

# Moving Forward:

## *A Research Agenda for UTM Synergy 4.0*

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# Overview of Presentation

1. Introduction
2. Synergy 4.0
3. Back to the Future: Success Story of Research Synergy
4. Making Friends with Others
5. The Evolution of Synergy Partnership
6. Interdisciplinary at Large
7. Interdisciplinary Research: The Challenge
8. Fostering Partnership
9. Our (UTM) Interdisciplinary Backbone

We should take on the **JOKER** on our own, Batman...

What's the point of having **JUSTICE LEAGUE** if we don't work together!



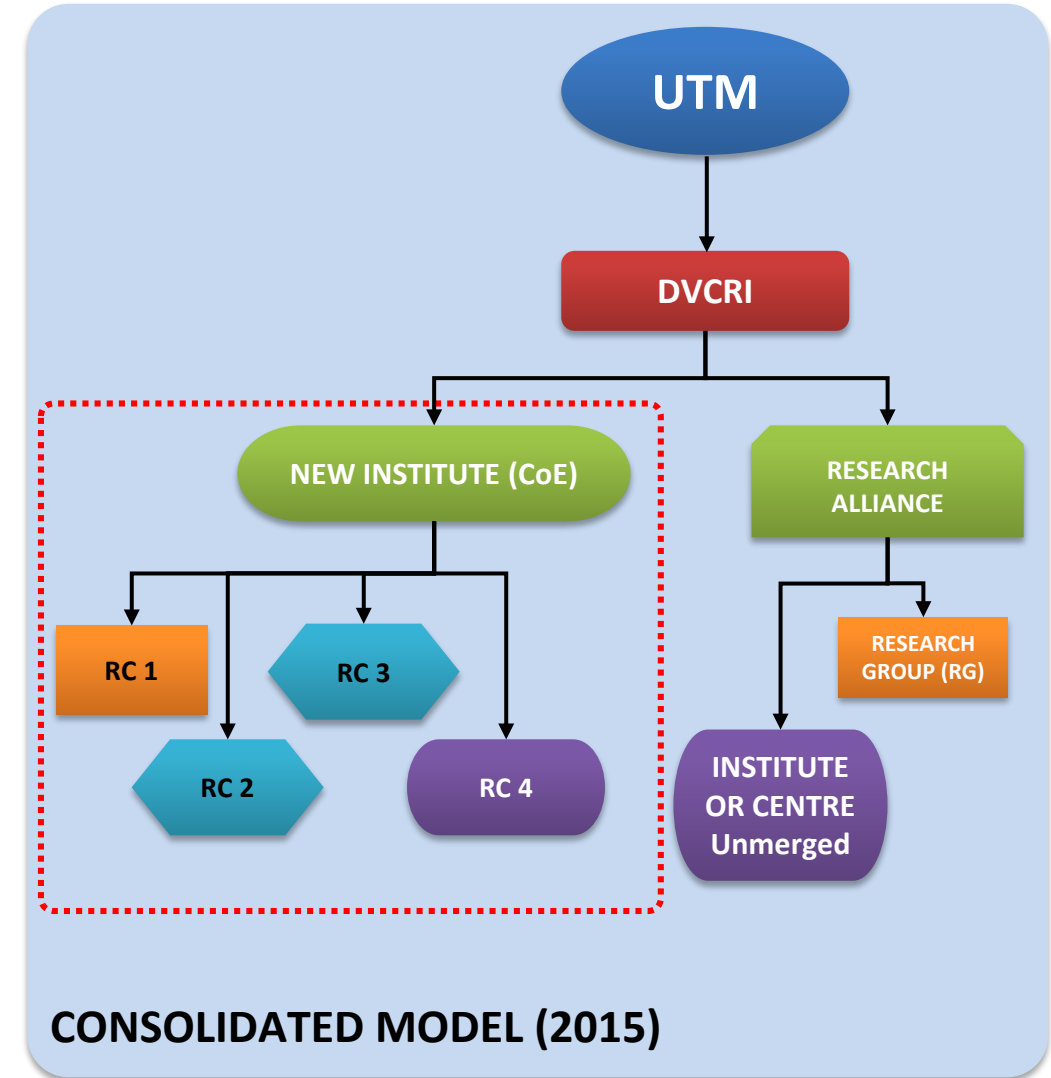
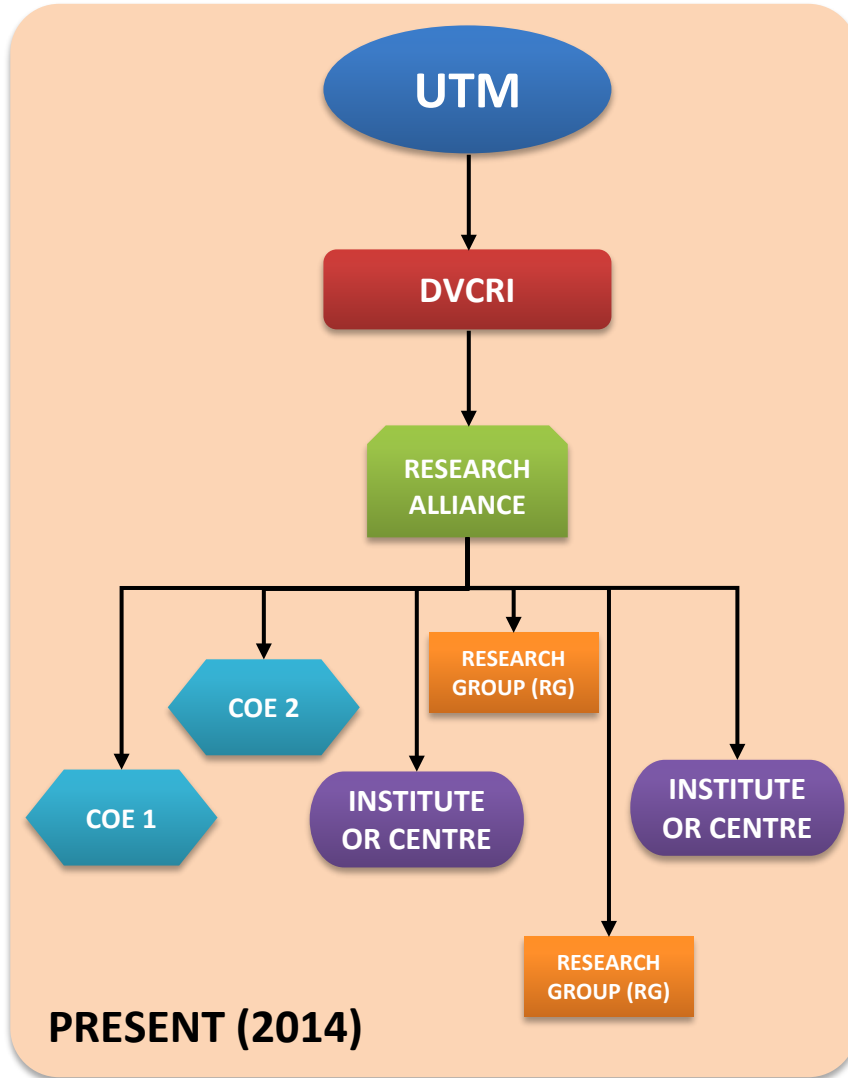
**SLAP!**

