

# **Supporting Collaboration in Research and Development at Bristol-Myers Squibb**

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Associate Director  
Knowledge Integration Resources  
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## ***Provide an understanding of:***

- How collaborative environments originated at BMS
- How we built the “franchise”
- How we leveraged technology over the years
- Tools and services offered
- Documented benefits
- Challenges faced
- Lessons learned

# Bristol-Myers Squibb ([www.bms.com](http://www.bms.com))

## ***Company Overview:***

- Research-based pharmaceutical manufacturer
- Fortune 500 ranking: # 98 (April 2003)

## ***Corporate Headquarters:***

- New York, NY

## ***Research Sites:***

- Wallingford, CT; Princeton, Hopewell and New Brunswick, NJ; Belgium, Canada, France, Italy, United Kingdom

## ***Employees:***

- 44,000 FTEs

# Bristol-Myers Squibb ([www.bms.com](http://www.bms.com))

## ***Mission:***

- Extend and enhance human life by providing the highest-quality pharmaceuticals and health care products.

## ***Some of BMS's Top Pharmaceutical Products:***

- Anti-cancer therapies: TAXOL<sup>®</sup>, Ifex<sup>®</sup>, and Paraplatin<sup>®</sup>
- Avapro<sup>®</sup>, an anti-hypertensive agent
- Excedrin<sup>®</sup>
- HIV/AIDS therapies: Sustiva<sup>®</sup>, Zerit<sup>®</sup>, and Videx<sup>®</sup>
- Plavix<sup>®</sup>, a platelet inhibitor
- Pravachol<sup>®</sup>, a lipid-lowering agent

# Bristol-Myers Squibb ([www.bms.com](http://www.bms.com))

## ***BMS's Newest Pharmaceutical Product:***

- Abilify™, an anti-psychotic for treatment of schizophrenia

## ***Some of BMS's Top Health Care Products:***

- Bristol-Myers Squibb Medical Imaging: Cardiolite®
- ConvaTec: ostomy care products, and wound and skin care products
- Mead Johnson Nutritionals: Boost®, Enfamil®

# Current Business Challenges

- Patent expirations led to decreased sales
  - BuSpar<sup>®</sup>
  - Glucophage<sup>®</sup>
  - TAXOL<sup>®</sup>
- Earnings restatement
- Changes in senior executive leadership
- Regulatory challenges

# Corporate Culture

- Employees are highly educated and self-directed
- Innovation is a key value in R&D
- “Can do”: the impossible is often achieved
- Speed is a key factor
- ROI drives resource allocation
- Relationships and networks foster collaboration

# Product Development Process

## Stages:

Discovery

Preclinical Testing

Phase I

Phase II

Phase III

FDA Review &  
Approval

## Compound Success:

5 – 10K Screened

250 Enter Testing

5 Enter Testing

1 Approved

*\* 12 – 15 Years, >\$800 Million*

*Source: <http://www.phrma.org>*



# Why is KM Important to BMS?

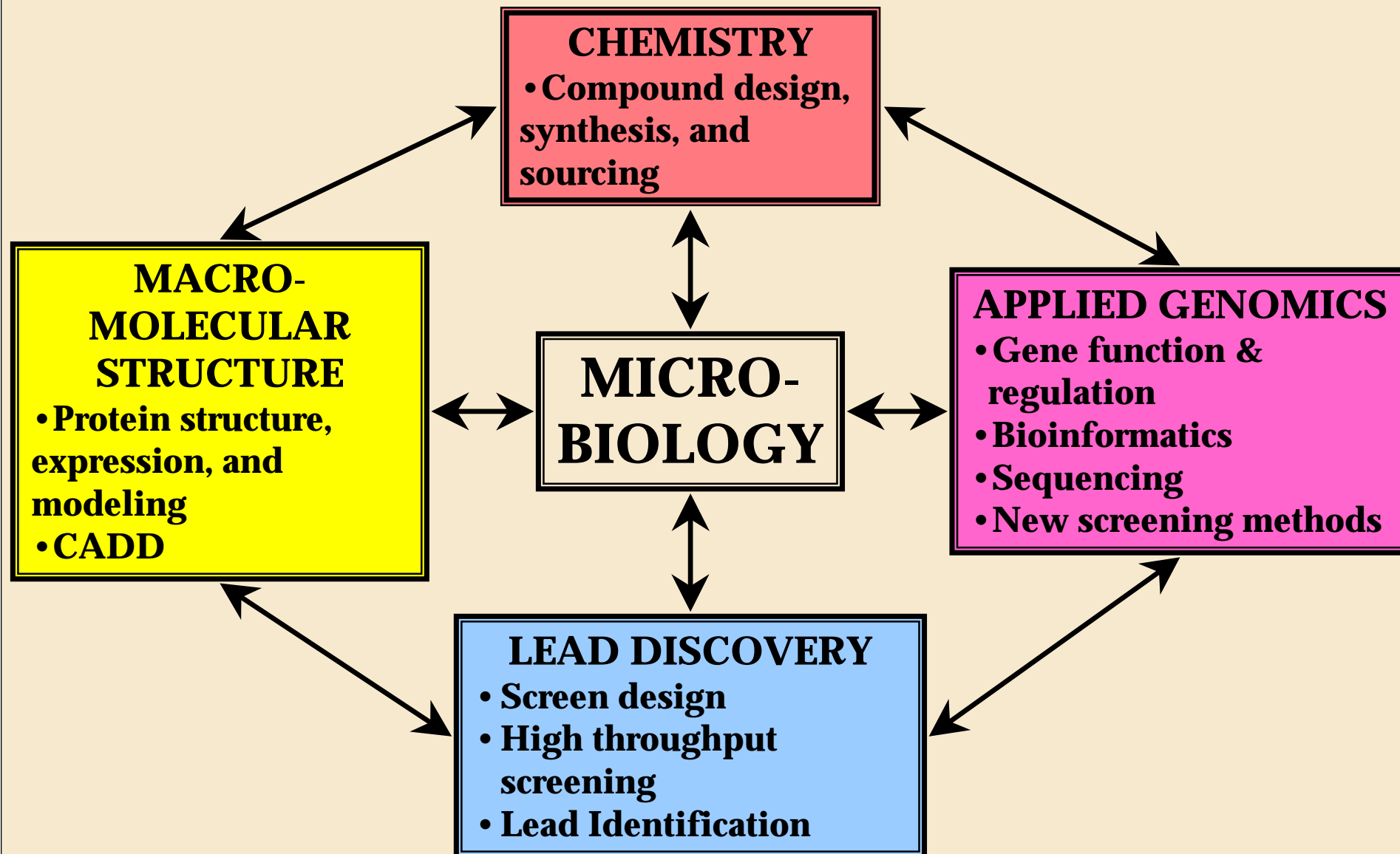
***“The actual product of the pharmaceutical industry is knowledge; pill and prescription ointment are no more than packaging for knowledge.”***

Peter Drucker  
*Post Capitalist Society*, 1993

# Origins of Collaborative Environments

- Began as convergent grass-roots effort in Infectious Diseases Drug Discovery
  - Roman Sterzycki (a scientist) working with Chemistry
  - Harvey Wiener (a scientist) working with Microbiology
  - Together Roman + Harvey = **SYNERGY**
- Infectious Diseases Drug Discovery needed to:
  - Improve communication and collaboration
  - Break down silos
  - Provide wide data access and streamline data management
  - Advance novel compounds into clinical development

