

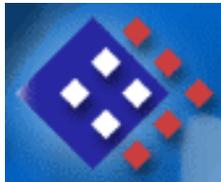


Orange County

September 28, 2000
County Data Center
Santa Ana, CA

FM Technology:

*A 6 Question and 1 Case Study
Management Overview*



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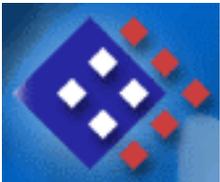


Agenda

The Questions -

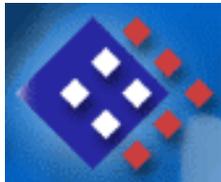
- 1. What is FM Technology?*
- 2. Who are the 'Players?'*
- 3. How do I implement it?*
- 4. What does it cost?*
- 5. What are the benefits?*
- 6. What is the future?*

The Case Study - *Capitol Hill*



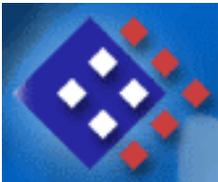
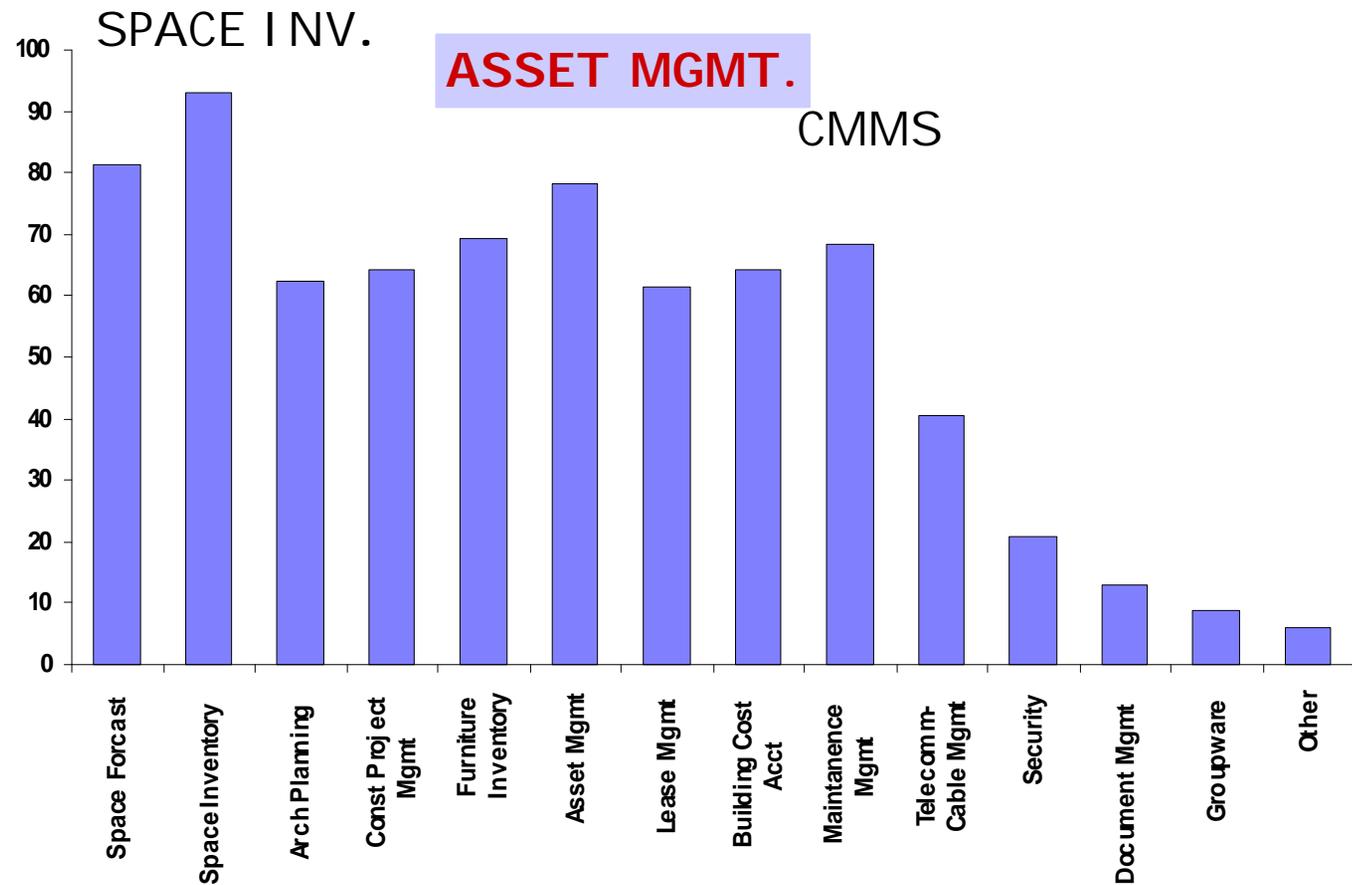


1. WHAT IS FM TECHNOLOGY?



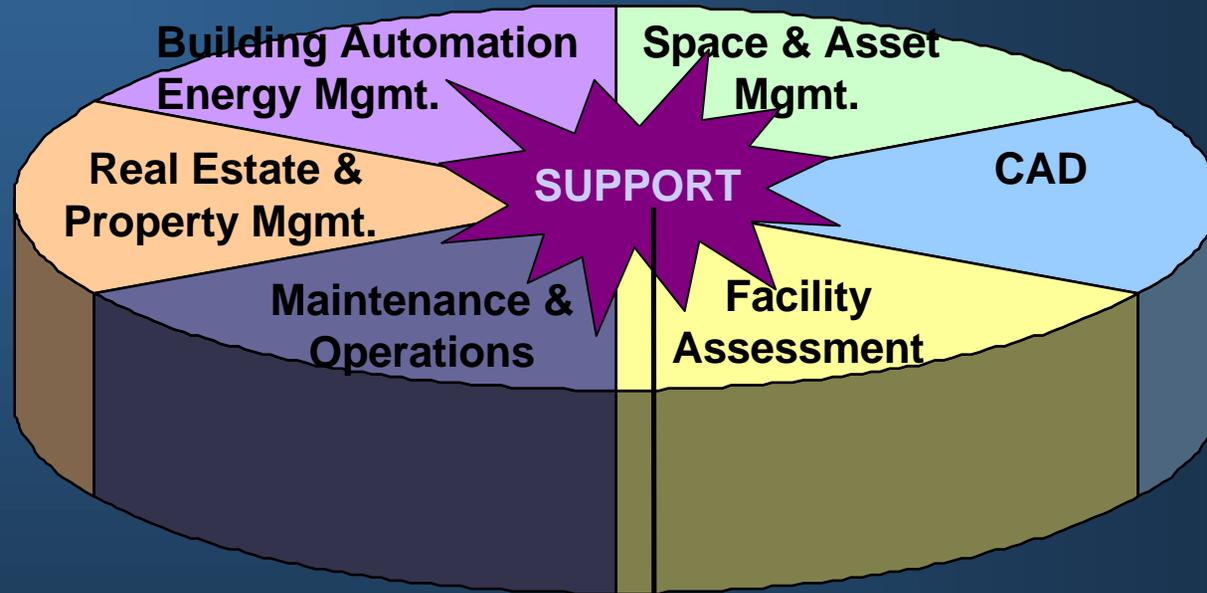


41. WHAT CAFM IS USED FOR

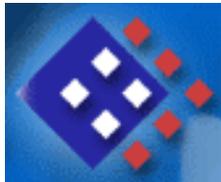




FM Technology



- IT Infrastructure
- ERP
- Project Management
- Strategic Planning
- Finance & Procurement
- Workflow / Process /Standards
- Document Management
- Collaboration

