A Journey Toward Project Excellence: Building an Engaged and Talented Team

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March 22, 2017
Shared Experience Poll

- Incompatible business strategies
- Unclear individual and team competencies and capabilities
- Organizational talent doesn’t know where to find critical knowledge
- Managers support policies aligning to their interests
- Employees only do what is necessary to keep the boss happy
- Projects succeed but fail organizational expectations
- Administratively burdensome processes and procedures
- Data is everywhere but knowledge is scarce
The Library of Babel – Jorge Luis Borges
Business Success

- Challenge/Opportunity
- Knowledge Capture
- Knowledge Sharing
- Outcomes
- Discovery & Innovation
- Individual & Team Talent
- Societal Context
- Organizational Expectations & Culture
Thoughts on Challenge and Opportunity
### Challenge & Opportunity

#### Projects, Products, Entrepreneurship

<table>
<thead>
<tr>
<th></th>
<th>Complex Project-Based Organization</th>
<th>Mass-Production Organization</th>
<th>Entrepreneurial Organization</th>
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</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td>One-and-only</td>
<td>Scalable manufacture</td>
<td>Permanent beta</td>
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<tr>
<td><strong>Problems</strong></td>
<td>Novel</td>
<td>Routine</td>
<td>Hackable</td>
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<tr>
<td><strong>Technology</strong></td>
<td>New/invented</td>
<td>Improved/more efficient</td>
<td>Frugal</td>
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<tr>
<td><strong>Cost</strong></td>
<td>Life cycle</td>
<td>Unit</td>
<td>-&gt; Zero marginal</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>Project completion</td>
<td>Productivity rate</td>
<td>Iterative</td>
</tr>
<tr>
<td><strong>Customer</strong></td>
<td>Involved at inception</td>
<td>Involved at point of sale</td>
<td>Involved in testing</td>
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<tr>
<td><strong>Knowledge Need</strong></td>
<td>Innovation</td>
<td>Continuous improvement</td>
<td>Bootstrap + innovation</td>
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One of the X-15’s many innovation legacies that it passed to the Shuttle was unpowered landing — both reentered the atmosphere as gliders.
Thoughts on Organizational Expectations & Culture
Expectations & Culture

Strategic Imperatives

1. The World Around Us
   - Sustainability
   - Complexity

2. Organizational Capabilities
   - Portfolio Management
   - Talent Management

3. The Way We Work
   - Team Diversity
   - Virtual Work
   - Smart Networks
   - Frugal Innovation
   - Project Academies
   - Transparency
## Expectations & Culture

### Strategic Imperatives

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th>FOUNDATIONAL NEEDS</th>
<th>WORKING PRINCIPLES</th>
<th>RISK MITIGATION APPROACHES</th>
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</thead>
<tbody>
<tr>
<td>Project world</td>
<td>Leadership</td>
<td>Problem-centric approach</td>
<td>Certification</td>
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<tr>
<td>Digital technology</td>
<td>Knowledge</td>
<td>Accelerated learning</td>
<td>Portfolio management</td>
</tr>
<tr>
<td>Talent management</td>
<td>Frugal innovation</td>
<td>Transparency</td>
<td></td>
</tr>
<tr>
<td>Governance, management, and operations</td>
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</table>
Confusing, vague, and poorly defined priorities, strategies, lines of authority, governance, policies, roles, responsibilities, support

Multiple customers, stakeholders, and partners at multiple levels of interest, involvement, responsibility

Increasing amounts of data and information for process input, throughput, output

Technical complexity and system integration issues within & across multiple disciplines and systems

Multiple overlapping, conflicting, outdated processes and procedures involving multiple POCs across multiple levels & across multiple oversight & advisory entities

COMPLEXITY
Expectations & Culture
Management Requirements

• Support and extend Knowledge Services gains for the NASA Technical Workforce towards improved accessibility, searchability, findability, and visualization

• No additional cost
• Least administrative burden
• Formal, rigorous, iterative, and Senior Leader supported
• Integrated, reinforcing, and actionable
• Measurable and objective
Expectations & Culture
Learning from Failure
Building and Maintaining Teams
Building and maintaining high performance teams

The 4-D Development Process

"4-D Ready" Team
- 5 to 20 people with a single supervisor and common behavioral norms

Team Development Assessment/Accelerator (TDA)
- Enhance, benchmark, and track performance
  - Leader briefs TDA Report to Team Members
  - Decisions & Behavior Action Items
  - Consultants Y/N?
  - IDAs Y/N?
  - Workshop Y/N?

