

Teaching Innovation and Entrepreneurship:

How Can Universities, Industry and Government Encourage the Next Generation



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Outline

- Introduction
- Approach to Learning
- Approach to Research
- Approach to Student
- Lessons Learned
- Closure

Introduction

- Everything is changing. Society changes. Economic changes. Nations change. Life changes.
- Youth and students are agent of changes.
- University is the center of the changes in the society and nation.

Introduction

- Innovation could be seen as a way to a sustainability, in facing new challenges .
- First in mind: *"All experts are the expert on what was. There is no expert for the future. To become an expert in the future, imaginations must replace experiences."* (Inspired from the book of Startup Nation, 2012?).
- Idea, creativity and innovation could get a way to sustainable impacts with a help of good entrepreneurship.

Approach to Research

Good researchers have two important missions:

1. To develop knowledge cycles
2. To deliver solutions of relevance, in the right context.

Introduction

- We need approaches to encourage our next generation towards innovation and entrepreneurship.

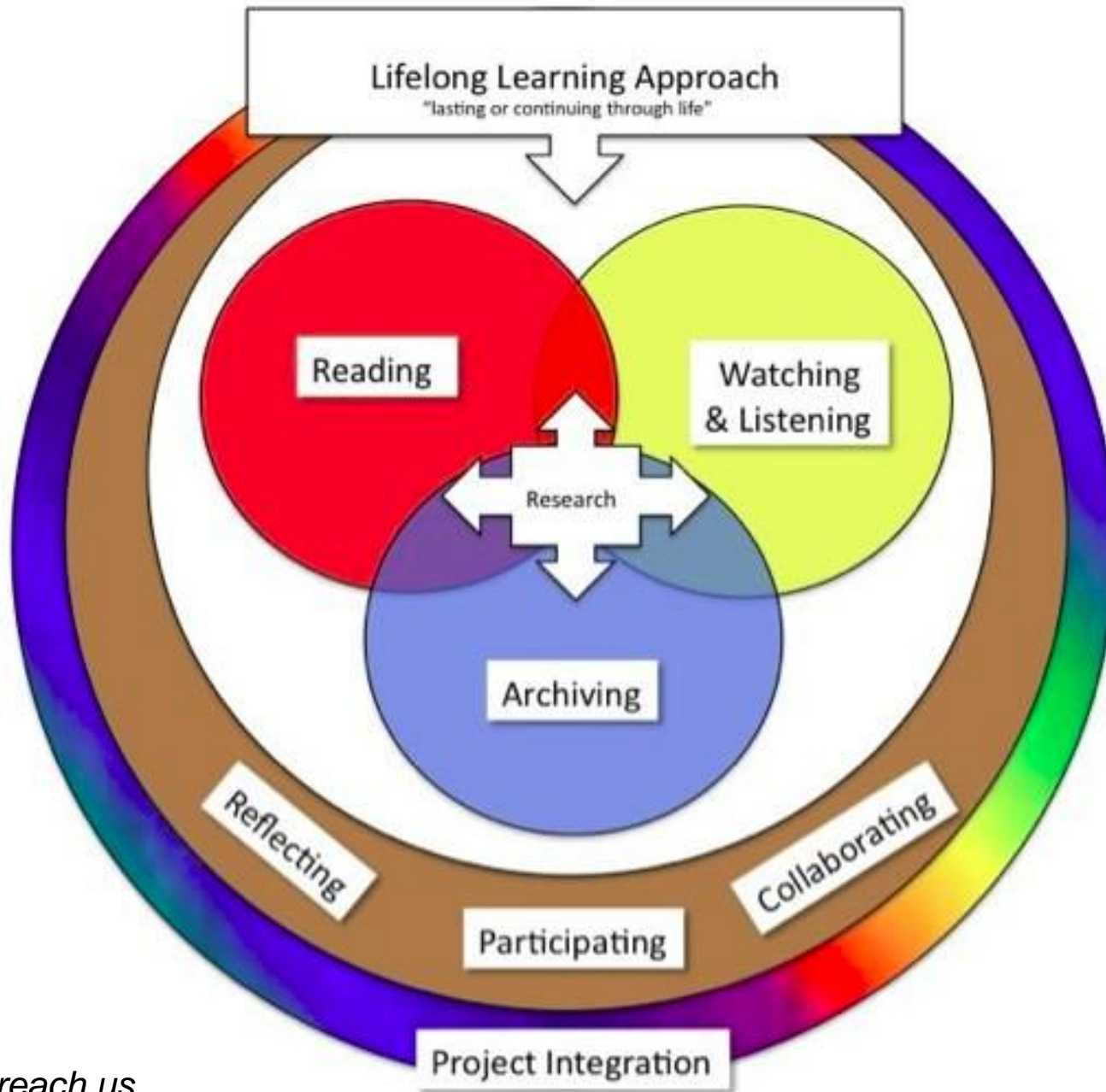
Who are we? A collaboration among universities, industries and governments.

- How can we could encourage the next generation? Here is approaches to learning, to research, and to the nex generation.

