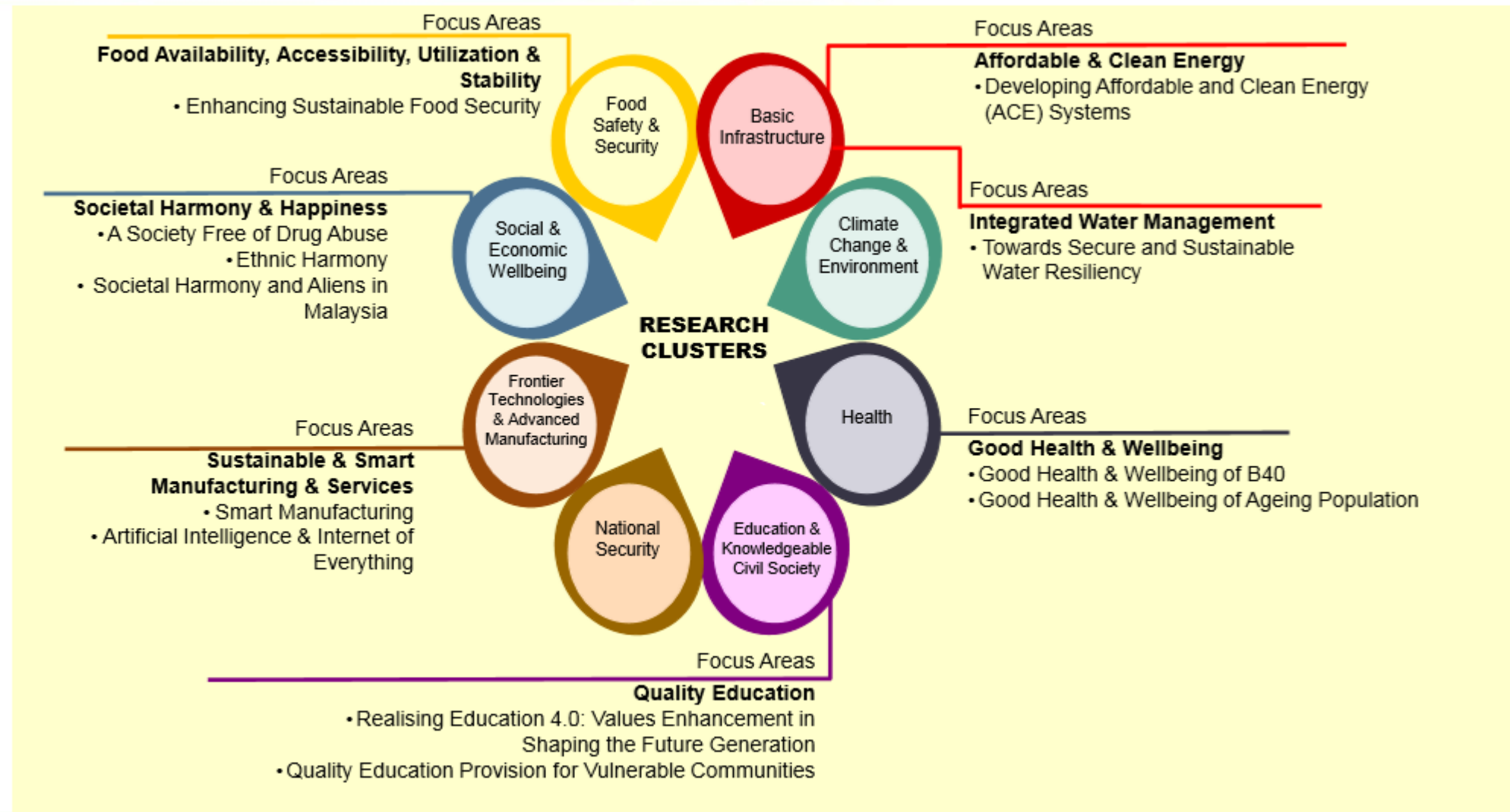


The New TRGS and LRGS Initiatives



National Priority Areas

1. Food security
2. Energy Security
3. Plantation Crops
4. Cyber Security, Big Data, AI (IR4.0)
5. Water Security
6. Biodiversity
7. Healthcare and Medicine
8. Environment and Climate Change
9. Transportation and Mobility

