



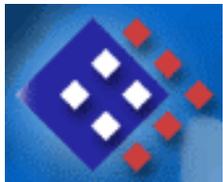
IFMA 2000
September 18, 2000
New Orleans, LA

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Graphic Systems, Inc.
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*Web Technology:
Preparing for Future
Impact on FM*

*New Technologies for Master Planning and
Condition Assessment*

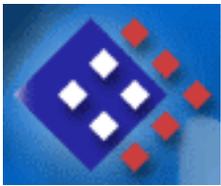




Agenda

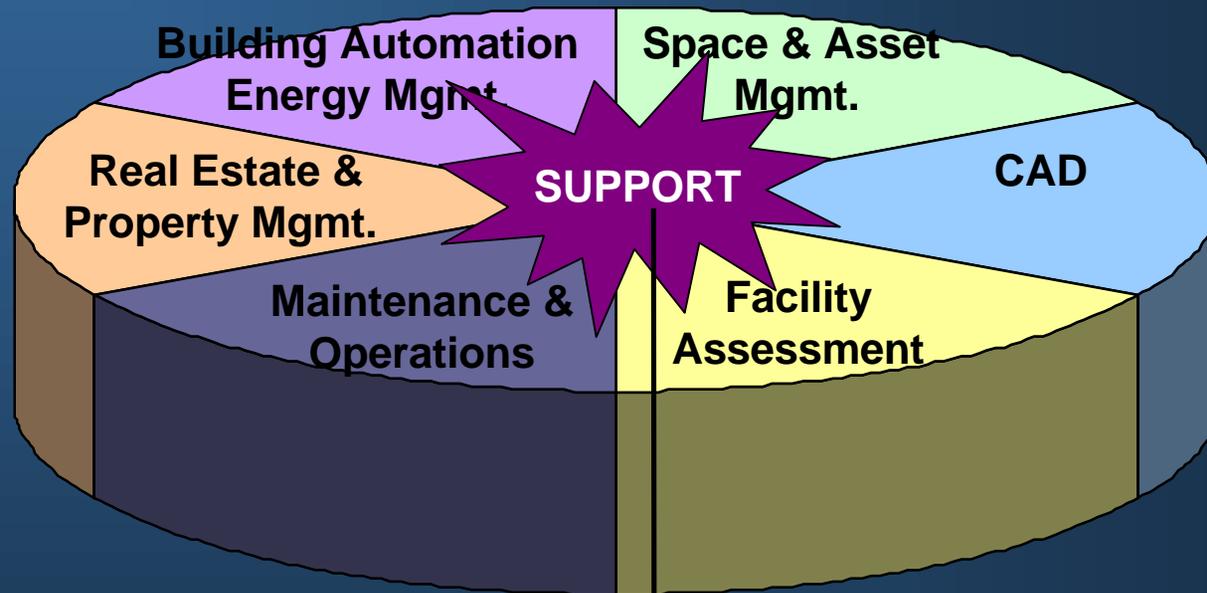
New Technologies for Master Planning and Condition Assessment

- *Internet FM technology evolution*
- *Space / Asset Management*
- *Condition Assessment*

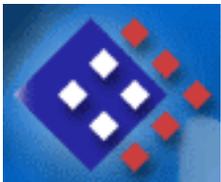




FM Technology



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





Evolution of Internet Technologies

Internet Industry Trends*

	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
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
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

Time

CAFM
Web Categories

1997

Static/Dynamic Reporting

Web-Enabled Applications

2000

Portals & Marketplaces

ASP's

Emerging

e-business & e-process

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

Web Categories & FM Examples

Static/Dynamic Reporting

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/calm> 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

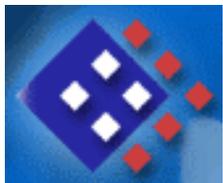
Energy Appearance

Bldg. Integrity Air Quality

Dynamic Query

Scale: State Campus Building Floor Room

Ready





Web Categories & FM Examples

Web-Enabled Applications

FIS Web Demo - Microsoft Internet Explorer

Address: http://fis-show1.fisincnt/web_html/twd.htm

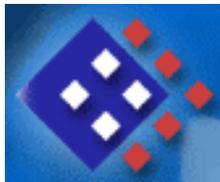
Generate Tabular Reports

Space floor common
 Space usable
 Usable Area Sq.Ft.
 Employee Label
 Employee
 Equipment
 Space
 Space Billing
 Space Organization
 Space Occupancy

