HOW SCIENCES AND TECHNOLOGY CAN COPE WITH DISASTERS BETTER? -A CHALLENGE TOWARDS INTEGRATED DISASTER RISK MANAGEMENT

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Major Messages

- Disasters, particularly natural disasters are one of the most crucial issues for peoples living in Asia. There have been ever-growing needs for roles of sciences and technology as a means of knowing and managing disasters more and better.
- How sciences and technology can more and better contribute to disaster reduction by addressing "lessons learned" and " good (success) models/ practices"?
- Three aspects of what a disaster is about: Hazard, Vulnerability , (Exposure)and (Risk) Management
- Disasters are local in nature but could become very global, given globalization. So it could sometimes become a systems of systems to govern.

Strategic Research Focuses

- Two types of research focuses are expected to be made strategically.

  1) More fundamental, pinpointed, and edge-cutting approach.

  2) More cross-disciplinary and integrated approach.
- Both are also interrelated.
- A Frontier Research Area: More efforts to be made towards Focus 2).

- Our knowledge and technology have to reach people (policy makers, regulators, practitioners, cooperates and above all residents at local, regional, national, and international) who actually need them!
- We are yet short of so doing and there exists a seemingly small but essential gap between us researchers here and users there.
- This is called “the last mile issue for disaster reduction” or “social implementation”

Episode 1

In Asia, particularly we are living with disaster risks which are imbedded in our daily life activities

- You cannot avoid disasters fully.
- Do people (tend to) make a choice to live there or are they forced to (meaning no other choice) ?
- In any case it is a choice of society or individual even if they have to take a risk to do that.
- Decision depends largely on whether they are well or ill informed and knowledgable of uncertainty and unknowns .

In Malaysia now

Dept: Brace for the Worst

The Star, Nation, Sat. Nov. 31,2010

- Northern states set to face extremely bad weather, flash floods
- The Meteorological Department (MMD) has issued **a yellow stage warning**, adding that heavy rainfall and thunderstorms with windy conditions were expected to occur over Kelantan and Terengganu beginning today.
- **A yellow stage warning**, the first of three warning levels, denotes a possibility of a monsoonal surge in the next 24 to 48 hours.

Indonesia's Latest Twin Disasters
Our Deepest Condolences
and Sympathy

Mount Merapi erupted

Mount Merapi erupted

http://www.google.co.jp/imglanding?imgurl=http://indahnesia.com/Images/Information/MER_merapi_eruption_2006.jpg&imgrefurl=http://indahnesia.com/picture/MER/005/gunung_merapi_eruption_in_2006.php&h=305&w=500&sz=44&tbnid=hO6M9RNEA5oZxM:&tbnh=79&tbnw=130&prev=/images%3Fq%3DMerapi%2Beruption&zoom=1&q=Merapi+eruption&hl=ja&usg=__pfKSWfCM35sJq2rAftghayyxNO8%3D&sa=X&ei=5kvNTJm2FIiKvgO8_fDPDw&ved=0CEAQ9QEwBg

Merapi claims more lives and its guardian

Slamet Susanto and Sri Wahyuni, The Jakarta Post, Yogyakarta | Thu, 10/28/2010 9:37 AM | Headlines A | A | A |

http://www.thejakartapost.com/news/2010/10/28/merapi-claims-more-lives-and-its-guardian.html

Twin disasters leave 400 dead

Malaysian "The Star-`People's Paper", World, Sat. 30 Oct.,2010

- Indonesia battled to deliver aid to remote islands where a tsunami has killed over 400 people, as bodies lay strewn on beaches and buried in debris days after the wave hit.
- Disaster response officials believe the final death toll from the huge wave that hit the Mentawai island chain off the west coast of Sumatra on Monday could pass 600, with many of the victims sucked out to sea as the tsunami receded.
- Almost 13,000 people are staying in makeshift camps on the islands after their homes were wiped out in the wave, which was triggered by **a powerful 7.7 magnitude earthquake**.

(Continued) Twin disasters leave 400 dead

Malaysian "The Star-`People's Paper", World, Sat. 30 Oct.,2010

- Mount Merapi, erupted five more times yesterday, threatening residents who may have returned to their homes after an eruption on Tuesday's eruption killed 34 people. No casualties were reported but officials said two more died of burns from Tuesday's eruption.
- Some 50,000 people have fled to temporary shelters but many are returning to their fields on the volcano during the day, despite the treat of another deadly eruption. ⇔Lessons owned by others seemed failed to be made use of!!

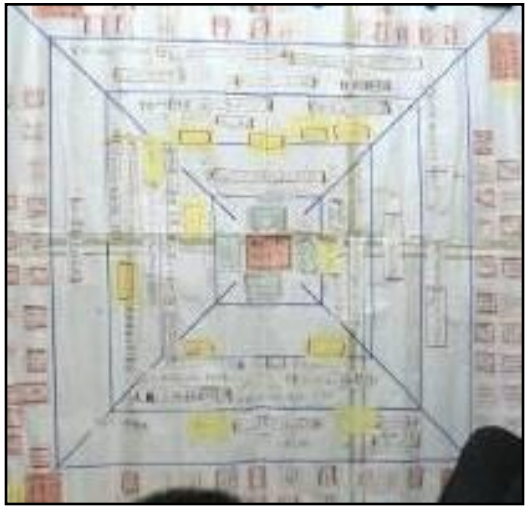
Our efforts perhaps serving on a modest scale?

- Collaboration between DPRI-Kyoto Univ. and Public Works Department, UGM, Indonesia

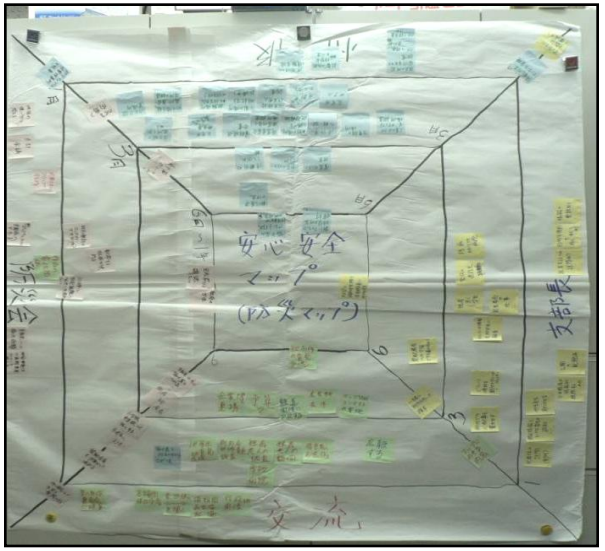
  (2009 -2010)
- Participatory Approach Introduced for Integrated Community Action Plan and Management –With a Focus on Merapi Volcanic Eruption Disaster Risk Susceptible Communities
- So far no victims reported-which needs anyway further “check”, “action”, “plan” and “do” processes needed by keeping stationed in field

Implementation of YSM in Japan

(1/0 Movement Activity of Hayase Village, Chizu, Tottori, 1997-2006)



Implementation of YSM in Japan (Disaster Reduction Action Plan Development of Shuhachi Community, Kyoto City in January ,2008)

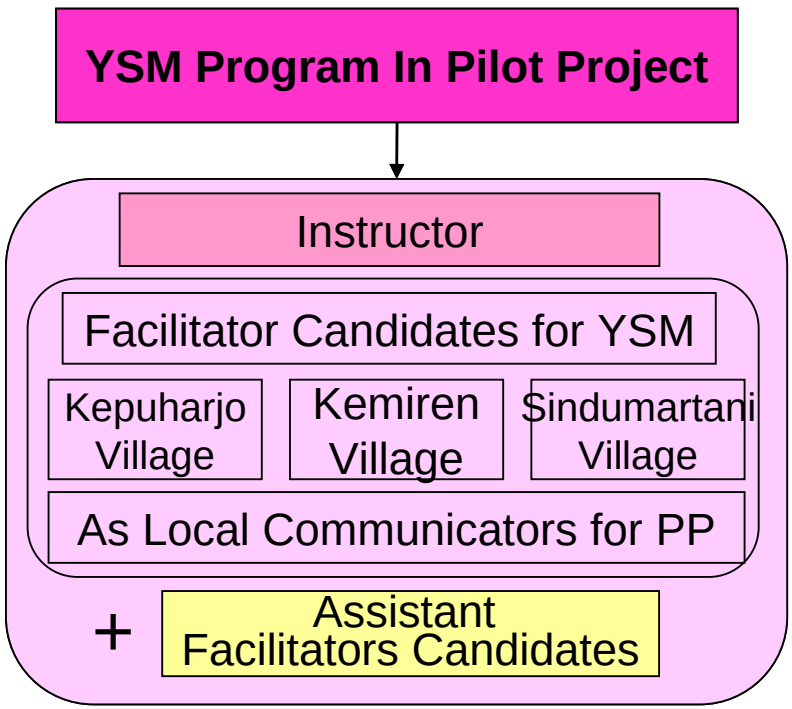


Implementation of YSM in Japan
(Open Ceremony of Yamasato Area, Chizu, Totori in 13,July,2008)

A New Challenge: Why and How YSM was introduced in the Merapi Pilot Project?

1. Each community had agreed to develop a collaborative action plan in a participatory manner so as to improve roles and activities of their social organization.
2. The fatal lack of capacity on the side of the community people was their inability and inexperience to systematically and logically make a sound diagnosis of the current state of their community and to work out a collaborative action plan so as to achieve their own goal.
3. YSM provides a communication basis for working together by having all seated together around a square table and by brainstorming about each other's views.
4. YSM provides collaborative action plan to improve the activity of sand mining management in local community, as the suitable participatory workshop method .

New knowledge Developed through YSM Application Program in Pilot Project



◆Part 1:
Facilitator Training's Program of YSM

Developing Action Plan for Field Activitie
- **Kemiren Village**
- **Sindumartani Village**
- **Kepuharjo Village**

◆Part 2:
YSM Workshop for Developing Collaborative Action Plan

Facilitator Training's Program of YSM for Facilitator Candidates of UGM

April, 2009

May, 2009

June, 2009

Special Procedures Developed to Implement YSM Workshops in Pilot Project

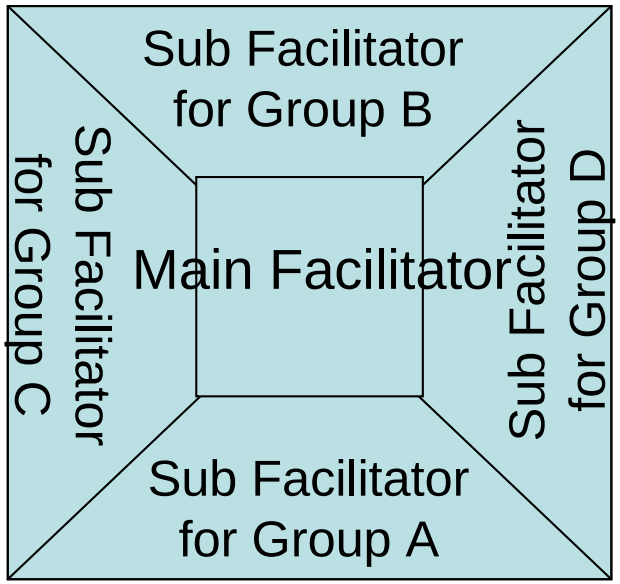
Implementation of YSM

◆Workshop A:
Sharing conscious between stakeholders

◆Workshop B:
Developing collaborative action plan to implement SMM in local communities

SMM: sand mining management
YSM:Yonmenkaigi system method
GMU:Gadjah Mada University

A new style of YSM workshop facilitation



◆KU-UGM proposed a new style of YSM facilitation:

adding the sub-facilitators to each group, considering the local situation

◆The role of Sub-facilitator:

Assisting and Accelerating participants' involvement during YSM Workshop

1) Supporting main facilitator
2) Guiding participants

Implementation of YSM in Pilot Project

Implementation of YSM

YSM of Local Community

Preparation

In Aug, 2009

Workshop A:
Share of awareness & need to SMM

Processes of YSM

SWOT & Strategy

In Aug, 2009

Workshop B:
Making action plan

YSC & Debating

In Oct, 2009

Field activity to SMM

Workshop A in 12, Aug, 2009

Topics of Villages:

1. Kemiren Village
   - Sand Mining Truck Survey
2. Sindumartani Village
   - Mapping of the Potential Location for Reclamation
3. Kepuharjo Village
   - Profile of Sand Mining Activity

SMM: sand mining management
YSM:Yonmenkaigi system method

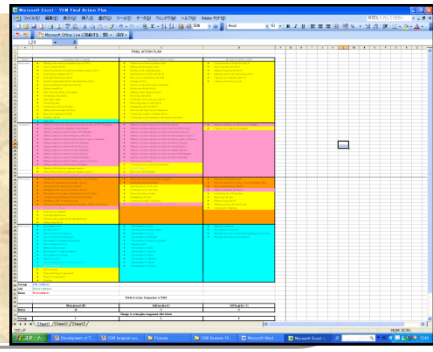
Case study: Case study: Kemiran village of Merapi volcano


Workshop A


2.SWOT


3. YSC


4. Debating



S 1.Have an office 2.Already legalized 3.Knowledge on the environment of survey 4.Sufficient Human Resources 5.Members of Bumi LEstari were former truck driver 6.Having conducted survey before	**W** 1.Communication is not good 2.Not familiar with survey method
O 1.Safe and quiet (condusive) condition 2.Assistance from GMU, Kyoto Univ, and YEC 3.Support from Village Government 4.Support from villagers 5.Support from related government agency 6.Proactive truck drivers 7.Most truck drivers know Bumi Lestari members	**T** 1.Many activities 2.Local truck driver 3.Unsupportive villagers 4.Disaster

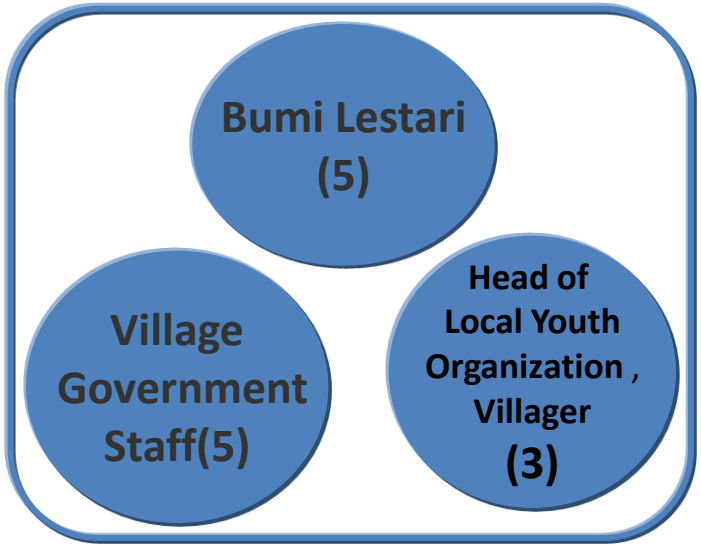
Strategy with SWOT analysis result

1. The objective of the field activity is to know the number of sand and gravel trucks and rate of sand from mining sites in Bebeng River passing through Kemiren village in a week.
2. The target is the truck armada passing through Kemiren.
3. Funding source for survey implementation is from village and Bumi Lestari.

Kemiren Yonmenkaigi Workshop

Date	19 August 2009	
Time	13.20 – 16.10	3 hours
Place	Kemiren Village	
Participants	Number : 13	Kemiren Villagers
Topic	Survey Armada	
Facilitator	Main : Aris	Sub: Mimbar, Didik, Pras, Nunung
Recorder	who : Fika	How : Camera, Handy Cam

Identification of participants



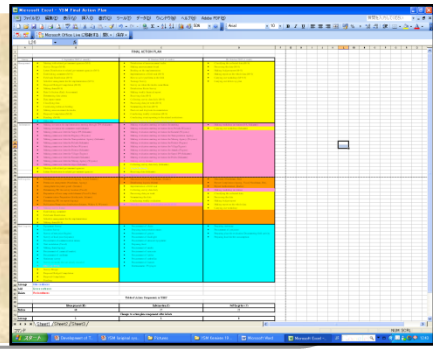
Case study: Case study: Kemiren village of Merapi volcano

Workshop A

2.SWOT

3. YSC

4. Debating



Debating for Collaboration

YMC after Debating

Partial Action Plan Chart (Kemiran Village)

	I. September 2009 (1 month)	II. October 2009 (3 weeks)	III. October 2009 (1 week)
M	Meeting with related government agencies (M+I) **Establishing committee (M+S)** Proposal Compilation (M+H)	Implementation of field task (M+S) **Survey on where the trucks come from** Collecting survey data daily (M+S) Agenda Planning (M+I, arrange from Sept 09)	Making report on the whole data (M+S) **Carrying out workshop (M+S+I)** Carrying out follow up plan
I	**Making invitation for implementation meeting through TPS (Sukamto)** Making invitation for committee establishment	Making evaluation meeting invitation for meeting **Making survey format** **Drawing conclusion of evaluation results (I+S)**	**Making workshop invitation (I+S)**
S	**Determining survey personnel (Agung, Yusuf, Sutarno)** Preparation of base camp establishment (Yusuf S, Heri) Communication Preparation (Iswahyanto, Istiarno)	**Data receiver (Yusuf, Nurohman, Istiarno)** Distributing logistic (Salem)	**Report Compilation**
H	**Equipment Survey** Procurement of uniforms Survey on trucks that are already recorded	**Procurement of something**	**Preparing of workshop** Preparing food for the consumption

Outcomes of YSM (Action Plan of Field Activities: Three Communities

Kemiren

Sand Mining Truck Survey

Sindumarutani

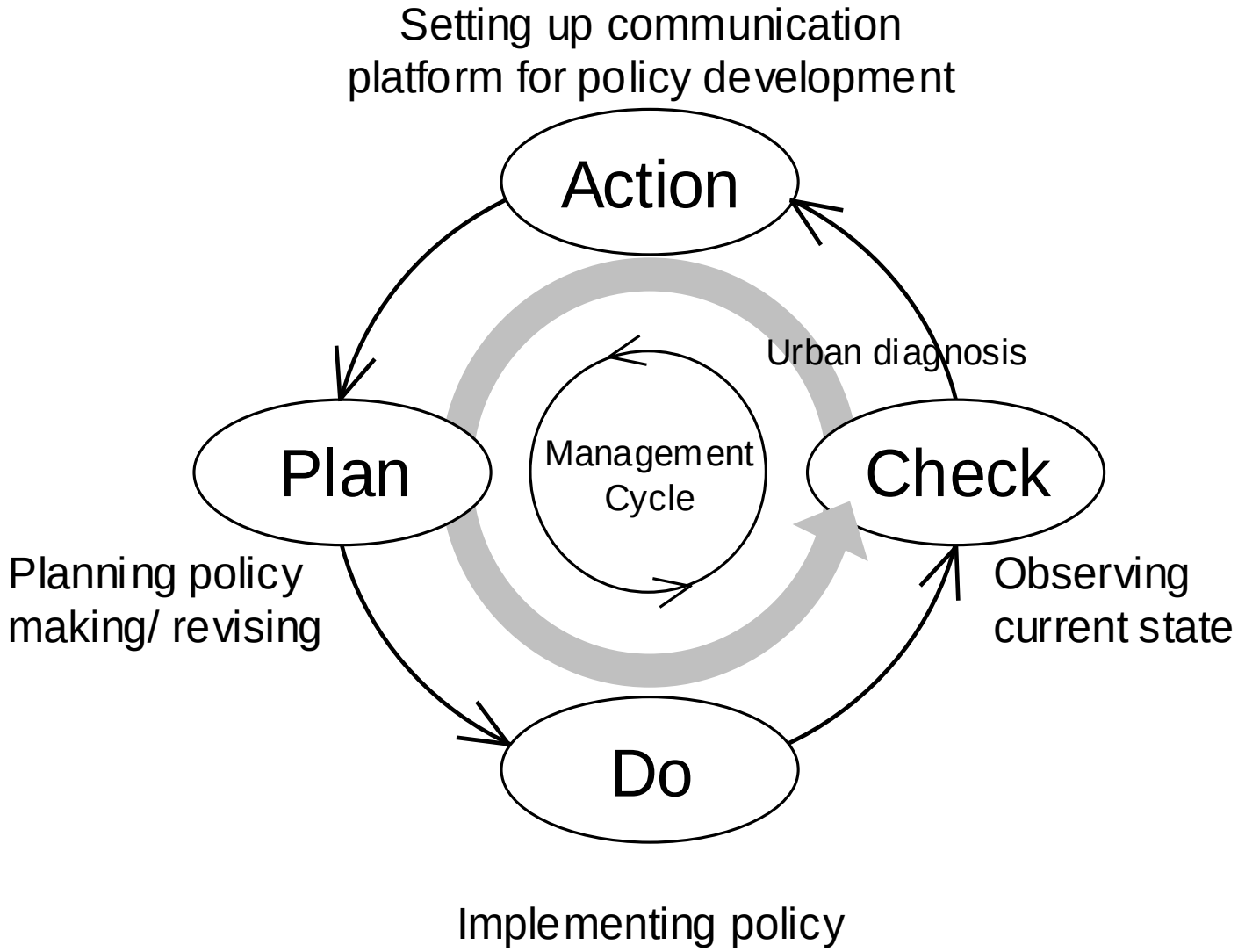
Mapping of the Potential Location for Reclamation

Kepuharjo

Profile of Sand Mining Activity

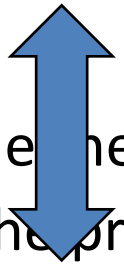
Plan-Do-Action-Plan Process

Small but Complete by Adaptive Management



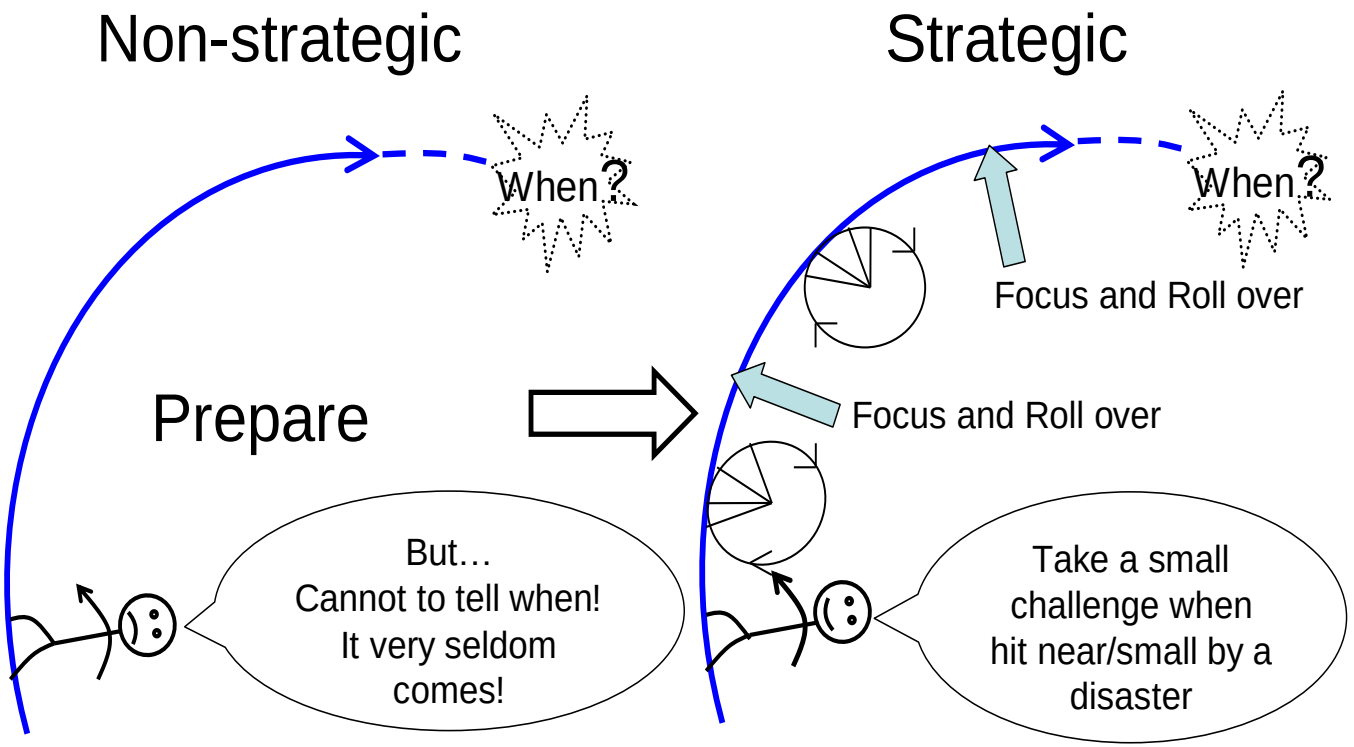
Challenge towards an Innovative Research Framework
Driving back and forth between
Theorization and Field Finding/Testing

- Basic (mathematical) theories/logical models for formalizing, explaining/interpreting, and diagnosing the mechanism/process.
- Basic (mathematical) theories/logical models for hypothesizing viable solutions and estimating/predicting possible outcomes .



- Field Finding/Testing the theories/models.
- Field Finding/Testing (the process of reaching) viable solutions.

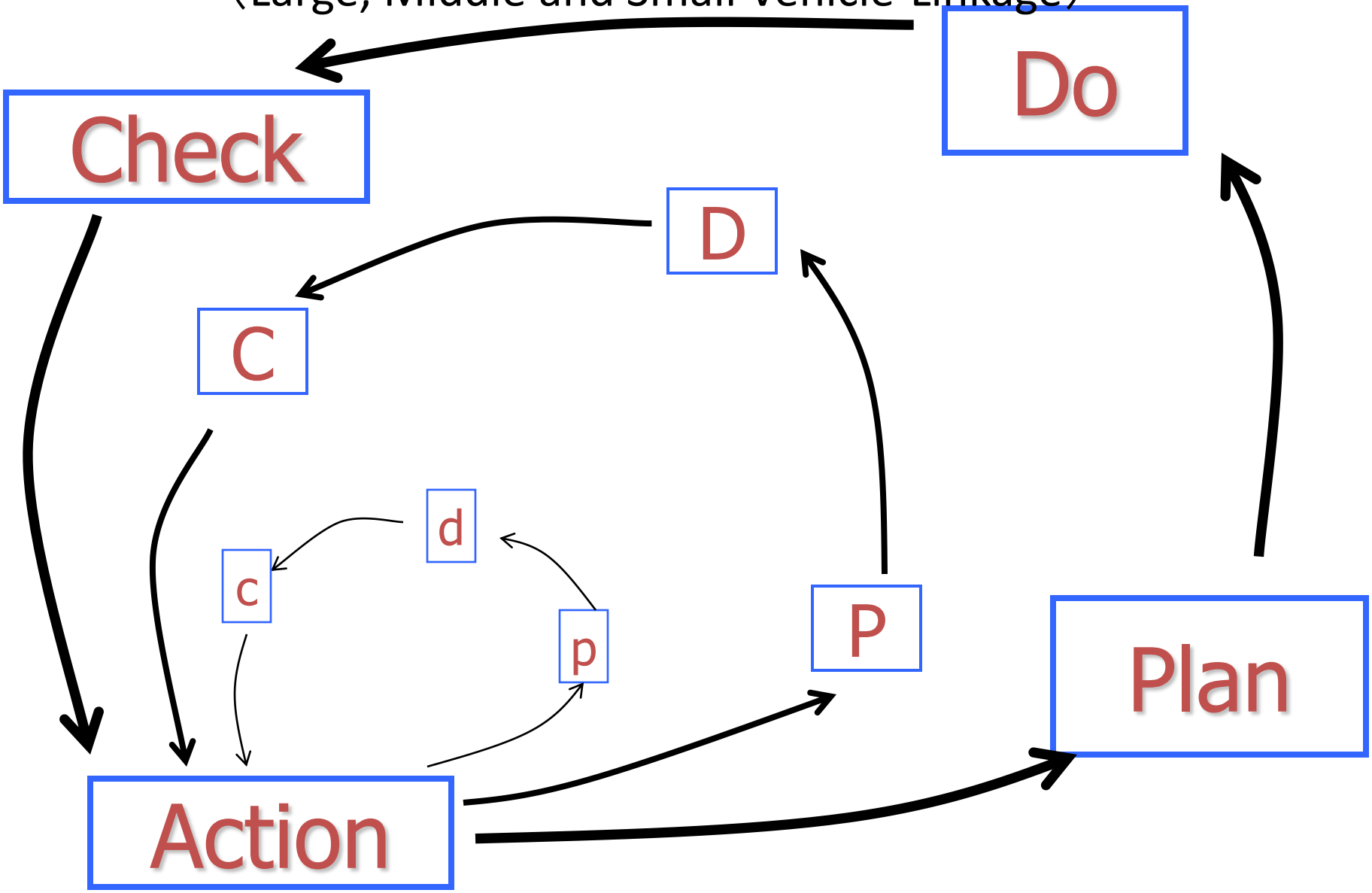
Strategic Shift towards Sustainable Disaster Cycle Management (Matsuda et al)

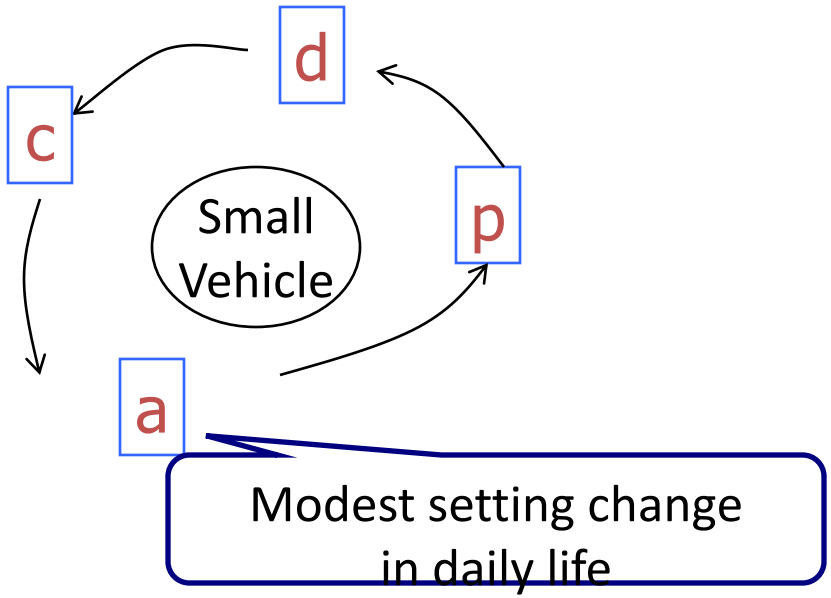


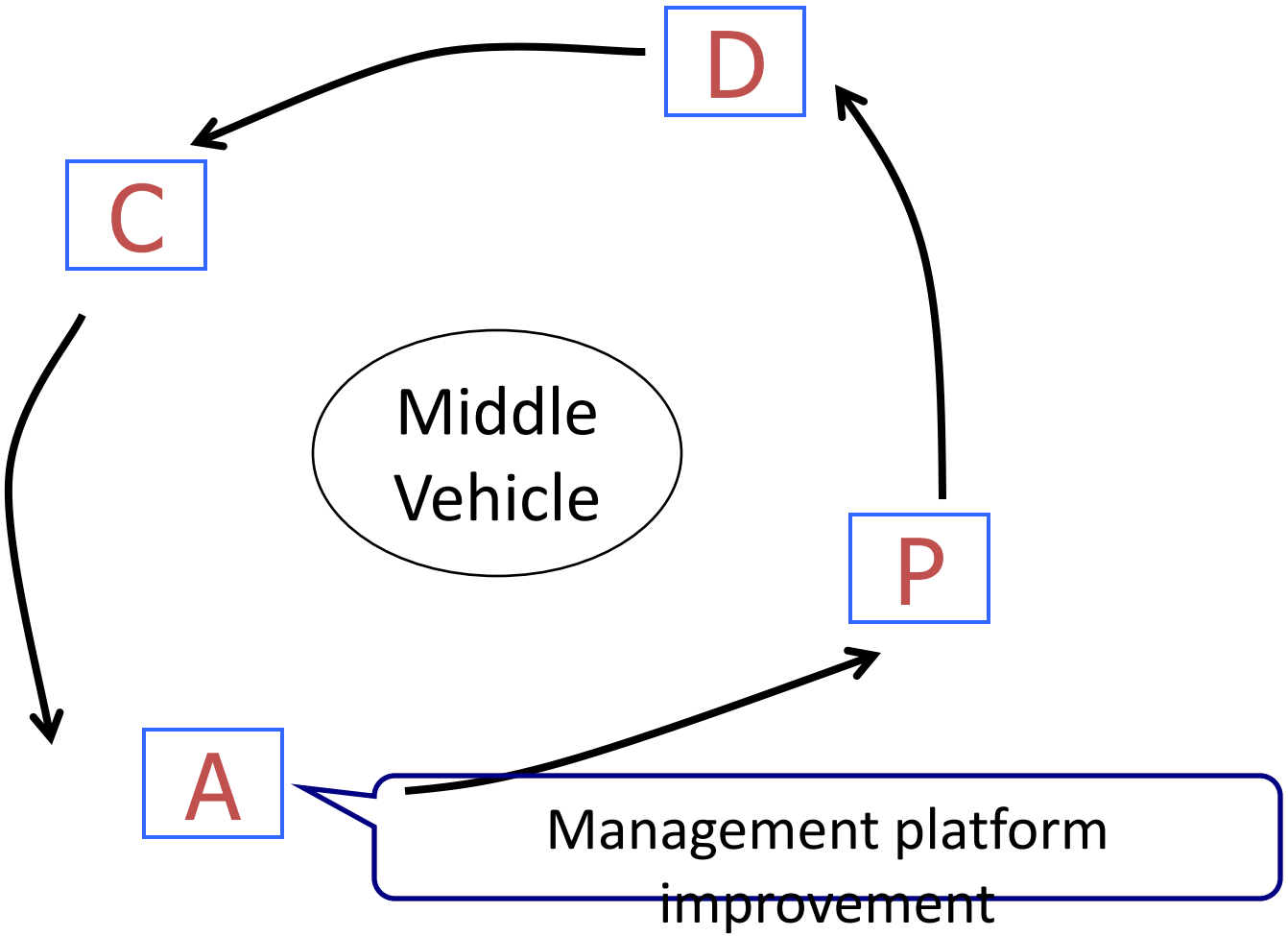
- Not easy to maintain awareness for long
- Not easy to bring it into motion from inside
- Not easy to become rhythmical between tension and relaxation in a day-to-day pace mode
- Not to be encouraged and rewarded by the effort

- To put in PDCA small cycles as fliers
- To catch the timing and external moment (shock)
- To beat the time with tension and relaxation
- To encourage and motivate people by making it visible and rewarding

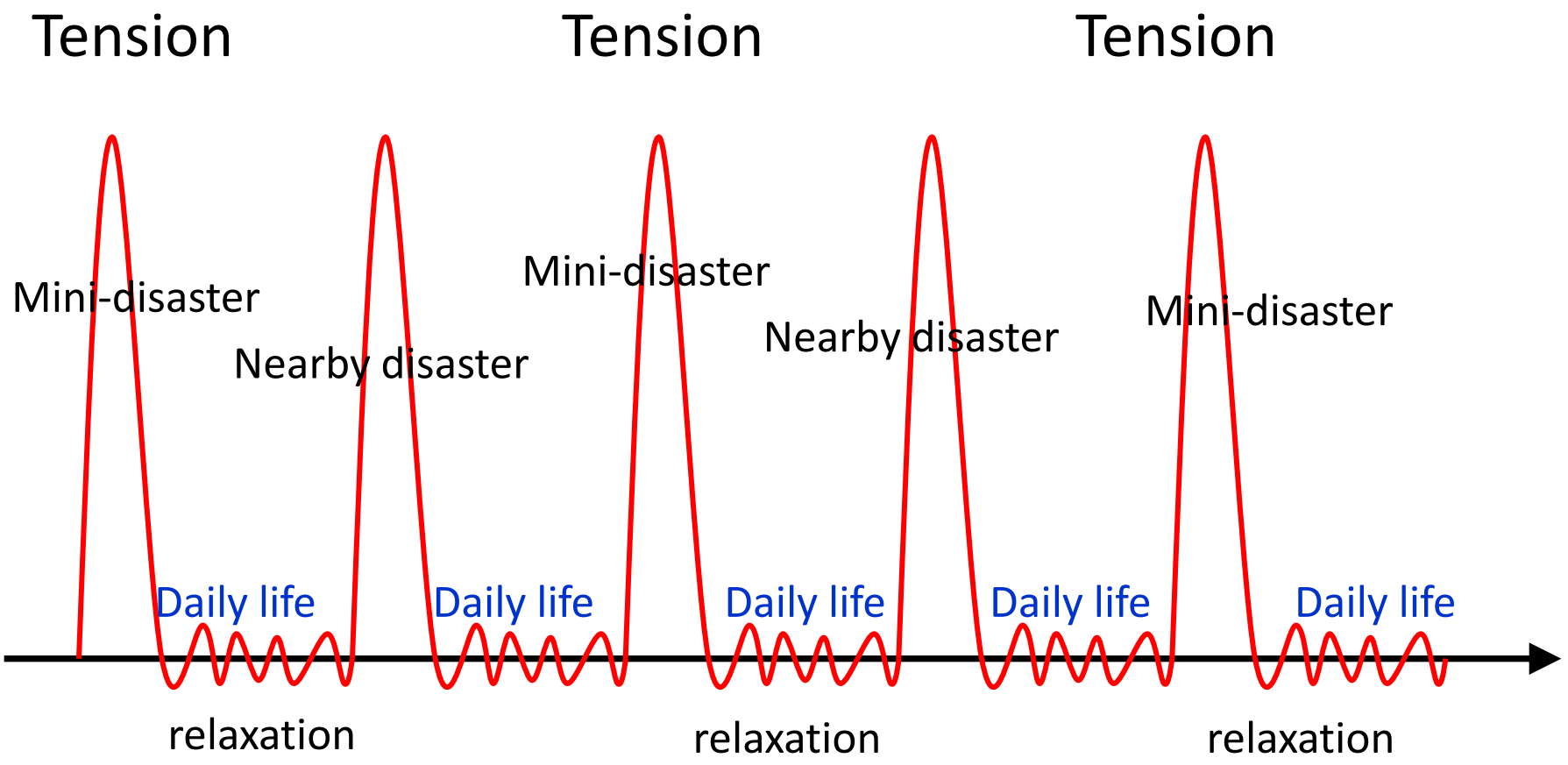
Nested Structure of PDCA Cycles
（Large, Middle and Small Vehicle-Linkage）




d
c
p
Small
Vehicle
a
Modest setting change
in daily life


D
C
Middle
Vehicle
P
A
Management platform
improvement

Vital Rhythms



Episode 2

Flights to Indonesia not affected by Merapi eruption

Petaling Jaya: The Star, Nation. Sat. Oct., 2010

- Flights from Malaysia to Indonesia destinations have not been affected by the Mount Merapi volcanic eruption in Central Java, Indonesia.
- A check with local airlines fund that no flights to Indonesia had been cancelled.
- Sales representatives from both airlines (MAS and AirAsia) would be noticed via email and SMS in case of cancelled flights.