Clusters Involved

1. Frontier Technologies & Advanced Manufacturing
2. Basic Infrastructure
3. Food Safety & Security
4. Health
5. Education & Knowledgeable Civil Society
6. Social & Economic Wellbeing

Research Domains

1. Pure and Applied Sciences
2. Technology and Engineering
3. Clinical and Health Sciences
4. Social Sciences
5. Arts and Applied Sciences
6. Natural and Cultural Heritage
7. Information and Communication Technology

LRGS

- Submission Date: 1 March to 30 April 2019
- Malaysian
- Involve at least 3 universities
- Interdisciplinary
- 3 – 5 years duration
- Maximum: RM3 million
- Employment status of PI: If under contract, need a co-PI who is permanent

TRGS

- Submission Date: 1 March to 30 April 2019
- Involve at least 3 projects
- Interdisciplinary under 3 different research domains
- 3 years duration
- Maximum: RM1.5 million

Assessment Criteria:

- a. Addresses an important issue(s) of urgent national interests
- b. Relevant preliminary work
- c. Track record of PI and Co-Investigators
- d. Suitability and relevance of the proposed collaboration
- e. Clear research deliverables and long-term impact
- f. Value for money: responsible budgeting & complementary funding
- g. Data management strategy

Artificial intelligence (AI) and internet of everything (IOE)

- high-quality, innovative, and integrated research proposals in the field of Artificial Intelligence (AI) and Internet of Everything (IoE) towards increasing competitiveness for Malaysian industry.
- **Research Scope:**
 - a. Augmented Reality
 - b. Machine Learning
 - c. Deep Learning
 - d. Data Analytics and Data Security
 - e. Internet of Everything (IoE)

Research Deliverables

- a. Enhancing industry competitiveness through adoption of new technology, automation and cyber-physical systems (efficiency, cost reduction, quality, delivery)
- b. Developing high-value AI solutions that are capable of systematically generating complex, unique and diverse products
- c. Empowering local industry to be sustainable globally
- d. Promoting evidence-based policy and influencing public policies
- e. Communicating research output for greater public engagement and awareness
- f. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Smart manufacturing

- high-quality, innovative and integrated research proposals in the field of smart manufacturing towards increasing competitiveness for Malaysian industry.
- **Research Scope:**
 - a. Design Automation
 - b. Flexible Manufacturing
 - c. Additive Manufacturing
 - d. Smart Sensor Technology
 - e. Machine Vision

B: Research Deliverables

- a. Enhancing industry competitiveness through adoption of new technology, automation and cyber-physical systems (efficiency, cost reduction, quality, delivery)
- b. Developing high-value-added, complex, unique, and diverse products
- c. Empowering local industry to be sustainable globally
- d. Promoting evidence-based policy and influencing public policies
- e. Communicating research output for greater public engagement and awareness
- f. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Developing affordable and clean energy (ACE) systems

- high-quality and innovative research proposals to develop affordable and clean energy (ACE) systems in Malaysia.
- **Research Scope:**
 - a. Generating affordable and clean technology
 - b. Focusing on both power and/or thermal excluding hydropower energy
 - c. Showing that the technology must be self-sustaining beyond the period of the project
 - d. Demonstrating that the technology may not be limited to specific remote areas
 - e. Mapping of resources and energy forecasting for sustainable supply
 - f. Providing social economic and Life Cycle Analysis (LCA)
 - g. Suggesting compensatory financial mechanism (renewable energy certificates, carbon trading and etc.)

