COLLABORATIVE MODELING AND VISUALIZATION PLATFORMS

EMBEDDING ECOSYSTEM SERVICES FOR DECISION SUPPORT

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CORP 2013

PLUS
PLANNING OF LANDSCAPE AND URBAN SYSTEMS

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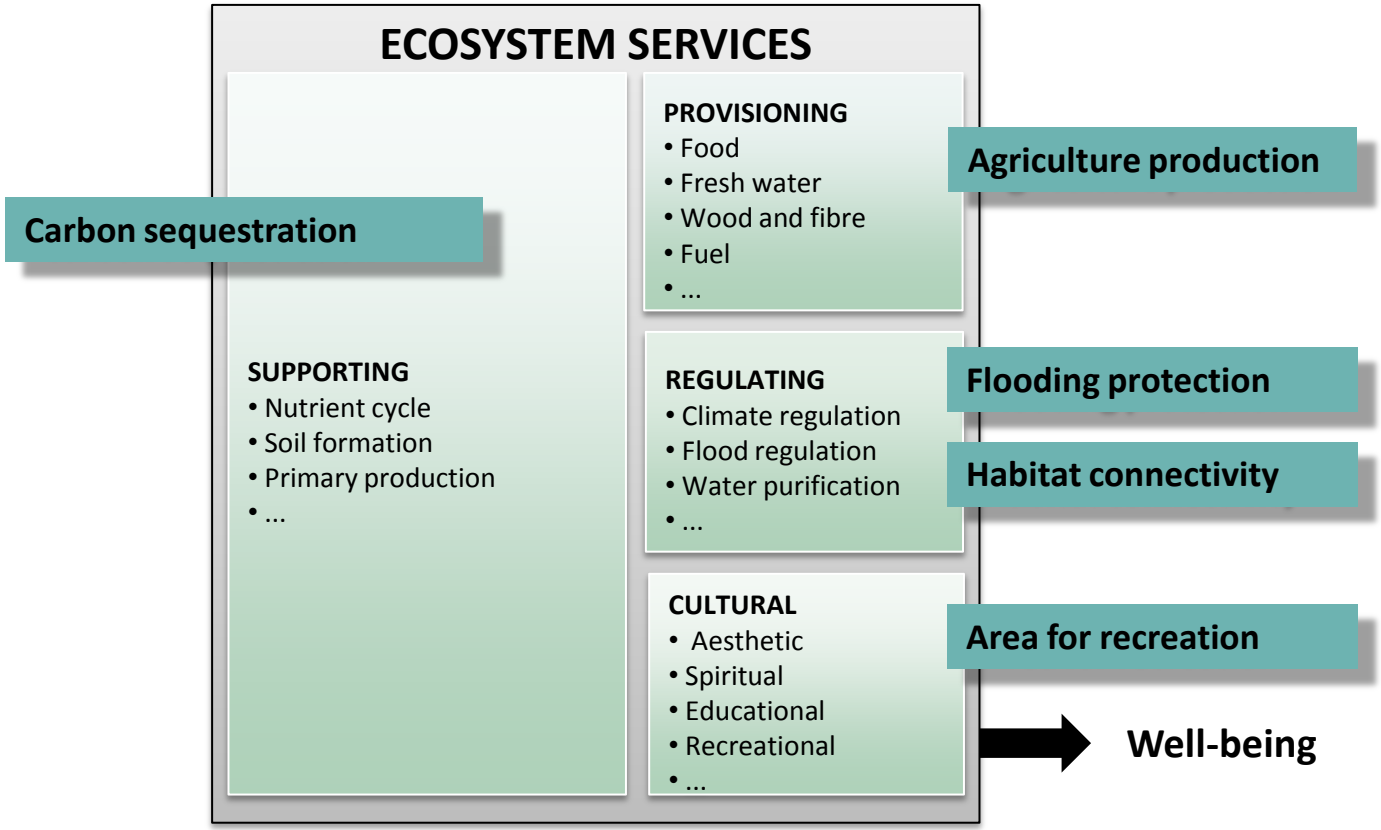
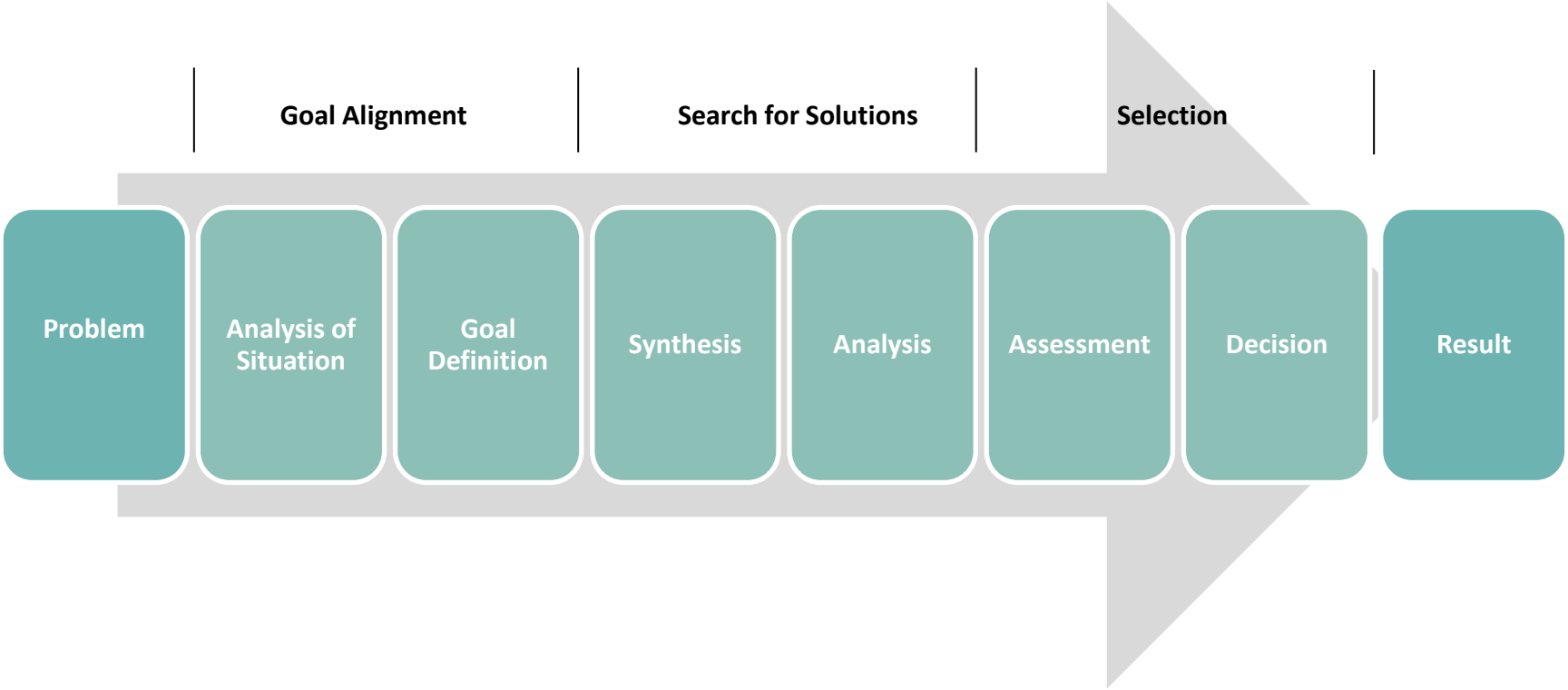
Image Sources: www.flickr.com