Approach to Learning

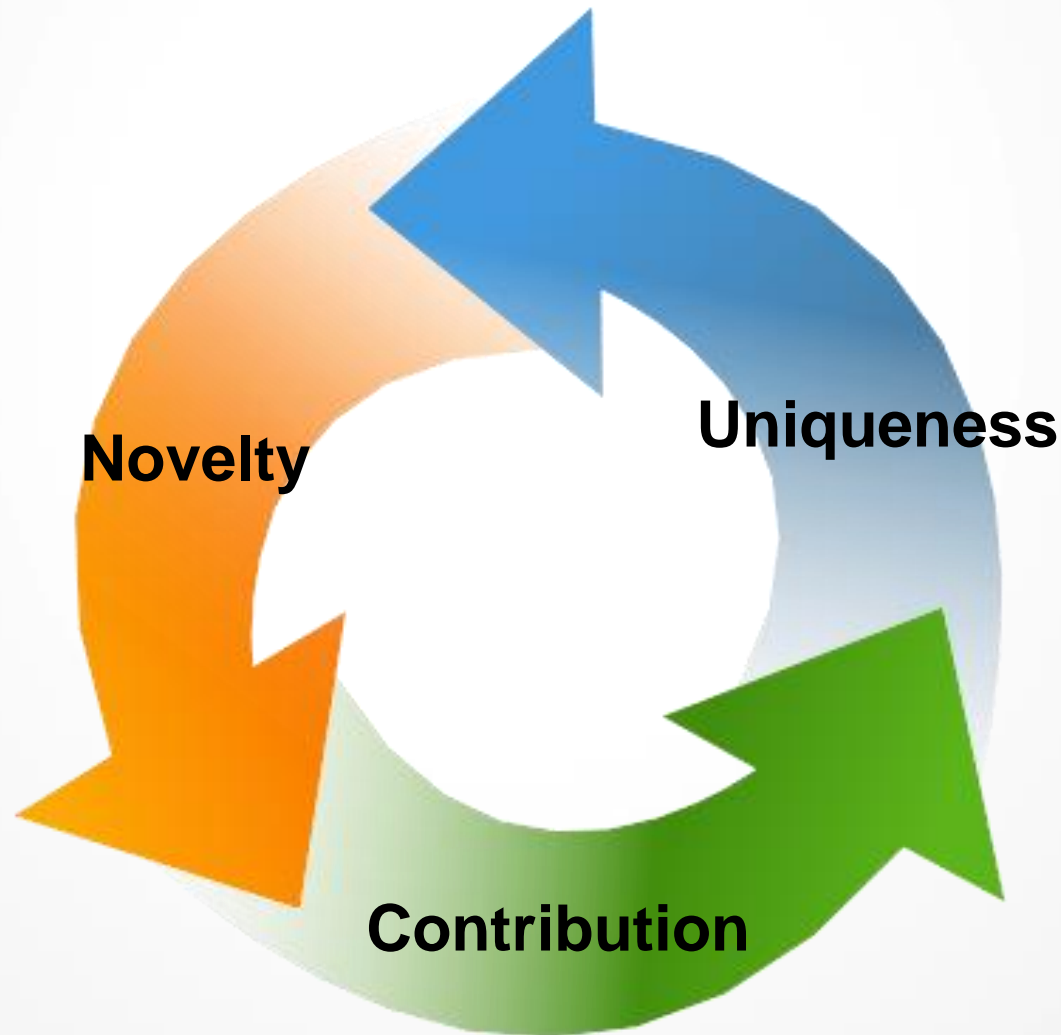
- Innovation and entrepreneurship require a higher level of thinking, skills and capability that could not be served by simple classroom teachings.
- A life long learning approach is required to develop capabilities in the right context. Such a learning could be derived from a collaboration in dealing with a complex problem of real life and challenges.

Approach to Learning



Approach to Research

Development of knowledge cycles



Approach to Research

Relevances

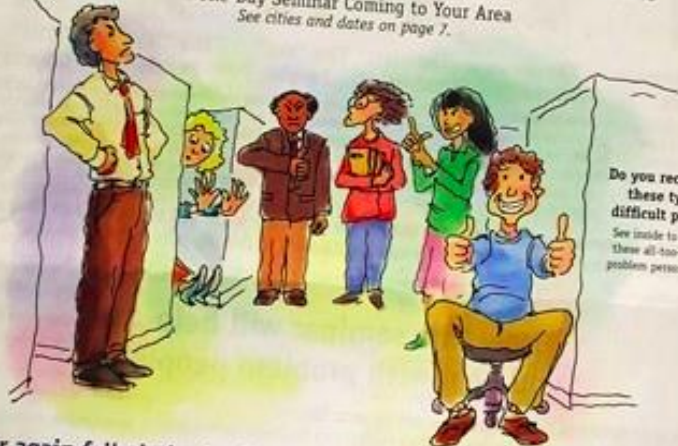
- Researcher may have high ideas or thoughts, but those should be in line with the context of social, economic or humanity.
- Innovation could be fostered and implemented for bigger impacts through entrepreneurship or techno-preneurship.

Approach to the Next Generation

Difficult People Make Difficult Times



Dealing with Difficult People
How to Communicate with Tact and Skill
A One-Day Seminar Coming to Your Area
See cities and dates on page 7.



Do you recognize these types of difficult people?
See inside to identify these all-too-familiar problem personalities.

Never again fall victim to those who love to make life miserable for the rest of us ...

- You'll learn why they act the way they do.
- You'll find out exactly what to say and do in specific situations.
- You'll become less of a target for their barbs and antics.
- You'll see how to bring out the best in even the worst offenders.

Attend this seminar and gain the communication skills you need to de-stress all of your difficult relationships, on the job and off.

This is a day of intensive training with immediate payoff.
Learn to take the offensive against know-it-alls, dictators, snipers, grippers, "yes" people, "no" people and all of the other contrary characters you confront every day.

Course content on page 3.

