

# **Introduction of NECTEC**

**Dr. Sarun Sumriddetchkajorn**  
**Executive Director of NECTEC**

**26 February 2015**

# NECTEC Vision and Mission

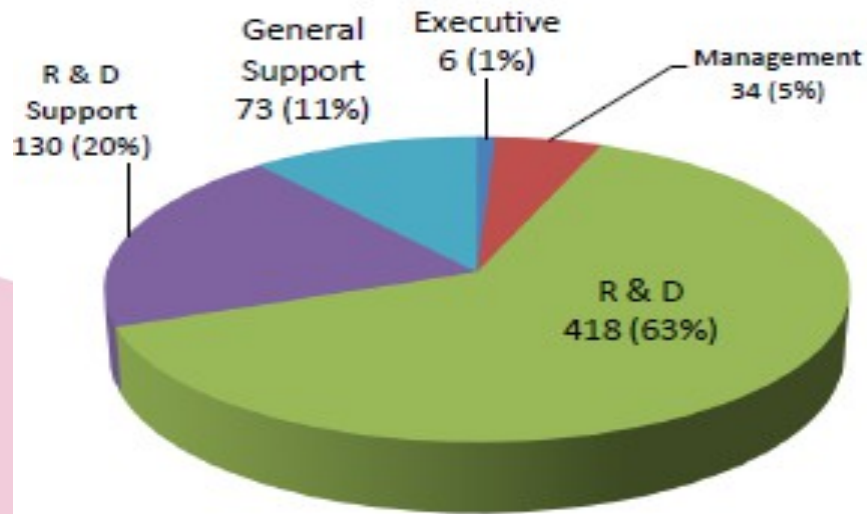
## Vision

“Being a core organization collaborating with alliances in R&D of electronics and computer technologies for strengthening the sustainability of Thai industries and the sufficiency society.”

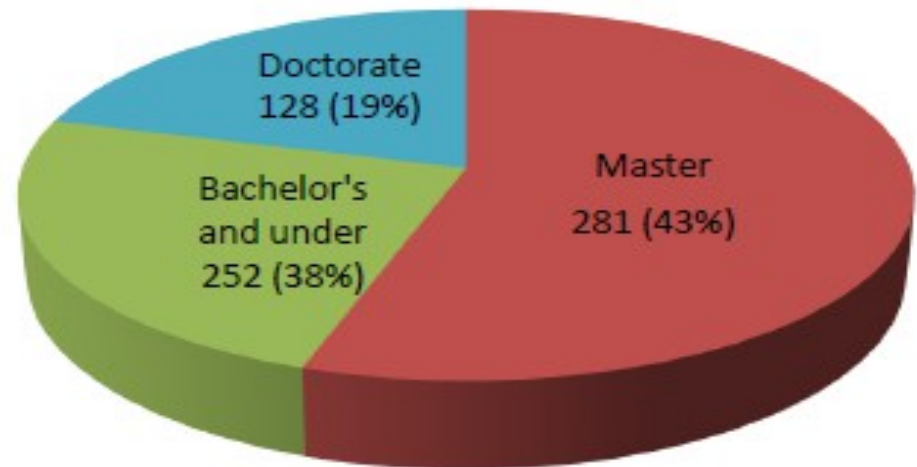
## Mission

- Research, development, design and engineering
- Technology transfer to industries and communities
- Human resource development
- Policy research, industrial intelligence and knowledge infrastructure

## NECTEC's Personnel



## NECTEC's Education



# NECTEC R&D Units

Institute of Technology for Persons with Disabilities and Elderlies	Intelligent Informatics Research Unit	Thai Microelectronics Center
Electronics and Computer Equipment Certification Section	Information Communication and Computing Research Unit	Innovation and Engineering Development Unit
Thai Organic and Printed Electronics Innovation Center	Biomedical Electronics and Systems Development Unit	Advanced Automation and Electronics Research Unit
	Wireless Information Security and Eco-Electronics Research Unit	Intelligent Devices and Systems Research Unit

