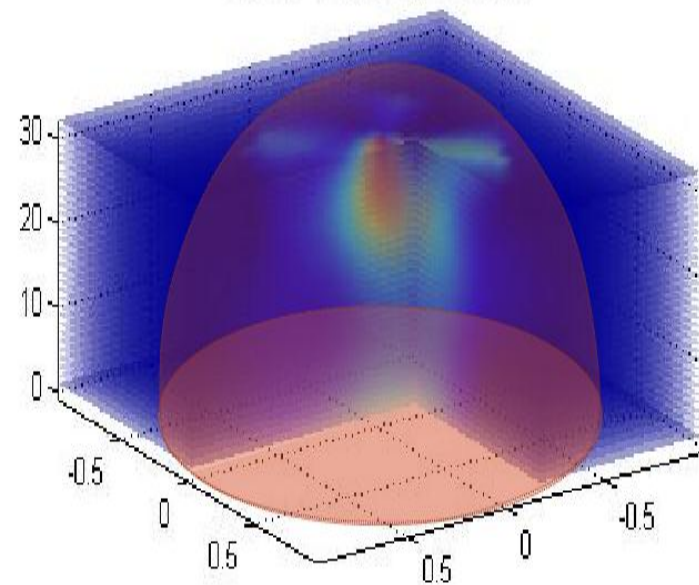




UNIVERSITY—PRIVATE RESEARCH INSTITUTION—  
INDUSTRY COLLABORATION  
FOR TECH-COMPANY START-UP  
IN INDONESIA

WARSITO PTARUNO

4D ECVT Cutted Image Frame#9



Cancer Research Clinics



EDWAR  
TECHNOLOGY

# Beyond C<sup>++</sup>

Capacitive & Computation  
Technologies

To C('See'), Cure & Care

Cancer & beyond



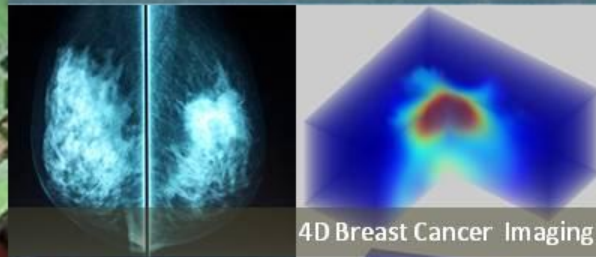
$$\vec{\nabla} \cdot \epsilon \vec{E} = \rho$$

$$\frac{1}{\epsilon_0} \oint \epsilon \vec{E} \cdot \vec{n} d\Gamma = C$$

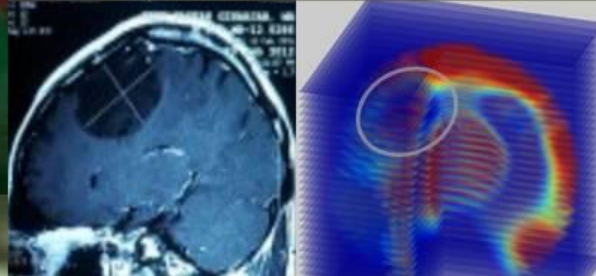
$C = \text{Cancer Case \& Cure}$

ECCT

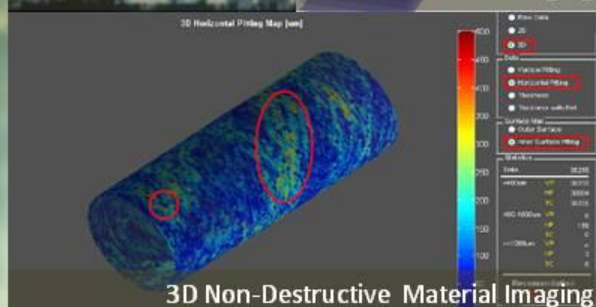
Electro-Capacitive Cancer Therapy



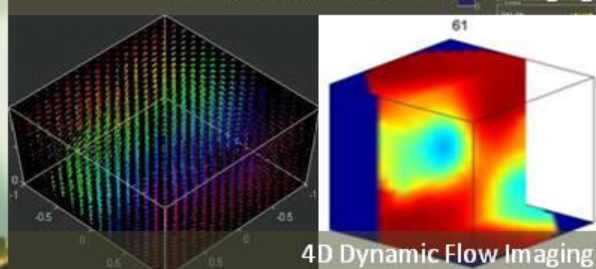
4D Breast Cancer Imaging



4D Brain Function Imaging



3D Non-Destructive Material Imaging



4D Dynamic Flow Imaging



[www.c-techlabs.com](http://www.c-techlabs.com)

The Center for Tomography Research  
Jl. Jalur Sutera Blok Spectra 23C No.10-12  
Alam Sutera, Tangerang 15323 INDONESIA

edwar  
healthcare

EDWAR  
TECHNOLOGY



# Core Technologies

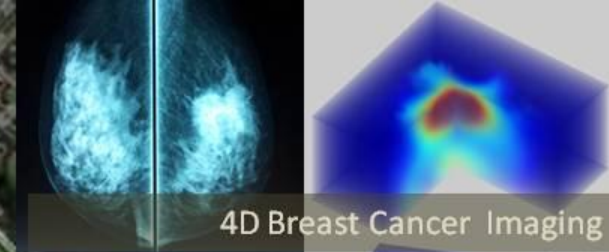
Low level energy sources for diagnosis and treatments:

## ECVT

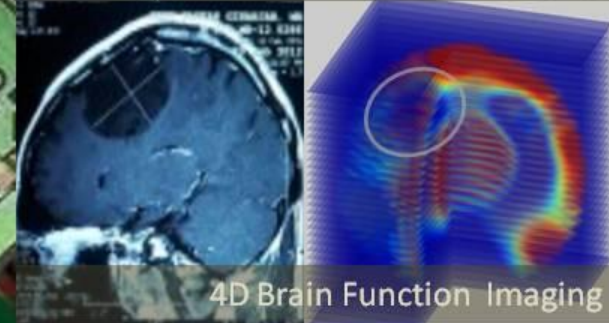
ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY for diagnosis (industrial & Biomedicals)

## ECCT

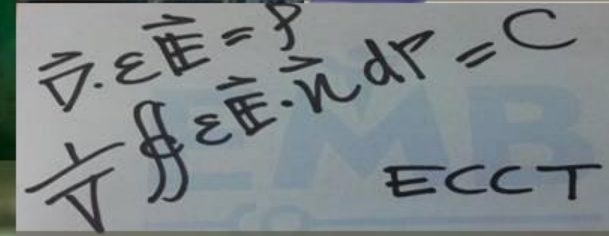
ELECTRO-CAPACITIVE CANCER THERAPY for radiation-free cancer therapy



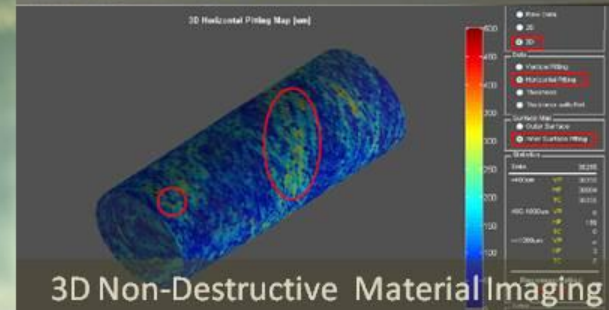
4D Breast Cancer Imaging



4D Brain Function Imaging



Electro-Capacitive Cancer Therapy

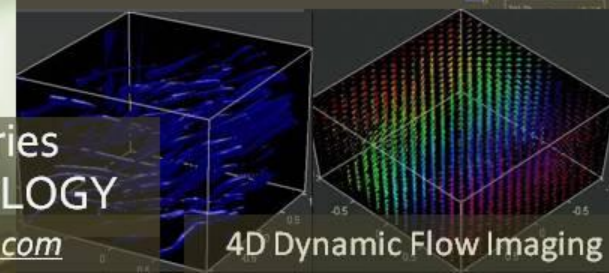


3D Non-Destructive Material Imaging



CTECH Laboratories  
EDWAR TECHNOLOGY

[www.edwartechology.com](http://www.edwartechology.com)