# Microbiology's Collaborative Model



# What Did We Learn From Microbiology?

## Storage areas

- ☒ Novell drives
- ☒ Local hard drive
- ☒ E-mail
- ☒ Paper

## Solution

- ☒ The Knowledge Desktop

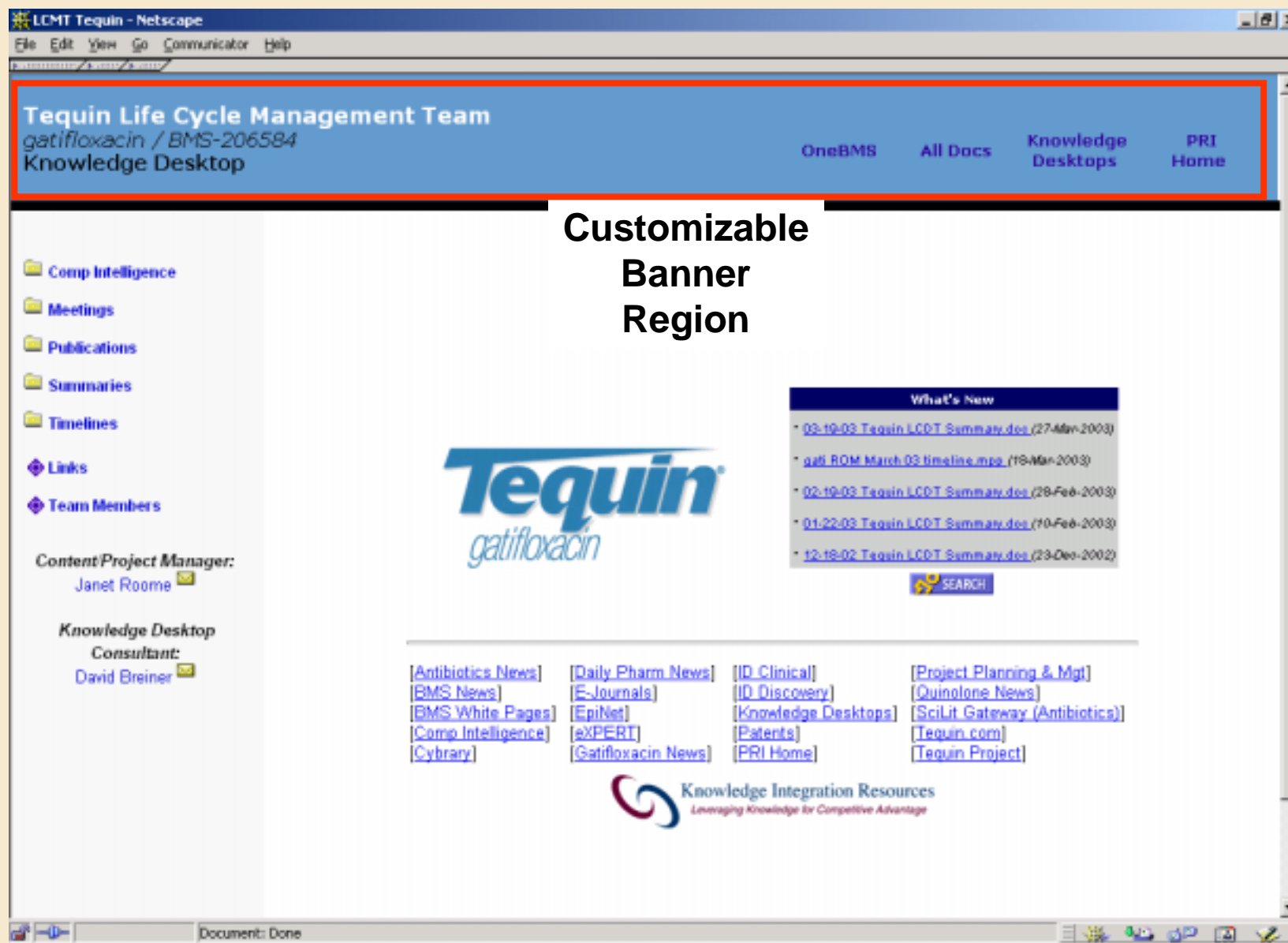
## Common complaints

- Difficult retrieval
- Users must go to multiple sources
- Not all sources are current
- Re-formatting documents
- User must back-up documents
- Stifling security
- Inconsistent architecture

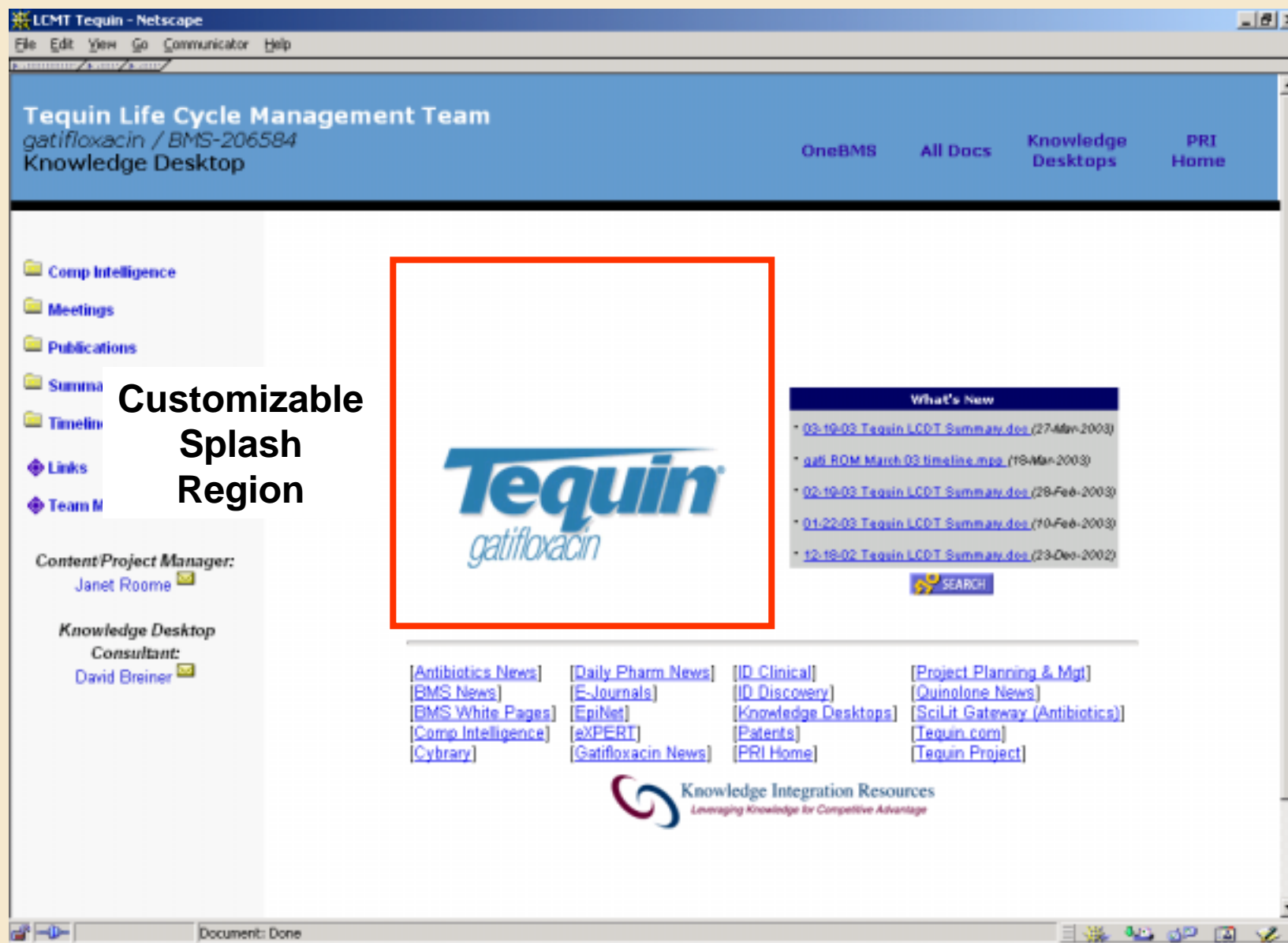
# What is the Knowledge Desktop?

- Web gateways to enable teams and communities of practice to collaborate and achieve breakthrough performance
- The Knowledge Desktop is more than an application...
  - ✓ KM Consultancy and Service
  - ✓ Process: Content Management Training and Support
  - ✓ A Team's Business Practice

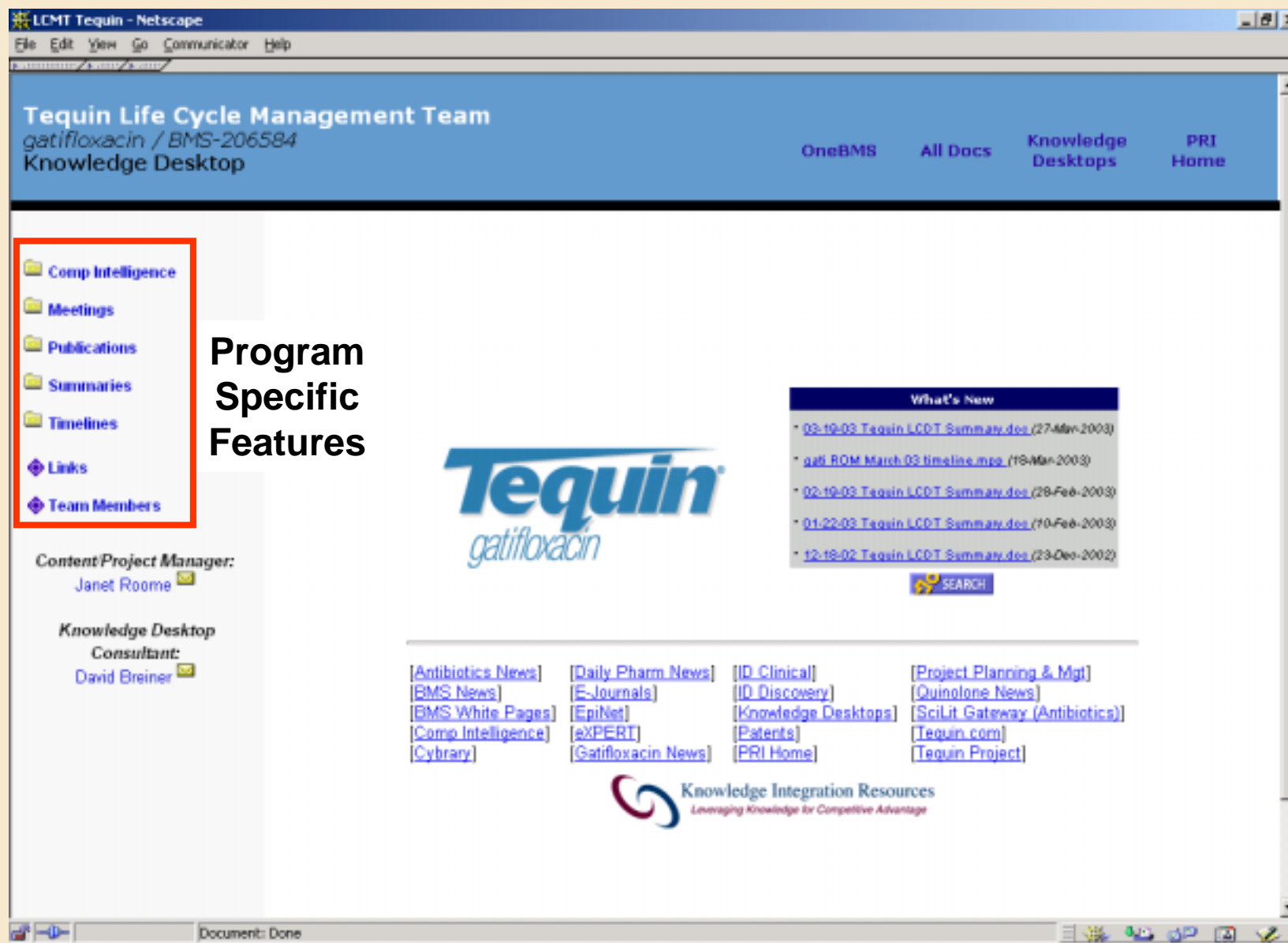
# Anatomy of a Knowledge Desktop (V. 3.X)



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# Anatomy of a Knowledge Desktop (V. 3.X)

The screenshot shows a Netscape browser window titled "LCMT Tequin - Netscape". The address bar shows a URL starting with "http://". The page header is blue and contains the text "Tequin Life Cycle Management Team", "gatifloxacin / BMS-206584", and "Knowledge Desktop". Navigation links include "OneBMS", "All Docs", "Knowledge Desktops", and "PRI Home".

