

Supporting participatory land use planning processes and decisions – the GISCAME platform

(Natural) bio-geo-physical conditions

Impact

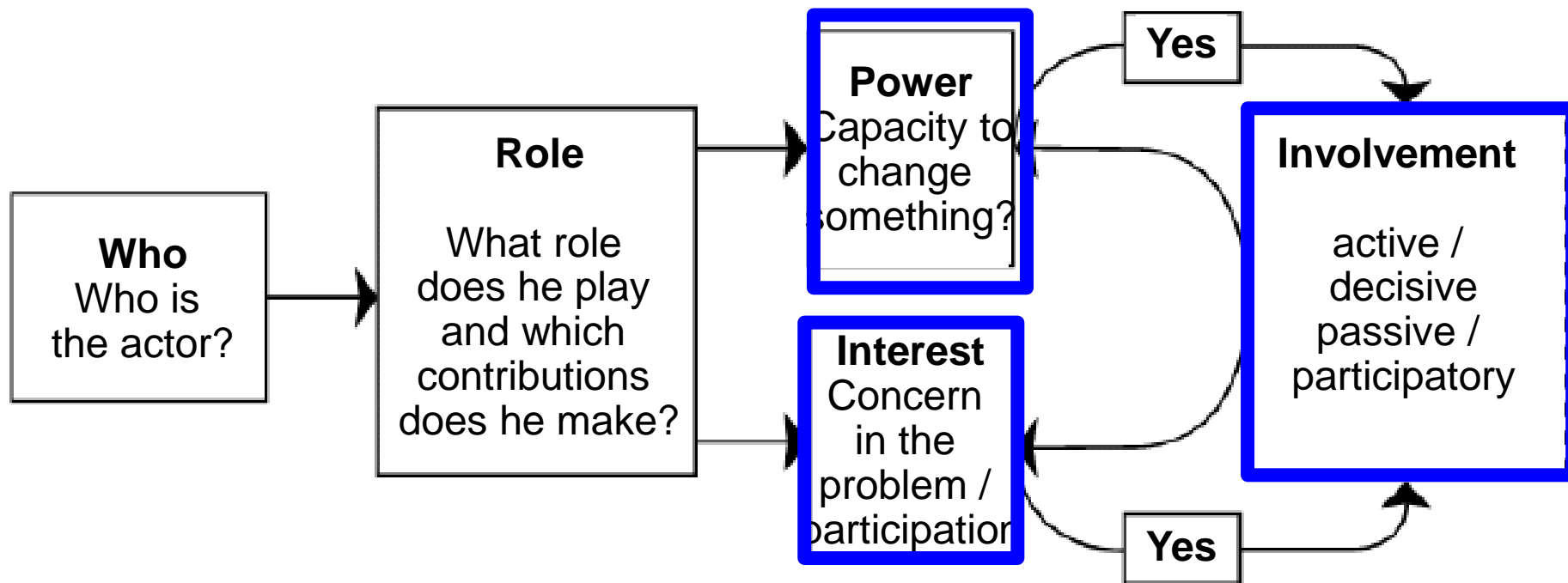
Land (use) systems

Actors

**Anthropocene (individuals / communities /
society)**



How to approach?





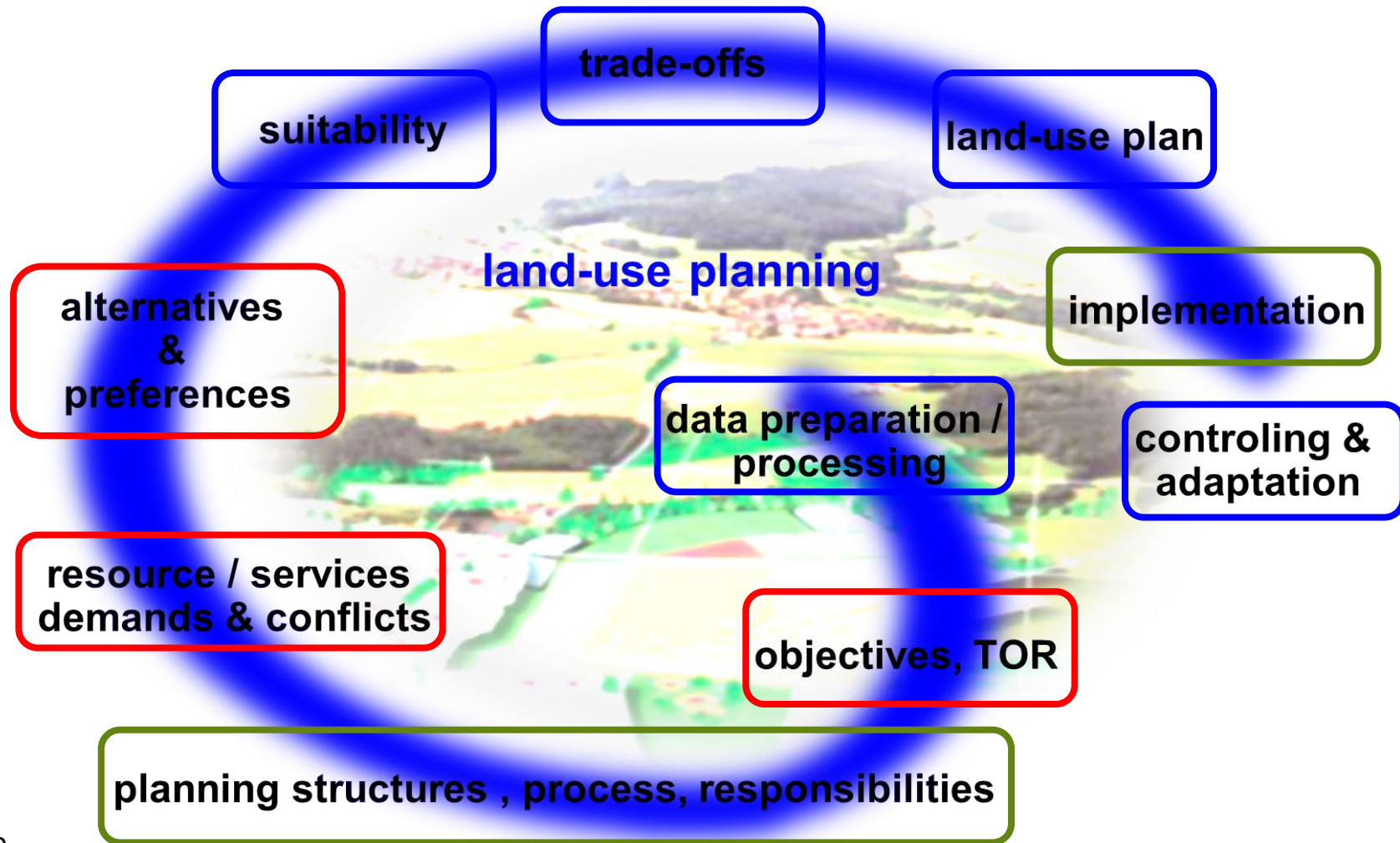
How to approach?

Some terms to differentiate: experts – stakeholders - laymen

- **Experts:** consulted due to their specialization, should (ideally) not be personally concerned / interested in the land use decision.
Examples: Scientists, government staff, opinion leaders...
- **Stakeholders:** individuals, groups or organizations that represent a specific / typical interest or concern.
Examples: land owner associations, NGOs
- **Laymen:** individuals that are directly / indirectly affected by decisions, consulted to represent the “public view / opinion”
Examples: local / regional citizens, randomly selected persons



