



Laboratory Informatics Past, Present and Future

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Clarity. Vision. Enlightenment™

About Atrium Research

Atrium Research is an independent, vendor-agnostic market research and management consulting practice specializing in scientific informatics

We develop packaged and customized research reports and strategy, analysis, and process re-engineering services



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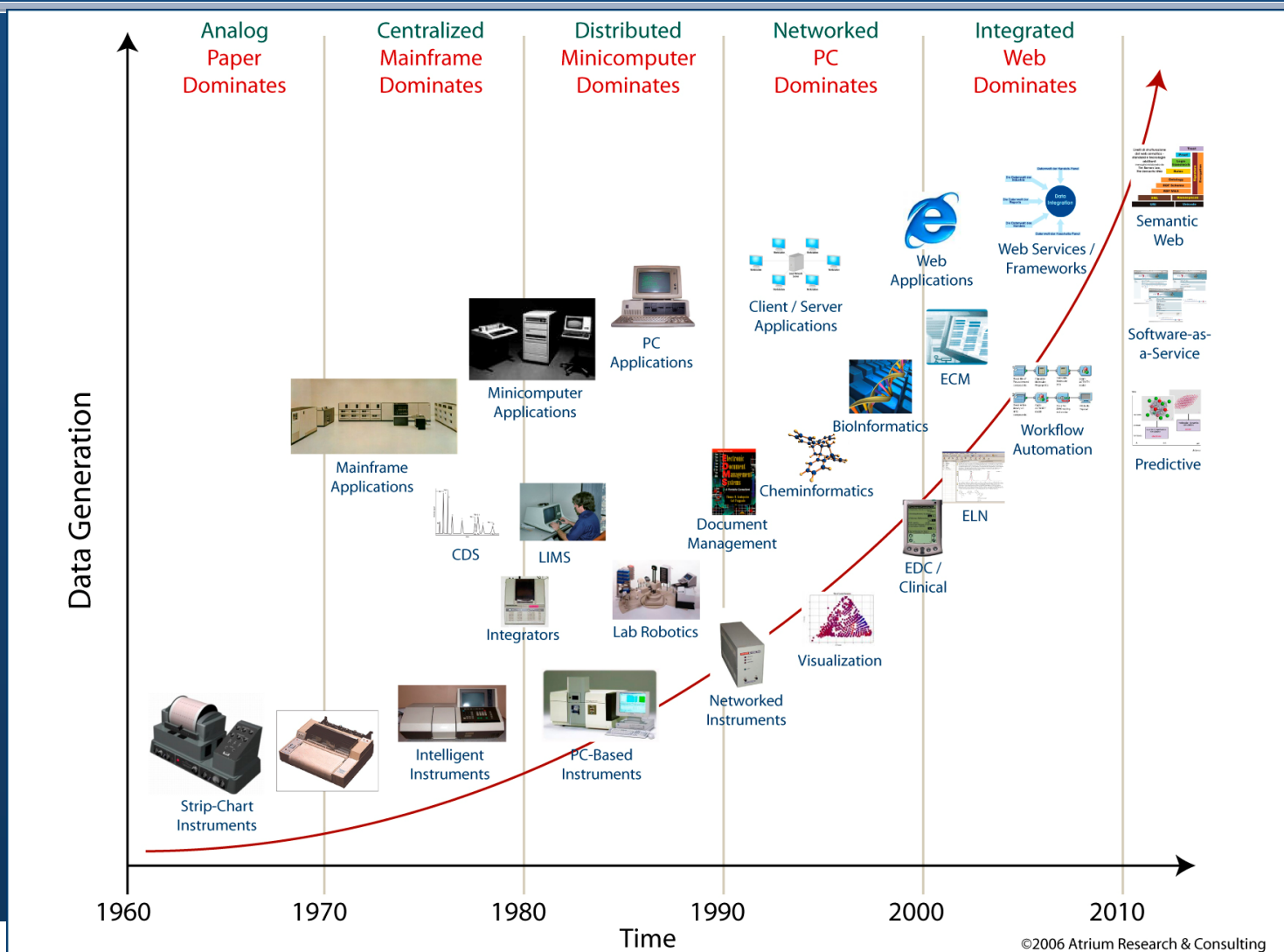
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Prediction

The corporate laboratory of the future will be adaptive and continuously optimized. Winners will dynamically alter operations to changing business needs based on operational analytics and leverage of institutional knowledge

Data and information have exploded – only organizations that can effectively manage, analyze and use it to their advantage will survive

