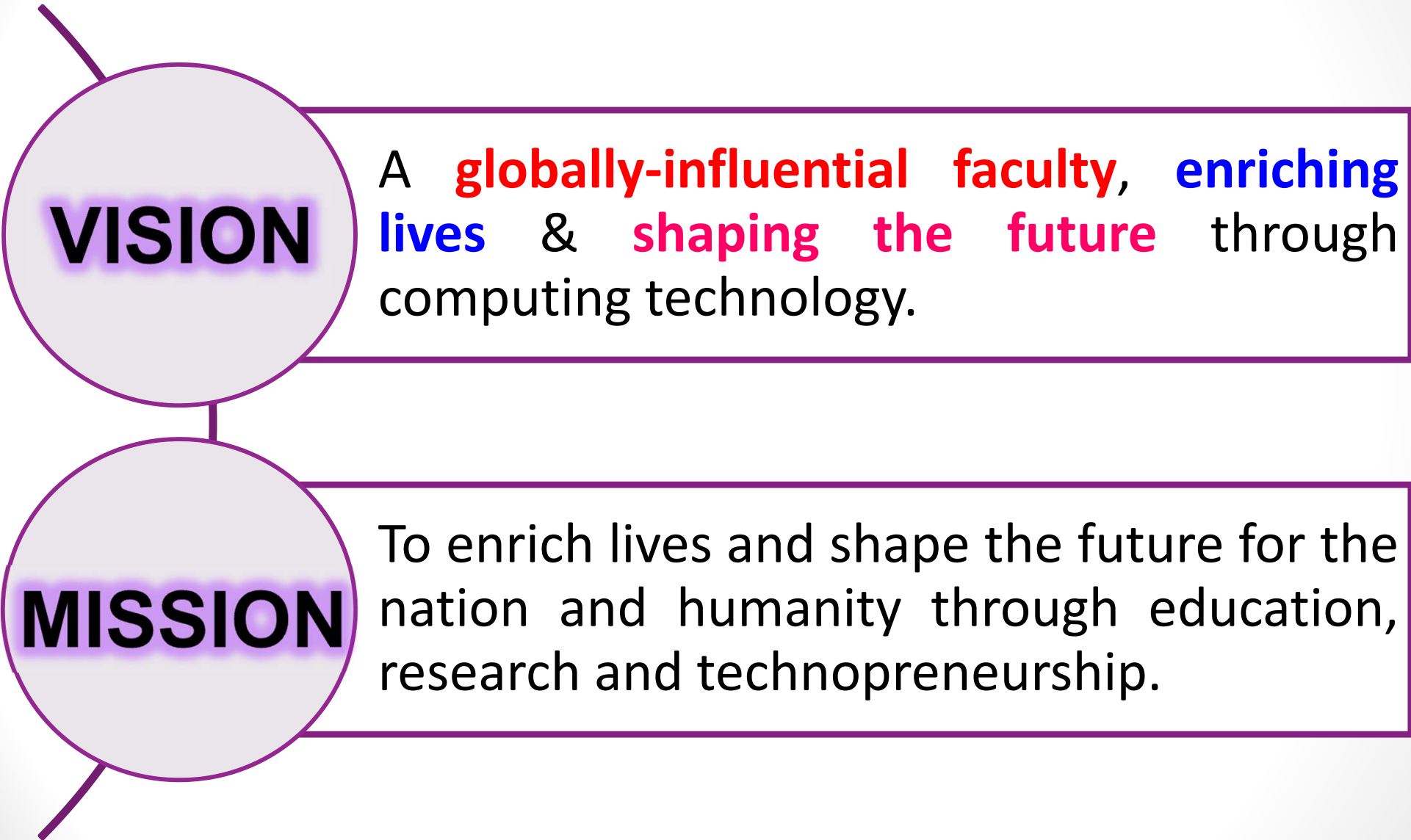




# Strategic Plan 2016 – 2020

*Faculty of Computer Science &  
Information Technology  
University of Malaya*

# FCSIT VISION & MISSION



## VISION

A **globally-influential faculty**, **enriching lives** & **shaping the future** through computing technology.

## MISSION

To enrich lives and shape the future for the nation and humanity through education, research and technopreneurship.



# FCSIT STRATEGIC PLAN 2016-2020

**Shaping The  
Future**

**Enriching  
Lives**

**Globally-  
Influential  
Faculty**

## DEFINITION

**Building the Nation and  
Training the Leaders of  
Tomorrow**

**Enhancing Communities  
through Intellect and  
Technology for a More Fulfilling  
and Meaningful Life**

**Academia with Strength and  
Dominance to Create a Positive  
Impact that Brings World  
Recognition in Teaching,  
Research, Knowledge Transfer  
and International Outlook.**

## INDICATORS

1. Employability Rate & Period
2. High Quality Training
3. No. of Awards (Int. & National)
4. Technopreneur Establishment
5. No. of Innovative Products
6. No. of Commercialize Product/ Services
7. First Class Graduands
8. No. of Programme Accreditation
9. No. of Local Postgraduates
10. No. of Specialized Comp. Labs
11. Amount of Diversified Research Funding

12. No. of Societal Problem Solved Using The Innovative Products
13. No. of Computing Knowledge & Services Transferred
14. No. of Successful Participants To Establish Businesses
15. Amount of "Knowledge Transfer" Grant Obtained
16. New Intelligent / Smart / Conducive Learning Space
17. No. of Applause & Accolade Events

18. Global League Ranking by Subject
19. No. of Citations Per Faculty
20. No. of Participation in Global Grand Challenges Projects
21. No. of International Postgraduate Intake
22. Programme Accreditation
23. No. of Students in Global Computing Workforce



# Shaping the Future

**“Building the Nation and Training the Leaders of Tomorrow”**

# INDICATOR 1: Employability Rate & Period

## TARGET

2016  
5 months

2017  
3 months

2018  
2 months

2019  
1 month

2020  
0 month

**REQUIREMENT:** To develop Holistic and Balanced Graduates

**OBSTACLE:** Curriculum not diverse with industry needs

**STRATEGY:** To incorporate industry collaboration with undergraduate program

| ACTION PLAN                                          | IMPLEMENTATION                                                                                                                                                    | PIC       |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Graduate Skill Attributes (Soft Skills)              | Conduct training with MDEC / 3P<br>Sem 1: 1 <sup>st</sup> Nov – 22 <sup>nd</sup> Nov (3 weeks)<br>Sem 2: 6 <sup>th</sup> April – 17 <sup>th</sup> April (2 weeks) | TDID      |
| Faculty Career Fair                                  | Set-up booth and exhibition<br>Sem 1: 1 <sup>st</sup> Oct – 5 <sup>th</sup> Oct                                                                                   |           |
| Invite company to interview students before graduate | Industry Talk & Interview sessions<br>Sem 1: 1 <sup>st</sup> Oct – 5 <sup>th</sup> Oct<br>Sem 2: 4 <sup>th</sup> Apr – 8 <sup>th</sup> Apr                        |           |
| Groom students to become Technopreneur (Soft skills) | Technopreneurship course<br>Sem 2: 14 weeks (22 <sup>nd</sup> Feb – 29 <sup>th</sup> May)<br><br>Innovative products project initiative (3 ½ years)               | SIG: IPPI |

## INDICATOR 2: High Quality Training

### TARGET

2016  
Revenue: 100k

2017  
Revenue: 150k

2018  
Revenue: 200k

2019  
Revenue: 300k

2020  
Revenue: 300k

**REQUIREMENT:** To establish expert database or portfolio

**OBSTACLE:** Lack of certified or expert trainers

**STRATEGY:** To establish HUB of Computing Expertise

#### ACTION PLAN

#### IMPLEMENTATION

#### PIC

Form Faculty  
subsidiary company

Establish Faculty subsidiary (Organizational  
Structure)  
(2<sup>nd</sup> Jan 2016)

TF: BIG

Increase certified staff  
in niche areas

Identify niche and in-trend areas  
(2 months: 2<sup>nd</sup> Jan – 28<sup>th</sup> Feb 2016)

Staff competency planning  
(1 month: 1<sup>st</sup> Mar – 31 Mar 2016)

Publicize faculty  
experts

Establish mass media connection  
(1 week: 3<sup>rd</sup> Mar – 9<sup>th</sup> Mar 2016)

Create influential website  
(3 months: 1<sup>st</sup> Apr- 30<sup>th</sup> June 2016)

TF: Rebranding/  
Marketing

## INDICATOR 2.1: High Quality Training [Digital Security]

### TARGET

2016  
Revenue: 40k

2017  
Revenue: 50k

2018  
Revenue: 80k

2019  
Revenue: 120k

2020  
Revenue: 120k

**REQUIREMENT:** Identify the required University SAPT for each staff level

**OBSTACLE:** Lack of monitoring and motivation

**STRATEGY:** To increase number of expertise and staff promotion

| ACTION PLAN               | IMPLEMENTATION                                                                            | PIC                           |
|---------------------------|-------------------------------------------------------------------------------------------|-------------------------------|
| 1) Professional trainings | Identify the related or latest security training/skill required for security group member | Dr. Nor Badrul Anuar Juma'at  |
| 2) Monitor staff SAPT     | Identify staff to be supported for promotion immediately                                  | Prof. Dr. Miss Laiha Mat Kiah |

## INDICATOR 2.2: High Quality Training [Cloud Computing & Hybrid Cloud]

### TARGET

2016  
Revenue: 30k

2017  
Revenue: 50k

2018  
Revenue: 60k

2019  
Revenue: 90k

2020  
Revenue: 90k

**REQUIREMENTS:** Approval of courses, Training advertisement, Training software development

**OBSTACLE:** Attract Trainees, Training software non-readiness

**STRATEGY:** Publicize trainings well in time, Push early software development

#### ACTION PLAN

#### IMPLEMENTATION

#### PIC

Prepare Course  
Approval

Prepare and submit for approval the courses on cloud computing, Cloud programming and cloud security to be taught at MS level

Prof. Dr. Abdullah Gani  
Dr. Anjum

Training

Organise 4 trainings on Cloud Administration, Cloud Deployment, Cloud Development and Cloud Application programming

Dr. Anjum

Training

Organise 2 trainings each in year 2019 and 2020 for the developed cloud softwares

Prof. Dr. Abdullah Gani  
Dr. Anjum

## INDICATOR 2.3: High Quality Training [COVIRO]

### TARGET

|                      |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 2016<br>Revenue: 30k | 2017<br>Revenue: 50k | 2018<br>Revenue: 60k | 2019<br>Revenue: 90k | 2020<br>Revenue: 90k |
|----------------------|----------------------|----------------------|----------------------|----------------------|

**REQUIREMENTS:** To meet the minimum requirements to achieve from RG to RC  
**OBSTACLE:** Different criteria to achieve RC status  
**STRATEGY:** Increase industrial and commercial income

| ACTION PLAN                                      | IMPLEMENTATION                                                                                                                                                                                                                                                        | PIC                |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| To conduct trainings related to domain knowledge | <ul style="list-style-type: none"> <li>● Drone related</li> <li>● Deep learning</li> <li>● Humanoid programming</li> <li>● Robot education</li> <li>● Opensource libraries</li> </ul>                                                                                 | All COVIRO members |
| Product licensing                                | <ul style="list-style-type: none"> <li>● Home-care robot (CARE DROID)</li> <li>● 3D SLAM system</li> <li>● Connected Healthcare System</li> <li>● Learner's Assessment Tool</li> <li>● Collision Avoidance System</li> <li>● Real-Time Surveillance System</li> </ul> | All COVIRO members |

# INDICATOR 3: No. Awards (International & National)

## TARGET

|                                                             |                                                              |                                                             |                                                             |                                                              |
|-------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------|
| 2016<br>(Gold Medals)<br>International : 10<br>National: 30 | 2017<br>(Gold Medals)<br>International : 15<br>National : 50 | 2018<br>(Gold Medals)<br>International : 20<br>National :70 | 2019<br>(Gold Medals)<br>International : 25<br>National: 90 | 2020<br>(Gold Medals)<br>International : 30<br>National: 100 |
|-------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------|

