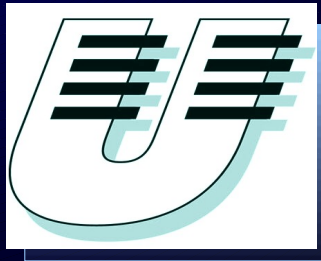


Technical Support for non-technical decision support for approaching the last Mile Problem



University of Koblenz-Landau

ReGLaN - Health

Research Group Learning and Neurosciences

Prof. Dr. E. Niehaus

— In cooperation with —



CSIR Pretoria

Prof. Dr. Marlien Herselman

PROBLEM

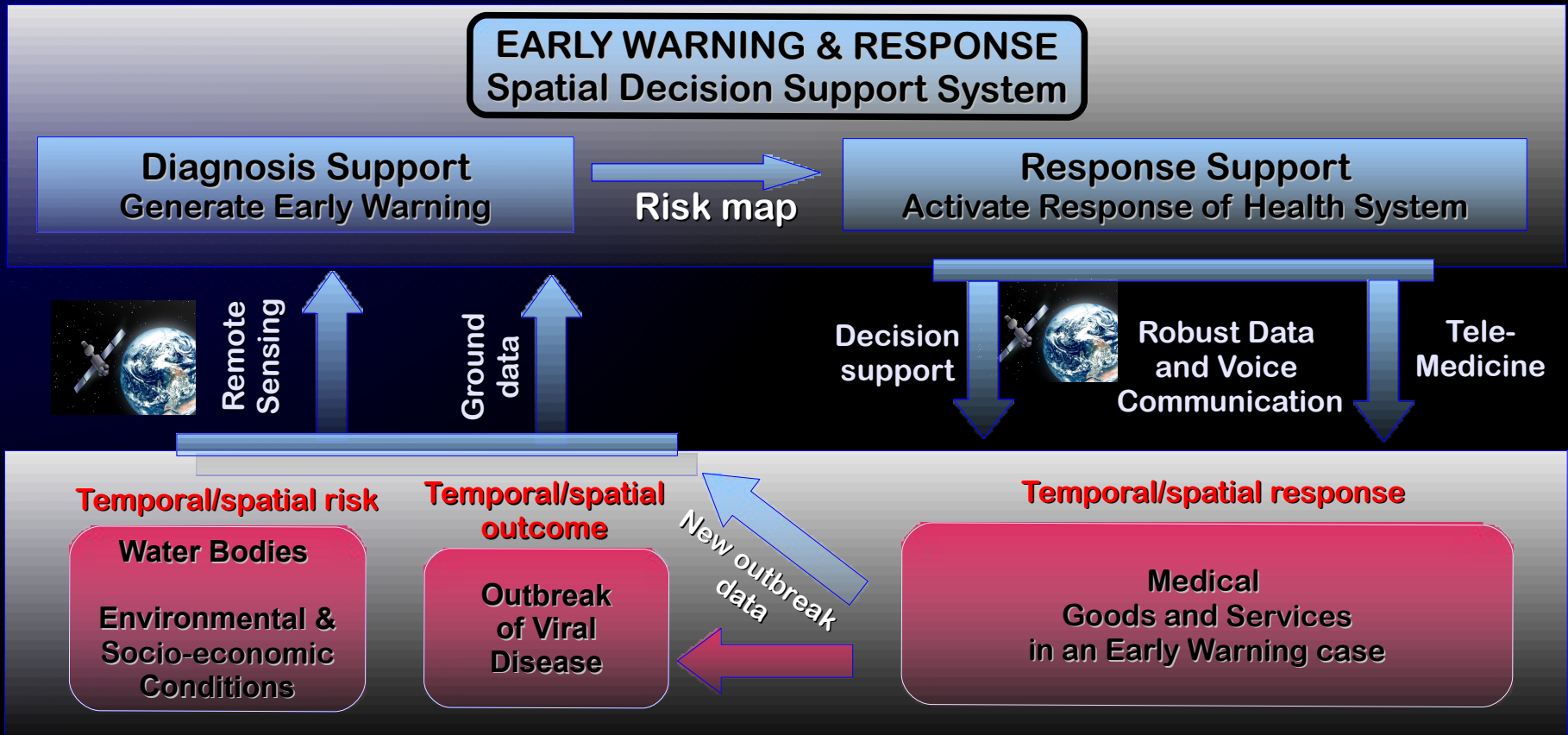
**EARLY WARNING & RESPONSE:
SPATIAL DECISION SUPPORT
CONNECTIVITY TO PEOPLE
IN RURAL AREA
(developing countries)**

Project Objectives

- AIM:** Support Early Warning with ICT for last non-ICT Miles to rural communities
(Spatial Decision Support)
- HOW?** Using Living Labs in Rural Areas to build Interfaces to the ICT-based Early Warning System
(Living Labs)
- WITH:** ICT-support for non-ICT communication
Knowledge representation - pre-disaster
(Open Content)
- TO WHOM?** Rural Communities (= Decision Makers)

Early Warning & Response Cycle

Health Service Delivery



Early Warning & Response Cycle

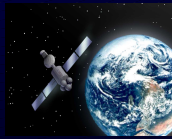
Health Service Delivery

EARLY WARNING & RESPONSE Spatial Decision Support System

Diagnosis Support
Generate Early Warning

Risk map

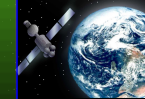
Response Support
Activate Response of Health System



Remote Sensing

Ground data

Decision support



Robust Data and Voice Communication

pre & post disaster - surveillance

decision support clients



Early Warning & Response Cycle

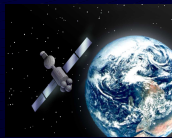
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ICT – non-ICT barrier

Rural Communities

Poor ICT infrastructure
Poor Health service
(even in non-disaster times)



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Decision
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Robust Data
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ICT – non-ICT barrier

Support
Does not
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The Rural
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Early Warning & Response Cycle

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Extend
Range of
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ICT

