

Knowledge Management at Goddard

1. The KM Problem
2. KM Architecture
3. Current KM Actions

Who is Ed Rogers?

- ★ GSFC Knowledge Management Architect
 - ★ Code 300, located in the SMO Office
 - ★ Started at Goddard on May 13, 2003
- ★ Was professor of business strategy
 - ★ BS Ohio, MIB, South Carolina, PhD Cornell
 - ★ Taught at University of Alabama in Huntsville
- ★ Worked with NASA (Marshall) Sum 02
 - ★ Communication Systems
 - ★ Measuring Antecedents to Sharing Behavior



NASA KM Strategic Goals

- ★ To sustain NASA's knowledge across missions and generations
 - KM will identify and capture the information that exists across the Agency
- ★ To help people find, organize, and share the knowledge we already have
 - KM will efficiently manage NASA's knowledge resources
- ★ To increase collaboration and to facilitate knowledge creation and sharing
 - KM will develop techniques and tools to enable teams and communities to collaborate across the barriers of time and space



KM as Critical for Achieving Excellence

- ☀ **KM Processes Directly Impact Mission Success**
 - ☀ Safety and Mission Assurance
 - ☀ Cost and Schedule (fast and efficient use of knowledge and the reapplication of knowledge)
- ☀ **The Causal Ambiguity of KM Processes Builds GSFCs Competitive Advantage**
 - ☀ Unique from Industry (longer term focus)
 - ☀ Difficult to Replicate
 - ☀ Required for the “Build Once – Fly Once” FBC Environment of Future Space Projects



What is the Problem?

- ★ Existing knowledge processes are not stable (unpredictable)
 1. Designer dependent outcomes (team make up determines team outcome more than team function or structure)
 2. Expert reliance avoids need for facts
 1. Contour MIB
 2. CAIB Report
 3. Organizational communication processes introduce risk to system (redundancy, reliability delusions, stress points)
 4. Knowledge loops are longer than operational throughput cycle time (knowledge is not timely in application)



What is the Problem?

★ Current systems are not sustainable

1. Social networks are decaying faster than they are being reproduced
 1. Human capital plan addresses workforce decay
 2. Building old systems doesn't meet new needs
2. Knowledge sharing legacy systems are not built around today's workplace structures
 1. Digital workplace and electronic relationships
 2. Legacy systems still overly reliant on face2face
3. Mentors have a time-space gap with Mentees for effectively sharing knowledge
 1. Lack of co-location of teams (distributed)
 2. Time demands shrink availability of time



The Knowledge Function

Opportunity & Tools

Inflow of Human Capital

Loss of Human Capital

Customer Need Focus

Organization Interaction Coefficient

$$\left(\begin{array}{c} \text{Rate of} \\ \text{Knowledge} \\ \text{Discovery} \end{array} - \begin{array}{c} \text{Rate of} \\ \text{Knowledge} \\ \text{Loss} \end{array} \right) = \text{Potential Knowledge Utilization}$$

Openness & Sharing

Innovation & Creativity

Knowledge Decay

Project Execution



GOAL: Embed KM Smart Thinking in Project Life Cycle

- ★ Technical Reference Experts in Project Formation
 - Perform Single Point Knowledge Searches
 - Perform as Knowledge Experts in Design Processes
- ★ Project Technical Reference Expert
 - Upgrade Role from Document Management to Knowledge Management for Project Librarians
 - Project Teams to Include KM Designate from Inception through Close Out to Manage Knowledge Flow
- ★ Utilize Library FTE to Help Launch KM Initiatives by Deploying Their Skills to:
 - Begin Knowledge Nugget Tracking (LL Candidates)
 - Perform Knowledge Preservation (Catch Up)
 - Project Reference Document Management (Libraries)
 - Train Tech. Reference Experts and KM integrators for the Projects



Goals of the KM Office at GSFC

- ✦ Increase the Effectiveness and Efficiency of Knowledge Use at GSFC
- ✦ Craft and communicate a clear vision and plan for KM at GSFC: the need, the means & the goal
- ✦ Help equip with the necessary tools
 - ✦ Organization
 - Processes and policies to support KM
 - Rewards and performance evaluations
 - ✦ IT Infrastructure
 - Easy, secure access and search
 - Simplified documentation and storage
- ✦ Help transition the workforce
 - ✦ Model and walk the KM talk
 - ✦ Demonstrate the Value



