# Taiwanese-Czech joint R&D call for proposals 2021 webinar (MoST / MoEA / TA CR)

**April 12, 2021**


**Ms. Tana Halova Perglova** - The Technology Agency of the Czech Republic

**Ms. Radana Ditova** - The Technology Agency of the Czech Republic

**Dr. Hong-wei Yen** - Taipei Economic and Cultural Office in Prague (representing Ministry of Science and Technology, Taiwan)

**Mr. Wayne Lu** - Industrial Technology Research Institute (representing Department of Industrial Technology, Ministry of Economic Affairs, Taiwan)

# WELCOME & INTRODUCTION

# Agenda

- Welcome and introduction by TA CR and TECO (5 min)
- Presentation of specific requirements for joint call for proposals between TA CR – MoST and TA CR – MoEA (30 min)
- Presentation of three joint projects - example of good practice (42 min)
- Presentation of matchmaking tool (3 min)
- Pitch presentations (28 min)
- Questions & answers (10 min)
- Closing remarks (2 min)

# Presentation of specific requirements for joint call for proposals
# TA CR - MoST
# TA CR - MoEA

# Areas of research TA CR & MoST

**Priority areas of cooperation mutual for TA CR & MoST:**

- 1. Green Energy
- 2. Artificial intelligence applications
- 3. Health Care and Biomedicine
- 4. Cyber Security
- 5. New Agriculture (incl. Smart Agriculture)

**Project proposals from other areas are also welcomed!**
**TA CR does not support defence and medical research!**

# Areas of research TA CR & MoEA

**Priority areas of cooperation mutual for TA CR & MoEA:**

- 1. Smart Technology
- 2. Green Energy Technology
- 3. Smart Manufacturing Technology
- 4. Material & Biotechnology
- 5. Service Innovation, with the combination of the Internet, IoT, Big Data and AI

**Project proposals from other areas are also welcomed!**
**TA CR does not support defence and medical research!**

# BASIC CRITERIA - TA CR

# Preliminary schedule TA CR

| Joint Call for Proposals | |
|---|---|
| **Project submission** | 13 May - 14 July |
| **Evaluation period** | 15 July - 29 November |
| **Results' announcement** | by 30 November |
| **Start of projects** | 1 January - 30 March 2022 |

# TA CR - DELTA 2

**Main applicant**

An enterprise

**Other participants**

Enterprises

Research organizations or Universities

**Linked and partner enterprises**

Are not allowed to participate

**Project length**

12 - 36 months

# FUNDING SCHEME - TA CR

# Funding scheme - TA CR (DELTA 2 Programme)

- Total expenditure: **300 mil CZK (approx. 13,8 mil USD)**
- Maximum funding intensity per project: **up to 74 %**
- Maximum amount of funding  per project: **not set**

**The TA CR and both the MoST and MoEA will fund the respective nationals in the selected consortia in accordance with their national funding rules.**

# Funding scheme - TA CR (Delta 2 Programme)

| | Industrial research | | Experimental development | |
|---|---|---|---|---|
| **Type of applicant** | Max. allowable aid intensity | Max. allowable aid intensity with demonstrated effective collaboration with a research org. | Max. allowable aid intensity | Max. allowable aid intensity with demonstrated effective collaboration with a research org. |
| Small enterprises | 70 % | 80 % | 45 % | 60 % |
| Medium enterprises | 60 % | 75 % | 35 % | 50 % |
| Large enterprises | 50 % | 65 % | 25 % | 40 % |
| Research org. | 100 % | - | 100 % | - |

The aid intensity (%) of a project is the ratio of funding amount to the total eligible project costs.
The aid intensity (%) of an applicant or project partner is the ratio of the amount of its funding to its total eligible costs.

# SUBMISSION & EVALUATION PROCESS - TA CR

# Submission process

**Submission of the project proposal via ISTA (an electronic system)**

**www.ista.tacr.cz**

**Compulsory annexes:**

- Sworn statement of the applicant
- Common proposal
- Annexes connected to project results

**Submission deadline: by 14 July,  2021!**

# Submission & evaluation process

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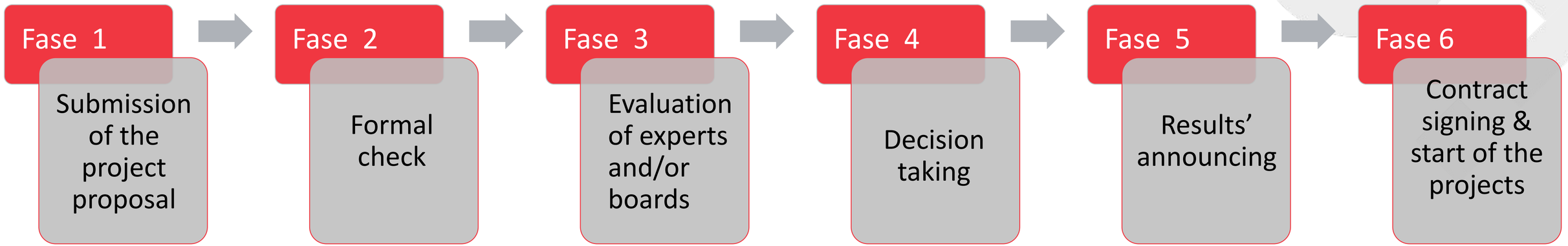


**The project proposal must be approved by both (TA CR - MoST or TA CR - MoEA) in order to receive funding!**

# Thank you!

More information about the DELTA 2 call for proposals (in Czech) available at https://www.tacr.cz/soutez/program-delta-2/treti-verejna-soutez-6/

T A
C R

Technology Agency of the Czech Republic

www.tacr.cz/en


**DELTA 2 PROGRAMME TEAM**

**Ms. Radana Díťová**
International Cooperation Coordinator
E: radana.ditova@tacr.cz

**Ms. Kateřina Feiglová**
International Cooperation Coordinator
E: katerina.feiglova@tacr.cz

**Ms. Eva Pentel**
International Cooperation Coordinator
E: eva.pentel@tacr.cz


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Č R

# BASIC CRITERIA - MoST

# 臺捷(MOST-TACR)雙邊協議國際合作鏈結法人計畫

# MOST-TA ČR Joint Research Project Program


**Dr. Hong-wei YEN**

**Director of Science and Technology Division**
**TECO, Prague**
**Professor of Chemical & Materials Eng.,**
**Tunghai University, Taiwan**


# MoST Preliminary schedule

| Joint Call for Proposals | |
|---|---|
| **Project submission** | 13 May - 14 July |
| **Evaluation period** | July - December |
| **Results' announcement** | by 30 December |
| **Start of projects** | 1 January - 30 March 2022 |

# BASIC CRITERIA - MoST

- The principal investigator has to be from:
  University;
  National Applied Research Laboratories (NarLabs); or
  any other research institution recognised by MoST.

- The principal investigator has to **have an ongoing project already funded by MOST** by the time he/she applies for the bilateral cooperation. Kindly follow ***Add-on program* guidelines**「補助雙(多)邊協議國際合作擴充加值(Add-on)方案作業須知」
  - for further information, please visit: http://www.most.gov.tw

The ongoing project and the bilateral cooperation project should be related in the *field or general topic*. When submitting the project for the bilateral cooperation, the principal investigator is required to provide information about his/her ongoing project and its budget.

# MoST Funding scheme

Maximum amount per project:
The financial support of TA ČR-MOST JRP *and* the already running project cannot exceed 3 M NTD per year.

The project lasts up to three years. The overall budget is divided for each year and area (personal costs, conferences, travel, equipment etc.), but unused finances might be used next year after MOST approval.

# MoST Submission process

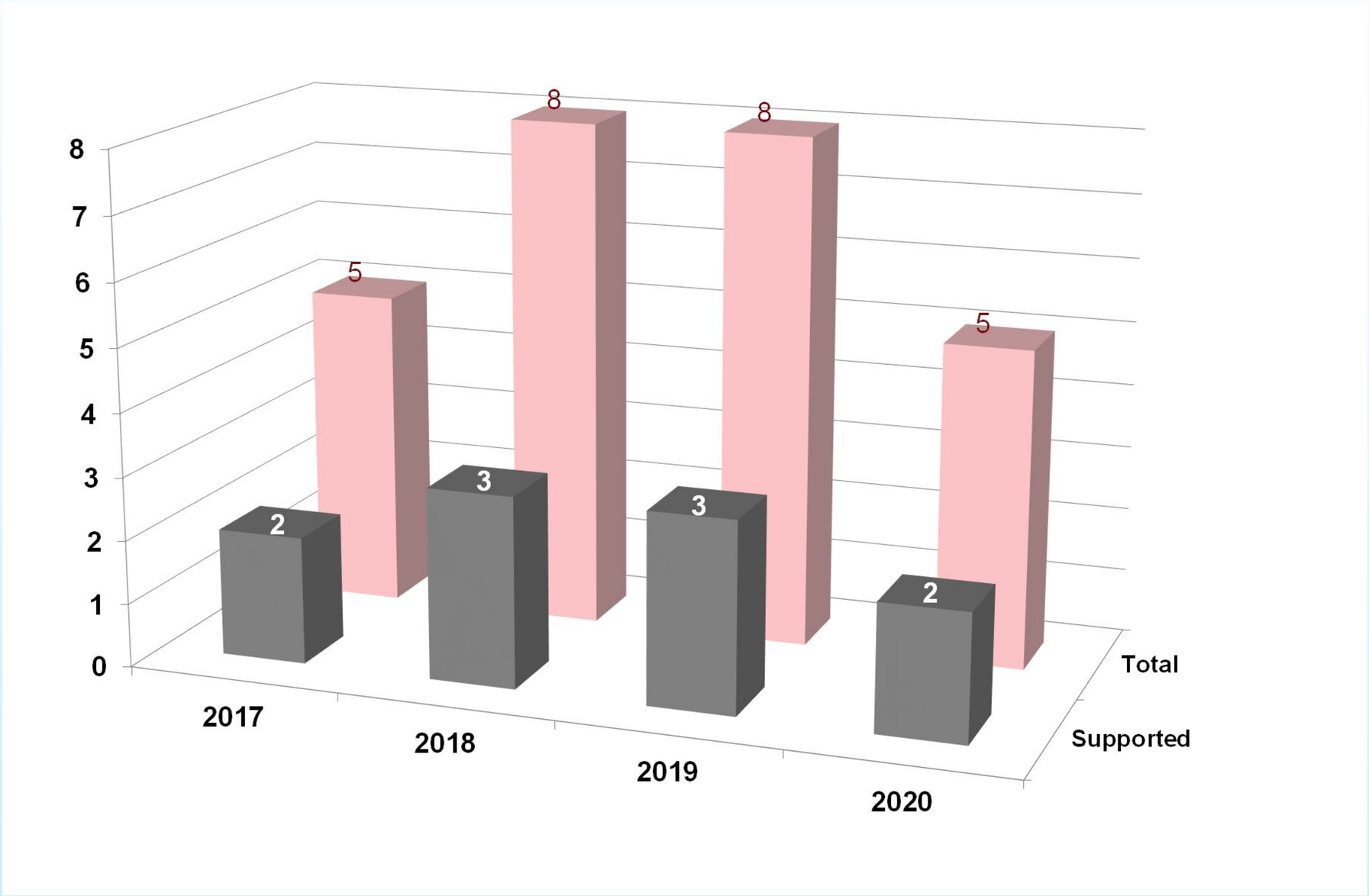
**Submission are sent electronically via MoST website until July 14th,  2021**

**Kindly follow guidelines for the *add-on projects*.**

# Evaluation

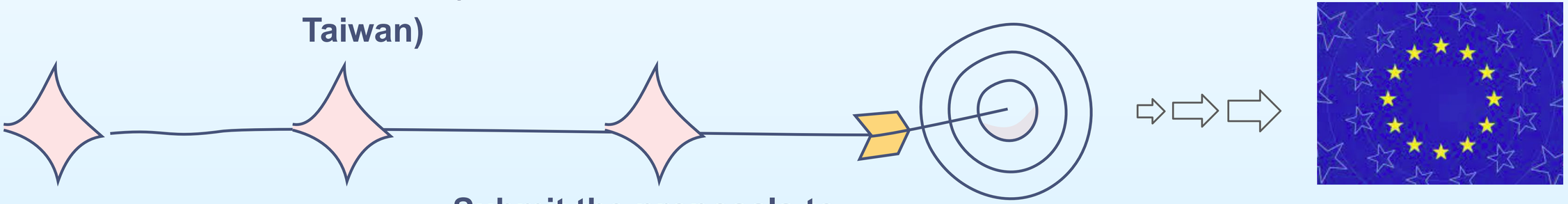
The evaluation on Taiwanese and Czech side is run **independently**.
By November 2021, both sides exchanges their internal results and projects supported on both sides are proposed as the winning projects.

# MOST-TACR Bilateral call 2017-2020



Find your partners in Czech Republic (or in Taiwan)

MOST-TACR project



Have a novel idea first

Submit the proposals to MOST & TACR respectively

# Contacts

**STD TECO Prague**
**Dr. Hong-wei Yen**, director
hwyen@most.gov.tw
hwyen20020@gmail.com

Mgr. Klára Netíková, assistant
czech@most.gov.tw

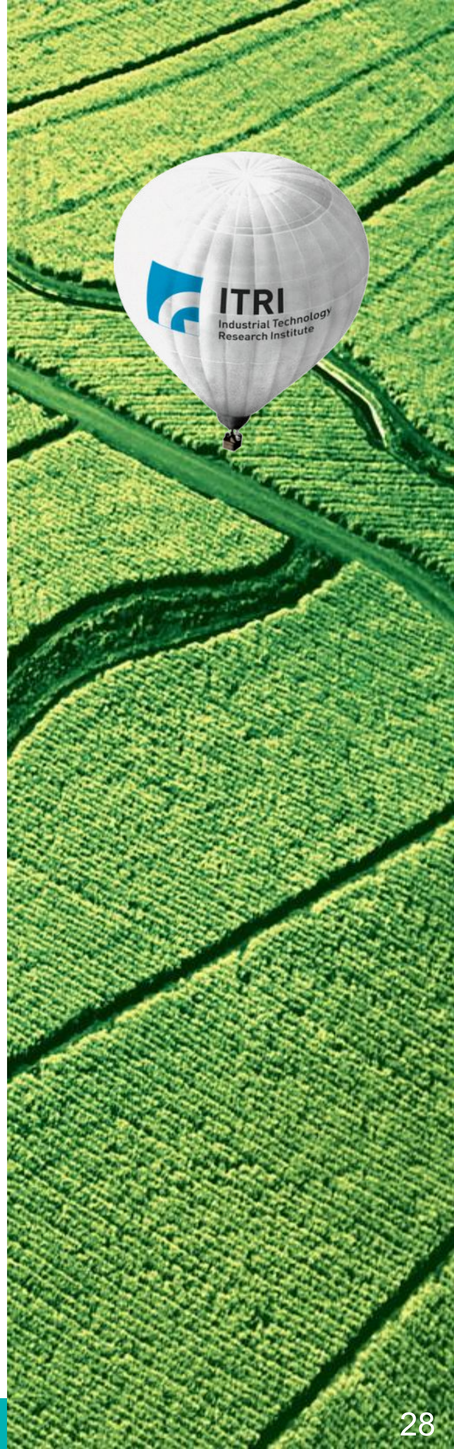
**MOST**
**Ms. Jennifer Hu**, MoST International cooperation unit, Senior coordinator
jenhu@most.gov.tw

MoST website
www.most.gov.tw

# Thank you !

# BASIC CRITERIA - MoEA

ITRI
Industrial Technology
Research Institute




# 臺捷(MOEA-TA ČR )創新研發合作

# MOEA-TA ČR Joint R&D Project Program

DOIT 經濟部技術處
Ministry of Economic Affairs

Wayne Lu ,Business Manager, ITRI

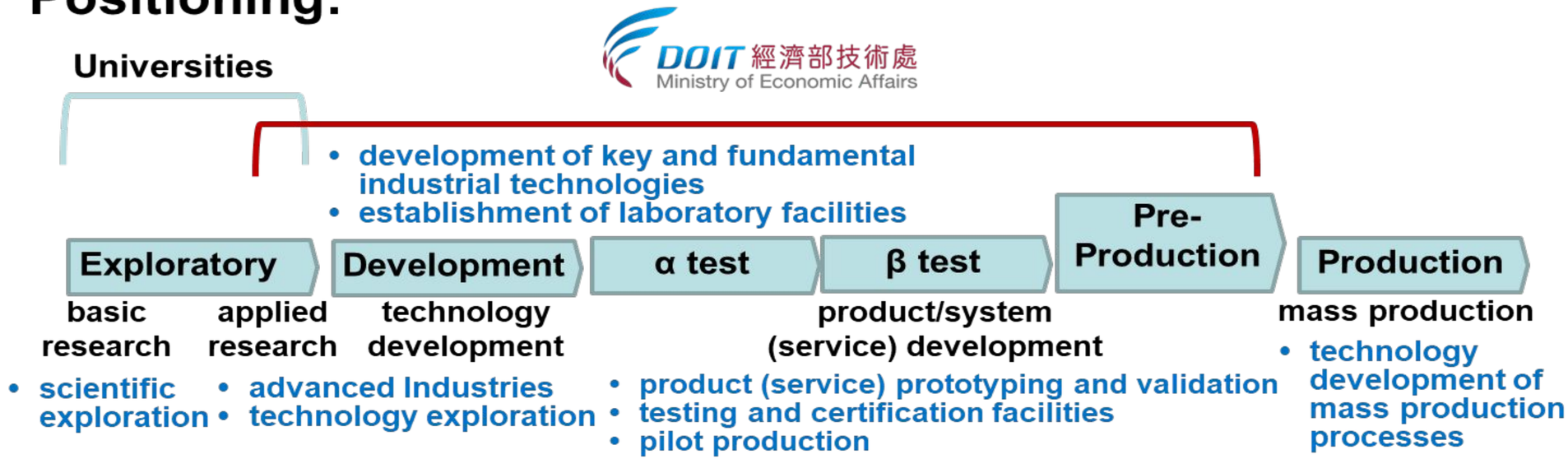
12th April, 2021

# Mission and Positioning DoIT, MoEA

Mission:

- Formulate industrial technology development strategy
- Integrate R&D resources and capabilities of research institutes, academia and industries to develop key cutting-edge and interdisciplinary technology
- Assist Taiwan's industry with structural change and value creation.

