

# Creativity Support Tools

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## Some examples

- US Library of Congress
- International children's digital library: 1500 books
- Spotsfire: commercial tool
- Treemap: Stock Market, Music, Books classifiers

## Key Sources

1. Csikszentmihalyi, *Creativity*, 1996, *Finding Frow*, 1997
2. Sternberg, *Handbook of Creativity*
3. National Academy of Sciences, *Beyond Productivity*
4. Florida, *Rise of the Creativity Class*, 2002
5. Von hippel, *Democratizing Innovations*

## CST Goals

- More people, more creativity & more of the time
- More software, that helps us be creative

## Structuralists: A plan, method, process

Polya's structure:

- Understanding a problem
- Devising a plan
- Carrying out a plan
- Looking back

Atman's design steps

- Problem definition
- Gather information
- Generate ideas
- Modelling
- Feasibility

## Inspirationalists: Aha, aha, aha!

Free association

Brain storm, ideation, thesauri, random stimuli

Breaking set

Work on other problems, get away to different locations

Visualization

2-D network of ideas, sketching

## Situationalists: Context, community, collaboration

Personal history

Family history, challenging teachers

Consultation

Peers&mentors; in early, middle and late stages  
Motivation  
Legacy, admiration, competition

From Czikszentmihalyi's book *Creativity*

- Domain
- Field
- Individual

### **8 activities**

1. Searching and browsing digital libraries
2. Consulting with peers and mentors
3. Visualizing data and process
4. Thinking by free association
5. Exploring solutions – “What if” tools
6. Composing artifacts and performance: Powerpoint
7. Reviewing and Replaying the session histories: PhotoShop, MS Word
8. Disseminating results: Publishing, online papers, interaction with readers

**Evaluation Methods:** Ethnographic

- Multi-dimensional
- In-depth
- Long term

For example, MILC

- Evaluation hierarchical clustering Explorer
- Focused on efficacy of rank-by-feature framework
- 57 email survey
- 3 case study (molecular biology, statistics, meteorology) for 4-8 weeks

### **Guidelines CSIT**

- Support good explorer
- Support many paths & many styles
- Low threshold, high ceiling& wide walls
- Use templates, exemplars (PowerPoint)

### **Creativity Challenges**

- Evolve new theories: incorporate social, technical dimensions
- Identify the role of creativity in all disciplines
- Propose radically new CST
- Design socio-technical environments to enhance group creativity