International Mini-Seminar on Icelandic Volcanic Eruption and Impacts on Aviation Systems: Hazard, Socio-Economic Impact, and Global Risk Governance

Kyoto 5th November 2010

At Obaku Plaza Seminar Room 1, Uji Campus, Kyoto University

Icelandic volcanic ash alert grounds UK flights

http://news.bbc.co.uk/2/hi/8621407.stm

Evidences

2008 - 2010
Major Disasters in the World and the Issues

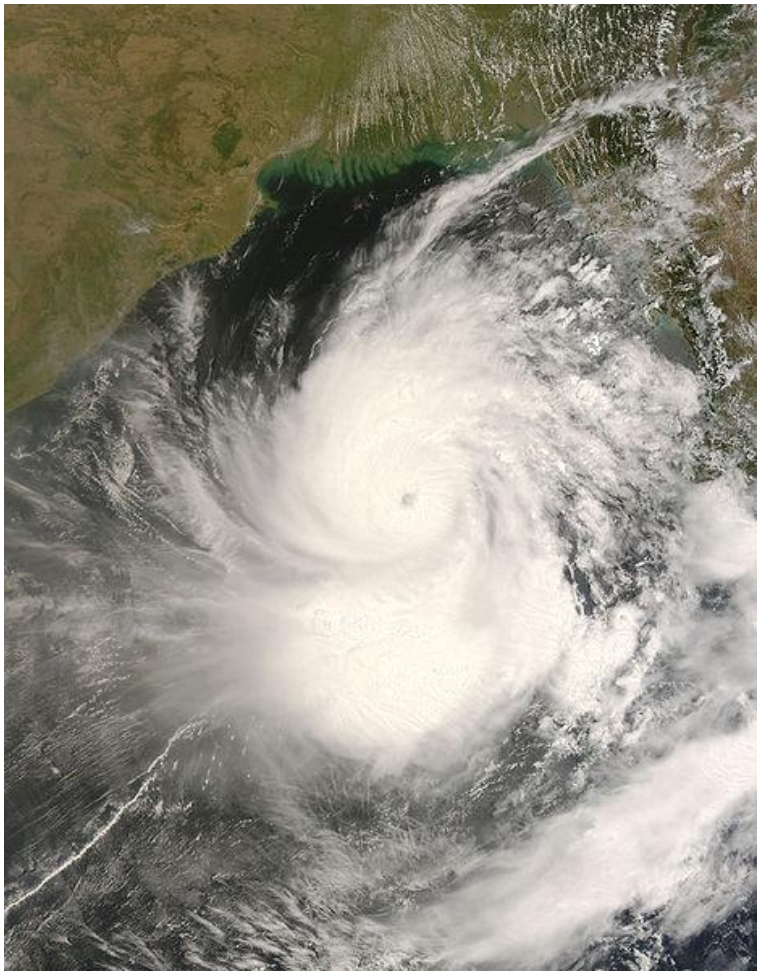
Tropical Cyclone, Myanmar, 2 May 2008

- Number of people killed at the country level: 138,366

Source: "EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be, Université Catholique de Louvain, Brussels (Belgium)"

Issues:

- The ruling military Junta's blockade of aid (the self-reliance doctrine)
- The domestic political context. The cyclone struck at a politically sensitive moment for the regime, one week before the country was to vote in a national referendum on a controversial new constitution



(Photo: http://rapidfire.sci.gsfc.nasa.gov/gallery/?2008122-0501/Nargis.A2008122.0440.250m.jpg)

The Great Sichuan Earthquake – China, 12 May 2008

- Number of people killed at the country level: 87,476
- Number of affected people at the country level:45,976,596
- Economic damage costs at the country level: US$85,000,000,000

Source: "EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be, Université Catholique de Louvain, Brussels (Belgium)"

Issues:

- According to the state-run Xinhua news agency, the earthquake killed 5,335 students and left another 546 children disabled
- Invention of the phrase: "tofu-dregs schoolhouses" (豆腐渣校舍), to mock both the quality and the quantity of the inferior constructions that killed so many school children

http://www.drgeorgepc.com/Earthquake2008ChinaSichuan.html

Earthquake, Haiti, January 12, 2010

- Number of people killed at the country level: 222,570
- Number of affected people at the country level: 3,700,000
- Economic damage costs at the country level: US$8,000,000,000

Source: "EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be, Université Catholique de Louvain, Brussels (Belgium)"

Issues:

- Slow-delivered international aid
- After 6 months, 1.5 million Haitians were homeless
- Thousands of abandoned children (orphans)

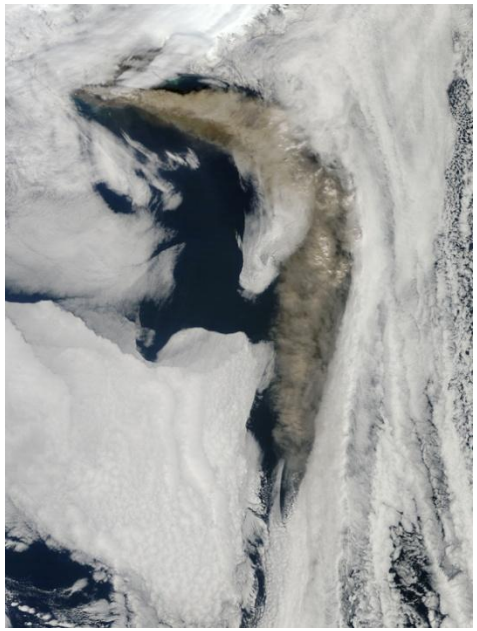
(Photo: http://blog.nema.go.kr/661)

Volcanic eruption, Iceland's Eyjafjallajökull volcano, April, 2010

- Impact: an unprecedented closure of UK,European and North Atlantic air space for 6 days in April 2010 and this was followed by further episodes of air travel disruption.

- By 21st April 95,000 flights had been cancelled, resulting in chaos and leaving hundreds of thousands of passengers stranded.

Source: Institute for Risk and Disaster Reduction, University College London, 2010



(Photo: NASA)

(Photo: Newsis/AP)

Natural Disasters in Japan

- Sayochyo, Hyogo Prefecture, 2009
- Number of people killed at the local level: 18
  （Population 20,440,Rainfall 326.5 mm/24h)
- *Some victims did not follow the evacuation alarm*

Source: http://www.town.sayo.lg.jp/bousai/hinan_higai.html

(Photo: http://www.bo-sai.co.jp/sayosuigai.html)

- The Iwate-Miyagi Nairiku Earthquake, 2008
- Number of people killed at the local level: 23（M 7.2, East-north Area of Japan)
- *Small damage impacts due to collapsed building and mountain landslides.*

Source: http://www.bousai.go.jp/kinkyu/iwate/2008-iwate-cao-024.pdf

(Photo:http://www.yomiuri.co.jp/feature/20080614-2892868/news/20080722-OYT1T00584.htm

Recent/ On-going Disasters

Russian Heat wave

At least 7000 people died

Forest fire, thick smoke, aircraft disturbance

Photo: www.treehugger.com

Pakistan Flash Flood

Continuous Monsoon Rain

More than 1500 people killed

Energy Crisis

Photo: www.overoll.com

Recent/ On-going Disasters

Oil Spill, Gulf of Mexico

Extensive damage to marine and wildlife habitat, fishing and tourism industries

Photo: http://rapidfire.sci.gsfc.nasa.gov/

Background: Directives of Policy and Governance

The Hyogo Framework for Action (HFA)
The World Conference on Disaster Reduction was held from 18 to 22 January 2005
in Kobe, Hyogo, Japan

Management of High-risk Zones Needed

- Disaster loss is on the rise with grave consequences for the survival, dignity and livelihood of individuals, particularly the poor, and hard-won development gains.
- Disaster risk is increasingly of global concern and its impact and actions in one region can have an impact on risks in another, and vice versa.
- This, compounded by increasing vulnerabilities related to changing demographic, technological and socio-economi conditions, unplanned urbanization, development within high-risk zones, under-development, environmental degradation, climate variability, climate change, geological hazards, competition for scarce resources.

HFA :Disasters are local but becoming also more global

- The impact of epidemics such as HIV/AIDS, points to a future where disasters could increasingly threaten the world's economy, and its population and the sustainable development of developing countries.
- In the past two decades, on average more than 200 million people have been affected every year by disasters.

HFA: More Compounded and Complex, and Global challenge needed

- Disaster risk arises when hazards interact with physical, social, economic and environmental vulnerabilities.
- Events of hydrometeorological origin constitute the large majority of disasters.
- Despite the growing understanding and acceptance of the importance of disaster risk reduction and increased disaster response capacities, disasters and in particular
- the management and reduction of risk continue to pose a global challenge.

HFA: More integrated , sustainable and policy and action at community , national and international level

- There is now international acknowledgement that efforts to reduce disaster risks must be systematically integrated into:

  Policies, plans and programmes for sustainable development and poverty reduction, and supported through bilateral, regional and international cooperation, including partnerships.
- Sustainable development, poverty reduction, good governance and disaster risk reduction are mutually supportive objectives, and
- In order to meet the challenges ahead, accelerated efforts must be made to build the necessary capacities at the community and national levels to manage and reduce risk.

Paradigm shift from the conventional to a new frontier sciences and technology

Driving forces into the new direction

- More proactive, precautionary and adaptive management approach,
- More multi-stakeholder-involved participatory approach,
- More linkage to day-to-day concerns, and increasing necessity to manage disasters in the total context and space of the city and region at stake,
- More cross-disciplinary, multi-lateral knowledge accumulation and methodological development

Conventional disaster plan vs. 21st century's integrated disaster risk management

20th Century

- Reactive
- Emergency and crisis management
- Countermeasure manual approach
- Predetermined planning (Non-surprise)
- Sectoral countermeasure approach
- Top-down approach

21st Century

- **More proactive**
- More risk mitigation + preparedness approach
- **More anticipatory/ precautionary** approach
- **More comprehensive** policy-bundle approach
- **More adaptive** management approach
- **More bottom-up** approach

IDRiM Society: An academic initiative, a new academic society

- IDRiM Society was launched in Kyoto last year (2009) and it held its first conference in Vienna early September this year (2010).
- Before that there have been decade-long initiatives to develop and extend cross-disciplinary forums (IDRiM Forums, 2001-2009) and networking efforts made by us, DPRI and IIASA (International Institute for Applied Systems Analysis) in Austria.

Past IDRiM Annual Conference Themes

2001 - 2009

Socio-economic Vulnerability
Austria, 2001

Mega City Vulnerability and Resilience
Austria, 2002

Coping with Regional Vulnerability
Japan, 2003

Challenges and Implementation
Italy, 2004

Innovations in Science and Policy
China, 2005

Risk and Challenges for Business and Industry
Turkey, 2006

Coping with Disasters: Global Challenge for the 21st Century and Beyond
Italy, 2007

Integration and Multi-disciplinarity
Italy, 2008

Scientific Challenges in Implementing IDRiM in a Changing World
Kyoto, 2009

How major themes have developed in the past IIASA - DPRI Forums

The 1st conference (2001): Socio - Economic Vulnerability, focus on the importance of integrating risk policy making with infrastructure development, communication, social networks and economic/ financial planning

Additional themes starting 2002

Mega Cities, Urban Vulnerability & Resilience
Not only involving scholars, but also practitioners and public policy makers (Research and Practice)

Additional themes starting 2004

The Challenges of Implementation, Implementation Science
Innovations in Science and Policy

Additional themes starting 2006

Policy oriented IDRiM, especially for practices involving business and industry

Starting 2007: New Workshops

On Implementation Science, Casifica and DRH
Young Scientists Session
DFID Workshop
Natech RIsk Assessment and Management
Cost-benefit Analysis

Additional themes starting 2008

Post-event impact and governance (learning from Sichuan Earthquake)
Climate Change Adaptation

Additional thems starting 2009

Insurance, Business Continuity
Adaptive Management

IDRiM 2010: "Sharing IDRiM experiences under different socio-economic and cultural contexts." The themes are:

(1) Global Change and Vulnerability
(2) IDRiM and Sustainable Human Development
(3) Disaster Impacts in Different Cultural Settings
(4) Industrial Risk Management
(5) Disaster Safety Nets
(6) The Science of Implementation

1st Annual Conference of the International Society for Integrated Disaster Risk Management - IDRiM 2010: Sharing IDRiM experiences under different socio-economic and cultural contexts

at BOKU, Vienna, Austria

Sept. 1-3, 2010

http://www.idrim2010.com/

You all are welcome!
Join us in

- IDRiM Society.

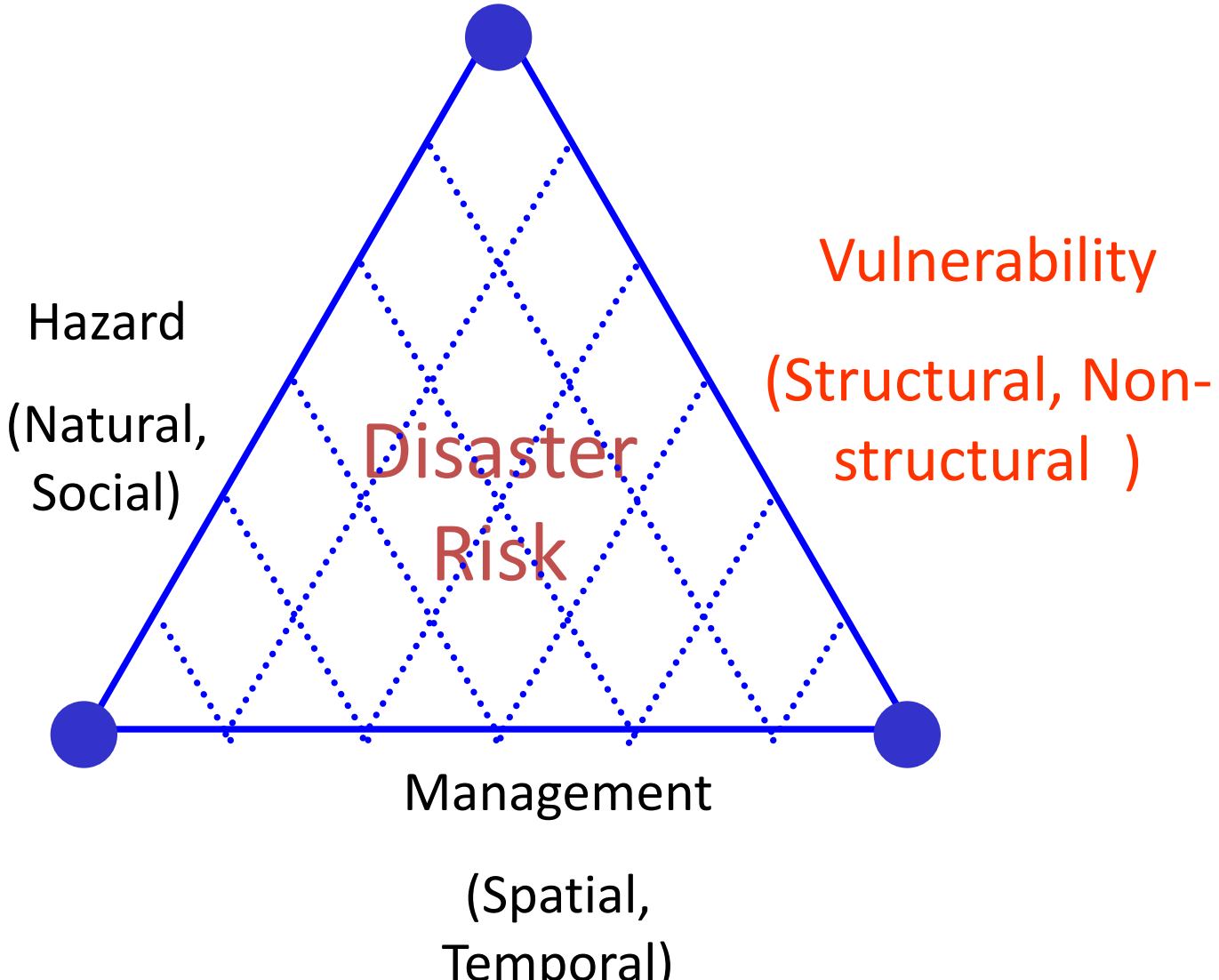
  Visit http://nexus-idrim.net/idrim10/

  for information and member registration

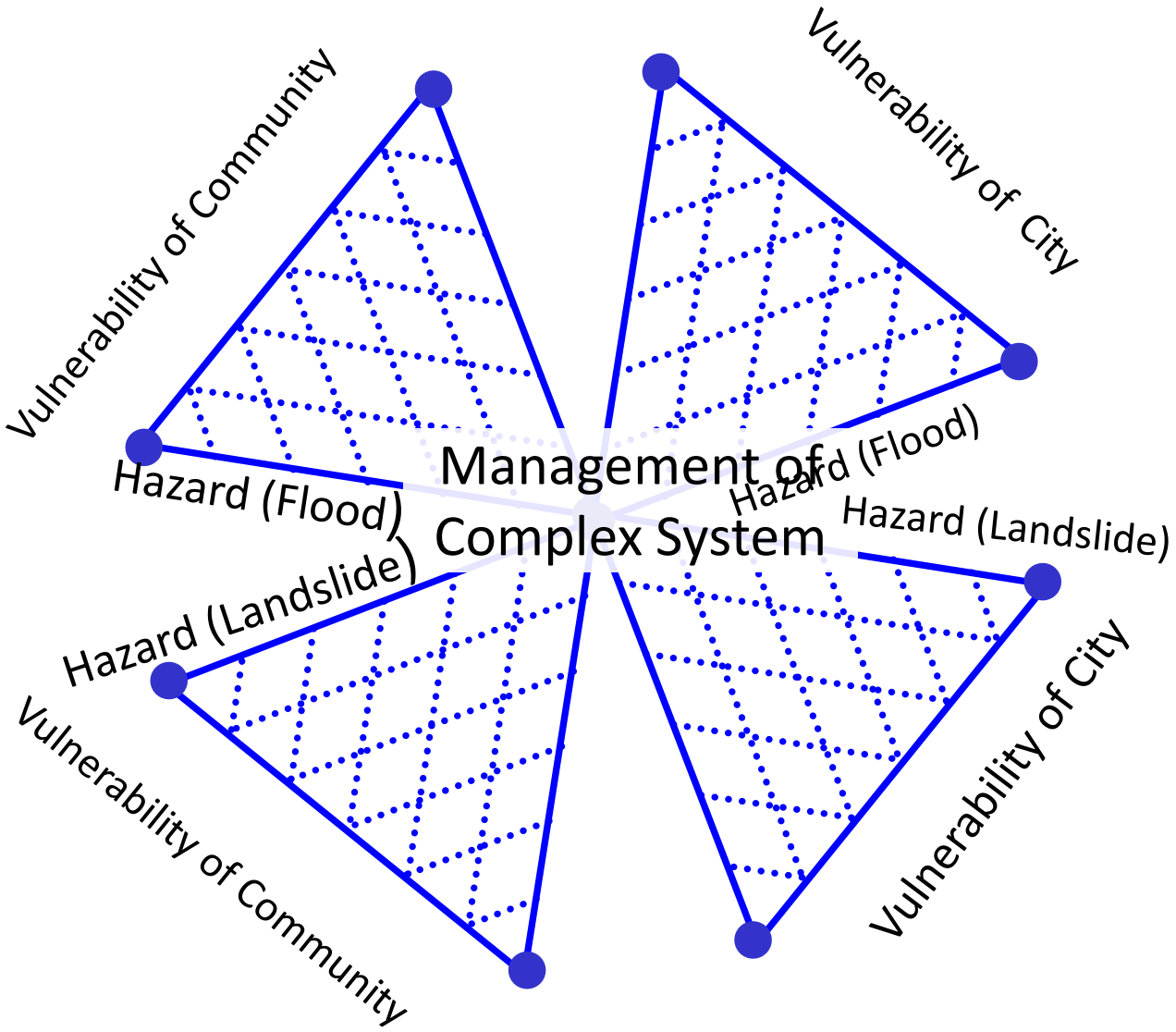
IDRiM: Conceptual and Methodological Frameworks Proposed

Three Components of what a Disaster is about

Characterized by Uncertainty, Ambiguity, Unknown, Value, Perception

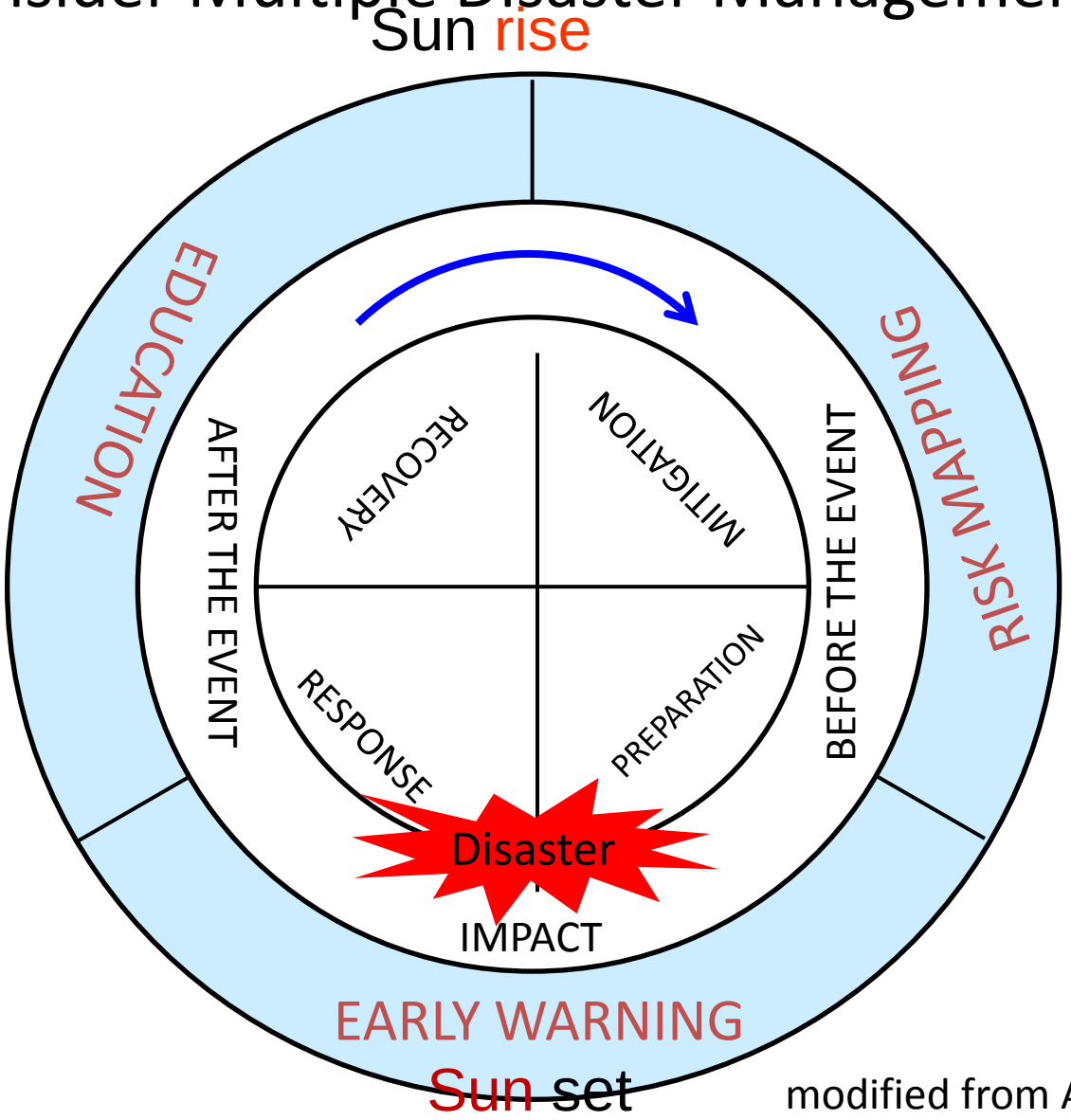


Disaster Risks Coupled and Compounded



Integrated Disaster Risk Management is needed!

Disaster Clock: Managing Integrated Disaster Risks Must Consider Multiple Disaster Management Cycles



modified from Alexander, 2002

Natural Hazards/Disasters as Extreme and Non-extreme Events

- Large Cycle: Low frequency-high impact event = Catastrophic Disaster

  e.g. 1995 Kobe Earthquake

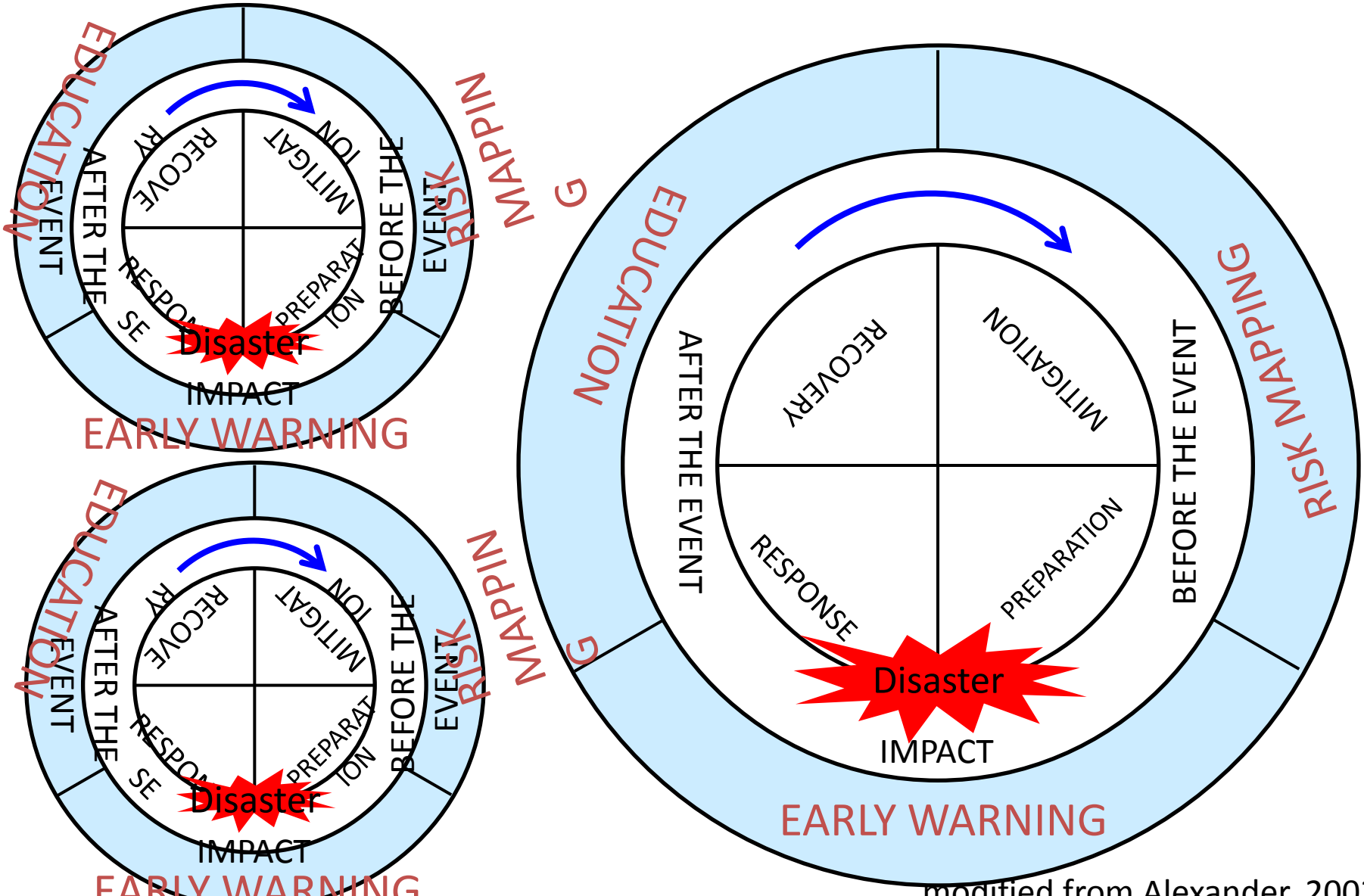
  2005 Hurricane Katrina

  (due to climate change?)

  2008 Sichuan Earthquake

- Middle/Small Cycle: Mid/high frequency-mid/low impact event= Disaster Risks to Live with

Managing Multiple Disaster Clocks



modified from Alexander, 2002

City/regions viewed as spatial-temporal multi-layer system

Life in Community

Landuse and Built Environment

Infrastructure

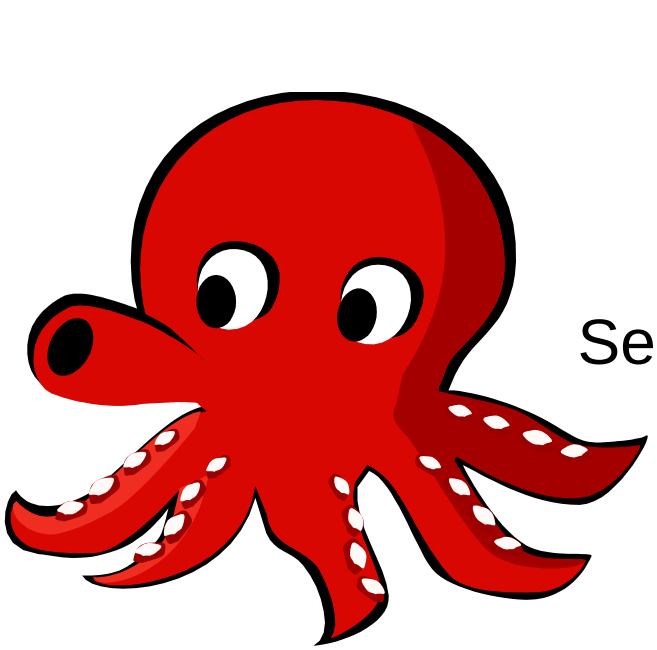
Social Schemes

Culture and Convention

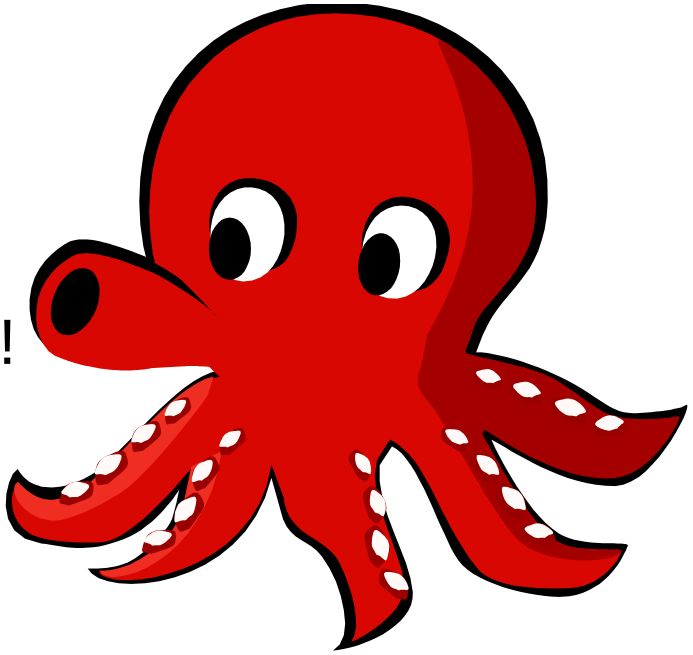
Natural Environment

Five-storied Pagoda Model

Let Octopuses Interact and Pull Together !



Separated!!

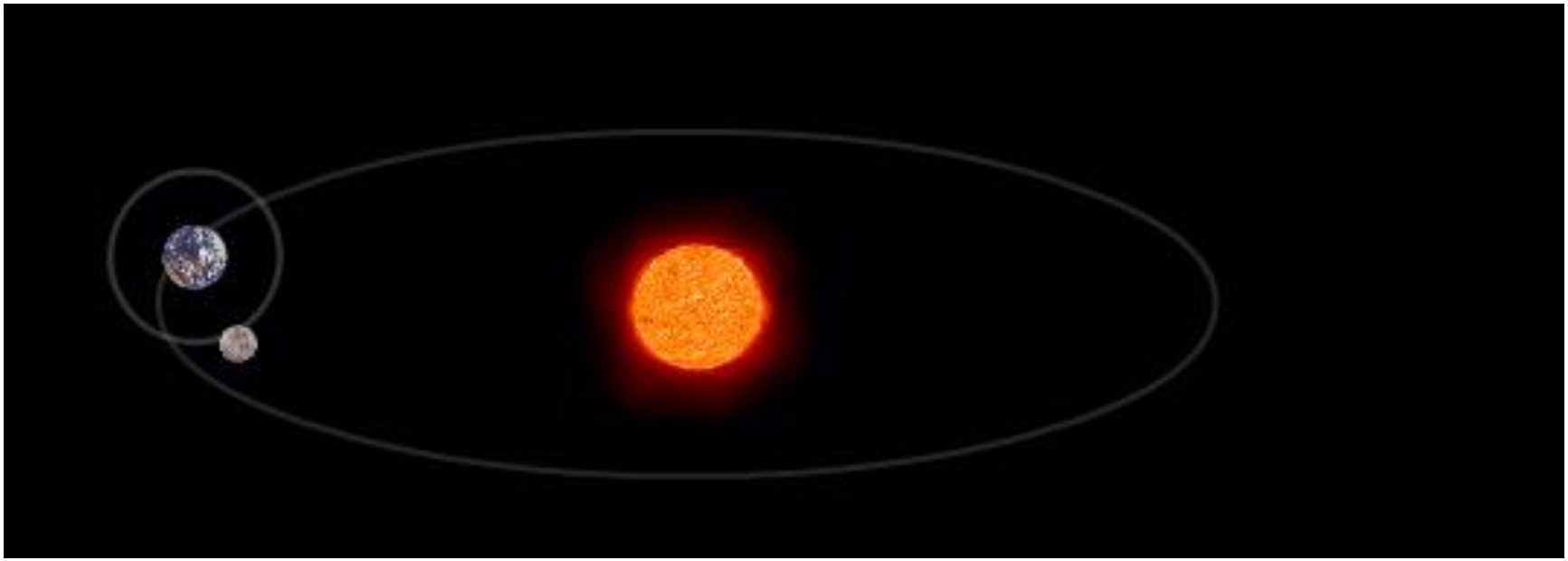


I Live in my own
Star (Ocean).
I don’t need my legs to touch others!