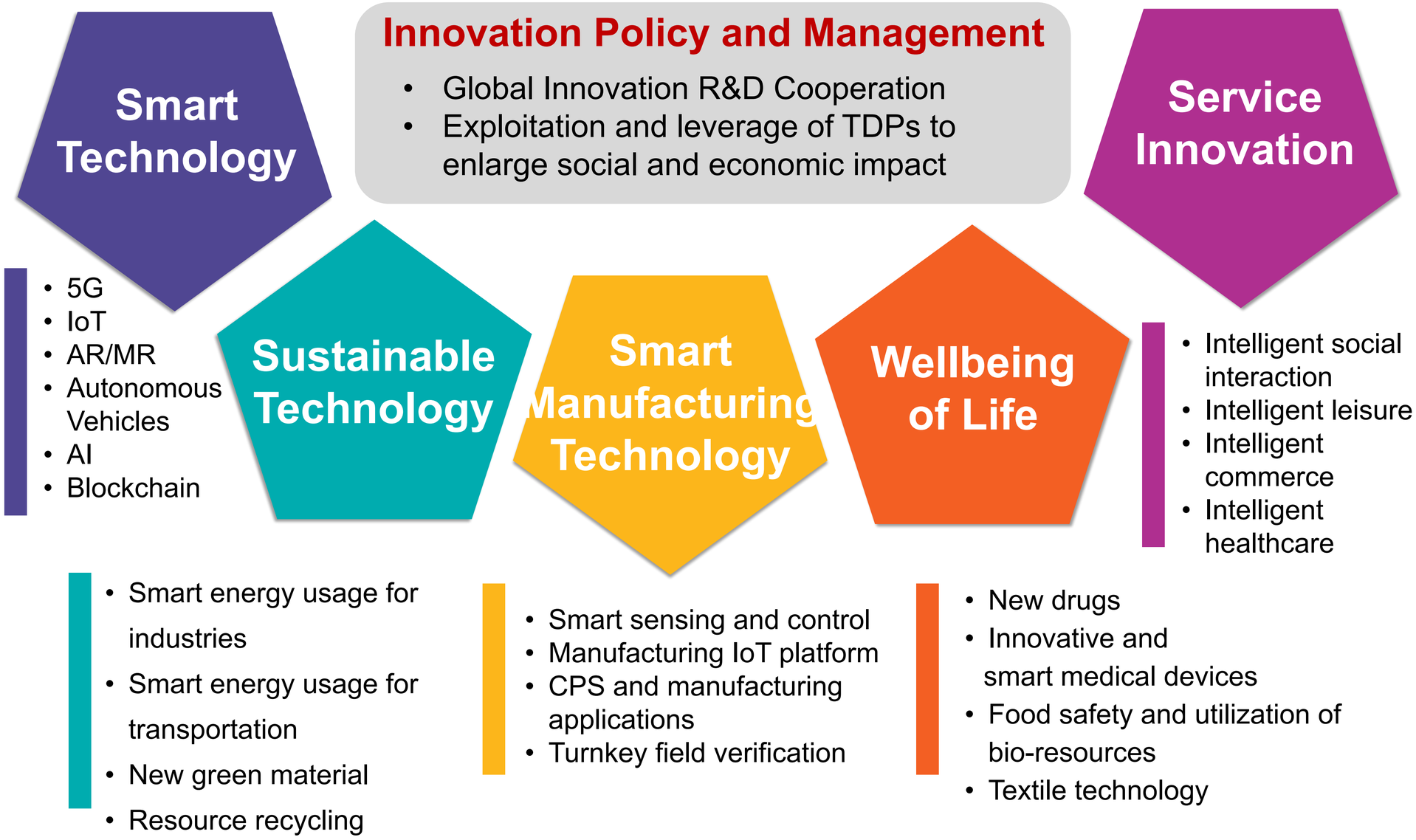
**Positioning:**




ISTI

ITRI Industrial Technology Research Institute

# Strategic Focuses of DoIT, MoEA




ISTI

ITRI Industrial Technology Research Institute

# Preliminary schedule MoEA

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| **Results' announcement** | by 15 December |
| **Start of projects** | 1 January - 30 March 2022 |

ISTI

ITRI Industrial Technology Research Institute

# MoEA - A+ Programme

**Main applicant**

An enterprise

**Other participants**

Enterprises

Note:

Research organizations or Universities can be subcontractor to the project.

**Linked and partner enterprises**

Are not allowed to participate

**Project length**

24 - 36 months

# Funding scheme

Total expenditure: **not set**

Funding intensity: **up to 50%**

Maximum amount per project: **not set**

**The MOEA will fund the respective nationals in the selected consortia in accordance with their national funding rules.**

# Submission process

**Submission of the project proposal to A+ Programme execution office**

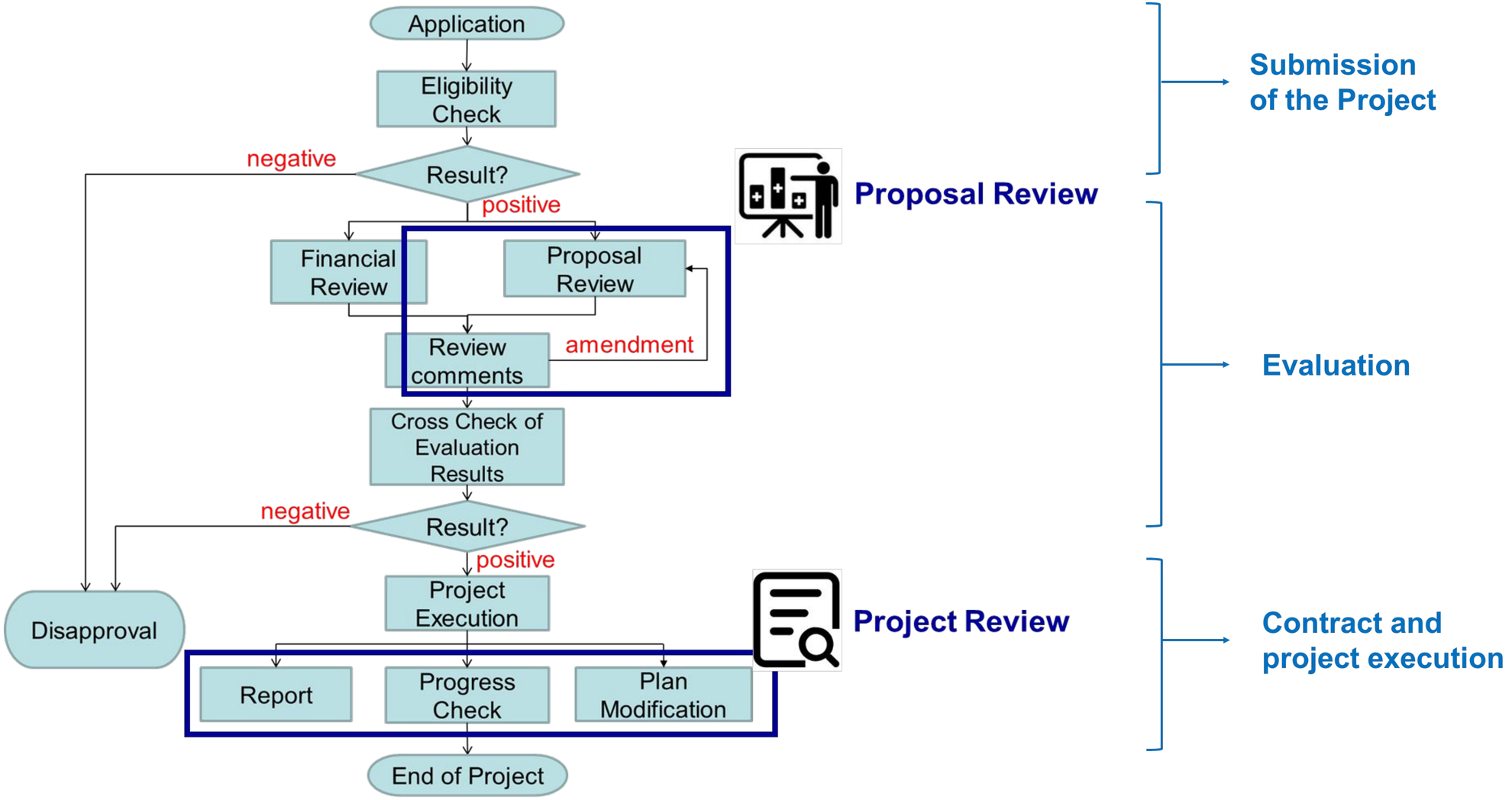
**https://aiip.tdp.org.tw/**

**Compulsory annexes:**

- **Common proposal;**
- **Application form;**
- **A+ Program Proposal;**
- **Financial Report;**
- **Consortium Agreement;**

**Submission deadline: by 14 July, 2021!**

# Submission & evaluation process




ISTI

# Well-developed Industry Clusters in Taiwan

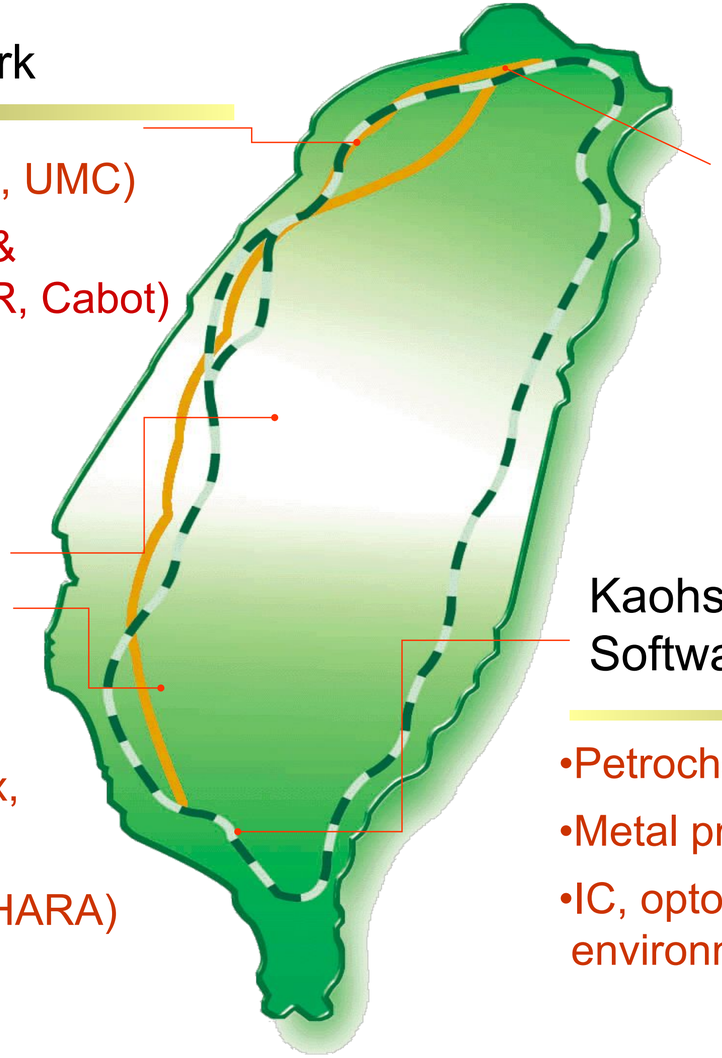
## Hsinchu Science Park

- IC manufacturing (TSMC, UMC)
- Semiconductor material & equipment(AM, ASML ,LR, Cabot)
- Biotechnology

## Central Taiwan Science Park

## Southern Taiwan Science Park

- Flat displays(AUO, Innolux, Corning, AGC,JSR)
- Optoelectronics(Canon, OHARA)
- Precision machinery

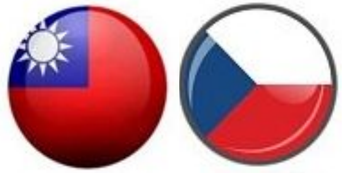


## Nangang Software Park

- Technology service industry
- Digital content
- Biotechnology
- Foreign investment 30% (IBM, HP, Philips, etc.)

## Kaohsiung Linhai, Data and Software Industrial Parks

- Petrochemicals, iron and steel industry
- Metal processing, precision machinery
- IC, optoelectronics, communications, environmentail technology



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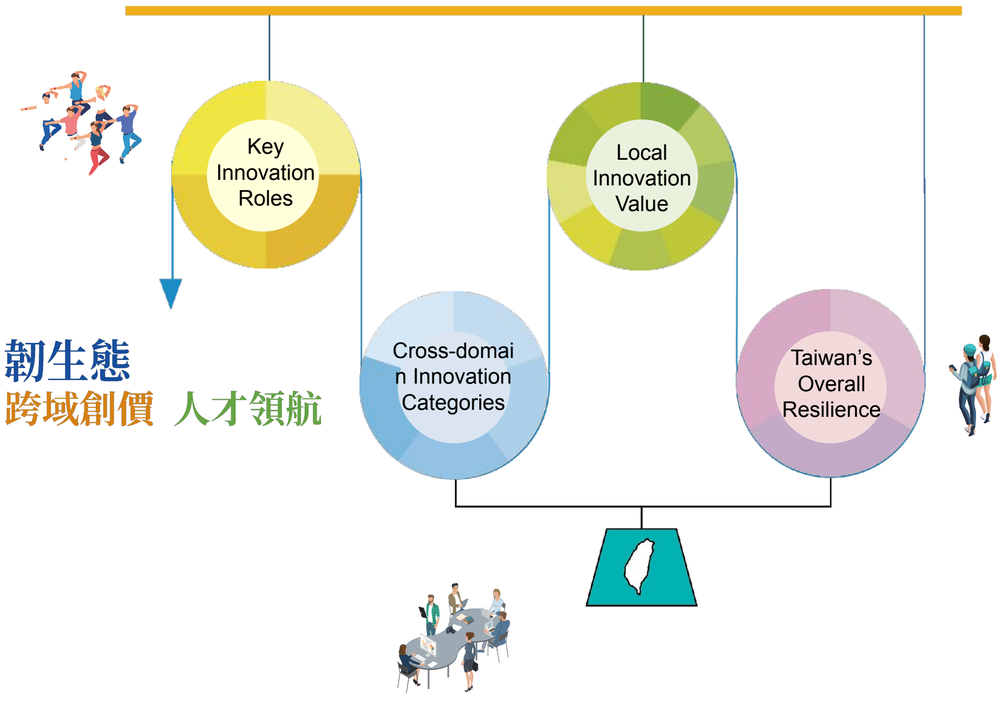


2020 IEKTopics

IEK產業情報網

# THANK YOU



**A+ Industrial Innovative R&D Program**

**Wayne Lu**
Business Manager
E: wayne.lu@itri.org.tw

# SUCCESSFULL PROJECTS and sharing of good practice

# Show case 1

**Speakers:**

Dr. Chao-Chung PENG

Mr. Milan ROLLO

**Organisations:**

National Cheng Kung University

AgentFly Technologies s.r.o.

**Project name:**

System for Situational Awareness Improvement and UAS Operation Management

Intelligent
Embedded
Control
Laboratory

NCKU

# System for Situational Awareness Improvement and UAS Operation Management
# 無人機運用管理與強化式態勢感知之整合平台


**NCKU Project Director**

**Dr. Chao-Chung Peng (彭兆仲 博士)**

Intelligent Embedded Control Lab (IEC-Lab)

Department of Aeronautics and Astronautics

National Cheng Kung University

Tainan, Taiwan

# Sharing Topics

Intelligent Embedded Control Laboratory

- **How was the partnership established?**
- **How did you choose your foreign partner?**
- **How did you divide projects tasks with your partner and how do you communicate on their accomplishment?**
- **How did you benefited from the international cooperation?**
- **How does the international cooperation proceed (including in the midst of COVID-19 pandemic)?**
- **What is the most difficult thing on the international cooperation?**



ccpeng@mail.ncku.edu.tw

# Sharing Topics

- **How was the partnership established?**

National Chung-Shan Institute of Science & Technology (NCSIST)

國家中山科學研究院


Czech Technical University in Prague (CTU) & AgentFly

布拉格捷克理工大學

National Cheng Kung University (NCKU)

國立成功大學



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# Sharing Topics

Intelligent Embedded Control Laboratory

- **How did you choose your foreign partner?**

- **Project Goals:**
  - A. Unmanned aerial vehicle (UAV) sensor fusion for environment sensing technology
  - B. Design of artificial intelligence (AI) based suspicious object recognition for UAV decision making strategy.
  - C. UAV self-awareness system development based on simultaneous localization and mapping technology.
  - D. Recent smart UAV swarm combat system scheme.


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# Sharing Topics

- **How did you choose your foreign partner?**

  - **NCSIST** : has strong development energy and experience on unmanned aerial vehicle design, avionic and artificial intelligence (AI) based suspicious object recognition technology.

  - **NCKU**: has related research achievements regarding simultaneous localization and mapping (SLAM), sensor fusion, signal processing as well as control system technology.

  - **CTU**: has a long time experience with software development for both ATM modeling and simulation and UAS operation, which could be extended for UAV swarm combat system scheme.


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# Sharing Topics

- **How did you divide projects tasks with your partner and how do you communicate on their accomplishment?**


What are the core technologies both sides can supply~

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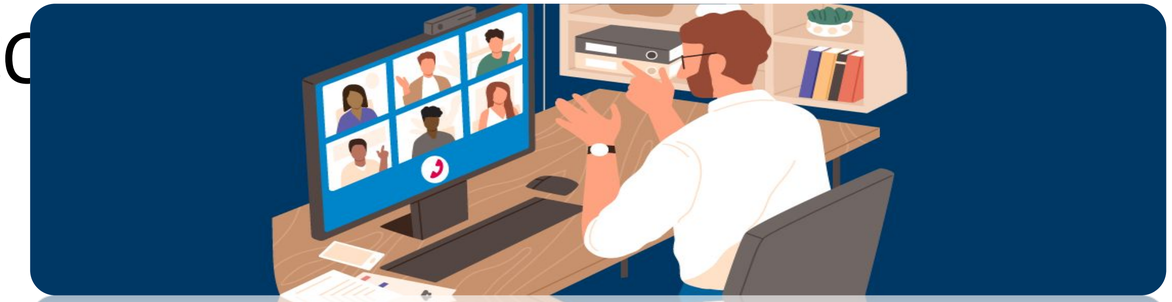
# Sharing Topics

- **How did you benefited from the international cooperation?**
- **How does the international cooperation proceed (including in the midst of COVID-19 pandemic)?**
- Before COVID-19 : onsite meeting & email

- After CO

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# Sharing Topics

- **What is the most difficult thing on the international cooperation?**


- The hardware/software modules are developed individually from NCSIST, NCKU and CTU, respectively.
- Therefore, interface making & standard protocol definition will be the most difficult things during integration.