Building a KM Architecture

☀ Assets

- ☀ What you gather
- ☀ What you learn

☀ Actors

- ☀ Owners & Hosts
- ☀ Doers & Builders

☀ Application

- ☀ Search & Presentation
- ☀ Appeal and Relevance

☀ Knowledge

- ☀ Recording & Storage
- ☀ Archives/Preservation

☀ People

- ☀ Cooperation to Share
- ☀ Motivation to Learn

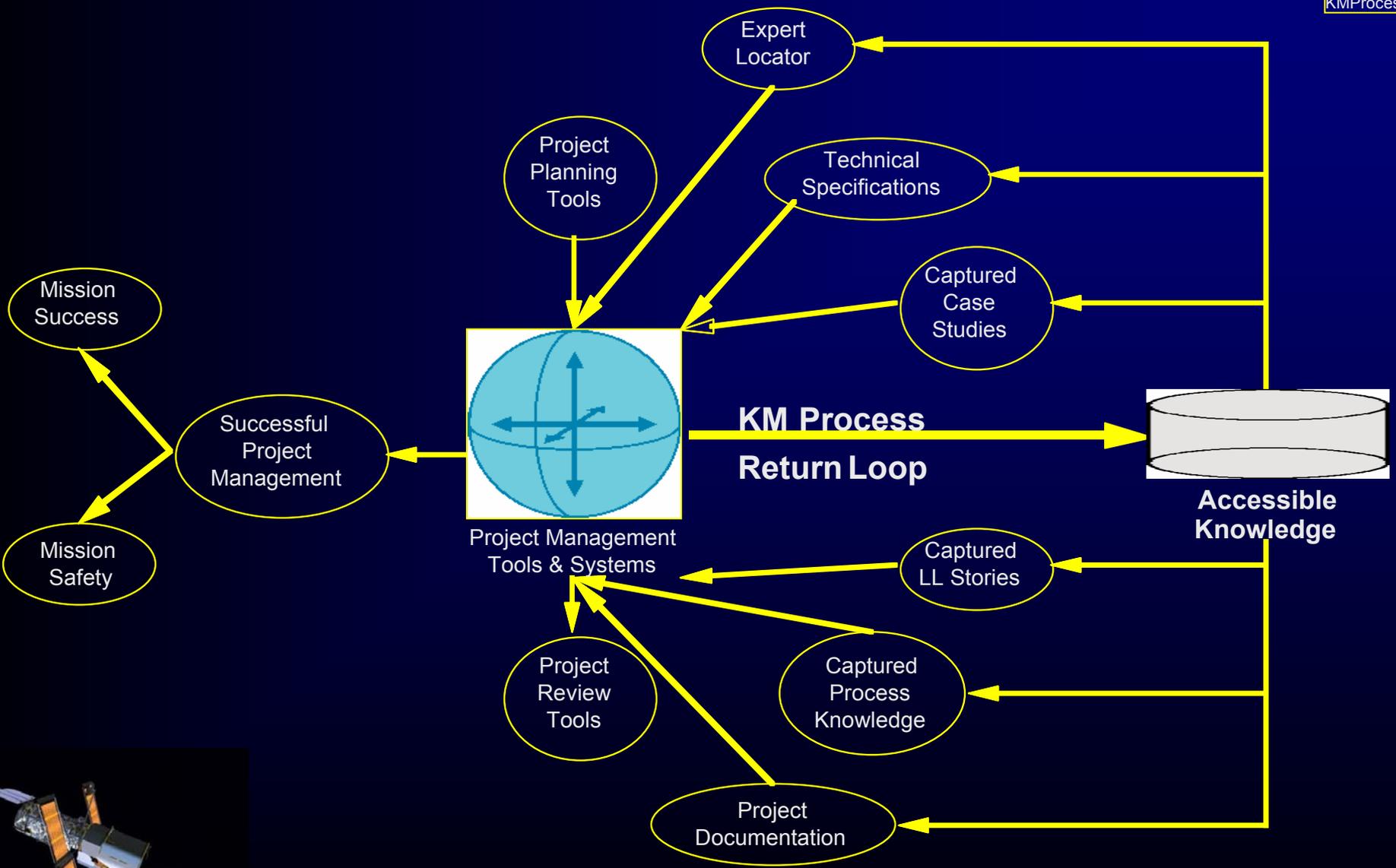
☀ Value

- ☀ Access & Availability
- ☀ Utility and Application

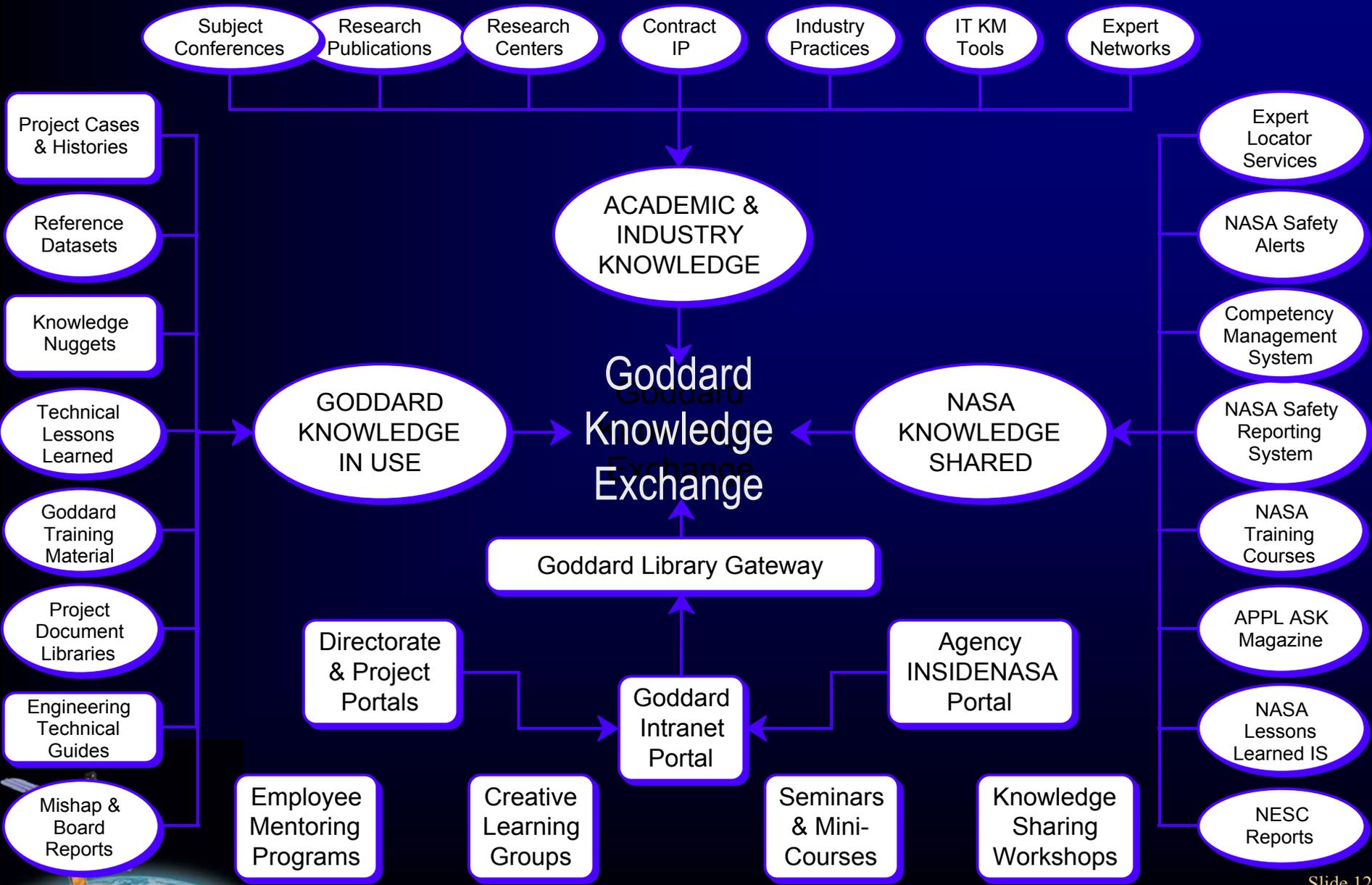


KMProcess

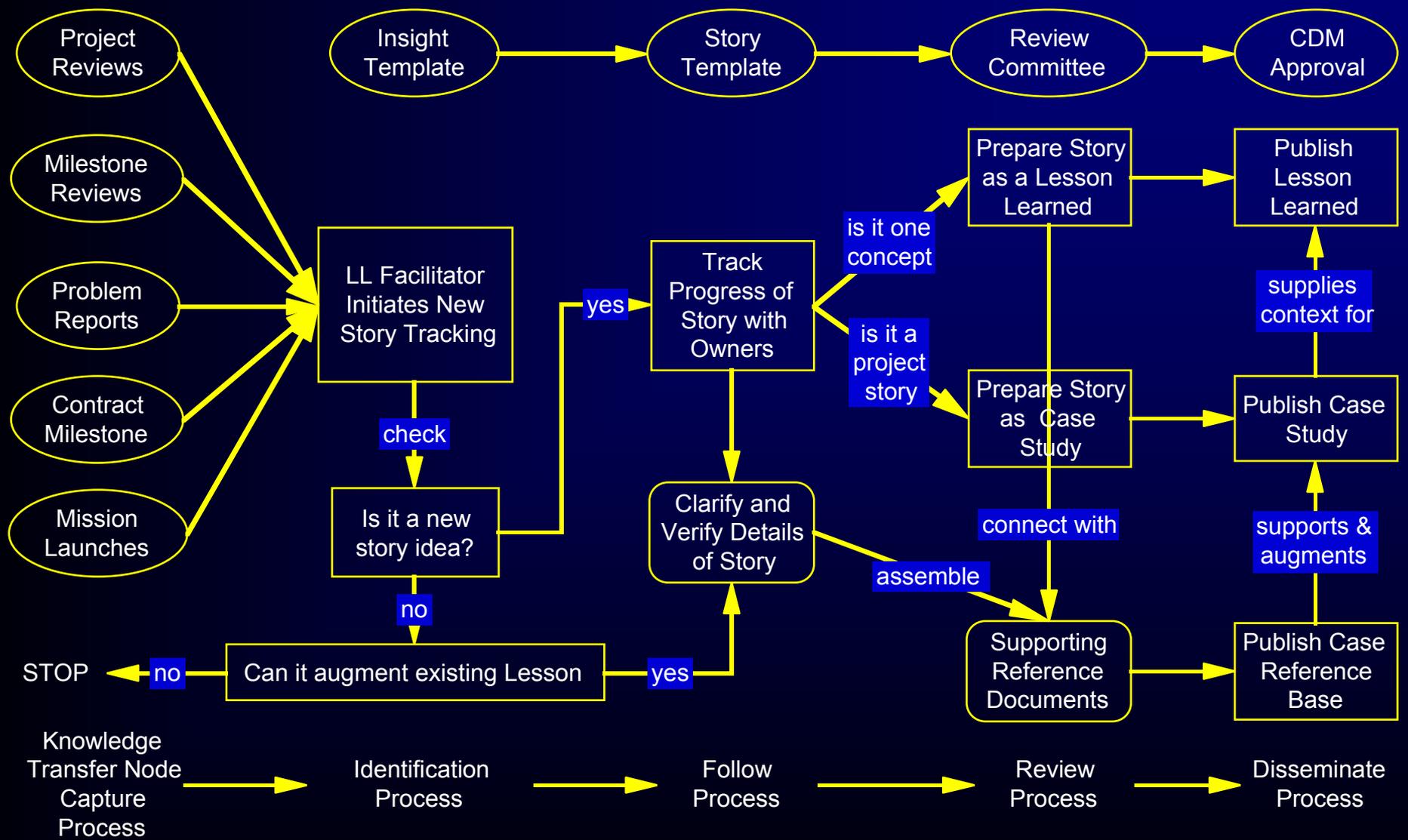
KM Builds a Knowledge Return Loop



Goddard KM Architecture



Process Flow for Knowledge Nuggets



Goddard Has a Good Start

☀ ***Knowledge Management Architect (KMA)***

The role of the KMA is to develop the approach and set priorities across the center for implementing the changes needed to build an effective and efficient knowledge management system. The KMA is equal parts champion, advocate, educator and planner of KM at Goddard.

