Boosting Collective IQ

A Design for Dramatic Improvements in Productivity, Effectiveness, and Competitiveness

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The Bootstrap "Paradigm Map"

- Objective
- Capability Infrastructure
- Augmentation System
- Co-Evolution
- Most Payoff
- Investment Criteria
- Improvement Infrastructure
- Bootstrap Strategy
- Continuous Improvement
- Improvement Cycles
- Improvement Community
- Deployment Targets?
- O H S
- Global Interoperability
- Collective IQ

Interconnections:
- Objective to Capability Infrastructure
- Capability Infrastructure to Augmentation System
- Augmentation System to Co-Evolution
- Co-Evolution to Most Payoff
- Most Payoff to Investment Criteria
- Investment Criteria to Improvement Infrastructure
- Improvement Infrastructure to Bootstrap Strategy
- Bootstrap Strategy to Continuous Improvement
- Continuous Improvement to Improvement Cycles
- Improvement Cycles to Improvement Community
- Improvement Community to Deployment Targets?
- Deployment Targets? to O H S
- O H S to Global Interoperability
- Global Interoperability to Collective IQ
- Collective IQ to Continuous Improvement
The Bootstrap "Paradigm Map"

**Objective**

**Capability Infrastructure**

**Augmentation System**

**Co-Evolution**

**Most Payoff**

**Continuous Improvement**

**Investment Criteria**

**Improvement Infrastructure**

**Bootstrap Strategy**

**Collective IQ**

**Improvement Cycles**

**Deployment Targets?**

**O H S**

**Global Interoperability**

**OBJECTIVE**

High-Performance Organizations
The Bootstrap "Paradigm Map"

APPROACH

Focus on the Capability Infrastructure
The Bootstrap "Paradigm Map"

Objective
Capability Infrastructure
Augmentation System
Co-Evolution
Most Payoff
Continuous Improvement
Investment Criteria
Improvement Infrastructure
Bootstrap Strategy
Collective IQ

Objective

Continuous Improvement

Improvement Cycles

Deployment Targets?

O H S

Global Interoperability

Human System

Tool System

Approach
Whole-System Augmentation

Infrastructure Augmentation
System Co-Evolution
Most Payoff
Investment Criteria
Improvement Infrastructure
Bootstrap Strategy
Collective IQ
The Bootstrap "Paradigm Map"

Objective

Continuous Improvement

Improvement Cycles

Improvement Community

Capability Infrastructure

Deployment Targets?

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APPRAOCH

Pragmatic Co-Evolution
The Bootstrap "Paradigm Map"

Step-wise vs. Compounded ROI

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The Bootstrap "Paradigm Map"

Objective → Capability Infrastructure → Augmentation System → Co-Evolution → Most Payoff

Continuous Improvement

Improvement Cycles

Improvement Community

Deployment Targets?

O H S

Global Interoperability → Collective IQ

Investment Criteria

STRATEGIC QUESTION

What would yield the compounded ROI?
The Bootstrap "Paradigm Map"

STRATEGIC TARGET

Faster, smarter "improvement cycles"
Objective

Capability Infrastructure

Augmentation System

Co-Evolution

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The Bootstrap "Paradigm Map"

COMPOUNDING ROI

Targeting Collective IQ

• Boosts Product Cycle
• Boosts Improvement Cycle
Objective -> Capability Infrastructure -> Augmentation System -> Co-Evolution -> Most Payoff

Continuous Improvement

Improvement Cycles

Improvement Community

Deployment Targets?

O H S

Global Interoperability

Collective IQ boosting by:

CoDIAK

Concurrently Developing Integrating & Applying Knowledge

The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

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Collective IQ

CHALLENGE

Global Interoperability

for collective use

Improvement Cycles

Deployment Targets?

O H S
The Bootstrap "Paradigm Map"

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Open Hyperdocument System

Critical missing piece of the tool system
The Bootstrap "Paradigm Map"

Objective
Capability Infrastructure
Augmentation System
Co-Evolution
Most Payoff

Continuous Improvement

Improvement Cycles
Improvement Community

Deployment Targets?