4D Dynamic Flow Imaging

# R&D ACTIVITIES

**TOTAL R&D Staffs:** 20 persons (PhD researchers 5, professor 1, MS 3) = 25% of total full time staffs

**Internship students:** 25 (PhD 5, MS 8, BS 15)

**R&D Budget:** 20-30% of turn over

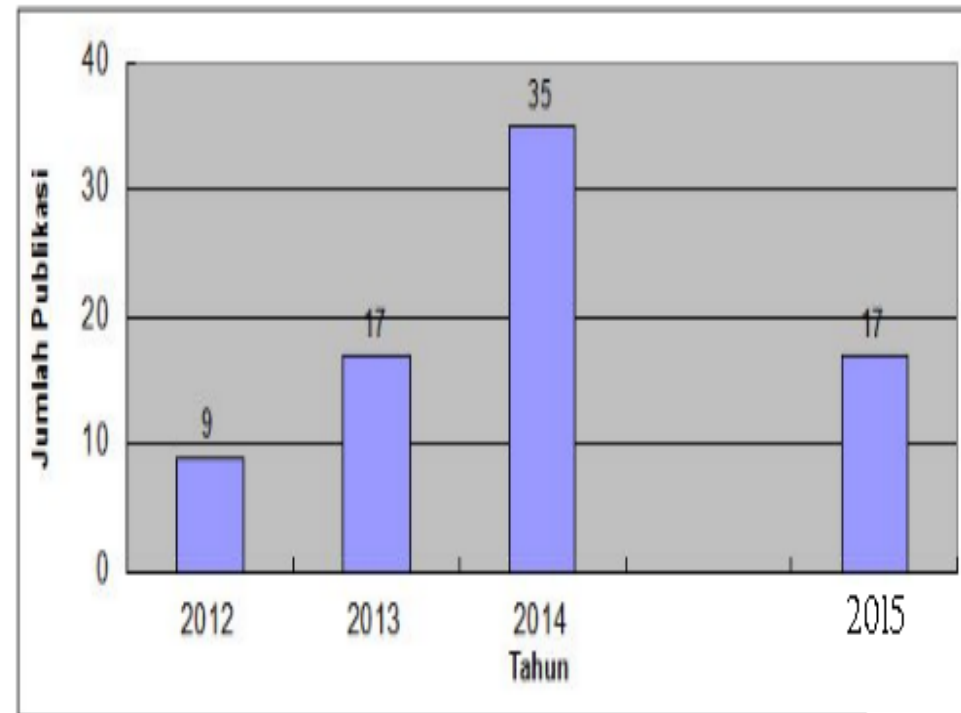
## R&D Divisions

### Basic Research Divisions

- Electronics and Signal Conditioning
- High Performance Computing and Software Engineering
- Sensor's Technology (Ultrasound, Electromagnetic Wave, Capacitance, Impedance)

### Applied Research Divisions

- Non Destructive Testing and Material Inspection
- Industrial Process Imaging
- Medical Physics and Cancer Research
- Cancer Research Clinic



Gambar 1. Jumlah Total Publikasi pertahun

# Business Activities

- Research projects (CTech Labs)
  - NDT, Material Inspection and Process Imaging
- Manufacturing (edwar technology):
  - Tomography System (hardware, software, sensors)
  - Cancer therapy equipments (ECCT apparels, oscillators and accessories)
- Services (edwar healthcare)
  - Breast cancer Screening
  - Cancer Therapy
  - Brain Function Scanning
  - Doctors and medical physicists' Training

# The Milestones

Shizuoka University, JPN

Ohio State University, US

CTECH Laboratories The Center for Tomography Research

EDWAR TECHNOLOGY



**Technology Users:** Ohio State University (USA), NASA, Univ. of Cambridge (UK); B&W (USA); US DoE; BBG (INA), National Univ. of Malaysia, Univ. of Malaya (MLY), KAU (KSA)

# ECVT & ECCT by Numbers

- **10** Years since the first time invented
- **100+** Students graduated worldwide with (9PhDs, 15MSs, 30BSs, 58 Internships)
- **1000+** Cited
- **10.000+** Patients treated with
- **40.000+** Women screened with





# Our Products

*Hi-Techs Made In Indonesia*



# Laboratory Instrumentations

Supporting advance researches @Ohio State University, NASA & NETL (US DOE)

## Multiphase Reactor Engineering Laboratory

ECVT has been developed earlier at the Ohio State University in Professor Liang Shieh Fan multiphase reactor engineering laboratory, and partly in CTECH Labs, Indonesia between 2003—2006. The technique has largely helped studies of multiphase flow phenomena in chemical reactors for oil refineries, powder processing and other applications in the Ohio State University and Morgantown National Energy Technology Laboratory, West Virginia owned by US Department Energy. The technique has also been used for research on development of dielectric material imaging in space shuttle experiments in Florida Kennedy Space Center and for zero-gravity fuel gauging in Goddard Space Flight Center, Maryland.



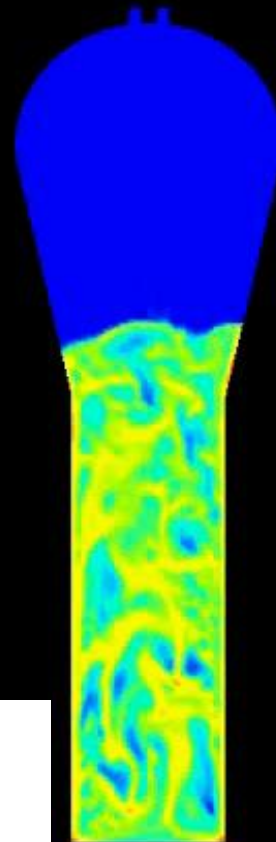
ECVT at the Ohio State University

ECVT at Florida Kennedy Space Center (TOP) and Maryland Goddard Space Flight Center (BOTTOM)

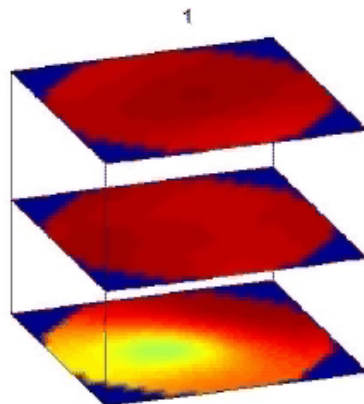
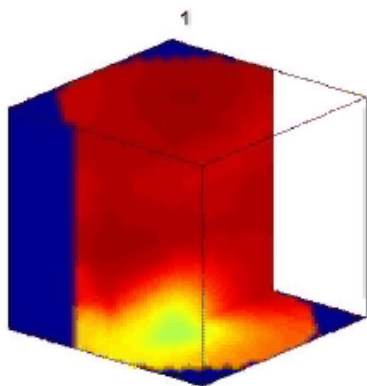
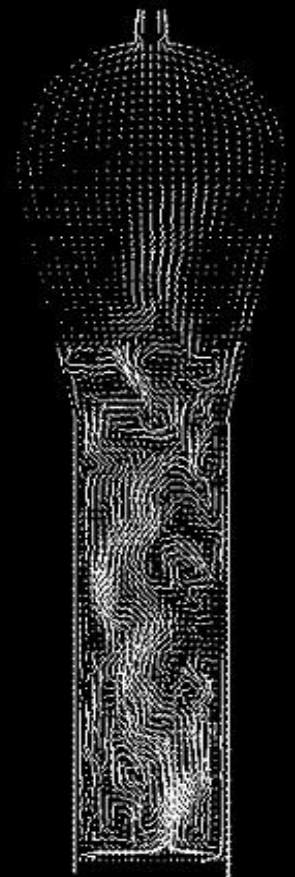
# INDUSTRIAL IMAGING SYSTEM Simulation VS. ECVT



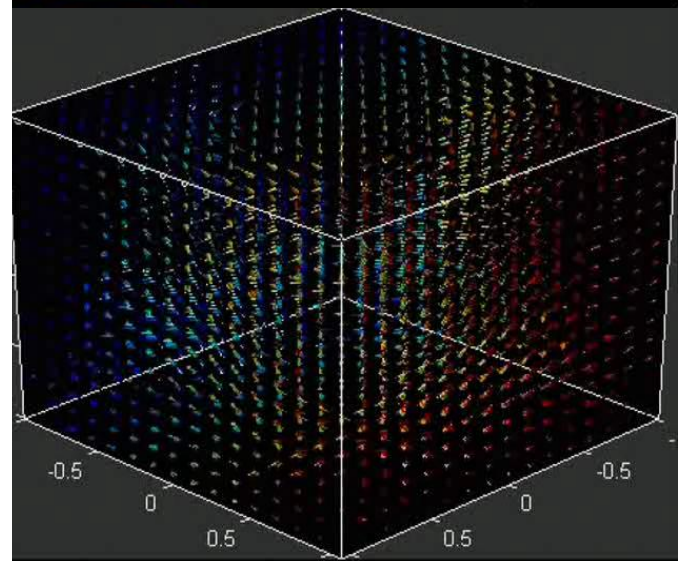
Solid volumetric  
fraction



Time  
28.08 s.



