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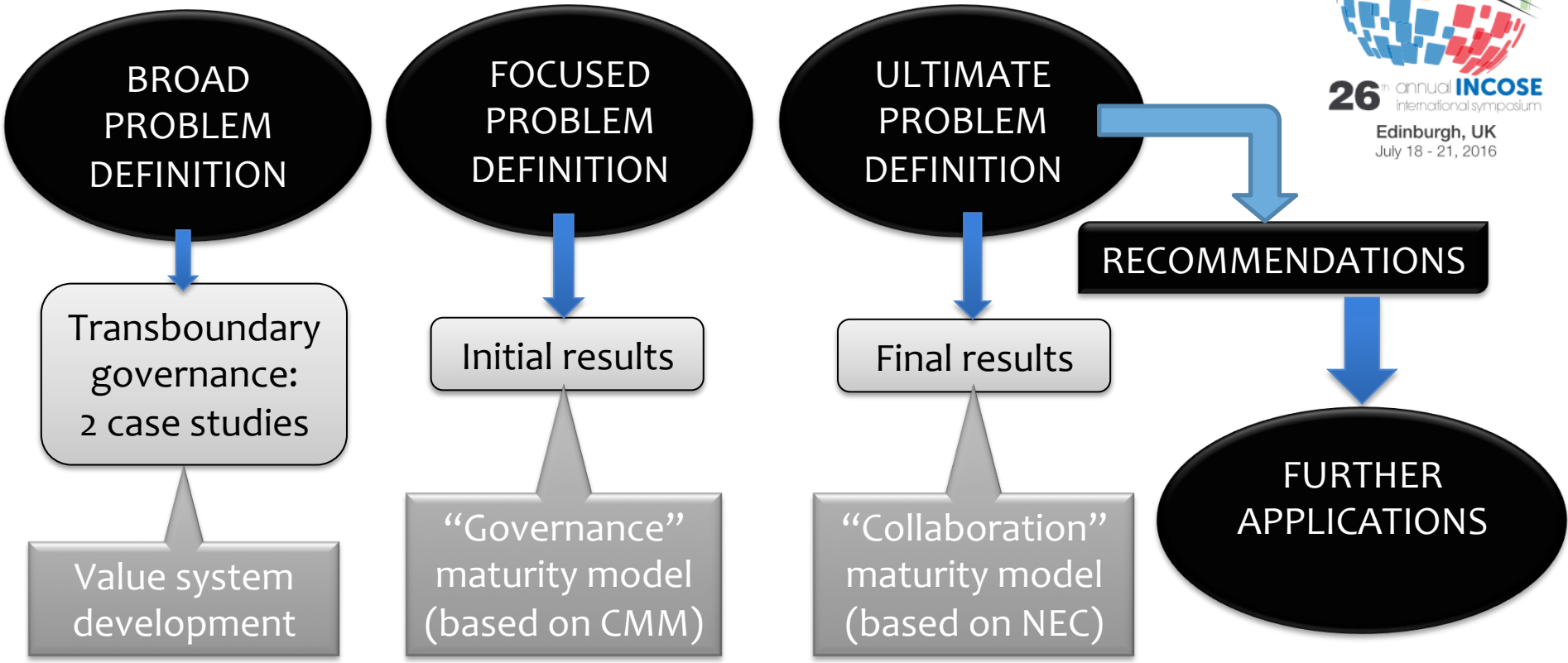
Edinburgh, UK
July 18 - 21, 2016

Using systems thinking to improve natural resource governance and strengthen weak networks

Suzi Malan PhD

Regional Inter-Agency Standing Committee Southern Africa (RIASCO)

Outline


BROAD PROBLEM DEFINITION
FOCUSED PROBLEM DEFINITION
ULTIMATE PROBLEM DEFINITION
RECOMMENDATIONS
Transboundary governance: 2 case studies
Initial results
Final results
FURTHER APPLICATIONS
Value system development
"Governance" maturity model (based on CMM)
"Collaboration" maturity model (based on NEC)

The Essence of a Systems Approach: …a few definitions

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System = a set of elements in interaction (Von Bertalanffy 1968)

= a combination of interacting system elements organized to achieve one or more stated purposes (ISO/IEC/IEEE 2008)

System science = an interdisciplinary field of science that studies the nature of **complex systems** in **nature**, **society**, and **science**. It aims to develop **interdisciplinary** foundations, which are applicable in a variety of areas, such as engineering, biology, medicine and social sciences (Farlex 2012)

System of systems = a collection of task-oriented or dedicated systems that pool their resources and capabilities together to create a new, more complex system which offers more functionality and performance than simply the sum of the constituent systems (Systems Engineering Body of Knowledge (SEBoK))

Forms of resource governance of systems that span international boundaries

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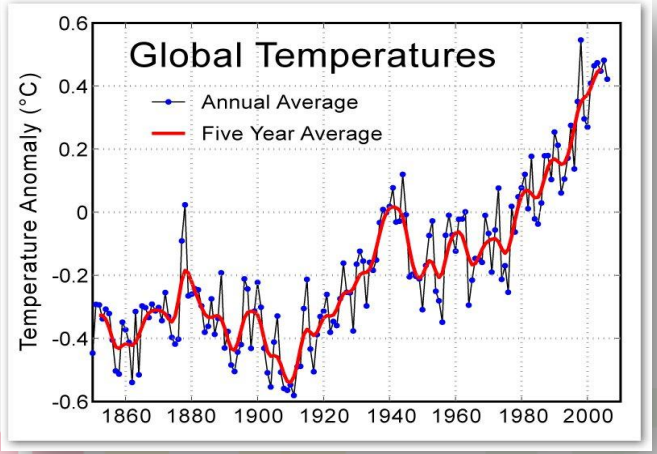
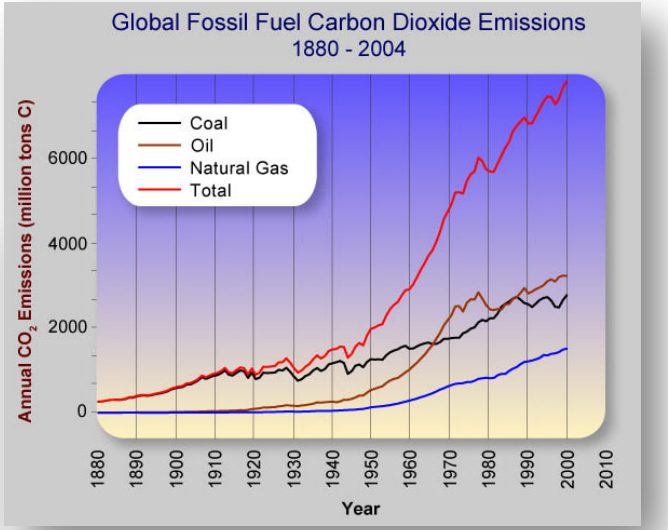
Governance of **shared resources** and **ecosystems** across **national boundaries**

Shared air and **climate**





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Governance of **shared resources** and **ecosystems** across **national boundaries**

Shared river systems

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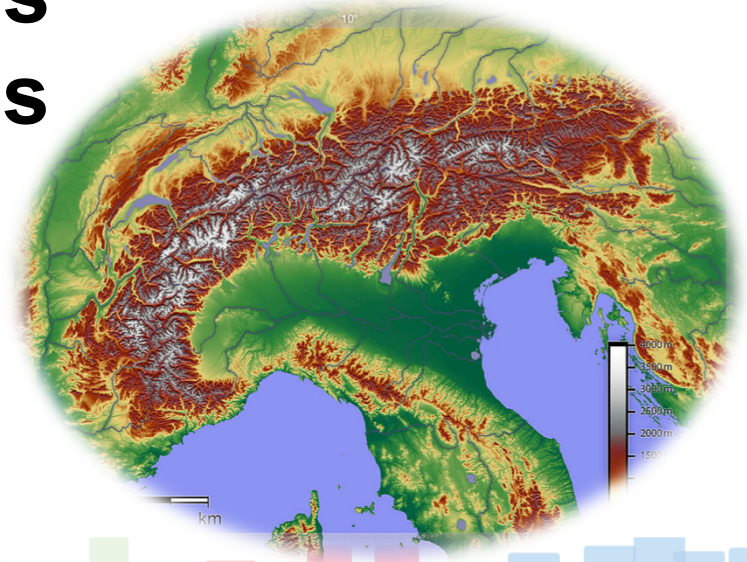
Governance of **shared resources** and **ecosystems** across **national boundaries**

Shared mountain systems



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Governance of **shared resources** and **ecosystems** across **national boundaries**

Shared water bodies

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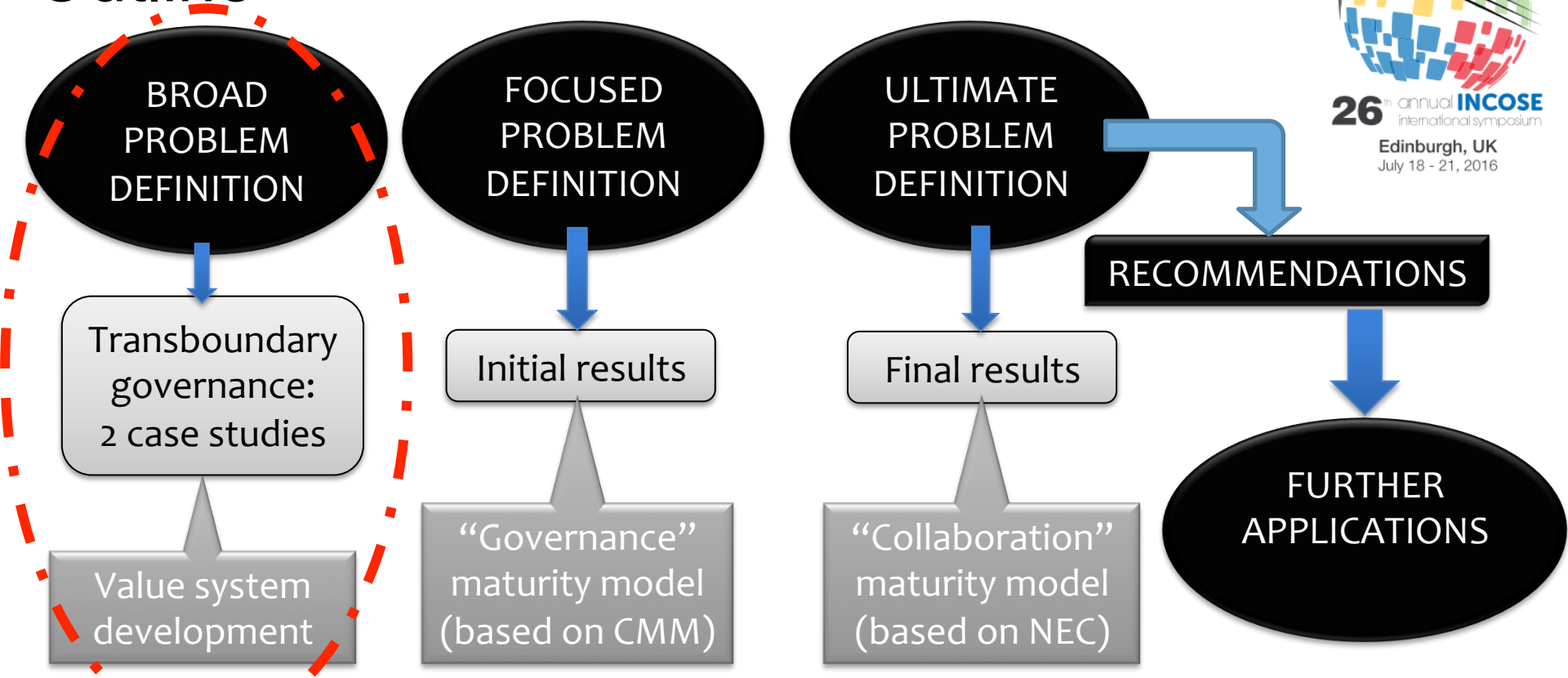
Governance of **shared resources** and **ecosystems** across **national boundaries**

