Building and Maintaining Virtual Teams

or

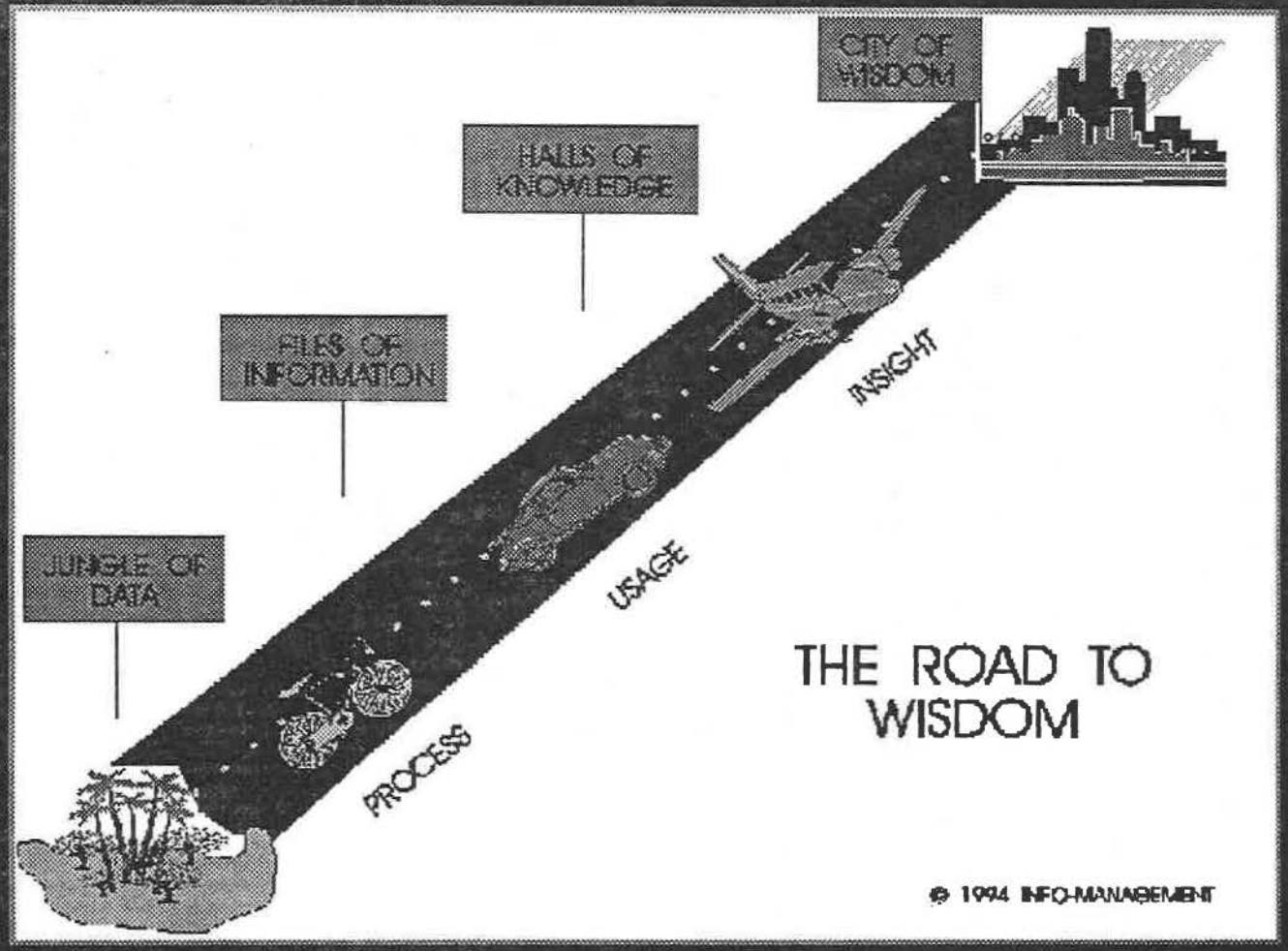
The Last Information Manager

or

The First Knowledge Manager

HRN, 18Jun95

Documentation Paves The Road to Wisdom



The Last Information Manager, The First Knowledge Manager

18 June 1995

Los Aamedas Restaurant, Houston, TX

CONOCO
Knowledge Managers

HyperMedia Corporation

an invited presentation by:

H. Roice Nelson, Jr.

with materials and support from:

Ned Butler, Mining and Petroleum Geology Studies
Laura Kay Ethetton, Risk and Economic Analysis
Jeff Hume, Seismic Acquisition and Processing QC
Merrill Littlewood, Asset Acquisition and Dispersal
Evan Pappas, Computer Based Training and Simulation
Laura J. Pankonien, Technical Writing and Marketing
Charley Rego, Indexing using Work Breakdown Structures
Dan Shaughnessey, Seismic Interpretation
Blaine Taylor, Information Management
Walt Turpening, Environmental and Connectivity Geophysics

for:

A Global Contingency of Information Managers from

Conoco

18 June 1995

Los Alamedas Restaurant
Houston, Texas

HyperMedia Corporation
unlocking information barriers

HRN, 18Jun95

•11767 Katy Freeway, Suite 330 • Houston, TX 77079-1711• WWW: http://www.hypermedia.com •
• Phone (713) 293-0325 • Fax (713) 293-9662 • INTERNET: info@hypermedia.com •

Theme

Don't Re-engineer

Sharpen your Focus

HRN, 18Jun95

Objective

Project Agility

where Agility is the ability of a team to reconfigure rapidly and to respond effectively to unanticipated change, thriving in a continuously changing, unpredictable environment.

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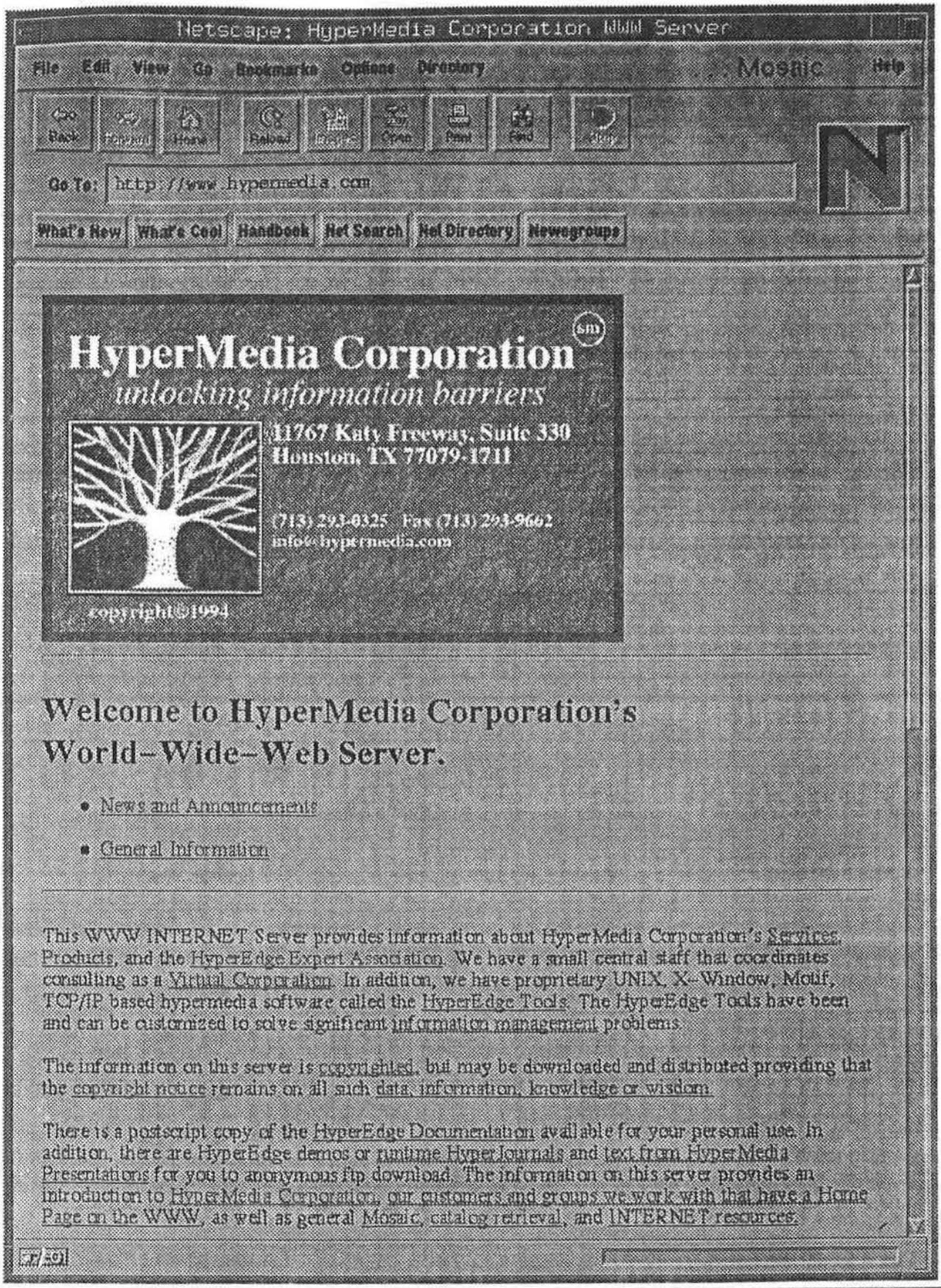
Find Opportunities