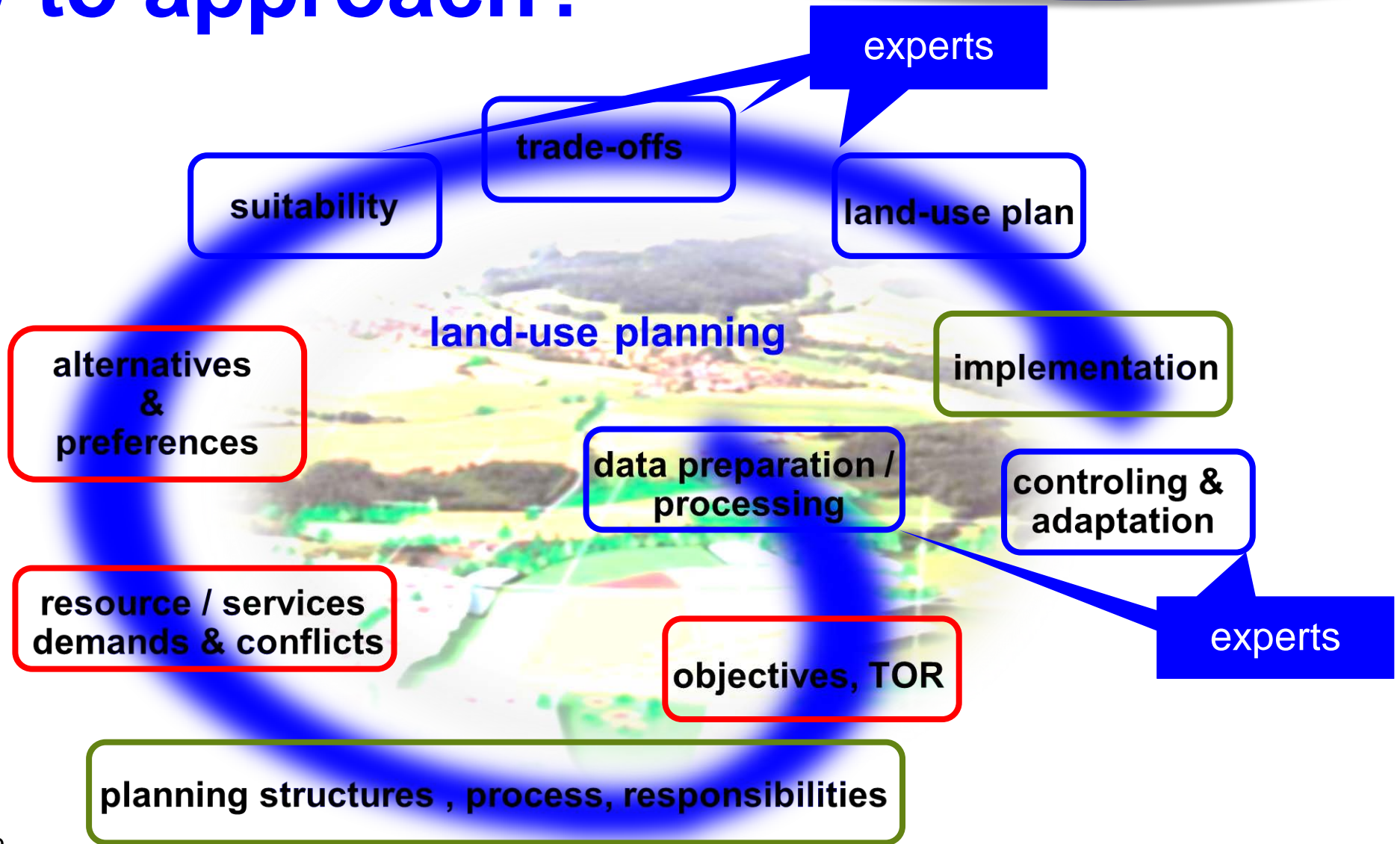
How to approach?



- participation
- knowledge integration
- consensus building



How to approach?





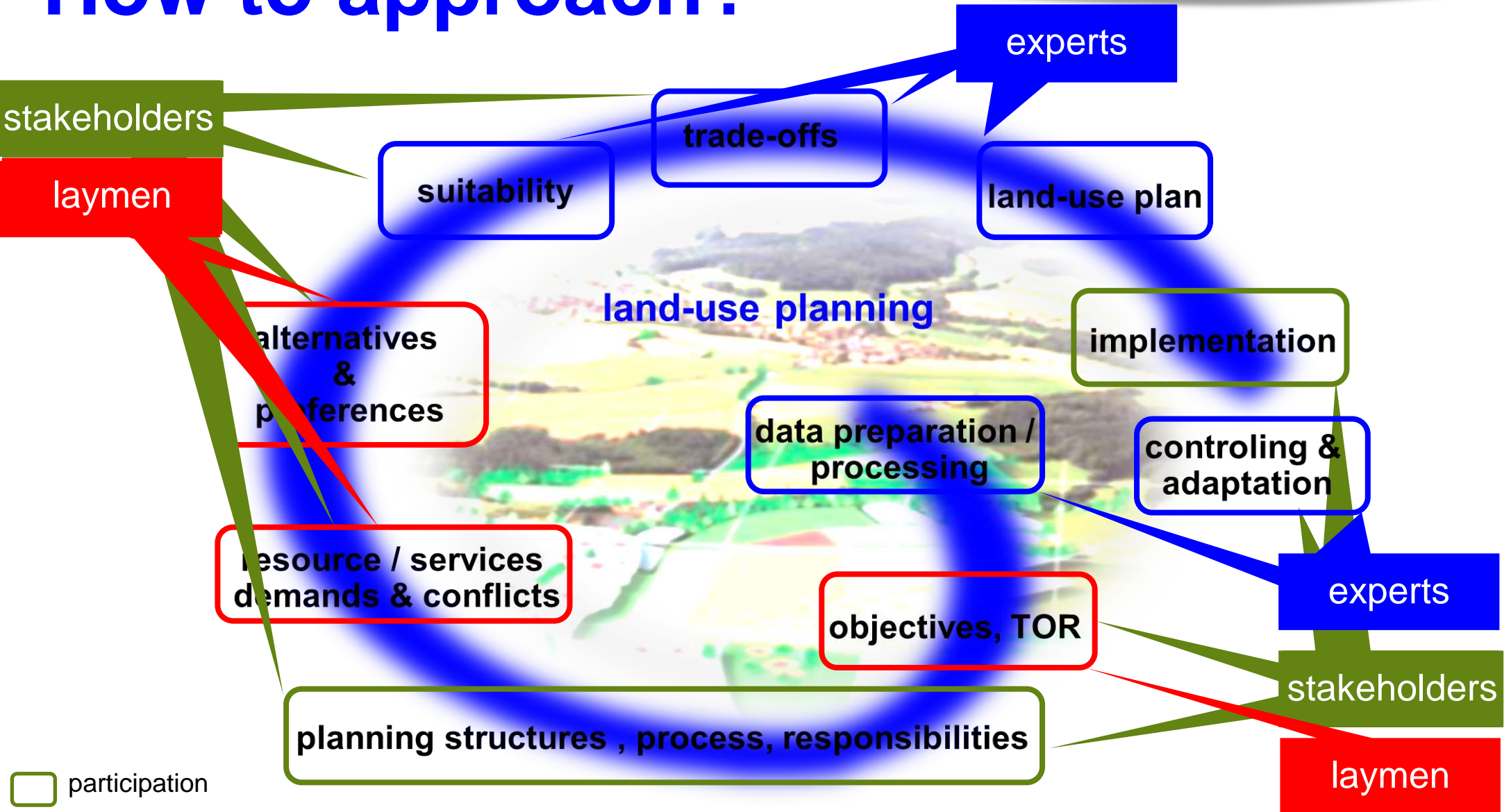
How to approach?



