



**UNIVERSITY
OF MALAYA**



QS STARS
RATED FOR EXCELLENCE



This Institute is rated 5 Stars
based on 8 categories.

5



QS Stars

#146

QS World University
Rankings

30

QS WU Rankings by Subject
Development
Studies

54

QS WU Rankings by Faculty
Engineering and
Techno ...

#29

Asian University
Rankings

Pemeriksaan Penyelidikan

Prof Dr Noorsaadah Abd. Rahman
TNC (Penyelidikan dan Inovasi)



UM RESEARCH VISION & MISSION



To be a **leading research university** that will actively contribute to the generation and dissemination of **new knowledge** and the enhancement of the **quality of life**.



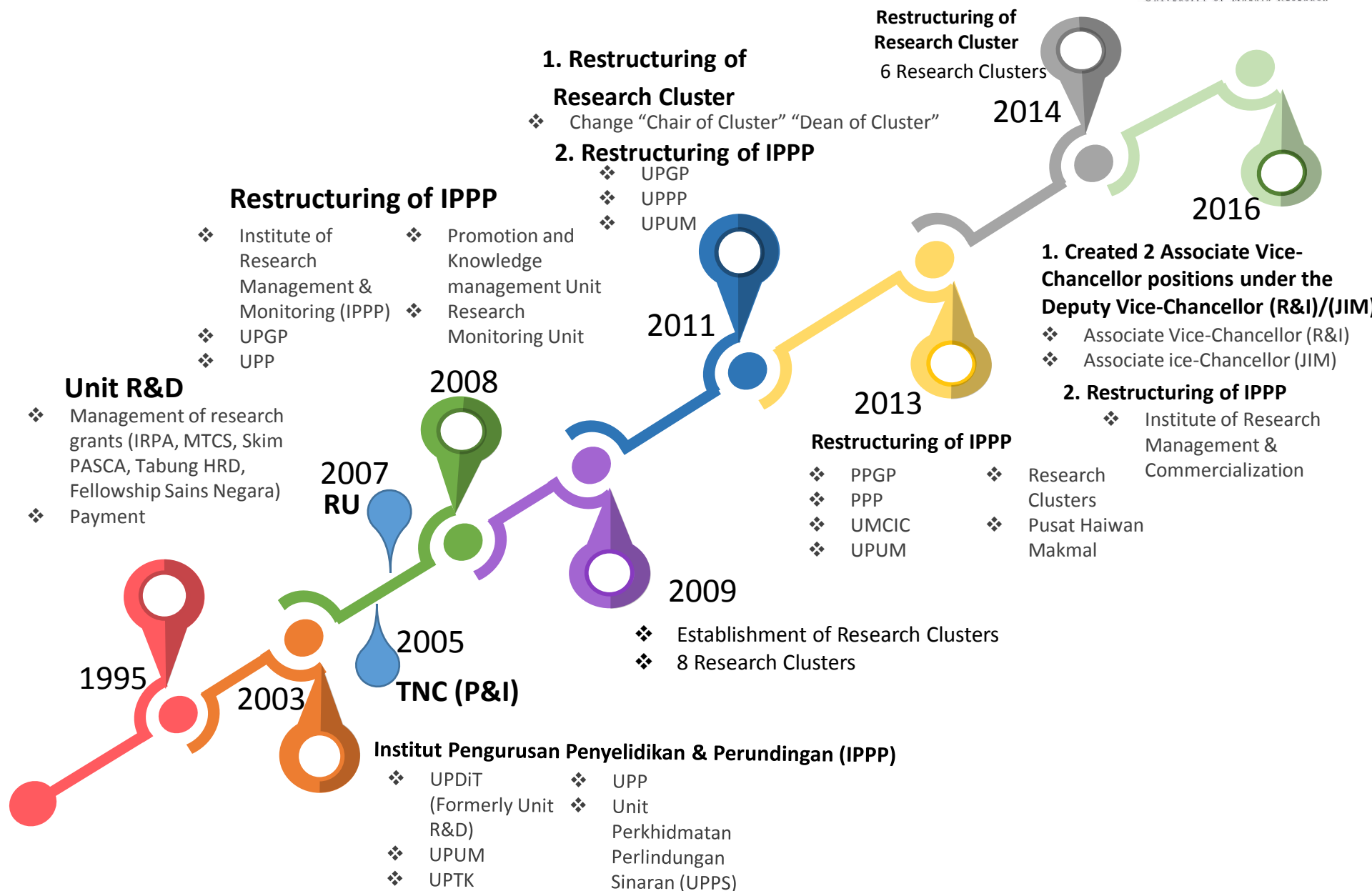
- To **promote full and active** participation of all university researchers.
- To **administer and coordinate** optimally all fully funded and partially funded research.
- To establish **centres of excellence** in strategic research areas.
- To provide **consultancy services** and excellent **collaborative research** to the public and private sectors through strategic partnerships.

Research Objectives

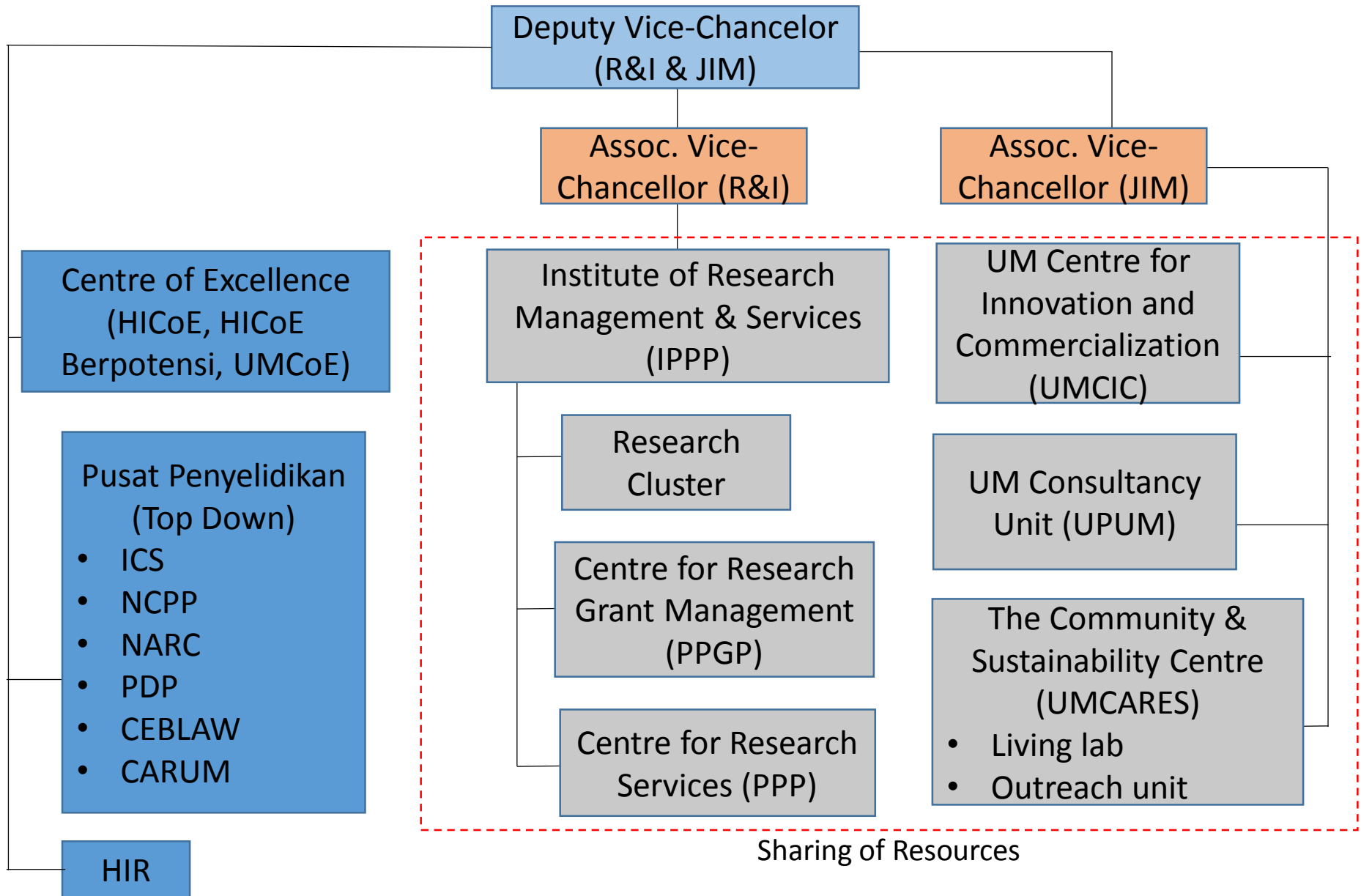
UM aims to:

- Be the premier research university in Malaysia.
- Be the international preferred research collaborator in Malaysia.
- Develop and promote specialized research areas at the frontier of knowledge and cutting-edge technology, which UM is or has the potential to be, a national and international leader.
- Foster multi- and inter-disciplinary collaborative research within and outside the University.
- Enhance the research skills of its researchers.
- Continually improve the quality of its research output and outcome.
- Provide quality learning and research opportunities and resources.
- Promote good research practice and conduct.

OUR EVOLUTION



Organisational Chart



TD Research and HODs

RESEARCH CLUSTERS

Professor Dr. Noor Hayaty Abu Kasim
Coordinator



Innovative Technology

Wellness

Sustainability Science

Frontier Science

Humanities

Equitable Society

Cluster Dean



Deputy Cluster Dean



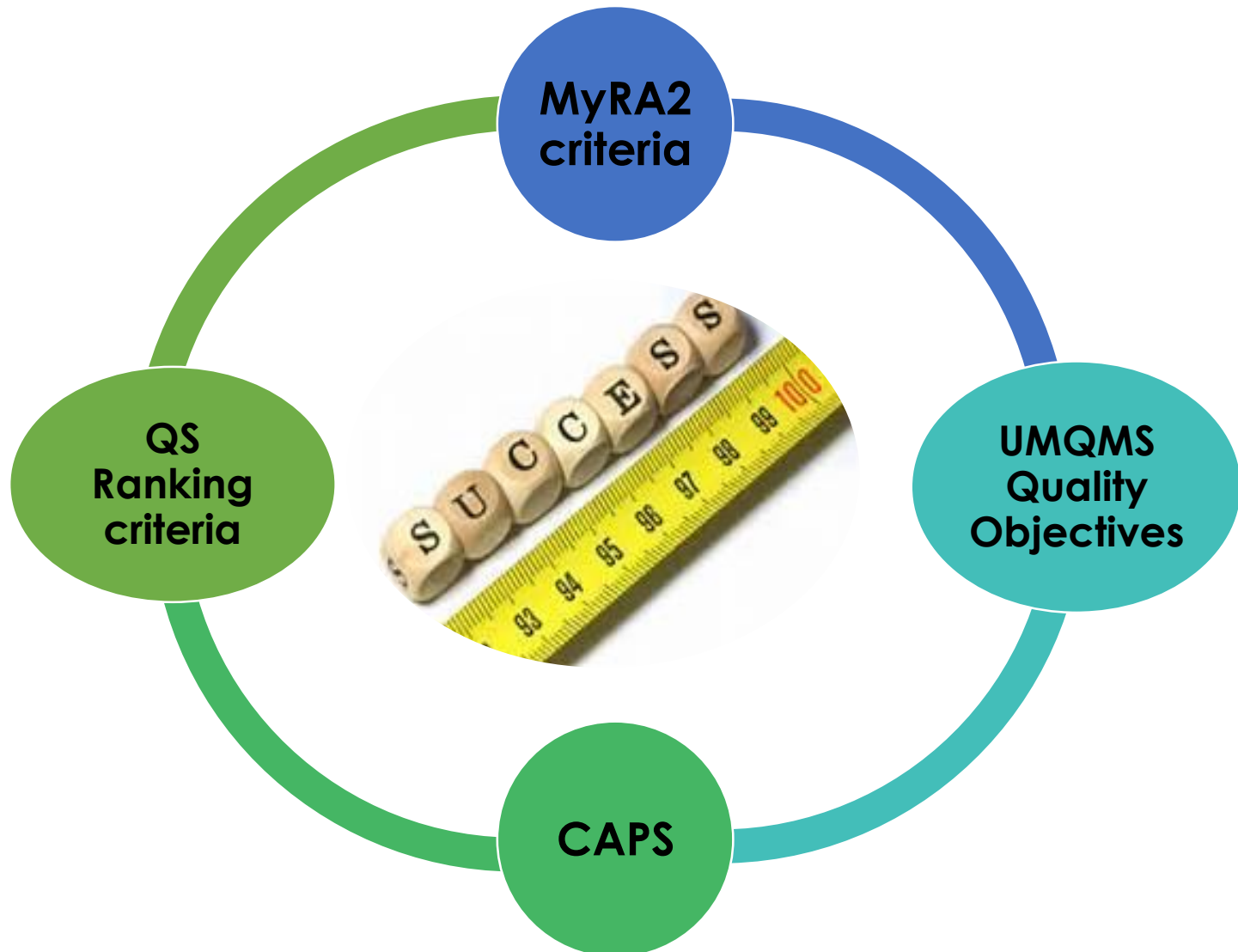
Research Officer/
Social Research Officer