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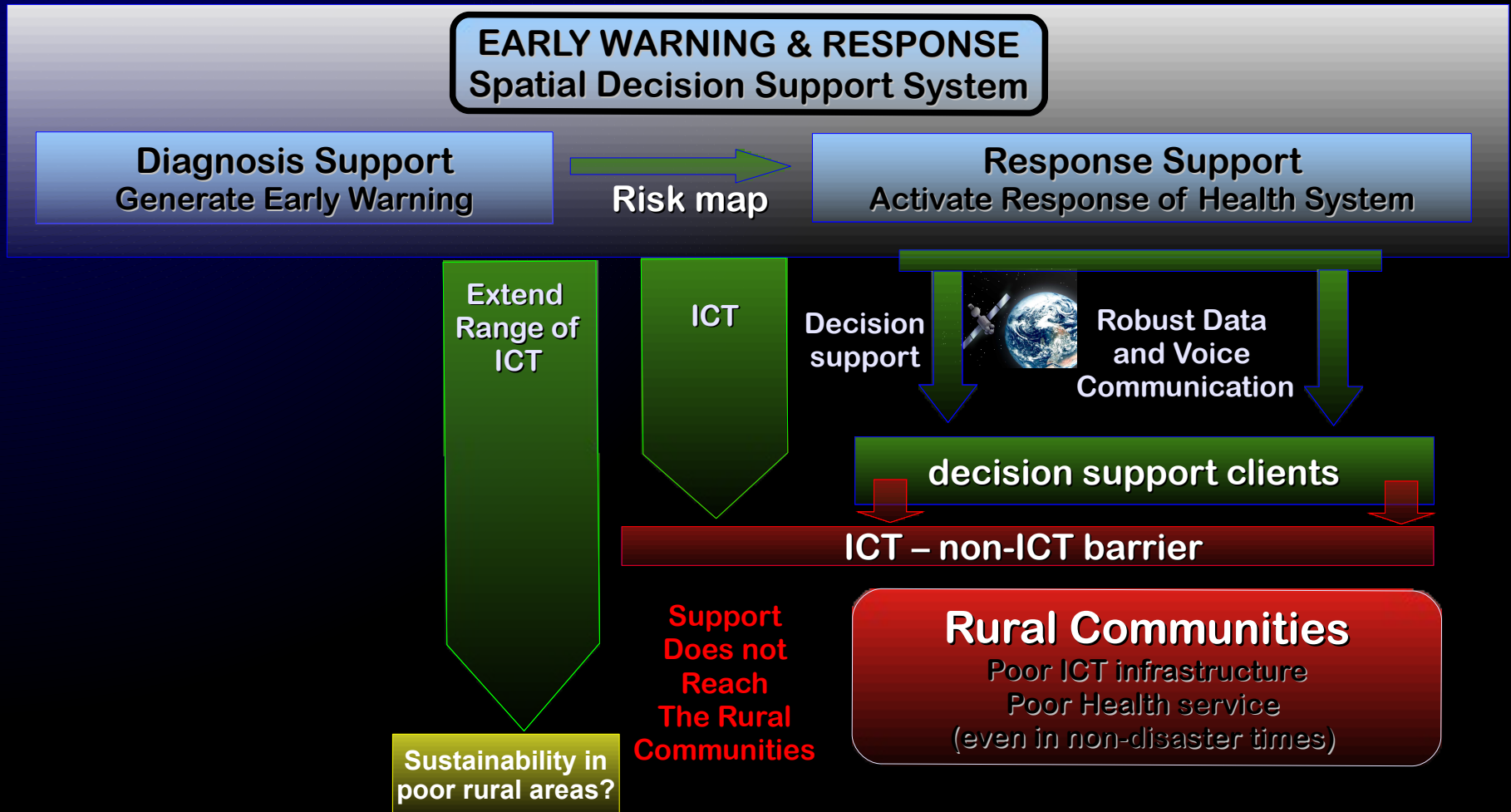
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Early Warning & Response Cycle

Health Service Delivery

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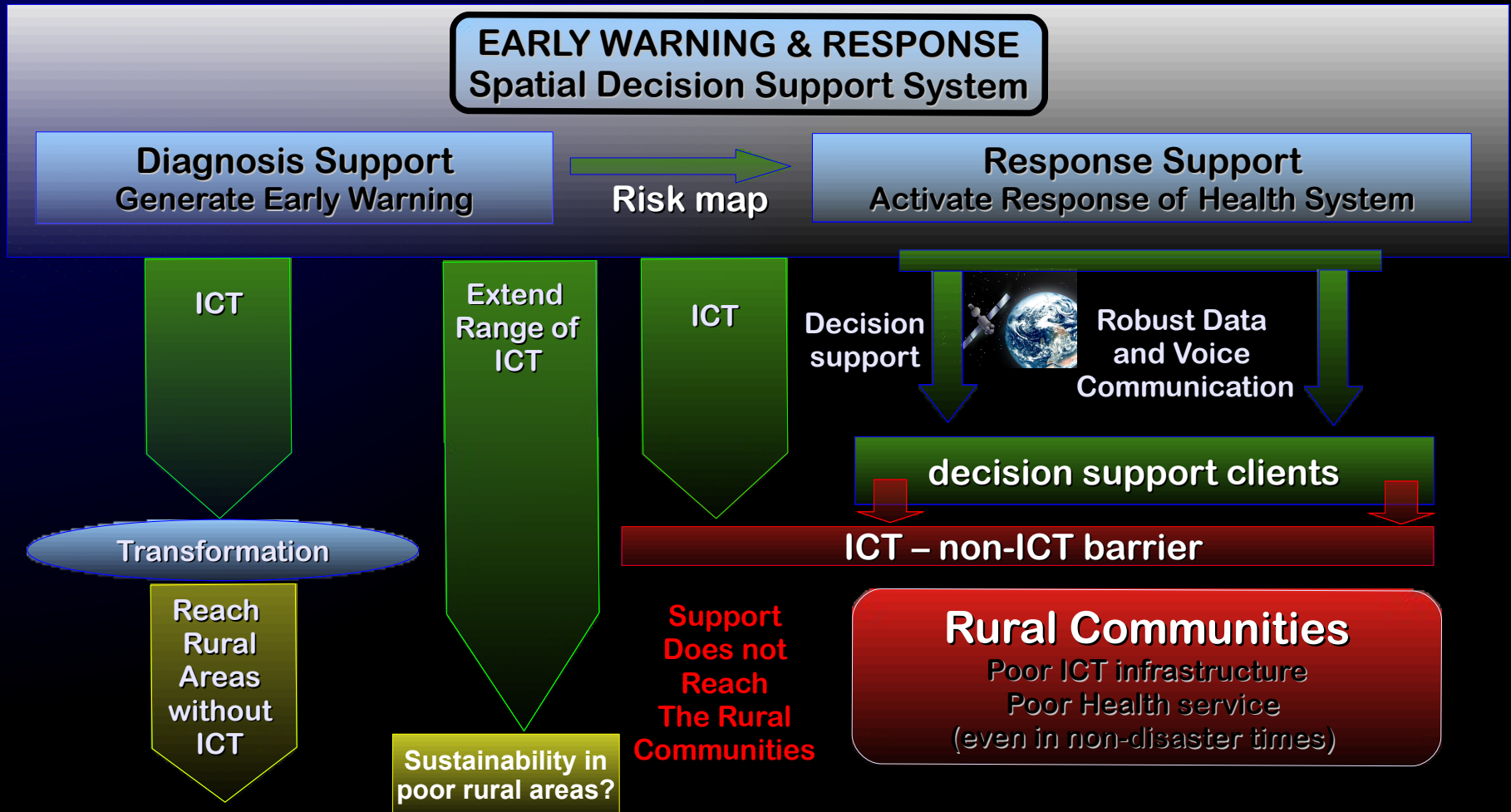
Poor ICT infrastructure
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Sustainability in
poor rural areas?