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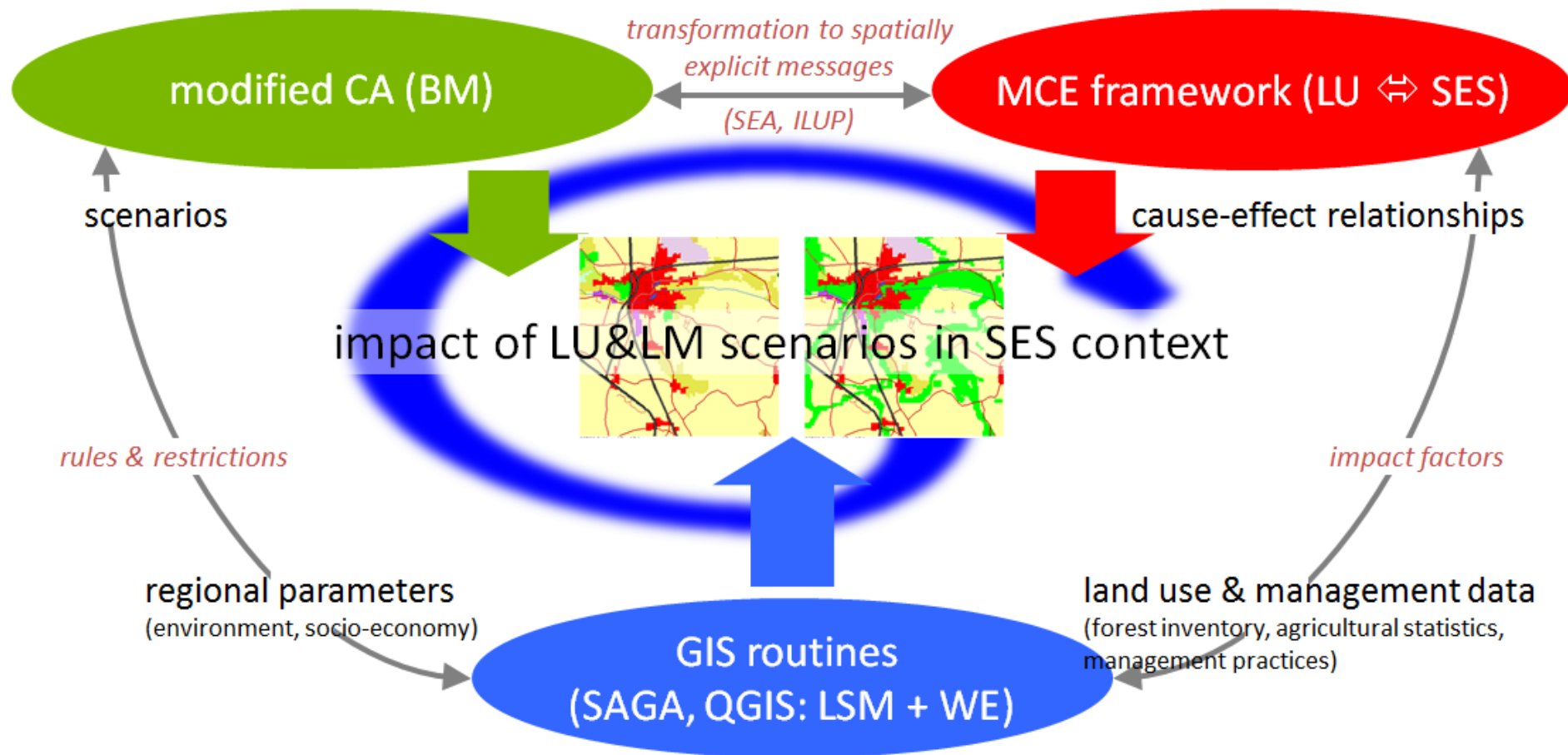


How to approach?



... but how to integrate in DST?