Administrative Assistant



MEASURED UM RESEARCH PARAMETERS

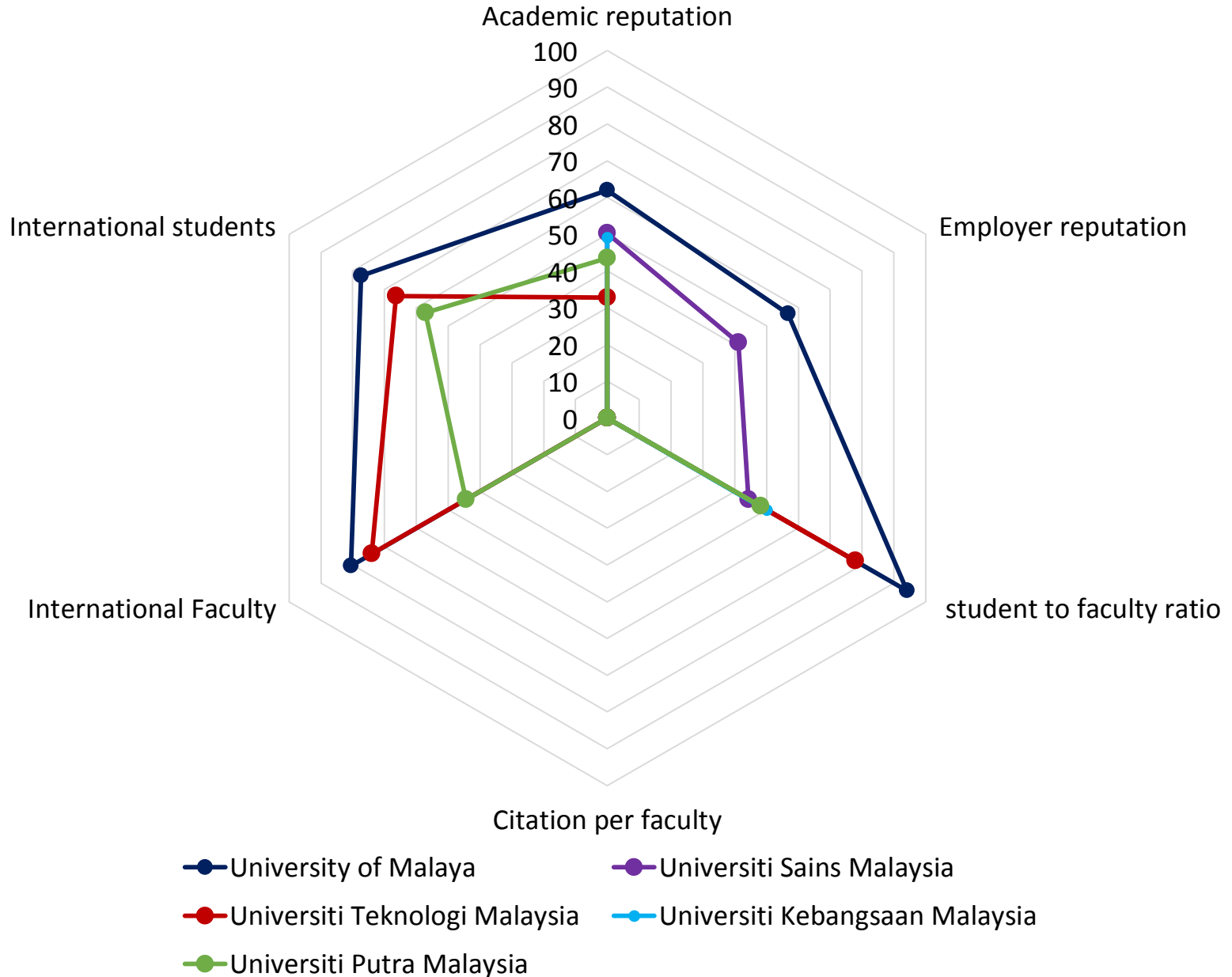


QS WUR and AUR

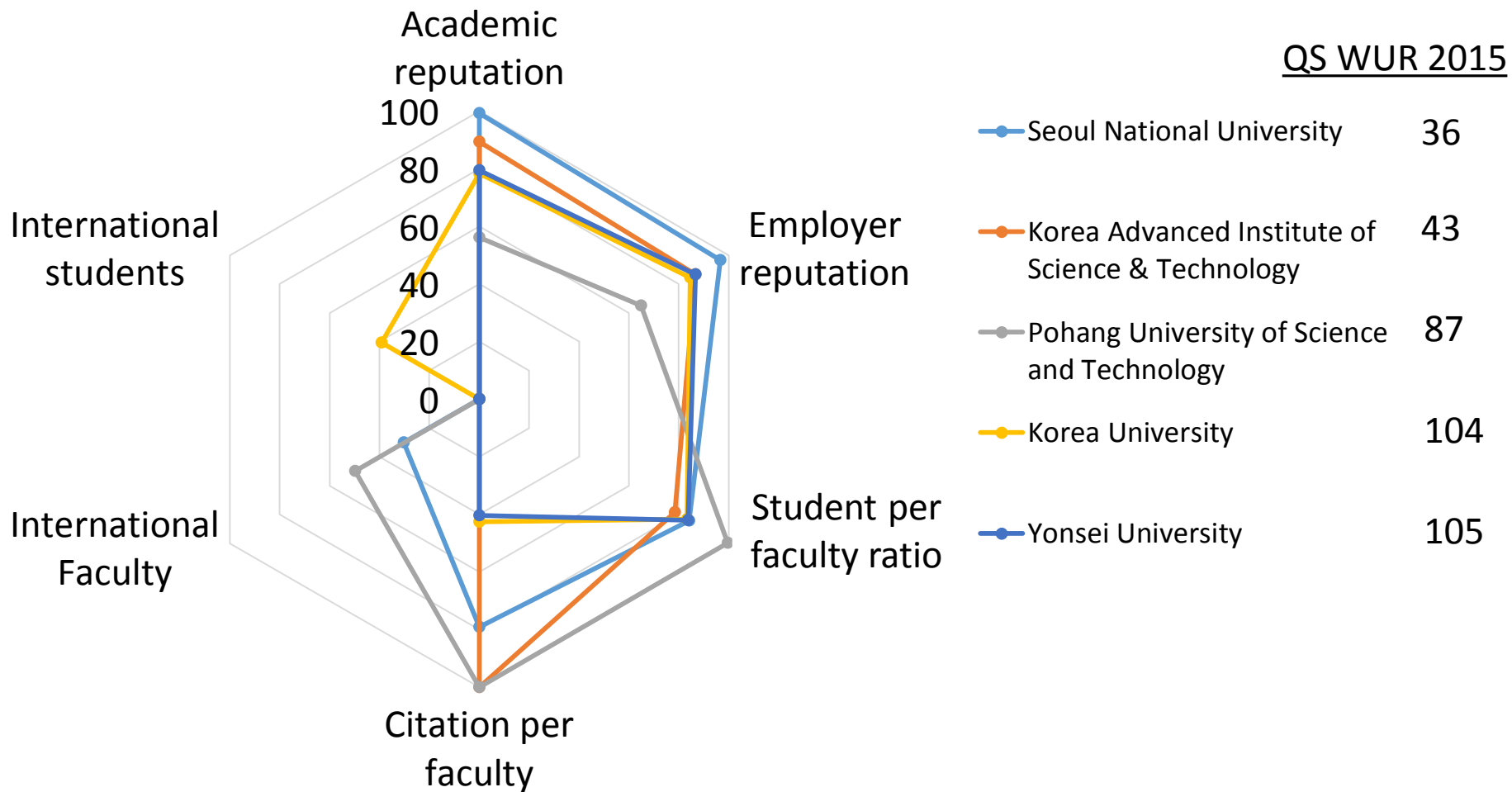


Criteria	World University Rankings (WUR)	University Rankings Asia (AUR)
Academic Reputation	40%	30%
Employer Reputation	10%	20%
Student to Faculty ratio	20%	15% (Faculty per student ratio)
Citations per Faculty	20%	-
Citations per paper	-	10%
Papers per faculty	-	10%
Staff with a PhD	-	5%
International Faculty ratio	5%	2.5%
International Students ratio	5%	2.5%
Inbound Exchange Students	-	2.5%
Outbound Exchange Students	-	2.5%

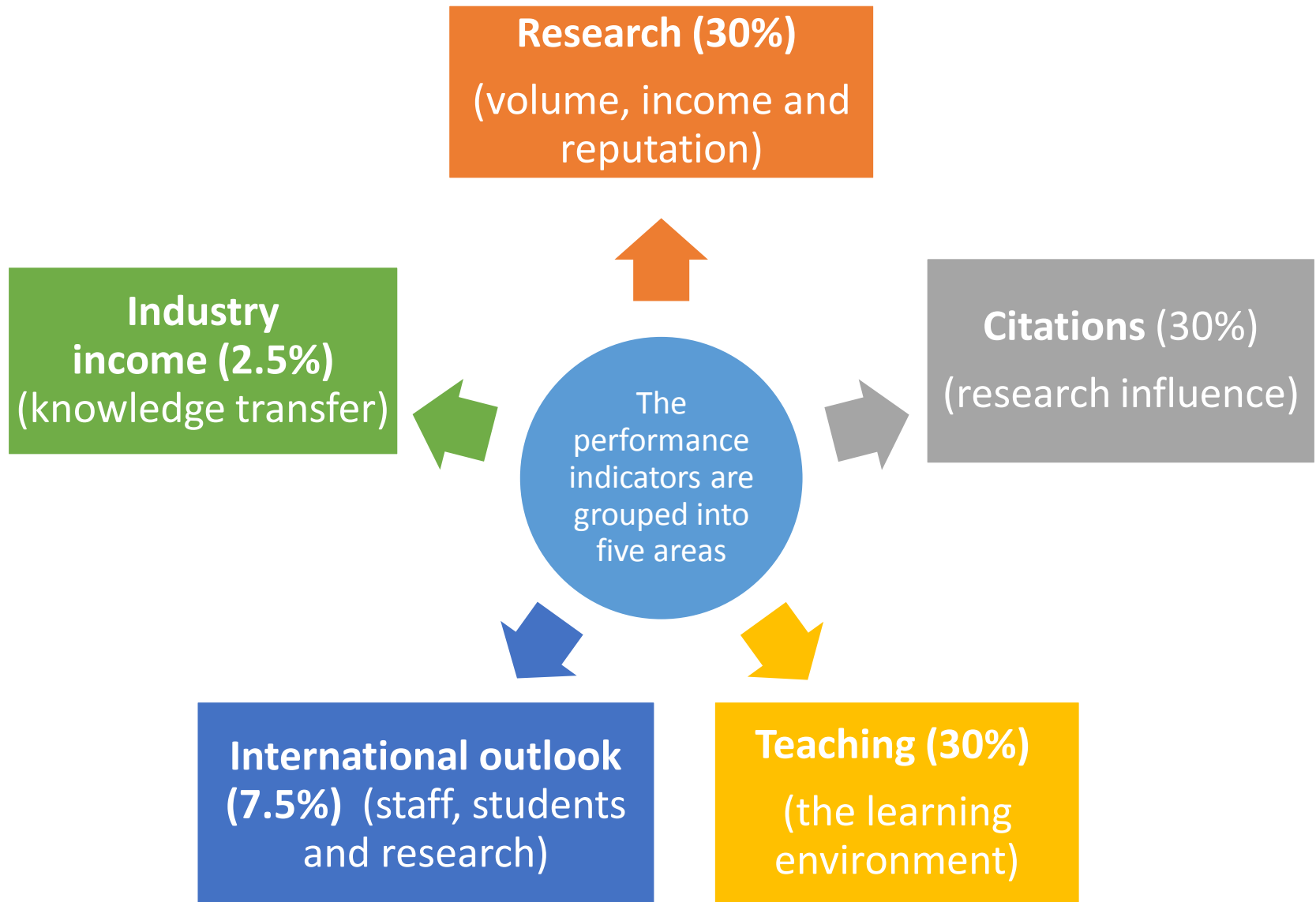
QS WUR: Malaysian Research University 2015



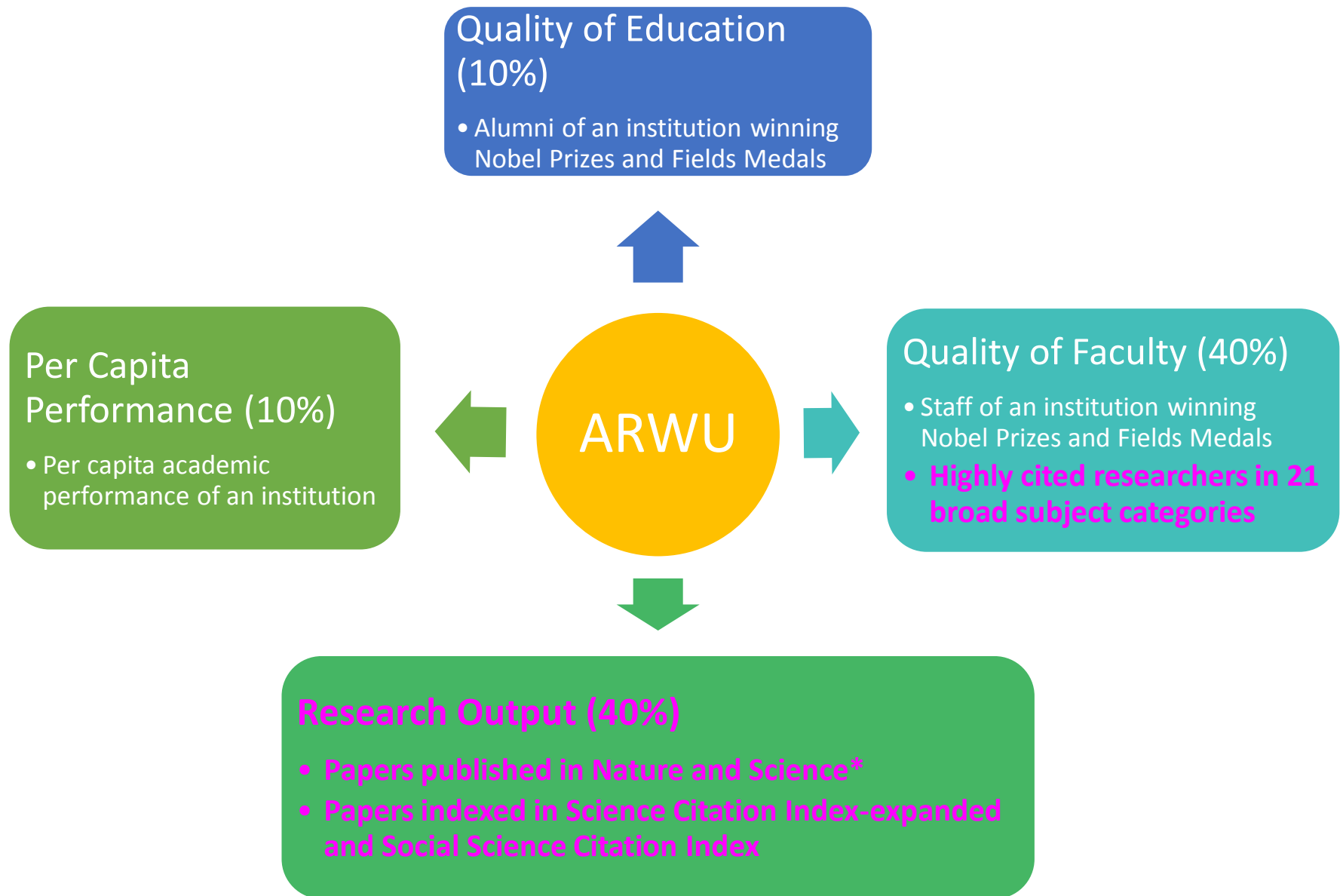
QS WUR: Korean Research University 2015



THE World Ranking



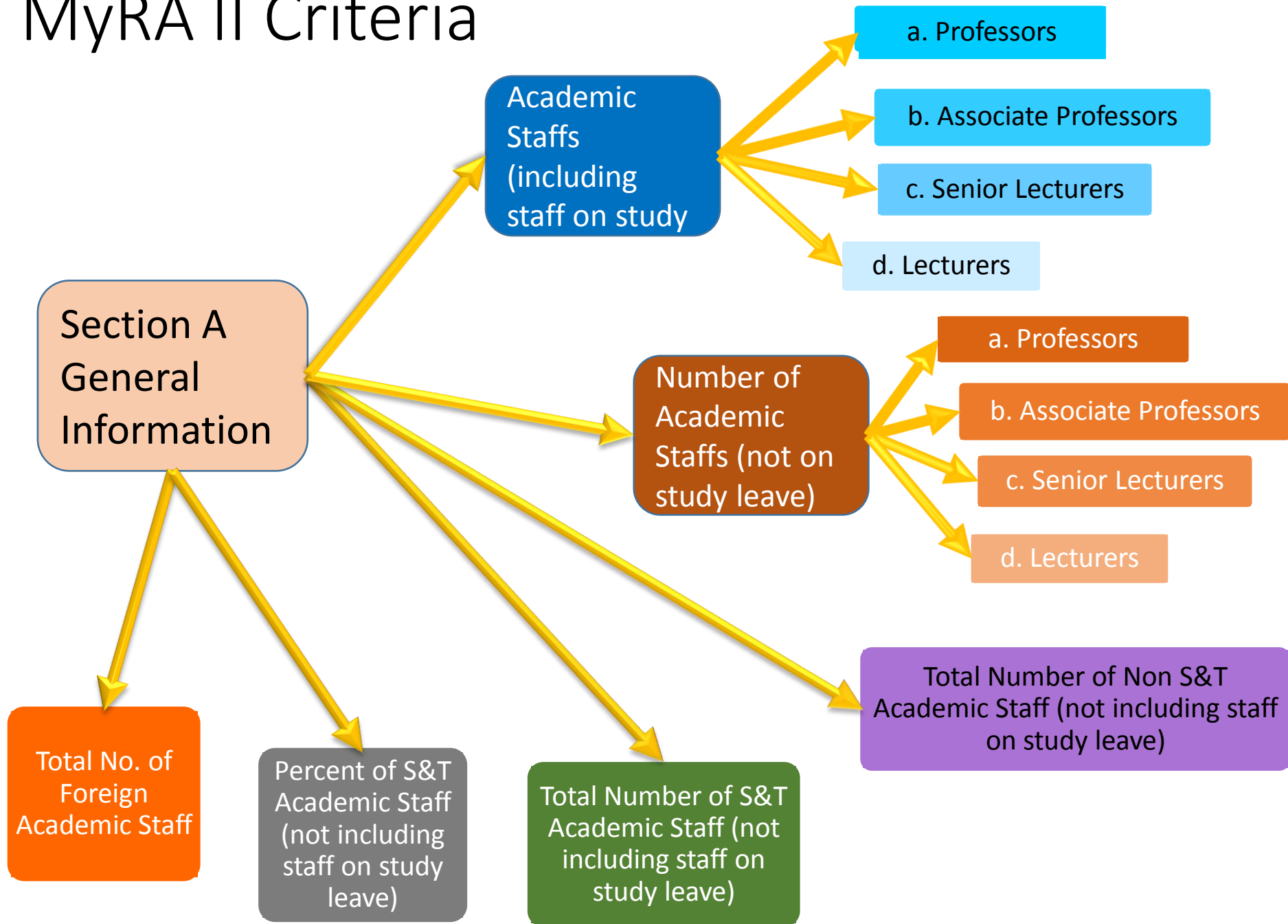
Academic Ranking of World Universities (ARWU)