CONCEPT OF ESS



Source: Millennium Ecosystem Assessment

SUPPORT OF PLANNING PROCESS



REQUIREMENTS (TEEB 2012)

- **Use indicators as a management cockpit**
- **Yet not well informed by indicators about human well-being**
- **Consolidate the number of categories to be assessed**
- **First phase: low number of general indicator;**
  second phase: user specific indicators

BEHAVIOR & CHARACTERISTICS

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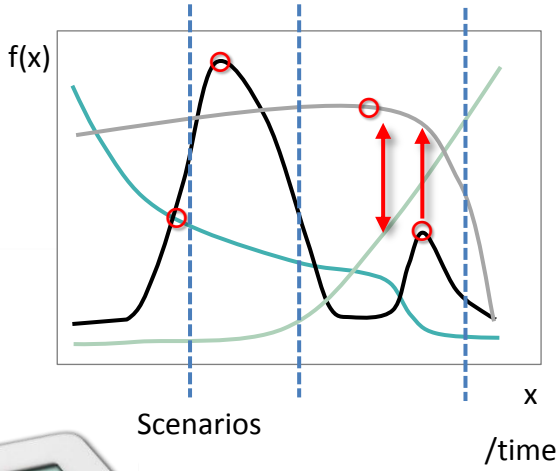

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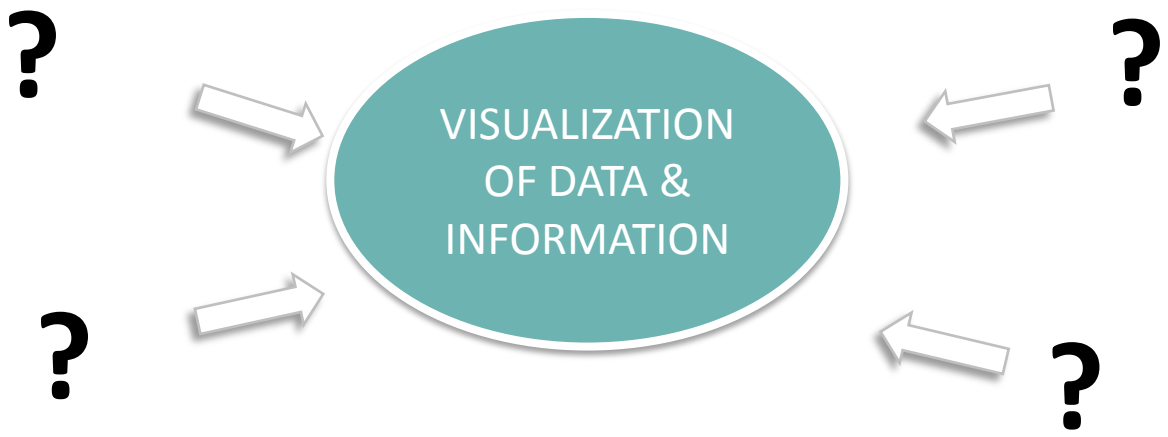
DEVELOPMENT STEPS

- **Analysis of demands**
- **Categorization of demands & requirements**

- **→ Go through “Creative Problem Solving Process” according to Alex Osborn (1953)**

Image Sources: http://www.directionservice.org

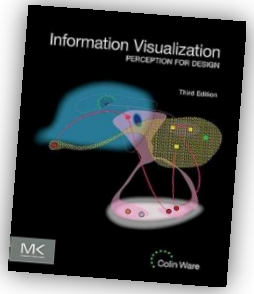
STRUCTURAL LINKAGES



VISUALIZATION OF DATA & INFROMATION

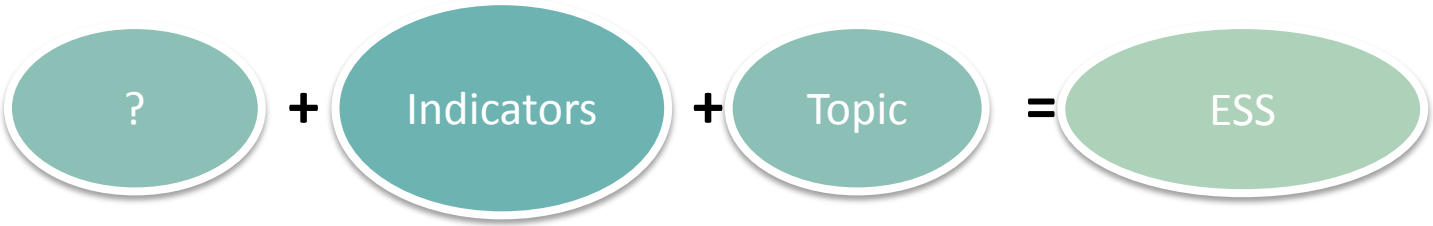
- "The ultimate goal of interactive visualization design is to **optimize applications so that they help us perform cognitive work more efficiently**. Optimizing a system requires that we have at least some conception of value. We use visualizations because they **help us solve problems faster or better, or they let us learn something new**, and these activities have monetary value."