# R&D Units

**Electronics and Computer  
Equipment Certification  
Section**

**Institute of Technology  
for Persons with  
Disabilities and Elderlies**

**Thai Organic and  
Printed Electronics  
Innovation Center**

**Assistive Technology  
Assessment Service  
Section**

**Applied Research in  
Assistive Technology  
Section**

**Management and  
Planning Section**

## Intelligent Informatics Research Unit

Digital Media  
Informatics Laboratory

Speech and Audio  
Technology Laboratory

Image Technology  
Laboratory

Language and Semantic  
Technology Laboratory

## Information Communication and Computing Research Unit

Large Scale Simulation  
Research Laboratory

Network Technology  
Laboratory

Intelligent Transportation  
Systems Laboratory

Knowledge Elicitation and  
Archiving Laboratory

## Biomedical Electronics and Systems Development Unit

Rehabilitation and Assistive Technologies Laboratory

Biomedical Signal Processing Laboratory

X-Ray CT and Medical Imaging Laboratory

Healthcare Systems and Data Analytics Laboratory

## Wireless Information Security and Eco-Electronics Research Unit

Eco-Green Innovations Laboratory

RF Electronics Laboratory

Wireless Network and Protocol Laboratory

Information Security Application Laboratory

Cybersecurity Laboratory

# R&D Units

## Thai Microelectronics Center

Microelectronics Research and Development Division

Engineering Division

Fabrication Equipments Engineering Section

Facilities and Utilities Engineering Section

Production Section