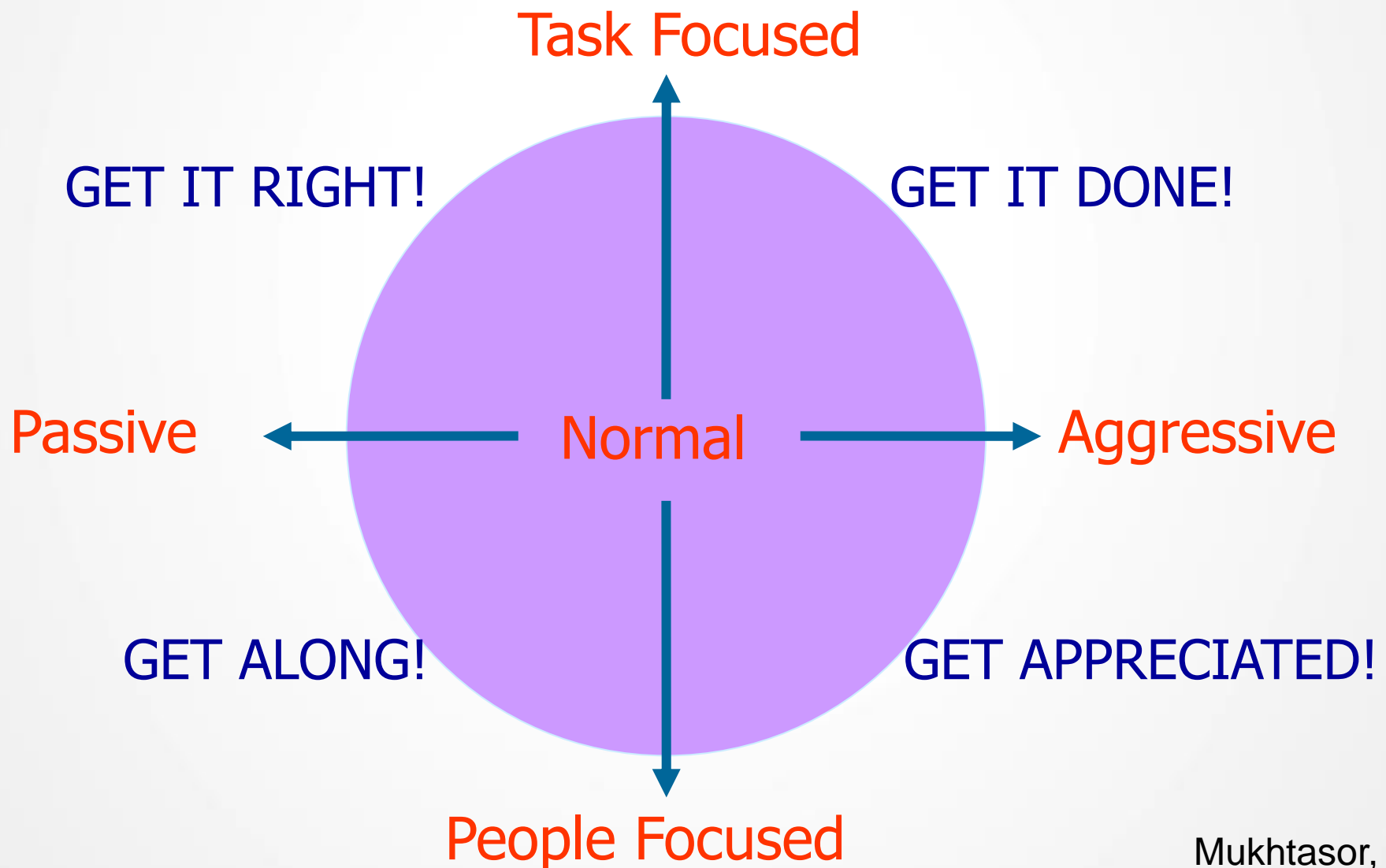
"I learned more about how to deal with people in one day than I have during all my years in the workforce. I wish we had this kind of seminar years ago — maybe there would be less hostility and aggressiveness in the offices."
— Evelyn Allard, administrative assistant

Express Enrollment!
<http://events.careertrack.com/267427>

CAREERTRACK
CPE
This course qualifies for CPE credits. See details on page 6.