I Live in my own
Star (Ocean).
I don’t need my legs to touch others!

Star Alliance Needed

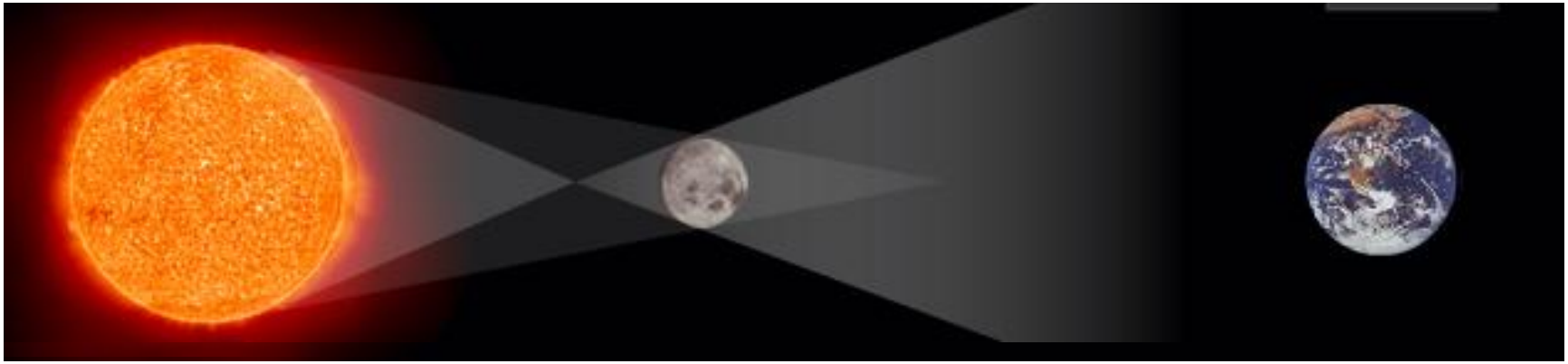
- Star as an *Independent* Discipline, School and Profession
- Star as an Independent Producer and User
- Implementation demands an innovative thinking and practice for “Stars to Meet Together”

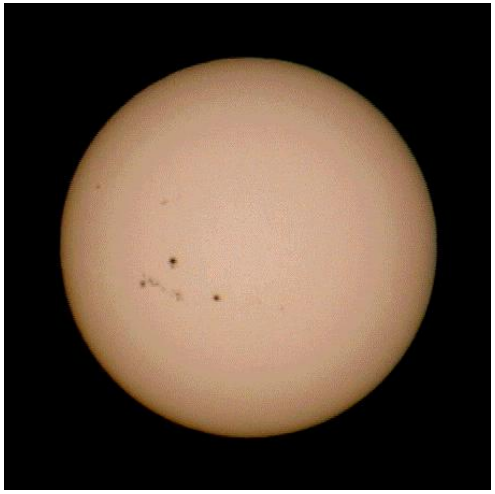


Viewing the Overlaps by
Eclipse Revolving Model

Placing into the Common
Perspective
Categorically Different
Stars (Disciplines and Schools)

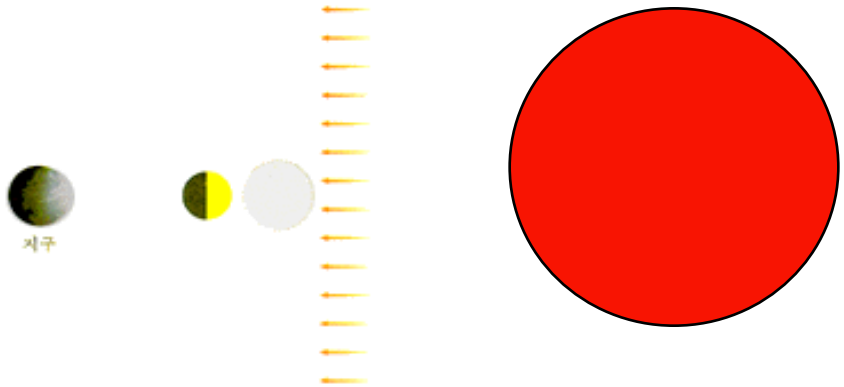
http://100.naver.com/moon/moon02.htm





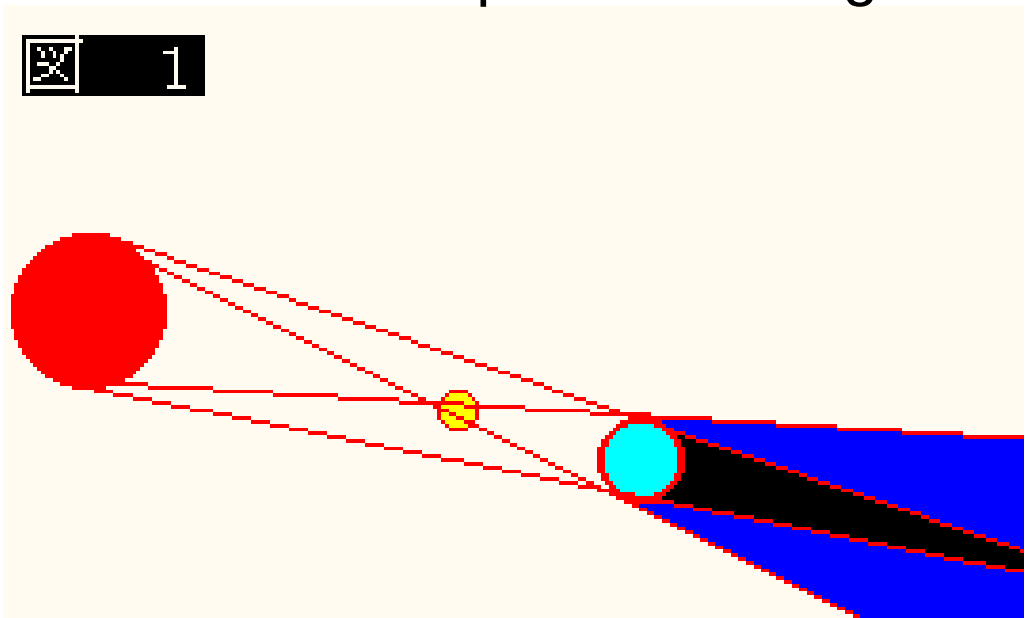
http://sos.kasi.re.kr/korean/solar_eclipse/principle.php

http://100.naver.com/moon/moon02.htm



Positioning and Timing the Whole System

As Lunar and Solar Eclipse Revolving Process



Research Organization Challenges Needed

- How to systematically implement implementation science actually

→Case Station-Field Campus (CASiFiCA) Framework Proposed and Tested

- How to systematically formalize implementation process and outcome knowledge

→Implementation Science Knowledge Building and Co-Schooling Efforts

- How to systematically archive, share and disseminate such accumulated knowledge

→Disaster Hyperbase (DRH)

- How to systematically implement implementation science actually
  →Case Station-Field Campus (CASiFiCA) Framework Proposed and Tested
- How to systematically formalize implementation process and outcome knowledge
  →Implementation Science Knowledge Building and Co-Schooling Efforts
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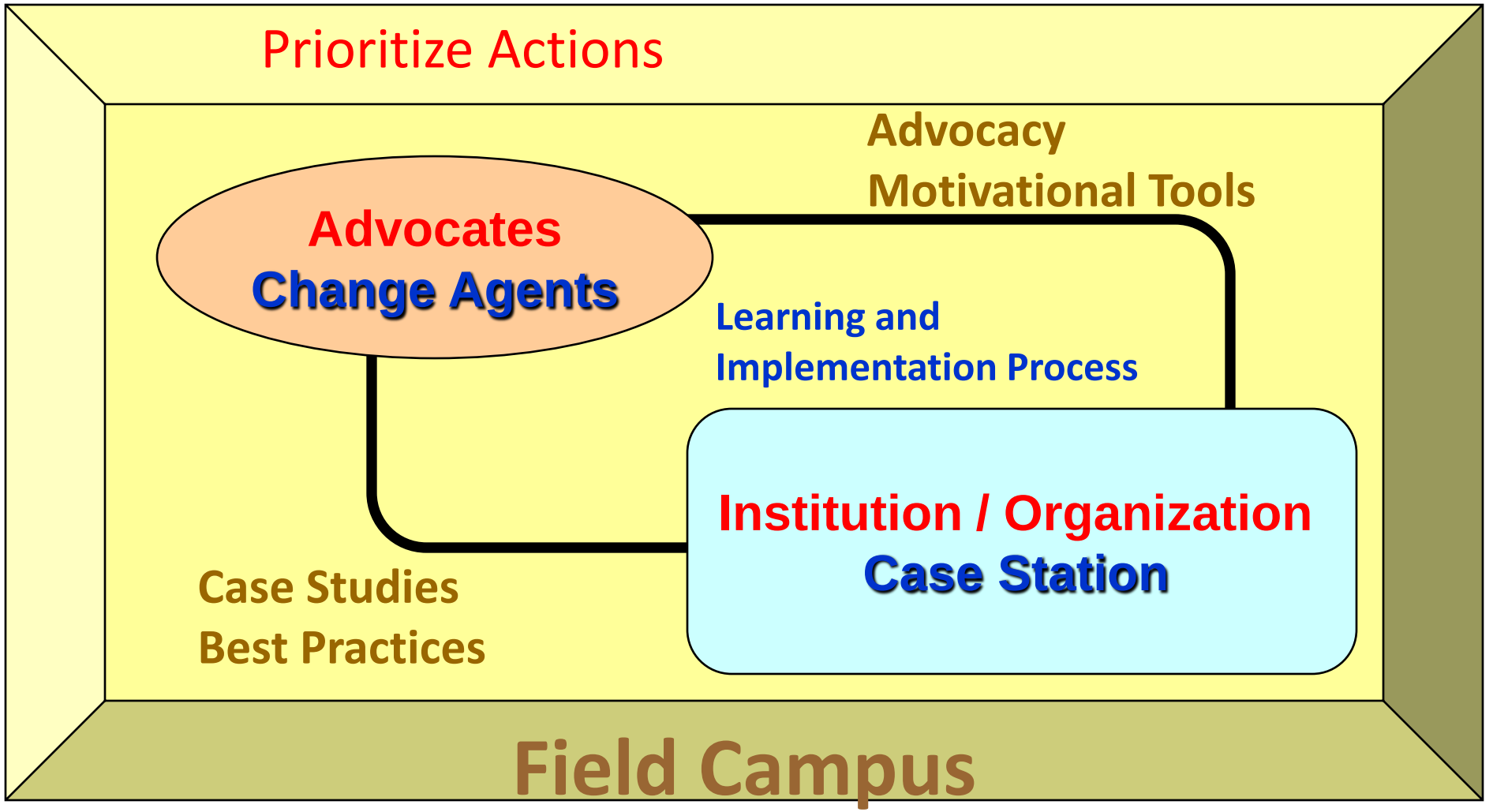
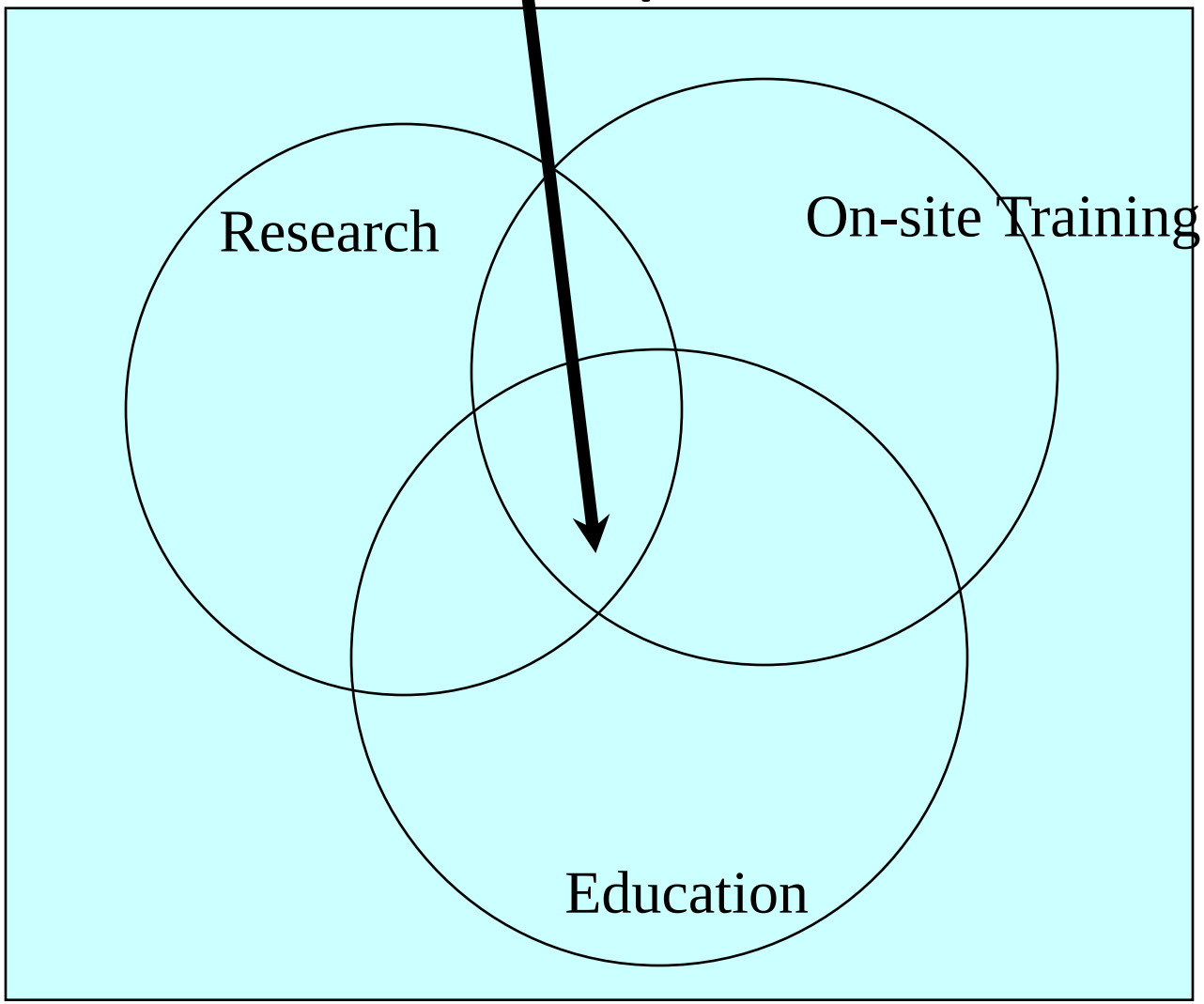
  →Disaster Hyperbase (DRH)

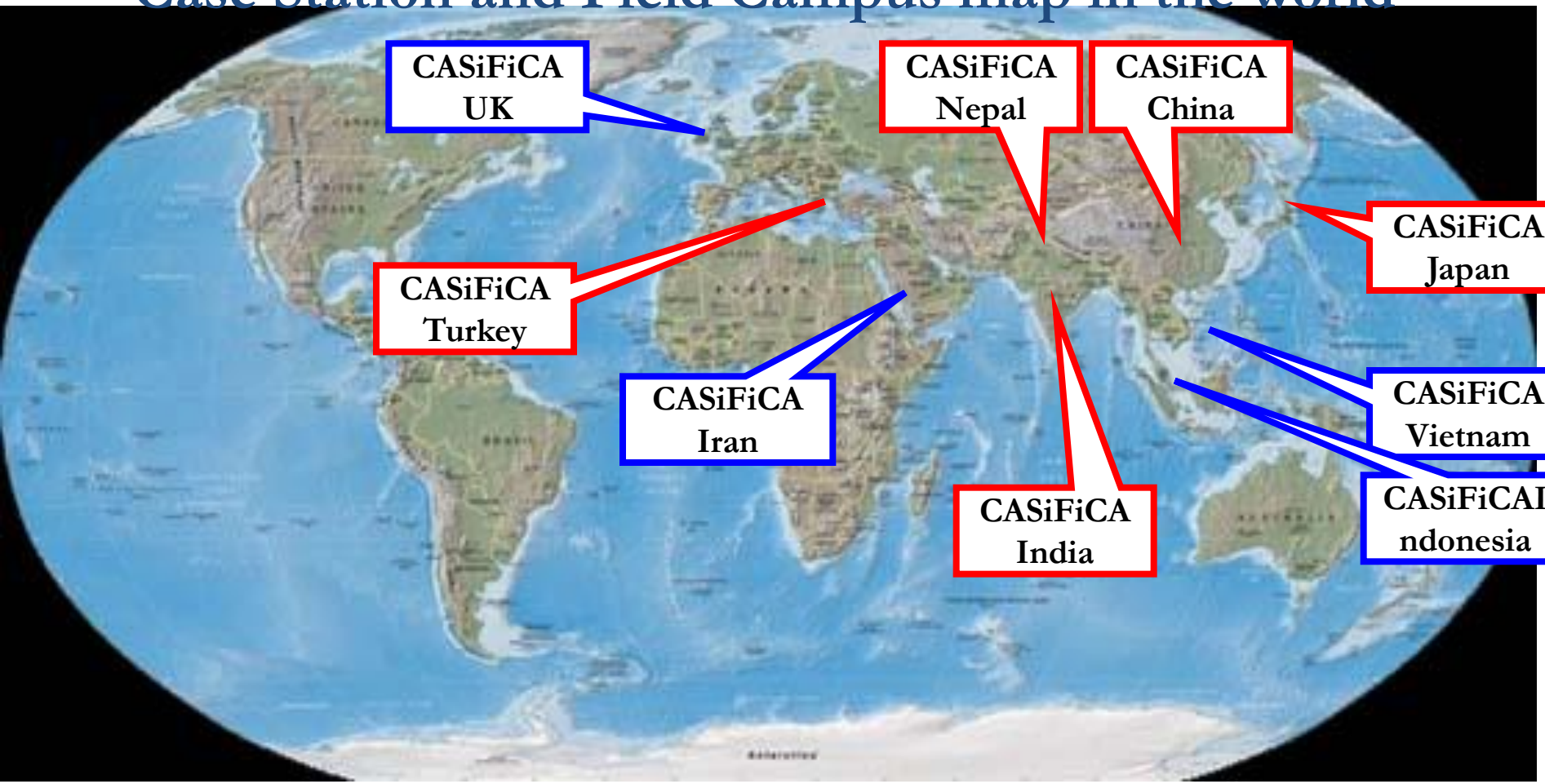
Case Station/ Field Campus



CASIFICA targets this missing overlap!



CASiFiCA Challenge
Case Station and Field Campus map in the world



ongoing MEXT-CASiFiCA

Upcoming CASiFiCA

“CROSSROAD Game”

-- A sample practice of participatory & collaborative disaster risk management

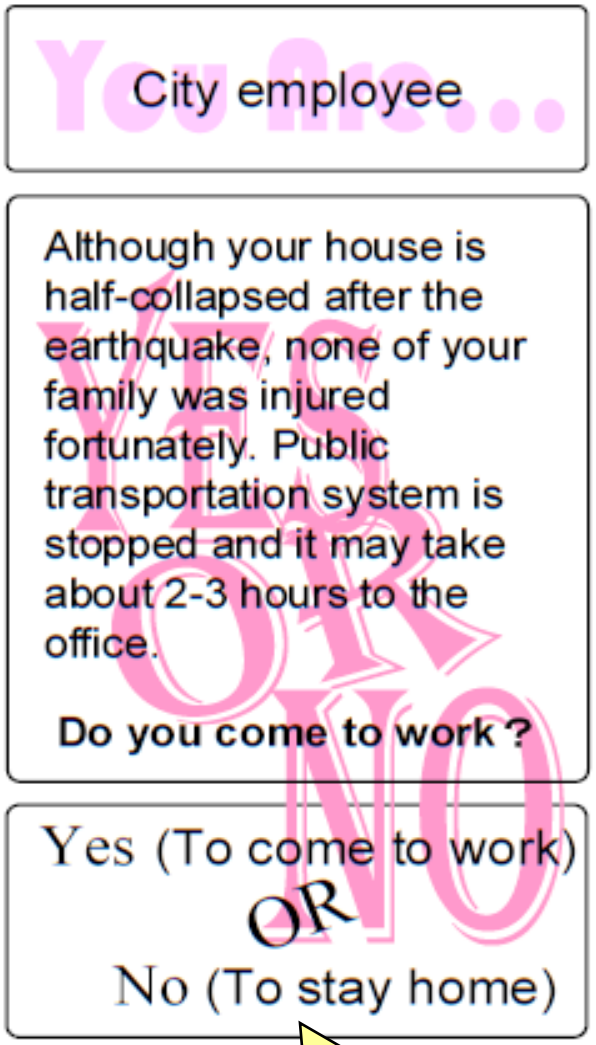
- 25,000 copies published
- Big media coverage (TV news, papers, magazines, etc.)
- more than 35,000 participants

Gaming-type disaster education procedure

"CROSSROAD Game"

- Original version, "Kobe-Version": all episodes are based on ***actual events (real stories)*** in the 1995 Kobe Earthquake
- Obtained from a series of focus-group interviews with those who experienced the disaster (more than 200 hours with more than 150 interviewees)
- Interviewees: survivors, volunteers, and local government officers working at the frontline

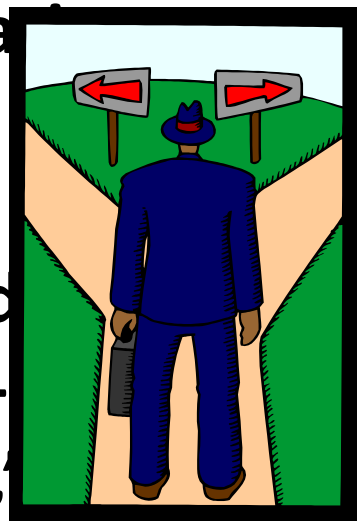
[Kobe1015]



Episode Card Sample

“CROSSROAD Game”

- Episodes: re-describing real experiences of interviewees in a form of severe dilemmatic either-or decision between two conflicting choices, which we call “Crossroad Format,” to extract ba essentials of disaster risk management
- Unexpectedly good feedback to Kobe–version
-More than 10 different new versions published the same Crossroad Format, such as “Everyday-preparedness-Version,” “School-safety-Version,” “Kochi-Prefecture-Version,” “Social-work-Version,” etc.



“CROSSROAD” --- Preparation

Forming a group of 5-7 members around a table, preferably in odd numbers of members

You are…

City employee

【Kobe1015】

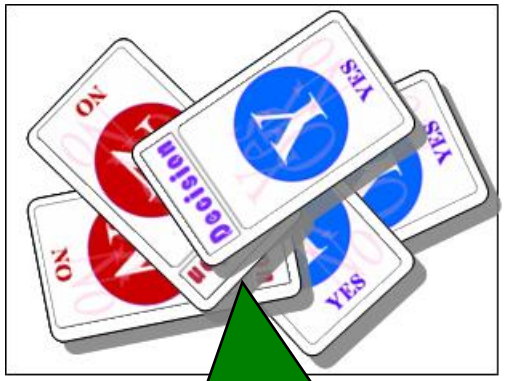
Although your house is half-collapsed after the earthquake, none of your family was injured fortunately. Public transportation system is stopped and it may take about 2-3 hours to the office.

Do you come to work?

Yes (To come to work)

OR

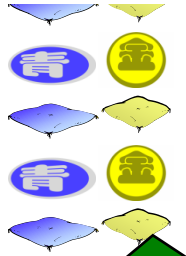
No (To stay home)



“YES” & “NO” Card (1 pair for 1 person)

Pens, and Blue & Pink notes (stack on the table)

Episode cards

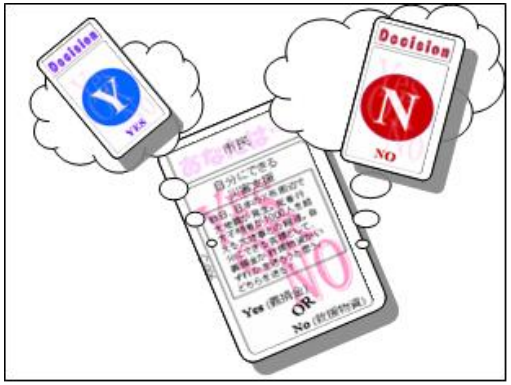


Blue and gold point chip cards (stack on the table)

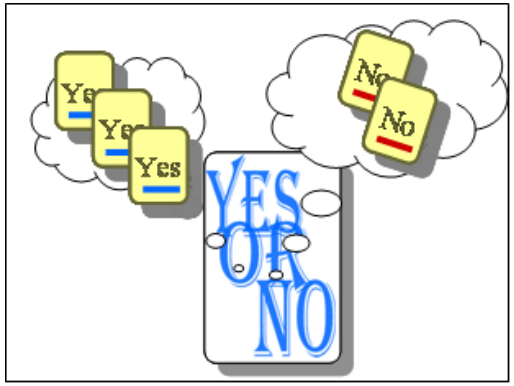
Basic procedure of “Crossroad: Kobe”

Procedure

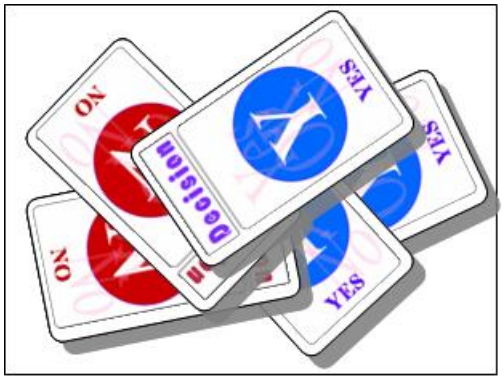
1 Read episode and Make your choice - Yes or NO?



2 Disclose your choice by Yes or No card



3 Find out group result — Majority or minority?



4 Get game points based on the results
--- Majority : 1 normal point (a blue chip)
--- Single Minority: 1 special point (a gold chip)

5 Exchange views --- persuading others and/or persuaded by others, Also, writing down the reasons, grounds, and conditions for YES or NO attitude on the note

6 Learn basic info and listen to disaster veterans’ talk

From ongoing CASiFiCA site

Flood Risk Communication system
by CASiFiCA Chukyo (Tatano and Hatayama)

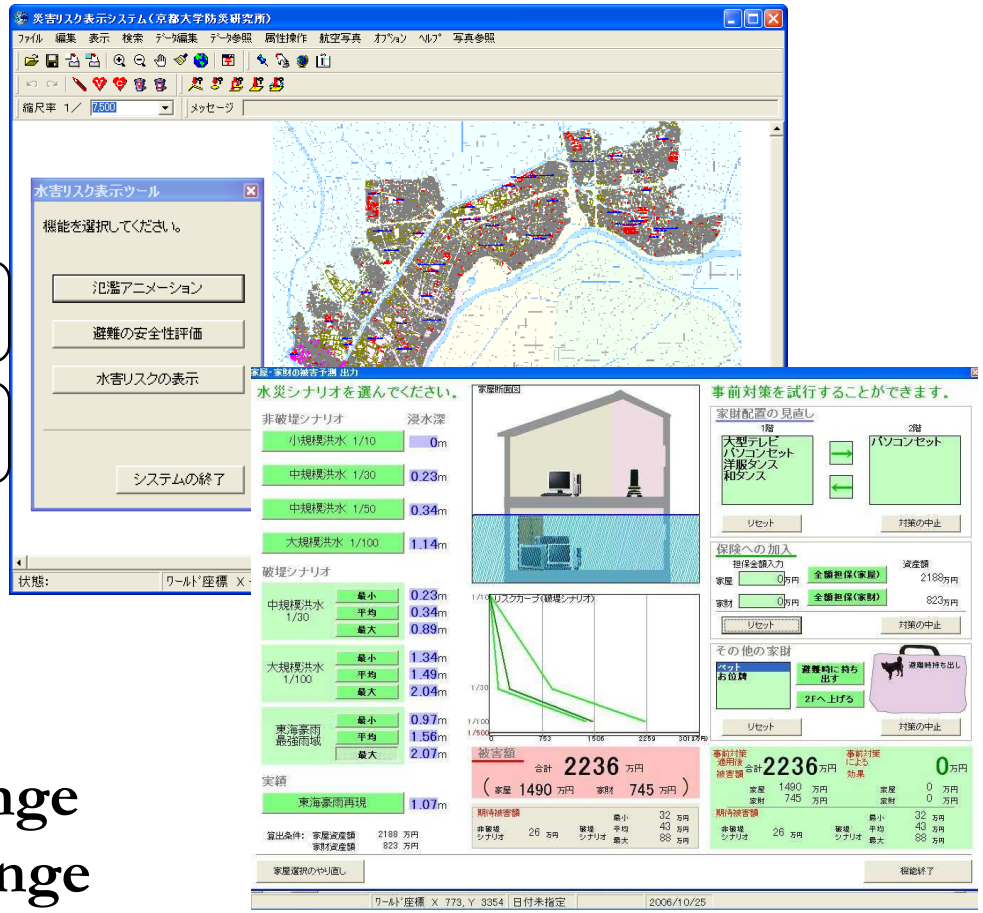
Develop GIS (DiMSIS)

Flood Analysis

Evacuation Risk Evaluator

Housing Risk Evaluator

workshop



Picture by Tatano

Personal Experience can change their "mental model" and change their actual behavior

Make process of Distal Disaster *Kamishibai* by CASiFiCA Chukyo (Hideshima and Takeuchi)

Decide hearing target

Hearing

Extract messages from hearing

Making story

Drawing picture

Recording

Packaging

Developed Risk Communication tool

Developed on Workshop method using of Distal Disaster *Kamishibai* by CASiFiCA Chukyo (Hideshima and Takeuchi)

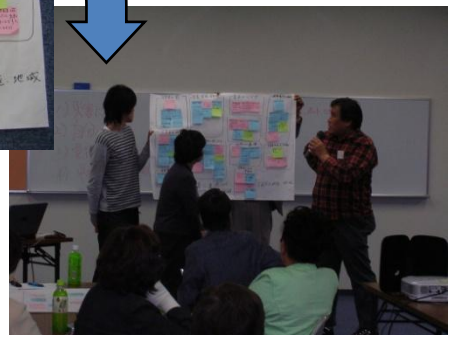
Appreciate *Kamishibai* narratives

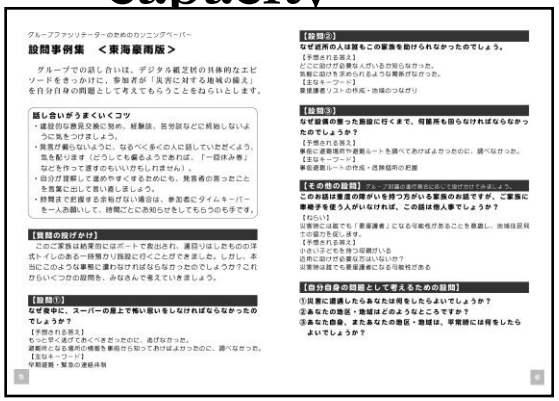
Discussions

Determine shared rules and roles in community

Share ideas and actions

Enhance community's coping capacity




グループファシリテーターのためのカンニングペーパー

設問事例集　＜東海豪雨版＞

グループでの話し合いは、デジタル紙芝居の具体的なエピソードをきっかけに、参加者が「災害に対する地域の備え」を自分自身の問題として考えてもらうことをねらいとします。

話し合いがうまくいくコツ
- 建設的な意見交換に努め、経験談、苦労話などに終始しないように気をつけましょう。
- 発言が偏らないように、なるべく多くの人に話していただくよう、気を配ります（どうしても偏るようであれば、「一個休み券」などを作って渡すのもいいかもしれません）。
- 自分が経験して道めやすくするために、発言者の思ったことを言葉に出して言い直しましょう。
- 時間まで約握する余裕がない場合は、参加者にタイムキーパーをー人お願いして、時間ごとにお知らせしてもらうのも手です。

【設問1】
なぜ災害中に、スーパーの屋上で怖い思いをしなければならなかったのでしょうか？
【予想される答え】
もっと早く逃げておくべきだったのに、逃げなかった。
避難所とならない病院の機能を事前から知っておけばよかったのに、調べなかった。
【主なキーワード】
早期避難・緊急の連絡体制

【設問2】
なぜ近所の人は誰もこの家族を助けられなかったのでしょう。
【予想される答え】
どこに助けが必要な人がいるか知らなかった。
気軽に助けを求められるような関係がなかった。
【主なキーワード】
要援護者リストの作成・地域のつながり

【設問3】
なぜ設備の整った施設に行くまで、何箇所も回らなければならなかったのでしょうか？
【予想される答え】
事前に避難場所や避難ルートを調べておけばよかったのに、調べなかった。
【主なキーワード】
事前避難ルートの作成・透除箇所の把握

【その他の設問】 グループの進行具合に応じて投げかけてみましょう。
このお話は重度の障がいを持つ方がいる家族のお話ですが、ご家族に車椅子を使う人がいなければ、この話は他人事でしょうか？
【ねらい】
災害時には誰でも「要援護者」になる可能性があることを意識し、地域住民同士の協力を促します。
【予想される答え】
小さい子ども を持つ母親だいる
近所に助けが必要な方はいないか？
災害時は誰でも要援護者になる可能性がある

【自分自身の問題として考えるための設問】
①災害に遭遇したらあなたは何をしたらよいでしょうか？
②あなたの施設・地域はどのようなところですか？
③あなたの自身、またあなたの施設・地域は、平常時には何をしたらよいでしょうか？


進行の手引き

想定：3グループ15人程度

趣旨説明など（10分）

デジタル紙芝居の観賞（15分）

カーテンなどで暗くできる部屋で行ってください。動作・音量などは事前に確認しましょう。

グループでの話し合い（50分）

設問1問につき10～15分程度話し合い、ある程度の方向性を定めていきます。

全体ファシリテータはどんなことをみんなで話し合って欲しいかを考え、そのアイデアや意見が出やすくなるような設問をデジタル紙芝居を題材に用意します。

各グループに分かれたら自己紹介から始め、グループファシリテータは時間を区切りながら、設問を1問ずつ参加者に投げかけます。参加者は出された設問について考え、グループ内で簡易KJ法を使いながら意見を出し合います。

まずは特に場所を気にせずどんどん出していきます。同じ意見の人でも、時間があるのならばその人の意見で表現してもらいましょう。出尽わったら頂目事に種類分けし、まとめ、簡単なキーワードをみんなで戻し出します。

発表（15分）

話し合いで出た意見や提案を、グループの代表が皆で発表します。

まとめ（10分）
（計1時間40分）

Approach to community

by CASiFiCA Chuetsu (Atsumi)

Foot massage

People feel comfortable

Conversation starts

Identify and Share Concerns & Problems

Foster trust and partnership between community people and volunteers

Photo by Atsumi

Design of re-constructing a community
by CASiFiCA Chuetsu (Atsumi)

Foster trust and partnership between community people and volunteers

Hold ‘Kids try camp’

Notice of Community

Reconfirm of Community

Re-structure of Real Community

Picture by Kobayashi and Miyamoto

From upcoming CASiFiCA site

Discussion System;. Squ-Table Workshop Method

by Okada

Field work

SWOT analysis

Decide discussion theme

Decide future frameworks

Debate

Make action plan

Can make strategy action plan

internal factors	
S	W
external factors	
O	T

Player A

Player I

Player II

theme

Framework (after 10 years)

