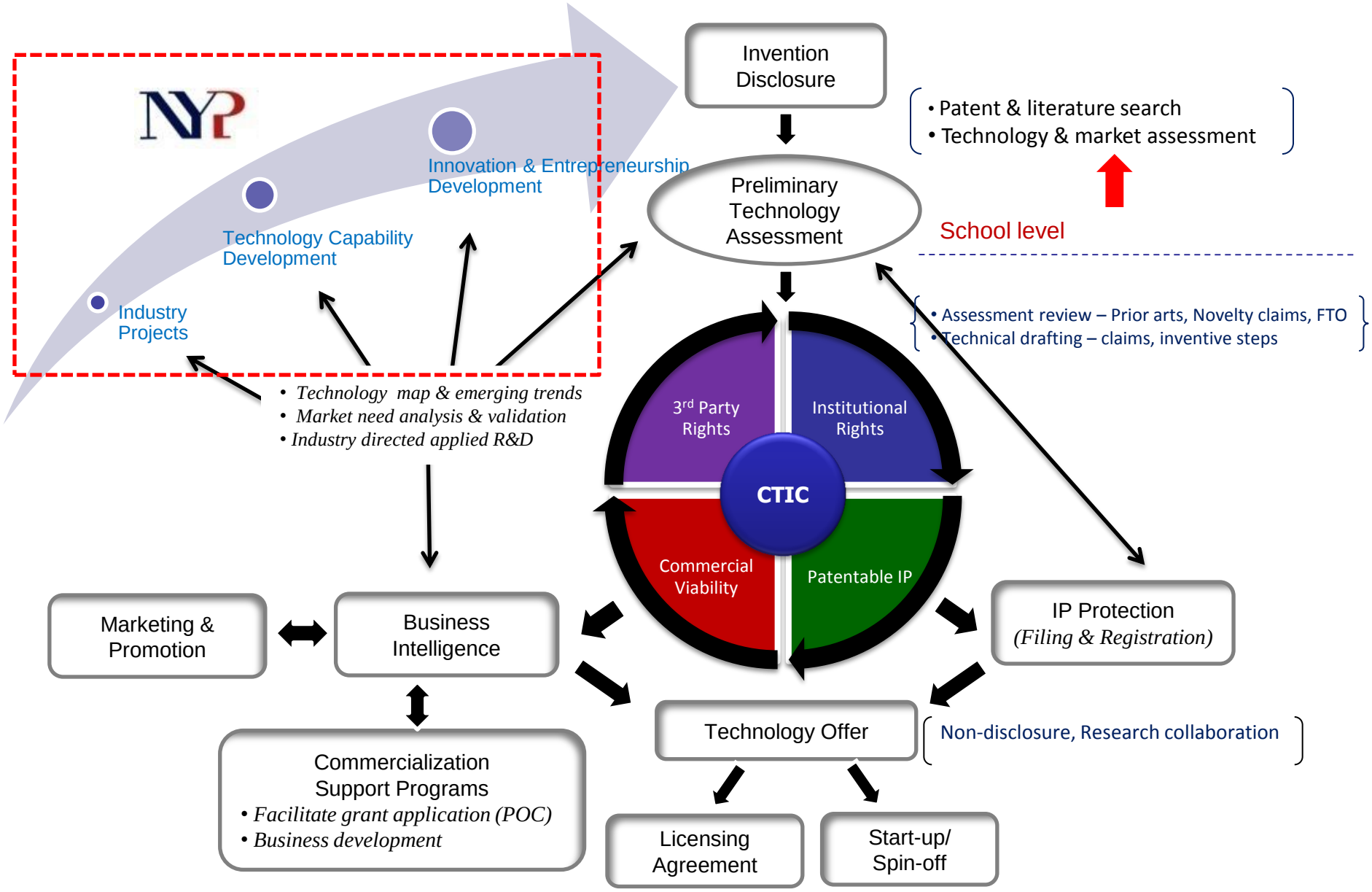
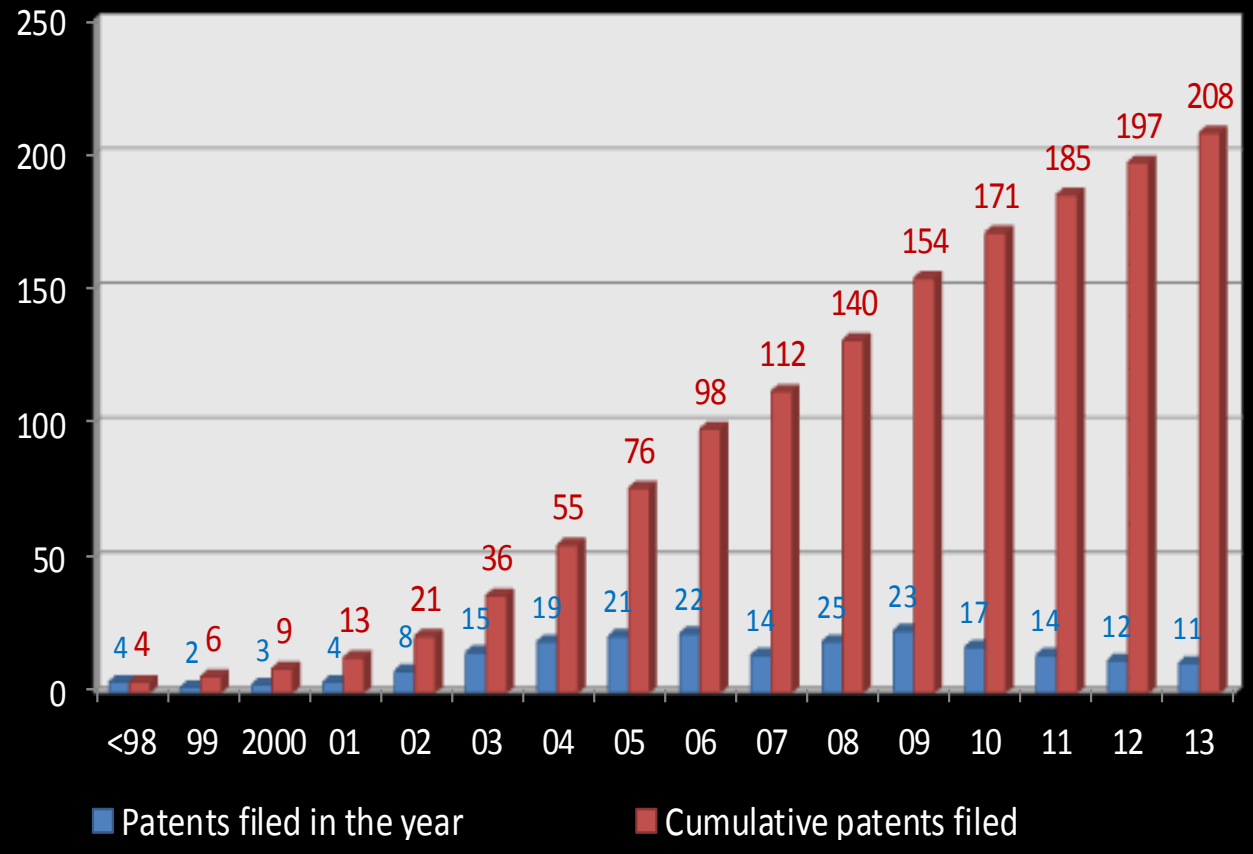
IP Management & Commercialization Pathway