Priority
Water
Food
Jobs
Health
Public Security
Disaster Preparedness
Disaster Mitigation

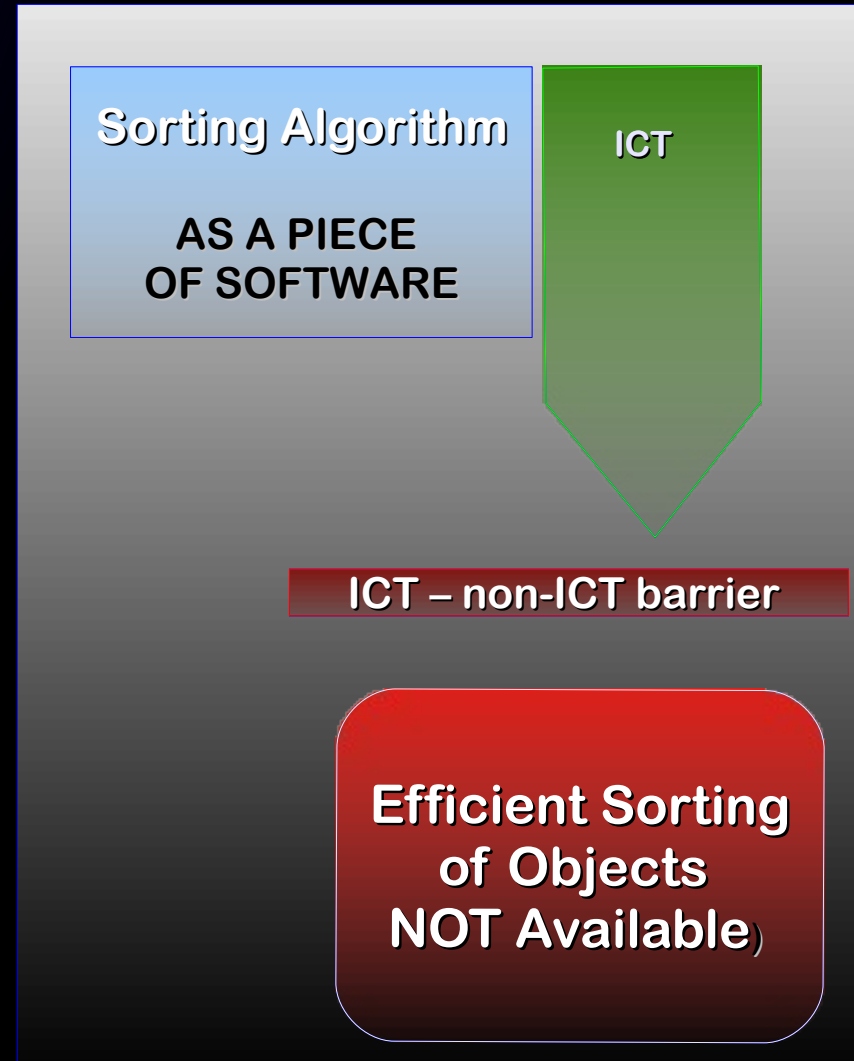
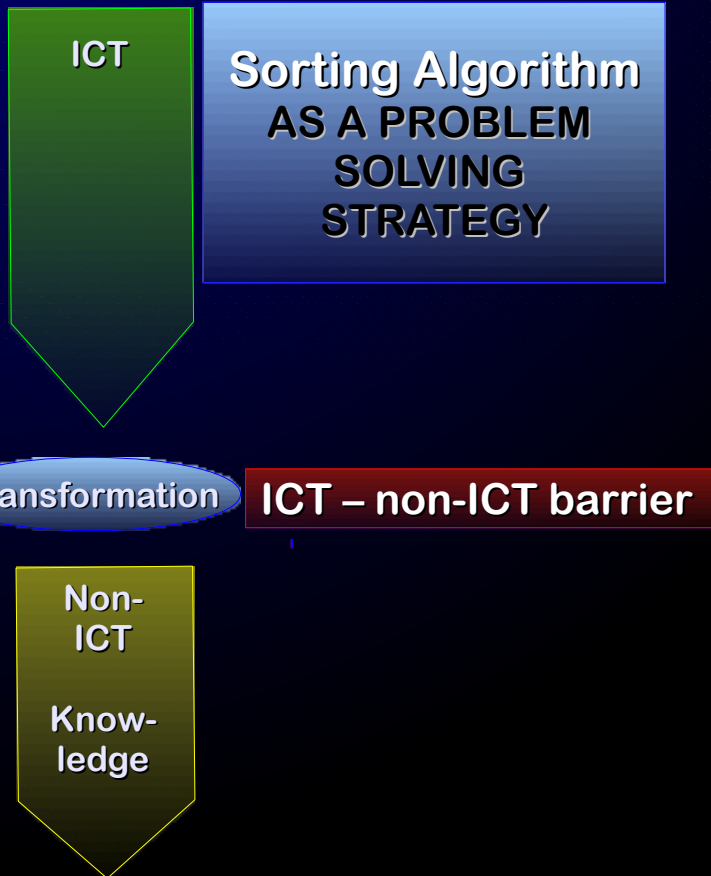
Early Warning & Response Cycle