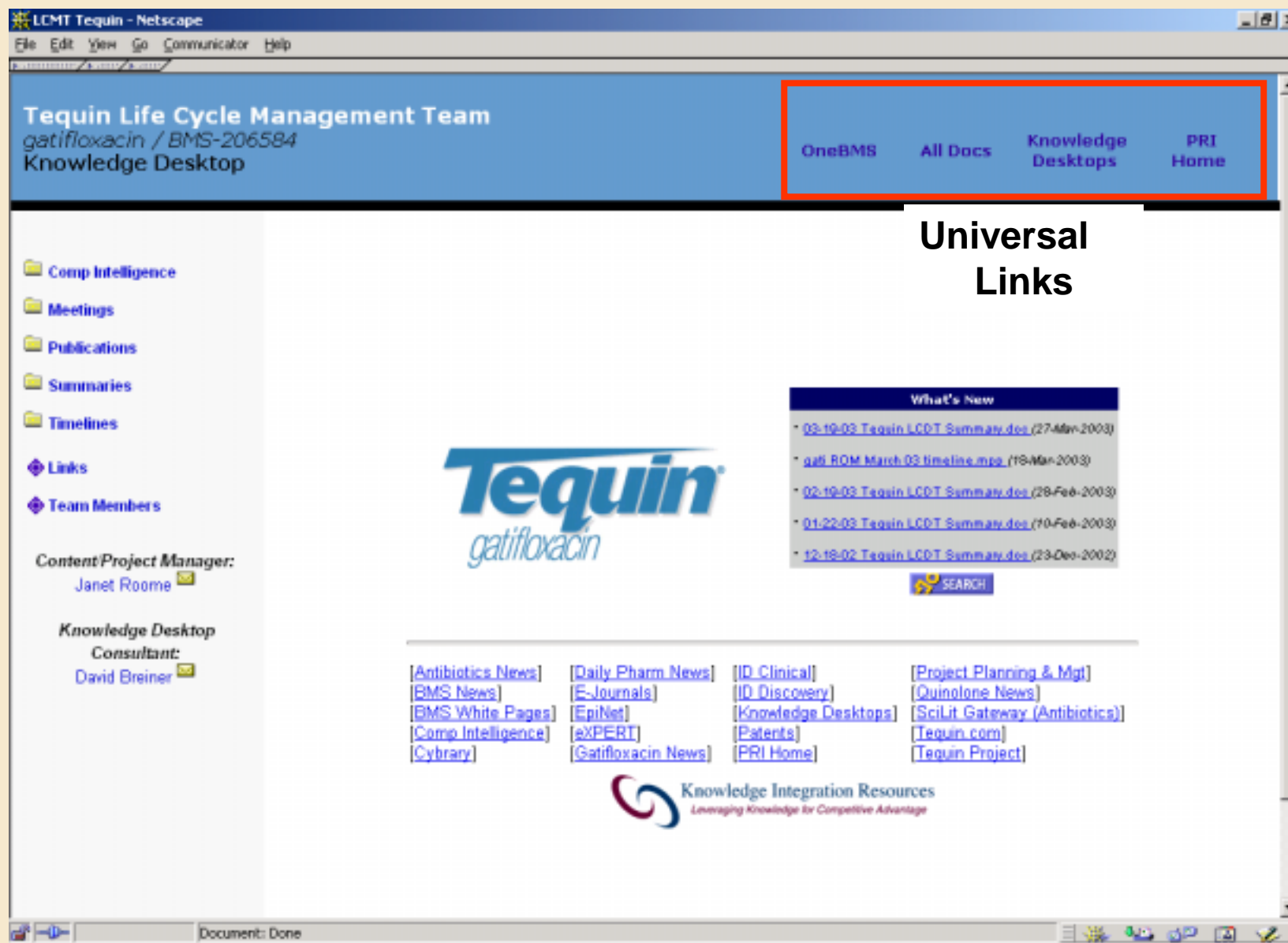
On the left side, there is a vertical menu with the following items: "Comp Intelligence", "Meetings", "Publications", "Summaries", "Timelines", "Links", and "Team Members". Below this menu, a red box highlights the "Content/Project Manager:" section, which lists "Janet Roome" with an email icon, and the "Knowledge Desktop Consultant:" section, which lists "David Breiner" with an email icon. Below the red box, the word "Contacts" is written in a large, bold, black font.

The main content area features the "Tequin" logo with "gatifloxacin" underneath. To the right of the logo is a "What's New" section with a list of links and dates, including "03-10-03 Tequin LCOT Summary.doc (27-Mar-2003)", "gati ROM March 03 timeline.mps (18-Mar-2003)", "02-10-03 Tequin LCOT Summary.doc (28-Feb-2003)", "01-22-03 Tequin LCOT Summary.doc (10-Feb-2003)", and "12-18-02 Tequin LCOT Summary.doc (23-Dec-2002)". Below this list is a "SEARCH" button.

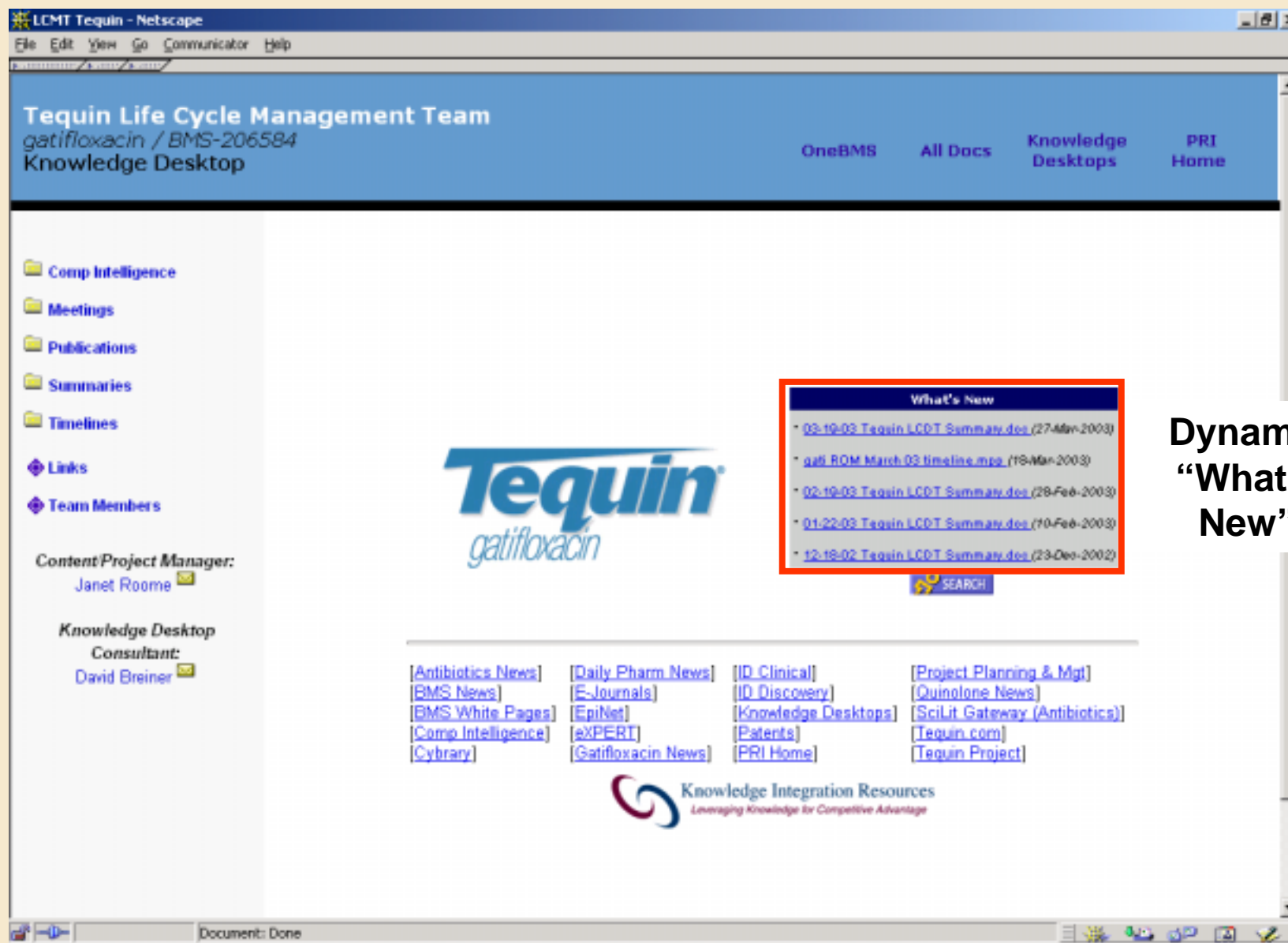
At the bottom of the page, there is a grid of links organized into four columns: "Antibiotics News", "Daily Pharm News", "ID Clinical", "Project Planning & Mgt"; "BMS News", "E-Journals", "ID Discovery", "Quinolone News"; "BMS White Pages", "EpiNet", "Knowledge Desktops", "SciLit Gateway (Antibiotics)"; "Comp Intelligence", "eXPERT", "Patents", "Tequin.com"; "Cybrary", "Gatifloxacin News", "PRI Home", and "Tequin Project".

Below the grid of links is the "Knowledge Integration Resources" logo and the tagline "Leveraging Knowledge for Competitive Advantage". The browser's status bar at the bottom shows "Document: Done".

