Doug Engelbart's Unfinished Revolution—
Program for the Future

Open Hyperdocument System
- as a paradigm proposal

Dino Karabeg

Reference

- Bootstrap Dialogs, Stanford University TV Studio 2008

Candidate solution to our puzzle

- While everyone was trying to understand Doug's inventions as things
- Doug was inventing a paradigm

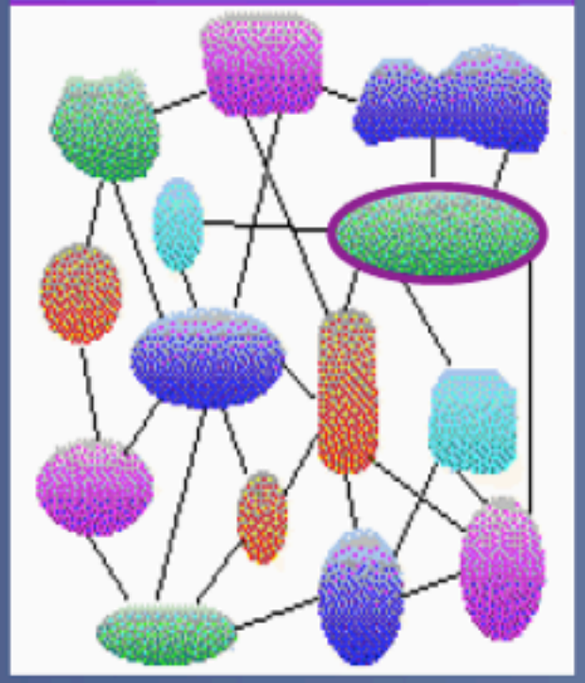
Canvas: Sequence 1 in Untitled Project 3
Sequence 1
Sequence 1
Sequence 1
00:02:34;27
99%
00:01:40;16
TCR 09:28.08.23
PLAY
LOCK

In a paradigm, everything is a placeholder

~~AUTOMATION~~

AUGMENTATION

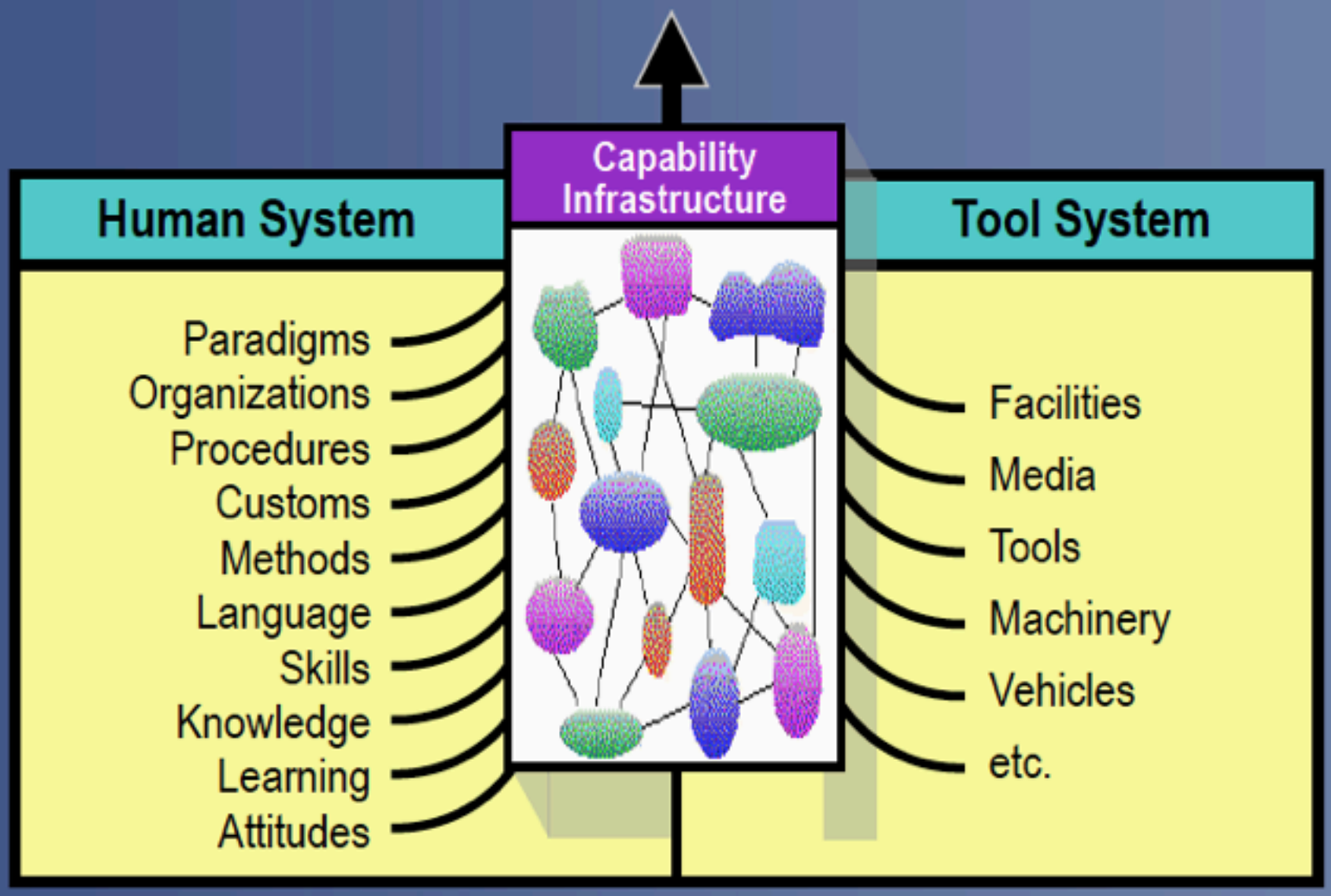
Capability Infrastructure



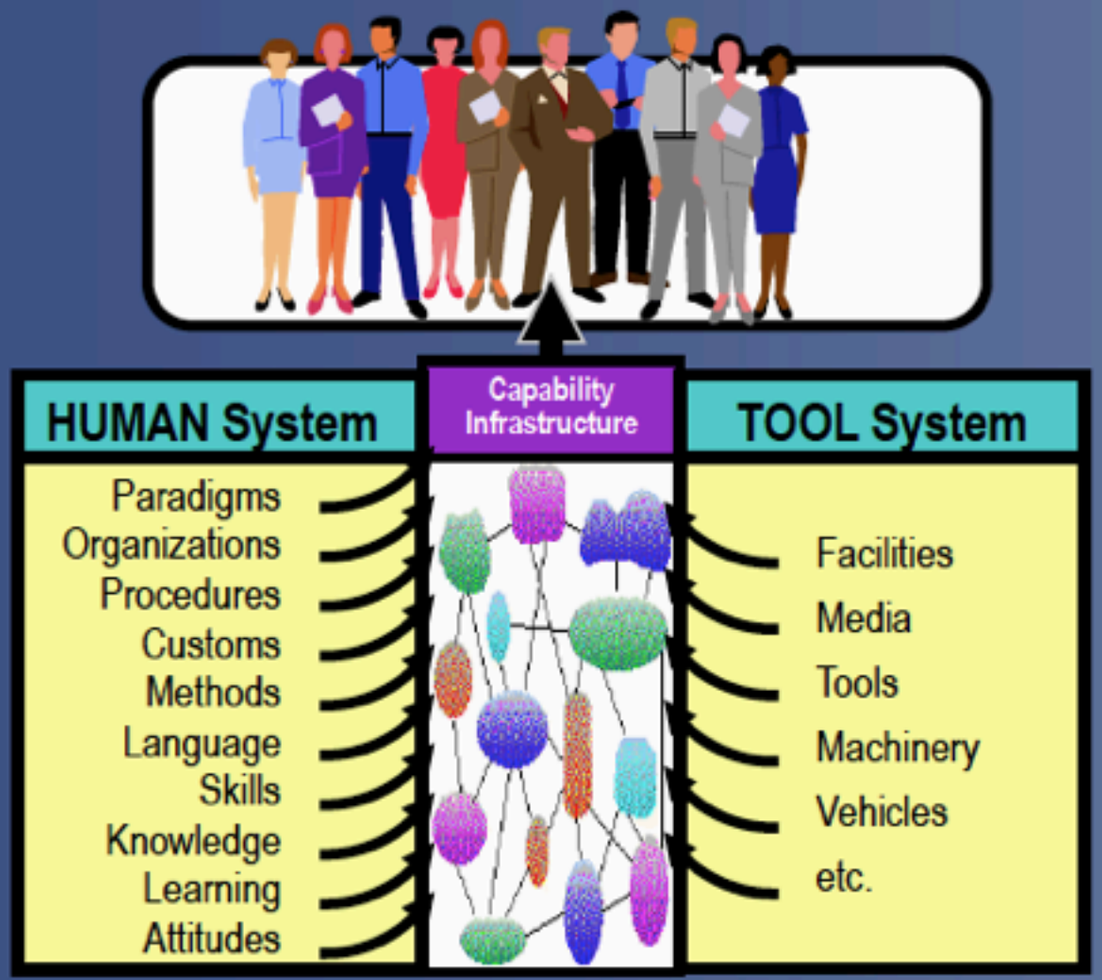
Solving large-scale problems requires collective capability

END

The Whole Augmentation System



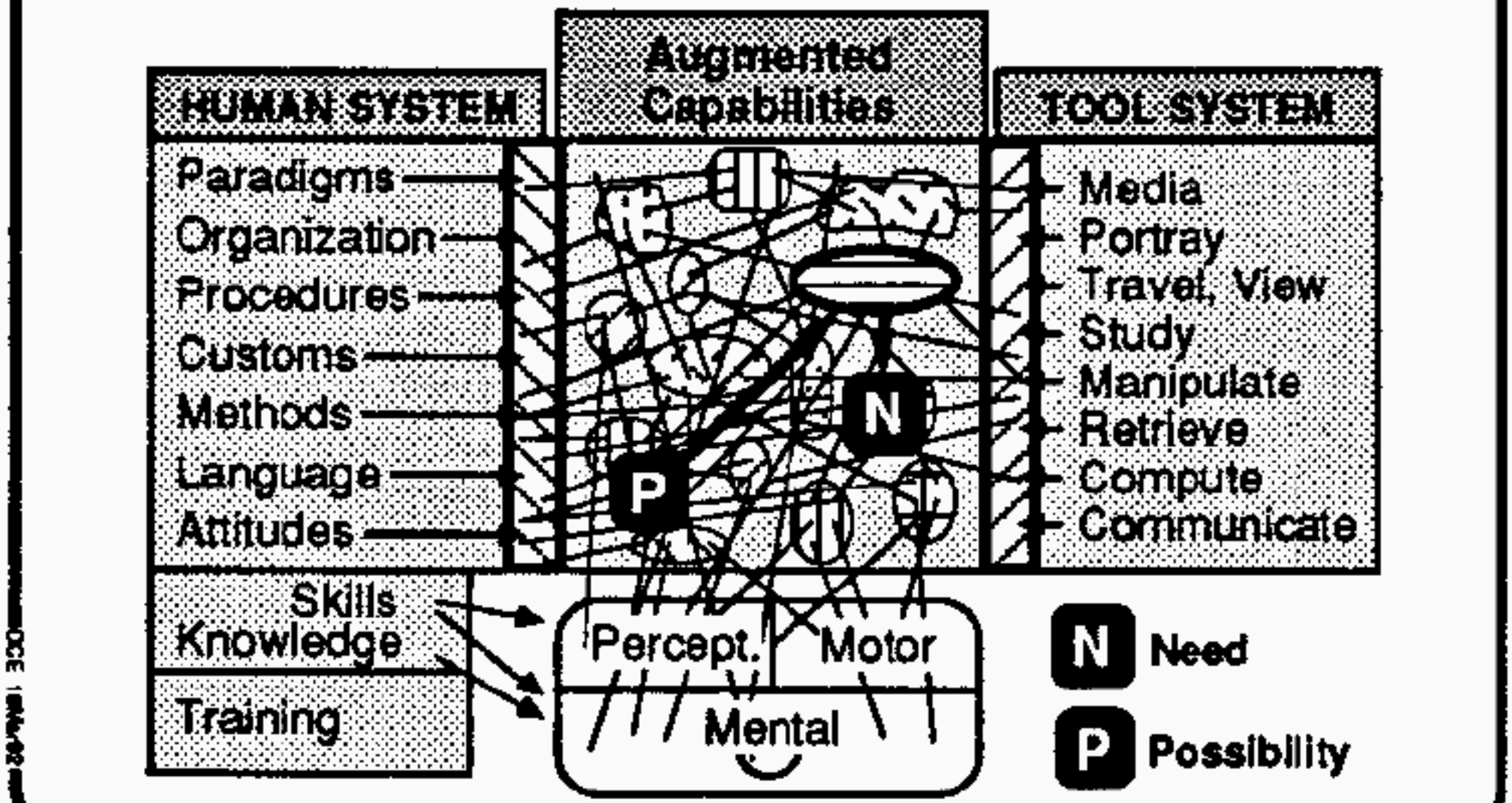
Augmentation System



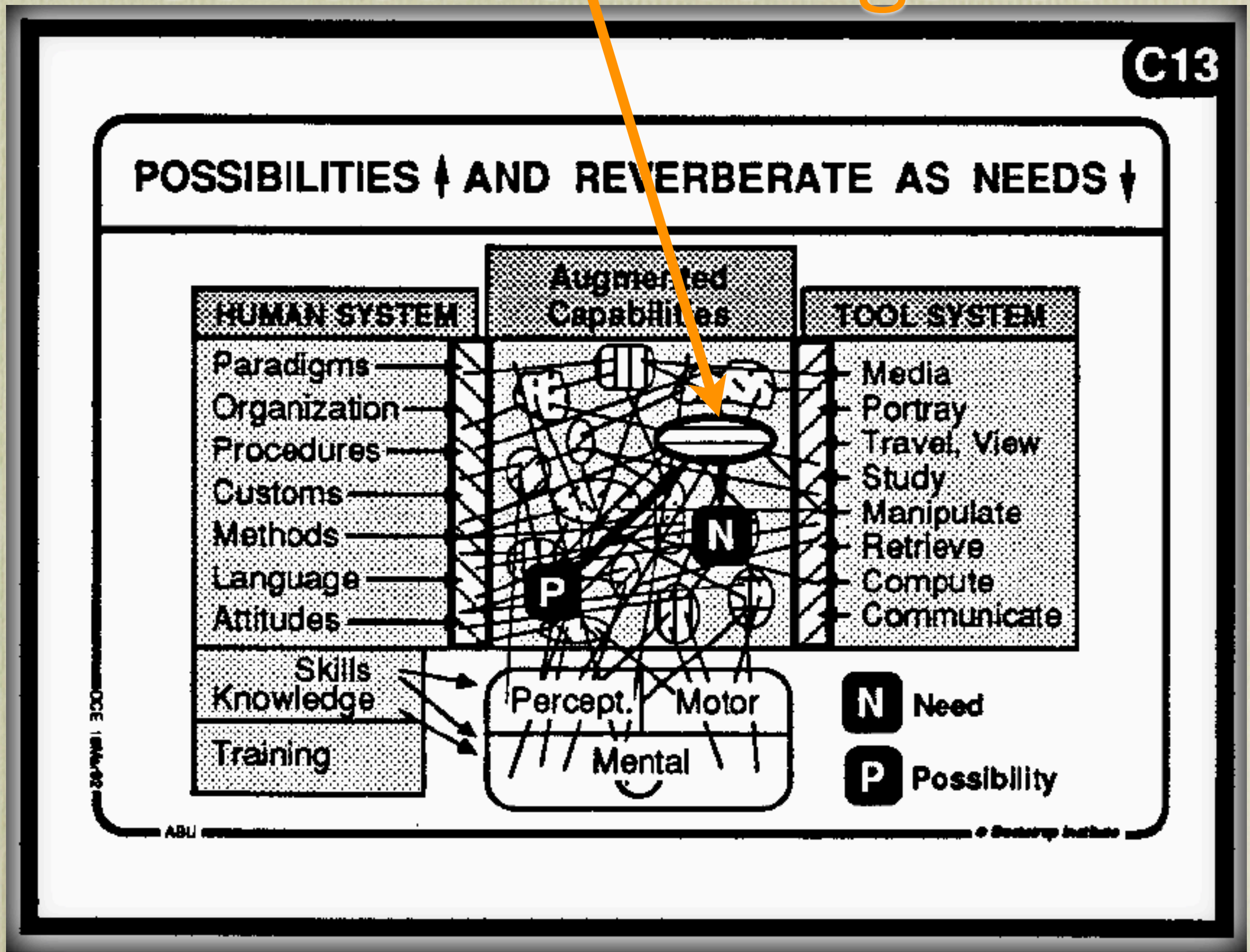
Capability Infrastructure
fed by the
Human / Tool
Augmentation System