Health Service Delivery



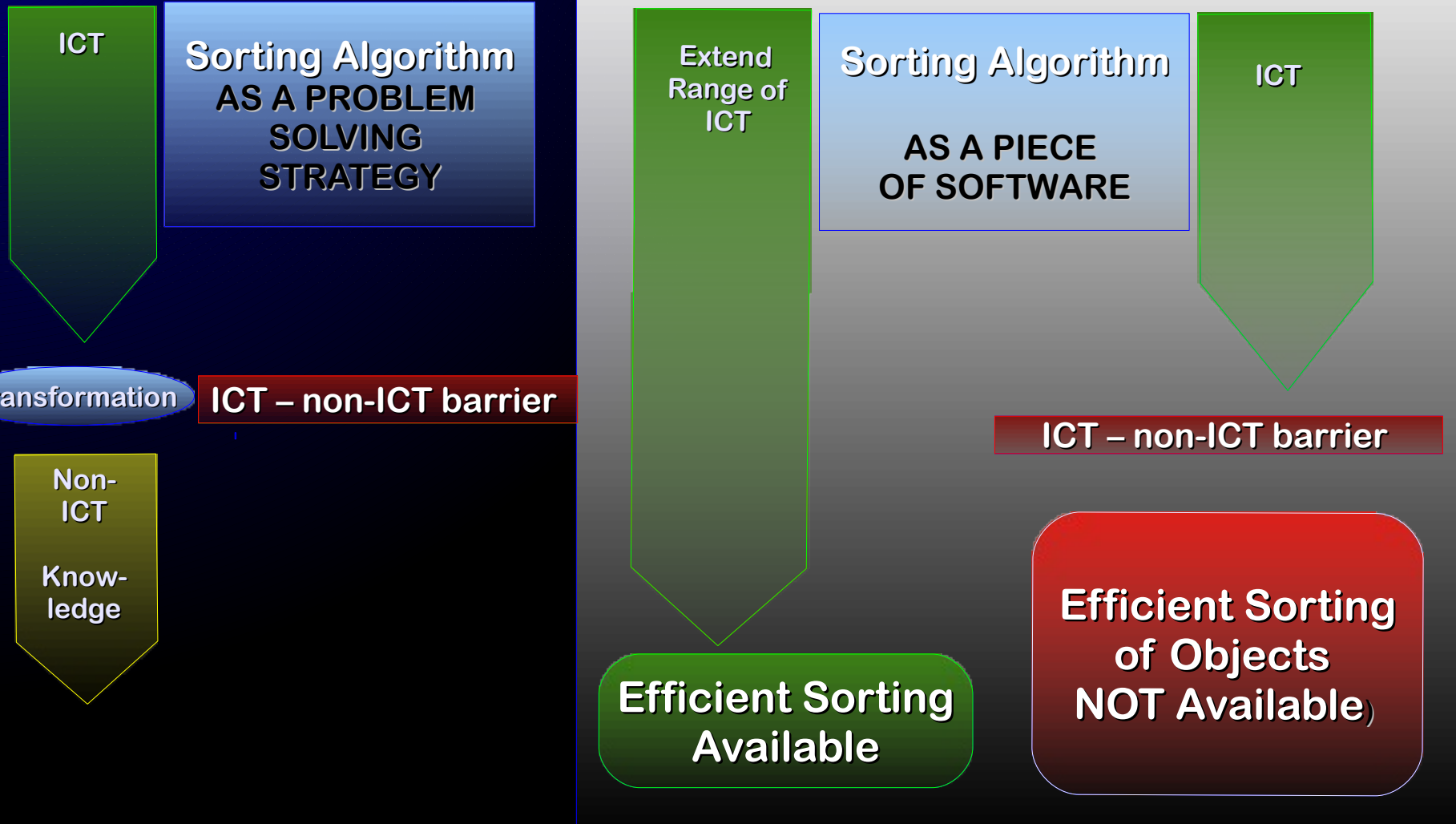
General Example: Sorting Algorithm

Crossing ICT -- non-ICT Barrier



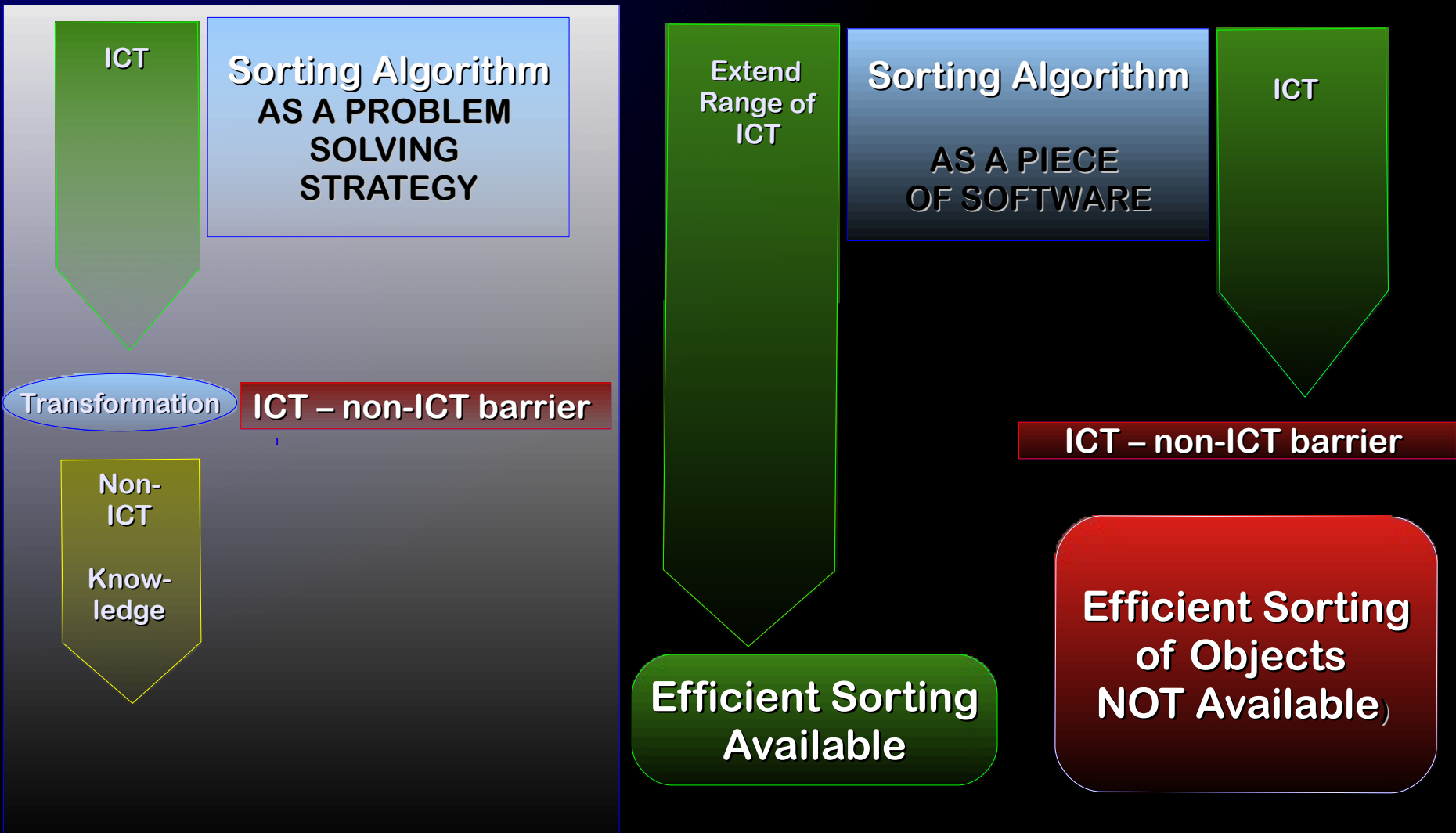
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