Capturing Project Knowledge: Learning from the Past to Create the Future

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Agenda

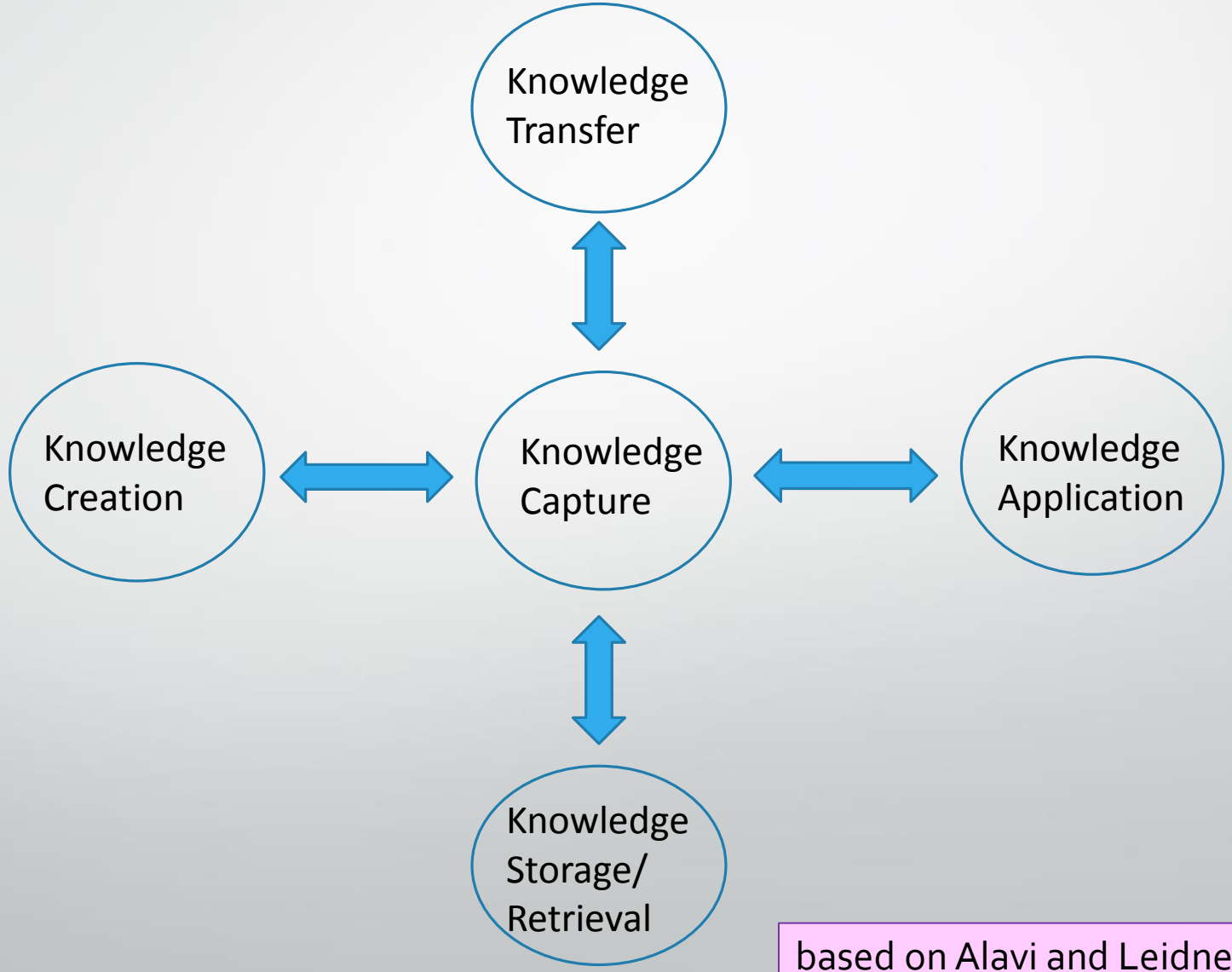
- The broad swath of knowledge capture and project management
- Work related to knowledge capture
- Toward a “corporate foresight” view of knowledge capture in project management research

What are the goals of knowledge capture?