# 2. Synergy 4.0: A New Synergy Horizon

ENGINEERING	SCIENCE & TECHNOLOGY	SOCIAL SCIENCES
Civil Engineering	Science	Built Environment
Biosciences and Medical Engineering	Computing	Education
Electrical Engineering	Geoinformation & Real Estate	International Business School
Mechanical Engineering	Razak School of Engineering and Advanced Technology	Islamic Civilization
Chemical and Energy Engineering	Malaysia-Japan International Institute of Technology	Language Academy
	Advanced Informatics School	Management
		Perdana School of Science, Technology and Innovation Policy

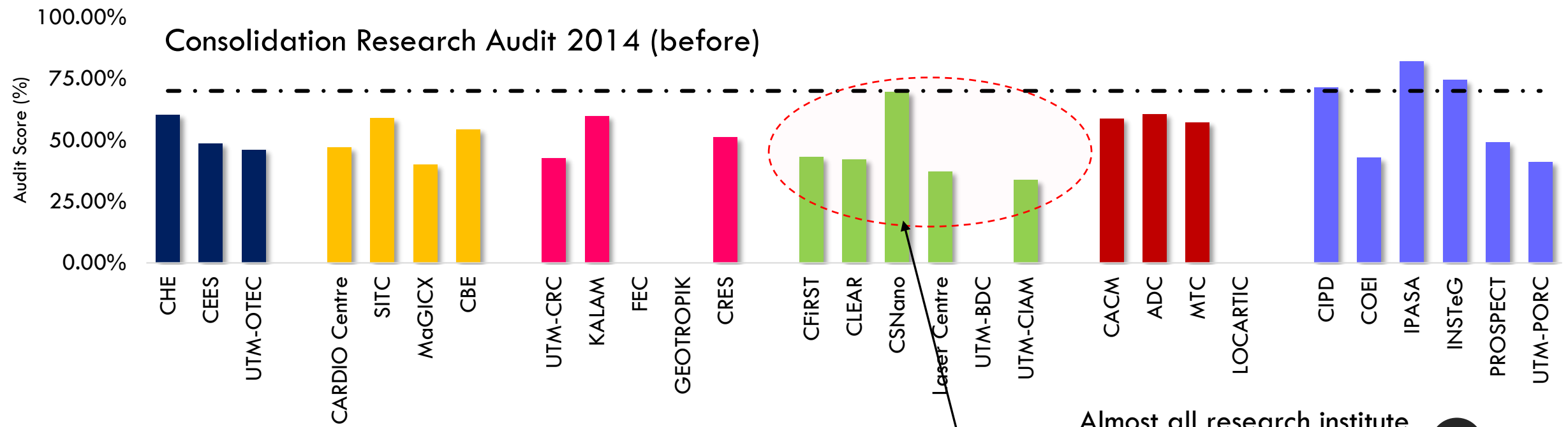


# Back to the Future: Success Story of Research Synergy (2014-2015)

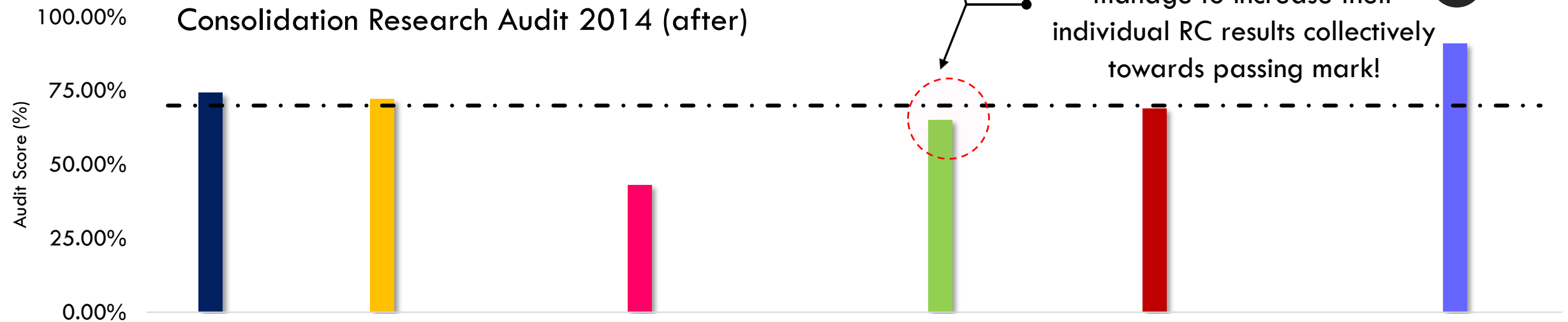


# Back to the Future: Success Story of Research Synergy (2014-2015)

Consolidation Research Audit 2014 (before)



Consolidation Research Audit 2014 (after)



Almost all research institute manage to increase their individual RC results collectively towards passing mark!