C13

POSSIBILITIES ↓ AND REVERBERATE AS NEEDS ↓



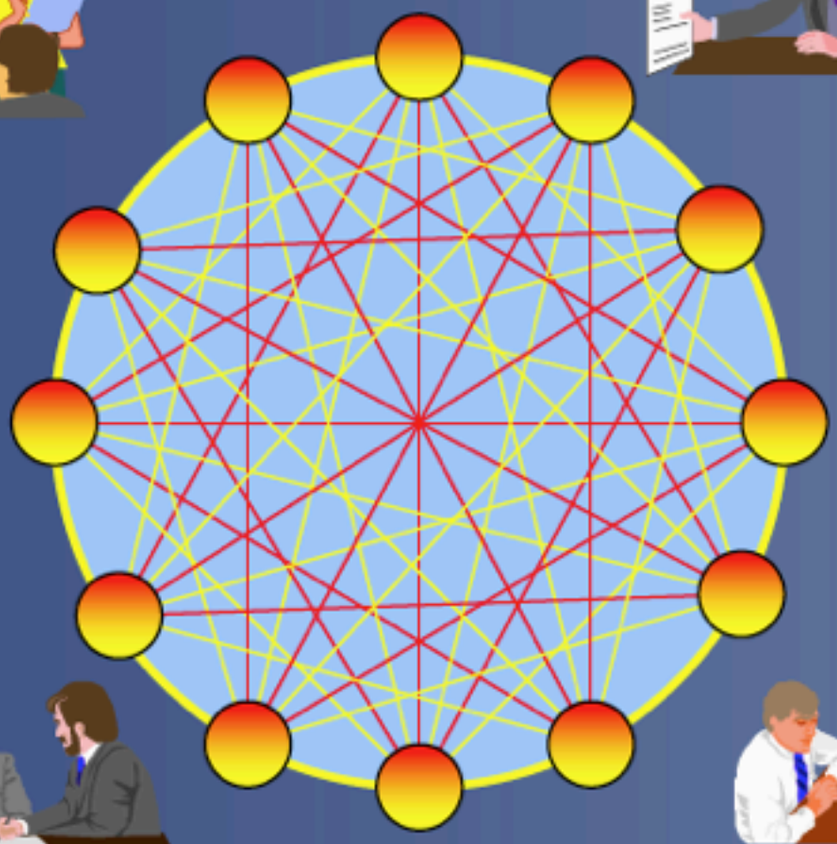
Collective intelligence



TCR 09:26.28.26
PLAY
LOCK

Collective IQ:

How well people work *collectively*



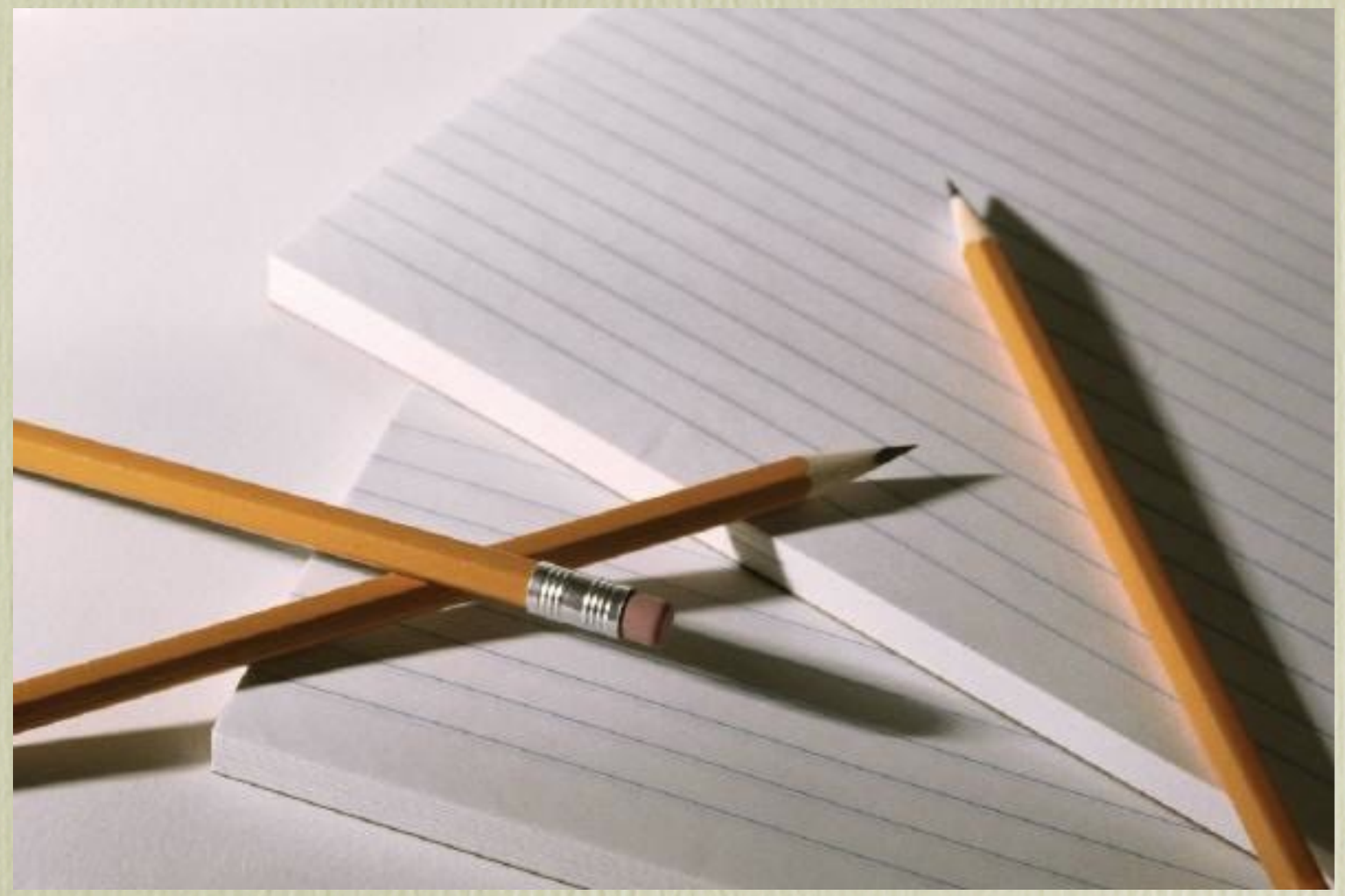
Organizational Unit
of any size

How quickly and intelligently people can respond to a situation *collectively*...

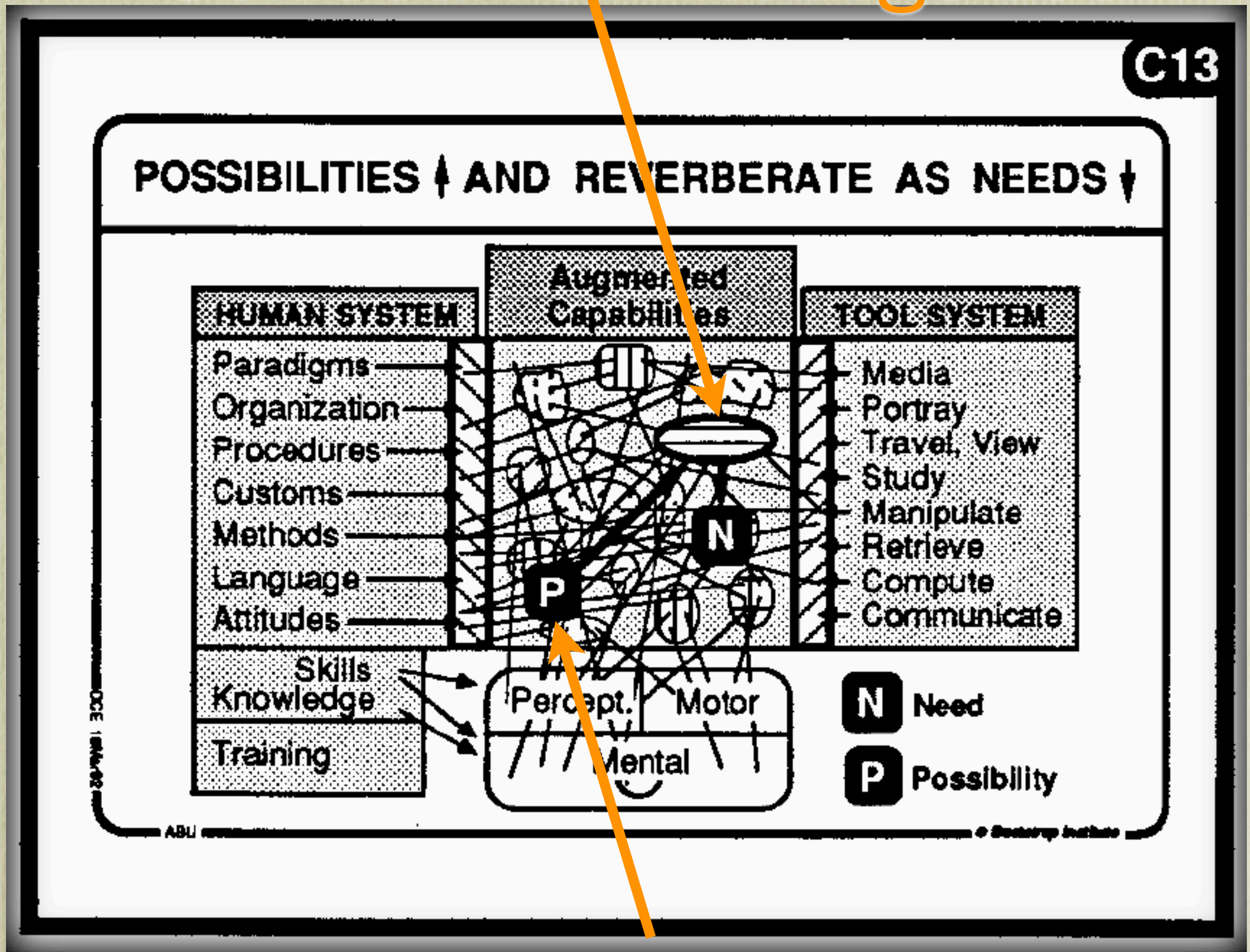
Leveraging their collective

- memory
- perception
- planning
- reasoning
- foresight
- experience

into applicable knowledge



Collective Intelligence



CoDIAK

The Bootstrap "Paradigm Map"

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

Most Payoff

Investment Criteria

Improvement Infrastructure

Bootstrap Strategy

Collective IQ

Global Interoperability

O H S

Deployment Targets?

Improvement Community

Improvement Cycles

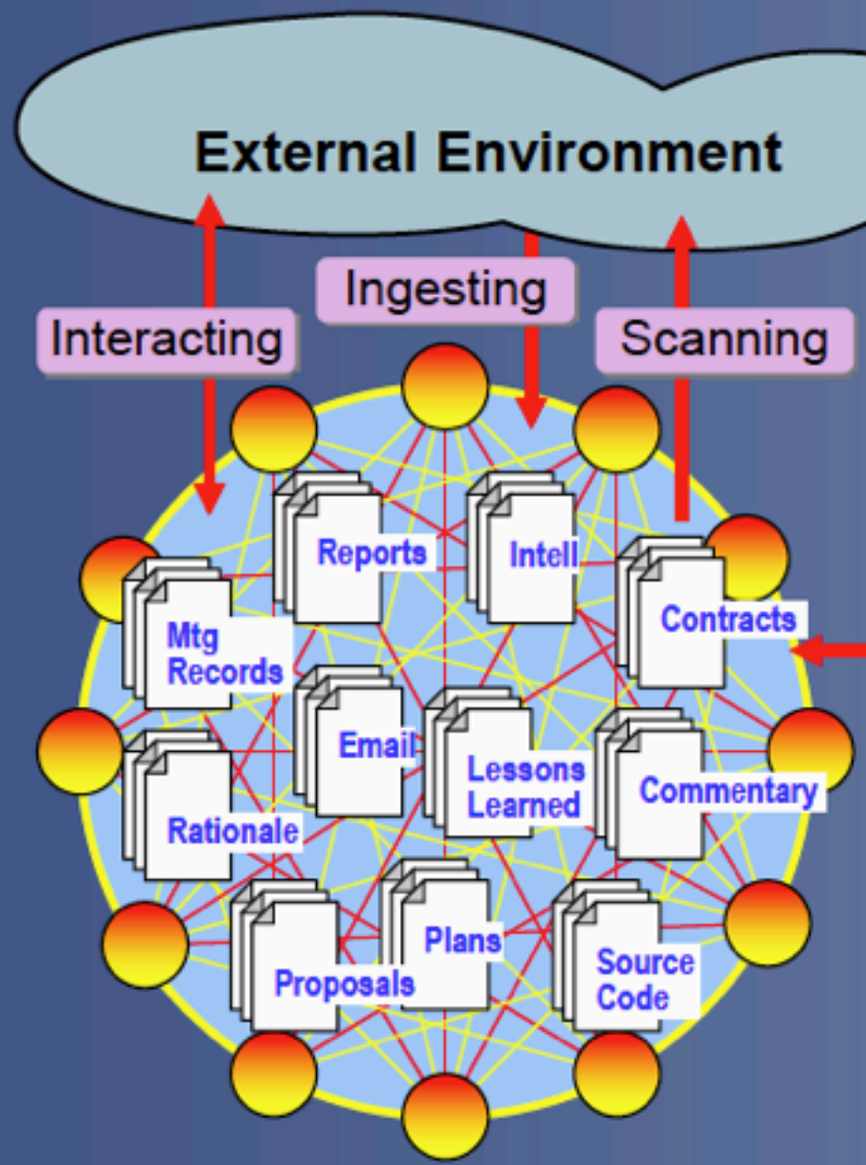
Continuous Improvement

Collective IQ Boosted By:

CoDIAK

- **C**oncurrently
- **D**eveloping
- **I**ntegrating &
- **A**pplying
- **K**nowledge

Engaged in Basic Knowledge Processes

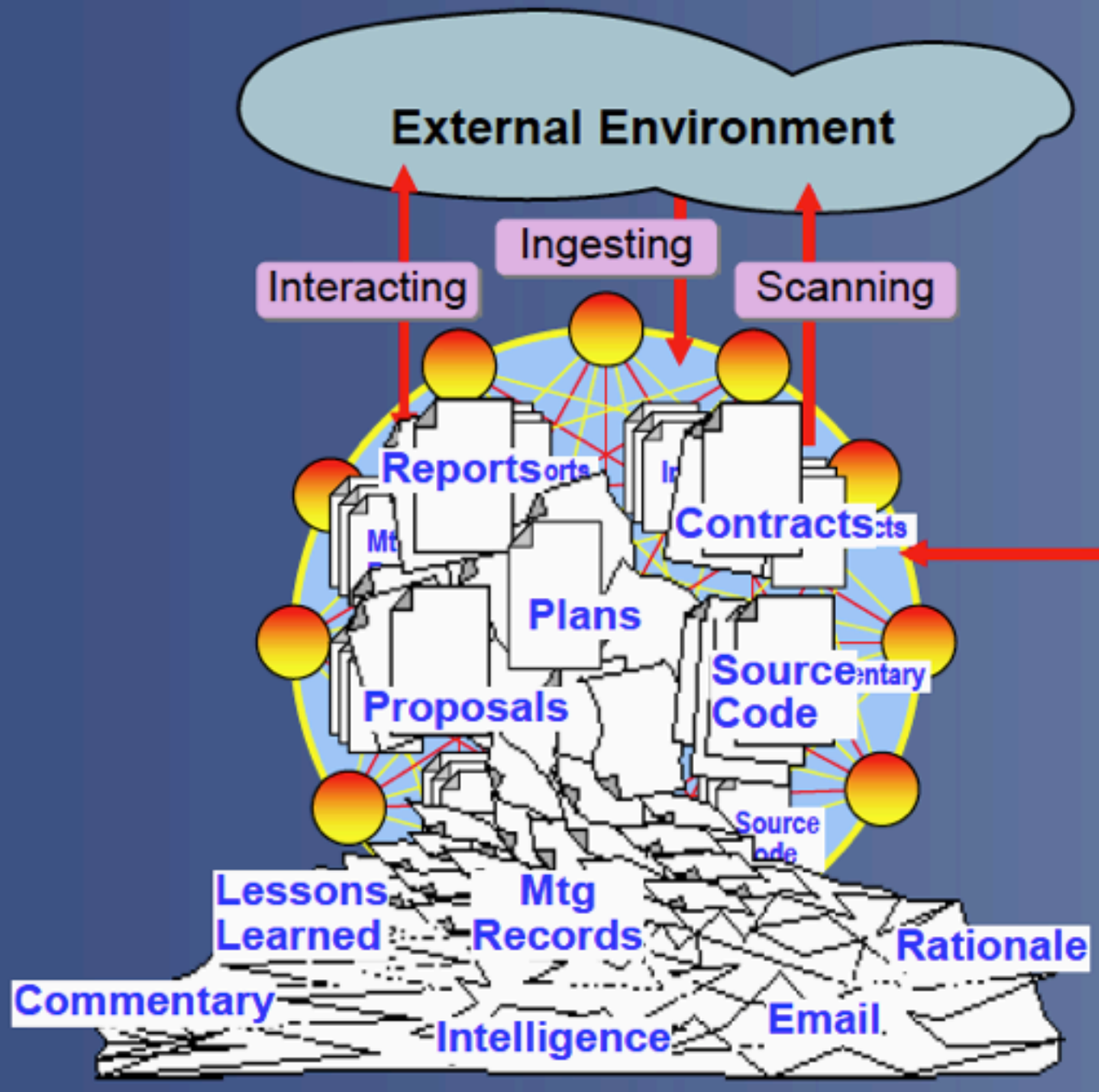


CONCURRENTLY:

- Assessing
- Digesting
- Integrating
- Collaborating
- Developing
- Applying
- Learning
- (Re)using

A *Dynamic Knowledge Repository* (DKR) emerges

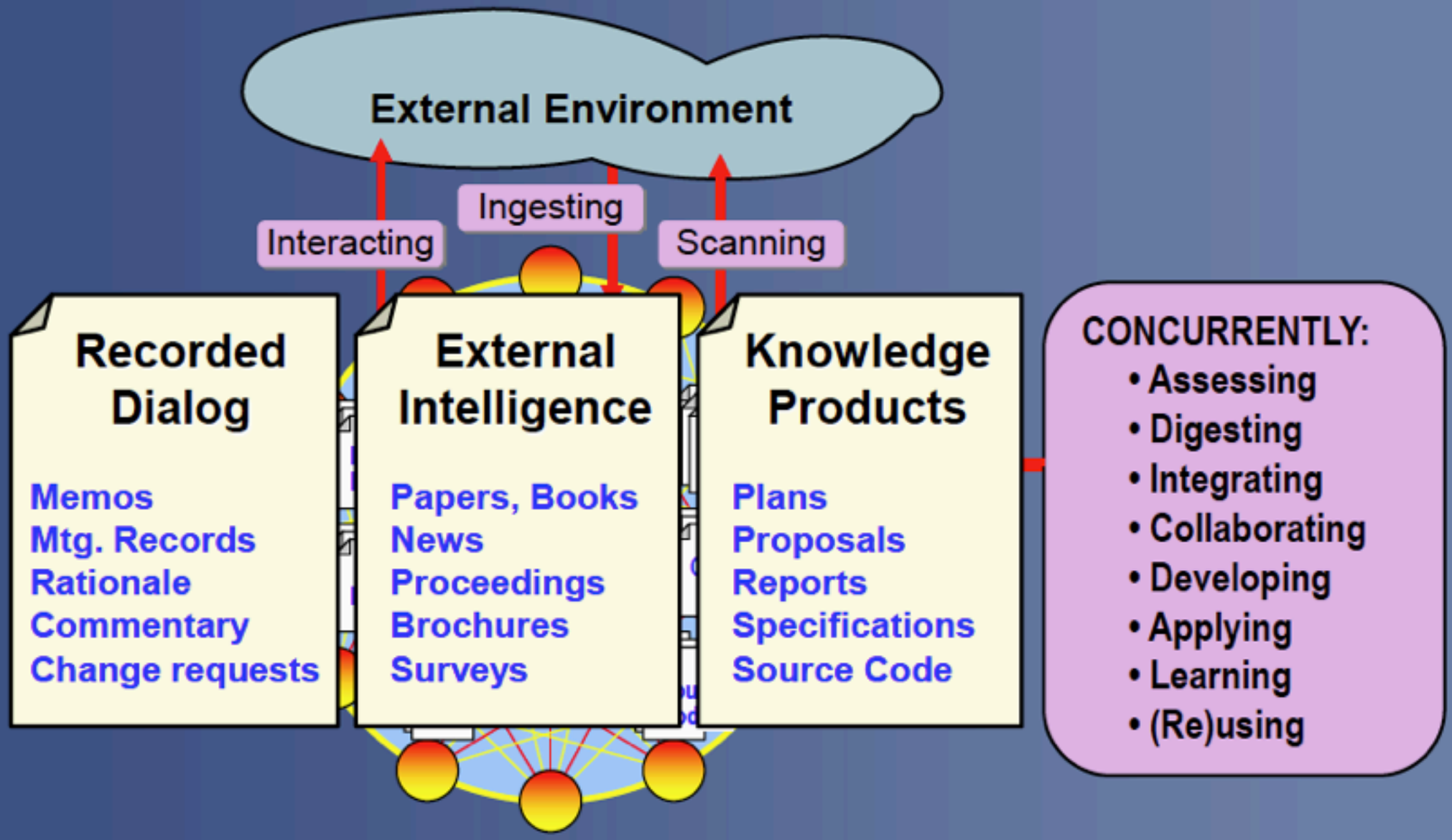
Engaged in Basic Knowledge Processes



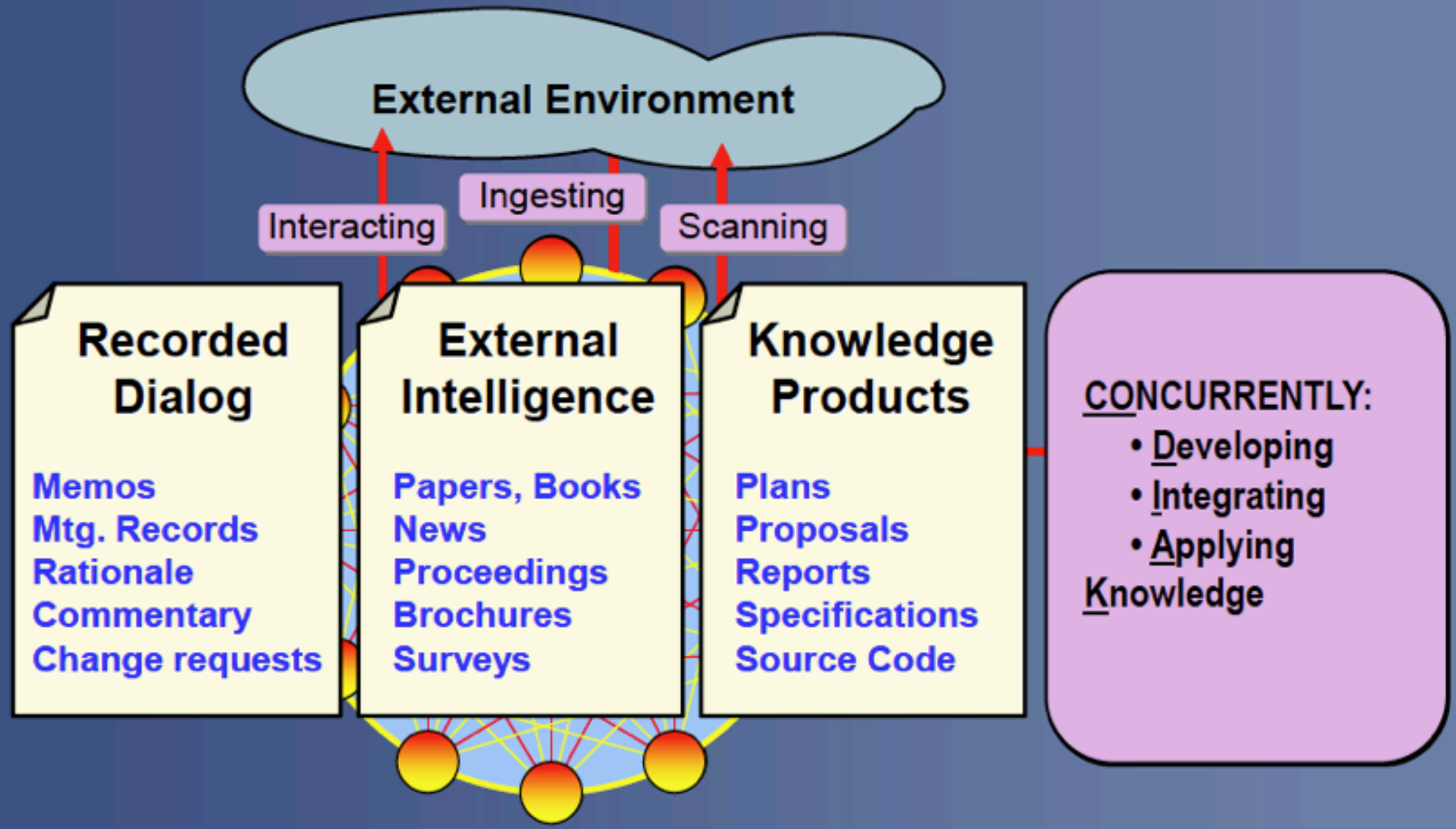
CONCURRENTLY:

- Assessing
- Digesting
- Integrating
- Collaborating
- Developing
- Applying
- Learning
- (Re)using

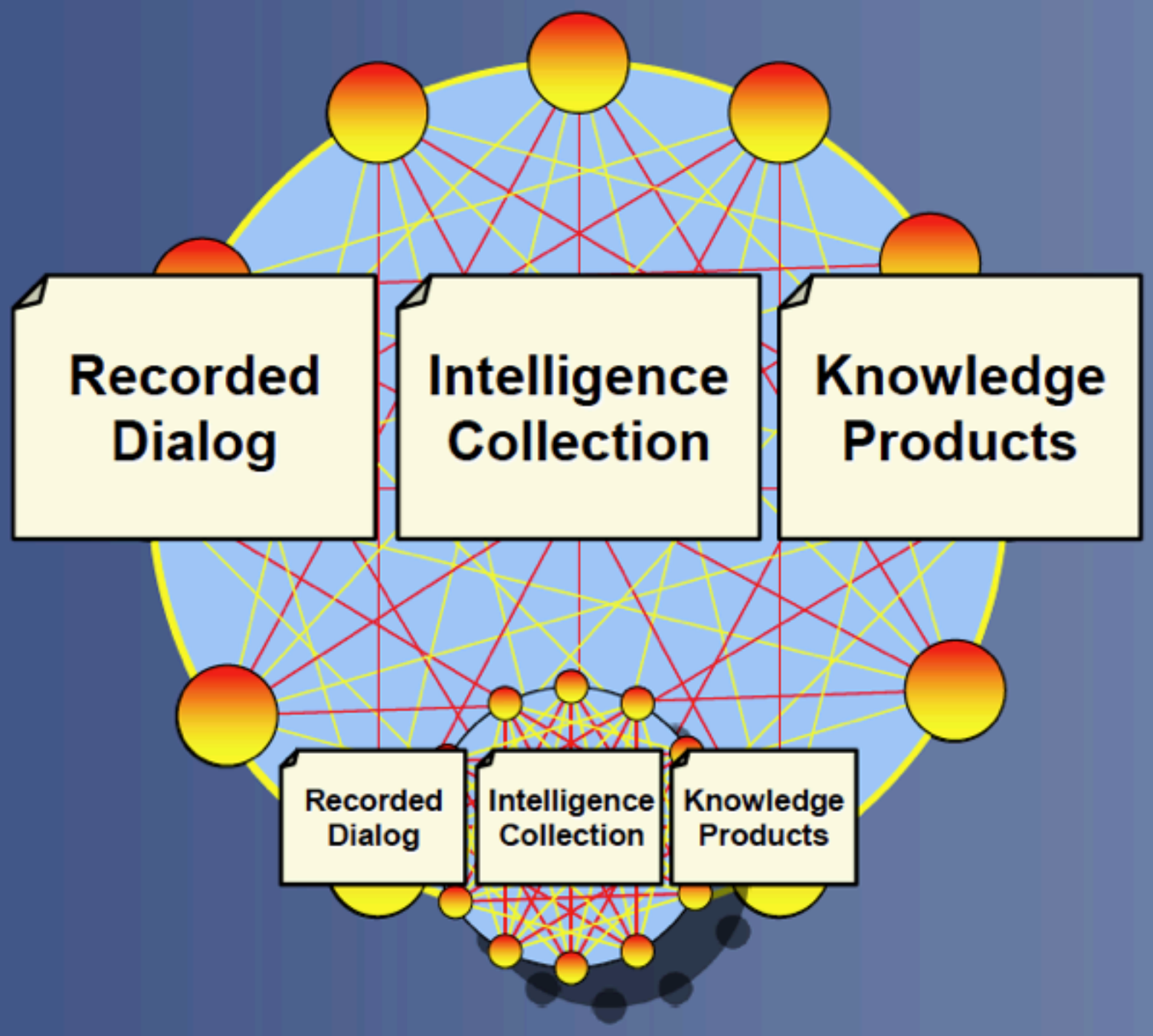
Useful Categorization of the Evolving Knowledge Base



