

# Riset untuk Peningkatan Daya Saing Perguruan Tinggi

*Benyamin Lakitan*

Rakornas Penelitian dan Pengabdian kepada Masyarakat  
Kementerian Pendidikan & Kebudayaan  
*Yogyakarta, 20 Januari 2012*

# Tantangan Perguruan Tinggi

RAKORNAS  
P2M  
Yogyakarta  
24 Oktober 2010

- Bagaimana prioritas riset dirumuskan?
- Bagaimana prioritas riset dikawal hingga ke hilir?
- Bagaimana hasilnya menjawab masalah-masalah bangsa?

# Sistematika Presentasi

RAKORNAS  
P2M  
Yogyakarta  
20 Januari 2012

- Identifikasi Persoalan Daya Saing Bangsa
- Optimalisasi Kontribusi Riset PT
- Prioritas Riset dan Penataan Lemlit PT
- Agenda Utama: Mengubah Mindset Akademisi

# Identifikasi Persoalan Daya Saing Bangsa

# 12 Pilar Daya Saing

## Basic requirements

- Institutions
- Infrastructure
- Macroeconomic environment
- Health and primary education

Key for  
**factor-driven**  
economies

## Efficiency enhancers

- Higher education and training
- Goods market efficiency
- Labor market efficiency
- Financial market development
- Technological readiness
- Market size

Key for  
**efficiency-driven**  
economies

## Innovation and sophistication factors

- Business sophistication
- Innovation

Key for  
**innovation-driven**  
economies

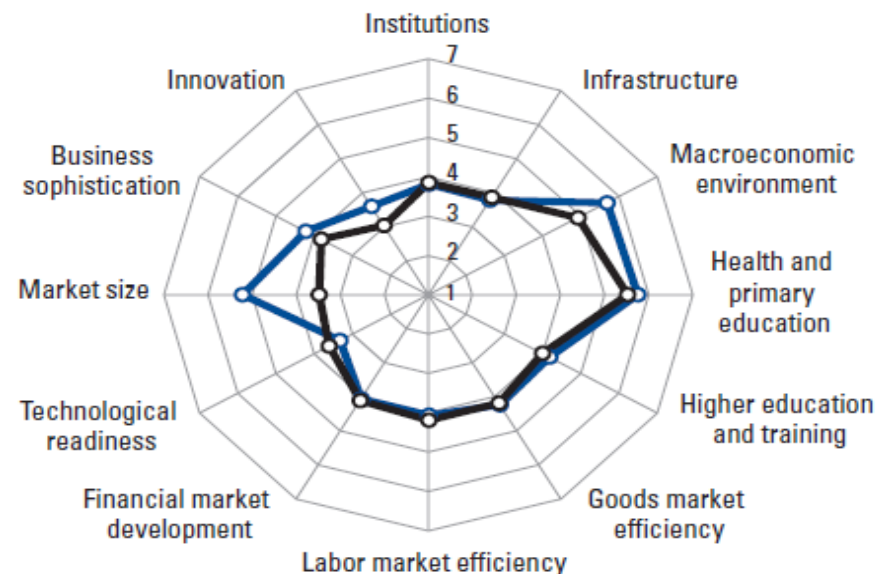


# Indeks Daya Saing Indonesia

	Rank (out of 142)	Score (1-7)
<b>GCI 2011–2012</b> .....	<b>46</b>	<b>4.4</b>
GCI 2010–2011 (out of 139).....	44	4.4
GCI 2009–2010 (out of 133).....	54	4.3
<b>Basic requirements (40.0%)</b> .....	<b>53</b>	<b>4.7</b>
Institutions.....	71	3.8
Infrastructure.....	76	3.8
Macroeconomic environment.....	23	5.7
Health and primary education.....	64	5.7
<b>Efficiency enhancers (50.0%)</b> .....	<b>56</b>	<b>4.2</b>
Higher education and training.....	69	4.2
Goods market efficiency.....	67	4.2
Labor market efficiency.....	94	4.1
Financial market development.....	69	4.1
Technological readiness.....	94	3.3
Market size.....	15	5.2
<b>Innovation and sophistication factors (10.0%)</b> .....	<b>41</b>	<b>3.9</b>
Business sophistication.....	45	4.2
Innovation.....	36	3.6

Sumber: WEF (2011)

## Stage of development



—○— Indonesia    —○— Efficiency-driven economies

# Higher education and training

- Globalizing economy requires countries to nurture pools of **well-educated workers** who are able to adapt rapidly to their changing environment and the evolving **needs of the production system**
- Measures secondary and tertiary enrollment rates as well as the **quality of education as evaluated by the business community**

Sumber: WEF (2011)

# Technological readiness

- **ICT access and usage** are key enablers of countries' overall technological readiness.
- The **level of technology available** to firms in a country needs to be distinguished from the country's ability to innovate and expand the frontiers of knowledge. That is why we separate technological readiness from innovation

Sumber: WEF (2011)