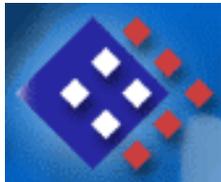
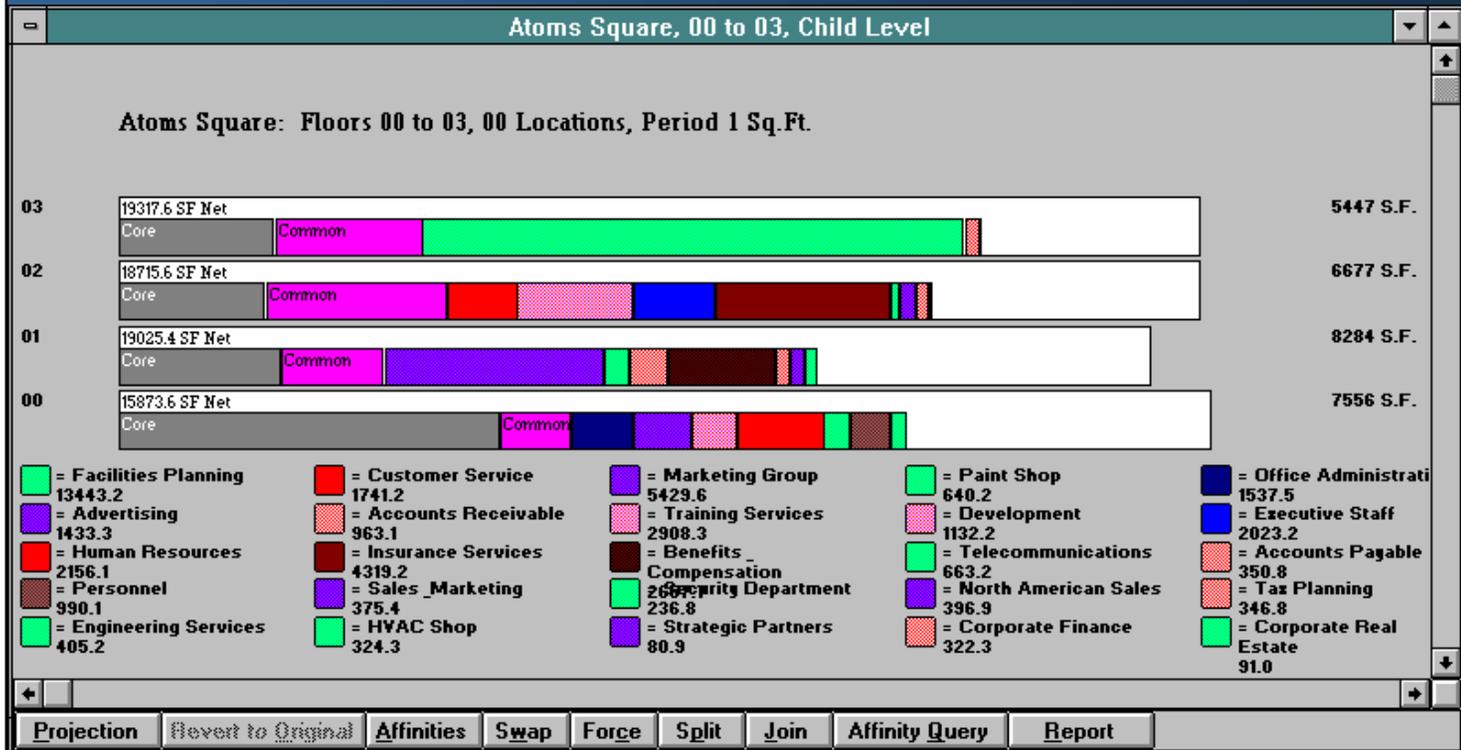


Space and Asset Management (Aperture)

The screenshot displays the Aperture software interface for space and asset management. The main window shows a floor plan with rooms color-coded by department. A legend on the left lists the departments: Finance (yellow), Acctg (pink), Mkting (red), HR (blue), Facilities (light green), Common (grey), R & D (dark green), Unassg (light yellow), and I.S. (cyan). On the right, a 'REPORTS' menu is visible, with a 'GO TO FLR' button set to '08'. A 'Modify a Stylizer Expression' dialog box is open, showing the 'Record' as 'E-Asset Coverage Table' and the 'Name' as 'Department'. The 'Field Names' list includes 'Asset #', 'Coverage Type', 'Start Date', 'Period', 'Term', 'Expiration Date', and 'Days Remaining'. The 'Functions' list includes mathematical and logical operators like ABS(), ARCTAN(), COS(), EXP(), INT(), LOG10(), LOGN(), MAX(), MIN(), MOD, AND, and OR. The 'Expression...' field contains the formula: `FillForeColor[Lookup['S-Stylizer Dept Table'. 'ForeFillColor', 'S-Area', 'Department']]`. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom right of the dialog.

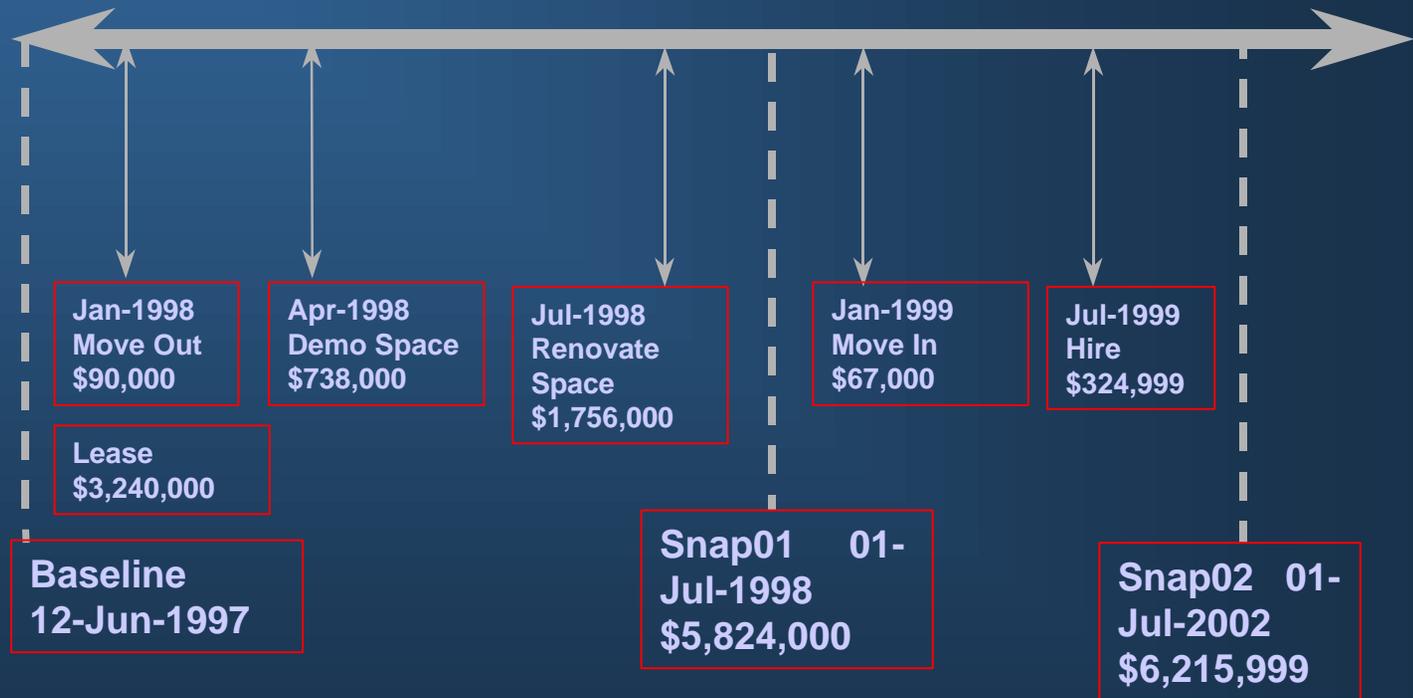


Space Planning/Stacking (Archibus)





