



Facilitating the Evolution of our Collective IQ

*What our Organizations and
Governments Could Do*

Douglas C. Engelbart
Speaking to U.S. Agencies
August-September 2005

Lifetime Goal

*As much as possible, to boost
mankind's collective capability
for coping with complex, urgent
problems*

*Continuous, dedicated pursuit
now for over 50 years*

**For Examples of “Large-scale,
Complex, Urgent Problems,” See:**

**The AC/UNU Millenium Project –
since the mid-90’s: Harnessing
world-wide participation in isolating
and clarifying what are the MAJOR
CHALLENGES to humanity:**

<http://www.acunu.org/index.html>



THE MILLENNIUM PROJECT

GLOBAL FUTURES STUDIES & RESEARCH

What's Hot	Books and Reports	Global Lookout Study	Press Room	Global Scenarios
Project Overview			American Council for The United Nations University	
Project Participants			Listserv	Internships
Affiliated Institutions			About the AC/UNU	
Nodes	Futures Matrix	Gifts and Contributions	About the UNU	

The **American Council for the United Nations University** is a U.S. NGO that provides a point of contact between Americans and the primary research the UN - the [United Nations University \(UNU\)](#)- which focuses intellectual resources from all nations on world problems.

The **Millennium Project** of the American Council for the United Nations University is a global participatory futures research think tank of futurists, scholars, business planners, and policy makers who work for international organizations, governments, corporations, NGOs, and universities. The Millennium Project is a coherent and cumulative process that collects and assesses judgements from its several hundred participants to produce the annual "[State of the Future](#)", "[Research Methodology](#)" series, and special studies such as the [Future Scenarios for Africa](#), [Lessons of History](#), [Environmental Security](#), [Applications of Futures Research to Policy](#), and a 500+ [annotated scenarios bibliography](#).

It connects local and global perspectives via regional [Nodes](#) (groups of individuals and institutions) in Beijing (China); Buenos Aires (Argentina); Cairo (Egypt); Calgary (Canada); Caracas (Venezuela); Essen (Germany); Helsinki (Finland); Kuwait (Gulf region); Lismore & Aspendale (South Pacific); London (U.K.); Madurai & New Delhi (India); Maui (Hawaii); Moscow (Russia); Paris (France); Prague (Central and Eastern Europe); Rome (Italy); Sao Paulo (Brazil); Silicon Valley (U.S.); Tokyo (Japan); and Yokohama (Japan). The Millennium Project was selected among the "100 Best Practices" by IBM Habitat, best 7 foresight org.

AC/UNU Millennium Project

Futures Matrix

(This page is continuously updated; your feed-back is welcome.
 Click on the blue bullets in the table to get to the topic of your choice.)

	Demographics and Human Resources	Environmental Change and Biodiversity	Technological Capacity	Governance and Conflict	International Economics and Wealth	Integration or Whole Futures
Scenarios	●	●	●	●	●	●
Challenges	●	●	●	●	●	●
Actions	●	●	●	●	●	●
Regional Views	●	●	●	●	●	●
Indicators	●	●	●	●	●	●
Developments	●	●	●	●	●	●
Web Sites	●	●	●	●	●	●
Institutions						
Individuals						

If you know of excellent additions to any of these domains that address the long-range future, please send them to jglenn@igc.org

INTEGRATION AND WHOLE FUTURES

- useful web sites -

- World Future Society: <http://www.wfs.org>
- World Futures Studies Federation: <http://www.worldfutures.org>
- Futures Survey: <http://www.wfs.org/fsurv.htm> - monthly guide to the literature of social change, new technologies, futures studies, policy-making, environmental studies, organizational renewal, and related cross-disciplinary fields.
- OECD Forum for the Futures: <http://www.oecd.org/sge/au/> - is committed to an interdisciplinary approach and a systemic perspective as the most appropriate way of effectively tackling longer-term future challenges in a world of increasing interdependence and accelerating change
- Foresight: <http://www.foresight.gov.uk/> - UK Foresight Programme - Future trends and how they might affect humanity
- The Futuribles Group <http://www.futuribles.com> French web site on Futures Studies
- World Future Society Venezuela <http://www.FuturoVenezuela.org> Spanish web site on Futures Studies and related activities in Venezuela
- Center for Globalization and Futures Research, Argentina - Global Latino <http://www.global-latino.com/> Spanish web site on Futures Studies
- University of Houston (Institute of Futures Research): <http://www.ci.uh.edu/futureweb/> - MS program in Future Study
- Global Options, California State University Dominguez Hills: http://www.csudh.edu/global_options
- Institute for Alternative Futures: <http://www.altfutures.com> - AF helps organizations and communities clearly understand the accelerating pace of change and focus their energies on clarifying their highest aspirations.
- Institute of Future Studies for Development, IFD <http://www.ifd.or.th> - is an independent academic research institute created for the purpose of communication
- CNN Hot Stories: <http://www.cnnfn.com/news/>

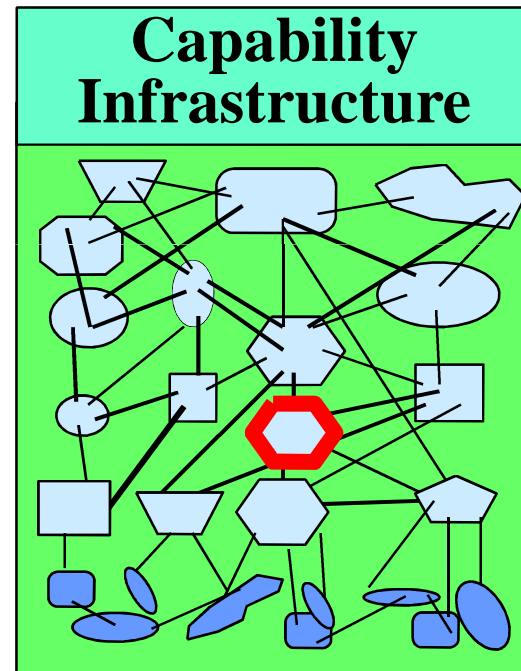
Solving any, truly large-scale problem requires **COLLECTIVE CAPABILITY**

e.g. to:

- Develop an adequate, comprehensive understanding:
 - Of the problem situation
 - Of the possible solutions
 - Of the resources required
 - Of the resources available
- After selecting a solution approach:
 - Cyclic Process: Status; Next-Glitch Problem; ...

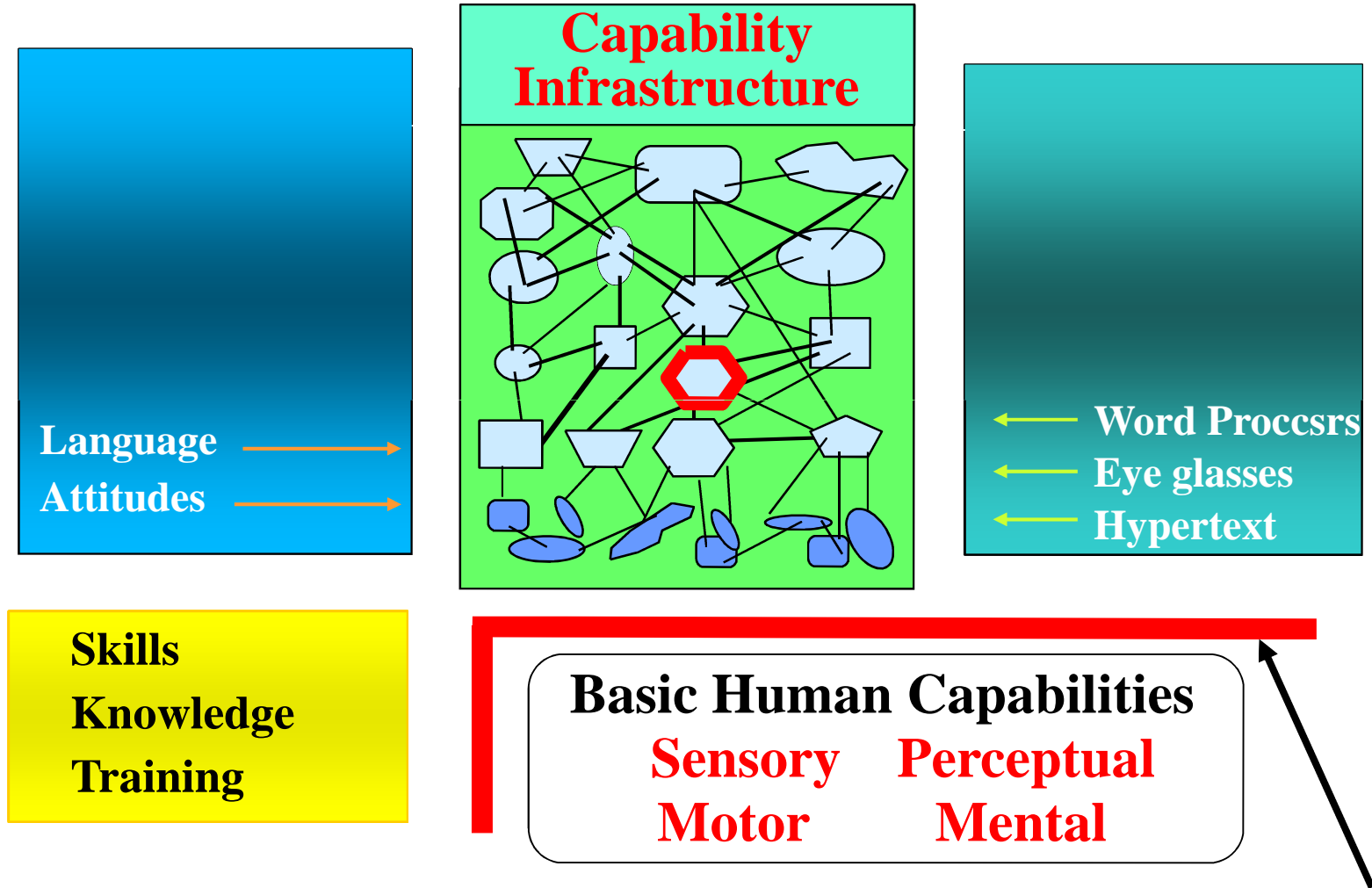
Consider that human capability (individual or collective) depends upon an integrated infrastructure of component capabilities.