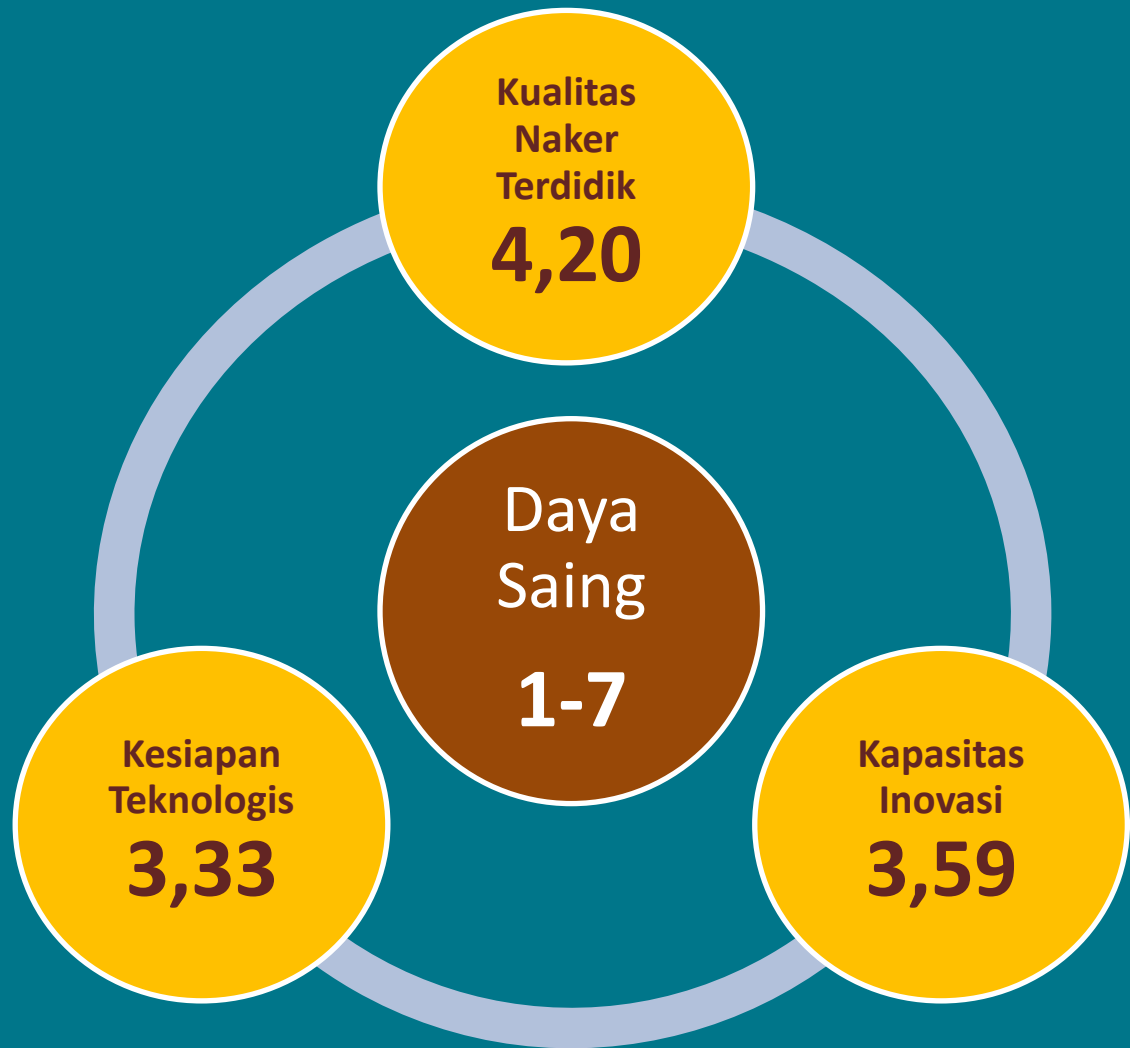


# Innovation

- In the long run, standards of living can be enhanced **only** by technological innovation.
- it means sufficient **investment in R&D**, especially by the private sector; the presence of **high-quality scientific research institutions**; extensive **collaboration in research** between universities and industry; and the **protection of intellectual property**.

Sumber: WEF (2011)

*Triple  
Challenges*



Sumber: WEF (2011)

# Potret Kontribusi Teknologi

- The contribution of TFP growth to GDP growth in Indonesia was on average a low 7–13% during 1880–2008.
- The case of Indonesia appears to offer support for Krugman's\* thesis that economic growth in East Asia in recent decades was 'perspiration', rather than 'inspiration'-based.

van der Eng (2010)

\*Krugman, P., 1994. The Myth of Asia's Miracle. *Foreign Affairs* 73 (6), 62–78

•Van der Eng, P. 2010. The sources of long-term economic growth in Indonesia, 1880–2008. *Explorations in Economic History* 47 , 294–309

**Tabel 1. Sumber Pertumbuhan Ekonomi Indonesia, 1971-2007**

Periode	A	$g^Y$	$g^K$	$g^N$	$g^{ES}$	$g^N + g^{ES}$	$g^{TFP}$
1971 - 1985	44,07%	5,72	6,98	2,84	1,04	3,88	0,64
1986 - 1997	48,93%	7,22	10,39	2,30	1,83	4,13	0,58
1998 - 1999	36,95%	-6,51	2,78	3,10	1,72	4,82	-10,52
2000-2007	44,54%	5,04	3,66	1,66	1,13	2,78	1,90
2005 - 2007	42,40%	5,84	4,64	1,32	1,12	2,44	2,52
1971-2007	45,36%	5,40	7,10	2,42	1,35	3,77	0,29

Sumber: Alisjahbana (2009)\*

\*Alisjahbana, A.S. (2009), "Revisiting Indonesia's Source of Economic Growth and Its Projection Towards 2030", Working Paper in Economics and Development Studies, Padjajaran University, No. 200905. Ket: = MPK,  $g^Y$  = pertumbuhan PDB riil,  $g^K$  = pertumbuhan capital,  $g^N$  = pertumbuhan tenaga kerja,  $g^{ES}$  = pertumbuhan dari nilai tambah tingkat pendidikan penduduk (return to education attainment per person).

