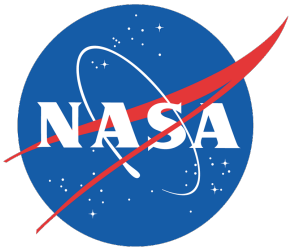


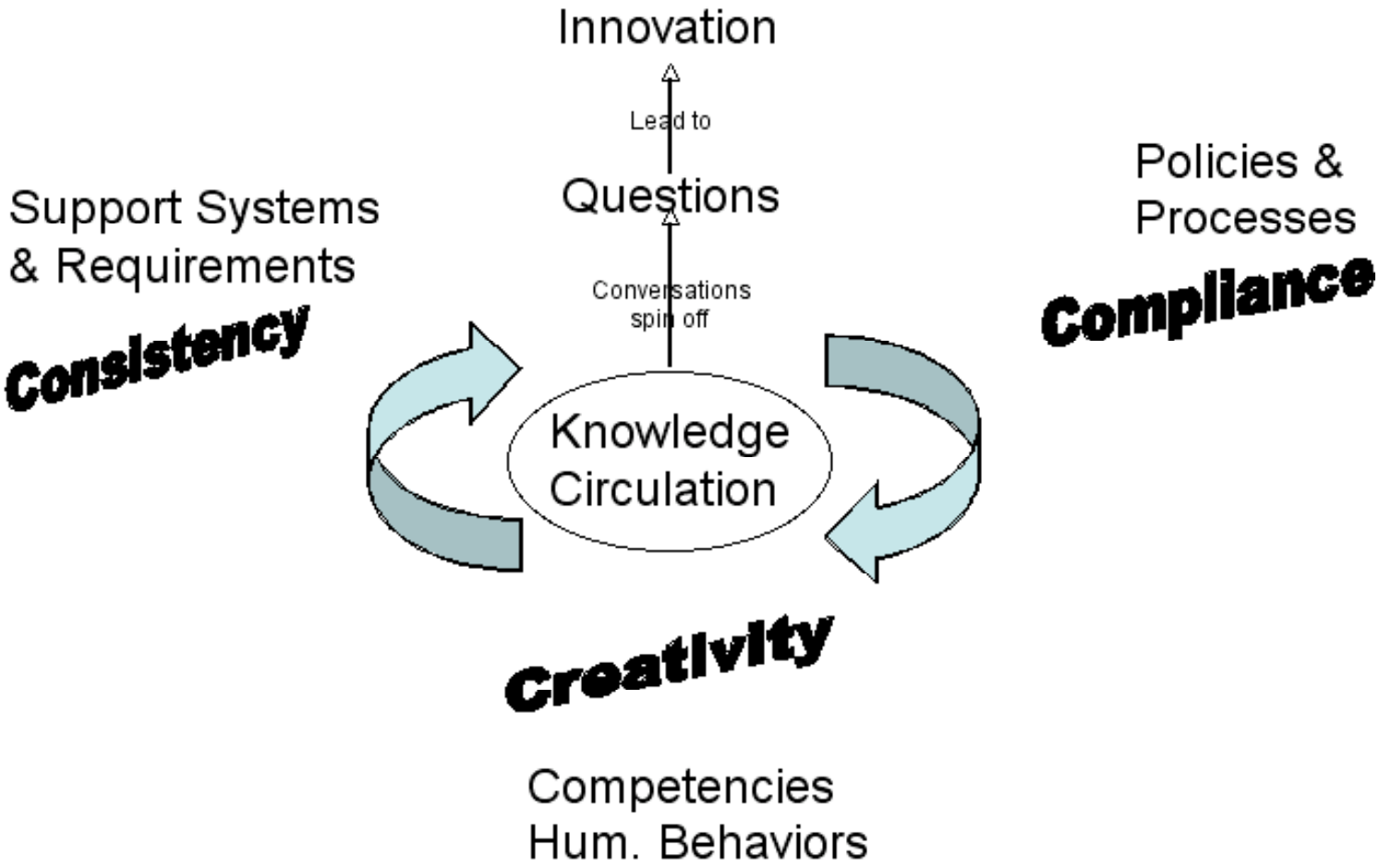
The NASA Learning Organization: How NASA Reapplies Its Knowledge for Mission Success