Facility Master Planner (FMP) - financial models



FIS: Scenario-based planning (personnel, space, FF+E)





Facility Audit Data Management

Print Report

Reports:

Sort Selection:

Records Selection

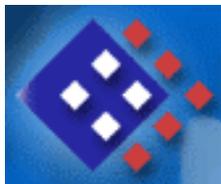
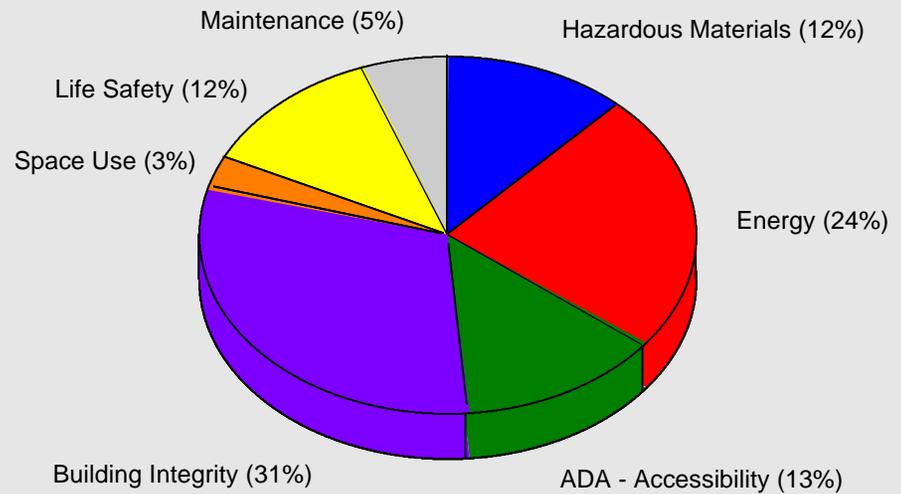
Fields	Operators	Value or Exp
<input type="text" value="Year Built"/>	<input type="text" value=">"/>	<input type="text" value="1929"/>
<input checked="" type="radio"/> AND <input type="radio"/> OR		
<input type="text" value="GrossArea"/>	<input type="text" value=">"/>	<input type="text" value="500000"/>

Print Destination:

Select the Output File Type:

Enter Output File Name (including path):

Deficiency Distribution by Category



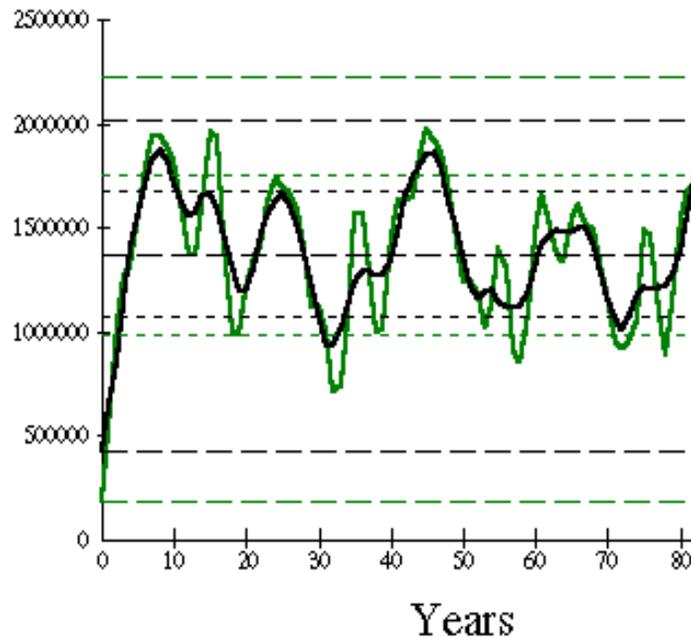
- Sum
- Average
- Min
- Max
- Count



Facilities Renewal Forecast

- Client specific building prototypes
- Each building assigned prototype
- System life cycle phasing

Physical Plant Renewal Expense Forecast



Building Cost Prototype			
<i>File Edit Select Equalize</i>			
Major Bldg Components and Systems	% of Orig. Bldg. Cost	Lifetime (Years)	% Renewed
Foundation	6.35%	100	5.00%
Vertical Support	2.96%	100	5.00%
Floor Framing	6.25%	75	10.00%
Roof Framing	3.16%	75	10.00%
Roofing	4.33%	20	100.00%
Exterior Wall	4.22%	75	35.00%
Doors	1.55%	30	80.00%
Windows	1.73%	30	85.00%
Partitions/Doors	12.25%	50	70.00%
Flooring	4.75%	17	95.00%

Laboratories : \$190/gsf



Work Management (CMMS) Phase



- Work Force Management
- Help Desk & Work Order Processing
- Scheduling
- Planned Maintenance
- Inventory > Purchasing Integration
- Standard Practices & Measurement





Create Work Order

SPAN-FM 6.3 - Maintenance Management

File Edit Property/Organization Standards Details Utilities Window Help

Open/Close Work Orders

Work Order #: 90000017 Time Stamp: 3/21/96 11:10:33

Status: Online Type: Demand

Job Description:

Building: HQ-03 Three Bell Plaza

Room: 03-121 Workstation 121

Building System: ELEC Electrical

Requested By: Herbert, Mike Phone: 313

Contact: Phone:

Activity: ELEC001 Lights Out - Replace

Priority: 02 Within Two Hours

Shop: MAINT General Maintenance

Personnel:

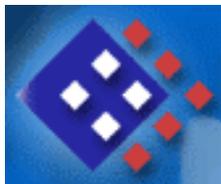
Vendor:

Phone: Beeper:

Project #:

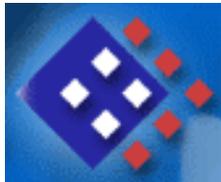
OK Save Clear Cancel Notes Attributes Materials.. Journal.. Asset.. Est/Act.. Latest.. AutoPrint Audit.. View

Ready





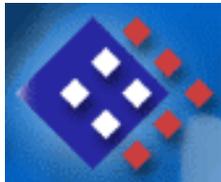
2. Who are the 'players?'