"The Network is the Computer"

This identification process assumes that some agent or broker has the charter to

- **Identify Possible Opportunities**
  - **Walking Databases**
  - **World-Wide-Web**
- **Refine Opportunities**
- **Characterize Opportunities**



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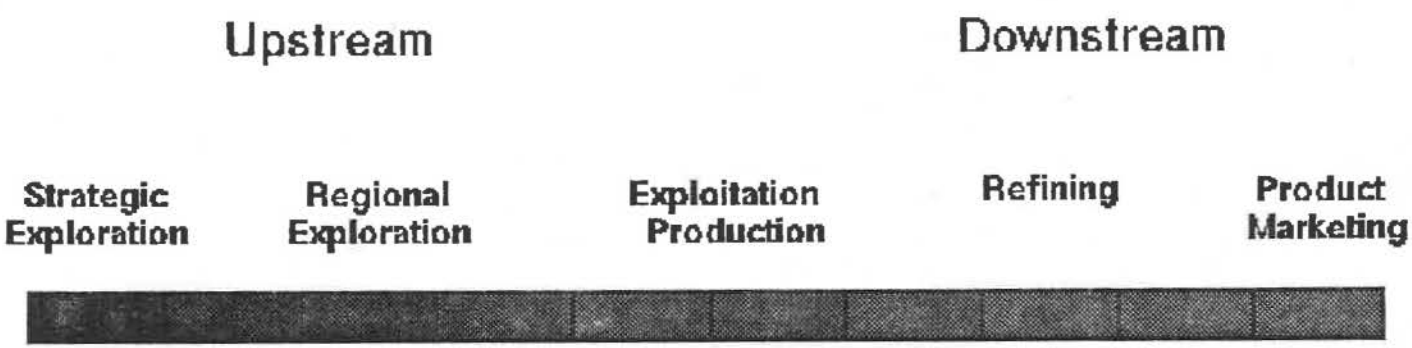
Identify Possible Opportunities

Autonomous Agents

Agent-Based Technologies and/or Embedded Documentation and Indexing improve agility.

- **Agents can be deployed incrementally to upgrade and eventually replace legacy systems.**
- **Agents can self-configure, without extensive programming.**
- **Communities of Agents can reorganize dynamically in the face of individual failure or changing demands.**
- **Agents are a natural extension of recent developments in hardware and software technologies.**
- **Smart Libraries become active partners to humans and help flatten organizations.**

. . . Information Spectrum



Predominantly Hardcopy	Media Types	Predominantly Digital
Long (Forever)	Data Life	Short
Predominantly Concepts,Ideas	Data Type	Predominantly Measurements