Essentially every capability is dependent upon a set of lower-level capabilities – usually shared with other higher-level capabilities.



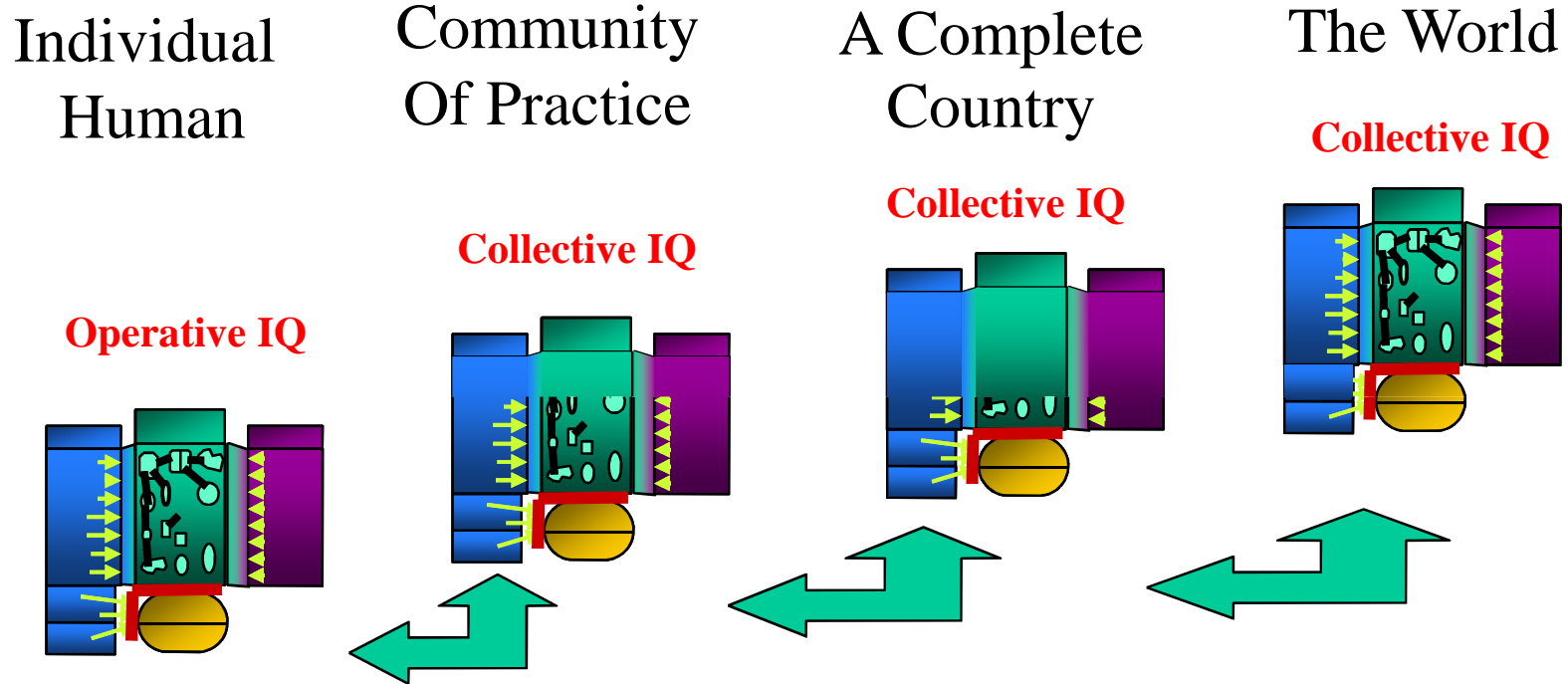
My Focus: 1. Capability; 2. Ease of Use.

Humans' Capabilities Depend Upon Their Augmentation Systems



(This interface is much more significant than “HCI”)

This Augmentation Model is valid over huge scale!



Purposefully pursuing accelerated evolution of mankind's knowledge development and application capabilities is a HUGE CHALLENGE, and requires very effective strategies in applying our resources

“SCALE” – it matters a great deal when tackling a BIG problem:

- The “scale factor” has a huge impact on the way a problem can successfully be approached.
- Tackling a large-scale problem requires a “strategic” rather than a “tactical” approach.
- And the “paradigms” which shape our individual and collective perceptions of big problems -- and of their possible solutions:
 - They need to be appropriate -- and yet they evolve much more slowly than do the big-problem complexities.