- Retain best practices
- Manage future risks
- Eliminate causes of failure
- Discover new approaches
- …

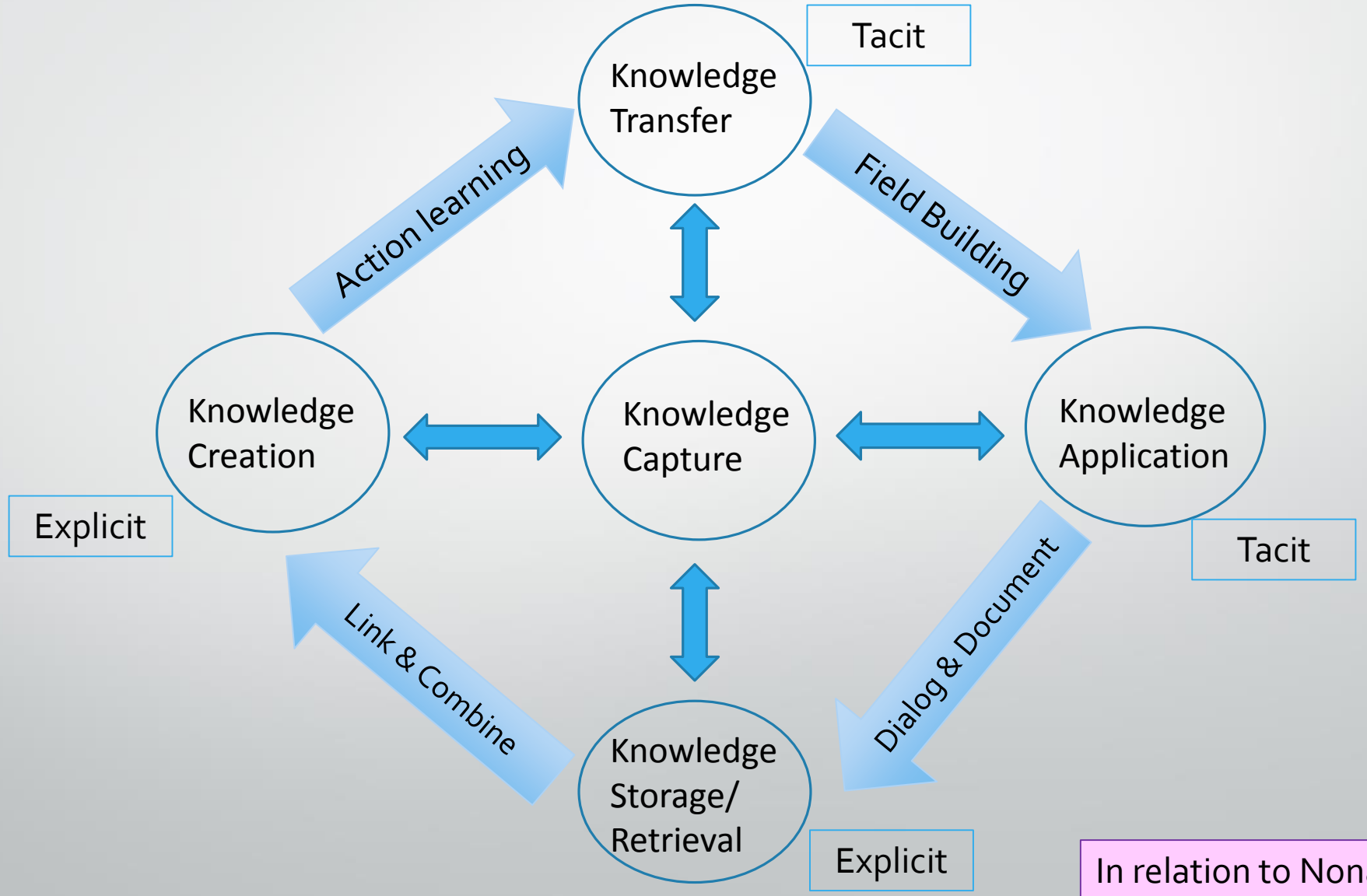
- Benefit the organization as a whole and individual projects moving forward