Types of Vendors

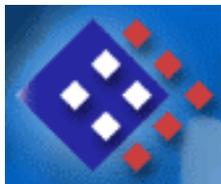
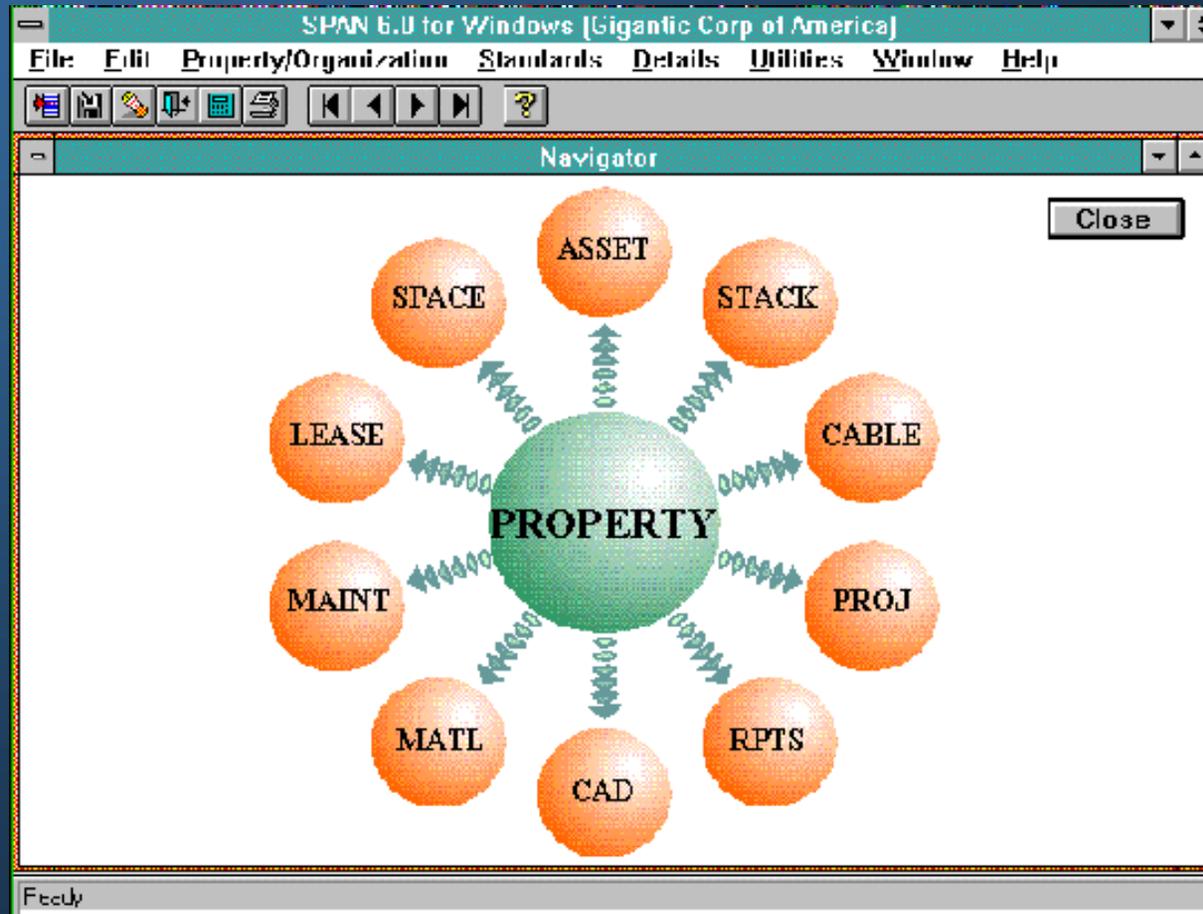
- Integrated CAFM/CI FM Vendors
 - I.e., Peregrine, FIS, Archibus (Enterprise)
 - I.e., Aperture, FM:Systems (Desktop)
- Third Party Discrete
("Islands"/Integration tradeoffs)
 - I.e., AutoCAD, Bentley (CAD); Datastream, Maximo (CMMS); etc.
- Application Service Provider (ASP)
- Write Your Own



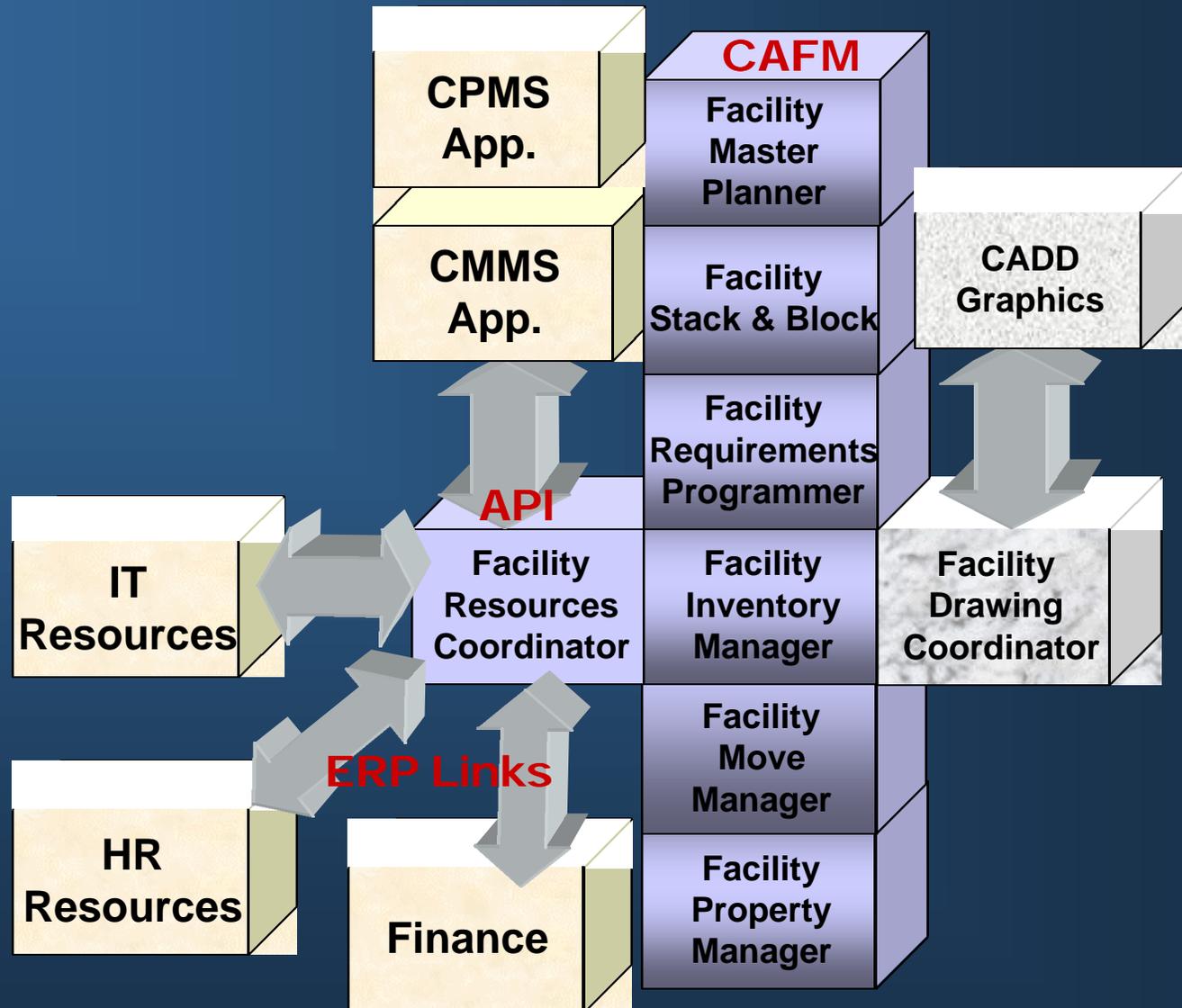
"shellware"



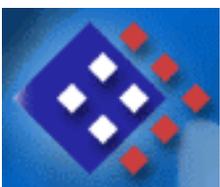
Vendors



Peregrine approach...