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# Sharing Topics


CTU
CZECH TECHNICAL UNIVERSITY IN PRAGUE

1931
國立成功大學
National Cheng Kung University

Thanks for Listening


ccpeng@mail.ncku.edu.tw

AgentFly Technologies

ATM Modeling & Simulation

UAS Operations & Control

# Experience with Czech Republic – Taiwan R&D Cooperation

# Introduction

- **Project title: System for Situational Awareness Improvement and UAS Operation Management**
- **Project no.: TF06000082**
- **Funding Agencies**
  - Technology Agency of the Czech Republic
  - Ministry of Science and Technology R.O.C. Taiwan

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MOST 科技部
Ministry of Science and Technology

- **Partners**
  - AgentFly Technologies s.r.o.
  - Czech Technical University in Prague
  - National Chung-Shan Institute of Science & Technology (NCSIST)
  - National Cheng Kung University, Department of Aeronautics and Astronautics (NCKU)

AgentFly Technologies
ATM Modeling & Simulation | UAS Operations & Control

ČVUT
ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

NCSIST

1931
NCKU
National Cheng Kung University

# Project

- **Goal**
  - Investigate various approaches to presentation of UAS traffic data to relevant stakeholders
  - Study impact of this improved situational awareness on their decision making process

- **Outcome**
  - New methods, algorithms and software tools that will enable future operation of UAS with higher levels of automation and ensure their safe and efficient operation and interaction with other air traffic.

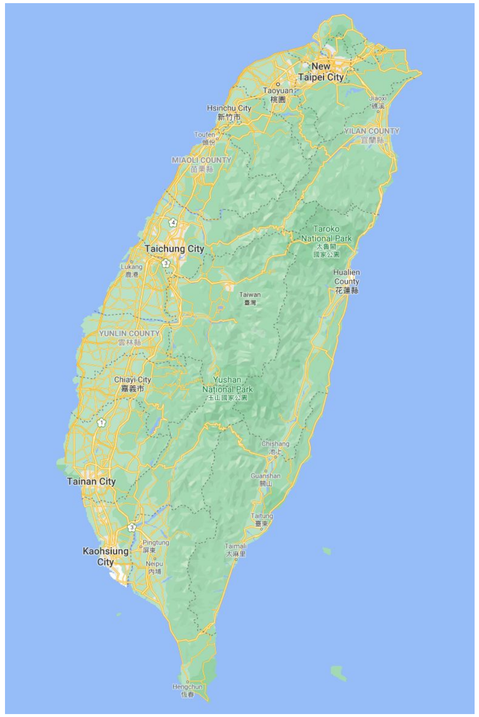
- **Combination of theoretical research and verification by deployment on real hardware assets**

# Advantages of Cooperation

- **Combination of unique capabilities of individual partners**
  - AFT – design, implementation and validation of software algorithms - UAS traffic flow management algorithms, conflict detection and resolution methods and optimization of communication resources
  - CTU - design, implementation and validation of interaction schemes between various ATM stakeholders, like UAS operators, ANSPs, airports, manned traffic, etc.
  - NCSIST - identification of relevant UAS operation data, important for improvement of situational awareness of UAS operators. Design and implementation of data gathering and fusion algorithms
  - NCKU – basic research of detection and fusion algorithms
- **Software frameworks**
  - Fast-time and real-time simulators provided by AFT
- **Facilities and hardware assets**
  - Hardware assets for verification of algorithms – 6DOF simulator provided by CTU
  - UAS platforms and sensors provided by AFT and NCSITS
- **Field tests carried out at Taiwan**
  - Designated UAS test sites

# Visits

- **Mar 19-20 2019 CZ -> TW**
  - Taichung - NCSIST
  - Tainan - NCKU
- **July 24-25 2019 TW-> CZ**
- **Nov 18-21 2019 TW -> CZ**
- **Visits to CTU FEE**
  - Dept. of Computer Science
  - Dept. of Cybernetics
  - Dept. of Control Engineering
  - Dept. of Measurement





- **Czech Institute for Informatics, Robotics and Cybernetics (CIIRC)**
- **Bohemia Interactive**

# Conclusion

- **Great experience**
  - New contacts and business opportunities
  - Approach to project management
- **Social gatherings**
  - Experience the lifestyle, culture
- **Project affected by COVID-19**
  - No travel in 2020
  - Unclear situation in 2021
  - Overheads with integration of developed modules
    - On-site assistance would be easier
- **Definitely would recommend**

# Show case 2

**Speakers:**

Mr. Radomír PUKL

Dr. Brandon LI

**Organisations:**

Červenka Consulting s.r.o.

National Taiwan University

**Project names:**

CeSTaR/CeSTaR 2 projects

T A

C R

DELTA 2 Programme

中華民國科技部

Ministry of Science and Technology, R.O.C.

# TA CR / MoST / MoEA webinar

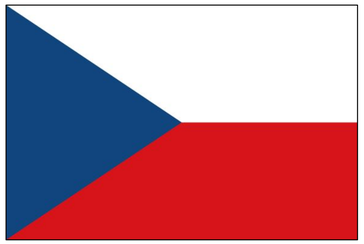
# **CeSTaR** DELTA/DELTA 2 bi-lateral projects

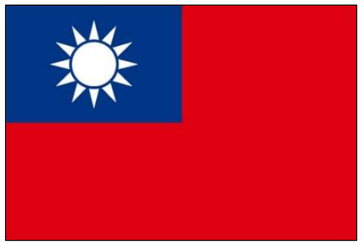

***Radomír Pukl***

*project manager*

*Červenka Consulting s.r.o.*

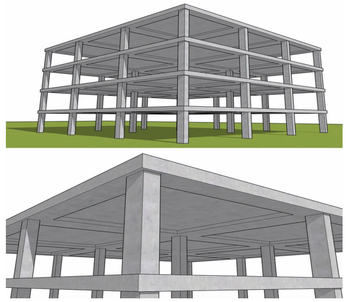

**Prague, 2021-04-12**

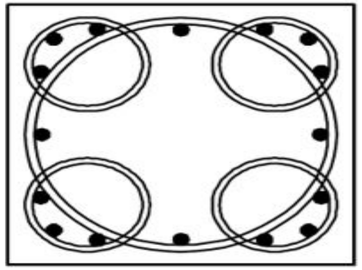




Our subject:

# Pre-cast concrete columns with innovative multi-spiral reinforcement

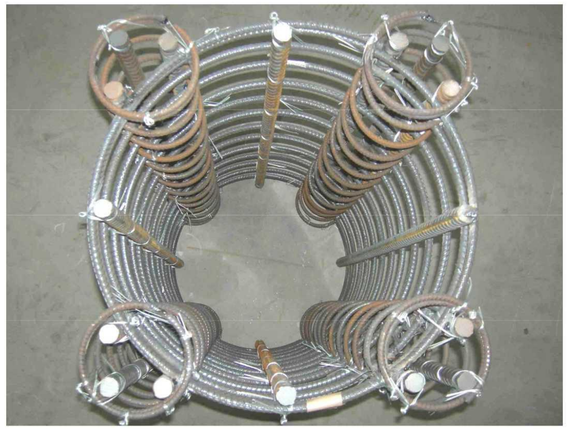


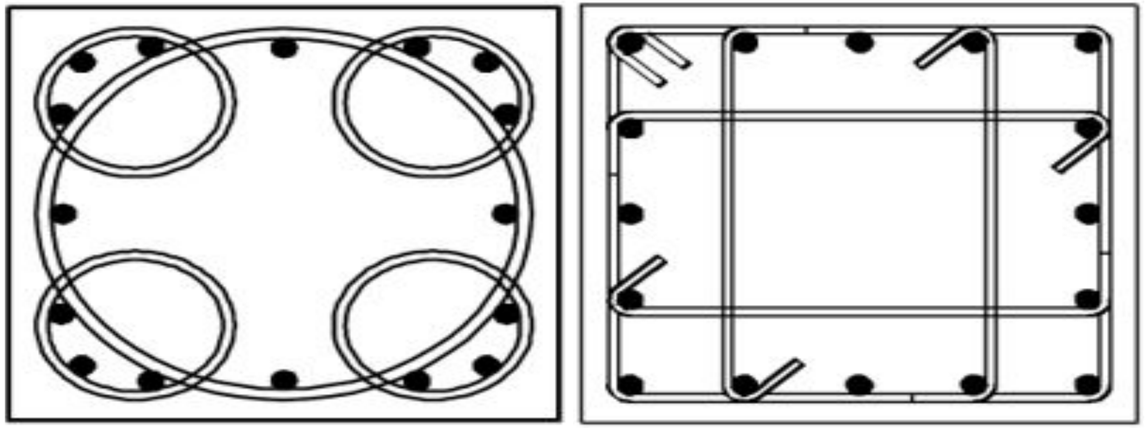


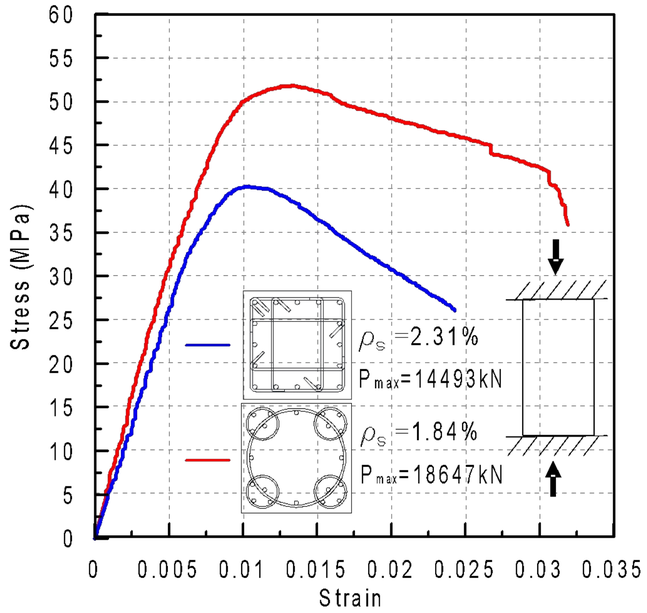
- Civil engineering
- Pre-cast structural parts
- **Concrete columns**
  - special type of shear reinforcement (multi-spiral)
  - automated production in pre-cast plant
  - world-wide patent by Ruentex Company, Taiwan
- Used in construction of buildings, production halls
- Support for elevated highways
- Safety – against earthquake (low-cycle repeated loading)
  - design, testing, **computer modeling**
- Environmental aspects
  in massive production

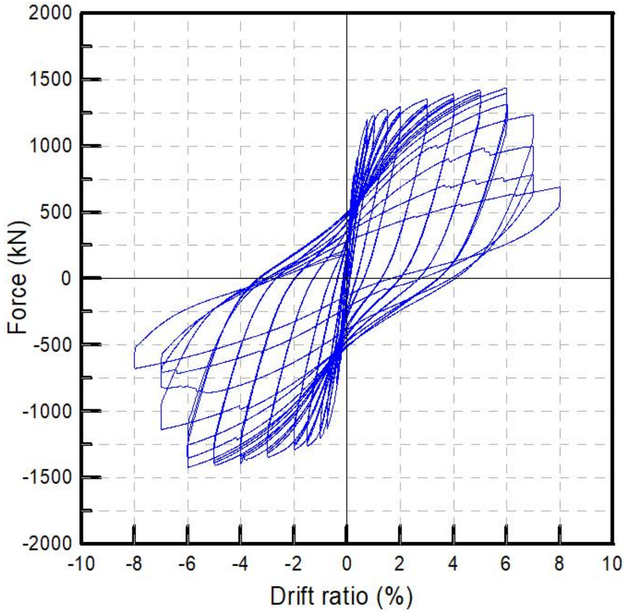
Subject of our research:

# Pre-cast concrete columns with innovative multi-spiral reinforcement







# Two consecutive projects within the TA CR DELTA/DELTA 2 programmes:

***CeSTaR*** (2018-2019) – *Computer simulation and experimental validation - complex service for flexible and efficient design of pre-cast concrete columns with innovative multi-spiral reinforcement*

*(software for flexible design)*

***CeSTaR 2*** (2020-2022) – *Reducing material demands and enhancing structural capacity of multi-spiral reinforced concrete columns - advanced simulation and experimental validation*

*(focused on environmental friendly and efficient production)*

# Projects CeSTaR and CeSTaR 2

## TA CR DELTA/DELTA 2 - MoST

**Taiwanese project partners:**

- **Ruentex** Engineering & Construction Co., Ltd.
- NTU – National Taiwan University
  - Department of Civil Engineering
  - **Prof. Yu-Chen Ou**, expert in civil engineering and bridge constructions
- NCREE – National Center for Research on Earthquake Engineering

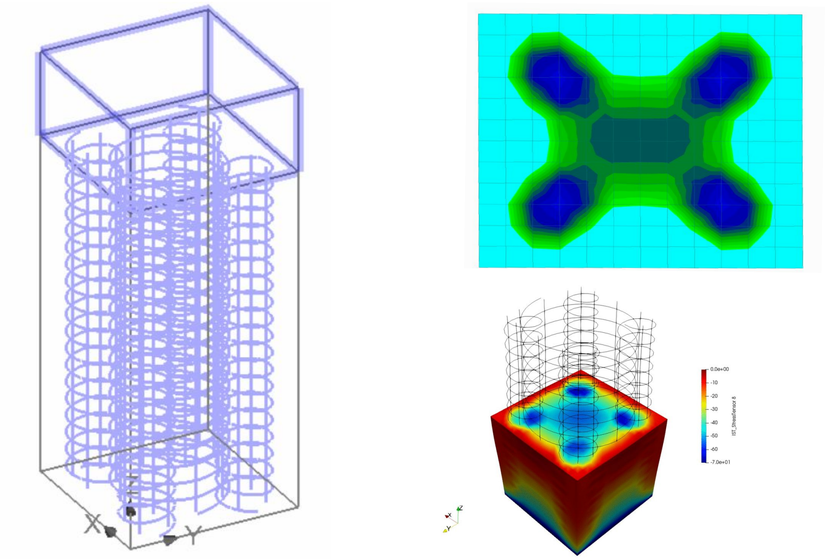
- ***Production*** *of concrete columns and test specimens with the multi-spiral reinforcement*
- *Theoretical research, large scale loading experiments*

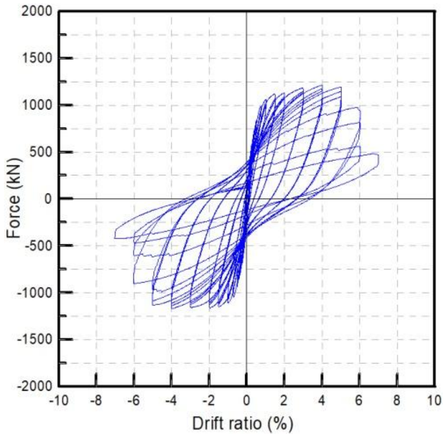
**Czech project partners:**

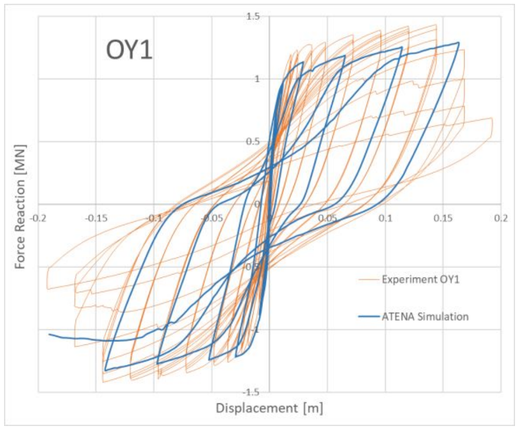
- Červenka Consulting s.r.o.
- CTU in Prague - Czech Technical University
  - Faculty of Civil Engineering, Institute for Mechanics

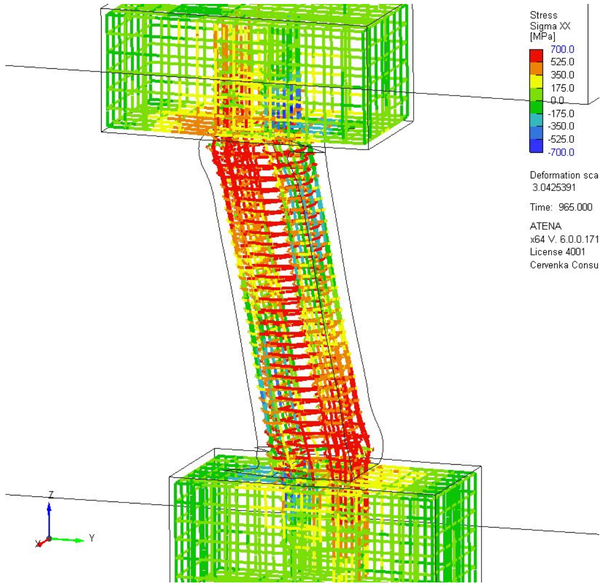
- *Computer simulation,* ***advanced numerical modeling****, virtual testing, digital twin*
- *Software development (ATENA, OOFEM), user courses and seminars*
- *Material technology and material tests (concrete, innovative building materials)*

# Testing and advanced computer simulation



# International cooperation within CeSTaR and CeSTaR 2 projects

## TA CR DELTA/DELTA 2 - MoST (Czech Republic – Taiwan)

- How the partnership was established ?
  - IALCCE conference co-organized by Prof. Yu-Chen Ou in Taipei, **2010**
  - PhD thesis at NTU supported by Červenka Consulting (ATENA software)

- How did you choose your project partners ?
  - Meeting of Prof. Bittnar (CTU) with Prof. Emeritus Jenn-Chuan Chern (NTU)

- Why did you decide to work with Taiwan ?
  - Product, optimization requested, testing devices at NCREE (MATS, DATS)
  - DELTA/DELTA 2 program **conditions** for the cooperation

- How does the international partnership work for you (even with regard to the current COVID situation) ?
  - **E-mails**, web-meetings; visits – personal contacts postponed; missions
    - Smart City Summit & Expo, Taipei March 2019, TAČR exhibition stand
    - Business mission with the senate chair Mr. Miloš Vystrčil to Taiwan in September 2020

# International cooperation within CeSTaR and CeSTaR 2 projects

## TA CR DELTA/DELTA 2 - MoST (Czech Republic – Taiwan)

- How did you divided tasks with your partners, and how do you communicate their fulfillment ?
  - **TW** – production of test specimens, large scale experiments; applications
  - **CR** – software development, numerical modeling, simulations, predictions; concrete mixing technology, testing of concrete in specific conditions
  - E-mails, meetings (web), mutual visits – training school (postponed)

- What does the international cooperation bringing to you ?
  - **Strengthening of relationships with NTU (project partners) and Taiwan**
  - Data from experiments – improvements in material models, software sale

- What is the most difficult part of the international cooperation ?
  - Time delays; understanding (with students at NTU)

- ***Financial support from TA CR and MoST programmes enabled to realize this long-term considered cooperation***

# *Thank you for your attention*

## Acknowledgement:

T A
C R
DELTA 2 Programme

中華民國科技部
Ministry of Science and Technology, R.O.C.