The Evolution of Laboratory Computing

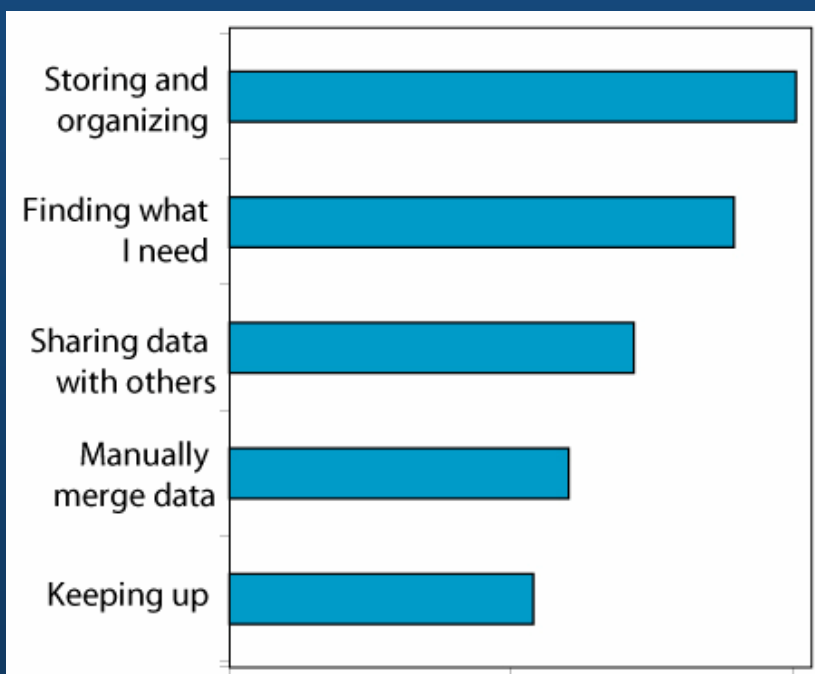


Today's Typical Laboratory Environment

- Multiple, independent, non-integrated data repositories
- Paper notebooks & reports
- Heavy reliance on e-mail for communications
- Heavy reliance on Excel for data management
- Reactive management to increasing data generation
- Poor electronic record and data lifecycle management practices

The Result? - Time with Data is Increasing

Over 95% of scientists report data management as a challenge



2004 Medicinal Chemist Study

Data and Information Tasks:	45%
Exp Design and Execution:	33%
Admin / Meetings / Other:	24%

2006 Biologist Study

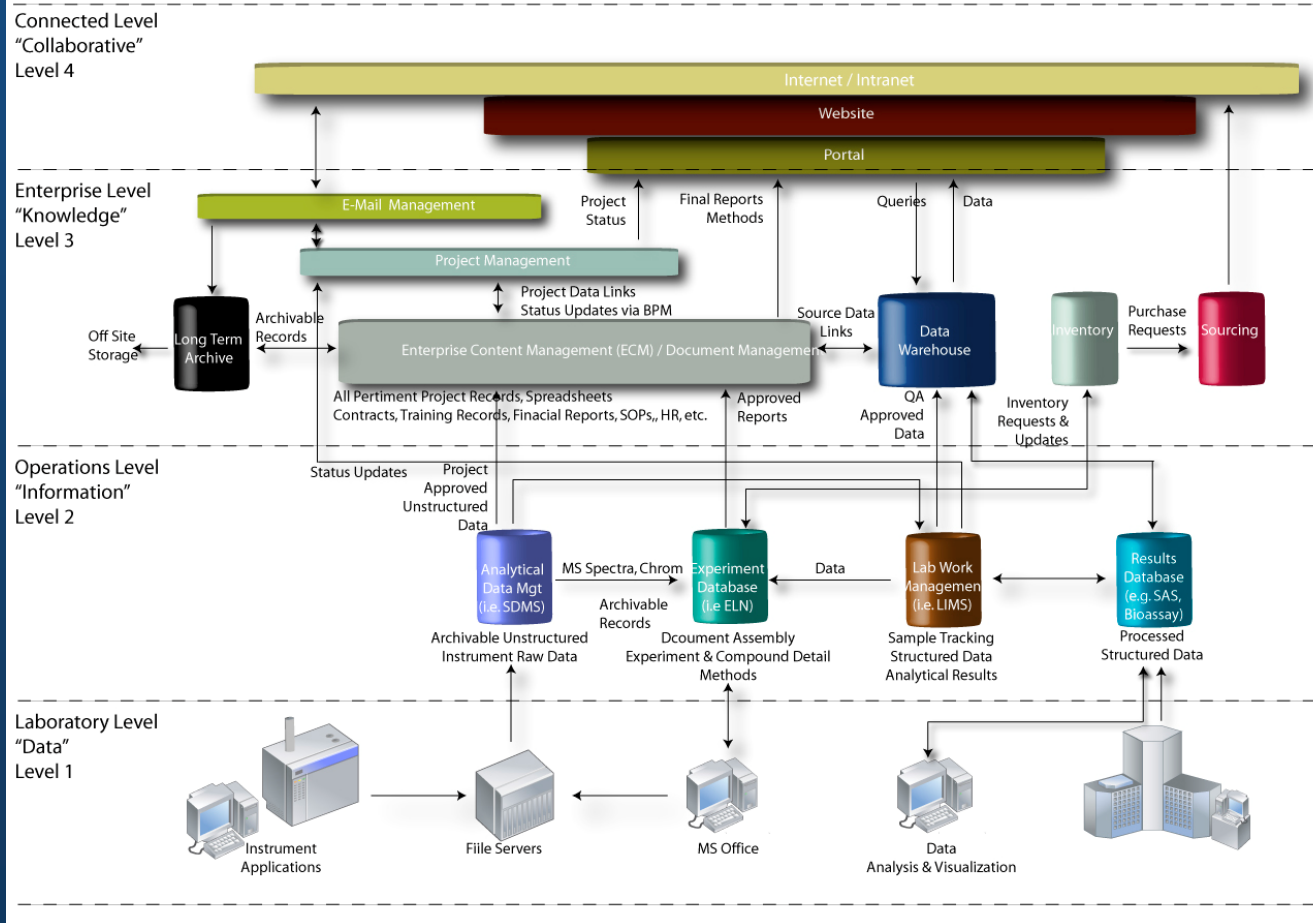
Data and Information Tasks:	48%
Exp Design and Execution:	36%
Admin/Meefings/Other:	16%

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How Will the Vision of an “Information on Demand” Laboratory be Achieved?

