Images as Action Instruments in Complex Projects

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Background

- Images have always been important in managing projects
  - Gantt, PERT/CPM, WBS, ...
- Traditional images appear to be insufficient in complex projects
- Alternative images have emerged in practice
- More or less ignored by the research community
Knowledge interest

• Reason for the insufficiency of traditional images?
• Qualities of alternative images?
  - What makes them attractive in complex projects?

Point of departure - enactment

“[The enactment view] starts with human action and examines how it enacts emergent structures through recurrent interaction with the technology at hand” (Orlikowski, 2000)

Acting in order to evoke meaningful and useful resources in some context
Any idea?
Means, capabilities and resources

Capabilities of means

Capability of human

Resource

Resources always related to intentions, goals
Capabilities of humans requires learning
Capabilities depend on the context

Organizations, workpractices, ...

Work object, result

Anatomy

inventing for enhancing resource dependencies

Need, motive

"Transport heavy stuff"
Dimensions of resources

Activity Modalities

- Empirical grounding: observations from industrial projects
- Theoretical grounding: Activity Theory, cognitive sciences

Context dependent

Resource! Liability!
Temporally oriented

Spatially oriented
Regulatory oriented

Instrumentally oriented

Hubble telescope

“Attention!”

Material character

Linguistic character
Cooperatively oriented

Dimensions of resources - different sides of a unity

- All dimensions necessary when coordinating actions
- Determined by needs, motive, work object
- Interdependent
- Usually treated one at a time in organizational discourse
In plain English …

• Actions have a context specific purpose (contextualization)
• Actions imply spatial orientation (spatialization)
• Actions are carried out in a certain order (temporalization)
• Rules, norms, etc., signify valid actions (normalization)
• Humans always put something between themselves and their work object (instrumentation)
• Societies and work groups need to interact (cooperation)

The Golden Gate Bridge project

• Need cross the gate, motive for project
• Object bridge
• Actors workers, managers, ...
• Result realized bridge
The Activity Domain Theory

- Contextualization: The Golden Gate Bridge project
- Spatialization: Maps, blueprints,..
- Temporalization: Plans, processes...
- Normalization: Safety rules, measurement units,..
- Instrumentation: Dynamite, cable spinning saddles, ...
- Cooperation: Contracts between sub contractors, ...

The Activity Domain Theory produces is a prerequisite for outcome needs object fulfills motive has
has
modifies
enacted along
manifested as
activity modalities
notifier

spatialization

temporalization

normalization

instrumentation

contextualization

cooperation

Technological capabilities

Human capabilities

Technological capabilities

Human capabilities
Traditional images

Gantt charts - resource dimensions
Gantt charts - resource dimensions

WBS - Product Breakdown Structure (PBS)
Anatomy

Dependencies and independencies between capabilities
Images in Integration Centric Development

**Anatomy**

**Organic Integration plan**

**Integration plan**

Comparison

<table>
<thead>
<tr>
<th>Traditional images</th>
<th>Alternative images</th>
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</thead>
<tbody>
<tr>
<td>• Several dimensions in one image</td>
<td>• One dimension per image</td>
</tr>
<tr>
<td>• Disregard dimension interdependencies</td>
<td>• Enhance dimension interdependencies</td>
</tr>
<tr>
<td>• “Book-keeping” character</td>
<td>• “Action” character</td>
</tr>
<tr>
<td>• Focus - Activity dependencies</td>
<td>• Focus - Capability dependencies</td>
</tr>
<tr>
<td>• Hard to understand in complex projects</td>
<td>• Common understanding an objective</td>
</tr>
<tr>
<td>• Hard to maintain in complex projects</td>
<td>• “Easy” to maintain in complex projects</td>
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Conclusion

Alternative images are well aligned with the Activity Modalities (resource dimensions)

Activity Modalities reflect the structure of the human cognition (this is the way we experience the world)

The fit between alternative images and Activity Modalities may be one reason why these images are powerful instruments for managing complex projects