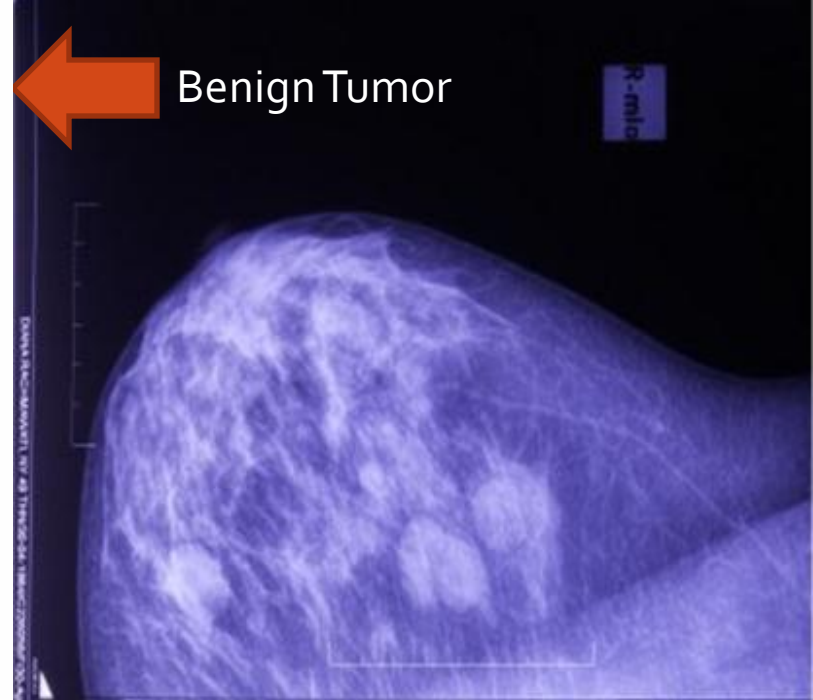
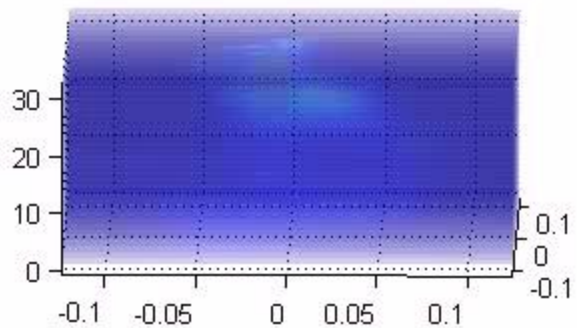
Gas-Solid (GB200)  $U_G = 10$  cm/s



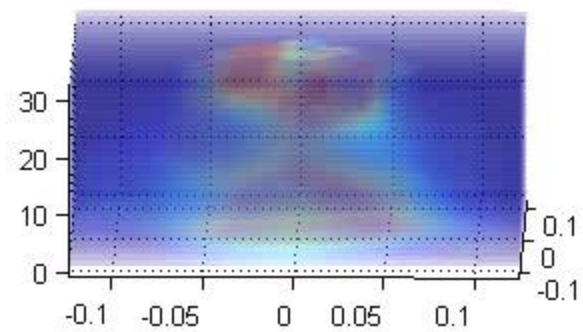


# 4D BREAST CANCER SCANNER





Malignant Cancer

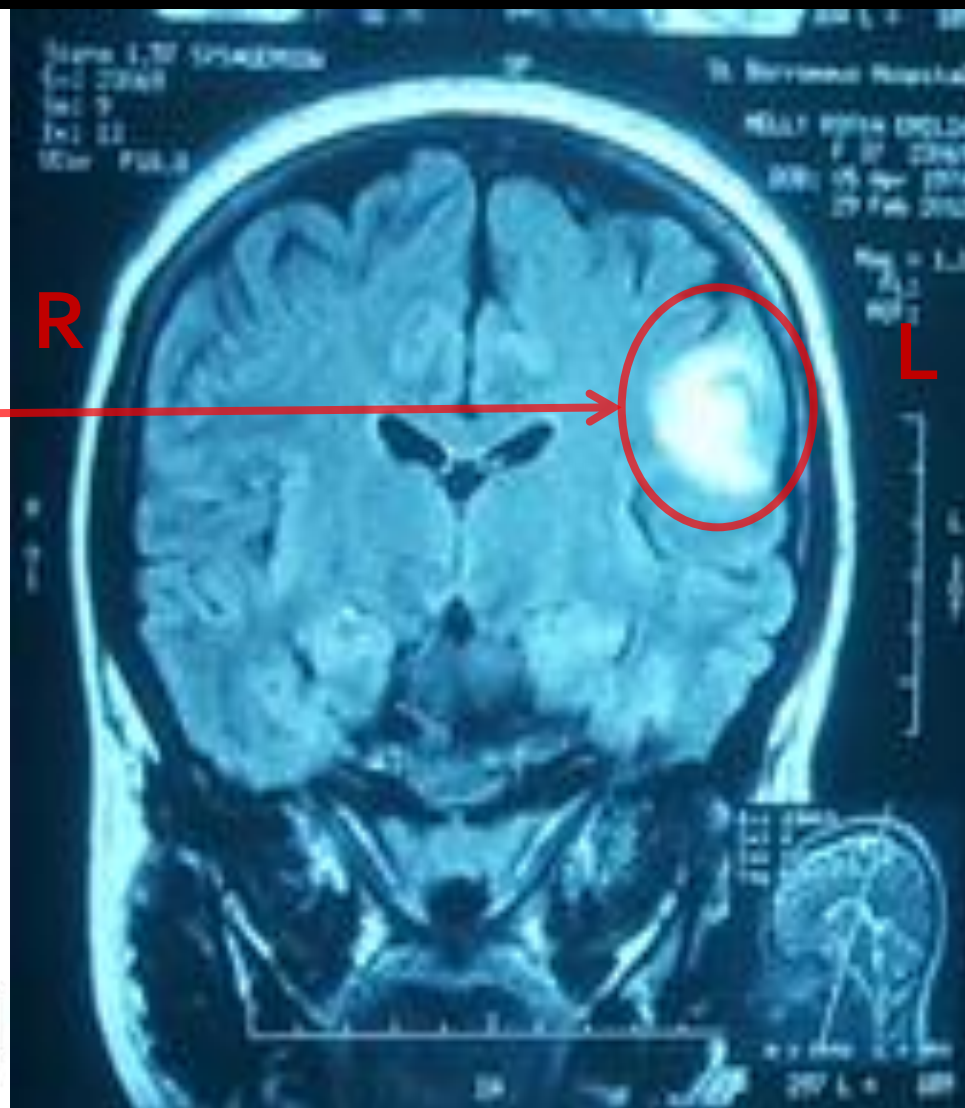
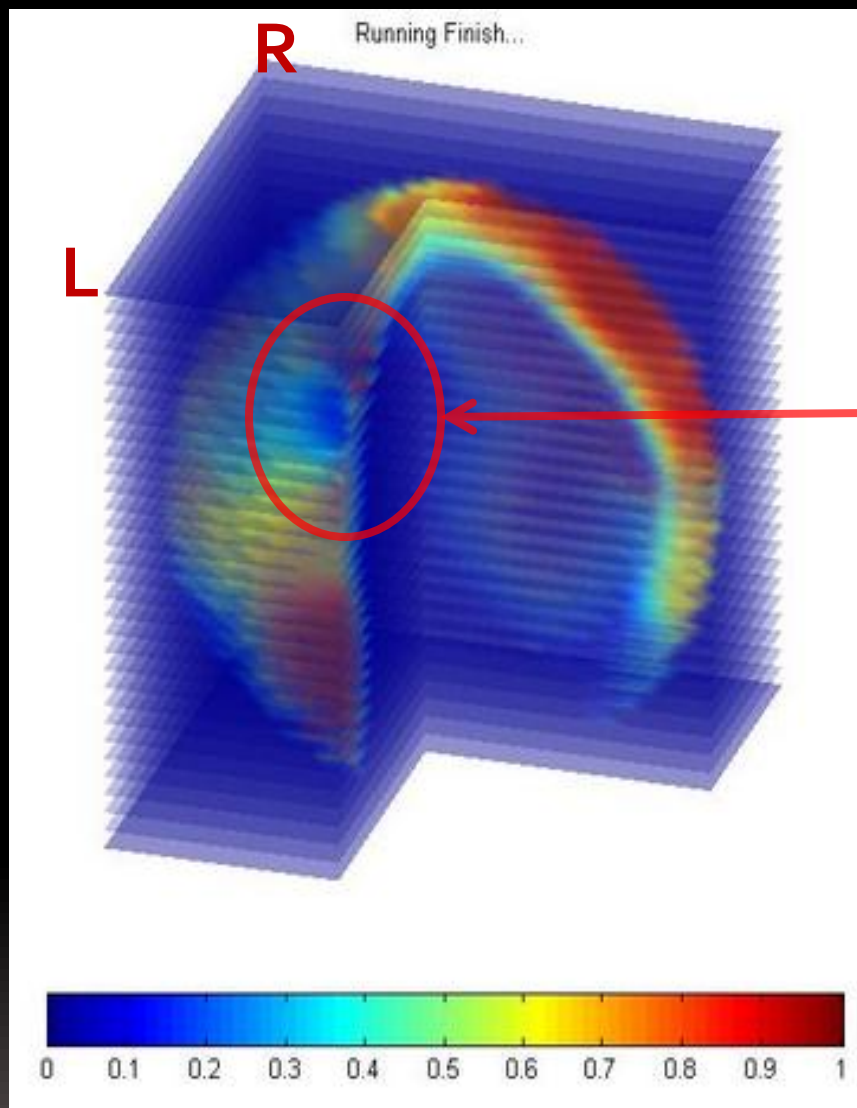