OA
 OP
 DT
 VA
 VR
 VU

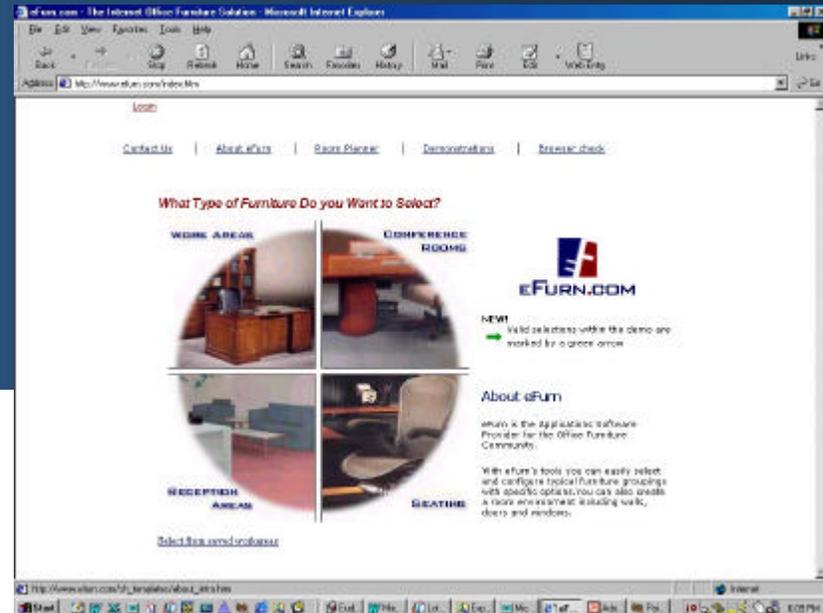
12 object(s) selected | 1 : 34,560 | 2.81 x 1.65 (mi)

BLDG 100	FLR 1	156	Open Workstation	VA	64
BLDG 100	FLR 1	157	Open Workstation	OP	64
BLDG 100	FLR 1	158	Open Workstation	OP	64
Total Sq. Ft.:					384



Web Categories & FM Examples

Portals & Marketplaces



Content

Workstation
 Comparison Engine
 Room Layout
 Technology
 Dealer Partnerships
 Installer Partnerships
 Manufacturer
 Partnerships
 Information provider
 Partnerships
 Furniture Inventory
 support
 Move management
 support

Commerce

Manufacturer Fixed
 Price
 Variable Regional
 Dealer Price
 Collective Buying
 Auctions

Community

Office Design Tips
 from industry
 professionals
 Discussion Groups
 & Forums
 Branded E-mail



Web Categories & FM Examples

ASP's

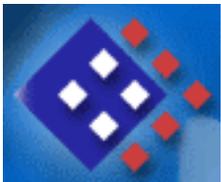
Business Integration Group
BIG CENTER
INTEGRATION THROUGH TECHNOLOGY

LEASE ADMINISTRATION CALL CENTER SPACE MANAGEMENT

THE COMPANY TECHNOLOGY

Click on area of interest!

COPYRIGHT © 1998, BUSINESS INTEGRATION GROUP. ALL RIGHTS RESERVED.