Re-TDA 3 to 6 months
Teams Have Preferences

- Appreciating, helping people grow
- Including, relating with people
- Thinking, creating new ideas
- Managing, organizing, directing
Project Success & Failure

Failures: Challenger, Hubble, Columbia, Crash at Tenerife...

Successes: Gamma Ray Observatory, Mars Pathfinder, Maven, STEREO...

Vacant Dimensions, particularly emotional-side

All Dimensions filled, more on the emotional-side
Team Assessments *Drive* Performance Enhancement

*Team performance increased ~4% per TDA cycle!*

- **Top Quintile**: Average performance increased by 83% compared to the original quintile.
- **Average Quintile**: Average performance increased by 81% compared to the original quintile.
- **Bottom Quintile**: Average performance increased by 77% compared to the original quintile.

During 2000 to 2008, 198 teams used multiple TDAs, and performance increased ~4% per TDA cycle!
Context Shifting Worksheet – Take Action

Your (Troubling) Situation – succinctly stated

The Outcome(s) that you desire/require

Limiting Mindset: Experienced Emotions & Red Story-lines

Liberating Mindset: Expressed Emotions & Green Story-lines

Express Authentic Appreciation

Address Unfortunate Realities

Address Shared Interests

Be 100% Committed

Appropriately Include Others

Avoid Blaming or Complaining

Rigorously Keep All Your Agreements

Clarify Roles, Accountability & Authority

Summarize Your Action Items

Confirm Adequacy of Actions
Thoughts on Knowledge Services (not Knowledge Management)
Knowledge Services

Core Processes

Capture
- Mature capability:
  - Case studies
  - Lessons Learned Info. System
  - Videos
  - Shuttle Knowledge Console
  - Knowledge-based risk records

Share
- Mature capability:
  - Online tools and portals
  - Face-to-face events
  - Communities of practice

Discover
- Mature capability:
  - Search – enhanced ability to discover
  - Culture – expectation to discover
  - Nudges – reminders to discover
Knowledge Services
Message from Stakeholders

**GAO 2002**: “…fundamental weaknesses in the collection and sharing of lessons learned agency-wide.”

**ASAP 2011**: “…recommends NASA establish a single focal point (a Chief Knowledge Officer) within the Agency to develop the policy and requirements necessary to integrate knowledge capture…”

**OIG 2012**: “…inconsistent policy direction and implementation for the Agency’s overall lessons learned program.”
Knowledge Services

Policy and Governance

NASA collaboratively developed and adopted a new knowledge policy in November 2013

• Federated approach to governance
• CKOs appointed at Centers, Mission Directorates, Functional Offices, with Roles and Responsibilities
• Tools such as the first NASA Knowledge Map to form a common vocabulary and the km.nasa.gov portal to focus communications and distribution
NASA CKO Knowledge Referee Process

**Information Collection**
- Information & knowledge sources for Agency/Centers/ HQs/ Mission Directorates/ Functional Offices: Knowledge Services (lessons-learned activities, case studies, workshops, training, missions & projects, etc).
- Centers/HQs/Mission Directorates/Functional Office CKO/PDOs follow local knowledge policy to capture/reretain & share; apply information for evaluation in semi-annual Knowledge Referee process.

**Information Evaluation**
- Reports forwarded to local & Agency designates.
- Agency CKO chairs semi-annual Knowledge Referee Panel to designate, prioritize, recommend information/knowledge disposition according to NASA policies & guidelines; Agency-level knowledge referee items defined & formatted.

**Knowledge Disposition**
- Information/knowledge forwarded to distribution POCs.
- Distribute & implement in local governance, policy, training, digitization, taxonomies, keywords, etc.
- Agency CKO briefs APAC, ASAP, & monitors information/knowledge outcomes.

**Central/HQs/MD/RO**
- NASA CKO notifies Center/HQ/Mission Directorates/Functional Office CKO/PDOs on semi-annual Knowledge Referee process; assembles knowledge referee panel, sets date, agenda, and location.

**Agency**
- Centers/HQs/Mission Directorates/Functional Office CKO/PDOs follow local knowledge policy to capture/reretain & share; apply information for evaluation in semi-annual Knowledge Referee process.