MyRA II Criteria

Section A	• General Information
Section B	• Quantity and Quality of Researchers
Section C	• Quantity and Quality of Research
Section D	• Quantity of Postgraduates
Section E	• Innovation
Section F	• Professional Services and Gifts
Section G	• Networking and Linkages
Section H	• Support Facilities

MyRA II Criteria



MyRA II Criteria

Section A General Information

Number of Total
number of
fulltime students

Number of local
and foreign
undergraduate
students.

a. Bachelor (LOCAL)

b. Bachelor (FOREIGN)

Number of local
and foreign
POSTGRADUATE
students

a. Master Research (Local)

b. Master Research (Foreign)

c. Master mixed modes (Local)

d. Master mixed modes (Foreign)

e. Master coursework (Local)

f. Master coursework (Foreign)

g. PhD (Local)

h. PhD (Foreign)

i. Doctoral level Coursework (Local)

j. Doctoral Level Coursework (Foreign)

Number of PhD
(research mode)
graduated in the
year

Number of Master
(research mode)
graduated in the year

MyRA II Criteria

Section B Quantity and Quality of Researchers

Total number of
academic staff
involved as
principal
investigator of
research grants

a. University funded

b. National grants

c. Industry grants

d. International grants

PhD or
Professional
Qualification

a. Total number of staff
with PhD/DSc, DEng

b. Total number of staff with
Professional Qualifications (such as
medical, engineers, architects,
accountants etc)
(IR,AR,FRCP,SR,ACCA,MMed etc)

Awards/ stewardship
conferred by national and
international learned and
professional bodies

a. Total number of
awards conferred
by international
bodies

b. Total number of
awards conferred
by national bodies

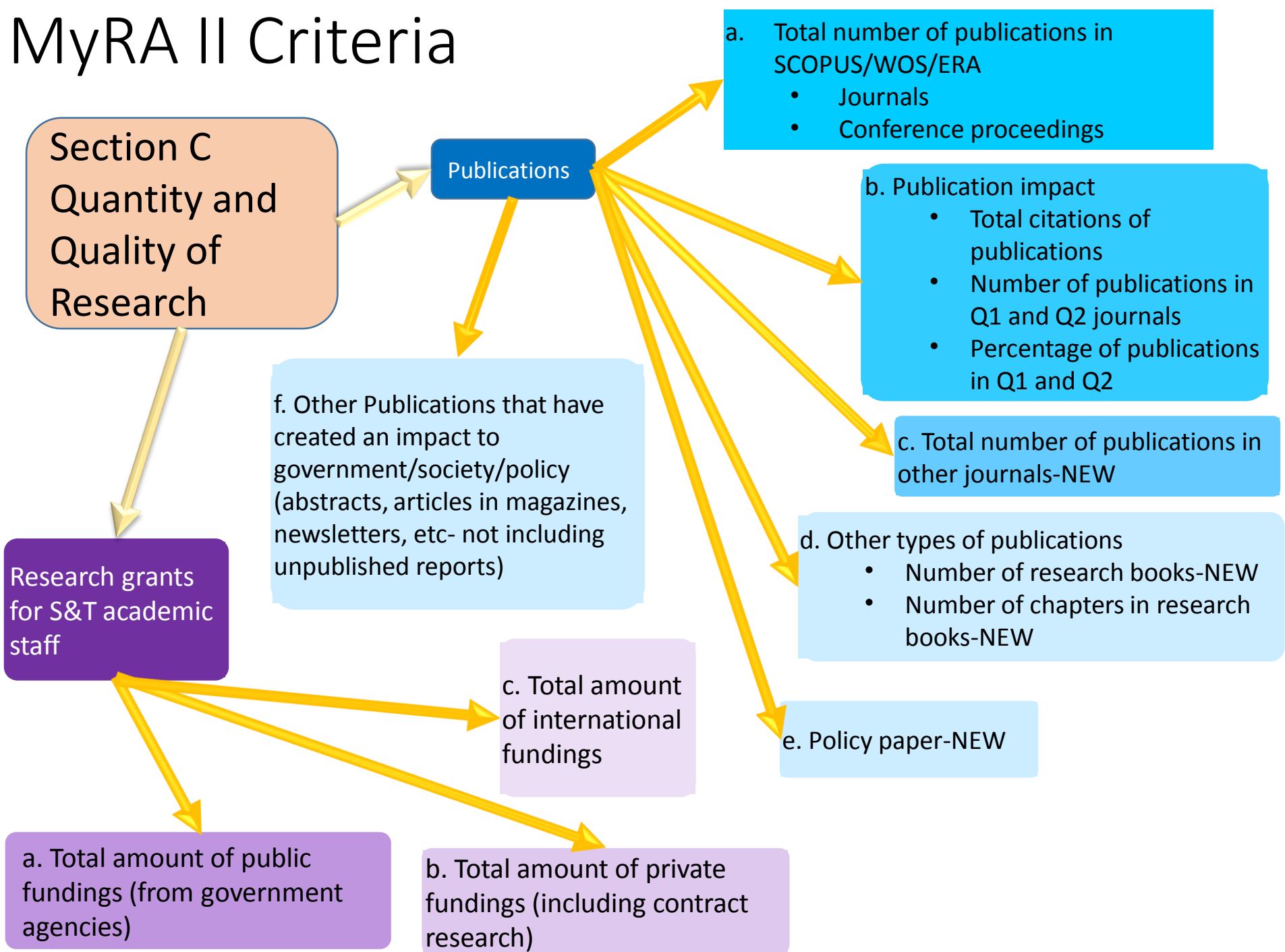
Research Experience
(3 cohorts) (Total
number of staff in
each age group)

a) >50 years old

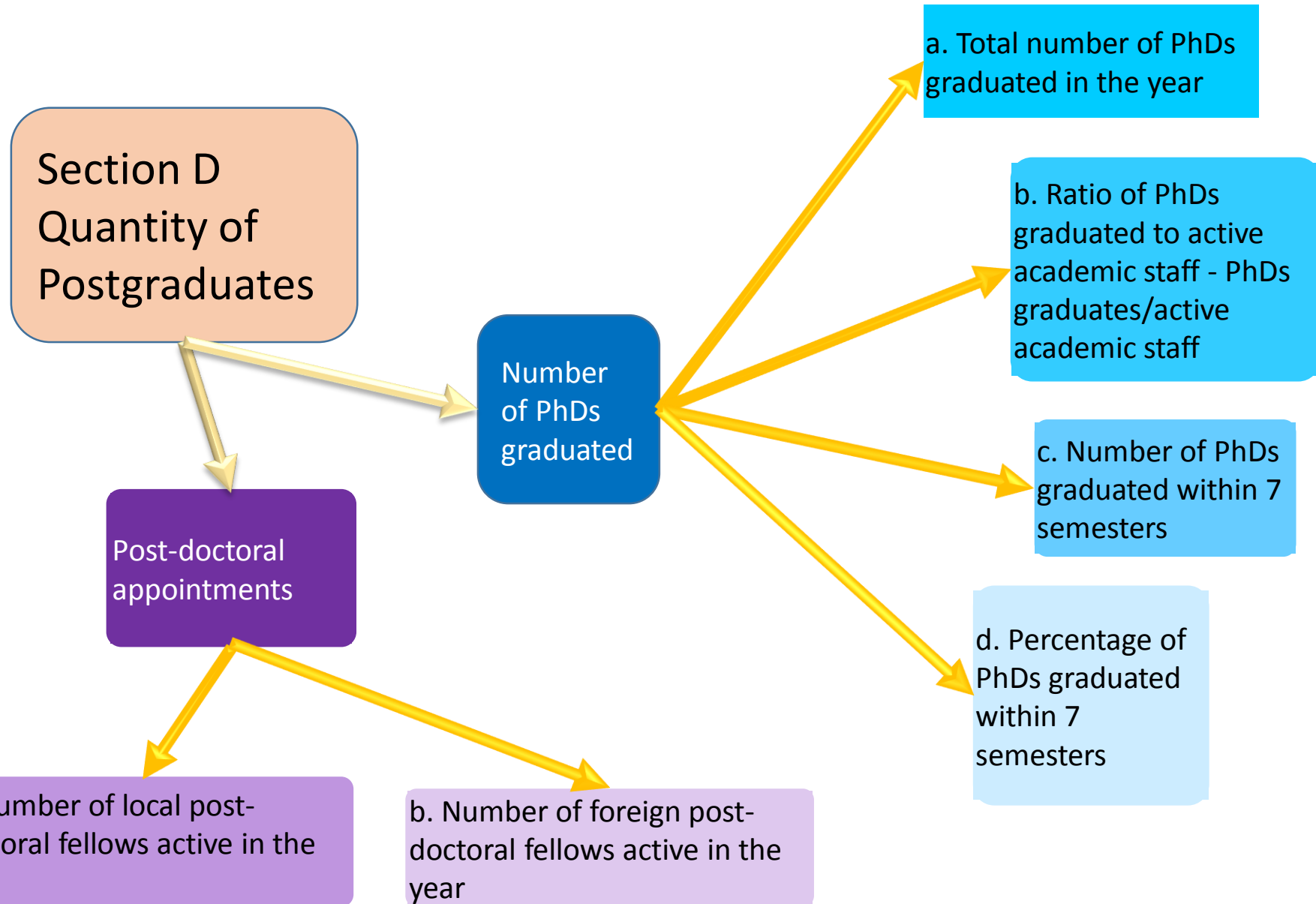
b) 40 - 50 years old

c) < 40 years old

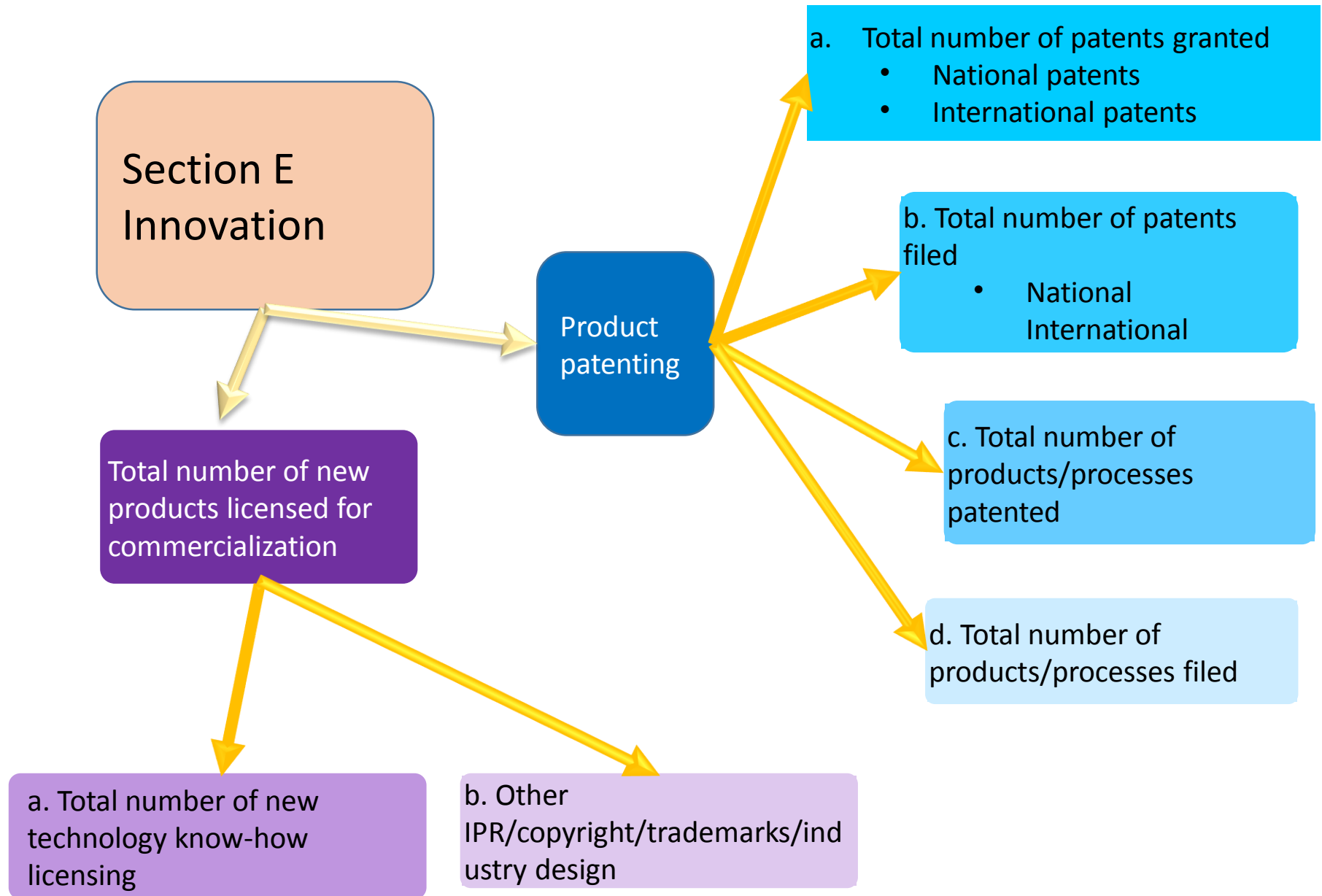
MyRA II Criteria



MyRA II Criteria



MyRA II Criteria



MyRA II Criteria

Gross income from training courses (non-degree programme)/postgraduate fees with/from R&D

Gross income from product commercialization/technology know-how licensing

Gross income based on financial transactions of that year from consultancies (excluding contract research)/hospital recoupable fees/lab services fees

Section F
Professional Services
and Gifts

Gift (money, equipments, research materials, etc.) worth \geq RM 3,000.00 each

Gross income from organising conferences and seminars in the field of expertise

Endowment (including professorial chairs)