**REQUIREMENT:** Need to establish characteristics of innovative products

**OBSTACLE:** Lack of systematic innovative products management

**STRATEGY:** To Produce Quality Products for Competition

| ACTION PLAN                                                                            | IMPLEMENTATION                                                   | PIC             |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------|
| Extensive Final Year Project Planning, Management and Supervision – Innovative Product | Each Semester (FYP coordinator) - Pre-Sem and End-Sem            | SIG: IPPI       |
| Create Industrial Collaborative Project                                                | Industry Project Collaboration Meeting (Pre-Semester)            | SIG: IPPI       |
| Recognized and Renown Competition                                                      | Annual Competition planning, filtering and selection – Each year | TF: Competition |

# INDICATOR 3.1: No. Awards (International & National) [COVIRO]

## TARGET

| 2016<br>(Gold Medals)<br>International : 4<br>National: 8 | 2017<br>(Gold Medals)<br>International : 4<br>National : 14 | 2018<br>(Gold Medals)<br>International : 5<br>National : 20 | 2019<br>(Gold Medals)<br>International : 6<br>National: 24 | 2020<br>(Gold Medals)<br>International : 8<br>National: 25 |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|

**REQUIREMENT:** To meet the minimum requirements to achieve from RG to RC  
(minimum = 10 awards/ recognition)

**OBSTACLE:** Winning or recognized to be worth of awards

**STRATEGY:** To study methods of winning/ being recognized for research works

| ACTION PLAN                                                                                  | IMPLEMENTATION                                                                                                   | PIC                |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------|
| To join multiple invention competition that is related to the different sub-domain of the RG | To assign specific competitions to different PICs for the competitions that are available for the different PICs | All COVIRO members |

## INDICATOR 3.2: No. Awards (International & National) [Data Science & Big Data]

### TARGET

|                                                           |                                                             |                                                             |                                                            |                                                            |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| 2016<br>(Gold Medals)<br>International : 2<br>National: 8 | 2017<br>(Gold Medals)<br>International : 4<br>National : 12 | 2018<br>(Gold Medals)<br>International : 5<br>National : 16 | 2019<br>(Gold Medals)<br>International : 6<br>National: 22 | 2020<br>(Gold Medals)<br>International : 8<br>National: 25 |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|

**REQUIREMENT:** An innovative product; Funding

**OBSTACLE:** Lack of project which focus on application

**STRATEGY:** To include product development element in research

| ACTION PLAN                             | IMPLEMENTATION                                                                 | PIC   |
|-----------------------------------------|--------------------------------------------------------------------------------|-------|
| Create collaboration within researchers | Conduct a discussion between research group to identify possible collaboration | MySIG |

# INDICATOR 3.3: No. Awards (International & National) [Smart Advisor Roadmap]

## TARGET

|                                                           |                                                             |                                                             |                                                            |                                                            |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| 2016<br>(Gold Medals)<br>International : 2<br>National: 7 | 2017<br>(Gold Medals)<br>International : 4<br>National : 12 | 2018<br>(Gold Medals)<br>International : 5<br>National : 16 | 2019<br>(Gold Medals)<br>International : 6<br>National: 22 | 2020<br>(Gold Medals)<br>International : 7<br>National: 25 |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|

**REQUIREMENT:** Need to establish characteristics of innovative products

**OBSTACLES:** Lack of systematic innovative products management

**STRATEGY:** To produce quality products for competition

| ACTION PLAN                                                              | IMPLEMENTATION                                        | PIC   |
|--------------------------------------------------------------------------|-------------------------------------------------------|-------|
| To create innovative project for undergraduate and postgraduate projects | To determine projects that have impact on society     | NF/HZ |
| Create Industrial Collaborative Project                                  | Industry Project Collaboration Meeting (Pre-Semester) | NF/HZ |
| Recognized and Renown Competition                                        | Annual Competition planning, filtering and selection  | NH    |

# INDICATOR 3.4: No. Awards (International & National) [Speech to Speech Translation]

## TARGET

|                                                           |                                                             |                                                             |                                                            |                                                            |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| 2016<br>(Gold Medals)<br>International : 2<br>National: 7 | 2017<br>(Gold Medals)<br>International : 4<br>National : 12 | 2018<br>(Gold Medals)<br>International : 5<br>National : 18 | 2019<br>(Gold Medals)<br>International : 7<br>National: 22 | 2020<br>(Gold Medals)<br>International : 7<br>National: 25 |
|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|

## REQUIREMENTS:

1. Identified the characteristics of innovative products
2. Establish the product features that are award winning

**OBSTACLE:** Lack of innovativeness in product development

**STRATEGY:** To promote the development of award winning innovation

| ACTION PLAN                                   | IMPLEMENTATION                                                      | PIC                                                                                  |
|-----------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1) Promoting innovative solution              | Identify suitable overseas laboratory for student exchange programs | <ul style="list-style-type: none"> <li>• Team members</li> <li>• Students</li> </ul> |
| 2) Managing innovation in product development | Identify the expectation of products                                | <ul style="list-style-type: none"> <li>• Team members</li> <li>• Students</li> </ul> |

# INDICATOR 4: Technopreneur Establishment

## TARGET

|                           |                            |                                                                   |                                                                   |                                                                   |
|---------------------------|----------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| 2016<br>5% of<br>graduate | 2017<br>15% of<br>graduate | 2018<br>20% of graduate<br>Students Start - Up<br>– 10% from IPPI | 2019<br>40% of graduate<br>Students Start - Up<br>– 20% from IPPI | 2020<br>50% of graduate<br>Students Start - Up<br>– 30% from IPPI |
|---------------------------|----------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|

**REQUIREMENT:** Change paradigm towards technopreneurial culture

**OBSTACLE:** Lack of fostering technopreneurial culture

**STRATEGY:** To establish support for technopreneurship practices

| ACTION PLAN                            | IMPLEMENTATION                                                                                                                                                                                     | PIC       |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Groom students to become Technopreneur | Technopreneurship courses/workshops ( Semester 2)<br><br>Innovative products project initiative ( 2018/19)<br><br>Collaboration with respective Government Body (eg: MAGIC) ( Semester 2, 2016/17) | SIG: IPPI |
| Students Start -Up                     | Identify venture capital firm and angel investors (3 <sup>rd</sup> Year 2018/2019)                                                                                                                 | TF: BIG   |

# INDICATOR 5: No. Innovative Products

## TARGET

2016  
5 products

2017  
10 products

2018  
26 products

2019  
32 products

2020  
35 products

**REQUIREMENT:** Innovative product development phases (identified industries)

**OBSTACLE:** Product with no/ minimal innovative characteristics

**STRATEGY:** To synergize industry expertise with faculty talent

| ACTION PLAN                                                                      | IMPLEMENTATION                                                                                                                                                           | PIC             |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1) Acquire real problem from industry and gov.                                   | 1) Meeting with director of industry relation division from MOE-second week July 2015<br>2) Special-Interest-Group (SIG) Innovation hub<br>3) HUB of computing expertise | SIG: IPPI       |
| 2) Encourage proof of concept project                                            | 1) Innovative Product Project Initiative – Sem 1 2016/2017<br>2) MoU/ MoA in research grants/ funding<br>3) Crowdfunding/ crowdsourcing                                  |                 |
| 3) Strengthen student soft skill and technical skill                             | 1) Faculty courses –every semester<br>2) Innovative Product Project Initiative – Sem 1 2016/2017<br>3) Bootcamp                                                          |                 |
| 4) Product commercialization                                                     | 1) Patent filing<br>2) Seek funding and consultancy from government and private sector                                                                                   | TF: IPR / Grant |
| 5) Collaboration with National and International RnD centers (e.g. CERN an IDRC) | 1) MoU/ MoA in research grants<br>2) Develop an innovation hub to support student teams involved in international, national and internal competitions                    |                 |

# INDICATOR 5.1: No. Innovative Products [Digital Security]

## TARGET

2016  
3 products

2017  
5 products

2018  
13 products

2019  
17 products

2020  
18 products

**REQUIREMENT:** Innovative product development phases (identified industries)

**OBSTACLES:** Product with no/minimal innovative characteristics

**STRATEGY:** To collaborate with industrial Innovative Products Initiatives

| ACTION PLAN                                                                      | IMPLEMENTATION                                                                                                                                         | PIC                 |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1) Acquire real problem from industry and gov.                                   | i. Special-Interest-Group (SIG) Innovation hub: Security Group<br>ii. HUB of security expertise                                                        | SIG: Security Group |
| 2) Product commercialization                                                     | i. Patent filing<br>ii. Seek funding and consultancy from government and private sector                                                                | TF: IPR / Grant     |
| 3) Collaboration with National and International RnD centers (e.g. CERN an IDRC) | i. MoU/ MoA in research grants<br>ii. Develop an innovation hub to support student teams involved in international, national and internal competitions |                     |

# INDICATOR 5.2: No. Innovative Products [Internet of Things (IoT)]

## TARGET

2016  
2 products

2017  
5 products

2018  
13 products

2019  
15 products

2020  
17 products

**REQUIREMENT:** Innovative product development phases (identified industries)

**OBSTACLE:** Product with no/ minimal innovative characteristics

**STRATEGY:** To synergize industry expertise with faculty talent

| ACTION PLAN                                                                   | IMPLEMENTATION                                                                                                                                                              | PIC         |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Acquire real problem from industry and gov                                    | i. Meeting with director of industry relation division from MOE-second week July 2015<br>ii. Special-Interest-Group (SIG) Innovation hub<br>iii. HUB of computing expertise | All members |
| Encourage proof of concept project                                            | i. Innovative Product Project Initiative – Sem 1 2016/2017<br>ii. MoU/ MoA in research grants/ funding<br>iii. Crowdfunding/ crowdsourcing                                  | All members |
| Strengthen student soft skill and technical skill                             | i. Faculty courses –every semester<br>ii. Innovative Product Project Initiative – Sem 1 2016/2017<br>iii. Bootcamp                                                          | All members |
| Product commercialization                                                     | i. Patent filing<br>ii. Seek funding and consultancy from government and private sector                                                                                     | TF: IPR     |
| Collaboration with National and International RnD centers (e.g. CERN an IDRC) | i. MoU/ MoA in research grants<br>ii. Develop an innovation hub to support student teams involved in international, national and internal competitions                      | All members |

# INDICATOR 6: No. Commercialize Product / Services

## TARGET

2016  
14 products

2017  
28 products

2018  
42 products

2019  
56 products

2020  
70 products

**REQUIREMENTS:** 1) Liaison officers for commercialization 2) Business plan market analysis and industrial matching 3) Industry partnership

**OBSTACLES:** 1) Limitation of novel research idea 2) Awareness of staff and student interest on technopreneurship 3) Lacking of experts on business plan writing and preparation, database for market analysis and insufficient industrial linkage to research project

**STRATEGY:** To answer the needs of the future technology

| ACTION PLAN                                                          | IMPLEMENTATION                                                                                                                                                                                  | PIC           |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Identification and protection of ideas or invention                  | 1. Identification of niche research areas.<br>2. Identification of key research “players” at the faculty level for the different departments.<br>3. Identification if IP worthy research ideas. | TF: IPR       |
| Translation of research prototype into pre-commercialization product | 1. Collection of proof of concepts from completed research.<br>2. Apply for pre-commercialization grant (technofund,innofund,mgs)<br>3. Product development.                                    |               |
| Licensing or spin-off matured commercial or technology               | 1. To plan several spinoff companies/licensing based on the different niche research areas identified in the “identification” stage.<br>2. Nurturing program for technopreneurship.             | TF: BIG       |
| Marketing                                                            | 1. To provide an overview/ summarization of the different products offered by the faculty.<br>2. Identification of target customers for the products developed.<br>3. Promotion.                | TF: Marketing |

# INDICATOR 6.1: No. Commercialize Product / Services [Digital Security]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENTS:** 1) Liaison officers for commercialization. 2) Business plan market analysis and industrial matching. 3) Industry partnership.