Research Deliverables

- a. Contributing towards achieving 20% renewable energy by 2025
- b. Implementing ACE technology that can benefit maximum targeted population in urban and/or rural areas
- c. Promoting evidence based policy-making and influencing public policies
- d. Communicating research output for greater public engagement and awareness
- e. Developing of long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Towards secure and sustainable water resiliency

- secure and sustainable water resiliency in Malaysia. The purpose is to seek and provide sustainable solutions in support of Malaysia's water resources development and management. A sustained multi-disciplinary and integrated water R&D programme is important to ensure that water is harnessed and utilised for the nation

Research Scope:

- a. Sustainable water supply development and management for multipurpose/conjunctive use (including waste water reuse)
- b. Water-Food-Energy Nexus
- c. Frontier technologies for water management and control
- d. Water related disaster and risk management
- e. Impact of climate change and resiliency of water resources and management
- f. Efficiency of agricultural drainage system and practices
- g. Governance and economics of water resources, services, and management

Research Deliverables:

- a. Contributing towards higher efficiency in water development, accessibility and delivery
- b. Contributing towards development and use of frontier technologies for integrated water resources
- c. Implementing water-related technology that can benefit maximum targeted population in urban and/or rural areas
- d. Demonstrating integrated solution for water-food-energy nexus and land management
- e. Promoting evidence based policy-making and influencing public policies
- f. Communicating research output for greater public engagement and awareness
- g. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Enhancing sustainable food security

- to enhance sustainable food security and safety in Malaysia in terms of availability, accessibility, utilization, and stability of food supply.
- **Research Scope:**
 - a. Increasing the productivity of food production which include crops, livestock and fishery
 - b. Enhancing food safety throughout the supply chain
 - c. Unravelling food authentication in relation to food safety
 - d. Improving the quality and practice of food processing and manufacturing.
 - e. Promoting urban farming practices
 - f. Improving the accessibility and affordability of food acquisition especially by B40

- (g) Improving the practices of producing nutritious, quality, Halal, and safe food.
- (h) Changing food consumption patterns among Malaysian and food-insecure households
- (i) Mapping of food resources for sustainable supply
- j) Promoting efficient and practical technology transfer programme to food producers (
- (k) Developing food entrepreneurship among youth to increase food production.
- (l) Recommending policies and economics related to sustainable and stable food system

Research Deliverables:

- a. Contribution towards higher percentage of food self-sufficiency level
- b. Improvement in the quality and affordable food prices and consumptions
- c. Improvement of food safety and Halal practices along the food supply chain.
- d. Generating evidence based policy-making for sustainable and stable food supply
- e. Communicating research output for greater public engagement and awareness
- f. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Good health and wellbeing of ageing population

- promote good health and well-being by addressing the biggest health challenges facing the ageing population (age 60 years and above) in Malaysia.
- **Research Scope:**
 - a. Bridge the knowledge gaps pertaining to the human and environmental factors and the relationship between human-environment interactions and the disease manifestations
 - b. Develop interventions; be it for prevention, diagnosis, therapy and patient management
 - c. Provide better understanding of the age-stratified disease burden and socioeconomic factors

Research Deliverables:

- a. Generating new therapeutic/diagnostic/intervention/disease management modalities
- b. Reporting impact on specific indices: – mortality/morbidity/incidence rates etc. – disease burden, health-cost benefit, affordable health access, healthy living etc. – quality of life
- c. Promoting evidence based policy-making and influencing public policies
- d. Communicating research output for greater public engagement and awareness
- e. Developing long-term research consortia comprising experts that will national interests and achieve global prominence

Good health and wellbeing of B40

- to address the health and social disparity that the B40 face in the urban and/or rural setting in Malaysia.
- **Research Scope:**
 - a. Provide better understanding of the socio-economic factors (may include cultural and religious influences) that affect health outcomes
 - b. Bridge the knowledge gaps pertaining to the relationship between human environment interactions and the disease manifestation as well as health outcomes
 - c. Develop interventions; be it for prevention (including advocacy and awareness), diagnosis, therapy and patient management