# Anatomy of a Knowledge Desktop (V. 3.X)

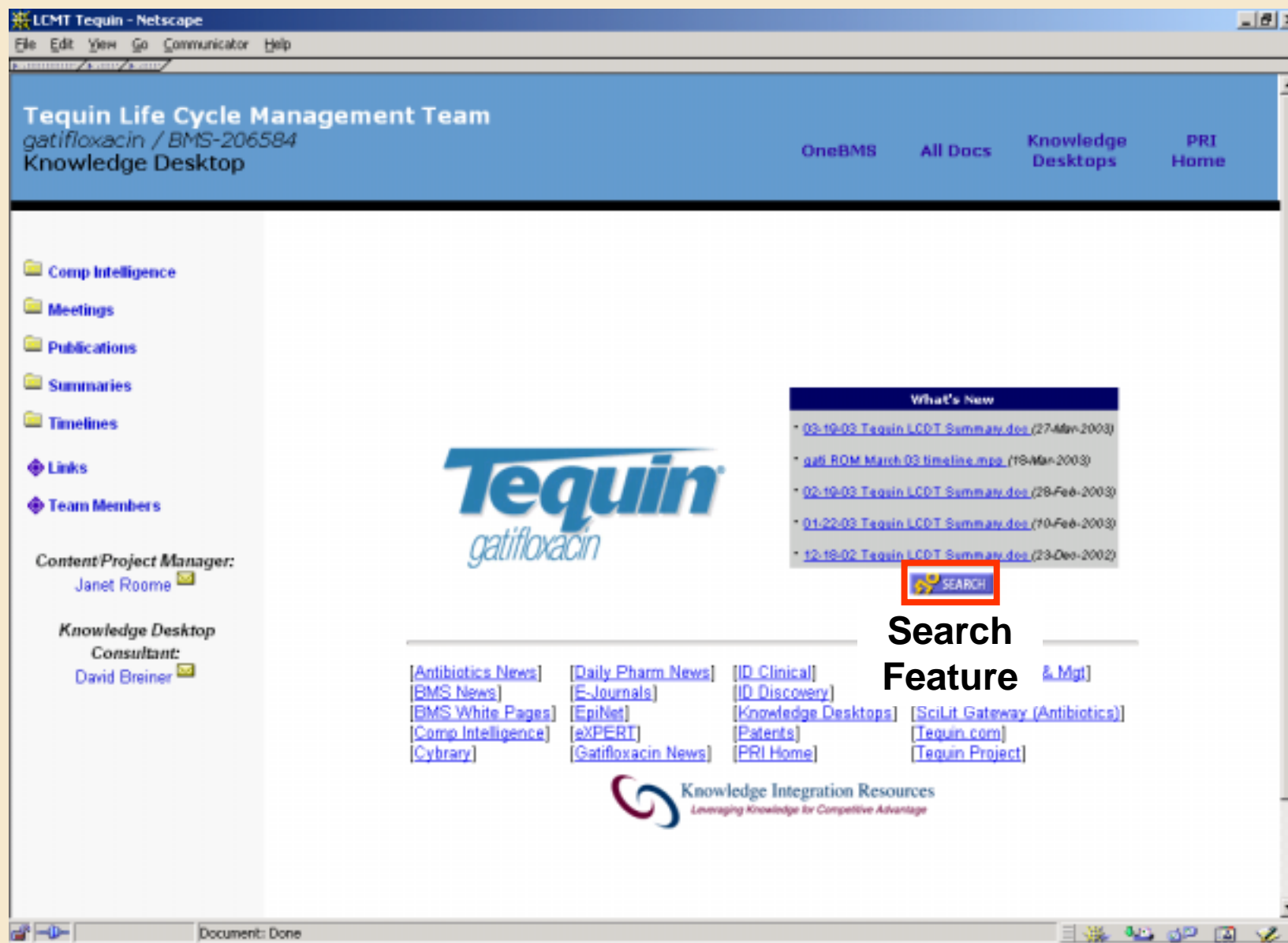


# Anatomy of a Knowledge Desktop (V. 3.X)



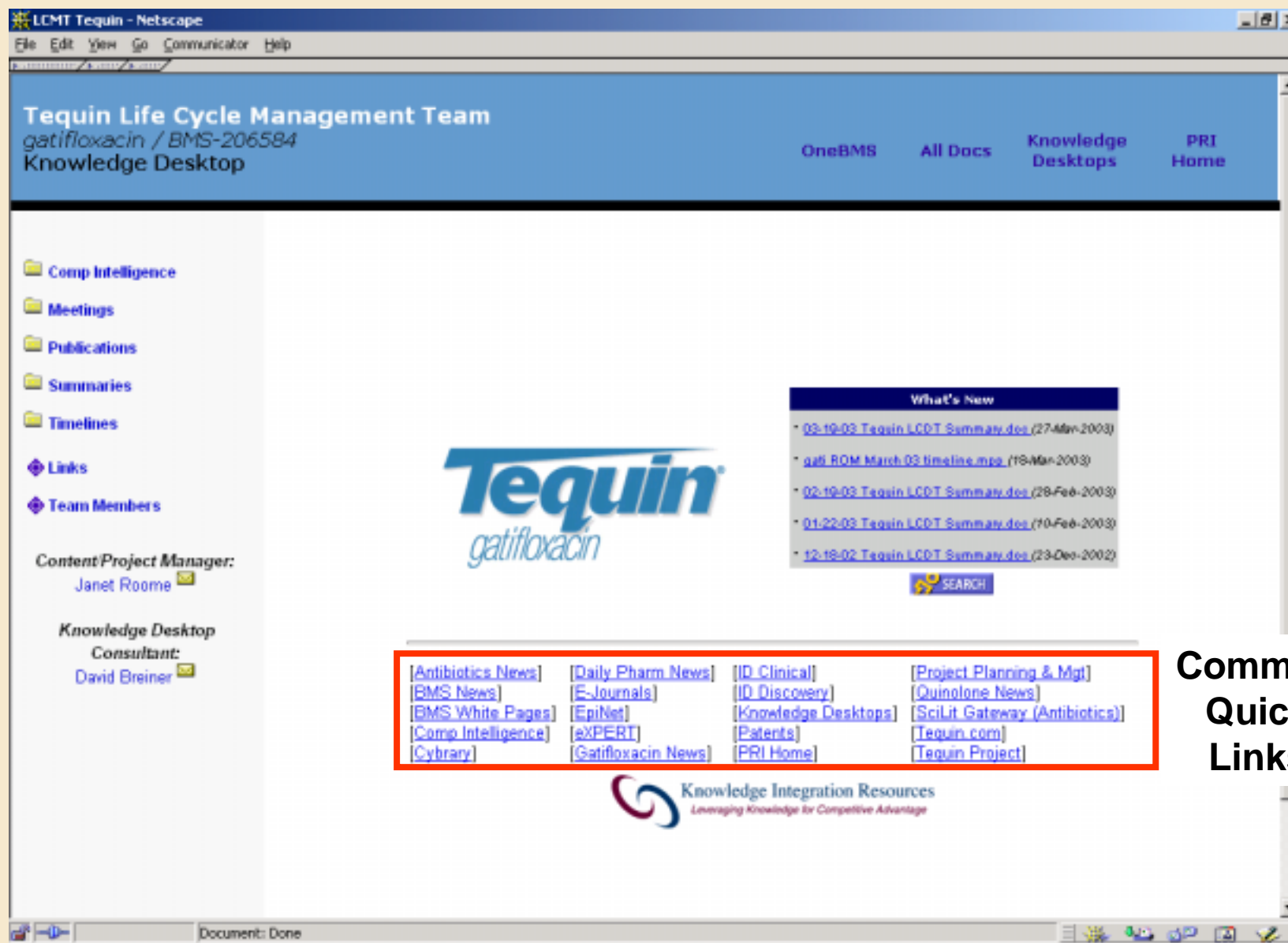
Dynamic  
"What's  
New"