**OBSTACLES:** Limitation of novel research idea.

**STRATEGY:** To increase IPR in research

| ACTION PLAN                                                           | IMPLEMENTATION                                                                                                                                                                                                                                       | PIC           |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Identification and protection of ideas or invention.                  | <ul style="list-style-type: none"> <li>Identification of niche research areas.</li> <li>Identification of key research “players” at the faculty level for the different departments.</li> <li>Identification if IP worthy research ideas.</li> </ul> | TF: IPR       |
| Translation of research prototype into pre-commercialization product. | <ul style="list-style-type: none"> <li>Collection of proof of concepts from completed research.</li> <li>Apply for pre-commercialization grant (technofund, innofund, mgs)</li> <li>Product development.</li> </ul>                                  |               |
| Licensing or spin-off matured commercial or technology                | <ul style="list-style-type: none"> <li>To plan several spinoff companies/licensing based on the different niche research areas identified in the “identification” stage.</li> </ul>                                                                  | TF: BIG       |
| Marketing                                                             | <ul style="list-style-type: none"> <li>To provide an overview/ summarization of the different products offered by the faculty.</li> <li>Identification of target customers for the products developed.</li> <li>Promotion</li> </ul>                 | TF: Marketing |

# INDICATOR 6.2: No. Commercialize Product / Services [Cloud Computing & Hybrid Cloud]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENTS:** Software Developers in form of UG students and RAs,  
Support from UM for commercialization

**OBSTACLE:** Trained developers unavailable, Not suitable commercialisation policy

**STRATEGY:** Offer cloud development training to students, Review policies for commercialisation

### ACTION PLAN

### IMPLEMENTATION

### PIC

Patents

File Patents on research as outlined in roadmap

Dr. Anjum  
Prof. Dr. Abdullah Gani

Cloud OS

Establish commercial entity based on Cloud  
Operating System

Dr. Anjum

Cloud App Profiling

Establish commercial entity based on Cloud App  
profiling

Dr. Anjum  
Prof. Dr. Abdullah Gani

# INDICATOR 6.3: No. Commercialize Product / Services [COVIRO]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENT:** To meet the minimum requirements to achieve from RG to RC

**OBSTACLE:** Different criteria to achieve RC status

**STRATEGY:** To achieve minimum requirements of RC status

### ACTION PLAN

### IMPLEMENTATION

### PIC

Seminar and  
workshop

- Attend seminars and workshops on various aspects of commercialisation for awareness enhancement and information dissemination.
- Constant dialogues and discussions with external parties such as venture capitalists, commercialisation seed funding agencies, private corporate industries

All COVIRO  
members

IPR Filing

- Home-care robot (CARE DROID)
- 3D SLAM system
- Connected Healthcare System
- Learner's Assessment Tool
- Collision Avoidance System
- Real-Time Surveillance System

All COVIRO  
members

# INDICATOR 6.4: No. Commercialize Product / Services [Data Science & Big Data]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENT:** New algorithm, process and tool from research output  
**OBSTACLE:** Difficulties to identify which research output that can be patented  
**STRATEGY:** To increase patent filing

### ACTION PLAN

### IMPLEMENTATION

### PIC

Identify research output that can be patented

Meeting with Patent Agent

All members

File patent

Collaborate with Patent Agent

TF: IPR

# INDICATOR 6.5: No. Commercialize Product / Services [Internet of Things (IoT)]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENTS:** 1) Liaison officers for commercialization. 2) Business plan market analysis and industrial matching. 3) Industry partnership.

**OBSTACLES:** 1) Limitation of novel research idea. 2) Awareness of staff and student interest on technopreneurship. 3) Lacking of experts on business plan writing and preparation, database for market analysis and insufficient industrial linkage to research project.

**STRATEGY:** To answer the needs of the future technology.

| ACTION PLAN                                                         | IMPLEMENTATION                                                                                                                                                                                                                                    | PIC              |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Identification and protection of ideas or invention                 | <ul style="list-style-type: none"> <li>i. Identification of niche research areas.</li> <li>ii. Identification of key research “players” at the research group.</li> <li>iii. Identification if IP worthy research ideas.</li> </ul>               | All members      |
| Translation of research prototype into precommercialization product | <ul style="list-style-type: none"> <li>i. Collection of proof of concepts from completed research.</li> <li>ii. Apply for pre-commercialization grant (technofund,innofund,mgs)</li> <li>iii. Product development.</li> </ul>                     | All members      |
| Licensing or spin-off matured commercial or technology              | <ul style="list-style-type: none"> <li>i. To plan several spinoff companies/licensing based on the different niche research areas identified in the “identification” stage.</li> <li>ii. Nurturing program for technopreneurship.</li> </ul>      | TF: BIG          |
| Marketing                                                           | <ul style="list-style-type: none"> <li>i. To provide an overview/ summarization of the different products offered by the faculty.</li> <li>ii. Identification of target customers for the products developed.</li> <li>iii. Promotion.</li> </ul> | TF:<br>Marketing |

# INDICATOR 6.6: No. Commercialize Product / Services [Smart Advisor Roadmap]

## TARGET

2016  
2 products

2017  
4 products

2018  
6 products

2019  
8 products

2020  
10 products

**REQUIREMENT:** Novel research outputs

**OBSTACLES:** Difficulty to identify the potential research elements for patent

**STRATEGY:** To increase numbers of patent filling

### ACTION PLAN

To identify potential research element for patent

### IMPLEMENTATION

To conduct regular discussion among group members and patent agents for identifying potential research elements.

### PIC

NH

To engage with well experienced agent

To liaise with UMCIC to appoint well experienced agent

NF

# INDICATOR 6.7: No. Commercialize Product / Services [Speech to Speech Translation]

## TARGET

|                    |                    |                    |                    |                     |
|--------------------|--------------------|--------------------|--------------------|---------------------|
| 2016<br>2 products | 2017<br>4 products | 2018<br>6 products | 2019<br>8 products | 2020<br>10 products |
|--------------------|--------------------|--------------------|--------------------|---------------------|

### REQUIREMENTS:

- 1) Identified problems from NKRA (infrastructure, crime rate, e-health, communication barrier).
- 2) Establish the connection with respective governmental agencies.

**OBSTACLE:** Lack of information dissemination due to language and communication barrier

**STRATEGY:** To promote society integration and security through computer-assisted communication

| ACTION PLAN                                                                              | IMPLEMENTATION                                                                                                                                                       | PIC                                                                                      |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 1) Point of Reference                                                                    | Establish an effective team to liaison with the respective governmental agencies.                                                                                    | <ul style="list-style-type: none"> <li>• Team leader</li> <li>• Gov. agencies</li> </ul> |
| 2) Innovative and resource efficient core and multi-lingual computer based communication | <ol style="list-style-type: none"> <li>i. Identify effective solution for multi-lingual communication</li> <li>ii. Identify the appropriate core language</li> </ol> | <ul style="list-style-type: none"> <li>• Team members</li> <li>• Students</li> </ul>     |

# INDICATOR 7: First Class Graduands

## TARGET

|                                                      |                                                      |                                                      |                                                      |                                                      |
|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| 2016<br>10% first class<br>20% more than<br>CGPA 3.5 | 2017<br>20% first class<br>40% more than<br>CGPA 3.5 | 2018<br>30% first class<br>60% more than<br>CGPA 3.5 | 2019<br>40% first class<br>80% more than<br>CGPA 3.5 | 2020<br>50% first class<br>90% more than<br>CGPA 3.5 |
|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|

**REQUIREMENT:** Produce students with high CGPA

**OBSTACLES:**

- 1) Lack of motivation and awareness on the importance of first class graduate
- 2) Inconsistency of student performance

**STRATEGY:** To drive undergraduate excellence

| ACTION PLAN                                           | IMPLEMENTATION                                                                                                                                                                                                   | PIC                                                                                                                                                                                                                                     |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First class graduands culture                         | 1. Motivation and awareness program: Industry talk in Sem 1 and Alumni talk in Sem 2<br>2. First Class Interest Group (FCiG): setup in December 2016<br>3. Academia involvement- in seminars for Sem 1 and Sem 2 | <ul style="list-style-type: none"> <li>• Industry-Faculty Coordinator (AP Dr. Chiew Thiam Kian).</li> <li>• Alumni-Faculty Coordinator (Mr. Mohd Khalit Othman)</li> <li>• Task force first class (lead by Dr. Siti Hafizah)</li> </ul> |
| Multi-level-mould                                     | 1 first class senior mold 1 first class freshmen-performance monitored every semester                                                                                                                            | TF: FC                                                                                                                                                                                                                                  |
| Positively skewed distribution of student performance | Tuition classes on identified courses to improve student performance- two tuition classes every semester                                                                                                         | TF: FC                                                                                                                                                                                                                                  |

# INDICATOR 8: No. Programme Accreditation

## TARGET

|                   |                   |                                                                                                                                 |                   |                                                                                                                                |
|-------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 2016<br>0 Program | 2017<br>0 Program | 2018<br>1 Undergraduate<br>Program (BCS)<br> | 2019<br>0 Program | 2020<br>1 Postgraduate<br>Program (MCS)<br> |
|-------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|

**REQUIREMENT:** Appoint Program Coordinator Committee Members & Support from UM Top Management

**OBSTACLE:** Major restructuring of the existing curriculum to meet the IAAP requirement & Expensive Application Fees

**STRATEGY:** To learn the experience of others for International Accreditation

| ACTION PLAN                           | IMPLEMENTATION                                                                                  | PIC      |
|---------------------------------------|-------------------------------------------------------------------------------------------------|----------|
| 1. Background Study on IAAP           | 1. Establish Task Force                                                                         | TF: IAAP |
| 2. Awareness and preparation for IAAP | 1. Create awareness about IAAP to faculty members<br>2. Establish Committee<br>3. Documentation |          |
| 3. IAAP Application                   | 1. Approach IAAP Agency<br>2. Visit by IAAP Agency                                              |          |

# INDICATOR 9: No. Local Postgraduates

## TARGET

2016  
50

2017  
70

2018  
90

2019  
120

2020  
150

**REQUIREMENTS:** Change employers mindset (support from top-management), flexible postgraduates programs, executive programs specific on computing technology

### OBSTACLES:

1) Lack of support from employers for staff to pursue further studies

2) Lack of career path opportunities with PG qualifications

**STRATEGY:** To establish smart partnership with GLC, private sector, government and semi-government

| ACTION PLAN                                | IMPLEMENTATION                                                                               | PIC                                           |
|--------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------|
| Awareness Programs                         | 1. Series of talks with the industries<br>2. Marketing activities                            | TF: Marketing<br>TDIT, KJ,<br>PG Coordinators |
| Partnership with GLC or Government Sectors | Establish connection with Syabas, PDRM, ATM, Maktab Perguruan                                | TF: Marketing<br>TDIT, KJ,<br>PG Coordinators |
| Executive postgraduate programmes          | Develop executive computing technology related programs to cater for higher level executives | TDIT, program coordinators                    |
| Bootcamp UG to PG                          | Bootcamp: Turn local undergraduates to postgraduates students                                | TDID, TDIT & program coordinators             |

# INDICATOR 9.1: No. Local Postgraduates [Digital Security]

**TARGET**

2016  
10

2017  
14

2018  
18

2019  
24

2020  
30

**REQUIREMENTS:** Promote security research area in the faculty

**OBSTACLES:** Not accredited security programme

**STRATEGY:** To sign MoA with security related entities for collaboration

## ACTION PLAN

## IMPLEMENTATION

## PIC

1) Awareness Programs

i. Series of talks with the industries  
ii. Marketing activities

TF: Marketing  
TDIT, KJ, PG  
Coordinators

2) Partnership with GLC or  
Government Sectors

Establish connection with Syabas, PDRM,  
ATM, Maktab Perguruan

TF: Marketing  
TDIT, KJ, PG  
Coordinators

3) Accredited security  
programme

Develop executive computing technology  
related programs to cater for higher level  
executives