Colin Ware (2013)



VISUALIZATION OF DATA & INFROMATION

- **Question + Visual Data + Context = Story** [Steele & Iliinsky 2010]

- 

- **Stories = efficient format for providing the additional information necessary to attain maximum understanding of an image.** [Segel & Hacker 2010]

VISUALIZATION OF DATA & INFROMATION

- How can we develop tools to enable normal people to do “super-human” analysis?
- What is the best visualization for each user?
- How can one better select and implement visualization tools to maximize information?

VISUALIZATION OF DATA & INFROMATION

- Individual/personal cognitions → psychological effects
- → various visualization types for supporting each other

Image Sources: http://illusion-mfh.kitt.net & ttp://johnscorner.blogspot.ch

VISUALIZATION OF DATA & INFROMATION

- **Visualization needs to be used a lot more and a lot better**

- **Do not use only one single form of visualization!**

Image Sources: www.scoop.it

VISUALIZATION OF DATA & INFROMATION

- **People want to know more details**

Initial Data

→

Object Libraries

→

Realistic 3D Visualization

- **Importance of realism for decision making?**

Image Sources:www.scoop.it, http://cs.swan.ac.uk, http://1.bp.blogspot.com

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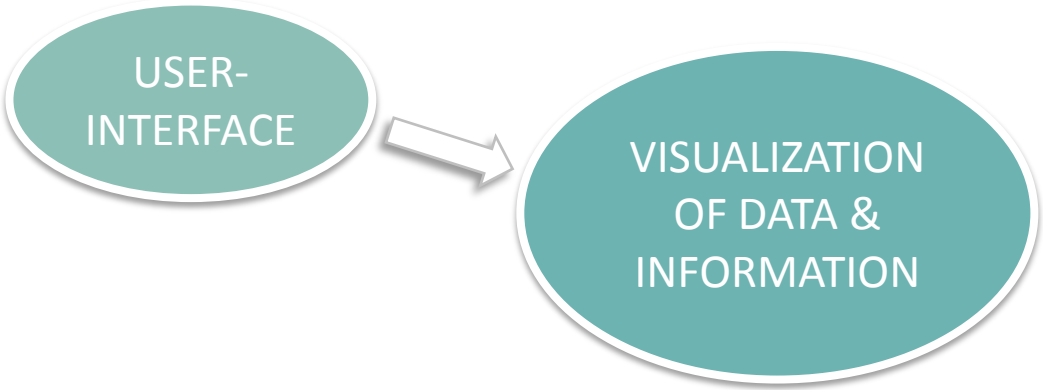
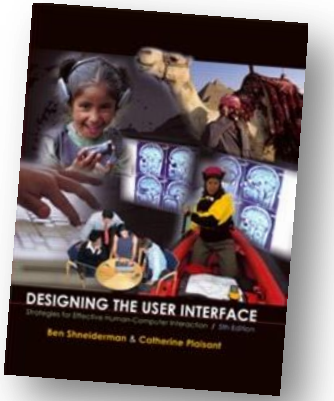


USER-INTERFACE DESIGN

- Diverse cognitive and perceptual abilities

→ A vital foundation for interactive systems designers is an understanding of the diversities of users.

Shneiderman & Plaisant (2009)



USER-INTERFACE DESIGN

- Customized interface design depending on user group
- Reduced complexity of the user-interface
- Controllability / details on demand