**Programs/Projects**
Expectations - Critical Knowledge

1.0 PEOPLE
- 1.1 Ensure issues that impact employee 
satisfaction and performance
- 1.2 Ensure employees are involved in 
the decision-making process
- 1.3 Ensure employees are 
trained to handle customer inquiries
- 1.4 Ensure employees are 
provided with the necessary tools
- 1.5 Ensure employees are 
provided with the necessary training

2.0 PROCESS
- 2.1 Ensure processes are 
efficient and effective
- 2.2 Ensure processes are 
aligned with the organization’s goals
- 2.3 Ensure processes are 
consistent across departments

3.0 KNOWLEDGE TRANSFER & DIGITAL TECHNOLOGY
- 3.1 Ensure knowledge transfer 
processes are in place
- 3.2 Ensure digital technology 
is integrated into the organization

4.0 DISCIPLINE TECHNICAL
- 4.1 Ensure discipline technical 
knowledge is up-to-date
- 4.2 Ensure discipline technical 
knowledge is applied in real-world scenarios
- 4.3 Ensure discipline technical 
knowledge is integrated into the organization’s processes

Category Definitions:
- People (factors involving communications, individual behavior, team behavior, organizational culture, attitudes, and interpersonal and organizational relationships)
- Process (factors addressing specific actions towards defined outcomes in an organization’s system perspective)
- Knowledge Transfer & Digital Technology (factors involving using knowledge across organizational boundaries and digital information and communications tools that enable and accelerate interaction and learning)
- Discipline Technical (factors involving content and lessons related to specific domains of practice)
1.0 PEOPLE

1.1 Raise issues that impact mission success & performance.

1.2 Failure in development is ok as long as people learn from it.

1.7 Lessons of failure are forgotten during relaxation period.

1.8 Really vital that all people raise honest concerns and problems early.

1.10 Value the importance of project reviews using experienced people for sharing critical knowledge.

1.12 Must have culture of communication.

1.13 Workforce must be free to speak up & say what is on their mind.

1.14 Eliminate toxic management.

1.17 How to facilitate in a virtual environment.

1.20 Tear down silos & stovepipes.

1.22 Poisonous managers or technical experts who shut down communications are bad.
Knowledge Services
Digital Tools to Find a Document

Like this......

Instead of this

Knowledge Services
Digital Tools to Find Similar Videos

Like this...... Instead of this

http://www.yasiv.com/youtube/#/Search?q=project%20management%20risk
Knowledge Services
Digital Tools to Search Lessons Learned

Like this......

Instead of this

Source: http://cs.ucsb.edu/~jod/topicnets.html
Knowledge Services
Digital Tools to Find Experts

Like this......

Instead of this

Source:
Thoughts on Individual and Team Talent Development
Talent Development

The 4 A’s
Talent Development
A Career Development Framework

EXECUTIVE LEVEL
Flagship Project or Program Manager / Chief Engineer

Core: Executive Program
Mentoring; Administrator’s Executive Forum
Leadership by example in knowledge sharing

EXAMPLES OF LEARNING STRATEGIES
Opportunities to exercise thought leadership

MID-CAREER
Project Manager or Major Systems Manager

Core: Advanced Project Management & Systems Engineering
In-depth courses; rotational assignments; mentoring
Participation in knowledge sharing activities

Knowledge sharing forums
Developmental assignments

MID-CAREER
Small Project Manager or Subsystem Lead

Core: Project Management & Systems Engineering
In-depth courses; team lead assignments; Project HOPE
Attendance at technical conferences or knowledge sharing activities

Performance enhancement for teams
Non-traditional and hands-on learning experiences

ENTRY
Project Team Member or Technical Engineer

Core: Foundations of Aerospace at NASA
Obtain mentor
Join professional associations

Core curriculum
Talent Development
Transferring Knowledge

Chris Scolese, GSFC Center Director
“...it's still hard to give up the technical side. I am a recovering engineer. But I recognize you just can't do that stuff anymore and to think you still have those skills is also really wrong...”

- Bill Gerstenmaier, HEOMD Associate Administrator
Thoughts on leadership and management through project knowledge services
Business Success

- Challenge/Opportunity
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Leadership & Management

NASA’s Gaps in Core Knowledge Processes

Capture

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Inadequate capability:
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Share

Mature capability:
- Online tools and portals
- Face-to-face events
- Communities of practice

Discover
Leadership & Management - Challenges

• How do we find and search our knowledge?
• What are our Critical Knowledge priorities?
• What are the metrics and measures that capture effectiveness and efficiency in the core knowledge processes?
• Who do we optimize Knowledge Services for accelerated learning, engagement, and managing complexity?
• Can an understanding of biases and heuristics that drive organizational and societal expectations help organizations make better decisions and design better knowledge services?
Questions

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