TDIT, program  
coordinators

## INDICATOR 9.2: No. Local Postgraduates [Cloud Computing & Hybrid Cloud]

**TARGET**

2016  
10

2017  
14

2018  
18

2019  
24

2020  
30

**REQUIREMENT:** Graduate students

**OBSTACLE:** Availability of Graduates

**STRATEGY:** Publicize group work, use contacts to induct students

| ACTION PLAN                | IMPLEMENTATION                                                                                                       | PIC                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Induct MS/UG               | Induct 8 MS/UG project students for development (September 2015)                                                     | Prof. Dr. Abdullah Gani<br>Dr. Anjum |
| Induct PhD<br>Induct MS/UG | Add a PhD to work on Cloud App Profiling (March 2016)<br>Add MS/UG student to replace existing (Sept 2016)           | Prof. Dr. Abdullah Gani<br>Dr. Anjum |
| Induct PhD<br>Induct MS/UG | Add 6 PhDs for Hybrid, Vehicular and security (March 2017)<br>Add MS/UG student to replace existing ones (Sept 2017) | Prof. Dr. Abdullah Gani<br>Dr. Anjum |
| Induct MS/UG               | Induct 8 MS/UG students for development (Sept 2018)                                                                  | Prof. Dr. Abdullah Gani<br>Dr. Anjum |
| Induct MS/UG               | Induct 4 MS/UG students for development (Sept 2019)                                                                  | Prof. Dr. Abdullah Gani<br>Dr. Anjum |

## INDICATOR 9.3: No. Local Postgraduates [COVIRO]

### TARGET

2016  
10

2017  
14

2018  
18

2019  
24

2020  
30

**REQUIREMENTS:** To meet the minimum requirements to achieve from RG to RC

**OBSTACLES:** Different criteria to achieve RC status

**STRATEGIES:** Increase the number of members for the group

| ACTION PLAN                      | IMPLEMENTATION                                                               | PIC                |
|----------------------------------|------------------------------------------------------------------------------|--------------------|
| Invite visiting researchers      | Invite visiting faculty members to work and do research on periodical basis. | All COVIRO members |
| Promote research programs        | Promote research programs across universities locally and internationally    | PIs                |
| Recruit RAs among local students | Recruit undergraduates as RAs for short term projects                        | PIs                |

# INDICATOR 9.4 : No. Local Postgraduate Student [Internet of Things (IoT)]

## TARGET

2016  
10

2017  
14

2018  
18

2019  
24

2020  
30

### REQUIREMENTS:

1. High publicity on the research group.
2. Well organized research group.
3. Collaboration with the industry

**OBSTACLE:** Lack of research grant to support the postgraduate.

**STRATEGY:** To device effective marketing programmes

| ACTION PLAN             | IMPLEMENTATION                                                | PIC         |
|-------------------------|---------------------------------------------------------------|-------------|
| Bootcamp UG to PG       | Bootcamp: Turn local undergraduates to postgraduates students | All members |
| Scholarship information | Update scholarship information on faculty website.            | All members |

# INDICATOR 9.5: No. Local Postgraduate Student [Speech to Speech Translation]

## TARGET

2016  
10

2017  
14

2018  
18

2019  
24

2020  
30

**REQUIREMENT:** Identified the faculty target on human capital development

**OBSTACLE:** Lack of professional expertise in speech to speech translation locally

**STRATEGY:** To create young and expert talent in Speech Technology

| ACTION PLAN                                                        | IMPLEMENTATION                                                                                                                 | PIC                          |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 1) Identify Talents                                                | Establish a suitable and effective selection criteria<br>Promoting Speech technology to post-graduates both locally and abroad | • Team member                |
| 2) Effective Training and exposure in speech to speech translation | i. Identify suitable workshop and conference<br>ii. Identify suitable overseas laboratory for student exchange programs        | • Team members<br>• Students |

# INDICATOR 10: No. Specialized Computer Labs

## TARGET

2016  
3

2017  
6

2018  
10  
(New Building)

2019  
15  
(New Building)

2020  
30  
(New Building)

**REQUIREMENT:** Dedicated labs for teaching and learning purpose inline with the in-trends computing technology

**OBSTACLE:** Logistics problem

**STRATEGY:** To establish collaboration with technology provider

### ACTION PLAN

### IMPLEMENTATION

### PIC

Determine the in-trend computing technology

Discussion with computing technology industries (define niche)

Industry-Faculty Coordinator (PM Dr. Chiew).  
Puan Syida (ICT Head)

Determine and develop new infrastructure the faculty

To design or develop new building architecture for high computing technology labs

Dean, TDP & JPPHB

Teaching and learning activities

Conduct active trainings, seminars and workshops

TF-BIG (En. Zaidi)

# INDICATOR 10.1: No. Specialized Computer Labs [Cloud Computing & Hybrid Cloud]

## TARGET

2016  
2

2017  
3

2018  
5  
(New Building)

2019  
13  
(New Building)

2020  
25  
(New Building)

**REQUIREMENT:** Research Centre KPIs, CoE KPIs

**OBSTACLE:** Conference and patents KPIs

**STRATEGY:** To achieve minimum requirements of CoE

### ACTION PLAN

### IMPLEMENTATION

### PIC

Research Centre KPI

Review Research centre KPIs every 3 months  
and make plan to reach targets

Prof. Dr. Abdullah Gani  
Dr. Anjum

CoE

Apply for Centre of Excellence in 2017

Prof. Dr. Abdullah Gani

Research CoE KPI

Review Research CoE KPIs every 3 months  
and make plan to reach targets

Prof. Dr. Abdullah Gani  
Dr. Anjum

# INDICATOR 10.2: No. Specialized Computer Labs [Internet of Things (IoT)]

## TARGET

2016  
1

2017  
3

2018  
5  
(New Building)

2019  
12  
(New Building)

2020  
15  
(New Building)

### REQUIREMENTS:

- 1) Liaison officers for commercialization.
- 2) Business plan market analysis and industrial matching.
- 3) Industry partnership.

### OBSTACLE:

- 1) Limitation of novel research idea.
- 2) Awareness of staff and student interest on technopreneurship.
- 3) Lacking of experts on business plan writing and preparation, database for market analysis and insufficient industrial linkage to research project.

**STRATEGY:** To answer the needs of the future technology.

| ACTION PLAN                                 | IMPLEMENTATION                                                 | PIC         |
|---------------------------------------------|----------------------------------------------------------------|-------------|
| Determine the in-trend computing technology | Discussion with computing technology industries (define niche) | All members |
| Teaching and learning activities            | Conduct active trainings, seminars and workshops               | All members |

# INDICATOR 11: Amount of Diversified Research Funding

## TARGET

2016  
4.0 mil

2017  
5.0 mil

2018  
6.0 mil

2019  
7.0 mil

2020  
8.0 mil

**REQUIREMENT:** Grow funding for support the teaching, learning and research development

**OBSTACLE:** Lack resources to carry out educational development activities

**STRATEGY:** To increase the numbers of research findings from diverse sources

| ACTION PLAN                                             | IMPLEMENTATION                                                                                                                        | PIC                                                                                                         |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Determine the partnership and source                    | Discussion with industries (define niche)                                                                                             | Industry-Faculty Coordinator<br>(AP Dr. Chiew Thiam Kian)<br>TF-Research Grant<br>(Dr. Por Lip Yee)         |
| Determine and develop top-drawer research proposal bank | To design or develop innovative research proposals                                                                                    | TDP and Industry-Faculty Coordinator<br>(AP Dr. Chiew Thiam Kian)<br>TF-Research Grant<br>(Dr. Por Lip Yee) |
| Center of excellence                                    | 1. Determine and develop critical niche area for the center of excellence<br>2. Generate revenue from training, workshop and seminars | TF-BIG<br>(Mr. Zaidi Razak)<br>TDP                                                                          |

# INDICATOR 11.1: Amount of Diversified Research Funding [Digital Security]

## TARGET

2016  
520 k

2017  
720 k

2018  
855 k

2019  
1.0 mil

2020  
1.22 mil

**REQUIREMENTS:** Collaboration universities, government sectors and private sectors  
**OBSTACLE:** Limited public fund.  
**STRATEGY:** To increase the quantum of funding for security group through local and international funding

### ACTION PLAN

### IMPLEMENTATION

### PIC

1) Collaboration with universities, government sectors and private sectors

Strategic partnership with UMCIC and the industry

SIG-Security Group and TF Grant

2) Grant proposal session in series of research discussion

Grant writing workshop

SIG-Security Group and TF Grant

3) Mentor-mentee

Pairing the skills

SIG-Security Group and TF Grant

# INDICATOR 11.2: Amount of Diversified Research Funding [Cloud Computing & Hybrid Cloud]

## TARGET

2016  
520 k

2017  
720 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

**REQUIREMENT:** Funding required year-wise (Approximate)  
RM (200K: 2016), (400K: 2017), (200K: 2018), (200K: 2019), (200K: 2020)

**OBSTACLE:** Acquiring Funding

**STRATEGY:** Apply for Govt Funding as well as industrial grants

| ACTION PLAN                   | IMPLEMENTATION                                                                                      | PIC                                |
|-------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|
| Proposal: Cloud App Profiling | Submit proposal to FRGS with 30 months duration (January 2016)                                      | Dr. Anjum                          |
| Proposal: Hybrid Clouds       | Submit proposal to e-science with 18 months duration (June 2016)                                    | Prof. Dr. Abdullah Gani, Dr. Anjum |
| Proposal: Vehicular Clouds    | Acquire Industrial funding using Proton and UM Industrial fund with 36 months duration (March 2016) | Prof. Dr. Abdullah Gani            |
| Proposal: Green Clouds        | Funding source unknown, Duration 24 months (June 2017)                                              | Prof. Dr. Abdullah Gani            |
| Proposal Cloud of things      | FRGS or eScience funding for 12 months (June 2018)                                                  | Dr. Anjum                          |

# INDICATOR 11.3: Amount of Diversified Research Funding [COVIRO]

## TARGET

2016  
520 k

2017  
720 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

**REQUIREMENTS:** To meet the minimum requirements to achieve from RG to RC

**OBSTACLES:** All research income must be secured on a competitive basis

**STRATEGIES:** Increase the volume of externally funded and collaborative research

### ACTION PLAN

To target local grants  
(Internal- i.e. UMRG, BKP, HIR  
etc. & External - FRGS, PRGS,  
ERGS etc.)

### IMPLEMENTATION

To submit 6 grant applications/ year

### PIC

Each members to be  
PIC

To target international grants  
- Newton Fund, Mitsutomo  
and etc.

To submit 6 grant applications/ year

Each members to be  
PIC

# INDICATOR 11.4: Amount of Diversified Research Funding [Data Science & Big Data]

**TARGET**

2016  
510 k

2017  
710 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

**REQUIREMENTS:** Grow funding to support research and development

**OBSTACLE:** Difficulty to get the funding from diverse resource

**STRATEGY:** To increase the numbers of research grant from diverse resources

**ACTION PLAN**

**IMPLEMENTATION**

**PIC**

Identify and develop top-drawer research proposal

Conduct workshop and focus group discussion

All members

Secure international research grant

Conduct workshop to produce high quality research proposal

All members

# INDICATOR 11.5: Amount of Diversified Research Funding [Internet of Things (IoT)]

## TARGET

2016  
500 k

2017  
710 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

### REQUIREMENTS:

- 1) Identification of Grant Opportunity.
- 2) Application of private, local and international grant.

### OBSTACLE:

- 1) Lack of awareness to international grant opportunity.
- 2) Lack of high quality postgraduate student to carry out the research.

**STRATEGY:** To secure wide spectrum of grants and recruit more high quality postgraduate student.

### ACTION PLAN

### IMPLEMENTATION

### PIC

Identify available  
international grants

Monitor information from IPPP and share information on  
faculty website

All members

Improve the quality of  
research proposal

Workshop for research proposal writing.

