Leadership and the Dynamics of Inter-Organizational Communications

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Overview

▶ Presenting problem

▶ Research approach

▶ Summary of modeling / analysis grounded in case study

▶ Research findings

▶ Application and implications

Presenting Problem

How to maintain alignment between the SPO-approved and contractor's baselines?*

> ### *Definition:*
> *"Disconnects," latent differences in understanding among groups that can negatively affect the program should they remain undetected or unresolved.*
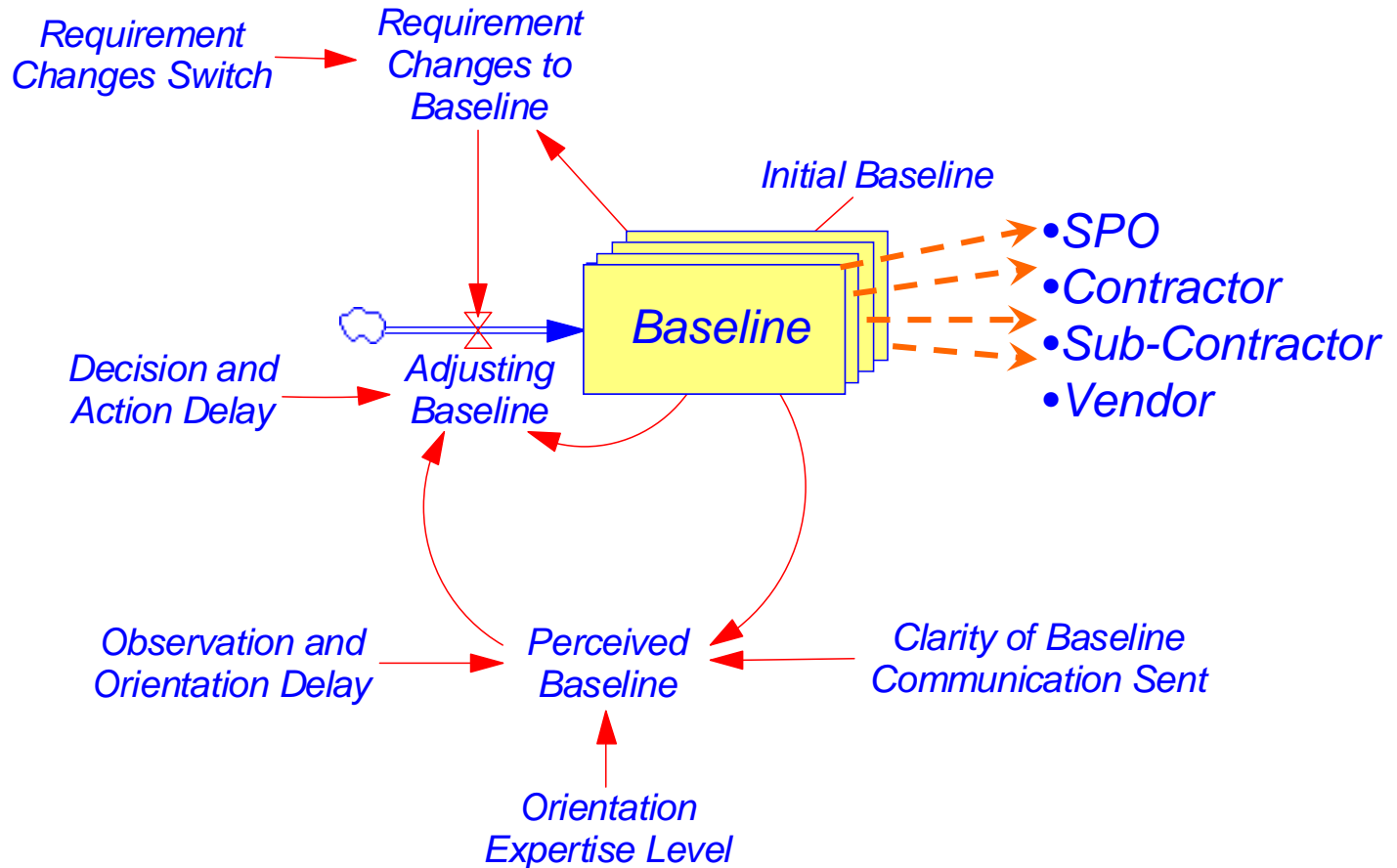
*SPO = System Program Office

Research Approach

▶ Begin with case study of "disconnects" among baselines— large system-of-systems program

▶ Look at dynamics—the "physics" of inter-organizational communications—in model grounded in case study data

