


Institute for Advanced Sustainability Studies
IASS in Potsdam Germany

Creativity, Collectives, And Complexity

Understanding opportunities for and consequences of innovation in diverse socio-ecological contexts

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Premises:

1. Past innovations have led to the Anthropocene Era and to unsustainable societal patterns and present threats to the world's social-ecological systems

2. Societies must learn to innovate differently in order to address the urgent complex global challenges at multiple temporal and spatial scales and contexts

3. Societal adoption of innovations for sustainable futures requires major societal transformations (e.g., in consumption and production)

4. Societal transformation requires collective behavior change at multiple scales and governance levels

Questions:

1. What societal changes will help us meet sustainable development goals and live within planetary boundaries?

2. Under what conditions does collective behavior change occur in different contexts, conditions, and cultures?

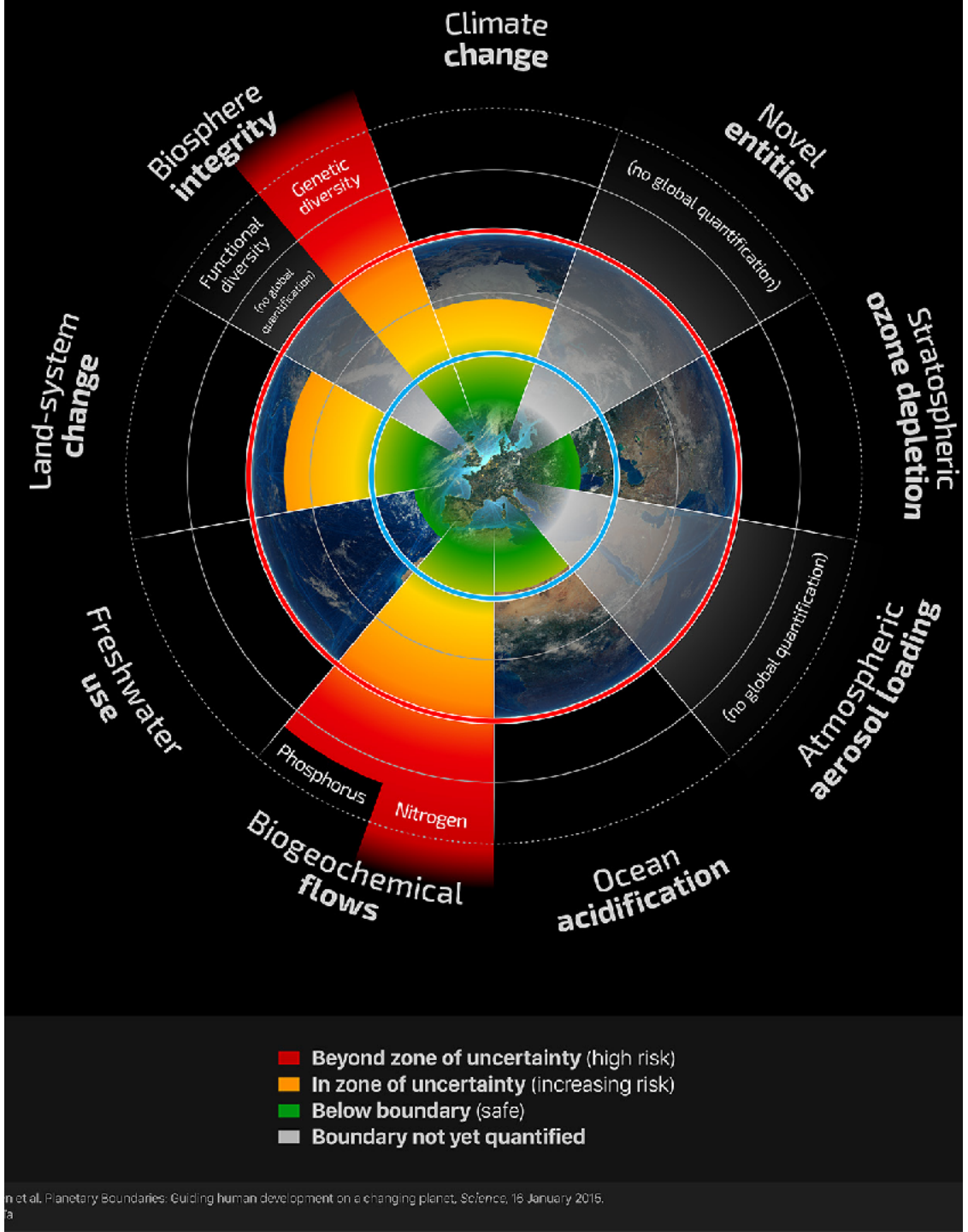
3. How can collective behavior change to foster adoption of societal innovations be catalyzed effectively?