☀ ***Knowledge Management Working Group (KMWG)***

The purpose of the KMWG is to communicate, promote and coordinate continuous and sustained improvements in Knowledge Management at Goddard; and to ensure the appropriate visibility of KM-related achievements and challenges across the Center.



Moving FTE's into KM Work

- ✦ The vision of keeping the Library FTE's enables Goddard to jump start KM work
- ✦ Document Management Skills that need to be disseminated into the projects
- ✦ Support for the knowledge sharing activities key to cultural change
 - ✦ Video capture and indexing
 - ✦ Webcasts of technical forums
 - ✦ Document Preservation and Searching
- ✦ Ability to expand KM activities in future as FTE's and contractor support becomes available



KM Actions at Goddard

- ✦ Knowledge Preservation Projects
 - ✦ Project Library Documents
 - ✦ Project Legacy: Telling the Story
- ✦ Electronic Access
 - ✦ Goddard Core Metadata
 - ✦ Authority and Control of Access
- ✦ Knowledge Sharing Forums
 - ✦ Capturing Events on Digital Video
 - ✦ Webcasting OnSite Seminars
- ✦ Tracking Knowledge Nuggets
 - ✦ Action Process for Knowledge Nuggets
 - ✦ Internal Availability of Lessons in Process



KM Smart Activities Underway

- ✦ Assisting Projects in Being KM Smart
 - ✦ Laser Risk Reduction Program
 - ✦ HitchHiker Hibernation Program
 - ✦ JWST Testing Team Measurement Systems
- ✦ Library knowledge preservation projects
- ✦ KM conference at Goddard in January
- ✦ Learning from other center KM practices
- ✦ Coordinating center-wide sharing forums
- ✦ University partnerships
- ✦ Case stories and lessons learned



KM Change Approach at Goddard

- ✦ Find Good Stuff and Celebrate It
- ✦ Work with Willing Projects and Leaders
- ✦ Demonstrate Value of the Collective
- ✦ Build on People's Desire for Legacy
- ✦ Make the System Intuitive
 - ✦ Works within existing project processes
 - ✦ Works as part of daily individual work flow
- ✦ Design Supporting Policies as Needed

