



**Collaborative Knowledge Work:
Theory and Practice of a Successful
Commercial Application**

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How well do organizations think?

How long does it take for new people to come up to speed?

Does the left hand know what the right hand is doing?

- Does knowledge walk out the door when someone leaves?

How do organizations communicate and coordinate their activities?

- How long does it take to find the right person for the task?

How do organizations maintain relationships as employees change?

Some Important Ideas

- **Knowledge Capture and Reuse**
- **Corporate Memory**
- **Organizational Learning**
- **Virtual Communities**
- **B2B Collaboration across Value Chains**

Some Business Realities

- Rampant workforce turnover
 - need for organizational memory
- Scarcity of talent
 - need to find and leverage experts
- Pressure for fix-fee services
 - need to capture and reuse best practices
- Need for Speed: Outsource and Partner or Die
 - need for B2B *knowledge communities*

A Success Story for Collaboration and KM

- **Intraspect was designed and built for collaborative knowledge management.**
- **It actually works.**
 - People use it.
- **It is a commercial success.**
 - They pay for it.
- **It is bringing new capabilities to mainstream business areas:**
 - CRM, BI, PSA, HR, Supply Chain



Some Intraspect Customers

Web & System Integrators

Logos for Web & System Integrators include: KPMG, PROXICOM (E-business. Our only business.), CSC, INFORTE, LavaStorm (LavaStorm, Inc.), Andersen Consulting, CONCEPTIVE TECHNOLOGIES, BRIDGE, CONCERO, Certive, event zero, xcelerate, TeleComputing, Aston (Generation High-Tech), and e-SI (The Builder of the e-World).

Telecom

Logos for Telecom include: SBC, Verizon, GiantLoop (Network, Inc.), SIEMENS, StorageNetworks (Storage Services for the e-Economy), digitalaccess, and OneMain.

Marketing Services

Logos for Marketing Services include: WPP Group plc, HILL & KNOWLTON, J. Walter Thompson, ACNielsen, JWT Specialized Communications, Rapp Collins, Brodeur Worldwide, zentropy, Epinions.com, CommonHealth (Limited resources, borderless brands), and USer's.

High Tech

Logos for High Tech include: SAS (SAS Institute Inc.), cadence, EXTRICITY, hp invent, QuickArrow, furnish|net.com, MERANT, ABC Technologies, Outbound Services, Altrium Technologies, Apropos, and Aladdin Systems.

Financial Services

Logos for Financial Services include: JPMorgan, Franklin Templeton, Fidelity Investments, J.W. Childs Associates (Private Equity Investments), Kemper Funds, H&R Block, Capital, and iGate Capital.

Other Vertical Markets

Logos for Other Vertical Markets include: GM, BOEING, JPL, BHP, Quaker Chemical, NASA, Bostik, EPR2, Rice University, Pepperdine University, Lawrence Livermore National Laboratory, STATPROBE, Inc., and FDC Federal Data Corporation.



OK, ENOUGH MARKETING!

**WHAT DOES IT DO AND HOW
DOES IT WORK?**



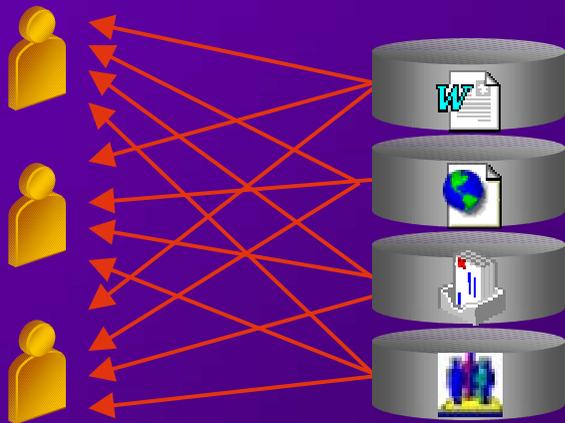
The Challenge:

- **How can technology foster organizational intelligence?**

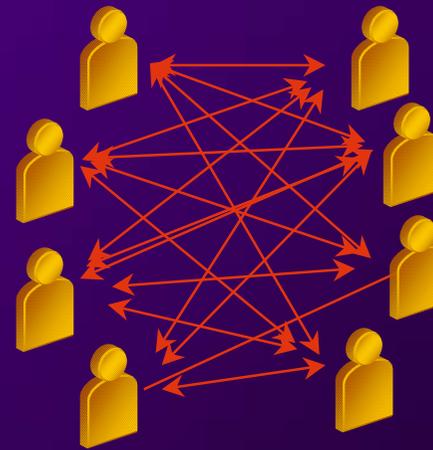
How to create an environment where

- people naturally build on each other's work
- a corporate memory is created and maintained
- virtual communities emerge and thrive

Existing Technical Approaches Don't Solve the Problem



Portals



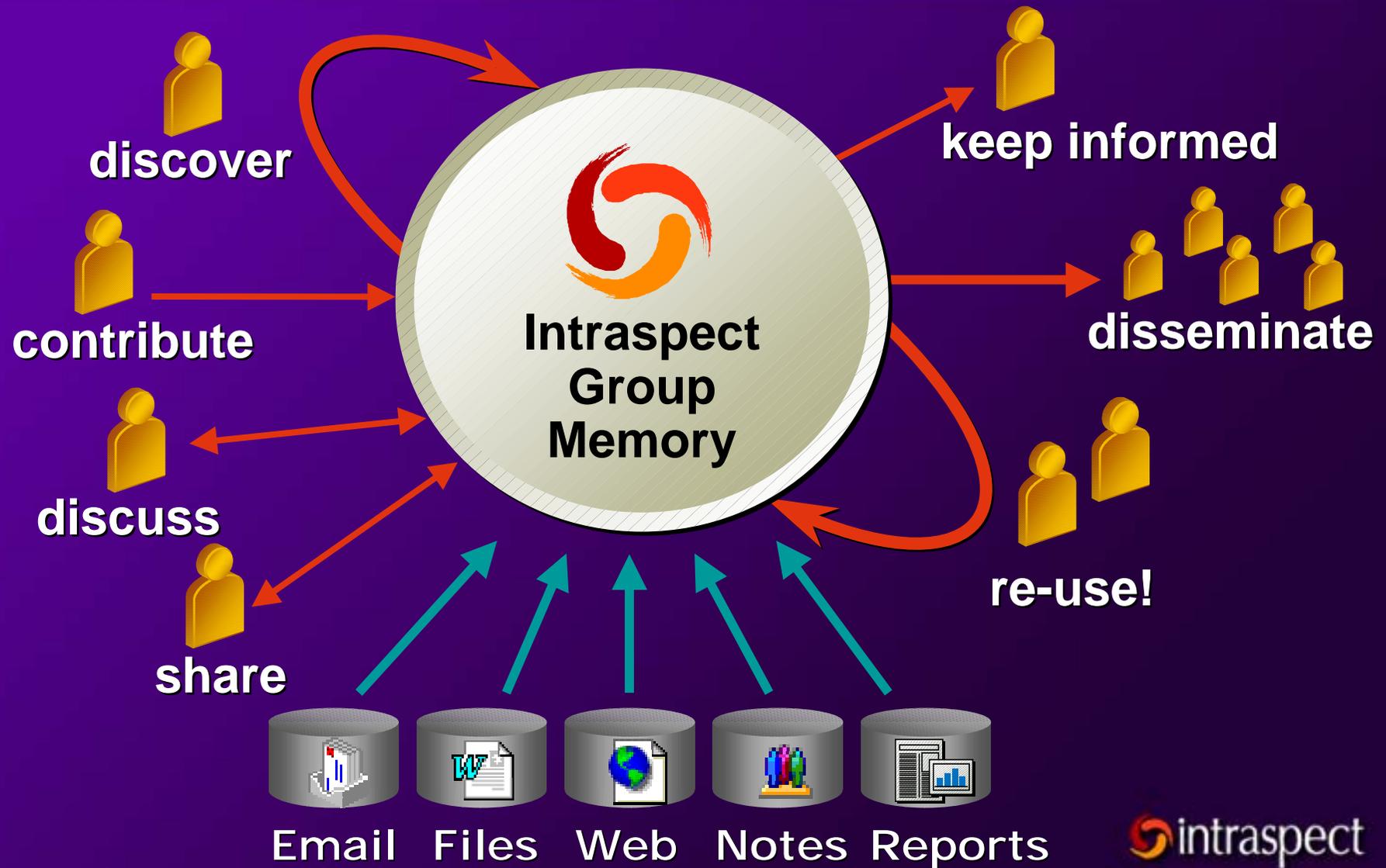
