



Knowledge, People & Value

Goddard Space Flight Center

Dr. Edward W. Rogers

October 15, 2003



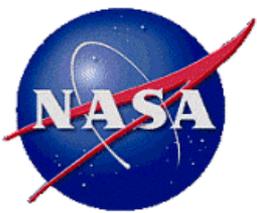
Knowledge Management at NASA



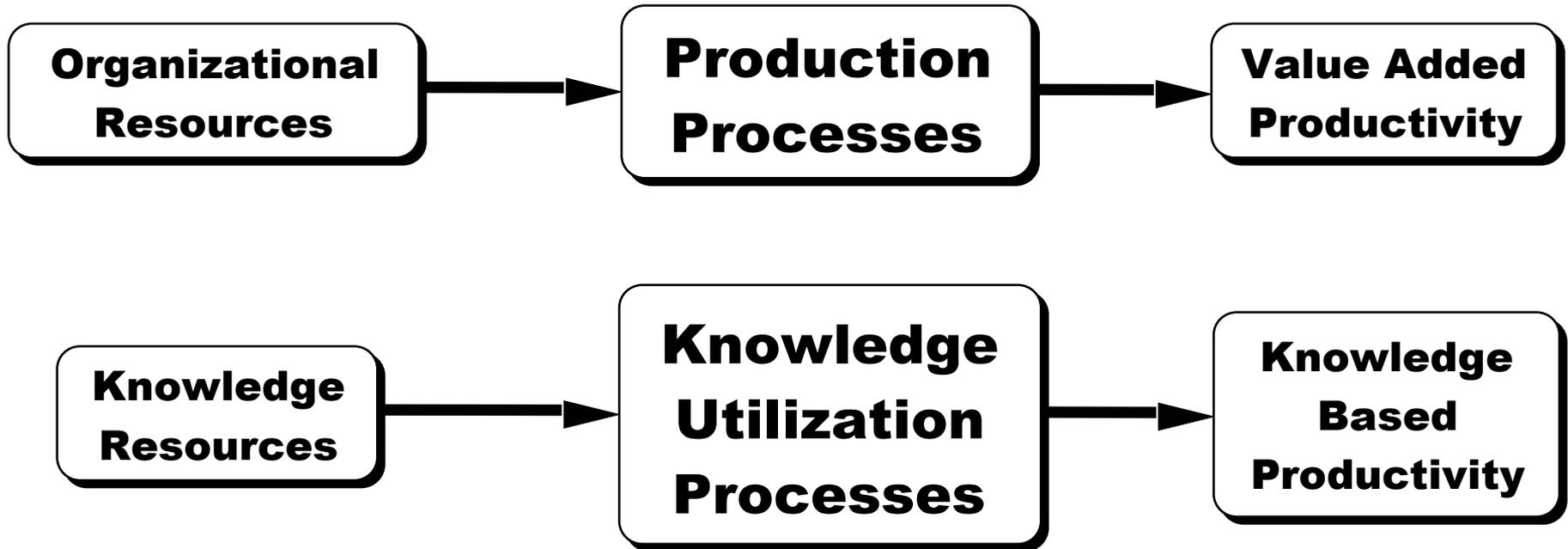
NASA is constantly challenged
to capture and integrate our lessons learned
to effectively manage the risk
involved in space exploration

“The Administration will adopt information technology systems to capture some of the knowledge and skills of retiring employees. Knowledge management systems are just one part of an effective strategy that will help generate, capture and disseminate knowledge and information that is relevant to the organization’s mission.”

The President’s Management Agenda



Knowledge Based Organization



Grant, Liebeskind, Appleyard, Bierly & Chakrabarti (SMJ, 1996)