# ECVT Brain 4D Brain Activity Scanner



ECVT Brain Scanner offers a low-cost, radiation-free, instantaneous detection of physiological abnormalities in the brain caused by tumors, epilepsy, Alzheimer's Disease and other brain dysfunctions. The technology opens new possibilities for neuroscience researches and other applications.



Mark Zuckerberg 'Dibantai'  
Bos Provider



**Breaking News** Hong Kong government says it has withdrawn riot police and urges protesters to disperse (Reuters).

# hi-tech

SCI-TECH | hi-tech

## Brain to brain communication edges closer

24/09 15:28 CET


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Indonesia is now at the forefront of new advances in neuroscience and technology.

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eurovibes



Business Guide

### Trends

Trends provides a window into the cultural zeitgeist through the aggregation of millions of search queries.

in association with Google

partnership

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Today

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7 Days

- 1 How to survive a plane crash
- 2 Comet Hunters: 'The landing is a huge event'
- 3 New car offers freedom for disabled drivers
- 4 Brain to brain communication edges closer
- 5 Breathing forest: assessing climate change impact on Earth's lungs

[advertisement]



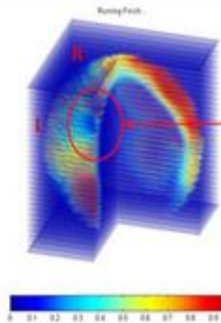
Plugin ini rentan terhadap keamanan dan harus  
diperbarui.

Aktifkan Adobe Flash.

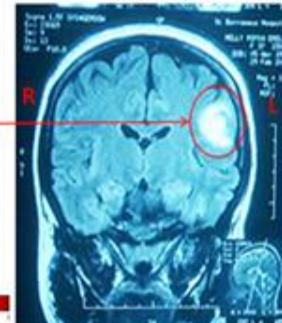
Periksa versi terbaru...



Plugged in: Looking as if, she escaped from a science-fiction movie in the 1950s, a woman uses CTECH Labs ECVT brain scanner. Courtesy of CTECH



ECVT



MRI

Mind's eye: A comparison of an image of a human brain depicted by CTECH Labs' ECVT scanner and traditional MRI technology. Courtesy of CTECH

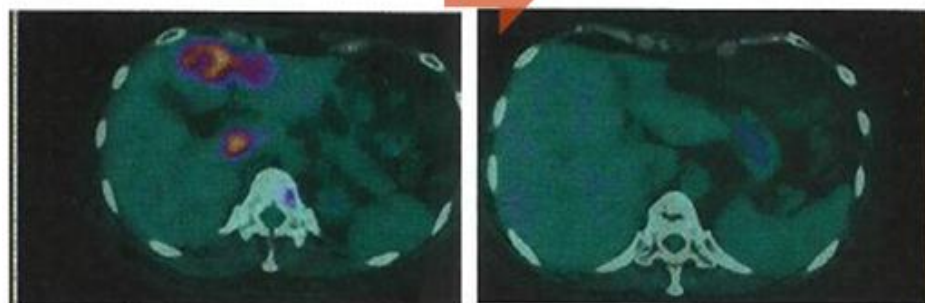
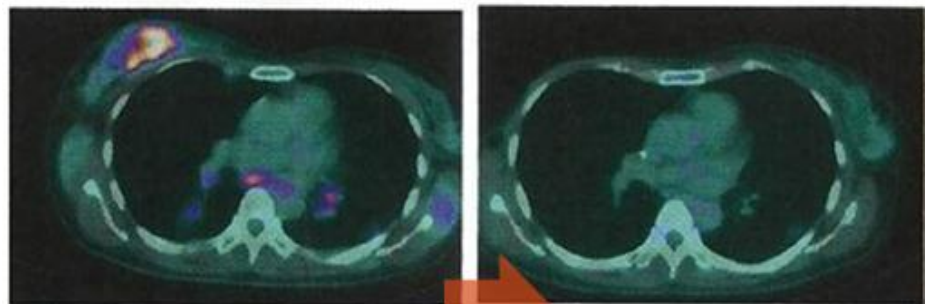
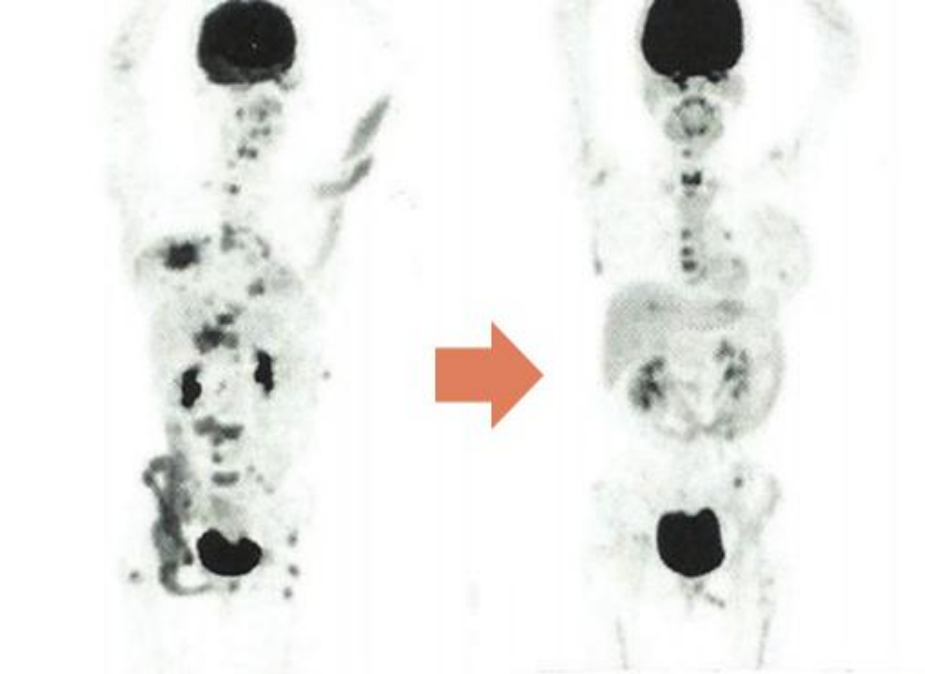