Agents and Conventional IMS

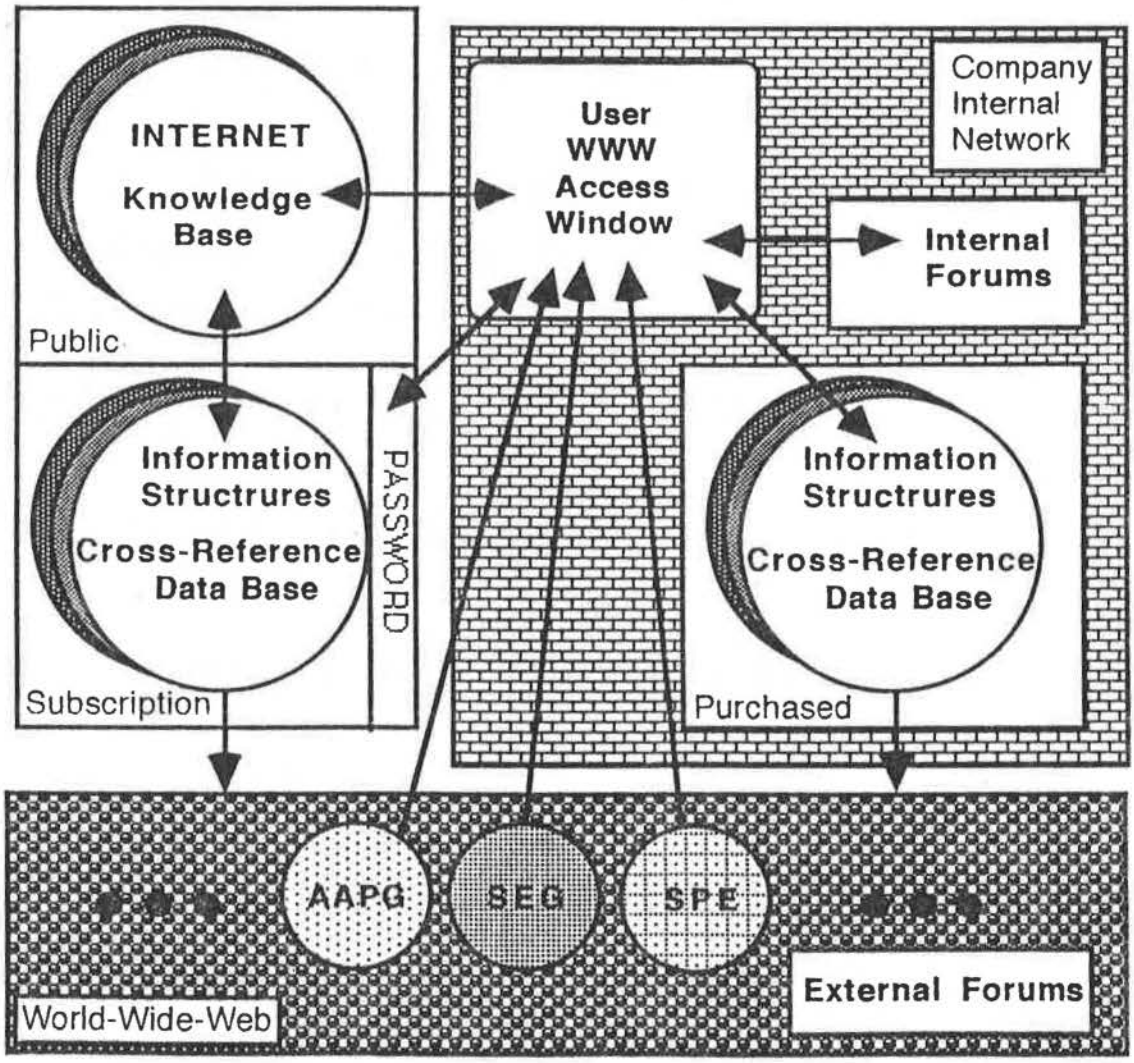
Agent-Based Technologies differ in respect to centralization, hierarchy, and sequentiality.

- **Conventional systems are centralized. Agent architectures reflect the natural distribution of data and control code.**
- **Control usually moves through a conventional system from the top down in a hierarchical pattern. Agent controllers respond directly to local conditions, deciding not only how to act and what actions to take, but also when to initiate their own activity.**
- **In conventional systems, scheduling and control take place sequentially. Local autonomy allows delivery requirements to be met without computing a detailed schedule in advance and then passing it on for execution.**

Characterize Opportunities

On-Line Geotechnology

Collaborative Forums



Plan Project

A Projects' Origin

After identifying possible opportunities, the agent or someone they inform organizes the Virtual Team.

Ideally this agent or broker will be

- **self-organizing**
- **use distributed information**
- **entertain many types of opportunities at low cost**
- **employ a reusable set of tools and infrastructure**