The Knowledge Function

Opportunity
& Tools

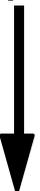


Organization
Interaction
Coefficient

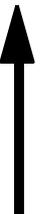


Openness
& Sharing

Inflow of
Human
Capital

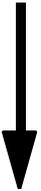


Rate of
Knowledge
Discovery

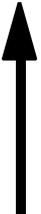


Innovation &
Creativity

Loss of
Human
Capital



Rate of
Knowledge
Loss



Knowledge
Decay



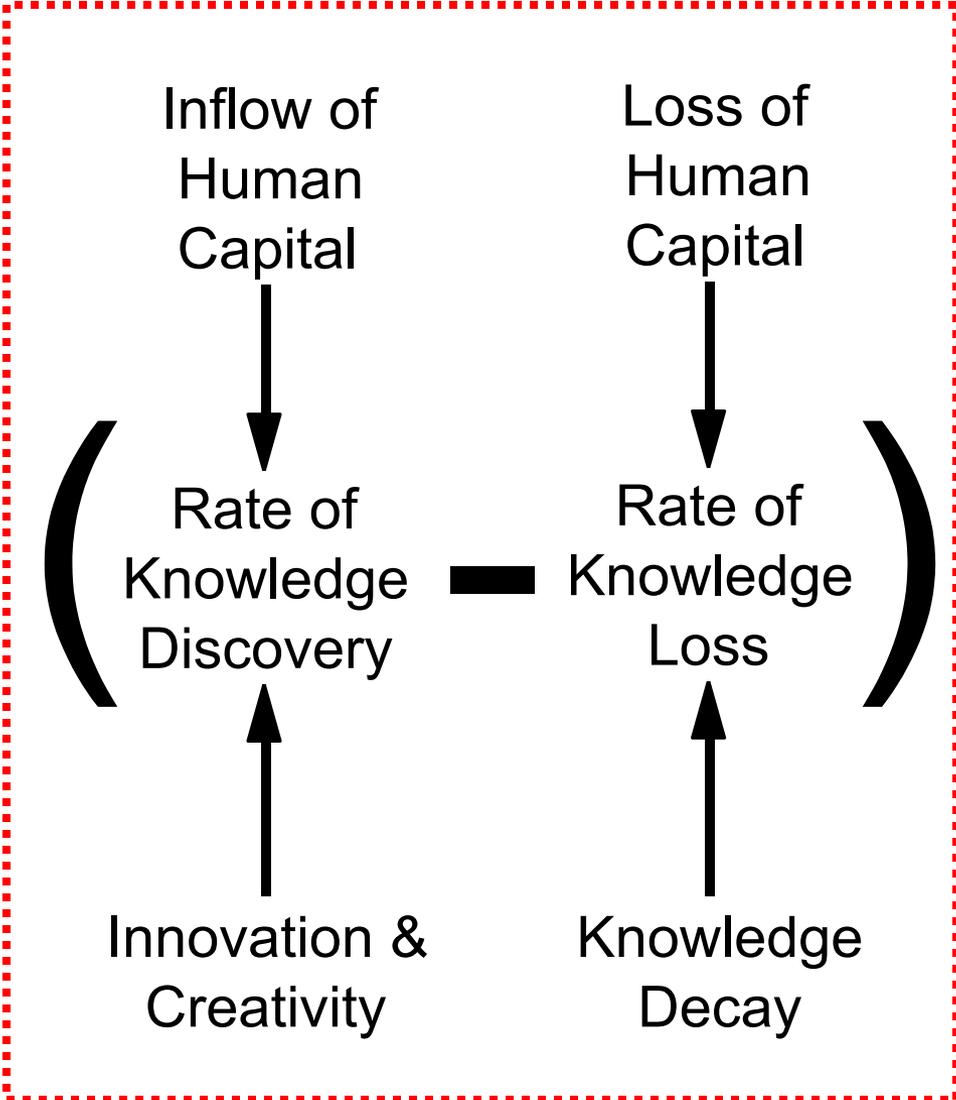
Customer
Need
Focus

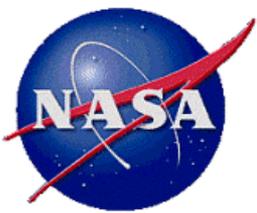


Potential
Knowledge
Utilization



Project
Execution





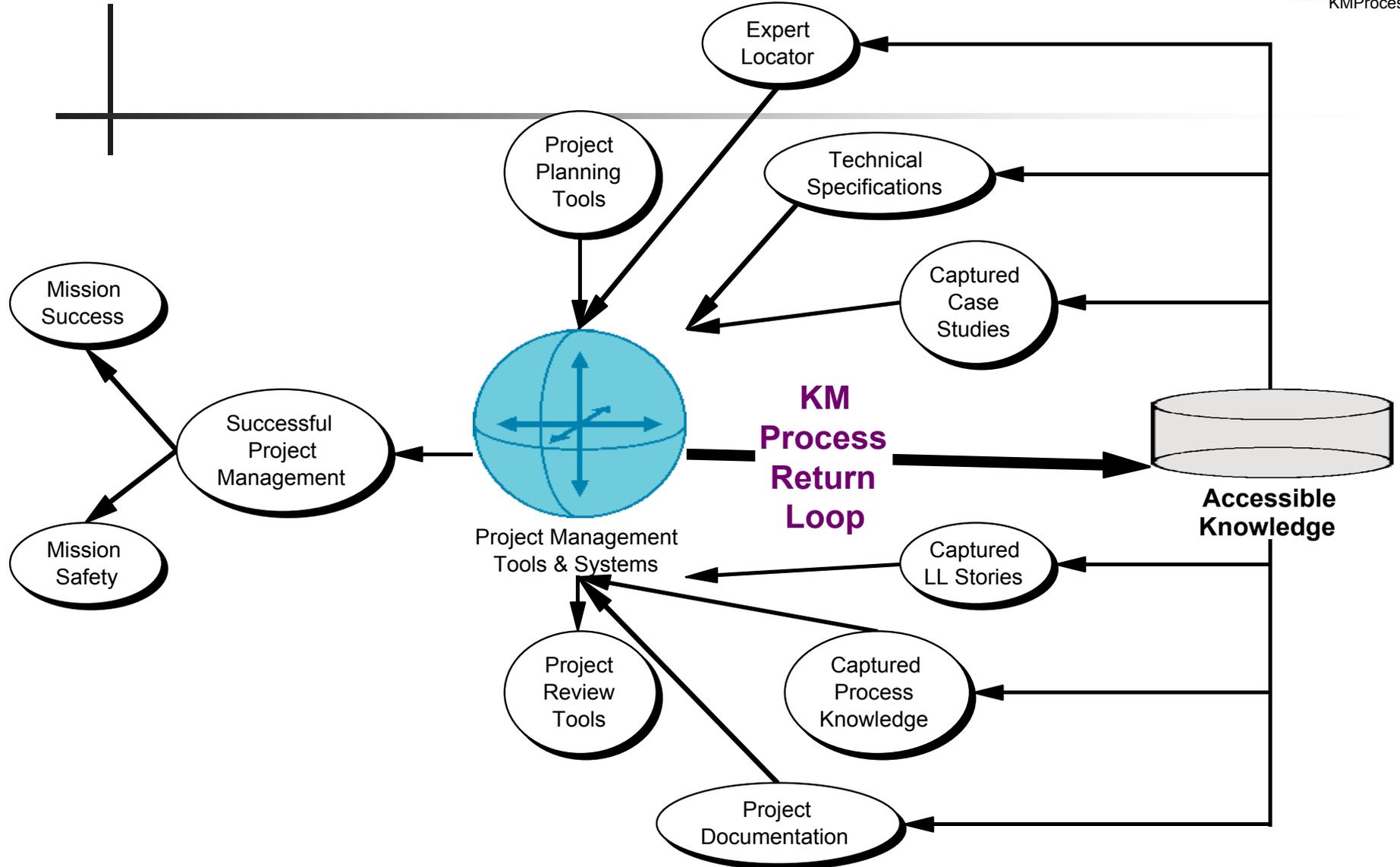
New Organizational Structures

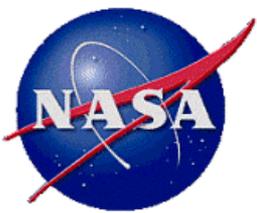


- Knowledge Flow \neq Information Flow
 - Interaction vs. Transaction
 - The R&D Organization vs. the Bank
- WHAT: Organizational Competencies that Enable High Rates of Knowledge Utilization
- WHY: Strategic Fit of Culture
- WHERE: Strategic Intent of Organizational Direction
- HOW: Size, Goal and Outcome Alignment