Collective IQ: Emerged As The Primary Strategic Capability

External Environment

Ingesting

Interacting

Scanning

Dynamic
Knowledge
Repository

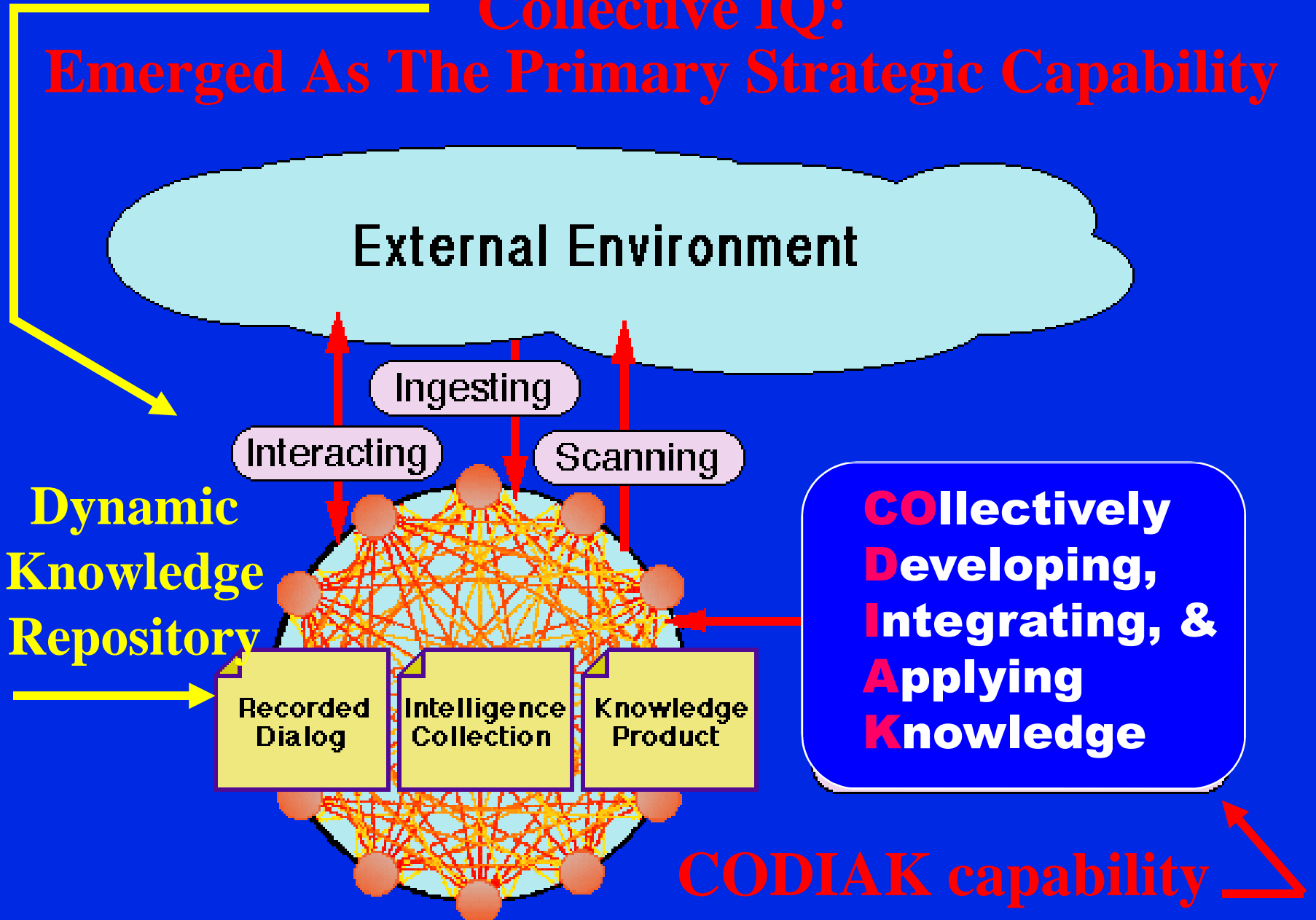
Recorded
Dialog

Intelligence
Collection

Knowledge
Product

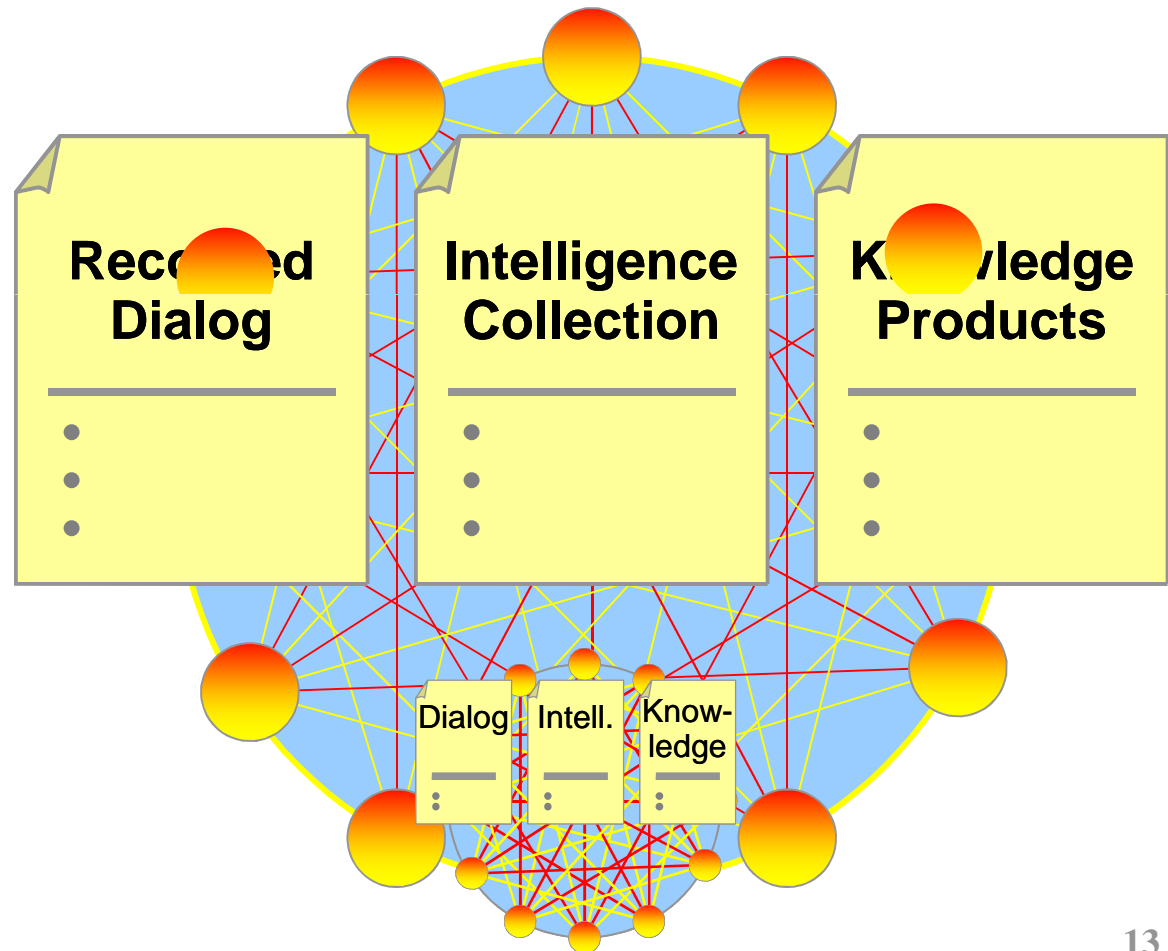
**COLlectively
DDeveloping,
IIntegrating, &
AApplying
KKnowledge**

CODIAK capability



Critical Factor: “Concurrent” Evolution of Society’s DKRs

**Concurrency:
Scaling Up --
actually, to
global scope**

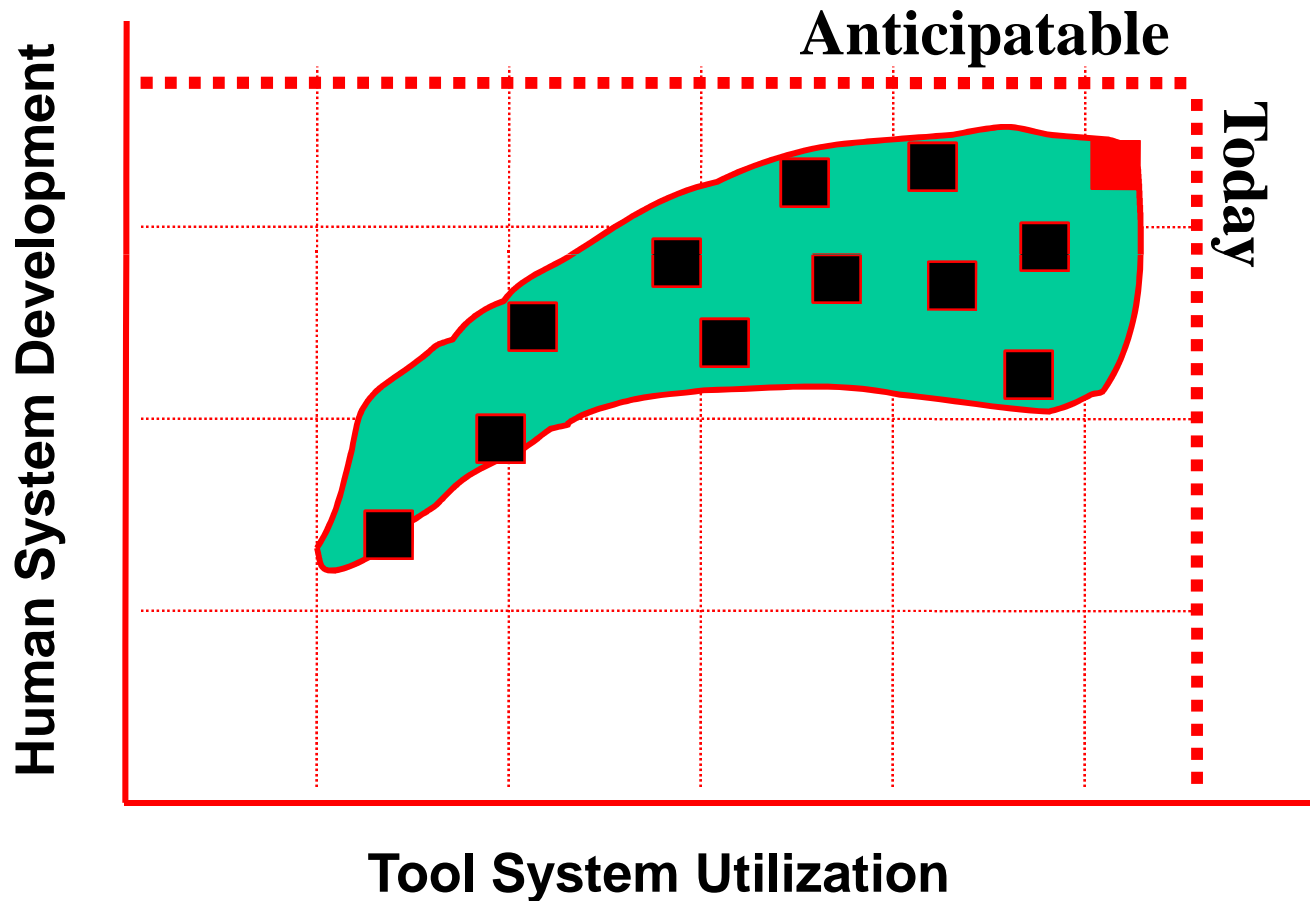


Large-Scale Facilitated Evolution

- No one can specify the design for our future capability infrastructure
 - Far too many of the possible “improvement steps” will change the design environment for other improvement candidates.
- Have to depend upon an Evolutionary Process!
- BUT, we CAN learn to FACILITATE this evolutionary process!

The World's Organizations in Human-Tool Space

Representative distribution of world's societies



“Co-Evolution Frontier”