MyRA II Criteria

Section G Networking and Linkages

Participation in International inter-institution research related activities under MoA

a. Total number of MoA signed

b. Total number of staff involved in joint research projects

Participation in international learned and professional bodies/associations

a. Total number of staff appointed as chairman/committee members in international learned and professional bodies/associations

Participation in national inter-institution research related activities under MoA

a. Total number of MoA signed

b. Total number of staff involved in joint research projects

Participation in national learned and professional bodies/associations

a. Total number of staff appointed as chairman/committee members in national learned and professional bodies/associations

Knowledge/Technology Diffusion Projects

a. Total number of new community related research projects

MyRA II Criteria

Section H Support Facilities

1	Laboratories compliant with or accreditation to Good Manufacturing Practice (GMP), Good Regulatory Practice (GRP), Good Laboratory Practice (GLP), ISO17025, ISO15189
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	a. Total number of laboratories accredited
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Quality Objectives

Kelulusan Mesyuarat Pengurusan : 13 Mei 2015

PT02 - PENGURUSAN PENYELIDIKAN

No	Criteria	Achievement 2015
1	Memastikan 70% penyelidik yang memohon geran penyelidikan sebagai Ketua Projek adalah berjaya.	83.6%
2	Memastikan 80% staf akademik adalah Ketua Projek (PI).	62.87%
3	Memastikan peningkatan 10% permohonan bagi geran swasta dan antarabangsa setiap tahun.	428%
4	Memastikan 85% penerbitan jurnal adalah di dalam jurnal yang diindekskan dalam Pangkalan Data Thomson ISI Web/Scopus.	86.3%
5	Memastikan sekurang-kurangnya 70% daripada komuniti terlibat berpuas hati dengan program anjuran UMCares.	96.54%
6	Memastikan 70% pengguna perkhidmatan di Pusat Perkhidmatan Penyelidikan (PPP) berpuas hati dengan perkhidmatan yang telah diberikan.	99.5%

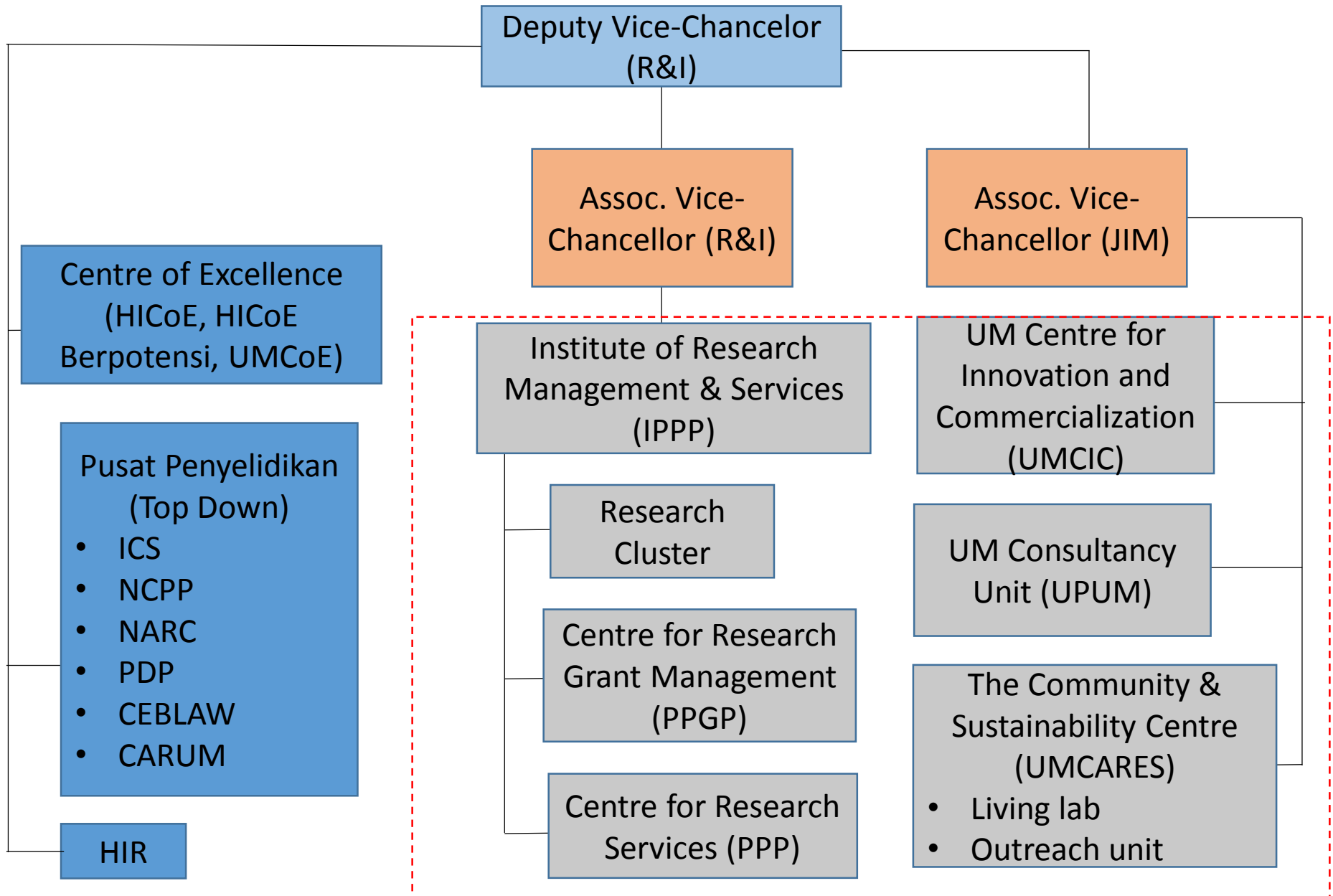
Quality Objectives

Kelulusan Mesyuarat Pengurusan : 13 Mei 2015

PT06 - PENGURUSAN KOMERSIALISASI

1. Memastikan 5% daripada staf akademik UM menjalankan kerja perundingan. (UPUM)
2. Memastikan sekurang-kurangnya peningkatan sebanyak 10% dari purata keuntungan tiga (3) tahun berakhir. (UPUM)
3. Memastikan sekurang-kurangnya 50% teknologi/produk/buku/karya asli didaftarkan dalam bentuk Harta Intelek (IPR) seperti paten, Cap Dagangan (*Trademark*), Hakcipta (*Copyright*), Rekabentuk Industri (*Industrial Design*) dan sebagainya dalam tempoh maksima enam (6) bulan selepas proses dimulakan. (UMCIC)
4. Memastikan sekurang-kurangnya 50% produk/teknologi UM memasuki proses pengkomersilan melalui Perlesenan Teknologi (*Licensing*), Penjualan Produk (*Outright Sale*), Penubuhan Syarikat (*Spin Off*) atau lain-lain strategi pengkomersilan, dilaksanakan dalam tempoh dua belas (12) bulan selepas ianya didaftarkan sebagai harta intelek paten UM. (UMCIC)
5. Memastikan sekurang-kurangnya 30% daripada penyertaan di dalam pertandingan Inovasi yang diiktiraf, mendapat anugerah khas/pingatemas/aktiviti pengkomersilan. (PPP)

Organisational Chart



Sharing of Resources

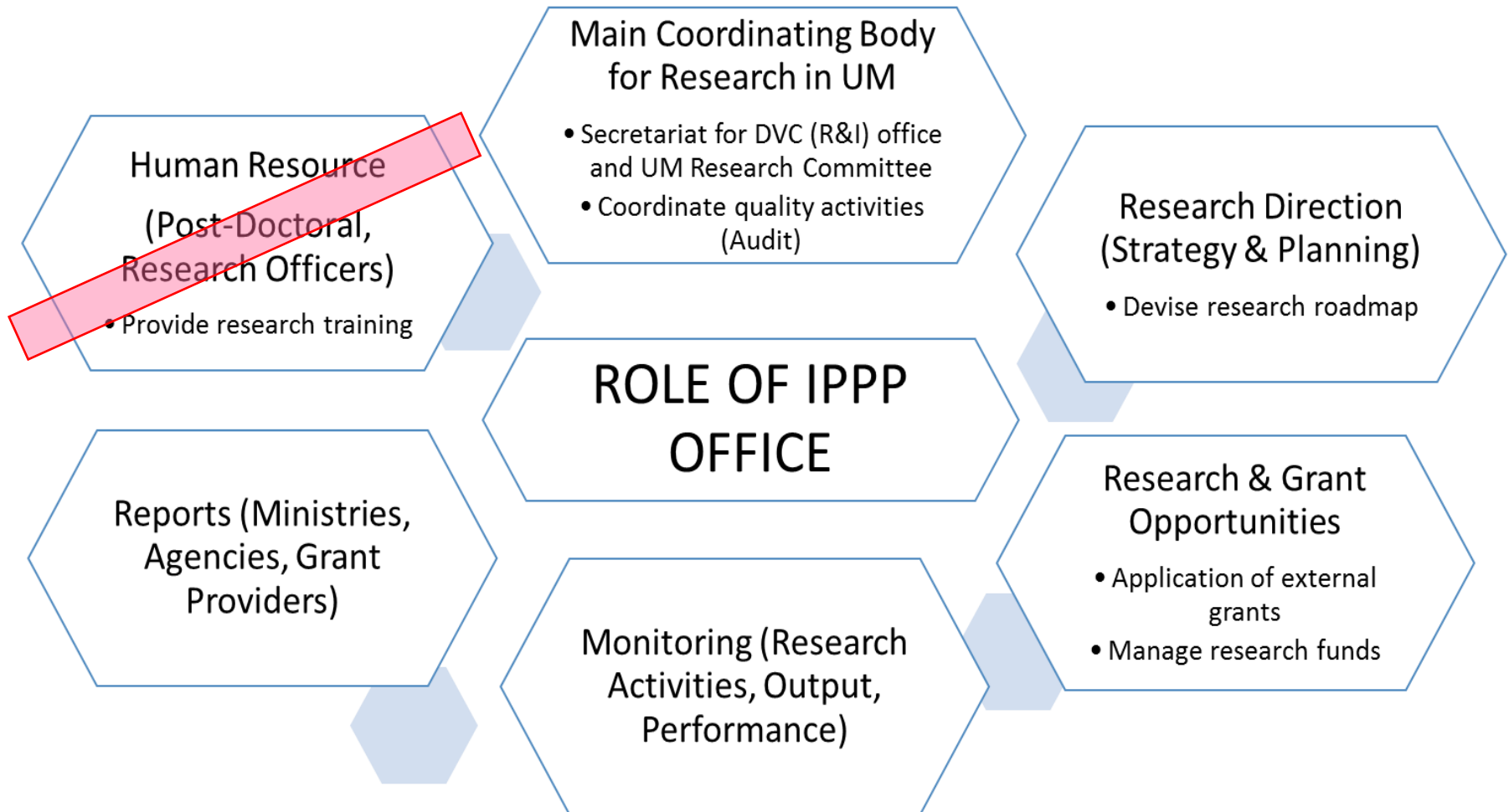


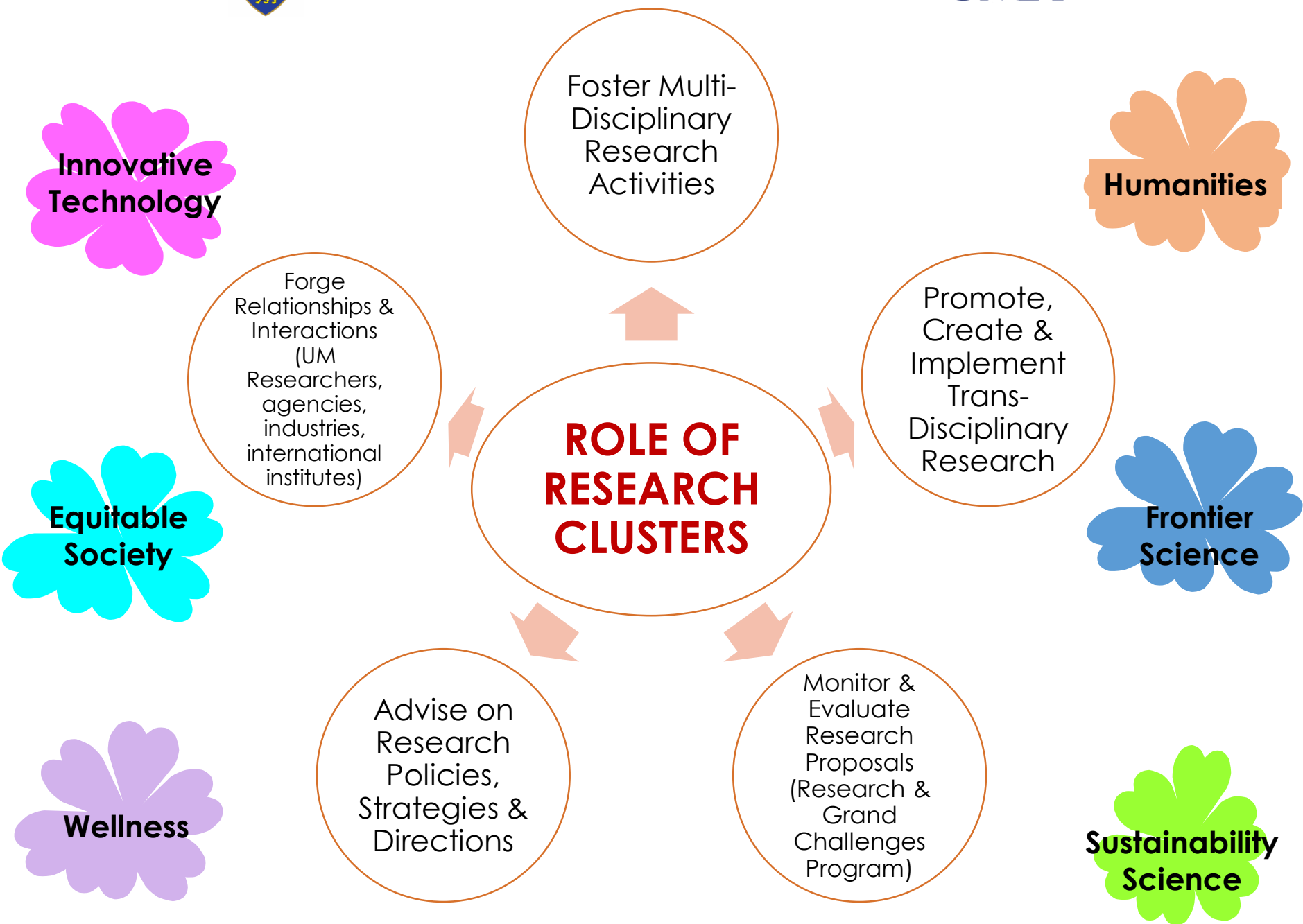
IPPP



Prof. Dr. Shaliza Ibrahim
*Penolong Naib Canselor
(Penyelidikan & Inovasi)*

**"one-stop" centre for all
research information of the
University**







PPGP



Associate Professor
Noor Hasnah Binti Moin
Director

Manage Research Grant Applications

- BKP, ROGS, PPP, Conference Fund
- Procedures & Guidelines
- Talks, Workshops Regarding Grants

Manage Recruitment of Supporting Staff

- Research Assistants

ROLE OF PPGP

Regulate Ministries & Agencies Research Grant Application (MOHE & MOSTI), Reports