# Anatomy of a Knowledge Desktop (V. 3.X)



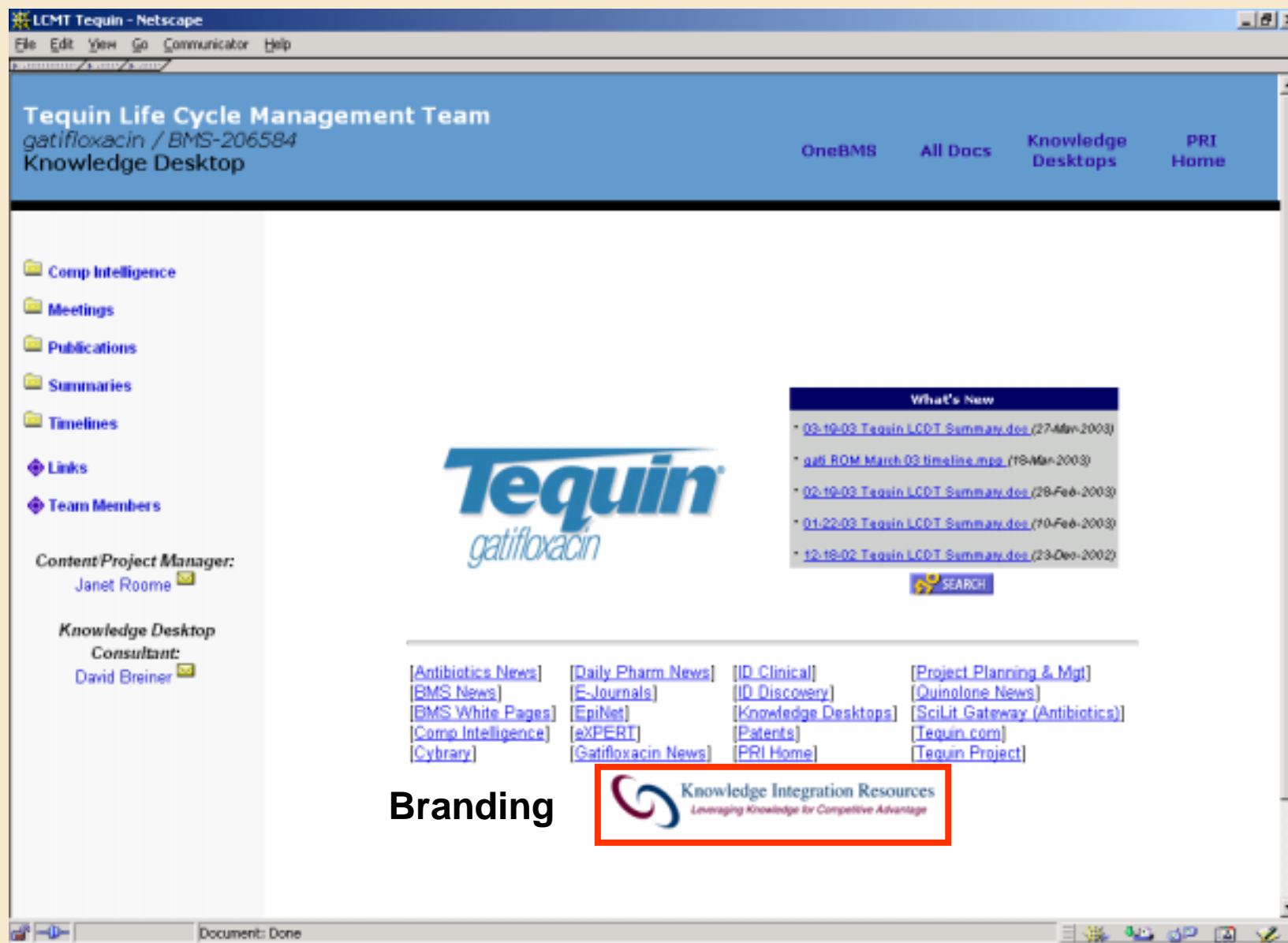
**Search  
Feature**

# Anatomy of a Knowledge Desktop (V. 3.X)



Common  
Quick  
Links

# Anatomy of a Knowledge Desktop (V. 3.X)



Branding



# Navigating to Documents

LCMT Tequin - Netscape

File Edit View Go Communicator Help

Tequin Life Cycle Manage  
gatifloxacin / BMS-206584  
Knowledge Desktop

Docs Knowledge Desktops PRI Home

Comp Intelligence  
Meetings  
Publications  
Summaries  
Timelines

Tequin (gatifloxacin) PubMed search  
**Tequin (gatifloxacin) Reviews**  
Tequin Pipeline Literature

Wing-outs point to documents that reside in Documentum repository

Tequin  
gatifloxacin

What's New

- 03-10-03 Tequin LCOT Summary.doc (27-Mar-2003)
- gati ROM March 03 timeline.mps (18-Mar-2003)
- 02-10-03 Tequin LCOT Summary.doc (28-Feb-2003)
- 01-22-03 Tequin LCOT Summary.doc (10-Feb-2003)
- 12-18-02 Tequin LCOT Summary.doc (23-Dec-2002)

SEARCH

Content/Project Manager:  
Janet Roome

Knowledge Desktop  
Consultant:  
David Breiner

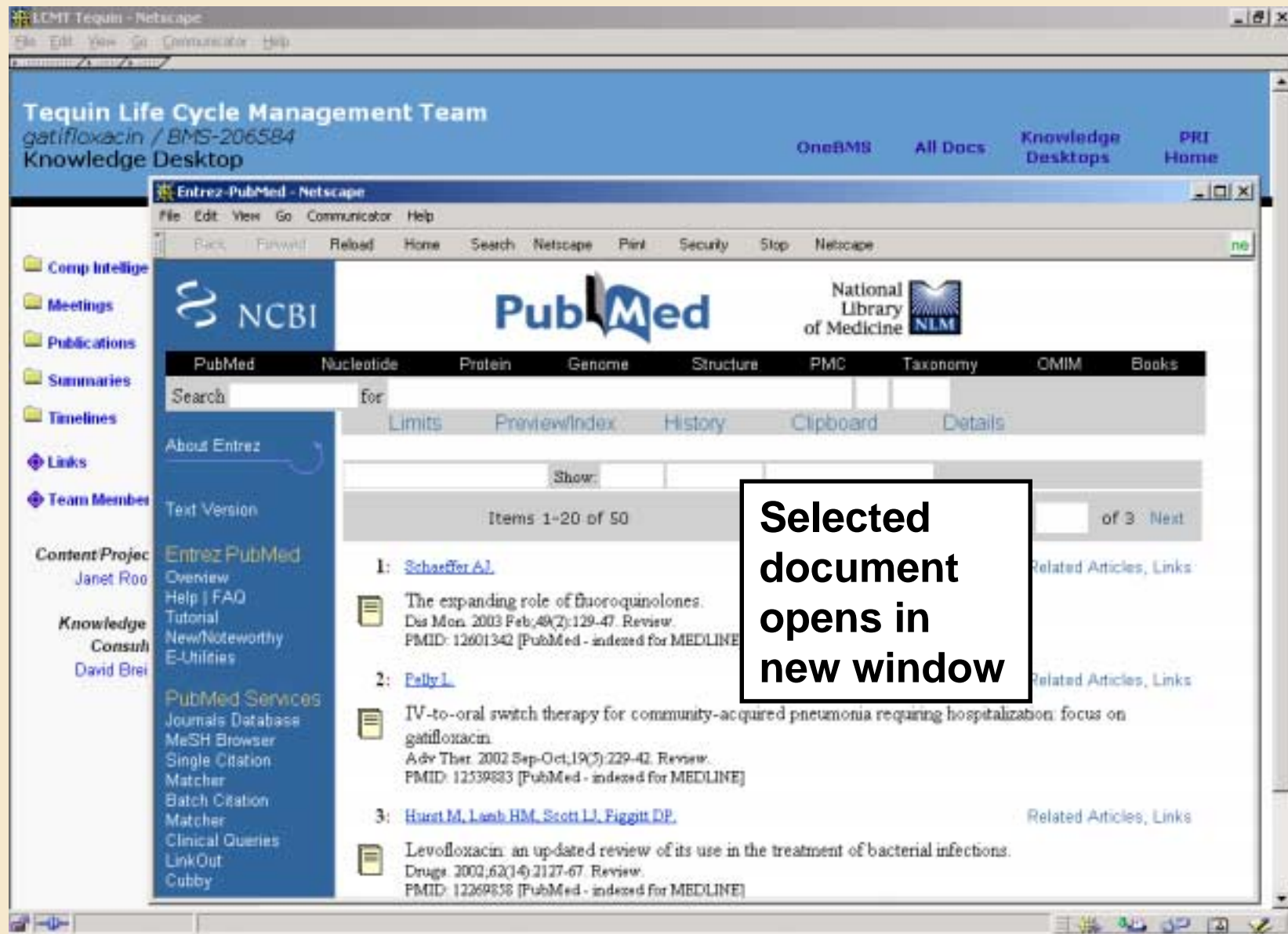
Antibiotics News | Daily Pharm News | ID Clinical | Project Planning & Mgt  
BMS News | E-Journals | ID Discovery | Quinolone News  
BMS White Pages | EpiNet | Knowledge Desktops | SciLit Gateway (Antibiotics)  
Comp Intelligence | xPERT | Patents | Tequin.com  
Cybrary | Gatifloxacin News | PRI Home | Tequin Project

Knowledge Integration Resources  
Leveraging Knowledge for Competitive Advantage

javascript:NewWindow("RightSite/getcontent?DMW\_DOCBASE=PRI&DMW\_OBJECTID=09008ab7800f0136")



# Opening Documents





# Building the “Franchise”

- “Proof of Principle” obtained with Microbiology
- Microbiology Executive Director’s sponsorship “opened the door” to Drug Discovery
- Lead Discovery and Applied Genomics executives requested KDs for seven newly emerging “Target Class” Communities of Practice paving the way to other disease areas
- Broad use in Drug Discovery led to Drug Development
- Broad use in PRI led to the Worldwide Medicines Group

...And The **Knowledge Desktop Brand** Was Born!

# Knowledge Desktop Scope

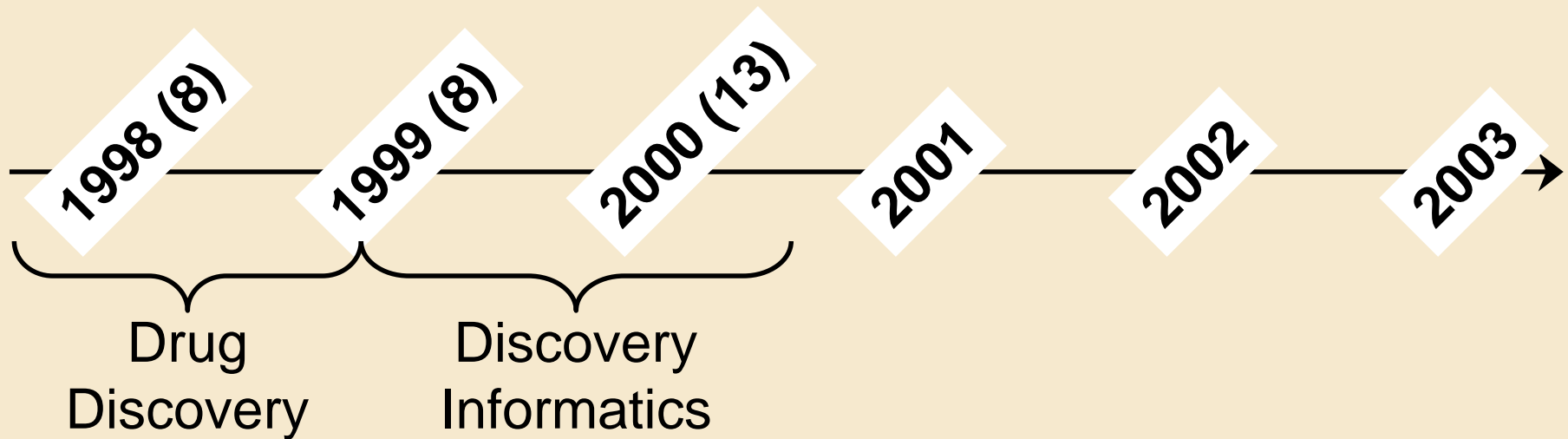


***The Knowledge Desktop supports all phases of Discovery and Development***

- Started in Drug Discovery and advanced down the pipeline
- Over 275 Knowledge Desktops launched
- All disease and functional areas
- All major Pharmaceutical Research Institute locations in USA
- Expanding international presence