QUESTION

Best targets for deploying new capabilities?
The Bootstrap "Paradigm Map"

ANSWER

Advanced Pilots
especially within
Networked Improvement Communities
The Bootstrap "Paradigm Map"

RESULTS!

Smarter and Faster:
- Product Cycles
- Improvement Cycles

= Compounded ROI
The Bootstrap "Paradigm Map"

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Continuous Improvement

Improvement Cycles

Improvement Community

Deployment Targets?

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Global Interoperability

Ever accelerating continuous improvement!
The Bootstrap "Paradigm Map"

OBJECTIVE

High-Performance Organizations
Objective

- Coping with complexity and urgency collectively

- High performance
  - Individuals
  - Teams
  - Organizations
  - Regions

- Improvement Strategy
  - Boosting Collective IQ
  - Boosting Improvement Infrastructure
  - Networked Improvement Communities
The Bootstrap "Paradigm Map"

Objective

• Coping with complexity and urgency collectively

• High performance

• Improvement Strategy

Continuous Improvement

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

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Improvement Cycles

The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

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Collective IQ

APPROACH

Focus on the Capability Infrastructure
Solving large-scale problems requires collective capability
The Whole Augmentation System

Human System
- Paradigms
- Organizations
- Procedures
- Customs
- Methods
- Language
- Skills
- Knowledge
- Learning
- Attitudes

Capability Infrastructure

Tool System
- Facilities
- Media
- Tools
- Machinery
- Vehicles
- etc.

Whole Augmentation System

The Whole Augmentation System
Augmentation System

Capability Infrastructure fed by the Human / Tool Augmentation System
The Bootstrap "Paradigm Map"

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HUMAN System

Paradigms
Organizations
Procedures
Customs
Methods
Language
Skills
Knowledge
Learning
Attitudes

TOOL System

Facilities
Media
Tools
Machinery
Vehicles
etc.

Capability Infrastructure

Collective IQ
The Bootstrap "Paradigm Map"

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APPROACH
- Pragmatic
- Co-Evolution
The Co-Evolution Frontier

Where is your organization today?

20 Years

Anticipatable Today

Tools System Improvement

Human System Improvement

Anticipatable Today

Here?

Anticipatable Today

20 Years

Where is your organization today?

The Co-Evolution Frontier
The Co-Evolution Frontier

Or, is this more like it?

Anticipatable Today

20 Years

Human System Improvement

Tools System Improvement

The Co-Evolution Frontier

Or, is this more like it?
The Co-Evolution Frontier

Or this? (more probable)

Anticipatable Today

20 Years

Human System Improvement

Tools System Improvement

Anticipatable Today

20 Years
Outposts on the Co-Evolution Frontier

Who will be the trailblazers?

20 Years

Anticipatable Today

Tools System Improvement

Human System Improvement

20 Years

Who will be the trailblazers?
The Bootstrap "Paradigm Map"

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- Today’s Frontier
- Penetration
- Anticipatable Today
- 20 Years

- Human System
- Tools System
The Bootstrap "Paradigm Map"

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Step-Wise vs. Compounded ROI
The Bootstrap "Paradigm Map"

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Investment Criteria

Bootstrap Strategy

Improvement Infrastructure

STRATEGIC QUESTION

What would yield the compounded ROI?
The Bootstrap "Paradigm Map"

STRATEGIC TARGET
Faster, smarter "improvement cycles"
Simple Organizational Model
Simple Organizational Model
Simple Organizational Model

A
Core Business Activity

B
Improves A's Capabilities

Showing explicit provision for
Improving product cycle

There should be a
permanent "continuous improvement"
B activity (as for TQM)

Simple Organizational Model
Goals of B and C Activities

A
Core Business Activity

B
Improves A's Capabilities

C
Improves B's Capabilities

Improving Product Cycle

Improving Improvement Cycle
Pushing the Frontier Requires Collaboration

INTEGRATING:
- Input, feedback
- Evolving requirements
- Lessons learned
- Evaluations

TRANSFERRING:
- Paradigm shifts
- Pilots
- Best practices
- Support
The Bootstrap "Paradigm Map"

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- Bootstrap Strategy
- Improvement Infrastructure

A - Core Business Activity
B - Improves A's Capabilities
C - Improves B's Improvability