# Electro-Capacitive Cancer Therapy

Low level energy source for cancer treatment

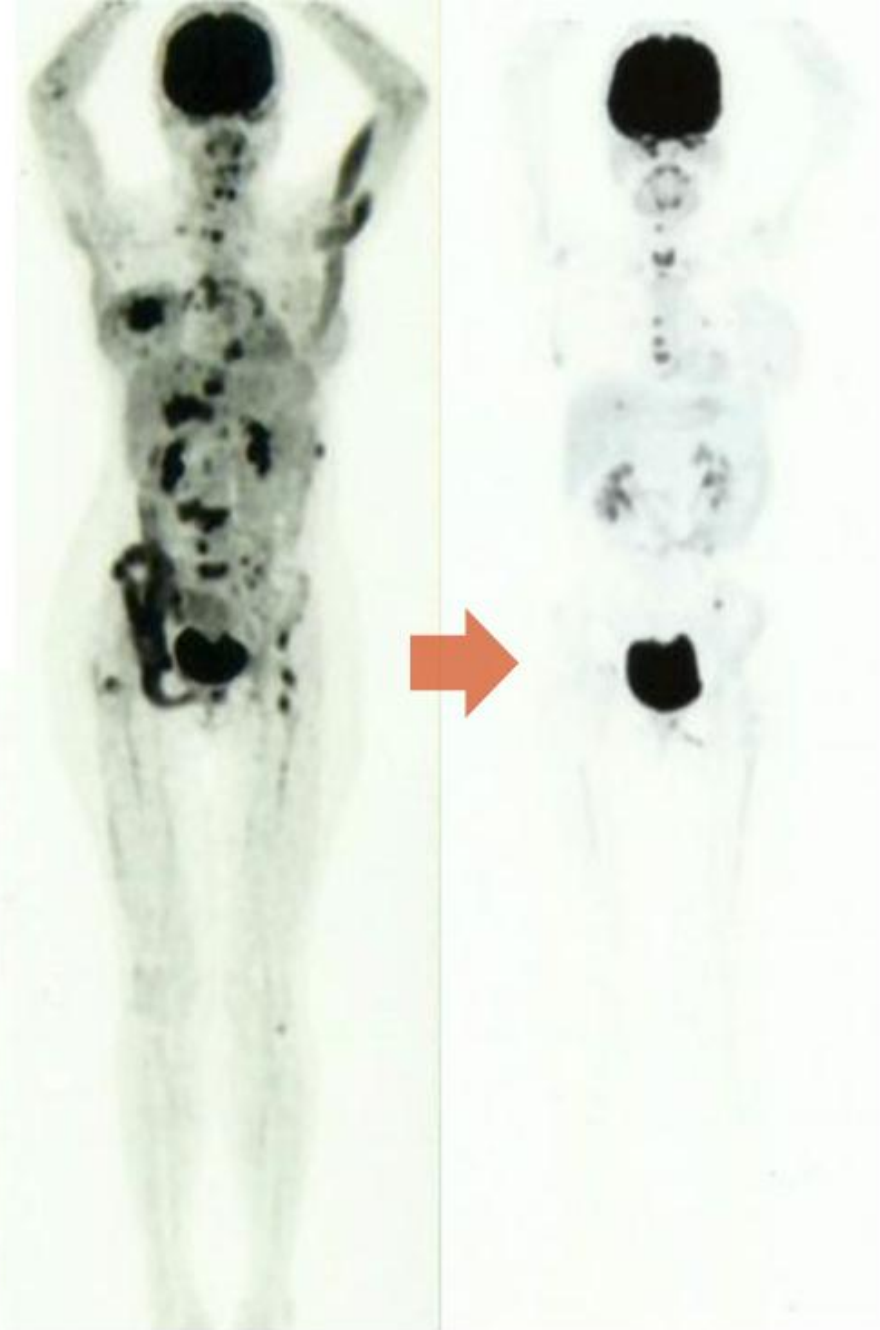


The Elysium Cancer Healing Machine



16 Agustus 2012

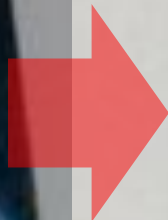
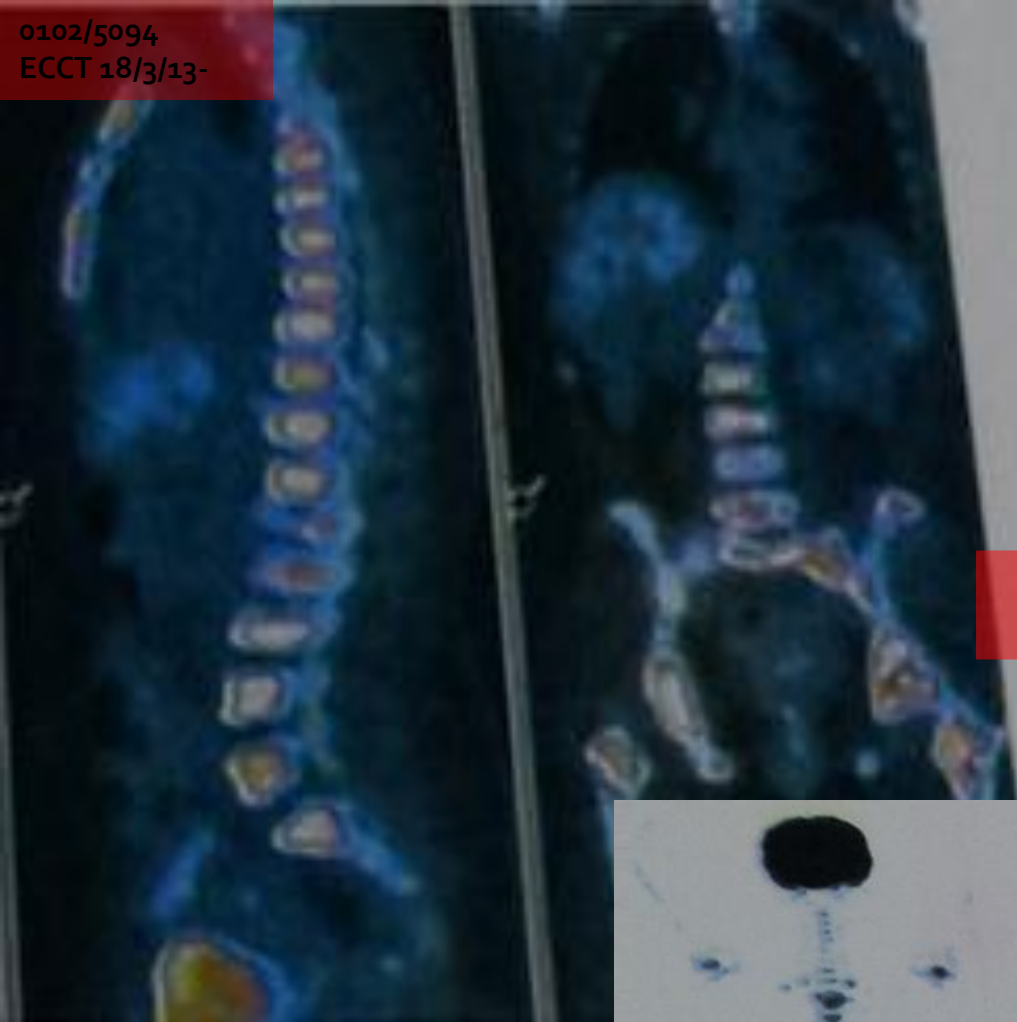
23 Desember 2013