Shared protected areas

SEAN workshop strengthens transboundary protected area management

Outline



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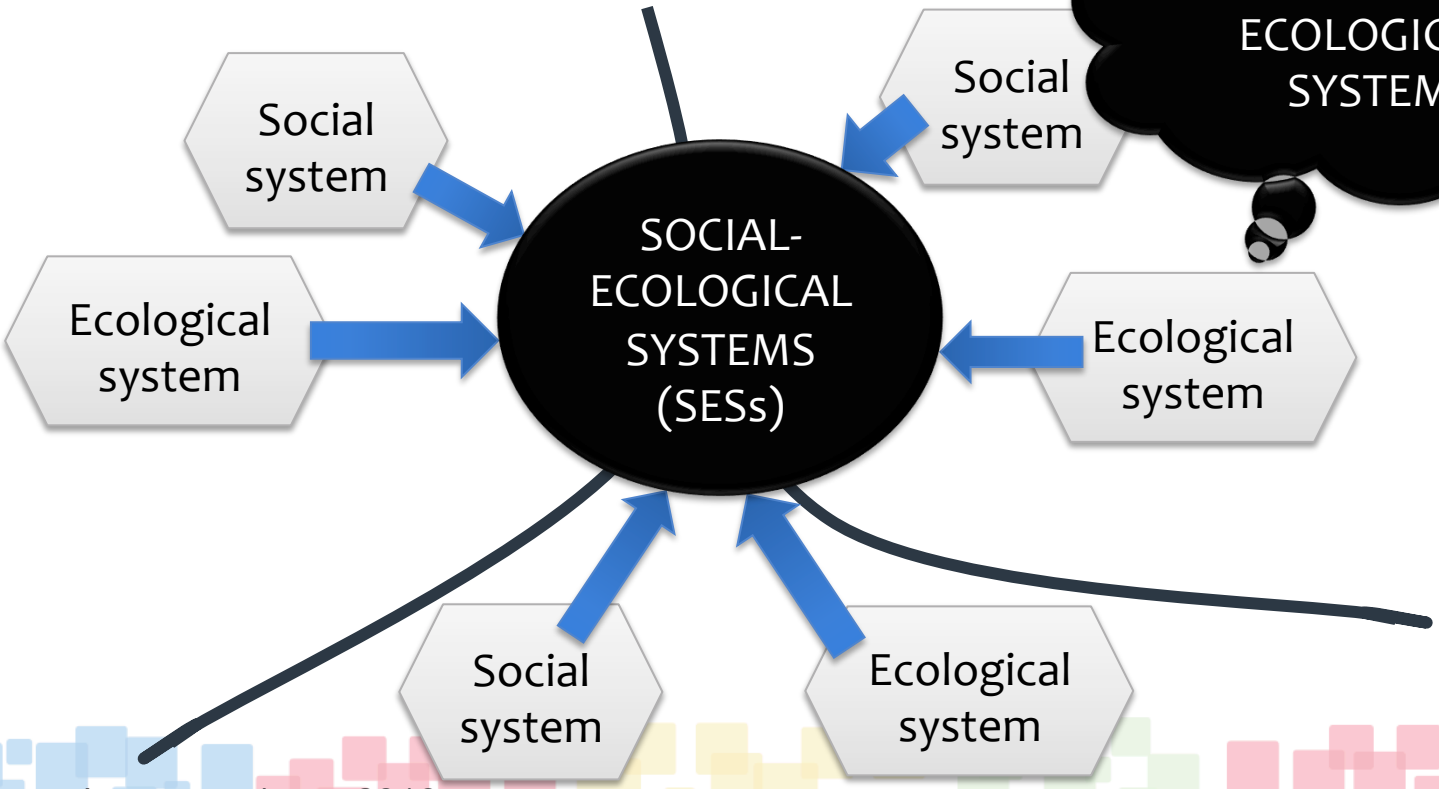
Broad problem definition

Transboundary resource governance



Embedded case study research: 2 case studies

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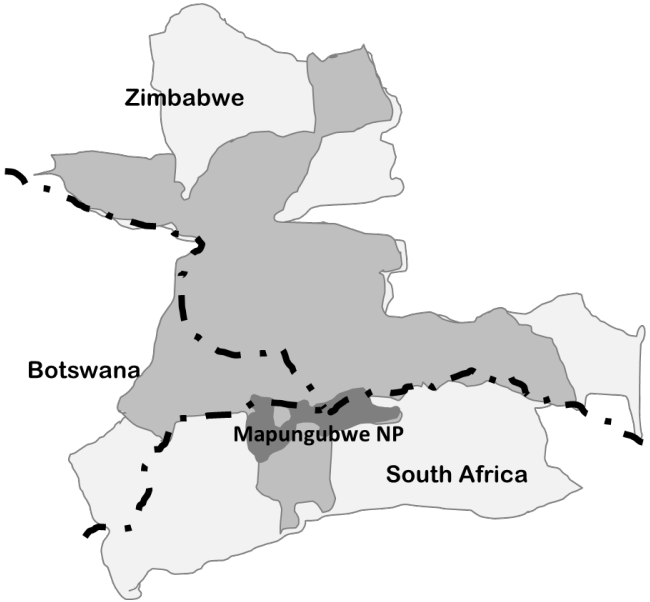
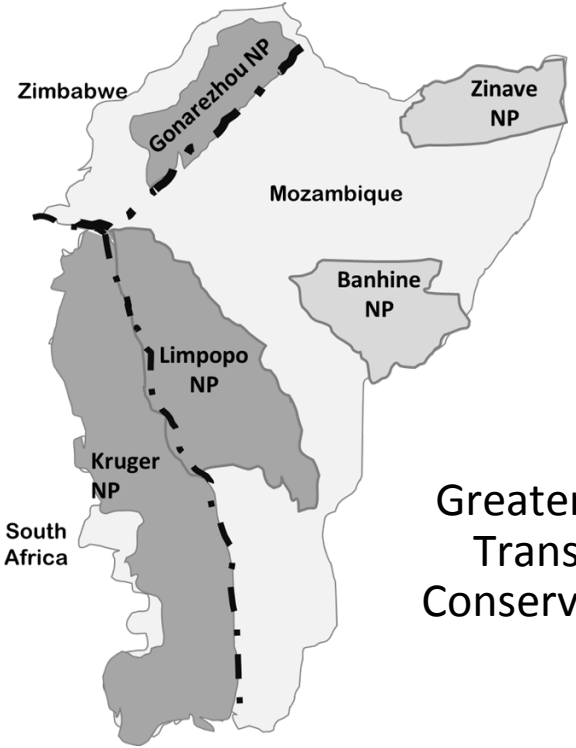
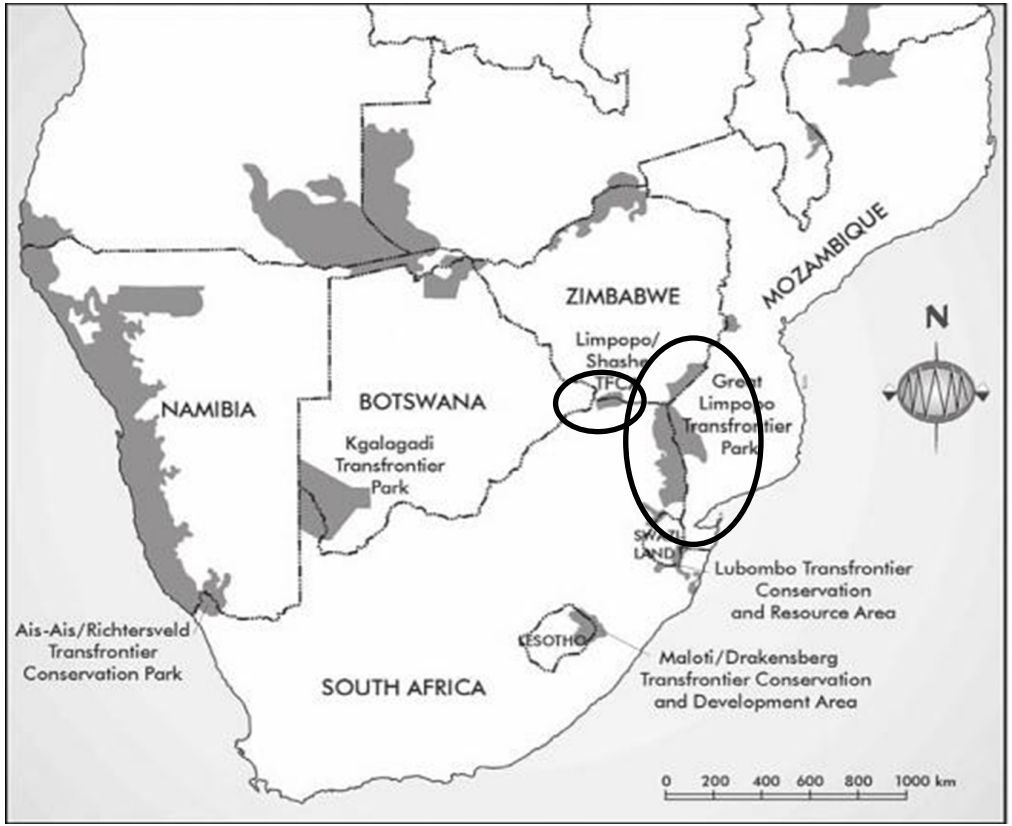
Greater Mapungubwe Transfrontier Conservation Area





Greater Limpopo Transfrontier Conservation Area



(Ramutsindela 2007)

Qualitative Research involving Mixed Methods

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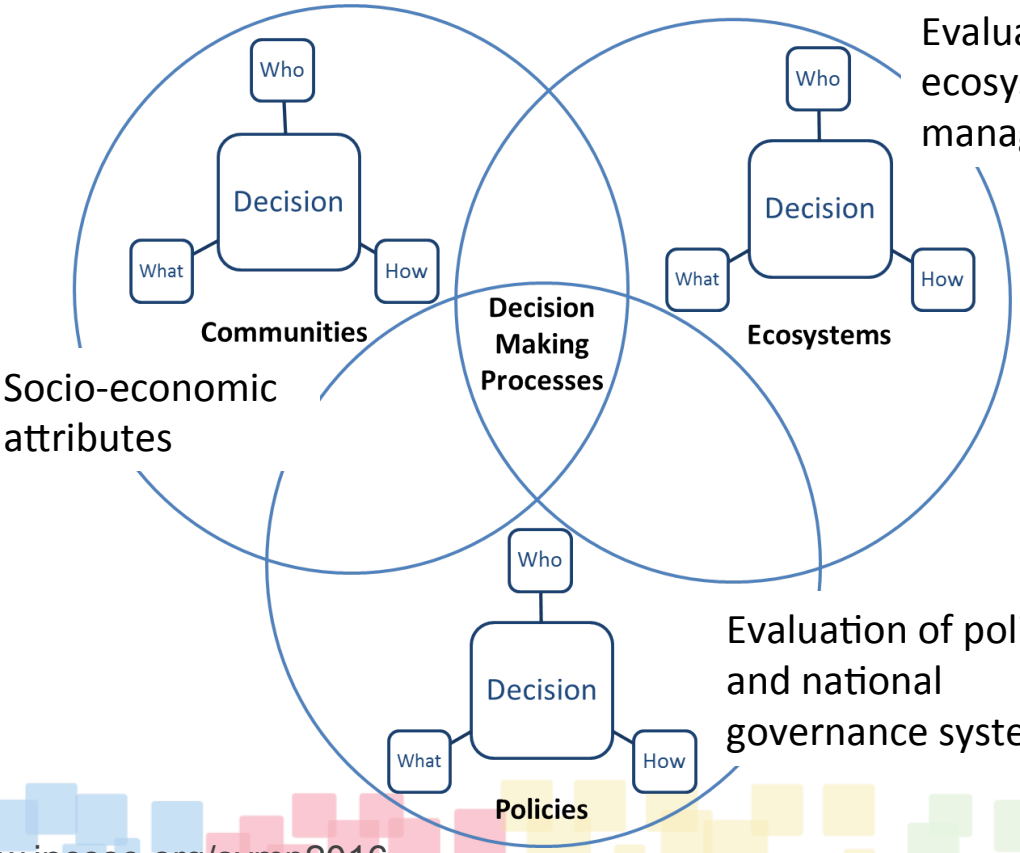
- 103 semi-structured interviews
- 16 questionnaires
- Meetings with all levels of decision makers
- 10 Mental Model Workshops
- Treaty documents, IDPs, workshop reports, policy documents