Hambatan utama yang masih menjadi kendala bagi pertumbuhan TFP antara lain: (1) infrastruktur dasar (transportasi dan distribusi) yang memperkuat interkoneksi dalam perekonomian, (2) kecukupan pasokan energi, (3) kurang memadainya aktivitas penelitian dan pengembangan, (4) kualitas modal manusia (*human capital*) dan inklusivitas sistem pendidikan nasional, dan (5) kesenjangan digital (*digital divide*).

*Bank Indonesia (2010)*



VISI  
INDONESIA  
2025

“Mewujudkan  
masyarakat Indonesia yang  
Mandiri, Maju, Adil, dan Makmur”

Inisiatif  
Strategis  
MP3EI

1. Mendorong realisasi investasi skala besar di 22 kegiatan ekonomi utama
2. Sinkronisasi rencana aksi nasional untuk merevitalisasi kinerja sektor riil
3. Pengembangan *center of excellence* di setiap koridor ekonomi

STRATEGI  
UTAMA  
MP3EI

PENGEMBANGAN  
POTENSI EKONOMI  
MELALUI KORIDOR  
EKONOMI

PENGUATAN  
KONEKTIVITAS  
NASIONAL

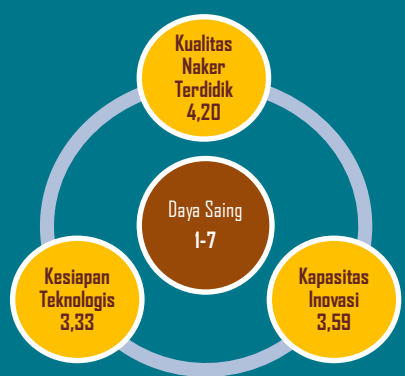
PENGUATAN  
KEMAMPUAN  
SDM DAN IPTEK  
NASIONAL

PRINSIP  
DASAR  
MP3EI

PRINSIP DASAR DAN PRASYARAT KEBERHASILAN  
PERCEPATAN DAN PERLUASAN PEMBANGUNAN EKONOMI

Tiga Strategi Utama MP3EI (Perpres 32/2011)

# The Tools



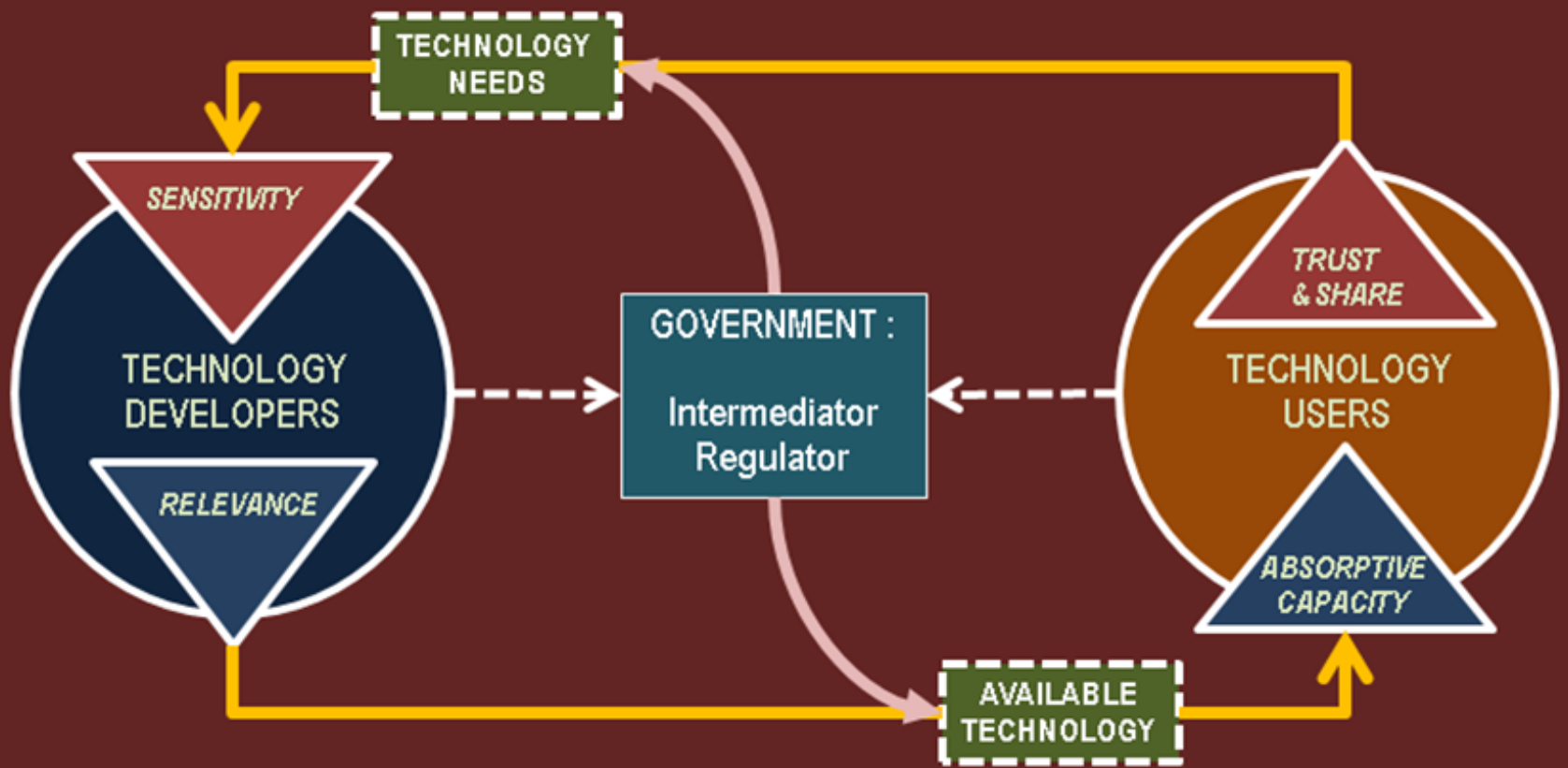
*“Pemerintah memajukan iptek  
dengan menjunjung tinggi nilai-nilai agama  
dan persatuan bangsa  
untuk memajukan peradaban  
serta kesejahteraan umat manusia”*