Knowledge capture is central to other knowledge functions



based on Alavi and Leidner, Table 3, p. 125

But there are also processes to convert to a new level

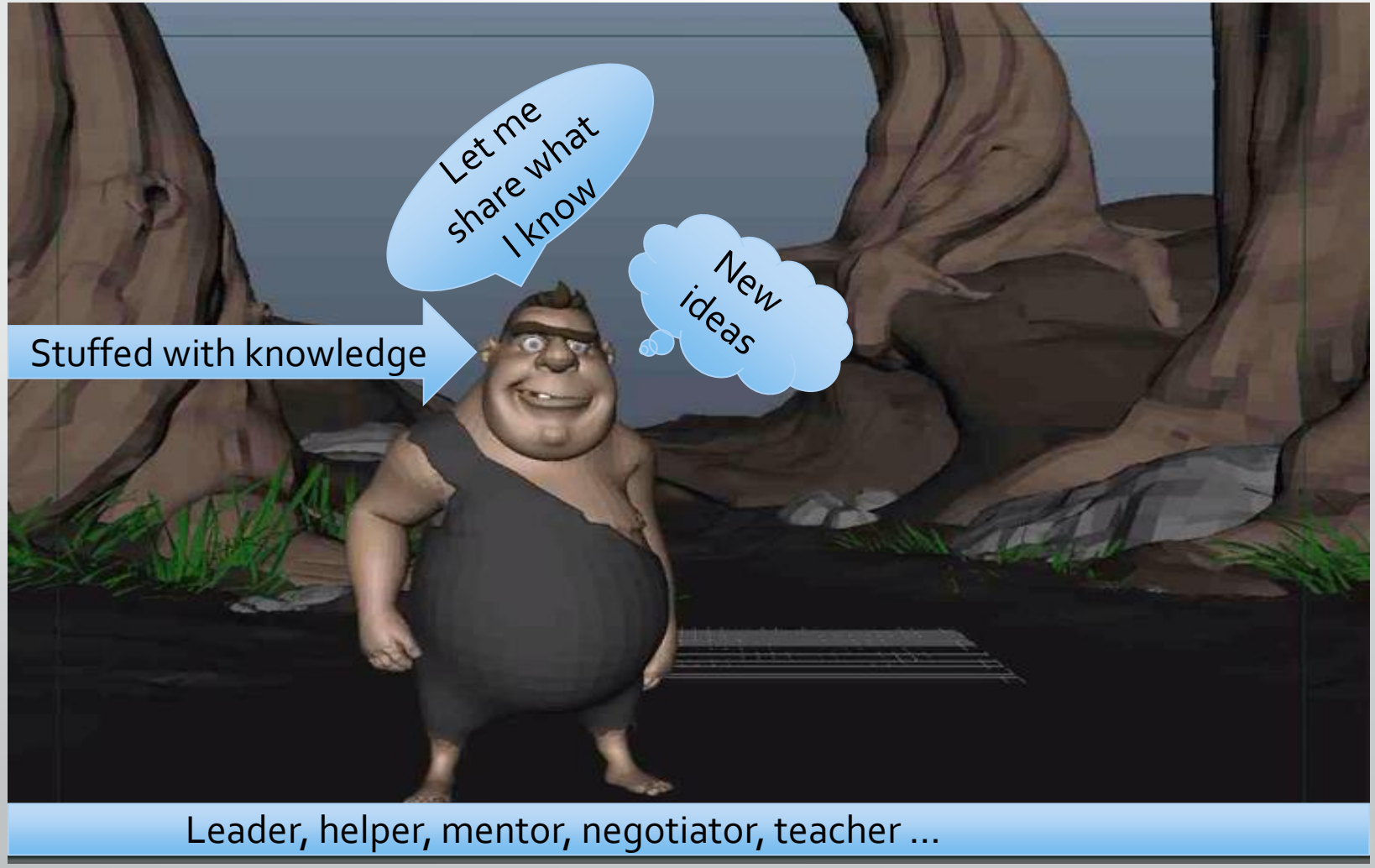


In relation to Nonaka, 1994

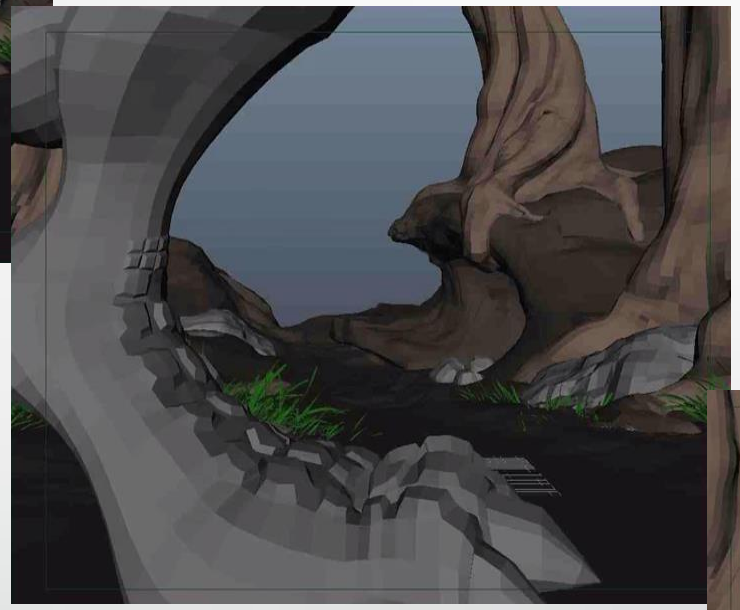
Many resources (free) advise on how to capture knowledge at various stages