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***Červenka Consulting s.r.o., Prague***

***Radomír Pukl***
radomir.pukl@cervenka.cz

T A
C R

DELTA 2 Programme

中華民國科技部
Ministry of Science and Technology, R.O.C.

# TA CR / MOST / MoEA webinar


***Brandon Li***

*Research Member of professor Y.C. Ou*

*National Taiwan University*

*Structure Division of Civil Engineering Department*


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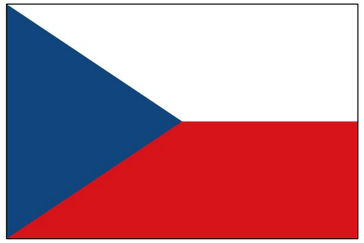
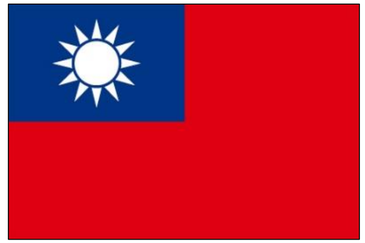
**Taipei, 2021-04-12**





# Partnership Establishment

- The visit of professor Zdenek Bittnar
- Seminar at National Taiwan University
- Professor J.C. Chern and Y.C. Ou participated
- Introducing a powerful finite simulation method for concrete

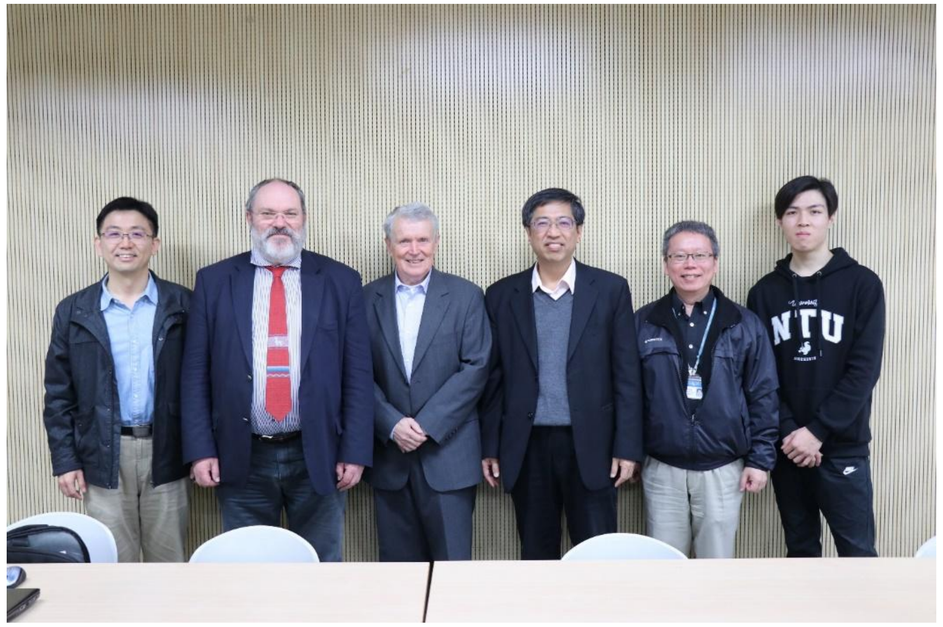
# Partnership Establishment

- The inadequacy of simulation technique
- The experimental resource of NTU
- Červenka Consulting & Ruentex Engineering and construction cooperation
- ATENA simulation software



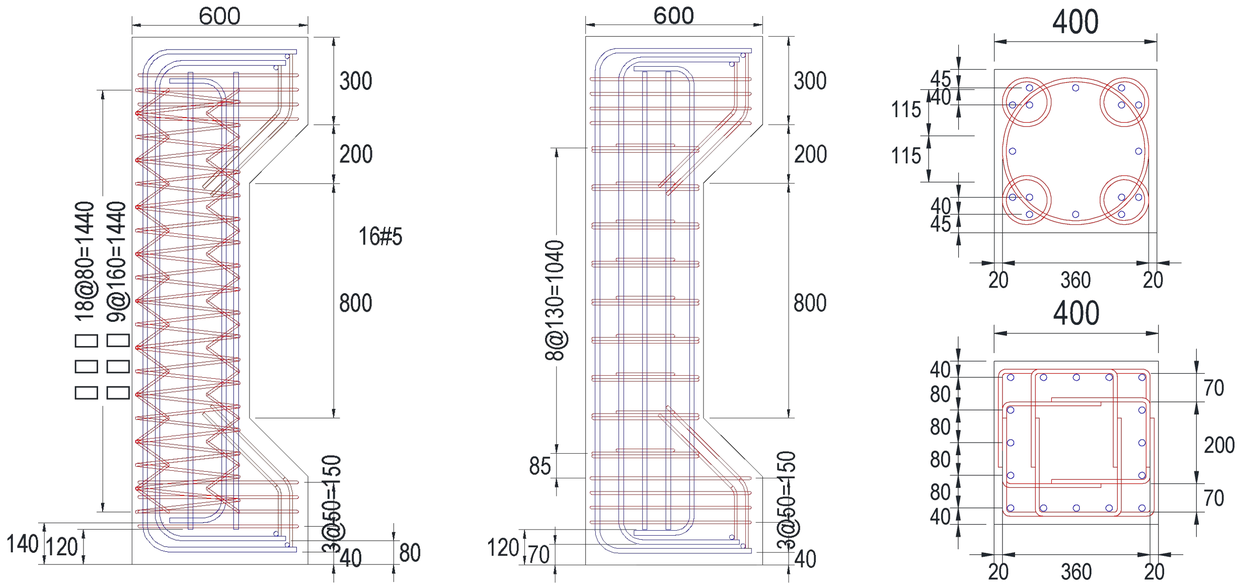
# International Cooperation Means

- Professor Ou’s visiting in 2018 and 2019
- Overall meeting in 2018
- ATENA tutorial and inspect the experiment facilities
- Meeting at Shangri-La’s Hotel in 2020
- Communication through the internet




# Benefit Received from Cooperation

- ATENA software subscription from Červenka Consulting Co. with  a reasonable fee
- Powerful finite element implement and technique
- Advices of the experiment design and arrangement
- Communication of ideals and the exchange of experiment and analysis data



# *Thank you for your attention*


## Acknowledgement:

T A

C R

DELTA 2 Programme

中華民國科技部
Ministry of Science and Technology, R.O.C.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Prof. Yu-Chen Ou
Distinguished Professor from Department of Civil Engineering, National Taiwan University (NTU)
Email: yuchenou@ntu.edu.tw

# Show case 3

**Speakers:**

**Mr. Chris LEE**

**Dr. Tomáš NĚMEC**

**Organisations:**

**Leadtech International Co., LTD**

**Institute of Thermomechanics of the Czech Academy of Sciences**

**Project name:**

**Development of high-performance catalyst materials and high-durability metallic plates for intelligent automated manufacturing of fuel cell stacks**

# SUCCESSFULL PROJECTS and sharing of good practice

# Show case 3

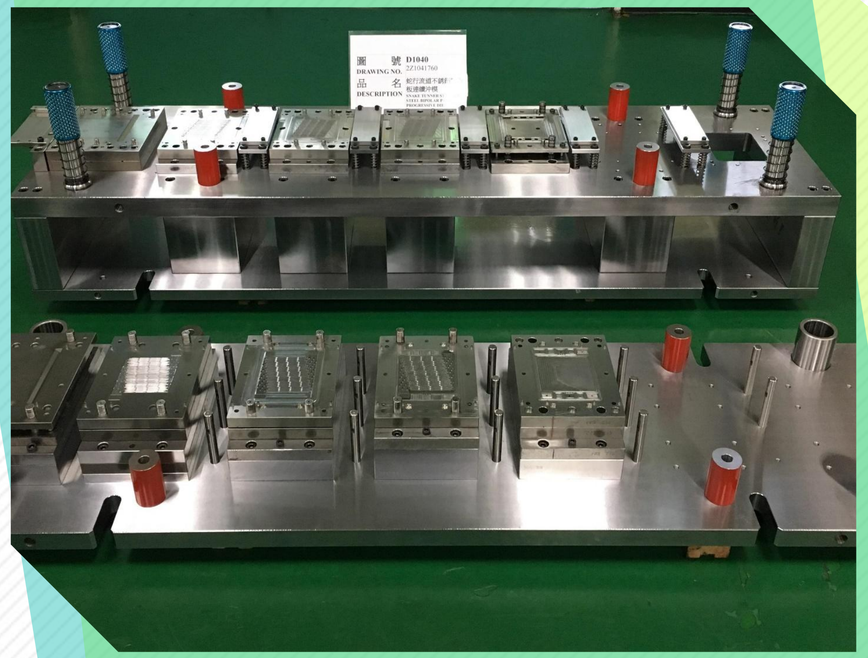
**Development of high-performance catalyst materials and high-durability metallic plates for intelligent automated manufacturing of fuel cell stacks**

Representatives: CHRIS LEE / General manager

Organisation: Leadtech International CO. LTD.

http://www.leadtech-intl.com.tw

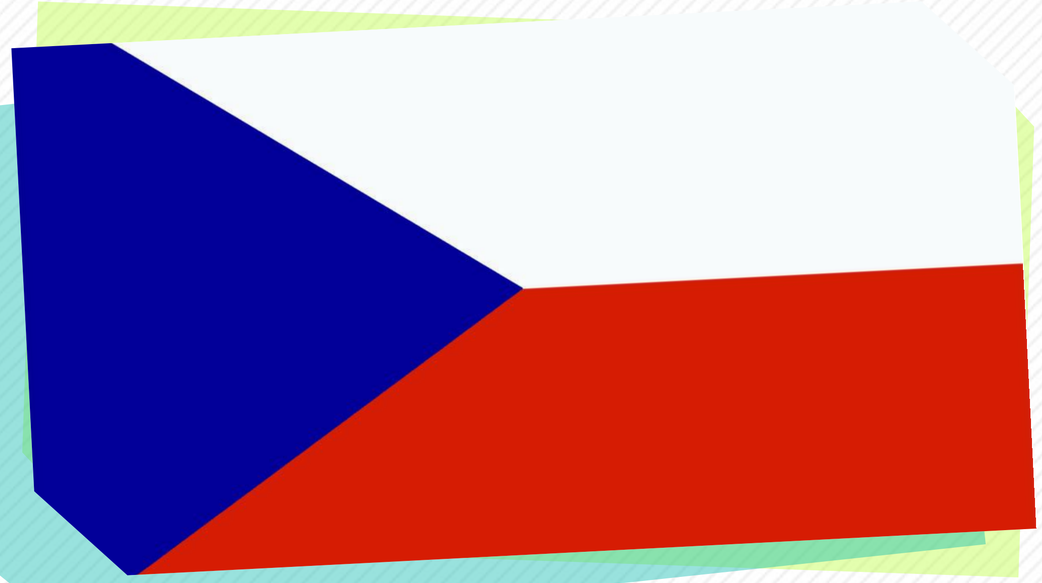
# ABOUT LEADTECH

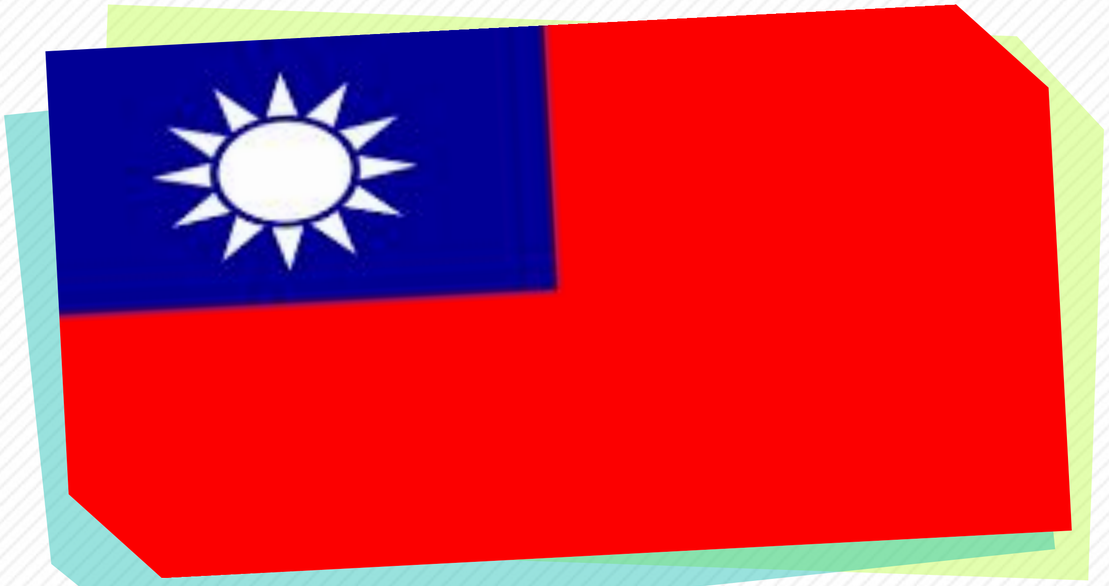



## WE BUILD STAMPING DIES

- ESTABLISHED IN 1976
- LOCATED IN TAINAN CITY, TAIWAN
- CURRENT NO. OF EMPLOYEE: 42
- BUILT MORE THAN 4,000 STAMPING DIES
- PROFESSIONAL MANUFACTURER OF METAL STAMPED PARTS
- STARTED BUILDING STAMPING DIE OF METAL BIPLOAR PLATE SINCE 2014
- STARTED MAKING FUEL CELL STACKS IN 2016

# PARTNERSHIP





## DELTA 2 Program

Nuclear Research Institute (ÚJV Řež, a. s.)

INSTITUTE OF THERMOMECHANICS
CZECH ACADEMY OF SCIENCES

## A+ MOEA

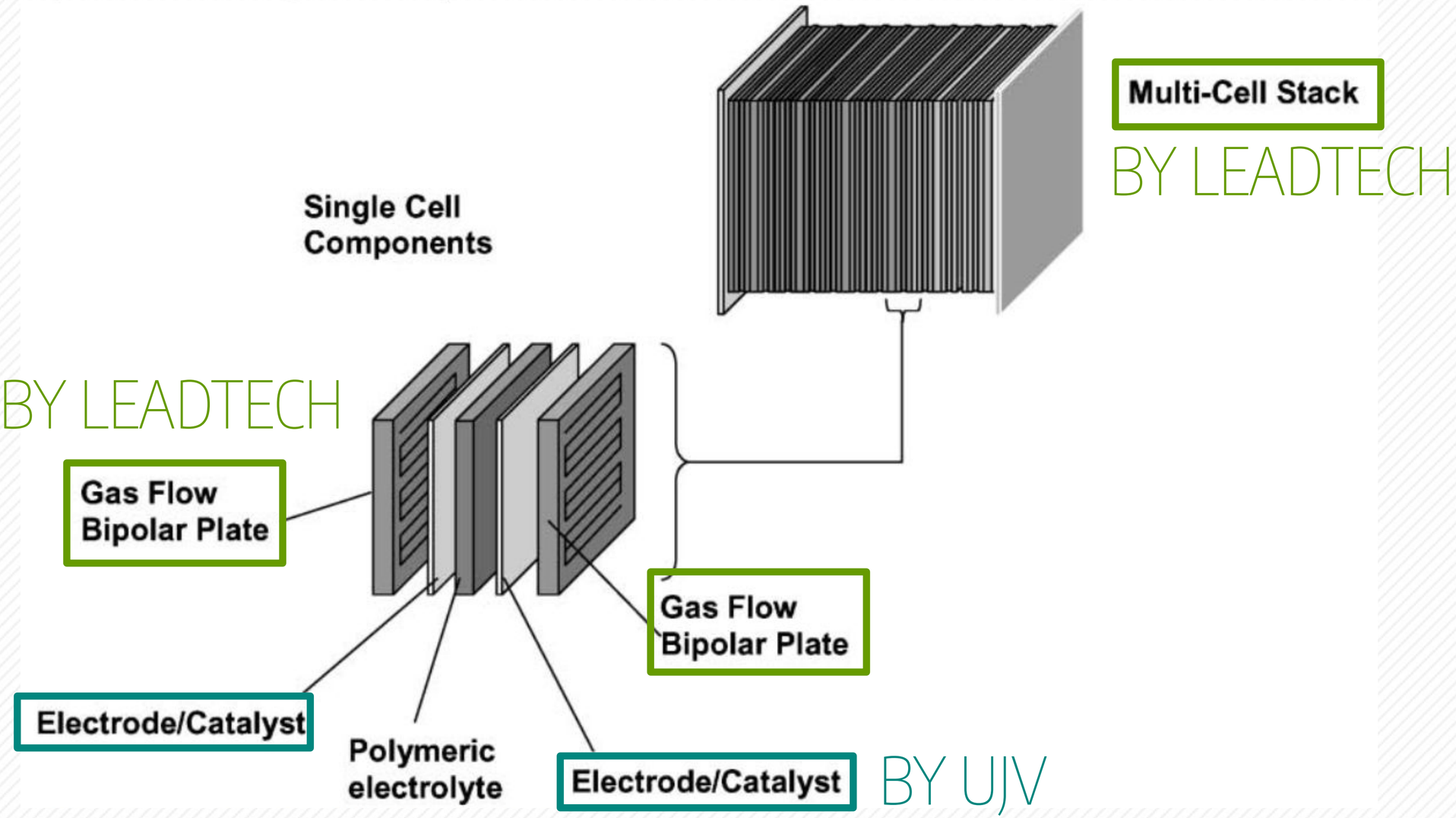
LEADTECH International Co., Ltd.
禾 新 國 際 股 份 有 限 公 司

工業技術研究院
Industrial Technology
Research Institute

e-Formula
TECHNOLOGIES, INC.