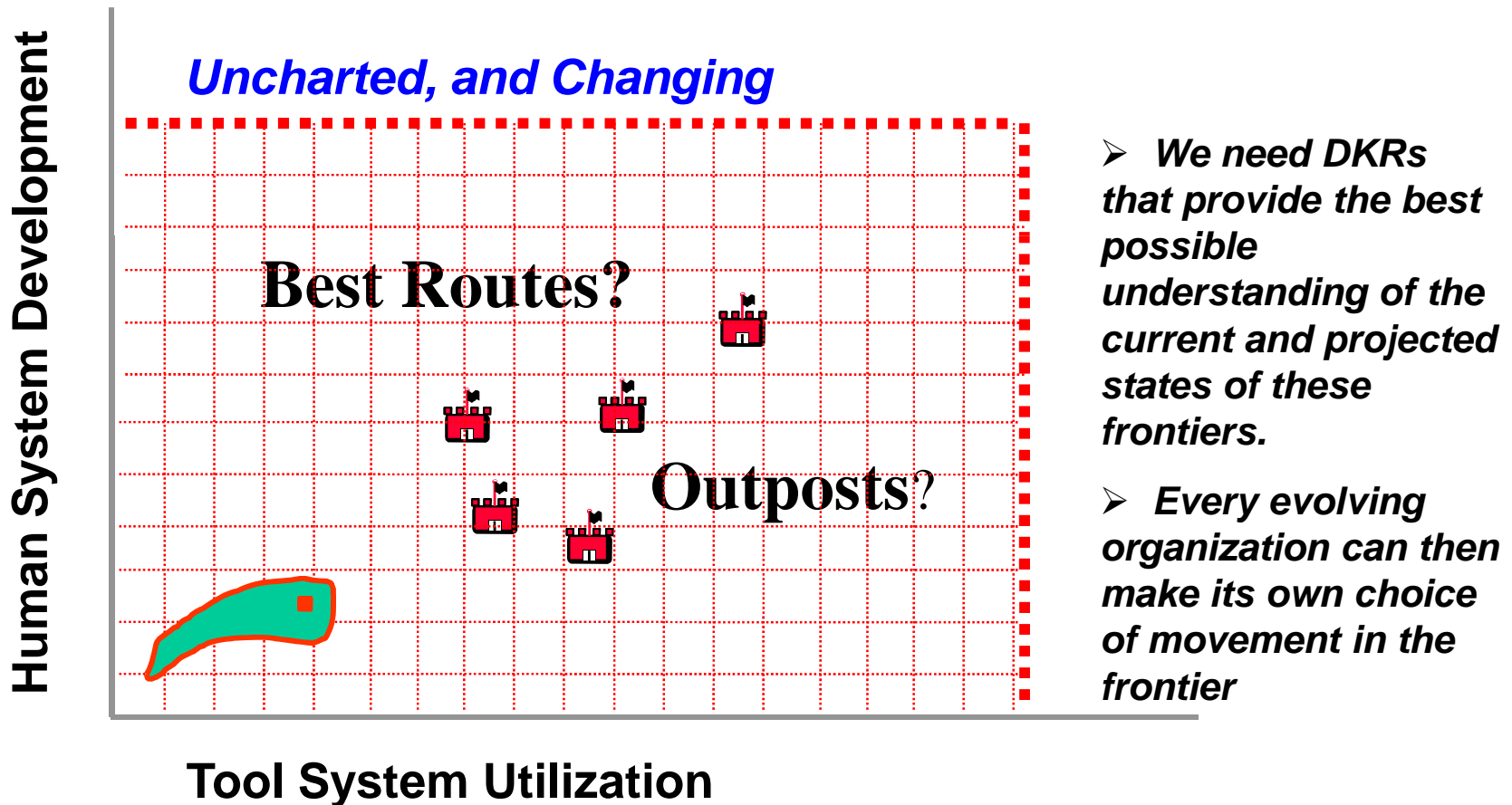
Human-Systems and Tool Systems Interactively Co-Evolving

- Mind-boggling rate & scale of technology change generate **accelerating rate of opportunities**.
- Our **paradigms** already lag well behind opportunities.
- **Paradigm change has to be accelerated:** Human skills, culture, and governance are already severely stressed.
- **Needed:** A setup that can **effectively facilitate** ... the **Human/Tool-System Co-Evolution** of our **Collective Augmentation Systems**.

Emergent Co-Evolution Frontier

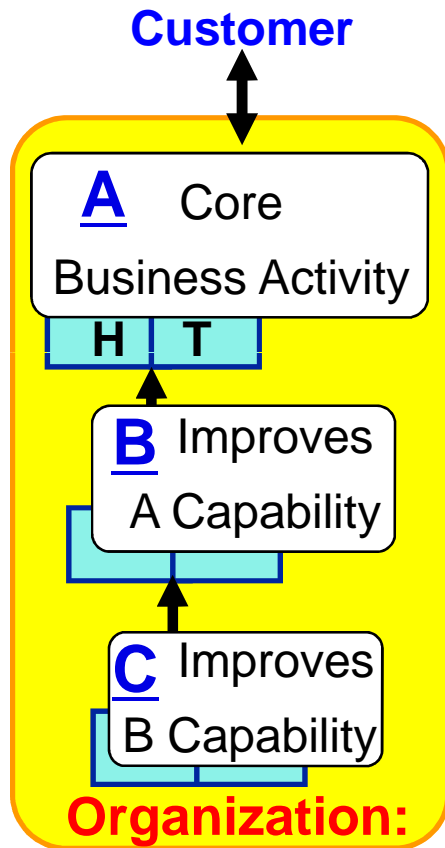
On a scale we can barely anticipate

**Where best should your organization head?
....By what route? Who else is out there?**



Meta approach to Improvement

Agency, NGO, Corporation, Prof. Society, ...

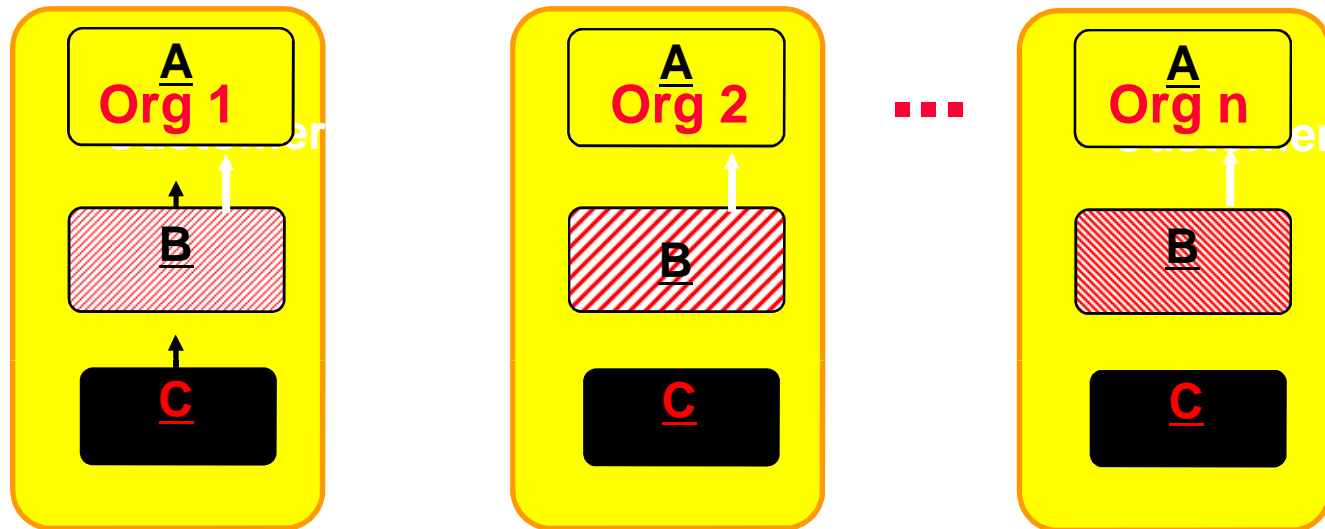


A Activity - **serves**
the **customer**

B Activity - **improves**
product cycle
time and quality

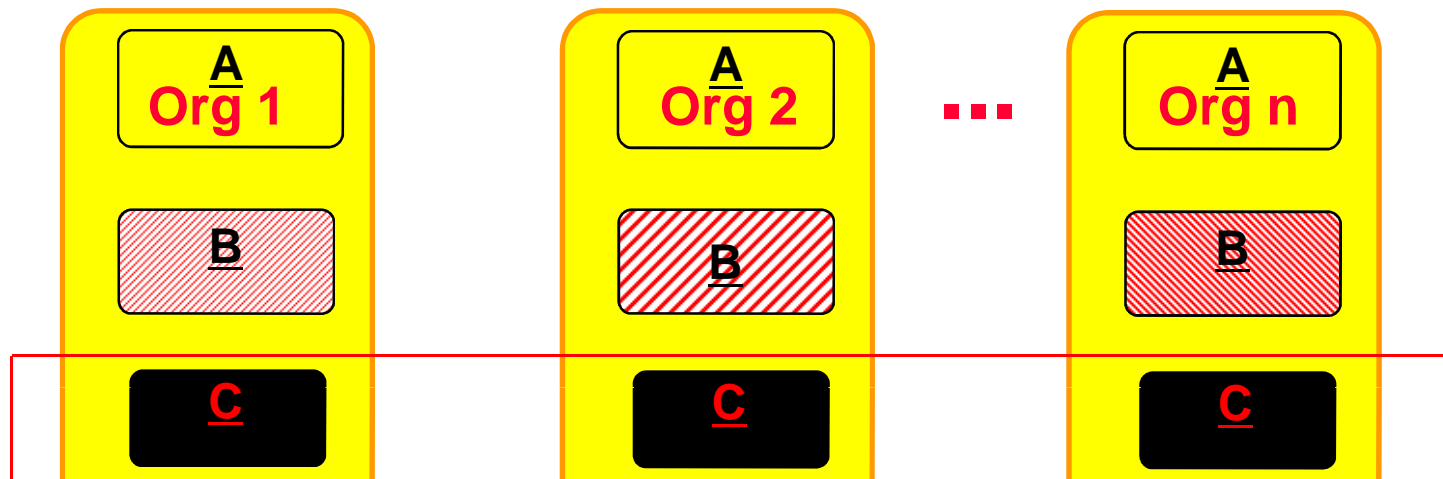
C Activity - **improves**
improvement cycle
time and quality

Identify Common-Interest Organizations



Multiple organizations, could pool “C-level” expenses to work collectively on common-capability improvements (Consortia; Prof. Societies).