Approach to the Next Generation

Compass of Motivating Factors



Approach to the Next Generation

Types of Difficult People



**The Know-
It-Alls**



**The
Passives**



**The
Dictators**



**The "Yes"
People**

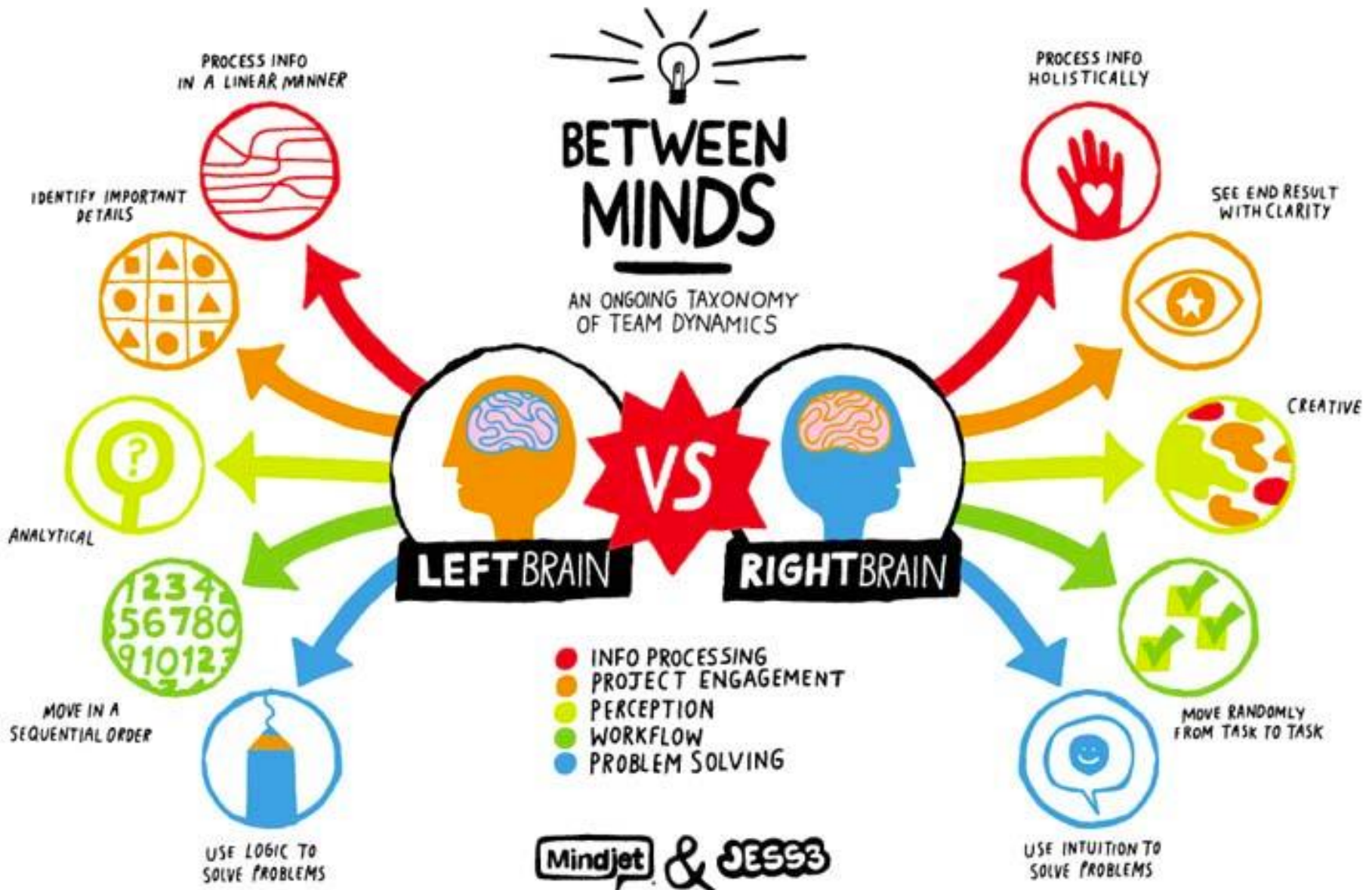


**The "No"
People**

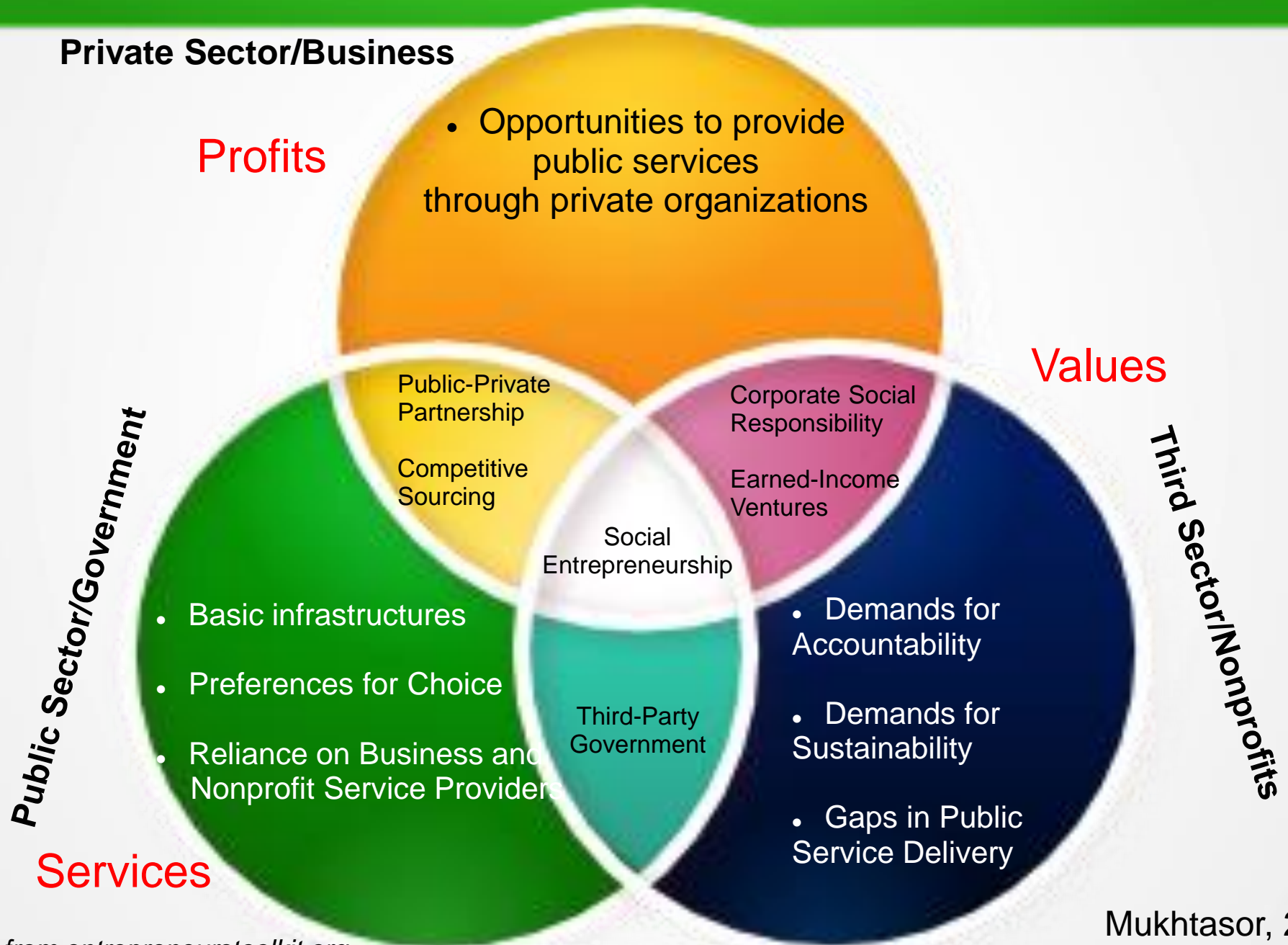


**The
Grippers**

Approach to the Next Generation



Approach to the Next Generation



Lessons Learned

- **Case Study:** Ocean Energy Development

- National context:

In Indonesia, there has been no implementation scale of the ocean energy.