Manage Online Research Accounts

- RGMS System
- Accounting Matters with Bursary



PPP



**Assoc. Prof. Dr. Ngoh Gek
Cheng**
Director





UMCIC



Prof. Dr. Rofina Yasmin Othman
Director

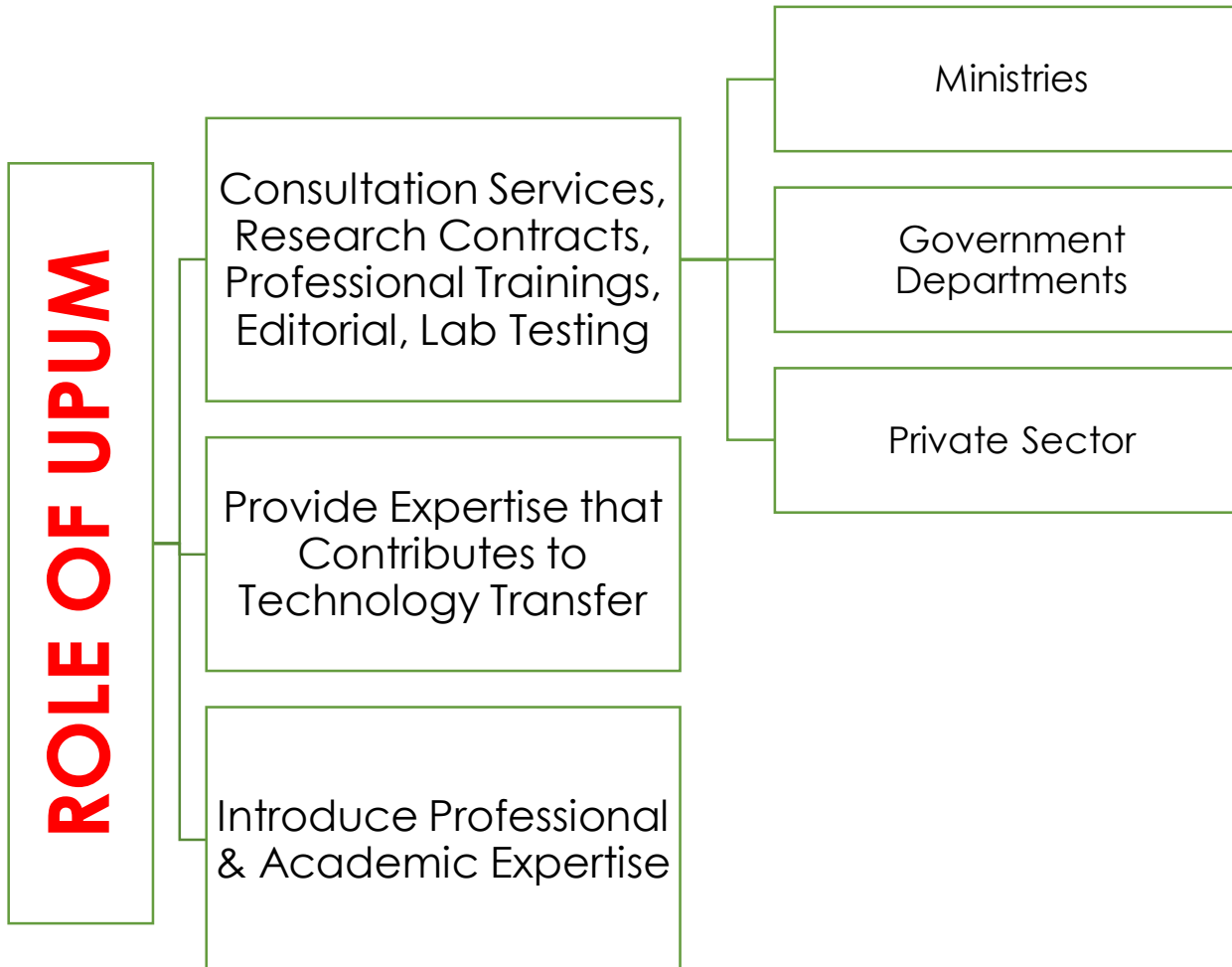




UPUM



Ir. Dr. Ismail Othman
Director





UMCARES



Prof. Dr Norzulaani Khalid
Director



Basis for
Administration of
Future Graduate
School of
Sustainability

Organize and
conduct tourism fairs
and other events to
promote and
encourage public
companies

Train and empower
local community to
develop a business
entity in promoting
related tourism
sector

Role of UMCARES

Organize conference in
tourism to foster closer
ties and collaboration
between business
entities, local
communities and
academics

Develop local
tourism on society
and industry
through university
relationship

Conduct
workshops to
train community
and business
entity as a tour
operator





GRANT APPLICATION (OPTIONS)

IPPP Office

- **International Grants**

Research Clusters

- **Internal Grants (Eligible for Conference Fund)**
 - UMRG Programme, UMRG Project
 - Flagship
 - Grand Challenge

Commercialization & Innovation Centre (UMCIC)

- **Pre-Commercialization Grants**
 - Industrial Prototype Grant
 - Prototype Grant

UMCARES

- **Knowledge Transfer Grants**
 - KTP Industry, KTP Community (Ministry)
 - Community Engagement (UM)



GRANT APPLICATION (OPTIONS)

Research Grant
Management
Centre (PPGP)

Research
Grants



- **Grants from Ministries and Agencies**

- ERGS, FRGS, LRGS, PRGS, TRGS,
- Science Fund
- NRGS - Herbal Research Grant
- MyLAB - Malaysia Laboratories For Academia-Business Collaboration

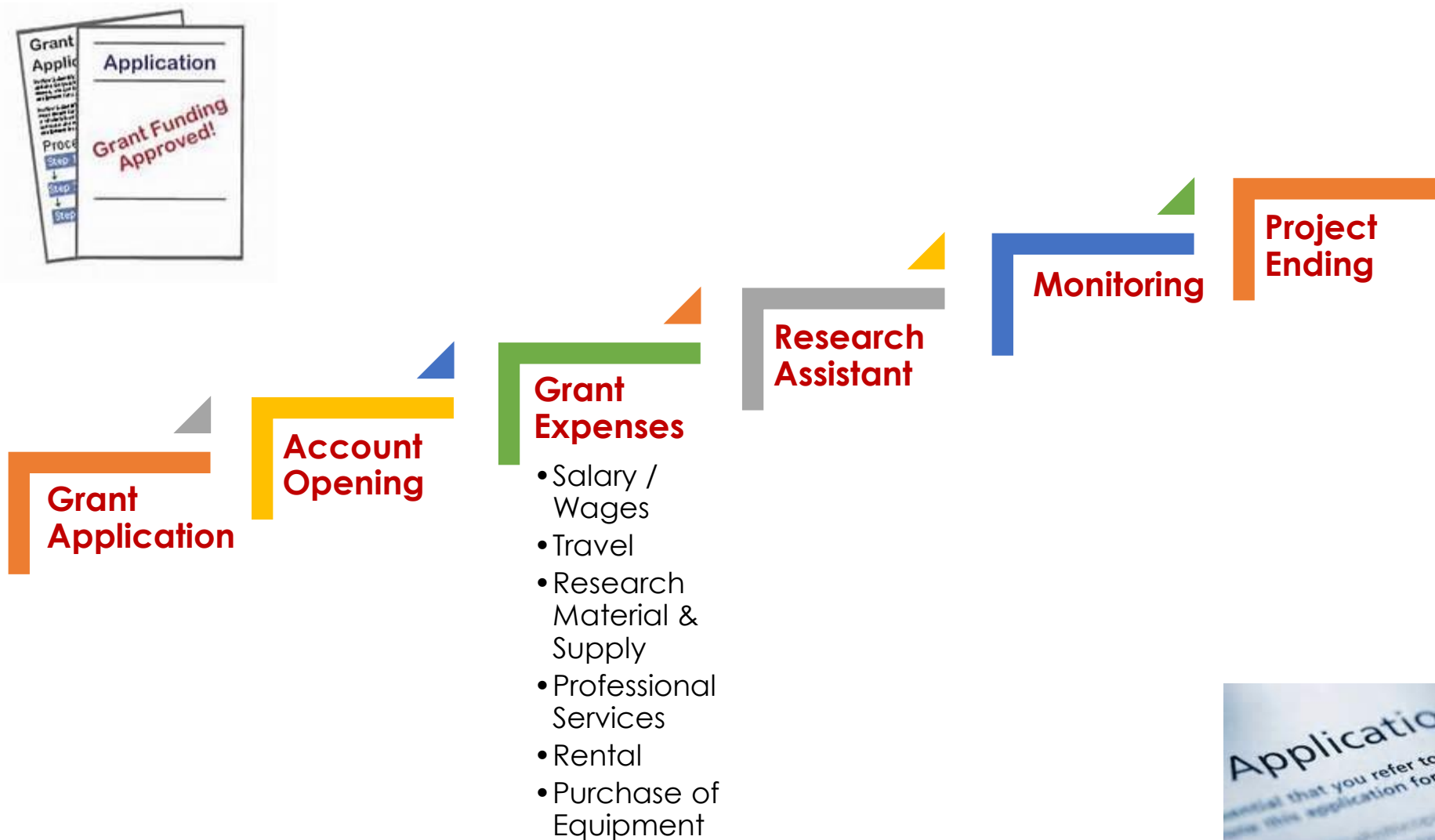
- **Internal Grants**

- Research Fund Assistance (BKP)
- Postgraduate Research Fund (PPP)
- Partnership Grant (Researchers who receive international/ Industrial Research Funds)
- Program Rakan Penyelidikan Universiti Malaya (PRPUM)
- Research Acculturation Collaborative Effort (RACE)
- RU Grant (Top-Down)
- ROGS

CATEGORY	IN-CHARGE	TYPE OF GRANTS / DETAILS
Grant Application	IPPP Office PPGP	International grants Grants (Ministries & Agencies) <ul style="list-style-type: none"> ERGS, FRGS, LRGS, PRGS, TRGS, Science Fund, NRGs - Herbal Research Grant, MyLAB Internal Grants <ul style="list-style-type: none"> BKP, PPP, Partnership Grant, PRPUM, RACE, RU Grant (Top-Down) ROGS
	CLUSTERS	Internal Grants <ul style="list-style-type: none"> UMRG (Programme & Project), Flagship, Grand Challenge
	UMCIC	Pre-Commercialization Grants <ul style="list-style-type: none"> Industrial Prototype Grant, Prototype Grant
	UMCARES	Knowledge Transfer Grants <ul style="list-style-type: none"> KTP (Industry & Community) - Ministry Community Engagement - UM
Account Opening	PPGP	External Grants, BKP, PPP
	Cluster	UMRG (Programme & Project), Flagship, Grand Challenge
	IPPP Office	RU Grant (Top-Down), Knowledge Transfer Grants, Pre-Commercialization Grants, International Grants
Research Assistant - RA - GRA / iGRA	PPGP	ALL GRANTS * for foreigners appointed by PPGP, PPGP will check the visa form and send to ISC for visa processing <ul style="list-style-type: none"> Vote Salary / Wages
Monitoring	IPPP Office	Internal Grants <ul style="list-style-type: none"> BKP, PPP External Grants <ul style="list-style-type: none"> Ministries, Agencies and others International Grants*
	Cluster	UMRG (Programme & Project), Flagship, Grand Challenge
	UMCIC	Pre-Commercialization Grants
	UMCARES	Knowledge Transfer Grants