# PROJECT GOAL

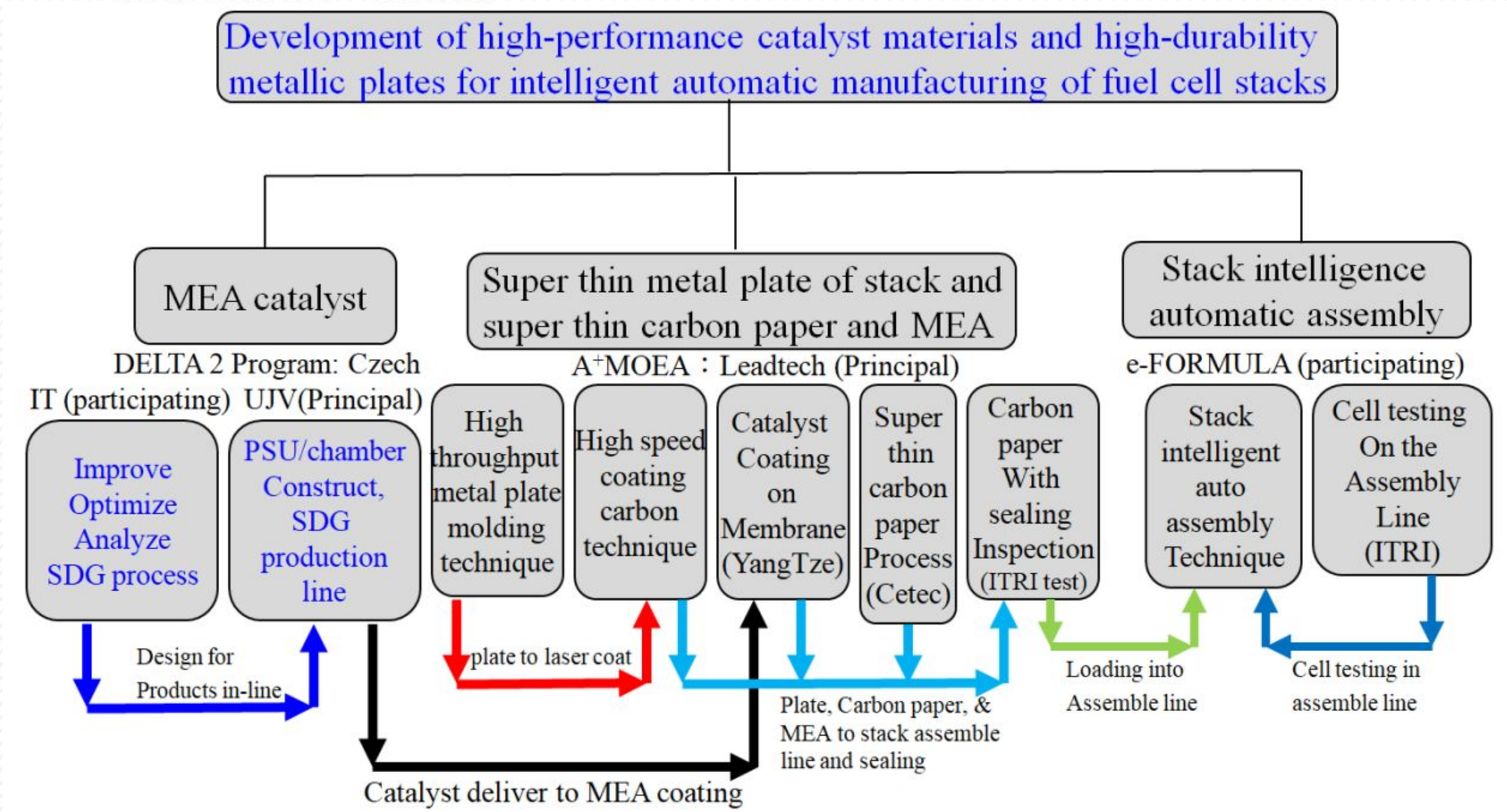
## 30kW PEMFC



# WHY WE CHOOSE UJV

## THE KEY IS TO PRODUCE CATALYST USING LESS PLATINUM

1. ÚJV Řež provides a wide range of services, including design, and engineering activities in the fields of energy using experienced professionals and specialized technical infrastructure
2. For more than 65 years UJV have been among the top technology centers in the Czech Republic and Europe
3. Able to compete for complex engagements in hydrogen areas on an international level
4. Work with IT CAS very closely on production of nanoparticle catalyst
5. IT CAS worked with ITRI on developing and completed SDG(Spark Discharge Generator) in 2018. This is key process to reduce Platinum particles used in fuel cell.




# PROJECT STRUCTURE

# 2 CHALLANGES

COVID-19

## LIMITED WORKING HOURS

The lockdown in 2020 impacted progress of the project resulting delay in producing nanoparticle catalyst. UJV is working very hard to catching up the progress in order to meet the project requirement by mid. 2022

## Restricted travelling

Scheduled visit between Czech Republic-Taiwan were cancelled due to COVID-19. Project members from each party haven't got the chance to meet each other in person.

# MEET ONLINE

FEB
19

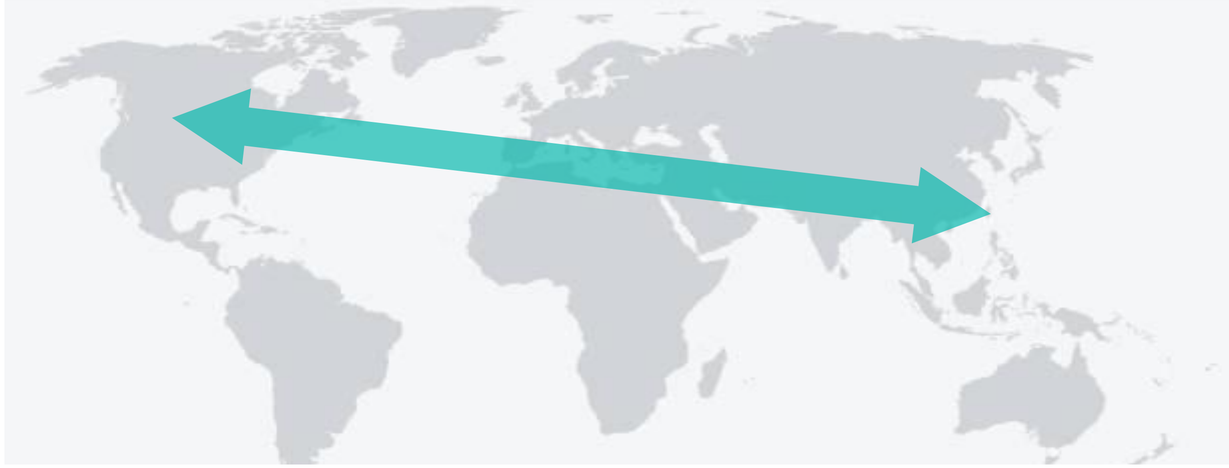
## Delta/A+ Project Meeting

8:50 AM - 149 min | ID: 940668605

### Attendees

Diagnostics

| Attendee | Join & leave times | Location |
|---|---|---|
| TO Tomáš Němec | 8:50 AM - 11:18 AM | Praha 1 |
| CE Cermakova Jirina | 9:00 AM - 9:06 AM | Prague |
| RA Radek | 8:53 AM - 11:18 AM | Bystřice |
| DO DOUCEK Ales (UJV Rez) | 8:50 AM - 11:18 AM | Husinec |
| LE Leadtech Simon | 8:58 AM - 10:52 AM | Kaohsiung City |
| CH Chun Han chunhanli@itri.org.tw | 9:13 AM - 9:15 AM | Kaohsiung City |
| CE Cermakova Jirina | 9:06 AM - 11:18 AM | Prague |
| LO Lopez Mathias | 9:00 AM - 11:18 AM | Husinec |
| CH Chris Lee | 9:26 AM - 9:50 AM | Taipei |
| CH Chun Han chunhanli@itri.org.tw | 9:15 AM - 11:18 AM | Kaohsiung City |



- COMMUNICATE VIA E-MAILS ON WEEKLY BASIS
- ONLINE VIDEO CONFERENCE CALLS ARE HELD MONTHLY TO SHARE PROGRESS FROM EACH PARTY


KEEP MOVING FORWARD!
2020.01.01 TO 2022.06.30

Project TM01000018

# Development of high-performance catalyst materials and high-durability metallic plates for intelligent automated manufacturing of fuel cell stacks

2020 – 2022 (30 months)

TA CR DELTA 2 Programme (CZ)

A+ Industrial Innovative R&D Program (TW)

Tomáš Němec, Institute of Thermomechanics of the Czech Academy of Sciences (*nemec@it.cas.cz)*

T A C R DELTA 2 Programme

INSTITUTE OF THERMOMECHANICS
CZECH ACADEMY OF SCIENCES

ÚJV

# TM01000018 – Project partners

Czech partners:

ÚJV Řež, a. s.

Institute of Thermomechanics of the Czech Academy of Sciences, v. v. i.

Taiwanese partners:

Leadtech International Co. Ltd.

e-FORMULA Co., Ltd.

# TM01000018 – Beginning of cooperation

- Contacts between UJV and ITCAS started thanks to the activities of HYTEP – Czech Hydrogen Technology Platform
- Cooperation with the Taiwanese partner ITRI was initiated in 2018 thanks to the funding from the Czech Academy of Sciences in terms of its Mobility projects (internal programme for bilateral cooperation)
- The CAS mobility programme supports matchmaking between Czech and Taiwanese research institutions and stimulates contacts between interested parties
- ITRI researchers visited ITCAS in October 2018, and ITCAS researcher spent 3 months in ITRI in spring 2019

HYTEP
CZECH HYDROGEN TECHNOLOGY PLATFORM
SINCE 2007

工業技術研究院
Industrial Technology Research Institute

# TM01000018 – Bilateral partnership initiation

- The activities on the Czech side regarding the development of an innovative method for fuel cell catalyst production matched quite well with the activities on the Taiwanese side to advance the use of hydrogen technologies
- Project partners from Taiwan had been selected by ITRI based on their long-term activities in the area of hydrogen fuel cells and green technologies

# TM01000018 – Motivation for cooperation with Taiwanese partners

- ITRI conducts long-term research activities targeted at hydrogen and fuel cells (Green Energy Technologies Laboratory)
- Several companies in Taiwan are already involved in technology development of fuel cells and hardware parts of fuel cells and their integration into hydrogen systems
- Taiwan has already developed plans to introduce hydrogen technologies in the energy sector and transportation to combat dependency on foreign suppliers of coal and oil

# TM01000018 – Project activities and communication strategy

- Activities of both parties, as defined in the Common Proposal, are complementary:
  - Fuel cell stack components development (Taiwan)
  - Catalyst development (Czechia)
- The common goal is to improve the fuel cell design, durability and efficiency, and to optimize the manufacturing process of fuel cells
- Reporting of project goals by email and messenger, video conferences are being organized every 6 months

# TM01000018 – Impact of COVID-19 on project activities

- Activities on the bilateral level are not impacted by the COVID-19 restrictions considerably
- Travel expenses for Taiwan visits had to be relocated to material costs
- The COVID-19 situation in the Czech Republic caused a slight slow-down of the project activities (related to higher absence of employees, longer supply times from subcontractors ...)

# TM01000018 – Benefits of international cooperation

- Contacts with fuel cell hardware producers
- Staying in touch with latest fuel cell technology developments
- Potential of follow-up future projects between Czech and Taiwanese institutions
- Cooperation with Taiwanese companies may help to accelerate the commercialization of catalyst technology developed at ITCAS and UJV

**TM01000018**

- Thank you!

# HOW TO FIND YOUR MATCH?

# Partnering Tool


**If you are interested in finding a suitable foreign partner or you would like to offer your cooperation**, use the buttons for registration.

Post a Partner Request | Post a Partner Offer

The Technology Agency of the Czech Republic helps Czech enterprises and research organizations to establish cooperation in the area of applied research and innovations.

# TACR Partnering Tool

## Partnering tool: Partner Request

The Technology Agency of the Czech Republic helps both Czech and foreign enterprises and research organizations to establish cooperation in the area of applied research and innovations. If you are interested in finding a suitable partner for research cooperation, please, fill in this form, which serves as a basis for bilateral cooperation under the DELTA 2 Programme.
For more information about our programmes visit our website: www.tacr.cz or www.tacr.cz/en

*Povinné pole

Contact Name *

Vaše odpověď

Contact Surname *

Vaše odpověď

Email Address *

Vaše odpověď

Phone Number

Vaše odpověď

Name of Organisation/Institution/Company *

Vaše odpověď

Country *

Vaše odpověď

Type of organisation *

- research organisation
- small enterprise
- medium enterprise
- large enterprise
- public administration

**Project**

Topic *

Vaše odpověď

Keywords *

Vaše odpověď

Please specify your cooperation interest *
Describe your project idea here

Vaše odpověď

Description of your organisation *

Vaše odpověď

Description of your partner of interest *
Please describe the type of partner you are looking for and the tasks they would perform in your project

Vaše odpověď

Programme of interest

- [ ] DELTA 2 (bilateral international R&D cooperation)

Countries of interest *

Vaše odpověď

The request expires *
Please, specify day/month/year, when this request expires.

Datum

dd.mm.rrrr

# TACR Partnering Tool

**Database of partner offers/requests:**

Offer | Request

Country + | Type of organisation + | Topic + | Keywords

1 - 6 / 6

| Directory |
| --- |
| CEITEC, Brno University of Technology |
| Biology Centre CAS, SOWA-RI |
| Taeseok P&I Co.,Ltd |
| Farmtec |
| IAM Co., Ltd. |
| Institute of Thermochanics, CAS |

**Name of Organisation/Institution/Company**: CEITEC, Brno University of Technology
**Type of Organisation** : research organisation
**Country**: Czech Republic

**Contact**
**Name**:
**Surname**:
**Email** :
**Phone Number** :

**Information**
**Keywords**: Materials, Recycling, Materials in medicine, nanocomposites, modeling

# PITCH SESSIONS

# Drazni revize s.r.o.

## Description of your organisation

Company was founded in 2014 and main business areas are: 1) design, testing and inspection of the railways safety systems, 2) renewable energy, 3) nanotechnology-based advanced sensors, and 4) customer-oriented solutions - complex systems solutions (Industry 4.0 & cyber-physical systems).

## Specify your cooperation interest

We seek partner for collaboration in applied research – development of flexible electronic with embedded smart sensors (3D printing combining polymer-metals composites and pressure/temperature/current/humidity sensors) for transportation and medical industry applications

## Description of your partner of interest

Company or consortium (company & research institute) with experience in areas of additive manufacturing (3D printing) / sensors / flexible electronics

## Research areas

Our research is in area of smart sensors for transportation / medical / manufacturing industry, green energy and biomedical sensors

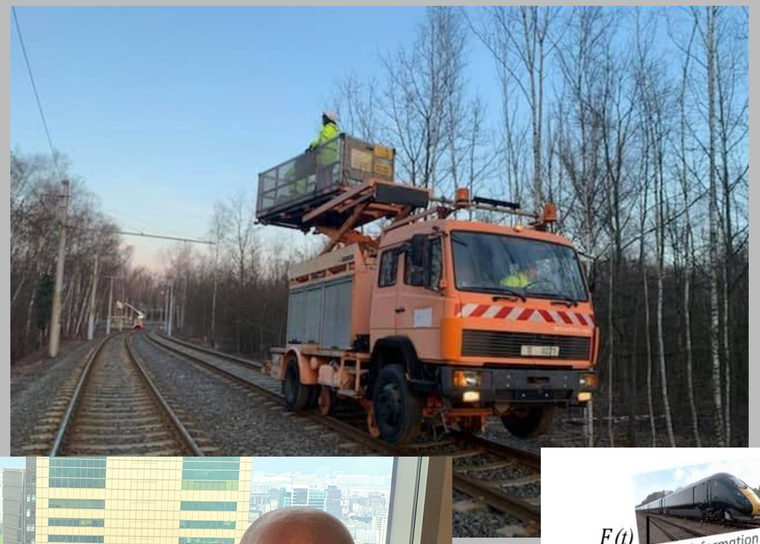
## Keywords

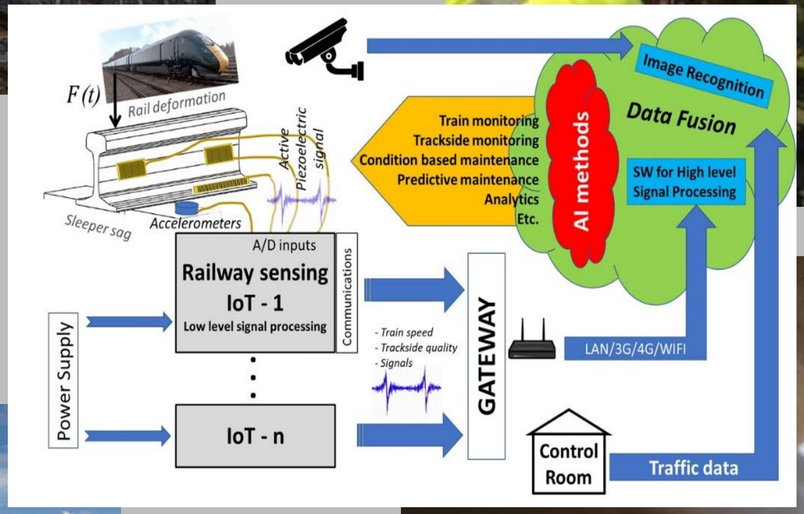
3D printing; smart sensors; Industry 4.0; flexible electronics