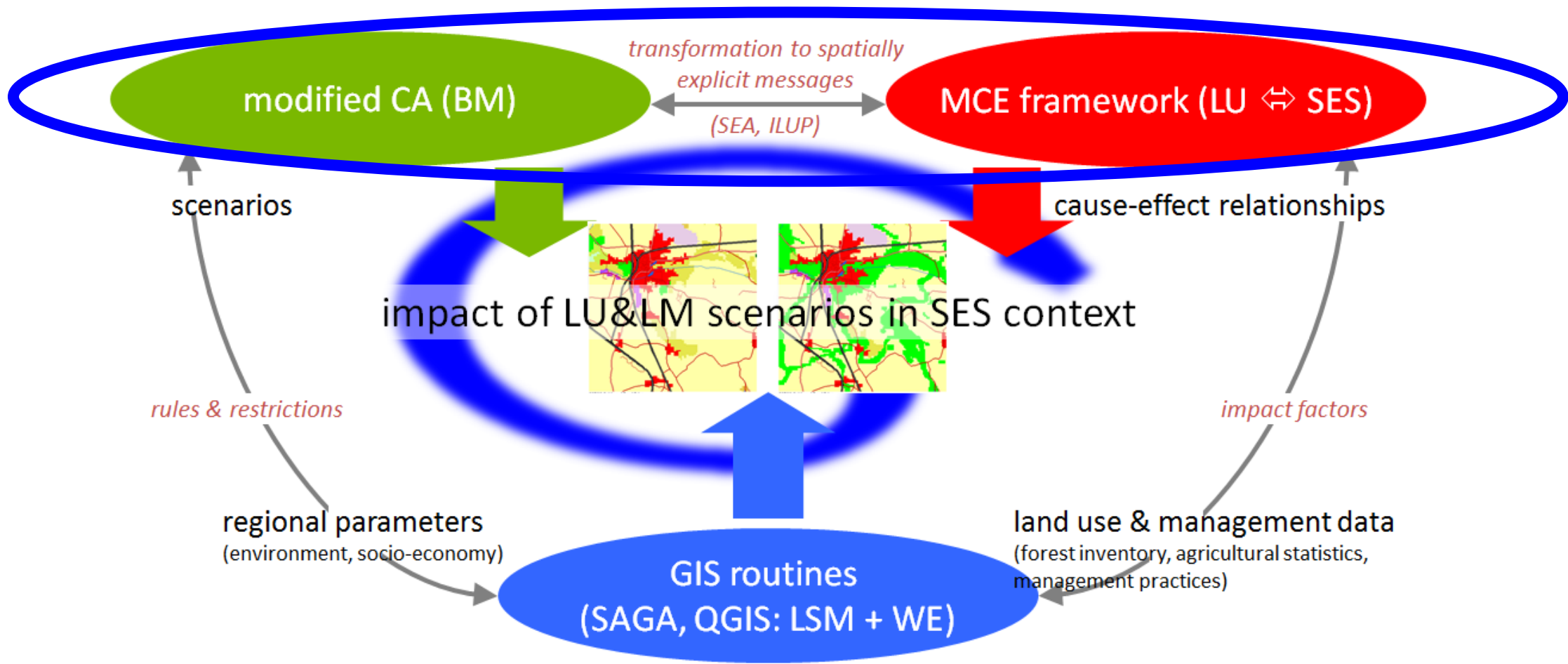
GUI: visualization / interactivity

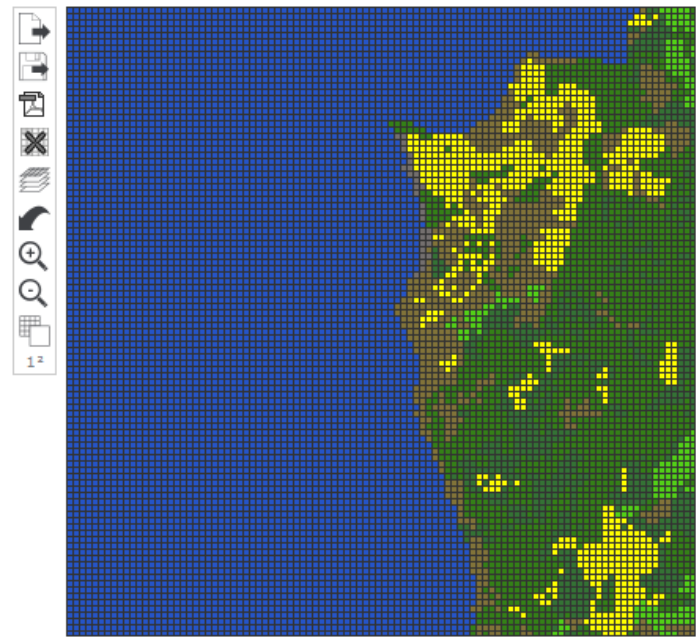




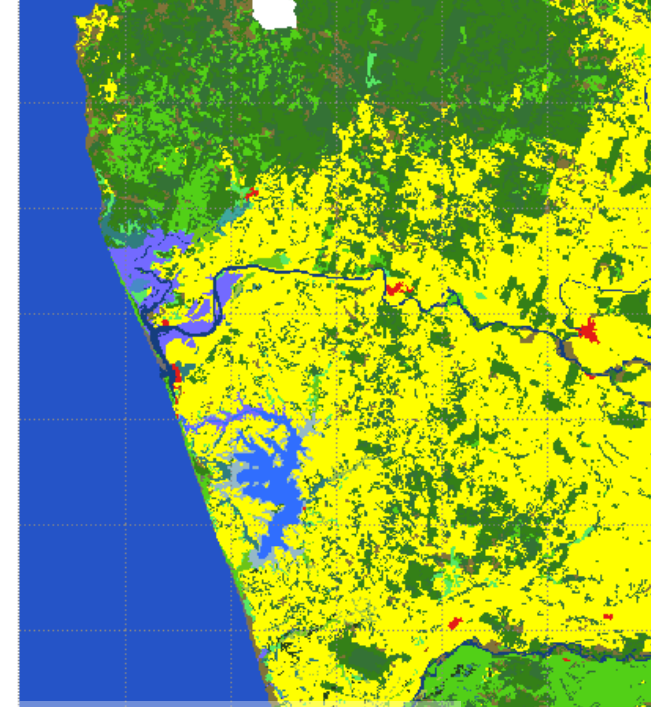
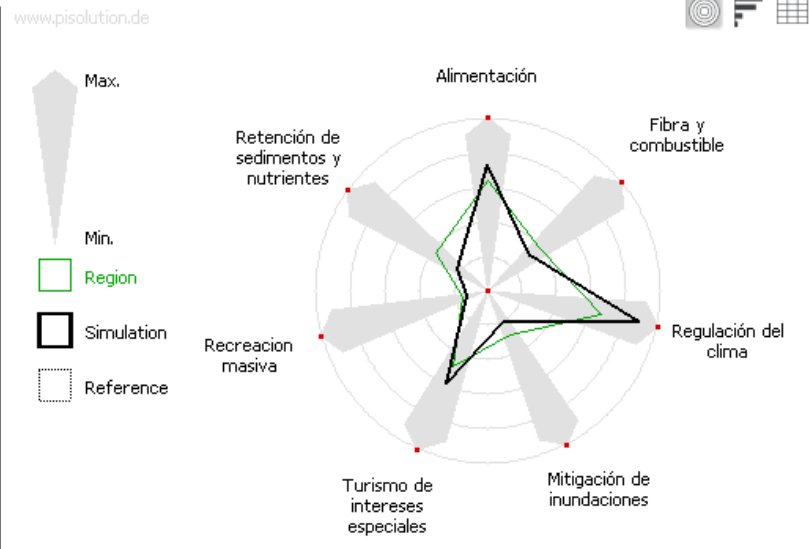
... but how to integrate in DST?

GUI: visualization / interactivity





10000 fields



„simple“ scenario tools (laymen / stakeholders)

cellwise

freestyle

neighbored cells with the same LUT

streets

all cells of a LUT

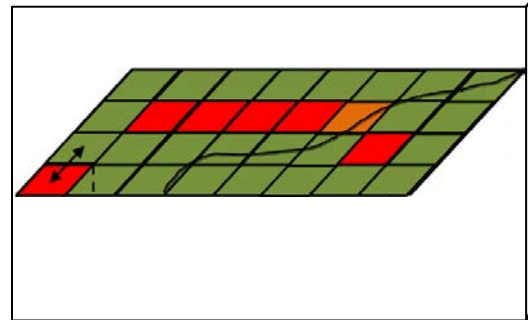
water courses

water bodies

area focus

point shaped element with impact gradient

„what if“? – change of observed pattern



Simulation | AddOn | Definition | Import | Help

Araucari | AAMS | jocania5_prue | LUF Set: FONDECYT_BC | environmental restrictions: [dropdown]

CA
LSM
WE

www.pisolution.de

Max.
Min.

Region
Simulation
Reference

Alimentación
Fibra y combustible
Regulación del clima
Mitigación de inundaciones
Turismo de intereses especiales
Recreación masiva
Retención de sedimentos y nutrientes

OSM | PIMP | initial

10000 fields

scenario + analytical tools (experts)

AddOn

AAMS

BM

CA

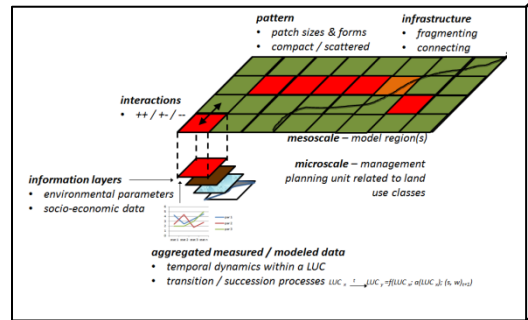
LSM

WE

- attribute dependent scenarios
- management scenarios (forestry)
- (LUT/attribute dependent) probabilities
- landscape structural analysis
- risks (mass movement / water erosion)

inheritable

drivers and system interactions



Araucanía.. | Me

CYT_BC e | environmental restrictions: [dropdown]

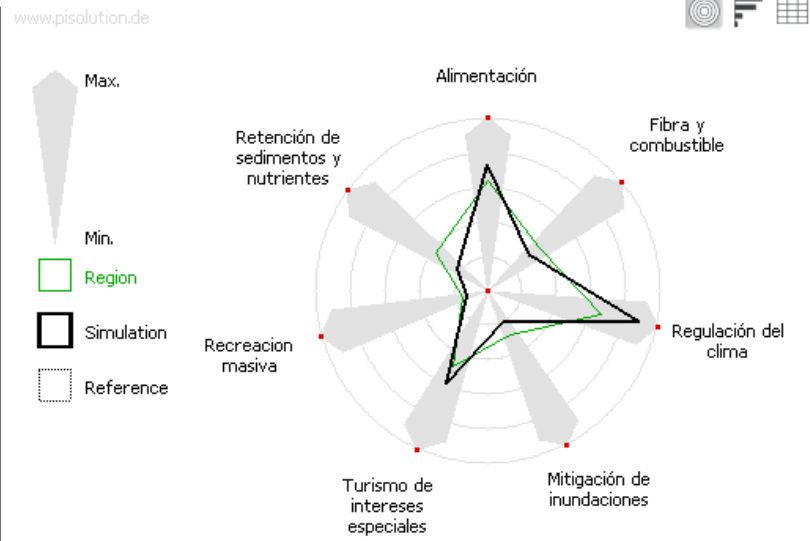
Definition

Transfer

Planning Restrictions

Environmental Restrictions

10000 fields



OSM | PIMP | initial

restrictions („experts“ => planning / policy interface)

Definition

Transfer

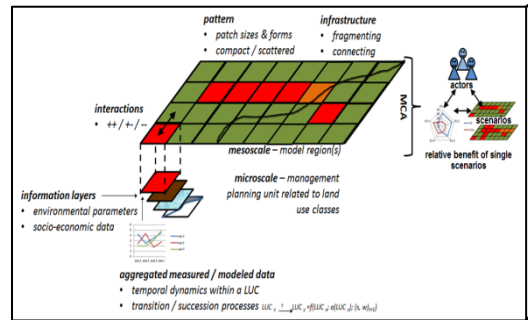
Planning Restrictions

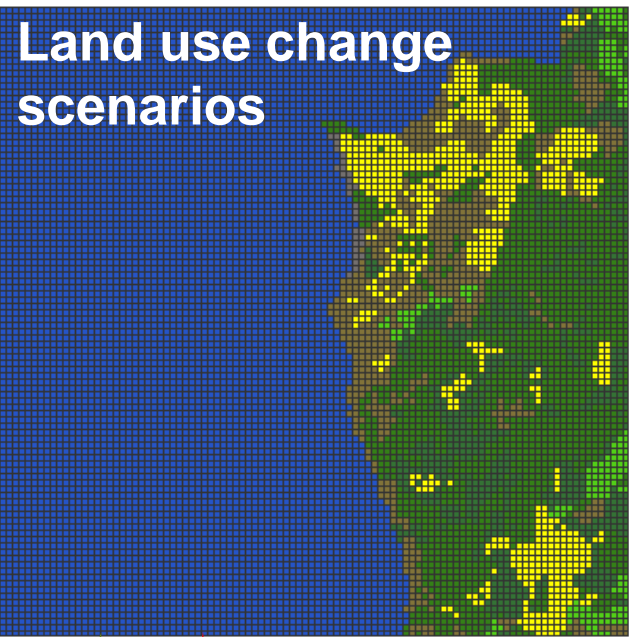
Environmental Restrictions

proximity effects (mutual impact) – forbidden / punished LUC

environmental attributes (suitability / risks) – forbidden / punished LUC

legal frame / regulations





10000 fields

stakeholders

laymen

Management scenarios

Simulation | Import | Definition
 Overview | New | Run

Set stocking
 TYPE OF CHANGE ACTION
 conversion clear cut

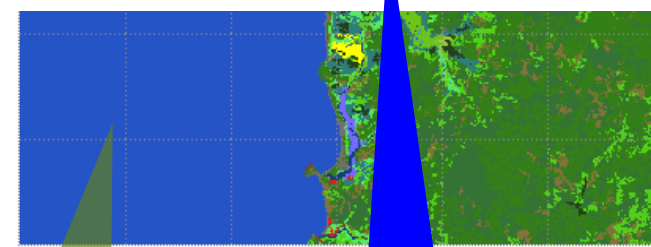
Beech-Spruce
 Beech
 Oak-Beech
 Oak-Fine
 Oak
 Spruce-Beech