Marketing Section

Administration and Support Section

Integrated Circuits Design Section

Quality, Safety and Environment System Section

## Innovation and Engineering Development Unit

Industrial Prototype and Product Development Laboratory

Standard and Testing Development Laboratory

Software Engineering and Service Innovation Laboratory



## Advanced Automation and Electronics Research Unit

Embedded System  
Technology Laboratory

Automotive Electronics  
Laboratory

Intelligent SCADA  
Laboratory

Advanced Automation  
System Laboratory

Machine and Drive  
Design Laboratory

## Intelligent Devices and Systems Research Unit

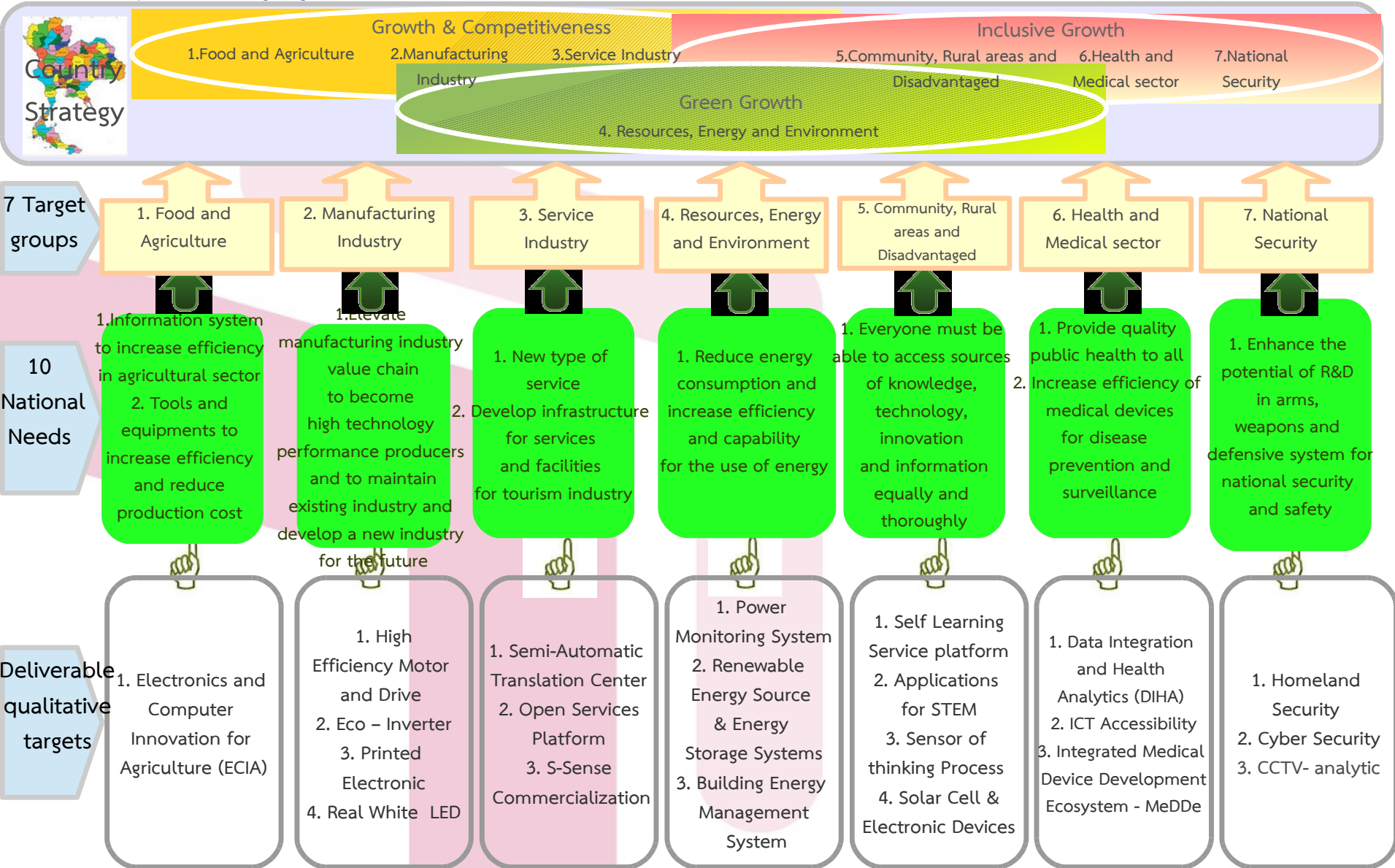
Photonics Technology  
Laboratory

Nano-Electronics and  
MEM Laboratory

Solar Energy Technology  
Laboratory

Optical Thin-Film  
Laboratory

**NECTEC's 3-year Strategic goals (2014-2016)**



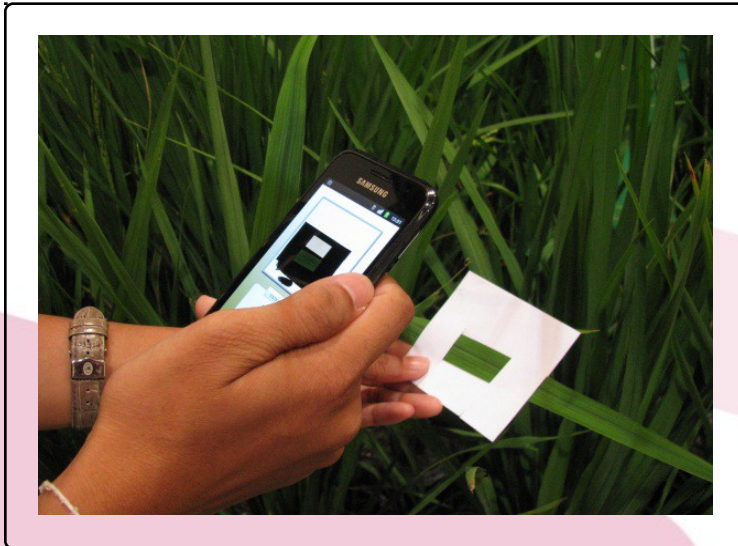
# Research Highlights



Thailand Agriculture Mobile Information System (TAMIS)



## Bai-KhaoApp: Nitrogen Estimator for Rice Field



### Features

- High accuracy with 6 levels of color
- Low energy consumption:
  - 5VDC 20 mA (operating mode)
  - 5VDC 10 mA (standby mode)
- Compact and lightweight:
  - (WxLxH) 40×120 ×25 mm<sup>3</sup>
  - 120 grams

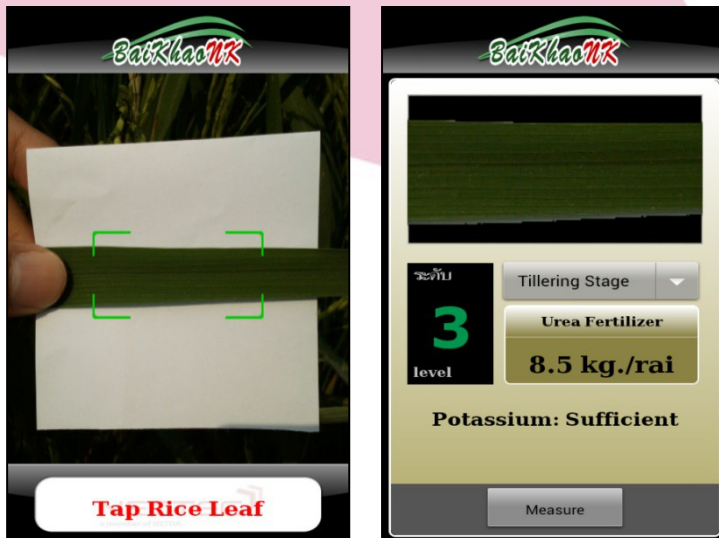
### Examples of fertilization rates:

- **Tillering Stage**

- Color level < 3: Urea fertilizer 12 kg./rai
- Color level = 3: Urea fertilizer 8.5 kg./rai
- Color level > 3: Urea fertilizer 5 kg./rai