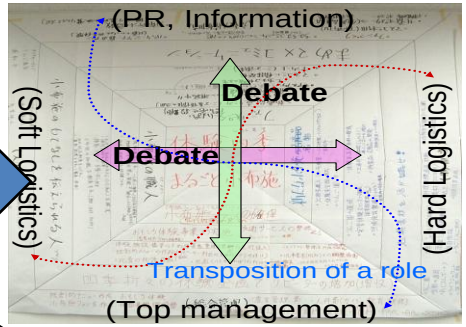
Framework (after 3~5 years)

Framework (after 1 year)

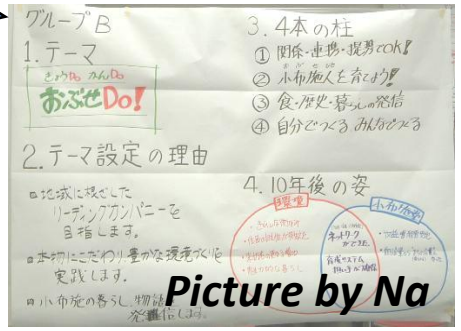
scenario

materials

Player B



1． Theme	3． 4 pillars a. b. c. d.
2． A setting reason of a theme	4． A figure after ten years



Community Understanding tool; Town watching by Rajib and Takeuchi

Decide Town watching theme

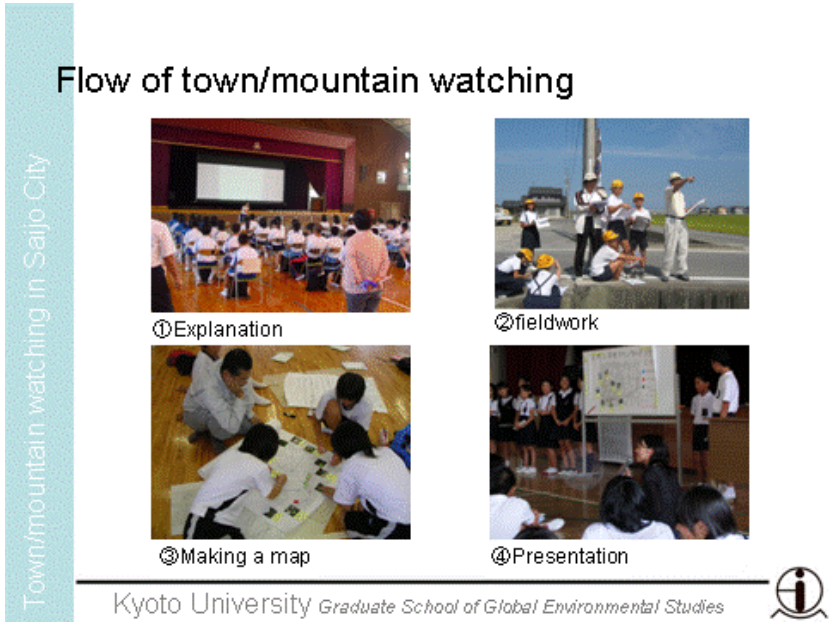
Decide stakeholder

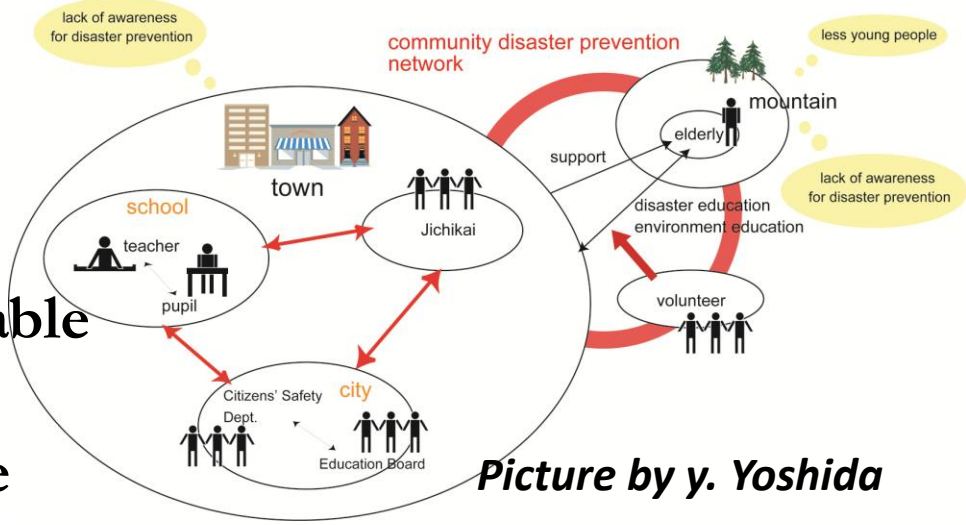
Prepare within and without school

Town Watching
-Field work
-Making a map
-Presentation

Presentation to Community

Develop of framework for sustainable community disaster education, Monitoring and Cross reference





Picture by y. Yoshida

NIED-EDM DRH Template (led by Kameda)

ver.6 070425

Template for DRH Database (ver.6 / 070425: fixed through 2007FY)
Disaster Reduction Technology and Knowledge under Implementation Strategies

I. Heading	
Title	Transferable Indigenous Knowledge Experiences from Japan on Flood Disasters
Major significance (less than 60 words)	Three kinds of Indigenous Knowledge and Technology for flood disaster. can be observed in the *Noubi* plains area of central Japan. These are: (1) Flood prevention; *Waju* (Inside Ring)=communities protected by ring dikes. (2) Erosion control; *Hijiri-Ushi* (Grand OX)=control water force. (3) Damage reduction; *Mizuya* (Flood House)=evacuation house.
Keywords	Flood disaster, Flood Prevention, Erosion Control and Damage Reduction

II. Categories (Multiple answers allowed)

Focus of this information
- ☐ Implementation Oriented Technology
- ☐ Process Technology
- ☒ Transferable indigenous knowledge

Anticipated users

Practitioners ***("Who are supposed to act as protectors?")***

Instruction for writers:
- Items of "experts" may overlap with other categories. In that case, please mark both categories.
- You can ignore sub-categories.

- ☒ Community leaders (voluntary base)
- ☒ Administrative officers
  - ☒ Municipalities
  - ☒ National governments and other intermediate government bodies (state, prefecture, district, etc.)
- ☐ NGO/NPO project managers and staff
- ☐ International organizations (UN organizations and programmes, WB, ADRC, EC, etc.)
- ☐ Commercial entrepreneurs
- ☐ Financing and insurance business personnel
- ☒ Experts
  - ☒ Teachers and educators
  - ☐ Architects and engineers
  - ☐ Sociologists and political economists
  - ☐ Information technology specialists
  - ☒ Urban planners
  - ☒ Rural planners
  - ☐ Environmental/Ecological specialists
- ☐ Others (Please explain using the blank space below.)

Associated users
- ☒ Policy makers
- ☐ Motivated researchers
- ☒ Local residents

1/6

Hazards focused (Secondary hazard should be included in the categories of
- ☐ Earthquake
- ☐ Tsunami

(GLOF)

pproach)

the blank space below. Other

mmunities

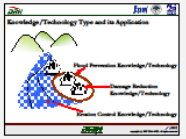
tion system

n

g the blank space below.)

Three kinds of knowledge and technology to cope with flood disaster can be observed in Noubi Plain.

+Flood Prevention: *Waju*(Inside Ring): *Communities protected by Ring Dike*
Communities living in lowland areas suffered from many flood disasters from several centuries. In the 14th century, communities built a ring dike to protect its people. Those dikes were managed by local groups of people aimed at flood control. Seeing the effectiveness of the these ring dikes, many communities copied the method. These dikes not only represented the physical structures, but also helped in developing community ties and ethical values through participatory decision making in maintenance and upgrading. As the results of physical countermeasures taken by the government in the Kiso, Nagara and Ibi Watershed Areas in 18th century, the frequency of flood in those areas has been reduced than before. Consequently, importance of the ring dikes became low, and in some cases were broken in order to renew the land use patterns.



+Damage Reduction: *Mizuya* (Flood House): *Evacuation House*
This house has been uplifted by about 2~5m in height compared to the main house. Ordinarily *Mizuya* is used as a storage room. When flood happens, this house is used for evacuation. Possession of these houses are limited to rich land owners.

Age-fune (Preparedness Boat)
House owners possessed boats for emergency needs at the time of flood.

Age-Butsudan(Lift up Buddhist Family Alter)
Buddhist Family Alter is an important assest for the household in this area, and in most cases, they are large in size. This system lifts up alters in order to protect them from submerging.

+Erosion Control: *Hijiri-Ushi*(Grand OX)
Grand OX is considered as a river bank erosion control measure to reduce water force. Grand OX is used in the areas where rapid rivers meander.

Necessary process to

e Ring)=Community Protected by Ring Dike
t of Community
agement team

duction: *Mizuya*(Flood House)=Evacuation House
t of Family
search type of floods with depth of water using previous disaster

ntrol: *Hijiri-Ushi*(Grand OX)=Control water force
here to install it.
e material for the construction

e Ring)=Community Protected by Ring Dike

leveloping community ties and awareness
epared using local materials

e land areas
ace is a crucial issue
of damage in case of dike failure

duction: *Mizuya*(Flood House)=Evacuation House

rotecting asset through closer look during flood
nger duration of flood, secondary damages due to floating
n be reduced

t cost of construction and maintenance
past flood limit, and sometimes difficult for higher floods

ntrol: *Hijiri-Ushi*(Grand OX)=Control water force

tive, can be made using local material
ental friendly

nical information on location and maintenance

. Resources required

ention: Soil, Tree and measurement technology

ntrol: Wood or Concrete , Wire or Creeper and sand bag

duction: Another House and Carpenter

5/7

Disaster Reduction Hyperbase

source:

Summary of discussion

4th DRH Facilitators Meeting (FM4)

Tokyo, 7 January 2009

Hiroyuki Kameda
(DRH Project PI)

* Participants: 4th DRH Facilitators Meeting, 7 January 2009

+DRH Project PI:
Hiroyuki Kameda (EDM-NIED)
+DRH Facilitators:
(IOT) Mohsen Ghafory-Ashtiany (IIEES) and Hiroyuki Kameda (ditto)
(PT) Amod Mani Dixit (NSET Nepal) and Norio Okada (Kyoto University)
(TIK) Rajib Shaw (Kyoto University) / (Anshu Sharma (SEEDS India): to be absent)
+Facilitator Supports
< Coordinator for DRH Contents from Japanese institutions: Takayuki Nakamura (JAXA)
< DRH Template coordinator: Naho Ikeda (EDM-NIED)
< CASiFiCA-DRH chief promoter: Hirokazu Tatano (Kyoto University)
+DRH Japan Board Chair
< Kaoru Takara (Kyoto University)
+ EDM Leaders
< Hiromichi Higashihara (Director)
< (Hiroaki Negishi (International Team Leader) : unable to make)
< Naho Ikeda (ditto)
< Koichi Shiwaku (International Team)
+Other Overseas Participants
< Saidur Rahman (BDPC: Co-Chair at Panel Discussion)
< Farokh Parsizadeh (IIEES: Presentation at Session 5)
(Supporting staff (DRH Project Assistant at EDM-NIED): Kayoko Taniguchi)

(Summary)

***Key Issues Addressed**

i) Enhance *user* incentive of DRH

ii) Enhance *contributor* incentive of DRH

iii) *Decentralize* and disseminate DRH developments

***Implementation of regional-national DRH**

iv) DRH Consortium and *sustainability*

***Reforming for post-project period**

DRH FM4 Discussion Memo (090107)

1. Problems of the DRH system development

(1) Web system

(User)

*Browse more easily / *Picture handling is difficult / *Multi language issue / *Icon identifying ***IOT, PT, TIK*** / *access counting / *Make proposals under discussion be visible

(2) Management

(Contributor)

*Easier to understand what to write / Research application / *Use of good work: most important / *increase the number of contents / *Facilitation of remaining 27 proposals by March 2009 / *New contributions - direct communication (face-to-face and/or telephone) is important / *How to handle facilitation /

(User)

*Having systematic titles (main attraction, hazard type, location) / *(Access DRH through Google)

Three technologies as good practices archived in DRH

http://drh.edm.bosai.go.jp/

- IOT= Implementation Oriented Technology
- PT = Process Technology
- TIK= Tested Indigenous Knowledge

2. How to build DRH → How to have DRH used

(1) User incentives

(User)

***Users are more important than builders / *Quality of users: Government recognition / *DRH user group / Involve private sectors / *How to make them interesting: social marketing / *Consolidate first efforts and get feedback from users / *Asking users on "what they would like to know", "What kind of information they like to see (have access on)": users' demand**

(2) Incentives to the contributors

(Contributor)

***Recognition = Social and moral responsibility, Personal satisfaction / *Practical advantage = grants, pints for evaluation, credits in promotion, etc. / *Affiliation with IDRiM Journal / *Award = best template award, best used award**
***Highlighting "technology of the month" / "DRH contributor of the month"**

(3) Actions

(Sustainability)

*Activate DRH Consortium

*UNESCO IHP project

*JSPS Seminar

*APEC-ASEAN-SAARC(SDMC)

(Decentralize)

*Establishing regional DRH / DRH-China & DRH-Europe/Africa are already moving

*DRH-Bangladesh, DRH-Napal adn DRH-Iran / system transfer (Japan-Bangladesh/Nepal/Iran) / management and dissemination (Bangladesh/Nepal/Iran)

(Contributor)

*Involving young generation: next leader generations / expansion of DRH Facilitators / inviting young professionals to DRH/ new faculty members

*increasing DRH registered members (at least ten each of us)

(User)

*Regional workshops on DRH

*DRH promoting group

(4) Publications

(User)

***Joint publication by ISDR & DRH / Geneva, or Bangkok (good practice, show-case of each technology) (Kameda to write to ISDR) 6months**

***Book on DRH (for institutional readers, education, ...) (Shaw) 1year**

(Contributor)

***Journal paper (technical people, researchers) (Kaneda) 3months**

***DRH brochure (Parsizadeh) 2months**

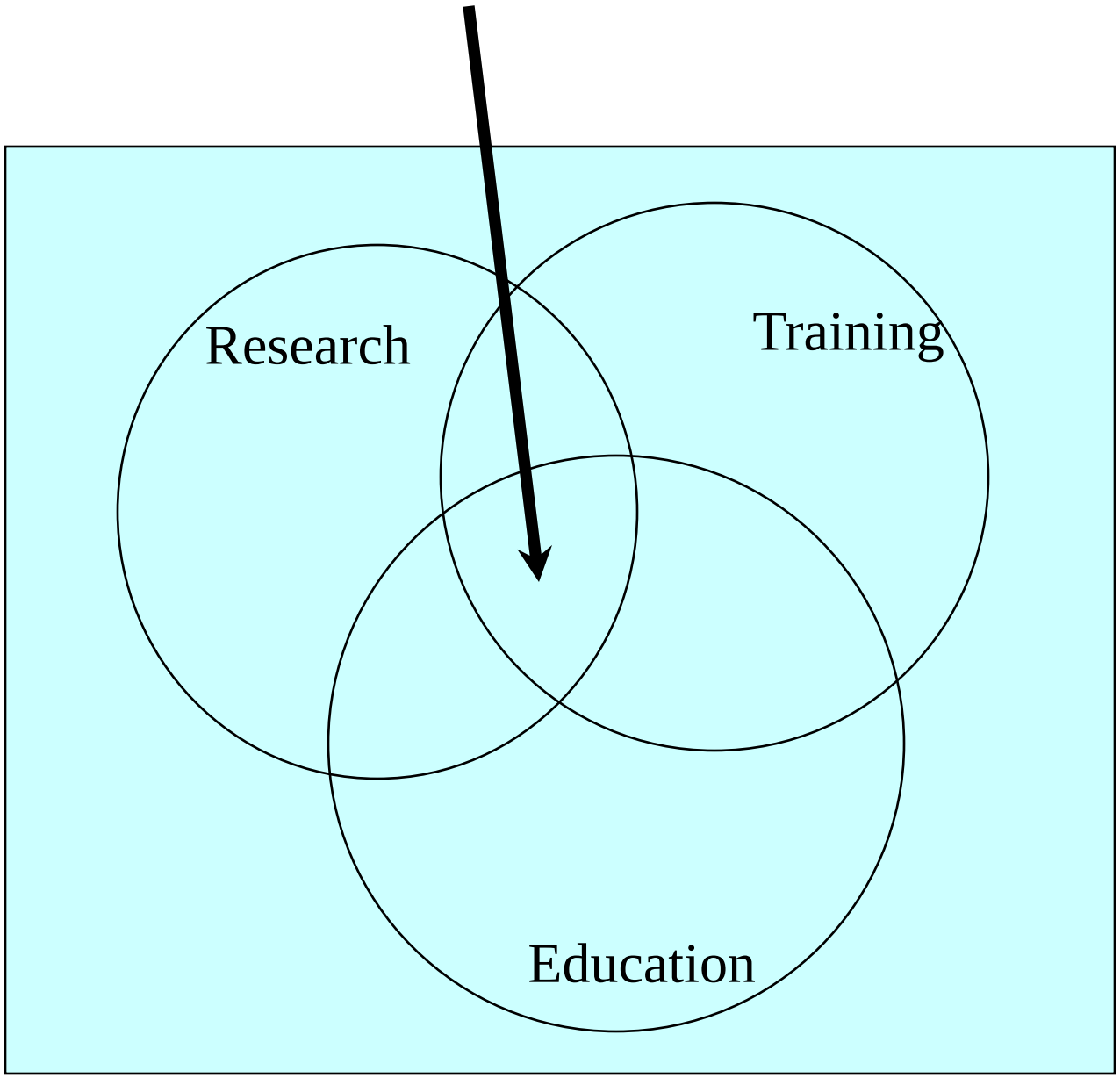
Last but not least message

- Either Disaster Fundamental research or IDRiM research you may wish to pursue,
- Both need to meet and stimulate each other.
- You young researchers are encouraged to join cross-cutting, cross-national networks and platforms.
- This Symposium of Asian Heads of Research Councils is an excellent setting for you all!

Thank you for your attention!

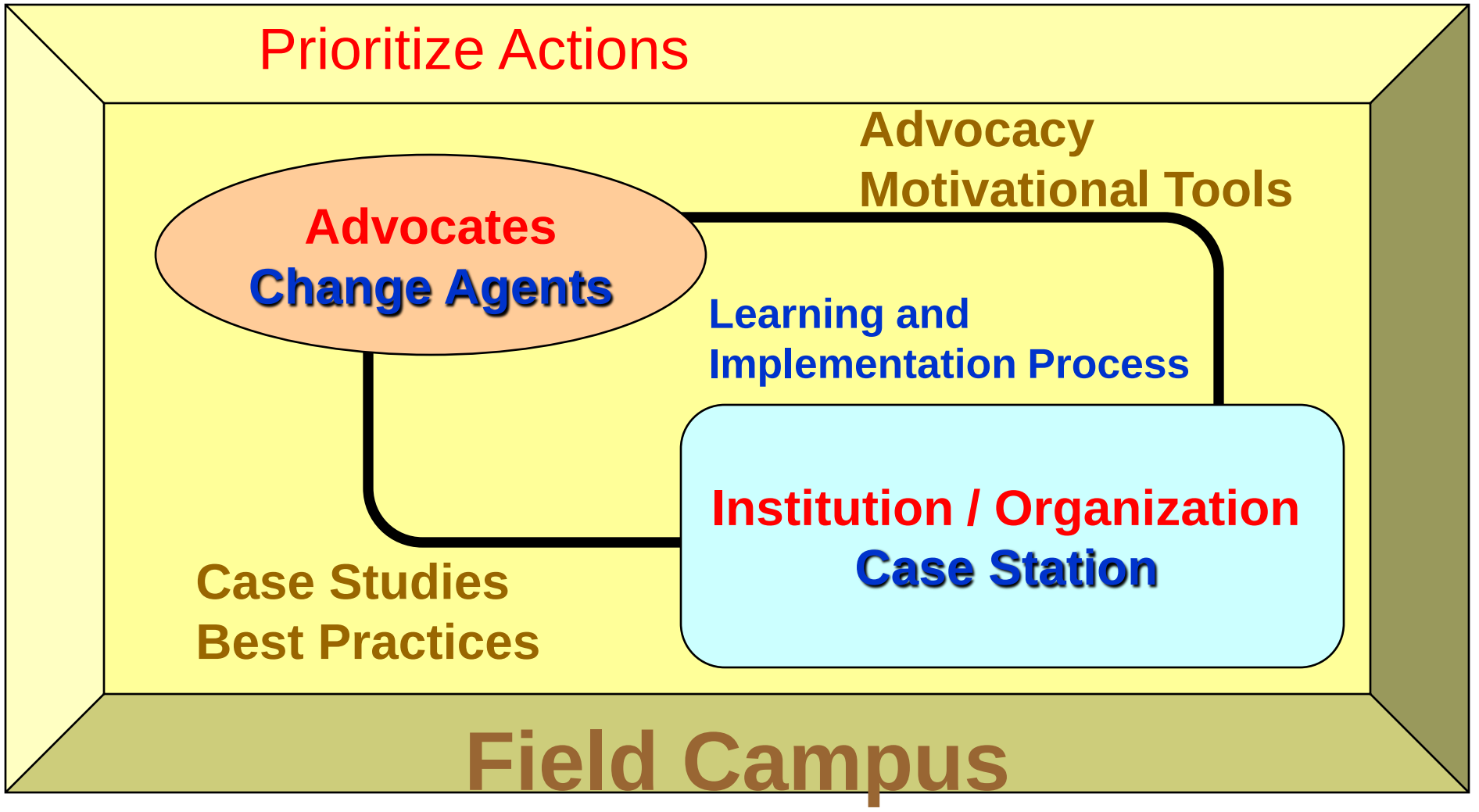
Appendix

CASiFiCA Target (Shaw 2005)



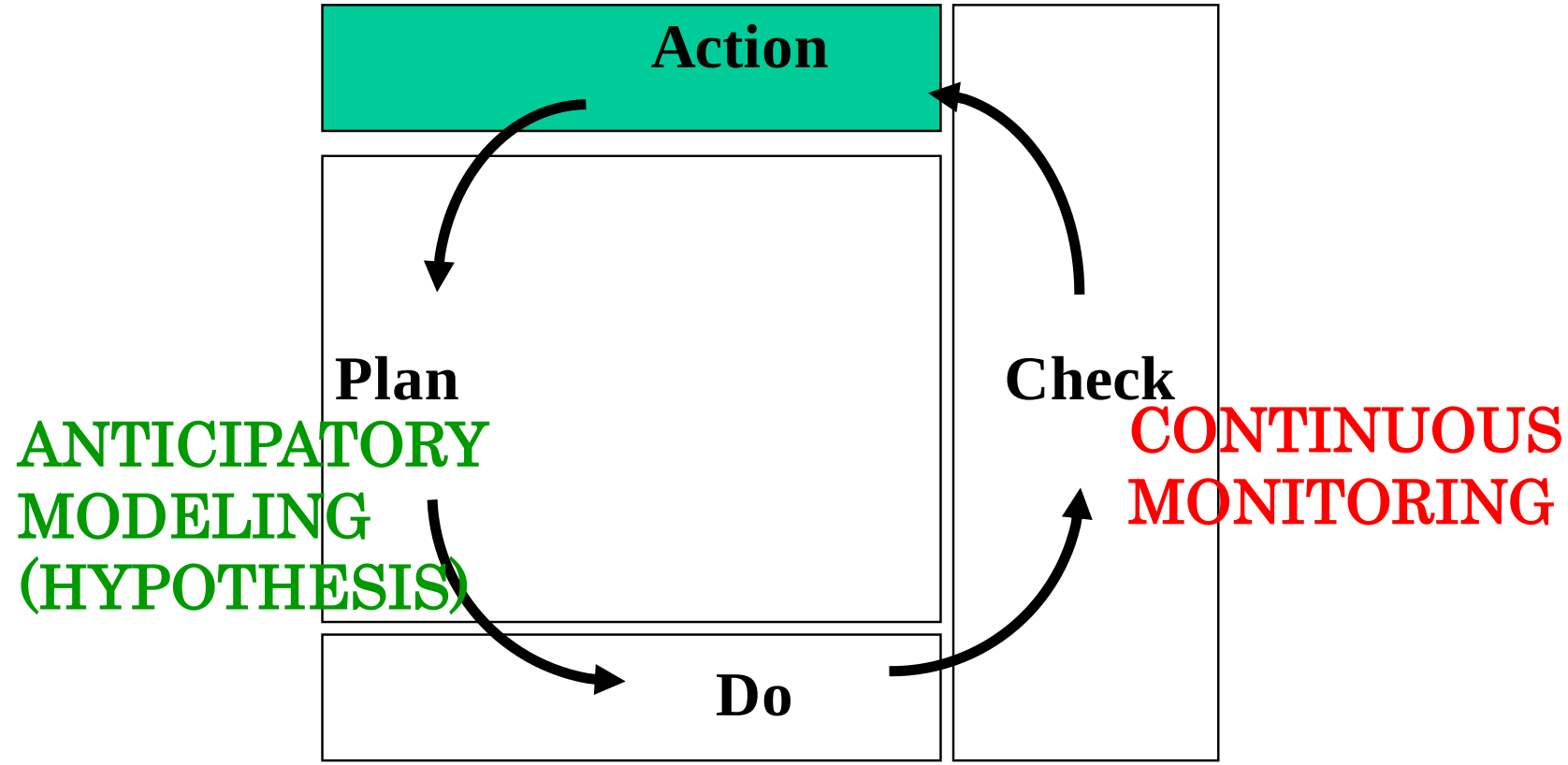
Case Station/ Field Campus

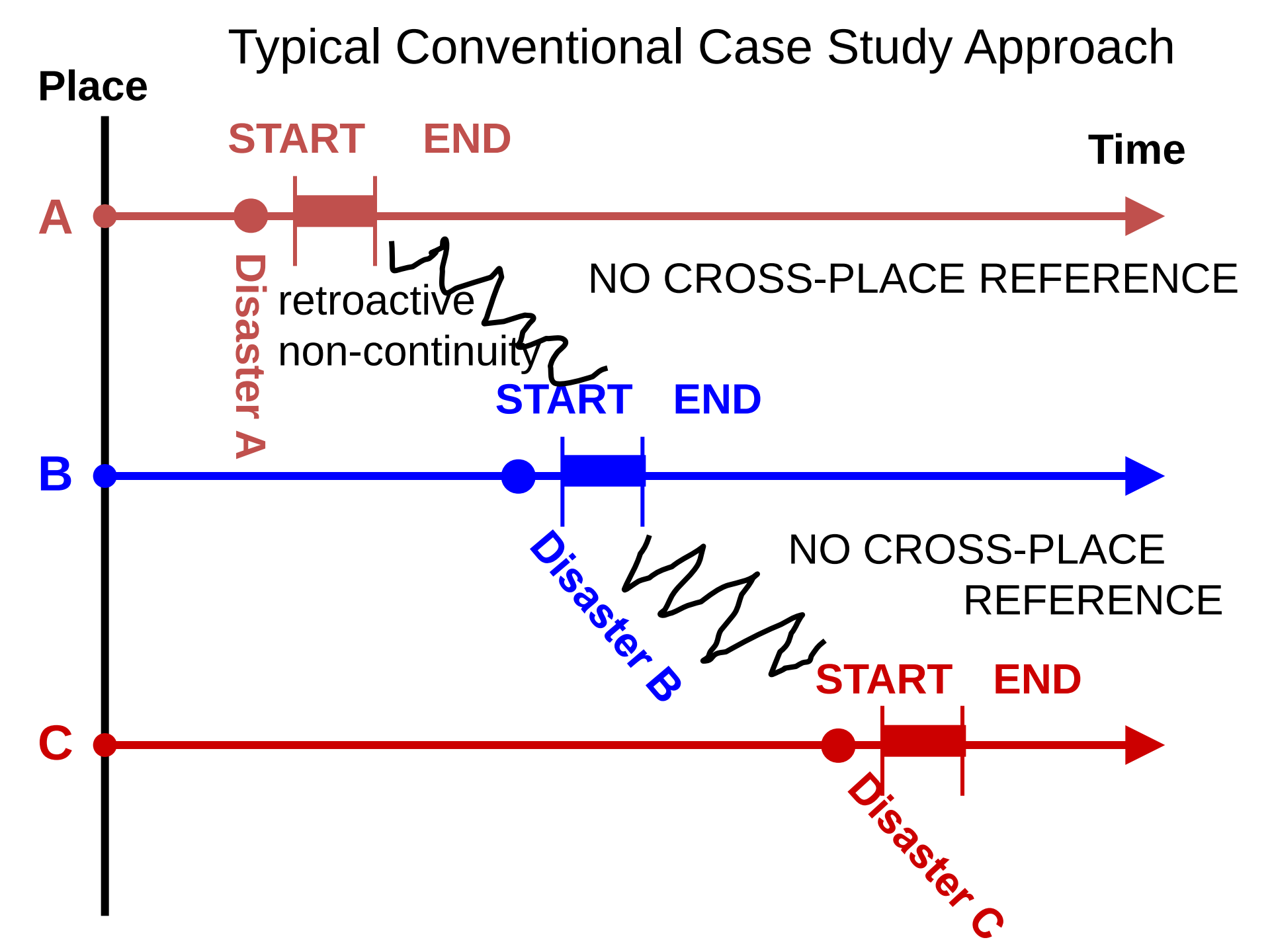
(Shaw 2005)



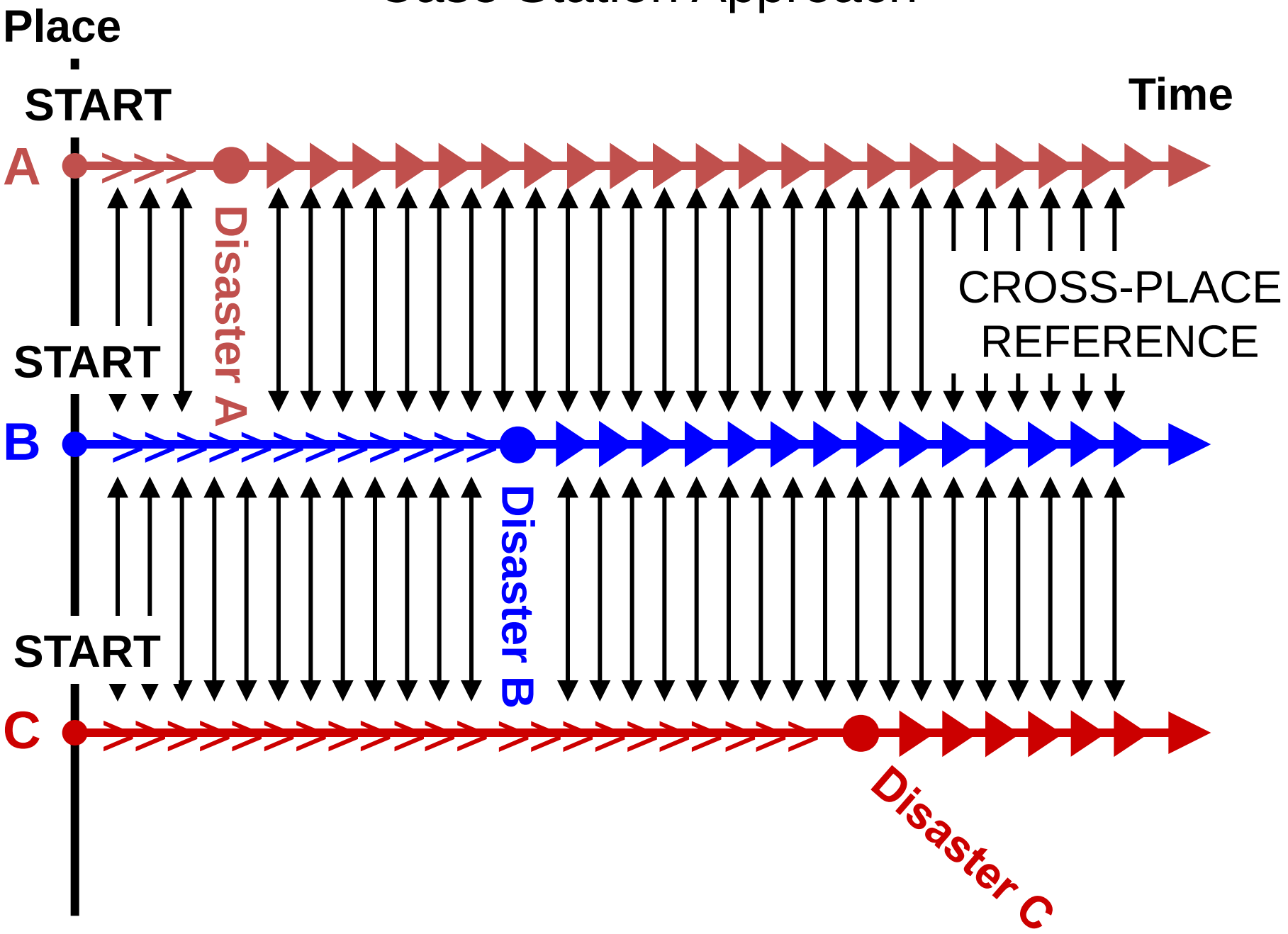
Participatory Framework for Implementing "Implementation Science"

Adaptive Management as a PDCA Cyclic Process in Semi-open-ended System (Actual Field)




Typical Conventional Case Study Approach
Place
Time
START
END
A
Disaster A
retroactive
non-continuity
NO CROSS-PLACE REFERENCE
START
END
B
Disaster B
NO CROSS-PLACE
REFERENCE
START
END
C
Disaster C

Case Station Approach



CASiFiCA Now and Near Future

- Starting in parallel with testable “success” (viable) models and practices?→Yes!
- Mutually recognizing other CASiFiCan activities?→So, so!
- Cross-visiting and –monitoring each other

  →Not yet so much.
- Fostering common communication platform

  →CASiFiCan Network, NEXUS-IDRiM Network, DRH Network,

  Not yet so much.
- Can we maintain and evolve as a long-term framework?

  →Yet to be challenged .

What are to be "Fundamentals of Implementation Science"?

- From Field to Continually and Cross-Testable (CCT) Theory
- From CCT Theory to Fields
- Fields as Geographical and Disciplinary Areas
- Fields as Campus, Outlet Laboratory Station of Key Research Institutes (Case Station)

Senior Researchers !
Tabling Testable Agenda is welcome!