Image Sources: http://media.timeout.com, http://image.made-in-china.com

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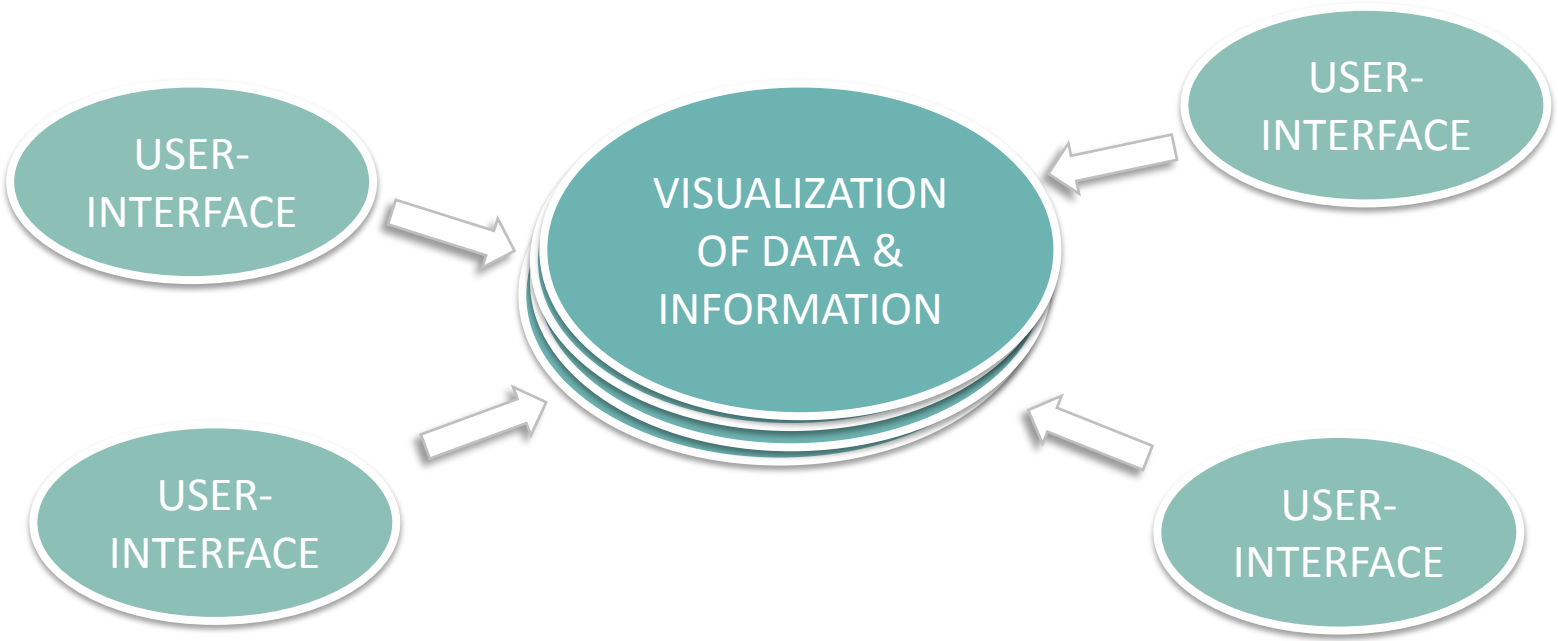

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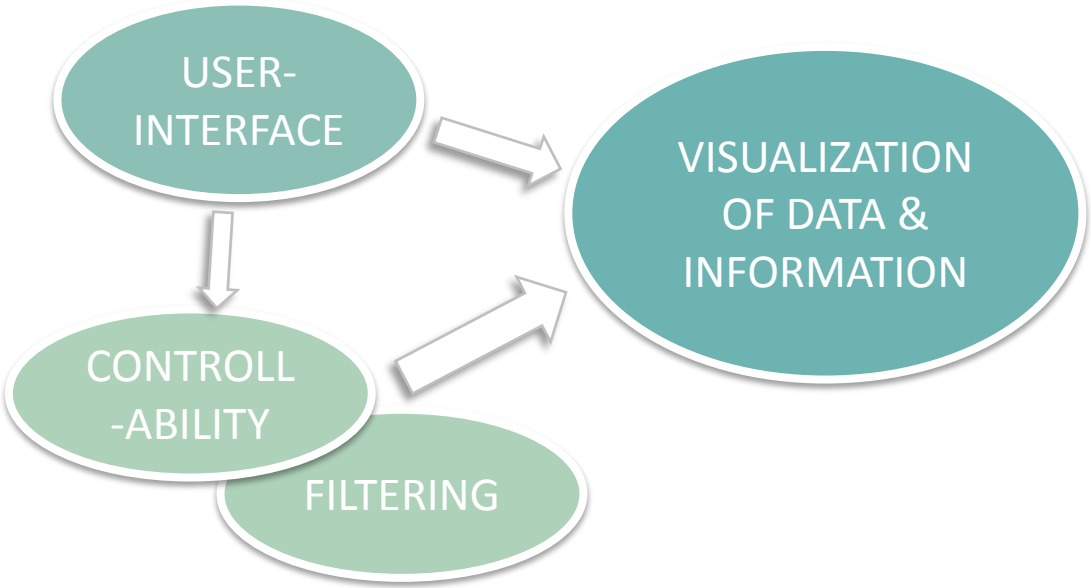