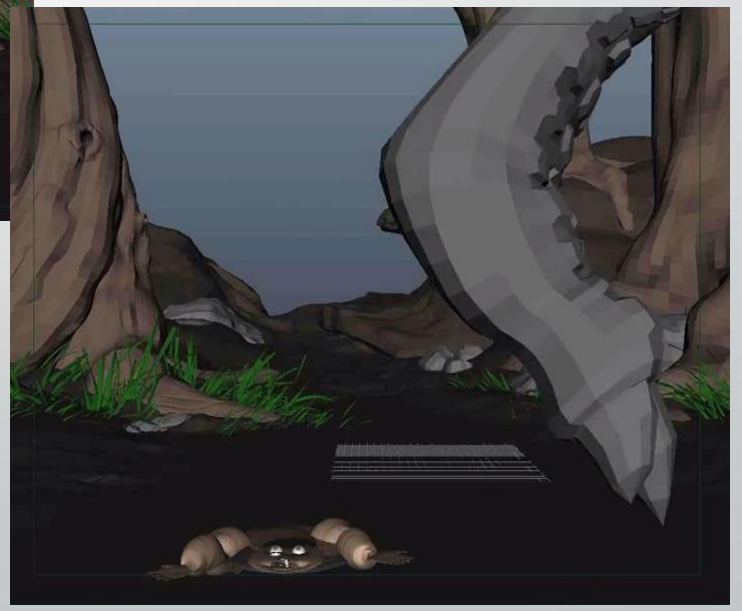
- http://www.knowledge-management-tools.net/
- http://www.idea.gov.uk/idk/aio/8595069
- http://www.fsnnetwork.org/sites/default/files/knowledge_management_toolkit.pdf

But we have a real problem in practice … and it's not always the project manager



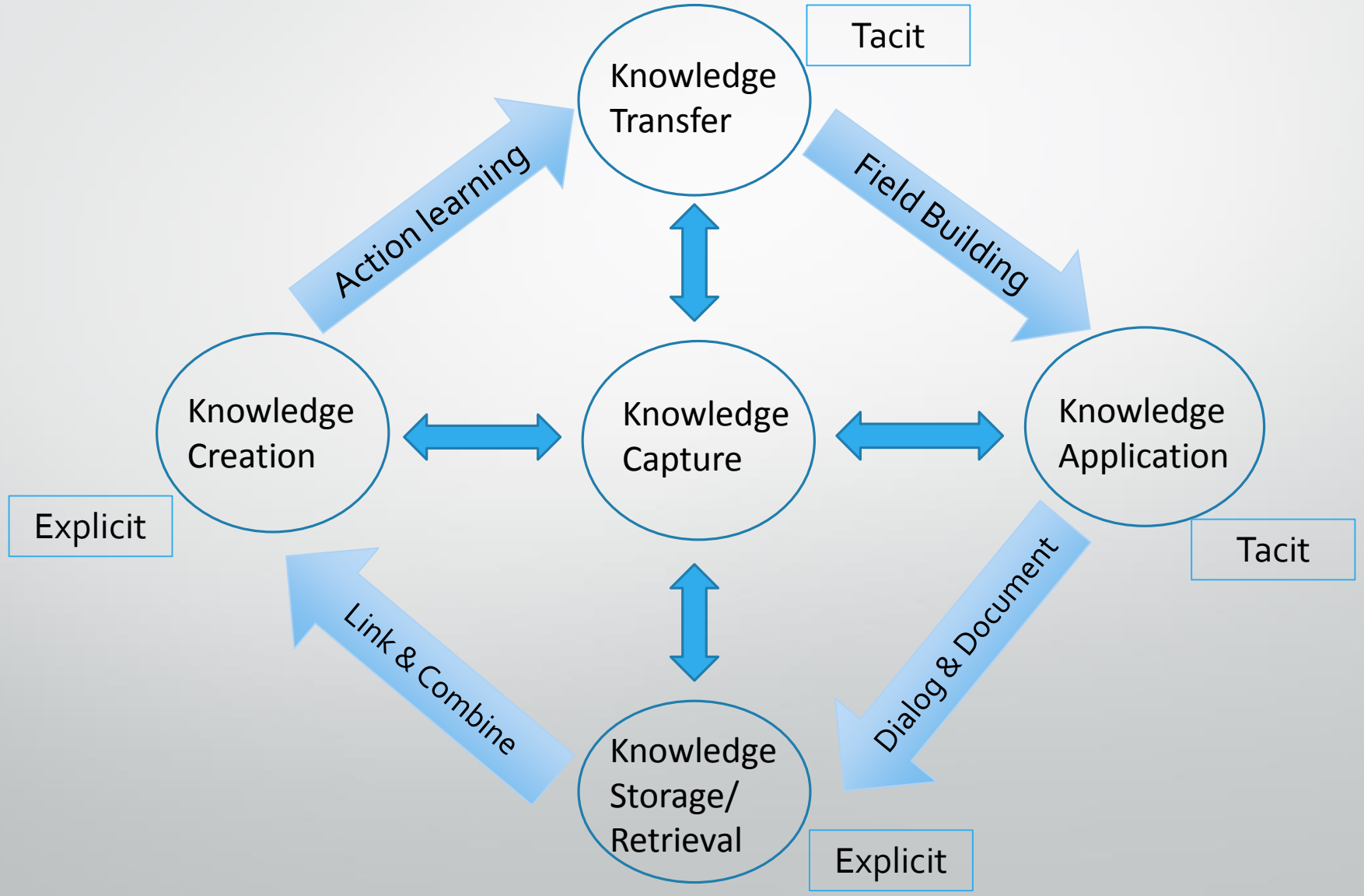
The problem is a natural conflict with the organization