- Switching CCT theory on

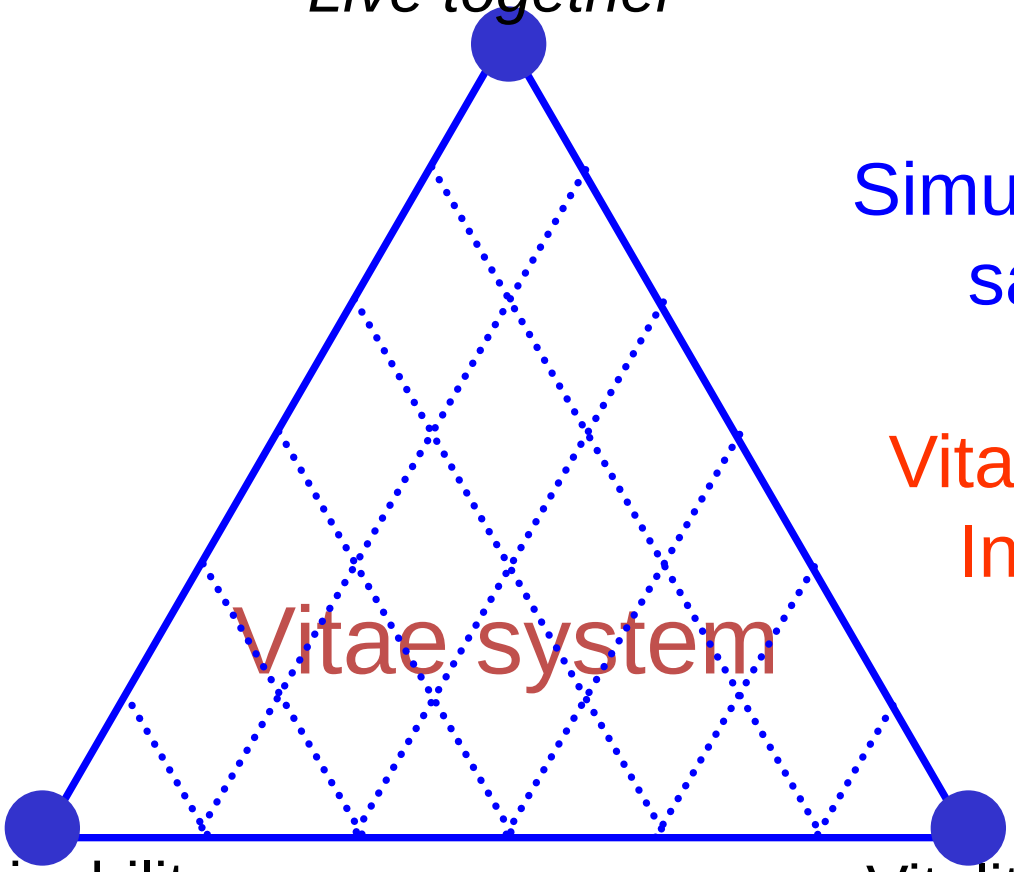
  -Situational Behavioral Change

  -Collective Knowledge to Action
- Conceptual Model Leverage for Boiling down to Implementation Core Issue
- Communication and Delivering Methods for Transforming Tacit Knowledge to Explicit

Conviviality

(Communication/Collaboration)

Live together



Simultaneously satisfied

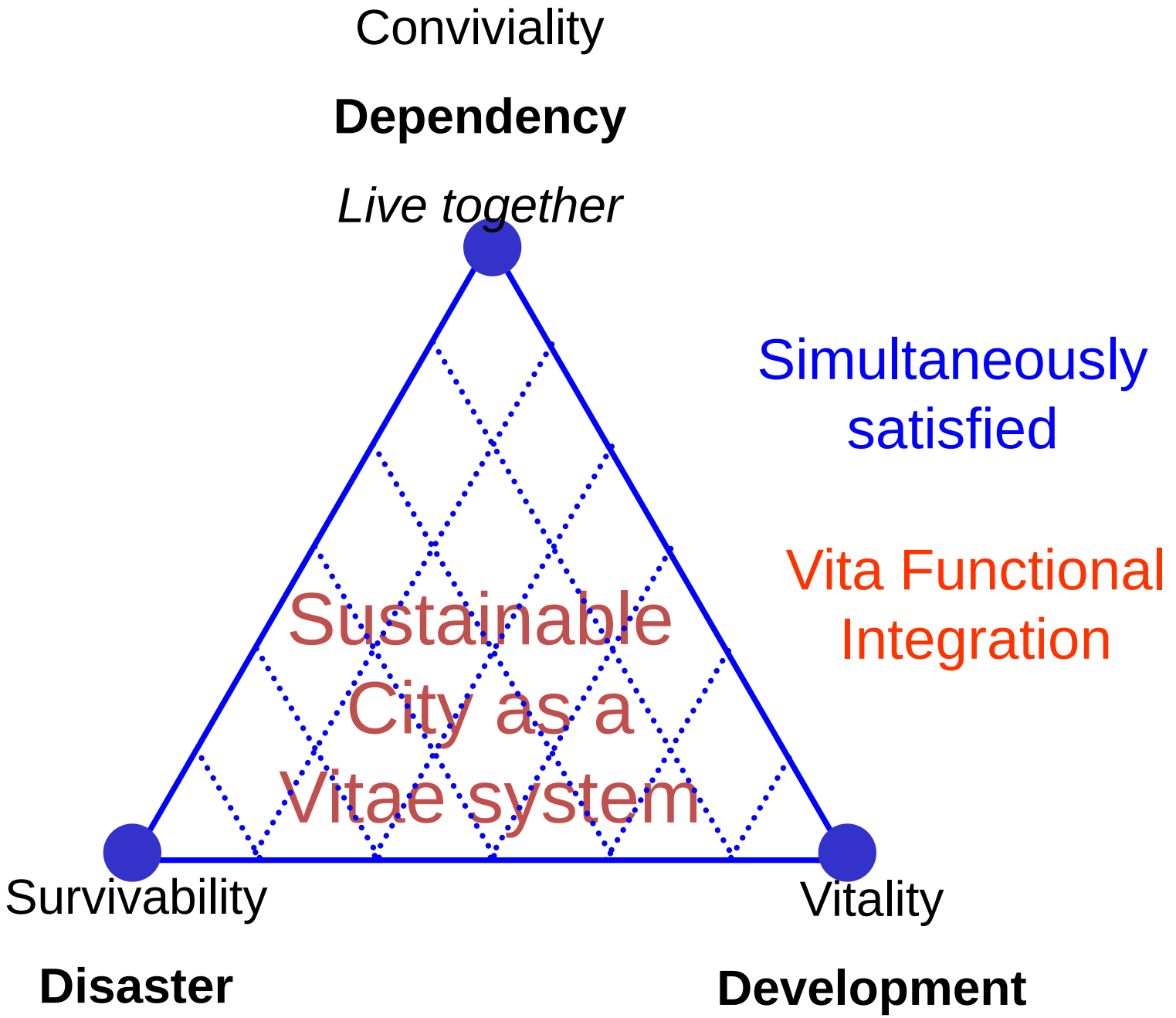
Vita Functional Integration

Survivability

Live through

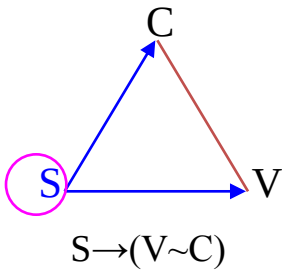
Vitality

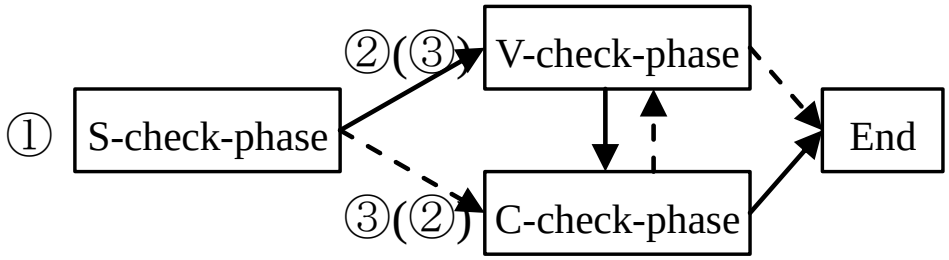
Live lively


Conviviality
Dependency
Live together
Simultaneously satisfied
Vita Functional Integration
Sustainable City as a Vitae system
Survivability
Disaster
Vitality
Development

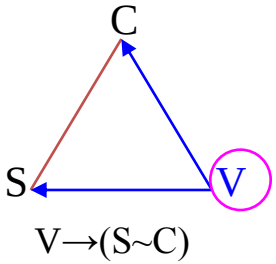
Three Approaches towards Capacity Integration: viewed by the Vitae System (Xu, 2007)

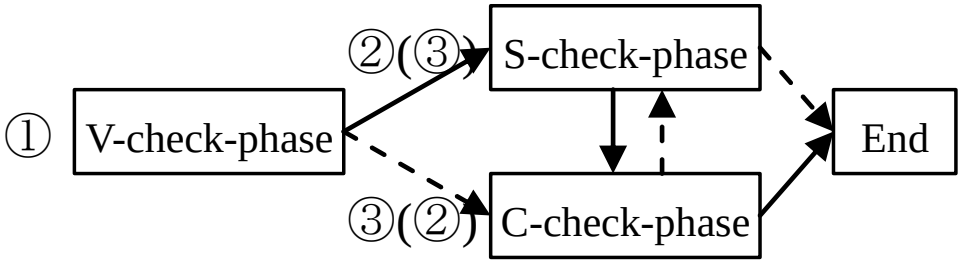
S-front integration approach

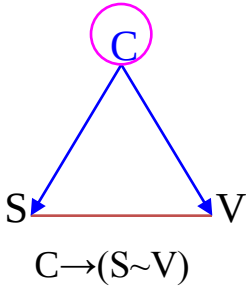


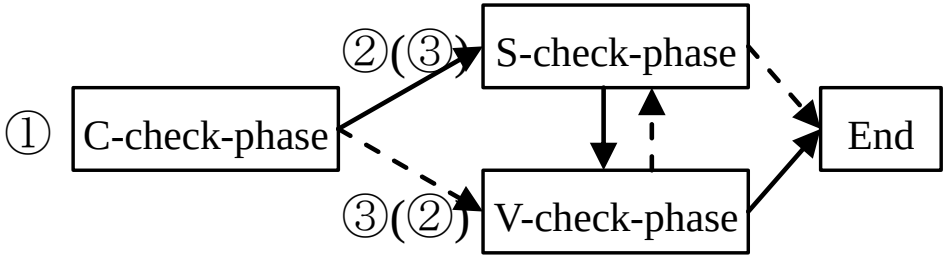


Start with S followed up by V and C to be integrated







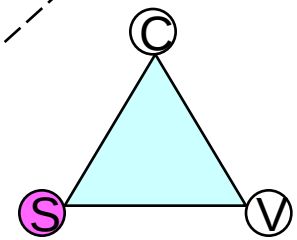


S: Survivability

V: Vitality

C: Communication

“Post-disaster Vitae Integration” over time

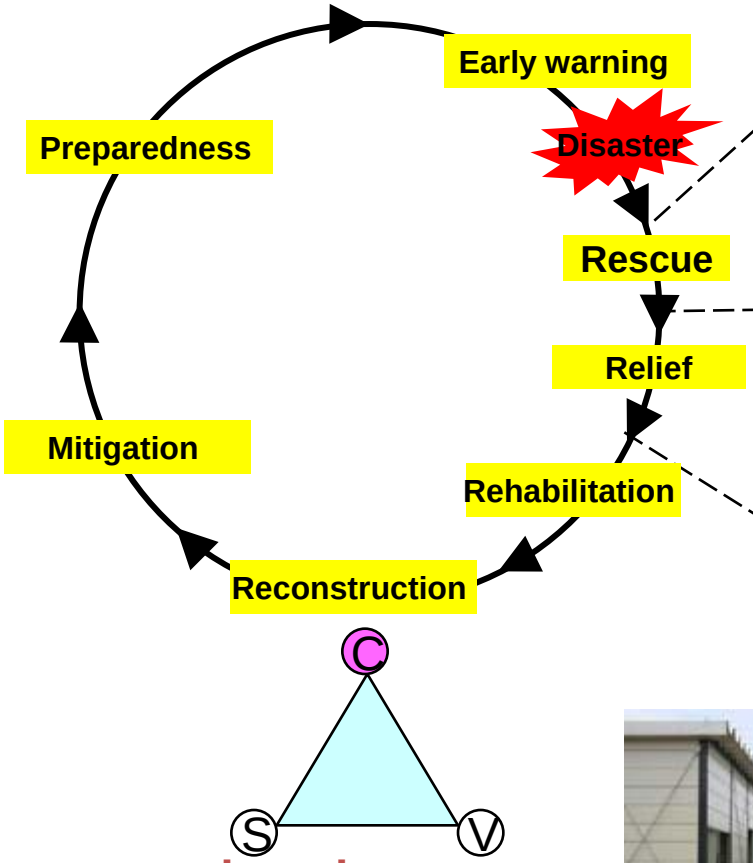


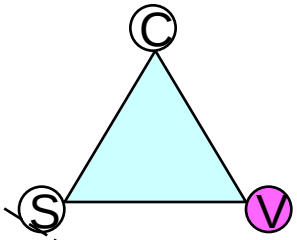
Temporary shelter

SURVIVAL FIRST

Accommodation shelter

VITALITY FIRST





Temporary housing

COMMUNICATION FIRST

Implementation-bound Modeling Angle (Policy-making Commitment Stance)

- Implementation-bound Modeling Angle by Vitae System
  S-faced approach
  V-faced approach
  C-faced approach
- Modeling Angle Rotation
  over time
  over geophysical space
  over governance space
  -concerns of stakeholders
  -interest of stakeholders
  -commitment of stakeholders
  -capacity of stakeholders

Governance Perspective Level

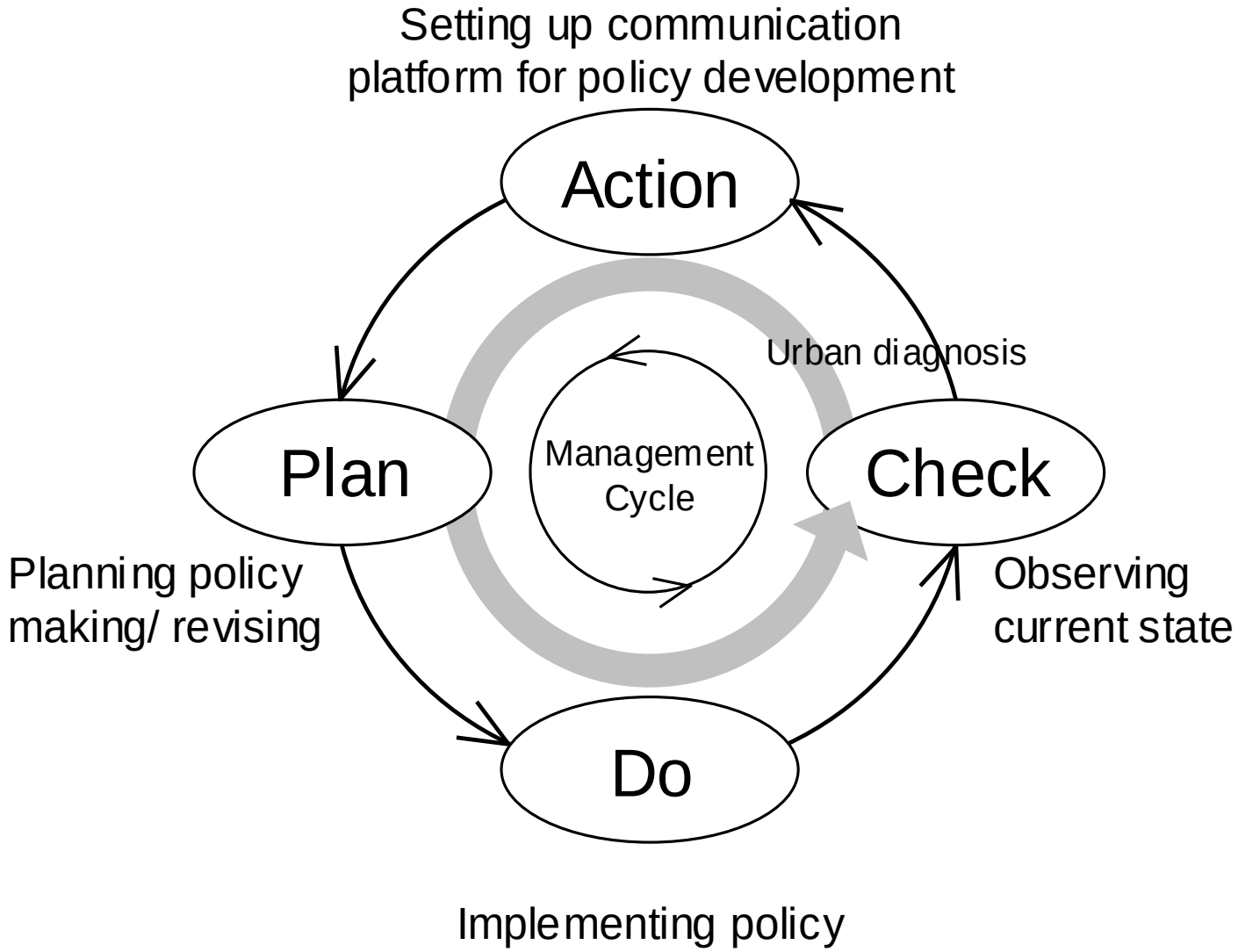
- From above to down (Bird's eye view)

  CCT Theory on Institutional design and effectuation
- From down to above (Ant's eye view)

  Formalizing KNOW-WHAT and KNOW-HOW (knowledge and technology) of Field-derived outcomes and findings
- Engaging in the Process of Synergy between the two dynamisms (individual and group efforts though implementation science schooling)

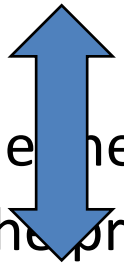
Plan-Do-Action-Plan Process

Small but Complete by Adaptive Management



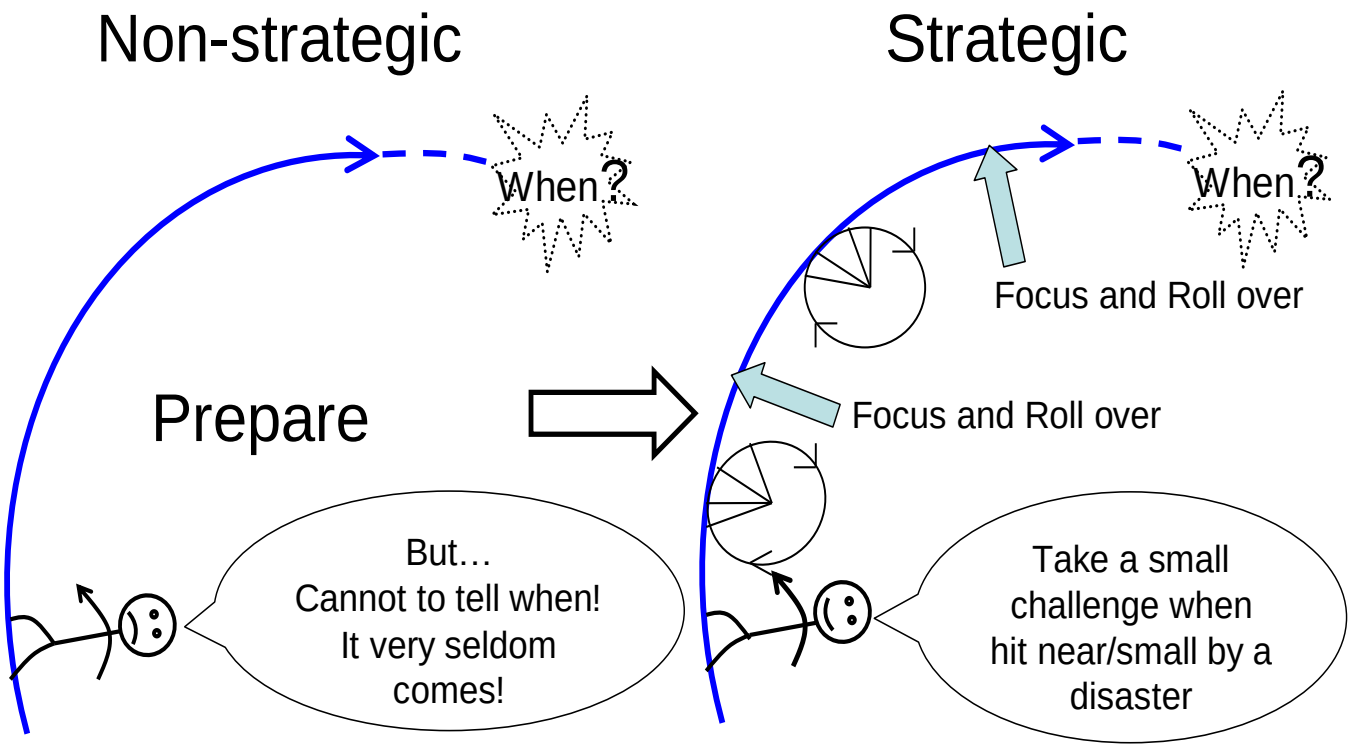
Challenge towards an Innovative Research Framework
Driving back and forth between
Theorization and Field Finding/Testing

- Basic (mathematical) theories/logical models for formalizing, explaining/interpreting, and diagnosing the mechanism/process.
- Basic (mathematical) theories/logical models for hypothesizing viable solutions and estimating/predicting possible outcomes .



- Field Finding/Testing the theories/models.
- Field Finding/Testing (the process of reaching) viable solutions.

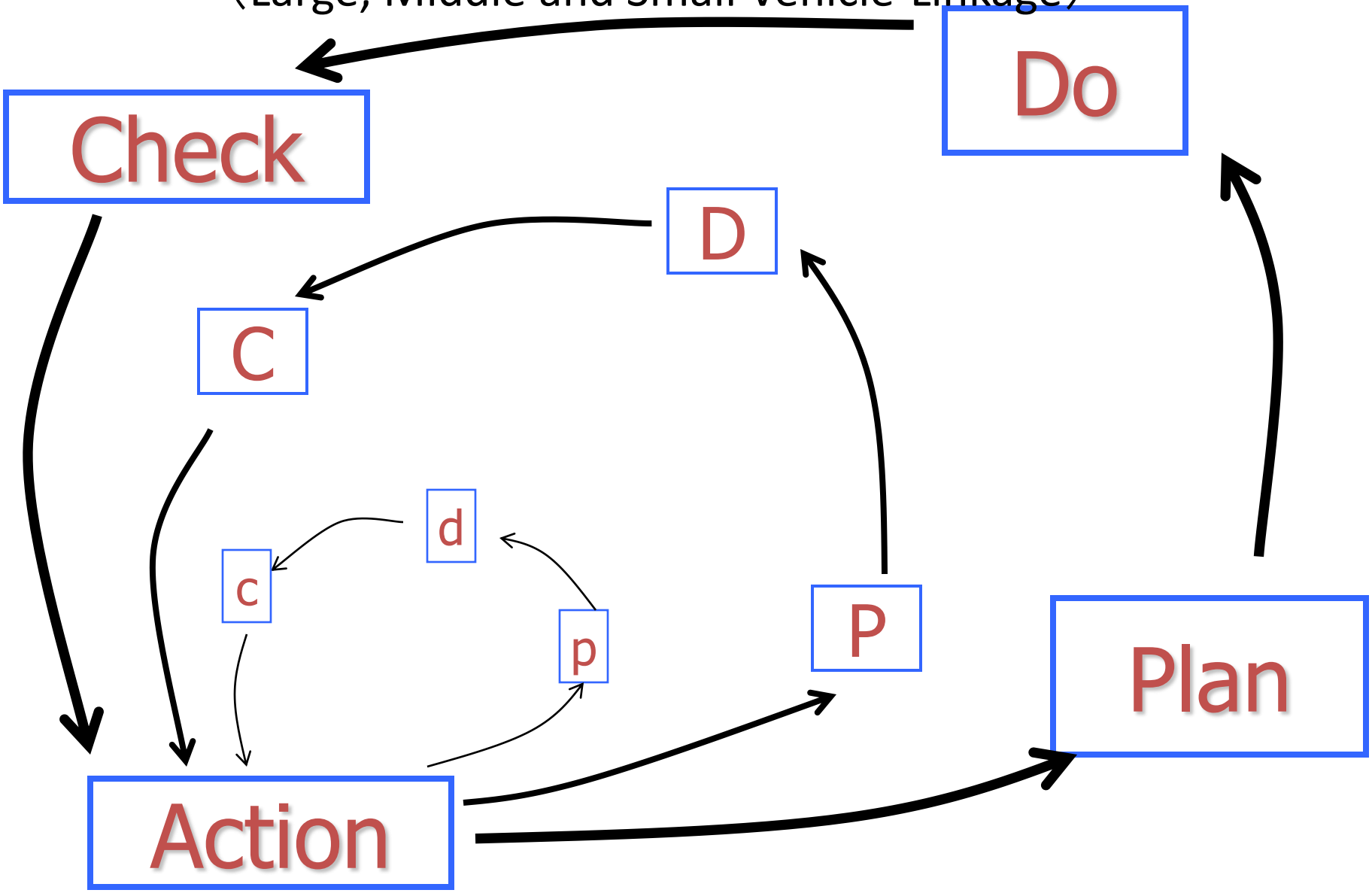
Strategic Shift towards Sustainable Disaster Cycle Management

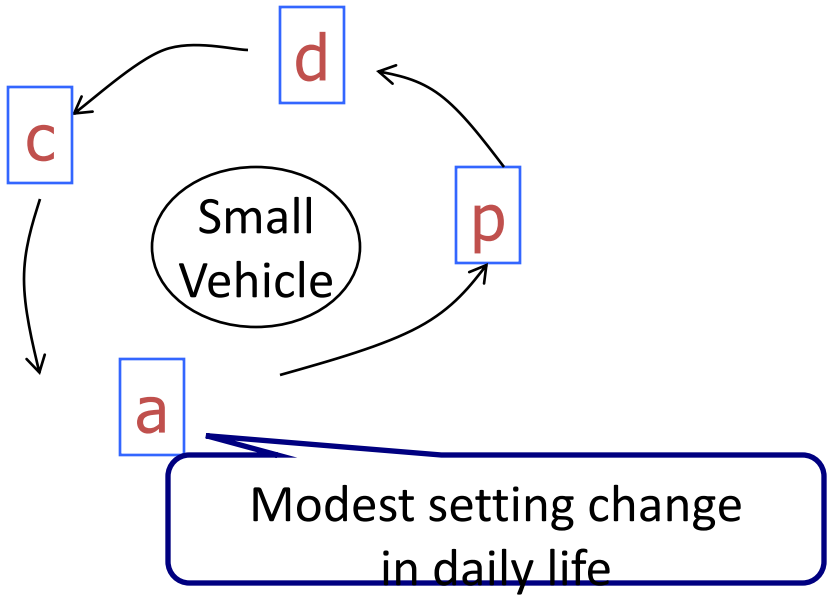


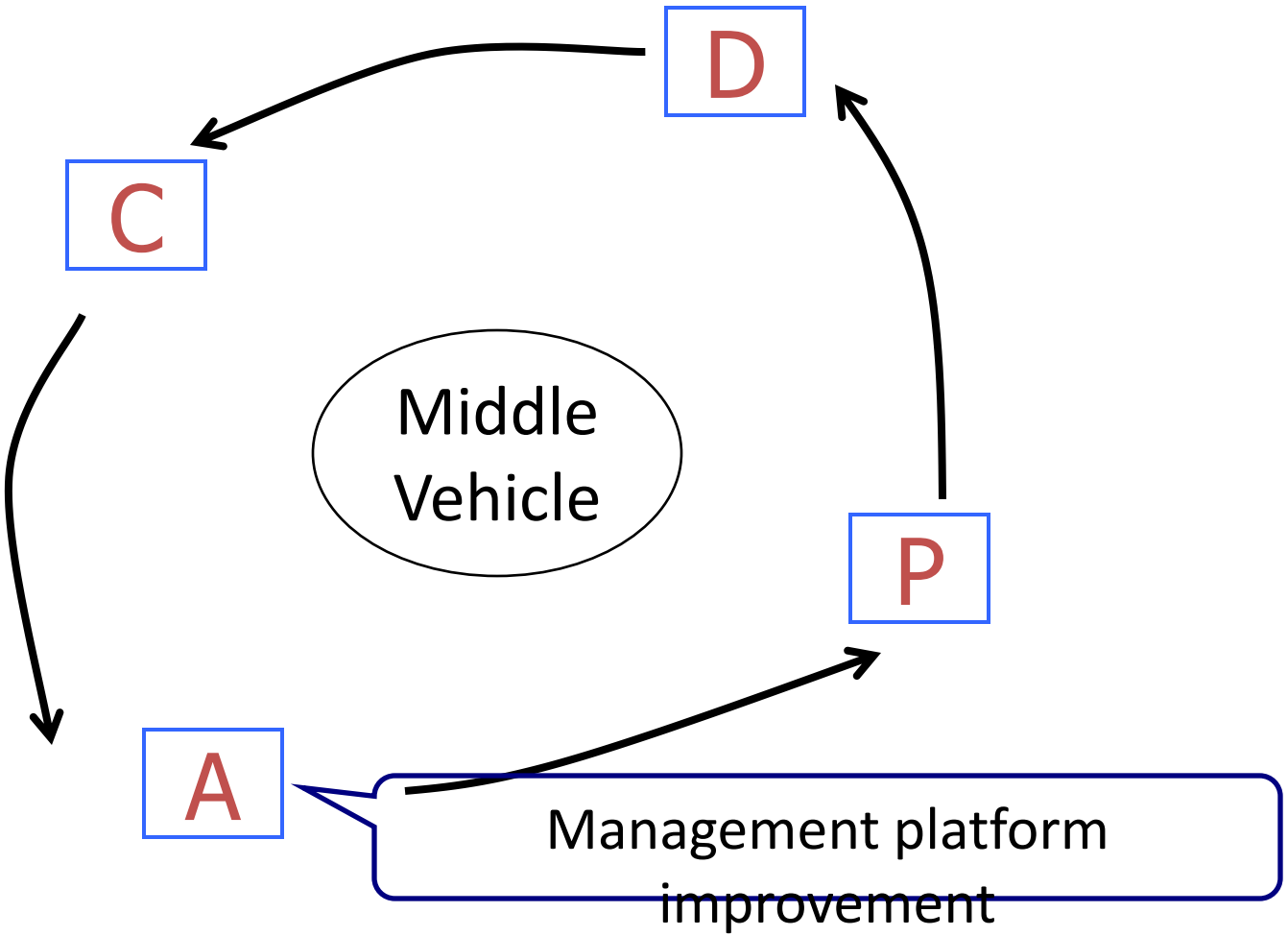
- Not easy to maintain awareness for long
- Not easy to bring it into motion from inside
- Not easy to become rhythmical between tension and relaxation in a day-to-day pace mode
- Not to be encouraged and rewarded by the effort

- To put in PDCA small cycles as fliers
- To catch the timing and external moment (shock)
- To beat the time with tension and relaxation
- To encourage and motivate people by making it visible and rewarding

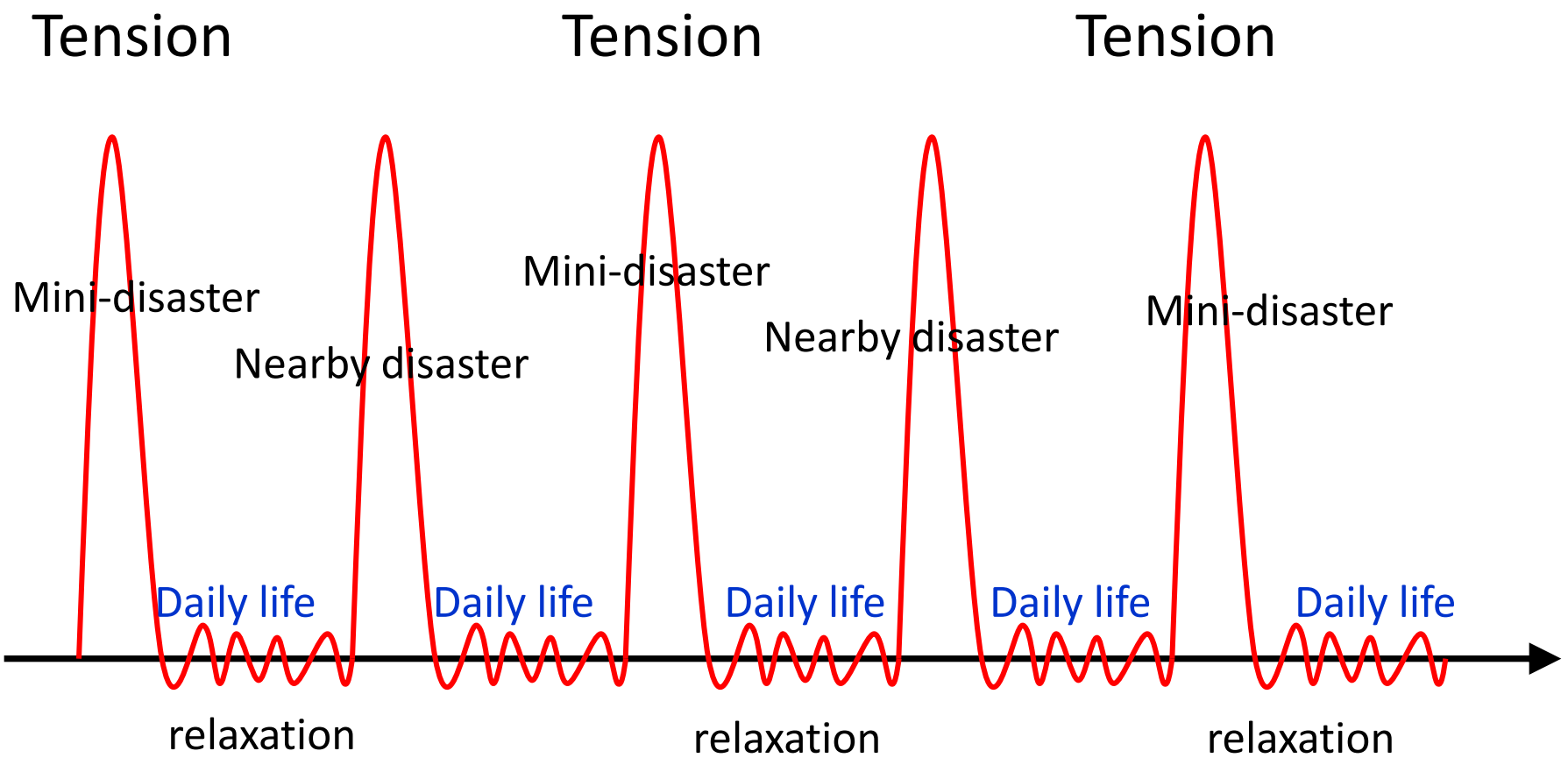
Nested Structure of PDCA Cycles
（Large, Middle and Small Vehicle-Linkage）




d
c
p
Small
Vehicle
a
Modest setting change
in daily life


D
C
Middle
Vehicle
P
A
Management platform
improvement

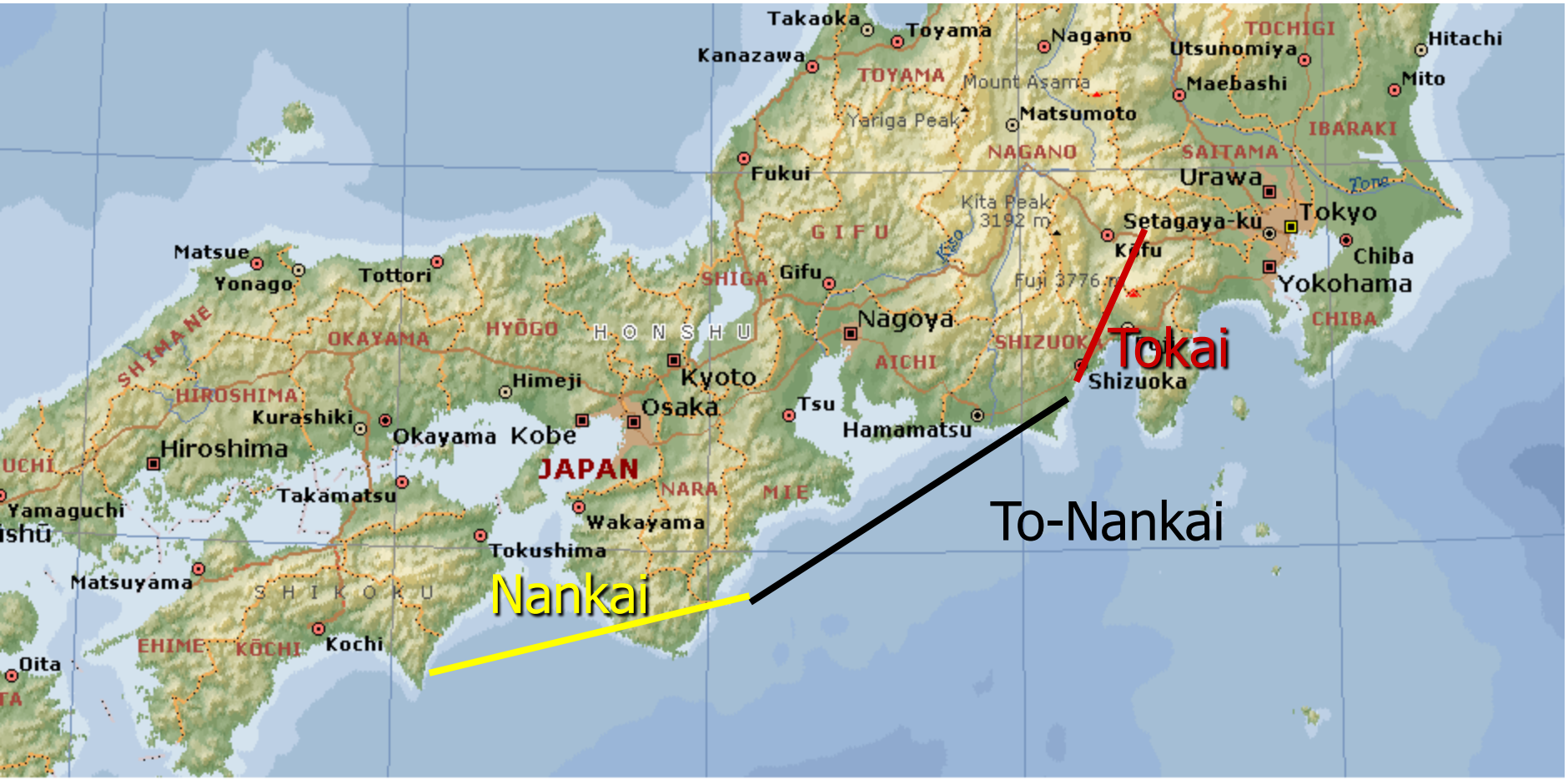
Vital Rhythms



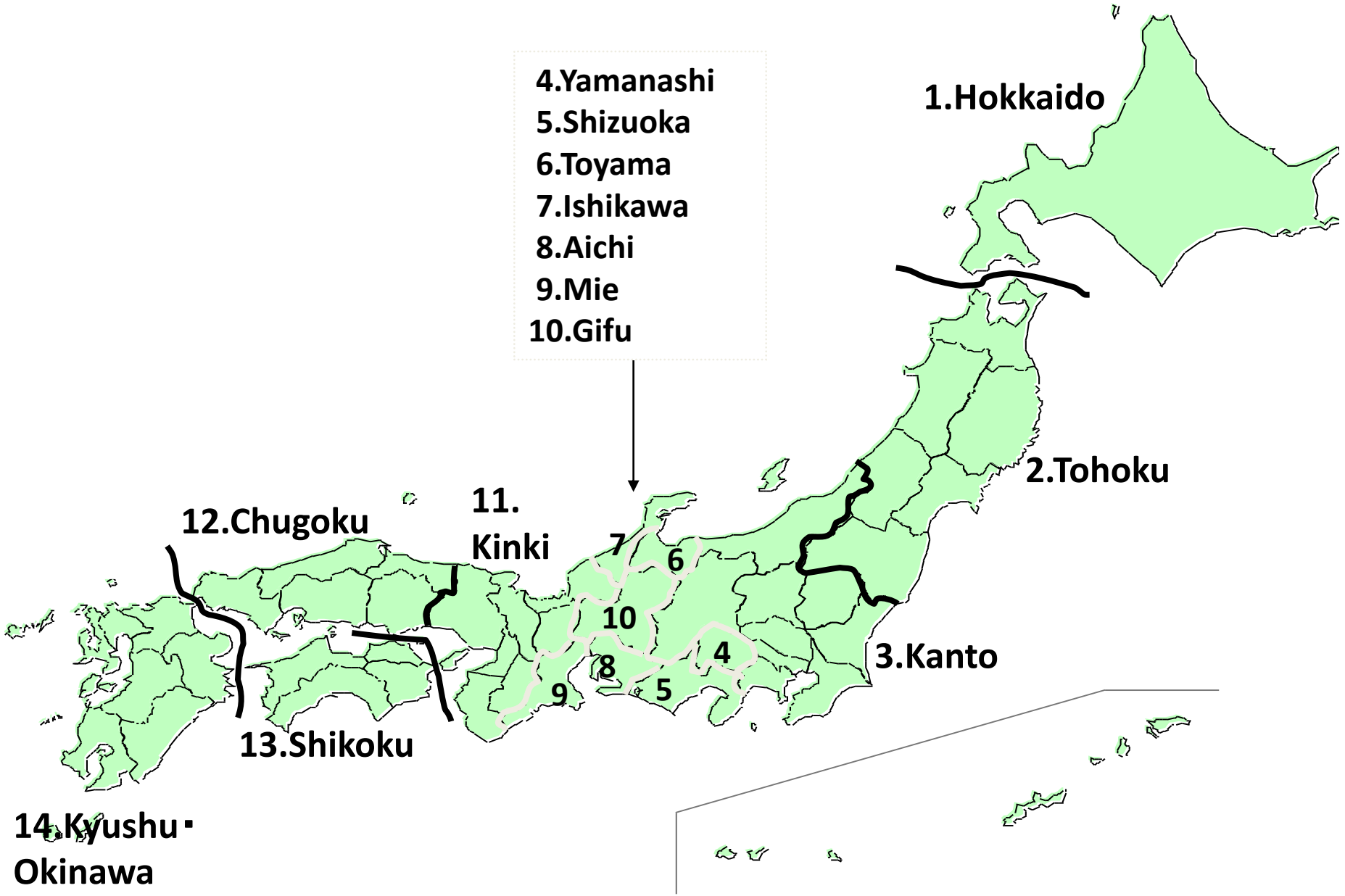
Japan's Dai-Dai-Toku Research Project (2002-2007)