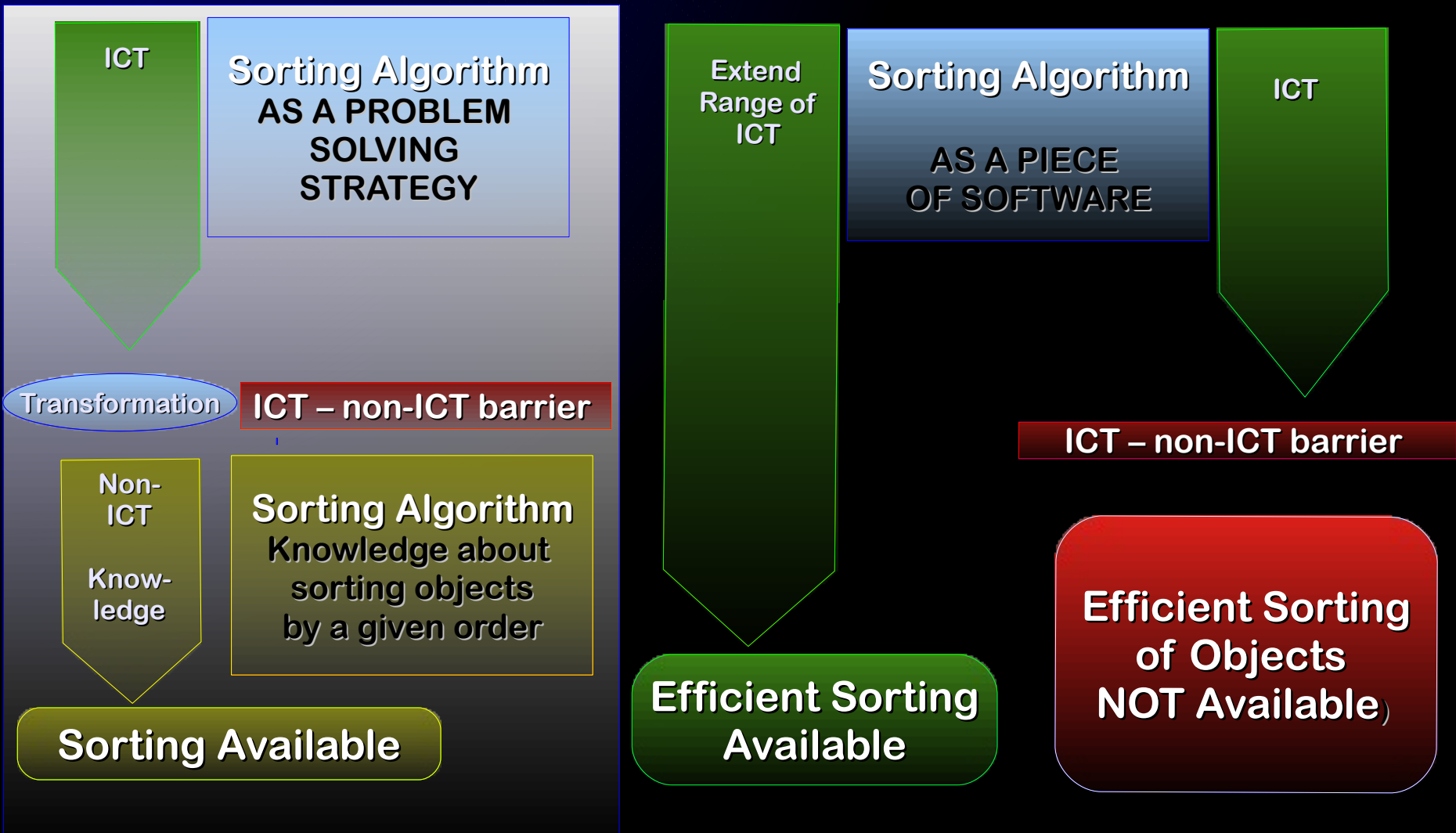
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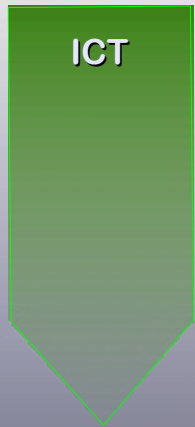
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Spatial Decision Support

