

NASA Langley Knowledge Strategy Presentation to Knowledge 2020

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Strategy Purpose and Importance

- Knowledge is a critical asset and focusing on its flow, capture, access, and use is important for organizations success
- Plan can help to bring focus on the key strengths and gaps to get leaders and employees to pay attention to the key areas
- Centers are requested to develop a plan by Agency CKO/OCE

Goal and Objectives

Develop a knowledge strategy and plan to leverage and utilize our collective organizational knowledge and thinking for mission success (3-5 years)

1. Maximize the utilization of our current knowledge services and systems
2. Enhance the knowledge sharing culture (it is everyone's responsibility)
3. Improve mentoring, and expert and retiree knowledge transfer and retention
4. Actively identify critical knowledge and enhance its capture and findability
5. Identify current best practices and ways to propagate their use

Approach Used

- Engaged the Center organizations
 - 27 representatives from multiple organizations participated
- Utilized Knowledge Management expert and Professor expertise and experience - Dr. Jay Liebowitz,
- Workshop I: Focused on current state, critical needs, gaps, and possible solutions - November 5th , 2014
- Core team and Consultant developed a draft strategy and recommendations - Jan., 2015
- Workshop II: Shared the draft plan, finalized recommendations, and identified priority actions - March, 2015.
- Presentation to CLC, and moving forward: May, 2015 -
- Present to NASA CKO Community: June 2015

Current State

- We do OK job of knowledge sharing; it is mostly adhoc and not systematic and integrated
- Younger generation feels that they aren't being mentored as effectively as needed; Older generation feels their expertise might be lost
- Project budgets are established without explicit consideration of knowledge capture and transfer
- Difficult to find the right person, relevant information, and critical knowledge quickly at LaRC; primarily done adhoc way by who you know
- Time and Resources is a big challenge

Desired State

- Systematic approach to knowledge capture and sharing
 - Acquainting people with its benefits & integrating it into everyone's job
- Sharing the message that with creativity comes failure
 - We all benefit from talking about our successes and our failures
- Educating people about what types of knowledge are valuable and how they can be shared, accessed and used
- Recognition and reward system that promotes learning and knowledge sharing behaviors
- Have the technology that works for people, not vice versa
- Providing the time and resources to do this well



Main Enhancements Identified

- Improve access, content, and user education of current LaRC knowledge systems and services
- Improve project knowledge sharing and capture to enhance the sharing and findability of critical knowledge
- Focus on the challenge of expertise loss of retirees and have a systematic initiatives
- Increase awareness and usage of lessons learned in order to further learning from others
- Improve the knowledge sharing culture - *it is part of all of our jobs*

Identify



Capture



Share



Strategy and Plan

- **Four Key Areas of Knowledge Strategy Identified**

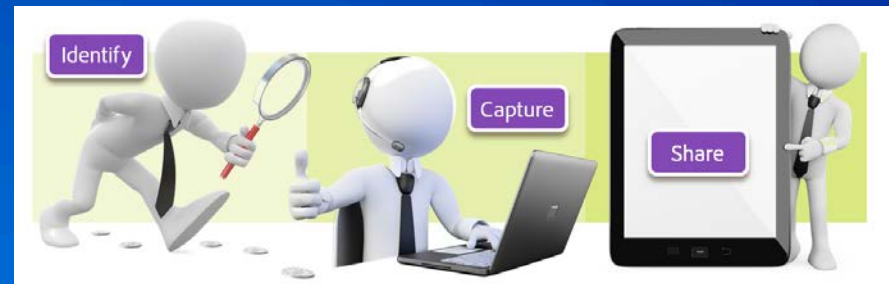
- Knowledge Systems
- Projects best practices and lessons learned
- Expert/Retirees knowledge transfer
- Culture

- **For Each Area Above identified**

- Current state and Gaps
- Recommendations
- High priority Recommendations to start*

- **Approach**

- Low/no cost and high impact recommendations
- Distributed responsibility and grass roots approach
- Start small and build momentum