Point-to-point Email

The Solution: Memory Mediated Collaboration



- **Shared Online Environment**
 - *Integrate All Information Sources*
- **Many-On-Many Collaboration**
 - *Not Just Teams and Rooms*
- **Community Knowledge Base**
 - *Build on Previous Work*

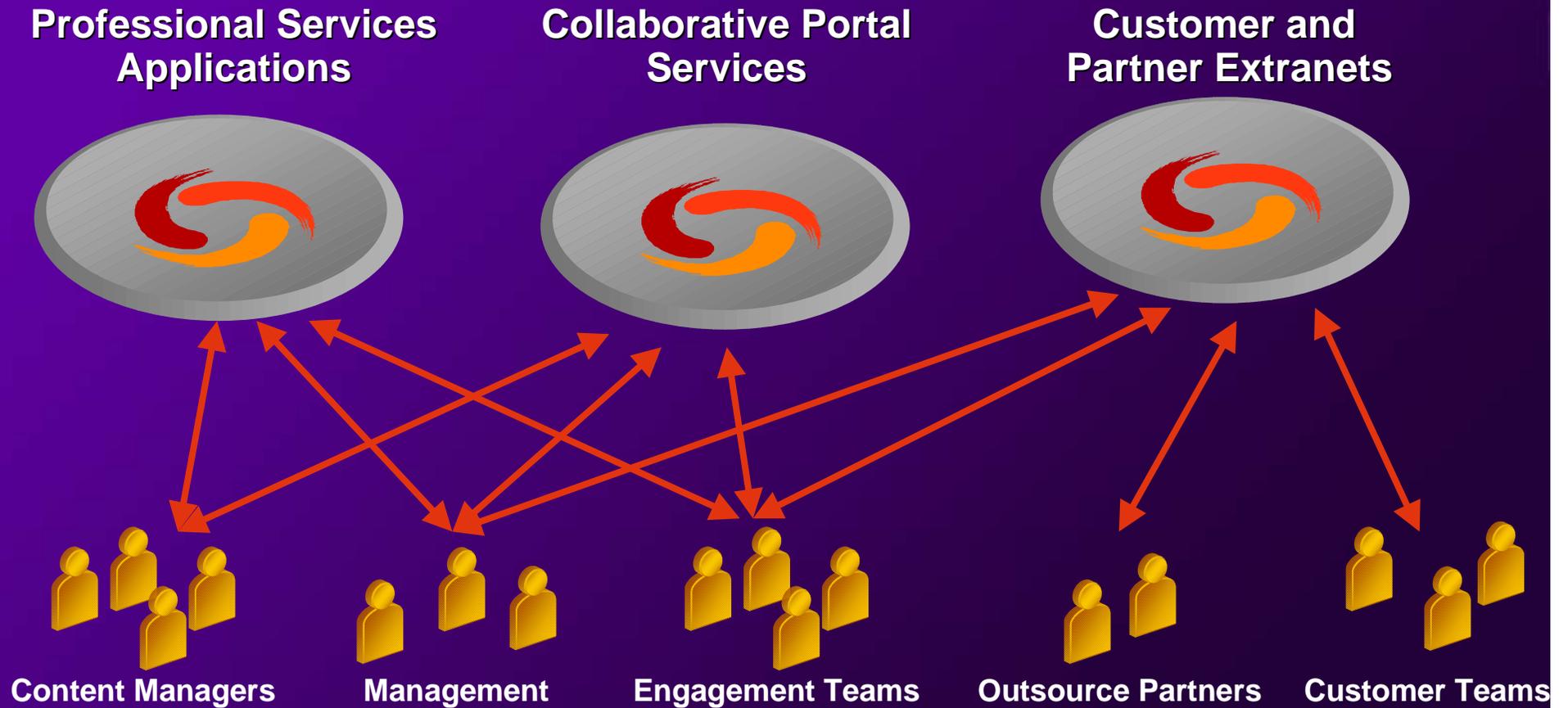
How It Works: The Intraspect Group Memory