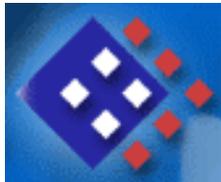


FIS Approach...





3. How do I implement it?





Implementation Planning

- CAFM Team
- Management Involvement (peer analysis)
- Business Needs - limits of FM technology
- Information needs
- Standards (technical/process)
- Database Issues
- Business Process Improvements
- Audit
- Cost-Benefits Analysis
- Implementation Planning
- RFP/performance benchmarks





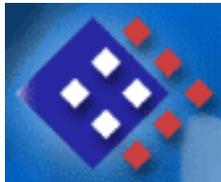
4. What does it cost?





Cost-Benefit Analysis Expenses

	Year 0	Year 1	Year 2	Year 3	Year 4
Expenses					
1. Acquisition related (capital)					
Hardware					
Hardware maintenance					
2. Acquisition related (non-capital)					
CAFM software					
3. Recurring expenses					
Supplies and maintenance					
Support and administration					
Development and customization					
Training					
Consulting					
4. Database/conversion					
New database development					
CAD/database legacy system linking					
Office automation clean-up					
5. One-time expenses					
Documentation					
Installation					
Application training					





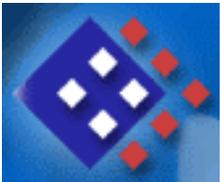
COSTS - CAFM



- Hardware (5)
- Software (4)
- Operations (7)
- Data entry/
maintenance (1)
- Training (3)
- Management (6)
- Overhead (8)
- Customization (2)

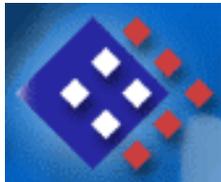
Rule of Thumb....

**You will spend \$5 on
implementation for every
dollar you spend on software**





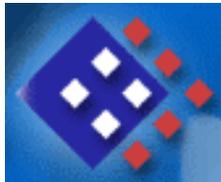
5. What are the benefits?





FM Technology Benefits

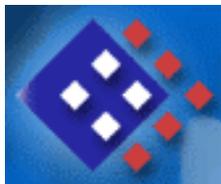
- Savings in facility group labor
 - reduce labor
 - perform additional work
 - capture/maintain more data
- Savings in construction / implementation
- Move costs
- Savings in space resource costs
 - Avoid excess space
- Savings in facility operating costs





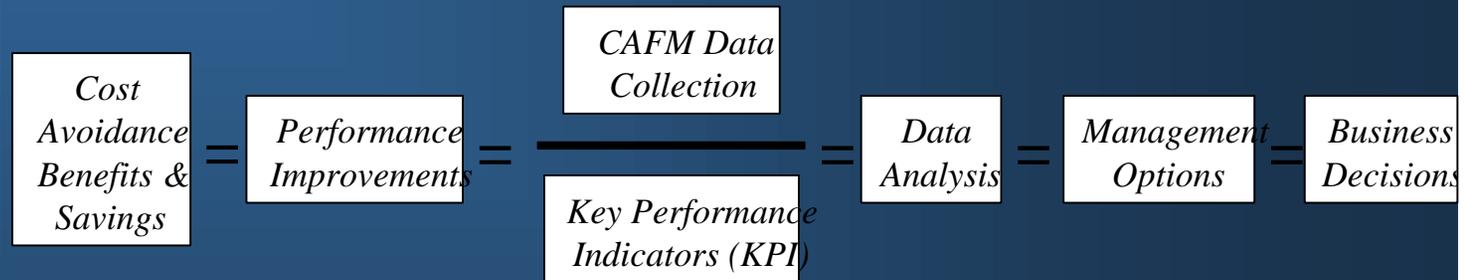
Benefits Impacted By...

- ✓ Area
- ✓ Churn
- ✓ Workload
- ✓ Growth/downsizing
- ✓ Multiple locations
- ✓ Cost of space



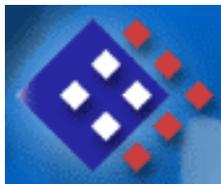


Cost Avoidance, Benefits and Savings Calculations



Performance improvement means three things:

- ◆ *Doing the same amount for less, that is Cost Savings,*
- ◆ *Doing more with the same amount that is cost avoidance,*
- ◆ *Providing a higher quality of service to the customer by improving the quality of service provided.*





Resultant Effects

Quality Service

=

Enhanced Customer Service

Cost Avoidance

=

Resource Management

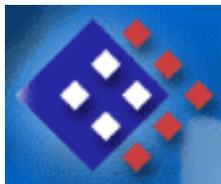
Cost Savings

=

Improved Business Process

Changes are achieved through:

- ◆ *Quality Service, requires that enhancements to the existing levels of customer service*
- ◆ *Cost Avoidance that means better resource management*
- ◆ *Cost Savings that comes through Improved Business Processes where management can do more with less.*





Capital project "drivers"

- Strategic Mission Achievement
- Health and safety
- Regulatory / Compliance
- Completion of ongoing projects
- New capacity / high ROI
- Organizational quality
- Other





6. What is the future?





Evolution of Internet Technologies

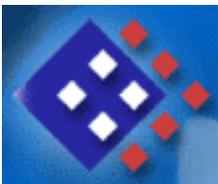
Internet Industry Trends*

Time

FM
Web Categories

	Definition	Characteristics 		
Stage 1: "Brochure-ware"	Web server deployed to provide information about the company and/or its products and services. Vendor automated provision of information, but humans still required to accept orders	Isolated service Web-based (HTML) Vendor-centric Strictly polling		1997 Static/Dynamic Reporting
				Web-Enabled Applications
Stage 2: "E-commerce"	Web server deployed to provide business services (e.g., order placement and order tracking). Vendor automated provision of information and acceptance of orders, but customer still needs humans to integrate information for decision-making	Back-end integration Web-based (HTML and XML) Vendor-centric Strictly polling		2000 Portals & Marketplaces
				ASP's
Stage 3: "Information Integration"	Internet services provide information to integration applications. Customer-automated integration of information for better decision-making, but humans are still required to act upon decisions	Back-end and front-end integration Not limited to Web Customer-centric Event driven (one-way) Container applications integrate information services		2002 e-business & e-process

*Source: <http://moakley.crmproject.com/>





Web Categories & FM Examples

UMass Facilities Planning Division - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Stop

Bookmarks Go to: <http://www.umass.edu/ip/cfm> What's Related

File View Tools Window Help

Maintenance Projects Facility Conditions Buildings/Space

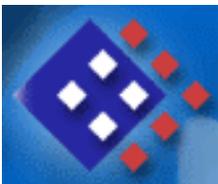
c:\data\eis\data\campus.shp

Campus Map

Queries	Reports
Code Compliance	Bldg. Profile
Life Safety	Deficiency
ADA/Access.	Schedule
Energy	Appearance
Bldg. Integrity	Air Quality
Dynamic Query	