Example Scientific Informatics Architecture

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Four Trends that Will Change the Laboratory Informatics Landscape

Trend 1: Convergence

- Convergence of traditional supplier solutions will change current product perceptions

Trend 2: Service Oriented Architectures

- Service Oriented Architecture (SOA) will enable flexibility in design resulting in more rapid solution suites

Trend 3: Integration Frameworks

- Adoption of service-oriented integration frameworks will enable “scientists desktop” metaphor to become a reality

Trend 4: Semantic Web

- Application of Semantic Web technology increases usability of data through relationships based on its meaning

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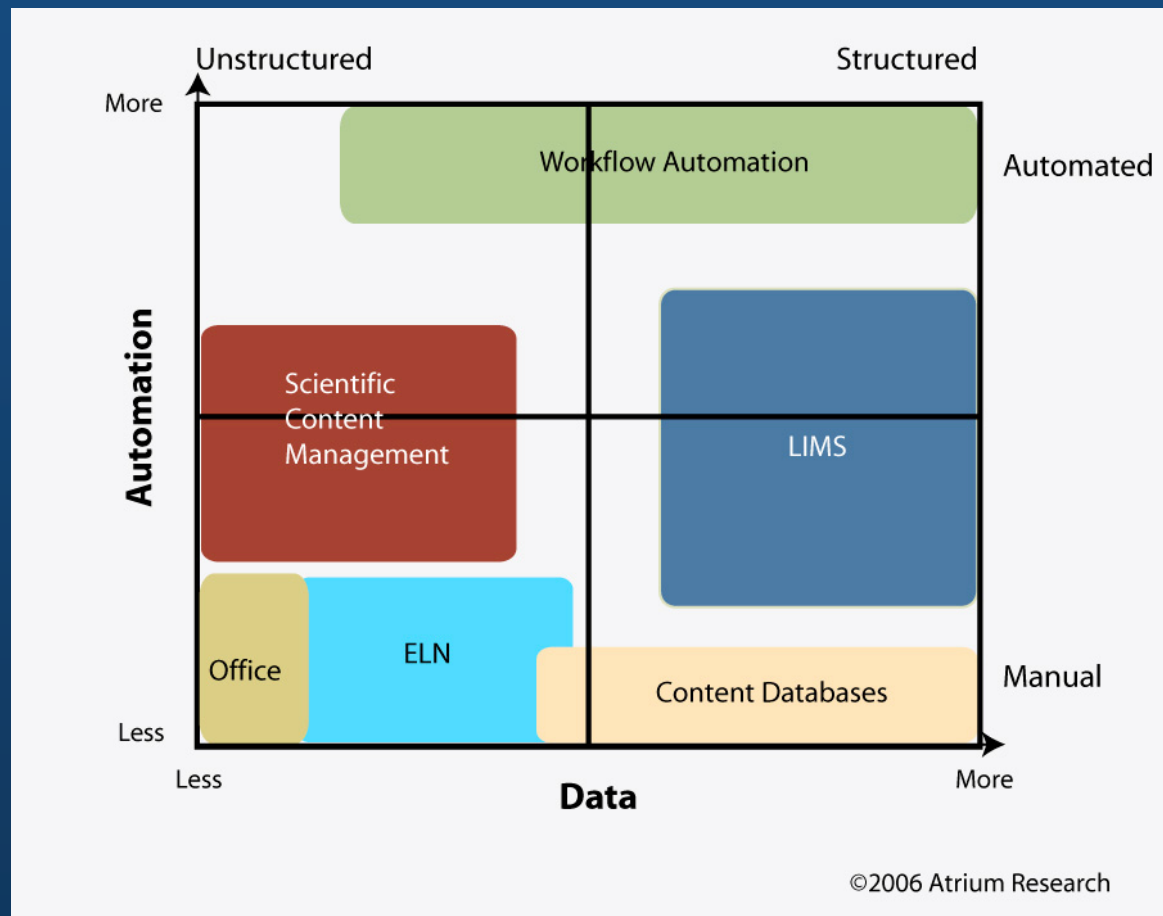
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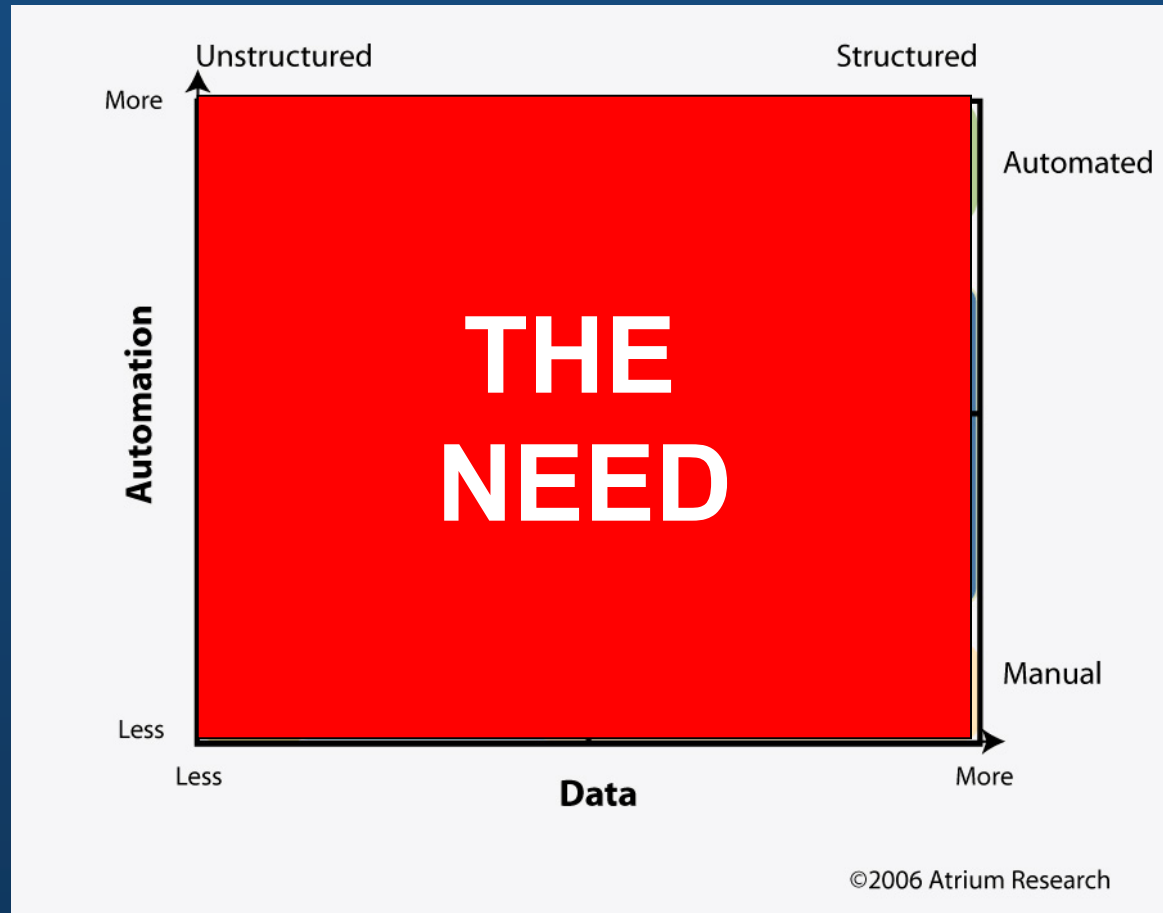
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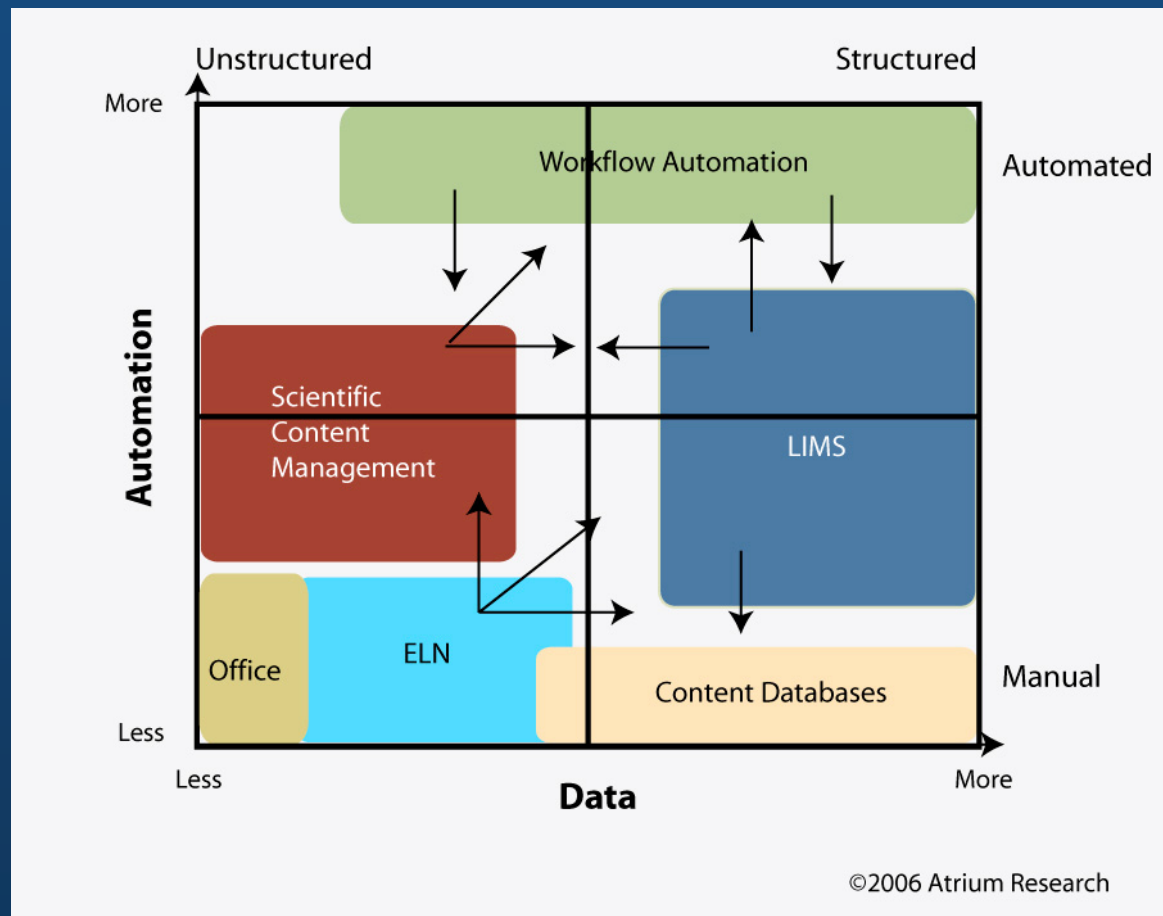
Supplier Offerings – Discrete Solutions to Discrete Problems