Collaborative Knowledge Work in Professional Services



Enterprise Deployment on a Federation of Intraspect servers



Product Functionality

- **Collection, Linking, Organization**
- **Discussion and Commenting**
- **Document Management & Sharing**
- **Full-text & Metadata Search**
- **Universal Subscription**
- **Distribution over web and email**
- **Access Control & Security**
- **Customization and Personalization**

Example: Workspaces for Collaborative Engagements

The screenshot shows a web browser window titled "MegaCom: Voice Over IP [Folder] - Microsoft Internet Explorer". The browser's address bar and menu bar are visible. The main content area displays the Intraspect logo at the top left. Below the logo, there are navigation links: "Top", "Up", "Search", and "Personal Page". The central heading is "MegaCom: Voice Over IP" with the subtitle "an Engagement" and a link to "details". A text box contains the message: "We are building a Voice-Over-IP capability for MegaCom." Below this, there are three key-value pairs: "Nature of Work: IP Telephony", "Partner in Charge: Neal Mostradamus", and "Team: MegaCom Voice-Over-IP Engagement Team". A "View in Web Folder" link is present, followed by a list of folders: "Best Practices Used", "Deliverables", "Engagement Review", and "Statement of Work". Below the folders are four document icons with titles: "Customer Correspondence", "Extranet Team Discussion", and "Internal Discussion". At the bottom, it says "Appears in 1 context:" followed by "Intraspect Group Memory" and "Professional Services". On the left side of the workspace, there is a vertical menu with options: "Add document", "Add web page", "New folder", "New discussion", "New c-space", "Link this", "Add to Offline", "Paste here", "Link items", "Move items", "Remove items", "Edit properties", "Delete", "Subscribe", "Tell people", and "Help". The Intraspect logo is also visible in the bottom right corner of the page.

Information is always In Context

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying 'MegaCom: Voice Over IP Opportunity [Folder] - Microsoft Internet Explorer'. The browser's menu bar includes 'File', 'Edit', 'View', 'Favorites', 'Tools', and 'Help'. The main content area displays the following information:

- MegaCom: Voice Over IP Opportunity**
an Opportunity Workspace
[details](#)
- Account Owner:** [Rob AccountMan](#)
- Named Account:** [MegaCom Global Account](#)
- Nature of Work:** [IP Telephony](#)
- [View in Web Folder](#)
- [Proposal Approval](#)
- [Proposal Drafts](#)
- [Qualified Lead information](#)
- [Discussion: MegaCom: Voice Over IP Opportunity](#)

Below this information, a section titled 'Appears in 2 contexts:' shows two hierarchical views of the folder's location within the SharePoint site:

- Context 1:**
 - [Intraspect Group Memory](#)
 - [Zebra Consulting](#)
 - [Zebra West](#)
 - [Sales Activities](#)
 - [Opportunity Workspaces](#)
 - [MegaCom: Voice Over IP Opportunity \(this folder\)](#)
- Context 2:**
 - [Intraspect Group Memory](#)
 - [Professional Services](#)
 - [Global Account Management](#)
 - [MegaCom Global Account](#)
 - [Opportunities at MegaCom](#)
 - [MegaCom: Voice Over IP Opportunity \(link to this folder\)](#)

The browser's status bar at the bottom shows 'Done' and 'Internet'.



Contribute directly to workspace from e-mail, browser or desktop

Integration Plan.doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help

New... Ctrl+N
Open... Ctrl+O
Close
Save Ctrl+S
Save As...
Save as Web Page...
Versions...
Web Page Preview
Page Setup...
Print Preview
Print... Ctrl+P

Send To

- Mail Recipient
- Mail Recipient (as Attachment)...**
- Routing Recipient...
- Exchange Folder...
- Online Meeting Participant
- Fax Recipient...
- Microsoft PowerPoint

Number:	02
Title:	Integration Plan
Project:	Wireless Integration
Author:	Frank Bian

Integration Plan

an for Magma
wide on this pla
continent, distri
Did I mention th
slaved over fo
bet you would.