All members

# INDICATOR 11.6: Amount of Diversified Research Funding [Smart Advisor Roadmap]

## TARGET

2016  
500 k

2017  
710 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

**REQUIREMENT:** Grow funding for support the teaching, learning and research development  
**OBSTACLE:** Lack resources to carry out educational development activities  
**STRATEGY:** To increase the numbers of research findings from diverse sources

### ACTION PLAN

### IMPLEMENTATION

### PIC

Determine the partnership and source

Discussion and collaboration with related agencies/industries

MNA

Determine and develop top-drawer research proposal bank

To design or develop innovative research proposals

NAA

Create a well known research group

- i. Determine and develop critical niche area for the group
- ii. Generate revenue from training, workshop and seminars

KU/KJ

# INDICATOR 11.7: Amount of Diversified Research Funding [Speech to Speech Translation]

## TARGET

2016  
500 k

2017  
710 k

2018  
850 k

2019  
1.0 mil

2020  
1.13 mil

### REQUIREMENTS:

- 1) Identified the government future strategy NKRA (crime prevention, e-health, society integration)
- 2) Seek the interest of Private companies in Speech to Speech Translation

**OBSTACLE:** Promoting the need for a multi-lingual Speech To Speech Translator

**STRATEGY:** To sell the idea of promoting society integration via effective multi-lingual communicator

| ACTION PLAN                                                      | IMPLEMENTATION                                                                                                                                                                      | PIC                                                                                      |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 1) Memorandum of Understanding                                   | Establish commitment from the private sectors on the proposed development                                                                                                           | <ul style="list-style-type: none"> <li>• Team leader</li> <li>• Private firms</li> </ul> |
| 1) Resource efficient multi-lingual computer based communication | <ol style="list-style-type: none"> <li>i. Identify cost effective solution for multi-lingual communication</li> <li>ii. Identify the market potential of the development</li> </ol> | <ul style="list-style-type: none"> <li>• Team members</li> </ul>                         |



# Enriching Lives

**“Enhancing Communities Through Intellect and Technology For A More Fulfilling and Meaningful Life”**

# INDICATOR 12: No. Societal Problem Solved Using The Innovative Products

## TARGET

|                                                      |                                                      |                                                       |                                                                               |                                                                 |
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 2016<br>No of problem solved 10<br>(2 products each) | 2017<br>No of problem solved 25<br>(5 products each) | 2018<br>No of problem solved 50<br>(10 products each) | 2019<br>No of problem solved 100<br>(10 products each, Increment of problems) | 2020<br>No of problem solved 150<br>(15 products each, 10 prob) |
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------|

## REQUIREMENTS:

- 1) Identified problems from NKRA (crime rate, low income citizen, public transport, bribe issues, infrastructure)
- 2) Establish the connection with people that involve with the community services

**OBSTACLE:** Lack of information dissemination

**STRATEGY:** To solve NKRA issues through innovative product

| ACTION PLAN                       | IMPLEMENTATION                                    | PIC      |
|-----------------------------------|---------------------------------------------------|----------|
| Point of reference                | Establish team that contact with the right people | SiG IPPI |
| Innovative product identification | Identified applications used by targeted citizen  | SiG IPPI |

# INDICATOR 12.1: No. Societal Problem Solved Using The Innovative Products [Internet of Things (IoT)]

## TARGET

| 2016<br>No of problem solved 10<br>(2 products each) | 2017<br>No of problem solved 25<br>(5 products each) | 2018<br>No of problem solved 50<br>(10 products each) | 2019<br>No of problem solved 100<br>(10 products each, Increment of problems) | 2020<br>No of problem solved 150<br>(15 products each, 10 prob) |
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------|
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------|

## REQUIREMENTS:

- 1) Identified problems from NKRA (crime rate, low income citizen, public transport, bribe issues, infrastructure)
- 2) Establish the connection with people that involve with the community services

**OBSTACLE:** Lack of information dissemination.

**STRATEGY:** To solve NKRA issues through innovative product

| ACTION PLAN                       | IMPLEMENTATION                                    | PIC         |
|-----------------------------------|---------------------------------------------------|-------------|
| Point of reference                | Establish team that contact with the right people | All members |
| Innovative product identification | Identified applications used by targeted citizen  | All members |

# INDICATOR 13: No. Computing Knowledge & Services Transferred

## TARGET

|                                                |                                                 |                                                 |                                                 |                                                 |
|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| 2016<br>No of knowledge and services served: 3 | 2017<br>No of knowledge and services served: 10 | 2018<br>No of knowledge and services served: 20 | 2019<br>No of knowledge and services served: 30 | 2020<br>No of knowledge and services served: 50 |
|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|

**REQUIREMENTS:** Getting Participants; Competent trainer; Sufficient funding; Search Engine Optimization; Accessible CoR; Services Identification

**OBSTACLES:** No CoR; Various and too many services; Lack of Collective Skills; Lack of Fund

**STRATEGY:** To create informative society

| ACTION PLAN             | IMPLEMENTATION                                                                                                      | PIC                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|
| Establishment of CoR    | Apply specific grants<br>MoA with Industry and GLC (CSR Project)<br>CoR Specification                               | TDP, TFR, TFBIG,      |
| Staff Development       | Identify relevant skills<br>Train collective skills ( expertise and soft-skills)                                    | TDP, KPPK, Each Staff |
| Marketing and Promotion | Meeting potential participants and community<br>Tailor-made knowledge and services<br>In-house and Online Promotion | TDP, TFBIG, TFR, TFJM |

# INDICATOR 13.1: No. Computing Knowledge & Services Transferred [Digital Security]

## TARGET

| 2016                                   | 2017                                   | 2018                                   | 2019                                    | 2020                                    |
|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|
| No of knowledge and services served: 1 | No of knowledge and services served: 3 | No of knowledge and services served: 7 | No of knowledge and services served: 10 | No of knowledge and services served: 17 |

### REQUIREMENTS:

- 1) To increase staff expertise through professional trainings and networking
- 2) To increase staff visibility through networking via seminar/trainings/public talk etc.

**OBSTACLE:** Lack of fund for professional trainings and support in networking

**STRATEGY:** To become Point of reference (POR)/focal point for security consultancy

| ACTION PLAN                                | IMPLEMENTATION                                                                            | PIC                |
|--------------------------------------------|-------------------------------------------------------------------------------------------|--------------------|
| 1) All staff professionally certified      | Identify the related or latest security certification required for security group member. | Dr. Badrul         |
| 2) Plan and organize series of public talk | Identify target participants for public talk                                              | Dr. Wong Kok Sheik |

# INDICATOR 13.2: No. Computing Knowledge & Services Transferred

## [Internet of Things (IoT)]

### TARGET

| 2016                                   | 2017                                   | 2018                                   | 2019                                    | 2020                                    |
|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|
| No of knowledge and services served: 1 | No of knowledge and services served: 3 | No of knowledge and services served: 6 | No of knowledge and services served: 10 | No of knowledge and services served: 16 |

**REQUIREMENTS:** Getting Participants; Competent trainer; Sufficient funding; Search Engine Optimization; Accessible Research Group; Services Identification

**OBSTACLE:** Various and too many services; Lack of Collective Skills; Lack of Fund

**STRATEGY:** To create informative society

| ACTION PLAN             | IMPLEMENTATION                                                                                                | PIC           |
|-------------------------|---------------------------------------------------------------------------------------------------------------|---------------|
| Staff development       | Identify relevant skills<br>Train collective skills ( expertise and soft-skills)                              | All members   |
| Marketing and Promotion | Meeting potential participants and community Tailor-made knowledge and services In-house and Online Promotion | TF: Marketing |

# INDICATOR 13.3: No. Computing Knowledge & Services Transferred

## [Speech to Speech Translation]

### TARGET

| 2016                                   | 2017                                   | 2018                                   | 2019                                    | 2020                                    |
|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|
| No of knowledge and services served: 1 | No of knowledge and services served: 4 | No of knowledge and services served: 7 | No of knowledge and services served: 10 | No of knowledge and services served: 16 |

### REQUIREMENTS:

- 1) Identified latest research interest from journal publications particularly on speech to speech translation
- 2) Establish the connection with overseas experts

**OBSTACLE:** Lack of professional expertise in speech to speech translation locally

**STRATEGY:** To promote knowledge transfer from advance nation to local Malaysian experts

| ACTION PLAN                                   | IMPLEMENTATION                                              | PIC                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1) Establish International collaboration      | Establish an effective collaboration with overseas experts  | <ul style="list-style-type: none"> <li>• Team leader</li> <li>• Overseas Experts</li> </ul> |
| 2) Innovative and resource efficient solution | Identify effective solution for multi-lingual communication | <ul style="list-style-type: none"> <li>• Team leader</li> <li>• Overseas Experts</li> </ul> |

# INDICATOR 14: No. Successful Participants To Establish Businesses

## TARGET

2016  
Successful  
participants 5%

2017  
Successful  
participants 10%

2018  
Successful  
participants 15%

2019  
Successful  
participants 30%

2020  
Successful  
participants 50%

**REQUIREMENT:** Identification of IT related business to be offered

**OBSTACLE:** Capabilities of the staff to handle these new tasks

**STRATEGY:** To create technopreneur society

| ACTION PLAN              | IMPLEMENTATION                                                                                                                                                                                                                                                                        | PIC                  |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Setup a spin off company | <ol style="list-style-type: none"> <li>Getting advice from UPUM for the spin off company that will be established under FSKTM</li> <li>Setup a team that will run the company</li> <li>Identify IT related businesses training</li> <li>Identify the targeted participants</li> </ol> | TDP/TF-BIG           |
| Training for the staff   | <ol style="list-style-type: none"> <li>Identify IT related certifications for the staff</li> <li>Send the identified staff for the training</li> </ol>                                                                                                                                | TDP/TF-BIG           |
| Assisting the clients    | <ol style="list-style-type: none"> <li>Conduct the related training to participants</li> <li>Spin off company to assist in setting up business plan</li> <li>Spin off company to monitor the progress of the business</li> </ol>                                                      | TDP/Spin Off Company |

# INDICATOR 15: Amount of “Knowledge Transfer” Grant Obtained

## TARGET

|                                      |                                      |                                      |                                      |                                                |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------------|
| 2016<br>2.0mil<br>60% with 50k grant | 2017<br>2.4mil<br>70% with 50k grant | 2018<br>2.8mil<br>80% with 50k grant | 2019<br>3.1mil<br>90% with 50k grant | 2020<br>3.5mil<br>All lecturers with 50k grant |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------------|

**REQUIREMENT:** Identification of Grant Opportunity

**OBSTACLES:** Shortage of Principal Investigator (PI); Lack of proposal writing skills;  
Not aware of other funding opportunities

**STRATEGY:** To secure wide spectrum of grants

| ACTION PLAN                                 | IMPLEMENTATION                                                                                                                                                                                                                       | PIC                   |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Database for PI status and available grants | <ol style="list-style-type: none"> <li>1. Identify the lecturers with non PI status and current grant amount.</li> <li>2. Communicate, monitor and assist all lecturers to become PI</li> <li>3. Identify possible grants</li> </ol> | TDP/TF-Grant          |
| Grant proposal writing workshop             | Conduct grant writing workshop facilitated by previous grant recipient                                                                                                                                                               | TDP/TF-Grant          |
| Community-Industry collaboration            | Strategic partnership with UMCIC and community/industry                                                                                                                                                                              | TDP/TF-Grant & TF-IPR |
| Mentor-mentee                               | Pairing the skills                                                                                                                                                                                                                   | TDP/TF-Grant          |

# INDICATOR 16: New Intelligent / Smart / Conducive Learning Environment

## TARGET

| 2016                     | 2017                     | 2018                     | 2019                     | 2020                                      |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------------|
| No of teaching lab<br>10 | No of teaching lab<br>12 | No of teaching lab<br>15 | No of teaching<br>lab 20 | New space upgrade<br>Teaching lab (30)    |
| Dedicated lab<br>5       | Dedicated lab<br>7       | Dedicated lab<br>9       | Dedicated lab<br>15      | Dedicated lab (25)<br>Space for rent (10) |

**REQUIREMENT:** The need of new building with spaces need (teaching lab, dedicated lab, space for rent, students & staffs 'stress-free'/'hangout' space)

**OBSTACLE:** Crowded space that cannot support the increment of labs and other spaces due to massive students intake and new staffs

**STRATEGY:** To provide conducive intelligent learning environment

| ACTION PLAN                                        | IMPLEMENTATION                                                                                                                        | PIC    |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------|
| Identify work process in establishing new building | 1. Cooperation from JPPHB and Legal unit<br>2. Ready Drawing and Plan<br>3. Approval from DBKL and LHDN<br>4. Fund raising activities | TF BiG |
| Upgrade the building with conducive facilities     | 1. Identify quality facilities for building                                                                                           | TF BiG |
| Identify teaching and dedicated labs               | 1. Find the market demand with the industry                                                                                           | TF BiG |
| Market spaces for rent                             | 1. Identify potential companies                                                                                                       | TF BiG |
| Establish students & staffs 'hangout' area         | 1. Identify ample spaces<br>2. Survey on most wanted facilities needed by student and staffs                                          | TF SH  |