Three-dimensional approach

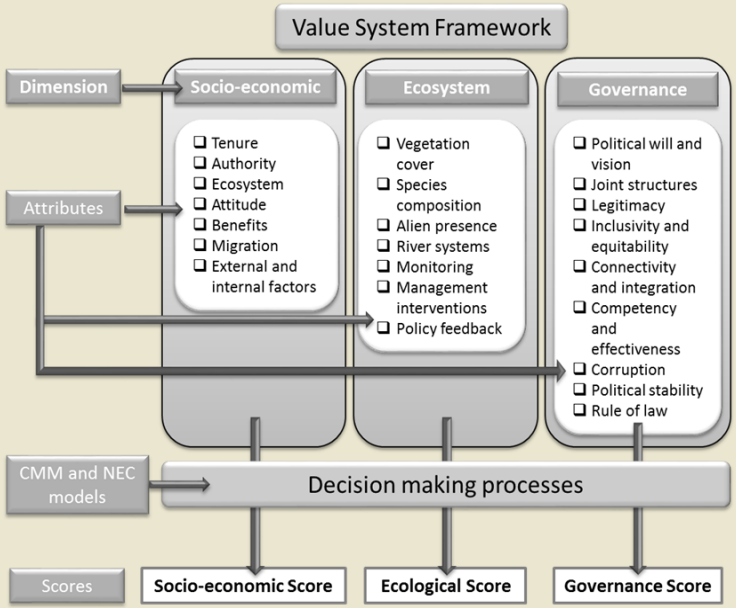


Meta review of:

- community-based conservation,
- ecosystem management,
- transboundary conservation governance

→ **3 metrics**

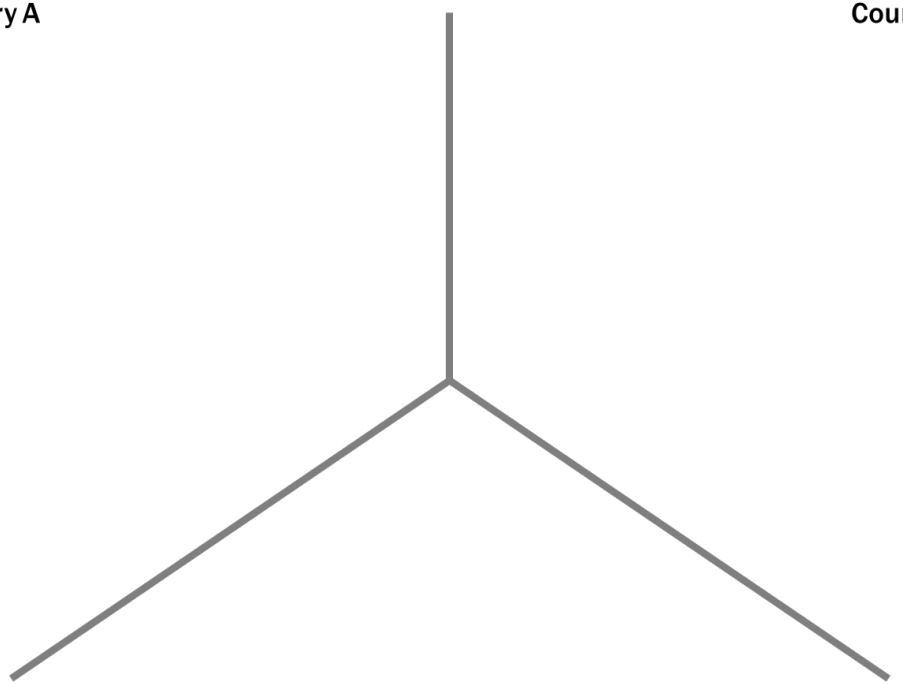
Using value system development to evaluate system performance



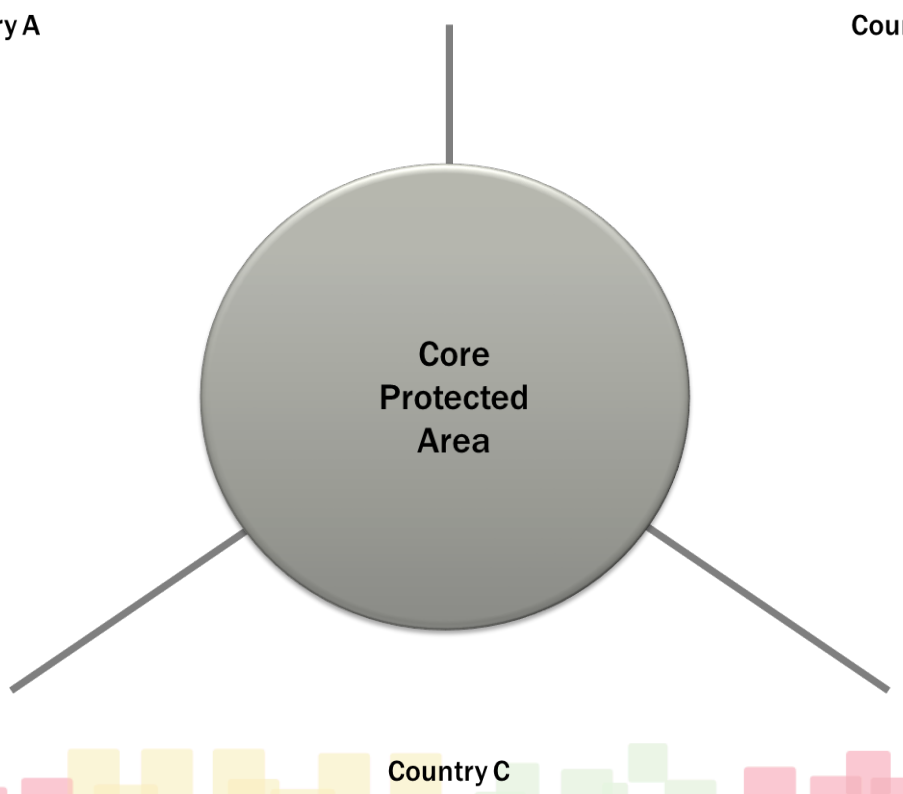
Research Steps

- Develop socio-economic, ecosystem and governance metrics from literature and management best practices
- Identify key stakeholders and decision makers in each case study
- Score attributes according to the metric for each of:
  - ✓ Socio-economic stakeholders (interviews and surveys)
  - ✓ Ecosystems (based on existing data bases, interviews with park ecologists, and observation)
  - ✓ Government institutions at local, regional and national level
- Use value scores to develop management framework – evaluate decision-making structure through logical analysis within the theoretical model

Results



Results



Results

Socio-economic disparity

- Population size and distribution within buffer zone as well as core PA
- Economic welfare
- Tenure system and ownership
- Infrastructure
- Self-organization
- **Value systems**

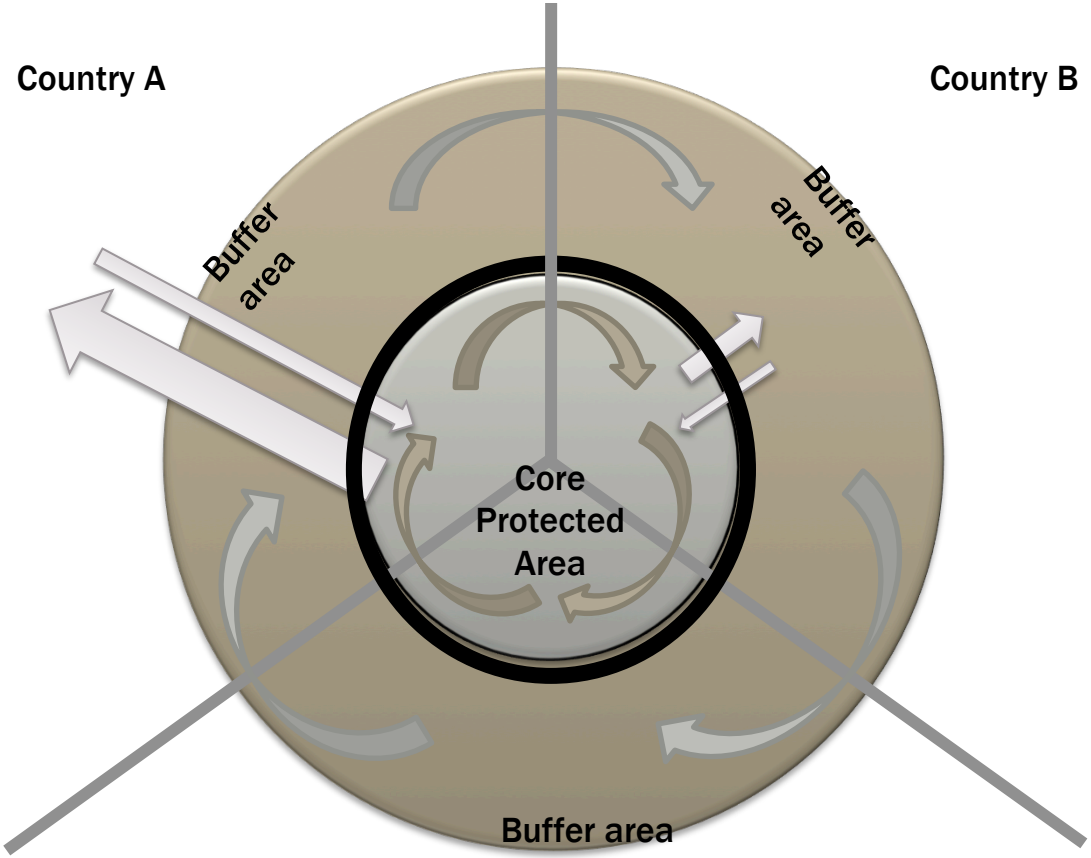
Political disparity

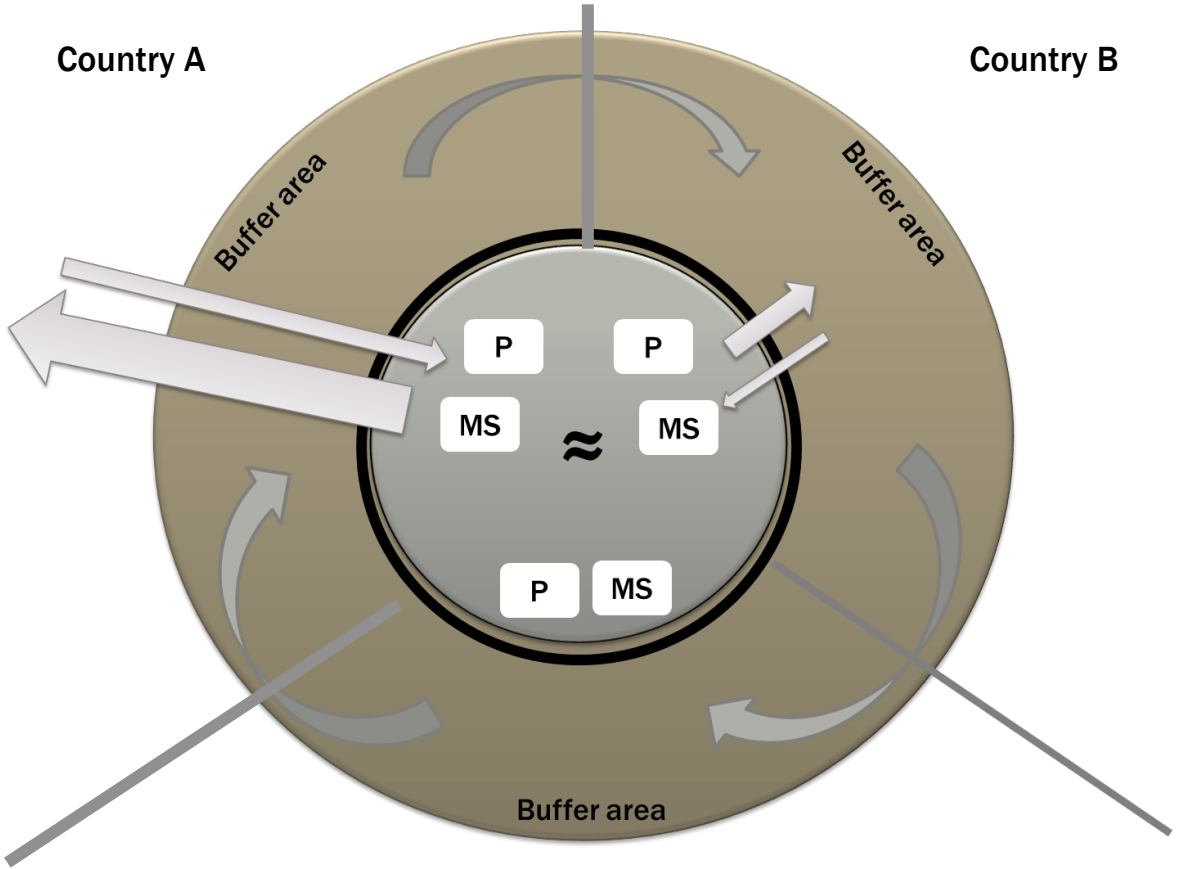
- History of conflict
- Political stability/instability
- Institutional disparity
- Resource allocation
- Policy disparity
- Priority disparities