Research Deliverables:

- a. Generating new therapeutic/diagnostic/intervention modalities
- b. Reporting impact on specific indices: – mortality/morbidity/incidence rates etc. – health-cost benefit, health access, healthy living etc. – quality of life
- c. Promoting evidence based policy-making and influencing public policies
- d. Communicating research output for greater public engagement and awareness
- e. Developing long-term research consortia comprising experts that will fulfil national interest and achieve global prominence

Quality education provision for vulnerable communities

- reducing students' performance gap associated with vulnerable communities
- **Research Scope:**
- developing interventions
 - to reduce this gap and ensure Quality Education for all (e.g. infrastructure, empathy and motivation of educators etc.).
 - to provide insights into re-designing the syllabus, teaching and learning pedagogical approaches, learning materials to meet the learning styles of 21st century students in the target communities.

Research Deliverables:

- a. Producing effective and impactful interventions for pre-school, primary, secondary OR tertiary
- b. Piloting the proposed interventions in the field across high performing to low performing schools
- c. Promoting evidence based policy-making and influencing public policies
- d. Communicating research output for greater public engagement and awareness
- e. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Realising education 4.0: values enhancement in shaping the future generation

- developing a comprehensive framework to ensure Quality Education for all Malaysians.
- **Research Scope:**
 - a. Provide a comprehensive model for values enhancement in the school curriculum within Education 4.0 framework
 - b. Bridge the gap towards quality future teachers including professionalism and values; psychological and mental well-being
 - c. Develop innovative and creative pedagogical approaches, assessments and technologies with the right balance of knowledge, skills and values
 - d. Design interventions in shaping the students' character with proper values to be effective societal members in the future

Research Deliverables:

- a. Generating new models for enhancing values in the future school curriculum
- b. Producing creative and innovative pedagogical and assessment approaches to develop and measure values within Education 4.0
- c. Developing a model of quality future teachers with balanced values, skills and knowledge within Education 4.0
- d. Promoting evidence-based policy and influencing public policies
- e. Communicating research output for greater public engagement and awareness
- f. Developing long-term research consortia comprising experts that will national interests and achieve global prominence

A society free of drug abuse

- game-changing research proposals to achieve a society that is free of drug abuse and addiction, and its associated impact on organised crime and drug rehabilitation initiatives in Malaysia.

Research Scope:

- the holistic approach on how to reduce, mitigate, and finally a society free of drug abuse
- may include new strategies in treating and managing drug abuse and addiction involving the whole spectrum of value chain as well as recommending new novel treatment, management, intervention, prevention, rehabilitation and aftercare, enforcement and decriminalisation.

Research Scope:

- a. Initiate a critical assessment of present strategies and legislations
- b. Identify the major factors that contribute to and promote drug abuse and addiction in our society, and the weaknesses of current intervention strategies
- c. Examine and propose novel intervention strategies and their priorities on the drug abuse ecosystem within the targeted society
- d. Scrutinise the etiology, prevention, rehabilitation, treatment and aftercare in managing drug abuse

- e. Develop innovative and game changing interventions in drug prevention, rehabilitation and treatment as well as aftercare that are evidence-based
- f. Identify economic and social impact of drug abuse at micro and macro levels eg individual, co-dependents, society, government and national security
- g. Re-examine present enforcement and punitive strategies in producing a society sans drug abuse
- h. Re-examine the synergy between various agencies and enforcement bodies involved in overseeing drug abuse in Malaysia.