Quickly find email addresses with LDAP integration

Unique customized e-mail address

INTERNAL MEMO - Message (Rich Text)

File Edit View Insert Format Tools Actions Help

Send

This message has not been sent.

To... wireless-integration-vignette@sa.inraspect.com

Cc...

Subject: Integration Plan

Integration Plan.doc

Full text search of attachments



Contribute directly from Microsoft Office 2000 or Windows Desktop

The image shows a Microsoft Word 2000 window titled "Integration Plan.doc - Microsoft Word". The "File" menu is open, and the "Save As..." option is selected. A "Save As" dialog box is open, showing the "Save in:" location as "Wireless Integration Pro". The dialog displays a folder structure with the following items:

- 1. Define
- 2. Design
- 3. Develop
- 4. Deliver
- Best Practices
- Templates
- Tasks

A callout box points to the "Design" folder with the text: "WebDAV allows Intraspect presentation as web folders." In the "Favorites" list on the left, the "Web Folders" icon is highlighted with a red box.

Personalized information management space

The screenshot shows the Intraspect software interface with several callouts pointing to specific features:

- Personal workspaces and client accounts:** Points to the "Frank's Workspaces" section, which lists folders like "Frank Bien's Public Folder", "Frank Bien's Private Folder", and various client folders such as "Adsys Competitive Analysis", "Advanced Systems, Inc", "Intel", "Sprint Communications", "Xcelerate", "Adsys Project Area in Peoplesoft/Vantive System", and "Adsys Home Page".
- Navigation Bar:** Points to the top navigation menu with links for "Top", "Up", "Search", "Personal Page", "My Profile", and "My Subscriptions".
- User-controlled command bar:** Points to the left-hand sidebar menu with options like "Add channels", "Add document", "Add web page", "New folder", "New discussion", "Copy items", "Link items", "Move items", "Remove items", "Edit properties", and "Help".
- Urgent Notifications:** Points to the "Notifications" section, which lists items like "Adsys Critical Failure Discussion" and "ICAD Documentation" with timestamps.
- Links to news and items of interest:** Points to the "News Sites" section, which lists "USA TODAY", "MSNBC Cover", "CNN.com", and "Regional (U.S.) Newspapers" including "The Atlanta Journal-Constitution" and "Boston Globe Online".
- Tasks, events, etc.:** Points to the "Calendar" section, which shows a calendar for October 2000 with tasks like "Develop SOW for Megallark" and "Presentation to KPMG".

Search and you will find.

c-business Server Quick Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Top Up Search Personal Page

c-business Server Quick Search

Enter words, phrases, or names, separated by commas. (TIPS)

Look in: Multiple Group Memories

I am looking for...	Extra parameters (optional)
<input checked="" type="radio"/> any information	contributed by: <input type="text"/> (contributor name)
<input type="radio"/> a specific document	of type: <input type="text"/> or filetype: <input type="text"/> (doc,xls...)
<input type="radio"/> a cabinet or folder	with email address: <input type="text"/> @gnosis.intraspect.com
<input type="radio"/> a web document	with URL pattern: <input type="text"/> (like "ibm.com")
<input type="radio"/> an e-mail message	from: <input type="text"/> (name or address)
<input type="radio"/> a discussion	with e-mail address: <input type="text"/> @gnosis.intraspect.com
<input type="radio"/> a comment	contributed by: <input type="text"/> (contributor name)
<input type="radio"/> a colleague	whose name contains: <input type="text"/>
<input type="radio"/> a colleague	whose description contains: <input type="text"/>
<input type="radio"/> a colleague	whose contributions contain: <input type="text"/>

Type: or

Return ewed with context

For more options, try [Advanced Search](#)

The c-businessSM Leader

Internet

intraspect

Find important client information

The screenshot displays the Intraspect software interface. The main content area shows the profile for 'Advanced Systems, Inc', a client. A table lists client details: Industry (High Tech), Region (USA-SW), Status (Customer-Referencable), Web Address (www.adsvs.com), Stock Ticker (VDR), Delivery Executive(s) (Paris Austin), and CD Executive (Alan Alda). Below this, a list of project entries is visible, including 'Initial Strategy Project' and 'Adsys Project Area in Peoplesoft/Vantive System'. A sidebar on the left contains navigation options, with 'New project' highlighted. Four callout boxes provide additional context: one points to the 'New project' button, another to the client details table, a third to the project list, and a fourth to the project details.