16 Agustus 2012

23 Desember 2013

0102/5094  
ECCT 18/3/13-



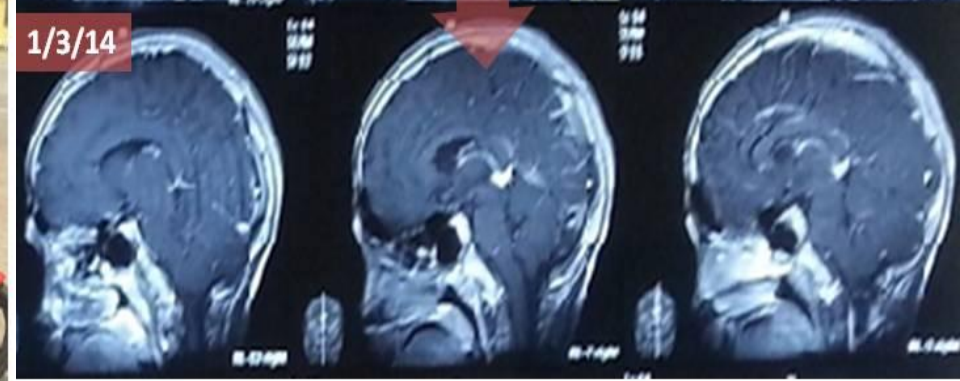
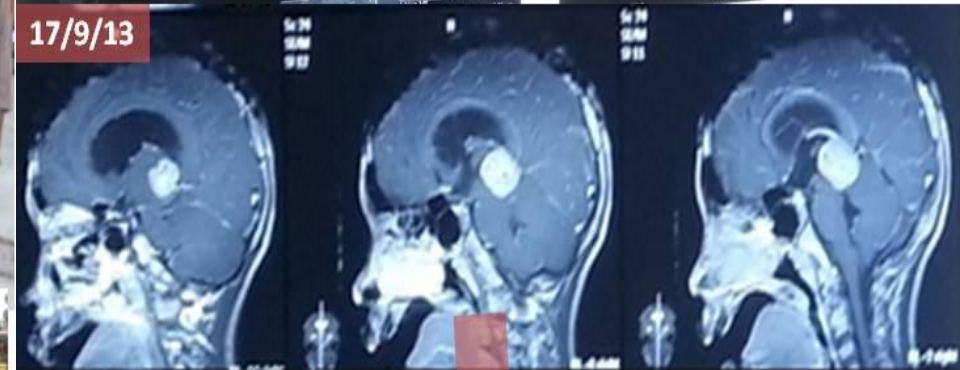
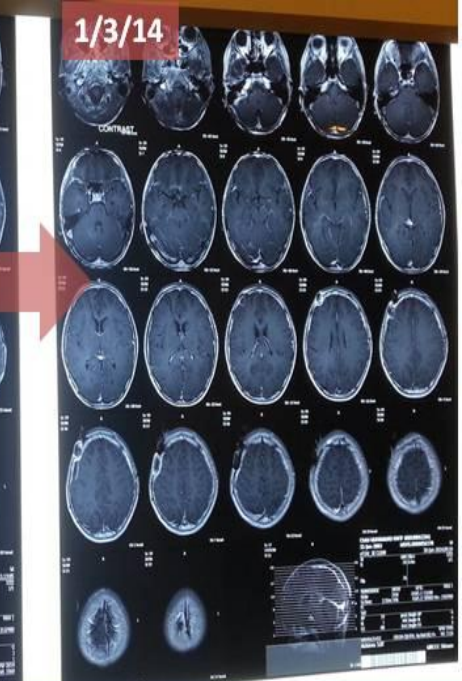
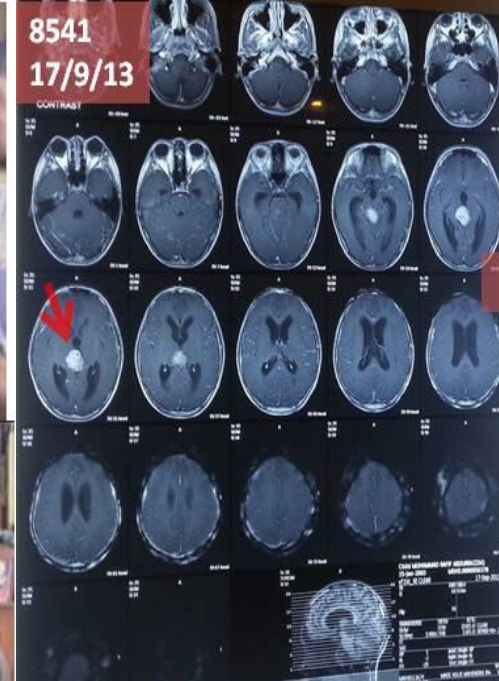
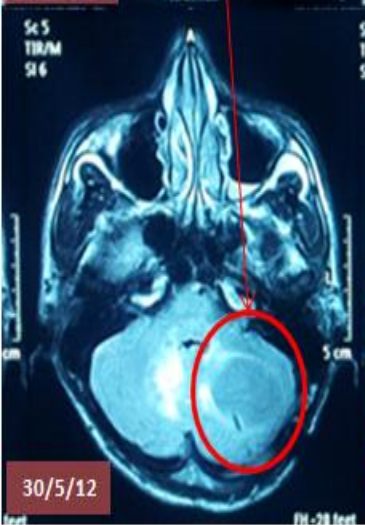
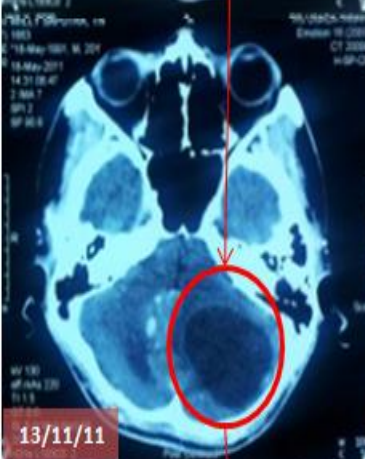
**CLEAR**