Scale: State Campus Building Floor Room

Ready



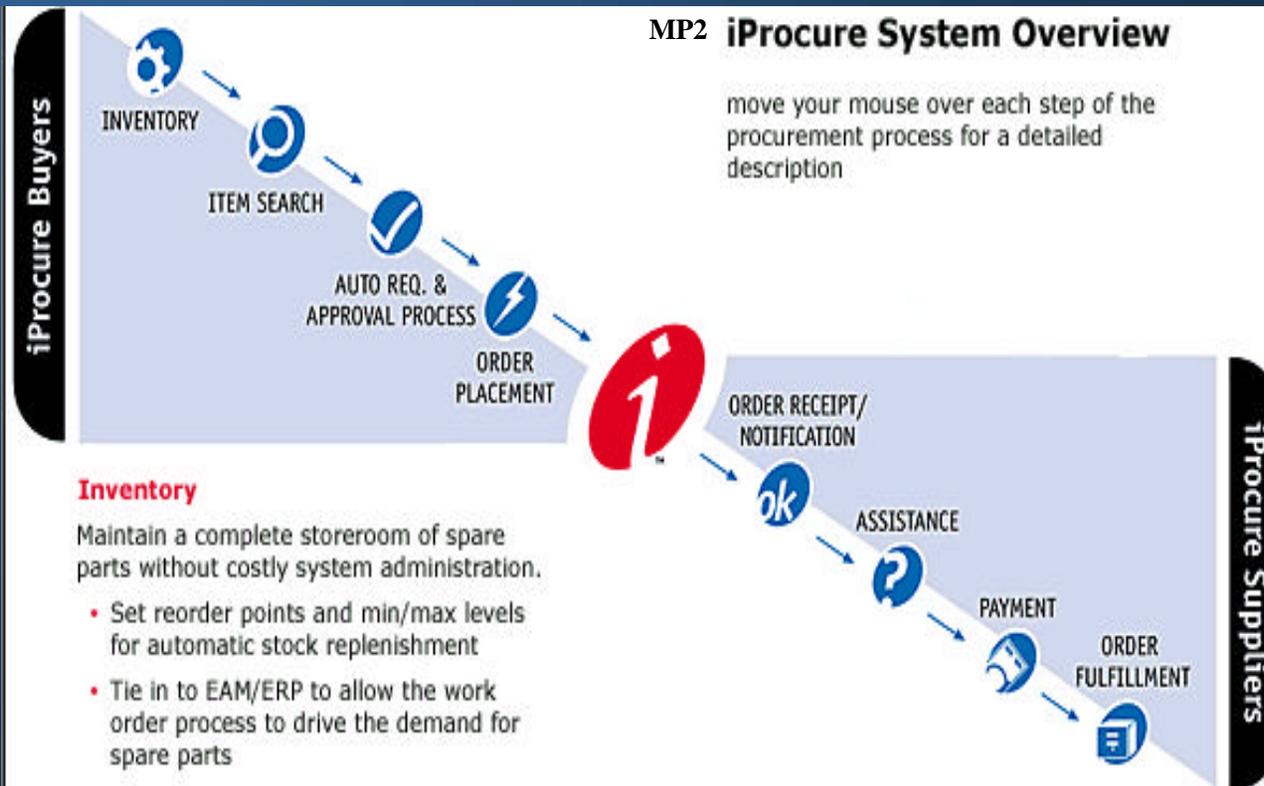


Web Categories & FM Examples

e-business &
e-process

MP2 iProcure System Overview

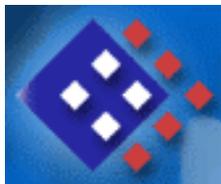
move your mouse over each step of the procurement process for a detailed description



Inventory

Maintain a complete storeroom of spare parts without costly system administration.

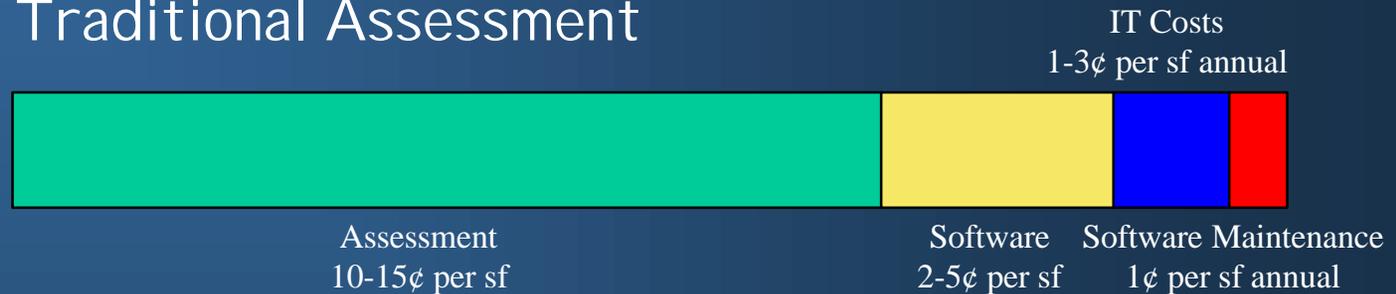
- Set reorder points and min/max levels for automatic stock replenishment
- Tie in to EAM/ERP to allow the work order process to drive the demand for spare parts



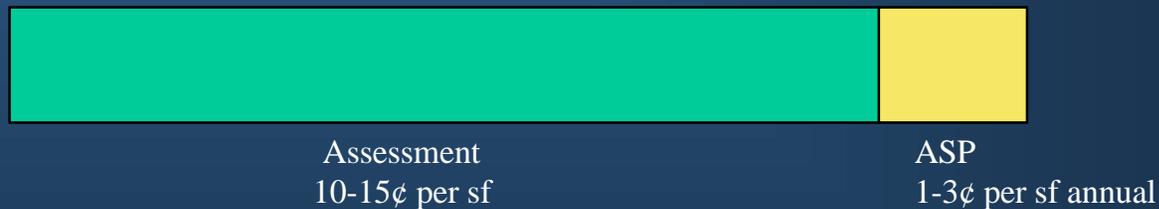


Assessment Cost Comparison

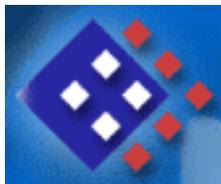
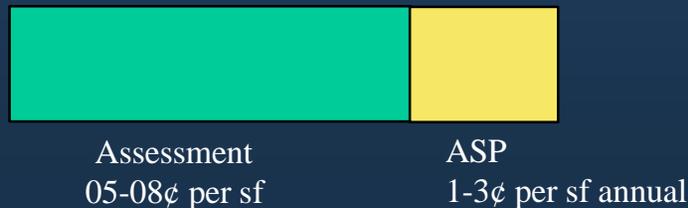
Traditional Assessment



ASP

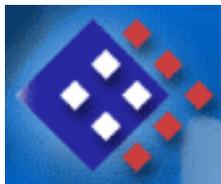


ASP + Web Assessment





Case Study: U.S. Capitol

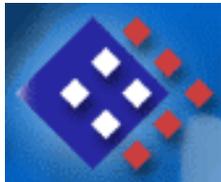




5-Year Plan: 1998

Existing State: "Islands of Automation" with each jurisdiction action independently....Needs Analysis results:

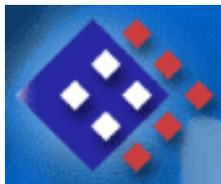
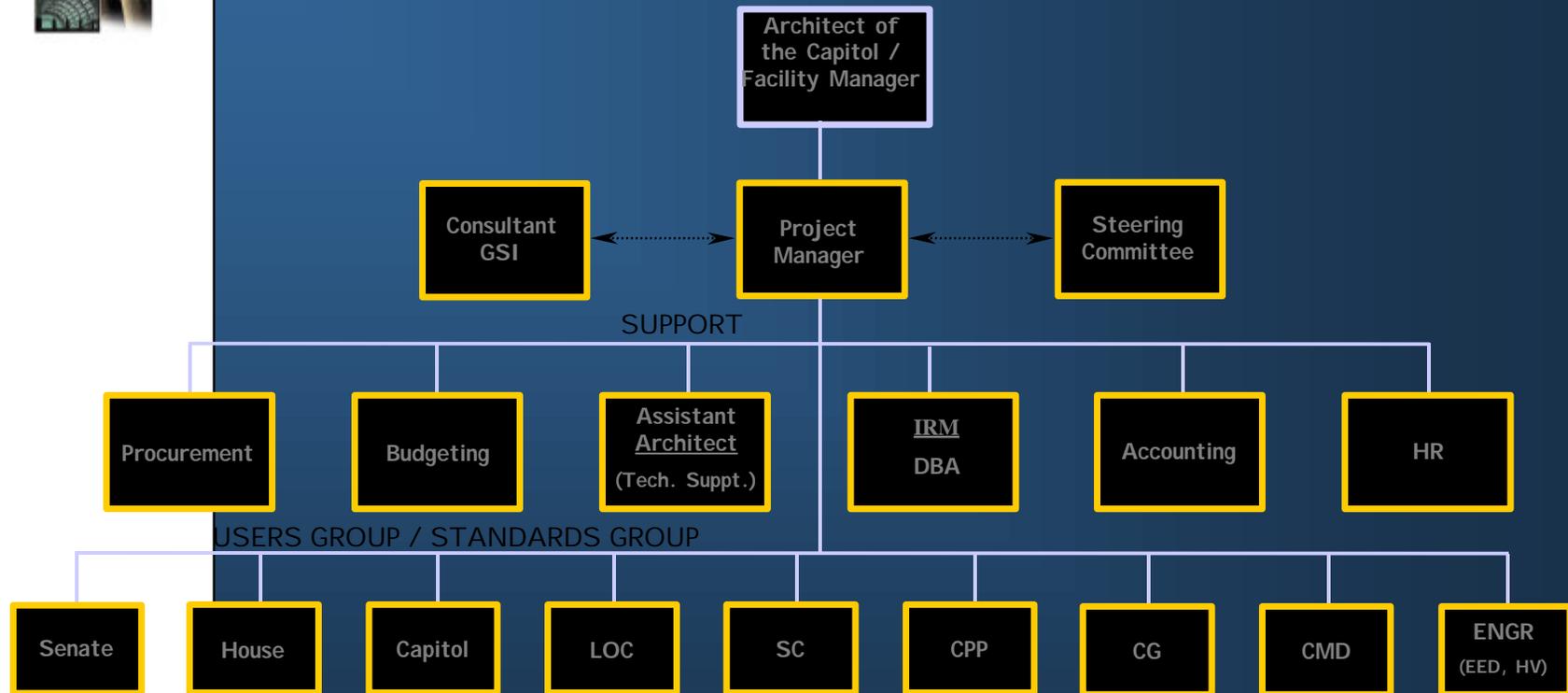
- 1-to-1 replacement of the VAX work order system for demand work orders
- Resolve Year 2000 Compliance issues
- Work Management standards
- Hardware/software installed
- Capitol/Senate shop implementation & training
- Space Management for Senate





CIFMS

AOC CAFM PROJECT ORGANIZATION





CIFMS: Updated Plan

Demand
Maint.

Material
Inventory

Life Cycle
Costing

EIS
Reporting

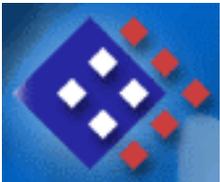
Assets

Preventive
Maint.

Cable
Mgmt.

Projects

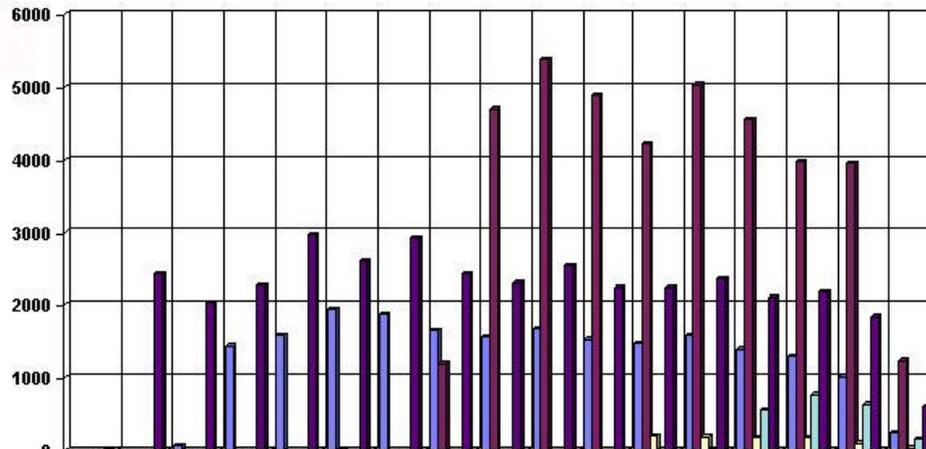
Space/
CAD



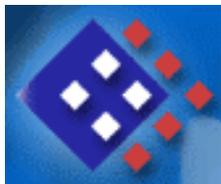


Congressional Information Facility Management System

Total Demand Work Orders: 98,485



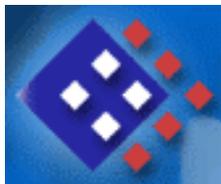
	Oct '98	Nov '98	Dec '98	Jan '99	Feb '99	Mar '99	Apr '99	May '99	Jun '99	Jul '99	Aug '99	Sep '99	Oct '99	Nov '99	Dec '99	Jan '00	
C		64	1435	1581	1940	1881	1650	1561	1665	1528	1472	1576	1393	1286	1012	243	
H					1		1191	4696	5382	4878	4219	5029	4546	3966	3949	1239	
J											200	189	176	184	98	33	
L												28	552	766	635	153	
S	1	2428	2036	2267	2965	2610	2919	2431	2307	2548	2241	2243	2360	2110	2186	1841	595





Asset Management

- Senate QBI C system consolidated with CAFM
- 107,527 pieces of Senate Furniture bar-coded and tracked
- Hand-held scanners in place
- Ability to keep historical locations of equipment now available





Space Inventory

- Property Portfolio includes 36 buildings
- 15,671 rooms loaded into CAFM, available for work order assignment
- 108 "Smart Floor Plans"
- Senate tracking space ownership