Ecosystems disparity

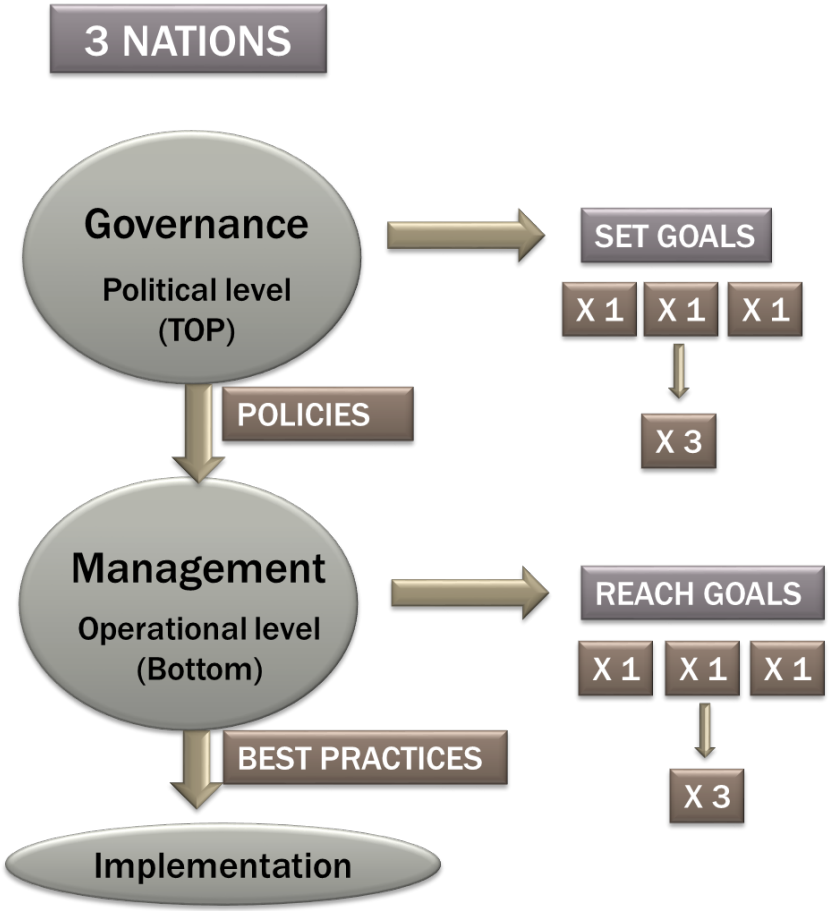
- Population size and distribution of some species (elephants in Tuli)
- Different fire regimes, biodiversity differences
- Different management systems – current and past
- Infrastructure

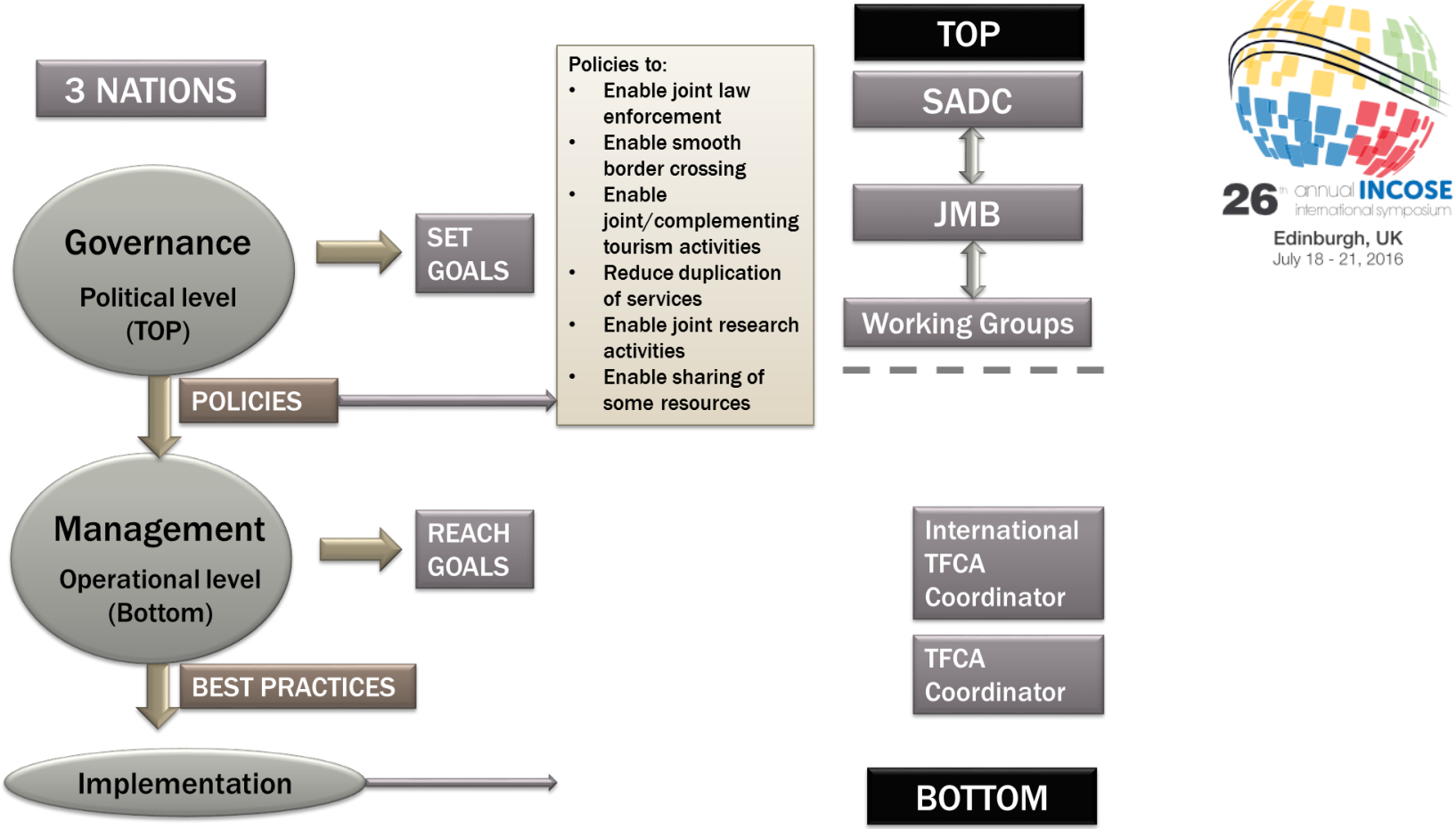
Disequilibrium = where there is pressure, there will be flow

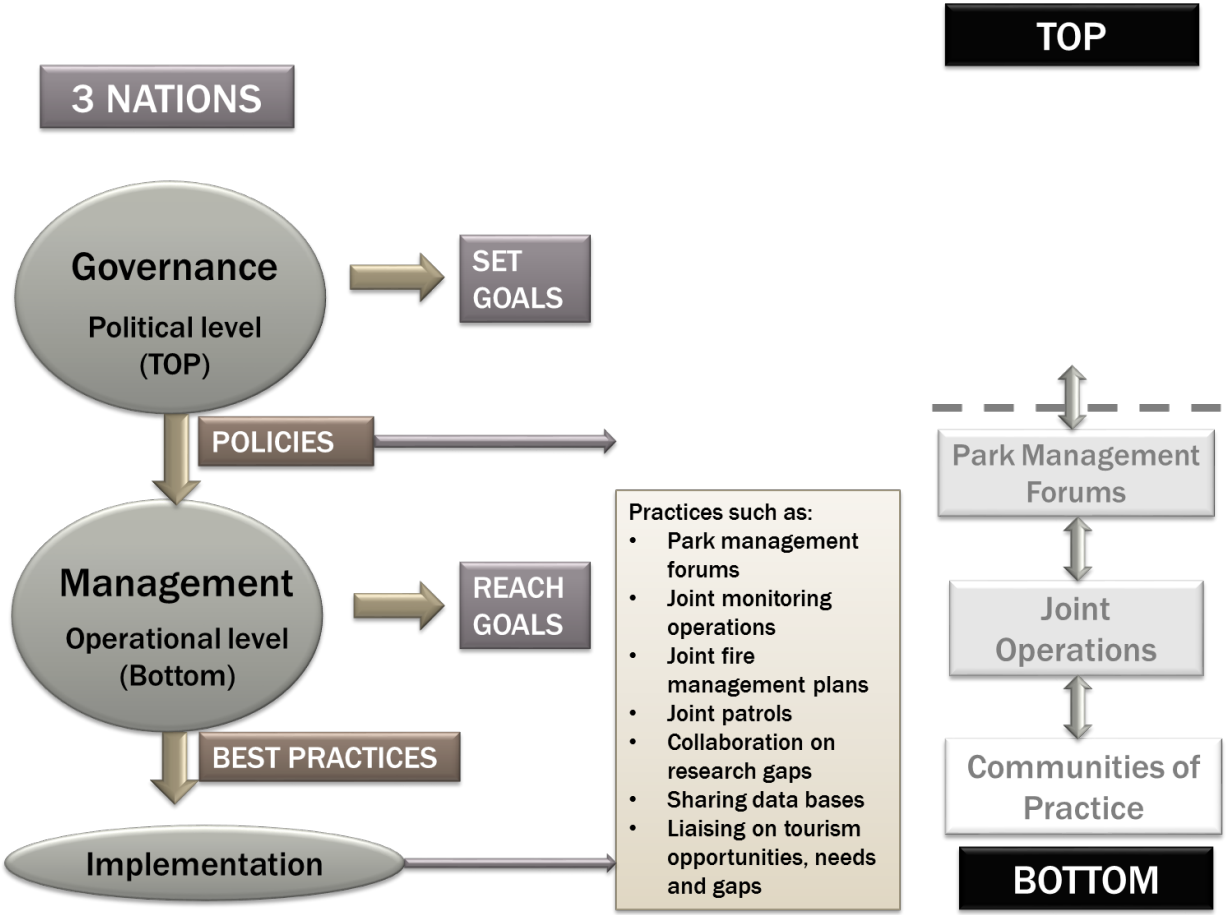

Country A
Country B
Buffer area
Buffer area
Core Protected Area
Buffer area

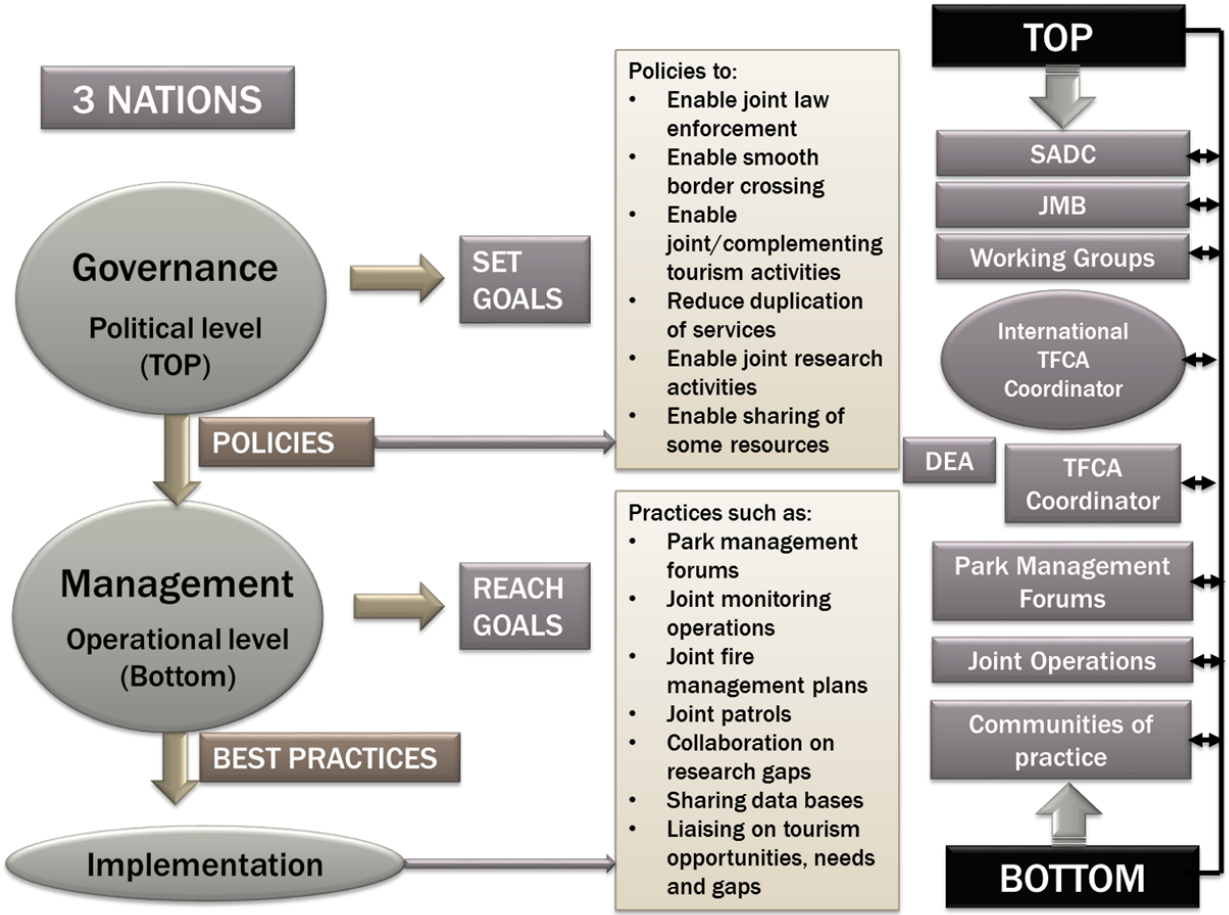

Country A
Country B
Buffer area
Buffer area
P
P
MS
≈
MS
P
MS
Buffer area
Country C