Edward W. Rogers
Chief Knowledge Officer
Goddard Space Flight Center, NASA

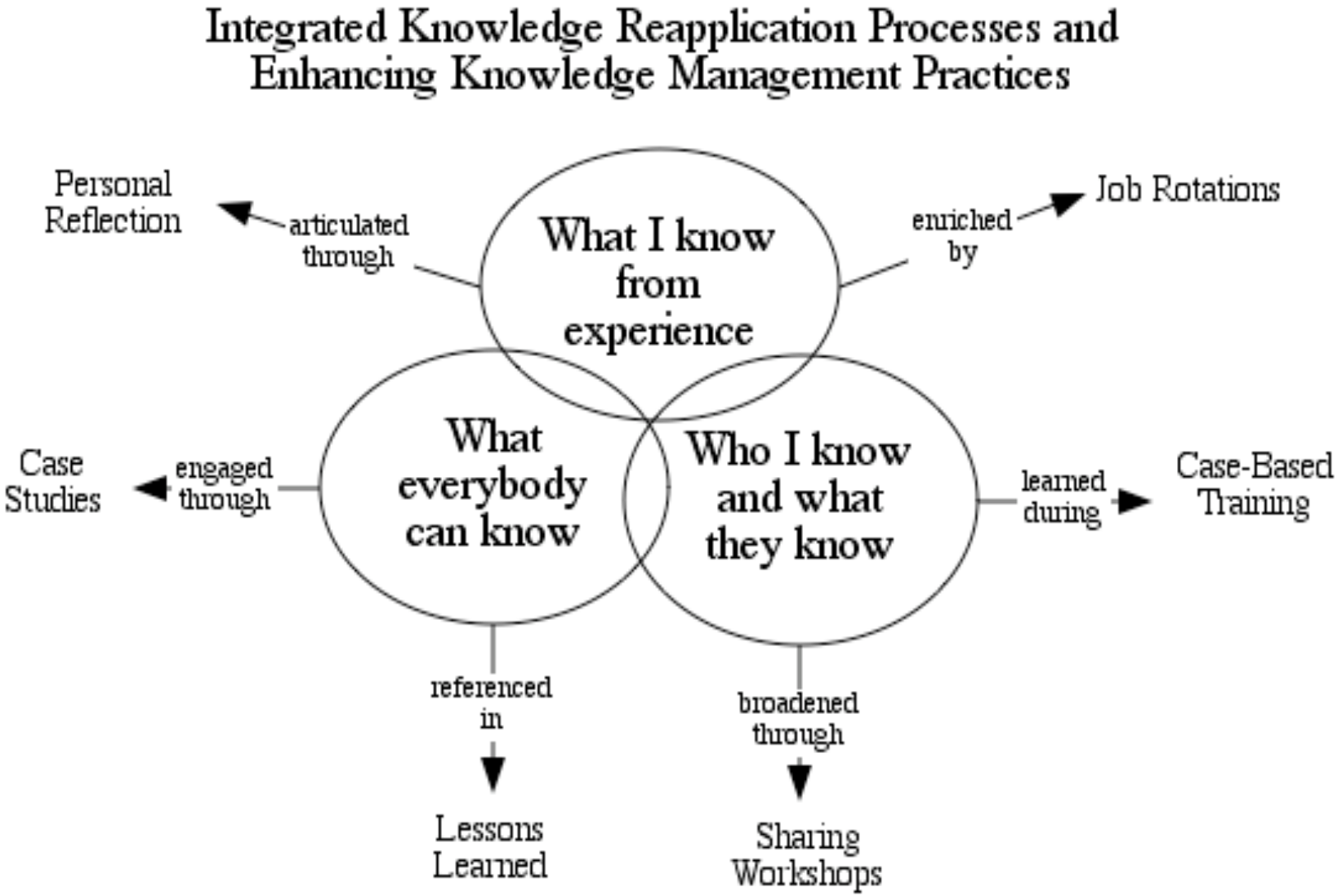
December,2 2009

Understand Your Organization and Fit KM to its Unique Character

Knowledge Circulation is more important than Capture