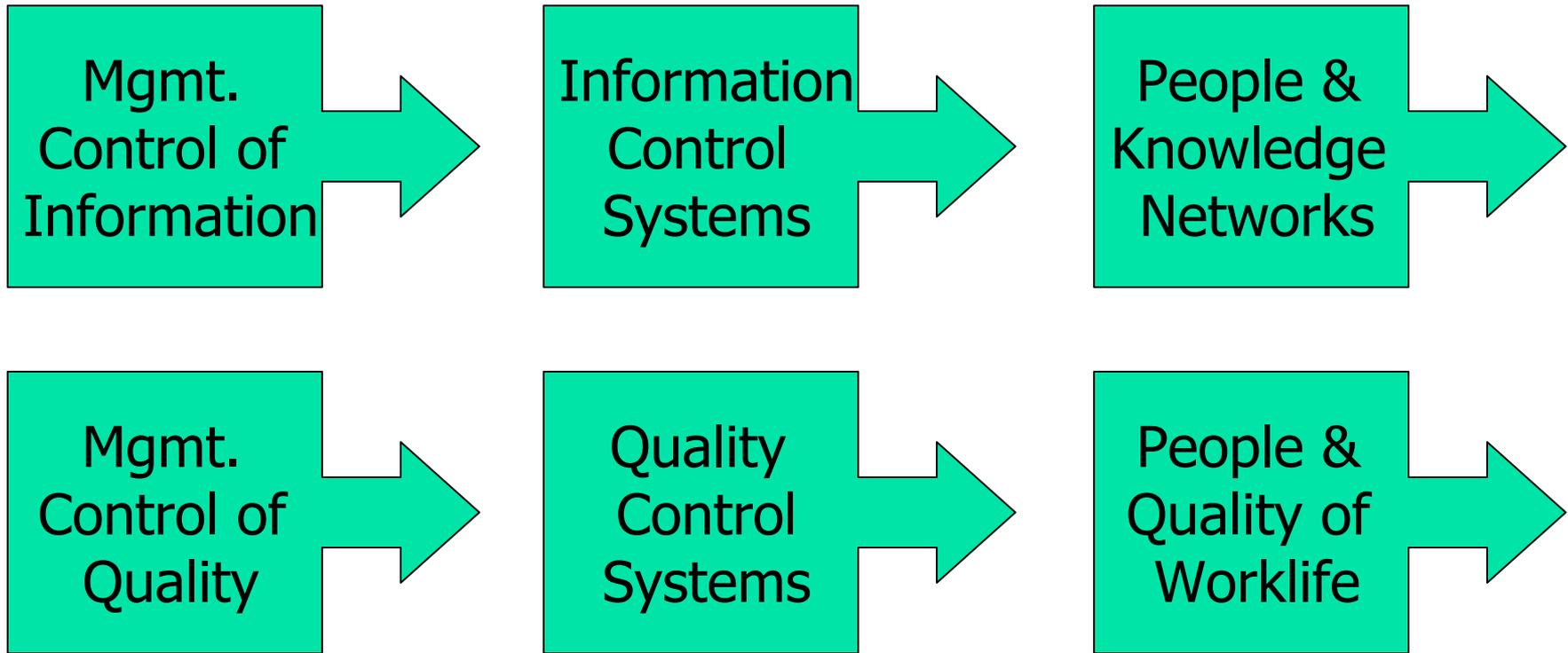


KM Knowledge Return Loop





Control, Systems and People





What is Knowledge Management?



Knowledge Management is simply doing things to apply knowledge in better ways than might happen without any management effort: In other words increasing **KNOWLEDGE UTILIZATION.**

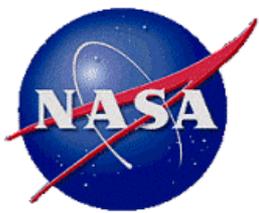


Perceptions of Knowledge



- People as an input variable
- Perceptions filled with noise

Personal Knowledge Strategies are Determined by Organizational Members' Implicit Theory of Knowledge Utilization.



Open-Sharing Environment



- What creates an open sharing environment?
 - What shows people what to share?
 - What equips people how to share?
 - What motivates people why to share?

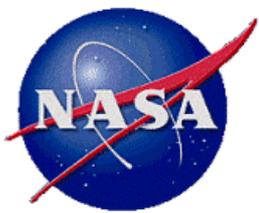


Organizational Depth Perception



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.

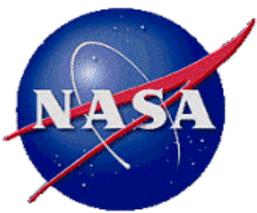


Communication Satisfaction



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

I am hearing the whole story, and if I take the time to speak something happens.



Employment Game Score



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

If I work hard, it's not just to make my boss rich.