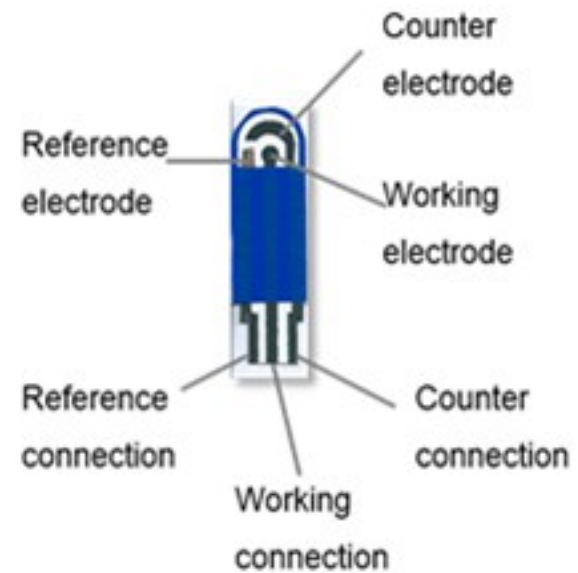
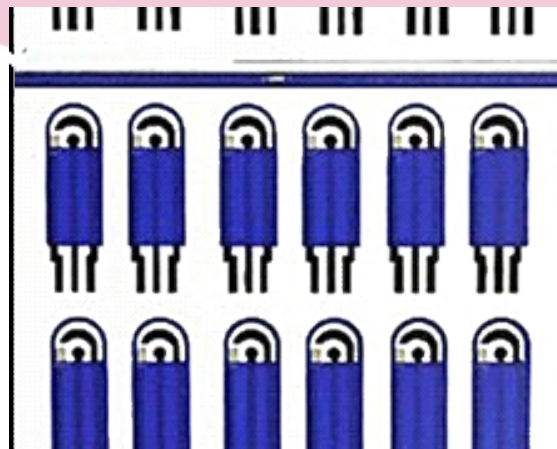
- **Panicle Initiation Stage**

- Color level < 3: Urea fertilizer 16 kg./rai
- Color level = 3: Urea fertilizer 12.5 kg./rai
- Color level > 3: Urea fertilizer 9 kg./rai

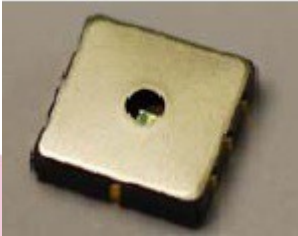




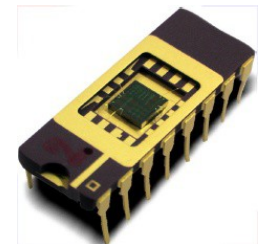
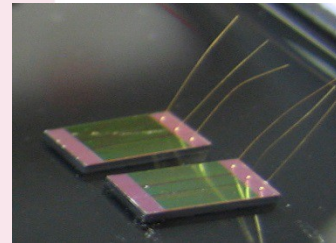
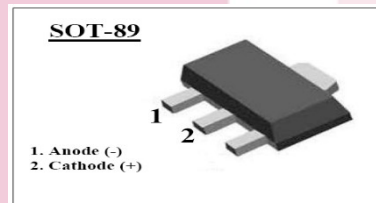
Portable rapid and low cost aflatoxin sensor with LAMP-Electrochemical detection kit

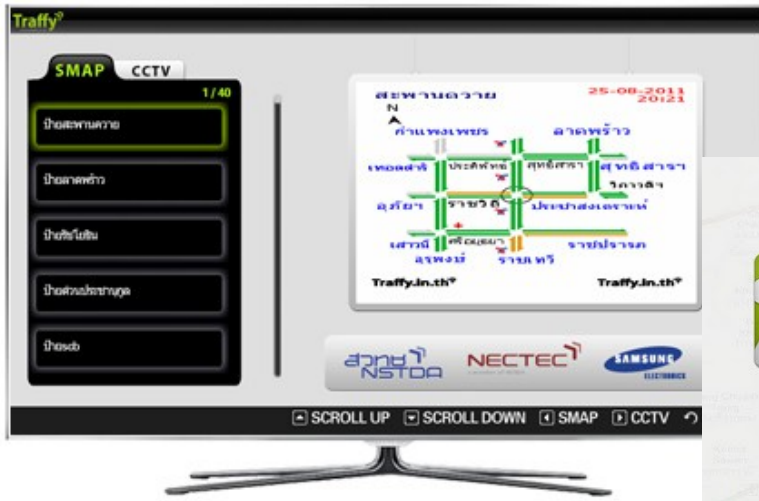


# TMEC's sensors



1. Pressure sensors
2. Humidity sensors
3. Temperature sensors
4. pH sensors (ISFET-based Technology)
5. Sun sensors (phototransistors)