Knowledge Systems

- **Current State**

- LaRC Google; Phone Book
- NX Document Management; LaRC Digital Repository
- TPSAS Publications system; NTRS
- NEN; Communities of Practice; Watson Analytics and Data archive Pilots

- **Gaps**

- **Systems**

- Systems need to be more simple, intuitive, and have online instructions
- Need to educate on how best to use them
- Lots of systems - do not know best places to look for needed information

- **Content**

- People - difficult to find the right person and expertise
- NX documents not searchable via Langley Google
- Current systems do not have access to all needed content

Projects Best Practices and Lessons Learned

Current State

- Projects conduct lessons learned activities on ad-hoc basis
- Lessons do not get propagated often beyond the Project
- Sharing: Ask PM CoP; e-mails; anecdotal discussions with peers; NEN; Contact PIs; Mostly people-to-people transfer

Gaps

- Not clear where Projects go for help in sharing lessons learned
- Knowledge sharing across LaRC Projects is not a norm or automatic
- Lessons capture throughout Project lifecycle is not a standard practice
- No one place to go for Best Practices/Lessons in each project/areas

Projects Best Practices and Lessons Learned - Recommendations

- *Lessons learned & Used discussions as part of Project Reviews, and Pause and Learn as part of Project/Org. meetings
- *Better capture of Projects knowledge - Incorporate as part of Project Planning ; Broaden Lessons Learned Plan to include Knowledge management; Digital repository of 'good examples'
- *Case Studies and Stories
 - model after JPL and Goddard
- Systematic Courses and Workshops
 - model after Goddard
- Online communities with active facilitators to foster relationships and cross fertilize knowledge - model after NEN
- Regular seminars and focus groups on sharing best practices



Leads/Champions:

OCE (Lessons Learned Lead) and Flight Projects Directorate

Experts and Retirees Knowledge Retention and Transfer

Current State

- Impending retirement of many experts and technical leaders, and loss of deep technical expertise
- Very little mentoring and job rotations
- Succession Planning initiative underway

Gaps

- No focused and systematic effort to address expertise loss of experts/retirees (both explicit and tacit)
- Capturing knowledge for the next generation is critical; Younger generation feels they are not being mentored effectively
- Critical Projects Data with its provenance is not being captured; multi-center projects pose more challenges
- No institutional processes and resources to capture key knowledge

Experts and Retirees Knowledge Retention and Transfer - Recommendations

- *Leverage avenues to retain and transfer experts knowledge - Pilot and evaluate
 - 3-6 month shadowing or mentoring pilots
 - Facilitate Retirees as DRAs to help with knowledge capture and sharing
 - Phased Retirement and Succession Planning
- * Propagate Knowledge Capture and Sharing activities
 - Short Courses and Seminars by experts
 - Pilot knowledge capture of a few experts:
Explicit by digitization, and tacit by video interview
- Identify critical areas and experts likely to leave
 - Take Branch Heads help
- Exit Interviews and Checklists
 - Exit Interviews of identified experts by Professionals to capture nuggets
 - Develop a key checklist to help leaving experts; Include as part of checkout process
- Develop and use a formal mentoring, shadowing and job rotations program
- Effective succession planning for identified experts/expertise
- New hires having an official mentor (not supervisor) for ~2 years



Leads/Champions: OHCM, CRUDs and OCE (Chief Engineer)

Culture

Current State

- In general, employees see the value and want to do the right thing
- Do not have enough time, and no institutional processes and resources available
- Chief Knowledge Officer, Chief Engineer and Lessons Learned Lead are facilitating this - Their time to do this is very limited

Gaps

- Time constraints and lack of resources & processes seem to be big challenges
- Explicit Senior Leadership buy in and championship
- Lack ways to show that lessons shared enhance projects execution
- Though benefits are intuitive, they are very difficult to measure/capture