Create new Improvement Community: Jointly Improving “C” Capabilities



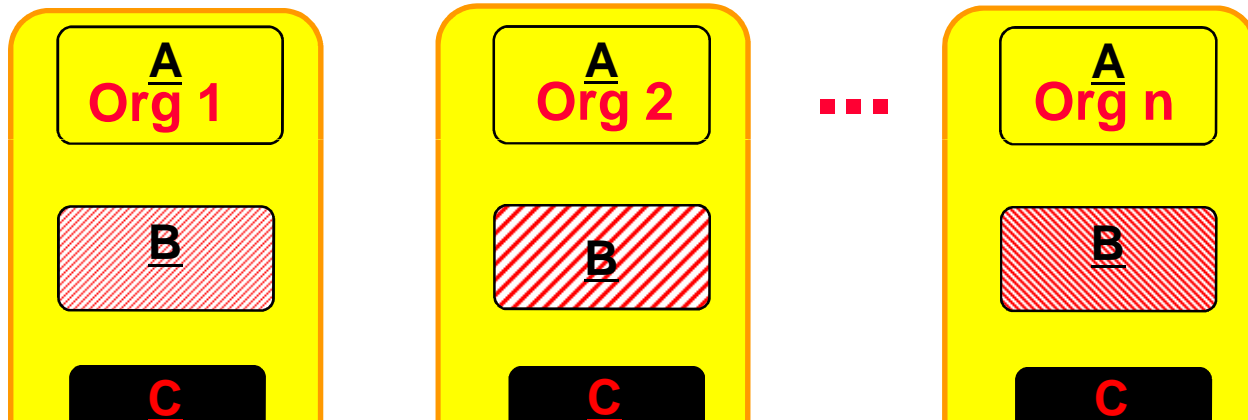
- Common challenges, issues, requirements
- Share advice, strategies, lessons learned
- Common types of “Customers” -- their “Bs.”

A New Community focused on Improving
“C” Activities across organizations

Networked Improvement Community (NIC)

What makes a NIC out of an IC? Actively employing A “NIC DKR” (Dynamic Knowledge Repository) focused on providing the best possible understanding of the possibilities and means for improving the specified common capability-improvement capability.

It's
DKR



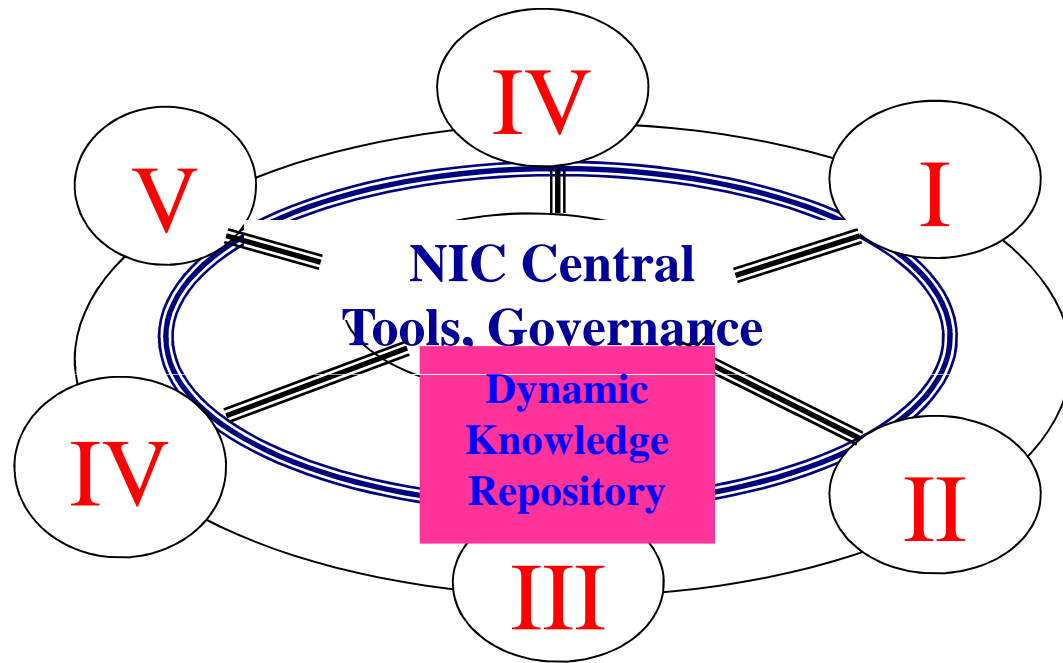
Recorded
Dialog

Knowledge
Products

Intelligence
Collections

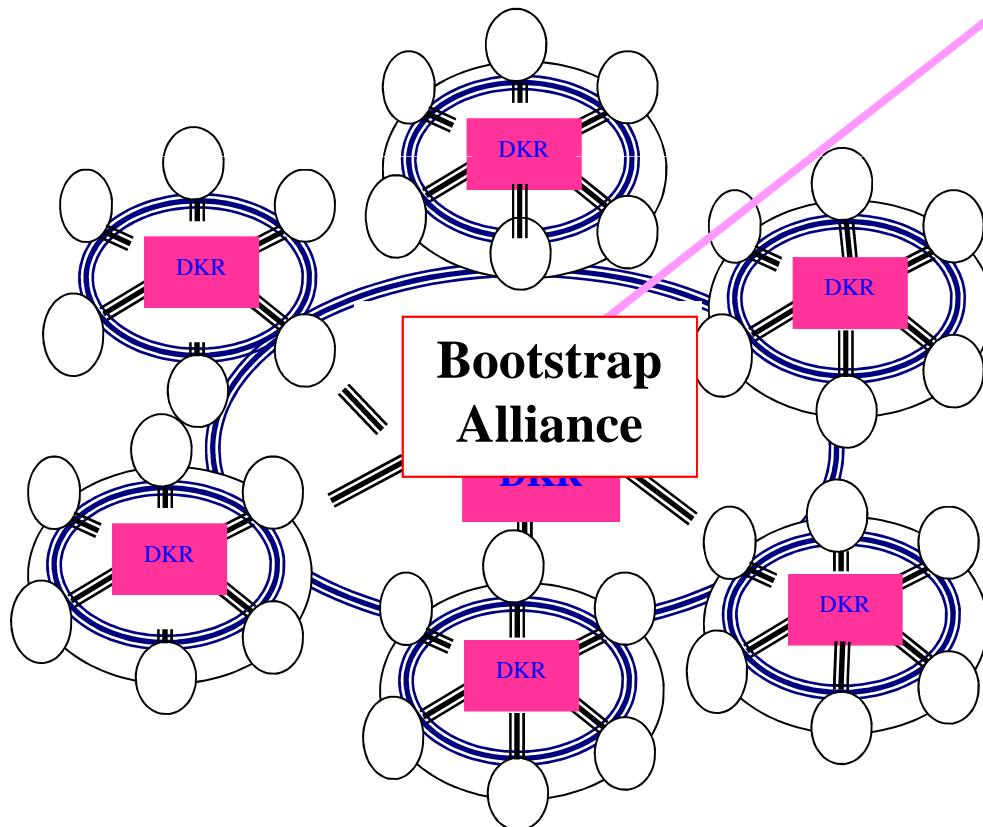
- Investigate & collect intelligence
- Provide collaborative website
- Rich test bed for experimentation

Networked Improvement Community



The Bootstrap Alliance – a Meta-NIC

A NIC whose members are NICs, teaming to improve their respective capabilities to be NICs.

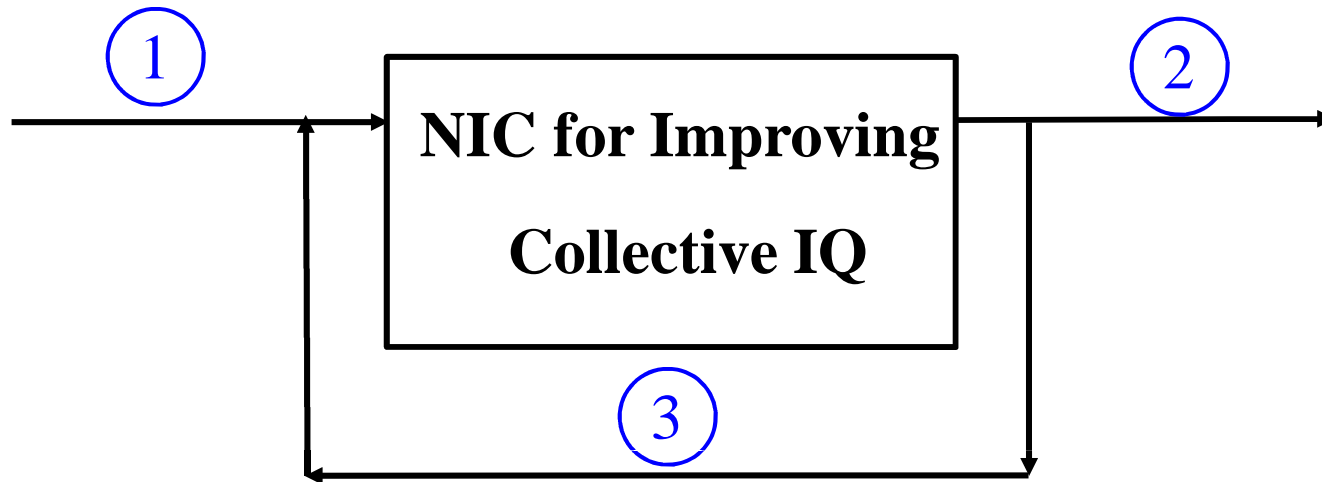


Bootstrap Handbook
Assessment & Metrics
Standards & Audits
Interoperability Standards
DKR Application Support
Training & Education
...