Industry:	High Tech
Region:	USA-SW
Status:	Customer-Referencable
Web Address:	www.adsvs.com
Stock Ticker:	VDR
Delivery Executive(s):	Paris Austin
CD Executive:	Alan Alda

Initial Strategy Project
Advanced Systems, Inc. leads the nation in building wireless integration systems with major content providers.

Adsys Project Area in Peoplesoft/Vantive System

ICAD Documentation 05-Oct-2000 at 21:44 PDT [Demo User](#)
This is the ICAD doc that describes the customer environment and how we can quickly integrate

Adds a project workspace with just one click

Templates to sort and analyze across accounts

Review project history

Links to live reports in other systems

Subscribe to stay informed of relevant activity

The screenshot displays the Intraspect web interface. On the left, there is a sidebar with options like 'Add channels', 'Add document', and 'New discussion'. The main content area is titled 'Frank's Workspaces' and lists several folders, including 'Advanced Systems, Inc'. A 'Notifications' section on the right shows a list of updates, with one entry for 'Advanced Systems, Inc' highlighted by a red box. Below this, an email window is open, showing a message from 'Knowledge Server Subscription' with the subject 'new discussion: "Adsys Critical Failure Discussion"'. The email body contains a notification that the discussion was added to the 'Advanced Systems, Inc' folder, with a URL to the discussion page highlighted by a red box.

Notified on his Personal Page

Notified by email



Subscribe and be kept informed.

The screenshot shows a Microsoft Internet Explorer browser window displaying the Intraspect website. The browser title is "Proposal Drafts [Folder] - Microsoft Internet Explorer". The website header includes the Intraspect logo and navigation links: "Top", "Up", "Search", and "Personal Page". The main content area is titled "Proposal Drafts" with a "details" link. A sidebar on the left contains various actions like "Add document", "Add web page", "New folder", "New discussion", "New c-space", "Link this", "Add to Offline", "Paste here", "Link items", "Move items", "Remove items", "Edit properties", "Delete", "Subscribe", "Tell people", and "Help". A "View in Web Folder" link is visible above a "Megacom Proposal" document icon. Below this, a section titled "Appears in 1 context:" shows a tree view of folders: "Intraspect Group Mem", "Zebra Consulting", "Zebra West", "Sales Activities", "Opportunit", and "MegaCo".

Overlaid on the browser window is a message window titled "new word-document: 'Megacom Proposal' - Message (Plain Text)". The message header includes: "From: Knowledge Server Subscription [gruber@intraspect.com]", "To: gruber@intraspect.com", "Cc:", and "Subject: new word-document: 'Megacom Proposal'". The message body contains the following text: "The word-document 'Megacom Proposal' was added to the folder 'Proposal Drafts' by Scott Dahlgren at 11:18 AM 29-Sep-2000." followed by a blue hyperlink: <http://gnosis.intraspect.com/qm/document-10169348686675970.2504235>. Below this, it says "To stop your subscription to this folder, go to:" followed by another blue hyperlink: <http://mindshare.intraspect.com/qm/Present?object=10171307190714370.2390534&return=mysubscriptions&type=ConfirmUnsubscribe>. The browser's status bar at the bottom shows "Internet".



Apply best practices to create a new project workspace

Group members:
Alan, Alan <alan@ourco.com>
Austin, Paris <pa@legaldemo.com>
Add/Remove Users...

Select Initial Content:
 None
 * Methodology Template
 Baan Deployment
 Call Center Deployment
 Extranet Deployment
 Intranet Deployment
 SD4F Methodology For Wireless Implementation

Client Name: Advanced Systems, Inc
Industry: High Tech
Region: USA-SW
Completion Status: (none)
Status Date: 10/22/2000
Current Methodology Stage: currentMethodologystage2
SW Product/Modules: Vignette - Content Mgmt Admin (CMA) or
Release/Phase: 11/25/2000

Select project members; assign access policies

Apply existing methodology

Replicate vital project statistics w/ c-spaces



Structured project spaces to run and manage the engagement

The screenshot displays the Intraspect web interface for a project titled "Advanced Systems, Inc. Wireless Integration Project". The interface includes a navigation sidebar on the left and a main content area. A red box highlights a metadata table, another red box highlights the project group name, and a third red box highlights a list of project phases.