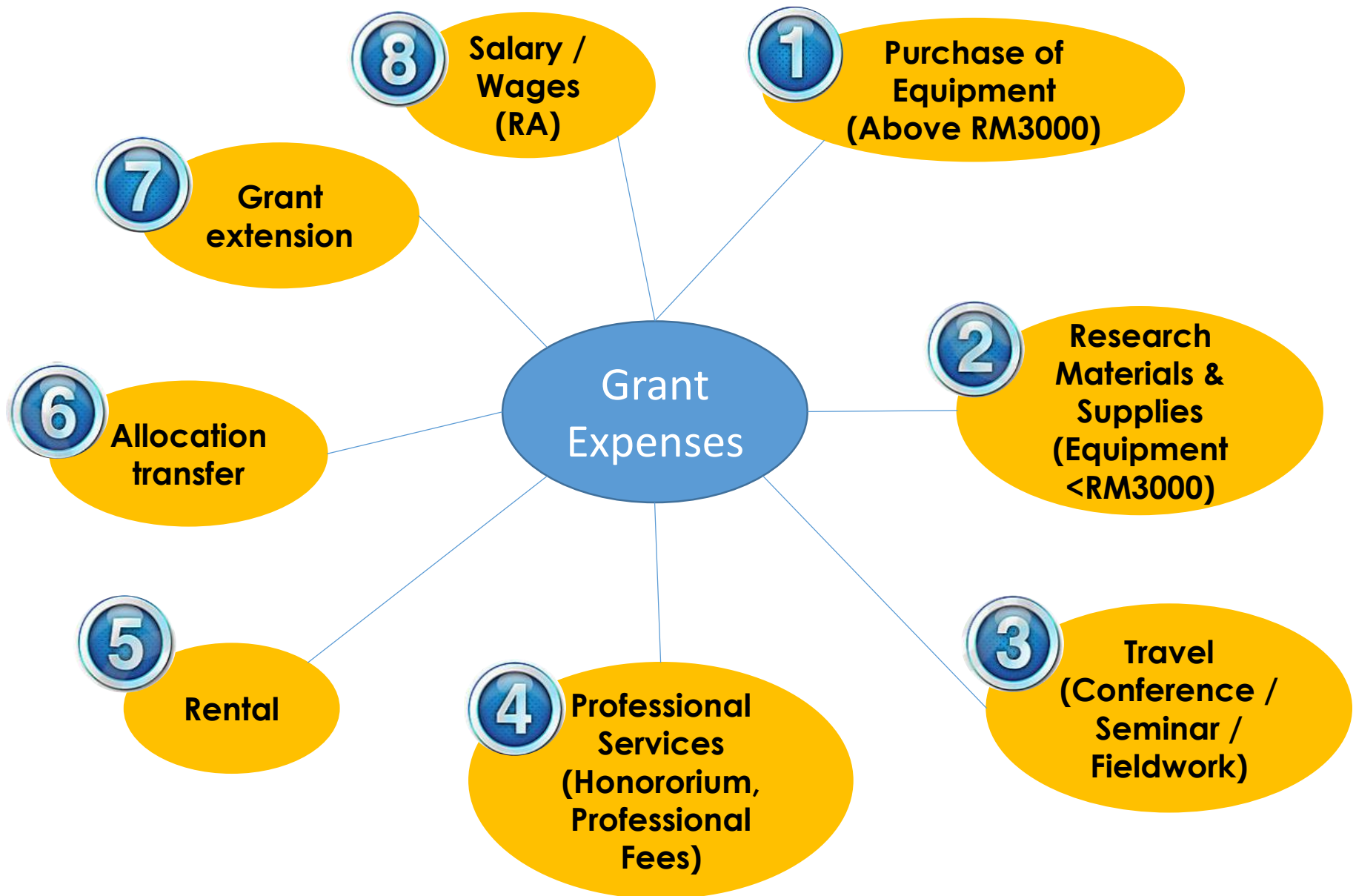


RESEARCH GRANTS MANAGEMENT



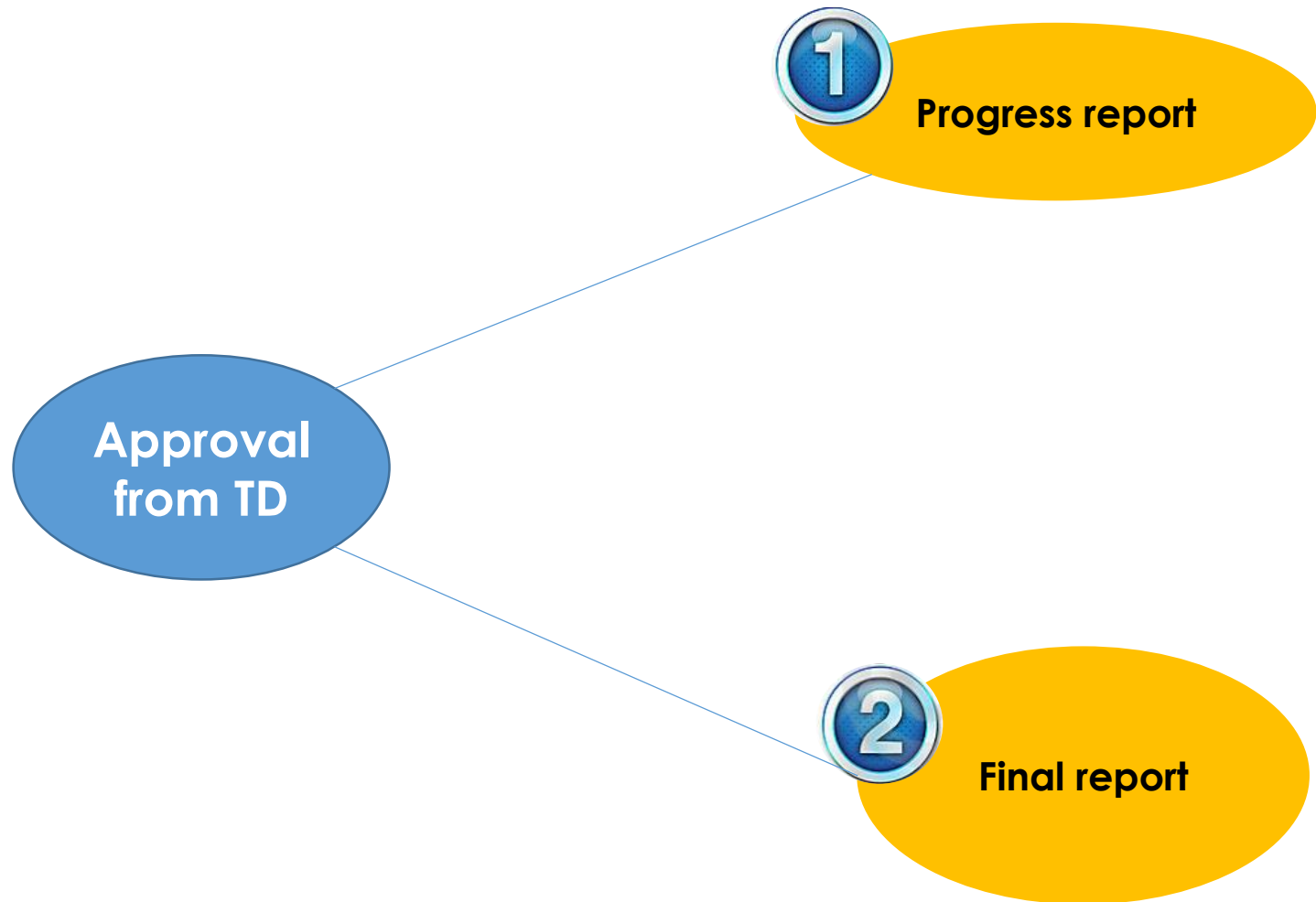


GRANT EXPENSES – approval from KJ





Approval from TD



Centre of Research (CoR)

With Senate's Approval

No	Faculty	Number of CoR
1	Equitable Society	2
2	Humanities	4
3	Frontier Science	6
4	Wellness	1
5	Sustainability Science	1
	Total	14

Centre of Research (CoR)

With Senat Approval

No	Faculty	Number of CoR
1	Fakulti Alam Bina	0
2	Fakulti Ekonomi & Pentadbiran	2
3	Fakulti Kejuruteraan	13
4	Fakulti Pendidikan	2
5	Fakulti Perniagaan & Perakaunan	1
6	Fakulti Perubatan	14
7	Fakulti Sains	2
8	Fakulti Sains Komputer & Teknologi Maklumat	1
9	Fakulti Sastera & Sains Sosial	3
10	Fakulti Undang-Undang	1

CoRs Under Research Clusters

With Senate's Approval

Equitable
Society

- | | |
|---|---|
| 1 | Centre for Poverty & Development Studies (CPDS) (Endowment) |
| 2 | Institute of China Studies (ICS) (Top Down) |

Wellness

Sustainability
Science

National Antarctic Research
Centre (NARC) (Top Down)

Centre for Natural
Product and Drug
Discovery (CENAR)

Humanities

- | | |
|---|---|
| 1 | Centre of Civilisational Dialogue (Pusat Dialog Peradaban) (Top Down) |
| 2 | Centre for Asean Regionalisme University of Malaya (CARUM) |
| 3 | Centre for Quranic Research (CQR) |
| 4 | Centre for Malaysia Indigenous Studies (Pusat Pengajian Pribumi Malaysia) |

Frontier
Science

- | | |
|---|---|
| 1 | National Centre for Particle Physics (NCPPI) (Top Down) |
| 2 | Low Dimensional Materials Research Centre (LDMRC) |
| 3 | Centre of Research for Computational Science and Informatics in Biology, Bioindustry, Environment, Agriculture and Healthcare (CRYSTAL) |
| 4 | Centre for Ionics University of Malaya (CIUM) |
| 5 | Mushroom Research Centre (MRC) |
| 6 | Plasma Technology Research Centre (UMPTRC) |

CoRs Under Faculties

With Senate's Approval

Fakulti Ekonomi & Pentadbiran

1. Social Security Research Centre (SSRC)
2. University of Malaya Malaysian Centre of Regulatory Studies (UMCoRS) (Endowment)

Fakulti Kejuruteraan

1. University of Malaya Centre for Ionic Liquids (UMCiL)
2. Centre for Applied Biomechanics (CAB)
3. Centre of Advanced Manufacturing and Material Processing (AMMP)
4. Centre for Transportation Research (CTR)
5. Centre for Research in Applied Electronics (CRAE)
6. Centre for Separation Science and Technology (CSST)
7. Centre for Product Design & Manufacturing (CPDM)
8. Centre for Energy Sciences (CES)
9. Centre for Image & Signal Processing (CISIP)
10. Centre for Innovative Construction Technology (CICT)
11. Centre of Advanced Materials (CAM)
12. Centre for Innovation in Medical Engineering (CIME)

CoRs Under Faculties

With Senate's Approval

Fakulti Pendidikan

1. University of Malaya Centre For Family Research and Development Centre (UMFRDC)
2. Centre for Research in International and Comparative Education (CRICE)

Fakulti Perniagaan & Perakaunan

1. Services and Research Innovation Centre (ServRI)

Fakulti Perubatan

- | | |
|----|---|
| 1 | University of Malaya Cancer Research Institute (UMCRI) |
| 2 | Oral Cancer Research and Coordinating Centre (OCRCC) |
| 3 | National Orthopaedic Centre of Excellence for Research and Learning (NOCERAL) |
| 4 | Centre for Population Health (CePH) |
| 5 | Centre of Excellence for Research in AIDS (CERiA) |
| 6 | Clinical Investigation Centre (CIC) |
| 7 | Julius Centre University of Malaya (JCUM) |
| 8 | Shimadzu-UMMC Centre for Xenobiotic Studies (SUCXeS) |
| 9 | University of Malaya Bioequivalence and Testing Centre (UBAT) |
| 10 | University of Malaya Centre for Proteomics Research (UMCPR) |
| 11 | University of Malaya Centre of Addiction Sciences (UMCAS) |
| 12 | University of Malaya Eye Research Centre (UMERC) |
| 13 | University of Malaya Research Imaging Centre (UMRIC) |
| 14 | Virtual Reality Centre (VRC) |

CoRs Under Faculties

With Senate's Approval

Fakulti Sains

- | | |
|---|--|
| 1 | Centre for Tropical Biodiversity Research (CTBR) |
| 2 | Zoological and Ecological Research Network (ZEN) |
| 3 | Centre for Research in Waste Management (CRWM) |

Fakulti Undang-Undang

Centre of Excellence for Biodiversity Law (CEBLAW) (Top Down)

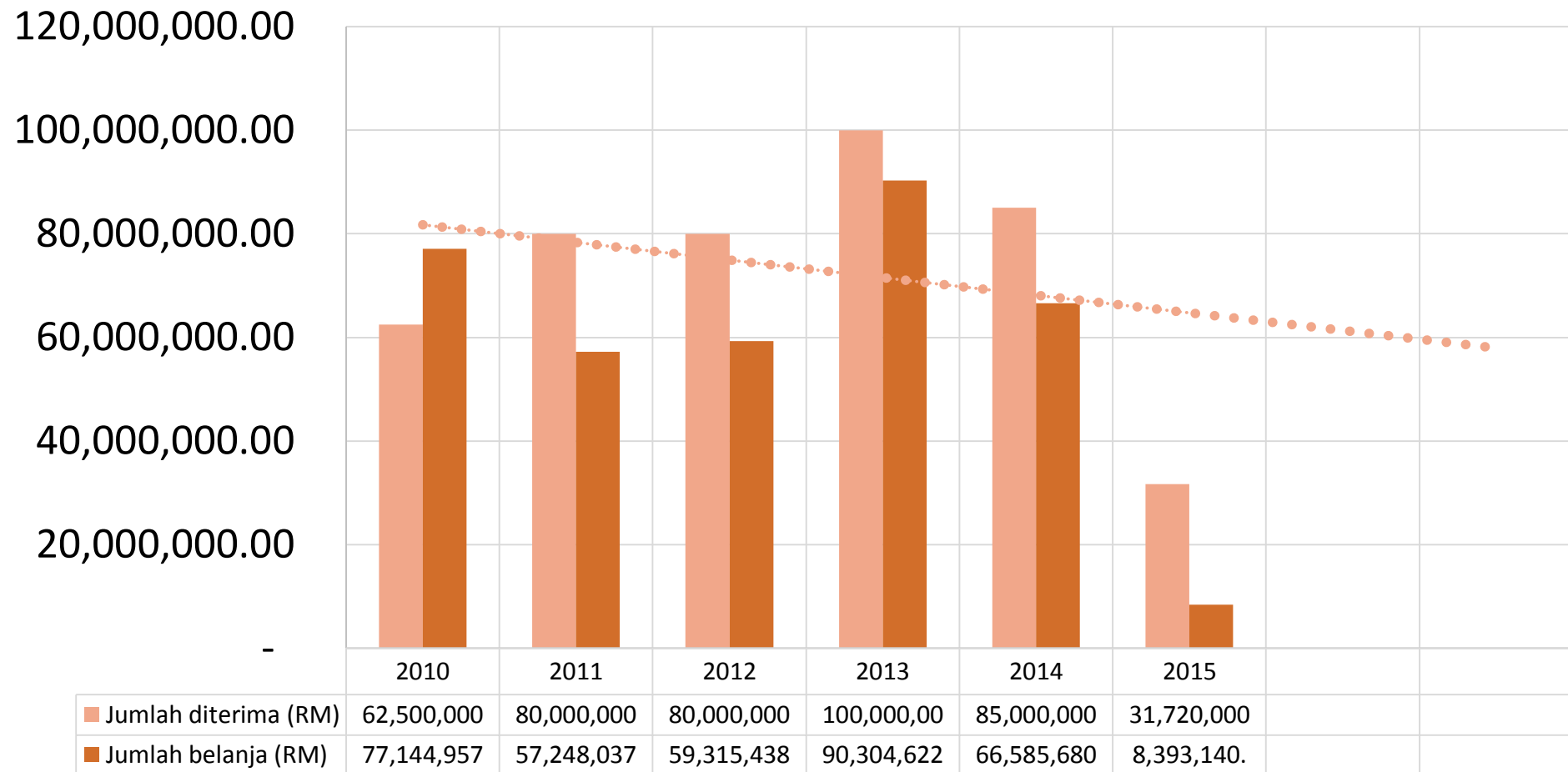
Fakulti Sains Komputer & Teknologi Maklumat

Center for Mobile Cloud Computing Research (C4MCCR)

Fakulti Sastera & Sains Sosial

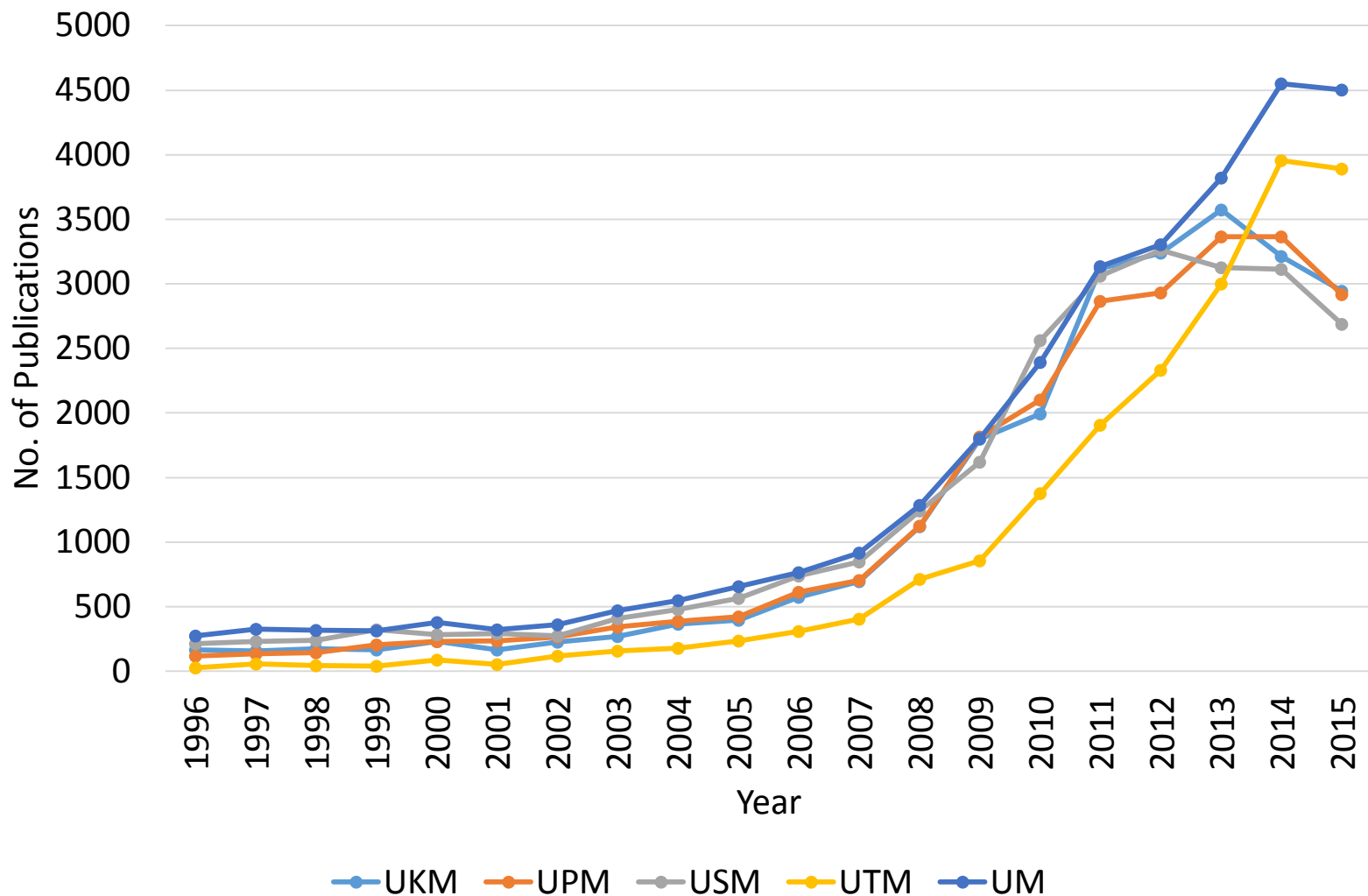
- | | |
|---|---|
| 1 | University of Malaya Centre for Democracy and Elections (UMCEDEL) |
| 2 | Malaysia-Japan Research Centre (MJRC) |
| 3 | Malaysia-Korea Research Centre (MKRC) |