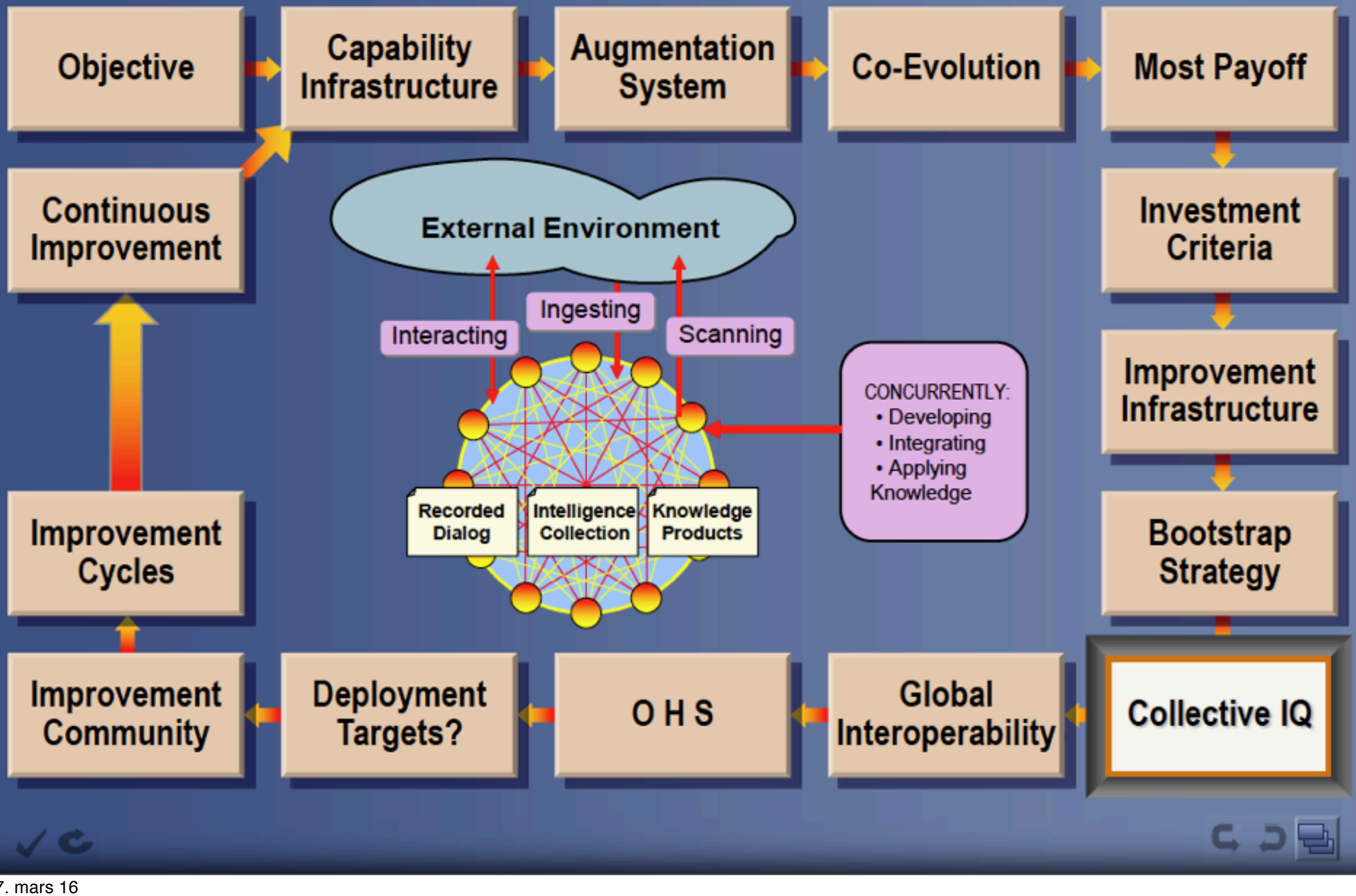
Collective IQ Depends on CoDIAK



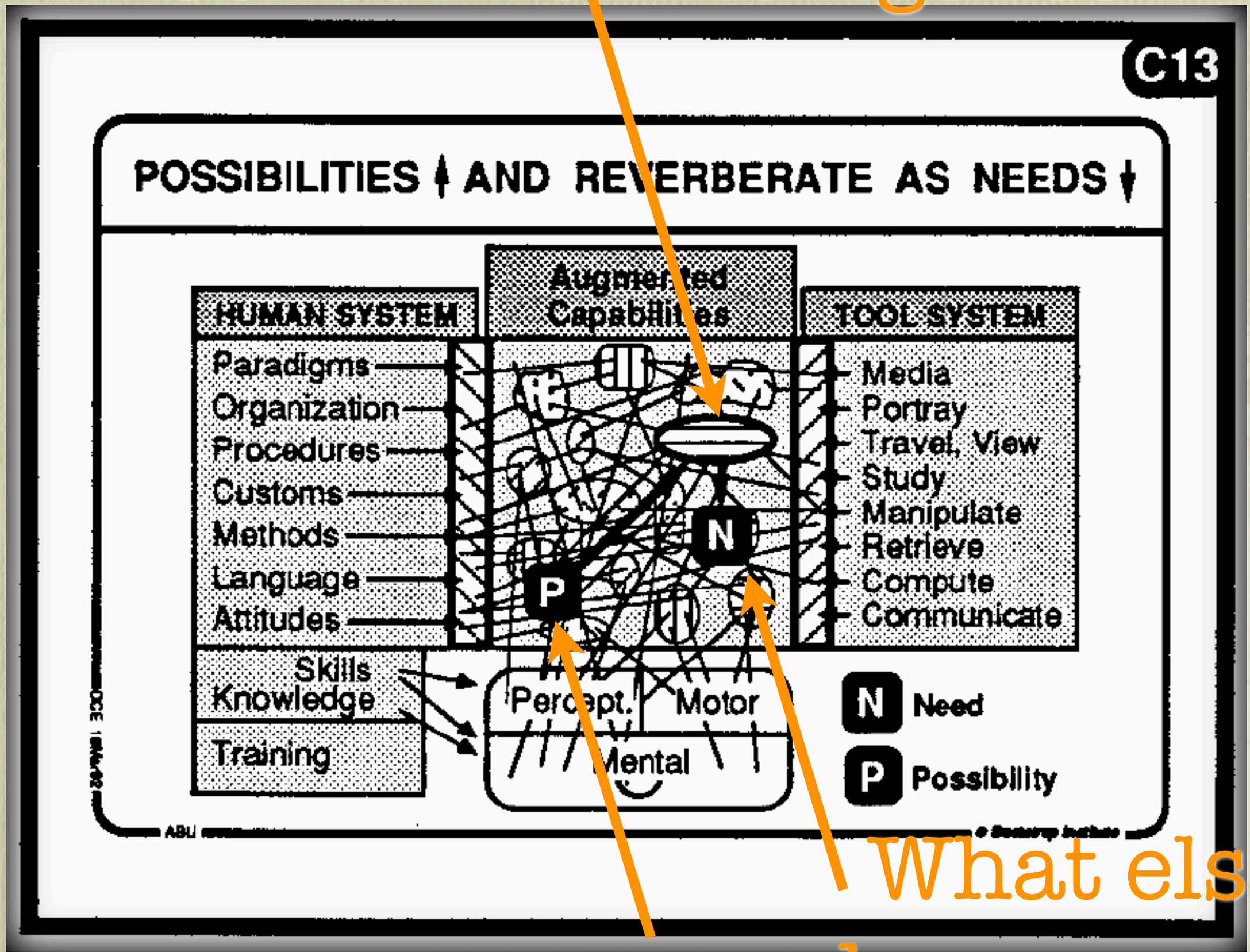
Concurrently Amplified by Interacting Knowledge Domains



The Bootstrap "Paradigm Map"

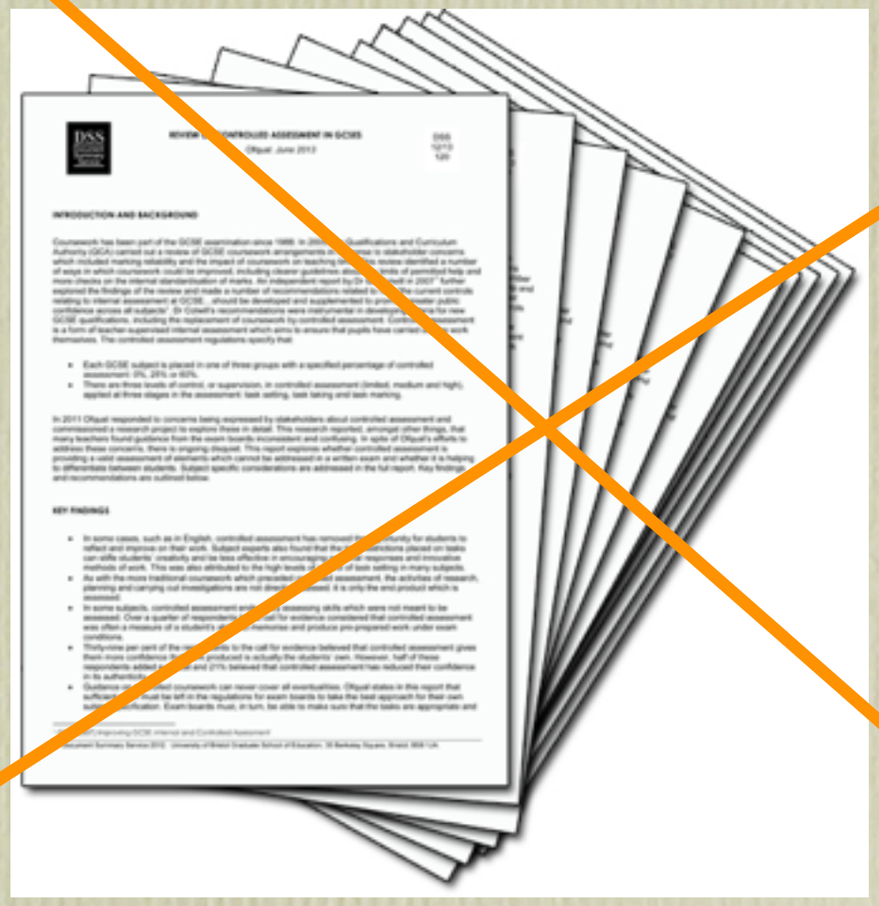


Collective Intelligence



What else do we need?

CoDIAK



REVIEW OF CONTROLLED ASSESSMENT IN GCSES

Ofqual: June 2013

INTRODUCTION AND BACKGROUND

Coursework has been part of the GCSE examination since 1988. In 2005 the Qualifications and Curriculum Authority (QCA) carried out a review of GCSE coursework arrangements in response to stakeholder concerns which included marking reliability and the impact of coursework on teaching time. The review identified a number of ways in which coursework could be improved, including clearer guidelines about the limits of permitted help and more checks on the internal standardisation of marks. An independent report by Dr Gill Stanley in 2007 further explored the findings of the review and made a number of recommendations related to whether the current controls relating to internal assessment at GCSE "...should be developed and supplemented to provide greater public confidence across all subjects" (5 Cohell's recommendations were instrumental in developing controlled assessment for new GCSE qualifications, including the replacement of coursework by controlled assessment. Controlled assessment is a form of teacher-supervised internal assessment which aims to ensure that pupils have carried out the work themselves. The controlled assessment regulations specify that:

- Each GCSE subject is placed in one of three groups with a specified percentage of controlled assessment: 0%, 25% or 60%.
- There are three levels of control, or supervision, in controlled assessment (limited, medium and high), applied at three stages in the assessment: task setting, task taking and task marking.

In 2011 Ofqual responded to concerns being expressed by stakeholders about controlled assessment and commissioned a research project to explore these in detail. This research reported, amongst other things, that many teachers found guidance from the exam boards inconsistent and confusing. In spite of Ofqual's efforts to address these concerns, there is ongoing disquiet. This report explores whether controlled assessment is providing a valid assessment of elements which cannot be addressed in a written exam and whether it is helping to differentiate between students. Subject specific considerations are addressed in the full report. Key findings and recommendations are outlined below.

KEY FINDINGS

- In some cases, such as in English, controlled assessment has removed the opportunity for students to reflect and improve on their work. Subject experts also found that the [illegible] restrictions placed on tasks can stifle students' creativity and be less effective in encouraging [illegible] approaches and innovative methods of work. This was also attributed to the high levels of [illegible] of task setting in many subjects.
- As with the more traditional coursework which preceded controlled assessment, the activities of research, planning and carrying out investigations are not directly assessed; it is only the end-product which is assessed.
- In some subjects, controlled assessment encourages assessing skills which were not meant to be assessed. Over a quarter of respondents to the call for evidence considered that controlled assessment was often a measure of a student's ability to memorise and produce pre-prepared work under exam conditions.
- Thirty-nine per cent of the respondents to the call for evidence believed that controlled assessment gives them more confidence that the work produced is actually the students' own. However, half of these respondents added a caveat and 21% believed that controlled assessment has reduced their confidence in its authenticity.
- Guidance on controlled coursework can never cover all eventualities. Ofqual states in this report that sufficient discretion must be left in the regulations for exam boards to take the best approach for their own subject specification. Exam boards must, in turn, be able to make sure that the tasks are appropriate and

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Deployment Targets?

Improvement Community

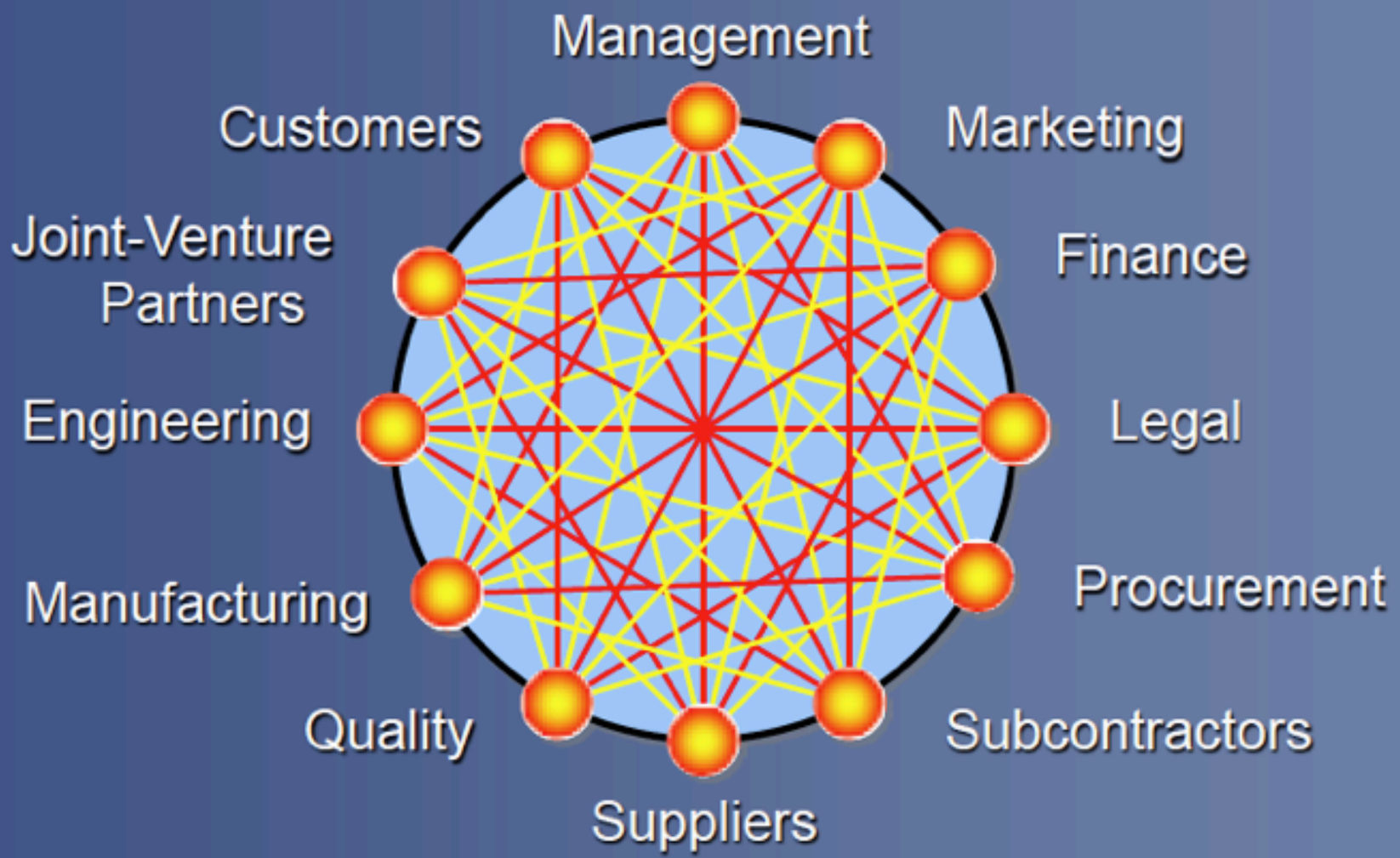
Improvement Cycles

Continuous Improvement

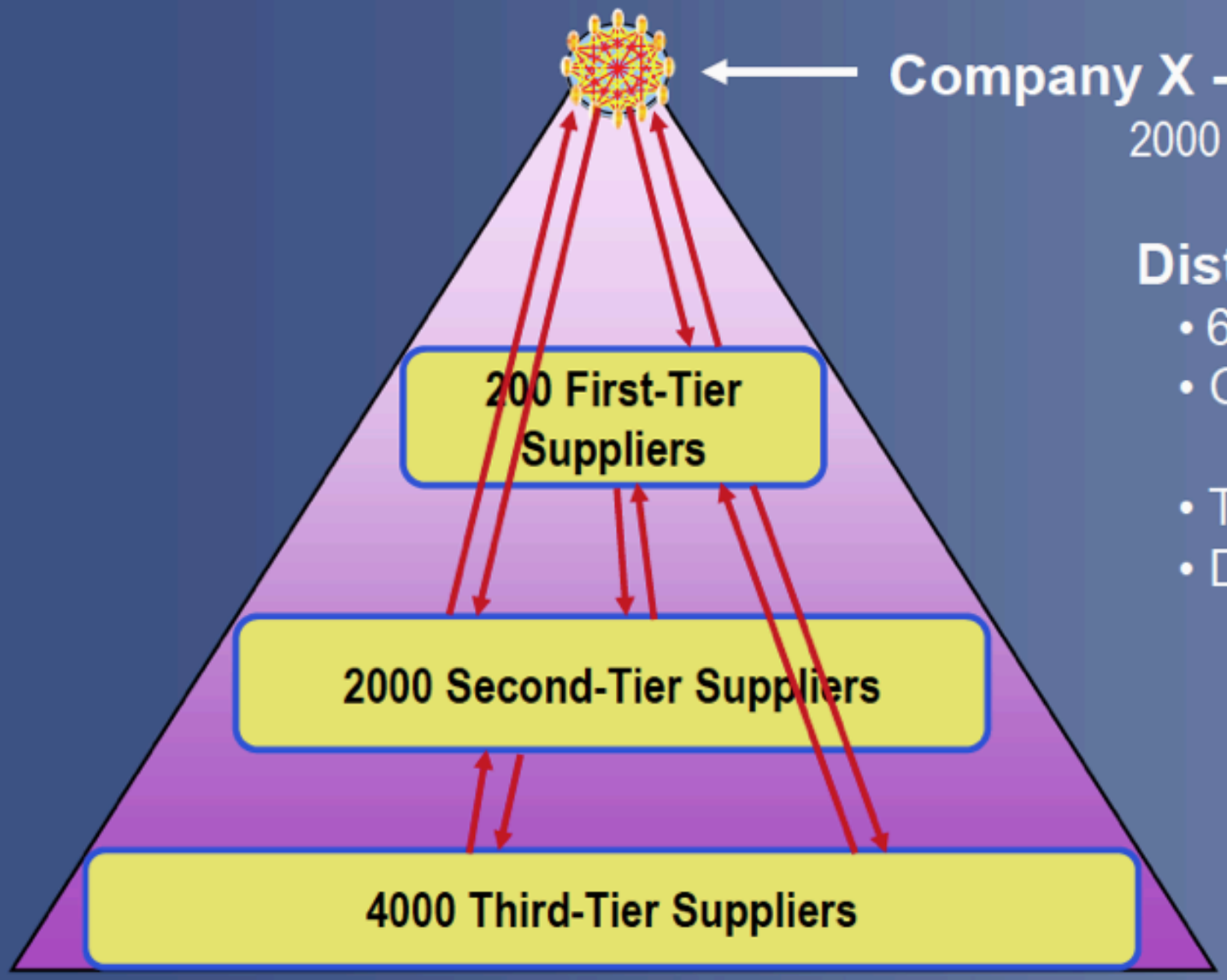
CHALLENGE

Global Interoperability for collective use

Example: Manufacturing Organization



Islands in a supplier hierarchy of a major aircraft program would be very costly



Company X -- Major Aircraft Program

2000 - 3000 people

Distributed Nationwide:

- 6000 + companies
- Collaborating on tasks & specifications
- Tracking progress
- Developing products