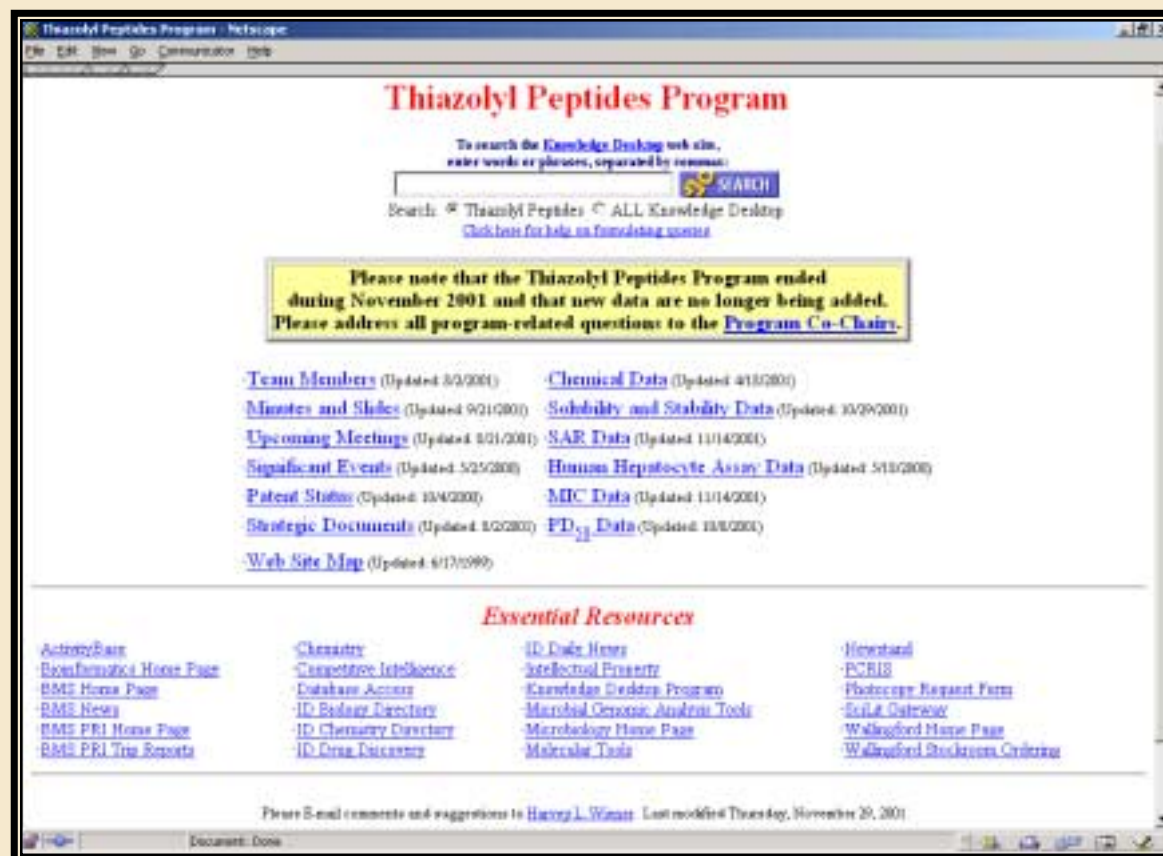
# Evolution of the Knowledge Desktop

Macintosh



# Macintosh Knowledge Desktop (V. 1.X)

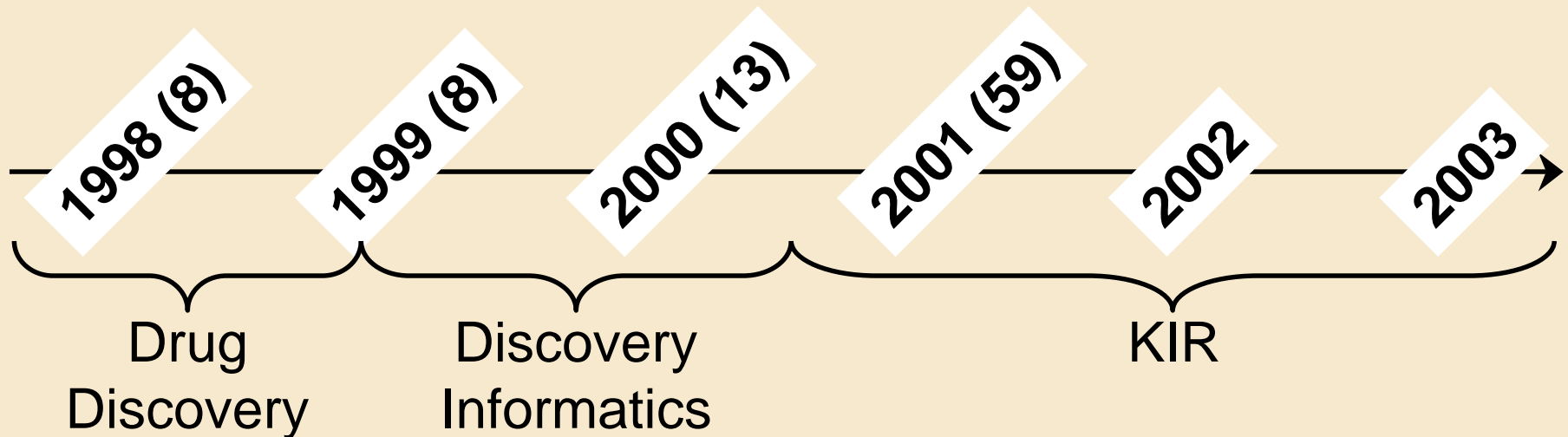
- ✓ Simple, intuitive interface
- ✓ Security: group passwords
- ✓ Search feature
- ✗ Difficult content management (HTML required)
- ✗ No collaborative authoring
- ✗ Limited IT support
- ✗ Limited availability