Large-Scale Facilitated Evolution

- Common Goal: Continuous Improvement of **Large-Scale Improvement Capabilities**.
- **Networked Improvement Communities (NICs)** defined around specific areas of interest
- Prime Goal: **Improve Collective IQ of NICs!**
- Organize NICs into a large-scale, ever-improving, **Improvement Infrastructure** for facilitating the **Concurrent Evolution** of the associated **Augmentation Systems**.

Central Strategy: Bootstrapping

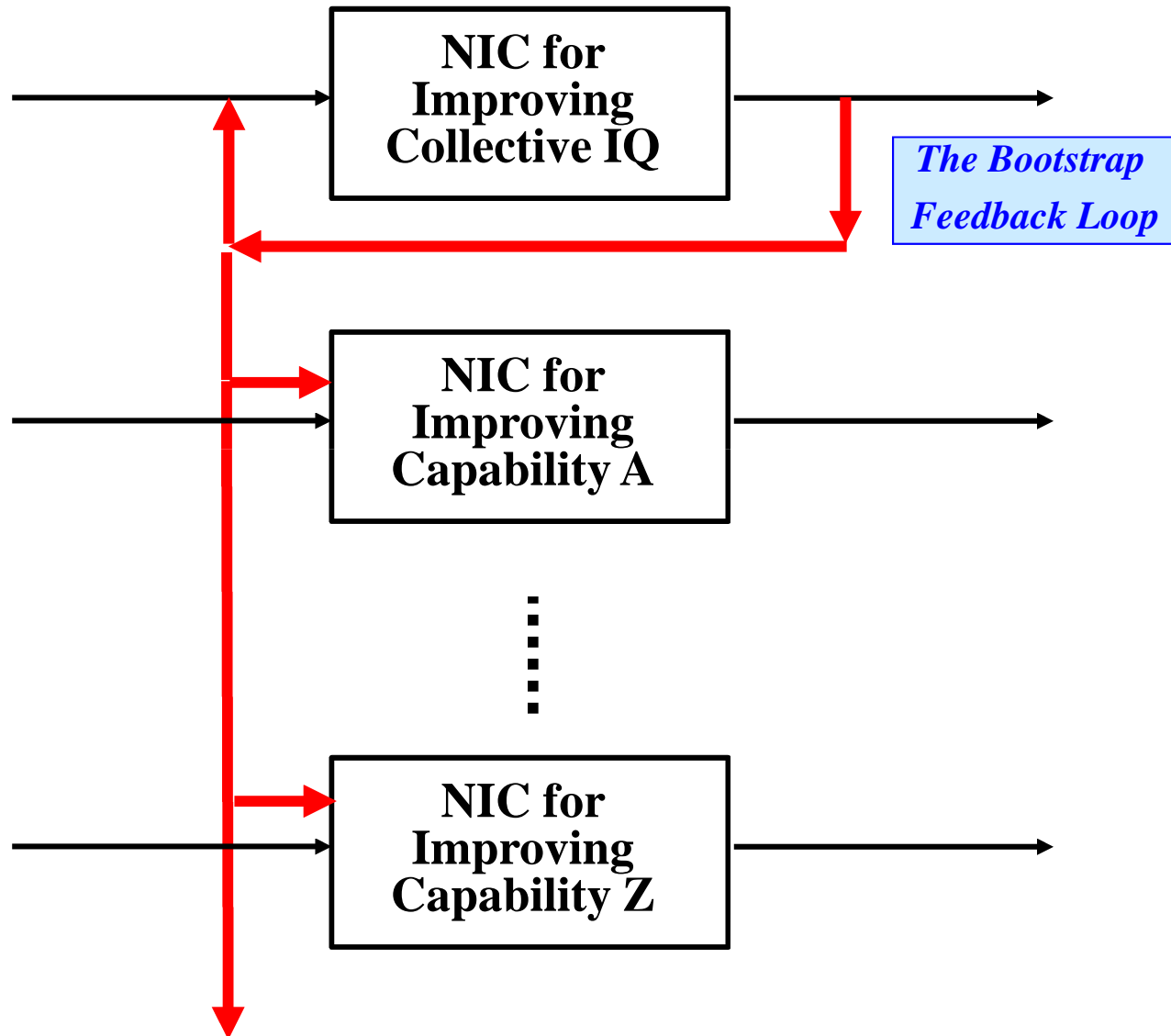


The Bootstrap Feedback Loop

1. Currently available information about Collective IQ
2. Best DKR/knowledge about improving Collective IQ
3. NIC immediately utilizing the best Collective IQ improvement knowledge

The better we get at getting better, the better and faster we'll get better

Bootstrapping: Extension to Many NICs



The Need For An Open Hyperdocument System (OHS)

To support the implementation and use of DKRs

- “Open” - Scalable, evolvable, interoperable across domains
- “Hyper” - To enhance access, maneuverability, and (re)utilization
- “Document” - To capture, integrate, and manage the emerging heterogeneous knowledge
- “System” - Provides a complete “knowledge workshop”

OHS - the critical missing piece

Some things we learned from twenty-five years', active-use evolution of the NLS-AUGMENT System

Prime objective was “Capability,” with a UIS that provided effective evolutionary learning for what steadily extended as a natural-language vocabulary.

Enter a minimum string of characters for each the verb and then the noun – and the system recognizes the intent and automatically fills out the whole-word command expression. So the user knows she has established a well-formed command.

Example: “**EXPERT-User**” **AUGMENT** **Command Verbs for the BASE subsystem** **(Text & File Manipulation)**

- *Act Append Break *Check *Clear
*COMment *CONnect Copy *Create Delete
*DETACH *ENlarge EXECUTE *EXPunge
Force *FReeze Goto Help Insert Jump
Logout Move *Point Print *PROcess Quit
*REName Replace *RESet *REVerse *SEt
*SHow Sort *STArt *STOp *THaw
Transpose *TRIm *TYpe *UNdelete Update
- NOTE: Type the Cap-noted letters (start with SPACE for the “*” terms) and the system will recognize the abbreviation and pop up the full-term command line.

Example: “**EXPERT-User**” AUGMENT Command Nouns for the BASE subsystem (Text & File Manipulation)

- Nouns: Branch Character *DIRective
Directory File Group Invisible Link
Number *Phrase Plex Statement Text
Visible Word
- Type Chars:
dw
mb
jl
- Command Line:
Delete Word
Move Branch
Jump Link

Text-manipulation vocabulary typical for a beginner

Verbs: Copy Delete Help Insert Jump
Logout Move Quit Replace Sort

Nouns: Branch Character File Group
Link Plex Statement Text Word

Example: “EXPERT-User” AUGMENT Verbs & Nouns for the Mail subsystem

- **Verbs:** Answer Copy Delete Forward
Goto Help Jump Logout Move
*Pickup Quit Send *Sort Update
- **Nouns:** All CAtategory *Citation Fields
Message

Expert User Verbs & Nouns for AUGMENT's Table Subsystem (Spread Sheets)

- **Verbs:** *Accumulate *Act Add *Automatic
*Check *Clear *Comment Copy *Create
*Cutoff *Delete Divide *Draw Execute
Fillout Goto Help Insert Jump *Justify Log
*Magnitude *Mean *Move Multiply *Partial
Percent *Point Quit Replace *Reset *Root
*Set *Show *Sort Subtract *Switch Total
*Transpose Update Variance
- **Nouns:** Column Entry Field Line
Modifications Numeric Row Profile Table
Text Viewspecs

Powerful “Macro Commands” significantly extend the power of the AUGMENT user.

- Setting them up becomes quite simple – writing them utilizing the same “Command Language” and the same highly flexible and explicit addressing.
- E.g., evoke this one with four-char call, give it the initials for friend Joe, and it compiles the content filter which will show me all of Joe’s email that I’ve stored in a given file domain.

High-resolution addressability – Basic NLS feature from mid-60s

- Initial purpose, so that one could use a link to cite ANY OBJECT in ANY FILE.
- Then an increasingly flexible and powerful addressing scheme evolved.
- “Open Jumps” began to be supported – e.g., a user can type [Jump Item ph,JS.l](#) which leads to his phone-directory file, then to the node labeled “JS” (for Jim Smith) where there is a simple link leading to the Jim Smith entry.

Why aren't "optional views" a natural part of "Hypertext"?

Besides having computer-held information be "linked" – to whole Documents in the sense that Vannevar Bush's Memex enabled "jumping" to other photo-captured frames ..

Suppose we provide for our computer to re-shape, re-color, re-arrange, etc., our stored information ...

... on the fly, with quick option-actions,

... portraying content in ways that help the human's perceptual machinery better grasp the concepts and their relationships.

Lower-Case-Letter Viewspecs

- a: show one level less
- b: show one level more
- c: show all levels
- d: show first level only
- e: show levels down to reference stat...
- f: recreate window if necessary
- g: show branch only
- h: show all branches
- i: filter statements
- j: don't filter statements
- k: show next filtered statement
- l: show plex only
- m: show statement numbers/SIDs
- ...

Upper-Case-Letter Viewspecs

- A: show level indenting
- B: don't show level indenting
- C: show statement names
- D: don't show statement names
- E: paginate when printing
- F: no paging; recreate display (display)
- G: statement numbers/SIDs right
- H: statement numbers/SIDs left
- I: show SIDs, not statement numbers
- J: show statement numbers, not SIDs
- K: show statement signatures
- L: don't show statement signatures
- O: user sequence generator on
- P: user sequence generator off

.....