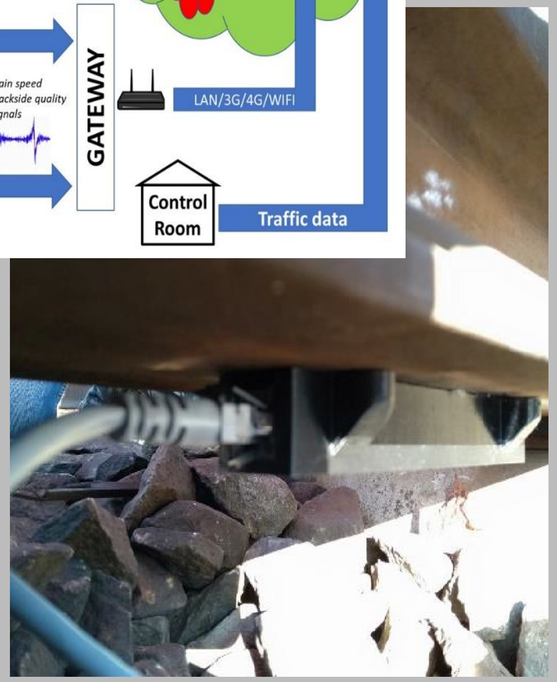
***Detailed data are available upon request***

# Contact info


- Assoc. Prof. Ivo Stachiv, Ph.D.
  & Chih-Yun Kuo, M.A.
- ivo.Stachiv@draznirevize.cz
  & ginny@draznirevize.cz
- +420605728875
  & +420737198007
- Drazni revize s.r.o.
- Small enterprise
- https://draznirevize.cz/
- Czech Republic




F (t)
Rail deformation
Active Piezoelectric signal
Sleeper sag
Accelerometers
A/D inputs
Railway sensing
IoT - 1
Low level signal processing
Communications
Power Supply
IoT - n
- Train speed
- Trackside quality
- Signals
GATEWAY
LAN/3G/4G/WIFI
Control Room
Traffic data
Train monitoring
Trackside monitoring
Condition based maintenance
Predictive maintenance
Analytics
Etc.
AI methods
Image Recognition
Data Fusion
SW for High level Signal Processing



# Pitch session

**Description of your organisation**

GEL of ITRI focus on renewal energy developing

**Research areas**

Fuel cell relative system on vehicle application

**Specify your cooperation interest / Description of your partner of interest**

Professional vehicle driver and motor(IPM)

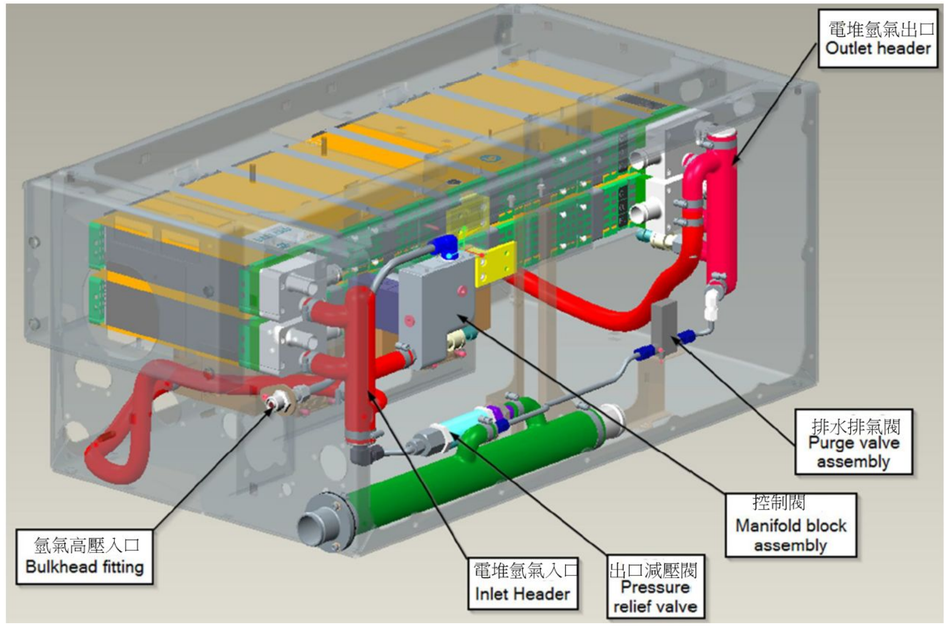
**Keywords**

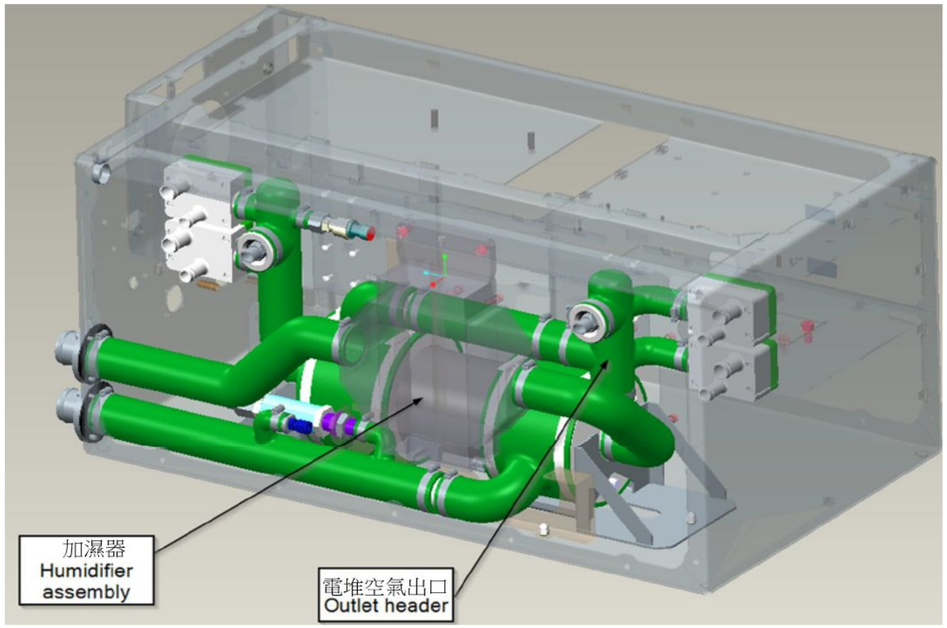
fuel cell, hydrogen, vehicle application

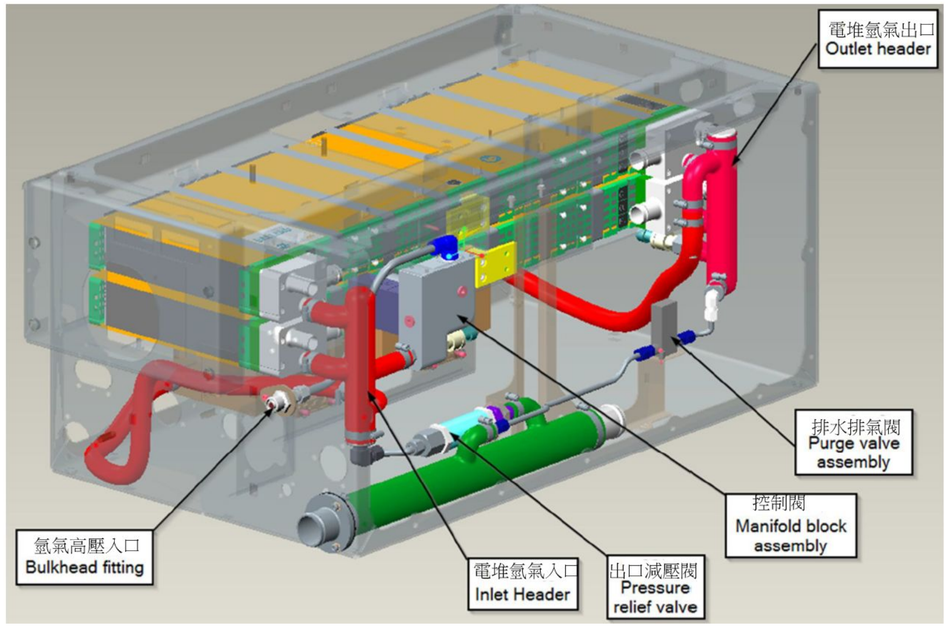
# Contact info

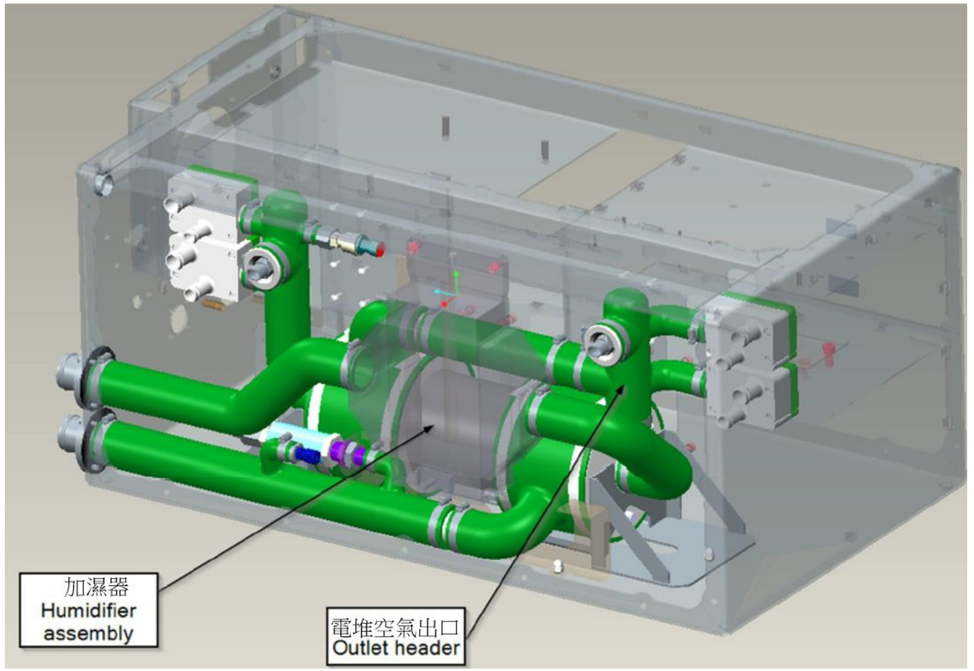

- **ITRI**
- **Green Energy Lab**
- Renewal energy
- www.itri.org.tw
- Taiwan, ROC
- Mr. Mark Lin
- marklin@irti.org.tw
- 886-6-3636936

# 60kW fuel cell power system architecture for hydrogen, air, cooling pipeline



# Pitch session

## Description of your organisation

Healthcare Systems Consortium is a healthcare platform in Taiwan. It offers a platform to facilitate hosting conferences and workshops, to foster cooperation between industry and academia so that to encourage the medical industry to take advantage of other business opportunities.

## Research areas

Simulation Optimization/Hospital Systems/Patient Safety/Productivity and Efficiency Measurement/Resource Allocation & Distributed Decision Systems

## Specify your cooperation interest / Description of your partner of interest

Maximizing Healthcare Efficiency, International Trade/ Hospital, Medical Company

## Keywords

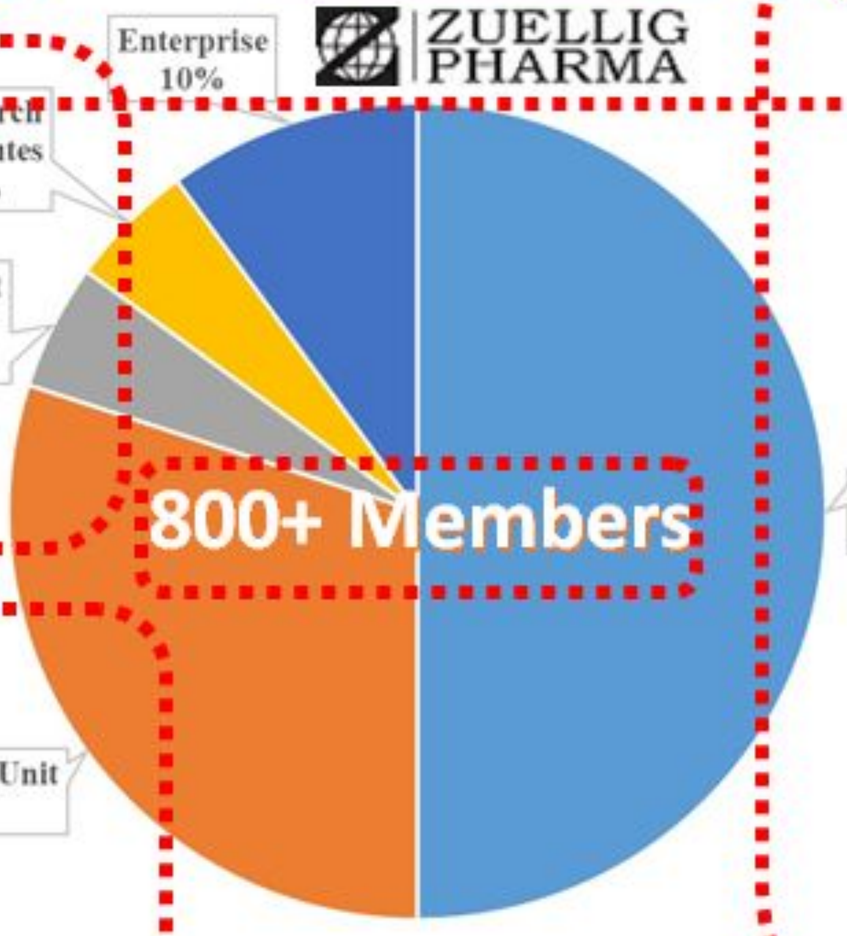
Healthcare, Hospital Systems, Optimization, COVID-19, Medical Devices

# Contact info


- Tunghai University Healthcare Systems Consortium (HSC)
- Education
- http://hsc.thu.edu.tw
- Taiwan
- Prof. Shao-Jen Weng
  sjweng@thu.edu.tw


HSC 醫療系統聯盟 Healthcare Systems Consortium

# Members





康倍得機械股份有限公司
HEX 瑞德感知
新唐人電視台 New Tang Dynasty Television
CADMEN Taiwan Auto-Design Co.
Think 雲想科技
萬寶綠生物科技股份有限公司
ZUELLIG PHARMA
工業技術研究院 Industrial Technology Research Institute
拓撲TRI TOPOLOGY RESEARCH INSTITUTE
臺中市政府衛生局 Health Bureau, Taichung City Government
臺中市政府消防局 FIRE BUREAU OF TAICHUNG CITY GOVERNMENT
員榮醫院 YUAN RUNG HOSPITAL
秀傳醫療社團法人 彰濱秀傳紀念醫院
CHHW 彰化醫院
澄清醫院 CHENG CHING HOSPITAL
台中
臺中榮民總醫院 Taichung Veterans General Hospital
中山醫學大學 CHUNG SHAN MEDICAL UNIVERSITY
光
聯安醫院 (04)2244-1995
豐原醫院 FENG YUAN HOSPITAL
光田醫療社團法人 光田綜合醫院 Kuang Tien General Hospital since1913
賢德醫院 Cender Hospital
秀傳醫療社團法人秀傳紀念醫院 Show Chwan Memorial Hospital

# Healthcare Systems Consortium

Public Sectors Information

Experts Team

Multi-Domains Technology

Private Sectors Information

Dynamic Tracing

Dynamic Tracing

Ministry of Science and Technology

Funding

Input

Medical Rescue Resource Integration Platform Service

Output

Hospital Beds Optimal Use

Healthcare Resources Optimal Allocation

Lean Medical Care Technology

Cloud Information Systems

Join as members

Matchin

HSC members

Hospitals

Enterprises

Governments

# HSC Services

Industry-Academia Collaboration

Workshop & Forum

Global/Local Corporate Visit

HSC

Medical Products & Equipment

International Patient Services

3 Day Free Evaluation

# 2017 HSC Grand Opening



# Q&A

## WE DO OUR BEST THINKING AND CREATING BEHIND HEALTHCARE.

No. 1 Multi-disciplinary Healthcare Platform in Taiwan

# Pitch session

**Description of your organisation**

The Ministry of Science and Technology has promoted the AI Innovation Research Program and established four AI research centers, including the Artificial Intelligence for Intelligent Manufacturing Systems Research Center (AIMS), which is located at National Tsing Hua University and focuses on intelligent manufacturing. The goal of AIMS is to establish a world-class AI research center that will build on Taiwan's traditional strength in manufacturing and make critical contributions to advance it to the next level.

**Research areas**

AIMS coordinates many outstanding research teams and projects in Taiwan in the field of intelligent manufacturing, including promising areas and applications such as artificial intelligence, deep learning, machine vision, machine network, big data analysis, intelligent agriculture, intelligent machinery, etc.

**Specify your cooperation interest / Description of your partner of interest**

Intelligent Manufacturing, AI Solutions for Smart Production, Smart Factory.

**Keywords**

Intelligent Manufacturing, AI Solutions for Smart Production, deep learning, big data analytics, intelligent machinery.

# Contact info


- Artificial Intelligence for Intelligent Manufacturing Systems (AIMS) Research Center, MOST, Taiwan
- Research center
- https://www.aims.org.tw/
- Taiwan
- Che-Wei Chou, wade.chou@ie.nthu.edu.tw

# Pitch session

## ◆ Description of your organisation

As the world demand for healthy protein source increases, the animal vaccine industry plays an important role in ensuring antibiotics-free livestocks. To facilitate the development of the industry, NPUST initiated The International Degree Program in Animal Vaccine Technology to provide world-class training for industry professionals with an international faculty consisting of expert researchers.