In fact, there is significant shortage of electricity, particularly in Eastern Indonesia. On the other hand, ocean energy resources in Indonesia is very huge to be utilised.

For such an implementation, therefore, a collaboration among government, university, and industry is necessary to be built.

Lessons Learned

- **Case Study:** *Ocean Energy Development*

Ocean energy at ITS was first introduced as an elective course for undergraduate students.

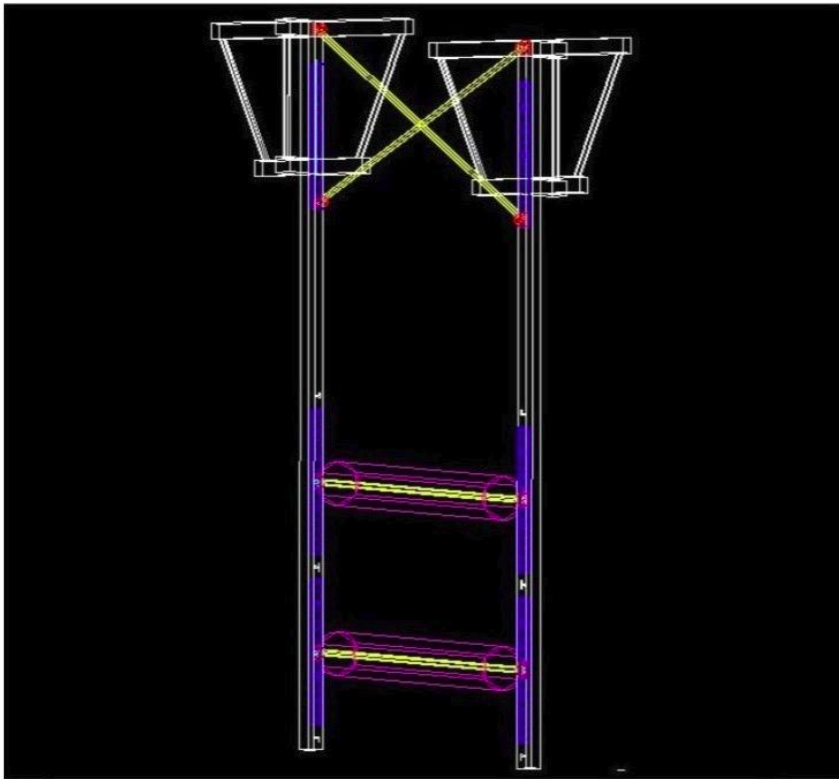
Along with time, it evolved into final project topics for final year students, and became research themes for several projects.

from this, then ITS involves in the national-wide



Lessons Learned

- ***Case Study: Ocean Energy Development***



Vortex Induced Vibration Converter Tidal Current Turbine
Laboratory of Marine Energy and the Environment, ITS

Lessons Learned

- **Case Study: Marine Energy Development**



Wave Energy Converter, Pendulum Systems

A Collaboration of ITS, BPPT, PLN, Pertamina HE, & RISTEK

Stage: Field test

Mukhtasor, 2015

Lesson Learned: “Achievement”

Towards Establishment of
South East Asia
Marine Energy Centre (SEAMEC)
(2015-2017)

Establishment of Post Graduate Program in
Ocean Energy Engineering & Management

Commitment and Budgeting of 10 MW of
Ocean Thermal Energy Pilot Project

Commitment and Budgeting of 1 MW of
Ocean Current Energy Pilot Project

Official Launching of National Marine Energy Potential Map (2014)

Ratification of Marine Energy Potential
(current, wave, thermal) (2011 & 2014)

Survey and Resource Assessment

Determination of Resource Assessment Methodology (2013)

National and International Collaboration (2012-2015)

Finalising roadmap draft on
ocean energy regulation (2013)

Dissemination of ocean energy issues (2011-2012)

Establishment of Indonesian Ocean Energy Association
INOCEAN (2011)

Resource Assessment and Site Selection





Peta Nasional Energi Laut Diresmikan

UNTUK pertama kalinya di Indonesia, Peta Potensi Energi Laut Nasional diresmikan penggunaannya. Potensi energi laut tersebut terdiri dari energi arus laut, energi gelombang laut, dan energi panas laut.

"Saya optimistis dengan diresmikannya peta potensi ini, Indonesia memiliki satu basis data yang sama secara nasional sebagai pedoman pengembangan energi laut sebagaimana diamanatkan Undang-Undang Energi Nomor 30/2007," kata Wakil Menteri ESDM Susilo Siswoutomo, di Institut Teknologi Sepuluh November (ITS) Surabaya, kemarin.

Klasifikasi potensi energi laut dikelompokkan menjadi tiga jenis, yaitu potensi teoretis, potensi teknis, dan potensi praktis. Anggota Dewan Energi Nasional (DEN) yang sekaligus sebagai Ketua Asosiasi Energi Laut Indonesia (Aseli) dan Guru Besar ITS Prof Dr Mukhtasor menjelaskan peta potensi energi laut yang diresmikan pemerintah pada 2014 ini ialah hasil pemutakhiran data dari eksplorasi energi laut yang sebelumnya telah diratifikasi Aseli pada 2011. (RO/E-4)



DOK ESDM

PETA ENERGI LAUT: Anggota Dewan Energi Nasional (DEN) yang sekaligus sebagai Ketua Aseli dan Guru Besar ITS, Mukhtasor (kiri), Wakil Menteri ESDM Susilo Siswoutomo (tengah), dan Kepala Badan Litbang ESDM FX Sutijastoto berfoto bersama se usai peresmian Peta Potensi Energi Laut Nasional di Surabaya, Jawa Timur, kemarin.