**Pasal 31 ayat (5) Undang-Undang Dasar 1945**





# Optimalisasi Kontribusi Riset Perguruan Tinggi



•Lakitan, B. 2011. National Innovation System in Indonesia: Present Status and Challenges. Presented at the Annual Meeting of Science and Technology Studies, GRIPS Tokyo, 10-12 June 2011

*“History is changed when we put into it  
the technology that counts:  
not only the famous spectacular technologies  
but also the low and ubiquitous ones”*

•Edgerton, D. 2006. The Shock of the Old. Profile Books Ltd., London

*What is not disseminated **and** used  
is not an innovation*

- The World Bank (2010)

•World Bank. 2010. Innovation Policy: a guide for developing countries. The World Bank, Washington DC

# Prioritas Riset dan Penataan Lemlit PT: Menuju 'Entrepreneurial University'

It appears that the **entrepreneurial university** is a global phenomenon with an isomorphic developmental path, despite different starting points and modes of expression.



Entrepreneurial university as any university than undertakes entrepreneurial activities, **with the objective of improving regional or national economic performance.**

•Etzkowitz, H., A. Webster, C. Gebhardt, and B.R.C. Terra. 2000. The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy* 29:313-330

**1. Introduction: back to the future**

There is empirical evidence that identifying, creating and commercializing intellectual property have become institutional objectives in various academic systems. Coming from different academic and national traditions, the university appears in the late 20th century as a common entrepreneurial university encompasses different starting points and modes of expression.

This paper argues that the internal development of the university is undertaken with the emergence of 'knowledge-based' entrepreneurial activities and national economic performance as well as the university's financial advantage and that of its faculty. However, many

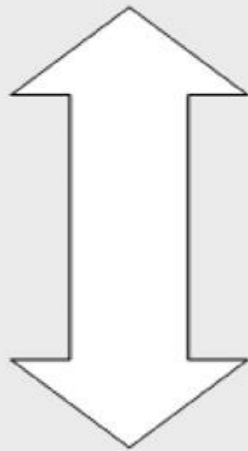


A university that embraces its role within the triple helix model (academia-industry-government) and **adopts the mission of contributing to regional/national development** is referred to as an entrepreneurial university.

•Philpott, K., Dooley, L., O'Reilly, C., Lupton, G. 2011. The Entrepreneurial University: examining the underlying academic tensions. Technovation 31:161-170