ACROSS 3 NATIONS
STRATEGIC
Governance
Political level
("Top")
SET GOALS
POLICIES
OPERATIONAL
Management
Operational level
("Bottom")
REACH GOALS
BEST PRACTICES
Implementation


3 NATIONS
Governance
Political level
(TOP)
SET GOALS
X 1
X 1
X 1
X 3
POLICIES
Management
Operational level
(Bottom)
REACH GOALS
X 1
X 1
X 1
X 3
BEST PRACTICES
Implementation


3 NATIONS
Governance
Political level
(TOP)
SET GOALS
POLICIES
Policies to:
• Enable joint law enforcement
• Enable smooth border crossing
• Enable joint/complementing tourism activities
• Reduce duplication of services
• Enable joint research activities
• Enable sharing of some resources
TOP
SADC
JMB
Working Groups
Management
Operational level
(Bottom)
REACH GOALS
BEST PRACTICES
International TFCA Coordinator
TFCA Coordinator
Implementation
BOTTOM


TOP
3 NATIONS
Governance
Political level
(TOP)
SET GOALS
POLICIES
Management
Operational level
(Bottom)
REACH GOALS
BEST PRACTICES
Implementation
Practices such as:
• Park management forums
• Joint monitoring operations
• Joint fire management plans
• Joint patrols
• Collaboration on research gaps
• Sharing data bases
• Liaising on tourism opportunities, needs and gaps
Park Management Forums
Joint Operations
Communities of Practice
BOTTOM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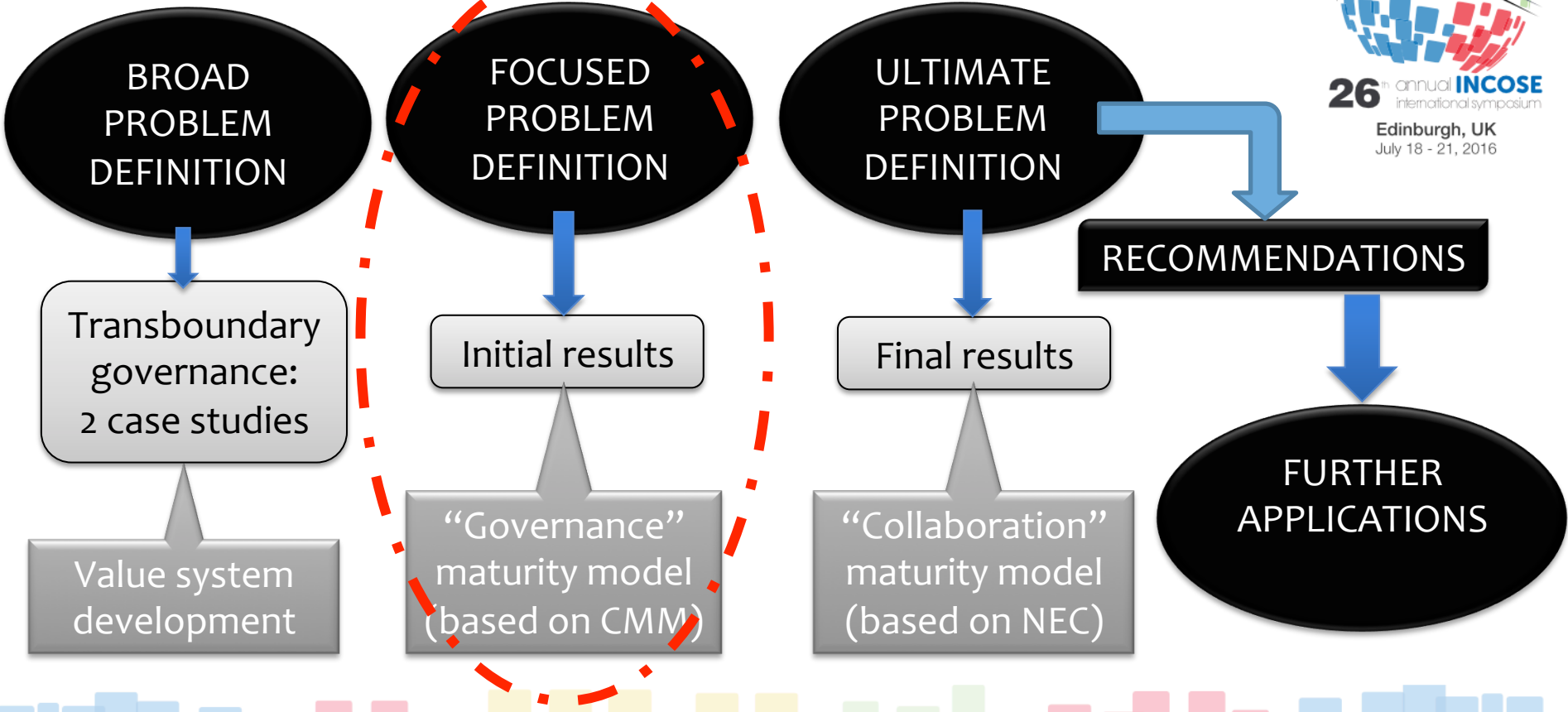
DEA
TFCA Coordinator
Park Management Forums
Joint Operations
Communities of practice
BOTTOM

Outline



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Capability Maturity Model (CMM) of Organizational Performance

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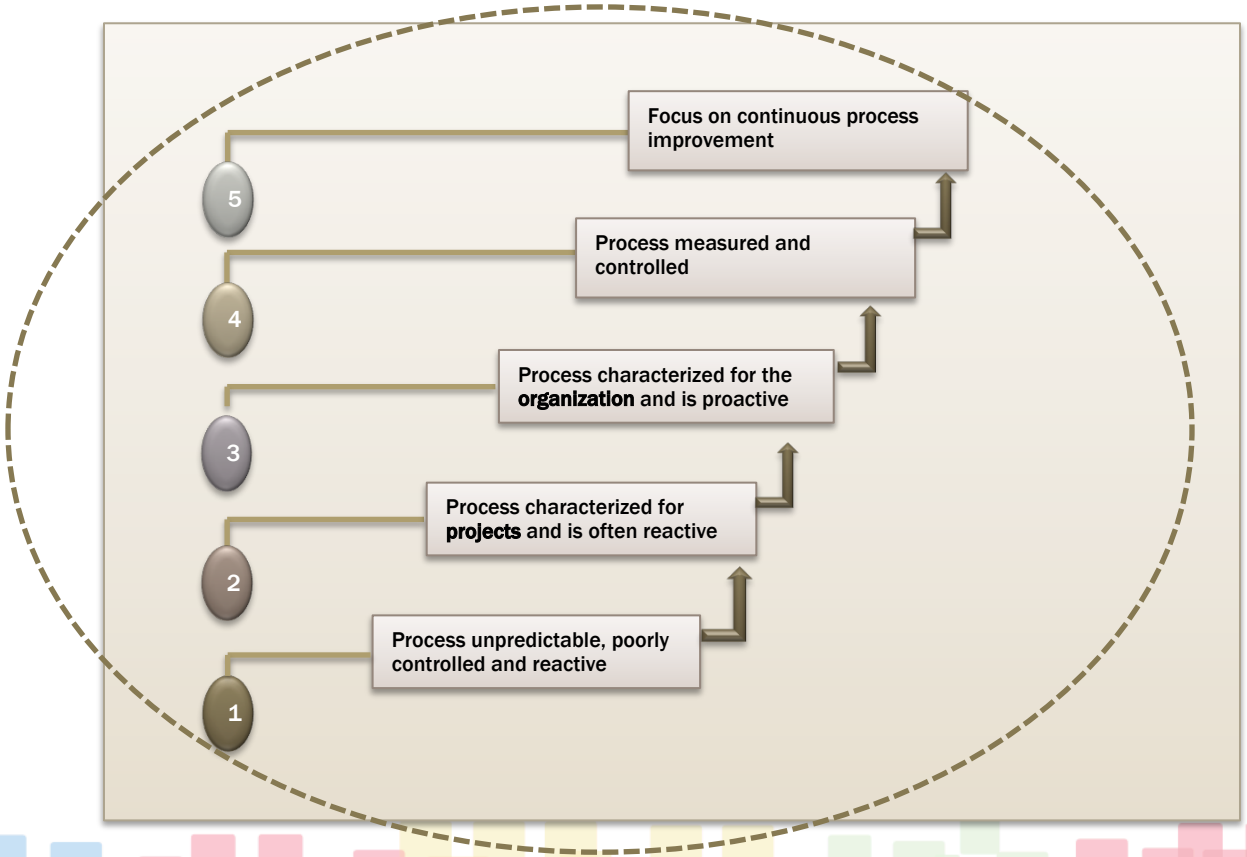
Focuses on elements of essential practices and processes, and;

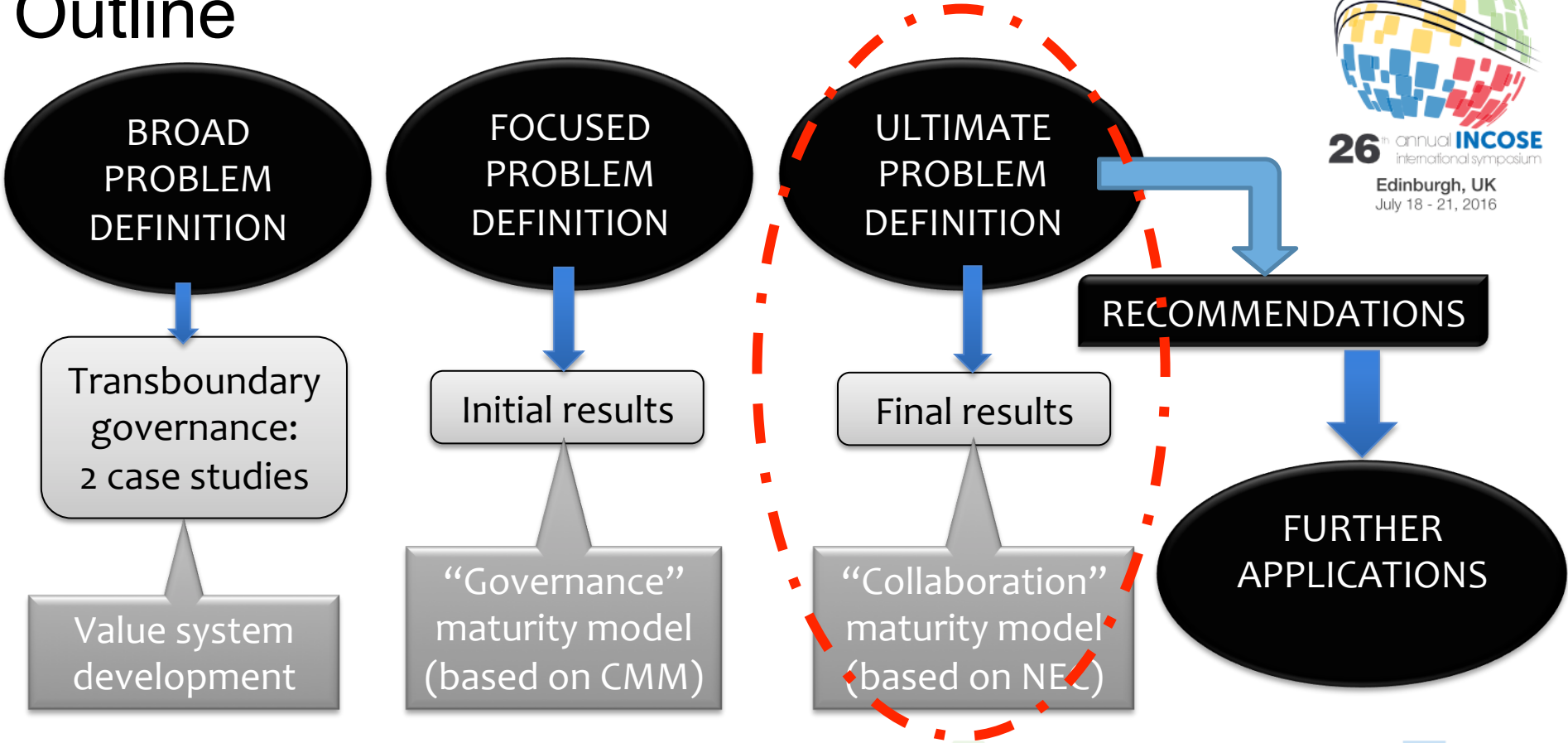
Describes common sense, efficient, proven ways of running an organization, doing business, or managing an administration