4. How can we design models and games to support societal innovations by helping
   - citizens become more engaged in acting for their futures?
   - scientists better understand peoples' motivations and decisions - and lead to better options for decisions?

We entered, but we can't go back

Planetary Boundaries 2015

1. **Climate change**
2. Change in biosphere integrity (loss of **genetic diversity**)
3. Stratospheric ozone loss
4. Ocean acidification
5. Biogeochemical flows (phosphorus, **nitrogen** cycles)
6. **Land-system change**
7. Freshwater use
8. Atmospheric aerosols
9. Introduction of novel entities - e.g., organic pollutants, radioactives, nanomaterials, micro-plastics



Sustainable Development Goals (SDGs)

Living In The Anthropocene Era

- Human actions have caused and are causing biological, chemical, and physical changes on geologically recognizable temporal and spatial scales
- Innovations were central to many of these changes, most of which were unintended or unanticipated
- Societies must learn and innovate repeatedly to cope with rapid changes in complex social-ecological systems
- New innovations based on societal needs are needed for sustainable future**s** in diverse contexts and cultures
- We seek to understand processes of creativity and societal innovation appropriate for diverse cultures and contexts
- Adjacent possible expands by inclusion of diverse actors

KLASICA ALLIANCE

Knowledge, Learning and Societal Change
An International Research and Action Alliance

KLASICA is an international research network of individuals and institutions seeking pathways to just and equitable sustainable futures appropriate to local conditions and cultures

Mission:

- to identify and understand the conditions under which collective behavior change (CBC) toward just and equitable sustainable futures occurs or fails to occur in different scales and contexts and
- to use that understanding to advance solutions for and promote actions on pathways to sustainable futures.

www.KLASICA.org

Why *Collective* Behavior Change?

1. Individuals generally lack a strong sense of agency when the
   - issue is complex - multiple feedback loops in time and space
   - unclear causality, high uncertainty, not immediate & personal
   - outcomes of individual actions are difficult to assess
2. Individual behaviors are often uncoordinated, inconsistent, or in opposition to each other, so are insufficient for transformation
3. Governance (e.g., policies and regulations) for sustained compliance requires establishment of concordant social norms
4. Broad societal engagement is essential for making strategic short-term decisions, rather than deferring difficult decisions

Communities Of Purpose (COP)

Members of (ideologically) heterogeneous communities may share common purpose(s) and thus act together

- Local, tacit, traditional knowledge and formal scientific knowledge are needed to find solutions for sustainability
- Creativity of heterogeneous COPs can help to address the community's needs
- Mutual learning among stakeholders with substantial inequalities in power, resource, or ideology is essential
- Can basic notions of complexity be made simply accessible?
- Adjacent possible may lie in ideas of a person next to you