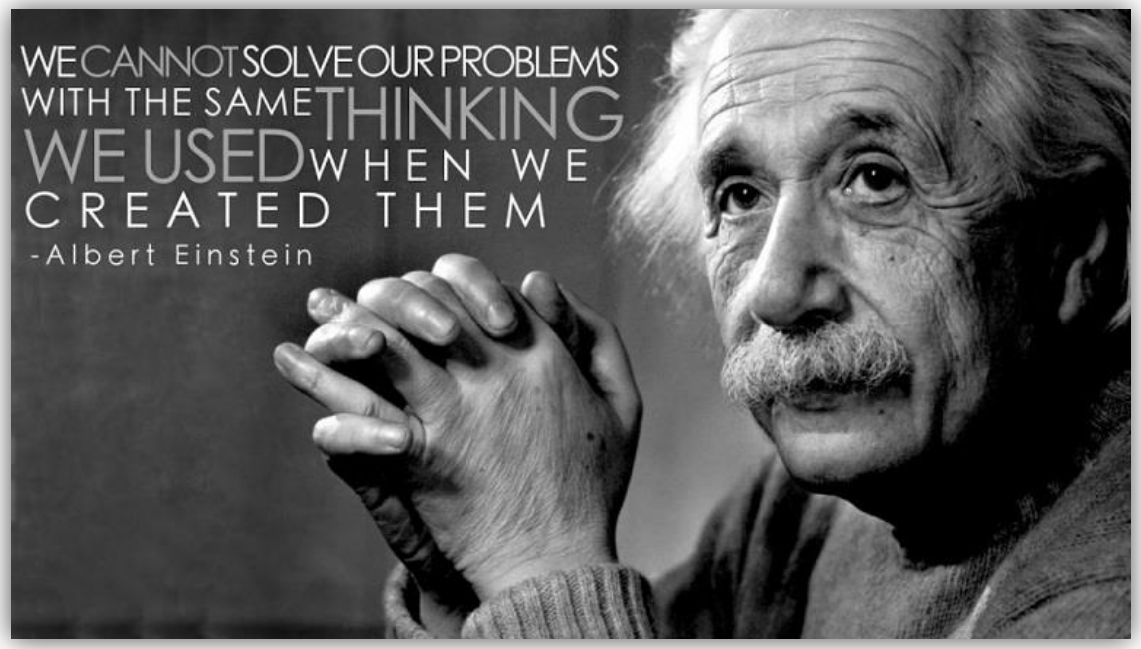
IP Filing Status

DOMAINS

- Biomedical & Healthcare
- Life Sciences
- Electronics & Automation
- ICT & Mobile Computing
- Interactive Media
- Materials
- Product Design



Create Synergy with Industry



"By Design"

Understand IP & Competitive landscape → Determine Strategy → Identify Required IP → Plan R&D → 'Harvest' IP

RESEARCH & INNOVATION FOCUS AREAS

Digital Entertainment & Lifestyle

Healthcare & Wellness

Clean & Green

'Silver' Industry

Automation & Optimization

Sustainable Urban Living

Technology & Market Evaluation Metrics

1. Competitive / Substitute products
(FTO, functionalities/features, maturity/degree of adoption/acceptance level)

2. Technology life expectancy in market
(Short/long term, open/pervasive, proprietary)

3. Permit / License requirement, Health & Safety
(Compliance to regulations & standards, agreements)

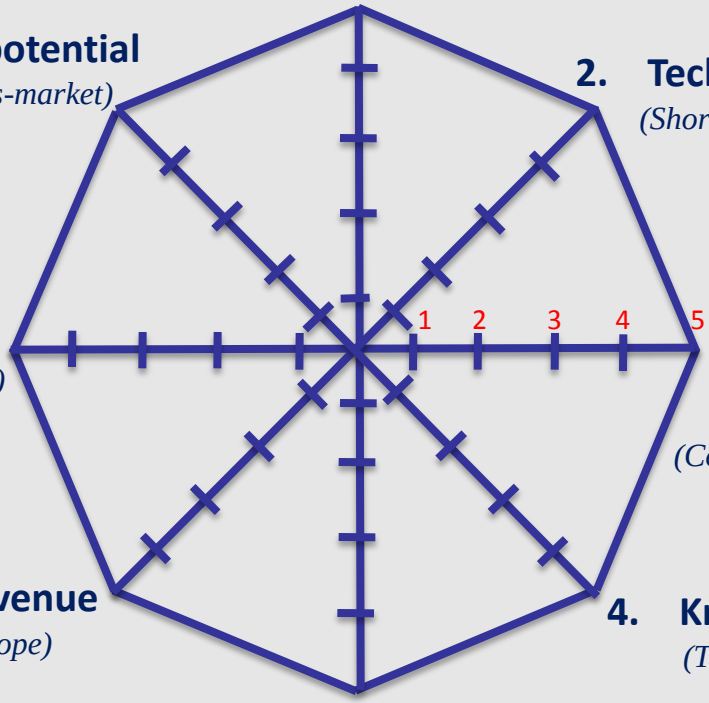
4. Knowledge of commercial opportunity
(Target customers, partnership, demand fulfillment)