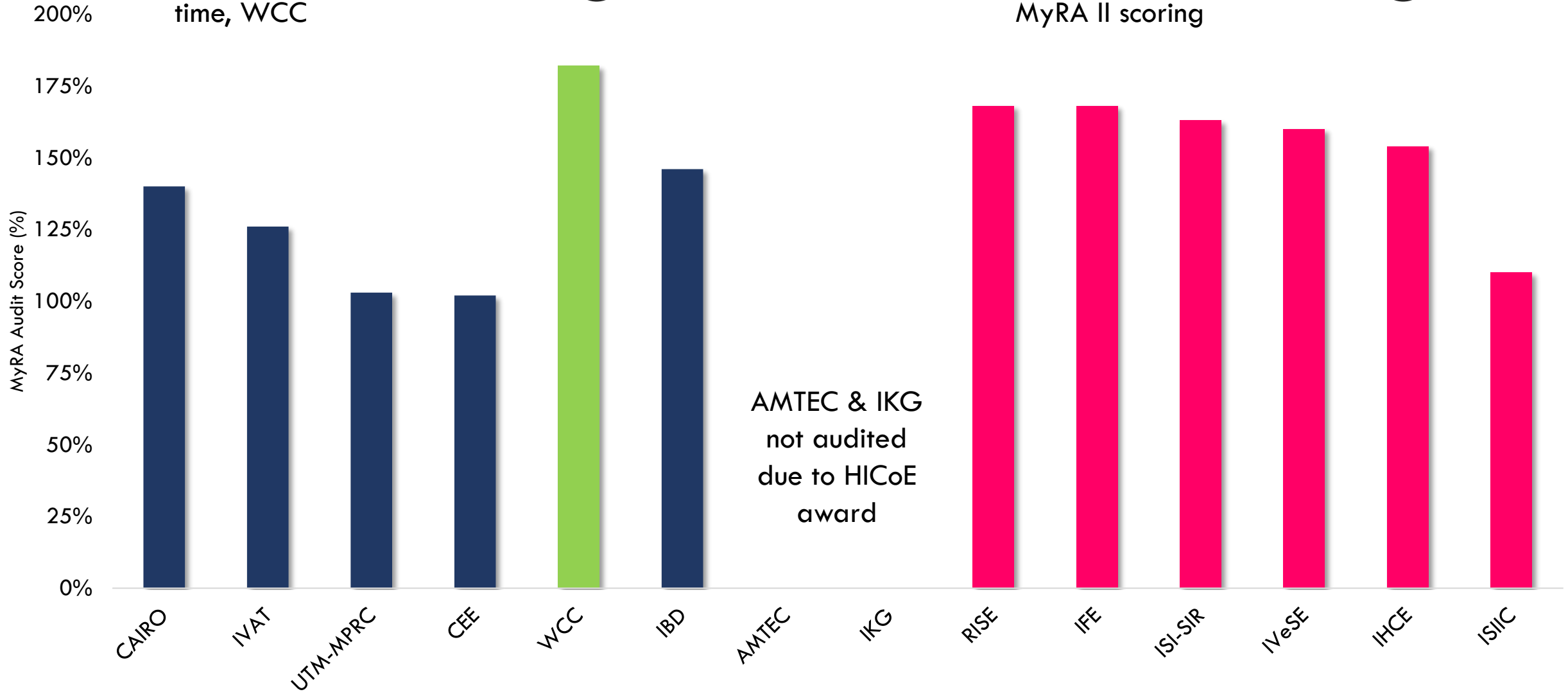


# Back to the Future: Success Story of Research Synergy (2015)

Five out of six institutes manage to rival our only HICoE at that time, WCC

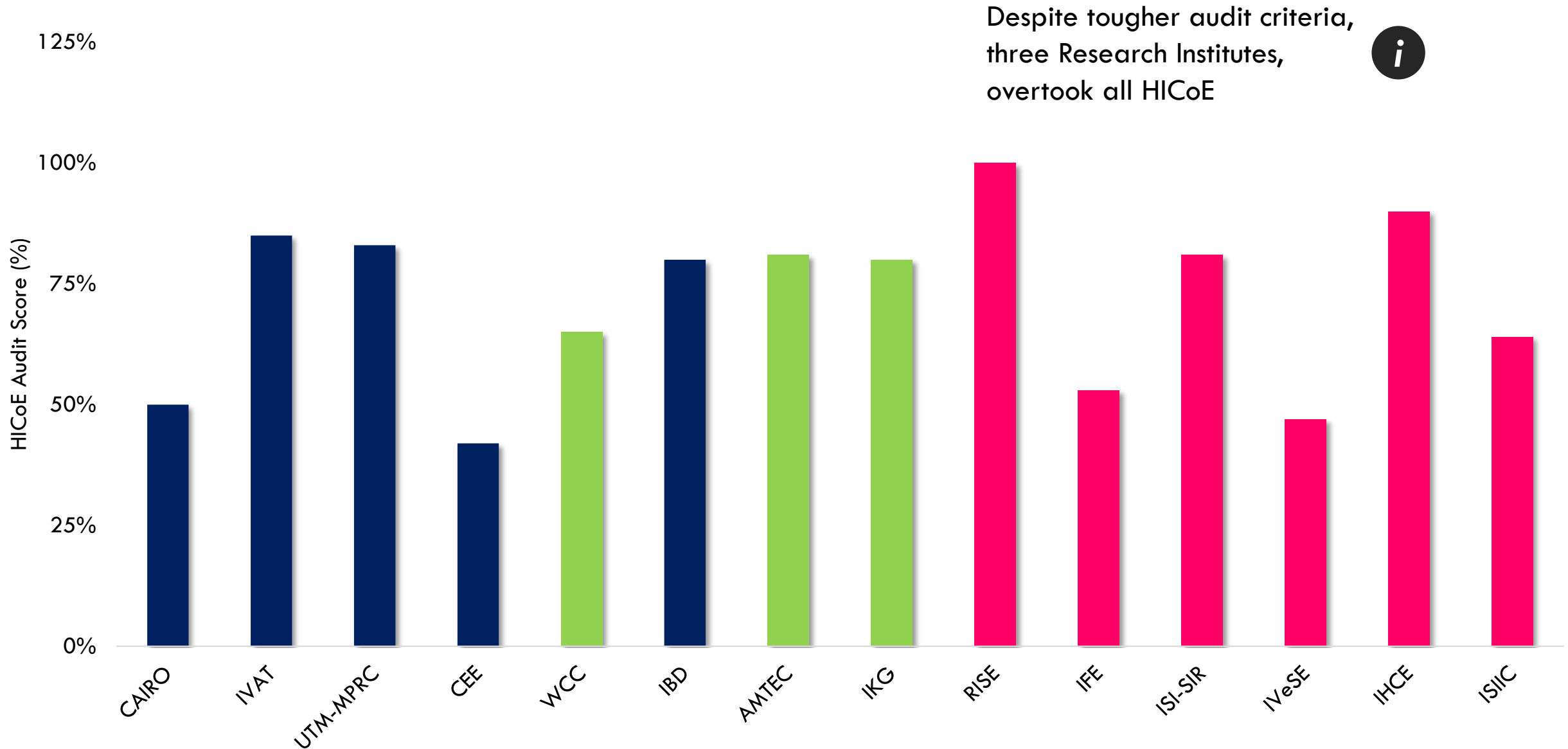