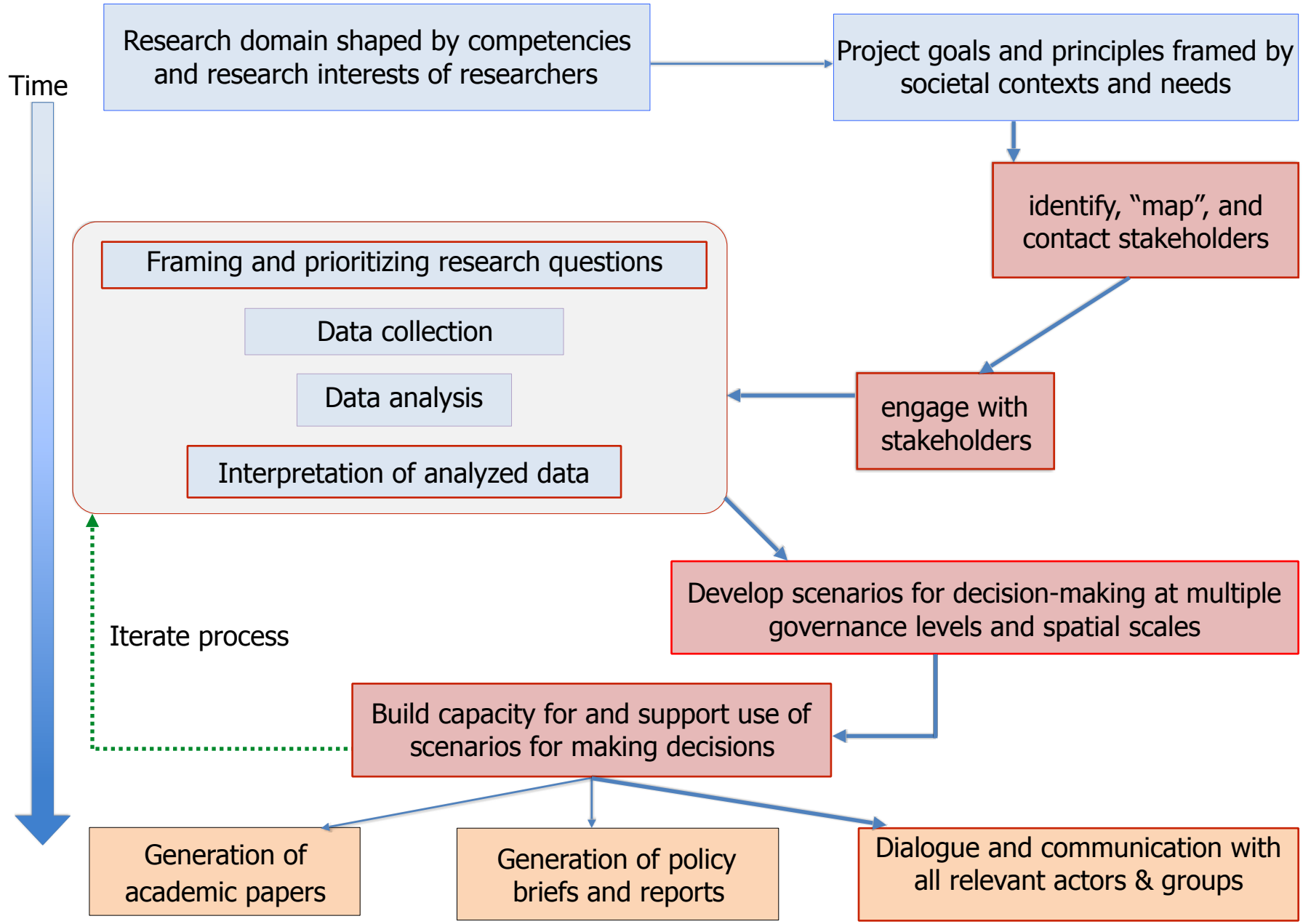
Dialogues with Rights-holders and Stakeholders

Arctic Circle meeting, Reykjavik: resource extraction companies, indigenous communities, OECD, UN, local communities, state governments

Arctic Council SD working group, Barrow, Alaska

Polish Fisheries Roundtable established

Taipei KLASICA case study symposium



Narratives As An Affective Lens

Stories, images, music, sculpture, dance have

- **affect** (emotions), **effect** (impact, memorable, shareable), and **reflect** (perspective)
- can **motivate** and enhance agency
- help **make sense** of complex ideas and extensive data
- express **identity, worldview, ideology**
- provide **visions** to inspire actions
- resonate in local **contexts and cultures**
- influence both **policy** and **political will**, i.e., top down and bottom up influence

Can narratives be used to inform rules for computational models?

Communicating About Complexity

Some simple characteristics of complex systems

- systems have multiple interacting components
- systems have boundaries that certain things can cross
- feedback loops connect some interdependent components
- feedback can be positive (reinforcing) or negative (damping)
- feedback loops may occur over space or time (or both)
- these properties lead to inherent uncertainty, ambiguity, and the potential for unintended or unanticipated results

Gaming the Future

goal: engage stakeholders in meaningful dialogues on complex issues of sustainable futures (SDGs) relevant in their own context

game: a boundary object for engaging on issues in an form accessible to different ages, education, experience