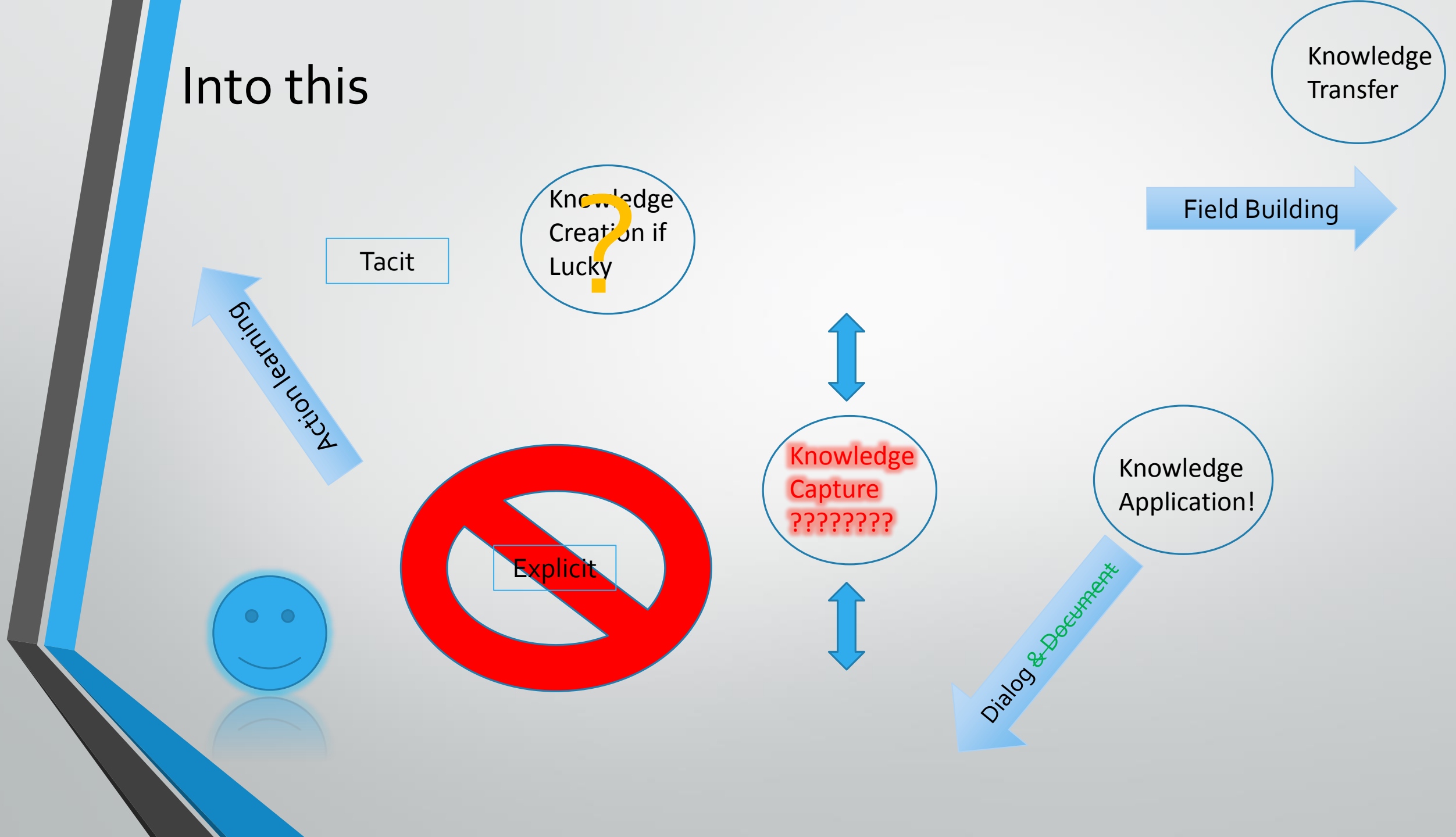


Knowledge is a bottom up phenomena, while processes are top down controls

What that often does in practice is turn this



Into this


Knowledge Transfer
Field Building
Knowledge Creation if Lucky
?
Tacit
Action learning
Explicit
Knowledge Capture ????????
Knowledge Application!
Dialog & Document