The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

Compounding ROI

Targeting Collective IQ
- Boosts Product Cycle
- Boosts Improvement Cycle

Bootstrap Strategy
The Goals of B and C Activities

- **A**: Core Business Activity
- **B**: Improves A's Capabilities
- **C**: Improves B's Capabilities

- Improving Product Cycle
- Improving Improvement Cycle

The Goals of B and C Activities:

- **A** Core Business Activity
  - Improves A's Capabilities
- **B** Improves A's Capabilities
  - Improves B's Capabilities
- **C** Improves B's Capabilities

The Goals of B and C Activities:

- Improving Product Cycle
- Improving Improvement Cycle
Extra Bootstrapping Leverage

Leveraging gains in collective IQ at multiple levels of the organization yields compounding ROI.
The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

Objective -> Capability Infrastructure -> Augmentation System -> Co-Evolution -> Most Payoff

Continuous Improvement

Collective IQ Boosted By:

CoDIAK

Concurrently Developing Integrating & Applying Knowledge

Investment Criteria -> Improvement Infrastructure

Bootstrap Strategy

Collective IQ

Improve Improvement Cycles

Improvement Community

Deployment Targets?

O H S

Global Interoperability
Collective IQ:
How well people work collectively

Collective IQ:
How quickly and intelligently people can respond to a situation collectively...

Leveraging their collective:
- memory
- perception
- planning
- reasoning
- foresight
- experience

into applicable knowledge

Organizational Unit of any size

How well people work collectively...
Engaged in Basic Knowledge Processes

External Environment

Interacting  Ingesting  Scanning

CONCURRENTLY:
• Assessing
• Digesting
• Integrating
• Collaborating
• Developing
• Applying
• Learning
• (Re)using

A Dynamic Knowledge Repository (DKR) emerges
Engaged in Basic Knowledge Processes

**External Environment**

- **Interacting**
- **Ingesting**
- **Scanning**

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

**Graphical Representation:**
- Reports
- Contracts
- Plans
- Source Code
- Lessons Learned
- Mtg Records
- Email
- Commentary
- Intelligence
Useful Categorization of the Evolving Knowledge Base

External Environment

Recorded Dialogue
- Memos
- Mtg. Records
- Rationale
- Commentary
- Change requests

External Intelligence
- Papers, Books
- News
- Proceedings
- Brochures
- Surveys

Knowledge Products
- Plans
- Proposals
- Reports
- Specifications
- Source Code

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

CONCURRENTLY:
• Assessing
• Digesting
• Integrating
• Collaborating
• Developing
• Applying
• Learning
• (Re)using
Collective IQ Depends on CoDIAK

External Environment

- Interacting
- Scanning
- Ingesting

Recorded Dialog
- Memos
- Mtg. Records
- Rationale
- Commentary
- Change requests

External Intelligence
- Papers, Books
- News
- Proceedings
- Brochures
- Surveys

Knowledge Products
- Plans
- Proposals
- Reports
- Specifications
- Source Code

CONCURRENTLY:
- Developing
- Integrating
- Applying Knowledge

Collective IQ Depends on CoDIAK

Interacting
Ingesting
Scanning
Concurrently Amplified by Interacting Knowledge Domains
The Bootstrap "Paradigm Map"

Objective → Capability Infrastructure → Augmentation System → Co-Evolution → Most Payoff

Continuous Improvement → Improvement Cycles → Improvement Community

Improvement Cycles → Deployment Targets? → O H S → Global Interoperability

External Environment

Concurrently:
- Developing
- Integrating
- Applying Knowledge

Collective IQ
The Bootstrap "Paradigm Map"

Objective
Capability Infrastructure
Augmentation System
Co-Evolution
Most Payoff

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Improvement Cycles
Improvement Community
Deployment Targets?
O H S

Global Interoperability

CHALLENGE
Global Interoperability for collective use

Investment Criteria
Improvement Infrastructure
Bootstrap Strategy
Collective IQ
Example: Manufacturing Organization

- Management
- Customers
- Marketing
- Financial
- Legal
- Procurement
- Joint-Venture Partners
- Engineering
- Manufacturing
- Quality
- Suppliers
- Subcontractors

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
The Bootstrap "Paradigm Map"

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

Most Payoff

Continuous Improvement

Investment Criteria

Improvement Infrastructure

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Deployment Targets?