## ◆ Research areas

Animal vaccine development; Adjuvant; Diagnostic kit; Delivery system; Expression system

## ◆ Specify your cooperation interest / Description of your partner of interest

Interdisciplinary collaboration

## ◆ Keywords

Vaccine, Adjuvant, Biotechnology,

# Contact info


- International Degree Program in Animal Vaccine Technology / Innovative Bioproducts Technical Service Center / Animal Biologics Pilot Production Center
- National Pingtung University of Science and Technology
- Taiwan
- Contact person:

1) Professor & Director
Chun Yen Chu /
cychu@mail.npust.edu.tw

1) Dr. Hsing Chieh Wu /
hcwu@mail.npust.edu.tw

國立屏東科技大學
National Pingtung University of Science and Technology

# Animal Vaccine and Adjuvant Development in IAVT

**Professor & Director**
**Chun Yen Chu**


**International Degree Program in Animal Vaccine Technology**

IAVT

國立屏東科技大學
National Pingtung University of Science and Technology

2016
Animal
Biologics Pilot
Production
Center

2005
GIAVT

Graduate Institute of Animal Vaccine Technology

Animal Vaccine &
Adjuvant
Development

2016
IAVT

International Degree Program in Animal Vaccine Technology

2006
Animal
Vaccine Pilot
Plant

**International Degree Program in Animal Vaccine Technology**

IAVT

動物製劑試量產中心
ANIMAL BIOLOGICS PILOT PRODUCTION CENTER

## The full design conforms to the cGMP specification

- To establish a universal animal vaccine production technology platform.
- To improve the bottleneck of antigen production, and promote industrial upgrading.

**Commercialization!**
**Industrialization!**

QR Code of Animal Biologics Pilot Production Center

**International Degree Program in Animal Vaccine Technology**

IAVT

動物製劑試量產中心
ANIMAL BIOLOGICS PILOT PRODUCTION CENTER

# PLATFORMS

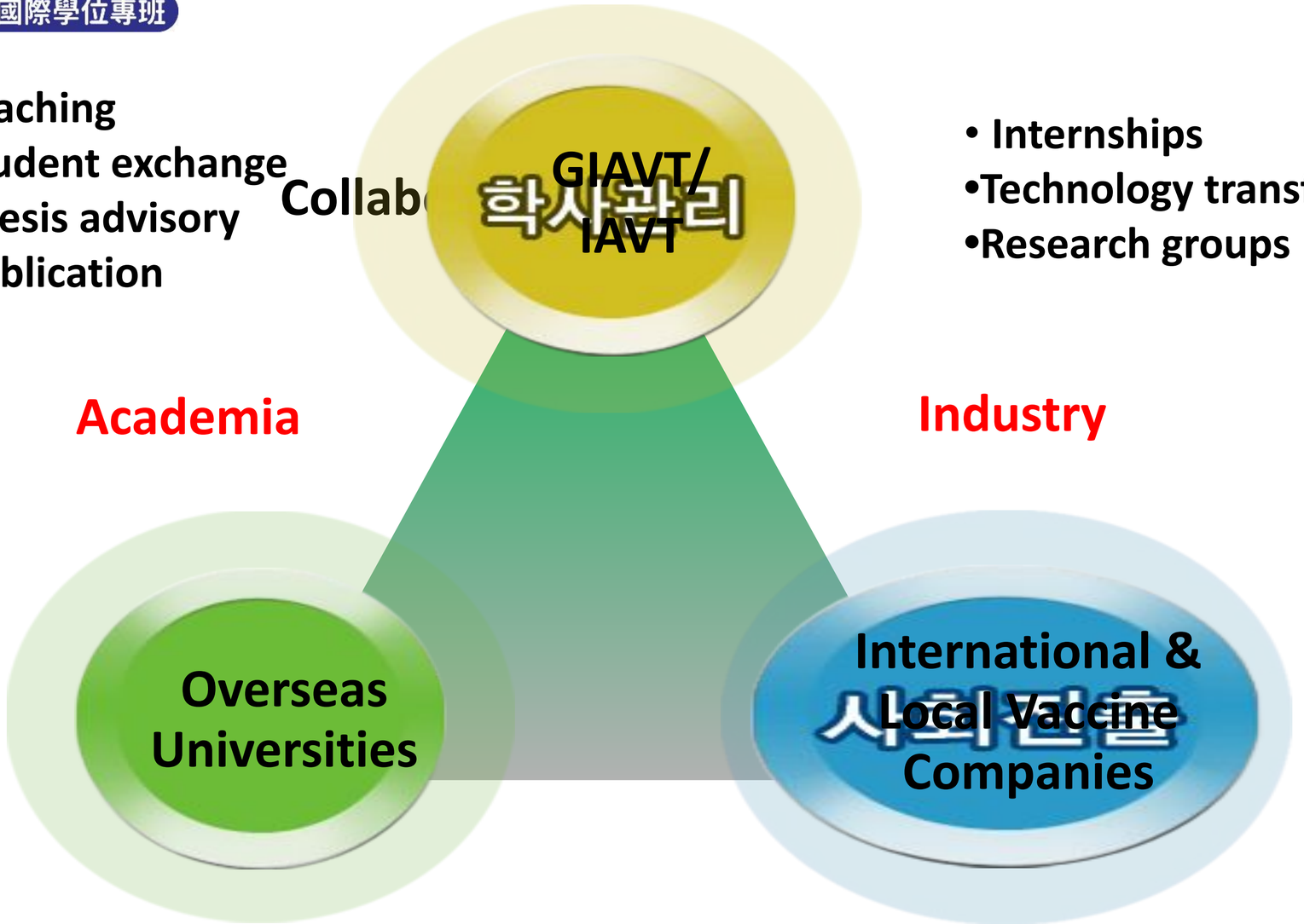
| Platforms | Characteristic | Vaccine |
|---|---|---|
| Cell culture system | 1. Mass production for viral Ag<br>2. Bioreactor<br>3. Modified medium<br>4. Genetic cell line | Avian: Reo, ND, IBD, ILT<br>Swine: PR, JE, CSF<br>Bovine: BEF, IBR, BVD |
| Expression system | 1. Virus like particle<br>2. High yield baculovirus<br>3. Insect cell mass production<br>4. Soluble protein expression<br>5. Fermentation technology | Subunit vaccines<br>Swine: PED, PRRS, PCV2, CSF, S. suis, APP, Er, PmT<br>Bovine: Mh, Sta, E. coli<br>Duck: Ra, Parvovirus |
| Adjuvant | 1. Microparticle<br>2. Slow release technology<br>3. Natural adjuvant<br>4. Plasmid CpG | Toxoplasma<br>Vibrio harveyi<br>CpG |
| Diagnostic kit | 1. Swine disease<br>2. Avian disease<br>3. Bovine disease<br>4. Dog and feline disease | Strip and kit |

# International Degree Program in Animal Vaccine Technology

動物用疫苗國際學位專班

- Teaching
- Student exchange
- Thesis advisory
- Publication

Collab




- Internships
- Technology transfer
- Research groups

NPUST National Pingtung University of Science and Technology

# 創新生物製品技術服務中心

# Innovative Bioproducts Technical Service Center

## 中心宗旨 Purpose

因應創新生物製品由研發端至商業化之產業需求，提供由研發導入生產、效能驗證、法規及市場分析、產品設計與行銷等相關技術服務，建立品牌認知度與影響力，增進國際競爭優勢及拓展市場發展潛力。

We provide related technical services such as the contribution of research and development to production, efficiency verification, laws and regulations, marketing analysis, product design and marketing to meet the needs of industry innovating biological products from research and development to commercialization. At the same time, we will establish brand recognition and influence to improve international competition and develop market potential.

## 服務內容 Service Content

1. 技術開發服務: 種原技術、蛋白質技術、細胞技術、試劑量產，以及相關製程設計等技術。
   Technology development services： Seed, Protein, Cell, Kit production, Process design.
2. 檢驗技術服務: 成份檢測、力價檢測、血清檢測、病原檢測(PCR, qPCR)、動物安全試驗、動物效力試驗。
   Diagnosis services： Component analytics, Titration, Serum analysis, Pathogen analysis, Animal safety and potency test.
3. 生物製品諮詢: 法規諮詢、製程諮詢、技術移轉評估等相關服務。
   Biological product consultation： Legal consultation, Process consultation, Technology transfer.
4. 市場分析與規劃: 市場趨勢分析、製品設計與行銷等相關服務。
   Market analysis and planning： Market trend analysis, Product design and marketing.

## 技術移轉 Technology Transfer

1. 豬假性狂犬病油質佐劑之應用。
   Pseudorabies Inactivated Oil vaccine.
2. 豬巴氏桿菌重組毒素蛋白之應用。
   A Recombinant Toxin Protein of Swine Pasteurella Application in Animal Vaccines.
3. 豬胸膜肺炎放線桿菌**重組毒素**ApxIV在動物疫苗佐劑之應用。
   A Recombinant Toxin ApxIV Protein of *Actinobacillus Pleuropneumoniae* Application in Animal Vaccines and Adjuvants.


**聯絡資訊**

中心主任 朱純燕 教授
聯絡窗口 吳幸潔 助理教授
聯絡電話 08-7703202 #5330
聯絡信箱 cychu@mail.npust.edu.tw

**Contact Information**

| | |
|---|---|
| Director | Prof. Chun-Yen Chu |
| Contact Person | Dr. Hsing-Chieh Wu |
| Phone | 08-7703202 #5330 |
| E - mail | cychu@mail.npust.edu.tw |

# Pitch session

## Description of your organisation

Healing Environment Administration and Research (HEAR) center focuses on the research and development for the elderly people, including the facility improvement, environment design , activities design and the most important of improving the life quality of caregivers.

## Research areas

The program design and evaluate of day care center, including the activities, environment and so on.

## Specify your cooperation interest / Description of your partner of interest

Anyone will be interested to the management and the research of aging society related topics.

## Keywords

Aging society, Dementia, Day-care center, healing environment.

# Contact info


- Center for Healing Environment Administration and Research (HEAR), Tunghai University
- https://sites.google.com/go.thu.edu.tw/hear/home?authuser=0
- http://ba.thu.edu.tw/web/teacher/detail.php?cid=5&id=51
- Taiwan
- Ying-Chyi Chou, Distinguished Professor

ycchou@thu.edu.tw

ycchou466@gmail.com


HEAR CENTER
Healing Environment Administration and Research

# Conferences organized (2019~2020):

- 2019/07/27,m Geriatric Health Care, Environment Design and Artificial Intelligence,（Organizer: Center for Geriatrics and Gerontology, Taichung Veterans General Hospital; Co-organizer: HRAR）
- 2019/07/28- 08/01, Society for Design and Process Science Transformative Research through Transdisciplinary Means International Conference (SDPS 2019).
- 2019/10/26, Integrated Care in the Older People with Dementia,(Organizers: Center for Geriatrics and Gerontology, Taichung Veterans General Hospital and HEAR Tunghai University）
- 2020/08/22, Mental Health and Quality of Life Care in the Older People,（Organizers: Center for Geriatrics and Gerontology, Taichung Veterans General Hospital and HEAR Tunghai University）
- 2020/10/17, Corporate Carbon Reduction Strategies Workshop,（Organizers: Center for Geriatrics and Gerontology, Taichung Veterans General Hospital and HEAR Tunghai University）
- 2020/10/25, Precision Medicine in Elder People Care,（Organizers: Center for Geriatrics and Gerontology, Taichung Veterans General Hospital and HEAR Tunghai University）



# Pitch session

**Description of your organisation**

"Department of Plant Pathology" has researches focused on Mycology, Bacteriology, Virology, Nematology, Plant Pathology, Applied Microbiology, Microbial biotechnology, Microbial Physiology, Genetics, and Ecology, Molecular Interactions of Plant-Microbe, and Plant Disease Management.
"Innovation and Development Center of Sustainable Agriculture (IDCSA)" integrates advanced technology/facility for the improvement of fruit and vegetable long-term storage and stress resistance ability from extreme climate, warming, drought, heavy rain, cold…etc. This center includes four research areas and 13 projects in total to achieve Sustainable Agriculture.

**Research areas**

Plant health care
(*Arabidopsis thaliana*, *Brassicaceae* crops)

Novel materials application
(Nanomaterials and beneficial microbes)

Molecular Plant-Microbes Interactions

**Specify your cooperation interest / Description of your partner of interest**

We are interested in applications of novel materials (nanomaterials and microbes) for increasing plant tolerance to biotic and abiotic stresses. We are looking for partners with same interests.

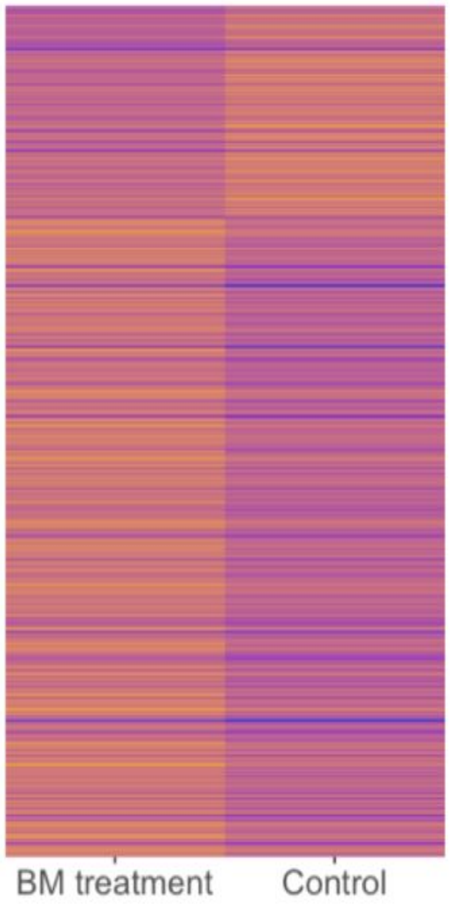
**Keywords**

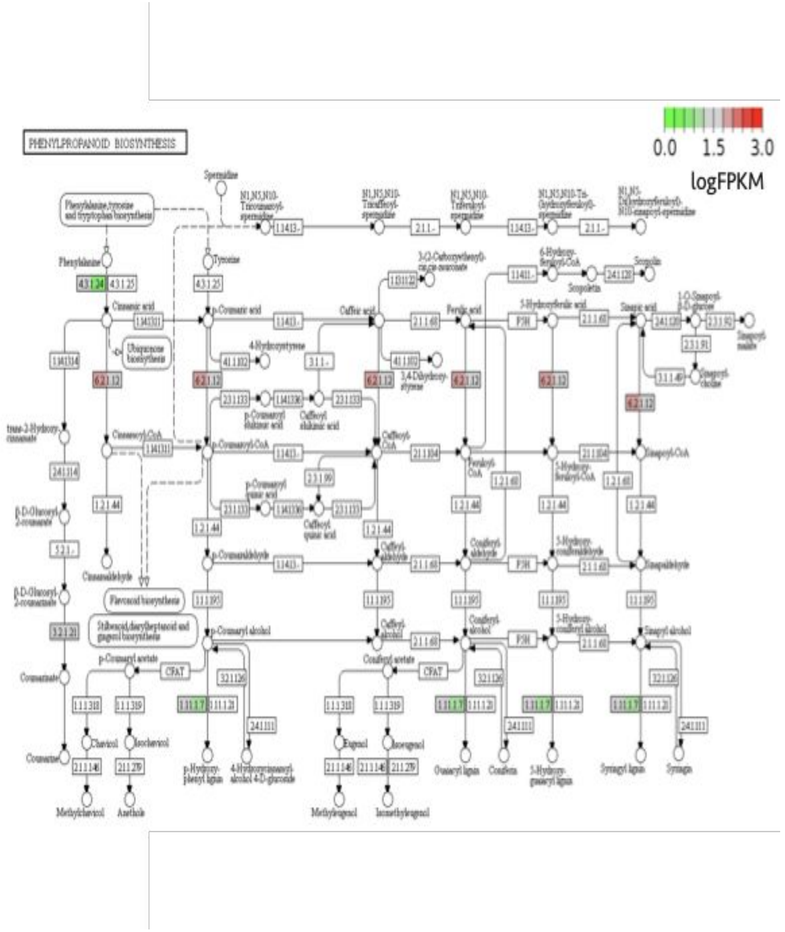
Plant health care, stresses tolerance, molecular plant-microbes interactions, beneficial microbes, *Arabidopsis thaliana*, *Brassicaceae* crops, *Bacillus* spp.

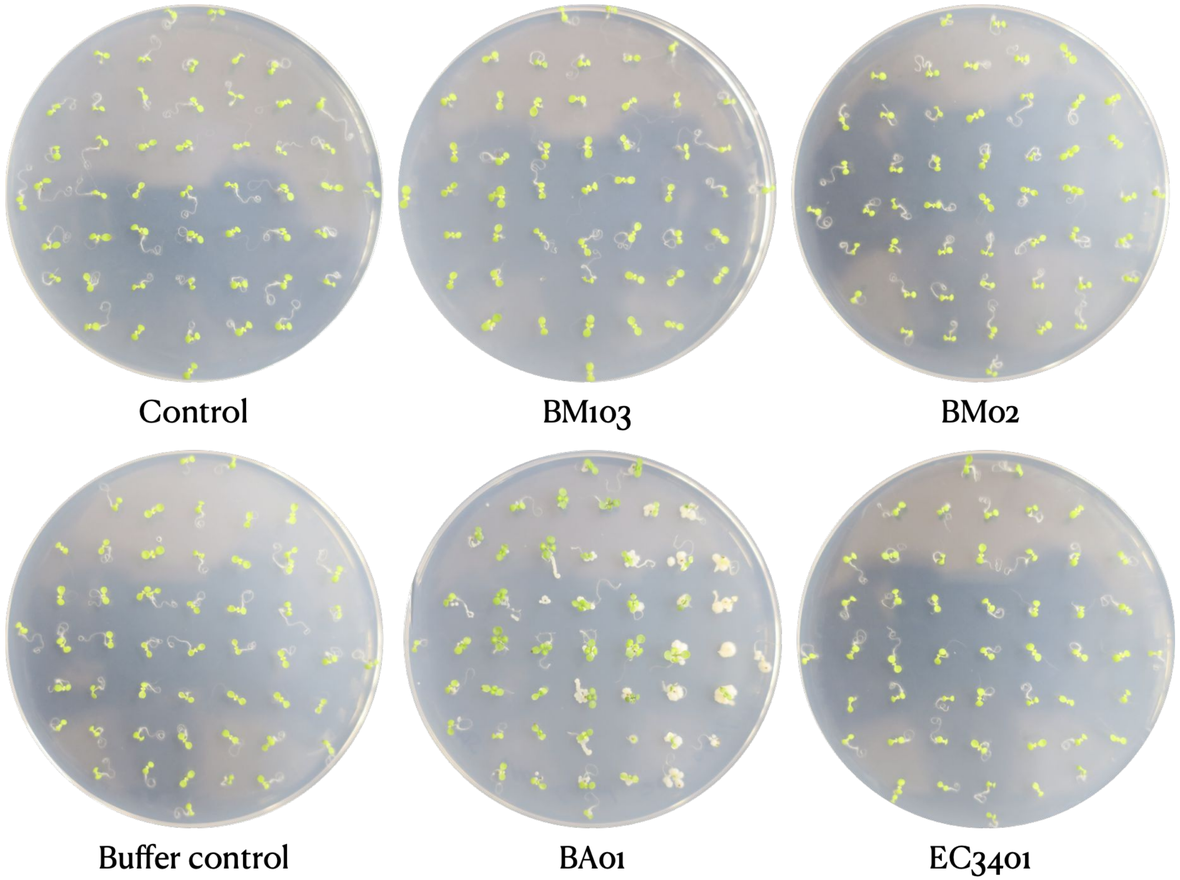
# Contact info


- National Chung Hsing University, "Department of Plant Pathology" and "Innovation and Development Center of Sustainable Agriculture"
- University research group
- http://idcsa.nchu.edu.tw/en/
- Taiwan
- Pi-Fang Linda Chang, pfchang@nchu.edu.tw
- Tao-Ho Chang, tauch@gmail.com

# Optional slide




Transcriptome analysis of strawberry after *Bacillus mycoides* application

Platform for assessing the effects of beneficial microbes on *Arabidopsis thaliana*

# Pitch session

## Description of your organisation

**Yu-Chan Chao**, Ph. D.  Tel: +886-2-2788-2697  E-mail: mbycchao@imb.sinica.edu.tw
Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan, ROC.