LEARNING PROCESS

- **Various learning types (Kolb 1984)**
  - **With various personal effectiveness**
  - **Various implementation effectiveness**

Abstract Learning / Conceptualization

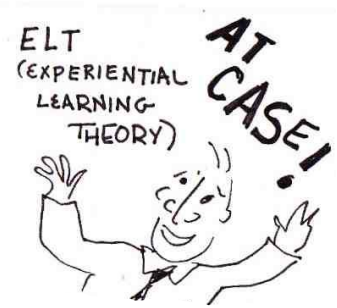
Observe & Reflect

Concrete Experience

Active Experience / Doing

Image Sources: cdev.concordia.ca, www.metatube.com, www.pleated-jeans.com, fromthierryshead.com

LEARNING PROCESS



- **According to Kolb, D.A. (1984).** ***Experiential Learning*.**

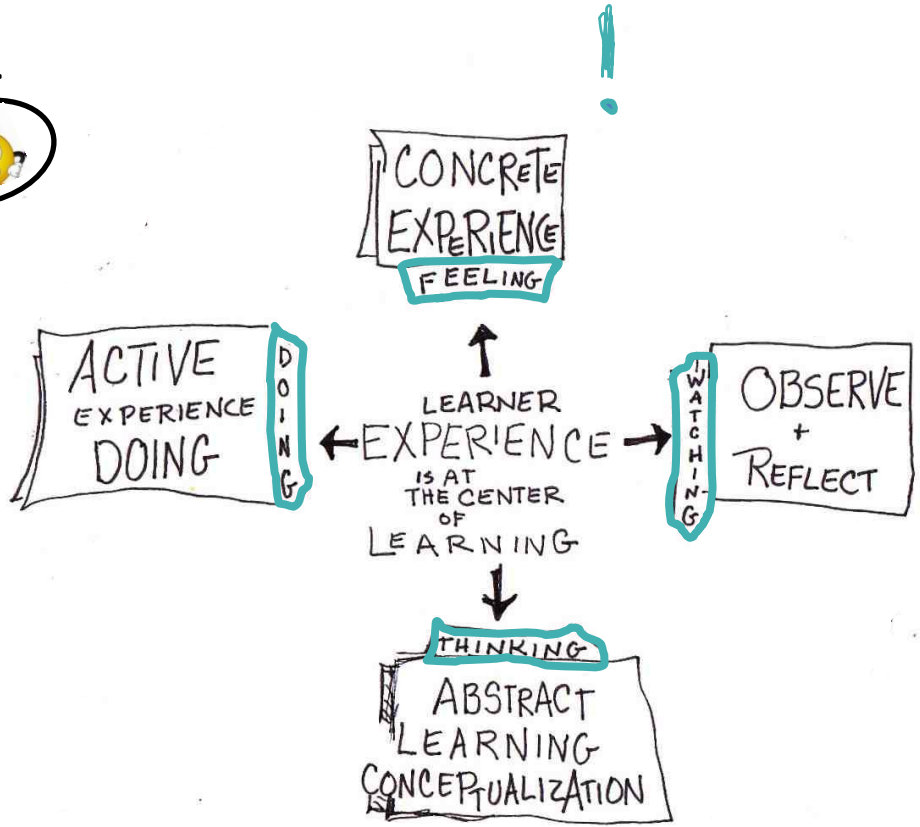


Image Sources: http://christianlefer.com