Maklumat Perbelanjaan Peruntukan Universiti Penyelidikan (RU)



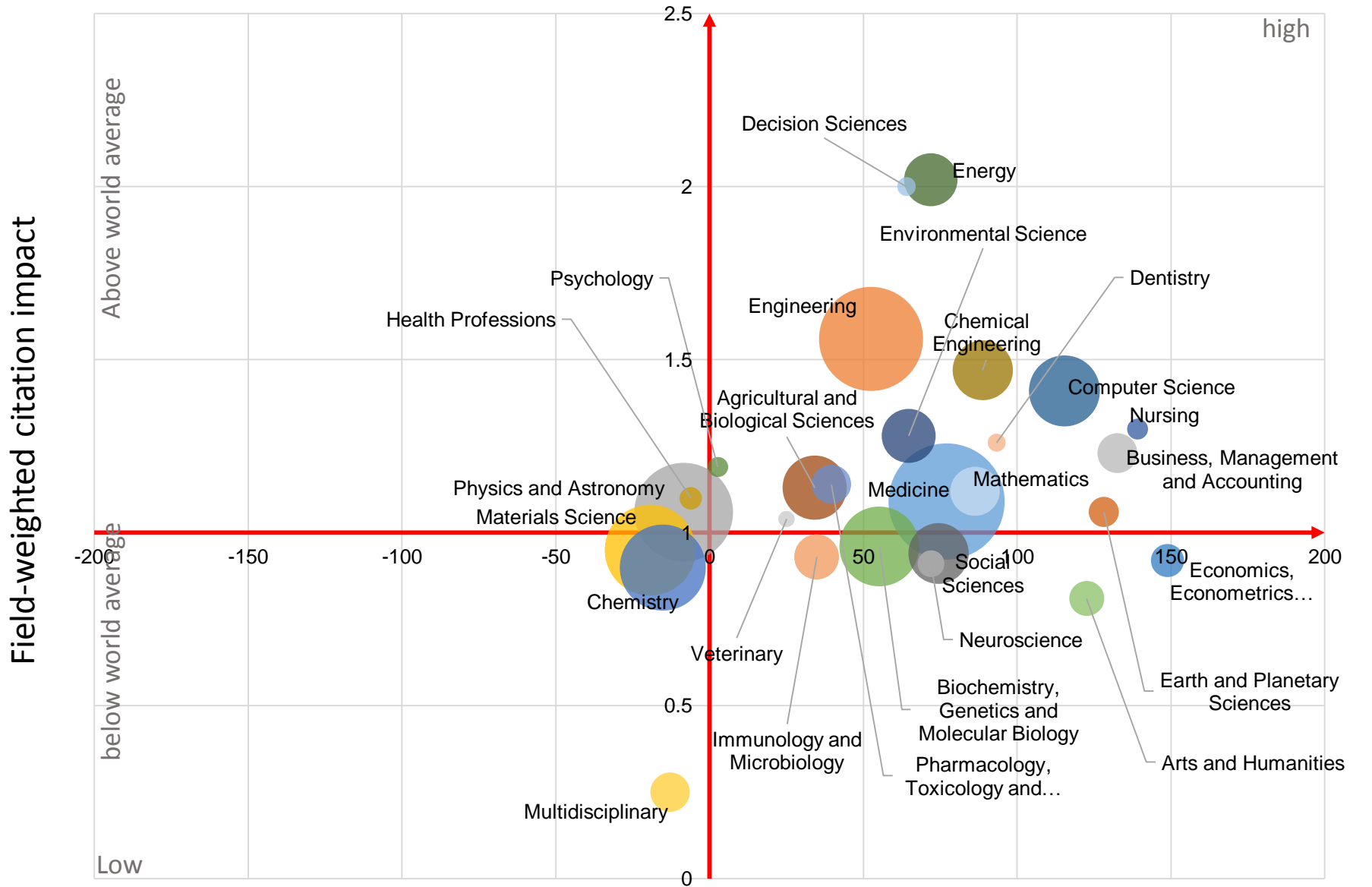
■ Jumlah diterima (RM)
 ■ Jumlah belanja (RM)
 ⋯ Linear (Jumlah diterima (RM))

Number of Scopus-indexed Publications for 5 RUs (2011-2015)



Impact of UM Publications by Subject Areas (2011-2015)

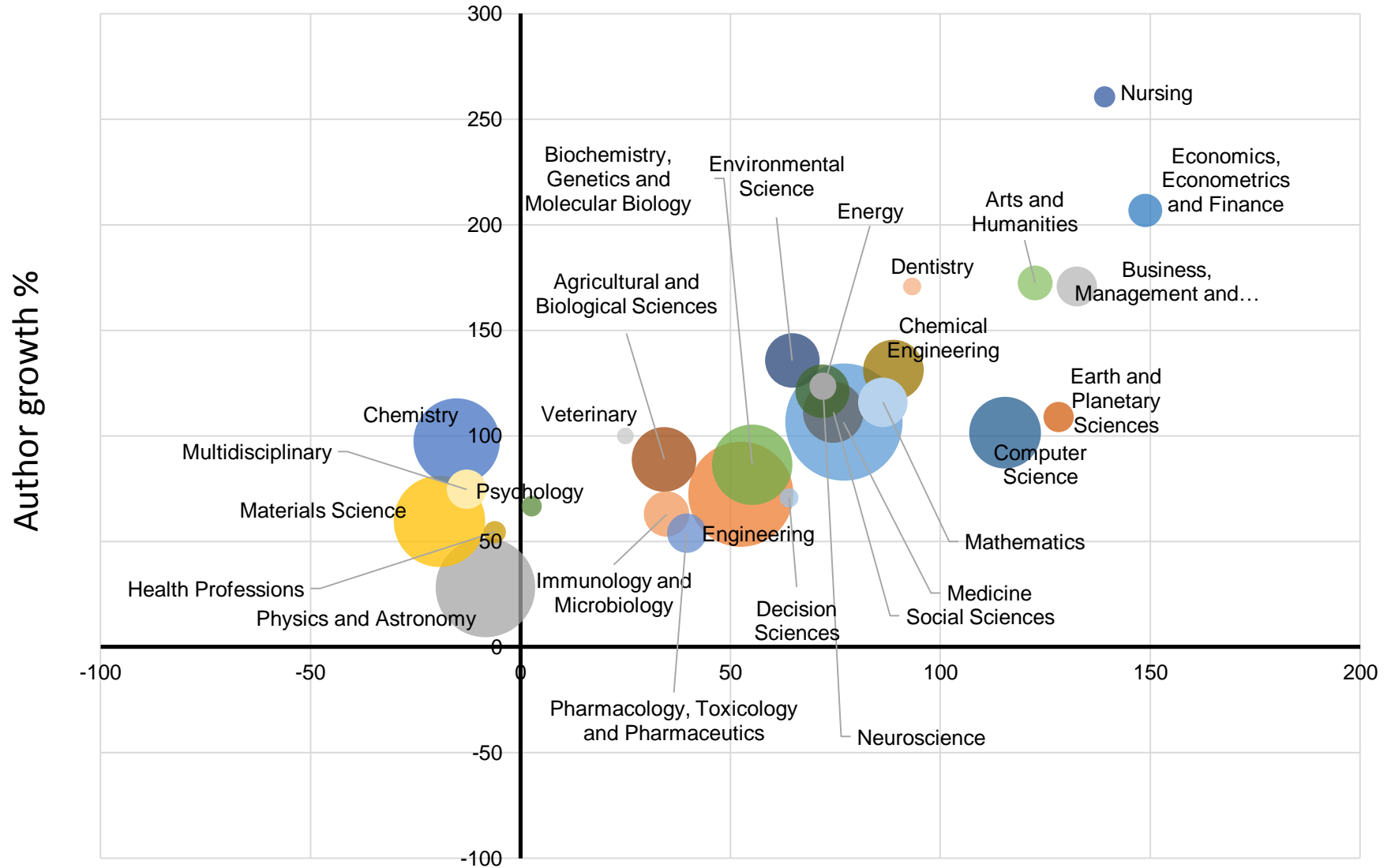
Bubble size: total number of publication published within 2011-2015



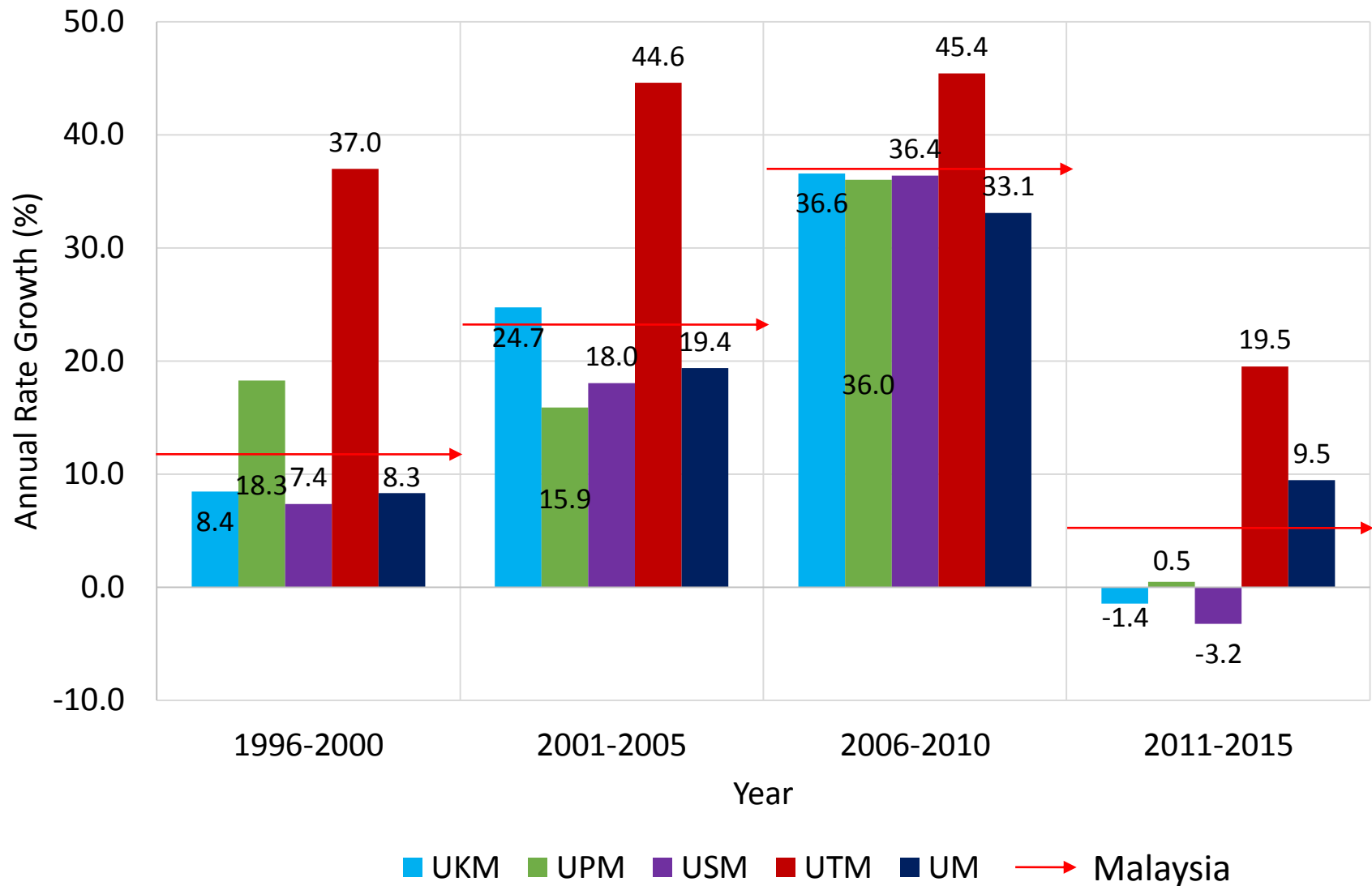
Data source: Scival (as of 11.07.2016)

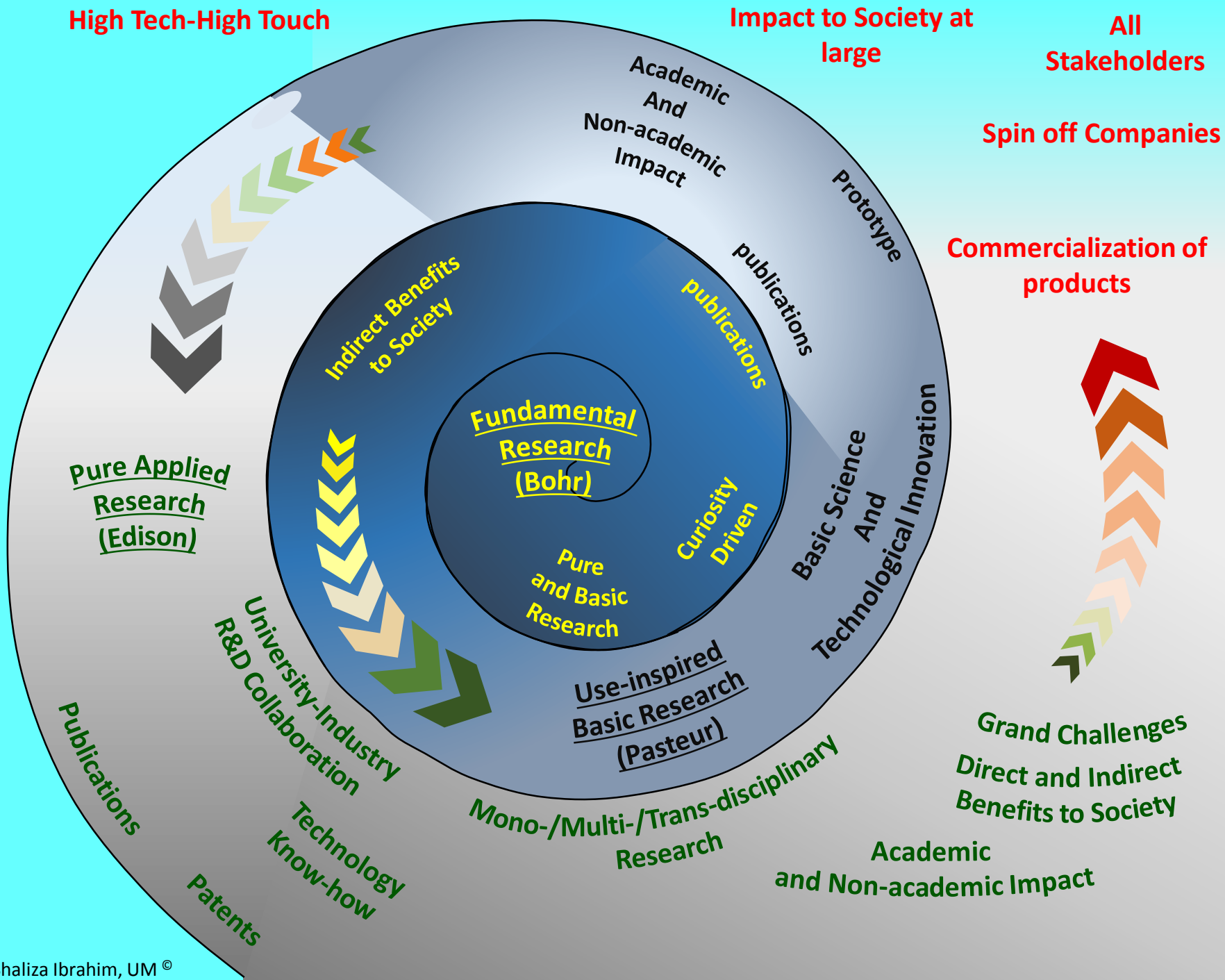
% growth UM Publications by Subject Areas (2011-2015)