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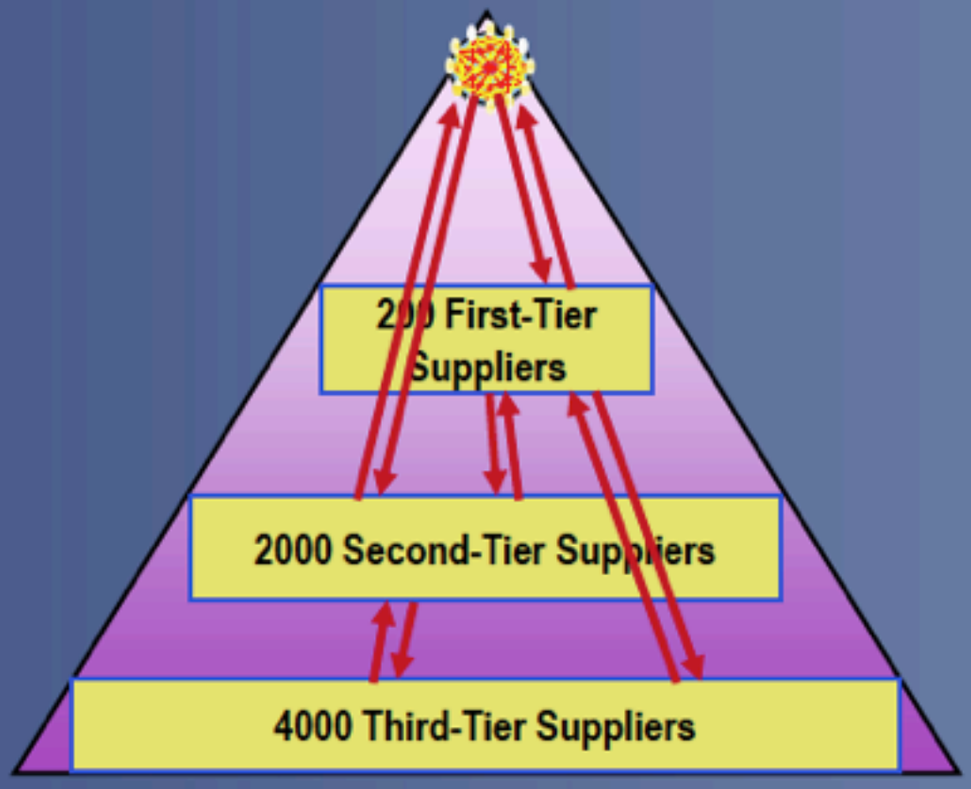

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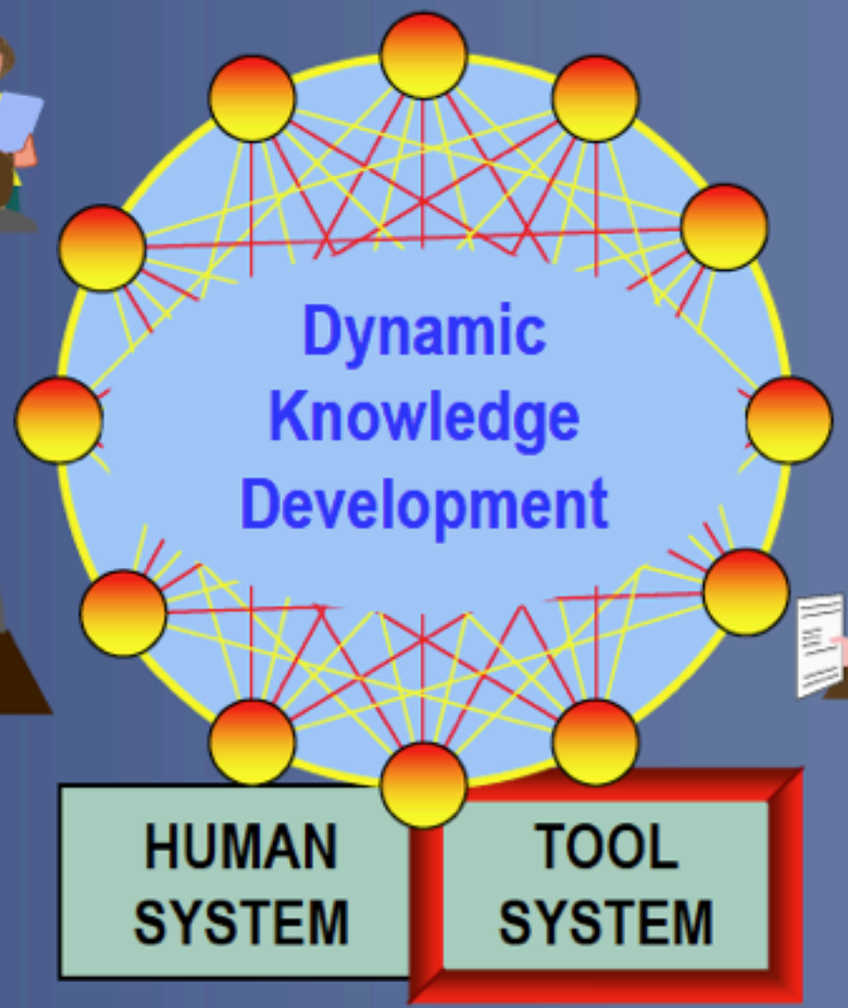
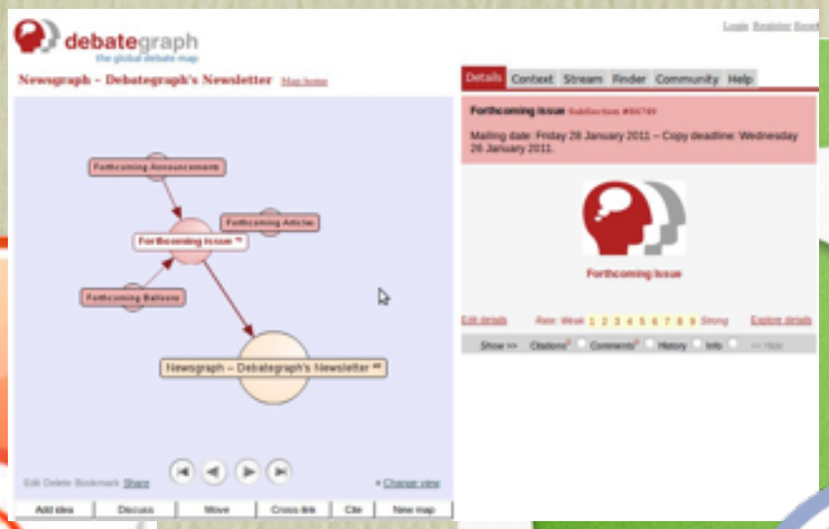
Open Hyperdocument System

Critical missing piece of the tool system

OHS Technology Boosting Collective IQ



State of the art today



OHS Enabling Technology

tachments: View file attachments

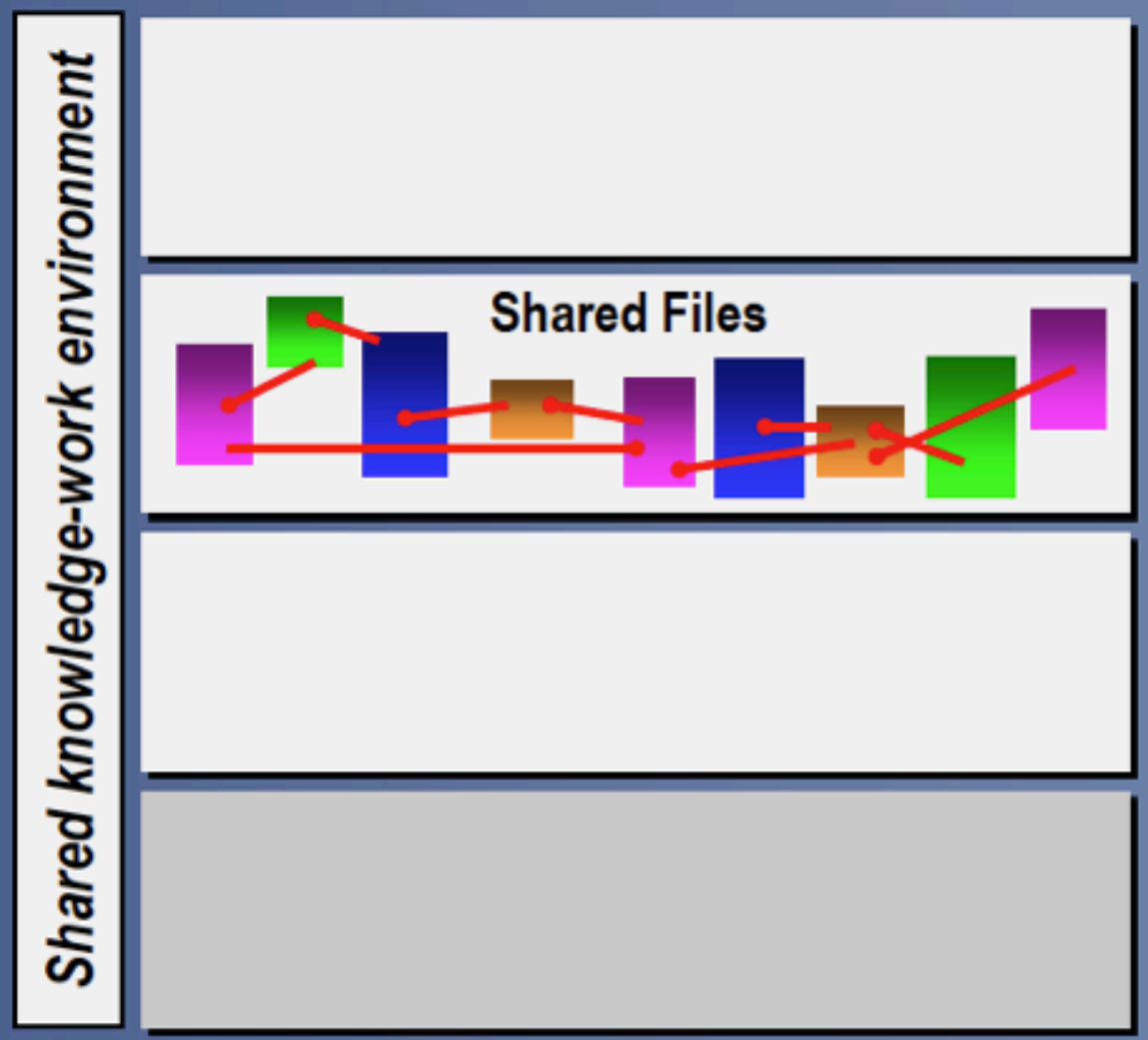
A collaborative hyperdocument environment

- Hypermedia for "real work"
- Unified knowledge capture and management
- Enhanced utilization of knowledge assets
- Enables concurrency, coordination, and collaboration
- Evolvable, interoperable, scalable, and integrative

OHS for Basic Collaborative Knowledge Work

- Structured
- Object linking
- Viewing
- Browsing
- Shared Screens
- Scripting

CoDIAK Example



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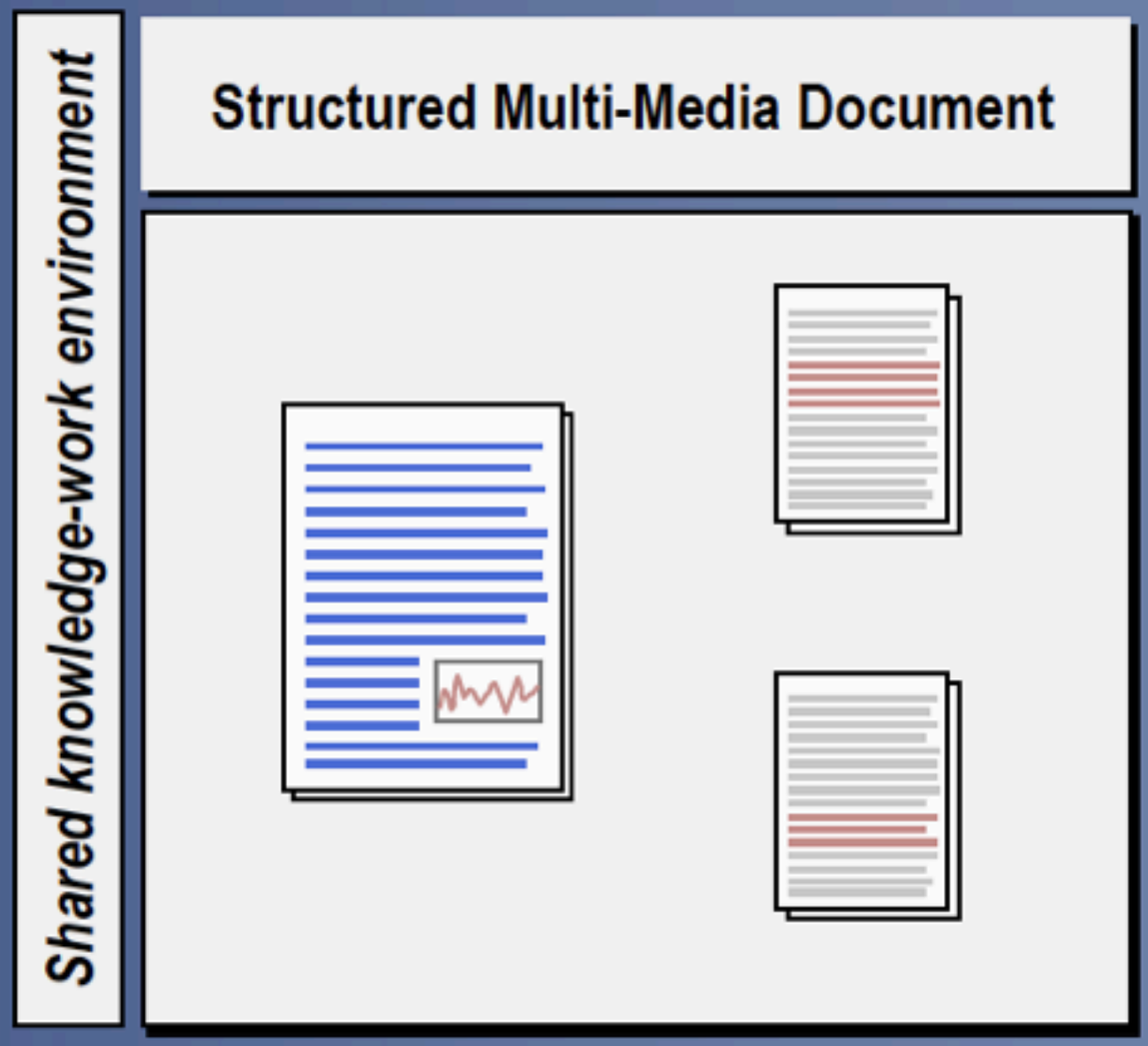

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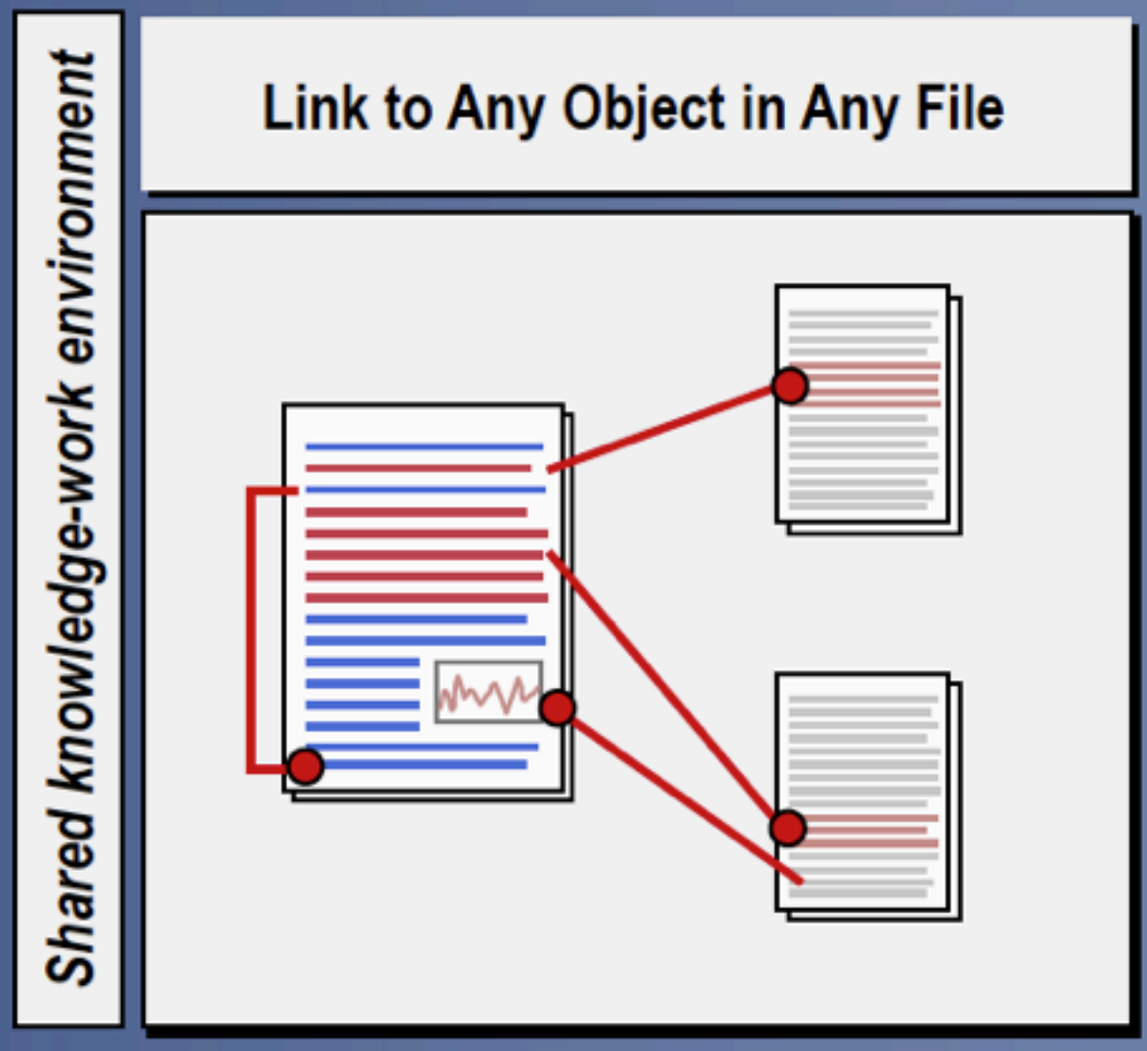