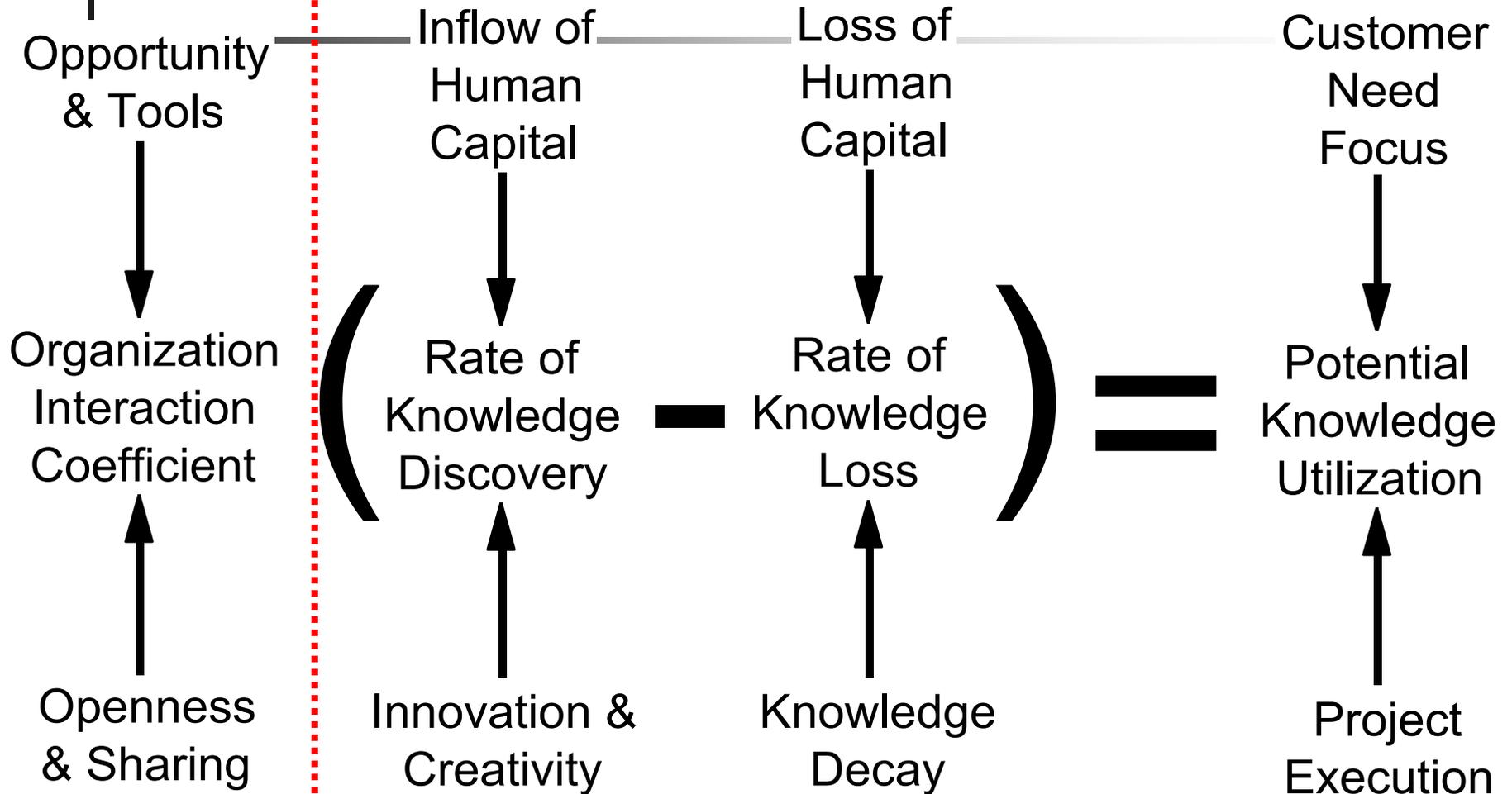
Knowledge, People & Value

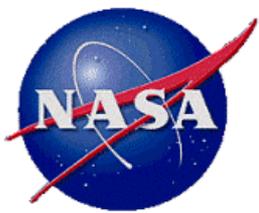


- Knowledge Management is about increasing the effectiveness and the efficiency of the ways the organization USES KNOWLEDGE.
- Of all the activities we choose to do, those which lead to human learning offer the greatest potential return because the fully engaged human mind will appreciate in value more than any earthly object.
- Make the right kind of investments that further the appreciation of human capital and enable the application of collective organizational knowledge.



The Knowledge Function





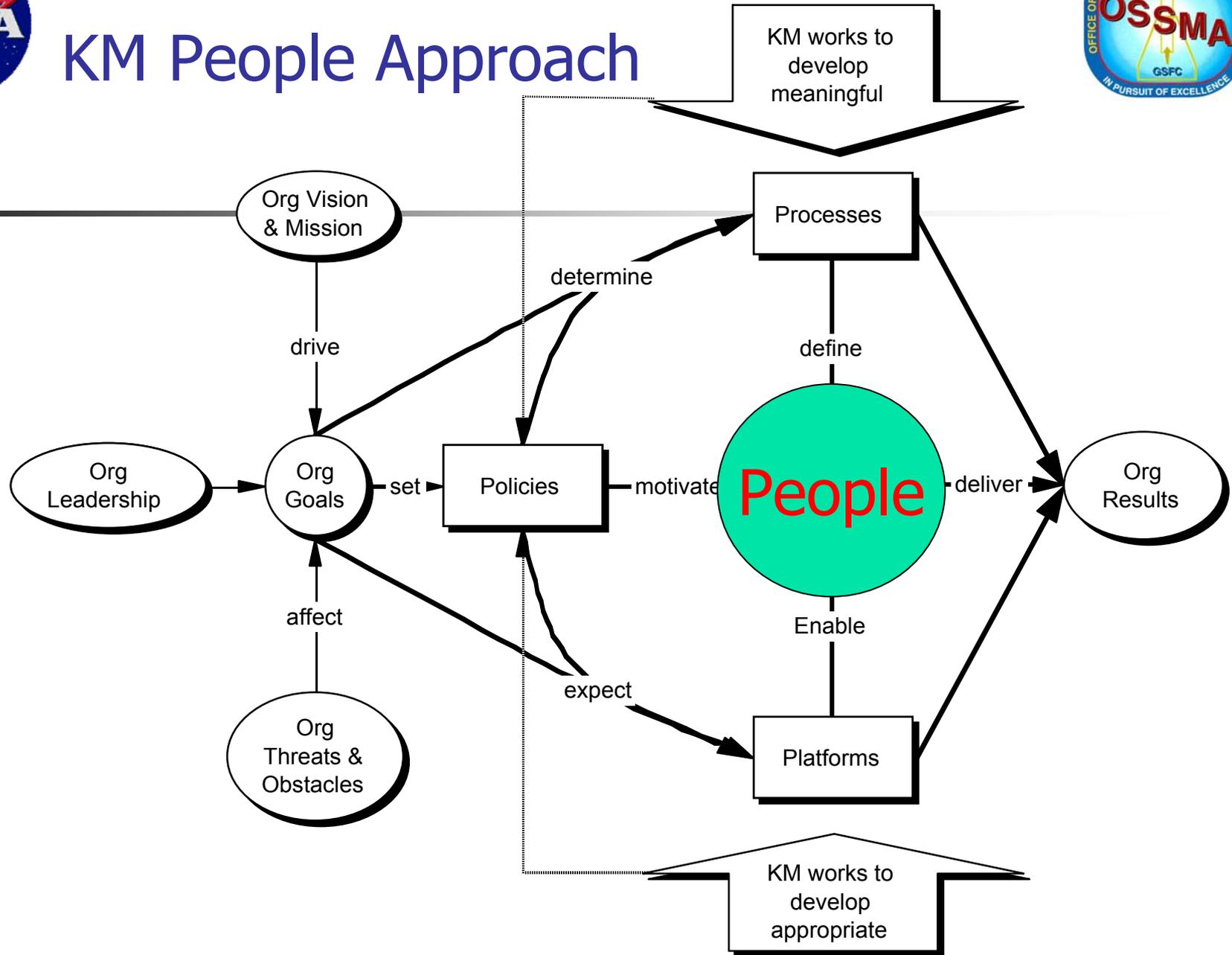
The Five Pillars of the NASA Strategic Human Capital Plan



- Strategic Alignment
- Strategic Competencies
- Learning
- Performance Culture
- Leadership



KM People Approach

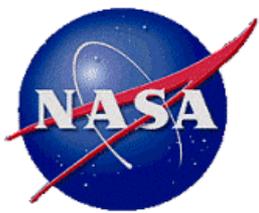




What is the Problem?