Sub-project headed by Okada: Adaptive Management by Policy Ima-Simulator on Enhancing Resiliency for Tokai/ To-Nankai Earthquake (year 20xx?) studied by Tatano et al

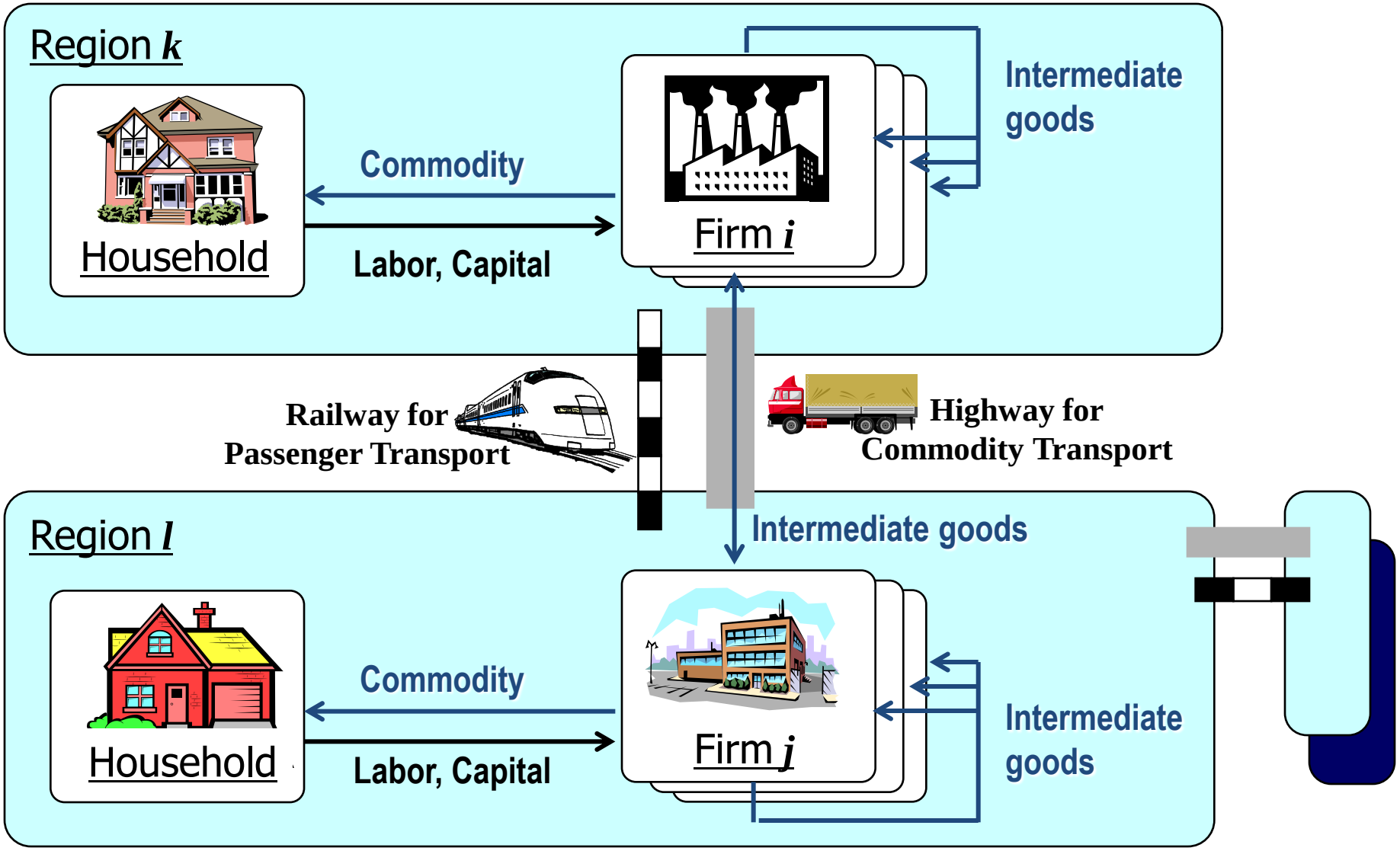
http://www.ddt33.dpri.kyoto-u.ac.jp/



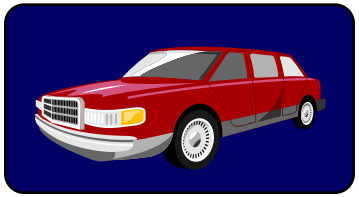
14 Zones for Loss Estimation



Regional Economic System

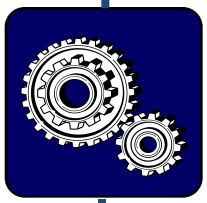


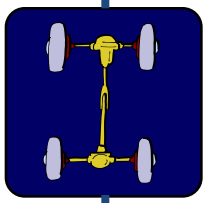
Production Structure of Firms



Output

Leontief type





. . .

Compound Factor Forming Value-added

Intermediate Goods

Purchased from other/the same region

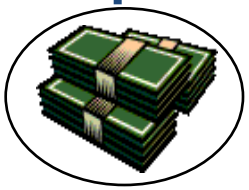
Cobb-Douglas type

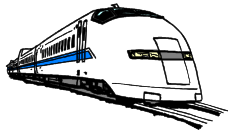
Fundamental Compound Factor

Knowledge

Cobb-Douglas type

Cobb-Douglas type





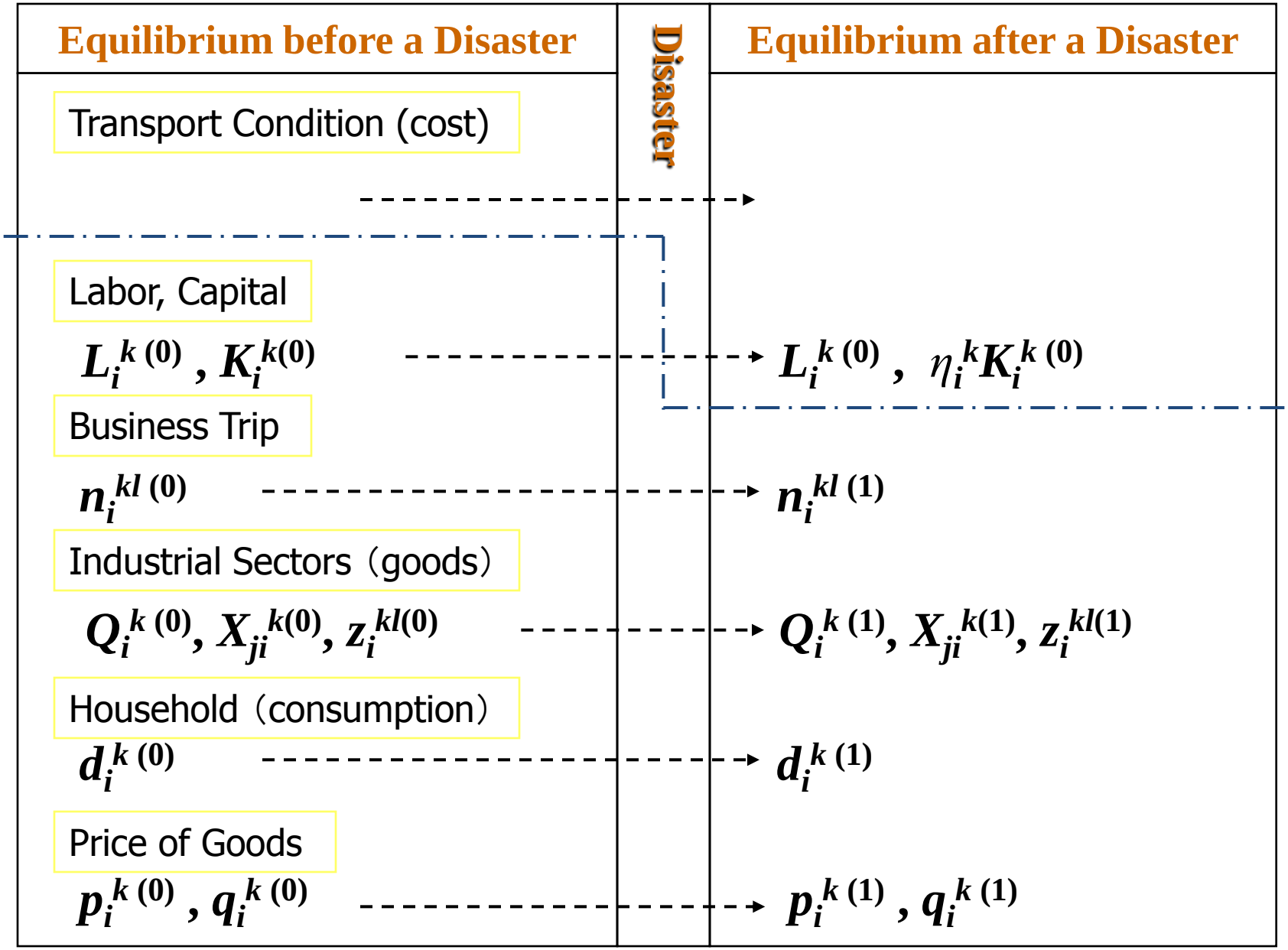
. . .

Labor

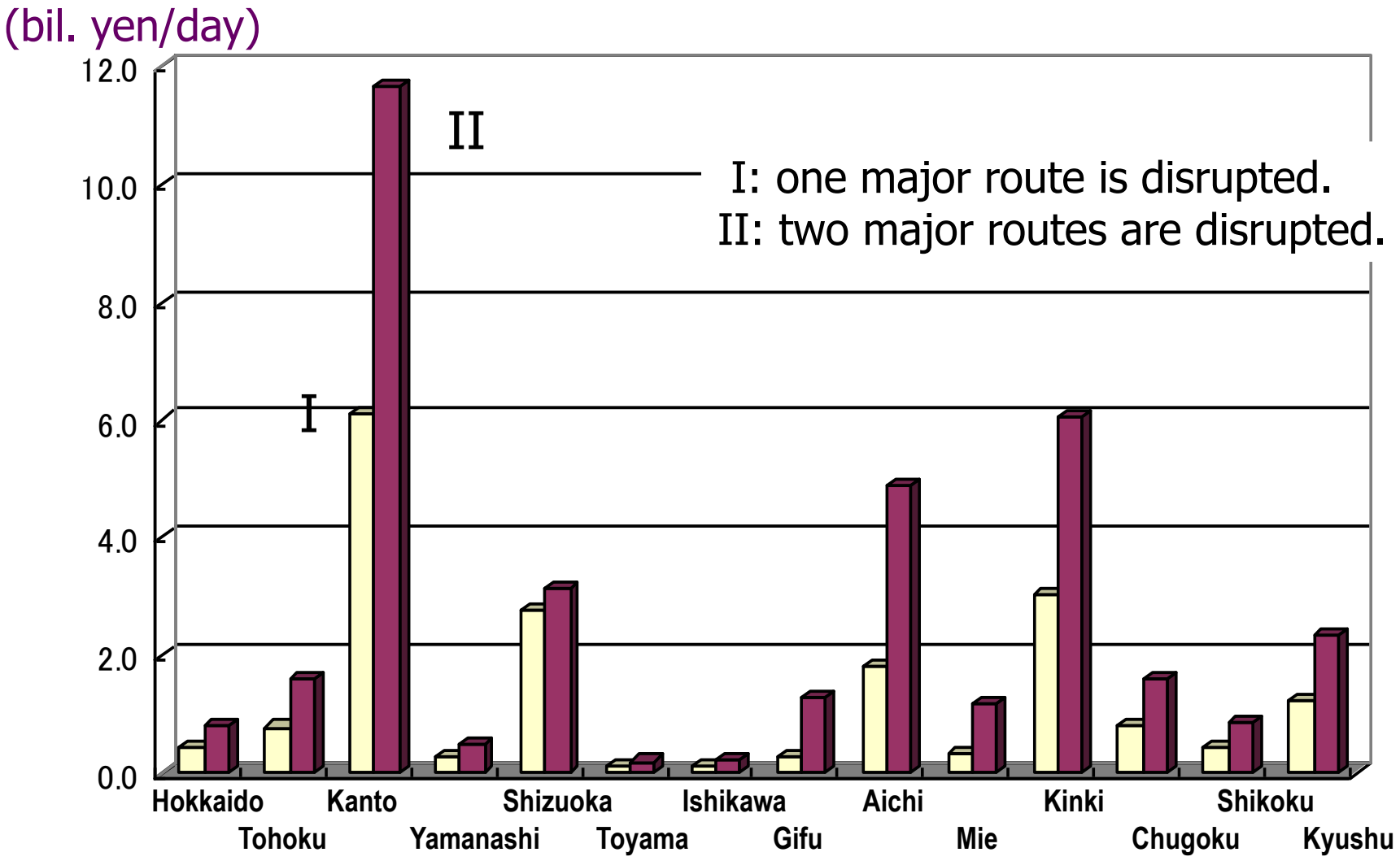
Capital

Business Trip

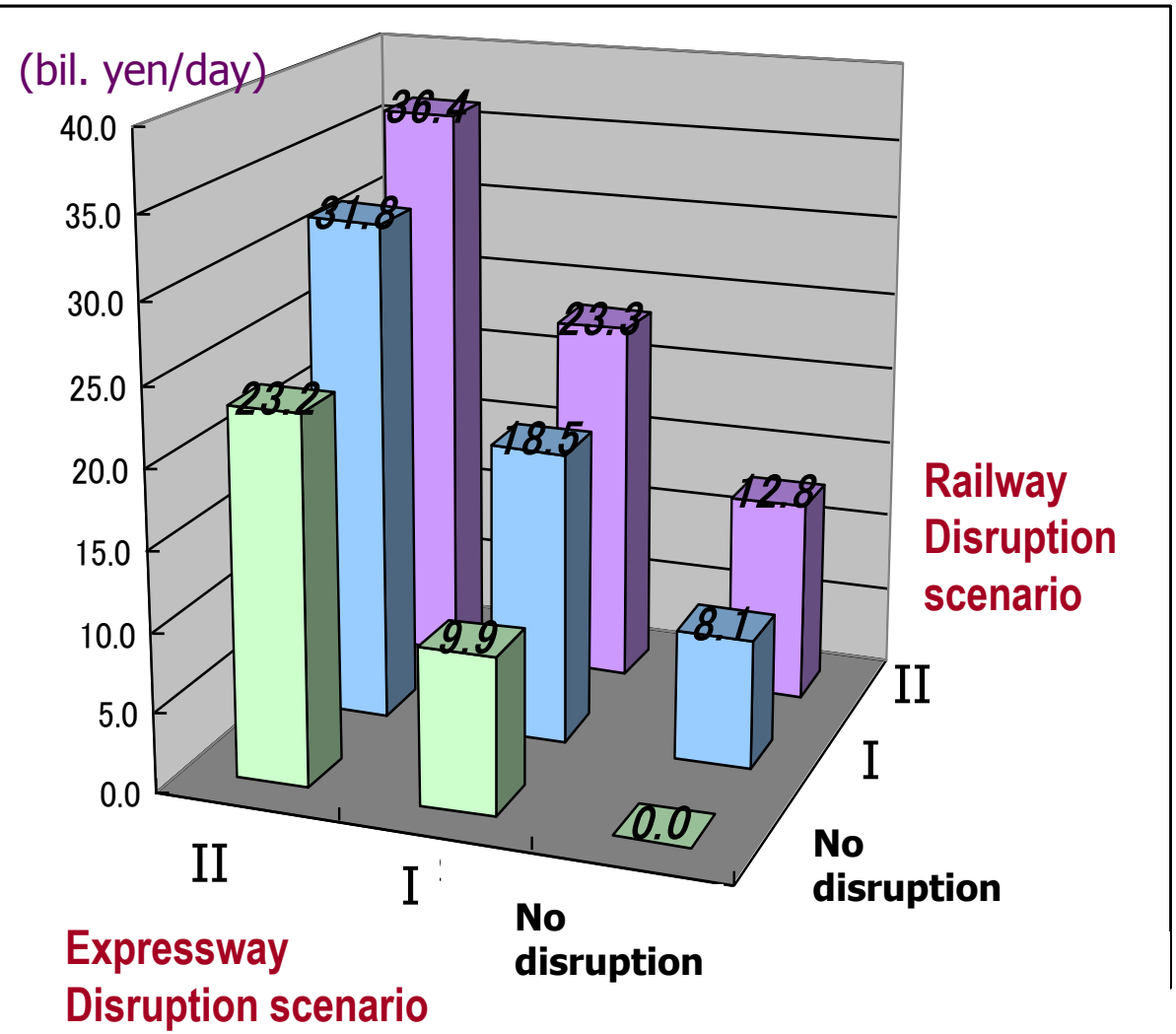
SCGE Model's Equilibrium Conditions



Transport-related Losses: Results



The Losses by Transportation Mode



Mutual Dependencies between Expressways and Railways

e.g. in scenario I, II,

18.5 **>** 9.9 + 8.1
36.4 **>** 23.2 + 12.8

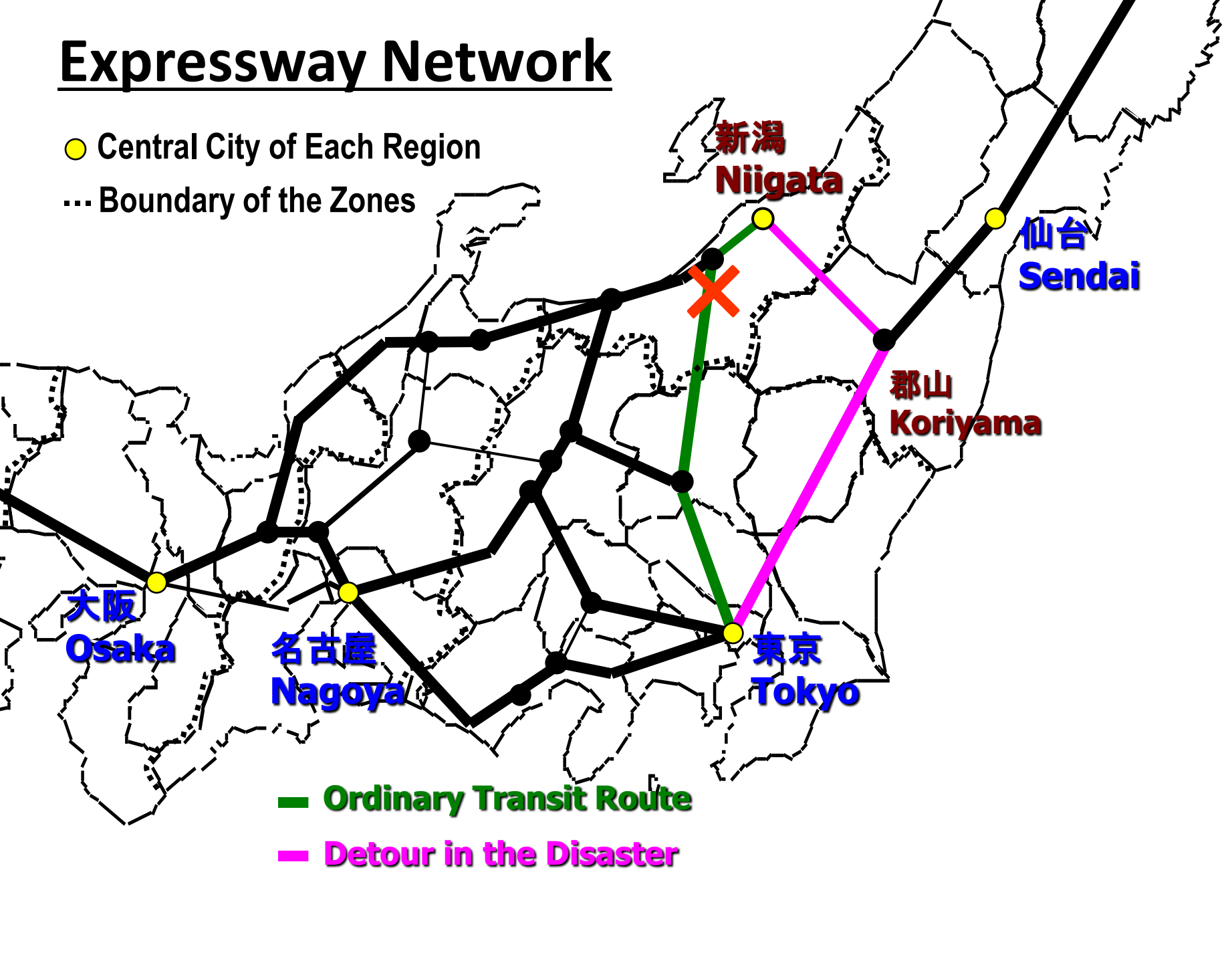
In the same way,

23.3 > 9.9 + 12.8
31.8 > 23.2 + 8.1

Model was adaptively tested for Niigata-Chuetsu Earthquake (2004)

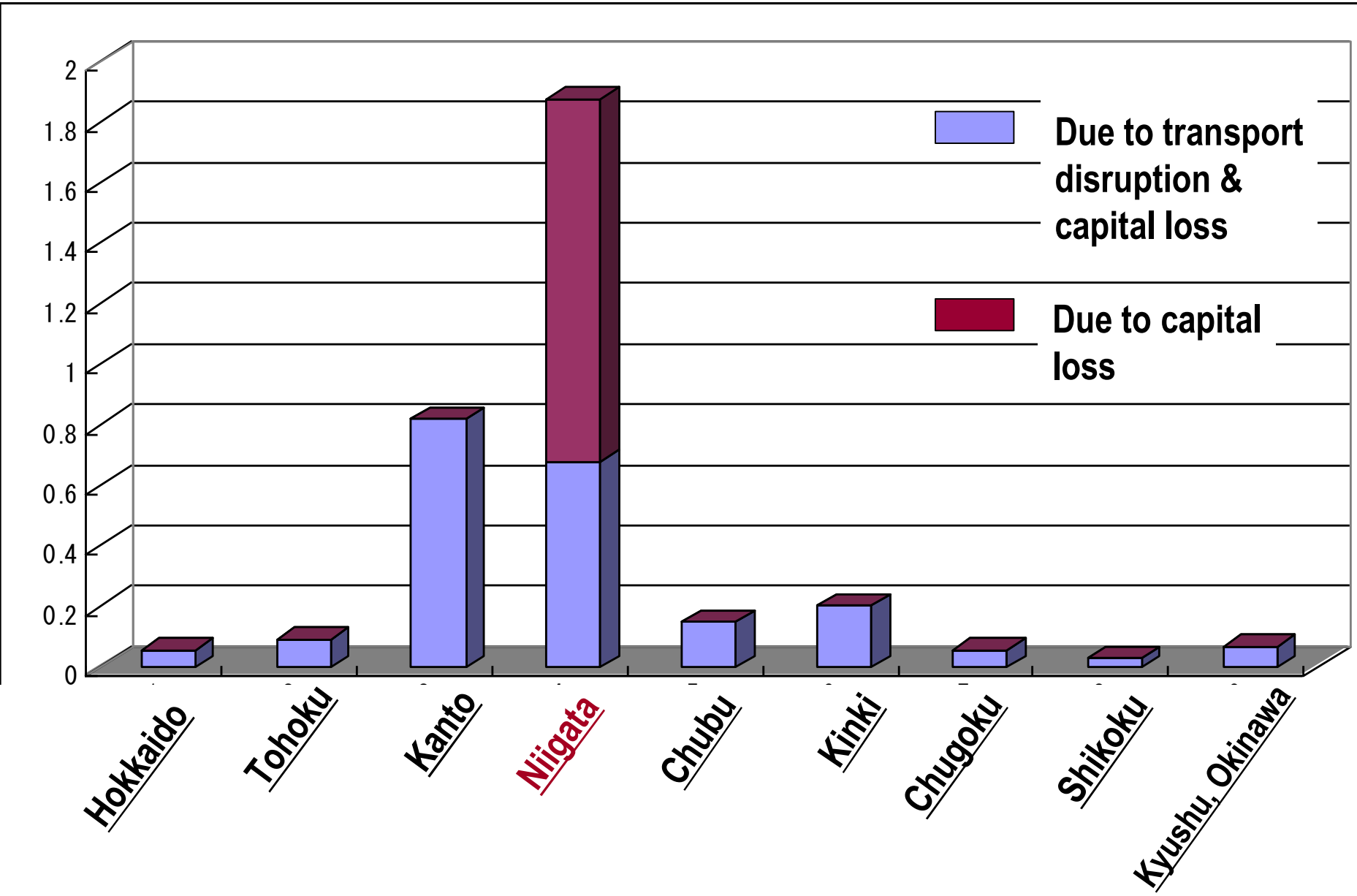
- Press info/ Development Bank of Japan report
  - 49 deaths
  - More than 16,000 houses were half-fully destroyed
  - Lifelines: 3 days (power), 2 weeks (water), 1 month (gas) for 90% recovery.
  - Transportation: network disruption for 2 weeks (freeway, temporary) – 2 months (Shinkansen)
  - Other infrastructure damaged: rivers, landslide, etc.
  - Forestry and fisheries: loss of over 100 billion yen for various facilities, 2% of all farmland are unavailable this spring in 8 damaged municipalities
  - Manufacturing: Electromechanical component, automobile parts, traditional crafts etc.
  - Services: tourism industries, etc.

Expressway Network

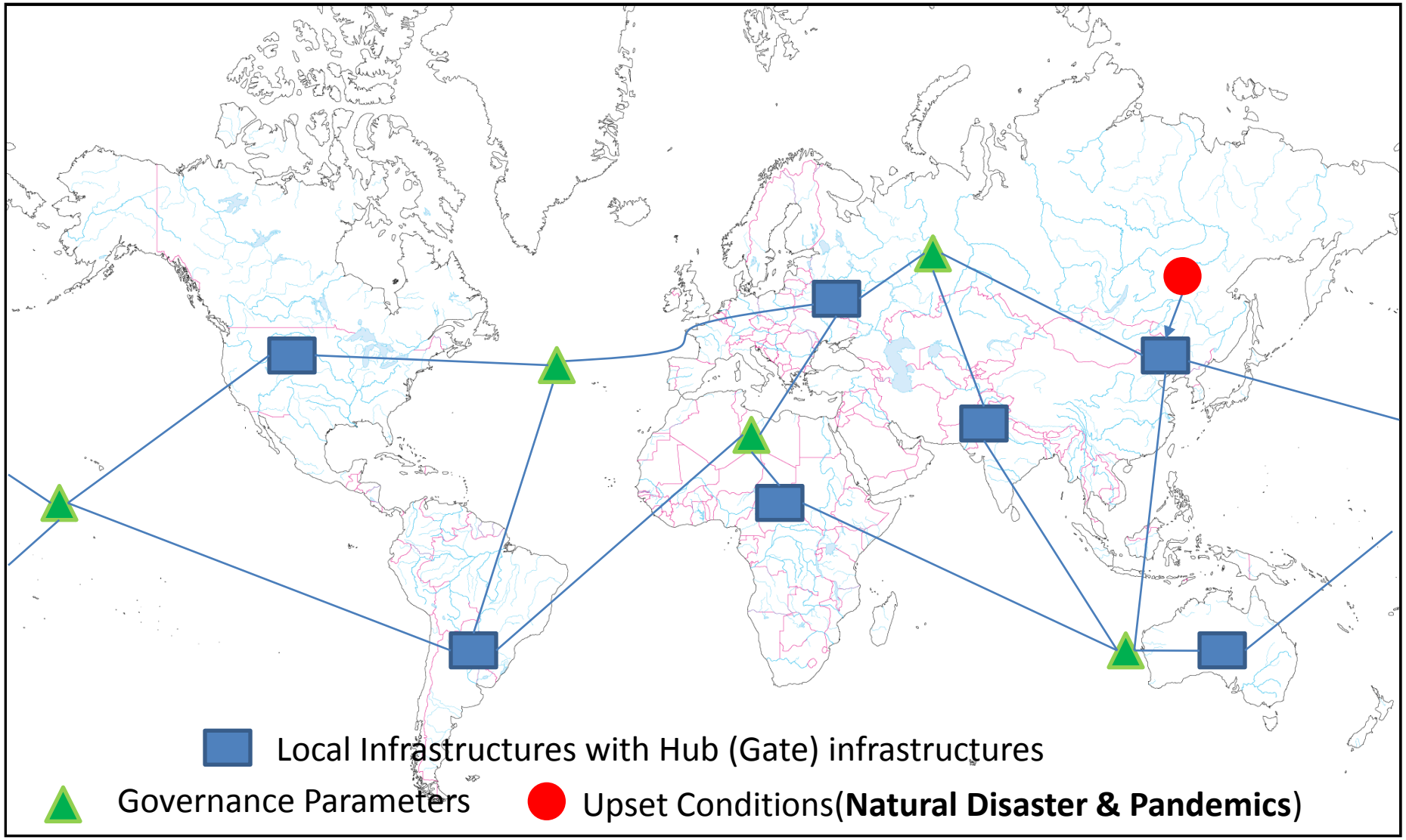


Economic Loss

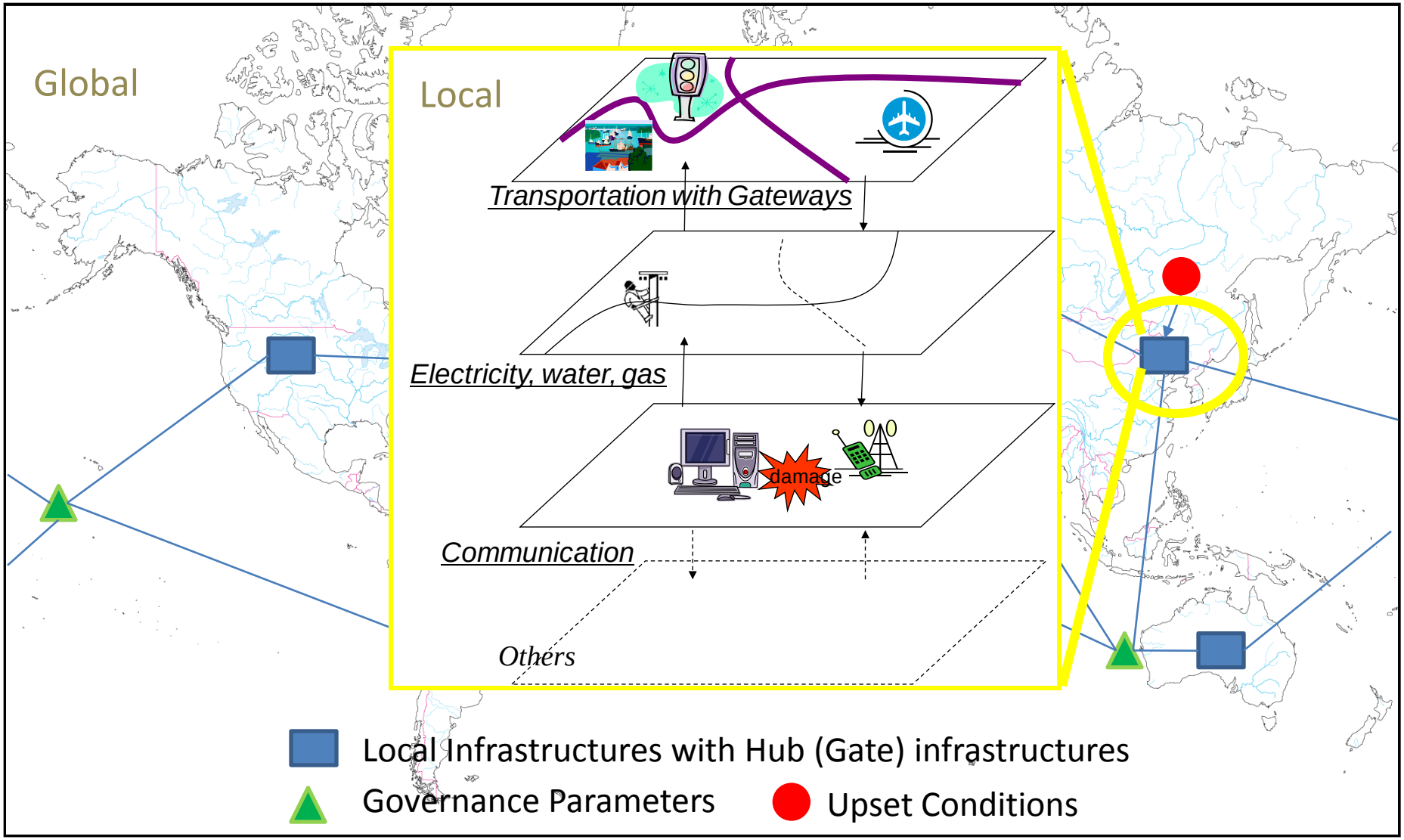
(billion yen/day)



Global Infrastructure as a "Network of Networks"



Global Infrastructure as a “Network of Networks”



Remarks

- This is just an example.
- The theory provides a clue to proactive policy making and is adaptively tested with ensuing real cases.
- The theory serves as a basis for imagination-activating policy simulator (ima-simulator) .
- The theory can grow and evolve by feed-backing evidences!
- The theory and field combined can offer platform for dialogues among practitioners and policy-makers.

