

Agenda

Part I

- Develop an understanding of NSF's Knowledge Management (KM) program
- Comparison to key practices of a lessons learned process

Part II

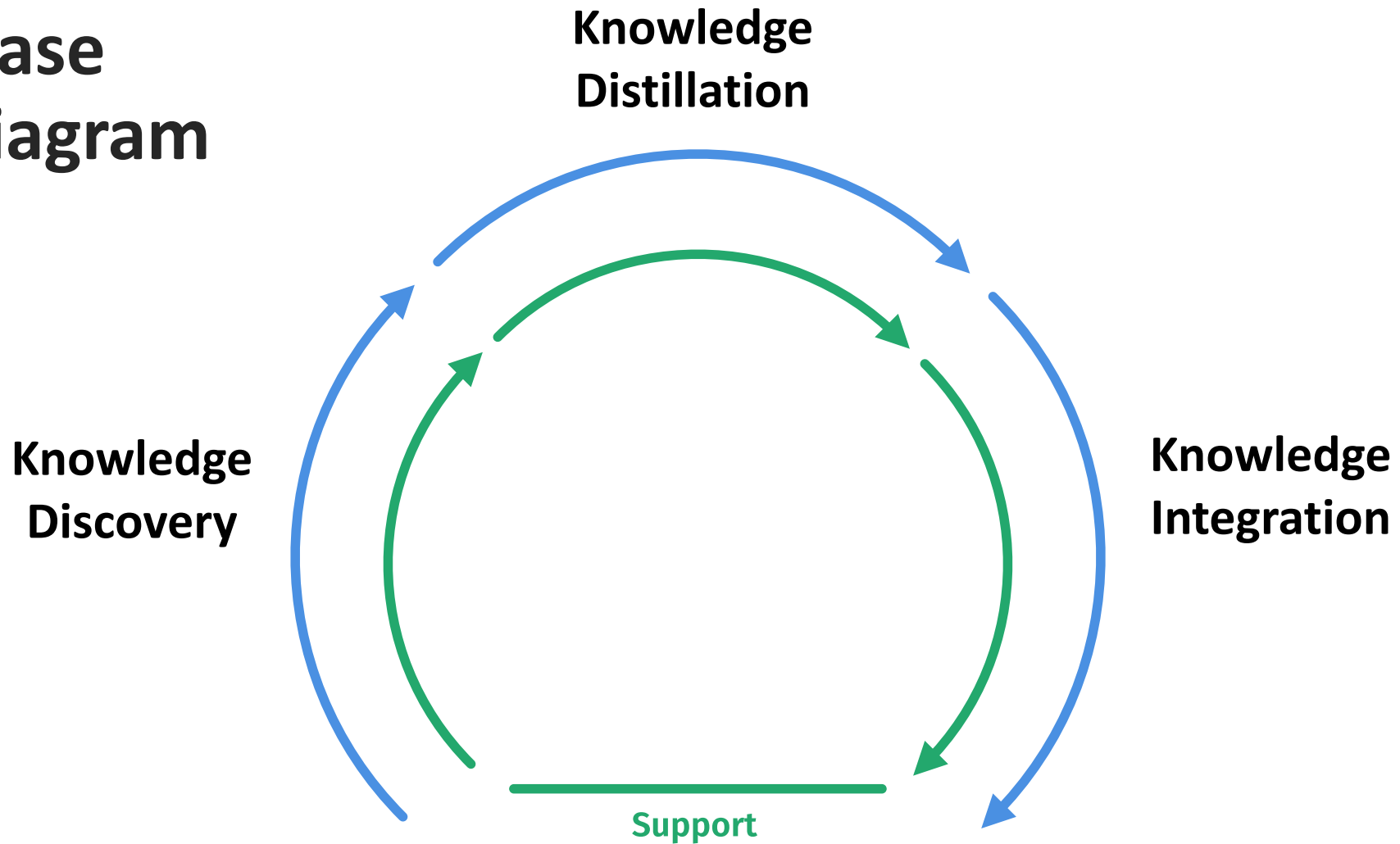
- Small group discussions on techniques for discovery of best practices and lessons learned
- Each group share key outcomes of discussion
- Inform NSF's KM program