▶ Analyze simulations to identify points of leverage in reducing disconnects, keeping organizations "on the same page"

▶ Research and integrate theories and practices to bring identified points of leverage into actionable recommendations
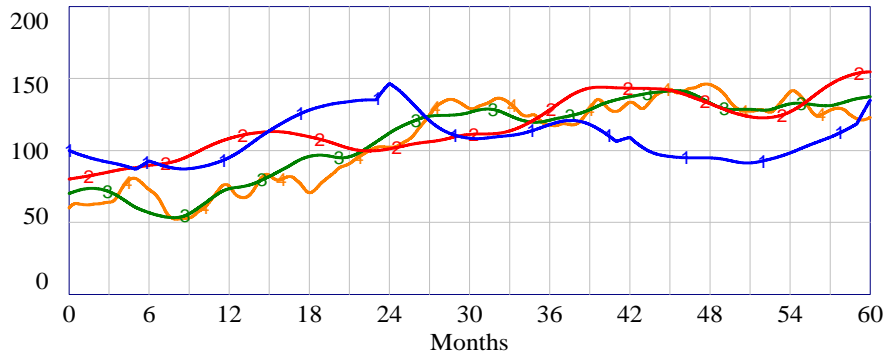
Four-Level Model of Inter-Organizational Dynamics
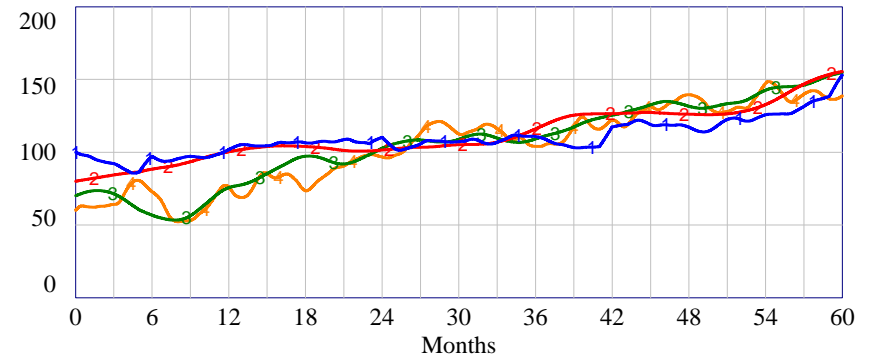## *SPO-Contractor-Subcontractor-Vendor*

Requirement Changes Switch

Requirement Changes to Baseline

Initial Baseline

Baseline

- *SPO*
- *Contractor*
- *Sub-Contractor*
- *Vendor*

Decision and Action Delay

Adjusting Baseline

Observation and Orientation Delay

Perceived Baseline

Clarity of Baseline Communication Sent

Orientation Expertise Level

Opportunity for Improvement

Government and Contractor Baselines

SPO Baseline ——1——1——1——1——1——1——1—— Widgets
KTR Baseline ——2——2——2——2——2——2——2—— Widgets
SUB Baseline ——3——3——3——3——3——3——3—— Widgets
VEN Baseline ——4——4——4——4——4——4——4—— Widgets

Government and Contractor Baselines

SPO Baseline ——1——1——1——1——1——1——1—— Widgets
KTR Baseline ——2——2——2——2——2——2——2—— Widgets
SUB Baseline ——3——3——3——3——3——3——3—— Widgets
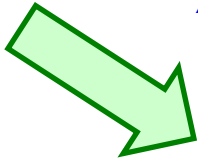VEN Baseline ——4——4——4——4——4——4——4—— Widgets

▶ Disconnect index 2529

▶ Disconnect index 1409—a 44.3% improvement

Finding: Boundary Objects are Key

Helps shorten the time to understand changes

<Requirement Changes to Baseline>

Helps compensate for differences in organizations, relative expertise, knowledge domains, timing and location of collaborators