BM Toolbar 31,33
 RU off

Reset | Save as | Save DETAIL FOR DEVELOPMENT

TS	D cm	Y m ²	CAI m ³ /ha	Ycum m ³	SV m ³	MAI m ³ /ha	Fuel wood m ³	Industry m ³	Pole stand m ³	Fuel Value kWh
0	10.81 16.96	68577 105952	4.58 6.76	698879 1200737	1765615 2859968	3.66 5.63	32828 52262	25502 39330	9249 13361	81035362 125911047
20	10.47 18.64	57710 106483	3.57 6.25	673126 1333956	1555703 3034831	3.00 5.32	23928 240287	24005 62540	8822 23041	70181795 345701780
50	13.59 15.45	77582 89632	5.97 8.47	716582 1193775	1821360 2659195	3.97 4.72	25495 42316	35318 32949	15136 11954	101844781 107372089
100	18.84 14.53	101051 93489	6.47 7.15	1019625 949408	2478455 2350314	4.92 5.15	31280 45123	46616 35103	20753 12145	134208994 110901030
200	29.93 13.85	83188 80951	4.84 5.76	1858090 932906	3586775 2208301	4.64 4.46	25685 37565	38629 31326	16901 11002	109948573 96816719

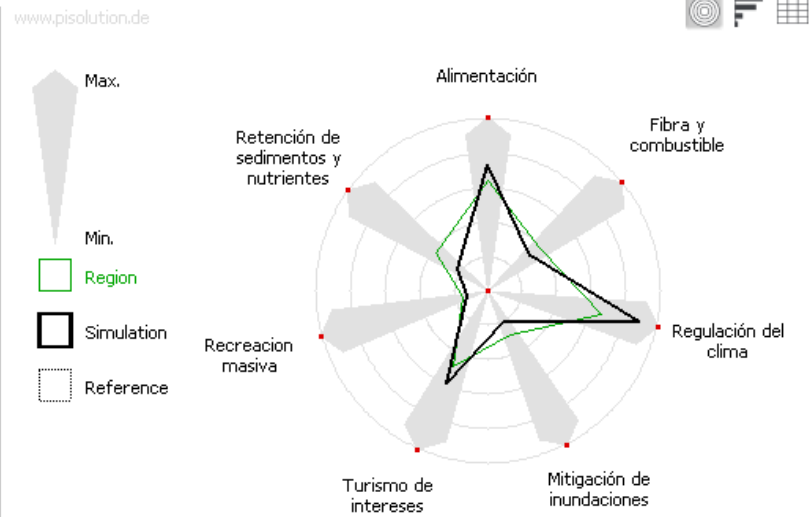
- 0 • conversion of pure pine into oak-pine
- 20 • clear cut of pure spruce, planting of oak-pine



stakeholders

experts

Trends in essential ES
(are decision alternatives acceptable?)



How to | Simulation | Import | Definition

Overview | New | Run

Set stocking

TYPE OF CHANGE ACTION

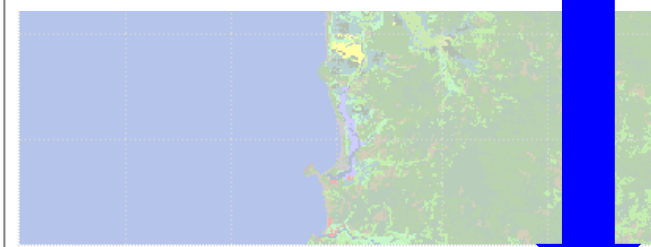
conversion clear cut

Beech-Spruce
 Beech
 Oak-Beech
 Oak-Fine
 Oak
 Spruce-Beech

BM Toolbar 31,33

Temporal variability of specific ES

(how well do decision alternatives correspond to larger scale / political aims, e.g. increased use of renewables?)



How to | Simulation | Import | Definition

Overview | New | Run | Analyse

Scenario selection

Multiple choice (compare)

Dresdner Heide

BAU

conversion to fir in three ste...

conversion to oakdominated for...

Scenario	Y m ³	Fuel wood m ³	Industry m ³	Pole stand m ³	Fuel Value kWh
BAU	81.129	35.562	32.528	12.159	102.043.780
conversion to fir in three ste...	1.189.094	541.167	471.442	167.695	1.498.515.530
conversion to oakdominated for...	54.933	26.861	19.638	7.624	66.433.234

stakeholders

laymen

stakeholders

experts



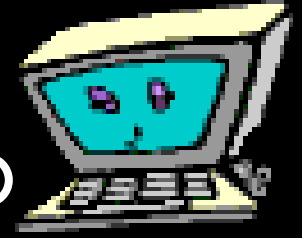
Conclusions

- **Benefit for informed decision processes** – higher transparency, facilitated identification and higher acceptance of LU&LM decisions
- **BUT: limitations** in IT based DST still given by infrastructural (technology base) demands, accessibility and know-how levels so that a clear definition who should participate (targeted actor group) supported by which kind of instruments is requested

➔ request for **public domain solutions**, e.g. implementation as apps / web-offers

➔ request for **tailorable DST** corresponding to individual information needs and professional skills

Thanks for your attention!!!