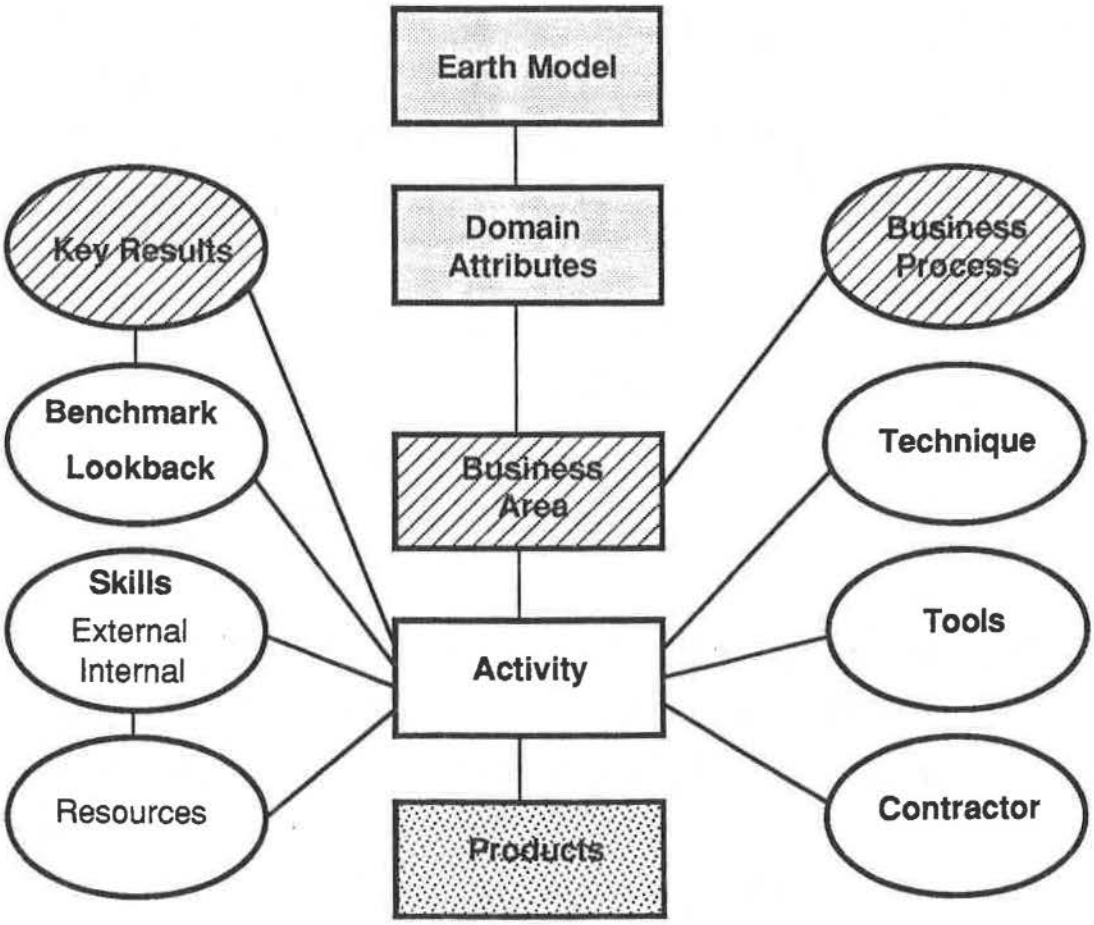
Exploit Opportunities

Job Security is tied to doing a Good Job with Agility and Flexibility

- Determine Customer Requirements
- Form a Virtual Team
- Solve Customer Requirements
- Obtain Customer Acceptance
- Dissolve Virtual Team

Determine Customer Requirements

Cross-Referenced "Threads"



Virtual Teams

are an opportunistic aggregation of entities working toward a common goal. This Virtual Team is comprised of the best available internal and external expertise.

- **To the customer, a Virtual Team appears to be one homogeneous entity which dissolves at the completion of the order or the project.**
- **Team members are focused on making the customer's project successful by identifying enhancements and new opportunities**

Identify Required Skills

Discipline-Specific Work Breakdown Structures

- **Geological Sciences:**
  - Structure
  - Stratigraphy
  - Petrophysics
  - Geochemistry
- **Seismology:**
  - Acquisition
  - Processing
  - Interpretation
- **Reservoir Engineering:**
  - Data Acquisition
  - Pressure/Temperature Interpretation
  - Reservoir Simulation
  - Core Analysis

Identify Required Skills

"Cross-Discipline" Work Breakdown Structures

- **Acquire Assets:**
  - Opportunities
  - Economics
  - Acquisitions
- **Asset Management:**
  - Controls
  - Finances
  - Mechanisms
- **Information Management:**
  - Technology
  - Model
  - Asset
- **Geology:**
  - Regional
  - Play Fairway
  - Prospect
  - Reservoir
- **Sequence Stratigraphy:**
  - Outcrops and Logs
  - Seismic Stratigraphy
  - Simulation
- **Work Breakdown Structures**

Select Skills

Relationship between:
Work Breakdown Structures, Best Practices, and Process Models

Work Breakdown Structures answer the questions What? and Why?
They are theoretical and depend on:
- **Domain Expertise**
- **A good Activity Modeler**

Best Practices also answer the questions How? and Who?
Best Practices are dependent on:
- **Skills**
- **Processes**
- **Solutions (Case Histories)**
- **Resources**

Process Models also answer the question When? and Where?
Process Models are dependent on:
- **Organization**
- **Corporate Culture**
- **Best Practices**
- **Information Structure**

Types of Aggregation

1. An aggregation formed in response to an opportunity.
2. A relatively permanent aggregation of core competencies that largely pre-exists, and which is seeking an opportunity.
3. A supplier chain which, while using relatively conventional business relationships exhibits agility in responding to market needs.
4. A bidding consortium.

Agile and Virtual Aggregation

A Virtual Team is agile if it is formed with the intent of dissolving or quickly and cheaply reconfiguring in direct response to a change in the opportunity.

Types 3 and 4 are less agile aggregations than Types 1 and 2.