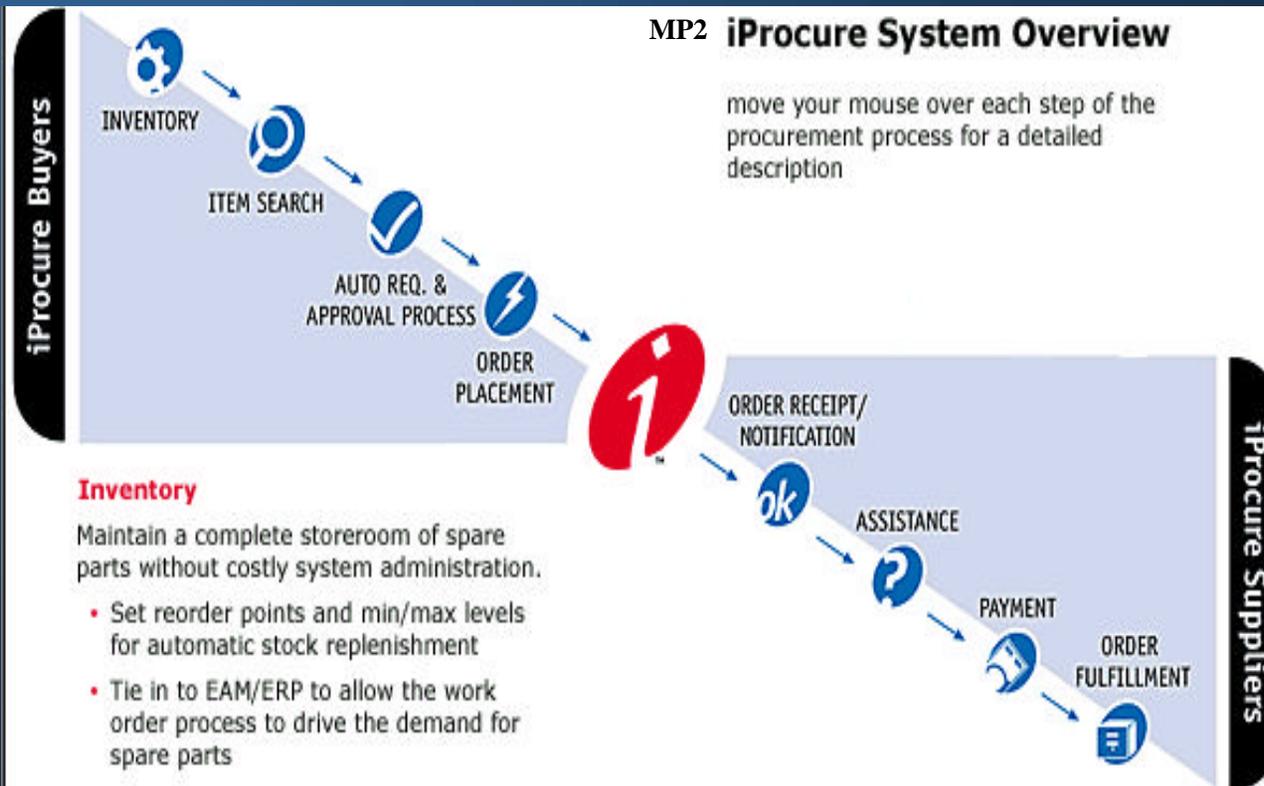


Web Categories & FM Examples

e-business &
e-process

MP2 iProcure System Overview

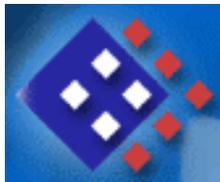
move your mouse over each step of the procurement process for a detailed description



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





SPACE PLANNING/ MANAGMENT

1. INVENTORY

- e.g., FF+E, Occupancy, Organizational structure, allocation/ adjacency, Standards, Leases, Space Usage

2. REQUIREMENTS

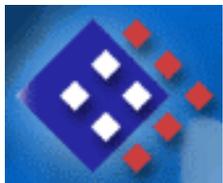
- e.g., same as above

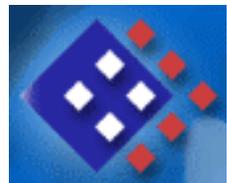
3. ANALYSIS

- e.g., stacking/blocking (manual , automatic), bubble diagrams, move management and simulation, occupancy (business unit density, area, location)

4. PLANNING

- e.g., forecasting (headcount/ absolute), financial / budget interface, future moves/ simulation





FIS Web Demo - Microsoft Internet Explorer

File Edit View Go Favorites Help

Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print

Address http://fis-show1.fisincnt/web_html/fwd.htm Links



[MAIN](#)

[FIS/FM](#)

[Reports](#)

[Drawing Viewer](#)

[MAP](#)

[KeyMap](#)

Employee Label

Employee Label

Employee

Equipment

Space

Space Billing

Space Organization

Space Occupancy

OA
 OP
 OT
 VA
 VR
 VU

Space Standard

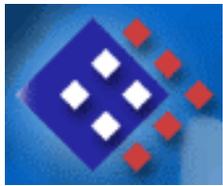
Space Category

Space Type

Equipment : Personal Computer 1 'Equipment' selected 1 : 14,897 6,388 x 3,763 (ft)

Serial No.	Name	Cat.	Type	Std.	Manufac.
PC-102	Personal Computer	COMP	PC		ALL COUNTY PC

Internet zone (Mixed)



Space Toolbar - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Links Address http://www.archibus.com/afm/reports/webtbspf.cfm Go

WEB CENTRAL
SPACE TOOLBAR

Departments

- Stack Plan - Rooms
- Locate Department Rooms
- Highlight Rooms by Dept
- Rooms by Department
- Chargeback Report

Rooms

- Vacant Rooms by Floor Chart
- Highlight Vacant Rooms
- Highlight Rooms by Standard by Floor
- Standard Analysis by Floor

Employees

- Employee Plan
- Locate and Highlight Drawing
- Moves Adds and Changes by Department

other modules... ?