O H S

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Deployment Targets?

O H S

Global Interoperability

Collective IQ

The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

Open Hyperdocument System

Critical missing piece of the tool system
OHS Technology
Boosting Collective IQ

Dynamic Knowledge Development

HUMAN SYSTEM

TOOL SYSTEM
OHS Enabling Technology

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

Shared knowledge-work environment

Shared Files
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Structured Multi-Media Document

Shared knowledge-work environment

OHS for Basic Collaborative Knowledge Work
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Link to Any Object in Any File
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Multiple Views of a Document

Shared knowledge-work environment

Document A: 1

Document A: 2

Document A: 3

OHS for Basic Collaborative Knowledge Work
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Rapid, Direct Navigation

Shared Files

Shared knowledge-work environment
OHS for Basic Collaborative Knowledge Work

Taking turns as the “designated driver”
“Let’s work on this together!” – “OK”

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

CoDIAK Example

Shared knowledge-work environment

Special architectural feature for working together as if side by side

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

CoDIAK Example
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

User Extensibility

Shared Files

Shared knowledge-work environment
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example
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 …
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example
Email Document

Mail Draft

To: terry.org
Cc: lane.org
Subject: Project

Message:
Attach <Doc-X>

Example:
Posting a document in the Journal
Example:
Posting a document in the Journal
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Shared knowledge-work environment

E-Mail

Shared Files

Catalog
- Journal
- Ext.Docs

Journal (Library)

External Docs (Offline)

Shared knowledge-work environment

Structured

Object linking

Viewing

Browsing

Shared Screens

Scripting

CoDIAK Example

Example
OHS for Basic Collaborative Knowledge Work

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

CoDIAK Example

Basic CoDIAK Support

Shared knowledge-work environment

Intelligence
Data

Knowledge
Products

Dialog

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

CoDIAK
Example
Document Support

For Groups & Individuals

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

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
Document Support

For Groups & Individuals

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

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
Document Support

For Groups & Individuals

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

AUTHORSHIP PROVISIONS IN AUGMENT

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Authorship has received a great deal of
We recognize explicitly that highly skilled
In this regard, our design goal was to provide
An implicit 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
AUTHORSHIP PROVISIONS IN AUGMENT

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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

Shared knowledge-work environment

Catalog
- Journal
- Ext. Docs

E-Mail

- Mtg Records
- Email
- Plans
- Proposals
- Lessons Learned
- Intell

Source Code

Commentary

Contracts

Rationale

OHS: to Support CoDIAK Work Processes and DKRs

Processes and DKRs

Rationale

Mtg Records

Email

Lessons Learned

Intell

Proposals

Plans

Catalog
- Journal
- Ext. Docs
OHS Represents a Paradigm Shift

FROM

• Tool-centric system
• Function-oriented tool / system
• Authoring and Publishing
• Isolated passive libraries and archives
• One user class: "easy to use"

TO

• Document-centric system
• Integrated end-to-end knowledge management environment
• Developing, integrating, & applying knowledge
• Active "living" libraries seamlessly integrated within the organization's work processes
• Many classes of user: Pedestrian to high performance
OHS Represents a Paradigm Shift (cont.)

**FROM**

- File-level addressability
- "Load & scroll browsing" in WYSIWYG or outline view modes
- Windows tied to a file and to the application used
- Each application has unique file design

**TO**

- Object-level addressability
- "Precision browsing" Jumping directly to any object in any file with on-the-fly custom views
- Windows are a portal onto a file repository; a variety of applications may be used on any file
- 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

Continuous Improvement

Improvement Cycles

Improvement Community

Deployment Targets?