Selected Reference Links

- Subset of our pubs that are on the Web:
<http://www.bootstrap.org/institute/bibliography.html>
- – Special interest in Items below:
- #3: Augmenting Human Intellect: A Conceptual Framework. Douglas C. Engelbart. 1962.
- #29: Toward High-Performance Organizations: A Strategic Role for Groupware. Douglas C. Engelbart. 1992.
- #32: A Draft OHS-Project Plan (The HyperScope) Douglas C. Engelbart. 2000

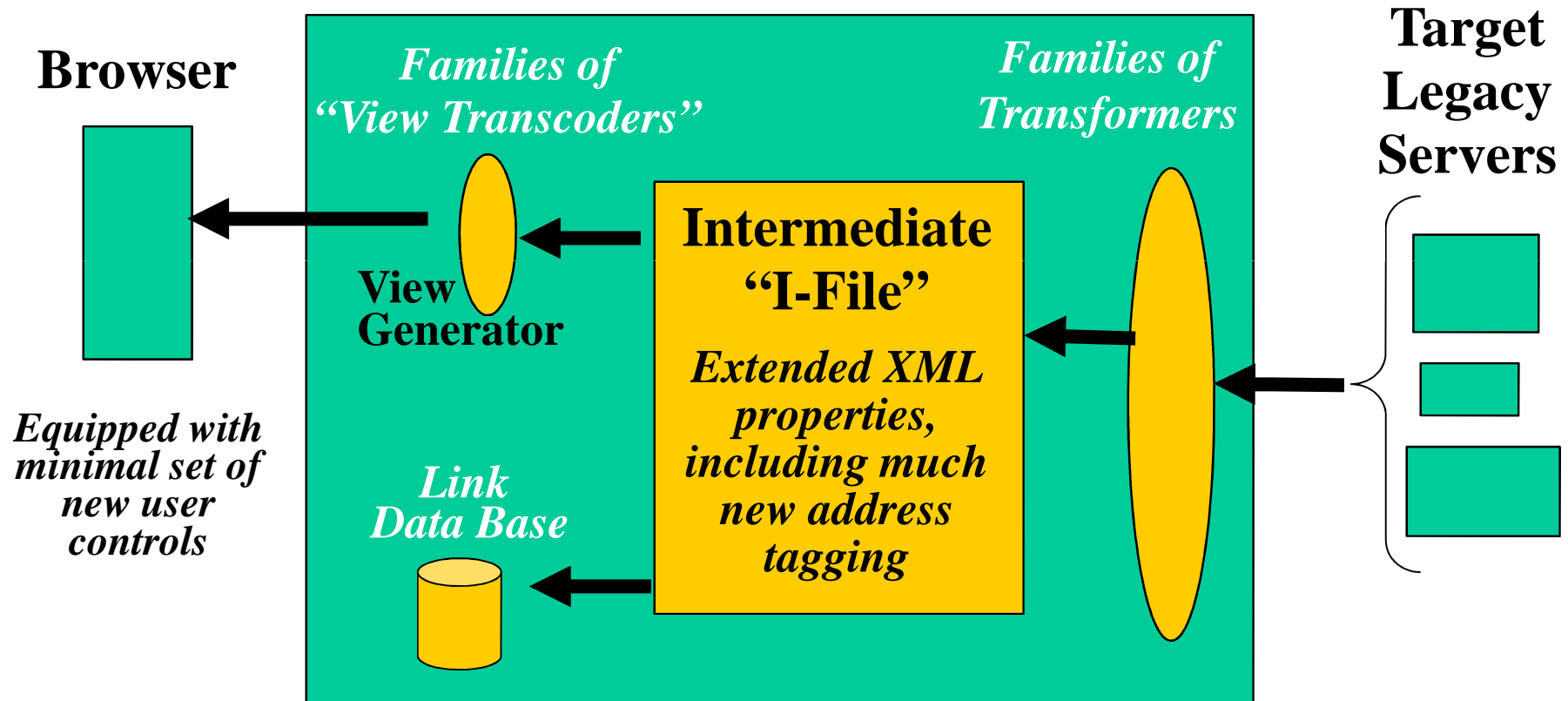
Comparative use of Pub #32

- ... From this Pubs listing:
<http://www.bootstrap.org/institute/bibliography.html>
- ... Let's use the following publication for a brief demo of what HyperScope would do:
- #32: A Draft OHS-Project Plan,
Douglas C. Engelbart, 2000:
<http://www.bootstrap.org/augdocs/bi-2120.html>

Stage 1: OHS-HyperScope Browsing

Over a wide variety of legacy files

- *High-resolution linking*
- *Many viewing options*



And also, hi-resolution linking to audio, video ...

Sample Views: The HyperScope File

<http://www.bootstrap.org/augdocs/bi2120.html>

INTRODUCTION

Large-scale challenges are best served if there are appropriately scaled strategic principles to guide their pursuit. And special value results if the launch plan of a long-term and large-scale strategy produces significant payoff accrual early in the pursuit.

We are addressing the large-scale, pervasive challenge of improving the collective development and application of knowledge. Many years of focussed experience and conceptual development underly the strategic framework guiding this proposal.

Phase-1, OHS Launch Project: HyperScope

Show just paragraphs' first lines

INTRODUCTION

Large-scale challenges are best served if

We are addressing the large-scale,

Phase-1, OHS Launch Project:

Special Note: Implementation of the

The HyperScope will be a lightly modified

A Hyperscope user will be able to follow

Brief Functional Description of Phase-1

Now don't show blanks between lines

INTRODUCTION

Large-scale challenges are

We are addressing the large-scale,
Phase-1, OHS Launch Project: HyperScope

Special Note: Implementation of the

The HyperScope will be a lightly modified

A Hyperscope user will be able to follow

Brief Functional Description of Phase-1

1. In response to what may be an ordinary

For any community seriously interested

2. High-Resolution Addressability:

E.g., here "<http://xxx.xxx.xxx#aaa>"

3. View-Specifications: The HyperScope

Show only the first two levels

INTRODUCTION

Large-scale challenges are

We are addressing the large-scale,
Phase-1, OHS Launch Project:

Special Note: Implementation of the
The HyperScope will be a lightly modified
Brief Functional Description of Phase-1 Phase-
2: Maturing/Evolving the
Evolution of the Intermediary File format
An OHS "User Interface System" (UIS)
Provision for archiving, version control,
Now the VERY important feature of this
And the critical community-development
For the scale of utilization that will be

Show one-line, next-level content of “Brief functional description”

Brief Functional Description of Phase-1

1. In response to what may be an
2. High-Resolution Addressability:
3. View-Specifications: The HyperScope
4. Expanded set of HyperScope
5. Copying-Pasting HyperScope Links:
6. Back-Link Management: Provision will
7. Extended addressing conventions to
8. Same file in multiple windows -- no

Now show only the first level

INTRODUCTION

Phase-1, OHS Launch Project:

Phase-2: Maturing/Evolving the

Phase-3: Special Evolutionary Provision:

OK, show all lines of top-level statements, with blanks between them.

INTRODUCTION

**Phase-1, OHS Launch Project:
HyperScope enhancement of Legacy
Systems:**

Phase-2: Maturing/Evolving the

Phase-3: Special Evolutionary Provision:

Key Launching Step in Creating a NIC's “Knowledge Workshop”

- Co-evolve from NIC's own starting point (legacy technologies, systems, cultures)
- Provide a direct useful entry step for the first stage of the human/tool co-evolution

Bootstrap Project - OHS

- Develop framework for hyperdocument architecture
- Develop framework for the functional tool systems

HyperScope is the smoothest first step, providing the least disruptive, best evolutionary potential

Candidate Legacy Types For HyperScope Interaction

- HTML, e-mail & e-mail archives; Proprietary email Store (Open Office, MS Exchange, Lotus Notes)
- Docbook (XML), UBL documents, MS Word, Open Office Docs, RTF, Blogs
- MS Excel, Open Office Equivalent, PowerPoint, PDF Documents, News (NITF, NewsML)
- Audio and Video records, CAD Systems, Data Bases, Digitized book-page images

What the Link Database Holds

- For every HyperScope link that was actuated into a given I-File, the Link Database will record:
 - the target object
 - the high-resolution location of the link in its “home file”
 - the “link-type designation” embedded in the link syntax (whose significant usage will be part of the new working conventions of HyperScope users)
 - for some link types, also: optionally viewed “content” -- e.g. comments about the targeted object, or highlighting of objects on the targeted document, or even one or more useable links which the reader can exercise

The “Link Data Base”

- Can directly support full-scale “**Argument Structuring**” and its graphic portrayal.
- Including “**Issue-based Information Systems**” (IBIS), tracking the evolution/resolution of issue-oriented dialog
- Records by which back-tracking can determine:
 - “Attribution” for helpful ideas or assessments
 - Isolate bad ideas or problem assessments that steered an issue off target.
- Support more carefully * **scrutinized** * analysis and judgements

Cultivate Special Knowledge-Work Capability-Development Roles

1. Start building KW capabilities using the HyperScope
2. Actively develop role of Knowledge Workshop Architect within Communities of Practice
3. Emphasize their turning their Cs-of-P into NICs -- Networked Improvement Communities

Continuing Evolution towards a Full-Scale Open Hyperdocument System

- Start with the HyperScope
- Extend viewing and linking options
- Add optional User Interface systems – pursuing range from “Pedestrian Users” to highly trained, top-capability users.
- Steady extension of functional utility and corresponding file properties
- Aiming resolutely toward most effective development and maintenance of DKRs, for an increasing array of important knowledge domains.