Departmental Stack Plan - Rooms

Select a Building: HQ Show Stack Plan

Building	EXECUTIVE-MANAGEMENT	SOFTWARE APP.-ENGINEERING	SOFTWARE SOLN.-ENGINEERING	ELECTRONIC SYS.-ENGINEERING	FINANCE -DOMESTIC	SOFTWARE APP.-OPERATIONS-MAINT	Total
HQ WARE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HQ 19	3563.0	0.0	0.0	0.0	0.0	0.0	3563.0
HQ 18	~1500.0	~1000.0	~1000.0	0.0	0.0	0.0	3253.0
HQ 17	0.0	0.0	0.0	~1000.0	~1000.0	~1155.0	3155.0

Departmental Stack Plan

Start | Lotus... | Eud... | Expl... | Micr... | Micr... | Pain... | Sp... | Internet | 12:22 PM



http://www.ppfm.csulb.edu/prod/owa/space_floor - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Web Entry Links

Address http://www.ppfm.csulb.edu/prod/owa/space_floor Go

California State University
LONG BEACH

GYM - UNIVERSITY GYMNASIUMS

01 - Floor 01

*** We are in the process of updating all drawings, please realize that there may be some inaccuracies in the drawings, we are aware of this and are in the process of bringing them up to date. Thank you for your patience. ***

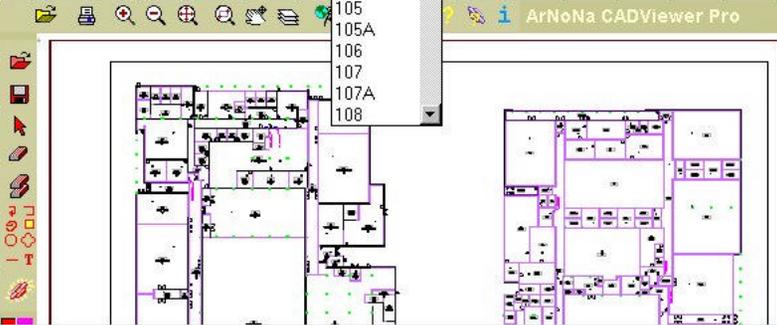
Please choose a room from a list or Select it from the floorplan

Please Press the  on the tool  to display the links, then choose a room

001 Submit

- 101
- 102
- 103
- 104
- 104A
- 105
- 105A
- 106
- 107
- 107A
- 108

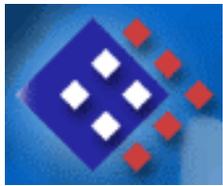
ArNoNa CADViewer Pro



CADViewer Pro - Copyright (c) 1998 ArnoNa Internet Software Inc.

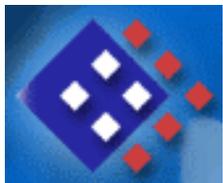
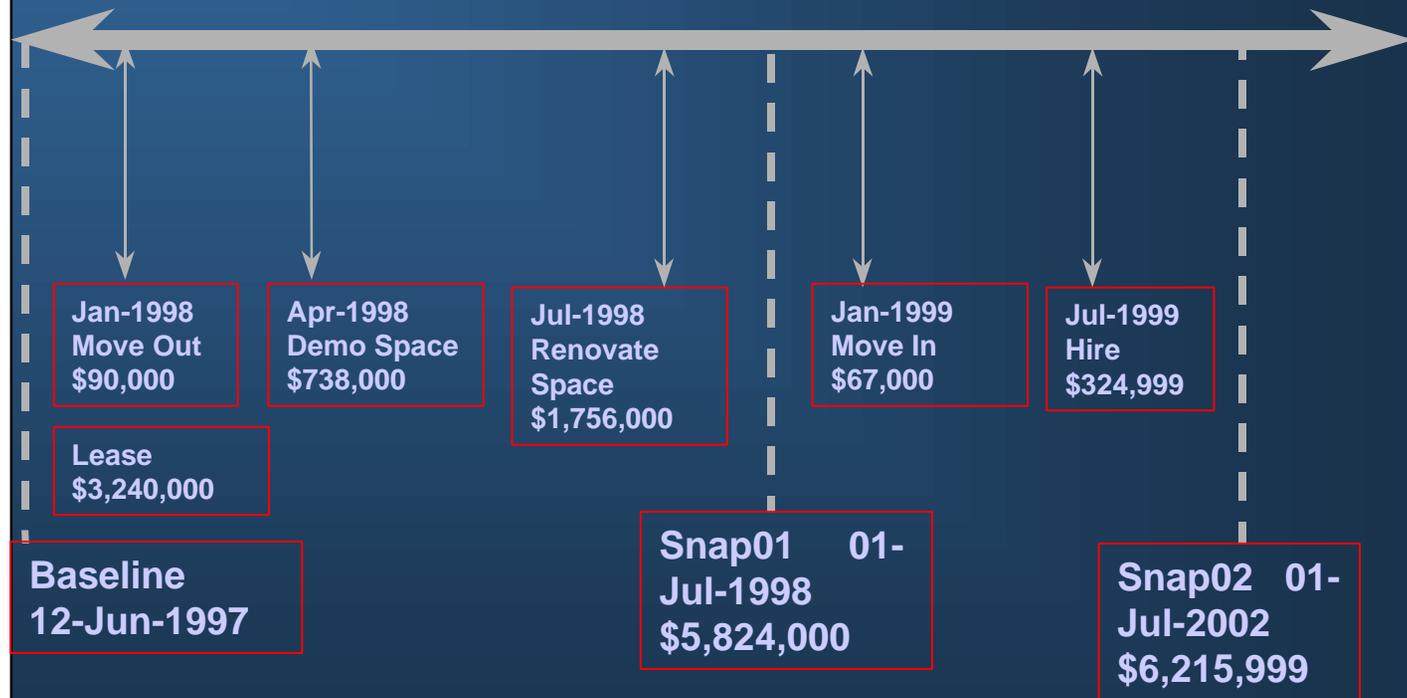
Start Internet