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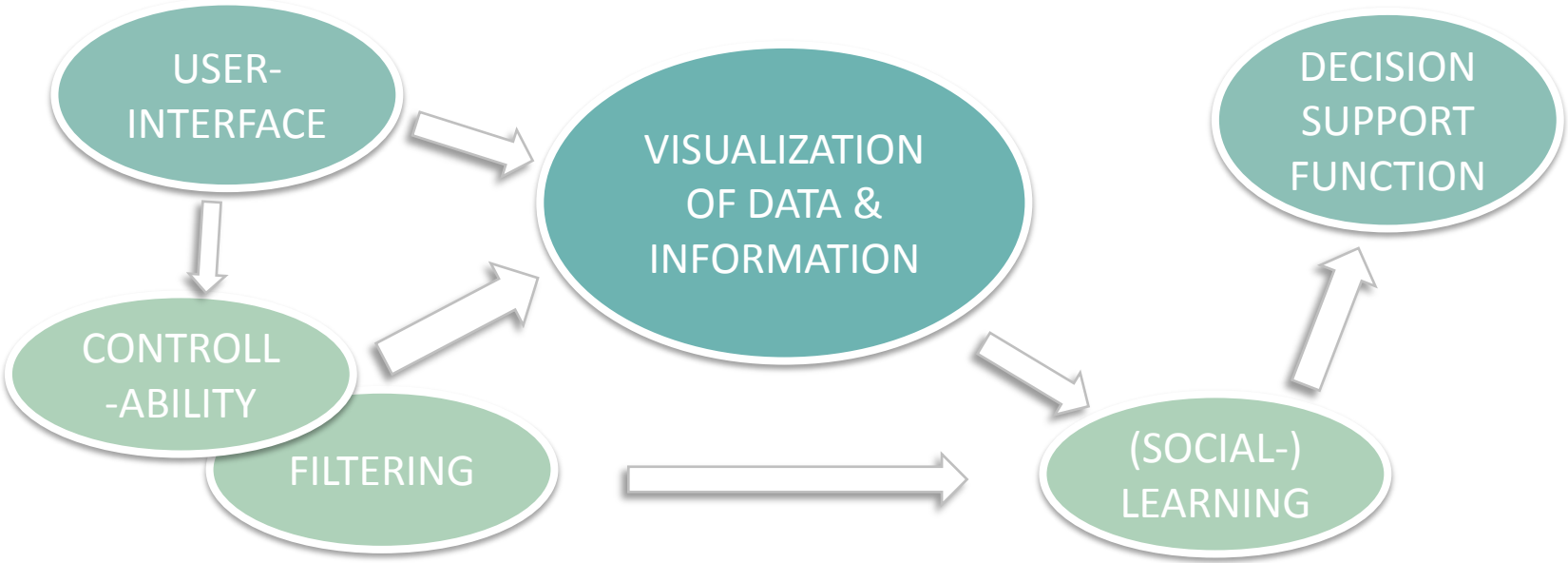

IMPLEMENTATION

IMPLEMENTATION

- Testing various DSS-packages

→ systemic & relevancy to practice

- Finding correct visualization/interface for corresponding user demands / process requirements

- Finding correct linkage between “DS-Tool”/ visualization type and planning process

- Validate application and benefit

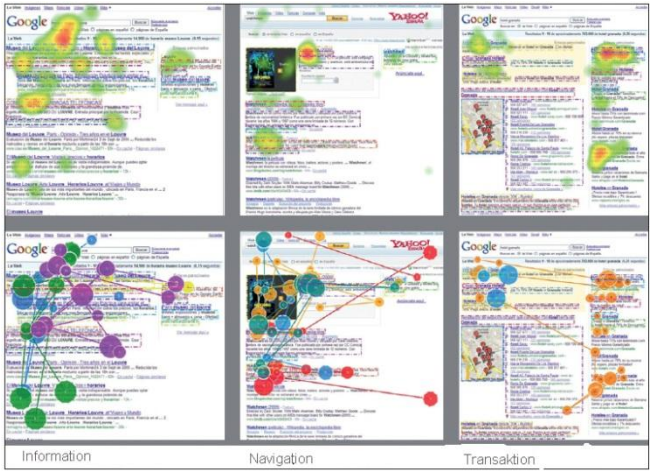

Image Sources: http://www.usability.ch, http://www.humanfactors.com, blog.runrev.com