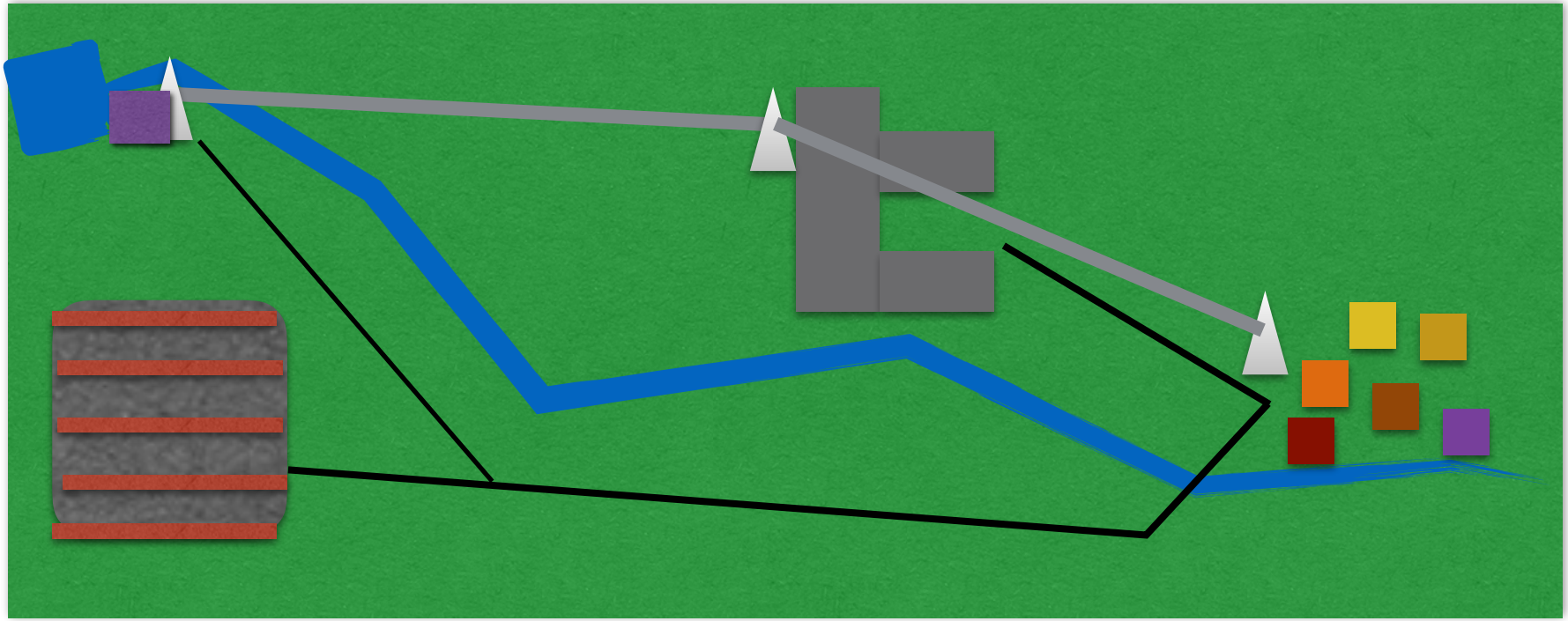
multimodal games: augmented reality; physical plus electronic systems to make plausible consequences of actions evident

observations: record user actions and interactions; model context-dependent actions and social mediation of choices