# Evolution of the Knowledge Desktop

Macintosh

UNIX

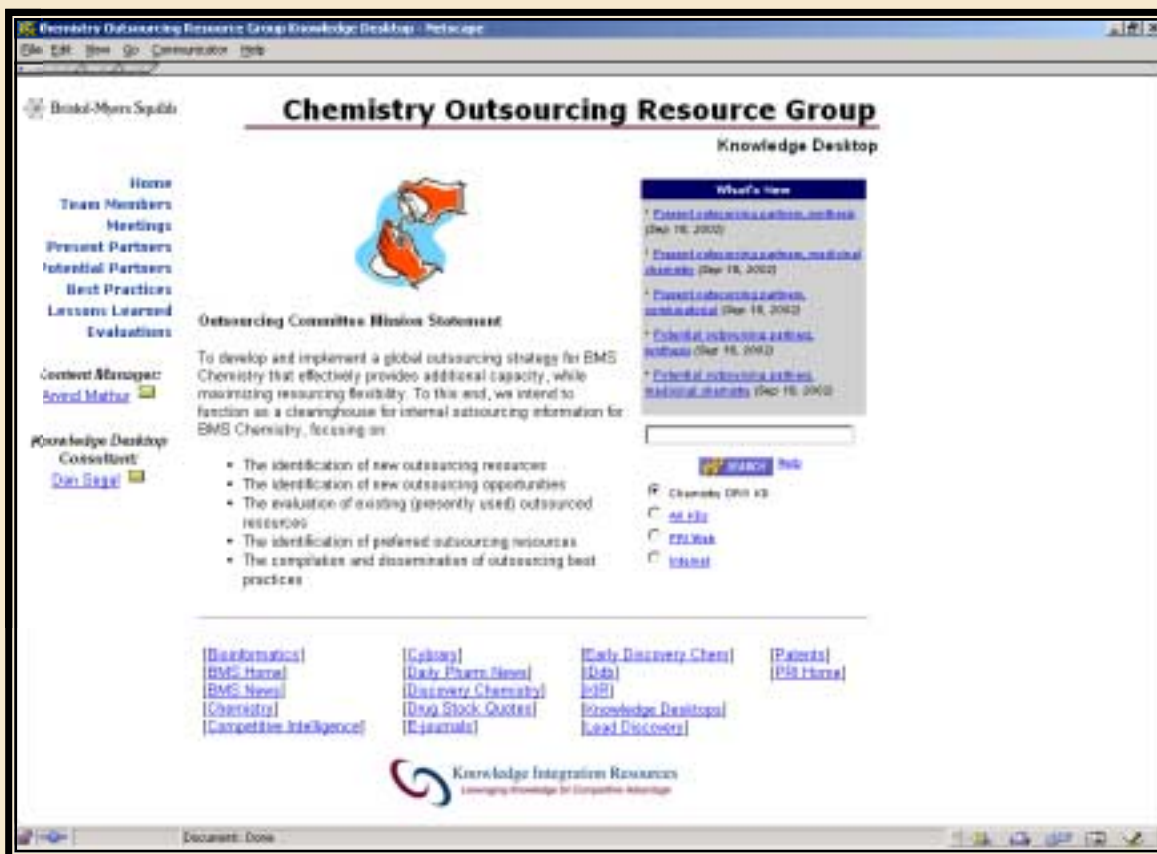


# Proper Parent Organization Is Critical

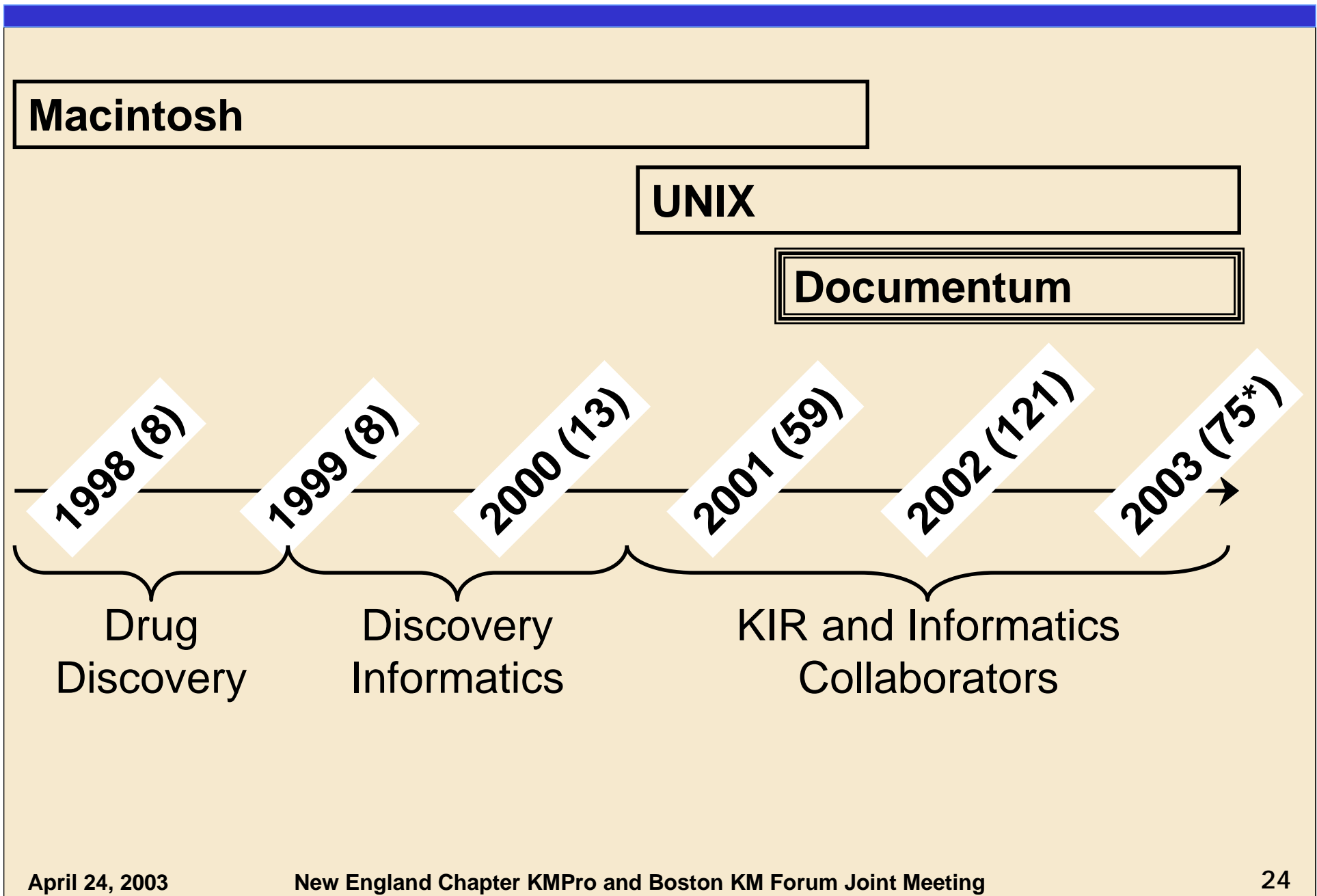
- Drug Discovery Informatics' early focus was not KM
  - Compound Management and Distribution
  - Data Analysis and Management
  - Laboratory automation
  - Limited resources for KM initiatives
- Project transferred to Knowledge Integration Resources (KIR) - this provided:
  - ✓ Support and resources
  - ✓ Organization, Governance
  - ✓ Project management
  - ✓ Wealth of e-resources and expertise in content sources
  - ✓ New connections

# Unix Knowledge Desktop (V. 2.X)

- ✓ Robust platform
- ✓ Supported by KIR
- ✓ Greater availability
- ✓ Security: individual passwords
- ✓ Dynamic “What’s New”
- ✗ Difficult content management (HTML required)
- ✗ No collaborative authoring



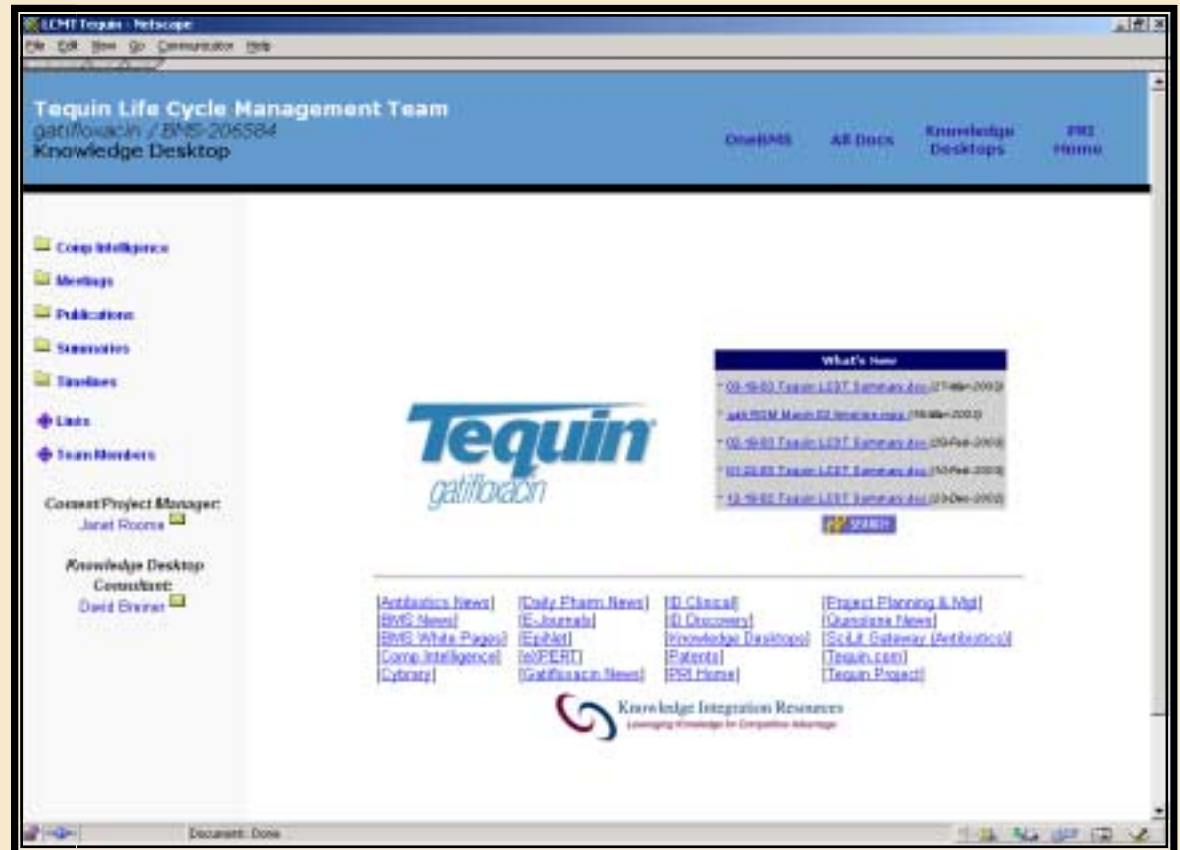
# Evolution of the Knowledge Desktop



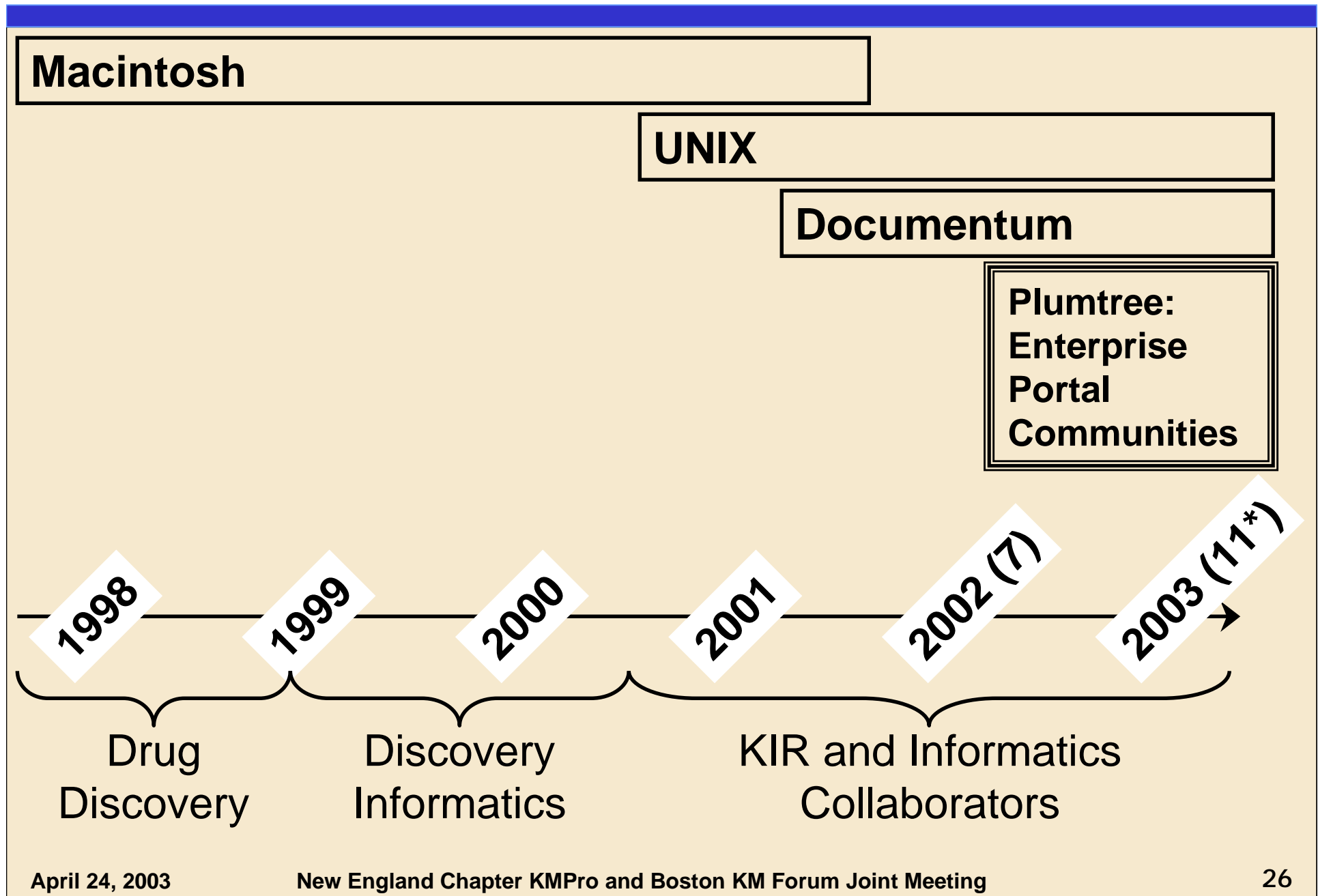


# Documentum Knowledge Desktop (V. 3.X)

- ✓ Industrialized process
- ✓ Simplified content management
- ✓ Enterprise standard document repository
- ✓ Object-level security
- ✓ Collaborative authoring
- ✓ Document version control
- ✓ Metadata capabilities
- ✗ Limited design flexibility



# Evolution of the Knowledge Desktop



# Plumtree Portal Desktop (V. 4.X)

- ✓ Enterprise portal technology
- ✓ New features (i.e., threaded discussion)
- ✓ Extensible through gadgets/portlets
- ✓ More control for Content Manager
- ✓ Customized for the Individual
- ✗ Limited design flexibility
- ? Industrialization
- ? Resources
- ? Training

The screenshot displays the Plumtree Portal Desktop interface for the 'Pravachol: New Osteoporosis Opportunity'. The page is organized into several sections:

- Prave-Osteo Meetings:** A table listing meetings with columns for Date, Time, HPW, and WFD.
 