5. Attainable sales & sustainability
(Cost management, funding/financial support, value offer, brand/premium, market growth potential)

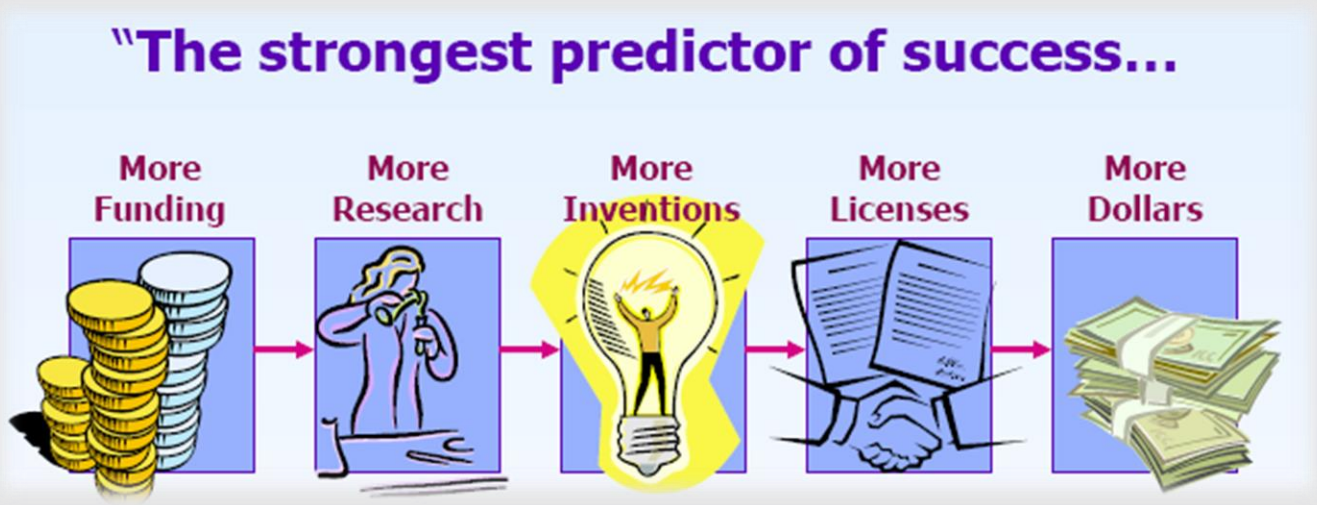
6. Potential licensing revenue
(Licensee dependence, FOU scope)

7. State of market
(None, established, new/emerging)

8. Alternative business potential
(Derivatives/platform technology, cross-market)



Scale: 1 = Poor, 5 = Very Good



KPIs
No. of IPs Filed / Granted
No of License Agreements & Assignment
Revenue from Commercialization
Acquired R&D Funding & Grants
No. of Spin-offs/Start-ups

Source of Revenue from IPs

Category	Type
1	IP Licensing
2	IP Infused projects

Mass Screening HealthCheck Software with

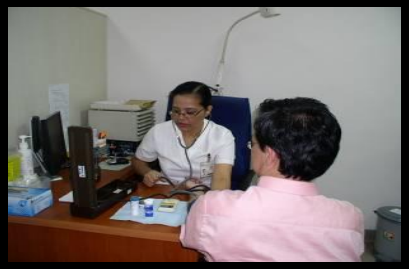
National Healthcare Group POLYCLINICS

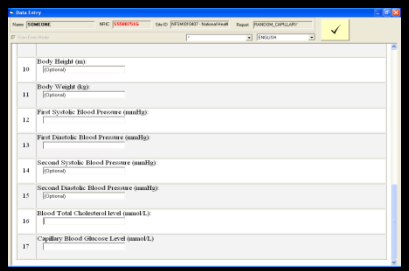
Patent :