Culture - Recommendations

- *Knowledge Stewards at Branch and Directorate level (no extra resource needed)
 - Communicators, Connectors and Facilitators; People with passion and are networked well
 - Formal designation could help
 - Could start with the knowledge strategy workshop attendees
- *Expert seminars; Brown bag lunch sessions
 - Chief Engineers and Branch heads can help
 - Senior leaders/managers encourage; attend to help with recognition and attendance
- Director message to all employees - importance of knowledge sharing with a few good examples and link to 'Knowledge Portal'
 - Can be propagated and emphasized by OUMs and Branch Heads
- Conduct Knowledge Audit via a web based survey
 - Identify 'knowledge gaps' and 'At Risk' critical knowledge areas;
- Formal Rewards and Recognition process and program
- Have a few key metrics to measure value - Quality/Timely delivery; Innovations; New technologies;

Leads/Champions: OUMs, CE, CKO, and FIRST TEAM

Moving Forward

Work towards an environment where knowledge sharing is emphasized, recognized, rewarded, and permeates NASA Langley

- Share the plan with Agency CKO and NASA KM community for inputs
- Start with low cost and high impact/priority actions and build the momentum
- Resources
 - Leads/Champions work the plans to implement them
 - Work with the respective OUMS
 - Engage Projects/Programs for buy-in and funds
- Organizational Leaders engagement and buy-in is critical
- Leverage other Centers expertise/experiences - GSFC; JPL; JSC...
- Have a quarterly status and discussion with the team (as part of Lessons Learned Meeting) and Update CLC annually
- Communicate successes for broad based buy-in and to build momentum


Implementation In Works

- Knowledge Systems – Knowledge Portal (OCIO)
 - Help technical community find and use many current systems
- Lessons Learned reviews for Projects (OCE)
 - Make them more effective and infusible
- Experts/Retirees knowledge capture (RD)
 - Pilot to capture both explicit and tacit knowledge



Implementation In Works – Knowledge Portal beta

Knowledge Portal



Search

People and Services

Search LaRC Phonebook

- [OCIO Services Directory](#)

Collaboration Capabilities

Search NEN

- [Navigation Center](#)
- [Engineering Design Studio](#)
- [Vidyo Video Conferencing](#)

Scholarly Knowledge

- [Langley Technical Library](#)
- [Google Scholar](#)
- [LaRC Research Directorate](#)
- [Langley Colloquium Series](#)
- [STI Homepage](#)

Project Knowledge

- [NX Out](#)
- [NX \(password protected\)](#)
- [Shuttle Repository](#)
- [Langley Digital Repository](#)
- [Langley Management System](#)

Lessons Learned

- [LaRC Lessons Learned](#)
- [Lessons Learned - NASA Office of the Chief Knowledge Officer](#)
- [Lessons Learned at NASA](#)
- [Lessons Learned Information Systems](#)
- [NASA Lessons Learned Search](#)


Multimedia and Videos

- [LaRC Videos](#)
- [LaRC Images](#)
- [NASA 360](#)
- [NESC Academy](#)
- [NASA EdLine News Videos](#)
- [LaRC Multimedia Repository](#)

Other Helpful Links

- [Langley Management System](#)
- [Web Toolbox](#)
- [NASA Homepage](#)
- [LaRC Links](#)

[Help](#) [Knowledge Management Awareness](#) [NASA Knowledge Management](#) [Feedback](#)

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Implementation In Works – Lessons Learned

- Lessons Learned success criteria for major projects in formulation
 - Significant Visibility of criteria; proactive infusion
 - Test Run with a major Project set for April
- Proactive Engagement with Major projects
 - Face to face meetings to understand critical knowledge needs
 - Identify sources to help and share with the team
 - Set to start the process with first project in Dec. 2015
- Lessons Learned Manager and Committee taking an active role



Implementation In Works- Experts Knowledge Capture

- Tacit Knowledge using interviews and NESAC Video Academy
 - 6 Retirees interviewed using our video studio
 - Group interview with retirees from Hypersonic Air Breathing area
- Interviews captured:
 - Career highlights; rewarding accomplishments; lessons learned; advice to next person in their position
- Explicit knowledge capture using digitization of unique documents
 - Digital Librarians to decide uniqueness and criticality
 - Digitized collections are made available via Langley Digital Repository