All CoE, including Research Institutes manage to surpass MyRA II scoring



AMTEC & IKG  
not audited  
due to HICoE  
award

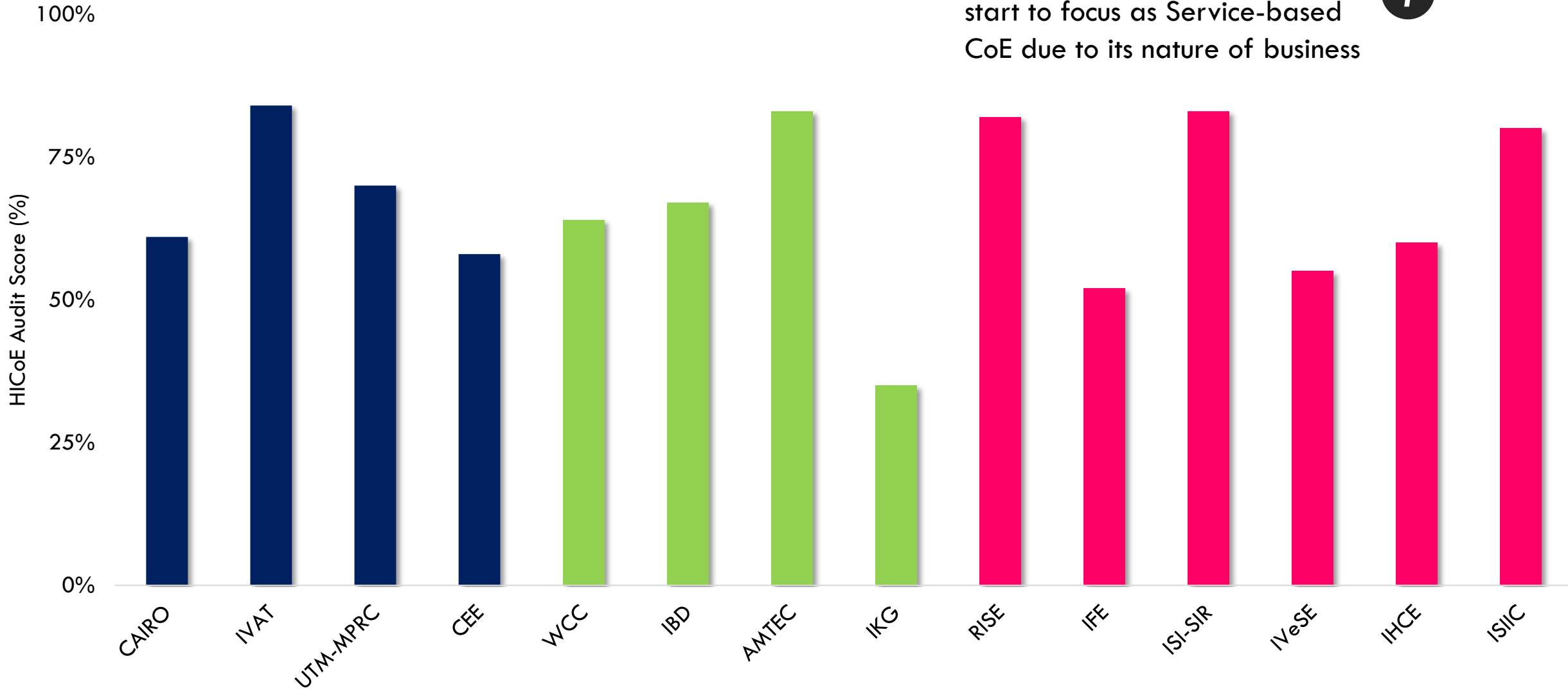
# Back to the Future: Success Story of Research Synergy (2016)