(Curtis *et al*. 2009)

5 levels of maturity:



Outline



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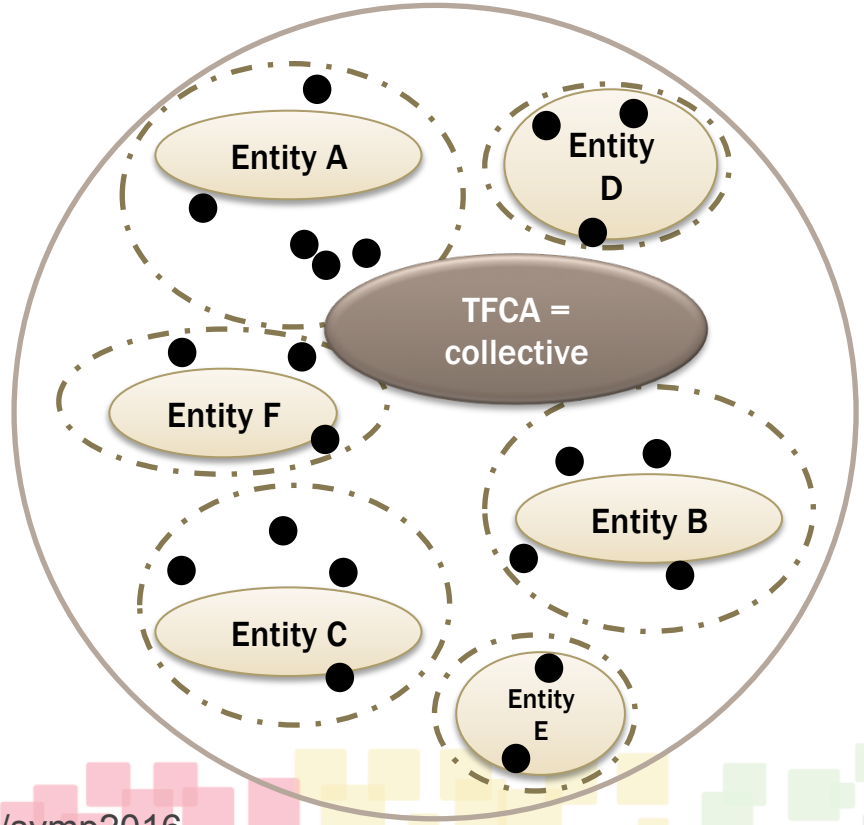
Network Enabled Capability Model

(NATO)



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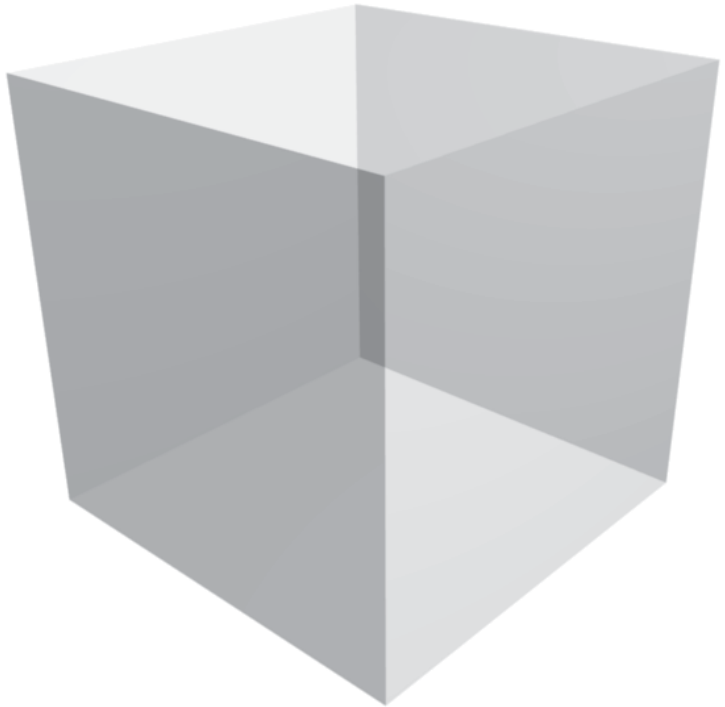
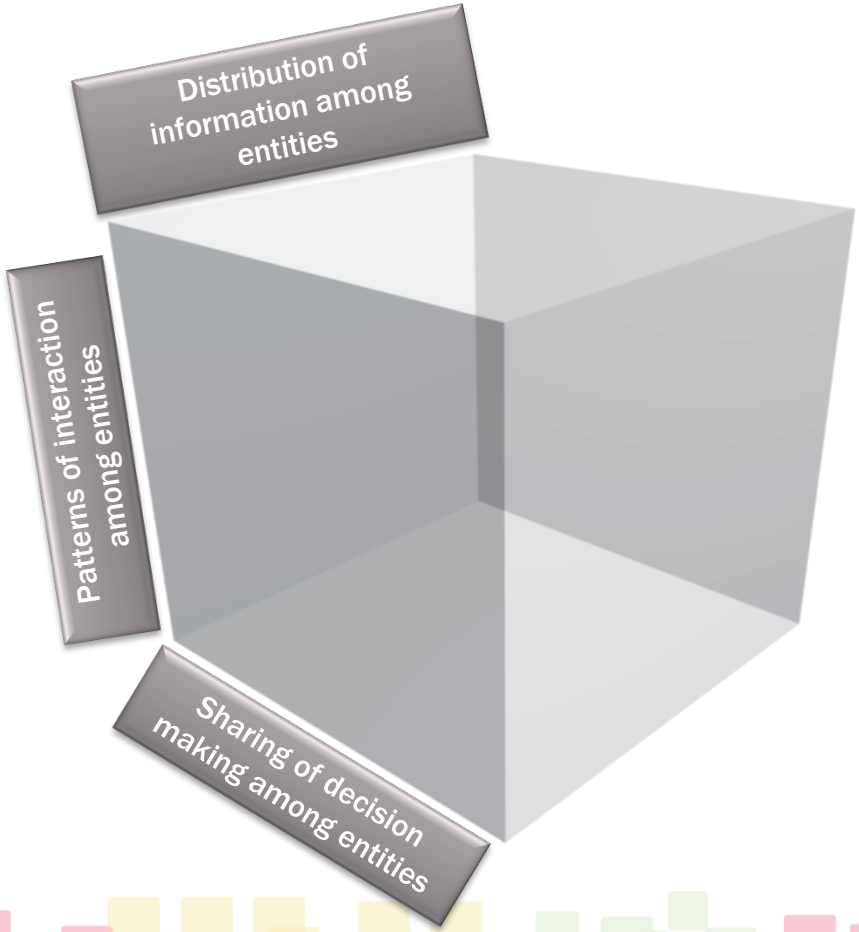
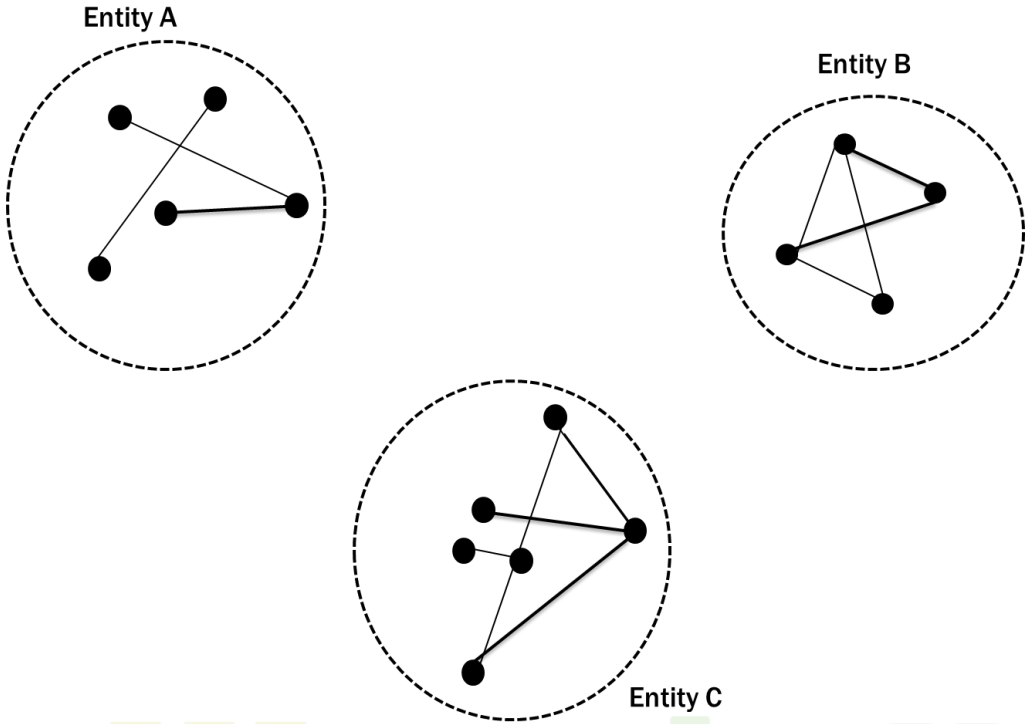
- Distribution of information among entities
- Patterns of interaction among entities
- Sharing of decision making among entities

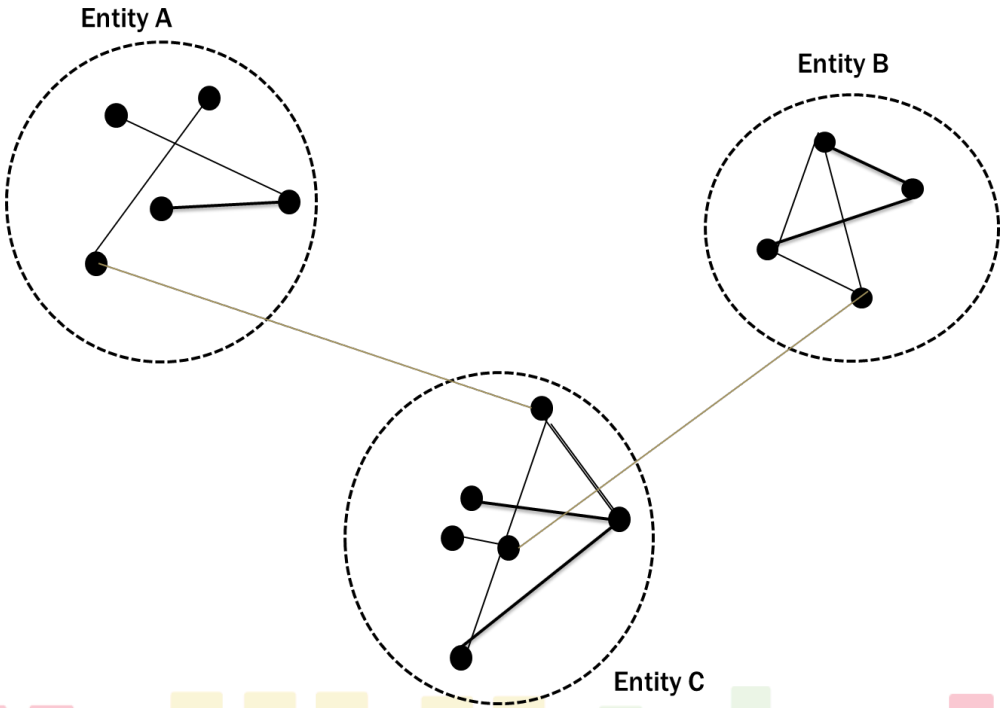



Distribution of information among entities
Patterns of interaction among entities
Sharing of decision making among entities