## A Spectrum of Entrepreneurial Activity

**Closer to the Entrepreneurial  
Paradigm**



**Closer to the Traditional  
Paradigm**

### Forms of Entrepreneurship

Creation of a Technology Park

Spin-off Firm Formation

Patenting and Licensing

Contract Research

Industry Training Courses

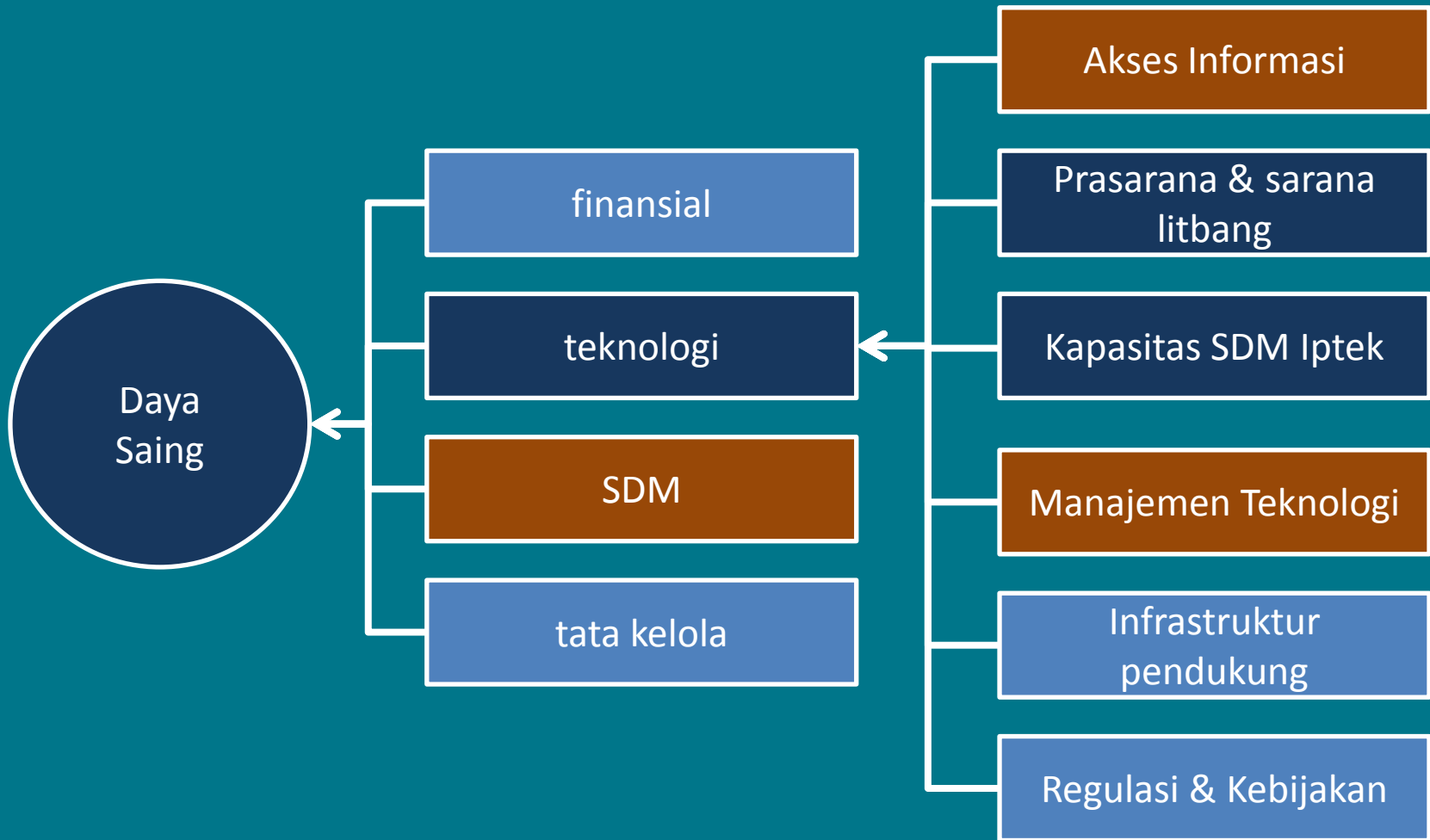
Consulting