Baseline

Decision and Action Delay

Adjusting Baseline

Observation and Orientation Delay

Perceived Baseline

Clarity of Baseline Communication Sent

Helps compensate for low expertise levels and leverages high expertise levels

Orientation Expertise Level
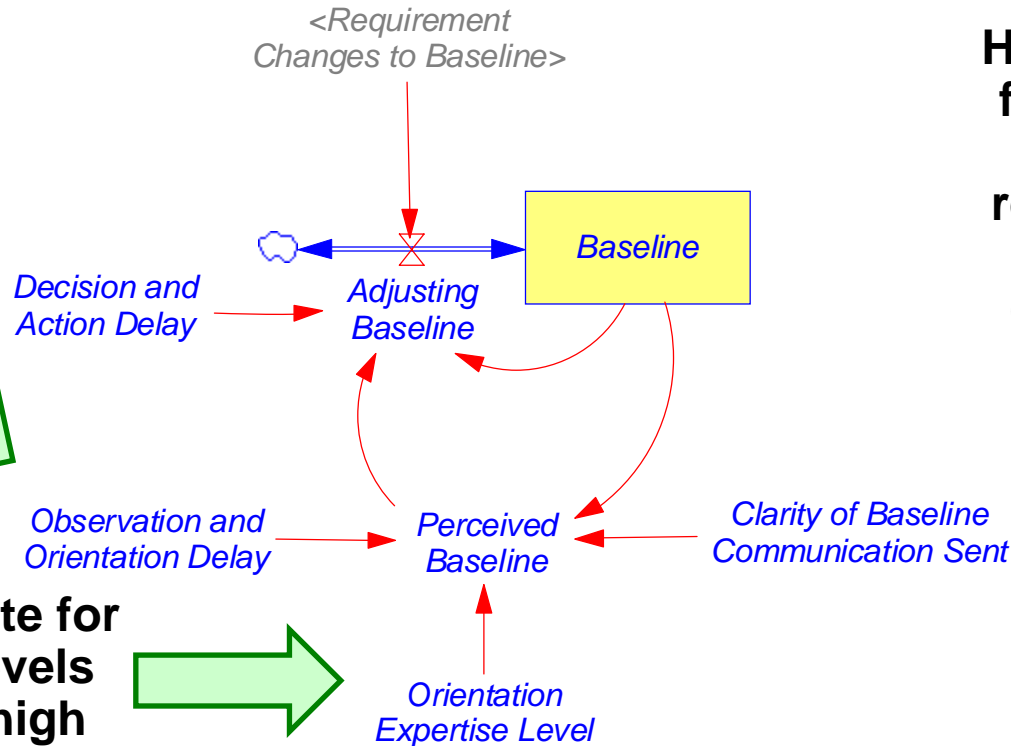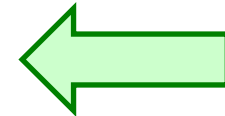
**Boundary Objects affect three points of leverage**

7

What is a "Boundary Object[1]"?

▶ A boundary object is an artifact (or sometimes a person) that enables individuals to collaborate effectively across some form of boundary.

▶ Boundaries are gaps or differences in organization structures or entities, political power, relative expertise, knowledge domains, timing, and/or locations among the players.

▶ The artifact represents key dependencies (dimensions of shared interest) among the players.

▶ It is an "impoverished replica" of the salient shared dependencies.

▶ To be a boundary object (not a bludgeoning tool) the artifact must be _transformable_ by all parties involved in the collaboration.

[1] S.L. Star and J.R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39," *Social Studies of Science, 19*, 1989. *See also* K. Henderson, "Flexible Sketches and Inflexible Data Bases: Visual Communication, Conscription Devices, and Boundary Objects in Design Engineering," *Science, Technology & Human Values,16* (4), 1991, and P.R. Carlile, "A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development," *Organization Science,13* (4), 2002.