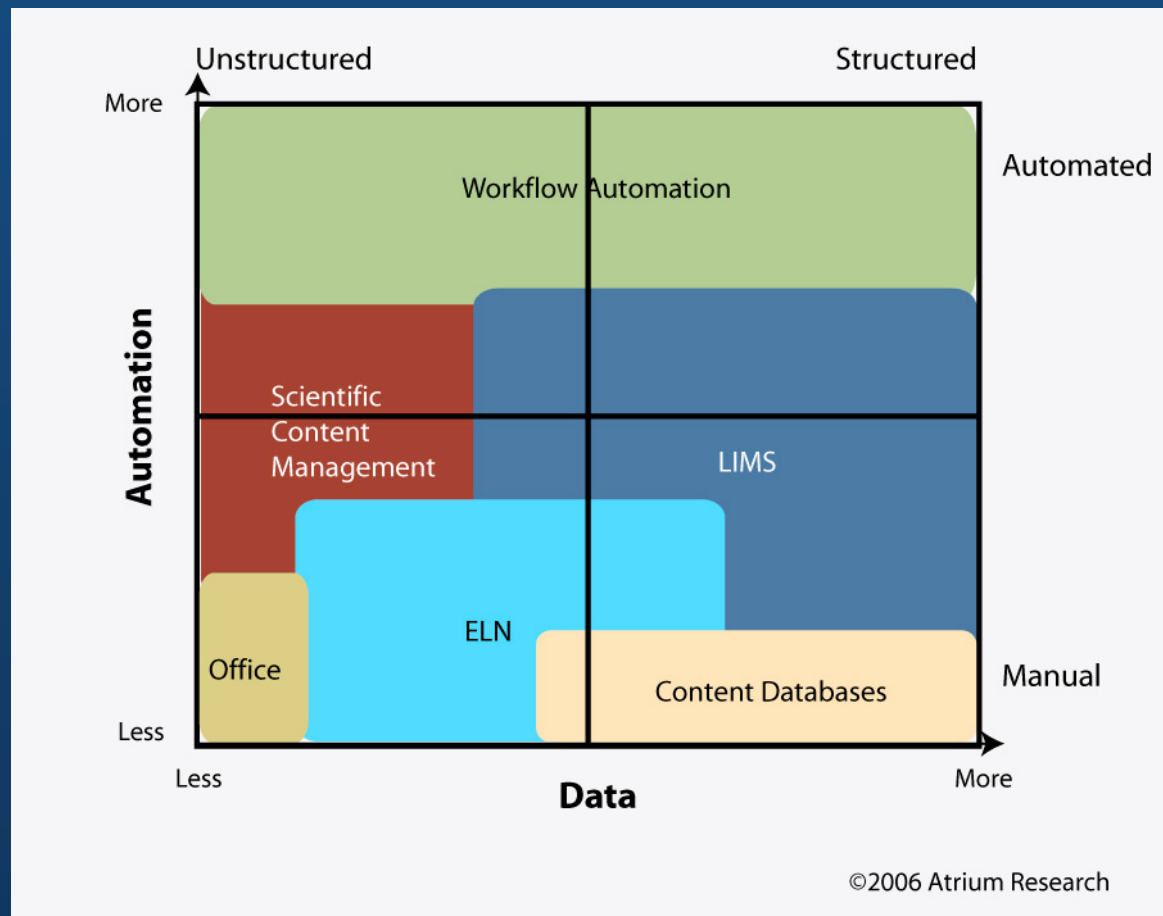
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Supplier Offerings – Expanding Beyond Traditional Borders