'Configurable Multi-lingual Advisory System & Method'

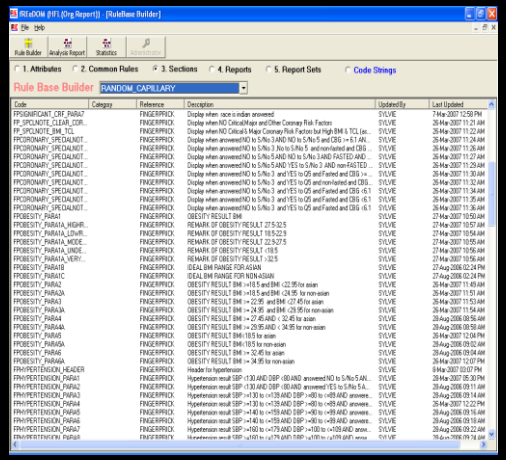
Application:

Deployed in polyclinics and hospitals to translate medical rules on-the-fly from English into preferred languages such as Malay, Tamil and Mandarin.

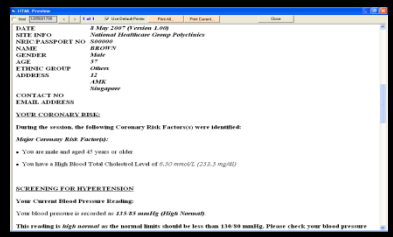


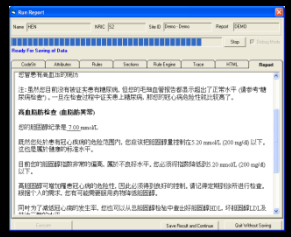


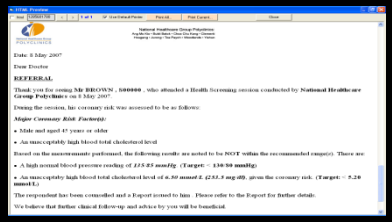
Screenee's Medical Info.



HealthCheck Engine with Medical Rules



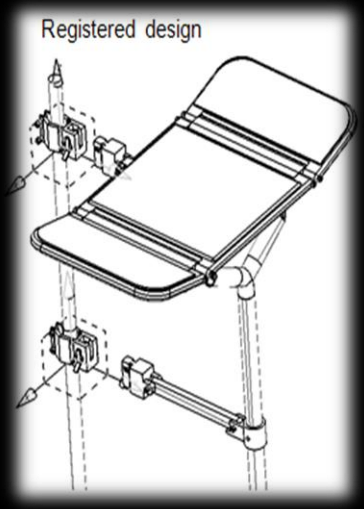




Referral Letter to Physician

Organisation/Constituency Health Profile

Foldable & Collapsible Chair with Easy Rest LLP



Patent & Registered Design:
'Foldable & Collapsible Chair'

Application:

Used to aid mobility of handicapped and elderly

MONEY
THE STRAITS TIMES
MONDAY, FEBRUARY 10, 2014

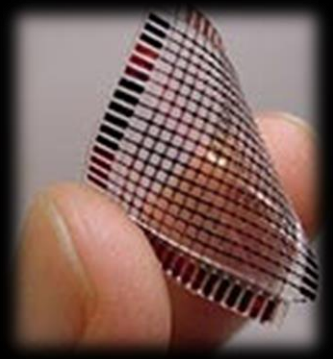
B11 Bumpy ride ahead for emerging markets
B10 Expert seeks out secrets of success

SMEs making waves in med-tech field

Reinventing the wheelchair

Lifeline Corp's managing director Michael Pang with the new wheelchair that allows easier transfers of users from one seat to anotherST PHOTO: LIM SIN THAI

- NRF – Proof of Concept
- NRF Translational Research Development
- MOE Innovation Fund



THE STRAITS TIMES FRIDAY, DECEMBER 19 2008 PAGE C8

9 get research grants of up to $250,000 each

Recipients expected to develop products with commercial viability

BY AMRESH GUNASINGHAM

A NEW heart valve that may be able to speed up an operation and reduce the

in the biomedical and technology sectors.