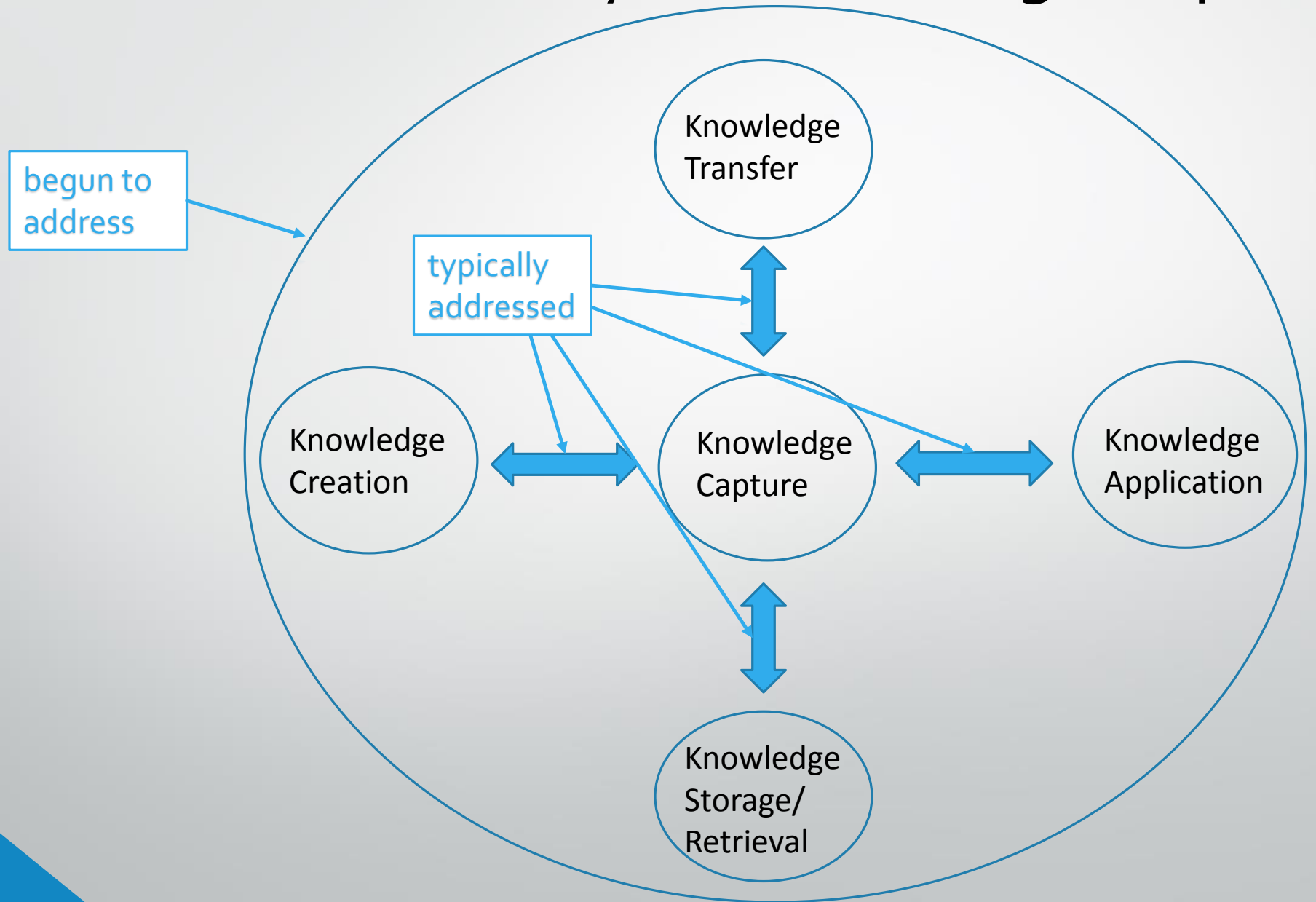
For better or worse, how do organizations often react?