The Convergence of Supplier Offerings



49% of users would prefer to purchase all software from one vendor

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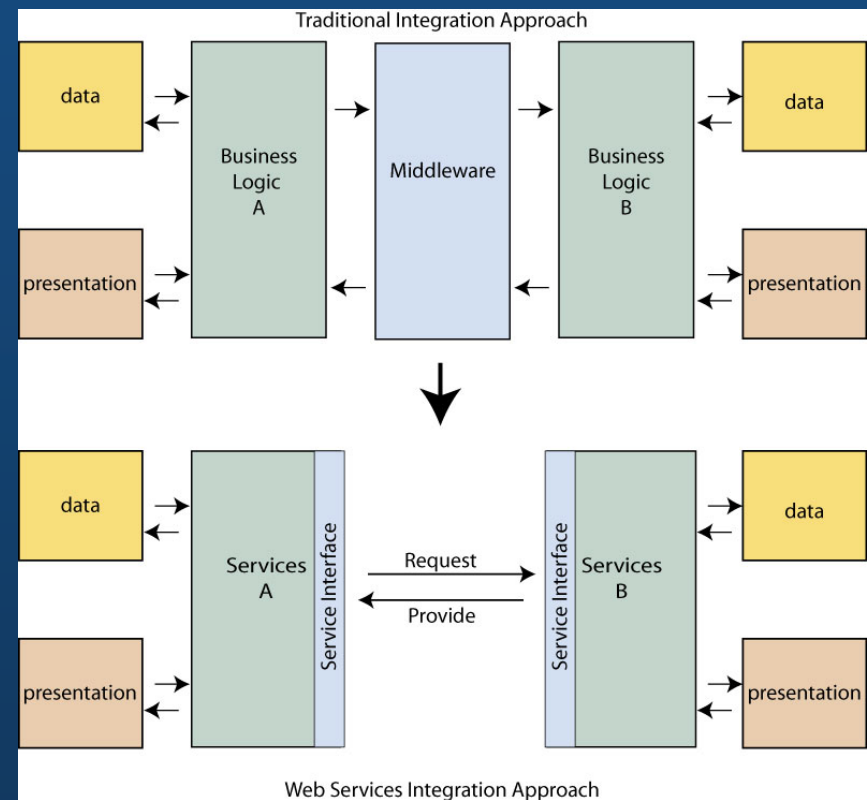
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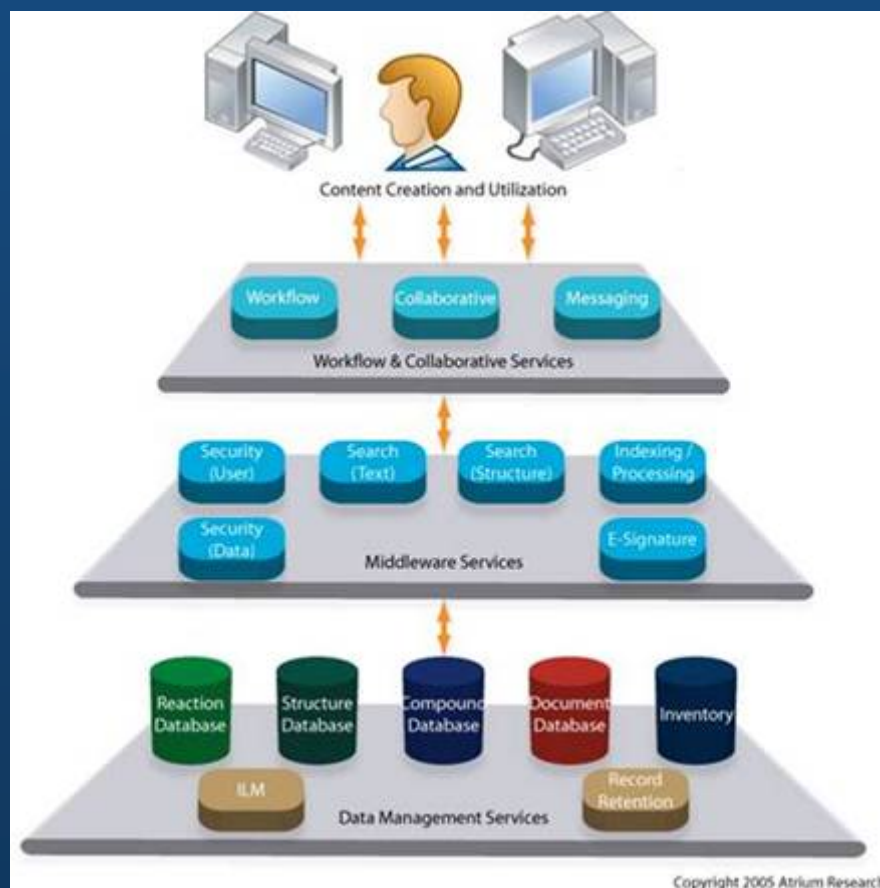
Web Services: A Design of Reusable Components

- A standard way of integrating modules or applications using XML (eXtensible Markup Language)
- A Service acts as a client and a server – requesting data, executing a function and returning the result
- Enables modules to be “loosely coupled” and reusable, rather than “hard coded”



SOA Enables Flexibility in Design

– Faster Delivery of Tailored Solutions



- Trend is toward a **Services-Oriented Architecture (SOA)** which is a design based on Web Services
- Architecture supports changing and evolving requirements and integration
- Modularity allows for “pull out and/or plug-in” configurability to allow domain-specific applications to be developed more easily