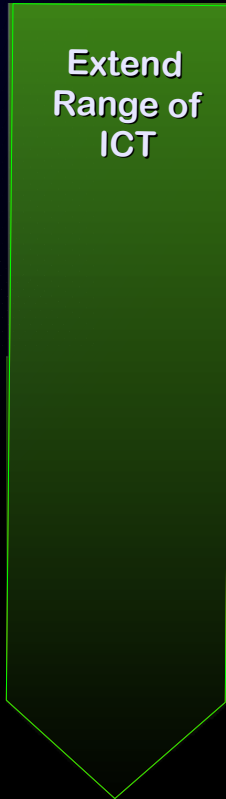
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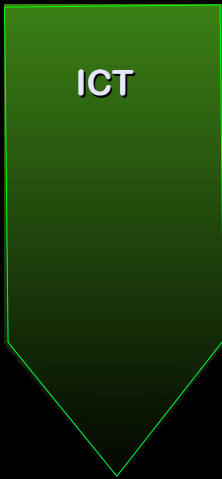
**Risk-Response
AS A PROBLEM
SOLVING STRATEGY**

Transformation

ICT – non-ICT barrier



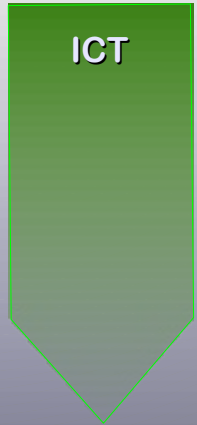
**Risk-Response
AS A PIECE
OF TECHNOLOGY**



ICT – non-ICT barrier

Spatial Decision Support

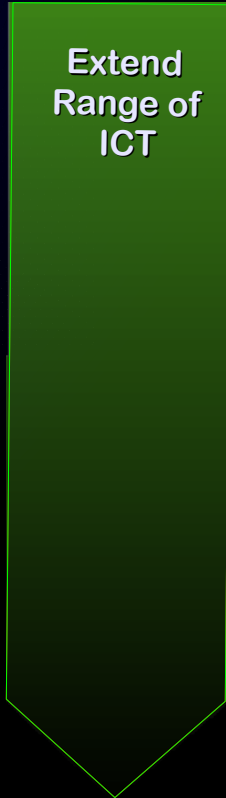
Crossing ICT -- non-ICT Barrier



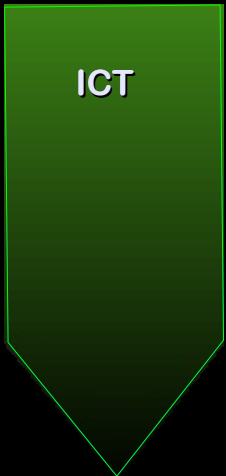
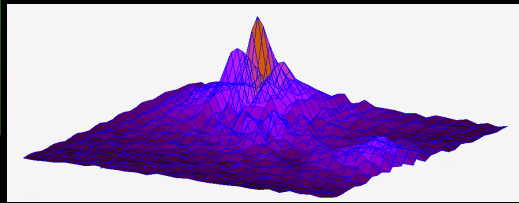
**Risk-Response
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**Risk-Response
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ICT – non-ICT barrier