Research Deliverables:

- a. Developing a workable and sustainable prototype of novel intervention strategies in promoting a society sans drug abuse
- b. Developing strategies that will remove barriers and enhance the implementation, prevention, rehabilitation, treatment and aftercare in managing drug abuse
- c. Proposing enforcement strategies that promote a society sans drug abuse
- d. Showing proof of direct engagement with stakeholders for a society sans drug abuse
- e. Developing long-term research consortia comprising experts that will fulfil national interests and achieve global prominence

Ethnic harmony

- address peace and ethnic harmony in Malaysia
- **Research Scope:**
 - a. Examine factors affecting social cohesion in multi-ethnic Malaysian society.
 - b. Map trends of peace and conflict in the last two decades
 - c. Examine knowledge, attitudes and perceptions of multi-ethnic co-existence in Malaysia
 - d. Study the economic cost and impact of ethnic disharmony
 - e. Develop national peace and ethnic harmony index
 - f. Examine best practices on managing ethnic relations

Research Deliverables

- a. Diagnostic tools to assess ethnic harmony in Malaysia
- b. Key issues, challenges and policy recommendations pertaining to social cohesion in Malaysia and Sustainable Development Goals (SDGs)
- c. Dissemination of research output for greater public engagement and awareness
- d. Development of long-term research consortia comprising experts and stakeholders that will fulfil national interest and achieve global prominence

Societal harmony and aliens in Malaysia

- For a population of 30 million people, Malaysia also is home to 7 million aliens. Their web of influence significantly impacts various aspects of our society's harmony and wellbeing. On the one hand, they contribute to wealth creation; on the other hand, they also have a negative impact on society, economy and national security.
- to address the impact of foreign workers, migrants, stateless children, and refugees on societal harmony in Malaysia.

Research Scope:

- a. Explore the impact of cantonisation, segregation, polarization, and cultural friction due to the influx of foreign workers in our society
- b. Assess existing and potential intra and inter-ethnic friction and crime, and tensions within the Malaysian society
- c. Examine the costs of the influx towards the Malaysian society's wellbeing such as health care, education, infrastructure, and national security.
- d. Study the impact of foreign remittance including illicit financial outflow on the Malaysian economy.
- e. Examine knowledge, attitudes and perceptions of Malaysians towards migrants in Malaysia and vice versa.
- f. Examine the problems of integration and develop workable strategies to integrate refugees and stateless children into our society.
- g. Identify solutions to reduce dependency on foreign workers.
- h. Examine ethical concerns, national and international policies, and governance on migration.

Research Deliverables:

- a. Mapping cantonisation of various ethnic aliens in Malaysia
- b. Suggesting workable strategies for harmonising aliens in our society
- c. Providing diagnostic tools to assess labour market, migration policies and conditions, and foreign remittance
- d. Providing solutions to address current key issues, challenges and policy recommendations pertaining to impact of migration in Malaysia and Sustainable Development Goals (SDGs).
- e. Suggesting sustainable solutions to reduce dependency on aliens in different sectors (for example construction, domestic, agriculture, hospitality, manufacturing)
- f. Benchmarking best practices and policies to integrate refugees and stateless children in our society in accordance to international and human rights obligations
- g. Disseminating research output to stakeholders for greater engagement, implementation, and enforcement
- h. Developing long-term research consortia comprising experts and stakeholders that will fulfil national interest and achieve global prominence

Data Sharing:

- The proposal should have a clear statement on how data will be collected, stored and shared.
- These include all the publications, data used to produce publication and important unpublished data (e.g. bioresources/database).

Track Record

- The PI and Co-Investigators should have a track-record and expertise relevant to the proposed work.
- Strong preliminary studies are usually required to justify the basis of the proposed project.
- You may include previous and especially recent publications to support your proposal.
- Proposals must be jointly prepared by the PI and Co-Investigators.