Shared knowledge-work environment

"Throw-Away" E-Mail

Shared Files

Catalog

Journal

Journals (Library)

External Docs (Offline)

Global Interoperability

O H S

Bootstrap Strategy

Investment Criteria

Improvement Infrastructure

Collective IQ
The Bootstrap "Paradigm Map"

**QUESTION**

Best targets for deploying new capabilities?
Pushing the Frontier Requires Aggressive Co-Evolution

Dynamic Knowledge Development

HUMAN SYSTEM

TOOL SYSTEM
Increasing Organizational Capability

Mode 1

Distribution of Capability throughout an Organization

Knowledge Capability Level

Increasing Organizational Capability
Increasing Organizational Capability
Mode 2

Distribution of Capability throughout an Organization

Knowledge Capability Level

Mode 2

Increasing Organizational Capability
Increasing Organizational Capability

Mode 3

Distribution of Capability throughout an Organization

Knowledge Capability Level

3
Increasing Organizational Capability
Mode 4

Distribution of Capability throughout an Organization

Knowledge Capability Level

4

Continuous Improvement

Collective IQ

Global Interoperability

O H S Deployment Targets?

Improvement

Community Improvement Cycles

Bootstrap Strategy

Investment Improvement

Most Payoff

Augmentation System

Infrastructure Improvement

Co-Evolution Capability

Objective
Multi-Faceted Deployment Strategy
The Bootstrap "Paradigm Map"

- Objective
- Capability Infrastructure
- Augmentation System
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- Most Payoff

- Continuous Improvement
- Improvement Cycles
- Improvement Community

- Distribution of Capability throughout an Organization

- Deployment Targets?
- O H S
- Global Interoperability
- Collective IQ

- Investment Criteria
- Improvement Infrastructure
- Bootstrap Strategy

- Collective IQ
The Bootstrap "Paradigm Map"

ANSWER

Advanced Pilots
especially within
Networked Improvement Communities
Goals of B and C Activities

A
Core Business Activity

B
Improves A's Capabilities

C
Improves B's Improvability

Improving Product Cycle

Improving Improvement Cycle
Networked Improvement Communities

1

2

n

A

B

A

B

A

B

Improvement Alliance

Collaborative "C" Activities

Bootstrapping Leverage
Bootstrapping: Strategic Investment Criteria

What to Improve?

1. Doing Group Knowledge Work
2. Transferring (↑)
3. Integrating (↓)
Core C-Community Capability

To integrate, analyze, and portray multiple-source contributions to its knowledge base

- From their B & A activities
- From External Environment
- From Internal C Community
Partner Orgs Get Unique Value

1. Direct experience with an advanced pilot activity.
2. Direct online access to extensive knowledge base.
3. Continuous dialog and knowledge transfer.
The Bootstrap "Paradigm Map"

RESULTS!

Smarter and Faster:

- Product Cycles
- Improvement Cycles

= Compounded ROI
The Bootstrap "Paradigm Map"

- Objective
- Capability Infrastructure
- Augmentation System
- Co-Evolution
- Most Payoff
- Improvement Criteria
- Improvement Infrastructure
- Bootstrap Strategy
- Collective IQ
- Continuous Improvement
- Improvement Cycles
- Deployment Targets?
- O H S
- Global Interoperability

Ever accelerating continuous improvement!
Objective

• Coping with complexity and urgency collectively
• High performance
• Improvement Strategy
The Bootstrap "Paradigm Map"

- Objective
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- Co-Evolution
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- Improvement Cycles
- Improvement Community
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- Collective IQ

HUMAN System
- Paradigms
- Organizations
- Procedures
- Customs
- Methods
- Language
- Skills
- Knowledge
- Learning
- Attitudes

TOOL System
- Facilities
- Media
- Tools
- Machinery
- Vehicles
- etc.
The Bootstrap "Paradigm Map"

Step-Wise vs. Compounded ROI

- Objective
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- Augmentation System
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- Improvement Cycles
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The Bootstrap "Paradigm Map"

**Objective**

**Capability Infrastructure**

**Augmentation System**

**Co-Evolution**

**Most Payoff**

**Investment Criteria**

**Continuous Improvement**

**Improvement Cycles**

**Deployment Targets?**

**O H S**

**Global Interoperability**

**Collective IQ**

**STRATEGIC QUESTION**

What would yield the compounded ROI?
The Bootstrap "Paradigm Map"

- Objective
- Capability Infrastructure
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- Improvement Infrastructure

A: Core Business Activity
B: Improves A's Capabilities
C: Improves B's Improvability