Bubble size: total number of publication published within 2011-2015



Annual Growth of Co-authored Publication for 5 RUs (1996-2015)





HIGH IMPACT LOW COST Research Strategy

1. Smaller grants, big ambitions
2. Soliciting external funding
3. Forging relationships with industries
4. Maximizing existing resources eg lab equipment and facilities w provision of minimal additional resources integration
5. Collaborations
6. Maximizing impact

Example of Research with Intangible Impact



THE TOYOTA FOUNDATION

EXPLORING NEW VALUES FOR SOCIETY

Program Objectives:

- The program solicits ambitious research projects that **explore basic ways of thinking** and **methodologies** to address
 - Difficult issues to be faced by **future society**
 - Issues that are on a **global scale**
 - Issues that **transcend generations**
 - Nascent problems that will only **fully manifest** themselves **in future**

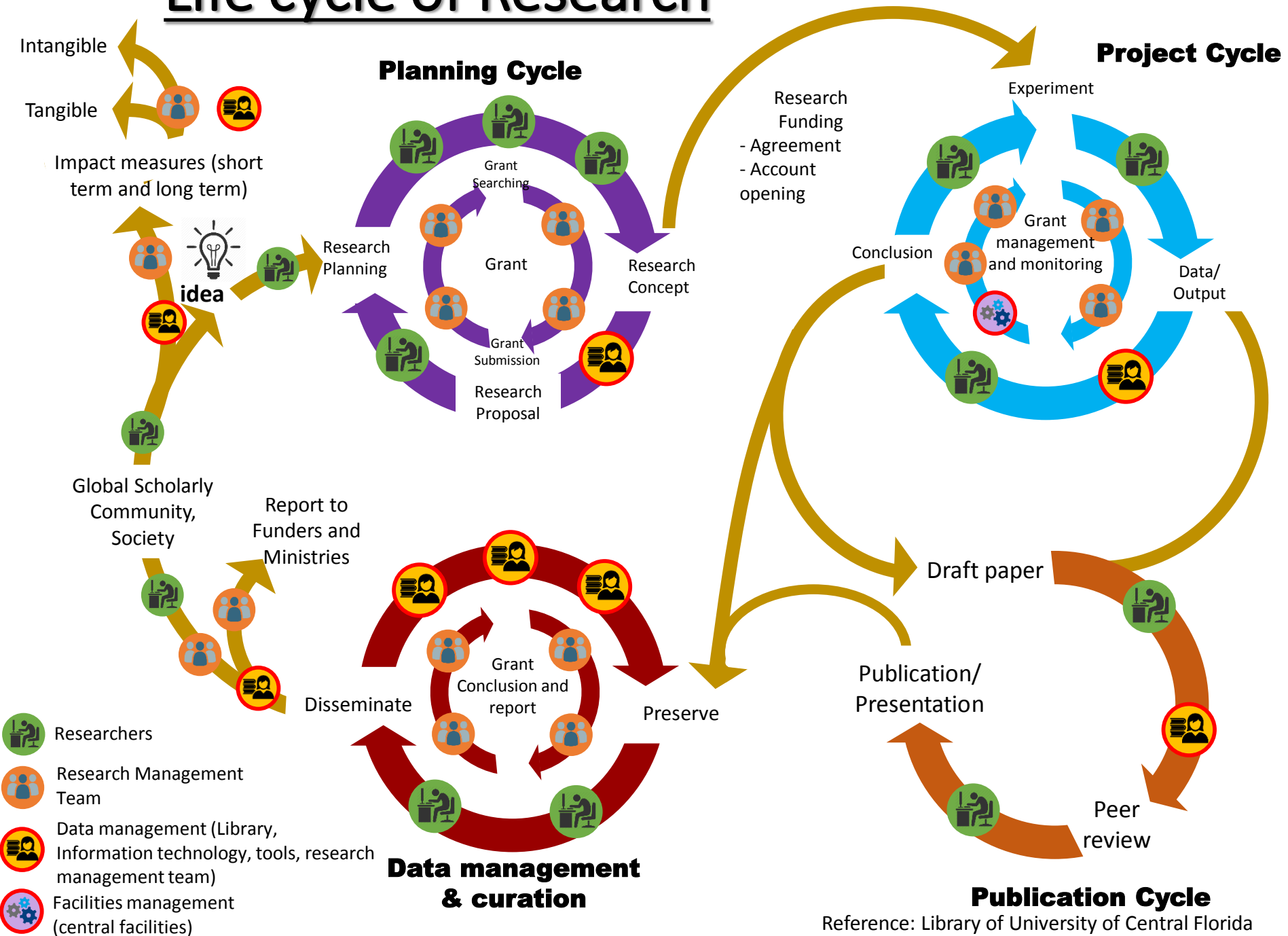
Question: What approach should be taken to address difficult issues to be faced by society in the future?

Hypothesis: What we need to develop are not only policies / technologies for solving specific problems, but also basic philosophies / arts (methodologies) that can be widely shared as new social values.

Expected project approach: Projects are expected to take a broad transdisciplinary perspective that (1) adopts a panoramic view of the world and (2) looks generations into the future, and thus question existing ideas and states of society.

Funded projects are expected to disseminate their findings effectively in many directions in order to spring up a range of lively discussions.

Life cycle of Research



Research Impact

- What is research impact?
- Why is it important?
- Enhancing Research Impact
 - Developed by Epigeum
 - UM as part of course development team



Enhancing Research Impact Download Page



- An introduction to research impact
- The research impact process
- Tools and techniques for research impact
- Writing about impact: Guidance and templates

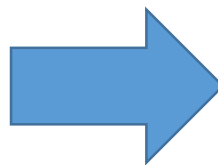
2. Install the quiz files, Blackboard native format

Click on the link below to download the quizzes:

- Quiz unit

Future: Game Changer

Current practices
R&D for Publications
R&D for Utility Design
Enculturating R&D&I
Fragmented R&D
Commercialization of R&D products
Merit and input based



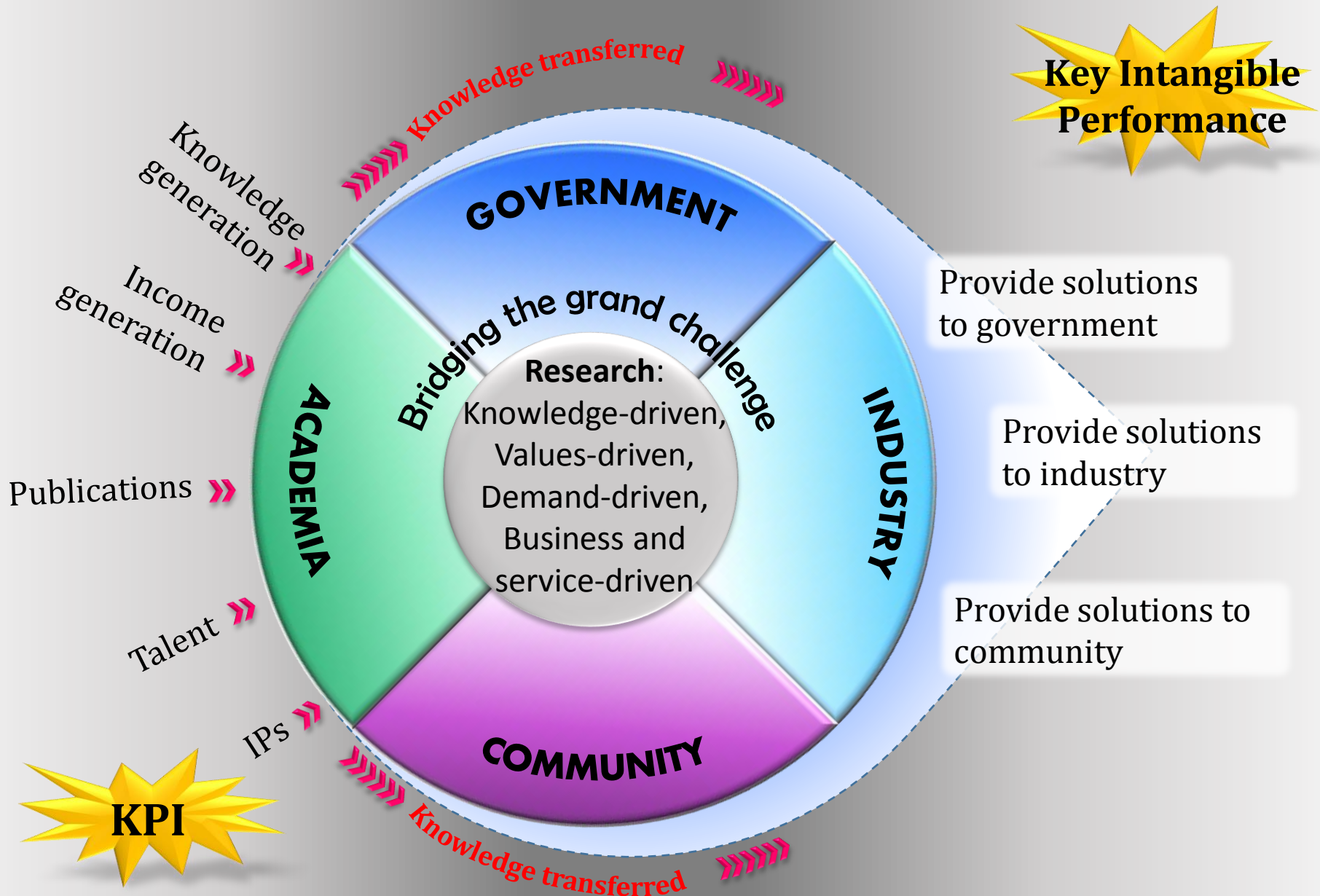
New shifts
R&D for Breakthrough Discoveries and Novel Technologies (Fundamental grants and RU)
Market demand-driven R&D&I&C&E (Quadruple Helix) – Community engagement)
R&D for Innovation, Business and Services (Community engagement)
Matching research grant schemes
Commercialization of R&D ideas and products
Merit and input based

Fundamental grants – Research Universities (U5) – Centres of Supra Excellence – Education and research data centre (ERDC)

Future: Quadruple-Helix Model

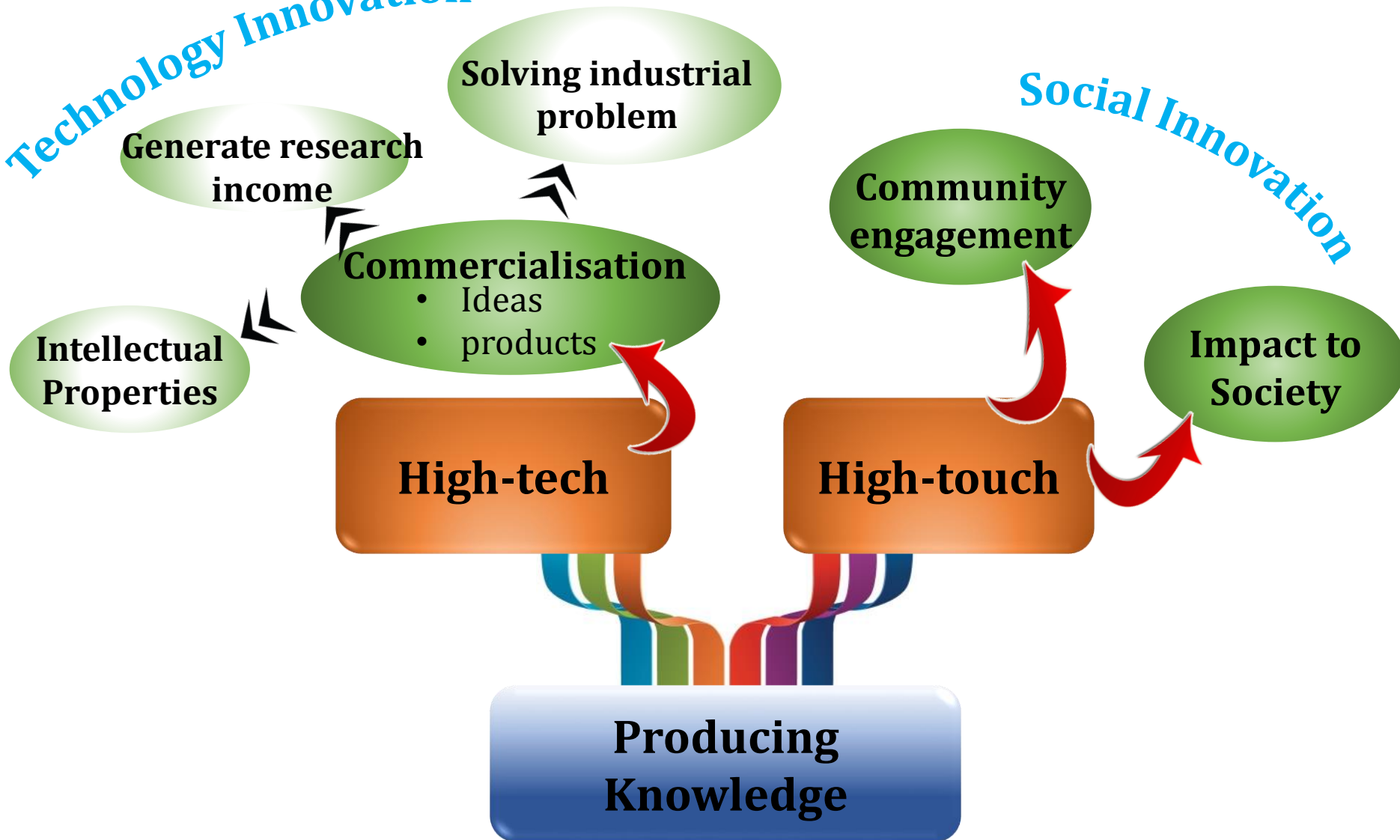
- Knowledge transfer
- External fund portfolio
- Full economic costing
- Fund raising
- Community engagement
- Industry collaboration
- Key Intangible Performance (KIP)

R&D according to the Quadruple Helix Concept



Research Outputs

Technology Innovation



Overarching goal:

To provide a vibrant research and innovation ecosystem and be Malaysia's most preferred global research partner

5 Goals
13 Strategies
17 Action Plans
25 KPI

The 5 Goals

Preferred global research partner

World Class High Impact Output

Enhancing Research Ecosystem

Enhancing Innovative Ecosystem

Impactful & Highly Visible UM
Community Engagement (CE)
Programs

UM Strategic Plan /
KPI 2016-2020
Excellent Research
& Enterprise
Activities



Other:

Big Idea Program

Strategy

Establishing a research park (4th generation incubator): UM Planet

Action Plan

Refer to UM's Master Plan and Big Idea Document

KPI

Refer to UM's Master Plan and Big Idea Document

Objectives:

- **Research Innovation and Enterprise Centre in one place with access to private companies research and development arm.**
- **To enhance UM-industries collaboration**