Existing knowledge processes are not stable

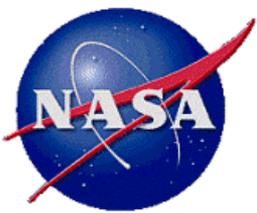
1. Designer dependent outcomes (team make up determines team outcome more than team function or structure)
2. Expert reliance avoids need for facts
 1. Contour MIB
 2. CAIB Report
3. Organizational communication processes introduce risk to system (redundancy, reliability delusions, stress points)
4.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



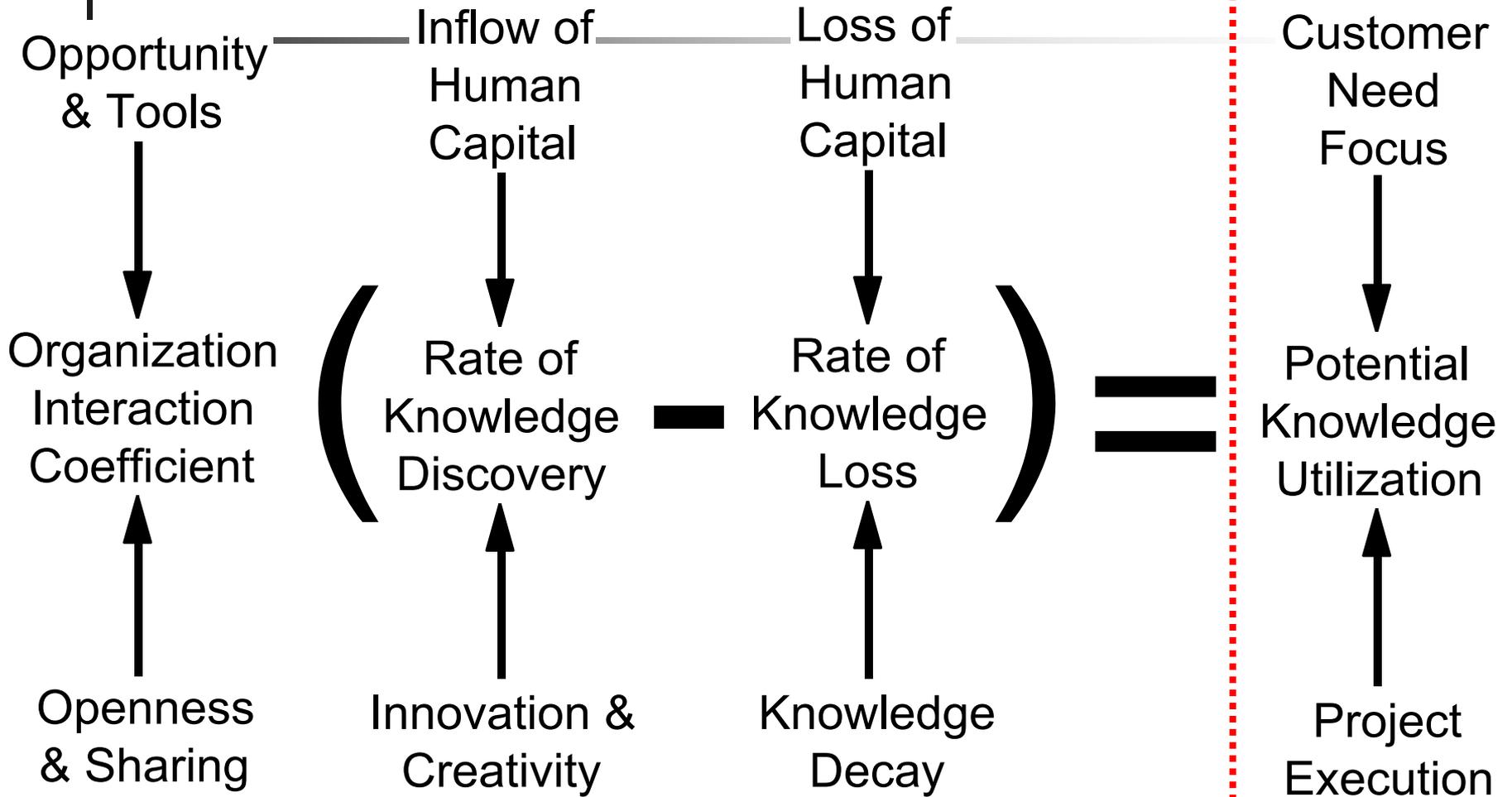
What is the Problem?

■ Current systems are not sustainable

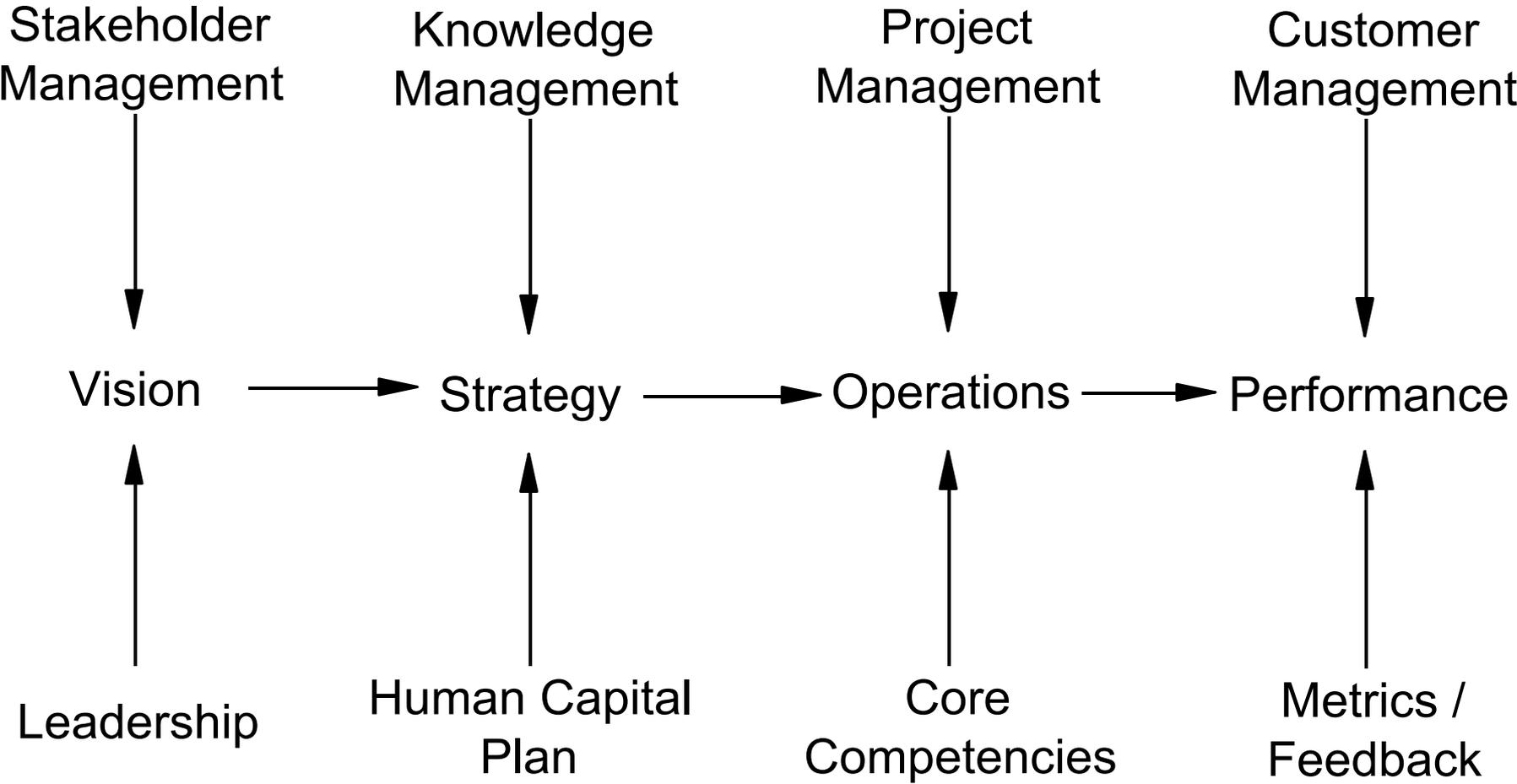
1. Social networks are decaying faster than they are being reproduced
 1. Human capital plan addresses workforce decay
 2. Building old systems doesn't meet new needs
2. Knowledge sharing legacy systems are not built around today's workplace structures
 1. Digital workplace and electronic relationships
 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 for contact