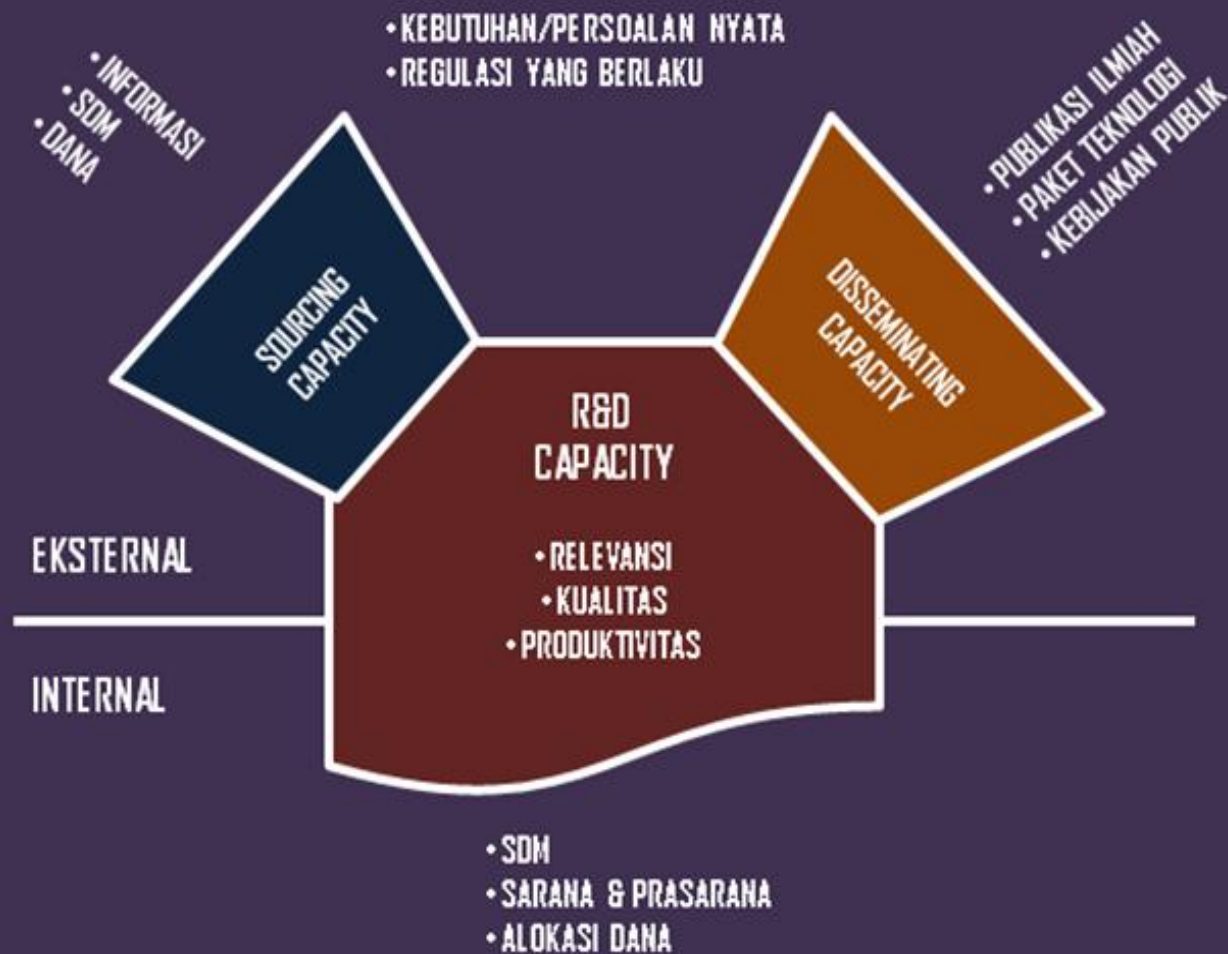
Grantsmanship

Publishing Academic Results

Producing Highly Qualified Graduates







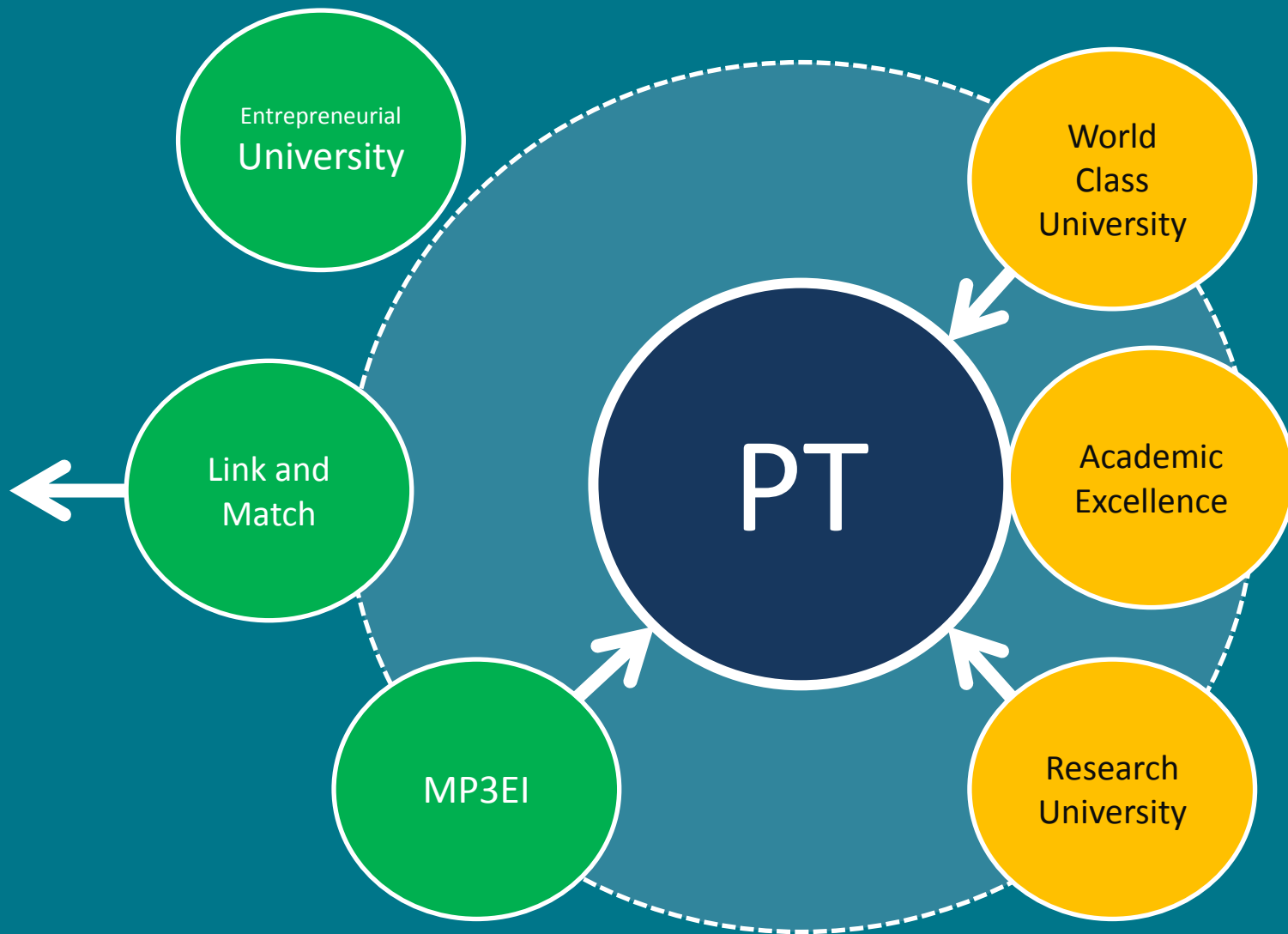
•Lakitan, B. 2011. Indikator Kinerja Lembaga Litbang di Era Informasi Terbuka. Makalah pengarahan pada Temu Peneliti Badan Litbang dan Diklat VIII Kementerian Agama RI di Makassar tanggal 12-15 April 2011