Date	Time	HPW	WFD
Jan. 23, 2002	2 - 4 PM	19-364	P404B
Feb. 22, 2002	2 - 4 PM	19-364	P404B
Mar. 28, 2002	9-11 AM	21-0394	P404B
- Community Links:** A list of links to various resources, including 'Pravachol', 'Pravachol.com', 'Osteovision', 'Osteoporosis Programs', 'Osteoporosis News', and 'National Osteoporosis Foundation'.
- Thrombosis News:** A list of news items, including 'Abbott reveals novel alpha2beta1 modulators in recent patent', '31-Oct-2002 - Prous Daily Essentials', 'NICE (UK National Institute for Clinical Excellence) issues thrombolytic guidance', '31-Oct-2002 - Scrip', 'Zetia lifts Schering-Plough out of gloom', '31-Oct-2002 - Scrip', and 'XIMITA (TM), an oral direct thrombin inhibitor, significantly reduces risk of VTE in major CG'.
- Prave-Osteo Demo Team:** A section for the demo team, featuring a 'Feedback' button and a 'Pravachol: New Osteoporosis Opportunity' banner.
- Community Publications:** A list of publications, including 'Prave-Osteo Meetings', 'Prave-Osteo: Strategic Documents', and 'Prave-Osteo: Program Data'.
- Prave-Osteo: Strategic Documents:** A list of documents, including 'PRDC: Role of BCTs', 'PRDC: Overview', and 'Pravachol: Global Partnership Statement'.
- Threaded Discussion:** A forum section with a table of posts and replies.
 

Post #	Subject	Author	Date
4	RE: RE: Re-Evaluation of LIPID trial for osteoporosis I	OneBMS/pegald	2/13/02 9:22:48 AM
1	RE: Re-Evaluation of LIPID trial for osteoporosis I	OneBMS/kenek	2/13/02 9:07:01 AM
2	RE: RE-Evaluation of LIPID trial for osteoporosis I	OneBMS/sterzyer	2/12/02 7:10:39 PM
1	Re-Evaluation of LIPID trial for osteoporosis I	OneBMS/cookk	2/12/02 4:48:01 PM

# Additional Services to Support Collaboration

New services introduced in 2002 - 2003:

- Community Consulting Service
- Lessons Learned Consulting Service

Process enhancements:

- Enterprise-level sponsorship
- Community Review Board
- Collaboration with Information Management Shared Services
- Help desk support

# One Integrated Community Consulting Process

## 1. Plan and Prioritize

- Process initial request
- Gather information and requirements
- Prioritize
- Go to “Build” or consider alternatives

## 2. Build

- Plan and design
- Build and test
- Promote to production
- Community kick-off

## 3. Sustain

- Perform health check: conduct “well visit” or prescribe to revive
- Enhance online community as needed
- Prepare to “Archive”

## 4. Archive

- Preserve community memory
- Celebrate the time together
- Move on

# Challenges

- Open, sharing culture
- Sponsorship
- Organizational readiness
- Security: information access on a need to know basis
- Balancing supply and demand
- Industrialization
- Leveraging technology
- Parent organization and governance
- Minimize content management time commitments

# Content Management

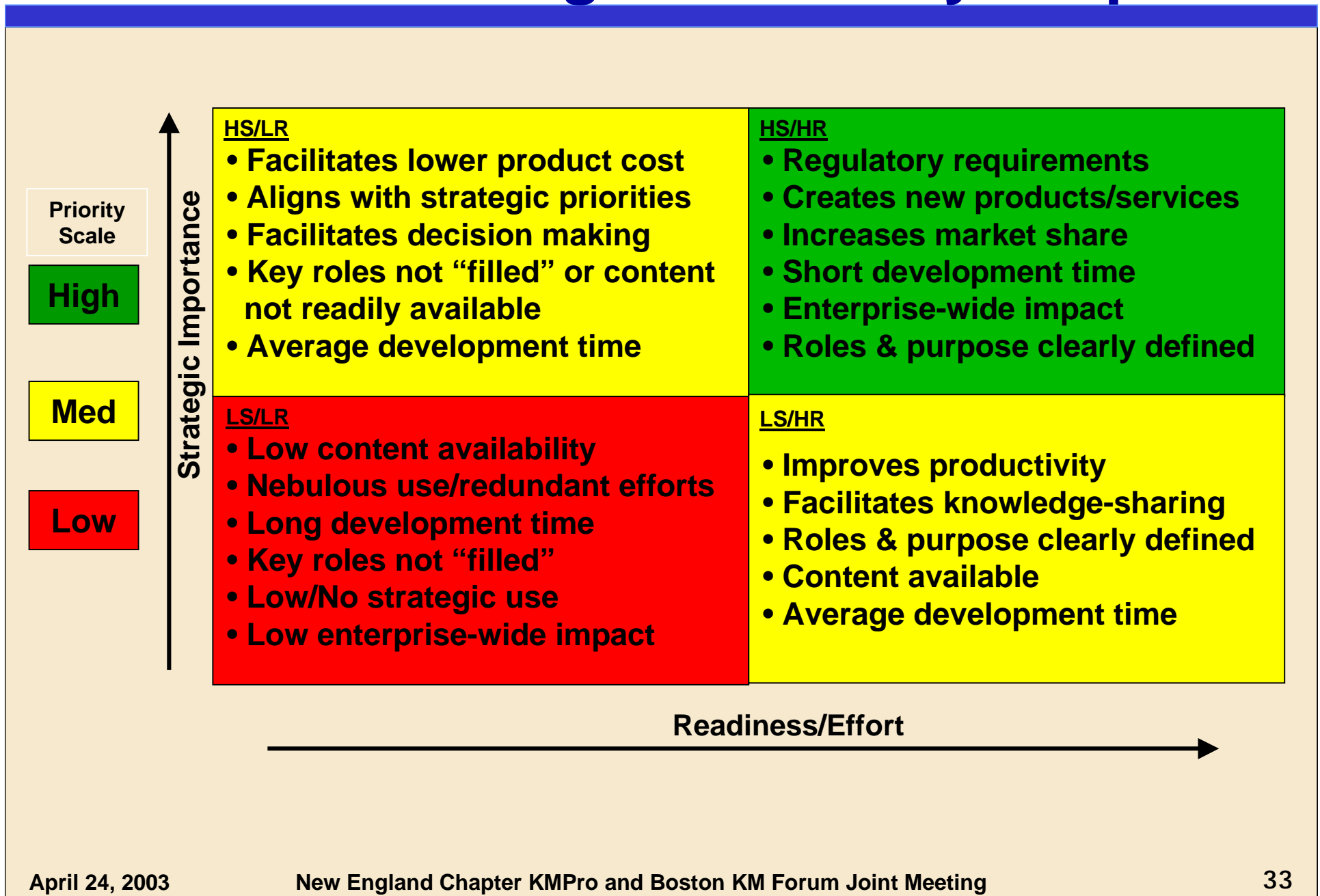
- Content owned by work group
- Easy: No HTML required with Documentum, just “drag and drop”
- Easy: No HTML required with Plumtree, use Wizards
- Less than one hour per week
- Training and support provided by Knowledge Management Team
- Growth and development of Content Managers' Community of Practice (>200 members), which meets semi-annually

# Other Lessons Learned

- Effective prioritization scheme
- Commitment to continued process and product improvement
- Communication of initial successes
- Capture metrics: quantitative, qualitative, and anecdotal
- Keep it simple
- Partner with other enabling groups



# Prioritizing Community Requests



# Tools and Services Offered

- Community Leader coaching
  - ✓ Roles, responsibilities and estimated time commitments
  - ✓ Readiness (visioning, goal setting, member engagement)
  - ✓ Community charter template
  - ✓ Referrals to other KM tools and services such as Social Network Analysis and Lessons Learned
- Development of an online environment
- Content Manager and Community Member training
- Expertise profiling for the community

# Documented Benefits

- Proven user acceptance
- Saves time locating critical information
- Driven by continuous feedback
- Promotes BMS goals and priorities
- Uses existing BMS technologies
- Leverages critical resources

# Online Communities: User Feedback

- *"It is absolutely essential to success of programs ...major accelerator of drug discovery...breaks down silos."*
- *"I rely on it each and every day, as does my co-chair and most of the team members. I cannot imagine running this program without it."*
- *"...major advance in our ability to capture and share knowledge."*
- *"...a place where we routinely share information and get work done. It is the platform for our Knowledge Management strategy."*

# Acknowledgements

Carol Bekar

Russ Bertelsen

Melinda Bickerstaff

David Breiner

Stephen Highcock

Graham Hill

Paul Knight

Karen Lyons

Michael Rogers

Dan Segal

JoAnne Sparks

Roman Sterzycki

## Questions/Feedback

*For additional information, please contact:*

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