# INDICATOR 17: No. Applause & Accolade Events

## TARGET

2016  
5 Events

2017  
6 Events

2018  
7 Events

2019  
8 Events

2020  
9 Events

**REQUIREMENT:** Adequate Budget and Refined Selection Procedures

**OBSTACLE:** Funding and Non-Bias Selection of Awards Recipients

**STRATEGY:** To recognize staff/students contribution

### ACTION PLAN

### IMPLEMENTATION

### PIC

Applause & Accolade Events

Design events based on characteristics  
(undergraduates, postgraduates,  
communities, research)  
Setup committee  
Develop refined selection procedures

TDID/TDIT/TDP

Funding

Acquire funding sources

Faculty Industry  
Coordinator



# Globally-Influential Faculty

**“Academia with strength and dominance to create a positive impact that brings world recognition in teaching, research, knowledge transfer and international outlook.”**

# INDICATOR 18: Global League Ranking By Subject

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

### REQUIREMENTS:

- 1) High quality postgraduates; High quality research topics; High amount research grants
- 2) Productivity in publishing ISI-indexed journal
- 3) Publications in top tier journals; High citations in top tier journal publications
- 4) World class building & infrastructure; high-tech computing facilities & Learning Spaces

### OBSTACLES:

- 1) Limited funding to recruit postgraduates; Lack of marketing & promotion activities & materials
- 2) Less citable publications; Citation behaviour & practices
- 3) Competition from other Universities for global ranking

### STRATEGY:

To inculcate research world class culture

| ACTION PLAN                                           | IMPLEMENTATION                                                                                                                                                                                                                        | PIC         |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Full research / Doctoral student numbers              | Increase number of doctoral students* (refer to indicator 4);<br>Expanded research landscape                                                                                                                                          | TDIT        |
| Acquisition of international research grants & awards | Establish a research grant advisory council to advise long term research grants opportunities and trends; Application of HIR2, GGC                                                                                                    | TFG;<br>TDP |
| Impact in scholarly research output                   | Establish a research advisory council to advise long term research impact opportunities and trends; Strategic collaboration with influential researchers; Collaborative authorship with other countries; Strategic citation practices | TDP         |

# INDICATOR 18.1: Global League Ranking By Subject [Digital Security]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

**REQUIREMENT:** Need to establish staff competency in academic writing

**OBSTACLE:** No proper mentor-mentee system

**STRATEGY:** To increase number and quality of articles

### ACTION PLAN

### IMPLEMENTATION

### PIC

1) Create mentoring system

Pairing the skill

Prof. Dr. Miss  
Laiha

2) Trainings

Identify the related or latest security  
training/skill required for security group  
member

Dr. Nor Badrul  
Anuar Juma'at

# INDICATOR 18.2: Global League Ranking By Subject [Cloud Computing & Hybrid Cloud]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

**REQUIREMENTS:** 1) Number of PhD students available as outline in HR indicator  
2) Funding available as outlined in Funding indicator

**OBSTACLE:** PhD student induction, Funding

**STRATEGY:** Publicise research activities to attract students, Apply grants

### ACTION PLAN

### IMPLEMENTATION

### PIC

Submit papers

Submit more than targeted number of papers at least 6 months before expected time.

Dr. Prem  
Dr. Hamid

# INDICATOR 18.3(1): Global League Ranking By Subject [COVIRO]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

**REQUIREMENT:** To meet the minimum requirements to achieve from RG to RC

**OBSTACLE:** Different criteria to achieve RC status

**STRATEGY:** Increase visibility of staff, students and research program

| ACTION PLAN                                 | IMPLEMENTATION                                                                                                                                                                                                                                                                                                                                                                                | PIC                    |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Collaborate with international researcher   | <ul style="list-style-type: none"> <li>i. Invite visiting researchers from the related fields to visit research group</li> <li>ii. Visit international universities to promote students and research programs</li> </ul>                                                                                                                                                                      | All COVIRO members     |
| Improve visibility of programs and research | <ul style="list-style-type: none"> <li>i. Create new international or partnership programs - summer school ; exchange program for research students</li> <li>ii. Enable staff and students to study and conduct short term research abroad</li> </ul>                                                                                                                                         | PIs of Research Grants |
| Initiate international agreement            | <ul style="list-style-type: none"> <li>i. Identify local and international researchers and create MOU and MOA</li> <li>ii. Materials exchange (library/teaching materials) / equipment sharing</li> <li>iii. Propose dual or joint degree programs</li> <li>iv. Offer and receive training and technical assistance</li> <li>v. Offer short term training and enhancement programs</li> </ul> | PIs of Research Grants |

# INDICATOR 18.3(2): Global League Ranking By Subject [COVIRO]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

**REQUIREMENT:** To achieve 35 publications/ year by 2020

**OBSTACLE:** Insufficient critical mass (i.e. research members) & Rate of Research Productivity

**STRATEGY:** To increase the opportunity of getting new research members

### ACTION PLAN

### IMPLEMENTATION

### PIC

Conduct proper marketing for the research group

- i. Invitation/ promotion to get more members
- ii. Get proper collaborations to integrate more partners

All COVIRO members

Conduct research topics related workshops/ seminars to attract new members

- i. Seminars/ workshops are advertised and conducted to gain external participations.
- ii. Hire post-docs

All COVIRO members

# INDICATOR 18.4: Global League Ranking By Subject [Data Science & Big Data]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

**REQUIREMENT:** High quality postgraduates; Research grants

**OBSTACLE:** Rejection of papers submitted to a journal

**STRATEGY:** To improve chances of publication success

### ACTION PLAN

### IMPLEMENTATION

### PIC

Research Collaboration

- i. Research visits to established institutions and Universities (collaborate and write papers with them)
- ii. Invite speakers/researchers who are established, who may be editors as well

All  
members

Find the right journal

Gather information from group members on their experience in submitting paper to various journals and the feedback from the journal and success rate. Make a list/table for guidance.

All  
members

Increase the visibility of your work

Develop a website for the research group for visibility.

All  
members

# INDICATOR 18.5: Global League Ranking By Subject [Internet of Things (IoT)]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

### REQUIREMENTS:

- 1) High quality research topics; Research grants; Postgraduates; Postdoctoral
- 2) Collaboration with other universities / Industry.
- 3) Identify the latest hot area of research.
- 4) Recruit good postgraduate students.

**OBSTACLE:** Lack of publicity to attract good postgraduate.

**STRATEGY:** Increase the visibility of the group through good research topics.

### ACTION PLAN

### IMPLEMENTATION

### PIC

Actively publish in ISI-indexed journal

Improve the research density in the research group to produce more result in shorter time.

All members

Recruit good postgraduate

Identify good quality undergraduate student as a potential postgraduate student.

TDID  
TF: First Class Program

# INDICATOR 18.6: Global League Ranking By Subject [Smart Advisor Roadmap]

## TARGET

2016  
51-100 QS

2017  
41-50 QS

2018  
31-40 QS

2019  
21-30 QS

2020  
Top 20 QS

### REQUIREMENTS:

- 1) High quality postgraduates
- 2) Research grants
- 3) Collaboration with related research entities

### OBSTACLES:

- 1) Limited national funding
- 2) Lack of visibility

**STRATEGY:** To increase number of research publication

### ACTION PLAN

### IMPLEMENTATION

### PIC

To produce quality publication

- i. To increase group activities in regards to producing quality publication such as peer reviewing and co-authorship
- ii. To recruit high quality research students

NAA

To secure research grant from international sources

To work in group to produce high quality research proposals

AK

To increase visibility

To have research collaboration with local and international researchers

NF

# INDICATOR 19: No. Citations Per Faculty

## TARGET

|                                                 |                                                 |                                                 |                                                 |                                                  |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|--------------------------------------------------|
| 2016<br>50 CpF for 25%<br>of FSKTM<br>academics | 2017<br>50 CpF for 50%<br>of FSKTM<br>academics | 2018<br>50 CpF for 75%<br>of FSKTM<br>academics | 2019<br>64 CpF for 75%<br>of FSKTM<br>academics | 2020<br>64 CpF for 100%<br>of FSKTM<br>academics |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|--------------------------------------------------|

### REQUIREMENTS:

- 1) High quality postgraduates; High quality research topics; Research grants
- 2) Productivity in publishing ISI-indexed journal
- 3) Publications in top tier journals

**OBSTACLES:** Less citable publications; Citation behaviour & practices

**STRATEGY:** To increase visibility of the faculty research output

| ACTION PLAN                                | IMPLEMENTATION                                                                                                                                                                                      | PIC         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Impact in scholarly research output        | Strategic collaboration with influential researchers;<br>Annual Research Open House to engage the scholarly community to recognize faculty research accomplishment;<br>Strategic citation practices | TDIT<br>TDP |
| Actively publishing in ISI-indexed journal | Organize academic writing workshops for staff and students;<br>Writing Bootcamp                                                                                                                     | TDP         |

# INDICATOR 19.1: : No. Citations Per Faculty [Internet of Things (IoT)]

## TARGET

| 2016                              | 2017                              | 2018                              | 2019                              | 2020                               |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| 50 CpF for 25% of FSKTM academics | 50 CpF for 50% of FSKTM academics | 50 CpF for 75% of FSKTM academics | 64 CpF for 75% of FSKTM academics | 64 CpF for 100% of FSKTM academics |

## REQUIREMENTS:

- 1) High quality postgraduates; High quality research topics; Research grants
- 2) Productivity in publishing ISI-indexed journal
- 3) Publications in top tier journals

**OBSTACLE:** Less citable publications; Citation behaviour & practices

**STRATEGY:** To increase visibility of the faculty research output

| ACTION PLAN                                | IMPLEMENTATION                                                                                                                                                                                | PIC         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Impact in scholarly research output        | Strategic collaboration with influential researchers; Annual Research Open House to engage the scholarly community to recognize faculty research accomplishment; Strategic citation practices | All members |
| Actively publishing in ISI-indexed journal | Organize academic writing workshops for staff and students; Writing Bootcamp                                                                                                                  | All members |

# INDICATOR 20: No. Engagements In Global Grand Challenges Projects

## TARGET

2016  
1 GC

2017  
2 GC

2018  
2 GC

2019  
2 GC

2020  
3 GC

### REQUIREMENTS:

1) Principal investigators with good research track-record

2) Existing collaboration with academic icons;

**OBSTACLE:** Hesitation and lack of commitment to undergo the GC application process

**STRATEGY:** To establish the Faculty as hotbed of innovations in emerging areas of computer-based research

### ACTION PLAN

### IMPLEMENTATION

### PIC

Establish a Technology roadmap of new projects under computing grand challenges

Devise a process to make the roadmap a living document,  
Project identification; Mapping of faculty research strength;  
Research proposals;

TDP

Aggressive purse of new GGC opportunities; Acquisition of International research grants & awards

i. Nurture partnership formation; Organize GC meetings;  
Create a support system for GGC activities  
ii. Strategic alliance with prestigious funder  
iii. Recruitment of Principal Investigators

TFG/TDP

Human capital development

Staff recruitment for Postdoc and Co-PI (to be future PI)

TDIT/TDP

Publicize research and innovation impact

Linkage with media; Publication; Community engagement;  
Societal Impact Pilot study

TF:  
Marketing

# INDICATOR 21: No. International Postgraduates Intake

## TARGET

|             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|
| 2016<br>100 | 2017<br>120 | 2018<br>140 | 2019<br>170 | 2020<br>200 |
|-------------|-------------|-------------|-------------|-------------|

### REQUIREMENTS:

- 1) Finance support - Money for Visits
- 2) Staff Commitment - to carry out visits;
- 3) New building & infrastructure, high-tech computing facilities

### OBSTACLES:

- 1) Time constraint; Red-tape – Visa application; Stringent Graduation Requirements; Competition from other Universities
- 2) Postgraduates from rich country are less interested to study our program; Cost of city-living

**STRATEGY:** To establish the faculty as a destination of choice for computing studies for Malaysian and foreigner

| ACTION PLAN                                                                                                     | IMPLEMENTATION                                                                                                                                        | PIC       |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| To increase recruitment of international postgraduates; Intensifying the Promotion of International PG Students | Join UM marketing promotion drive                                                                                                                     | TFPR/TDIT |
|                                                                                                                 | Organize official visit to universities with MoA/MoU for recruitment                                                                                  | TDP/TDIT  |
|                                                                                                                 | Carry out Faculty own promotional exercises; Create a web portal for potential graduate students to convey exciting research opportunities at faculty | TFPR/TDIT |
|                                                                                                                 | Establish a 'Student gets student' program                                                                                                            | TDIT      |
|                                                                                                                 | Summer research experiences for potential students (Bootcamp)                                                                                         | TDIT      |
| Ask cooperation from Alumni                                                                                     | Recruit faculty ambassadors among existing students                                                                                                   | TDP       |

# INDICATOR 21.1 : No. International Postgraduate Student [Internet of Things (IoT)]

## TARGET

2016  
100

2017  
120

2018  
140

2019  
170

2020  
200

### REQUIREMENTS:

- 1) World wide publicity of the research group.
- 2) Collaboration or exchange of students with oversea research group.
- 3) Sufficient grant to support the international postgraduate.