Client Name:	Varian Medical Systems
Industry:	High Tech
Region:	USA-SW
Completion Status:	completionStatus3
Status Date:	8/1/00
Current Methodology Stage:	currentMethodologystage3
SW Product/Modules:	Vignette - Content Mgmt Admin (CMA)
Release/Phase:	Start
Start Date:	8/1/00
End Date:	12/1/00
Project Manager:	Karl Marx Friedland
Job Code:	123325
Weekly Status Code:	WeeklyStatusCode1
Risk Code:	RiskCode1

Project Group: [Wireless Integration Project Group](#)

- 1. Define**
Also collaboration around conceptualize and define the project requirements and scope
- 2. Design**
Here is where we work on our synthesis of the technical implementation plan
- 3. Develop**
A place for software and to integrate product components
- 4. Deliver**
Collaboration with client where we release the system to production
- Best Practices**
Documentation on the best practices for this methodology.
- Tasks**
The set of tasks for this work.
- Templates**

Quick project overview with searchable metadata

Project member security policies.

Use pre-formatted methodologies or create new ones



Custom Searches combine metadata and full-text query

The image displays two screenshots of the Intraspect search interface. The top screenshot shows the search configuration page with various filters. A red box highlights the 'Only show documents ...' section, which includes a dropdown menu set to 'MS Word' and a field for 'or filetype:'. Another red box highlights the 'With the custom attribute...' section, showing a list of attributes with 'Industry' set to 'Telco'. A teal speech bubble points to these filters with the text 'Search by document type and custom attributes'. The bottom screenshot shows the search results page for the query 'Deliverable', displaying three matching items: 'Vignette overview for Sprint project', 'Mezannine Financing Release.doc', and 'Executive Management Team - 07March00.doc'. A search bar at the bottom of the results page contains the word 'vignette'.

Search by document type and custom attributes

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The Ontology of Context and Collaboration

- **Context hierarchy with typed nodes**
 - allow multiple parents, no inheritance
- **Conversational relations**
 - next-in-thread/in-reply-to
 - context-sensitive annotation
- **Implicit metadata**
 - contributor, date, content type
- **Explicit metadata**
 - titles and descriptions
 - user-defined types and attributes

How it works: the principles

- **Design for organizational intelligence.**
- **Create a knowledge ecology.**
- **Motivate by enlightened self-interest.**
- **Support existing work practice.**
- **Collaboration is king.**

1. People are part of the killer app!

What People do well

- Create lots of things to remember
- Make sense of data and information
- Communicate to solve problems
- What they are motivated to do

What Machines do well

- Remember lots of things
- Search large bodies of data and information
- Deliver messages to large audiences
- What they are told to do

2. An Ecology of Knowledge Reuse

- **Capture knowledge at its source**
 - get it while it's hot!
- **Capture knowledge in context**
 - don't dump and try to sort it later
- **Grow the corporate memory as a product of people working on-line**
 - corporate memory emerges

3. Enlightened self-interest

- **Make it easier to re-use than to reinvent.**
 - **Make it easier to work together, on-line.**
 - **Global benefit emerges from local action.**
- and...**
- **The more people use it, the more valuable it is to everyone!**

Not a Field of Dreams

~~“If you build it, they will come.”~~

“If they use it, it will build itself.”

4. Support existing work practice

- **Reach out to existing toolsets**
 - email, web, desktop
- **Support existing business processes**
 - workflow and metadata for routine tasks
- **Don't turn knowledge workers into librarians!**
 - don't expect IT staff to do it, either.

5. Collaboration is King!

- **Knowledge management is driven by collaborative work.**
 - the source of knowledge creation
 - the context for knowledge reuse
 - the main reason to be working over the net
- **KM without participation will fail.**
- **Collaboration in knowledge-based communities is the way we work in the new economy.**