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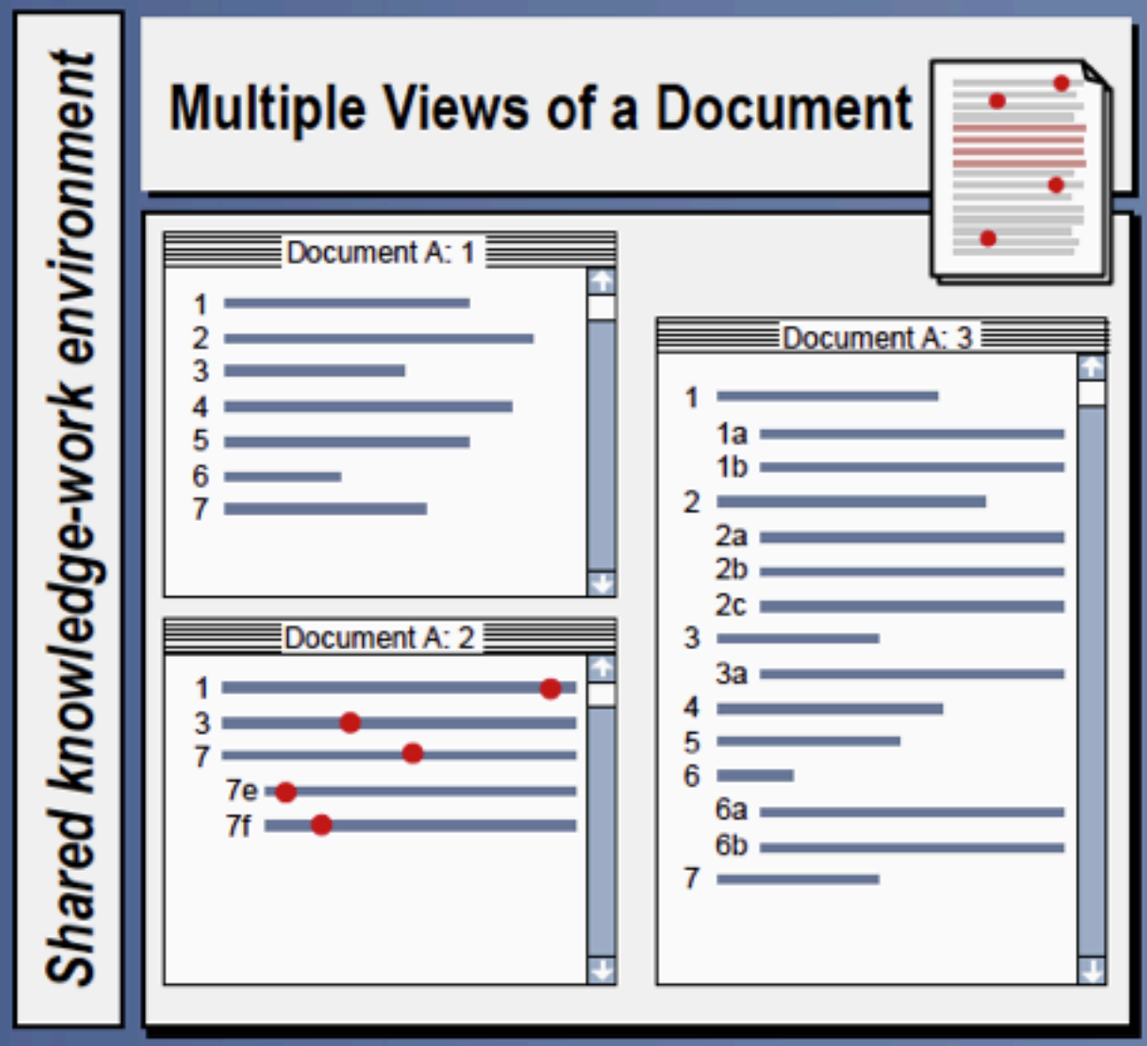
CoDIAK Example



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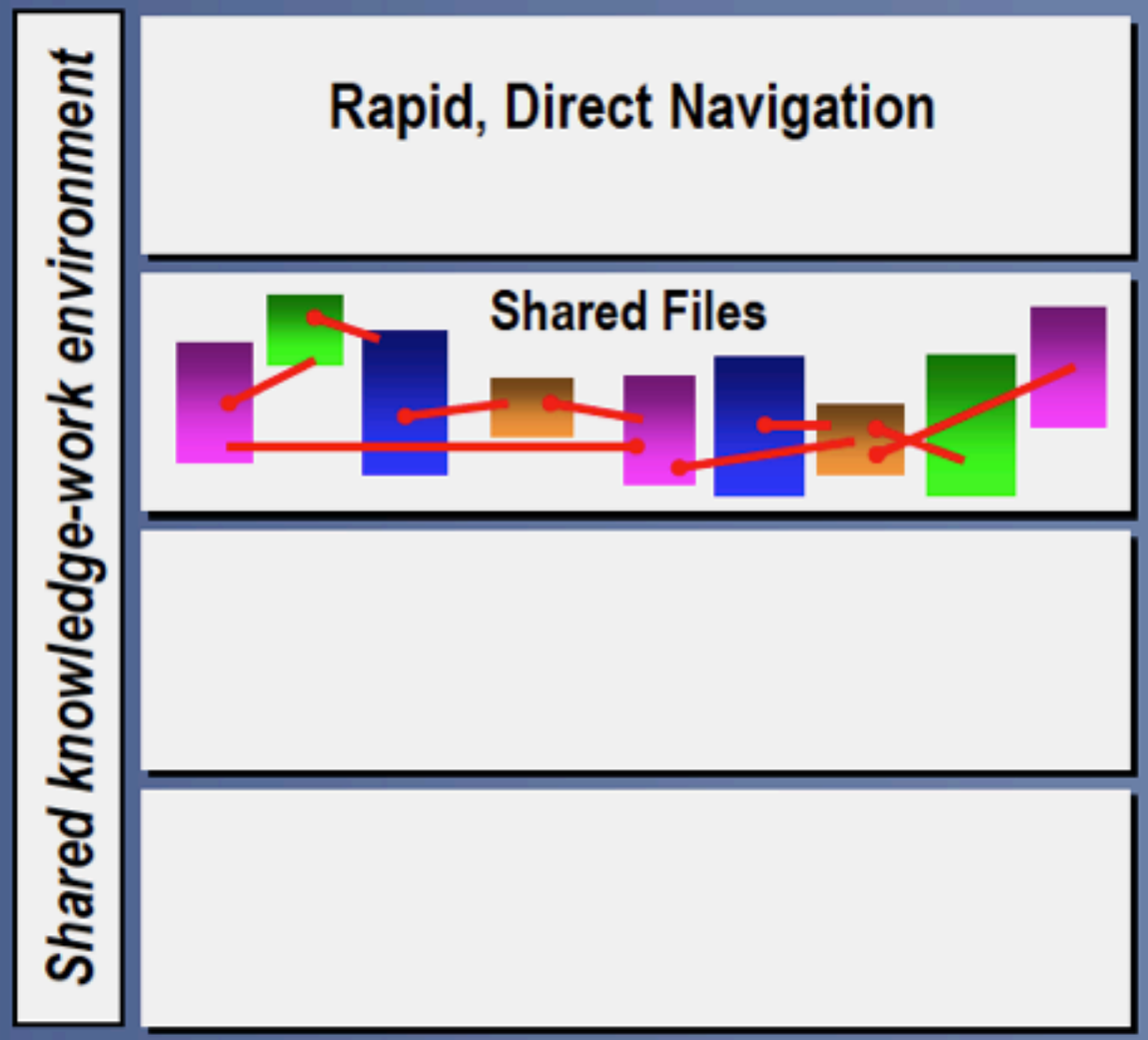

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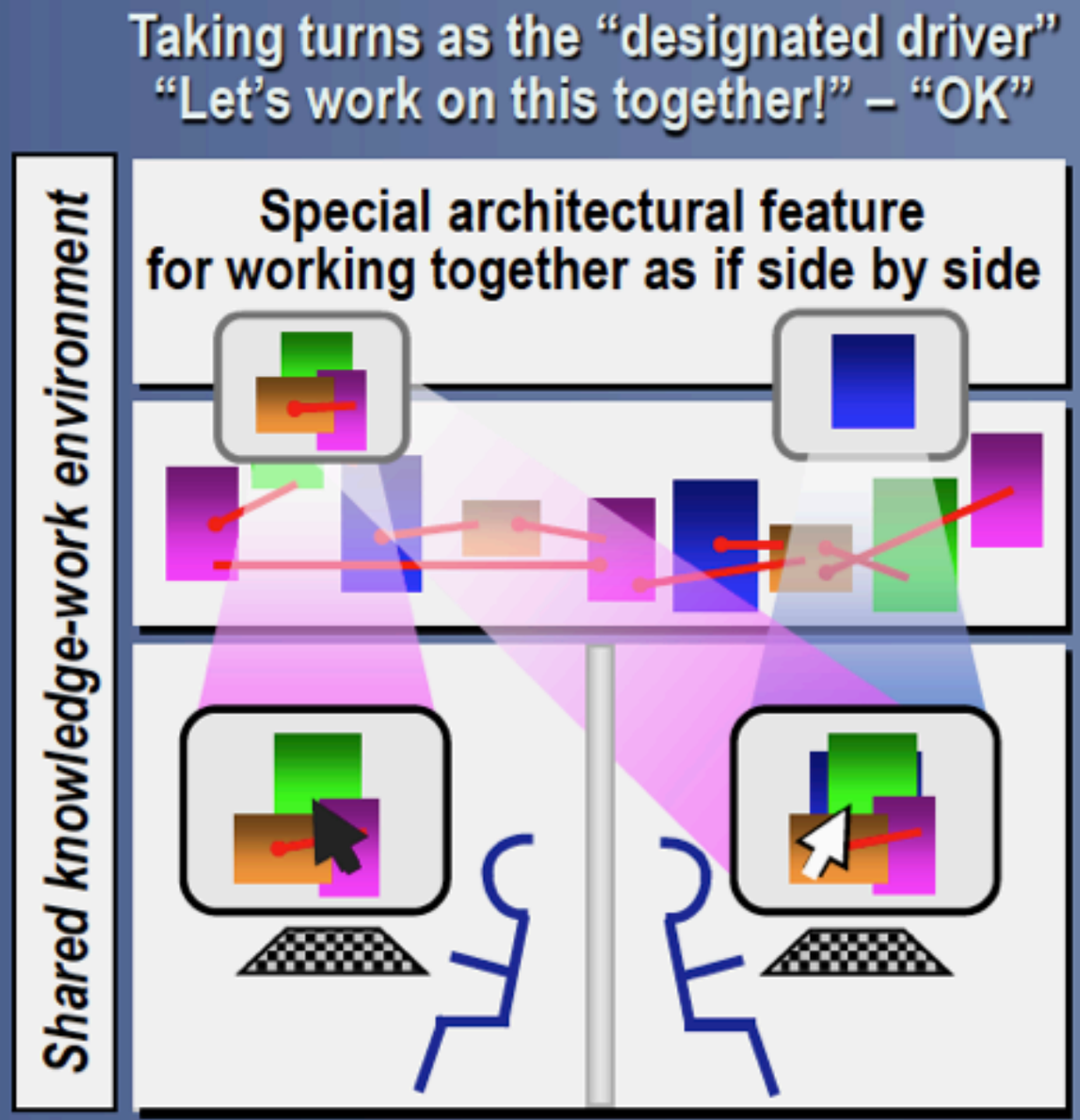
- Browsing
- **Shared Screens**
- Scripting

CoDIAK Example



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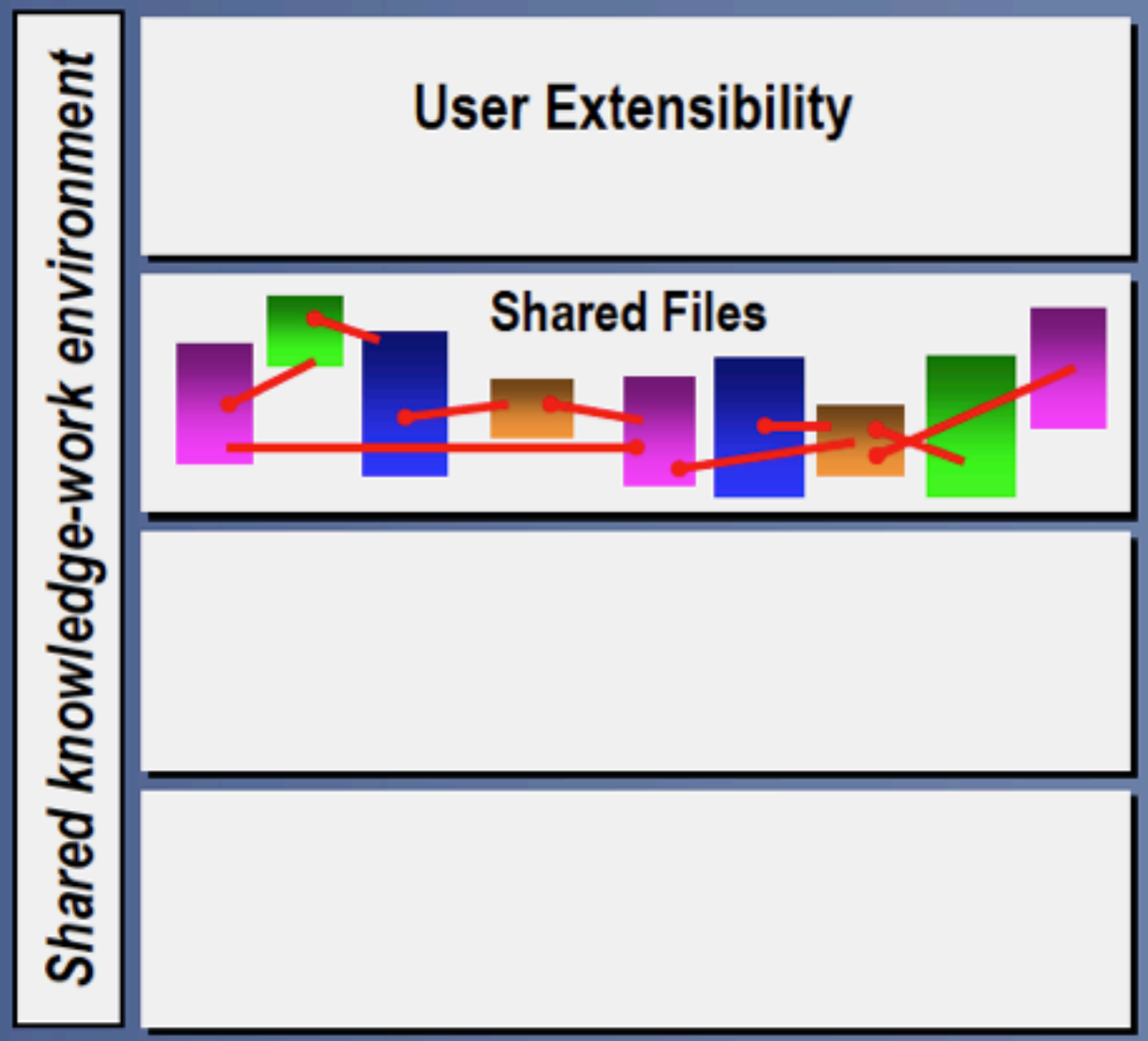