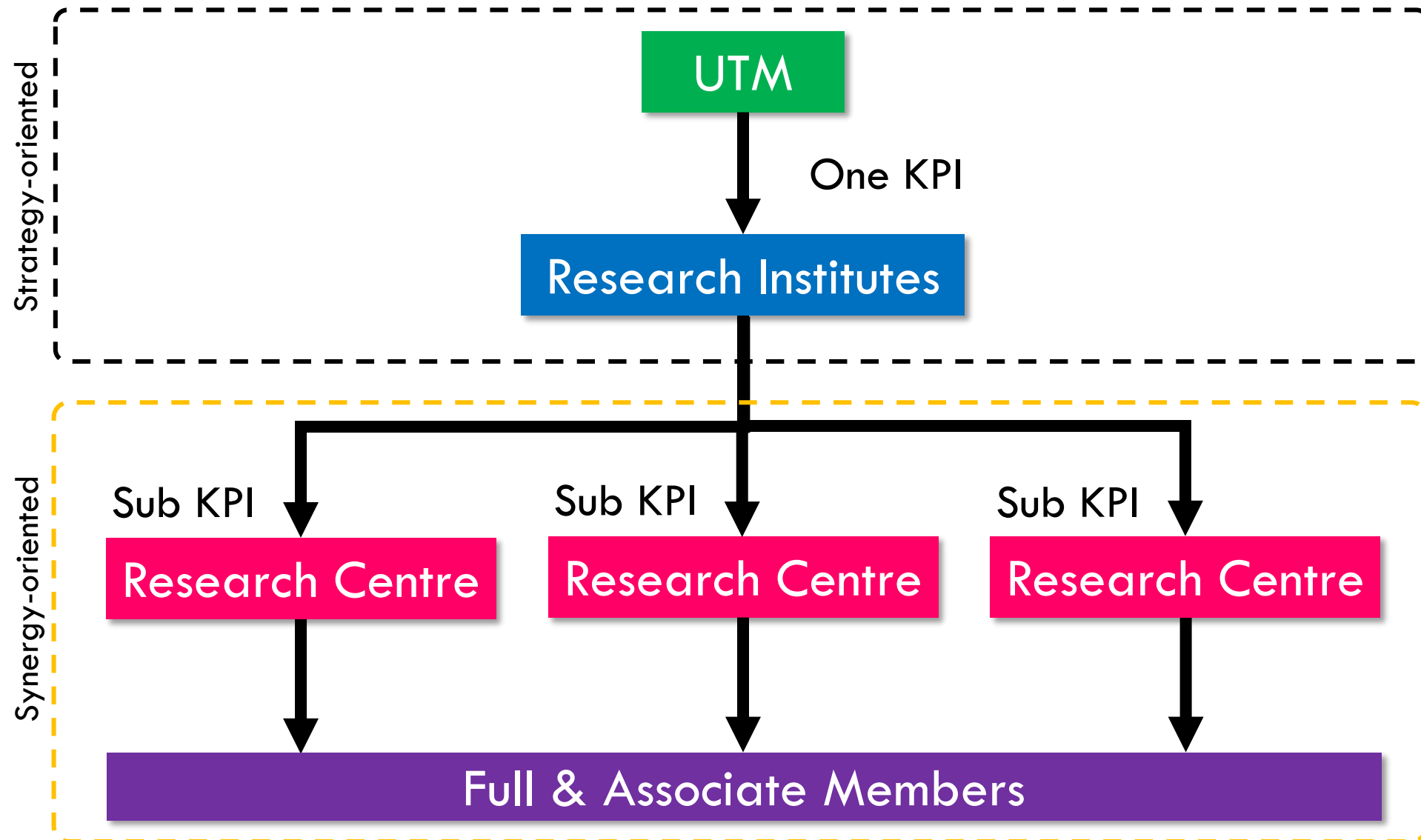


# Back to the Future: Success Story of Research Synergy (2017)

RISE & ISI-SIR continues to improve while ISIIC has since start to focus as Service-based CoE due to its nature of business



# Back to the Future: What do We Observed?



## Four Pronged Linkages Strengthening Approach

Within  
University



Research  
within university

Example:  
Fundamental Research  
Grant Scheme

Among  
Local Universities



Research  
between universities

Example:  
Long Term Research Grant  
Scheme

With International  
Universities



Research with int'l  
universities

Example:  
Newton-Ungku Omar Fund,  
International Collaboration  
Fund

With the Industries/  
Ministries/Agencies



Research between  
university – industry

Example:  
Malaysia Laboratories for  
Academia-Business  
Collaboration (MyLAB),  
TechnoFund