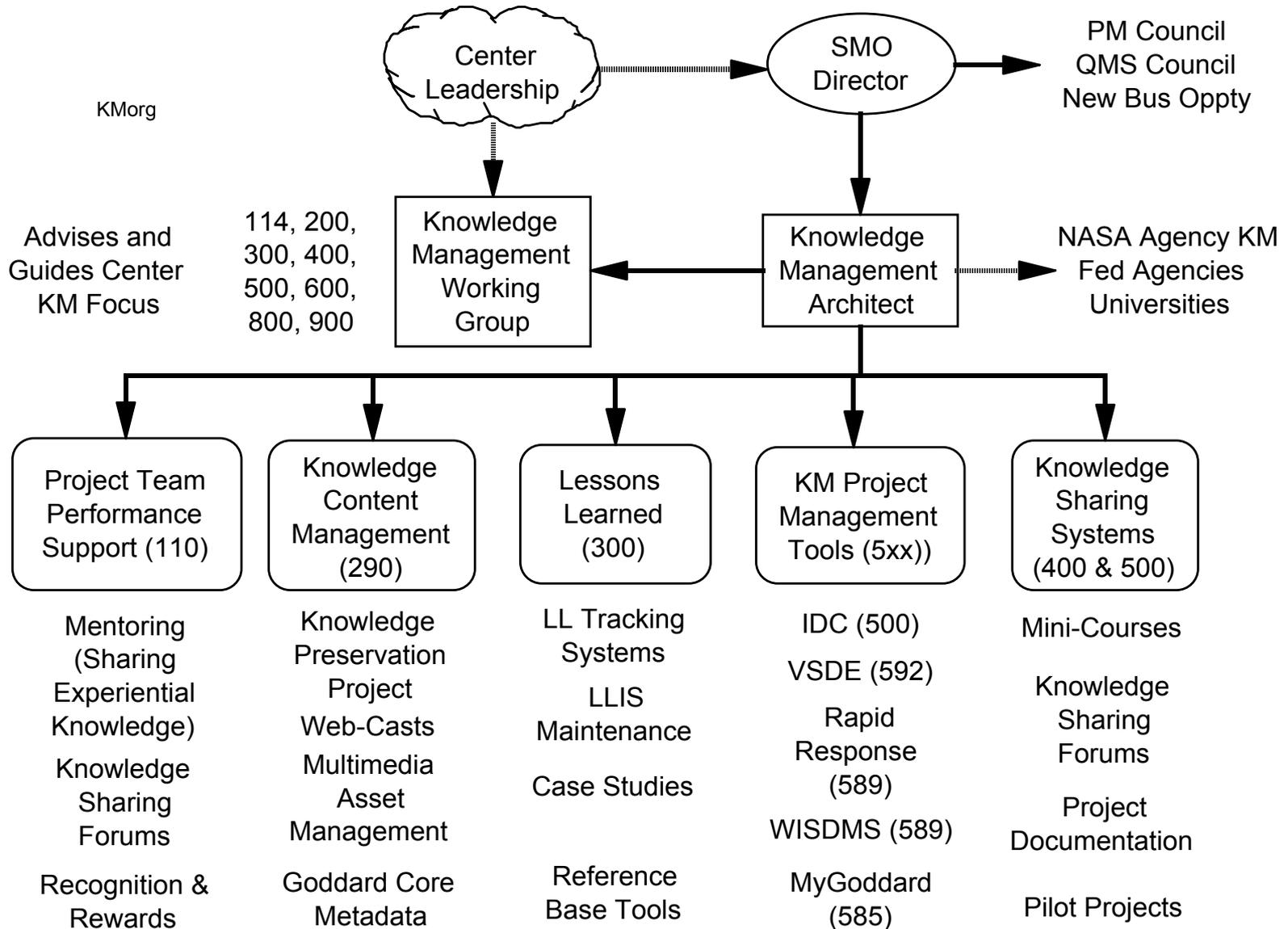
The Knowledge Function

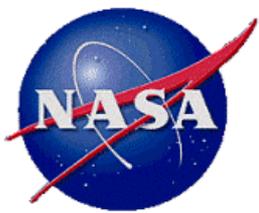


The Value of Knowledge Management



KM Organization for GSFC





Knowledge Management Working Group



Charter

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



GSFC KM Architecture

Strategic Goals

Generate, communicate, & share knowledge internally and externally

Ensure a vital workforce and promote human capital.

KM Goals

Capture share and generate knowledge to stimulate innovation and achieve results and mission success

Improve productivity, by embedding KM processes into daily work activities

Increase collaboration for expanding partnerships and generating new work

Increase a sense of community for continued people retention

KM Architecture

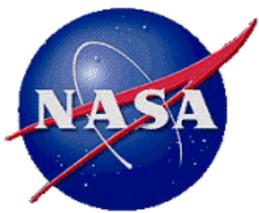
Systematically record critical knowledge

Create a unified knowledge network to find knowledge.