- More Constraints
- More Tools
- More Controls
- More Processes
- More Overhead
- Cultural Shifts
- Pursuit of Maturity
- Pursuit of Standardization

As academics: What have we addressed? Higher circles within circles

- Individuals' roles relative to knowledge model
- Business process and project roles relative to knowledge model
- The role of organizational tactics and cultures

Or from the Centrality of Knowledge Capture

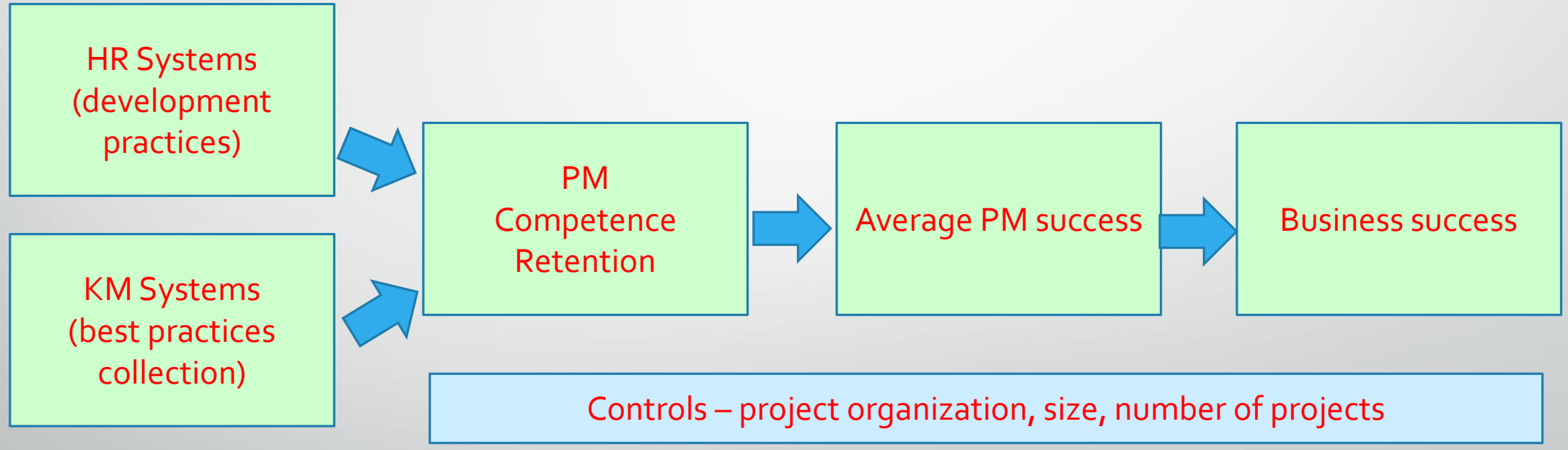


On the Whole this Means: Knowledge Governance (in Project-based Organizations)

- Goes beyond management of individual components of knowledge systems
- Considers knowledge as a program rather than set of independent activities
- Suggests multi-level theory – micro and macro processes and their alignment

Sofia Pemsel, Anna Wiewiora, Ralf Müller, Monique Aubry, Kerry Brown

Systematically intervene to retain competencies



Bastian Ekrot, Alexander Kock, Hans Georg Gemünden

Furthering Interventions

- 1). Good key HR and KM systems are studied – but they are not likely to be comprehensive
  - Effects of other HR issues – assignment to PM teams, narrow or broad job focus,
  - Effects of other KM tactics – how the lessons learned system is implemented
  - Whether the will to gain from competency retention outweighs particular strategies
- 2). Are there contingencies based on labor strategy, culture, and industry?

Capturing and Creating

Network structures

Roles

- What are the variation of possible roles?
- Does it matter which member of the team plays which role (e.g. should the gatekeeper always be the manager)?
- Does it help to have a knowledge creation role defined and assigned to someone?

User activity in terms of critical layers

e.g. Kratzer, Hölzle, and Gemunden

Knowledge Creation Research Questions

Based on Alavi and Leidner

RQ1 – What is the nature of knowledge created in projects?

RQ1a – How can we codify knowledge pertaining to particular project types and tasks?

RQ1b – How can we capture local and universal knowledge pertaining to effective management technique?

RQ2 – Are there processes that lead to more effective creation of knowledge

RQ2a – What methods are most effective for capture of new explicit knowledge?

RQ2b – What methods are most effective for expansion of new implicit knowledge?

Capturing and sharing/transferring

- As individuals what motivates participation in programs? What inhibits and encourages individuals to share what they've learned?
  - Husted et al on hostility to sharing under governance structures
- In PM we have considered sharing under various contexts and mechanisms
  - Lee at al on communities of practice
  - Mueller on formal/informal practices and boundary spanning
- We've looked at numerous processes, conditions, cultures, … in many fields

Knowledge Transfer Research Questions

Based on Alavi and Leidner

RQ3 – How can subsequent projects take advantage of what is learned in earlier ones?

RQ3a – What mechanisms can help individual project managers make systematic the application of lessons learned from their prior projects?