5:49 PM





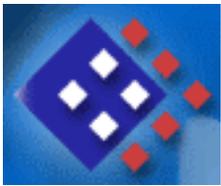
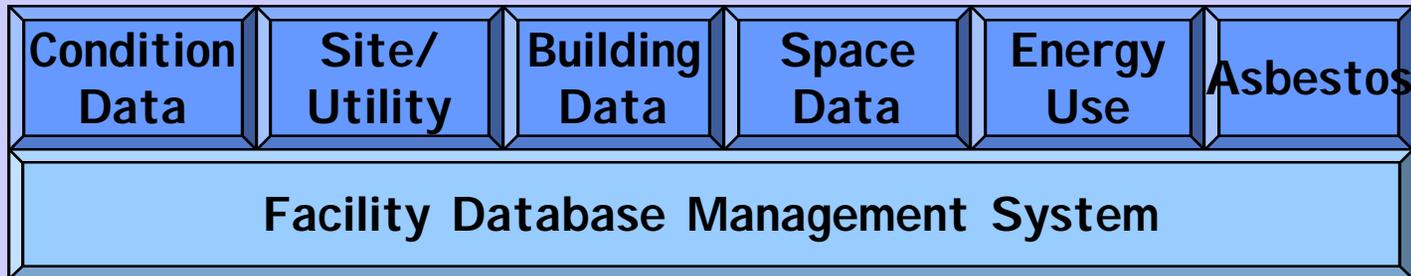
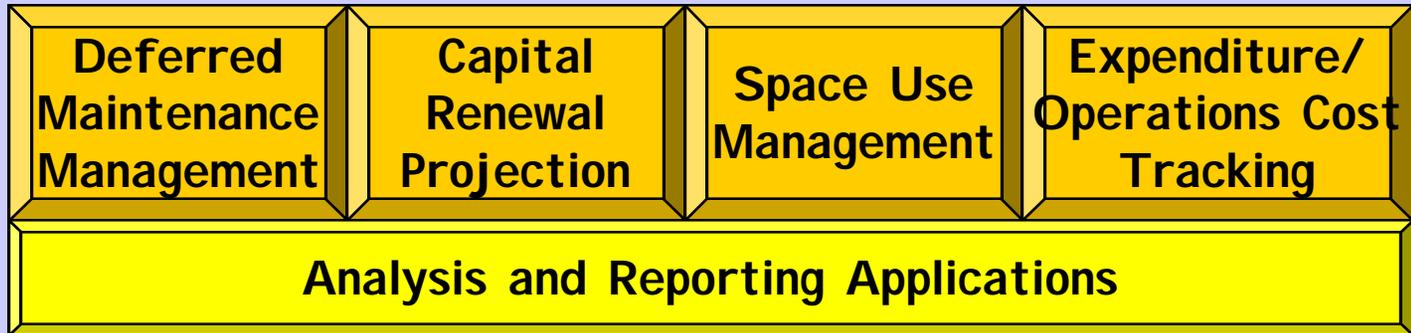
Facility Master Planner (FMP) - financial models