## Four Pronged Linkages Strengthening Approach

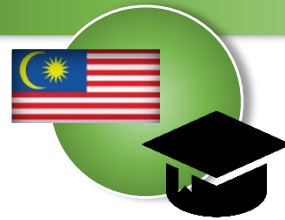
Within  
University



Research  
within university

Transdisciplinary  
Research Grant (TDR)

Among  
Local Universities



Research  
between universities

Collaborative Research Grant (CRG)

With the Industries/  
Ministries/Agencies



Research between  
university – industry

International & Industrial Incentive Grant (IIIG)

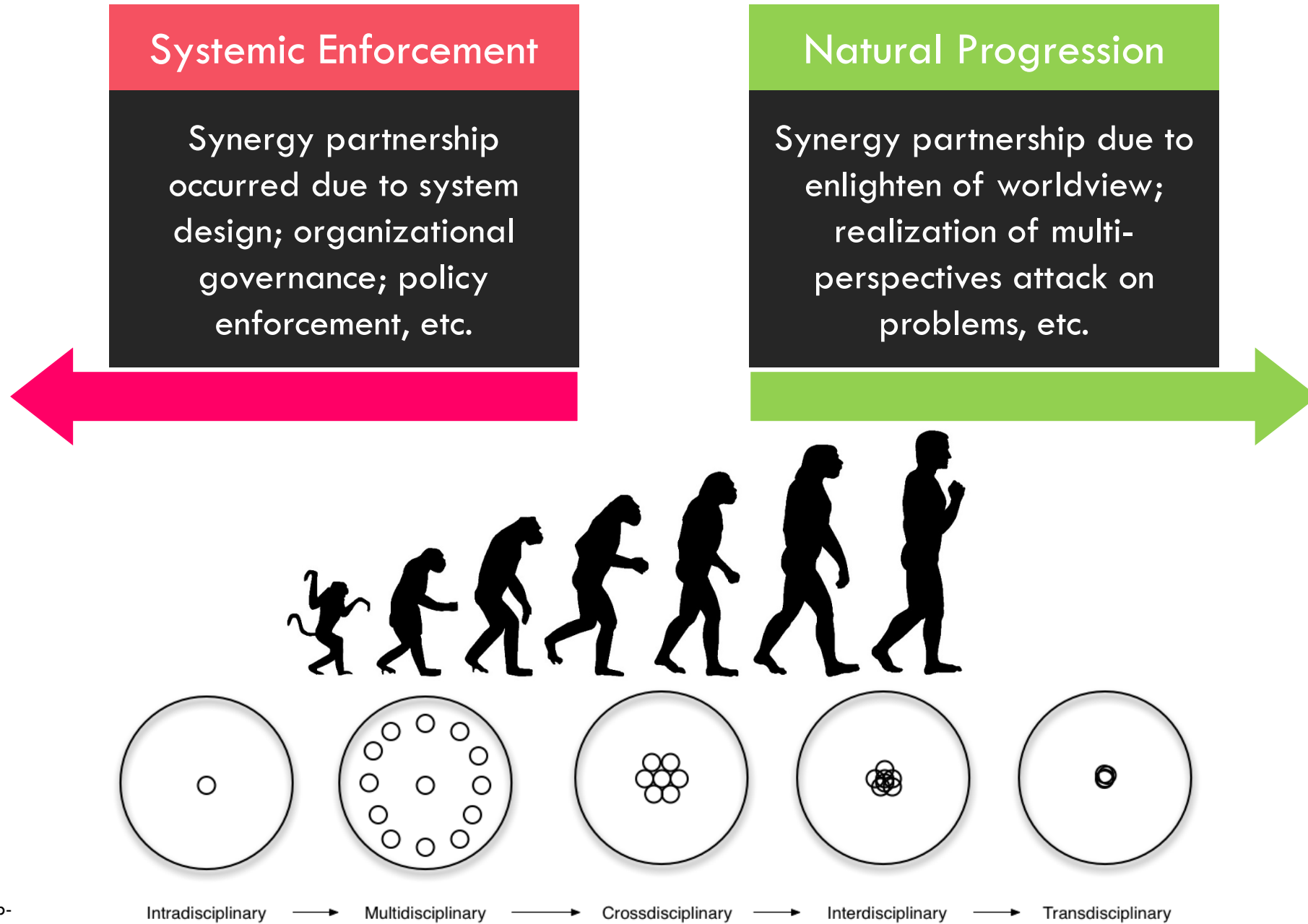
Knowledge Transfer Program-  
Networking Matching Grant  
(KTP-NMG)