Organize Virtual Team

Reporting Structure

Each team has

- **A Team Leader, responsible for project**
  - **budgeting**
  - **scheduling**
  - **coordinating activities**
  - **customer satisfaction**

- **Team Members, responsible for project**
  - **milestones**
  - **deliverables**
  - **identifying new projects**
  - **training**

Reconfigure Entities

Members of the HyperEdge Expert Association

identify client opportunities and passes them back to the HMC staff.

- Each opportunity is logged and made available to certified consultants via the World-Wide-Web.
- Work Orders are issued against an "evergreen contract" to HMC.
- HMC assigns a Team Leader and they select Team Members to support the project.
- The Team Leader works directly with the Client Representative, preparing regular status reports, which HMC distributes.
- Monthly billings are prepared, collected and then distributed to members of the Virtual Team Members by HMC.

Solve Customer Requirements

Undertake Project

- Identify Domain Attributes
- List Attributes
- Evaluate Attributes
- Select / Optimize Alternatives
- Implement

Obtain Customer Acceptance

Complete Project

- On-Line Geotechnical Forums
- Projects tied to a common Information Exchange Structure
- Embedded Project Documentation whenever possible
- Move Project Documentation towards automatic cross-referencing of Lookbacks and Benchmarks

Dissolve Virtual Team

Documentation On-Line and Close Project

Team Members

- Document relevant aspects of project
- Document contributions of all participating entities
- Update Vita's / Skills Database

Team Leader

- Signs-off on project documentation
- Obtains Customer Acceptance

Building and Maintaining the Virtual Team

Theme: Don't Re-engineer, Sharpen Your Focus

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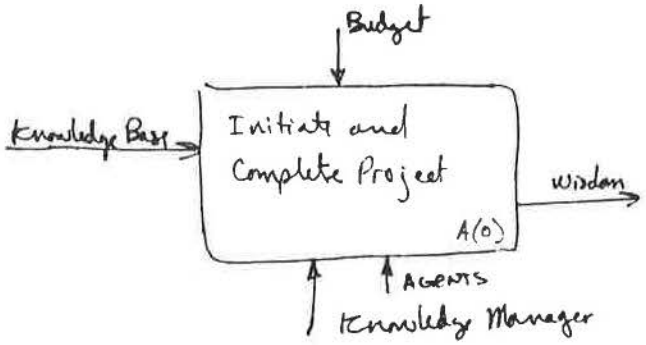
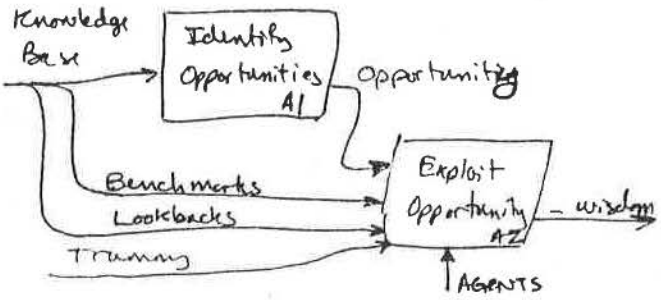
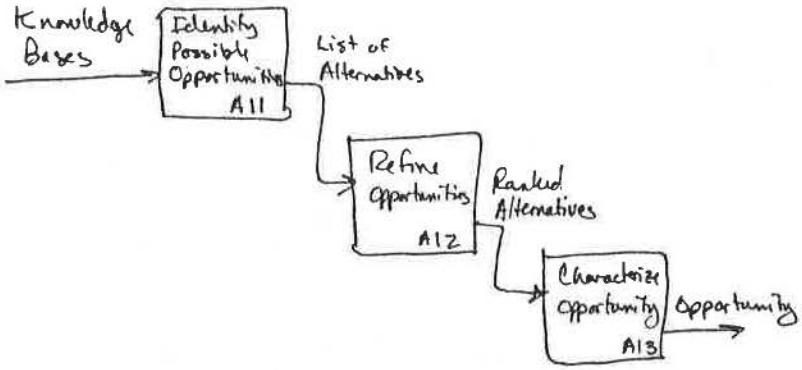
18 June 1995