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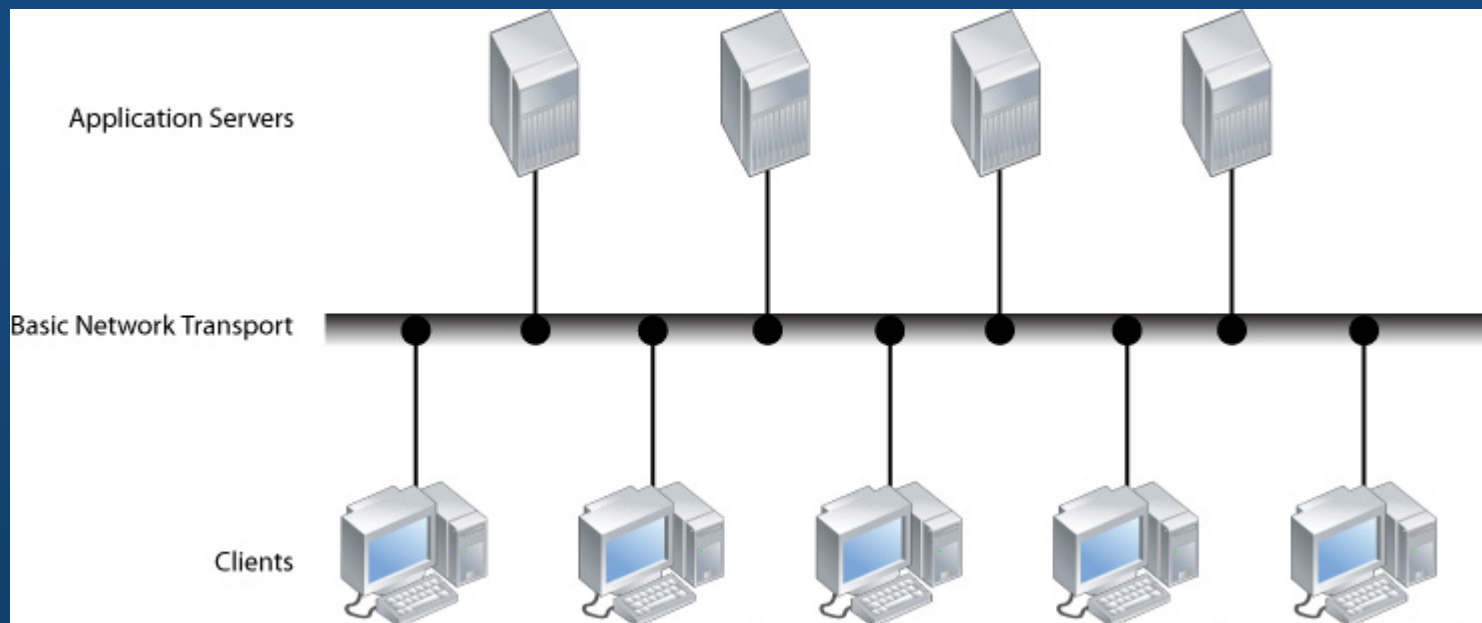
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Yesterday's Computing Environment

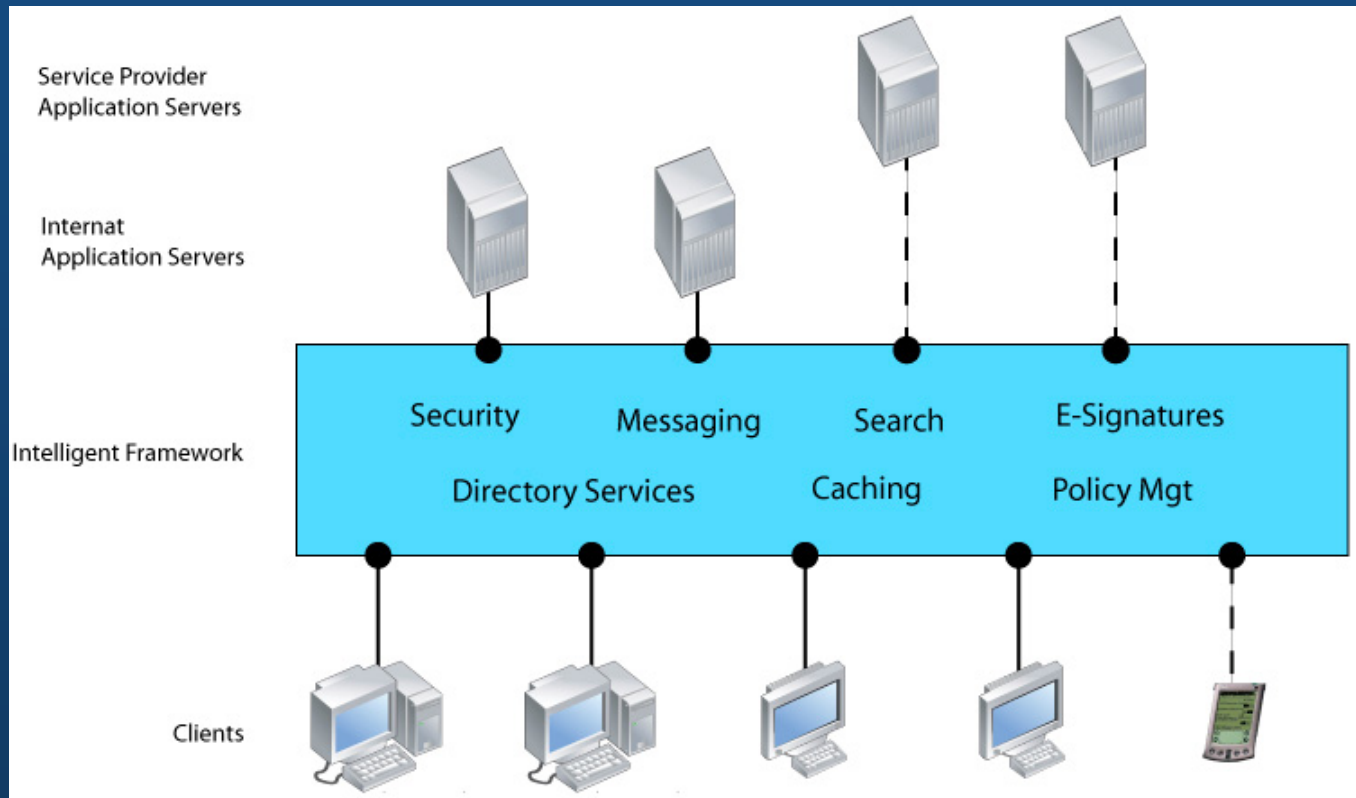
(and today's in many instances...)