## Research areas

Virology, protein engineering, serum detection, and vaccination

## Specify your cooperation interest / Description of your partner of interest

1. **Our technology:**
We have developed a cell-based ELISA system to detect patient serum from humans and animals, including COVID-19. We have also developed baculovirus vector vaccines for combating COVID-19 and other viral diseases.

2. **Partner of interest:**
We are interested to cooperate with those laboratories working on the detection and vaccination of humans and animals.

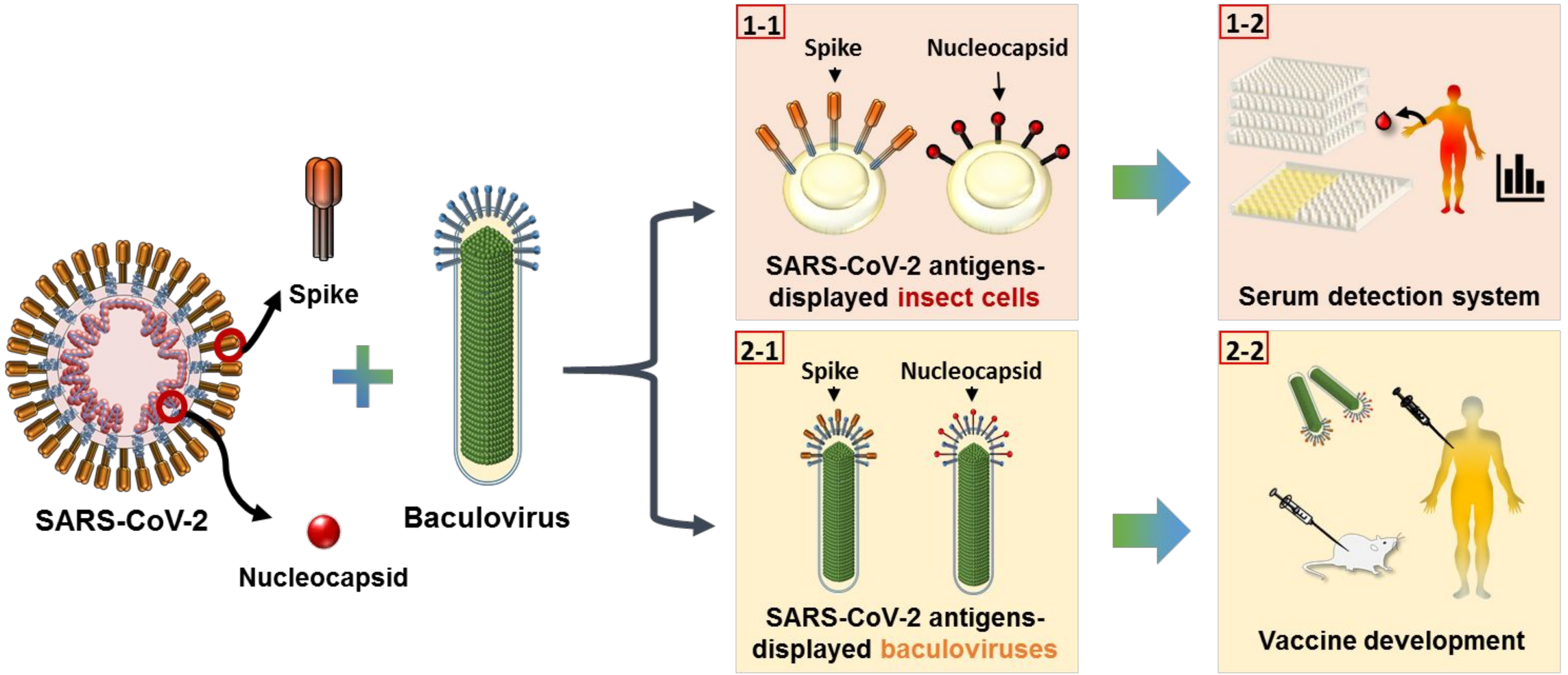
## Keywords

Serum detection, vaccine, baculovirus, protein engineering

# Contact info

**Yu-Chan Chao**, Ph. D.
Tel: +886-2-2788-2697
E-mail:
mbycchao@imb.sinica.edu.tw

**Baculovirus can display viral antigens on insect cell surfaces for patient serum detection.**
**Baculovirus can also display viral antigens on its surface as a vaccine.**



# Pitch session

## Process Information Lab.

**Description of your organisation**

- Process Information Lab. is dedicated to developing novel artificial intelligence technologies for industrial processes.
- We have many AI technologies, including soft-sensors, AI-MPC, and fault diagnosis, with many AI practical experience in chemical plants.
- We are actively seeking international partners to co-develop new technologies.

**Research areas**

- Deep learning technologies on Chemical Engineering, CFD simulation on Chemical Engineering

**Specify your cooperation interest / Description of your partner of interest**

- Artificial intelligence technologies for industrial processes application.
- Developing physics Informed soft-sensors as AI-MPC kernel model
- Bearing Vibration prediction using AI-model: Remaining Useful Life(RUL), and Fault Diagnosis.

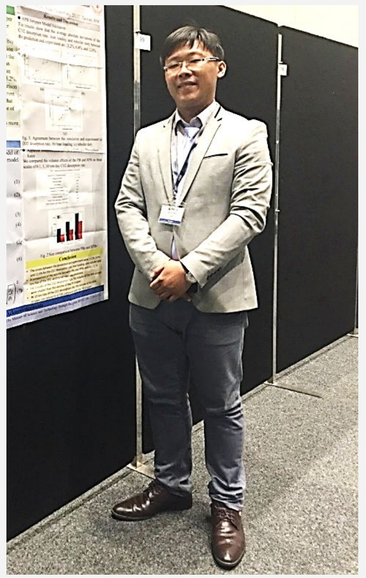
**Keywords**

Artificial intelligence, Deep learning, soft-sensors, AI-MPC, fault diagnosis, remaining useful life

YunTech
國立雲林科技大學

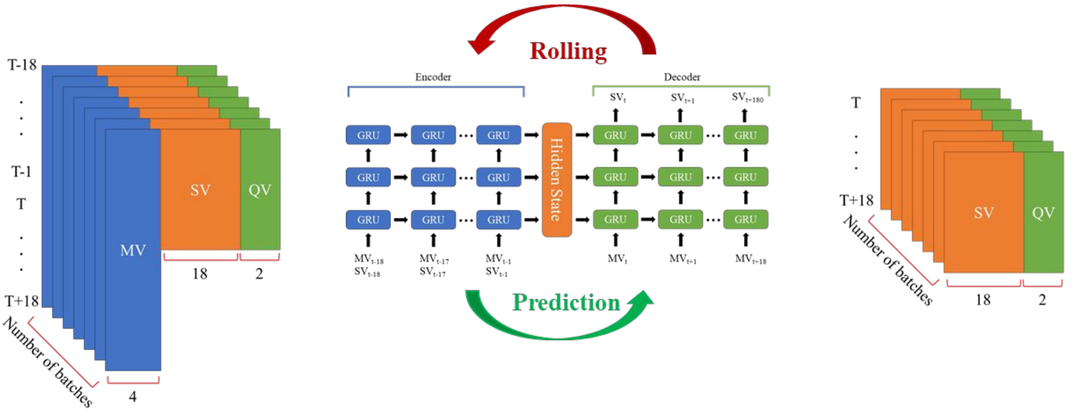
# Contact info


- **Process Information Lab.**
- Department of Chemical and Materials Engineering, National Yunlin University of Science and Technology, Taiwan
- Jia-Lin Kang
  Jlkang@yuntech.edu.tw

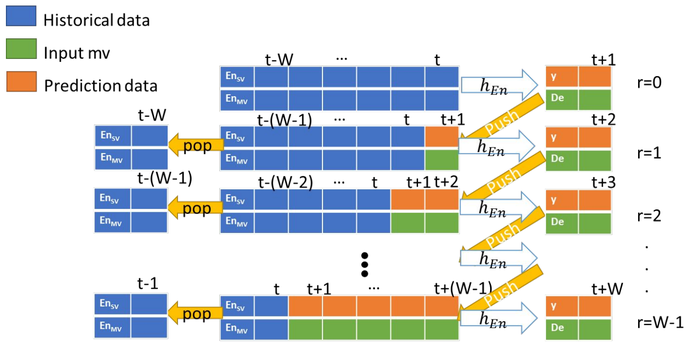



# AI Digital Twin Development for Industrial Plants

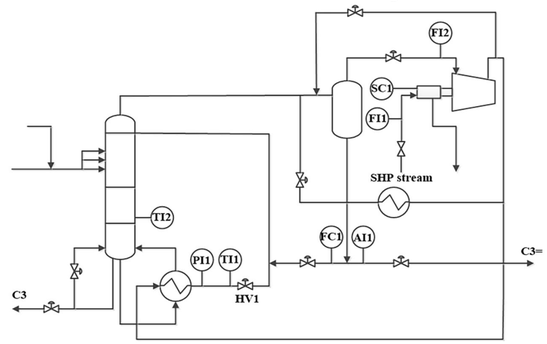
## Neural network Architecture



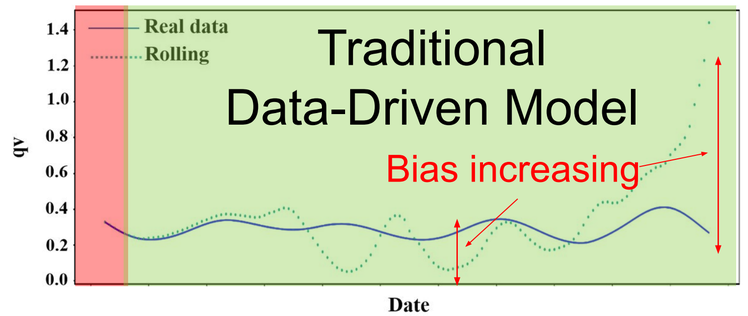

## Rolling Perdition

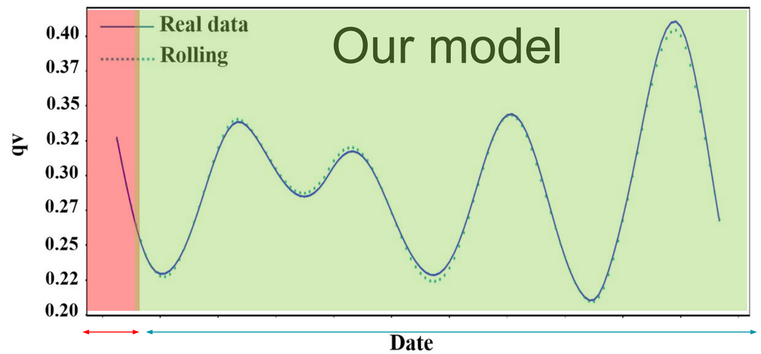



## Case Study




Vapor-recompression C3 (propane-propylene) distillation column simulation case.




Historical support simulation

Without historical data simulation

- A digital twin can assist engineers in evaluating the benefits and safety of the control and operation.
- Our model can accelerate the Digital Twin development.
- The model can independently predict the process quality values very well without historical data.
- **We seek wider applications for current techniques and international cooperation to develop a faster, more accurate, and more reliable AI digital twin.**

YunTech
國立雲林科技大學

# Pitch session

## Description of your organisation

TIRI – Taiwan Instrument Research Institute (formerly known as ITRC) is a government funded research institute pioneering in instrument related frontier researches foreseen by the nation. Our long term prospect is to advance national science competence and to improve the quality of lives for the public.

## Research areas

Thin film material/process development by ALD for semiconductor application, high-k materials, solar cell application, catalyst and transparent conductive film.

## Specify your cooperation interest / Description of your partner of interest

Semiconductor application, solar cell application or catalyst.

## Keywords

atomic layer deposition, ALD, semiconductor, high-k materials, solar cell, catalyst.

# Contact info


- Taiwan Instrument Research Institute, National Applied Research Laboratories
- Website: https://www.tiri.narl.org.tw/
- Country: Taiwan, R.O.C.
- Contact window: Yu-Hsuan Yu ysyu@narlabs.org.tw 886-3-5779911

# Pitch session

**Description of your organisation**

Department of Aeronautics and Astronautics, NCKU

**Research areas**

Unmanned Aircraft System (UAS), UAS traffic management (UTM), Intelligent Systems, Navigation and Flight Control, Computer Vision, Monocular SLAM, VIO, Non-GPS Navigation

**Specify your cooperation interest / Description of your partner of interest**

The development of the traffic collision alert and detect and avoid (DAA) for UAS traffic management (UTM) based on computer vision and artificial intelligent technology

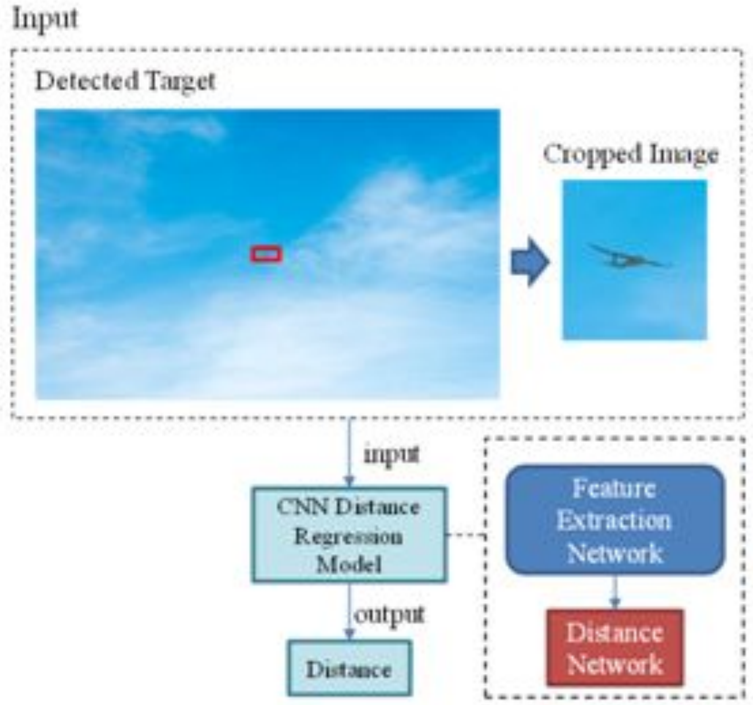
**Keywords**

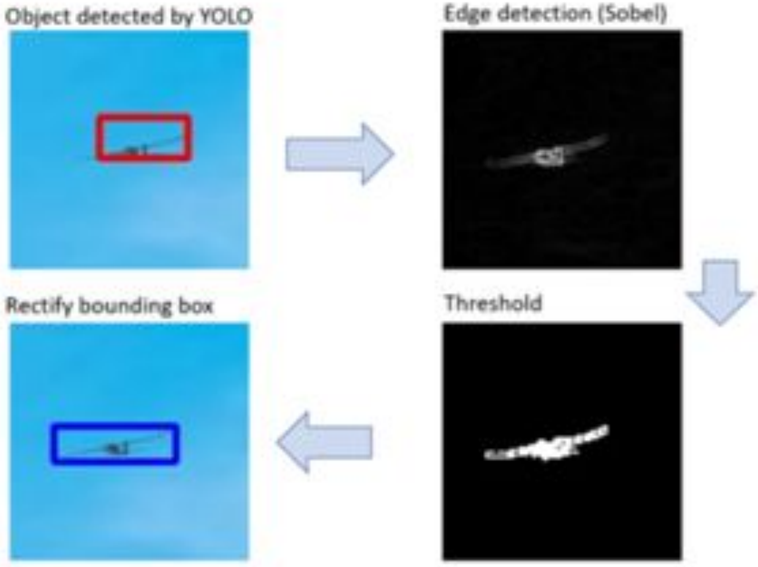
Unmanned Aircraft System (UAS), UAS traffic management (UTM), Artificial Intelligent, Navigation and Flight Control, Computer Vision, Monocular SLAM

# Contact info


- Department of Aeronautics and Astronautics, NCKU
- University
- http://iaa.ncku.edu.tw/p/412-1104-19629.php?Lang=en
- Taiwan
- Dr. Ying-Chih Lai, yingclai@mail.ncku.edu.tw, No.1, University Road, Tainan, Taiwan, TEL:+886-6-2757575 ext. 63648

# UTM and Vision-based DAA

# Questions & Answers

# Closing remarks

**Thank you**
**for attending our webinar!**