CANNON

LONGWORTH

U. S. CAPITOL

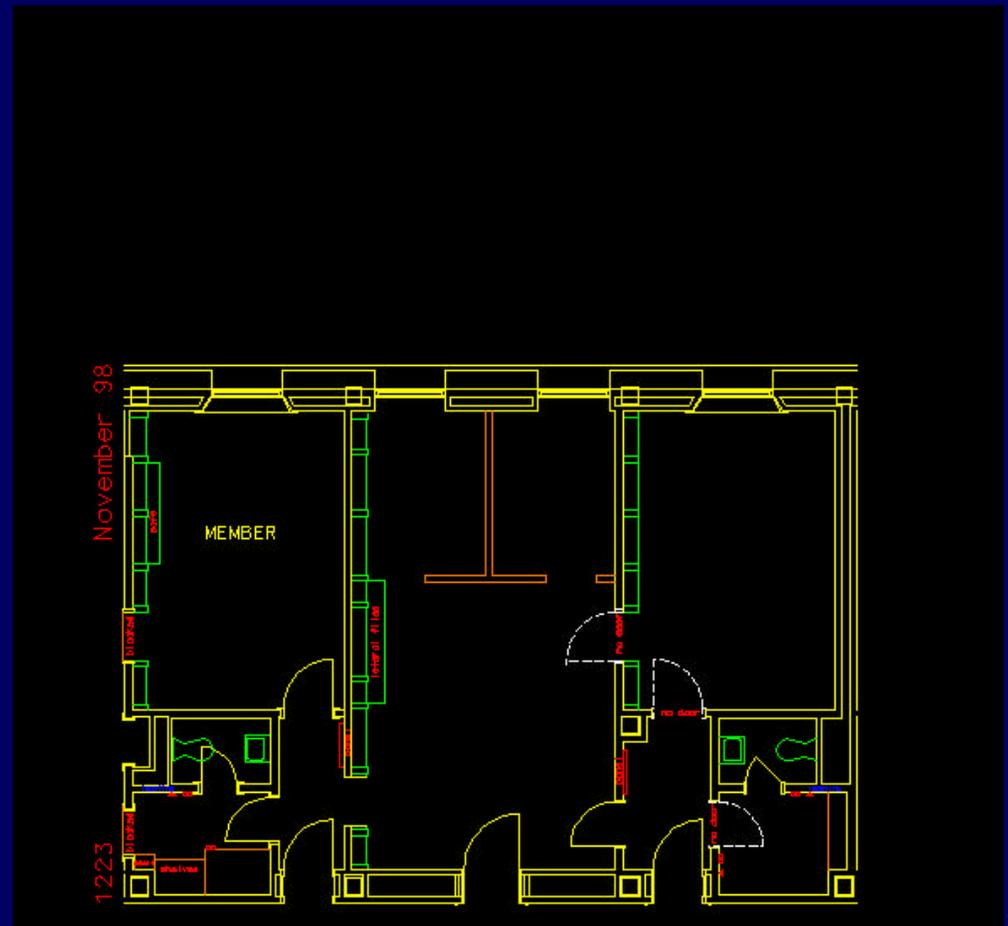
RAYBURN

CANNON SUITES:
[128](#) [130](#) [327](#) [413](#) [415](#) [437](#) [501](#) [502](#) [506](#) [507](#)
[508](#) [509](#) [510](#) [511](#) [512](#) [515](#)

LONGWORTH SUITES:
[1020](#) [1037](#) [1117](#) [1123](#) [1208](#) [1217](#) [1218](#) [1223](#)
[1229](#) [1232](#) [1237](#) [1404](#) [1407](#) [1419](#) [1440](#) [1505](#)
[1508](#) [1516](#) [1517](#) [1523](#) [1630](#) [1721](#) [1728](#)

RAYBURN SUITES:

SUGGESTED FURNITURE LAYOUT





KPI Utilization

Problem Statement

There was a request for additional staff to meet a perceived increase in work

PURPOSE

Cost Avoidance

CAFMDATA

Time of Demand Work Orders Received

KPI

Measurement of Work Orders by the Time of Day

DATA ANALYSIS

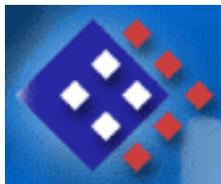
Plotting out the Number of Work Orders Received by Hour

OPTIONS

- 1. Increase the number of staff to cover increased work load*
- 2. Reduce the level of service - tell the client to wait.*
- 3. Manage Resources more efficiently through reassignment of roles*

BUSINESS DECISIONS

The AOC through the information provided were able to adjust the working times of specific staff to match the work load patterns defined in the data





KPI Utilization



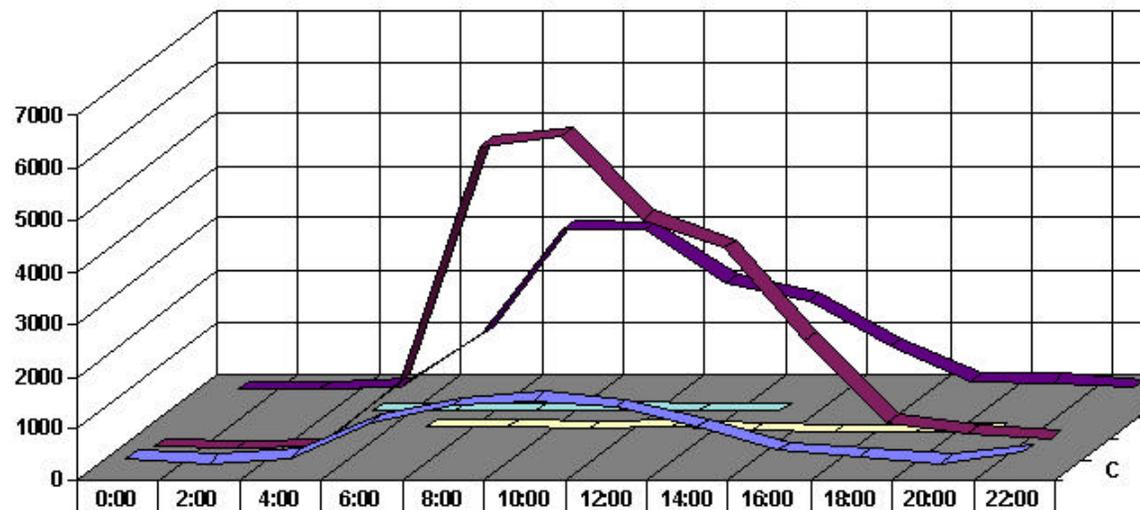
Congressional Information Facility Management System

Demand Work Orders

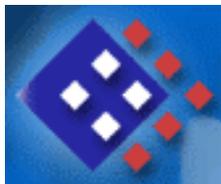
From 24-Apr-99 to 01-Oct-99

Total Demand Work Orders:

46,413



	0:00	2:00	4:00	6:00	8:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00
■ C	307	210	331	974	1318	1417	1280	907	460	349	214	432
■ H	124	89	138	1353	5891	6078	4491	3946	2162	573	374	275
■ J				98	107	57	101	20	2	2	3	
■ L			1	2	1	21	6	2				
■ S	7	14	68	1078	3090	3066	2058	1702	831	175	146	62





Successful Technology Implementation

1. Develop a plan
2. Define business and information needs
3. Document and improve business processes before you select systems
4. Performance of benchmarks and peer analyses
5. Get management and staff educated and supportive (build a consensus)
6. Establish standards (processes/technology)
7. Explore alternative organizational structures
8. Financial/schedule realism (capital budget perspective)
9. Focus on implementation
10. Plan for change