Independent Applications

Different security architectures, messaging, policies, data transport protocols, tightly coupled integration, etc.

The Evolving Computing Environment



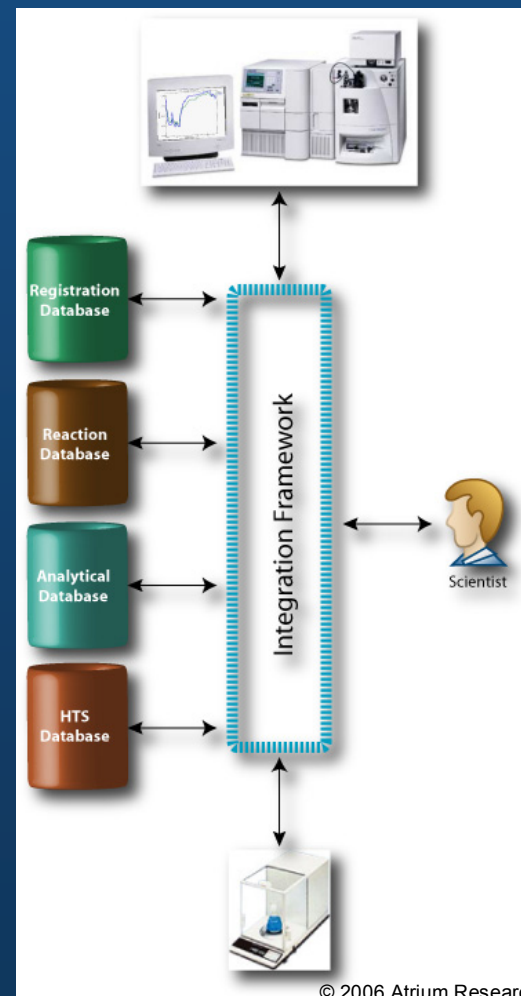
Interdependent Applications

**Common framework of data transport, security, etc.
Loosely-Coupled Integration**

Facilitation of a Single View into Multiple Repositories

"Intelligent Integration and Automation"

- On-demand data access
 - Present the *right* data when needed
 - Better mining and visualization tools
- "Scientist Desktop"
 - Dashboard view / Portal
 - Consistent user interface
 - Business intelligence
- "Smart" integration
 - Semantic data relationships
- Predictive tools
 - "Real time learning"



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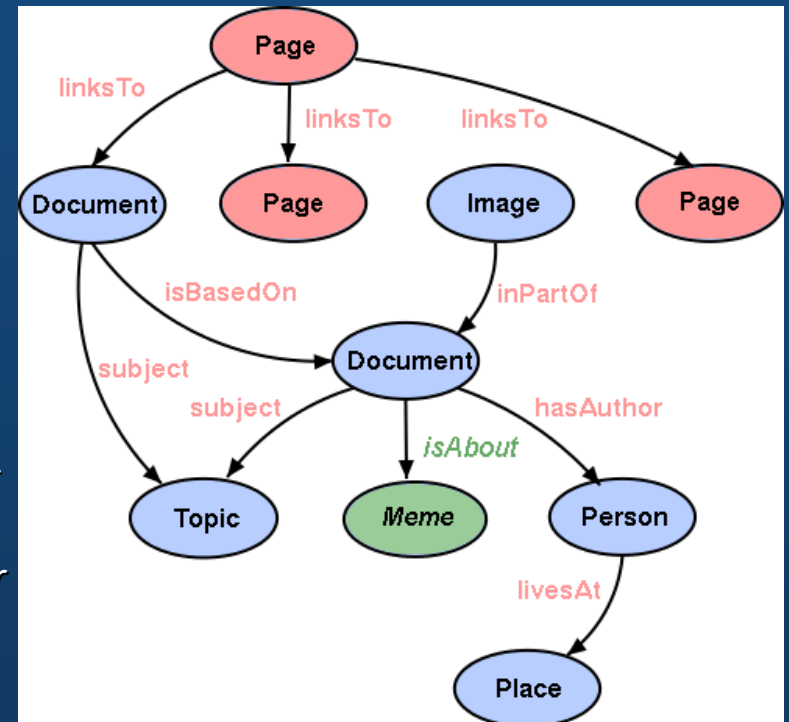
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Semantic Web Will Revolutionize How We Use Data

- Extension of the web defined by the WorldWide Web Consortium (W3C)
- Provides a common framework that allows data to be shared and reused across boundaries
- Designed to apply meaning to data
 - Example – sections or elements of a document
- Will enable semantic agents to crawl for data that is relevant and has similar meaning
- Ontology is key



Source: memography.org

In Summary

- Those organizations that make best use of their institutional capital will be the winners in the knowledge economy
- The current state of laboratory computing is, for the most part, not compatible with that vision
- Change in laboratory informatics technology will ease the migration to an integrated environment, but companies must pro-actively develop the strategies to effectively utilize the growing mountain of scientific information



Questions?

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