### OBSTACLES:

- 1) Time constraint; Red-tape – Visa application; Stringent Graduation Requirements; Competition from other Universities.
- 2) Postgraduates from rich country are less interested to study our program; Cost of city-living
- 3) Difficulty in getting scholarship.

**STRATEGY:** To establish the research group as a destination of choice for computing studies for Malaysian and foreigner

### ACTION PLAN

Increase the recruitment of international postgraduates.

### IMPLEMENTATION

- i. Join international education expo.
- ii. Visit to universities which has MoU with UM.

### PIC

All members

# INDICATOR 22: Programme Accreditation

## TARGET

2016

2017

2018  
1 Program

2019

2020

**REQUIREMENTS:** Quality assurance system in place; financial support; a dedicated document manager; staff commitment; new building & infrastructure; high-tech computing facilities

**OBSTACLES:** Financial support; staff commitment

**STRATEGY:** To obtain international recognition of our academic curriculum

### ACTION PLAN

### IMPLEMENTATION

### PIC

ABET Requirements and Evaluation Criteria

Study the requirements and the criteria  
June 2015

IAAP

Create awareness about ABET CAC to faculty members

Lunch Talk:  
September 2015

IAAP

Restructuring curriculum to map the requirement

Recommend possible framework of our curriculum restructuring to the curriculum review committee of the Faculty  
October 2015

IAAP

# INDICATOR 23: No. Students In Global Computing Workforce

## TARGET

|                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2016<br>10% of graduates | 2017<br>20% of graduates | 2018<br>30% of graduates | 2019<br>40% of graduates | 2020<br>50% of graduates |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

**REQUIREMENT:** International accreditation of academic program  
**OBSTACLES:** Graduates attitudes, computing and communication skills  
**STRATEGY:** To be one of the provider for global computing workforce

| ACTION PLAN                                                                                                                                                                              | IMPLEMENTATION                                                                                                                                                                                                                                  | PIC                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1. International accreditation of academic program                                                                                                                                       | Obtain ABET CAC<br>August 2018                                                                                                                                                                                                                  | IAAP                                           |
| 2. Students engagement with international companies and universities<br>3. Internship with multinational company<br>4. Joint product and services development with multinational company | 1. Increase number of students participating in academic exchange program with international companies and universities<br><br>2. Increase number of students participating in internship program with international companies and universities | TDID,<br>Industrial<br>Training<br>Coordinator |



# **RESEARCH ROADMAPS**

# DIGITAL SECURITY RESEARCH ROADMAP

## Commercialise

Consultations, Intellectual Property Rights (IPR), Security-Based Product (Web Security Analyzer, Secure Mobile Apps, Authentication System, Audio Forensic Tool)

## Publicise

Expert Panels/Judges, Publications, Training and Courses, Public Talks, Exhibitions, Product Demos, Policies

DEV

Secure Mobile App (M-Crypt)

Cert-less PKI

Web Security Analyzer

Social Network Analyzer

Online-Quran Authentication/Verification Tool

Online-Hadith Authentication/Verification Tool

Audio Forensic Tool (AudInquire)

Image Forensic Tool (Ainquire)

Secure Medical App

RESEARCH

Digital Audio Analysis

Digital Image Analysis

Digital Video Analysis

Intrusion Detection

Mobile Intrusion Detection

Social Network Intrusion Detection

Authentication (Graphical, Social Media, PKI, Product Verification)

Security Awareness Framework

Cyber-Resilient

Security Governance, Risk and Compliance

Secure Mobile Framework (Medical Apps, Confidentiality Apps)