# Kinerja Teknologi ASEAN

Negara	Komponen				Agregat
	Infrastruktur	Dukungan TIK	Kegiatan Litbang	Manajemen Teknologi	
Singapura	9,74	8,72	9,37	10,00	9,46
Malaysia	4,51	4,45	4,55	8,37	5,49
Thailand	4,60	2,36	4,40	7,08	4,60
<b>Indonesia</b>	<b>3,89</b>	<b>1,57</b>	<b>4,38</b>	<b>6,68</b>	<b>4,12</b>
Brunei	0,97	4,54	1,56	6,22	3,37
Filipina	1,22	2,07	3,52	6,03	3,22
Vietnam	2,51	1,79	1,07	5,38	2,70
Cambodia	2,14	0,60	1,36	6,28	2,60
Myanmar	0,85	0,08	1,37	5,67	2,01
Laos	0,85	1,33	0,92	3,92	1,77

•Kao, C., Wu, W.Y., Hsieh, W.J., Wang, T.Y., Lin, C., Chen, L.H. 2008. Measuring the national competitiveness of Southeast Asian countries. European Journal of Operational Research 187, 613-628

# Agenda Utama: Mengubah Mindset Akademisi



Wajah kita saat ini ?

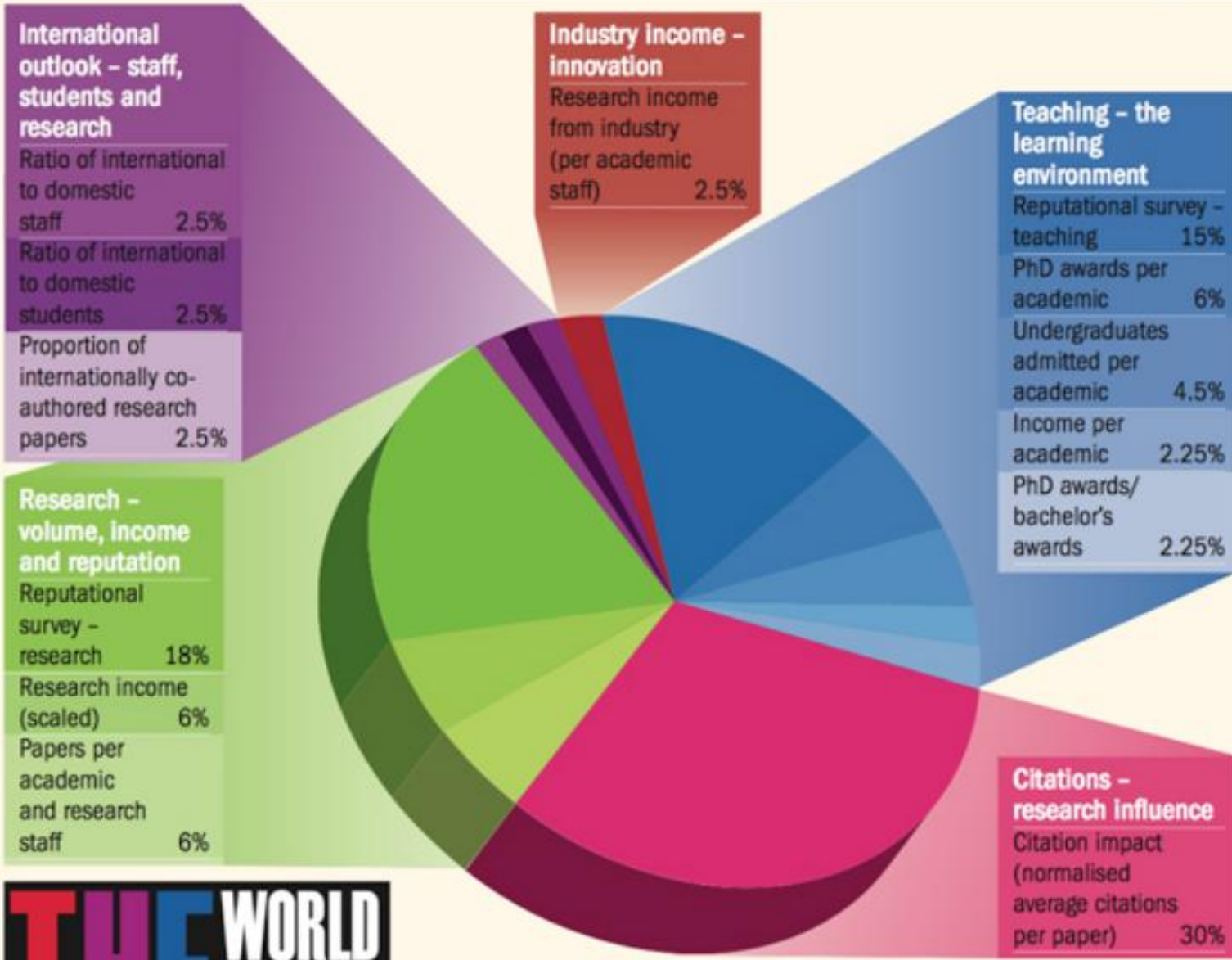


### Indicators and Weights for ARWU

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
	Highly cited researchers in 21 broad subject categories	HiCi	20%
Research Output	Papers published in Nature and Science*	N&S	20%
	Papers indexed in Science Citation Index-expanded and Social Science Citation Index	PUB	20%
Per Capita Performance	Per capita academic performance of an institution	PCP	10%
Total			100%

\* For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.