Of the first batch of recipients, only one was from a polytechnic – Dr Zuruzi Abu Samah of Nanyang Polytechnic who is working on using current flexible pressure sensor technology to develop a prototype that is cheaper and more efficient. Pressure sensor technology has many applications, particularly in the health-care industry.

Dr Michael Khor, the foundation's di-

The NRF will take in submissions again next March and later in the year.

This year's projects range from a system which promises to transfer data faster and more efficiently between wireless networks, to a portal which allows mobile phone and PC users to view images and videos in 3-D format.

NUS' Associate Professor Theodoros Kofidis, who is working on the new heart implantation device, said that if his project works, it will cut medical costs by about $4,000 by greatly reducing the time needed for the operation. Current operations to give patients a new heart valve usually last about three hours and can cost more than $8,000.

The device also poses less surgical risk as it does not require the incision or stitches, said Prof Kofidis.

Another recipient, Dr Freddy Boey of the Nanyang Technological University's School of Materials Science & Engineering, is exploring a way to create an improved mesh design for use in hernia operations. Current mesh designs can cause patients significant pain and discomfort.

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Some of the projects

Professor Mehul Motani, 37
Department of Electrical & Computer Engineering at NUS
He is looking into developing a cooperative wireless communication network which enables higher rates of data transfer. This translates into faster download speeds, especially for mobile phone users who stream audio and video files on their phones. It could also allow wireless network access from practically any location.

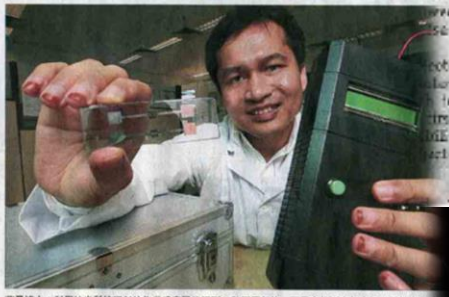
Dr Steven Zhou, 31
Department of Electrical & Computing Engineering at NUS
He plans to develop a portal where people can view images or movies in 3-D format on their mobile devices. It is also able to convert images or movies captured on cellphones or digital cameras into 3-D format using computers. They can then share and view these 3-D images and videos using a variety of display mechanisms like Flickr or YouTube.

Professor Freddy Boey, 52
School of Materials Science and Engineering at NTU
In a hernia operation, a mesh prosthesis is surgically inserted but this mesh can stiffen up after some time, causing the patient to feel pain when he bends down, or it may stick to the organs.

The project aims to develop a prototype that is very flexible and does not stick to the organs.

Dr Zuruzi Abu Samah, 35, Biomedical Engineering Group at NYP School of Engineering
This project uses flexible pressure sensor technology to achieve high pressure sensitivity across a large area. He aims to create a prototype mat used in physiotherapy. These mats use pressure sensors to assess whether a person can walk well by measuring the pressure distribution across a person's foot as he walks on it. Such mats cost as much as $40,000 now but Dr Zuruzi aims to make it cheaper by about half.

世界首个纳米科技感应器能同时探测10种气体



萨曼博士：利用纳米科技研制的化学感应器能探测10种不同气体，可用来侦测空气中极微量的毒气或爆炸物。（何炳耀摄）

Development of an ultra-sensitive flexible pressure sensor using Carbon Nanotubes

- NRF – Proof of Concept
- NRF Translational Research Development
- MOE Innovation Fund

Second NYP Project Awarded Prestigious NRF POC Grant

"Create higher efficiency solar cells via a novel electrode technology "

$500K NEA research grant for Waste Management

What Makes A Successful TTO?