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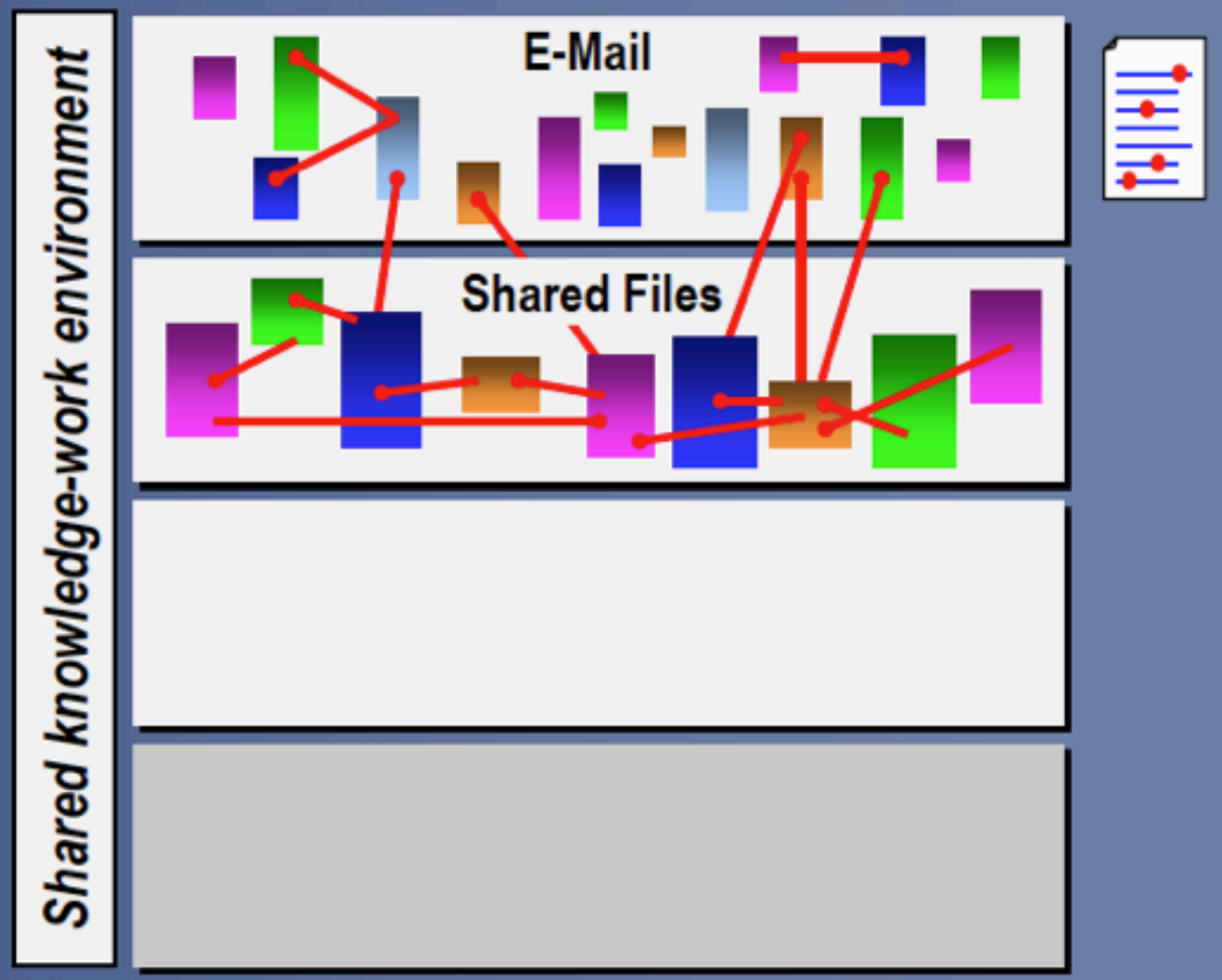


File Edit View Messages Tools Fields

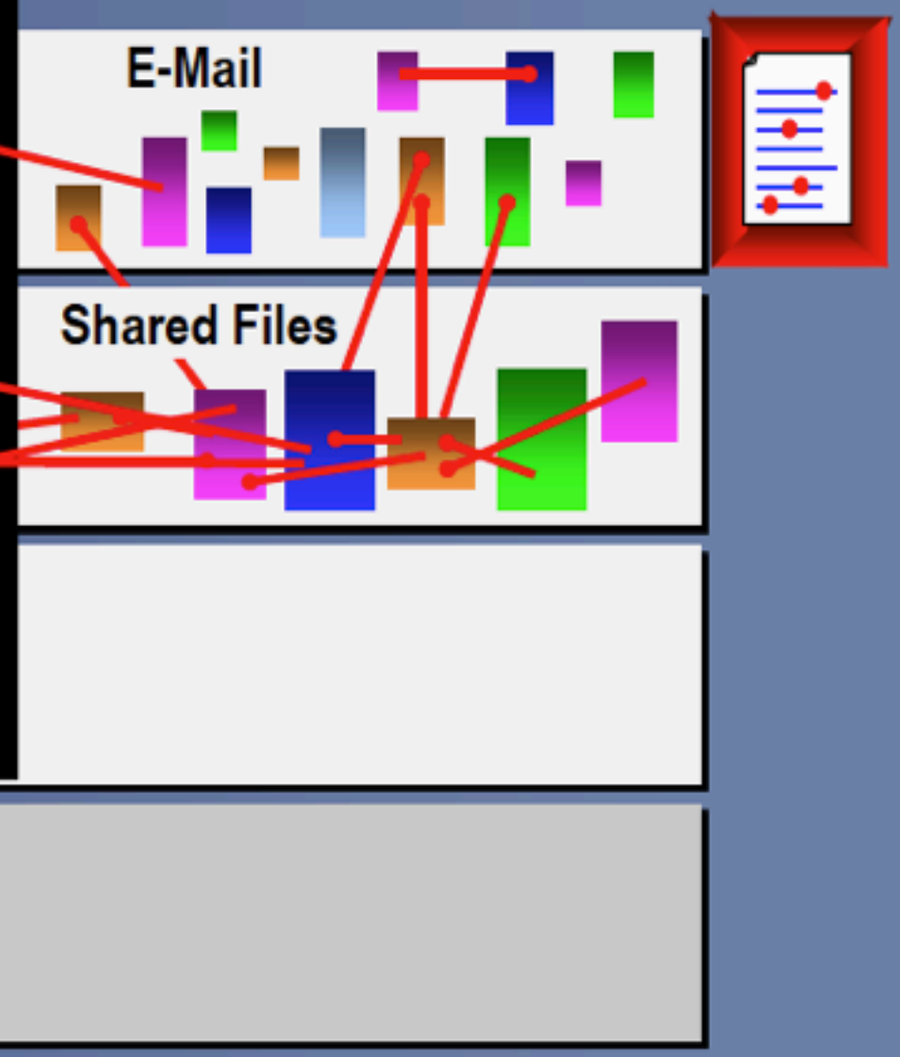
Email Document

In-Box

From: ce.bi
To: dce.bi
Subject: Draft Plan
In-reply-to: BI-DCE-XY4ZM
Message:
OK I added some wording in <engelbart,draft-plan@4c>. Take a look and tell me what you think. Also re: <@5a> I think we should incorporate the key points from <BI,plans,7b>.
- *Christina*

E-Mail Fully Augmented:

- structured browsing, editing, filtering
- object level manipulation …



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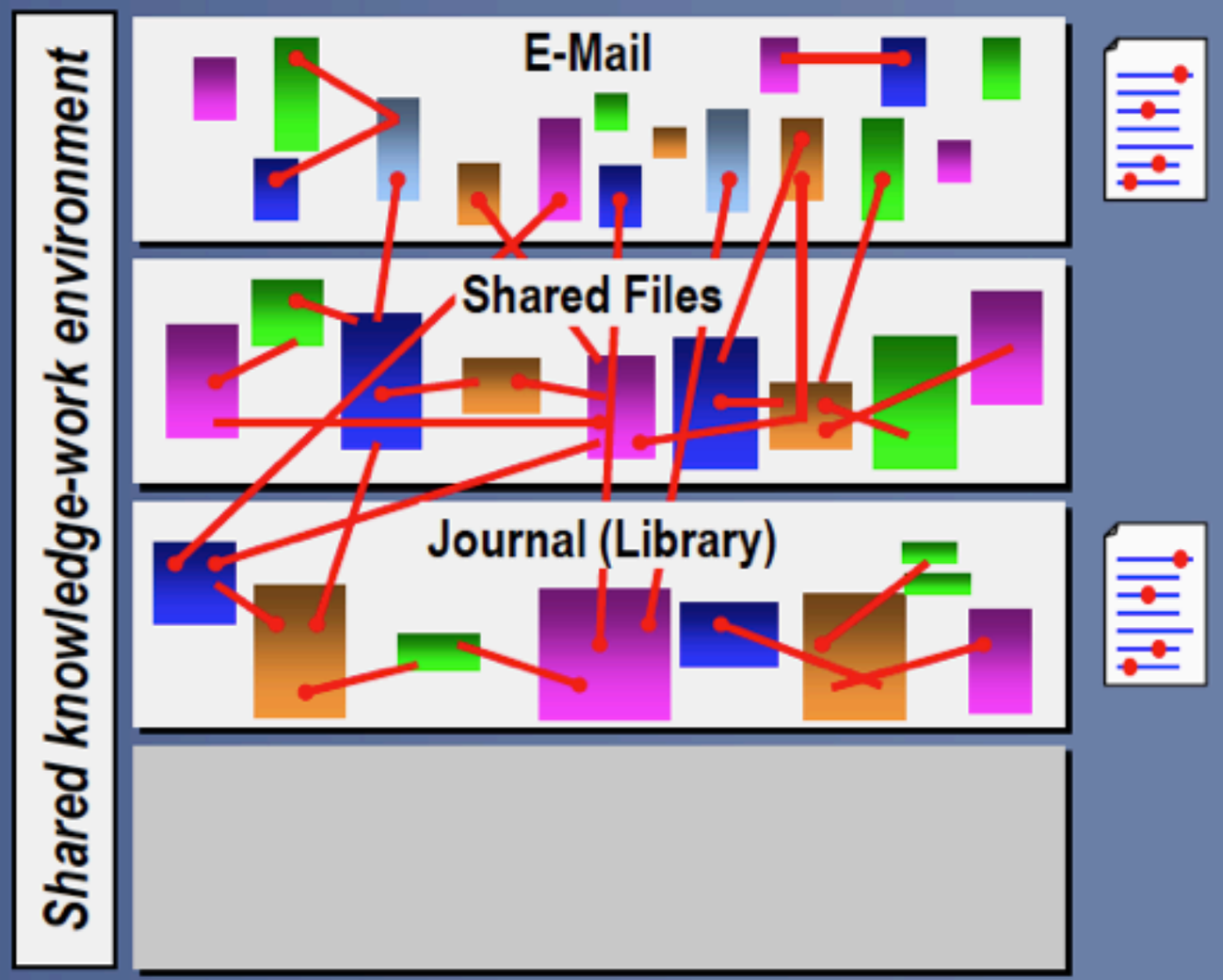


File Edit View Fields

Email Docum

Mail Draft

To: terry.org

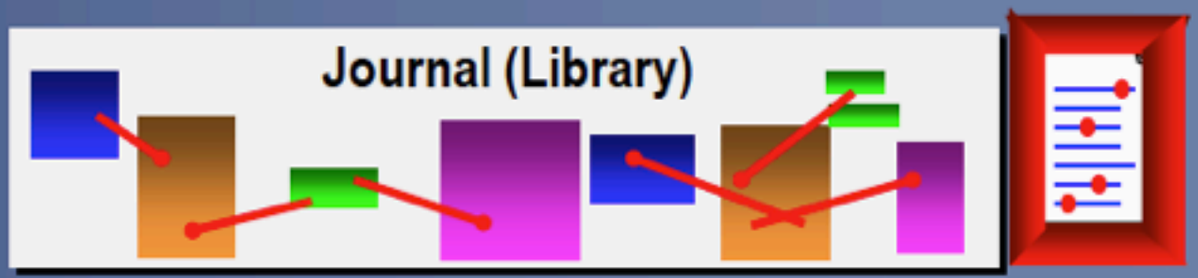
Cc: lane.org

Subject: Proje

Message:
Attach <Doc-X

Access
Addendum-to
Assign
Classification
Comment
Disposition
Extended-to
Journal
Keywords
References-to
Part-of
Sign
Supersedes

Document X



Example:
Posting a document in the Journal

File Edit View Fields

Email Document

Mail Draft

Send

To: terry.org

Cc: lane.org

Subject: Project Status

Journal: XYZ

Message:
Attach <Doc-X>

Email Notices

terry.org

Email Document

Mail Draft

To: terry.org

Cc: lane.org

Subject: Project Status

Journal: XYZ

Message:
Attach <Doc-X>

lane.org

Email Document

Mail Draft

To: terry.org

Cc: lane.org

Subject: Project Status

Journal: XYZ

Message:
Attach <Doc-X>

Journal (Library)

Document X

Example:
Posting a document in the Journal

OHS for Basic Collaborative Knowledge Work

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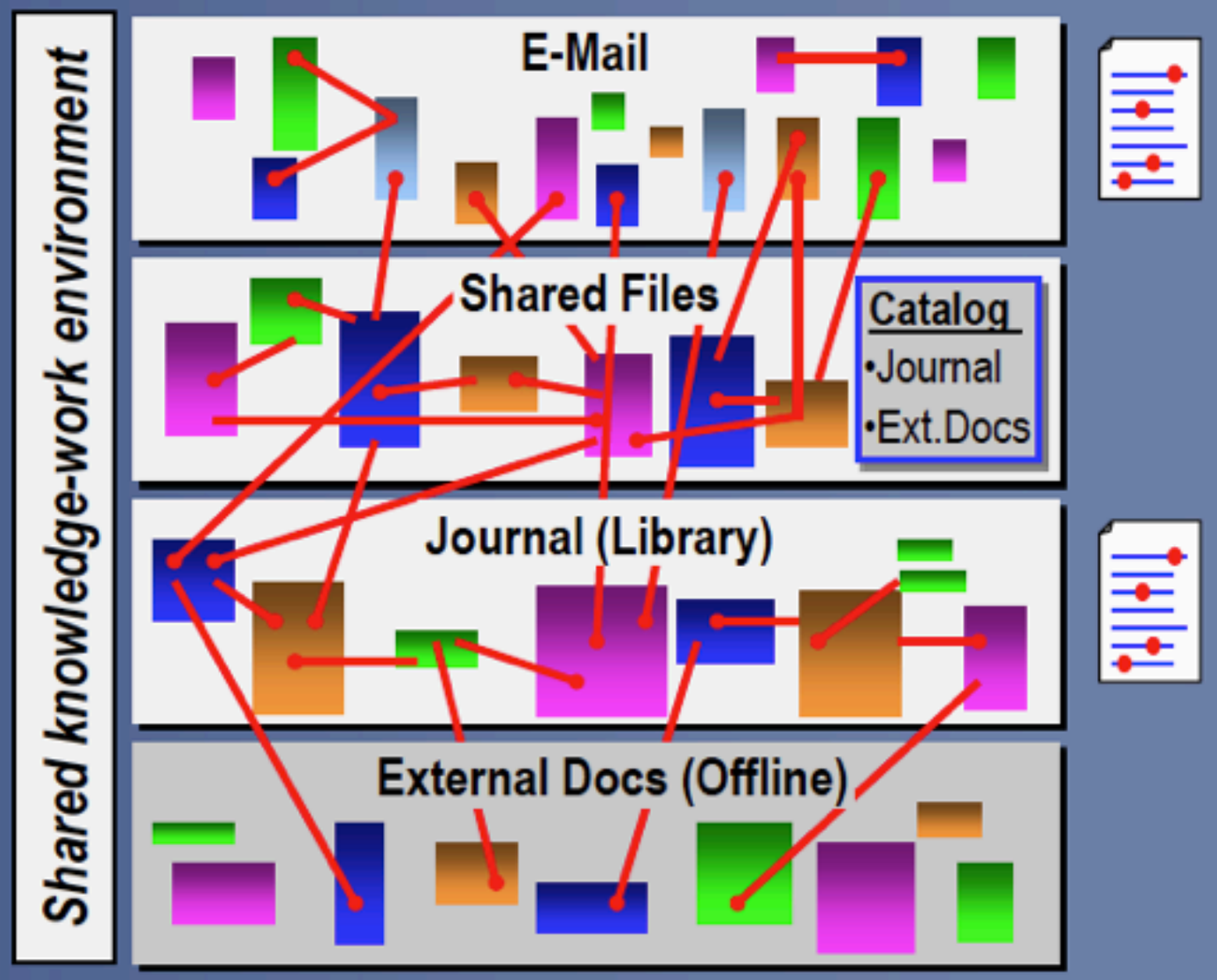
CoDIAK Example