Background

- 2015 - NAPA Recommendation: NSF should formally establish communities of practice (CoP) to share best practices and implement a “lessons learned” requirement for all MREFC projects.
- 2016 - NSF Advisory Committee for Business and Operations (BOAC)
- 2017 & 2018 Large Facilities Workshop Sessions
 - Working Group (NSF and Recipients) – June 2017 to January 2018
- Government Accountability Office (GAO) Assessment

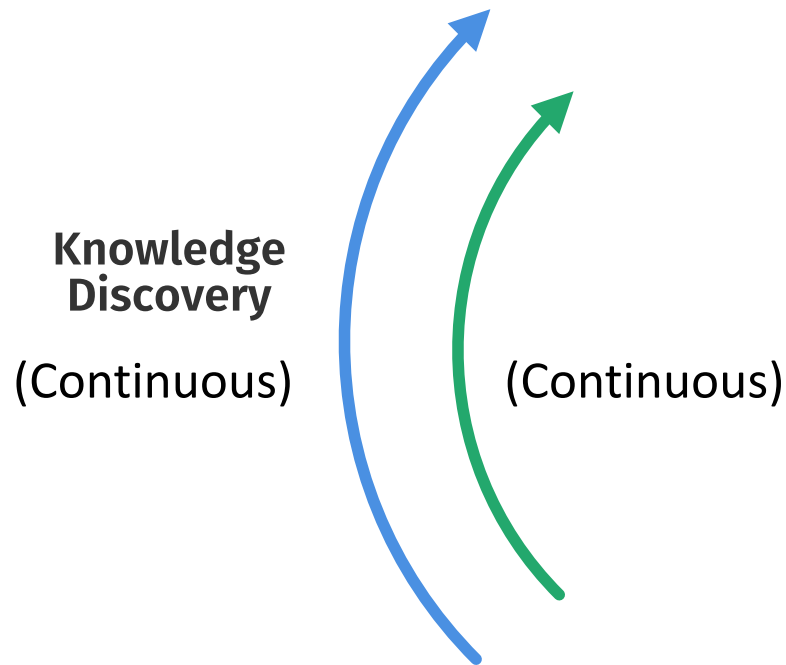


Three Phase Model Diagram



- NSF (Internal Processes/Procedures)
- Recipient Community (NAPA Report Recommendation)

NSF Major Facilities - Knowledge Discovery Phase



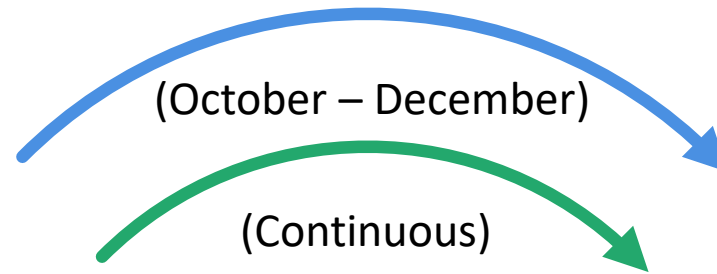
Sources:

1. Recipient Annual Reports & Reviews*
2. Business Systems Reviews (NSF)
3. Recipient Initiated Pause & Learn Activities
4. Integrated Project Teams (IPT)
 - Identified throughout the year
 - Consolidated list, annually, for external

* Large Facilities Manual 2.5.1 & 4.6.3

NSF Major Facilities - Knowledge Distillation Phase

Knowledge
Distillation



- PO Forum – October Meeting
- LFW Planning Committee

Identification of Key Topics

- Major Facilities Working Group (MFWG)
- Facilities Governance Board (FGB)

LFM Revisions and SOGs

NSF Major Facilities - Knowledge Integration Phase

1. Large Facilities Workshop (NSF)
2. LFO Webpages & Resources (NSF)
3. Recipient Peer Network & Assists
4. PO Forum
5. LFM & SOGs

(Continuous)

Knowledge
Integration

(April/May)



LFO Public Webpage with Knowledge Sources

<https://www.nsf.gov/bfa/lfo/index.jsp>

Knowledge Gateway – modeled after NASA’s critical knowledge website

Other Resources available:

- Large Facilities Manual
- Business Systems Review Guide
- NAPA Report
- GAO Report

NSF Major Facilities Knowledge Sharing Gateway

The knowledge sharing gateway serves as a portal connecting the NSF Large facilities community to shared best management practices and lessons learned presentations.