Build & nurture a knowledge sharing culture

KM Components

1. Building Center Document Management and Archiving Process
2. Connecting Center Knowledge Bases with Search and Index Capability
3. Establishing partners at Universities to build at the leading edge of tools and processes
4. Building Forums to Share Knowledge on-line, real time and across projects
5. Equipping project personnel with KM skills and tools



Knowledge, People & Value



- 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



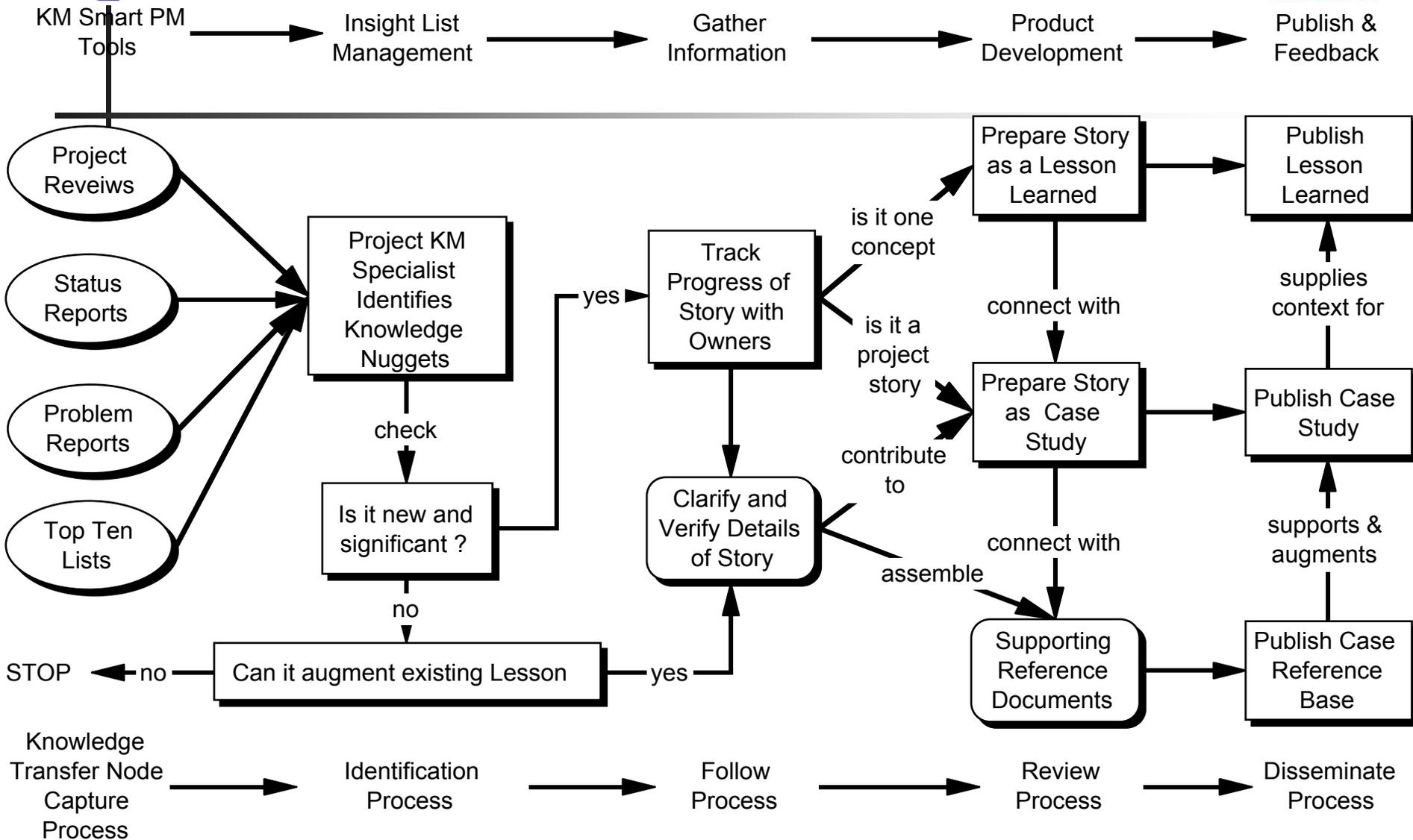
GSFC KM Activities



- Knowledge Sharing
 - Creative Learning Groups
 - Technical Forums
- KM Championing in Culture
 - Leadership
 - Rewards
- Knowledge Preservation Project
- Lessons Learned Information System
- Case Studies
- Intranet Knowledge Portal