Tidal Current Energy Reserves, 2014

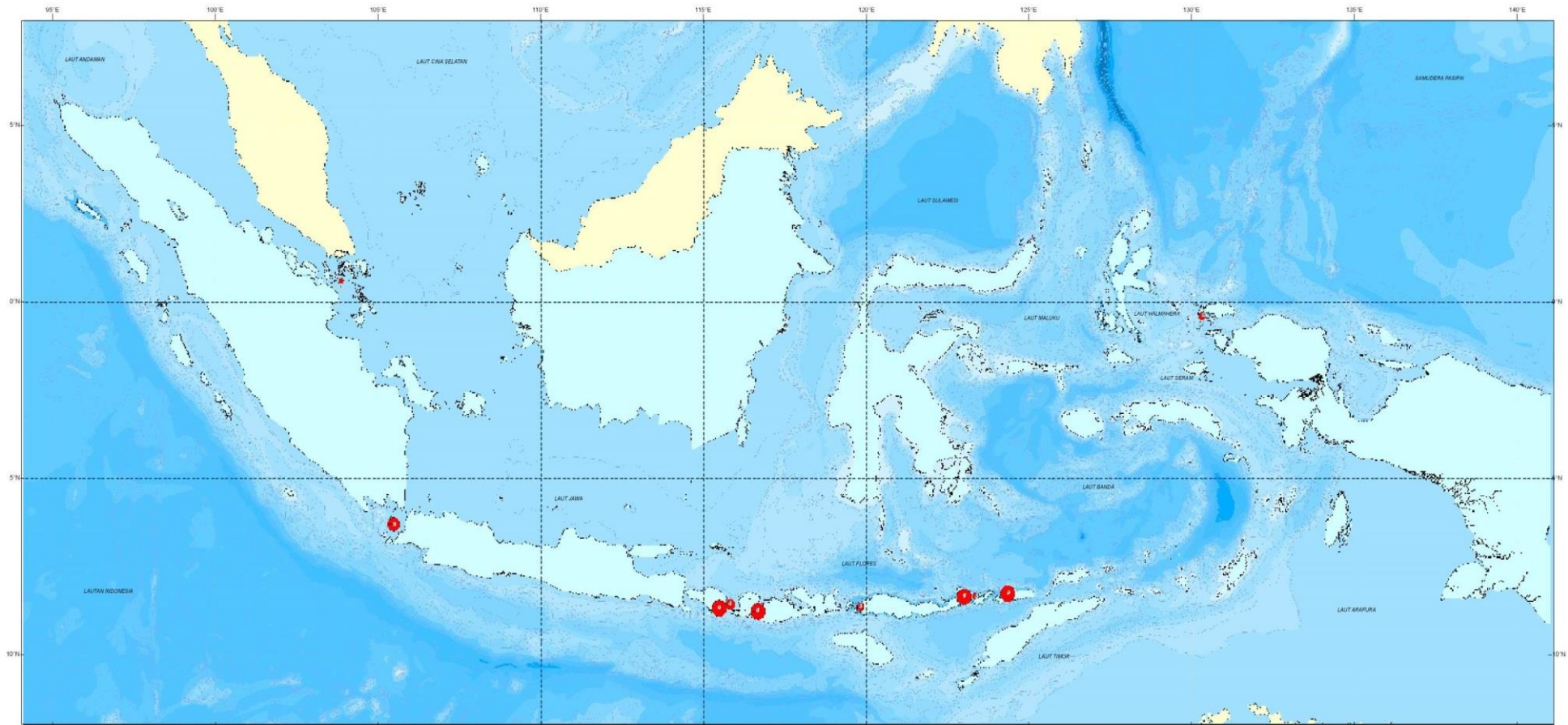


BADAN PENELITIAN DAN PENGEMBANGAN ENERGI DAN SUMBER DAYA MINERAL
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL

Kepala: FX. Sutjiastoto

PETA POTENSI ENERGI ARUS LAUT INDONESIA

Lembar: INDONESIA
Skala: 1 : 5.000.000
No. Seri: 01.01.2013



POTENSI ENERGI ARUS LAUT INDONESIA

LEGENDA:

● Lokasi potensi energi arus laut

PETA POTENSI ENERGI ARUS LAUT INDONESIA

2013

SKALA (SCALE) 1:5.000.000

PROYEKSI TRANSVERSE MERCATOR
TRANSVERSE MERCATOR PROJECTION
Datum: WGS 84

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KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA

Dengan ridho Allah Yang Maha Esa
Peta Potensi Energi Arus Laut Indonesia
yang telah berhasil diselesaikan oleh peneliti-peneliti Indonesia
tahun 2000 hingga 2013, disetujui oleh
"Menteri Energi dan Sumber Daya Mineral"