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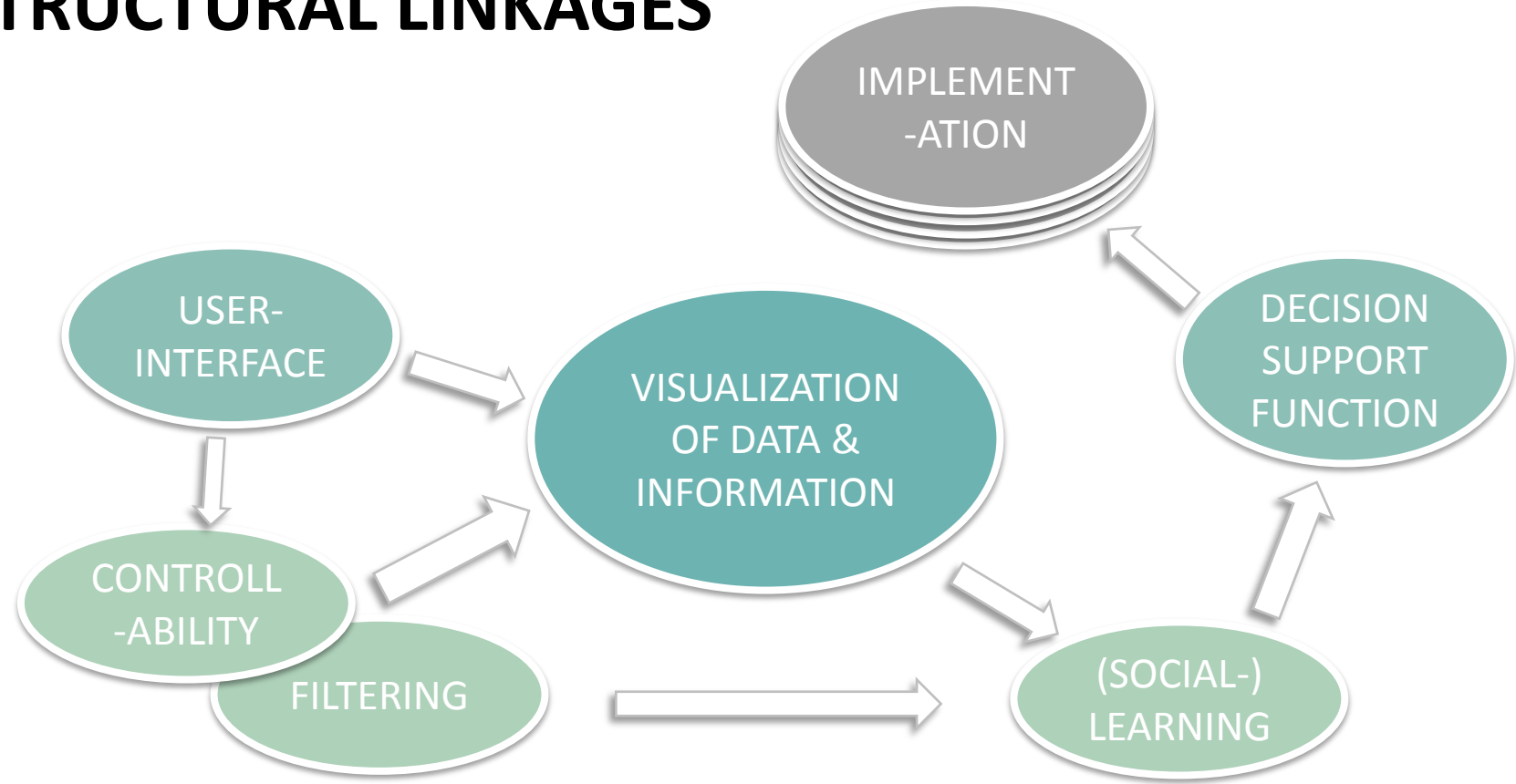

PROBLEMATIC / TASKS

- **How can ESS / indicators be valuated by various visualization types, that they are understandable for everyone and trade-offs can identified?**

- **How can different scales / dimensions be integrated / considered by this valuation?**

- **How can a database-link be created to link automatically correct e.g. vegetation types to realistic land use patterns for valuation of cultural services?**

- **How does the DSS fit into the established planning processes?**