18/9/12



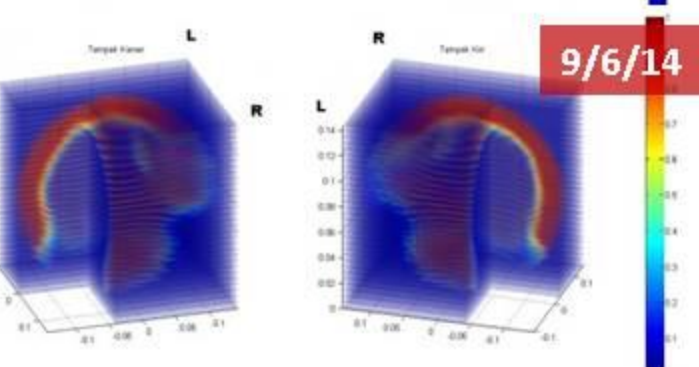
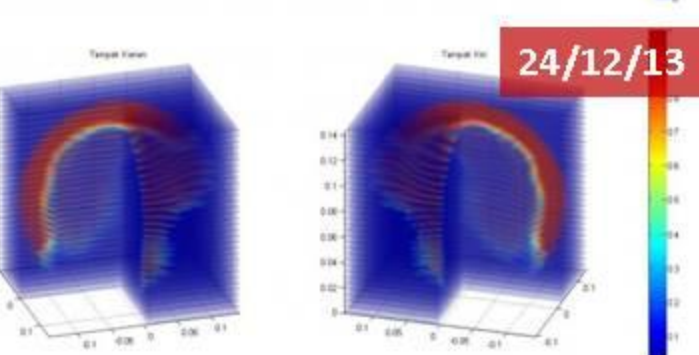
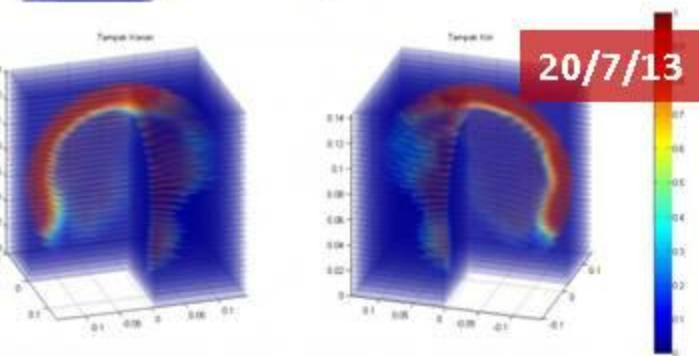
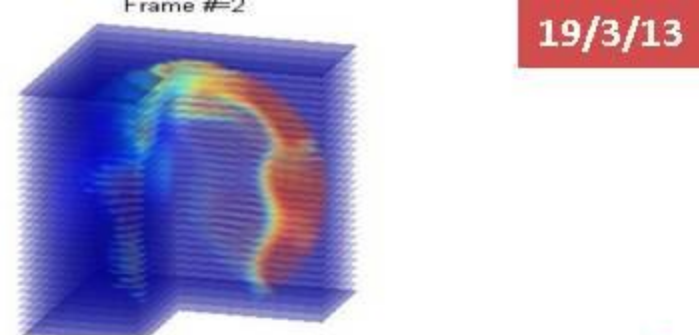
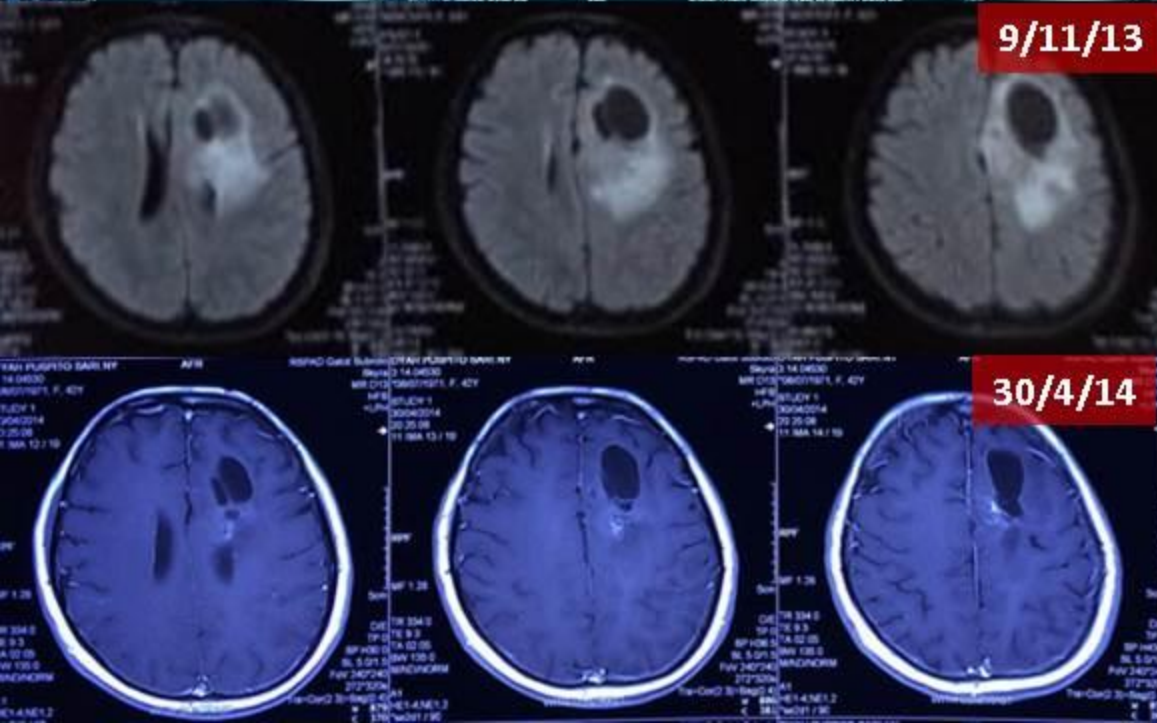
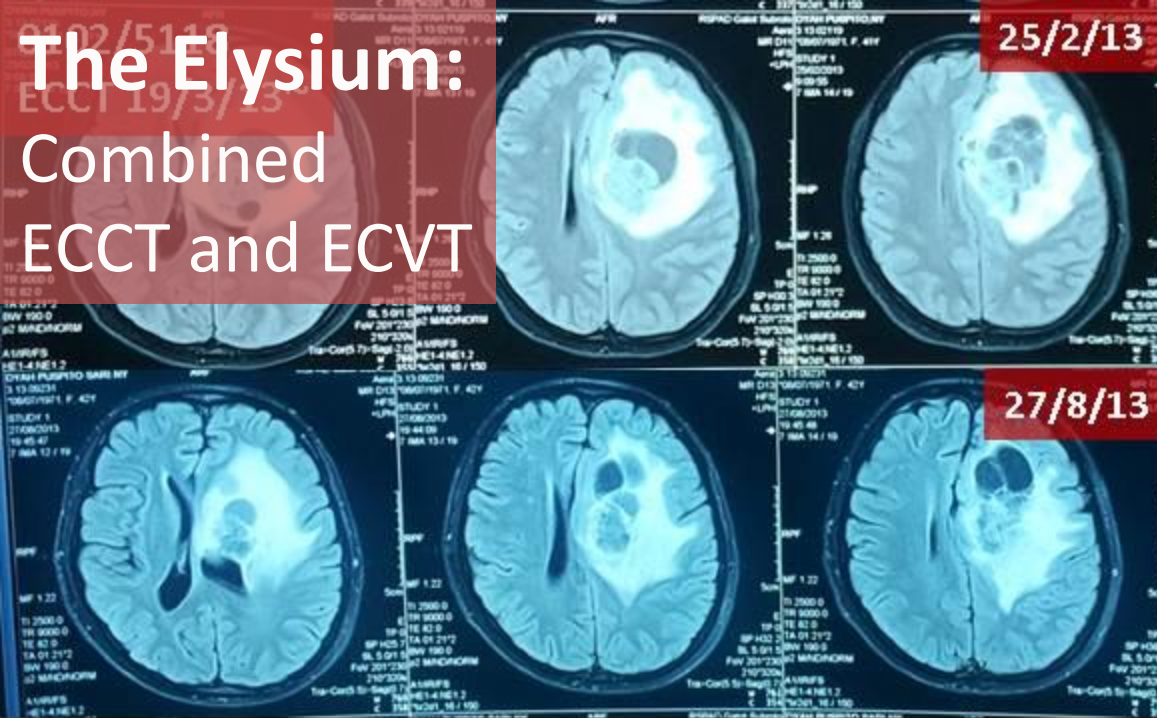
13/3/14







# The Elysium: Combined ECCT and ECVT



**STRATEGY**

# Our Business Strategy

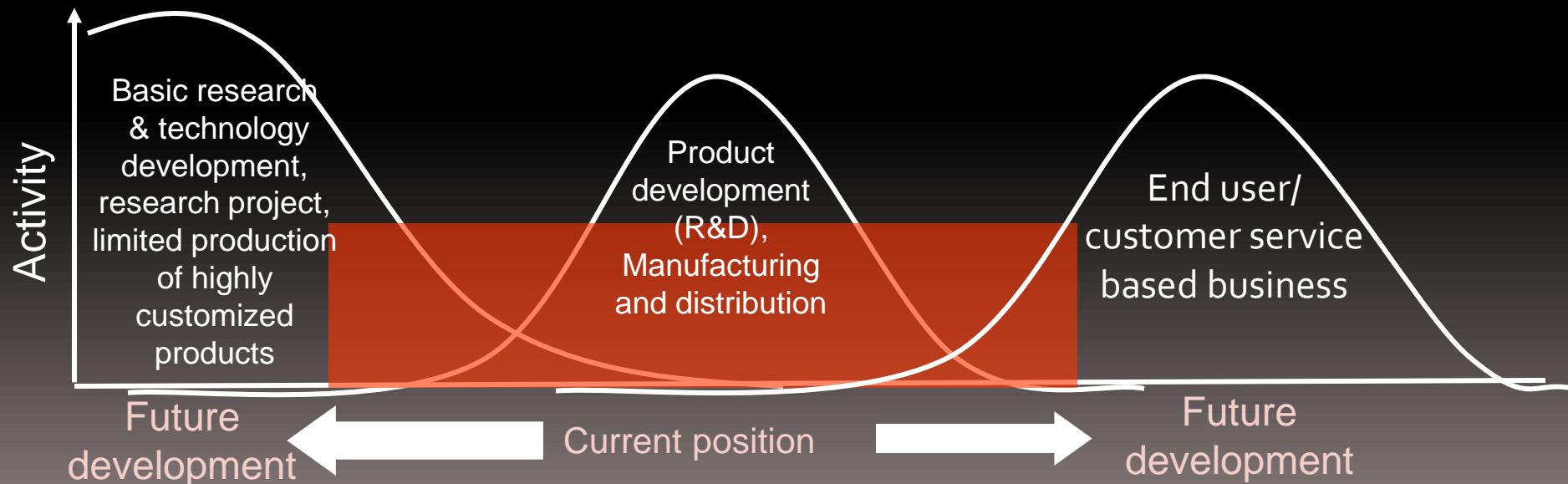
Competitiveness rooting from strong research and innovative product development