Jero Wacik
Surabaya, Januari 2013

No	Sal	Empas (m) Maksimum (mm Hg)	Energi (J/m ²) (W/m ²)	Luas Daerah (km ²) (mi ²)	Potensi Total (GJ)	Potensi Rata-rata (GJ/km ²)	Potensi Rata-rata (GJ/mi ²)
1	Sul	1,5	1,5	177.000	275.250	1,54	4,00
2	Mal	1,5	1,5	21.250	31.875	1,50	3,90
3	Timor	1,5	1,5	1.000	1.500	1,50	3,90
4	Lombok	1,5	1,5	11.000	16.500	1,50	3,90
5	Sul	1,5	1,5	1.000	1.500	1,50	3,90
6	Sul	1,5	1,5	1.000	1.500	1,50	3,90
7	Sul	1,5	1,5	1.000	1.500	1,50	3,90
8	Sul	1,5	1,5	1.000	1.500	1,50	3,90
9	Sul	1,5	1,5	1.000	1.500	1,50	3,90
10	Sul	1,5	1,5	1.000	1.500	1,50	3,90
11	Sul	1,5	1,5	1.000	1.500	1,50	3,90
12	Sul	1,5	1,5	1.000	1.500	1,50	3,90
13	Sul	1,5	1,5	1.000	1.500	1,50	3,90
14	Sul	1,5	1,5	1.000	1.500	1,50	3,90
15	Sul	1,5	1,5	1.000	1.500	1,50	3,90
16	Sul	1,5	1,5	1.000	1.500	1,50	3,90
17	Sul	1,5	1,5	1.000	1.500	1,50	3,90
18	Sul	1,5	1,5	1.000	1.500	1,50	3,90
19	Sul	1,5	1,5	1.000	1.500	1,50	3,90
20	Sul	1,5	1,5	1.000	1.500	1,50	3,90

Kepala: F.X. Sutijastoto

The map displays the Indonesian archipelago and surrounding regions. Key geographical features and labels include:

- Seas and Oceans:** LAUT ANDAMAN, LAUT CINA SELATAN, LAUT SULAWESI, LAUT MALUKU, LAUT HALMAHERA, LAUT SERRA, LAUT SANGA, LAUT FLORES, LAUT TIMOR, LAUT ARAFURA, LAUTAN INDONESIA, SAMUDERA PASIFIK.
- Islands:** LAUT JAWA, LAUT SUMBAWA, LAUT SANGA, LAUT FLORES, LAUT TIMOR.
- Sampling Locations:** Indicated by red dots, primarily along the Sumatran coast, in the Java Sea, and around the Lesser Sunda Islands.
- Coordinates:** The map spans from 90°E to 140°E longitude and 5°N to 10°S latitude.

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Dengan rahmat Allah Yang Maha Esa
Peta Potensi Energi Gelombang Laut Indonesia
yang telah berhasil diselesaikan oleh putra-putri Indonesia
sejak tahun 2011 hingga 2013, direvisi oleh
"Menteri Energi dan Sumber Daya Mineral"

Jero Wacik
malaya, Januari 20

No.	Subject	Pre-Test (n=10)	Post-Test (n=10)	Pre-Test (n=10)	Post-Test (n=10)
1	Arabic	26.00	75.00	27.00	75.00
2	Math	10.00	70.00	15.00	70.00
3	History	4.00	20.00	10.00	15.00
4	Science	10.00	70.00	10.00	70.00
5	English	10.00	70.00	10.00	70.00
6	Physical Education	10.00	70.00	10.00	70.00
7	Art	10.00	70.00	10.00	70.00
8	Music	10.00	70.00	10.00	70.00
9	Health	10.00	70.00	10.00	70.00
10	Computer	10.00	70.00	10.00	70.00
11	Foreign Language	10.00	70.00	10.00	70.00
12	Practical Training	10.00	70.00	10.00	70.00

Kepala: F.X. Sutijastoto

The map illustrates the potential of geothermal energy in the sea across Indonesia. Key features include:

- Geographical Labels:** LAUT ANDAMAN, LAUT CINA SELATAN, LAUT SULAWESI, LAUT MALUKU, LAUT HALMAHERA, LAUT SERAN, LAUT BANDA, LAUT FLORES, LAUT TIMOR, LAUT ARAFURA, LAUT JAWA, LAUT INDONESIA, SAMUDRA PASIFIK.
- Geothermal Potential Sites (Red Dots with Numbers):**
 - 1: West of Sumatra
 - 2: West of Sumatra
 - 3: West of Sumatra
 - 4: West of Sumatra
 - 5: West of Sumatra
 - 6: West of Sumatra
 - 7: West of Sumatra
 - 8: West of Sumatra
 - 9: West of Sumatra
 - 10: West of Sumatra
 - 11: West of Sumatra
 - 12: West of Sumatra
 - 13: West of Sumatra
 - 14: West of Sumatra
 - 15: West of Sumatra
 - 16: West of Sumatra
 - 17: West of Sumatra
- Legend:** POTENSI ENERGI PANAS LAUT INDONESIA
- Scale:** 0 50 100 150 200 km

No.	Lokasi	Batas Temperatur (°C)	Jarak ke Pantai (km)	Pemilihan Pantai (km)	Prediksi nilai (SD)
1	Desa P. Sengayan	26-32	<10	118,4	118,4
2	Desa P. Sengayan	30	<10	118,4	118,4
3	Sampah Hutan Puncak	22-24	<10	188,7	65,9
4	P. Hutan Bukit-Batu	25	10-20	950,2	121,7
5	P. Bukit	21-22	>20	600,8	280,1
6	P. Rendo Rendo	20-21	<10	30,8	147,5
7	P. Moko, Kp. Juncup	28	<10	180,3	25,4
8	P. Moko, Juncup	26	<10	180,3	172,4
9	Selat Mako, Mako	26-31	10-20	611,9	218,9
10	P. Subet, Sim	21-25	<10	170,5	58,4
11	Kp. Juncup	26	<10	180,3	25,4
12	P. Juncup	23-25	10-20	409,8	163,3
13	P. Mandar	22	<10	417,3	139,1
14	Puncak Hutan, Tero	23-24	10-20	101,4	56,5
15	Selat Air dan Selat Juncup	23-25	<10	378,2	93,7
16	Lat Sim	22-24	<10	278,2	93,7
17	Sampah Plastik, Sim	23-25	<10	551,6	184,3