Life

The Universe

& Everything

42



*... but this is definitively not
what I wanted to know?!?*



(Natural) bio-geo-physical conditions

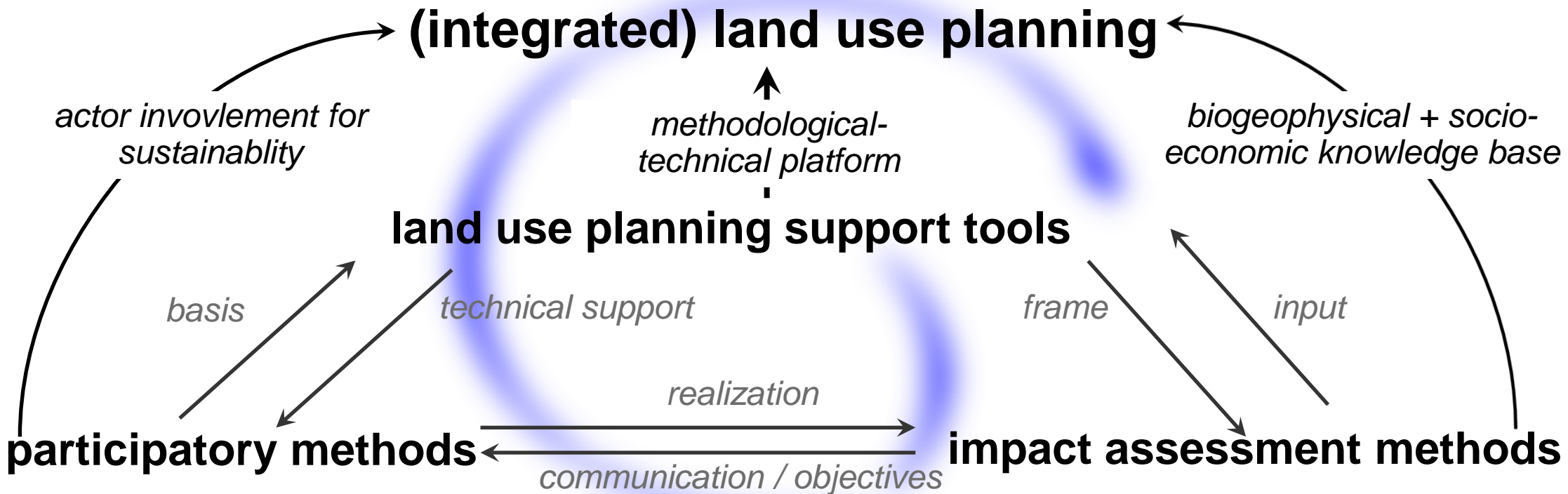
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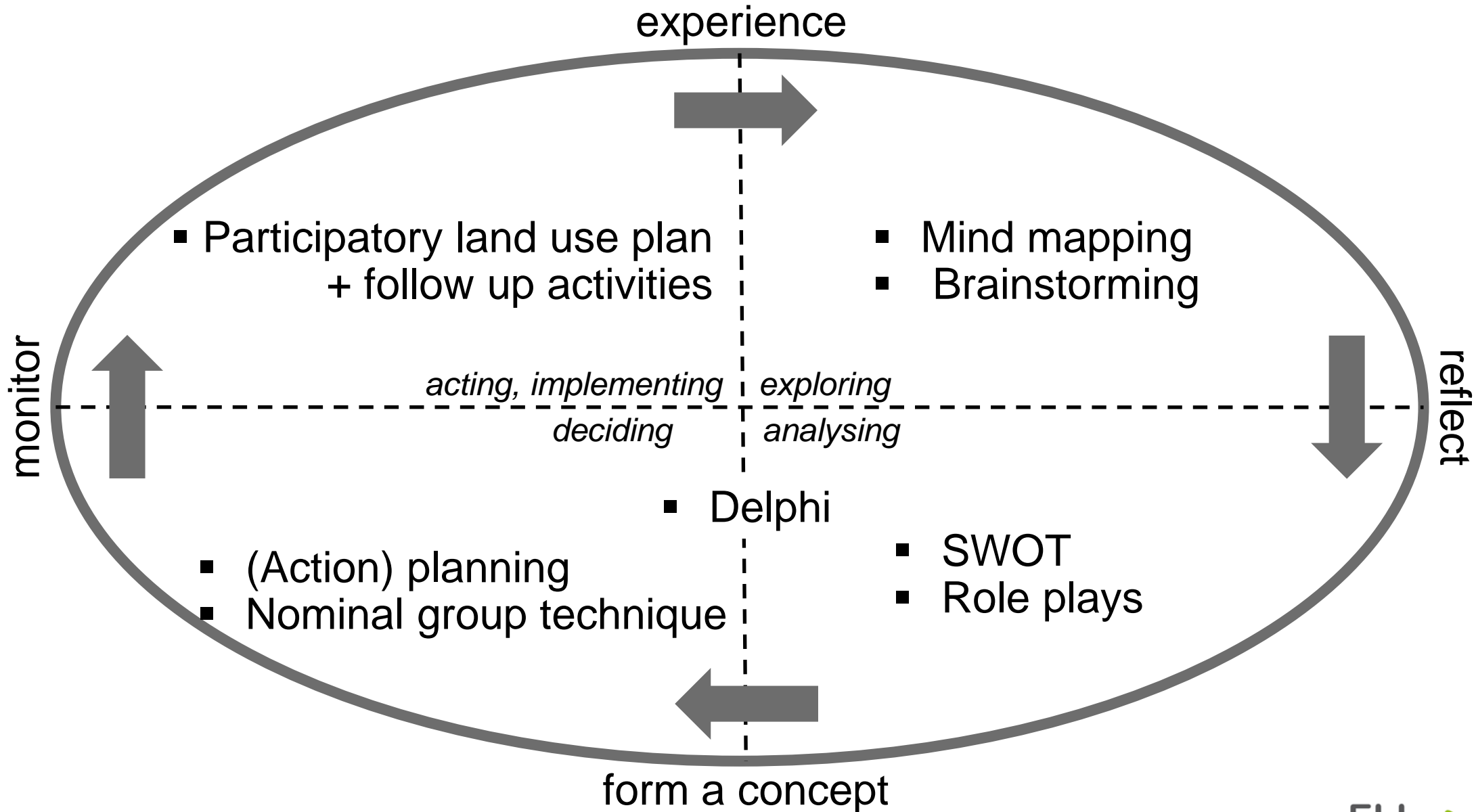
How to embedd?