**Spatial Decision
Support Available**

**Spatial Decision
Support
NOT Available**

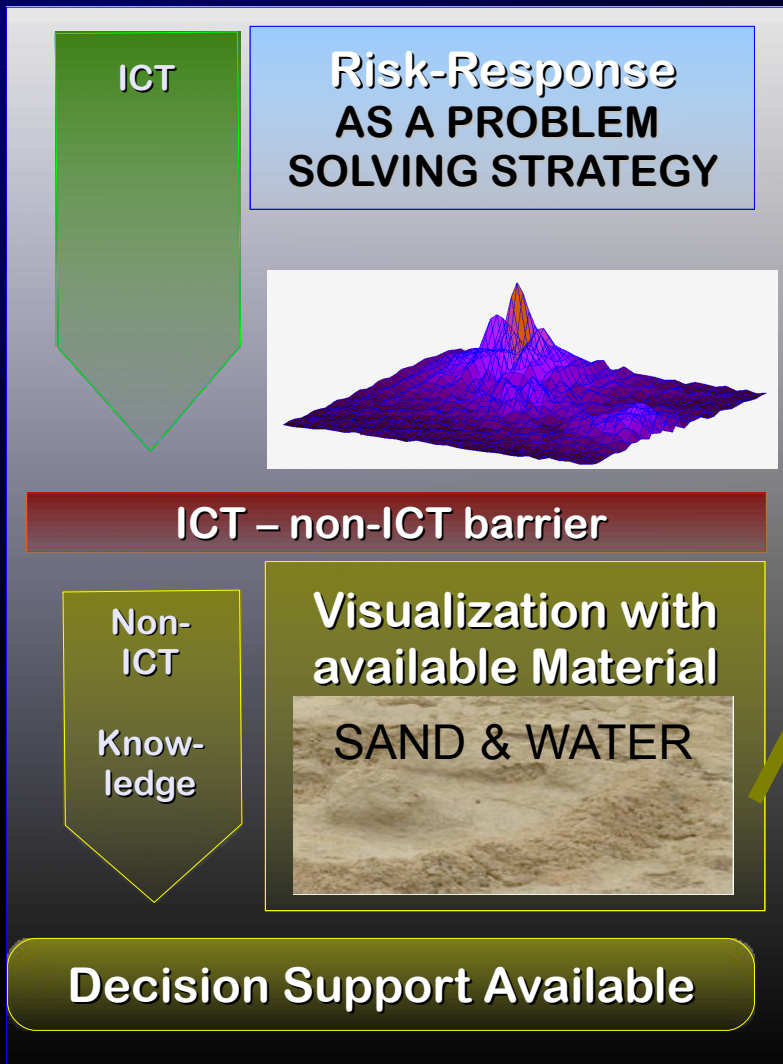
Spatial Decision Support

Crossing ICT -- non-ICT Barrier



Spatial Decision Support

Crossing ICT -- non-ICT Barrier



Risk visualized without ICT

Shaping a Risk Surface with Sand

Communication is dependent on Social, environmental & cultural Requirements and constraints:

Culture of Communication in the Communities (e.g. Story Telling)

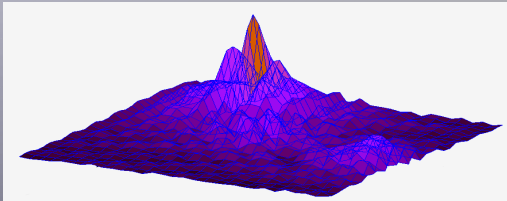
⇒ No Standard Approach for Non-ICT

Living Labs

located ICT -- non-ICT Barrier

ICT

**Risk-Response
AS A PROBLEM
SOLVING STRATEGY**



Transformation

ICT – non-ICT barrier

Non-
ICT

**Visualization with
available Material**

SAND & WATER



Decision Support Available

Prof. Dr. M.E. Herselman
CSIR – Pretoria – SA

Living Labs

ICT

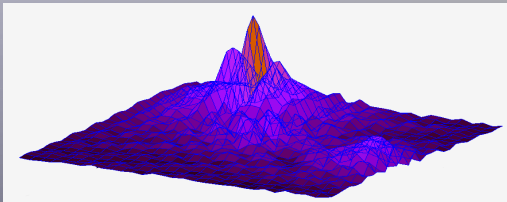
Non-
ICT

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Decision Support Available

ICT

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Living Labs

Living Labs as a research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts.

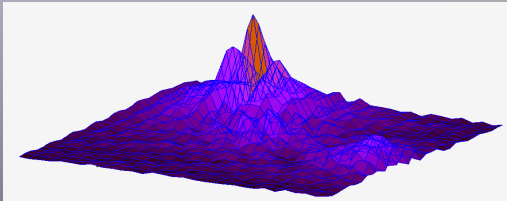
Non-
ICT

Living Labs

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ICT

Risk-Response
AS A PROBLEM
SOLVING STRATEGY



Knowledge about
Risk Situation and
Appropriate
Response Mechanisms

ICT

ICT – non-ICT barrier

Living Labs

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ICT

Visualization with
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Living Labs as a research methodology
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Non-
ICT

Decision Support Available

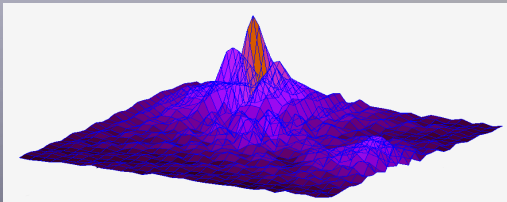
Knowledge about
Rural Communities

Living Labs – Rural Areas

Health Service Delivery & Disaster Preparedness

ICT

**Risk-Response
AS A PROBLEM
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ICT

ICT – non-ICT barrier

Living Labs

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**Visualization with
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SAND & WATER



Non-
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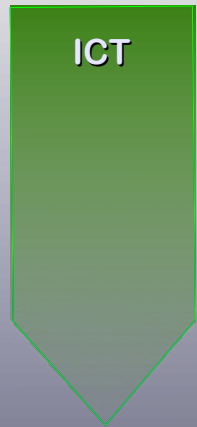
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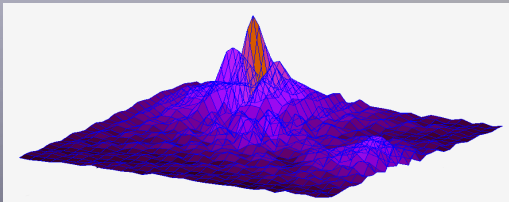
Combine Disaster Preparedness with general Improvement of Health Service Delivery

Living Labs – Rural Areas

Health Service Delivery & Disaster Preparedness



**Risk-Response
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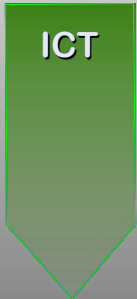


**Visualization with
available Material
SAND & WATER**

A photograph showing a mixture of sand and water, likely used for physical modeling in a living lab.

Decision Support Available

Priority
Water Food
Jobs
Health
Public Security
Disaster Preparedness
Disaster Mitigation

A red rounded rectangle containing a list of priority areas. Two yellow arrows point from the right side of the box towards the "Health" and "Disaster Mitigation" items.

Living Labs

Living Labs as a research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts.