The Bootstrap "Paradigm Map" illustrates the relationship between different aspects of business and development, focusing on how improvements in one area can augment others, leading to overall enhancement.
The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

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External Environment

CONCURRENTLY:
- Developing
- Integrating
- Applying Knowledge
The Bootstrap "Paradigm Map"

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- Co-Evolution
- Most Payoff

- Continuous Improvement
- Investment Criteria
- Improvement Infrastructure
- Bootstrap Strategy

- Improvement Cycles
- Improvement Community

- Deployment Targets?
- O H S

- Global Interoperability

- 4000 Third-Tier Suppliers
- 2000 Second-Tier Suppliers
- 200 First-Tier Suppliers

Targeted areas include 4000 Third-Tier Suppliers, 2000 Second-Tier Suppliers, and 200 First-Tier Suppliers.

Bootstrap "Paradigm Map" focuses on enhancing infrastructure, system co-evolution, and maximizing payoff through investment criteria.
The Bootstrap "Paradigm Map"
The Bootstrap "Paradigm Map"

- Objective
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- Collective IQ

Distribution of Capability throughout an Organization
The Bootstrap "Paradigm Map"

Objective

Capability Infrastructure

Augmentation System

Co-Evolution

Most Payoff

Continuous Improvement

Improvement Cycles

Improvement Community

Deployment Targets?

O H S

Global Interoperability

Collective IQ

Investment Criteria

Improvement Infrastructure

Bootstrap Strategy

Networked Improvement Community

Improvement Alliance

Collaborative "C" Activities
The Bootstrap "Paradigm Map"

RESULTS!

Smarter and Faster:
- Product Cycles
- Improvement Cycles

= Compounded ROI
The Bootstrap "Paradigm Map"

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Ever accelerating continuous improvement!
The Bootstrap "Paradigm Map"

Objective -> Capability Infrastructure -> Augmentation System -> Co-Evolution -> Most Payoff

Continuous Improvement

Improvement Cycles

Deployment Targets?

O H S

Global Interoperability

Collective IQ

Investment Criteria

Improvement Infrastructure

Bootstrap Strategy
End of Slideshow

Extra Slides and Photos Follow
Candidate NICs
Targeting Improvements In:

- External Intelligence: gathering; integration
- Comprehensive Scenario Development
- Enterprise Process Modeling
- Knowledge Management / Intellectual Capital
- Full-Enterprise CoDIAK -- and Global OHS
- Total Quality
Pilot Deployment Candidates

• Communities of agencies cooperating toward improving capabilities of, e.g.:
  • Procurement
  • Budgeting
  • Large-Project Management
  • Generic Knowledge-Work
  • AND ESPECIALLY: Planning and implementing internal capability improvements
And what does the Bootstrap Alliance propose to do?

- Evolve into a NIC that supports a (growing) community of NICs -- a TurboNIC (MetaNIC, SuperNIC)

- With a smallest core of fixed staff

- Developing this as a high-performance virtual organization
Bootstrap Alliance Website

Where to find us on the World Wide Web:

http://www.bootstrap.org
The Alliance Idea

Sharing Solutions:

Gov't
- other
- USAF
- CIA
- GSA

Industry
- Conoco
- NTT
- Netscape
- Sun

Universities
- other
- Berkeley
- CMU
- Stanford

Not-for-profit
- other
- ASIS
- IFTF
- ETF

Initiatives
- other
- A.C.
- Koop Hll
- Kellogg

"C" Level Cooperative

• Common Challenges, Issues, Requirements
• Share Advice, Strategies, Lessons learned

Note: Representative organizations that have indicated an interest in this approach.
Photos
2. First Mouse
3. Knee Control
4. Keyset
5. Keyset Code

One-Handed, Chord Keyset:

Code for “a”

b

c
d
e
f
g
h
x
y
z
6. C-supported Meeting (1967)
7. Martin with CRT Display Module (1968)
8. Jake with Display Generator System
9. Lab-type Workstation
10. Duvall at "Yoga" Workstation
Last slide @ 122
The Bootstrap "Paradigm Map"
I redrew this slide, thought to keep a copy here just in case.