sustainable ES provision



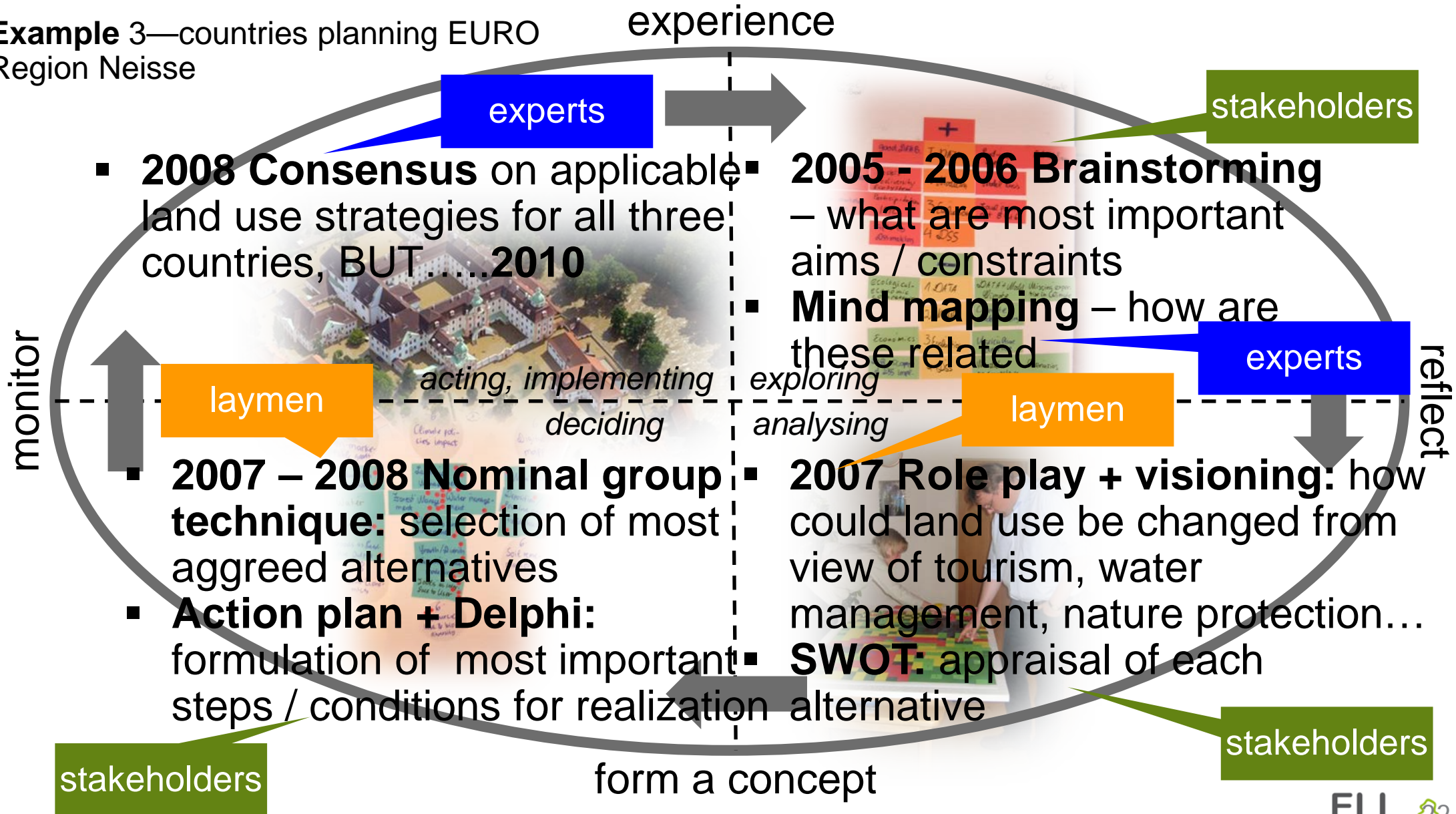


Embedding in a process

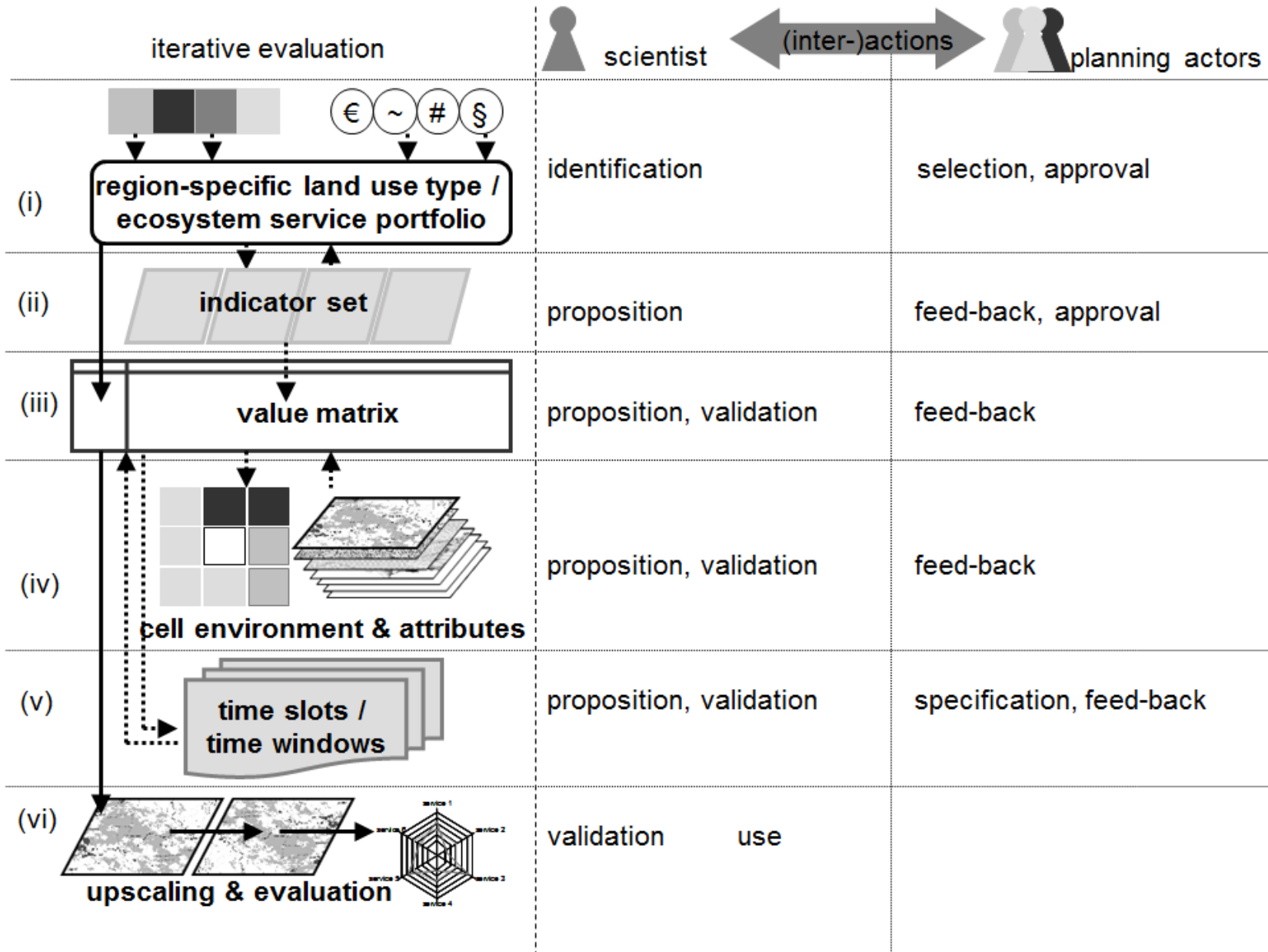


Embedding in a process

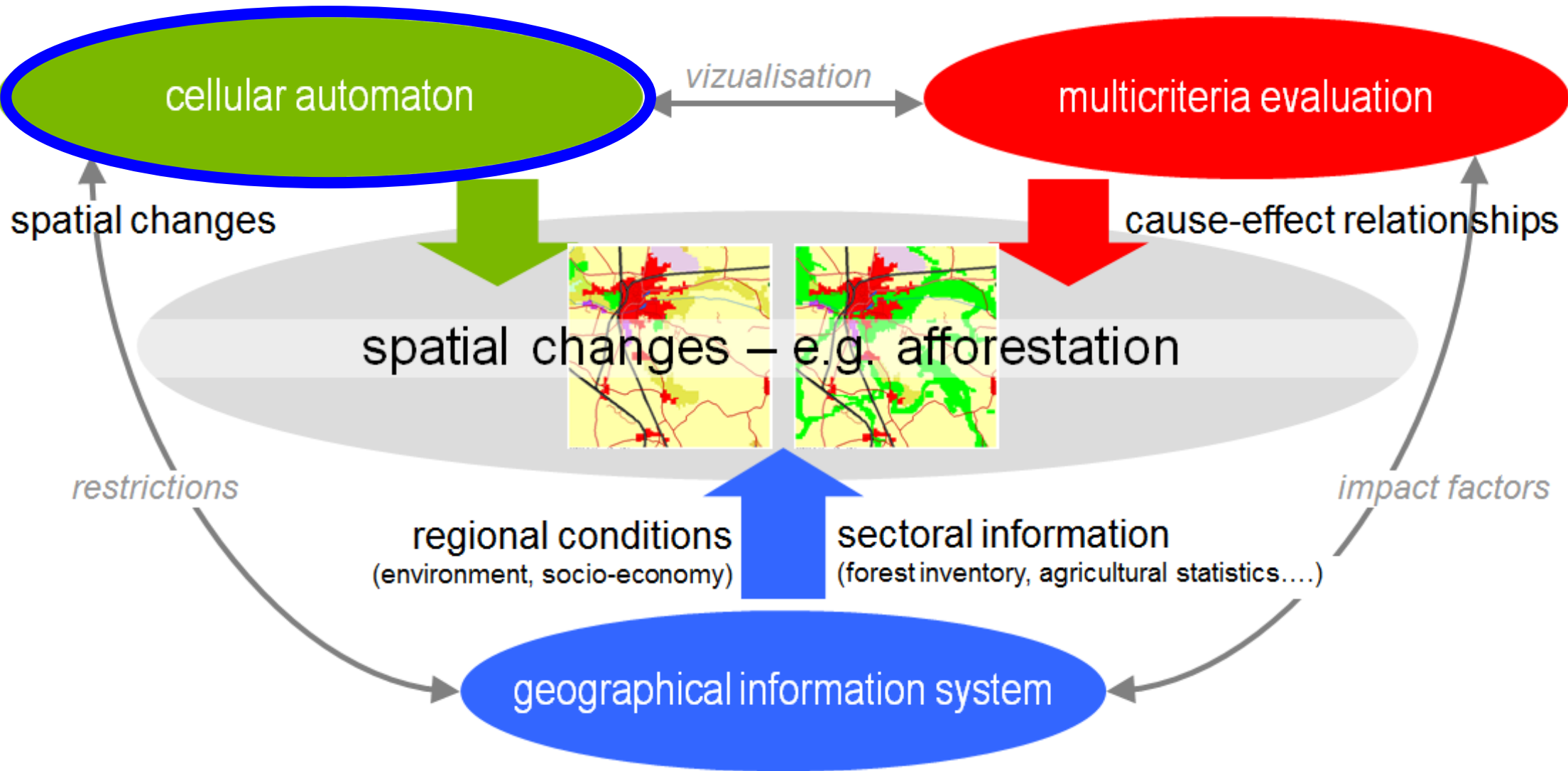
Example 3—countries planning EURO Region Neisse



... but how to integrate in DST?