KU-UGM Collaboration Prospect and Prioritization

Norio Okada

DPRI, Kyoto University

20-03-09 @UGM

Our roles from Kyoto

Mutual Knowledge Development-]Colearning

Strengths of ours –External Knowledge

Expertise and Experience and Education

Exchanging people with actual fields

Networking

Weaknesses of ours

Language and cultural barriers

Local knowledge and wisdom

Local hazards

Human resources including potential facilitators and communicative investigators

Participatory methods proposed

- Yonmenkaigi (4-sided) System Method
- Sandan (3-phase) System Method
- Crossroad Game Method (Yamori et al)
- Disaster Education Methods

 -kamishibai

 -by drawing

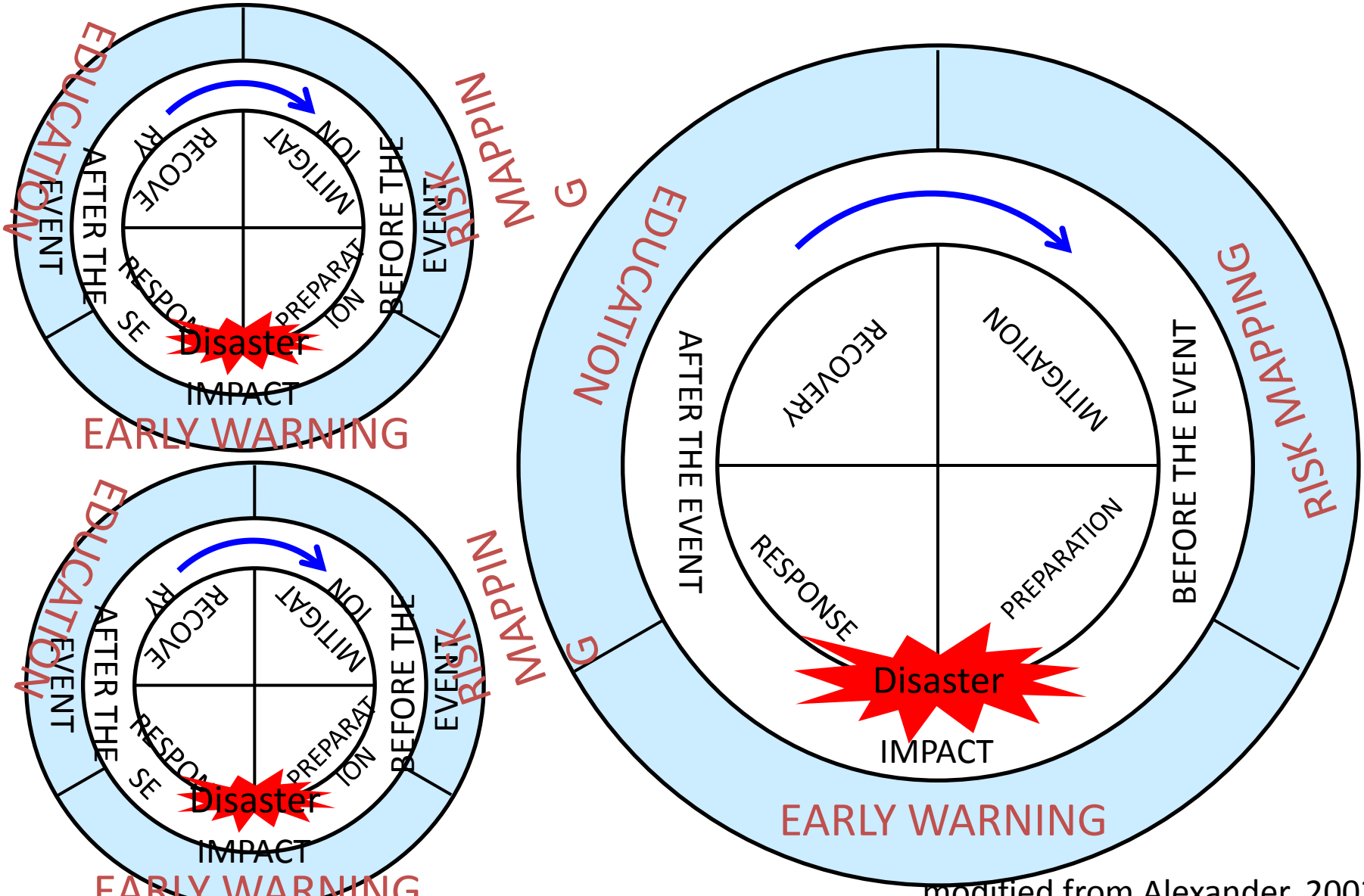
- Communicative Survey Methods

- Conflict Management
- Disaster Economics related to Development Economics
- Evaluation Methods of Process Development-Process Technology

Core of Risk Communication by Rowen's CAUSE

- ①Credibility(信頼)
- ②Awareness(気づき･防災意識)
- ③Understanding (理解)-alternatives/actable
- ④Satisfaction(Agreement) (充足･了解)
- ⑤Execution(執行･実践)

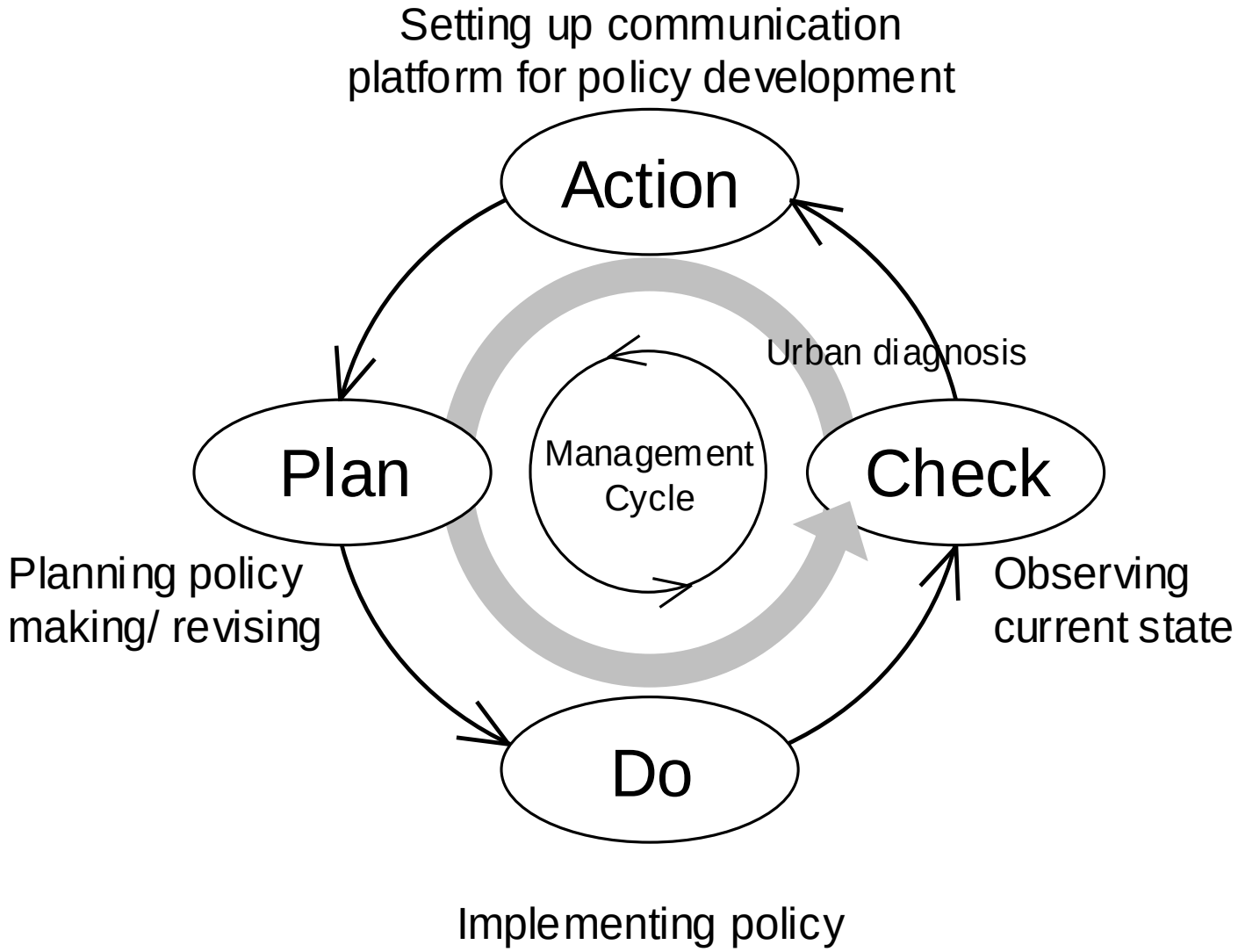
Managing Multiple Disaster Clocks



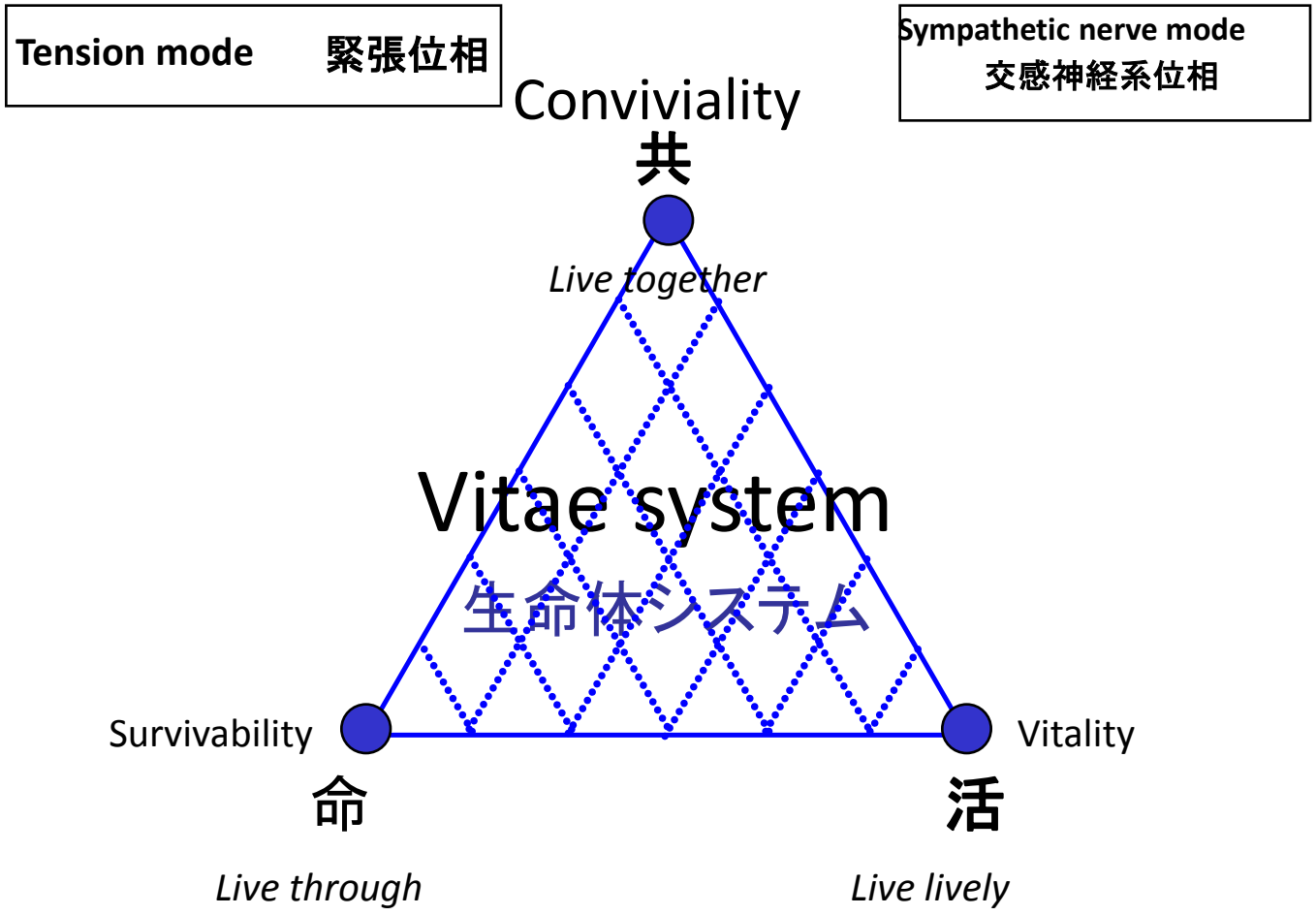
modified from Alexander, 2002

Plan-Do-Action-Plan Process

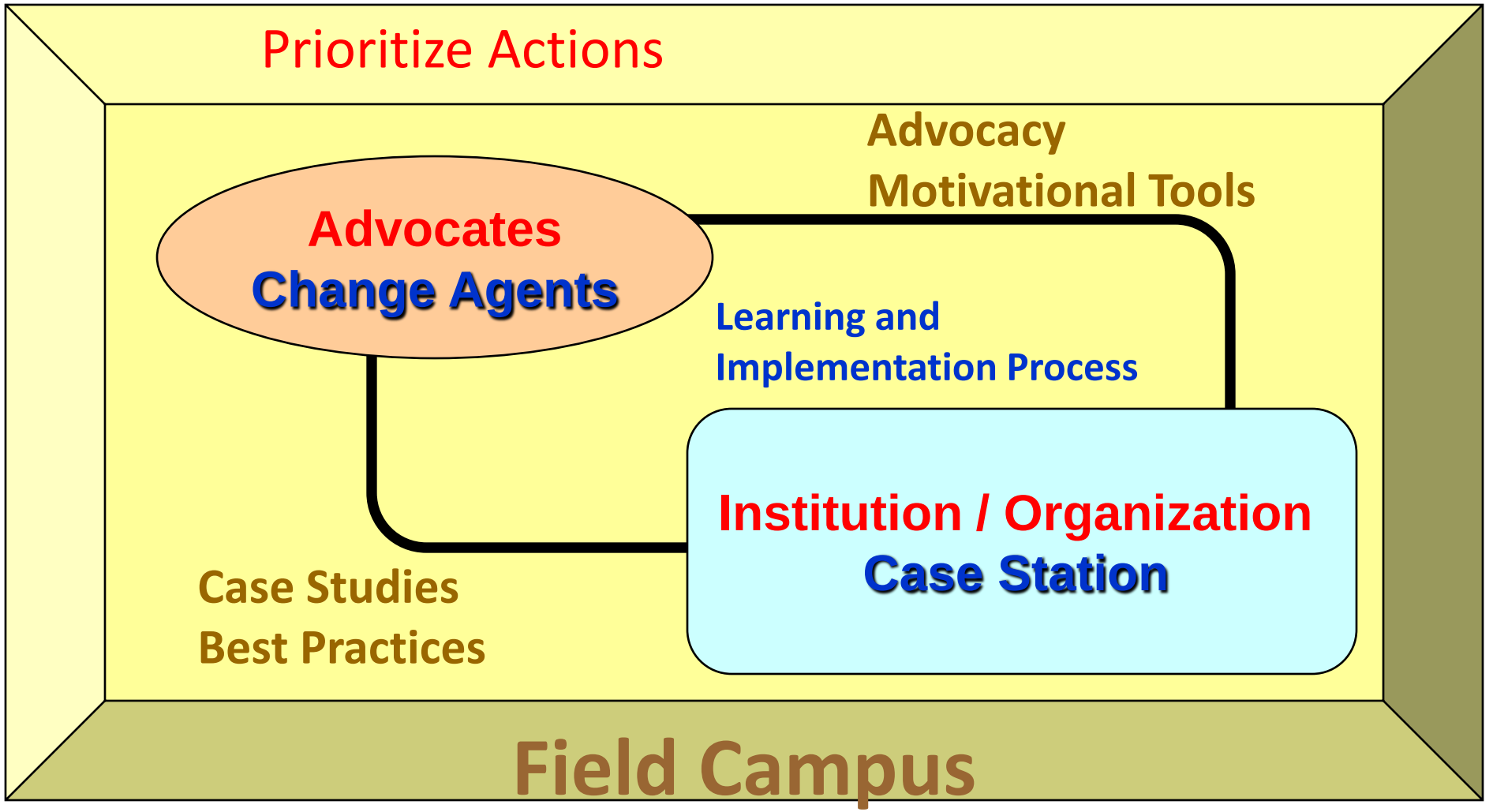
Small but Complete by Adaptive Management



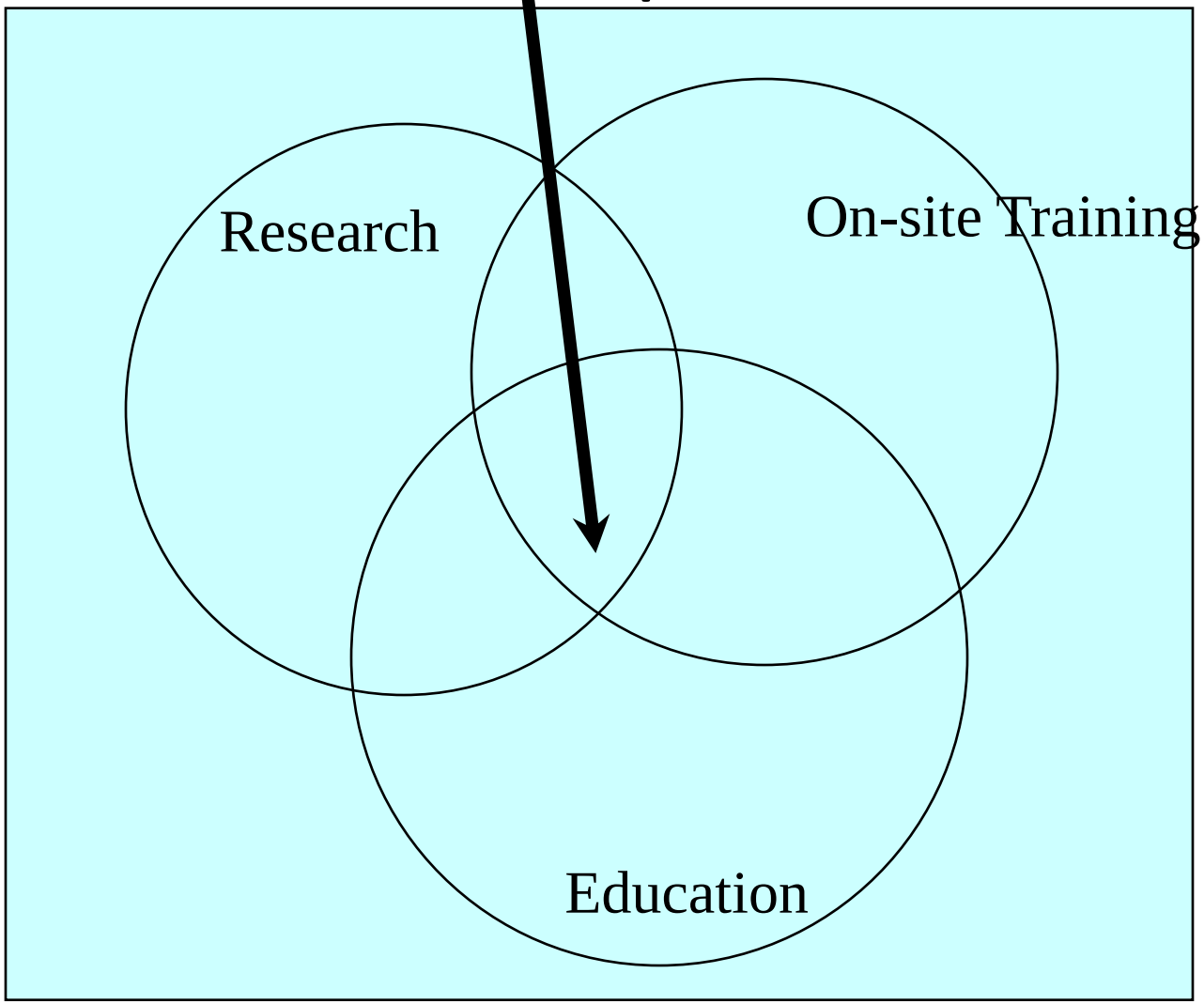
Vitae System



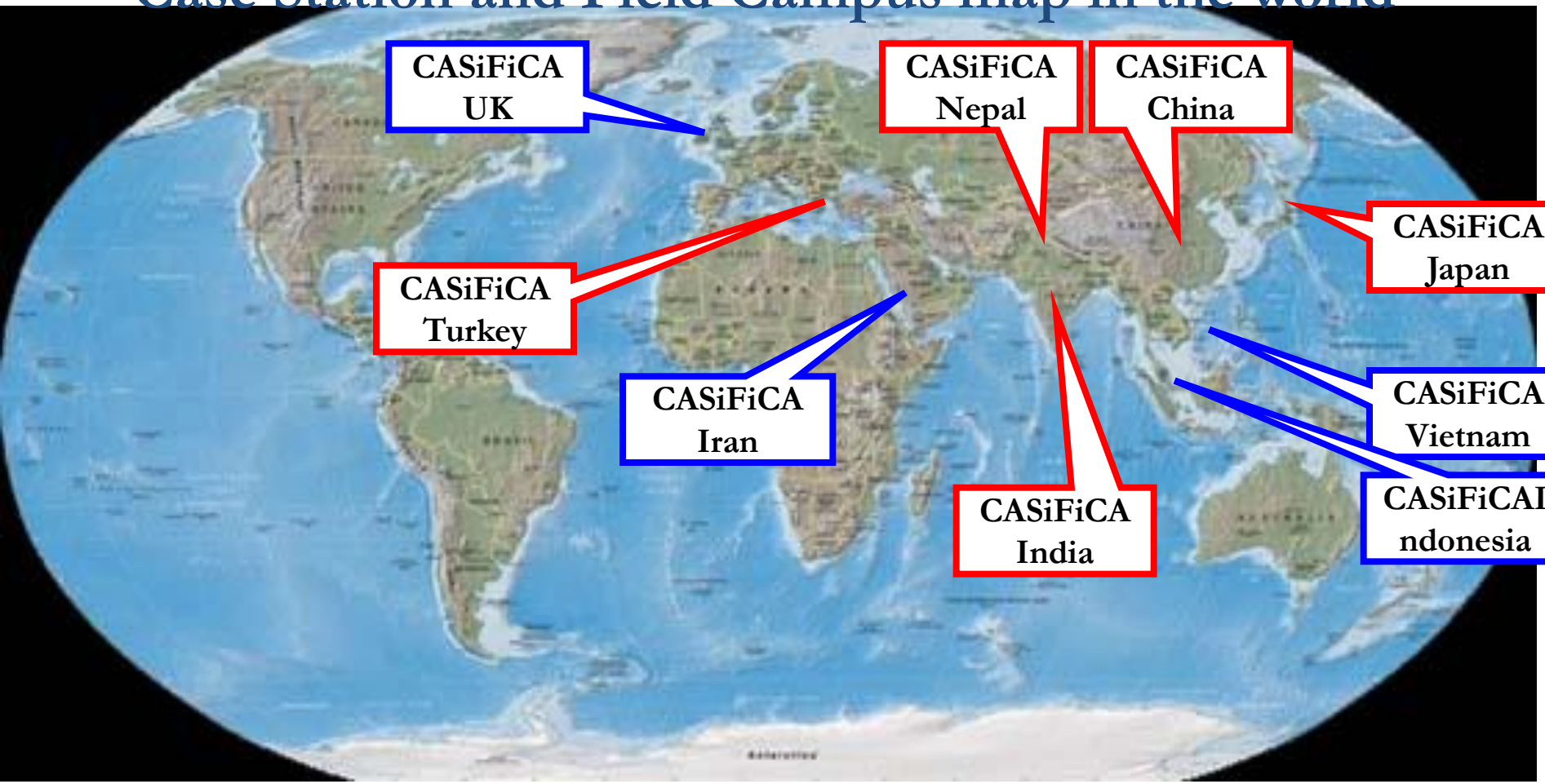
Case Station/ Field Campus



CASIFICA targets this missing overlap!



CASiFiCA Challenge
Case Station and Field Campus map in the world



ongoing MEXT-CASiFiCA

Upcoming CASiFiCA

“CROSSROAD Game”

-- A sample practice of participatory & collaborative disaster risk management

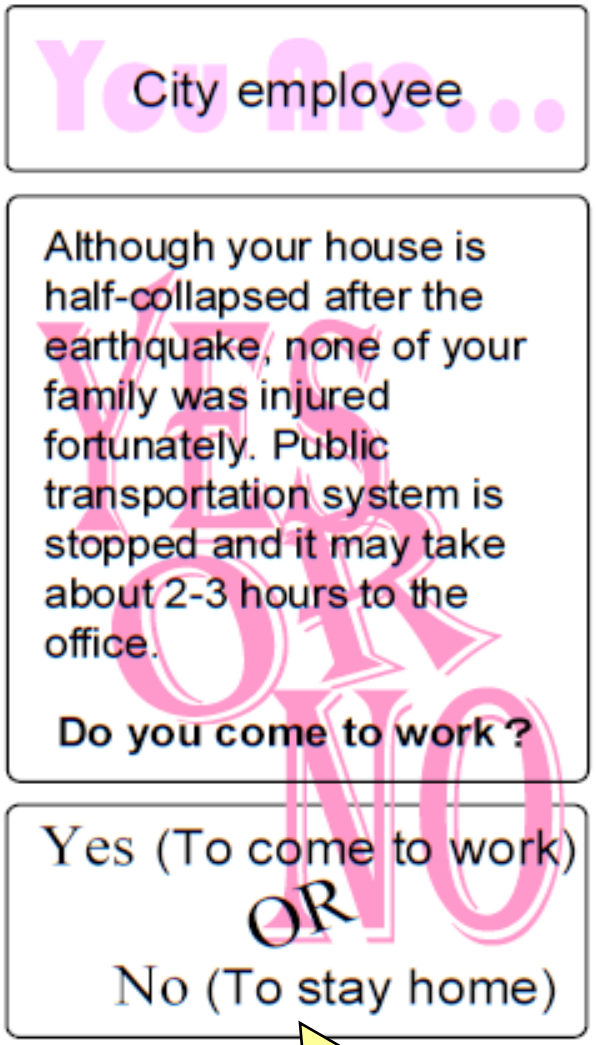
- 25,000 copies published
- Big media coverage (TV news, papers, magazines, etc.)
- more than 35,000 participants

Gaming-type disaster education procedure

"CROSSROAD Game"

- Original version, "Kobe-Version": all episodes are based on ***actual events (real stories)*** in the 1995 Kobe Earthquake
- Obtained from a series of focus-group interviews with those who experienced the disaster (more than 200 hours with more than 150 interviewees)
- Interviewees: survivors, volunteers, and local government officers working at the frontline

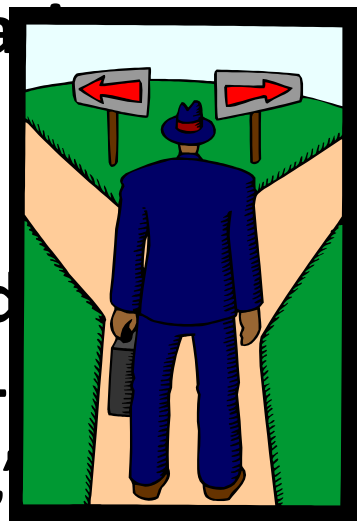
[Kobe1015]



Episode Card Sample

“CROSSROAD Game”

- Episodes: re-describing real experiences of interviewees in a form of severe dilemmatic either-or decision between two conflicting choices, which we call “Crossroad Format,” to extract ba essentials of disaster risk management
- Unexpectedly good feedback to Kobe–version
-More than 10 different new versions published the same Crossroad Format, such as “Everyday-preparedness-Version,” “School-safety-Version,” “Kochi-Prefecture-Version,” “Social-work-Version,” etc.



“CROSSROAD” --- Preparation

Forming a group of 5-7 members around a table, preferably in odd numbers of members

You are…

City employee

【Kobe1015】

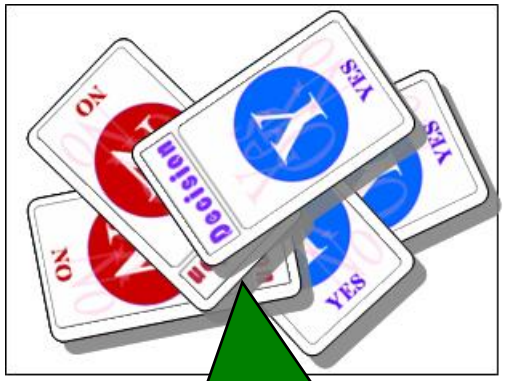
Although your house is half-collapsed after the earthquake, none of your family was injured fortunately. Public transportation system is stopped and it may take about 2-3 hours to the office.

Do you come to work?

Yes (To come to work)

OR

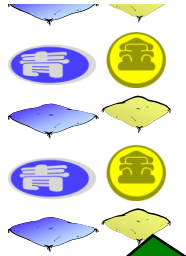
No (To stay home)



“YES” & “NO” Card (1 pair for 1 person)

Pens, and Blue & Pink notes (stack on the table)

Episode cards

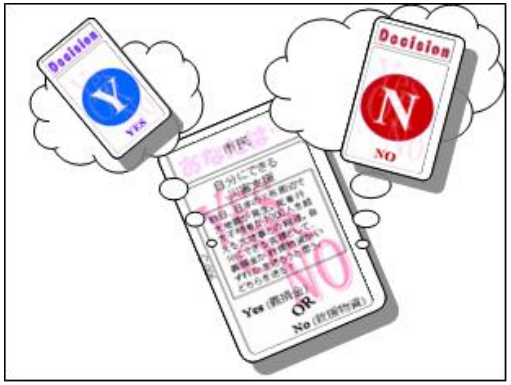


Blue and gold point chip cards (stack on the table)

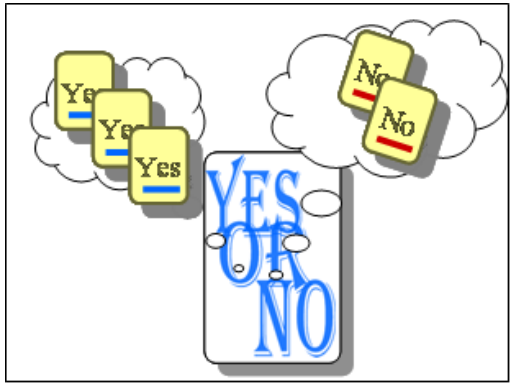
Basic procedure of “Crossroad: Kobe”

Procedure

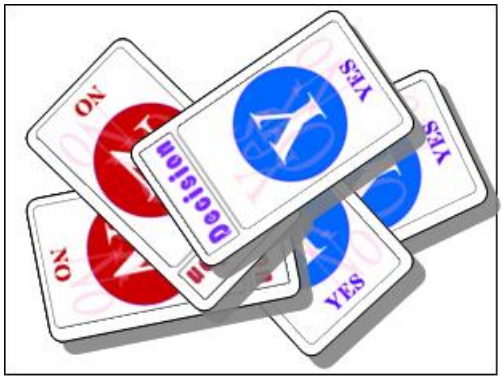
1 Read episode and Make your choice - Yes or NO?