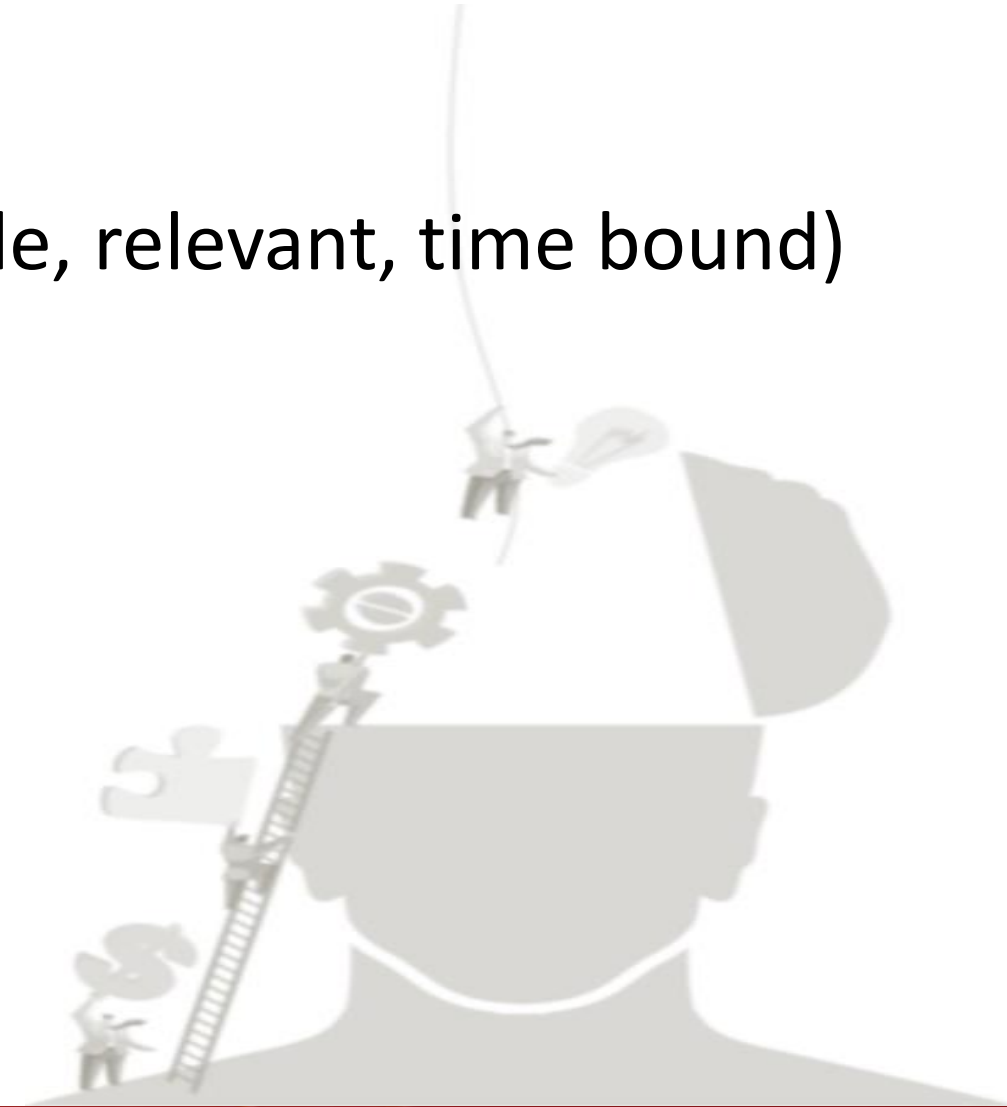
International and Industrial Linkages

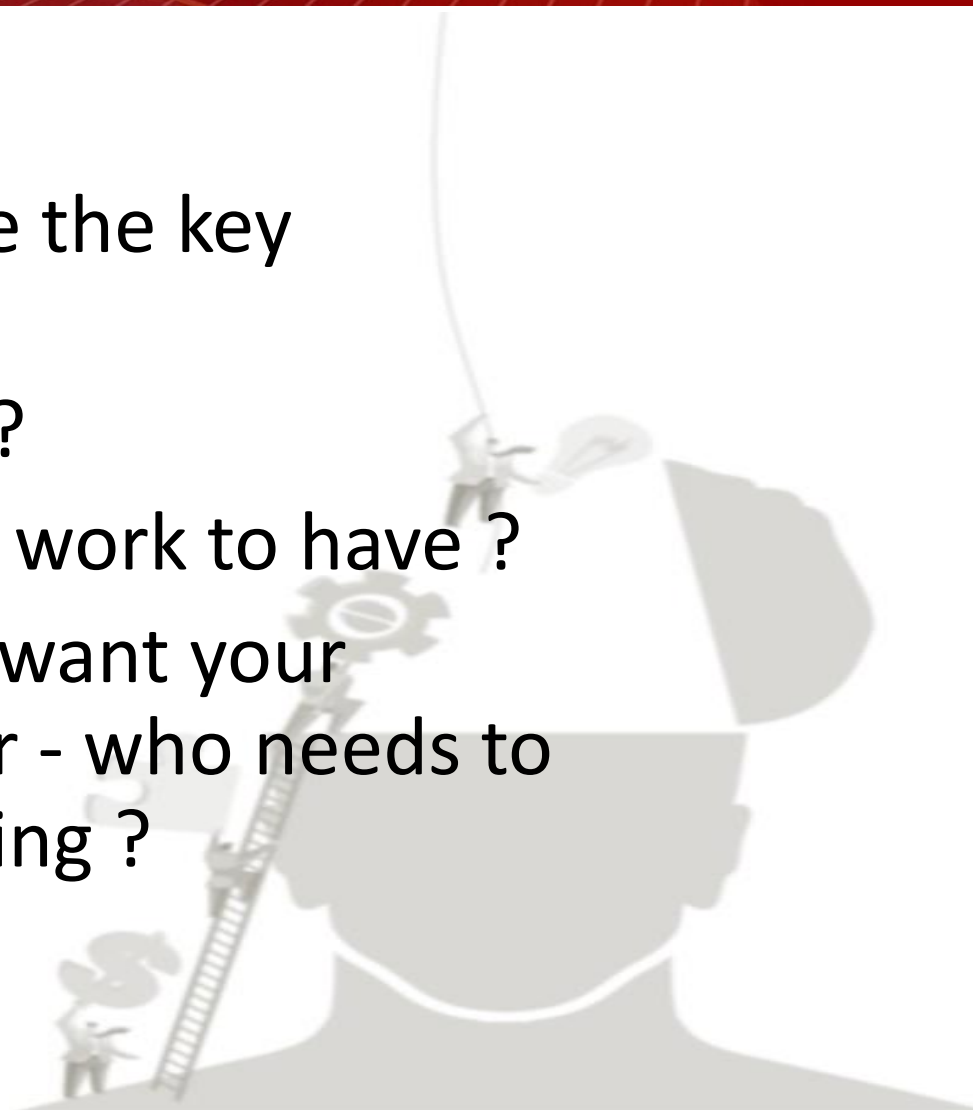
- International and industrial linkages are encouraged.
- Evidence of existing/additional funding from other sources that will complement the current proposal is highly encouraged.
- This should include in-kind contribution.
- Supporting evidence (MOUs, MOAs, other communication, etc.) is required as proofs.

- Similar Values
- Experienced
- Team players
- Best minds: Knowledgeable and Intelligent
- Similar mind set - Curious and Creative
- Iconic
- Good communicators
- Skilled project manager



- SMART (specific, measurable, attainable, relevant, time bound)
- Big and Bold
- Meaningful
- Selfless
- Public service
- Community driven



- For your research area, who are the key beneficiaries ?
 - Who do you want to influence ?
 - What impact do you want your work to have ?
 - Think ahead to the impact you want your research to have on your career - who needs to know you and what you are doing ?
- 

Good Luck!