A0 Initiate and Complete Projects with Agility
- **A1 Find Opportunities**
  - **A11 Identify Possible Opportunities**
  - **A12 Refine Opportunities**
  - **A13 Characterize Opportunities**
  - **A14 Plan Project**
- **A2 Exploit Opportunities**
  - **A21 Determine Customer Requirements**
    - **A211 Identify Enhancements**
    - **A212 Identify New Opportunities**
  - **A22 Form Virtual Team**
    - **A221 Identify Required Skills**
    - **A222 Select Skills**
    - **A223 Aggregate Entities**
      - **A2231 Organize Virtual Team**
        - **A22311 Select Team Leader**
          - **A223111 Elect Team Leader**
          - **A223112 Set Budget**
          - **A223113 Set Schedule**
          - **A223114 Insure Customer Satisfaction**
        - **A22312 Select Team Members**
          - **A223121 Pick Team Members**
          - **A223122 Set Milestones**
          - **A223123 Define Deliverables**
          - **A223124 Provide Required Training**
      - **A2232 Access Core Competencies**
      - **A2233 Use Supplier Chain**
      - **A2234 Form Bidding Consortium**
    - **A224 Reconfigure Entities**
  - **A23 Solve Customer Requirements**
    - **A231 Identify Domain Attributes**
    - **A232 List Attributes**
    - **A233 Evaluate Attributes**
    - **A234 Select / Optimize Alternatives**
    - **A235 Implement**
  - **A24 Obtain Customer Acceptance**
  - **A25 Dissolve Virtual Team**