1. Good leadership & trained competent people
2. A supportive & 'patient' parent organization
3. Good technology & healthy IP pipeline
4. Flexible & pragmatic policies, e.g.
   - *IP ownership, support start-ups, reward & recognition scheme, conflict of interest*
5. SOPs & support services - *systematic, transparent, consistent & efficient*
6. Good technology & business intelligence capability
7. Effective outreach & in-reach – *industry partners, R&D, projects, communities*
8. Be aware of risks & liabilities
9. Right attitude - *Don't take it personal & live to fight another day*

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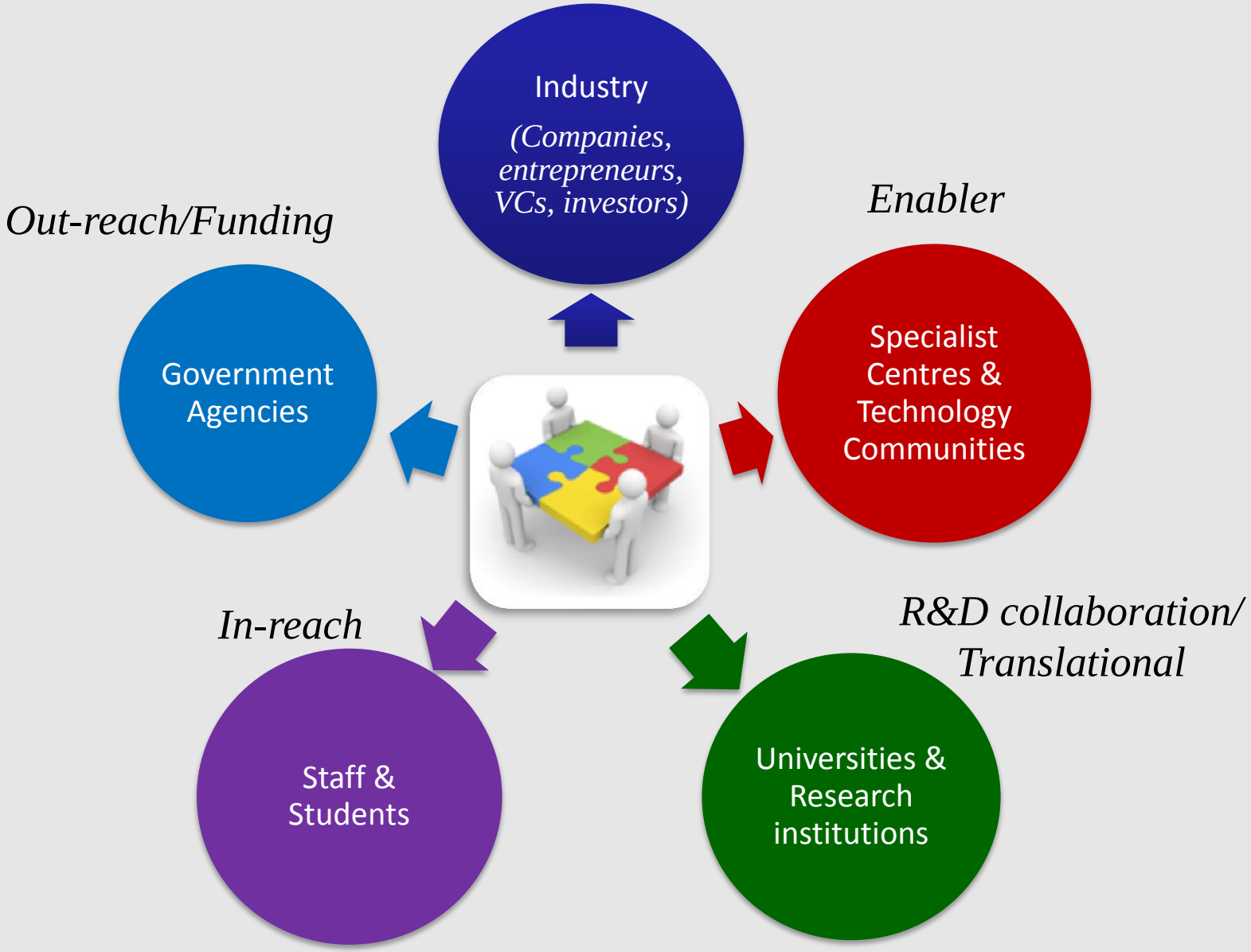
Innovation Eco-system @ NYP

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