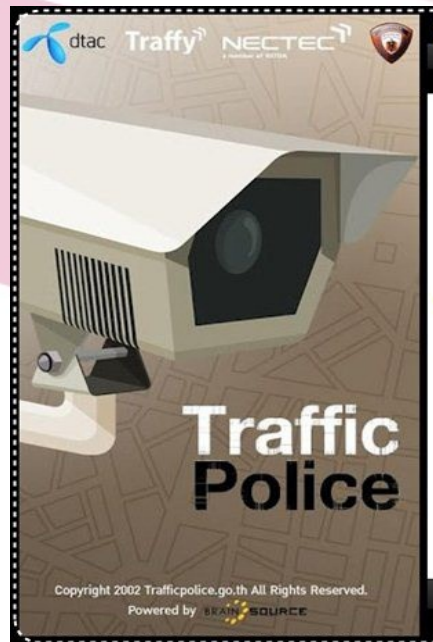
**TRAFFROID**

ข้อมูลการจราจรบนมือถือ

Powered by  
**Traffy**

**ontheroad**  
TRAFFIC IN YOUR HAND

-  **traffic congestion**  
ตรวจสอบสภาพจราจร
-  **traffic news**  
ตรวจสอบข่าวเกี่ยวกับสภาพจราจร
-  **check signs**  
ตรวจสอบป้ายจราจรอัจฉริยะ
-  **check cctv**  
ตรวจสอบภาพจากกล้อง CCTV







## Brain Assisted HCI (Human Communication Interface)

### Digital Hearing Aid

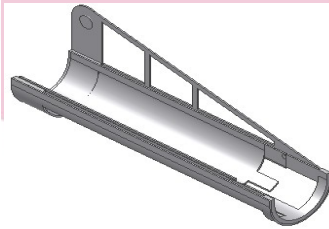


cps = cycles per second, or Hertz

DELTA	THETA	ALPHA	SMR	BETA	HIGH BETA
less than 4 cps	4-8 cps	8-12 cps	12-15 cps	15-18 cps	more than 18 cps
Sleep	Drowsy	Relaxed Focus	Relaxed Thought	Active Thinking	Excited

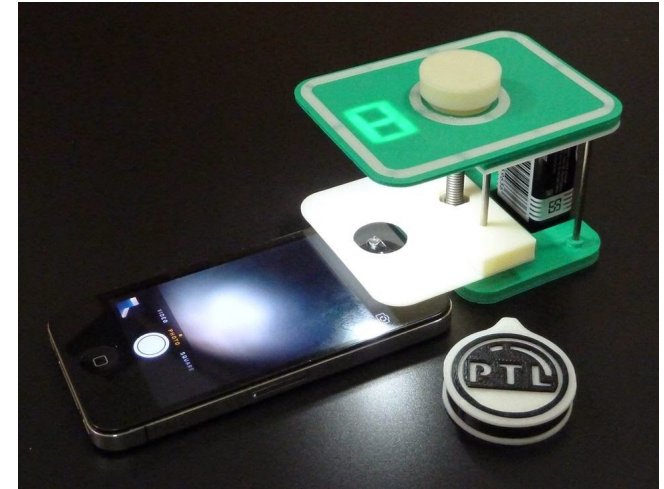
Figure 7-1. The Range of Brainwaves in the Human Brain

### Hand Rehabilitation Robot



### Thai Talking Word Processor and Calculating Aid Tools





EXPLORE | HOW IT WORKS | START YOUR CAMPAIGN

# Dual microscope lens for mobile devices: TWI-VIS

Story | Updates 0 | Comments 29 | Funders 100



**\$6,424** USD  
RAISED OF \$5,000 GOAL

128% 00 time left

This campaign started on Dec 11 and closed on January 10, 2015 (11:59pm PT).

Fixed Funding

**CAMPAIGN CLOSED**

This campaign ended on January 10, 2015

- TWI-VIS (Twice-Vision)**
- Field Prototype
- Crowdfunding via **indiegogo.com**

# Mae Hong Son IT Valley

แม่ฮ่องสอนไอทีวัลเลย์



Develop people, create jobs, and make connections

# Thank you

**National Electronics and Computer Technology Center  
(NECTEC)**

**<[www.nectec.or.th](http://www.nectec.or.th)>**

National Science and Technology Development Agency

Ministry of Science and Technology

Thailand