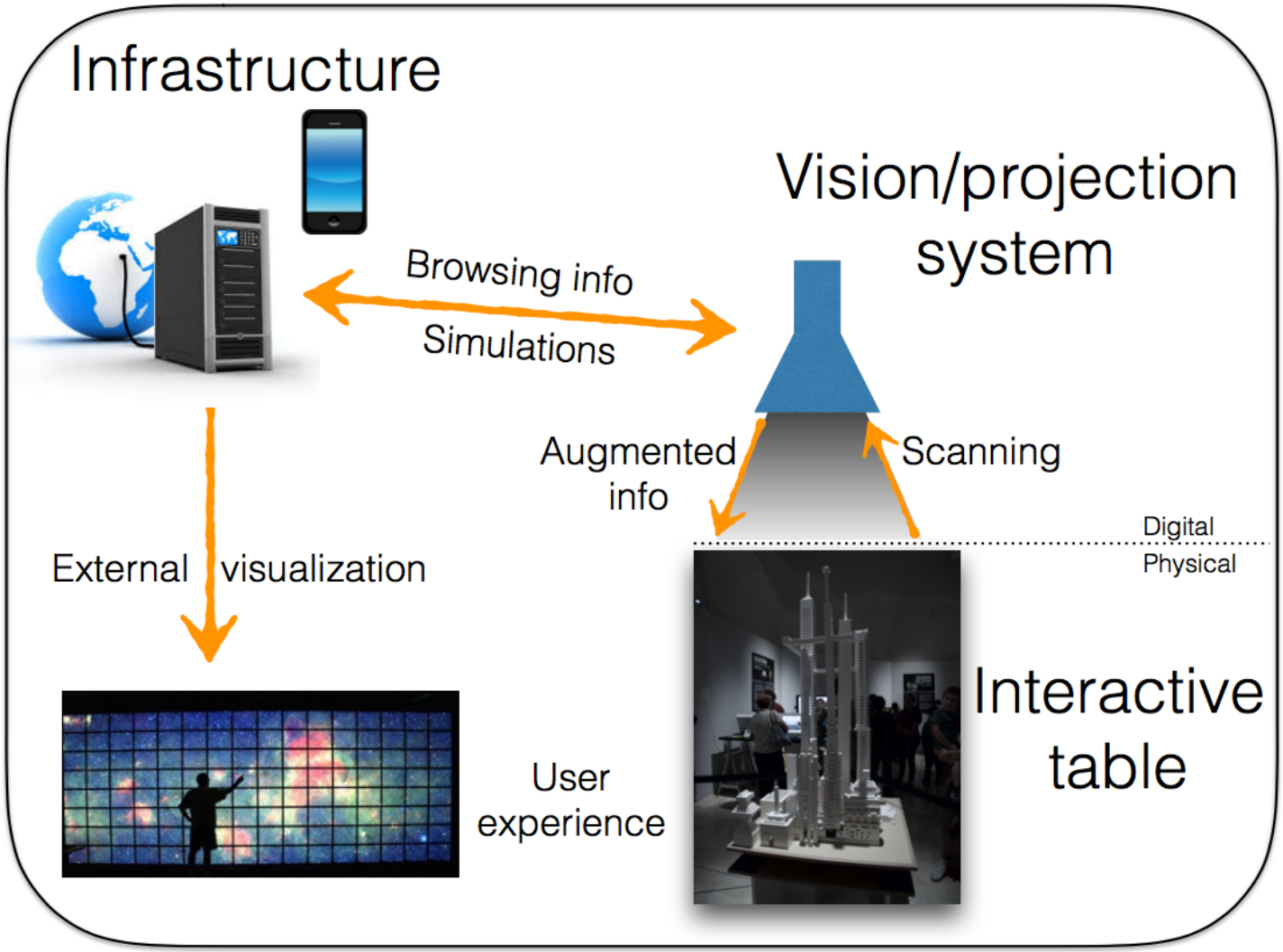
outcome: greater understanding of social processes in creative search for solutions under complexity, interdependency, and value-laden tradeoffs

example: concept for "Gaming the Future" - visualization of consequences of actions on user-built LEGO landscapes

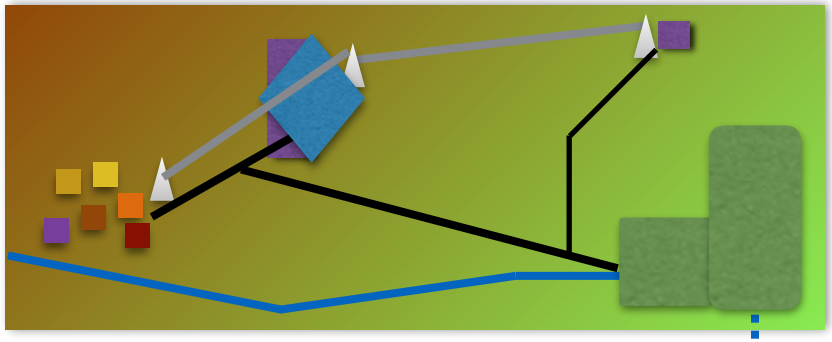
Landscape Construction Zone



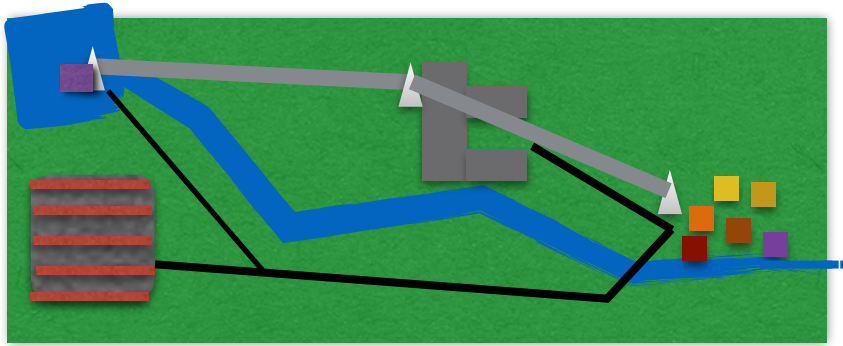
"Gaming The Future" Concept



Interdependent Landscapes



Mumbai



Rome

THANK YOU!

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