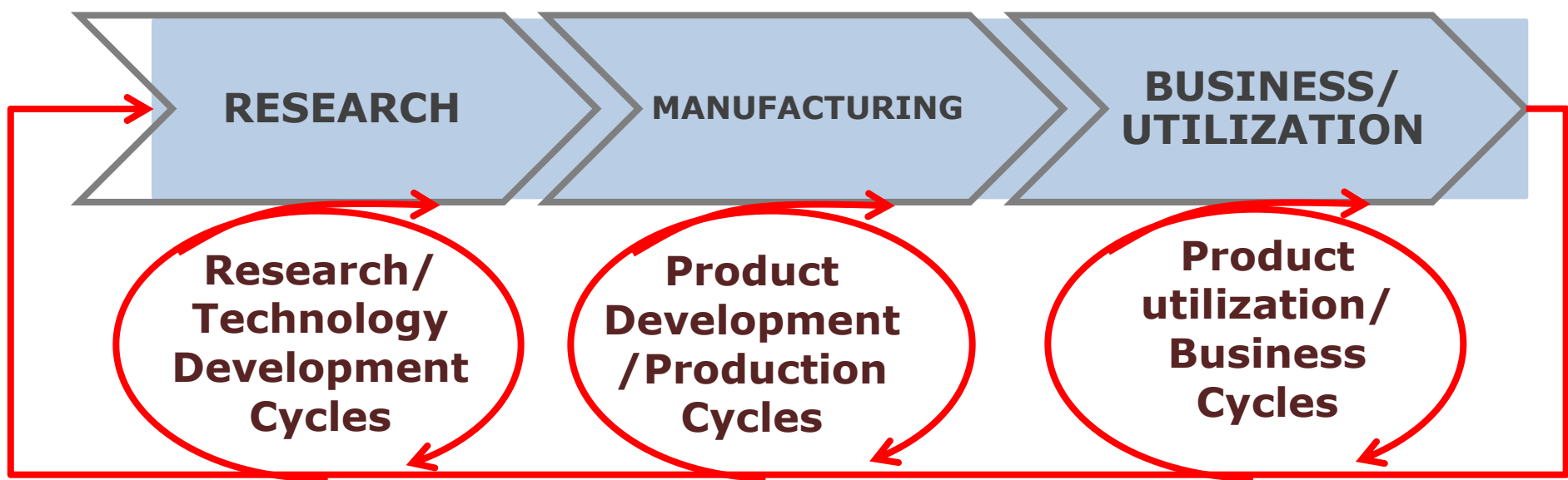
CTECH  
Labs



TECH4IMAGING  
(US Based)



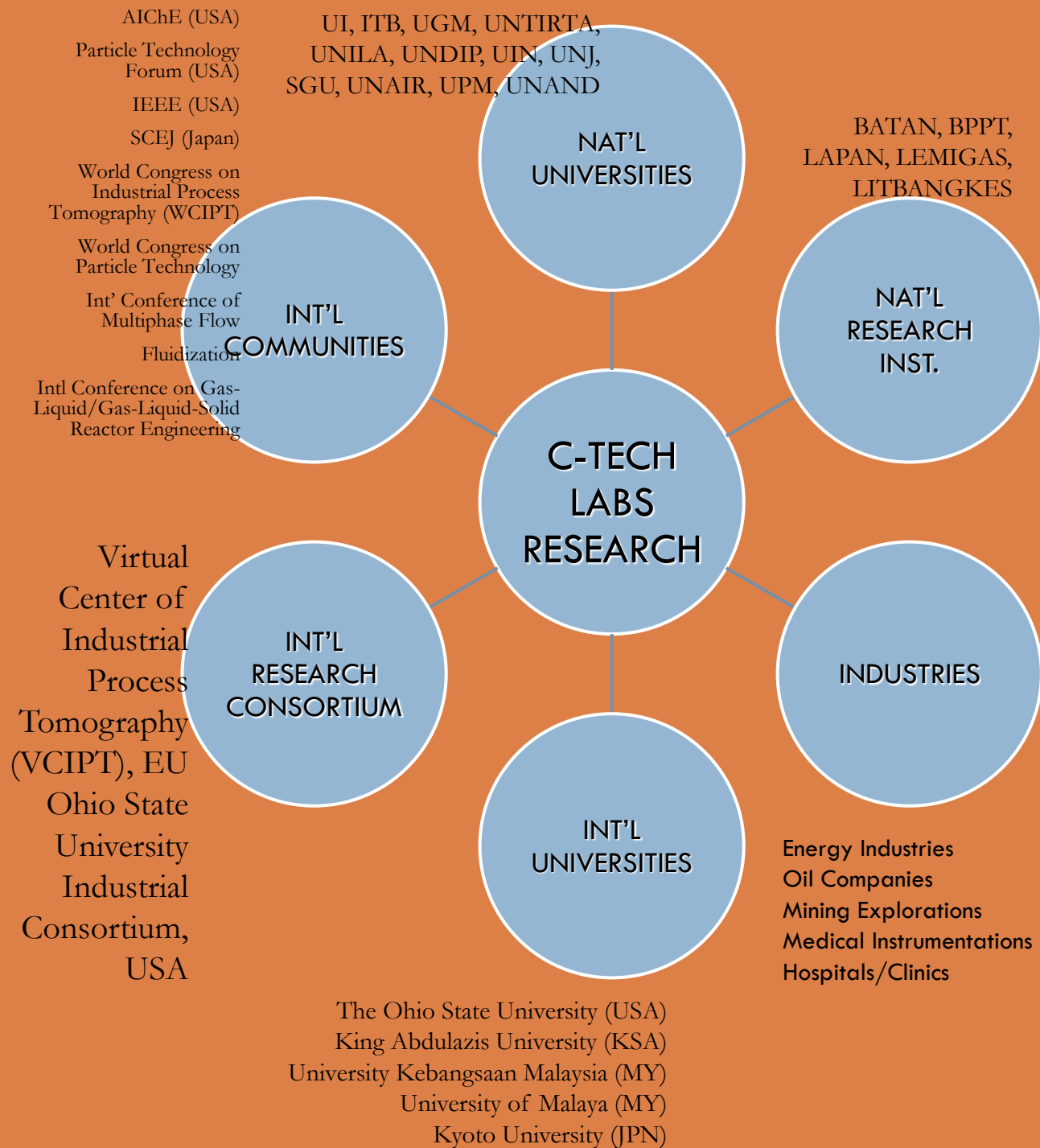
# BUILDING INNOVATION CAPACITY IN SME





# BUILDING KNOWLEDGE THROUGH OPEN INNOVATION NETWORK

**WE** have strong networking with universities, research institutions, scientific societies and industrial consortium world wide. The network is an effective media for marketing and accessing the most frontier and state-of-the-art advancement of the technology and products. Participations in international conferences, publication in international journals and joining with international communities are thus very important factors to succeed the goals of the research center.



# Closure: How can we collaborate?

- Our products are shaped by our customers' feedbacks and needs;
- Our problems are resolved by our R&D team working closely with university researchers/students;
- Our new products are coming from university student researches.