2015

2016

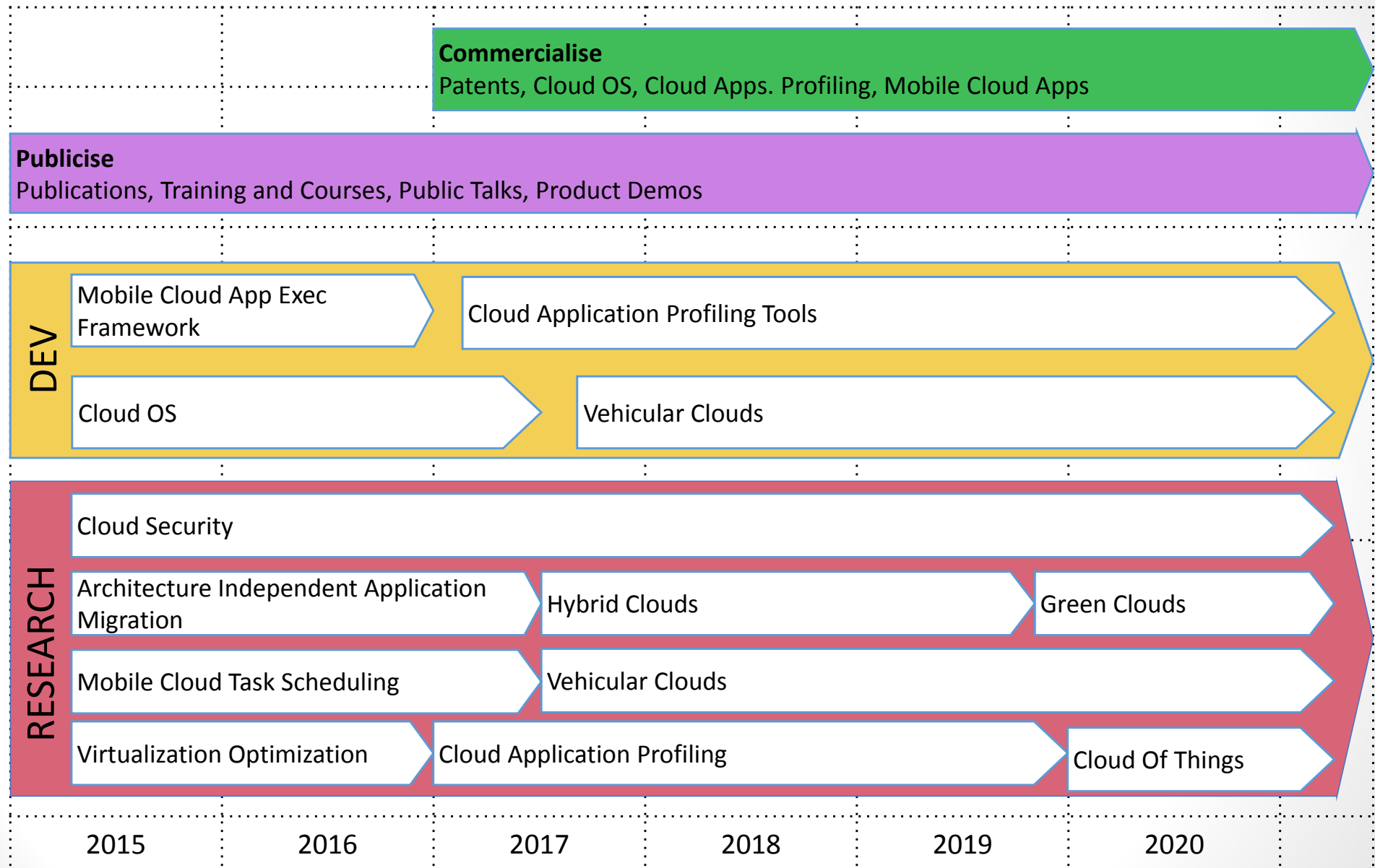
2017

2018

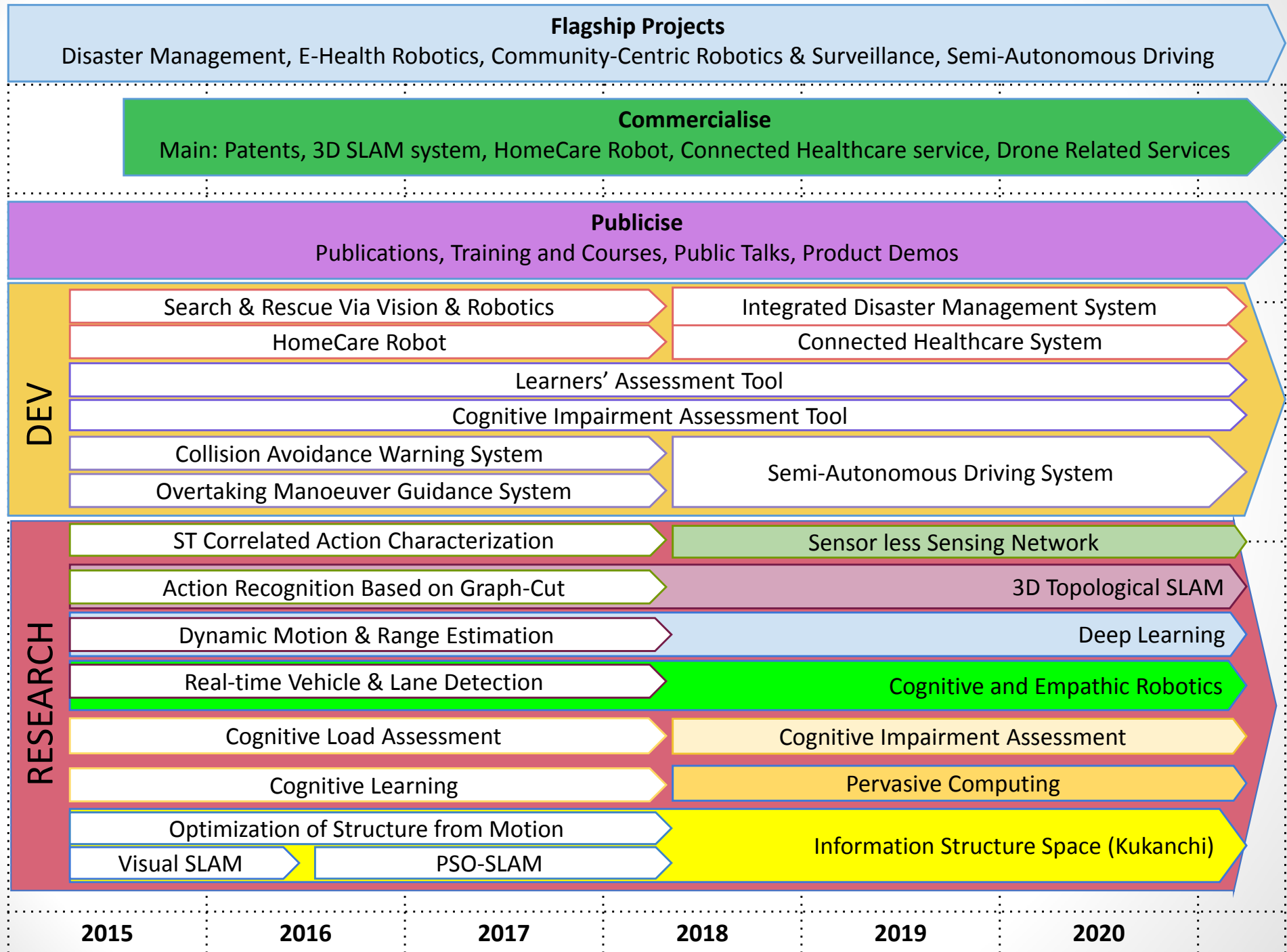
2019

2020

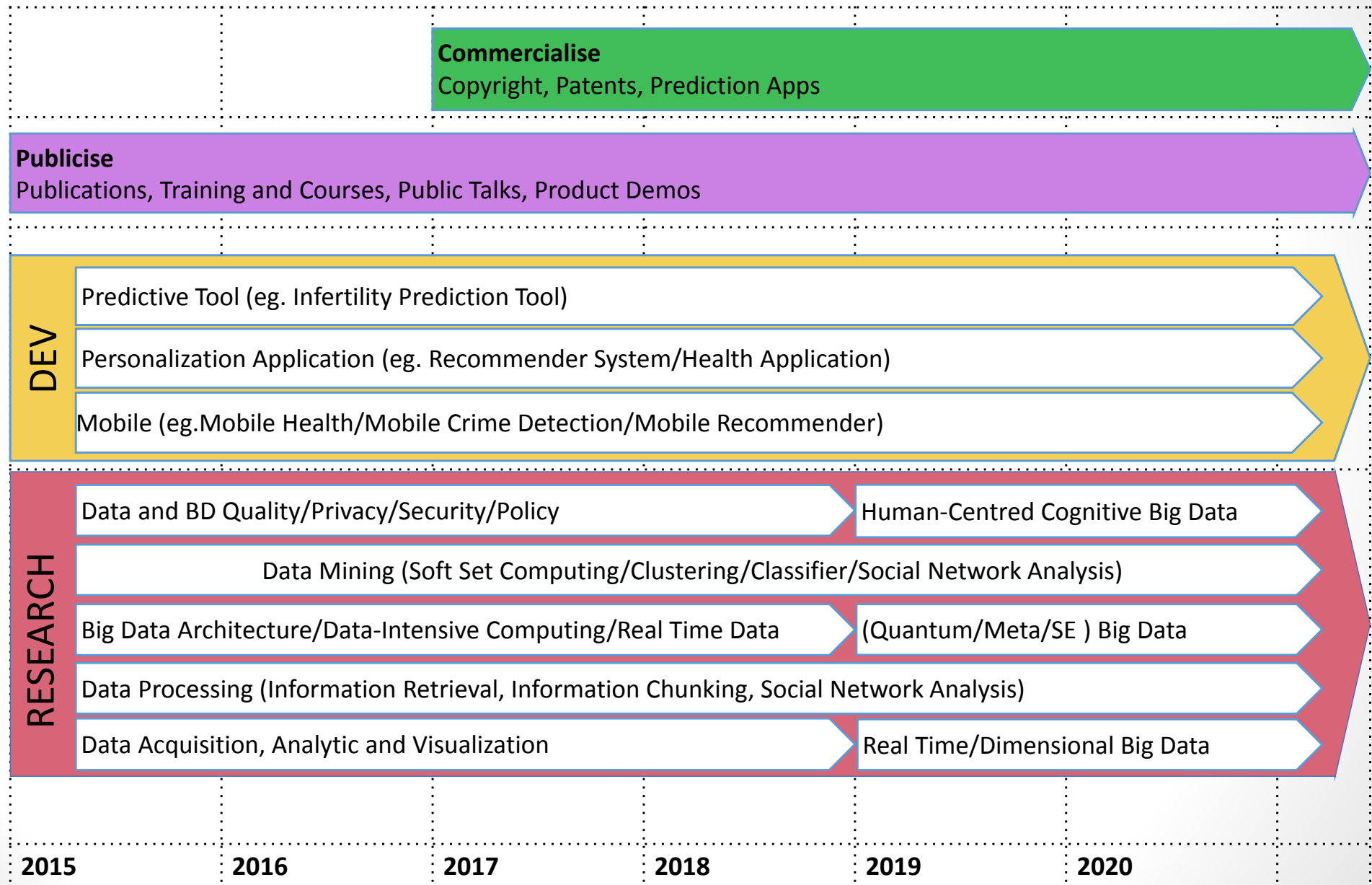
# CLOUD COMPUTING RESEARCH ROADMAP



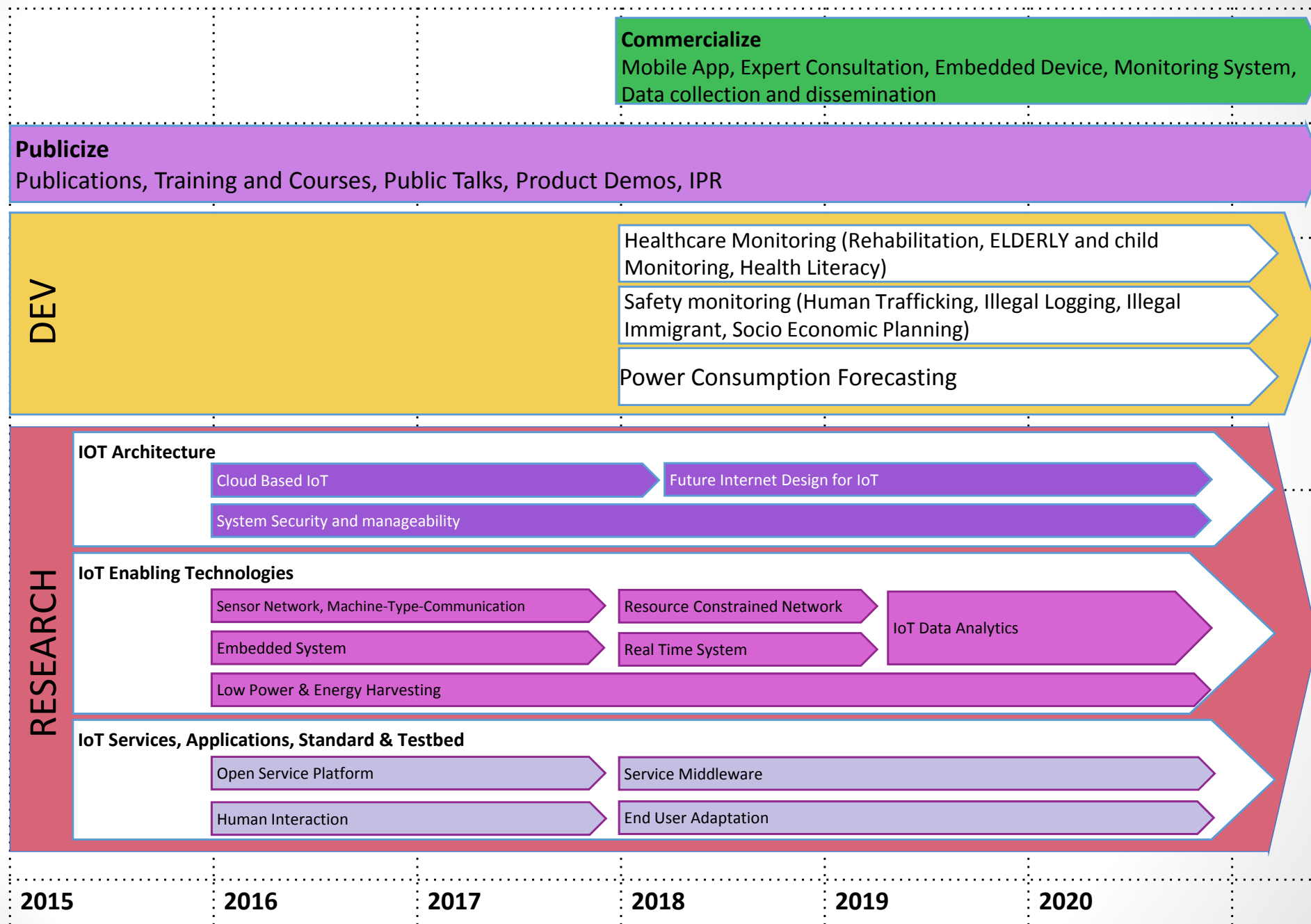
# COGNITIVE VISION & ROBOTICS (COVIRO) RESEARCH ROADMAP



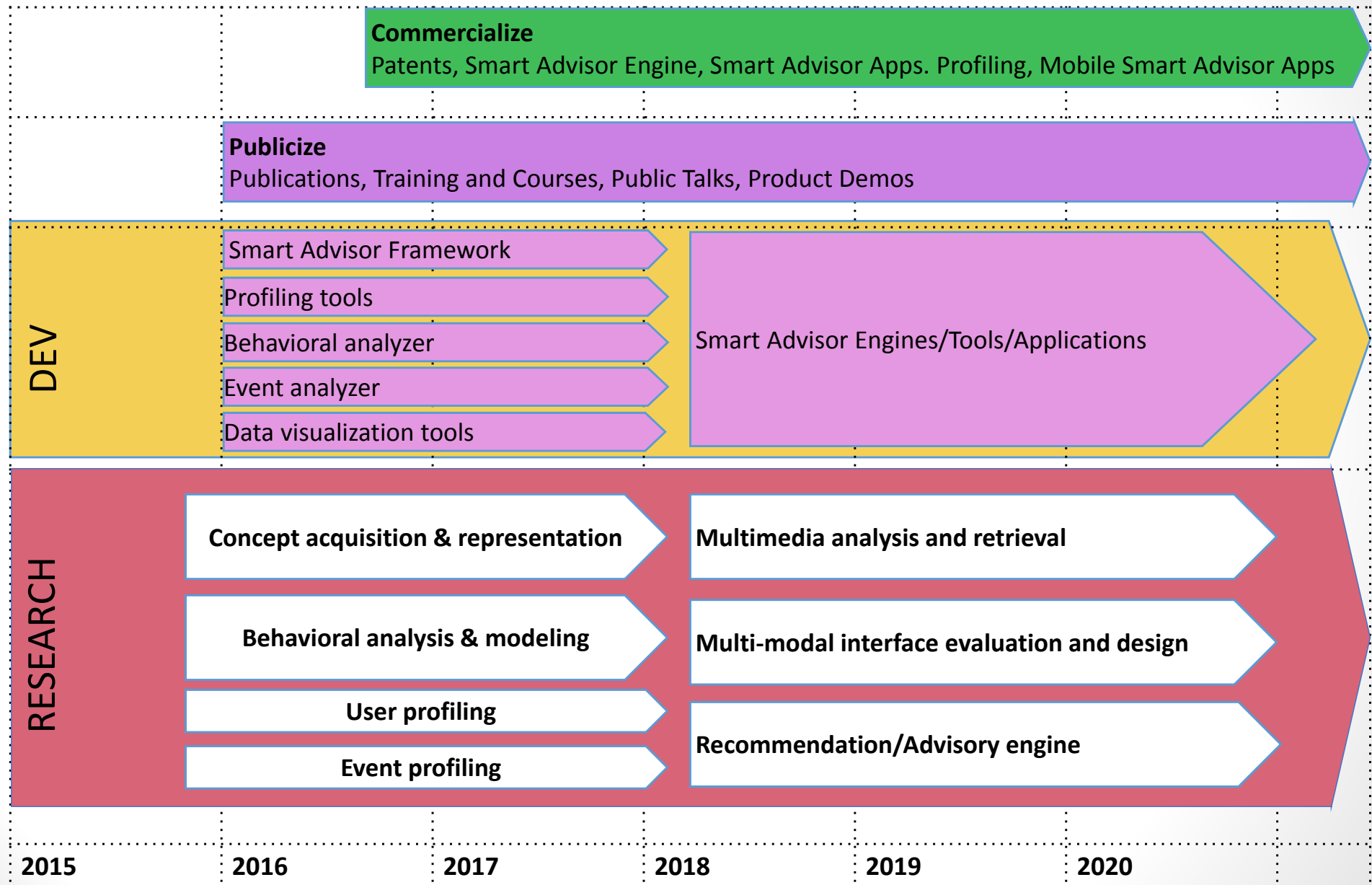
# DATA SCIENCE AND BIG DATA RESEARCH ROADMAP



# INTERNET OF THINGS (IoT) RESEARCH ROADMAP



# SMART ADVISOR RESEARCH ROADMAP



# SPEECH TO SPEECH TRANSLATION RESEARCH ROADMAP