P = 10 MW x (cooling profile to 0.001 cm)

- Lokasi pengambilan sampel temperatur air laut
- Kedalaman laut 1000 m pada batas 12 mil laut

- Peta dasar (basemap) Indonesia yang berasal dari Bakosurtanal
- Peta ketinggian dasar laut (batimetri) Indonesia yang berasal dari Bakosurtanal
- Data pengikutan BFTT (2010), PAGR (2012, 2013)

2013

SKALA 1:5 000 000



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Datum: WGS 84

KONTAK:



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KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA

Dengan rahmat Allah Yang Maha Esa
Peta Potensi Energi Panas Laut Indonesia
yang telah berhasil direvisikan oleh potensi-potensi Indonesia
sejak tahun 2011 hingga 2013, direvisikan oleh
"Menteri Energi dan Sumber Daya Mineral"

Jero Wacik
Sambora, Januari 2011

Lessons Learned :

“Network Development and Collaboration”

- **Case Study: Ocean Energy Development**



East Lombok
Regency



ITS
Institut
Teknologi
Sepuluh Nopember



ROBERT GORDON
UNIVERSITY ABERDEEN



PERTAMINA



Rotech



Indonesian Counterpart for
Energy & Environmental Solutions

ICEES



ASELI
Asosiasi Energi Laut Indonesia

Lessons Learned :

"Post Graduate, Sandwich Programme"

National Competence and Qualification



Post Graduate Program
*Marine Energy Engineering
and Management*



ITS
Institut
Teknologi
Sepuluh Nopember

Solving Problems in the Region



PERTAMINA



East Lombok
Regency

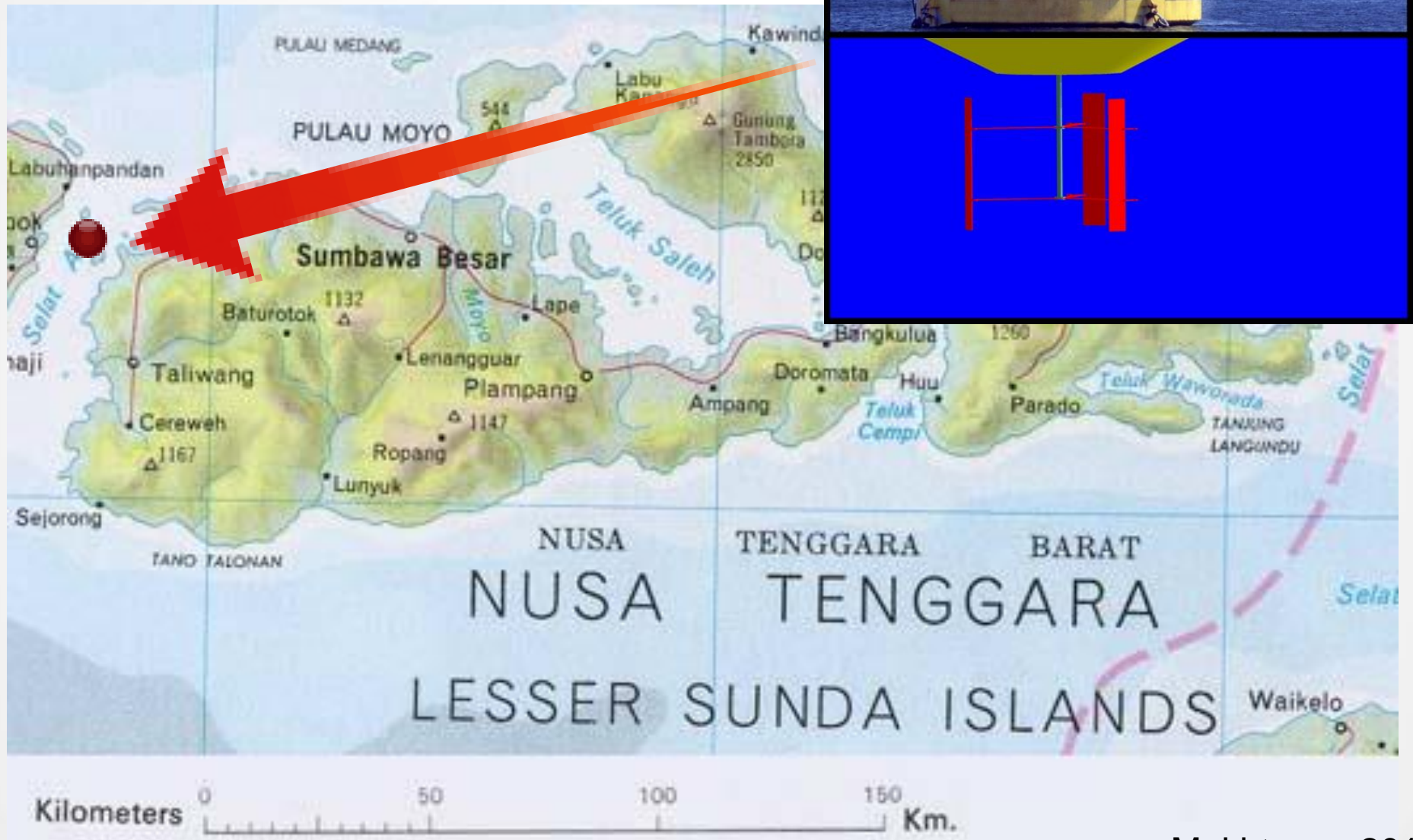


RGU **ROBERT GORDON**
UNIVERSITY ABERDEEN

International Education Culture

Mukhtasor, 2015

A Proposal Marine Energy Techno Park - A call for collaboration



Closure

Come on....let us develop a collaboration.

Tank you very much

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