Click on any of the icons below to select resources by theme, or use the checkboxes on the left to filter your search. Multiple icons can be chosen at once. Icons are highlighted when selected.

RESET

Facility Lifecycle Phase

Design & Construction (23)

Operations (59)

Themes

Lessons Learned (23)

Programs & Projects (40)

Tools & Processes (36)

Large Facilities Workshop

2015 (14)

2016 (28)

Lessons Learned: NHERI Experimental Facilities 4 | 2018

Lessons Learned: NHERI Experimental Facilities 3 | 2018

Lessons Learned: NHERI Experimental Facilities 2 | 2018

Lessons Learned: NHERI Experimental Facilities 1 | 2018

Cost Estimating for NSF Facility Operations | 2018



Key Concepts Behind NSF's KM Program

- **Encourage versus Require**

- Foster a learning culture
- Requirement could be perceived as an evaluation or review of performance
- May miss lessons that could benefit other facilities

- **Low burden**

- Take advantage of existing tools/processes
- Integrate as routine versus additional work

Comparison with GAO Expectations

Key Practices of Lessons Learned Process

- Collect potential lessons
- Analyze information collected
- Validate applicability of lessons
- Prioritize and apply lessons learned
- Share lessons learned through a variety of communication media
- Archive lessons in a manner that allows searches

NSF's KM Program

- ✓ **Encourage**
- ✓ NSF Staff evaluates
- ✓ PO Forum
- ✓ LFW Planning Committee
- ✓ Large Facilities Workshop (LFW)
- ✓ Knowledge Management (KM) website

Transition to Part II

- Any questions on NSF's Knowledge Management program?



Part II – Small Group Discussions

- Small group discussions (*30 minutes*)
 - *Includes Break*
- Each group share key outcomes of discussion
 - (*5 minutes per group*)
- All - Identify top techniques (*15 minutes*)

Questions for Discussion

1. Should Recipients be required or encouraged to submit lessons learned to NSF?
2. What are efficient means for Recipients to report lessons learned to NSF?

Summary

- Take away from Group Discussions
- NSF to codify “other means” for Recipients to inform NSF’s Knowledge Management program
- Follow-up Questions & Comments
- Please Complete Workshop Surveys
 - Used to measure and monitor the Knowledge Management Program