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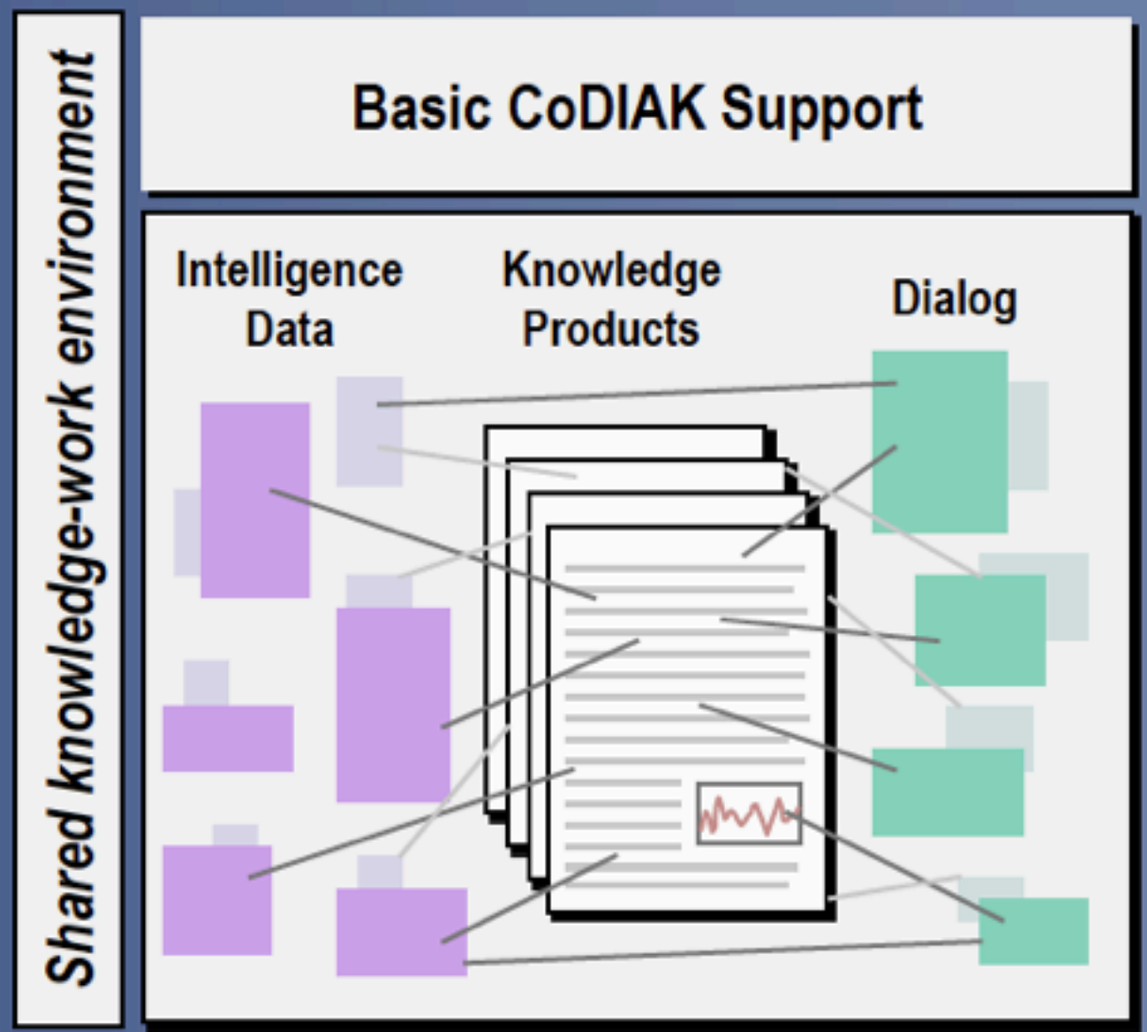

Augmented Knowledge Workshop

Dir File Edit View Window Special Print Help

OHS Overview (2,ALL)

Document Support

For Groups
& Individuals

- Structure
- View Control
- Browsing
- Object-level
- Linking
- Integrated Editor

Journal: oad,2250 (1,1)

AUTHORSHIP PROVISIONS IN AUGMENT
ABSTRACT
INTRODUCTION
SOME BACKGROUND
CONTROLLING THE TOOLS
ADDRESSING THE WORKING MATERIALS
CONTROLLING THE VIEWS
EMBEDDING THE GRAPHIC
TRAVELING THROUGH THE WORKING
MODIFYING THE DOCUMENT
SUPPORTING MULTI-PARTY
CONCLUSION
REFERENCES

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- Integrated Editor

Journal: oad,2250 (2,1)

AUTHORSHIP PROVISIONS IN AUGMENT
ABSTRACT
AUGMENT is a text processing system
INTRODUCTION
AUGMENT designed for analyzing human
Authorship has received a great deal of
We recognize explicitly that highly skilled
In this regard, our design goal was to provide
An explicit sub-goal in AUGMENT's
This paper concentrates upon the development
Studying another's work provides a
SOME BACKGROUND
AUGMENT commands are expressed with
FILE CHARACTERISTICS
CONTROLLING THE TOOLS
ADDRESSING THE WORKING MATERIALS
ADDRESSING THE WORKING MATERIALS
There is a consistent set of addressing features
Many of AUGMENT's unique author-support
In the early stages of our program at SRI, we did
HISTORY

Augmented Knowledge Workshop

Dir File Edit View Window Special Print Help

OHS Overview (2,ALL)

Document Support

For Groups
& Individuals

- Structure
- View Control
- Browsing
- Object-level
- Linking
- Integrated Editor

Journal: oad,2250 (3,1)

AUTHORSHIP PROVISIONS IN AUGMENT
ABSTRACT
AUGMENT is a text processing system
INTRODUCTION
AUGMENT designed for analyzing human
Authorship has received a great deal of
We recognize explicitly that highly skilled
In this regard, our design goal was to provide
An explicit sub-goal in AUGMENT's
This paper concentrates upon the development
Studying another's work provides a
SOME BACKGROUND
AUGMENT commands are expressed with
FILE CHARACTERISTICS
AUGMENT employs explicitly structured files,
(Note: AUGMENT workers generally use the
CONTROLLING THE TOOLS
ADDRESSING THE WORKING MATERIALS
There is a consistent set of addressing
EXPLICIT STATEMENT ADDRESSES
MARKERS

Augmented Knowledge Workshop

Dir File Edit View Window Special Print Help

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AUTHORSHIP PROVISIONS IN AUGMENT

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Tymshare, Inc.
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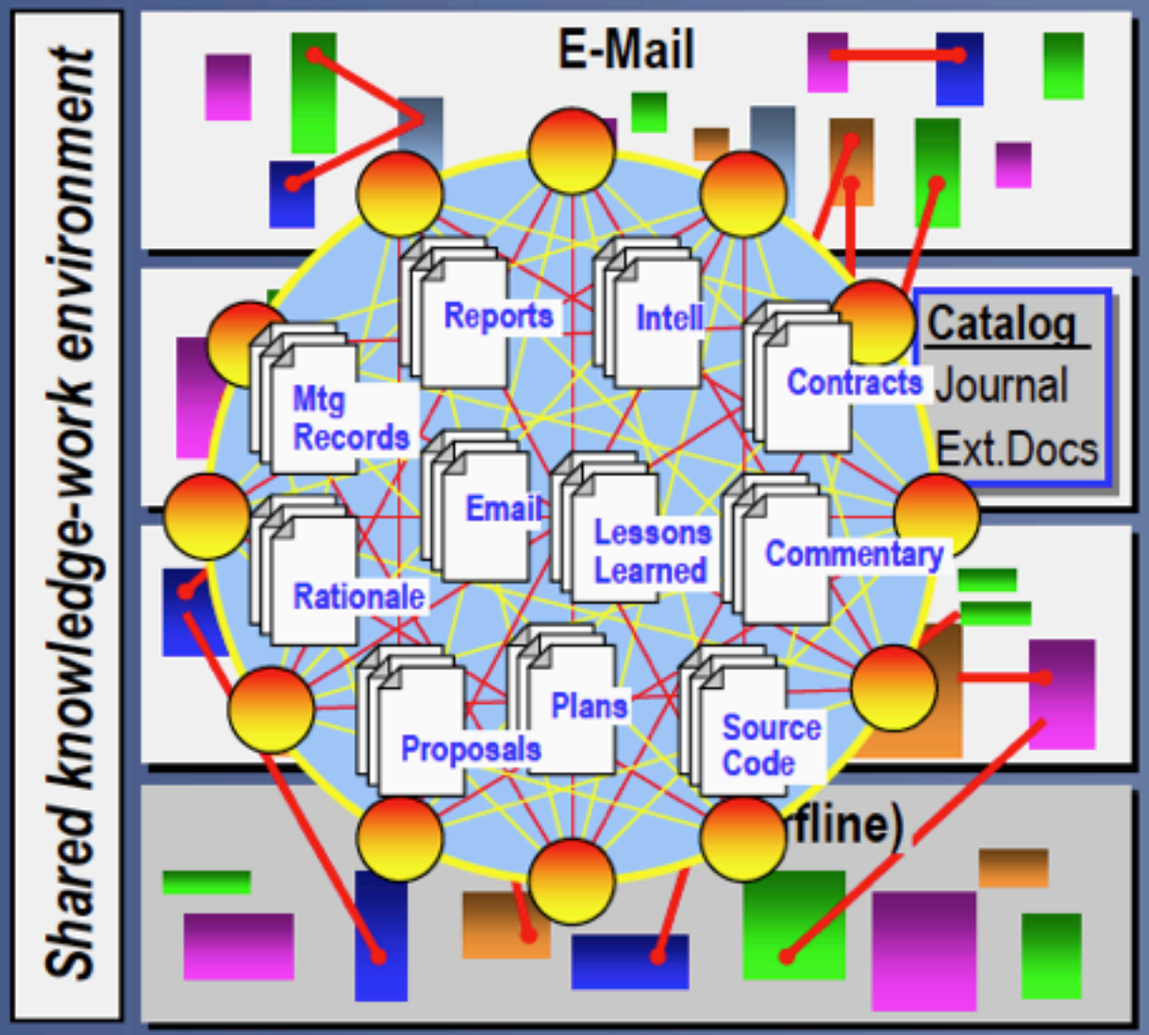
ABSTRACT

AUGMENT is a text processing system marketed by Tymshare for a multi-user network environment. In AUGMENT's frontend is a User Interface System that facilitates flexible evolution of command languages and provides optional command recognition features. Exceptionally fast and flexible control of interactive operations is enabled by concurrent action of mouse and optional one-handed chord keyset. Files are hierarchically structured, and textual address expressions can flexibly specify any text entity in any file.

INTRODUCTION

OHS: to Support CoDIAK Work Processes and DKRs



OHS Represents a Paradigm Shift

FROM	TO
• Tool-centric system	• Document-centric system
• Function-oriented tool / system	• Integrated end-to-end knowledge management environment
• Authoring and Publishing	• Developing, integrating, & applying knowledge
• Isolated passive libraries and archives	• Active "living" libraries seamlessly Integrated within the organization's work processes
• One user class: "easy to use"	• Many classes of user: Pedestrian to high performance

OHS Represents a Paradigm Shift (cont.)

FROM	TO
• File-level addressability	• Object-level addressability
• "Load & scroll browsing" in WYSIWYG or outline view modes	• "Precision browsing" Jumping directly to any object in any file with on-the-fly custom views
• Windows tied to a file and to the application used	• Windows are a portal onto a file repository; a variety of applications may be used on any file
• Each application has unique file design	• Applications use common file design

Potential OHS Applications
To Support and Integrate CoDIAK-intensive Work

- Program Management
- Collaborative Planning & Tracking
- Command and Control
- Concurrent Engineering
- Software Engineering (CASE)
- Acquisitions Support (CALS)
- CA - Integrated Architectures
- Contracts Management
- World Wide Web (WWW)
- Records Management
- Digital Libraries
- Tele-commuting
- Online Document Delivery
- Groupware, CSCW
- Enterprise Integration
- Total Quality Management (TQM)
- Continuous Process Improvement
- Re-Engineering
- Organizational Learning
- Distance Learning
- Technology Transfer
- Networked Improvement Communities
- etc...

The Bootstrap "Paradigm Map"

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

Most Payoff

Investment Criteria

Improvement Infrastructure

Bootstrap Strategy

Collective IQ

Global Interoperability

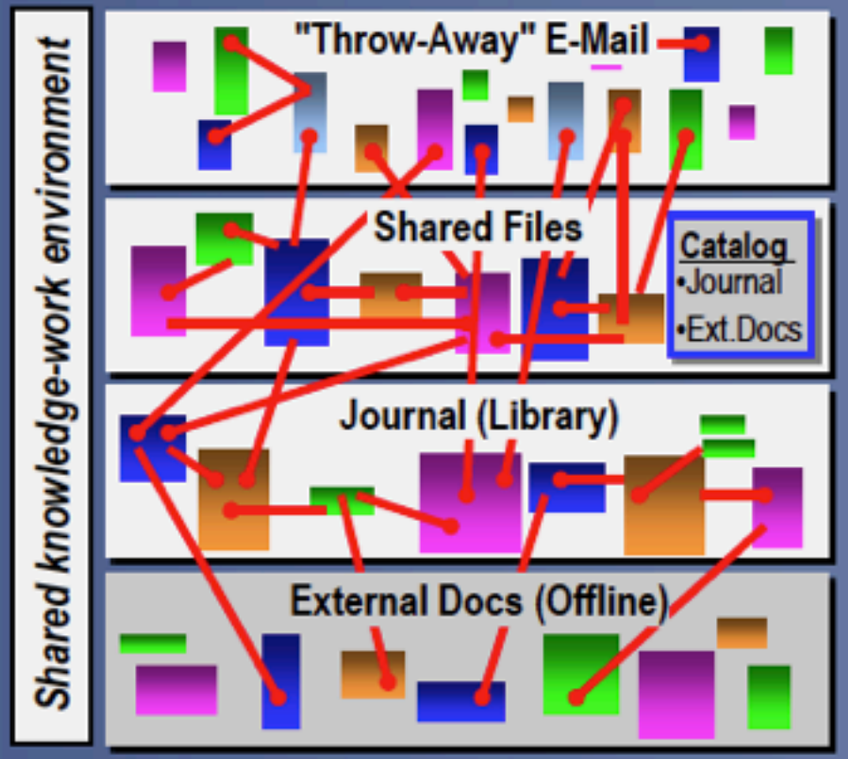
O H S

Deployment Targets?

Improvement Community

Improvement Cycles

Continuous Improvement



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O H S

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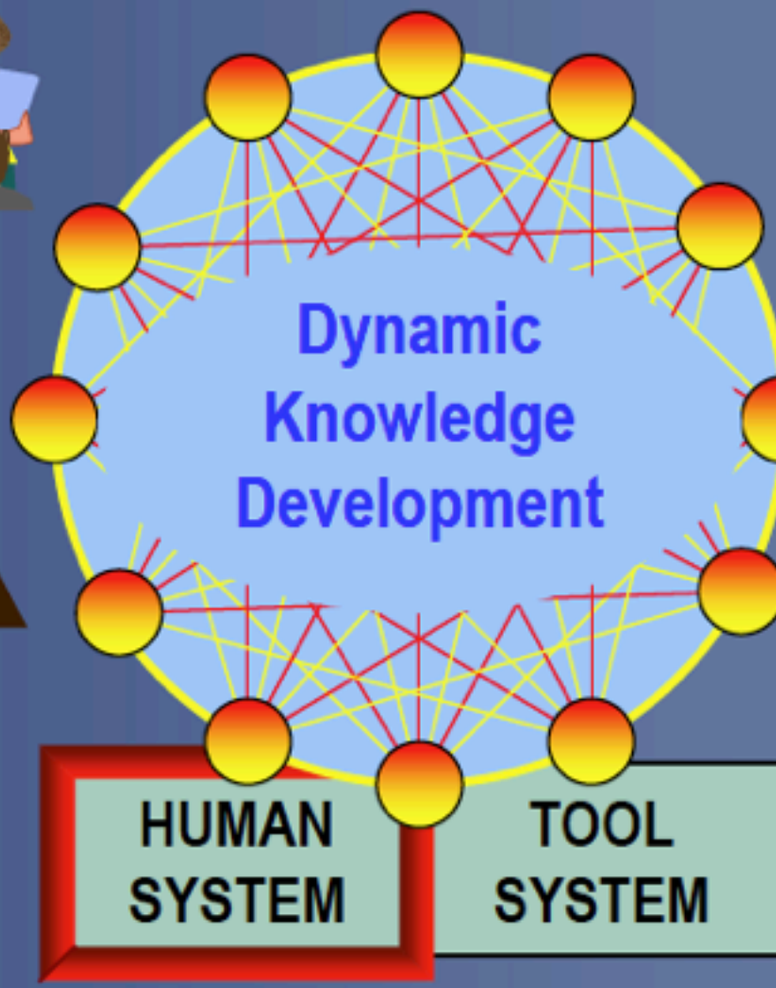
QUESTION

Best targets for deploying new capabilities?

Pushing the Frontier Requires Aggressive Co-Evolution



Knowledge
Federation

search here ... Go

A marvellous programme is shaping up for the EMCSR 2014

Posted on February 21, 2014 by sblachfellner

A marvellous programme is already shaping up for the European Meetings on Cybernetics and Systems Research EMCSR 2014, 22-25 April 2014 in Vienna.

The keynotes by Mario Bunge, John Collier, and Markus Schwaninger are confirmed. Three theme chairs will open the meetings and lead into the themes of Sustainability & Development, Emergence & Design, and Complexity & Strategy. Three theme speeches will set a special focus in these storylines. Distinguished lectures are confirmed in diverse symposia. Diverse Demonstrations like the Evolutionary Learning Labs, a movie screening (Population Boom) and discussion with the acclaimed Austrian director Werner Boote (Plastic Planet) and Systems Analysis for Informing Policy by the renowned International Institute for Applied Systems Analysis will showcase impactful systems thinking and practice.

Do not miss the opportunity to become a contributor and participant, too. The deadline

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