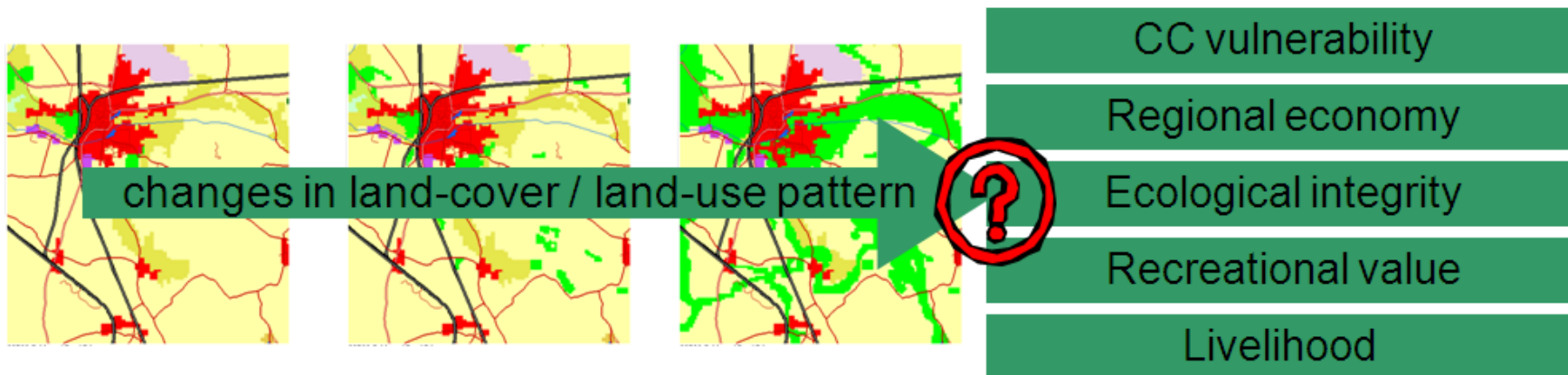


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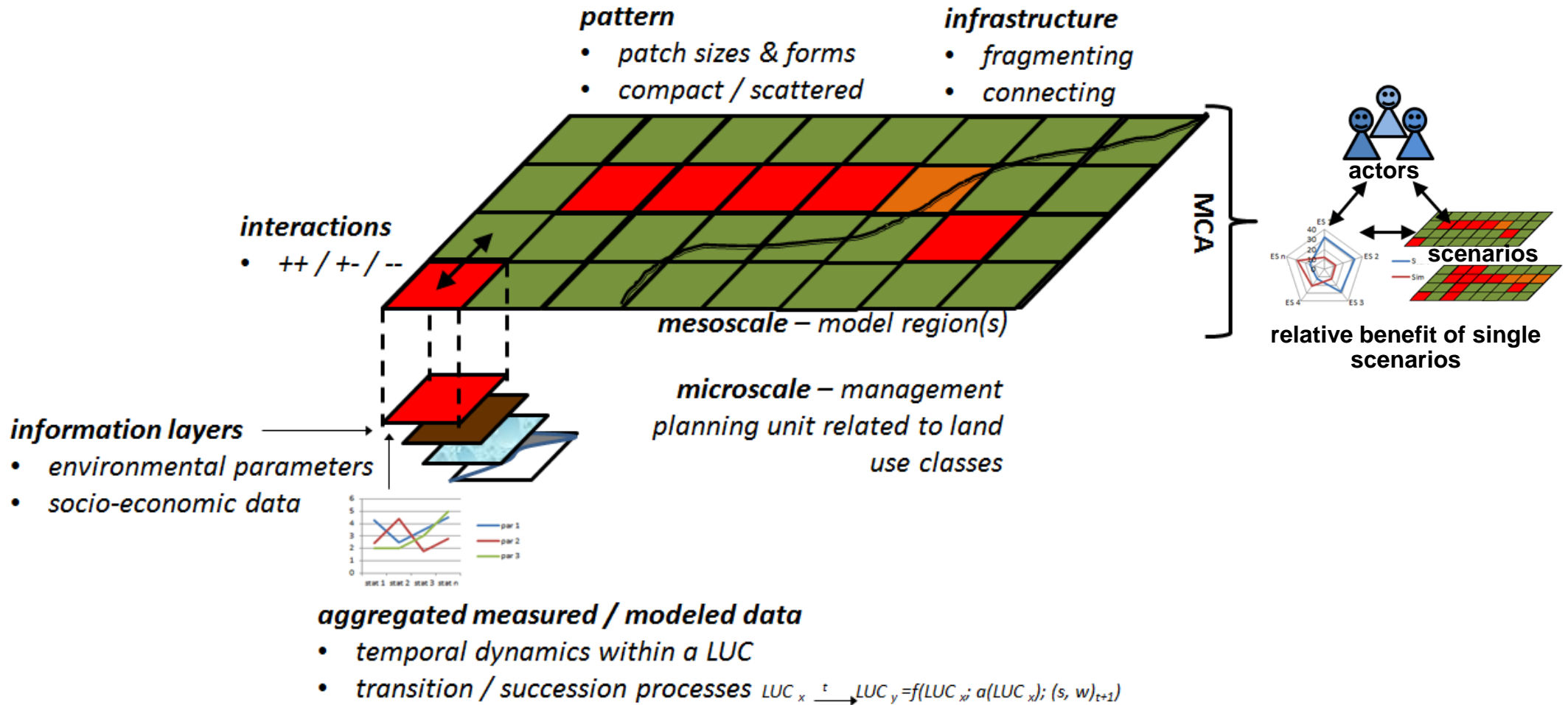


... but how to integrate in DST?

- GISCAMÉ platform for **participatory simulation and assessment of land-use / land-cover change scenarios**
- Consideration of **environmental and socio-economic attributes**, planning restrictions, landscape structural aspects
- **Qualitative evaluation** of the impact on ecosystem or landscape services (or other concepts)



... but how to integrate in DST?





Who are these actors and how can they be involved in land use planning?



Why do we need to involve them?

- Are the needs of (all) actors met so that decisions are based on consensus?
- Are there trade-offs? (biodiversity, natural resources, future generations)
- Are these acceptable or if not how should we adapt our decisions?

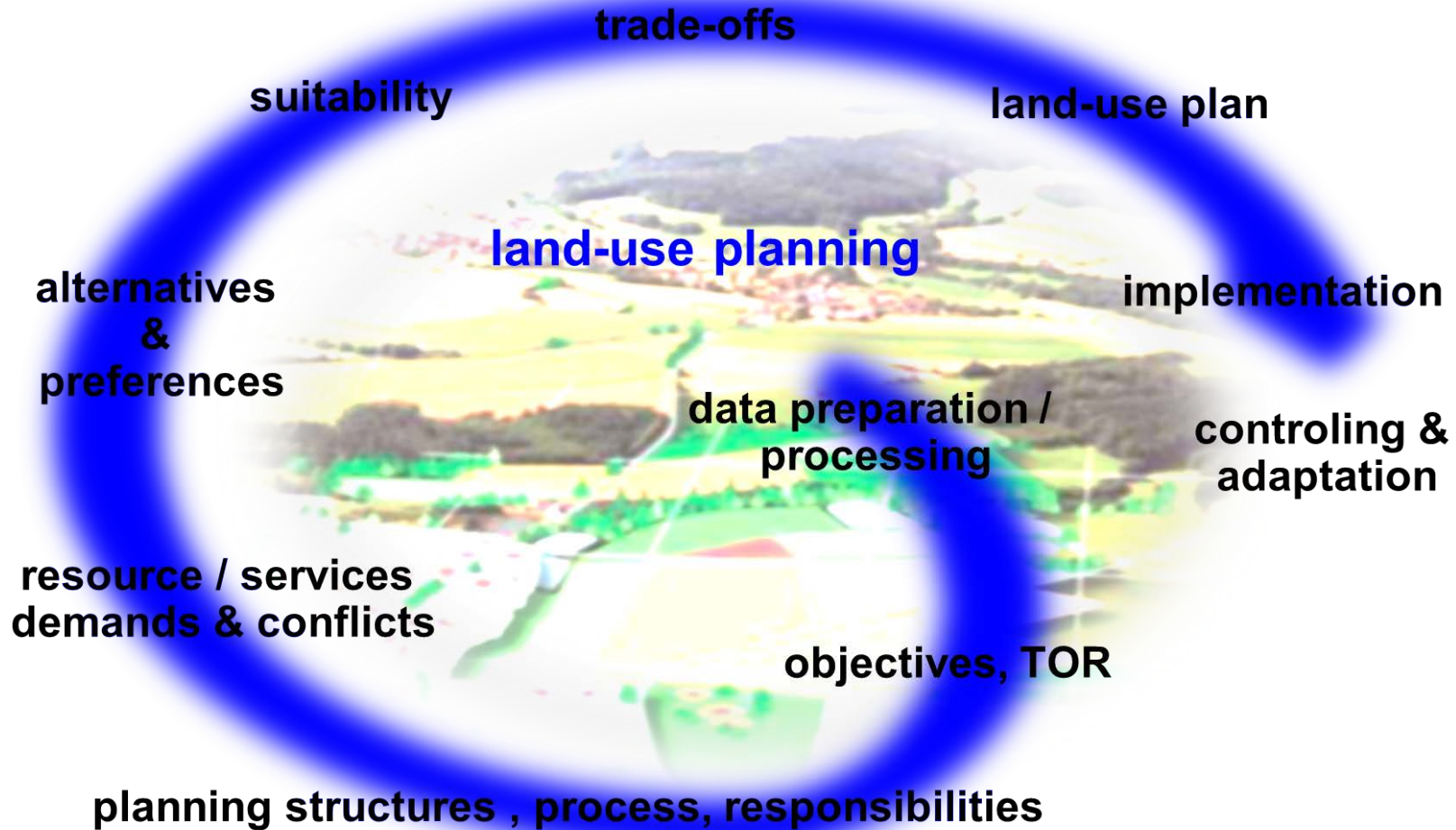


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