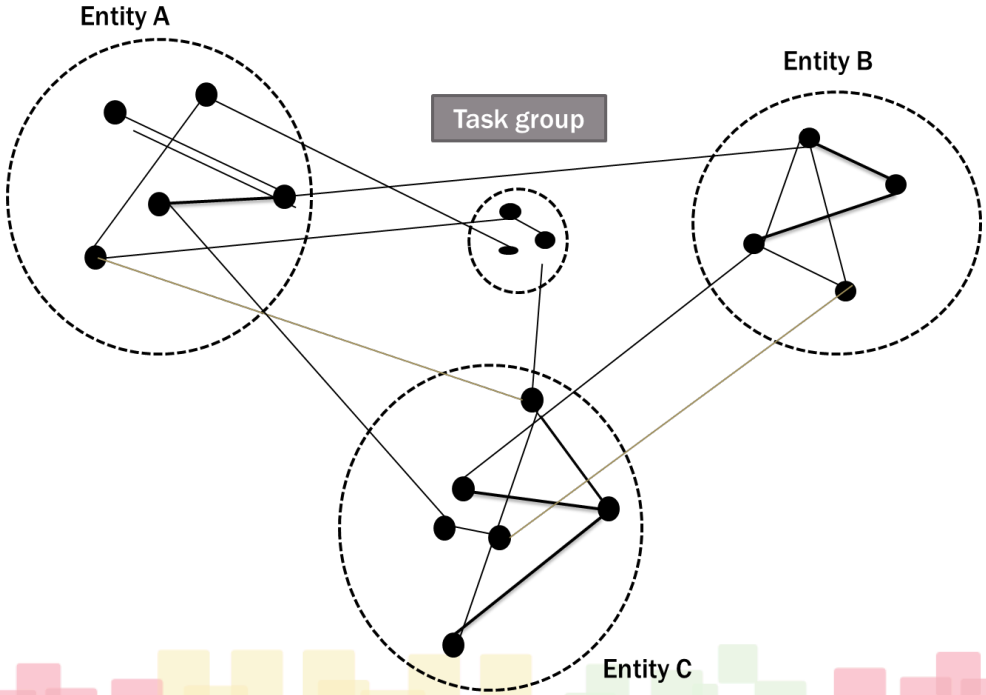
Disjointed – no sharing of decision making, information or interaction



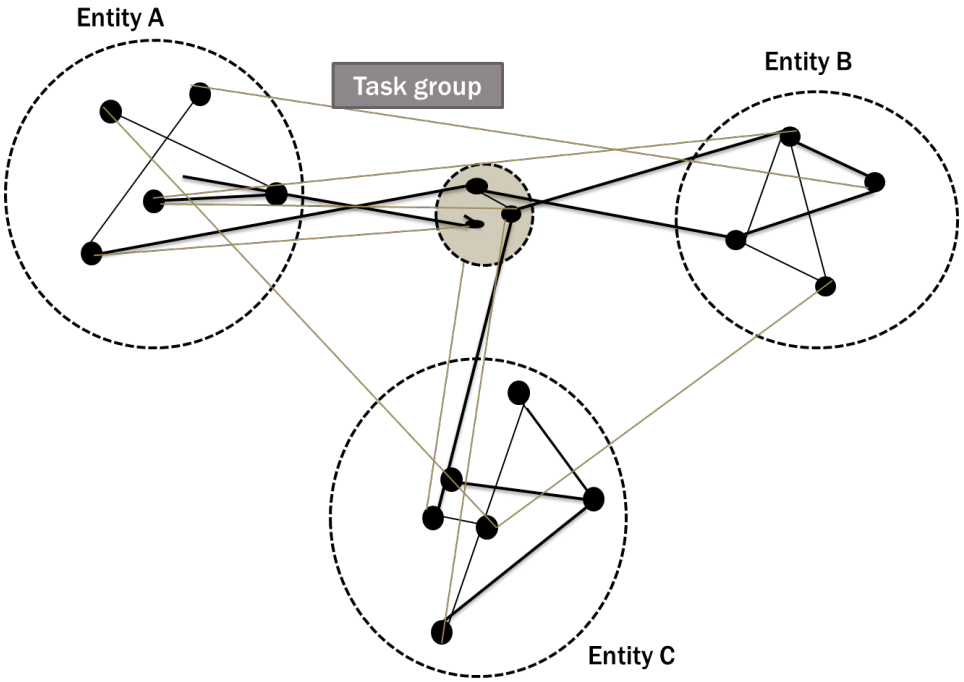
Ad Hoc – distribution of information or decision rights on ad hoc basis, very little focused interaction



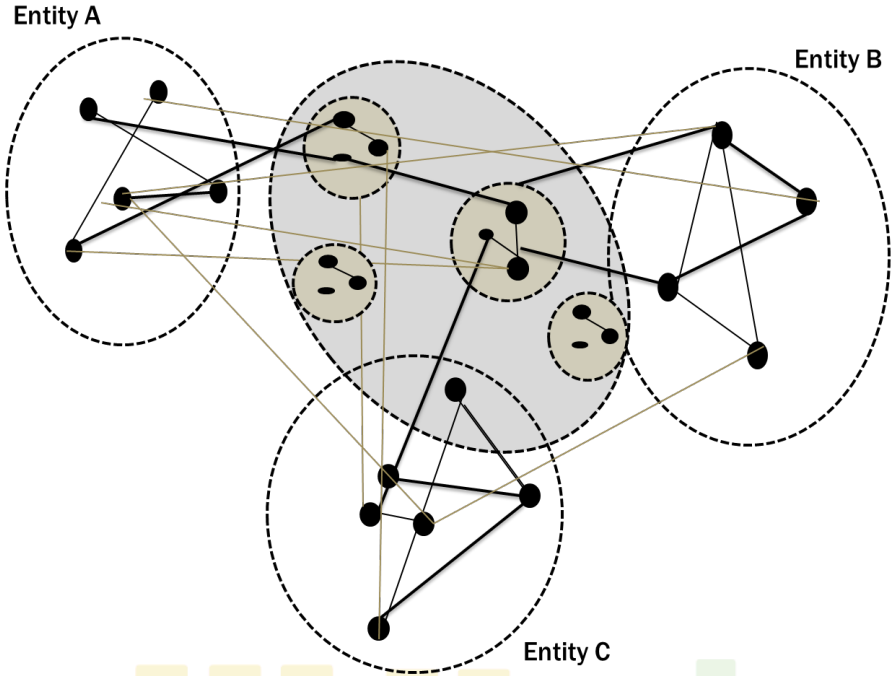
Coordinated – objective is to increase effectiveness; seek mutual intent, and start developing roles and responsibilities

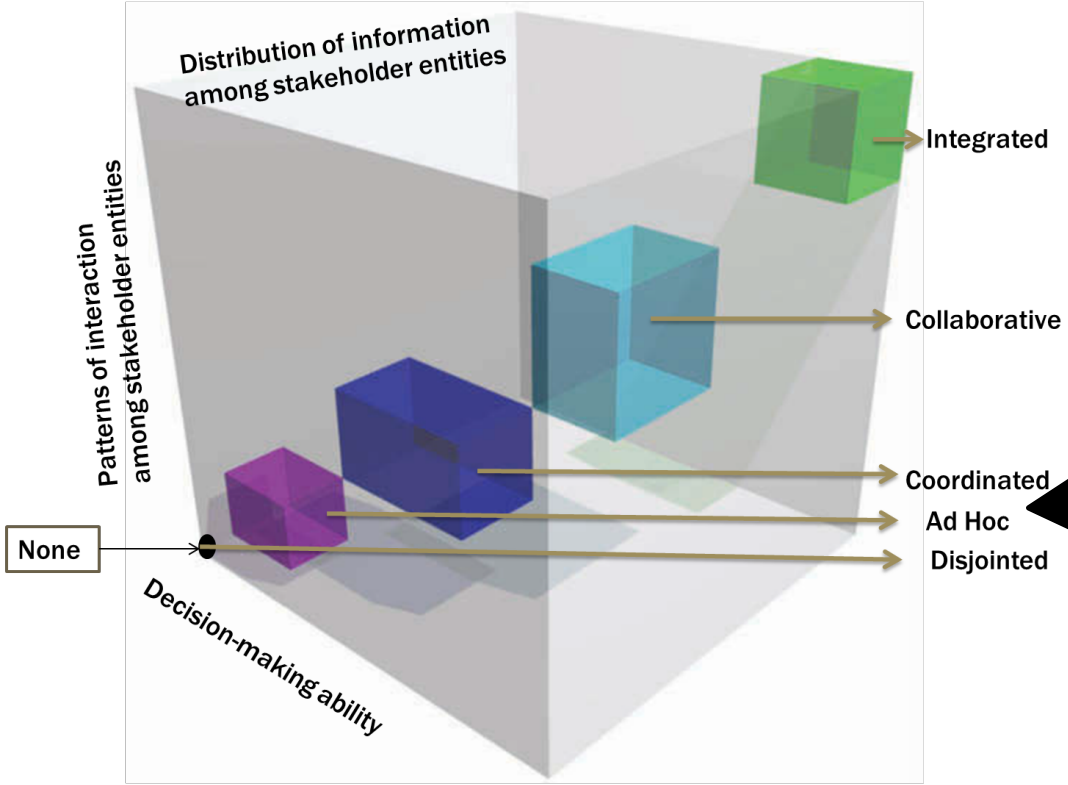


Collaborative – a collective intent and shared plan exists; collaborative development of single shared plan



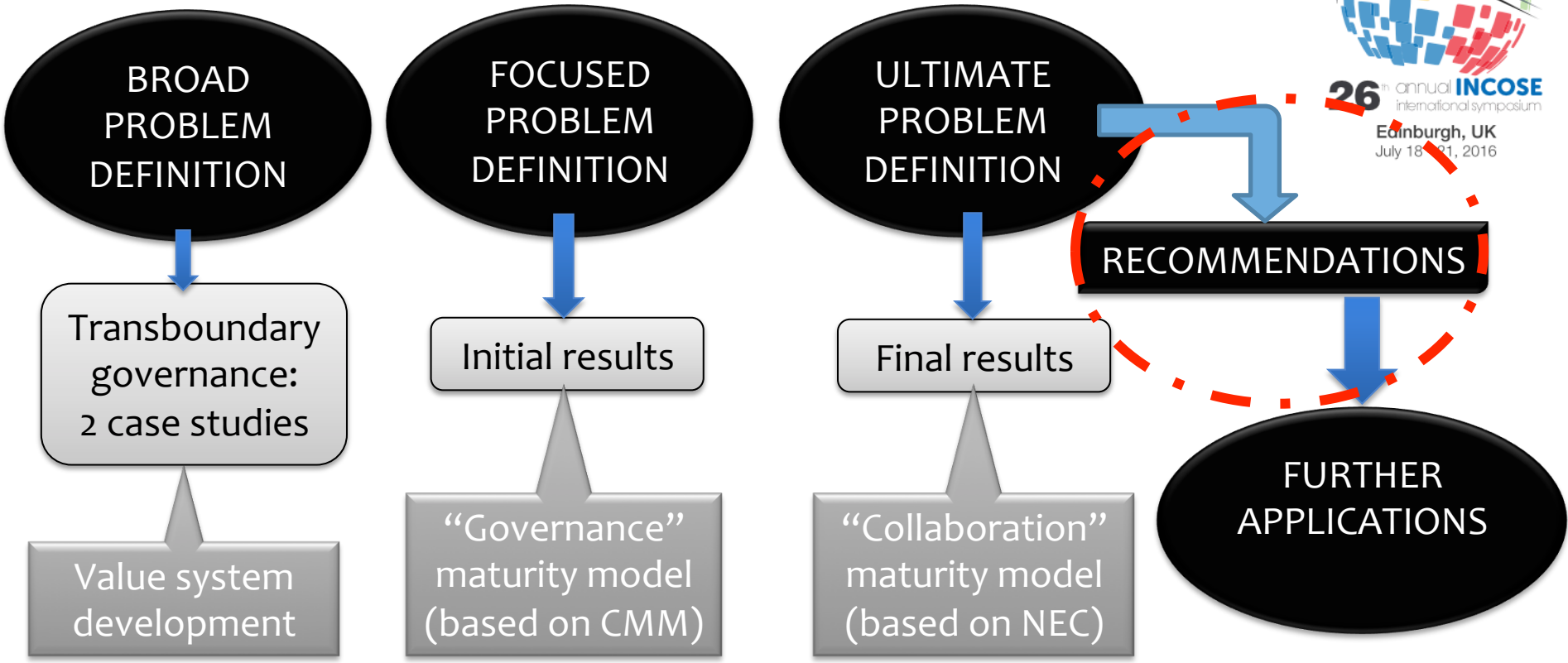
Integrated – a collective intent and shared plan exists; self-synchronization of shared plans – the shared entity takes on its own identity