With International  
Universities



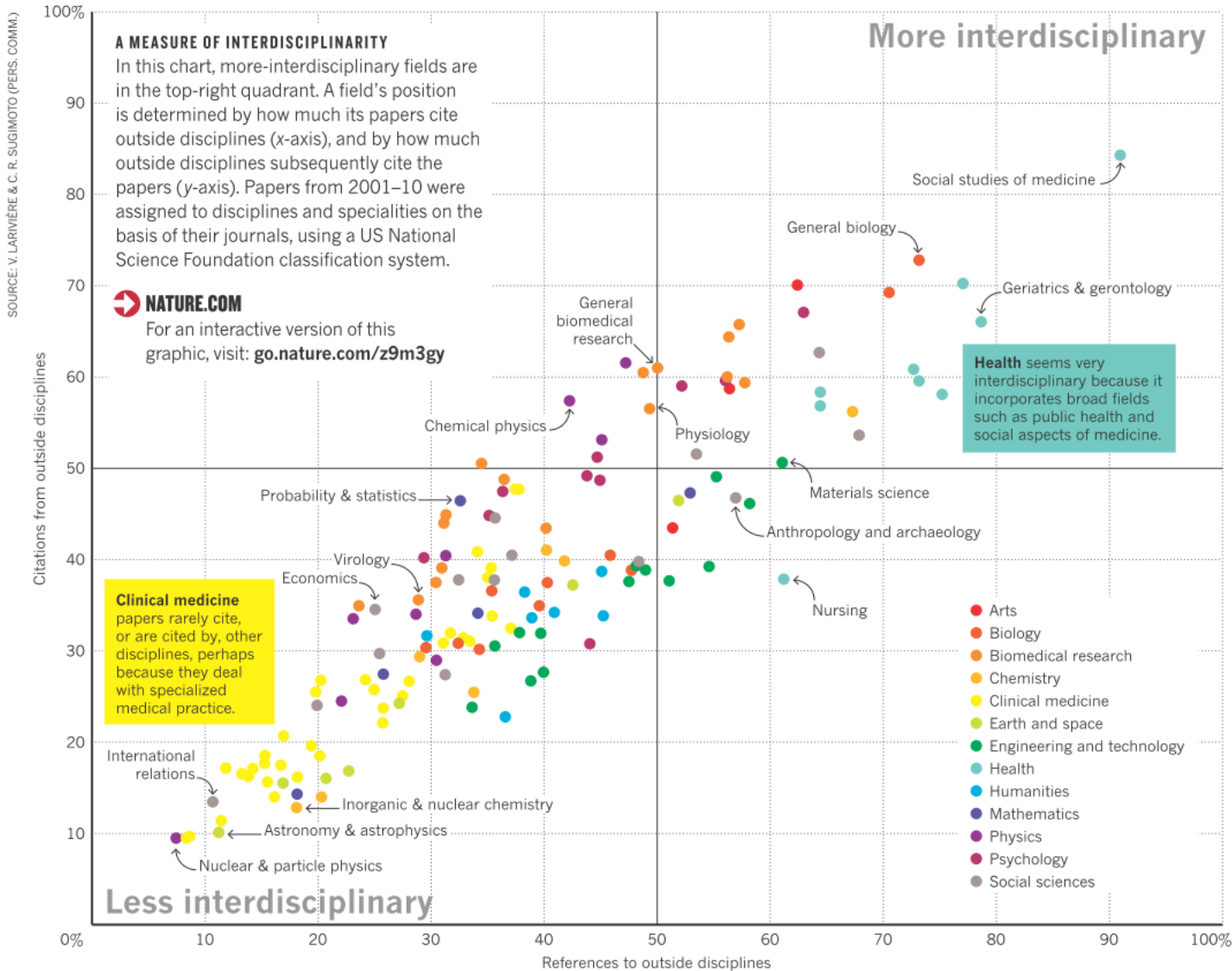
Research with int'l  
universities

# 5. The Evolution of Synergy Partnership: *Reactive to Proactive*



# 6. Interdisciplinary at Large

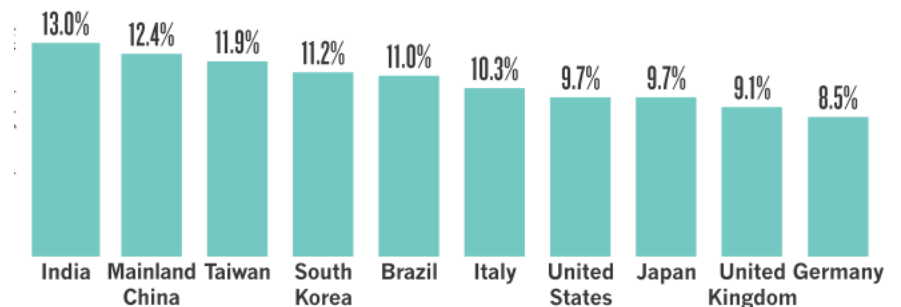
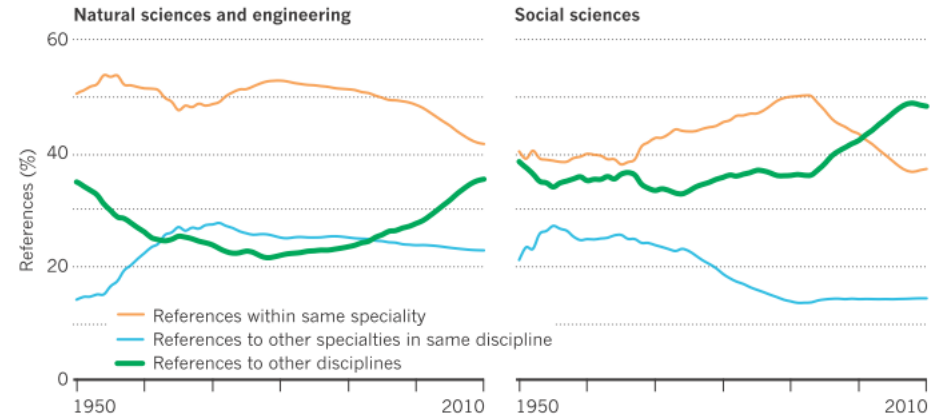
## 3 Some fields are more interdisciplinary than others ...



## 1 Interdisciplinary research is on the rise

### REFERENCES

Since the mid-1980s, research papers have increasingly cited work outside their own disciplines. The analysis shown here used journal names to assign more than 35 million papers in the Web of Science to 14 major conventional disciplines (such as biology or physics) and 143 specialities. The fraction of paper references that point to work in other disciplines is increasing in both the natural and the social sciences. The fraction that points to another speciality in the same discipline (for example, a genetics paper pointing to zoology) shows a slight decline.