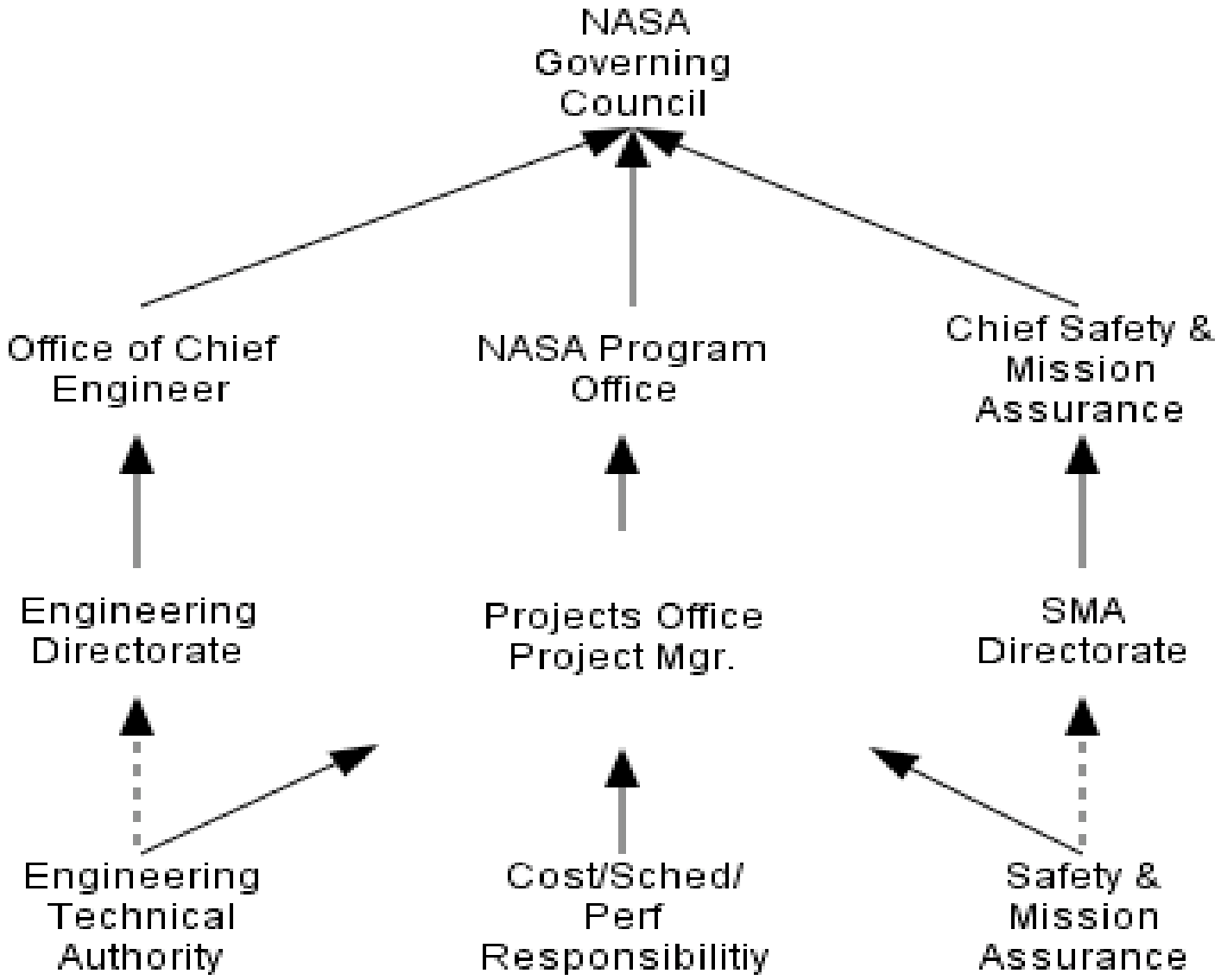
Understand How People Learn



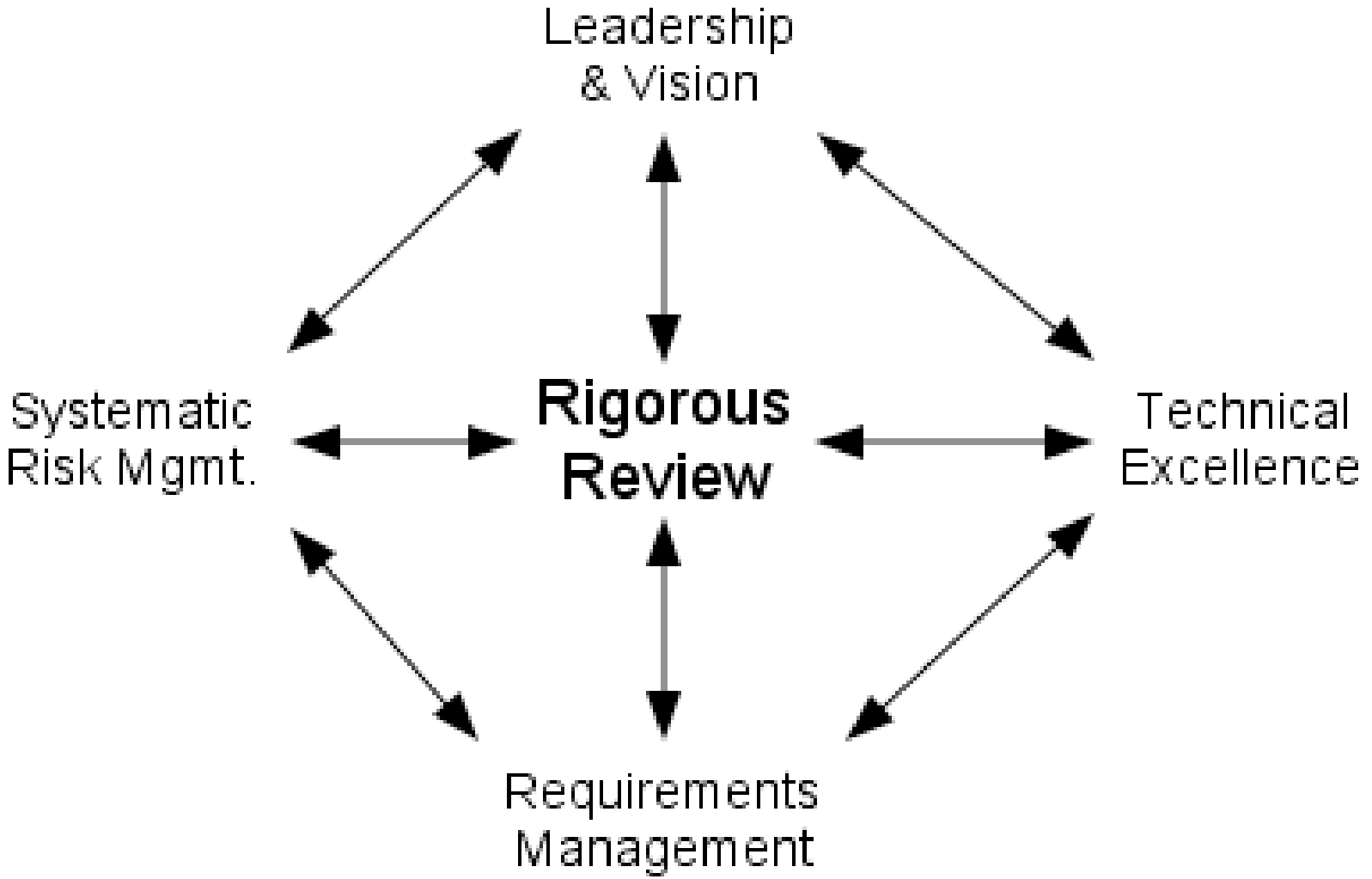
Identify Structural Limitations

- Distributed Centers
- Matrixed Core Disciplines

NASA Governance Model (simplified)



Goddard Success Model



Free Knowledge Flow

"Complete liberty of contradicting and disapproving our opinion is the very condition which justifies us in assuming its truth for purposes of action and on no other terms can a being with human faculties have any rational assurance of being right."