Knowledge Management Backup Slides

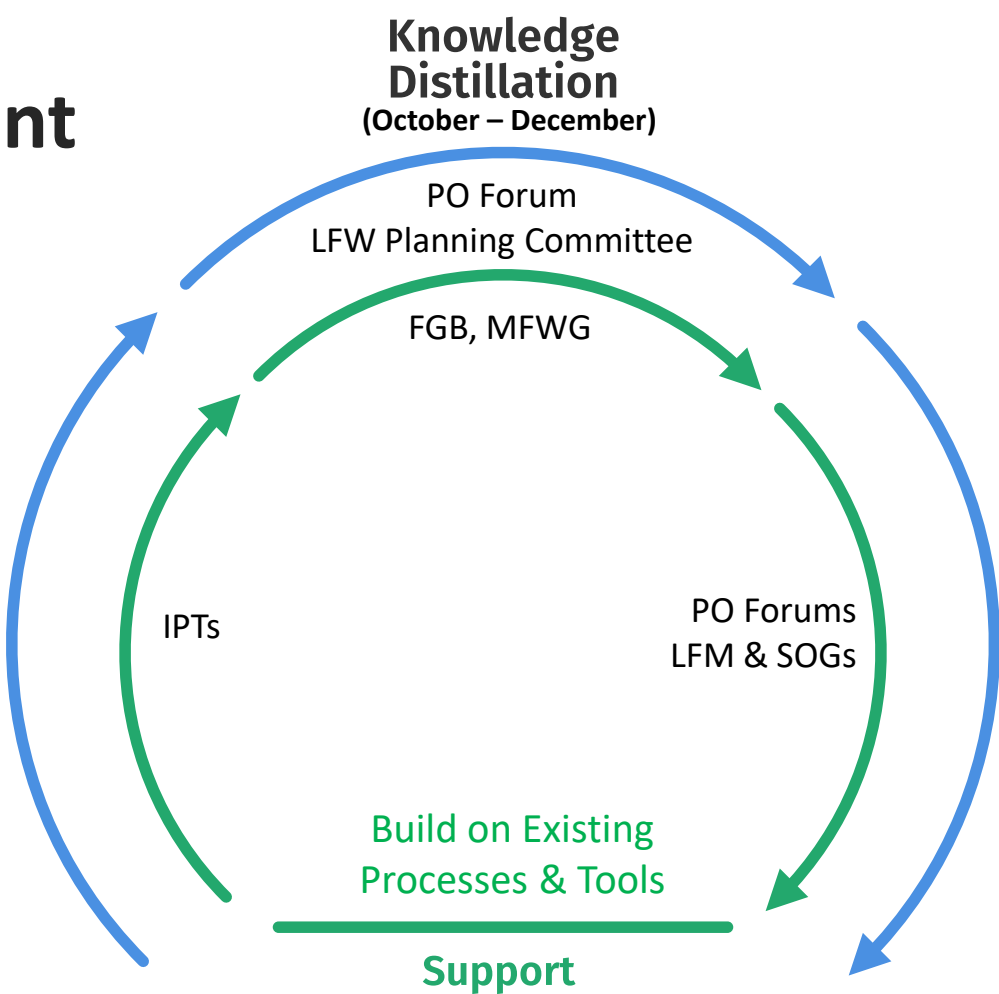
- NSF Large Facilities Knowledge Management Program Model
- Why NSF should have a Knowledge Management program
- Guiding Principles of NSF's Knowledge Management program
- Key aspects of NASA Knowledge Transfer Article applied to NSF's Knowledge Management Program

NSF Major Facilities Knowledge Management (KM) Model

- Guiding Principles**
- *Responsive & Adaptive*
 - *Efficient*
 - *Agile*

Knowledge Discovery

Recipient Annual Reports & Reviews
 Business Systems Reviews (NSF)
 Recipient Initiated Pause & Learn Activities



Knowledge Integration
 (April/May)

Large Facilities Workshop, LFW (NSF)
 LFO Webpages & Resources (NSF)
 Recipient Peer Network & Assists

- Abbreviations:**
- FGB – Facilities Governance Board
 - MFWG – Major Facilities Working Group
 - IPT – Integrated Project Team
 - PO – Program Officer
 - LFM – Large Facilities Manual
 - SOG – Standard Operating Guidance

- **NSF (Internal Processes/Procedures)**
- **Recipient Community (NAPA Report Recommendation)**



Why have a Knowledge Management program?

- Efficiency and effectiveness
- Implementation of best practices
- Foster a learning culture

Guiding Principles established by the Working Group (WG)