Two case studies currently function somewhere between these two

Outline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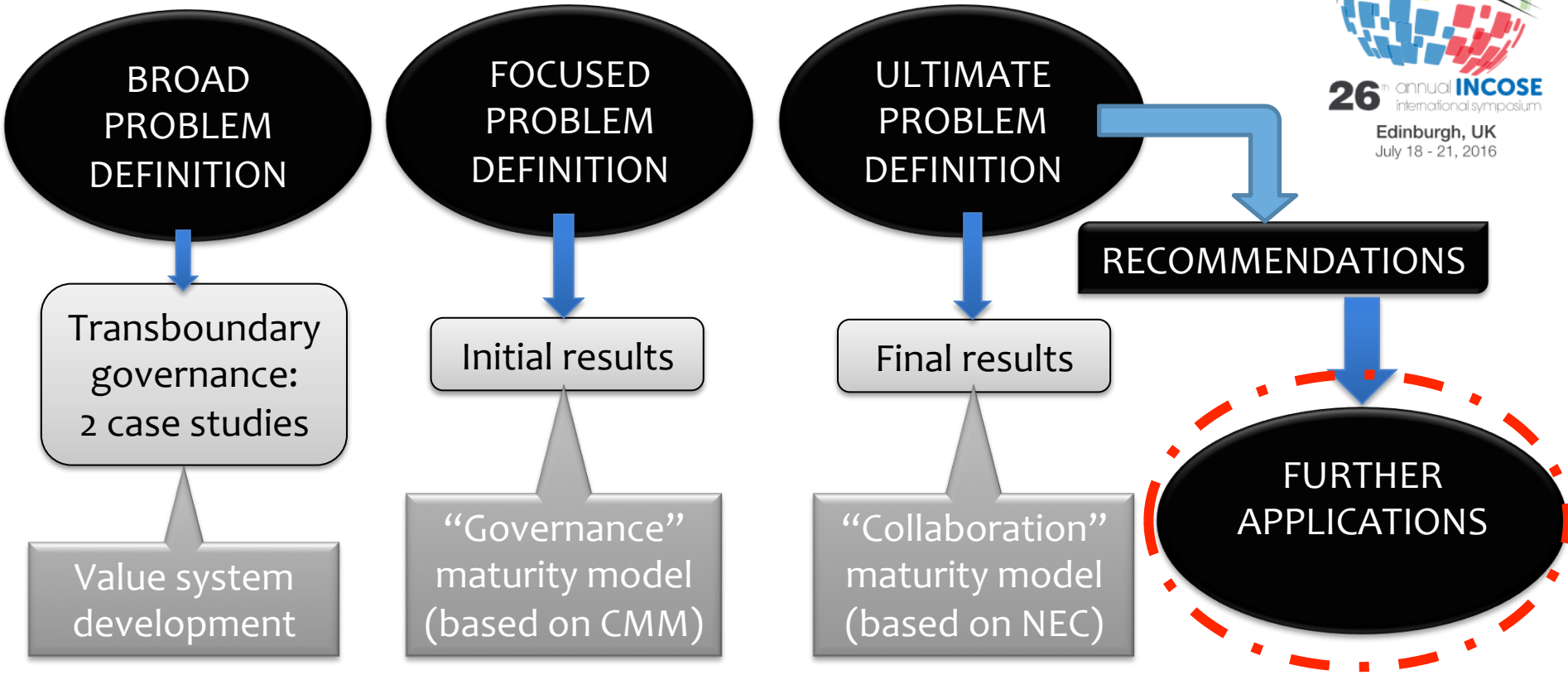
Recommendations

- Strengthen the bottom-up decision-making process
  - Park management forums – not just force together but make their interactions meaningful – consider other similar initiatives
  - Use common threats and interests to build/strengthen cross-border communities of practice (AHEAD etc.)
  - For each TFCA, develop a network of stakeholders (these would be interested, part-time passionate people – usually from the private sector, such as Friends of..)
- Strengthen the individual institution that is currently known as a TFCA – this will in turn strengthen weaknesses in the collective entities – governments should participate in funding this

Outline



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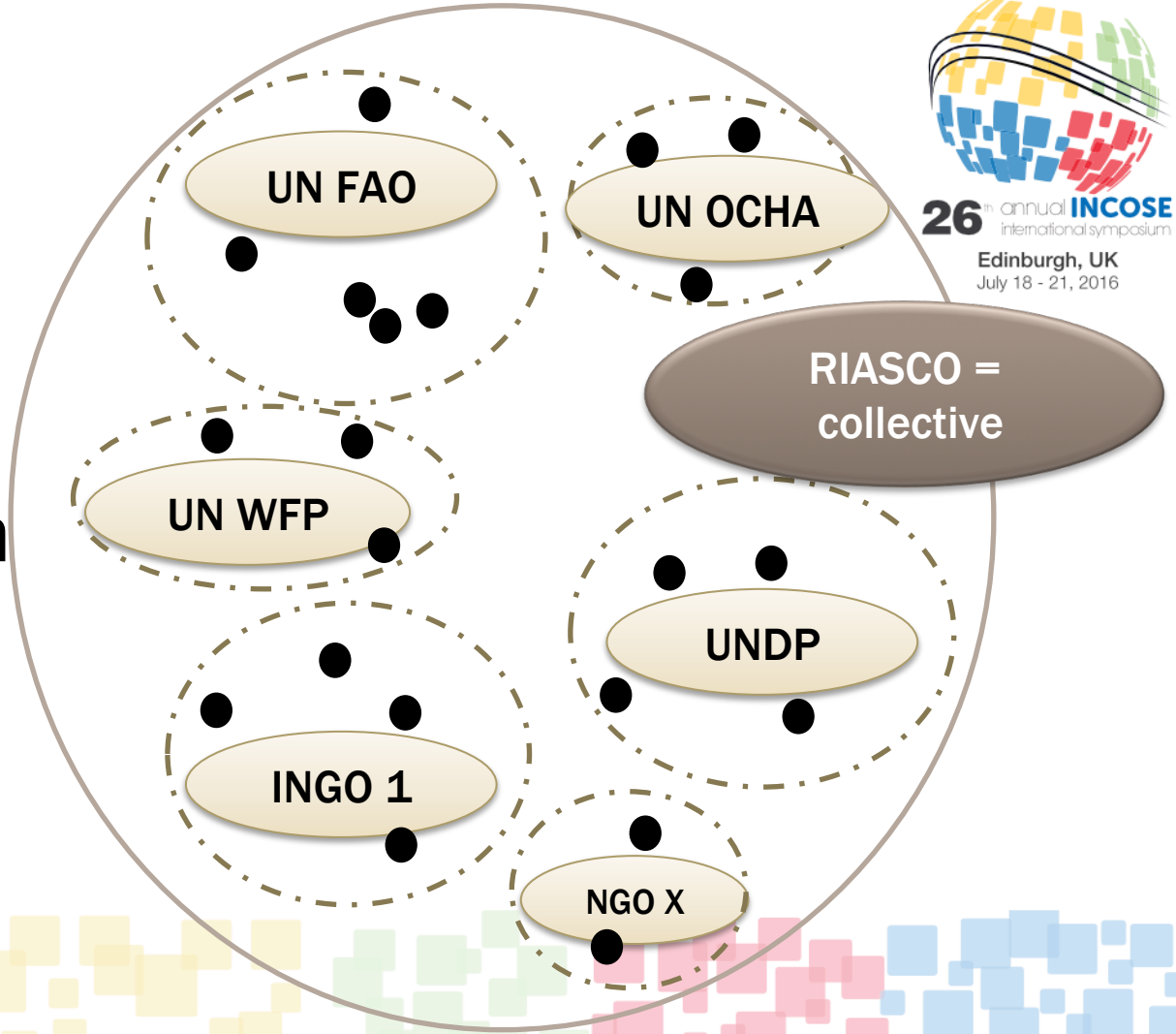
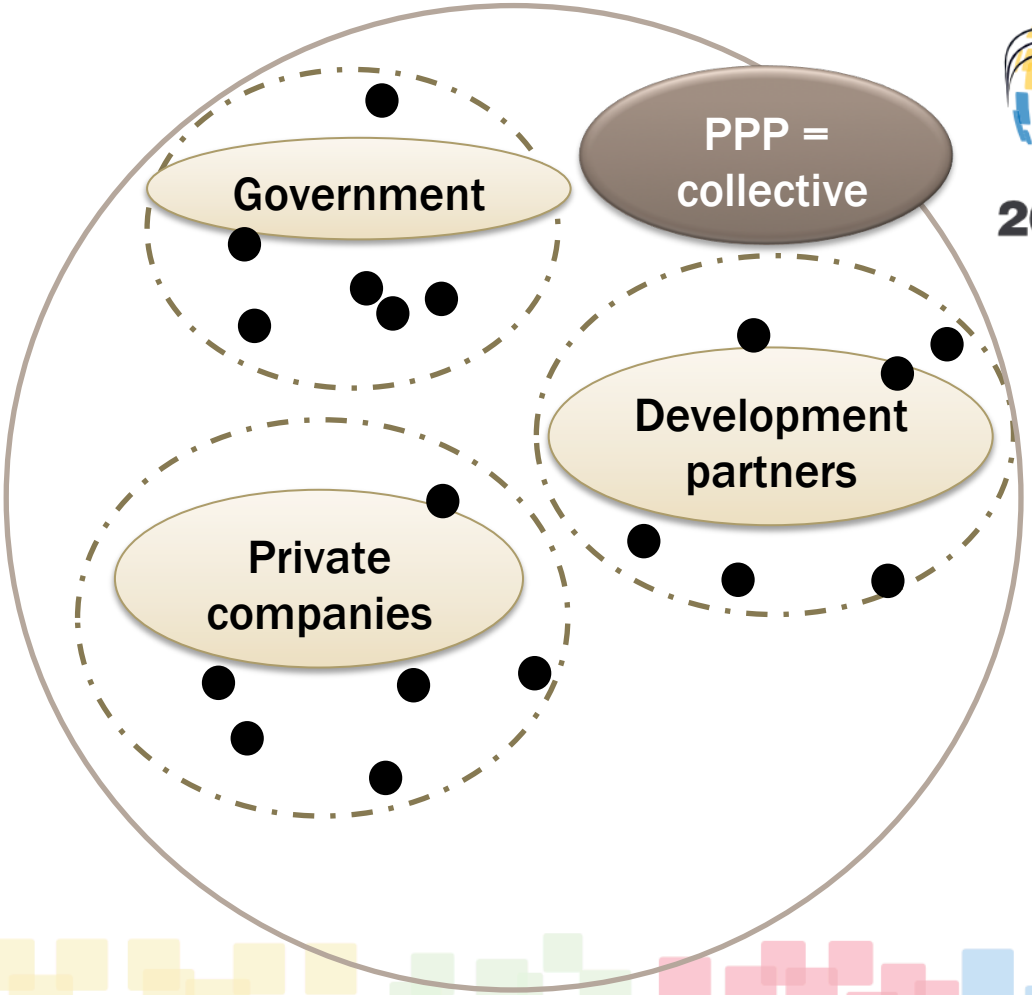
RIASCO = informal network of development and humanitarian agencies/NGOs



Some observations: critical aspects

- Continuity – how to ensure this?
- Long-term vs short-term planning
- Time constraints in making decisions
- Own/hidden agendas
- Individual-driven inefficient bureaucracies

Private/public partnership = development initiative across an entire geographical area



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