2 Disclose your choice by Yes or No card



3 Find out group result — Majority or minority?



4 Get game points based on the results
--- Majority : 1 normal point (a blue chip)
--- Single Minority: 1 special point (a gold chip)

5 Exchange views --- persuading others and/or persuaded by others, Also, writing down the reasons, grounds, and conditions for YES or NO attitude on the note

6 Learn basic info and listen to disaster veterans’ talk

From ongoing CASiFiCA site

Flood Risk Communication system
by CASiFiCA Chukyo (Tatano and Hatayama)

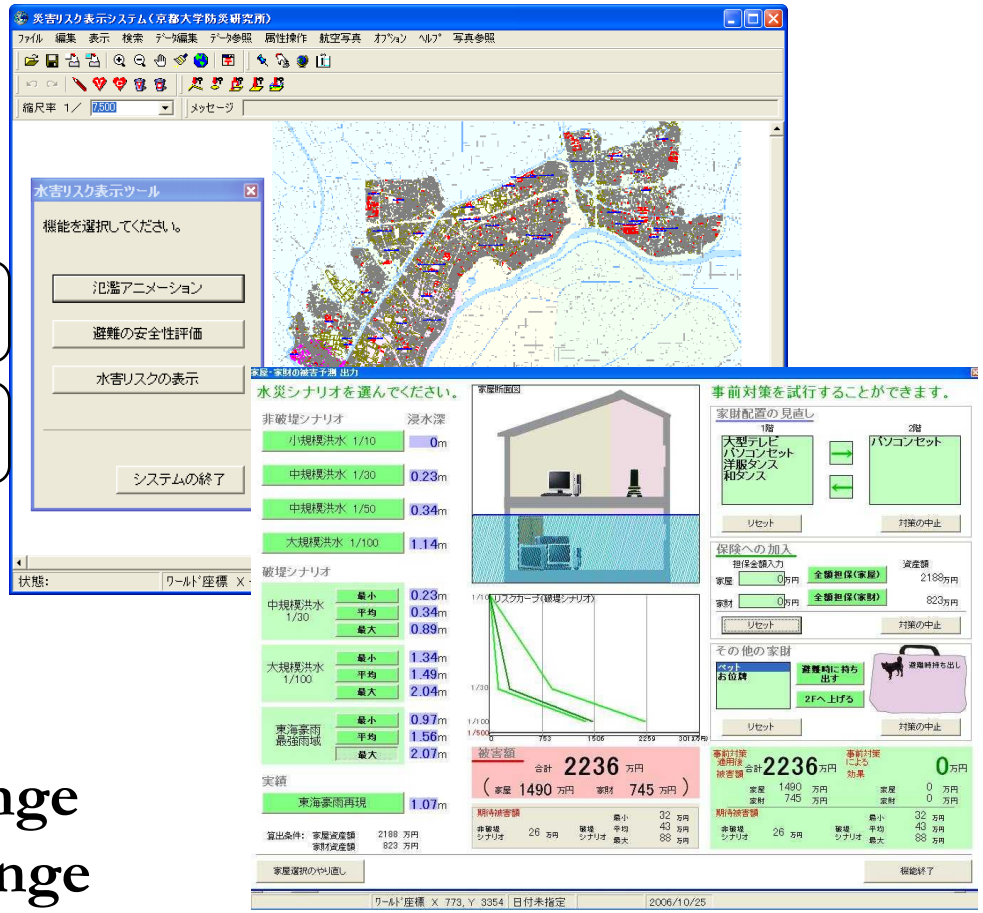
Develop GIS (DiMSIS)

Flood Analysis

Evacuation Risk Evaluator

Housing Risk Evaluator

workshop



Picture by Tatano

Personal Experience can change their "mental model" and change their actual behavior

Make process of Distal Disaster *Kamishibai* by CASiFiCA Chukyo (Hideshima and Takeuchi)

Decide hearing target

Hearing

Extract messages from hearing

Making story

Drawing picture

Recording

Packaging

Developed Risk Communication tool

Developed on Workshop method using of Distal Disaster *Kamishibai* by CASiFiCA Chukyo (Hideshima and Takeuchi)

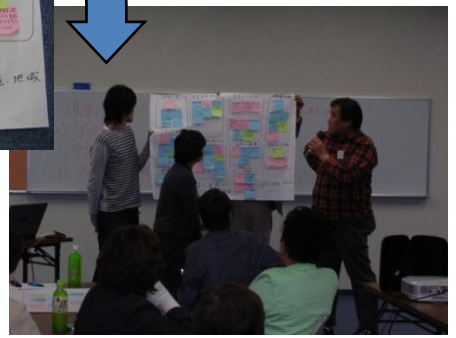
Appreciate *Kamishibai* narratives

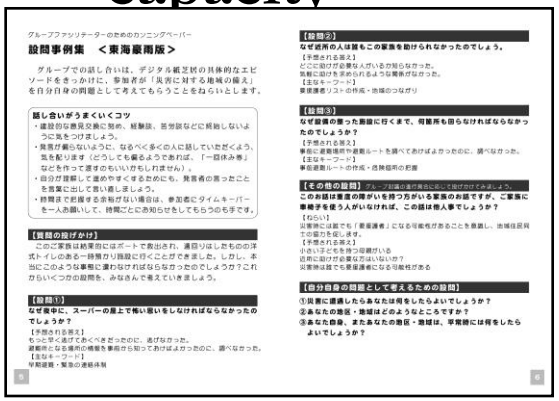
Discussions

Determine shared rules and roles in community

Share ideas and actions

Enhance community's coping capacity




グループファシリテーターのためのカンニングペーパー

設問事例集　＜東海豪雨版＞

グループでの話し合いは、デジタル紙芝居の具体的なエピソードをきっかけに、参加者が「災害に対する地域の備え」を自分自身の問題として考えてもらうことをねらいとします。

話し合いがうまくいくコツ
- 建設的な意見交換に努め、経験談、苦労話などに終始しないように気をつけましょう。
- 発言が偏らないように、なるべく多くの人に話していただくよう、気を配ります（どうしても偏るようであれば、「一個休み券」などを作って渡すのもいいかもしれません）。
- 自分が経験して道めやすくするために、発言者の思ったことを言葉に出して言い直しましょう。
- 時間まで約握する余裕がない場合は、参加者にタイムキーパーをー人お願いして、時間ごとにお知らせしてもらうのも手です。

【設問1】
なぜ災害中に、スーパーの屋上で怖い思いをしなければならなかったのでしょうか？
【予想される答え】
もっと早く逃げておくべきだったのに、逃げなかった。
避難所とならない病院の機能を事前から知っておけばよかったのに、調べなかった。
【主なキーワード】
早期避難・緊急の連絡体制

【設問2】
なぜ近所の人は誰もこの家族を助けられなかったのでしょう。
【予想される答え】
どこに助けが必要な人がいるか知らなかった。
気軽に助けを求められるような関係がなかった。
【主なキーワード】
要援護者リストの作成・地域のつながり

【設問3】
なぜ設備の整った施設に行くまで、何箇所も回らなければならなかったのでしょうか？
【予想される答え】
事前に避難場所や避難ルートを調べておけばよかったのに、調べなかった。
【主なキーワード】
事前避難ルートの作成・透除箇所の把握

【その他の設問】 グループの進行具合に応じて投げかけてみましょう。
このお話は重度の障がいを持つ方がいる家族のお話ですが、ご家族に車椅子を使う人がいなければ、この話は他人事でしょうか？
【ねらい】
災害時には誰でも「要援護者」になる可能性があることを意識し、地域住民同士の協力を促します。
【予想される答え】
小さい子ども を持つ母親だいる
近所に助けが必要な方はいないか？
災害時は誰でも要援護者になる可能性がある

【自分自身の問題として考えるための設問】
①災害に遭遇したらあなたは何をしたらよいでしょうか？
②あなたの施設・地域はどのようなところですか？
③あなたの自身、またあなたの施設・地域は、平常時には何をしたらよいでしょうか？


進行の手引き

想定：3グループ15人程度

趣旨説明など（10分）

デジタル紙芝居の観賞（15分）

カーテンなどで暗くできる部屋で行ってください。動作・音量などは事前に確認しましょう。

グループでの話し合い（50分）

設問1問につき10～15分程度話し合い、ある程度の方向性を定めていきます。

全体ファシリテータはどんなことをみんなで話し合って欲しいかを考え、そのアイデアや意見が出やすくなるような設問をデジタル紙芝居を題材に用意します。

各グループに分かれたら自己紹介から始め、グループファシリテータは時間を区切りながら、設問を1問ずつ参加者に投げかけます。参加者は出された設問について考え、グループ内で簡易KJ法を使いながら意見を出し合います。

まずは特に場所を気にせずどんどん出していきます。同じ意見の人でも、時間があるのならばその人の意見で表現してもらいましょう。出尽わったら頂目事に種類分けし、まとめ、簡単なキーワードをみんなで戻し出します。

発表（15分）

話し合いで出た意見や提案を、グループの代表が皆で発表します。

まとめ（10分）
（計1時間40分）

Approach to community

by CASiFiCA Chuetsu (Atsumi)

Foot massage

People feel comfortable

Conversation starts

Identify and Share Concerns & Problems

Foster trust and partnership between community people and volunteers

Photo by Atsumi

Design of re-constructing a community
by CASiFiCA Chuetsu (Atsumi)

Foster trust and partnership between community people and volunteers

Hold ‘Kids try camp’

Notice of Community

Reconfirm of Community

Re-structure of Real Community

Picture by Kobayashi and Miyamoto

From upcoming CASiFiCA site

Discussion System;. Squ-Table Workshop Method

by Okada

Field work

SWOT analysis

Decide discussion theme

Decide future frameworks

Debate

Make action plan

Can make strategy action plan

internal factors	
S	W
external factors	
O	T

Player A

Player I

Player II

theme

Framework (after 10 years)

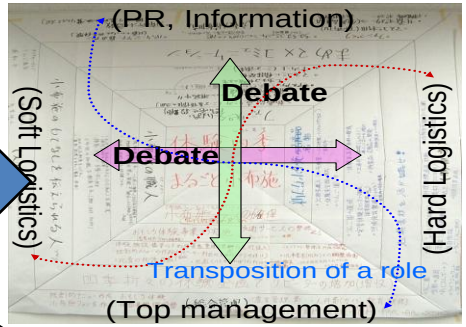
Framework (after 3~5 years)

Framework (after 1 year)

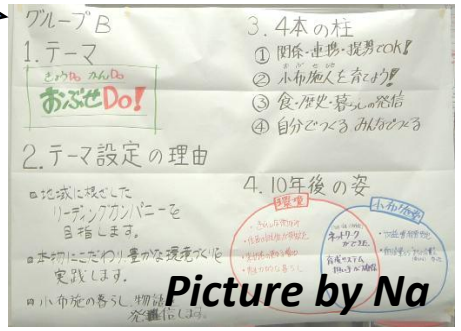
scenario

materials

Player B



1． Theme	3． 4 pillars a. b. c. d.
2． A setting reason of a theme	4． A figure after ten years



Community Understanding tool; Town watching by Rajib and Takeuchi

Decide Town watching theme

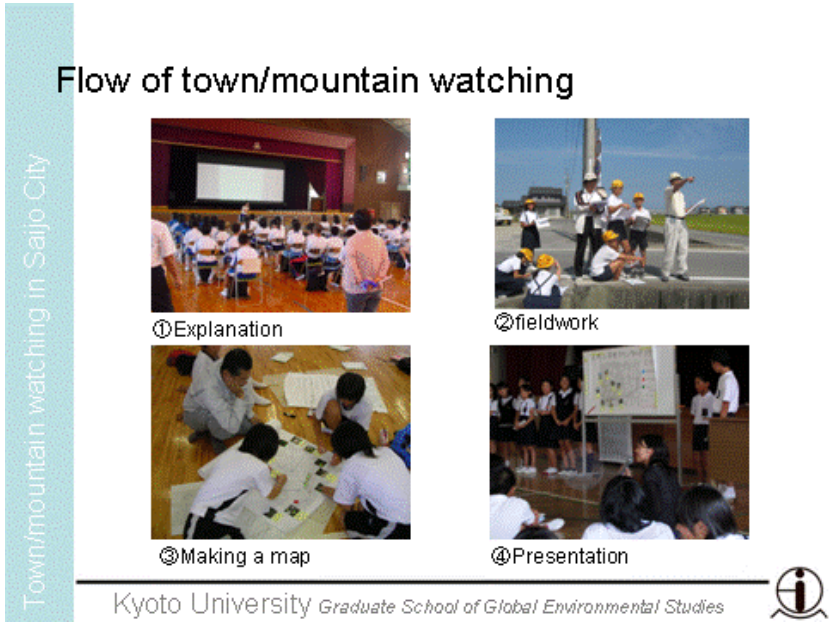
Decide stakeholder

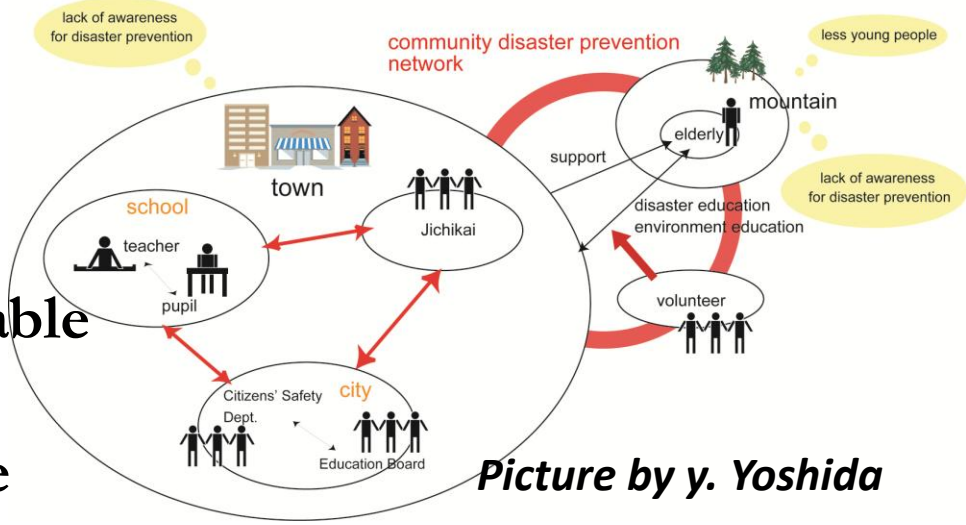
Prepare within and without school

Town Watching
-Field work
-Making a map
-Presentation

Presentation to Community

Develop of framework for sustainable community disaster education, Monitoring and Cross reference





Picture by y. Yoshida

NIED-EDM DRH Template (led by Kameda)

ver.6 070425

Template for DRH Database (ver.6 / 070425: fixed through 2007FY)
Disaster Reduction Technology and Knowledge under Implementation Strategies

I. Heading	
Title	Transferable Indigenous Knowledge Experiences from Japan on Flood Disasters
Major significance (less than 60 words)	Three kinds of Indigenous Knowledge and Technology for flood disaster. can be observed in the *Noubi* plains area of central Japan. These are: (1) Flood prevention; *Waju* (Inside Ring)=communities protected by ring dikes. (2) Erosion control; *Hijiri-Ushi* (Grand OX)=control water force. (3) Damage reduction; *Mizuya* (Flood House)=evacuation house.
Keywords	Flood disaster, Flood Prevention, Erosion Control and Damage Reduction

II. Categories (Multiple answers allowed)

Focus of this information
- ☐ Implementation Oriented Technology
- ☐ Process Technology
- ☒ Transferable indigenous knowledge

Anticipated users

Practitioners ***("Who are supposed to act as protectors?")***

Instruction for writers:
- Items of "experts" may overlap with other categories. In that case, please mark both categories.
- You can ignore sub-categories.

- ☒ Community leaders (voluntary base)
- ☒ Administrative officers
  - ☒ Municipalities
  - ☒ National governments and other intermediate government bodies (state, prefecture, district, etc.)
- ☐ NGO/NPO project managers and staff
- ☐ International organizations (UN organizations and programmes, WB, ADRC, EC, etc.)
- ☐ Commercial entrepreneurs
- ☐ Financing and insurance business personnel
- ☒ Experts
  - ☒ Teachers and educators
  - ☐ Architects and engineers
  - ☐ Sociologists and political economists
  - ☐ Information technology specialists
  - ☒ Urban planners
  - ☒ Rural planners
  - ☐ Environmental/Ecological specialists
- ☐ Others (Please explain using the blank space below.)

Associated users
- ☒ Policy makers
- ☐ Motivated researchers
- ☒ Local residents

1/6

Hazards focused (Secondary hazard should be included in the categories of
- ☐ Earthquake
- ☐ Tsunami

(GLOF)

pproach)

the blank space below. Other

mmunities

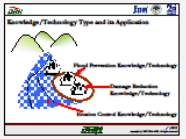
tion system

n

g the blank space below.)

Three kinds of knowledge and technology to cope with flood disaster can be observed in Noubi Plain.

+Flood Prevention: *Waju*(Inside Ring): *Communities protected by Ring Dike*
Communities living in lowland areas suffered from many flood disasters from several centuries. In the 14th century, communities built a ring dike to protect its people. Those dikes were managed by local groups of people aimed at flood control. Seeing the effectiveness of the these ring dikes, many communities copied the method. These dikes not only represented the physical structures, but also helped in developing community ties and ethical values through participatory decision making in maintenance and upgrading. As the results of physical countermeasures taken by the government in the Kiso, Nagara and Ibi Watershed Areas in 18th century, the frequency of flood in those areas has been reduced than before. Consequently, importance of the ring dikes became low, and in some cases were broken in order to renew the land use patterns.



+Damage Reduction: *Mizuya* (Flood House): *Evacuation House*
This house has been uplifted by about 2~5m in height compared to the main house. Ordinarily *Mizuya* is used as a storage room. When flood happens, this house is used for evacuation. Possession of these houses are limited to rich land owners.

Age-fune (Preparedness Boat)
House owners possessed boats for emergency needs at the time of flood.

Age-Butsudan(Lift up Buddhist Family Alter)
Buddhist Family Alter is an important assest for the household in this area, and in most cases, they are large in size. This system lifts up alters in order to protect them from submerging.

+Erosion Control: *Hijiri-Ushi*(Grand OX)
Grand OX is considered as a river bank erosion control measure to reduce water force. Grand OX is used in the areas where rapid rivers meander.

Necessary process to

e Ring)=Community Protected by Ring Dike
t of Community
agement team

duction: *Mizuya*(Flood House)=Evacuation House
t of Family
search type of floods with depth of water using previous disaster

ntrol: *Hijiri-Ushi*(Grand OX)=Control water force
here to install it.
e material for the construction

e Ring)=Community Protected by Ring Dike

leveloping community ties and awareness
epared using local materials

e land areas
ace is a crucial issue
of damage in case of dike failure

duction: *Mizuya*(Flood House)=Evacuation House

rotecting asset through closer look during flood
nger duration of flood, secondary damages due to floating
n be reduced

t cost of construction and maintenance
past flood limit, and sometimes difficult for higher floods

ntrol: *Hijiri-Ushi*(Grand OX)=Control water force

tive, can be made using local material
ental friendly

nical information on location and maintenance

. Resources required

ention: Soil, Tree and measurement technology

ntrol: Wood or Concrete , Wire or Creeper and sand bag

duction: Another House and Carpenter

5/7

Procedure of Yonmenkaigi

- Step 1
  - Identify the facilitator.
  - Introduction: Explain the purpose of the workshop, outline the model / process
- Step 2 (SWOT-NOW)
  - Provide and share the basic information for SWOT analysis
  - Make community diagnosis (current state) by SWOT analysis
- Step 3 (SWOT-Future)
  - Set time horizon (short-, mid- and long-term), discuss and softly agree on common visions (Final goals)
  - Discuss possible prescriptions (actions/countermeasures)
  - Discuss how to collaborate together

- Step 4 (Yonmenkaigi Chart-based Collaborative Work)
  - Divide participants into 4 groups and assign them to the four divisions (parts) in the Yonmenkaigi Chart.

Example 1: Total management, Information, Soft(human) logistics and Hard logistics.

Example 2: Government, NGO, Company, and Local Citizens (Residents)

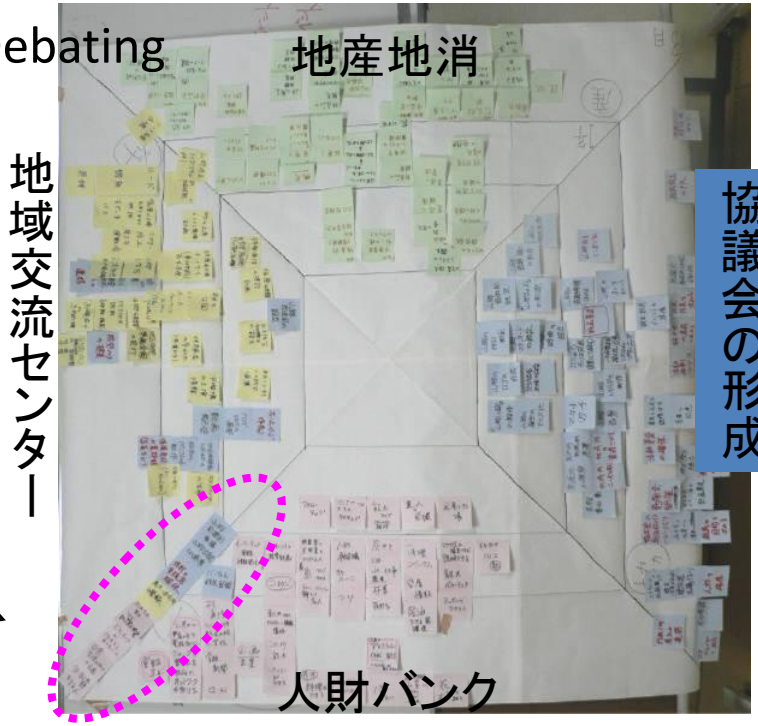
  - Let each group write out in each card actions of their own part that they think necessary and put it on one's time zones (within 1 -2 years, 5 years, 10 years)
  - Let each group discuss among themselves as to which card should remain in one's own area and which needs to go to the communication zone and do accordingly

- Step 5 (Debate and Inverted Debate)
  - Let two groups (facing each other on the Yonmenkaigi Chart) debate to protect one's own side and with the opposite side about if some cards on the opposite side need to be shifted in position, revised, or removed
  - Let each group rearrange cards accordingly.
  - Let each exchange their sides and let them debate to protect one's own (new) side and with the opposite side about if some cards on the opposite side need to be shifted in position, revised, or removed
  - Let each group rearrange cards accordingly.
- The same procedure applies to the remaining two groups facing each other in side.
- Let all groups reshuffle cards by allowing themselves to communicate and exchange or revise collaboratively on the messages of cards.
- Consolidate and substantiate the common vision(s)
- Produce the table of collaborative action plans
- Joint presentation of the result

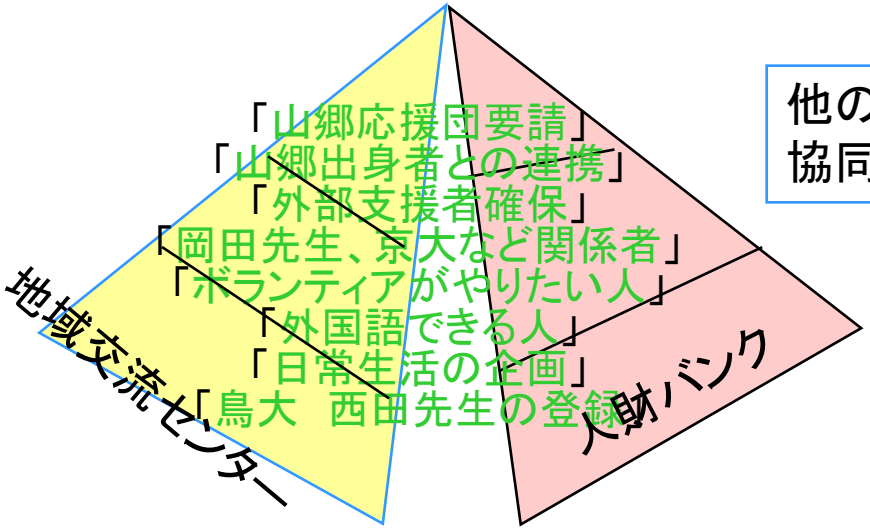
鳥取県智頭町山郷地区、2008,1,13

Before Debating

After Debating



人財バンクと地域交流センターの協同的行動開発

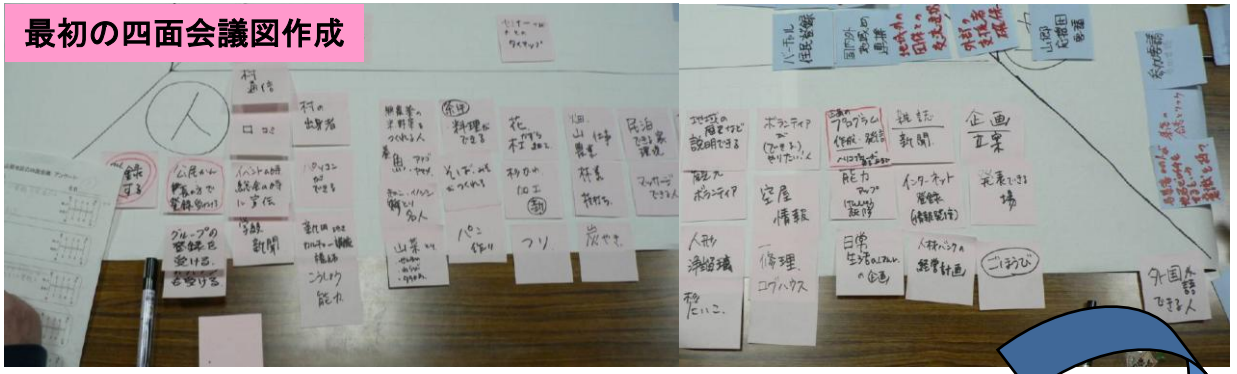


他の役割と協力することを認識して、
協同作業から、行動計画要素の実現性を高めていく

鳥取県智頭町山郷地区、2008,1,13

四面会議図の中で知識から行動化へ変換（人財から）

最初の四面会議図作成



他の役割と協力することを認識して、
協同作業から、行動計画要素の実現性を高めていく

「山郷応援団要請」
「山郷出身者との連携」
「外部支援者確保」

「岡田先生、京大など関係者」
「ボランティアがやりたい人」
「外国語できる人」
「日常生活の企画」
「鳥大　西田先生の登録」

ディベート後(完成)

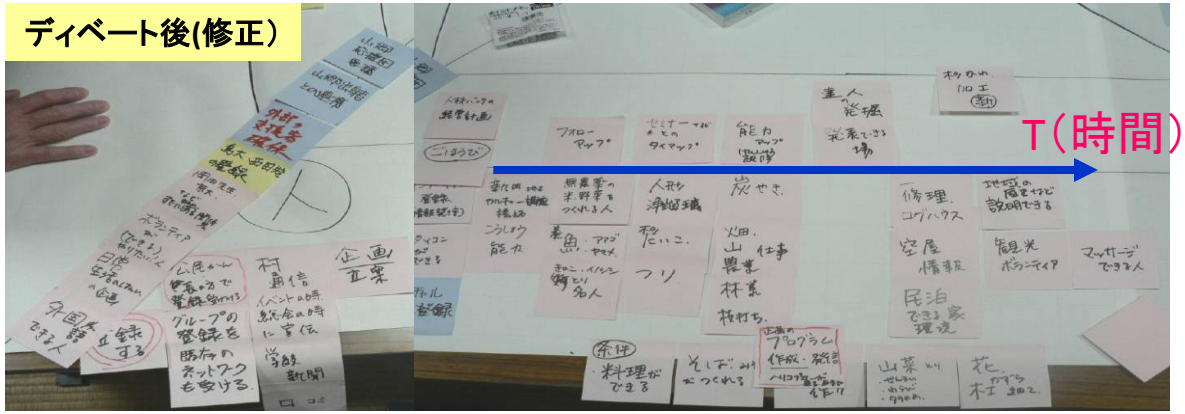
四面会議図の中で知識-行動への変換（人財から）

逆転ディベート後(完成)

52行動計画要素

1. 長期間（5－10年）まで計画案が整理、より現実性を確保
   （Knowledge to Action）
2. 行動計画案がいくつかのカテゴリ化になる
3. 長期間の行動計画案が時間順に左から右へ整理。

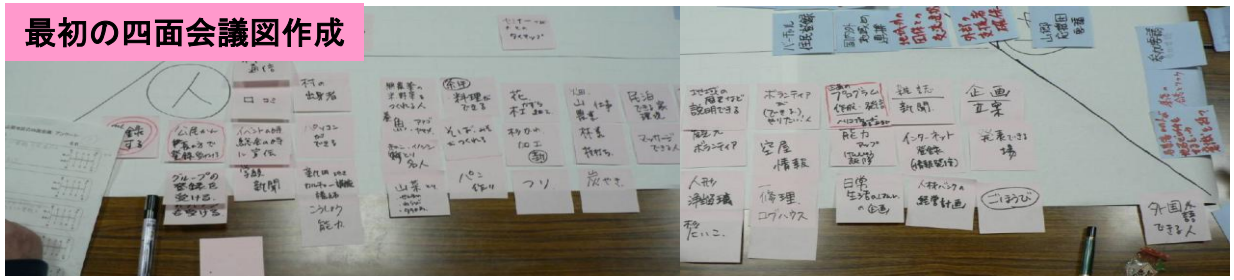
ディベート後(修正)



51行動計画要素

1. ディベート後は、行動計画案が
   時間軸に順応性を持つ
2. しかし、現実性では1年間で終わる。
3. 他の役割と協力することを認識
   （Collective Action）

最初の四面会議図作成

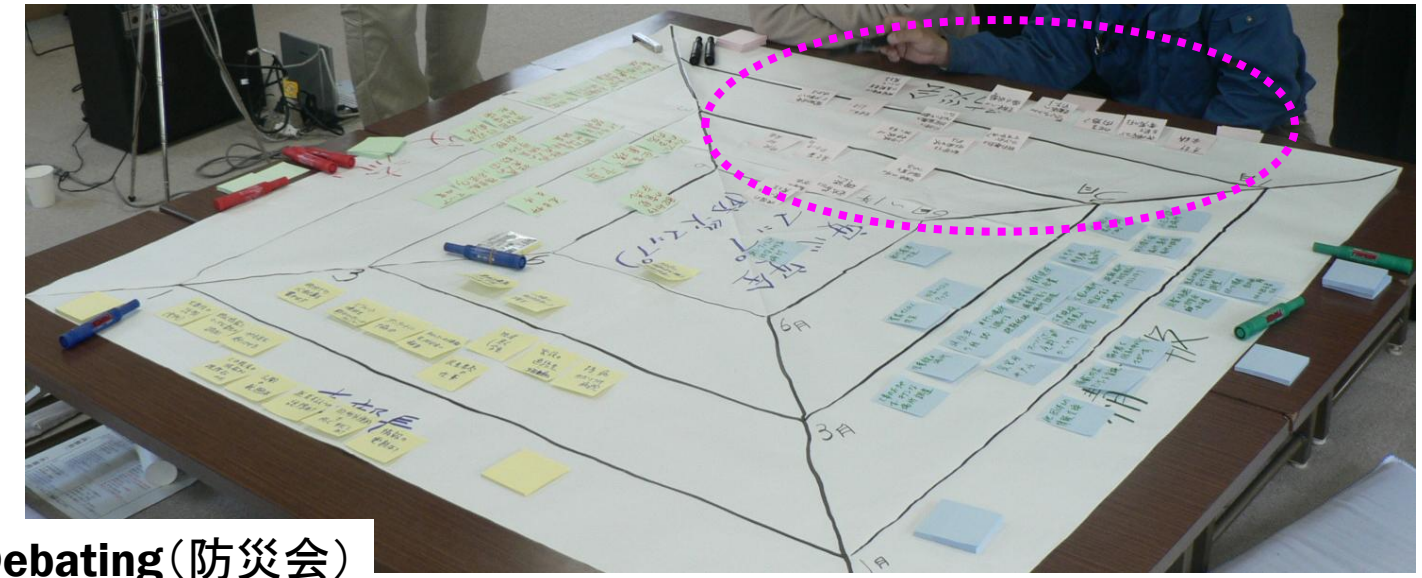


47行動計画要素

行動計画案が
3ヶ月～1年間だけで
集中している

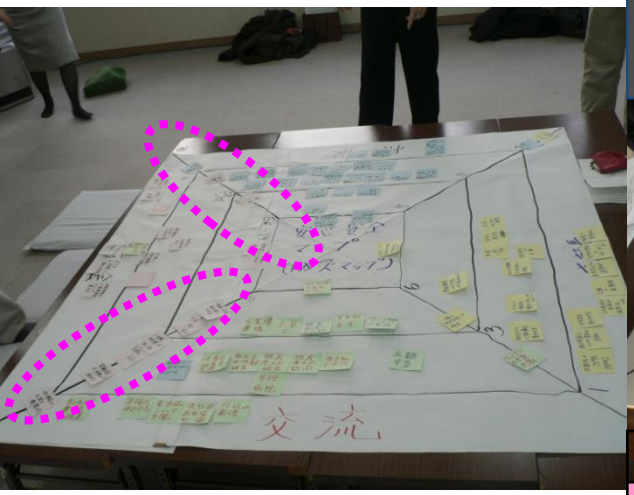
Before Debating

京都市朱八防災会、2008,1,26



After Debating

After Debating（防災会）

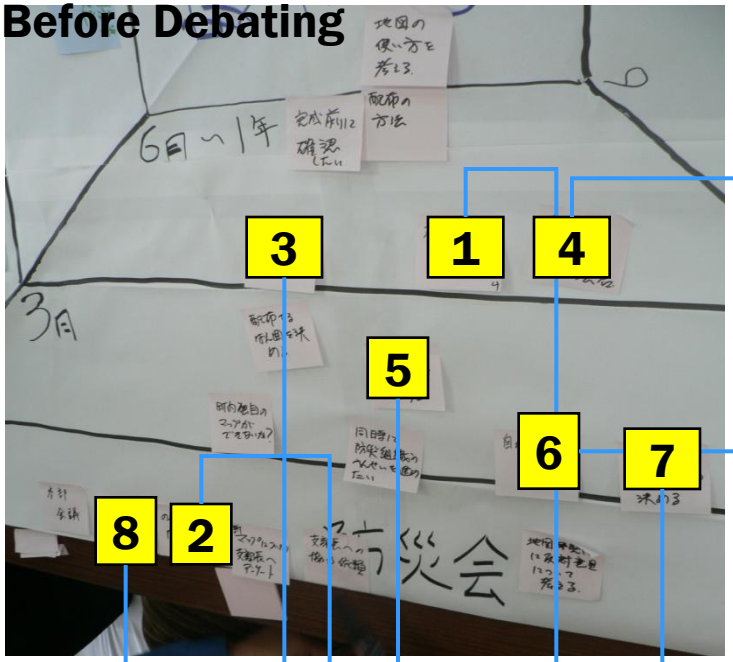


防災会の9個の行動計画要素が協同的行動開発になった。

	3ヶ月以内	3ヶ月～6ヶ月	6ヶ月～1年
防災会	9.防災マップの必要性事例を収集、	載せる内容(の確定)	1.消火器のマークつけ
	8.他の地域のマップを見て参考にする	小学校・中学校にも話しする	3.支部長以外の協力者をつのる
		自治会に要請	4.町内との会合
		参助会員も必要か決める	

京都市朱八防災会、2008,1,26

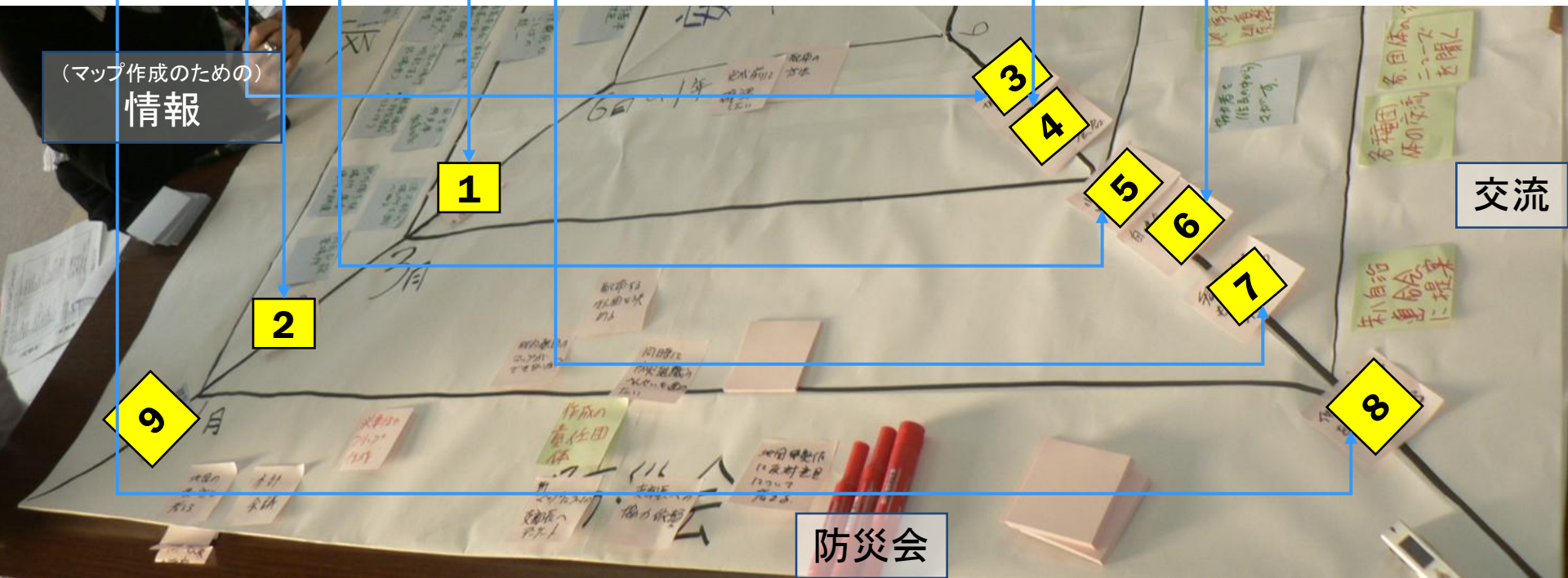
Before Debating



Collaborate Action components

安全・安心マップづくりにおいて防災会は
「載せる内容(の確定)」、「自治会に要請」、
「町内との会合」などの行動計画要素を実行のために
他のグループと協同的行動開発を行う。

After Debating



IDRiM Society: An academic initiative, a new academic society

- IDRiM Society was launched in Kyoto last year (2009) and it held its first conference in Vienna early September this year (2010).
- Before that there have been decade-long initiatives to develop and extend cross-disciplinary forums (IDRiM Forums, 2001-2009) and networking efforts made by us, DPRI and IIASA (International Institute for Applied Systems Analysis) in Austria.

1st Annual Conference of the International Society for Integrated Disaster Risk Management - IDRiM 2010: Sharing IDRiM experiences under different socio-economic and cultural contexts

at BOKU, Vienna, Austria

Sept. 1-3, 2010

http://www.idrim2010.com/

You all are welcome!
Join us in

- IDRiM Society.

  Visit http://nexus-idrim.net/idrim10/

  for information and member registration