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

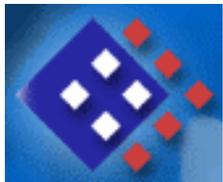
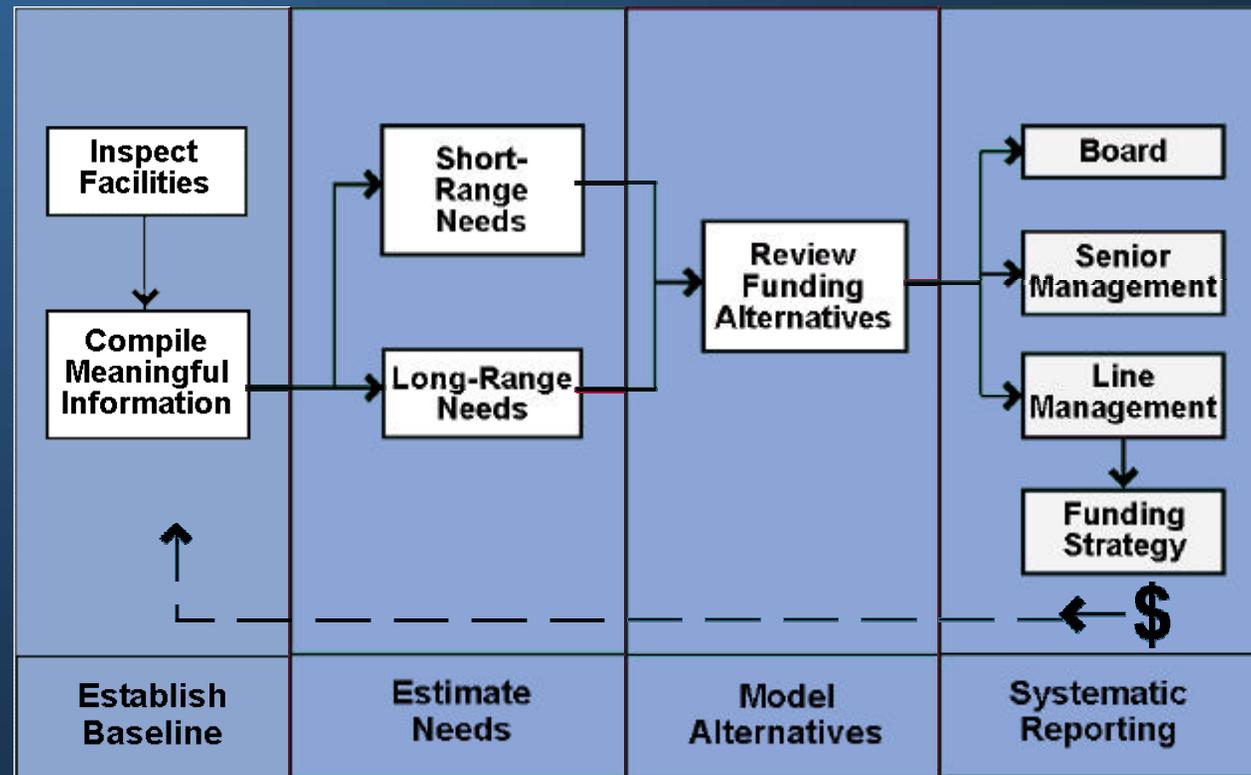


Capital Planning





APPROACH

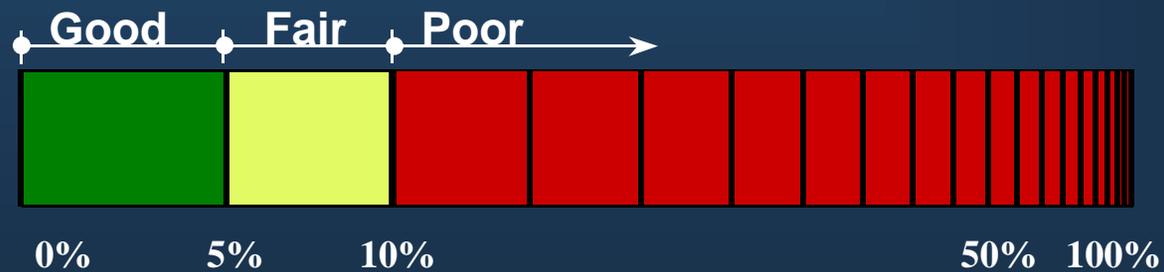
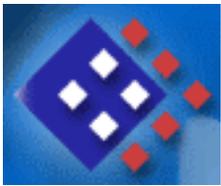




Benchmarks

Facility Condition Index (FCI) is an industry standard method for comparison of relative building condition