A Theory of How Boundary Objects Work

Abstract

Concrete

Insight

Insight

Boundary Object
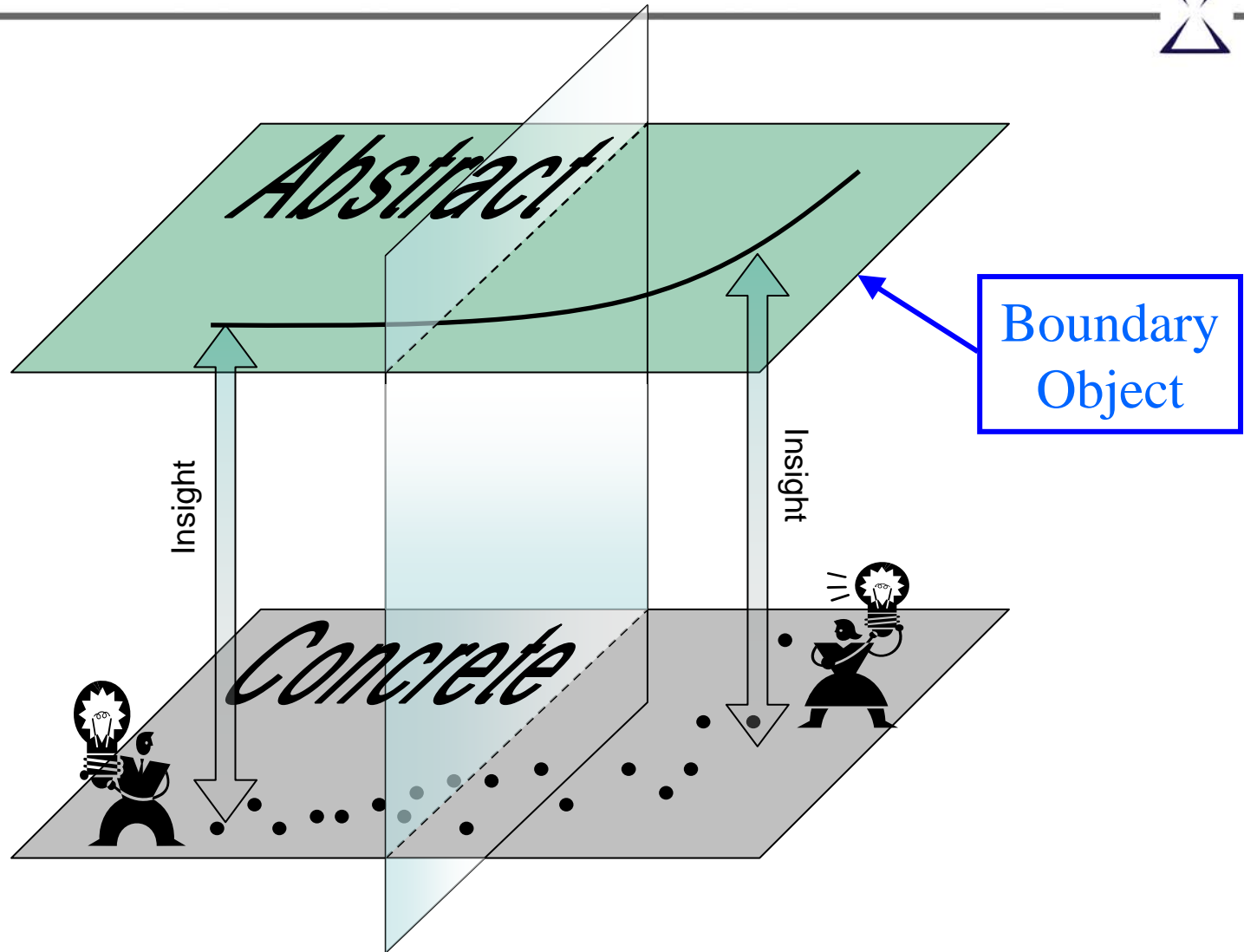
What Did Leaders Initially Do?

▶ Multiple initiatives pushed on traditional technology and process improvement levers.

  ▶ Established and documented process elements
    (lots of Operating Instructions on shared drives)

  ▶ Pushed DOORS implementation to aid impact analysis

  ▶ Acknowledged problem in expertise—but didn't see any options

▶ Multiple initiatives failed to yield substantial reduction of disconnects over 4-year period.

What Are Leaders Doing Differently?

▶ Developing a new mindset

- ▶ Seeking opportunities to transform traditional project management artifacts into boundary objects
- ▶ Acknowledging boundaries and interdependencies
- ▶ Increasing interaction rates
- ▶ Iterating—with less precise information
- ▶ Appreciating the consequences of continually shifting attention

▶ Using elements of distributed cognition to (re-)build expertise

▶ Chartering (informed by boundary object concepts) new group

▶ Reevaluating Mission Assurance approaches

Developing the Toolset and Skillset

▶ Focusing on social as well as technical issues

▶ Moving relationships from transactions to collaborations

▶ Sharing more information and perceived consequences of trade-offs

▶ Sharing information in ways that invite collaboration

12

Expected Effects of Making These Changes

▶ Better, earlier, richer stakeholder involvement

▶ Reduction in number of "open" engineering changes (freeing communication channel capacity)

▶ Reduction in contingency planning-driven changes

▶ Reduction in baseline disconnects

▶ Increase in innovation due to broader set of options and alternatives to design and implementation problems

Implications for Management

▶ Re-framing what they're trying to accomplish—from hierarchy and control to structured, facilitated interaction

▶ Eliminating waste (noise) in the intellectual capital supply chain

Summary

▶ The acquisition world is a different place:
We can influence (not control) each other.

▶ Boundary objects are an underdeveloped domain critical to working across complex interdependencies.

▶ We can no longer afford to play down the social aspects of technical problems.

▶ We need to match the "knowledge respiration rate" to the speed at which problems need to be resolved.