# WEIGHTING SCHEME FOR RANKINGS SCORES



## WEBOMETRICS RANK

VISIBILITY (external inlinks) 50%	SIZE (web pages) 20%
	RICH FILES 15%
	SCHOLAR 15%



Four indicators were obtained from the quantitative results provided by the main search engines as follows:

1. **Size (S)**. Number of pages recovered from four engines: Google, Yahoo, and Bing Search.
2. **Visibility (V)**. The total number of unique external links received (inlinks) by a site, according to Yahoo Site Explorer.
3. **Rich Files (R)**. After evaluation of their relevance to academic and publication activities and considering the volume of the different file formats, the following were selected: Adobe Acrobat (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft Powerpoint (.ppt). These data were extracted using Google, Yahoo and Bing.
4. **Scholar (Sc)**. The data is a combination of items published between 2006 and 2010 included in Google Scholar and the global output (2004.-2008) obtained from Scimago SIR.

The four ranks were combined according to a formula where each one has a different weight but maintaining the ratio 1:1

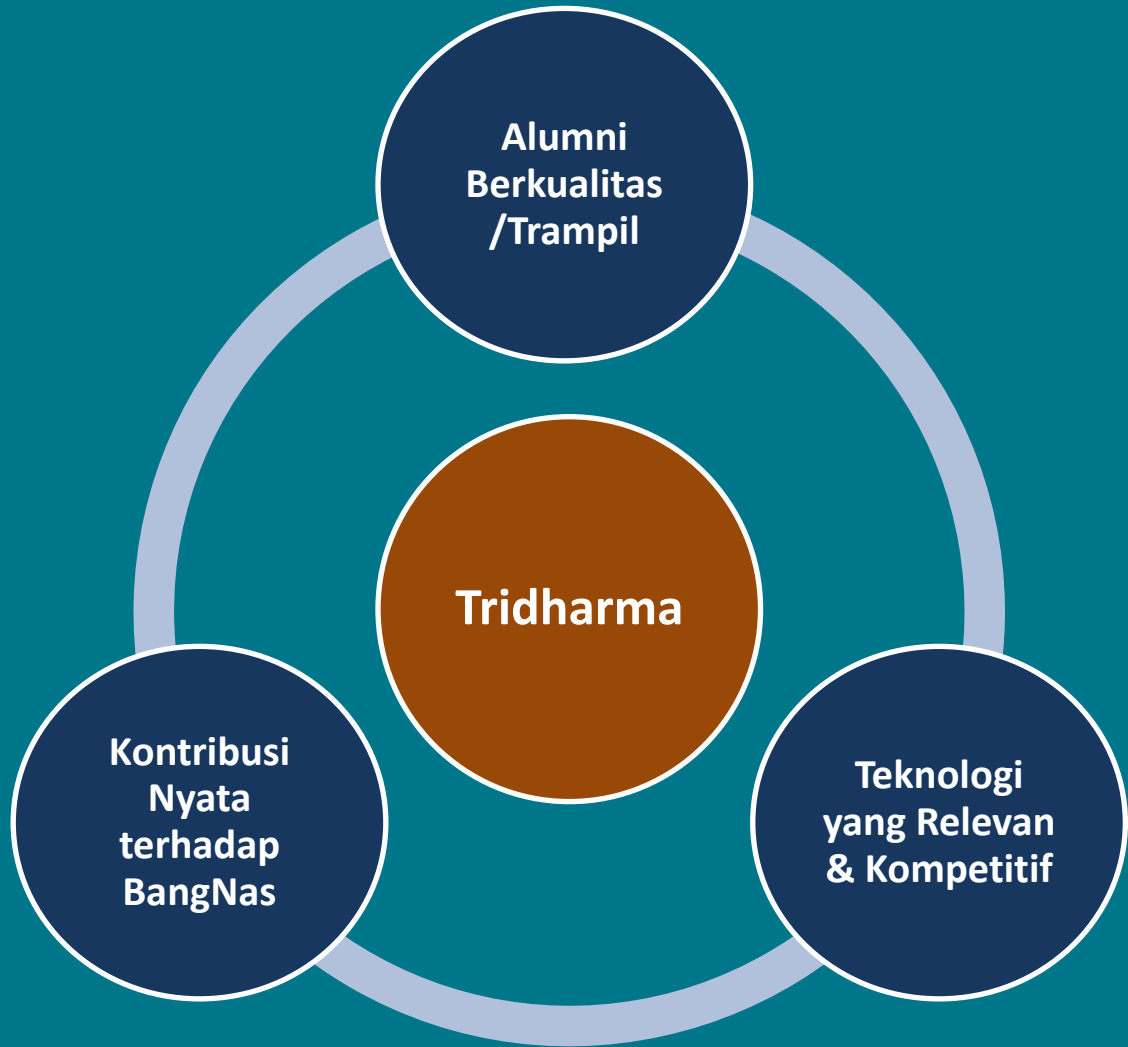
# Catatan Penutup

*“Pemerintah memajukan iptek  
dengan menjunjung tinggi nilai-nilai agama  
dan persatuan bangsa  
untuk memajukan peradaban  
serta kesejahteraan umat manusia”*

**Pasal 31 ayat (5) Undang-Undang Dasar 1945**



*The 'New'  
Tridharma*



Terima Kasih

*blakitan@ristek.go.id*