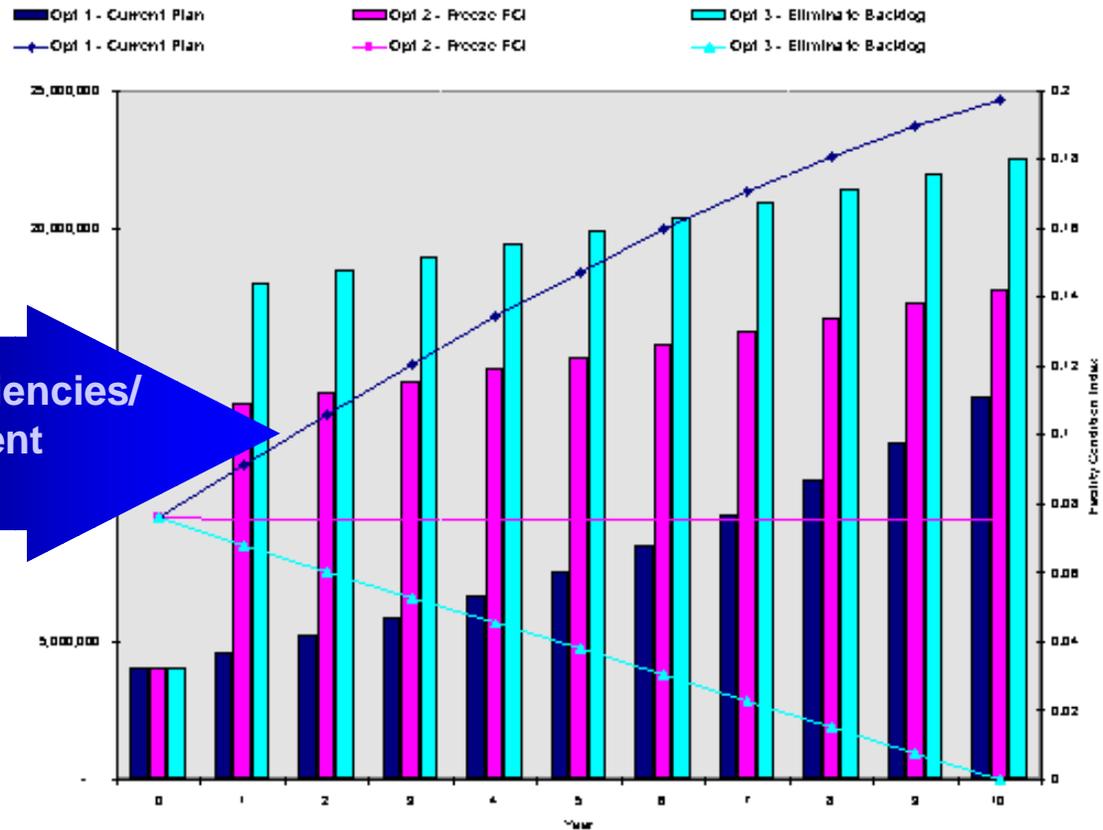
$$FCI = \frac{\text{total cost of existing deficiencies}}{\text{current replacement value}}$$



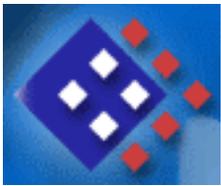


Financial Modeling

Facility Funding Scenarios



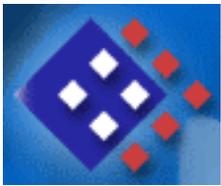
FCI = Deficiencies / Replacement Cost





Capital project "drivers"

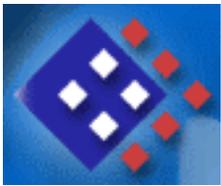
- ❑ Strategic Mission Achievement
- ❑ Health and safety
- ❑ Regulatory / Compliance
- ❑ Completion of ongoing projects
- ❑ New capacity / high ROI
- ❑ Organizational quality
- ❑ Other





Capital Planning & Management Solutions (CPMS)

**Web-Based Technology and Services
to strategically manage
capital reinvestment
into large, multi-building portfolios**

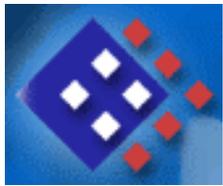
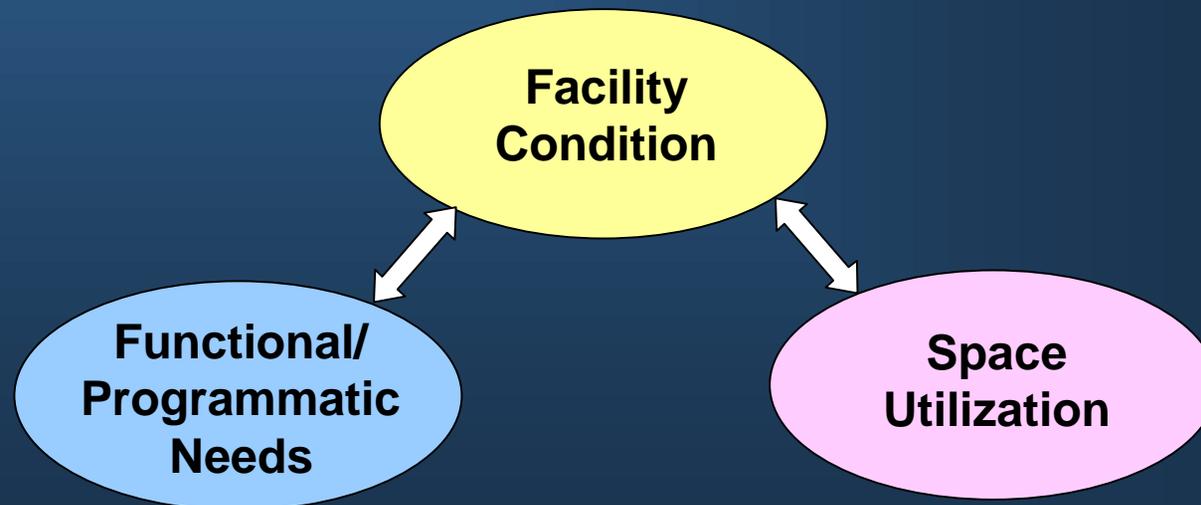