# 7. Interdisciplinary Research: *The Challenge*

## Strengthening “Single Disciplinary” skills

Before we move towards interdisciplinary research, we should develop our disciplinary skill first; not unlike when pursuing PhD.

## Biases between Social Science & Natural Science

Often time, social scientists are involved in an interdisciplinary research just to “tick a box” and not seriously thinking about incorporating Social Science in it entirety.

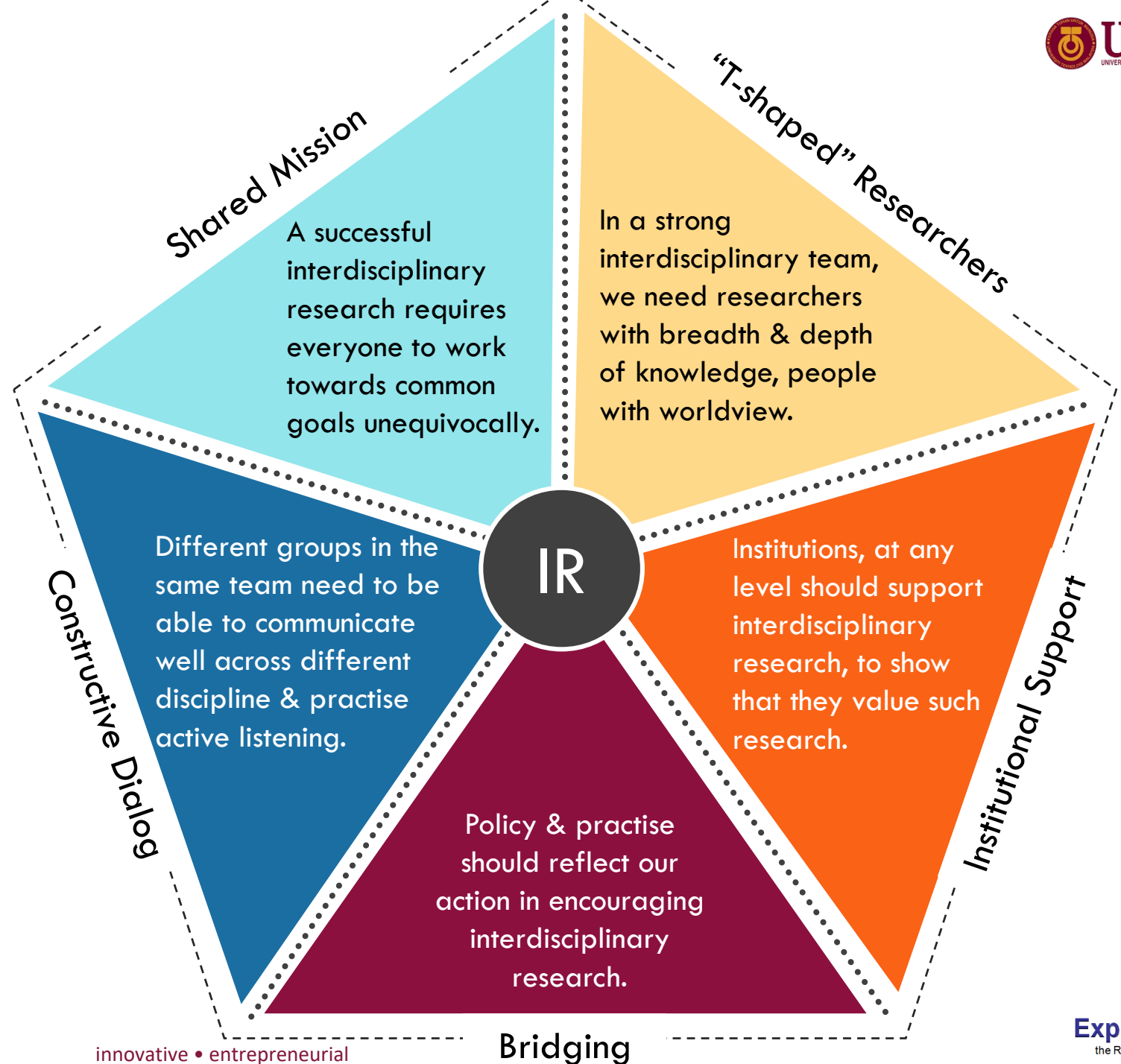
## It takes time to build a relationship

Good working partnership, especially in interdisciplinary does not happen overnight. Such relationship will ensure cohesiveness and thus result in conducive working environment



# 8. Fostering Partnership

Interdisciplinary research is easier said than done. However, it is only the logical progression if we wish to tackle a complex, multi-dimensional problems.



# 8. Our (UTM) Interdisciplinary Backbone: *Research Alliance*

Research Alliance	Sub Niche
Frontier Materials	Advanced Materials Science & Engineering
	Smart Manufacturing & Automation
Innovative Engineering	Networking & Telecommunications
	Sustainable & Resilient Infrastructure
	Green Vehicle
Resource Sustainability	Water & Wastewater
	Energy
	Sustainable Practise
	Resource Recovery

# Our (UTM) Interdisciplinary Backbone: *Research Alliance*

Research Alliance	Sub Niche
Health & Wellness	Bioproduct & Biomanufacturing
	Bioenergy & Environmental
	Medical devices & Health Informatics
Smart Digital Community	Smart Education
	Social Economic & Wellbeing

The sub niche area shall be our research roadmap with a clusters of three-year initiative to take small steps towards the vision set by each sub-niche

*i*