On Liberty by John Stuart Mill, 1859

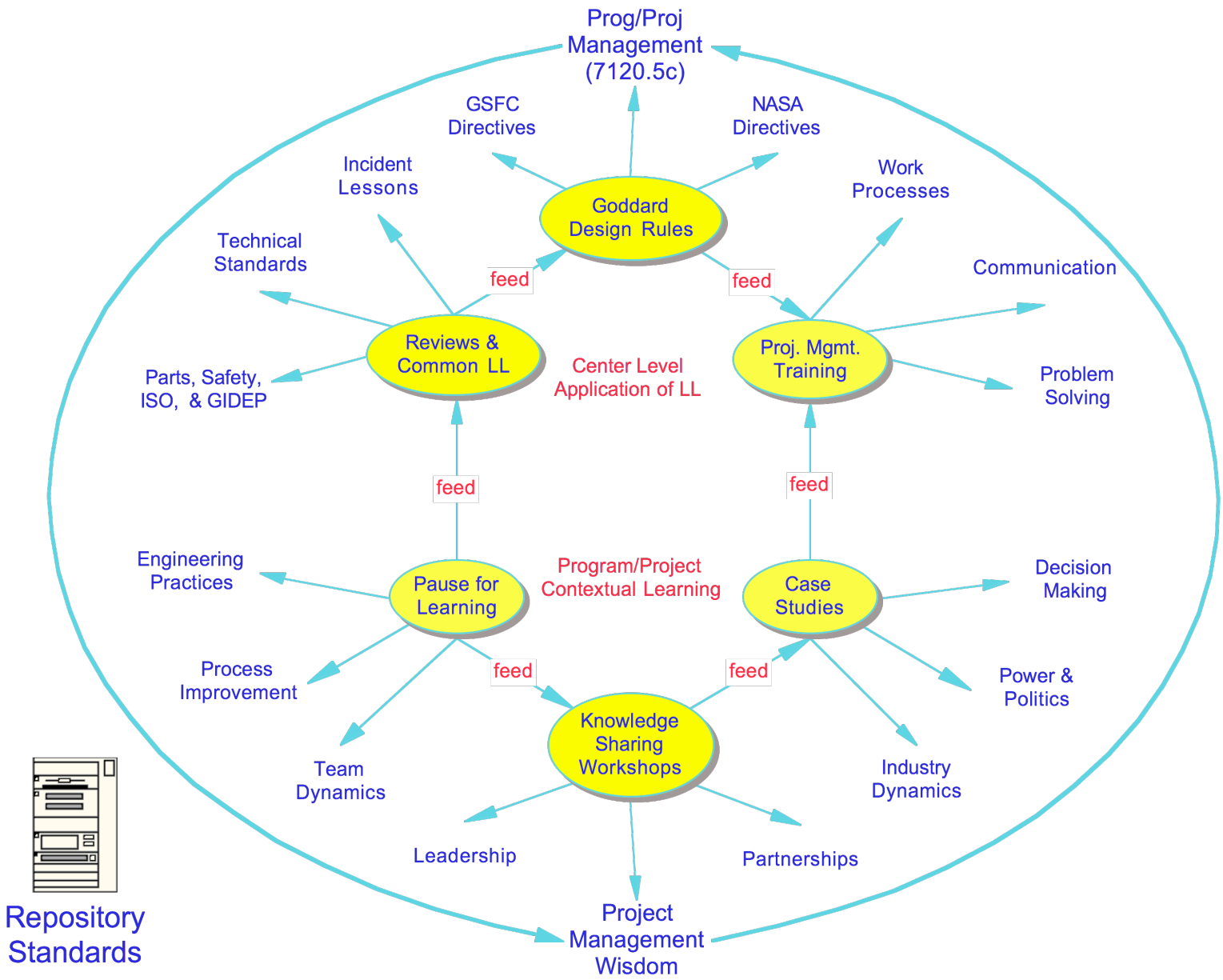
Project Execution

- “It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.”

Mark Twain

- Make Learning a Core Practice

Architecture of Learning Practices



Pause And Learn Sessions (PAL)

- Pause and Learn is a team based reflection activity for the team/ group to process their own learning.
- Five key parameters:
  - Non-attribution environment
  - Not a reporting activity
  - Close to the action (work level)
  - Participant discussion
  - Objective facilitator
- Inserted into process
  - After major reviews/gateways
  - After incidents or mishaps
  - At team formation or at risk

"That one PaL probably saved my project. "

Goddard Project Manager

Case Studies

"In fact, most people learn from others, learn by doing and learn from stories. … Most training is almost worthless."

Interview with E-Learn, Larry Prusak, 2008

- Case Studies are a channel for learning
  - Collects ambiguous wisdom into a context
  - Opportunity for protagonists to share their stories
  - Proven methodology for hundreds of years
- We need to be better at examining *why* things went right and not just assuming it was always because of our great planning and execution.
- Cases help overcome a reticence to discuss things that were less than perfect but still worked which are a great learning opportunities.

Lead by Example

NASA develops training and development activities that encourage discussion, conversation and nurture rather than simple information transfer.

Knowledge Sharing Workshops

- Usually a project team (instrument, engineering, mgmt. science etc.)
  - Share in a panel discussion format their personal experiences
  - Keep it focused on "What I learned"
- Sometimes use a case study or draft case study to spark discussion
- Facilitated by a Moderator (usually the CKO)
- Lasts about 2 hours
- Sometimes needed after an incident/mishap etc. to get the real story
- Help bring out personal lessons

"If I hadn't had to prepare for that workshop, I wouldn't really have figured out what I learned from that mission. We must be learning from all our missions. "

Goddard Project Scientist

The Road to Mission Success

Workshop Series Objectives

1. **Engage in dialogue with senior management on "Mission Success: The Way Goddard Does Business"**

2. **Articulate a clear and consistent statement of the rules, processes, and values that contribute to Goddard's success with flight missions**

3. **Identify the array of support mechanisms in place at Goddard**

4. **Expand and empower the cadre of existing and potential leaders and managers within Goddard**

Good Organizational Depth Perception

If people have a good grasp of what the organization is all about they will be more likely to openly share and communicate with each other.

I can see how what I know matters to others.

Open Communications

If people are satisfied with the communication systems they will be more likely to openly share and communicate with each other.

If I speak something happens.

Reward Fairly (and Punish Fairly)

If people perceive the organizational employment game to be fair and open they will be more likely to openly share and communicate with each other.

If I work hard, it matters.

Only knowledge will take us there.

Edward Rogers
www.nasa.gov
www.nasa.gov/goddard/ocko