About High-Performance Teams

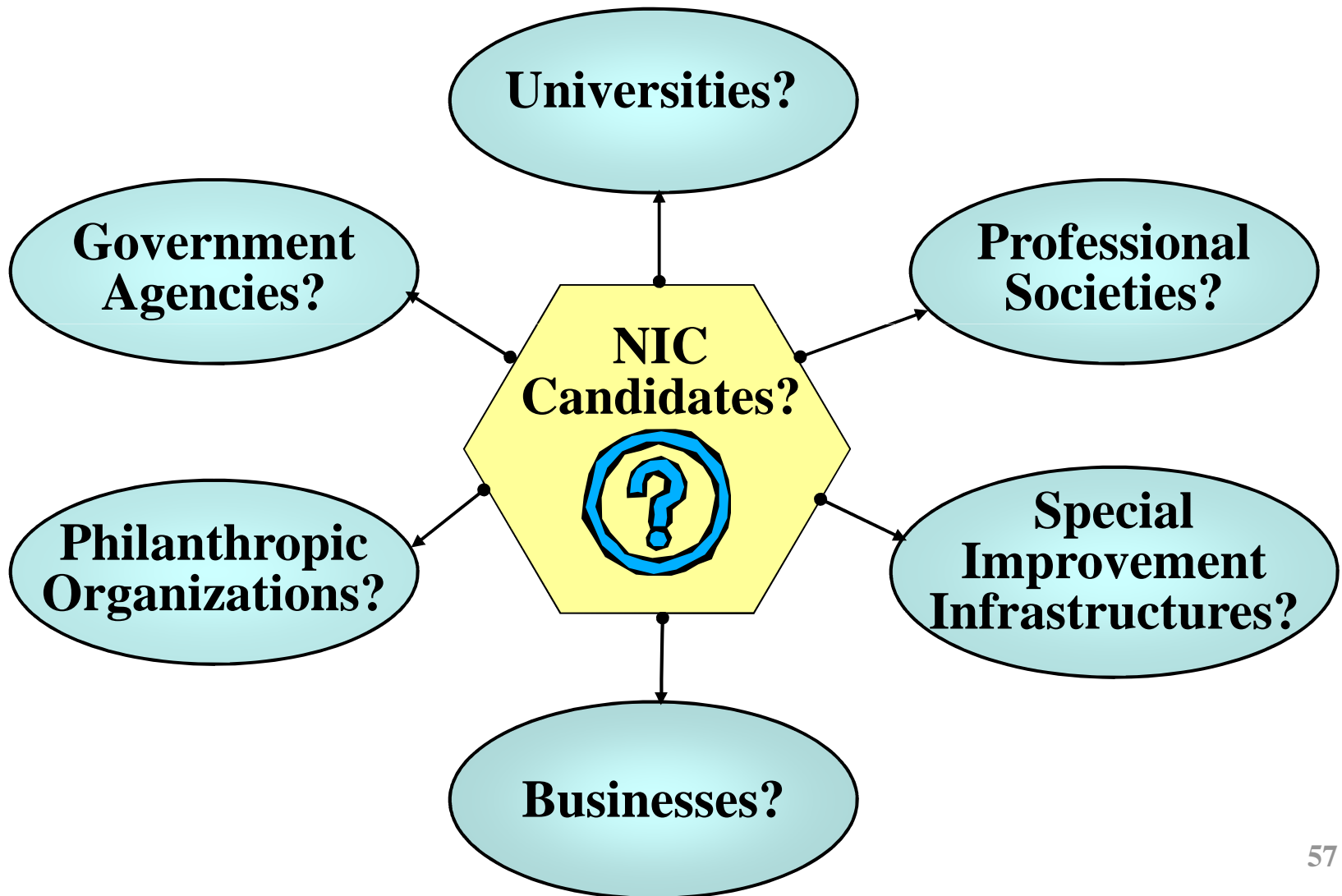
- Explicitly recruited, equipped and trained, as though for competitive performance assessments.
- No limit to the unusual ways in which their fundamental sensory, perceptual, cognitive, motor capabilities are trained, conditioned and harnessed.
- Strategically, seems best at first to be engaged as SUPPORT TEAMS – providing special services to larger teams operating in “current mode.”

Key to our Capability Improvement: High Performance Support Teams

- Support a larger, “conventionally capable” community, organization, or project team.
- Facilitate the CoDIAK processes associated with developing and maintaining its Dynamic Knowledge Repository.
- Special strategic value if HPSTs focus on the CoDIAK “Integration” processes, toward making significant improvements in the effectiveness for “very heavy types of collective knowledge work.”

Towards Effective Facilitation

Where/How to Start the First “real” NICs?



Trial: “Undergraduate NIC?” (UGNIC)

- Fall Quarter at Stanford: series of group presentations, demos and discussions with undergrads — opportunities for individual-projects in subsequent quarters.
- Interesting option to encourage their “clustering” into cooperative UGNIC groups, and see if it could spread in a significant manner among other universities — including other countries.
- Could lead to International UGNICs, UNNICs (University), GNICs (Global), ...

Key, Central Activity: Learning how to build better DKRs

So why not get a bunch of different university groups building prototype DKRs for selected knowledge domains?

In different departments – domains relevant to their study areas ...

In different universities – OK (preferable) to focus on same domains as other universities.

Each university has one special domain: A DKR about DKR development -- to facilitate the learning process about how better to develop and learn from DKRs.

Explore Current State of DKR Development & Use

Study organizations whose challenges are to improve their capability to cope with complex challenges

- How have they organized the knowledge they need to understand best those challenges? Look for examples of candidate DKRs associated with those domains.
 - Body of knowledge associated with domain, e.g. “handbook” or “encyclopedic” concept vs. simply results of Google search
 - Provides the means for skilled participants to use knowledge domain
 - Integrated knowledge, not just a list of sources
- Right now the “best available” might be:
 - the last published “textbook” on that knowledge domain; or
 - current design “status” of a complex product (e.g. design of an aircraft); or
 - the consolidated record of a deliberative group (e.g. standards body, professional society, etc.)
 - others, to be proposed by interested groups

Building, Using & Evaluating DKRs

The DKR is the integrated knowledge domain providing the current state of the frontier for that domain via dynamic integration of any new data observations, questions, proposals, and challenges that reflect the current state of the frontier.

- An appropriately skilled user must be able to follow the reasoning and verifiable data that lead to understanding the updated domain
- Discernible argument structure with linked citations to the specific passages that are components of the structure
- Helps to determine whether or not to accept the assertion made
- DKR updates might change the direction, future thinking, decisions, etc. for a project
- How well does DKR “machinery” support the need to learn about given sub-domains and answer questions

Are there examples of the best available early-model DKRs?
– Accessible and continually evolvable on-line

Challenges for DKR Development & Use: Rationale for Building a DKR of DKR's

- Special sets of skills required for increased capabilities
 - Who will provide the integration & linking of disparate information into the solid, verifiable DKR structures
- Properties & structural principles for DKR knowledge containers will be critical part of DKR evolution
- Dynamic, seamless integration of new data while preserving the DKR's evolutionary history
- Assessment and rating of the organization's capabilities to develop and use its DKRs
- Capability Infrastructure – support a wide range of usage capabilities, e.g. multiple user interfaces that reflect increasing levels of user expertise



Engelbart Papers A to Z (updated 08 Aug 2004)



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THE DEMO

On December 9, 1968, Douglas C. Engelbart and the group of 17 researchers working with him in the Augmentation Research Center at Stanford Research Institute in Menlo Park, CA, presented a 90-minute live public demonstration of the online system, NLS, they had been working on since 1962. The public presentation was a session in the of the Fall Joint Computer Conference held at the Convention Center in San Francisco, and it was attended by about 1,000 computer professionals. This was the public debut of the computer mouse. But the mouse was only one of many innovations demonstrated that day, including hypertext, object addressing and dynamic file linking, as well as shared-screen collaboration involving two persons at different sites communicating over a network with audio and video interface.

The original 90-minute video of this event is part of the Engelbart Collection in Special Collections of Stanford University. This original video has been edited into 35 segments and reformatted as RealVideo streaming video clips. A brief abstract of the subject matter treated in each segment is provided below.

Do we re-define “Hypertext,” or generate a new term? Thoughts about this ...

Everything that technology can help to improve our individual and collective knowledge-work capabilities – i.e. to develop, manipulate, study, share, store, retrieve, etc. our information-bearing “sensory symbols”.

Recognizing that we need to cultivate changes in our skills, procedures, work practices, organizational roles,

Important Hypothesis

There is great potential for developing new ways to stimulate our sensory receptors – even sound and touch, and potentially using direct nerve stimulus – so that trained perceptual responses will more quickly and comprehensively bring meaning into our cognitive processes.

End of Presentation !!

Kick-off: Education NIC (EdNIC)

- EdNIC “start-ups” currently operating in two universities:
 - CSUMB (Professor Valerie Landau)
 - Working on “Bootstrap Hypothesis” from tools & processes perspective
 - Indiana University East (Professor Mary Cooksey)
 - Working on “Bootstrap Hypothesis” from formal logic (epistemology) perspective
- Dialog about DKRs & Facilitated Evolution
- Discover DKRs for areas of interest
- Start working on form & functions for mature EdNICs
- Scout for additional university participants