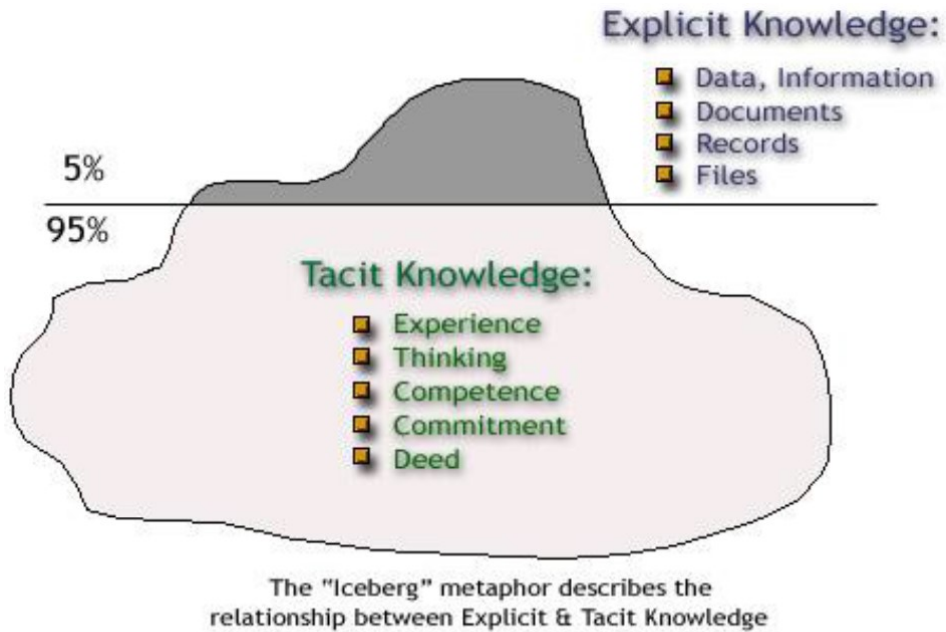
- Responsive and Adaptive
- Efficient
- Agile

Take credit for existing practices and enhance existing tools.



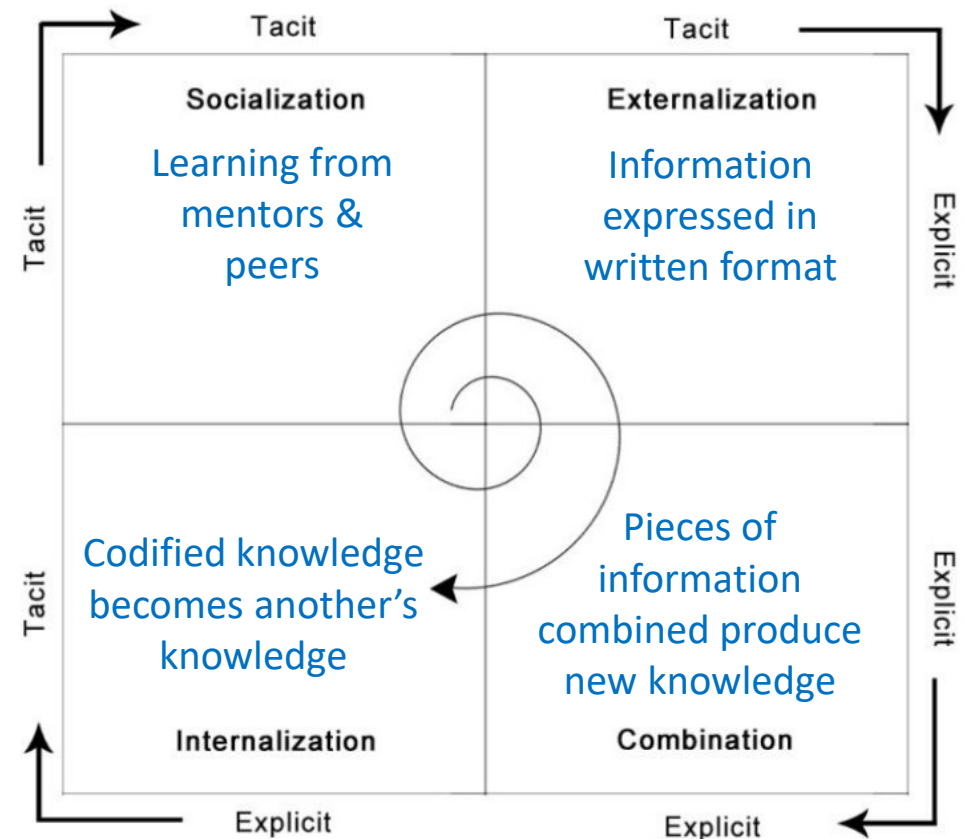
NASA Article - Knowledge Transfer

(<https://appel.nasa.gov/wp-content/uploads/sites/3/2015/11/Knowledge-Transfer.pdf>)



Source: Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By*

- Tacit knowledge is most difficult to transfer.
- Can be unleashed and shared by connecting people.



Source: Nonaka & Takeuchi, 1995