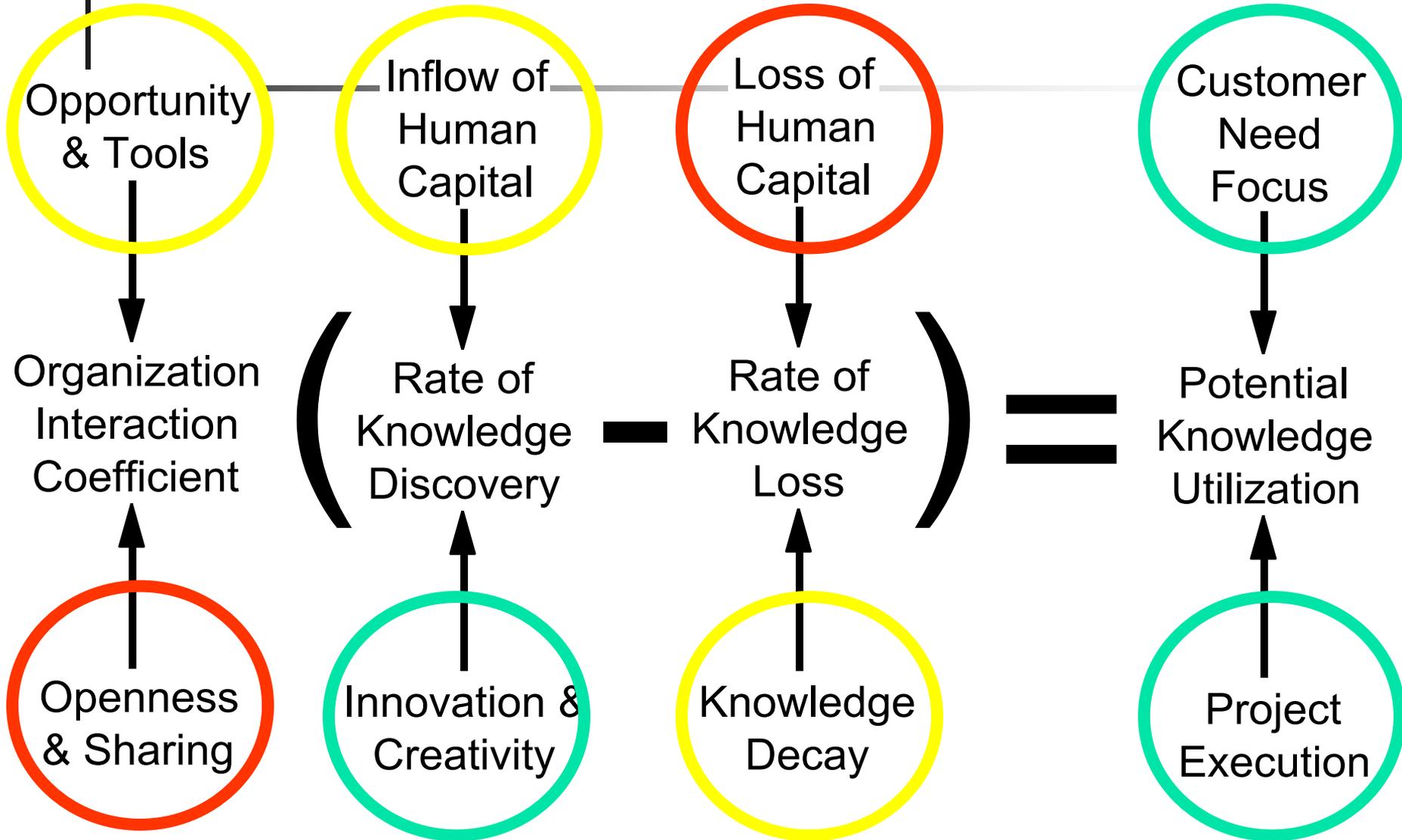


Process Flow for Knowledge Capture



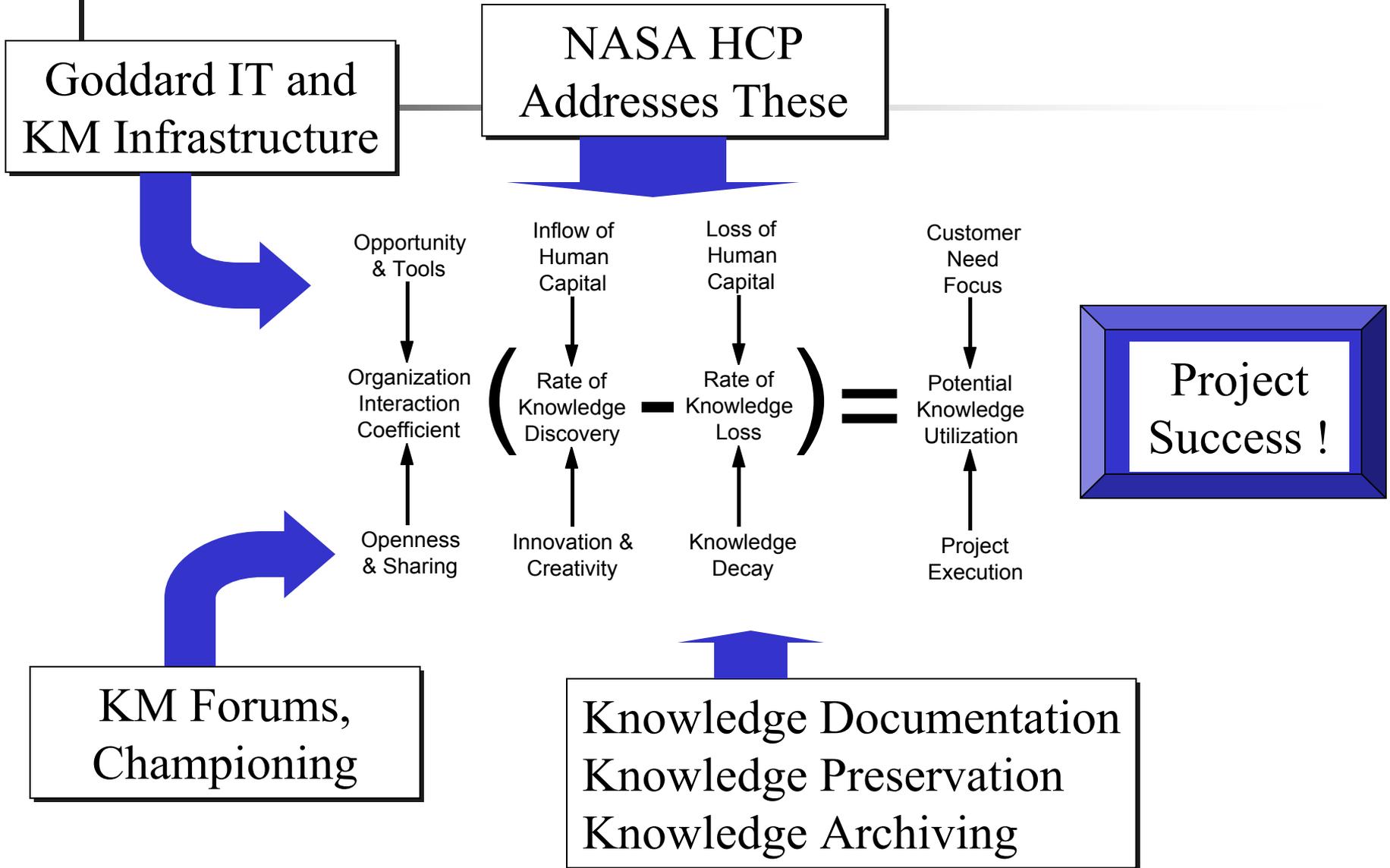


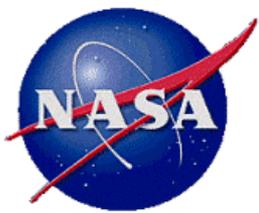
The Knowledge Function





The KM Value Challenge





What Should KM Mean at GSFC?



- Increase in Knowledge Utilization
 - More Efficient Discovery Processes
 - Faster Discovery Processes
- Increase in Mission Safety & Assurance
 - Better Identification & Mitigation of Risks
 - Rapid Incorporation of New Knowledge
- Increase in GSFC Core Competencies
 - Leverages Expert Knowledge More Effectively
 - Builds New Expertise More Rapidly