**Combine Disaster Preparedness with general
Improvement of Health Service Delivery**

Early Warning & Response Cycle

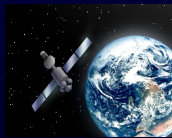
Health Service Delivery

EARLY WARNING & RESPONSE Spatial Decision Support System

Diagnosis Support
Generate Early Warning

Risk map

Response Support
Activate Response of Health System



Remote Sensing

Ground data

Decision support



Robust Data and Voice Communication

pre & post disaster - surveillance

decision support clients

ICT – non-ICT barrier

Rural Communities

Poor ICT infrastructure
Poor Health service
(even in non-disaster times)



Early Warning & Response Cycle

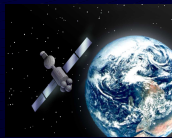
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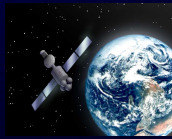
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Remote Sensing & Environmental Conditions

EARLY WARNING & RESPONSE
Spatial Decision Support System

Diagnosis Support
Generate Early Warning

→
Risk map



Remote
Sensing



Water Bodies

**Environmental
Conditions**

Flooding

Water Body

Early Warning & Response Cycle

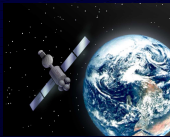
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**Reporting Disaster Situation
and urgent Needs**

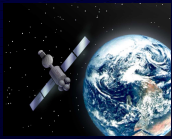
Remote Sensing as „low Tech Sat-Com“

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Remote
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Keep Client IT-Requirements Robust & Simple

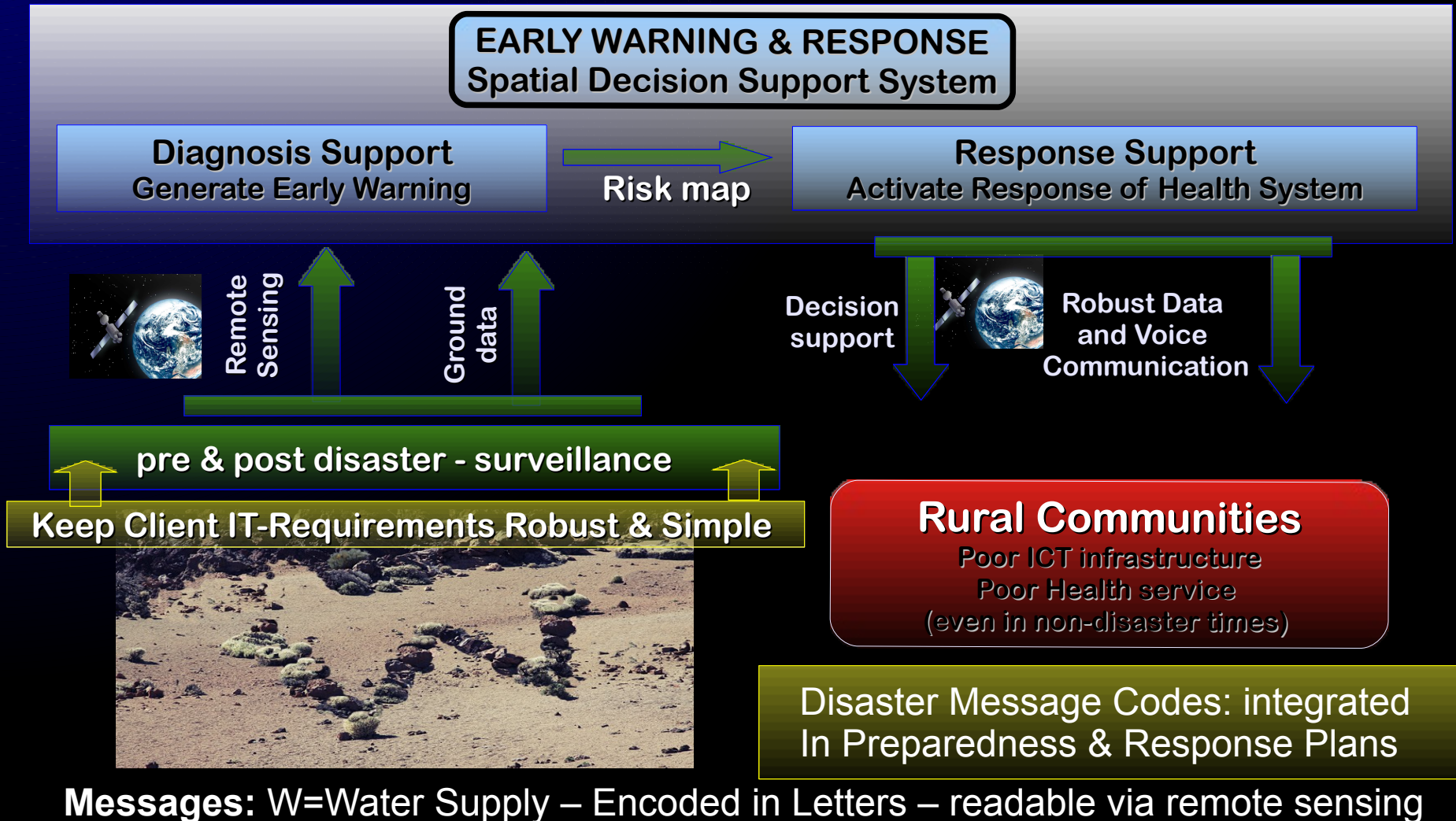


Rural Communities

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Messages: W=Water Supply – Encoded in Letters – readable via remote sensing

Remote Sensing as „low Tech Sat-Com“



Summary

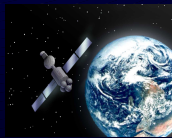
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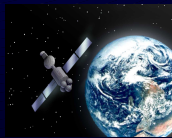
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Low Tech "Sat-Com"

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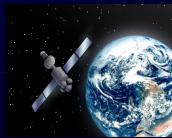
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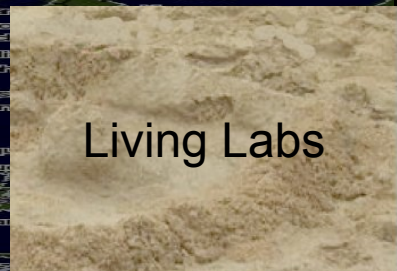
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Living Labs

THANK YOU

Summary

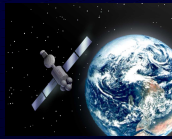
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