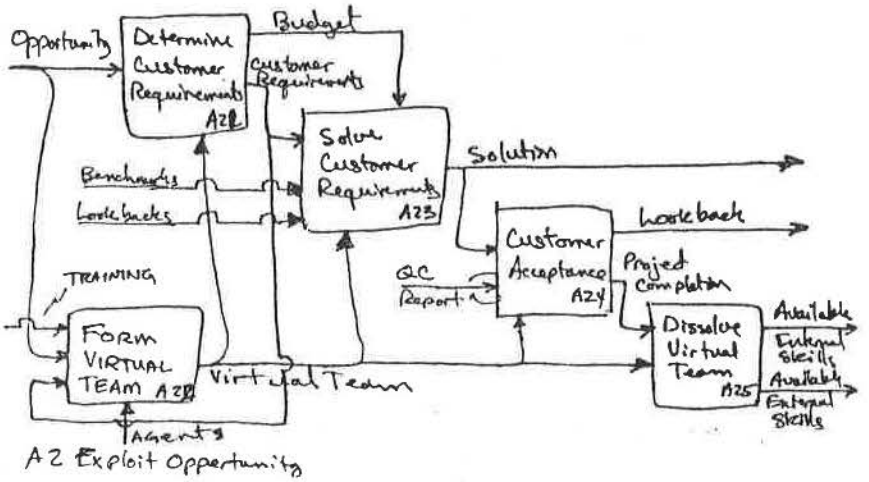




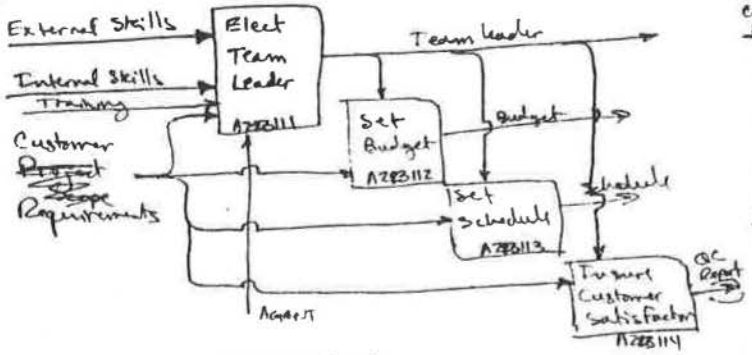
A0 Initiate and Complete Project



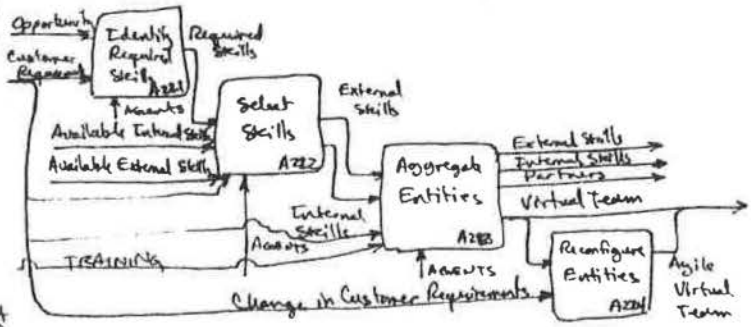
A1 Identify Opportunity



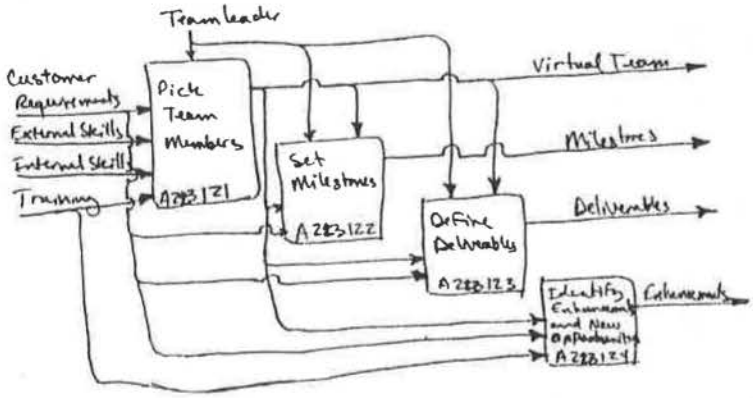
A2 Exploit Opportunity



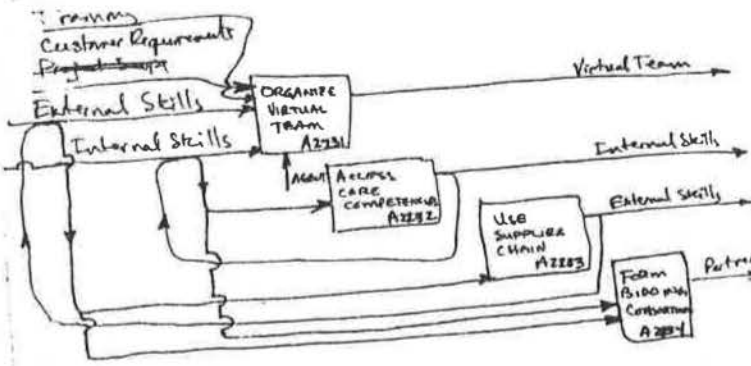
A22311 SELECT TEAM LEADER



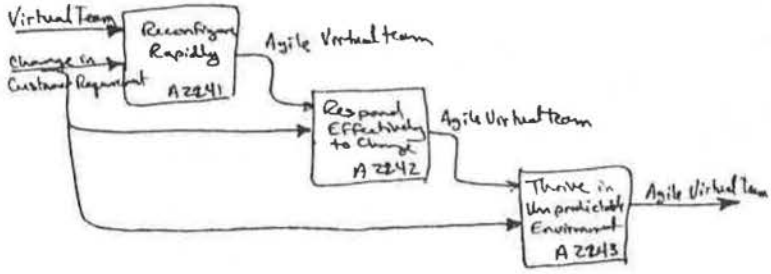
A22 FORM VIRTUAL TEAM



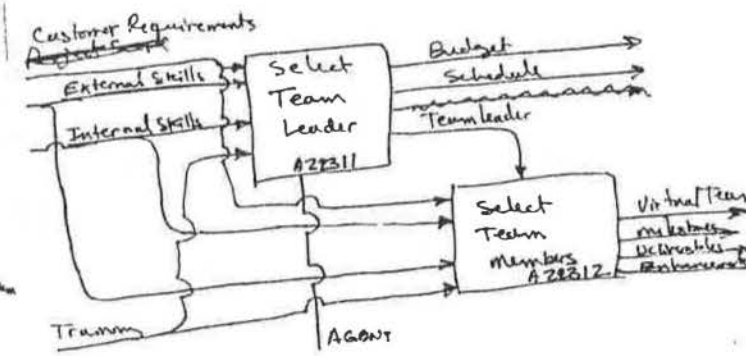
A22321 Select Team Members



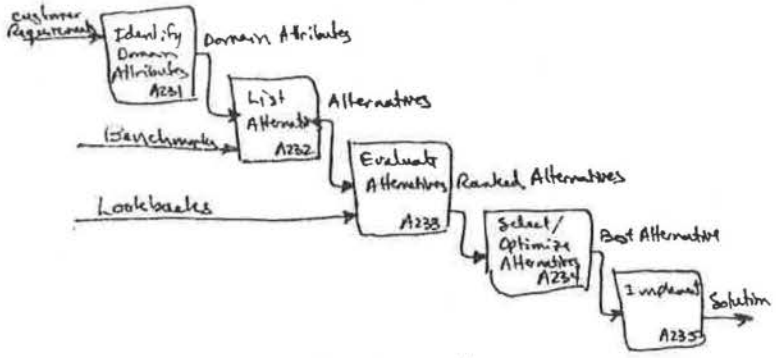
A223 Aggregate Entities



A224 Reconfigure Entities



A2231 Organize Virtual Team



A23 Solve Customer Requirement

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unlocking information barriers

Living Document

Acknowledgment

Many of the ideas related to the Agile Virtual Enterprise (AVE) were taken from a series of White Papers from an NIST Workshop on the Virtual Enterprise.

This material was provided by **Albert Boulanger**, Lamont-Doherty Earth Observatory, RT 9W, Palisades, NY 10964-8000 (914) 365-8775, facsimile (914) 359-1631, aboulanger@ldeo.columbia.edu

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