RQ3b – What mechanisms can help individual project managers take advantage of lessons learned by other project managers?

RQ3c – How can best task performance and management process best practices be moved from ad hoc individual application to organizational standard?

Capturing and Storing

- Knowledge Management Systems – Tacit and Explicit
  - Input – gathering, cleansing, combining
  - Storage – organization, indexing/access paths, updating
  - Output – searching, selecting, customizing

Knowledge Storage and Retrieval Research Questions

Based on Alavi and Leidner

RQ4 – Are some formats more effective than others for storing task content and management process knowledge created during project performance?

RQ4a –What techniques are needed for project managers to locate helpful knowledge during project performance?

RQ4b – How do techniques vary for storing task content knowledge and management process knowledge?

RQ4c – How do techniques vary for storing explicit and implicit project knowledge?

Capturing and Applying

- Issues of applying knowledge are the reciprocal of adding individual knowledge to a common body
  - Do I trust that the knowledge input by someone else will really help me?
  - Do I have the ability to extract what is useful, leave the rest, and do it in a way that is a net gain in time and/or quality of ultimate outcomes?
  - Can I find the relevant knowledge and evaluate its applicability in my case in an efficient way?

Knowledge Application Research Questions

Based on Alavi and Leidner

RQ5 – Are there techniques to ease contextualization of general knowledge to particular situations?

RQ5a – Are there techniques to aid managers with problems identify the appropriate extant knowledge for customization to the immediate problem?

RQ5b – Are there cost effective ways to update and expand on existing knowledge for subsequent use?

Boundary Objects

- The boundary object as a tool for project accomplishment and as byproduct documentation of gained knowledge
- Archives as sources for documentation of solved problems
- Templates to "automate" the linkage of past to future processing

Alin, P., Iorio, J., Taylor, J.E. (2013). Digital Boundary Objects as Negotiation Facilitators: Spanning Boundaries in Virtual Engineering Project Networks, Project Management Journal, Vol. 44, No. 3, 48–63

Conclusion

- We know that knowledge is central to organizations and projects
- We know that there are different sorts of knowledge
- We know that managing knowledge involves individual and programmatic initiatives

- We know that there is a lot more to know than what we do know

Supplemental slides

Knowledge Roles in the Online Community

- Creation and use of knowledge as a response to tensions
- Four sorts of response:
  - Dynamic roles such as "shaper"
  - Channeling participation through "front" and "back" narratives
  - Dynamically changing boundaries
  - Evolving technological affordances

Faraj, S., Jarvenpaa, S.L., and Majchrzak,A (2011). Knowledge Collaboration in Online Communities Organization Science 22(5), pp. 1224–1239.

Knowledge in Practice

- Some knowledge is resident only in individual minds
  - This may be lost when the individual leaves the organization; gained when someone enters
- Some knowledge can be enhanced within individuals by transformation from tacit to explicit and back
- Some knowledge can be transferred from one individual to others
  - By documentation (e.g. writing manuals)
  - By training (e.g. by demonstrating domain or task performance knowledge)
  - By assimilation (e.g. others can "reengineer" knowledge by seeing changes between states)
- Some knowledge can exist independent of any individual
  - Processes may remain that embed knowledge when any given individual leaves
    - This may be due to algorithms in systems, to standardization of process or roles,
- Organizations can:
  - Guard and nurture individuals with important knowledge
  - Create an environment that encourages transfer of knowledge informally from person to person
  - Create an environment that encourages formal knowledge transfer through databases, indices of experts, training
  - Creates an environment of capturing process knowledge in methods, roles, standards, and other operating procedures with a feedback look for constant improvement

Knowledge Management Systems

- All organizations rely on knowledge both formal and informal
- In moving to formal KM systems, the organization should focus on what areas knowledge enhancement can bring benefit over cost
- For project management…
  - This may pertain to management methods and processes for individual projects
    - Better planning and estimation, better governance and execution,
  - Or it may pertain to programs and portfolios
    - Better coordination, resource allocation, and learning across and among projects
  - Or it may pertain to project content
    - Better task execution (e.g. better debugging for software, better foundation pouring in construction)
  - Or it may pertain to using projects to create processes and products that contain, utilize, or enhance organizational use of knowledge

Knowledge Management Systems -- Continued

- Develop programs and processes to enhance tacit knowledge
  - Training/learning
  - Practice
  - Build best practice into systems and processes
  - Create standards and consistent roles for enhancing expertise
- Develop programs and processes to enhance explicit knowledge
  - Improve documentation creation, access, update, indexing, and archiving
  - Use “by-products” of processes for learning/teaching
  - Look for benefits from documentation recombination and “data mining”