Methodology

-Building the Long-range Strategic Plan-

- Integration of Facilities into Organizational Mission (Master Plan – Facilities Capital Plan)





CPMS: Concepts and Overview

-Information Flow-

Executive Directors

Capital Planning
Strategic Planning
Investment Policy
Capital Funding

Financial Planning

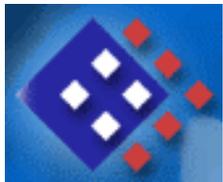
Budget Projections
Scenario Planning
Cost Accounting
Cost Recovery

Divisional Management

Capital Needs Prioritizing
Construction/Disposal
Benchmarking
Reporting

Facility Management

Condition Management
Project Planning
Project Execution
Workload Projection



CPMS: Concepts and Overview

Targeting

Metrics
Benchmarking

Financial Modeling

Capital Planning
Scenario Analyses

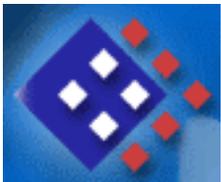


Baseline

Deferred Maintenance
Capital Renewal
Functional Needs

Implementation

Aggregated Projects
Accountability
Strategic Procurement

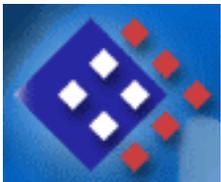
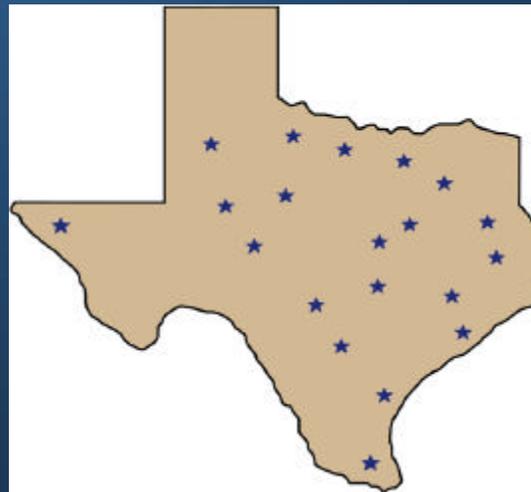




Case Study No. 1:

-CPMS detailed audit with CMMS integration-

Texas Department of Mental Health and Mental Retardation

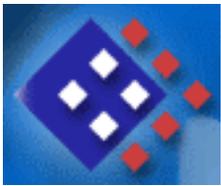




Texas Department of Mental Health and Mental Retardation

The Challenge

- 9,710,000 Square Feet
- 1,289 Buildings, ages 5-142 years
- 23 Campuses State Wide
- No defensible data on facility condition
- Diminishing facility budgets

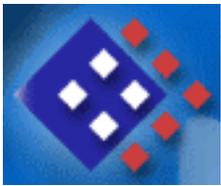




Texas Department of Mental Health and Mental Retardation

The Solution

- Comprehensive field analysis of facility conditions, code compliance, accreditation, site conditions and hazardous materials
- Lifecycle cost modeling projections
- LAN facility management system at each campus
- WAN networked to central offices for comparative analysis, data summary and central oversight
- Integration of existing TDMHMR facility data and CAFM system





CPMS Components

- Assessment
- Deficiencies
- Materials
- Labor
- Costs
- Spatial data
- PM data
- Life Cycle
- FCI
- Financial Investment Scenarios



- demand Work Orders
- PM Work Orders
- Asset inventory
- Space utilization
- CADD

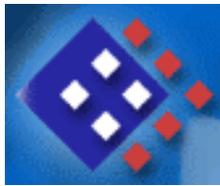


CMMS/CAFM Components

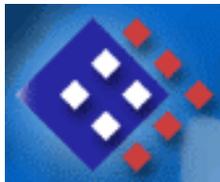
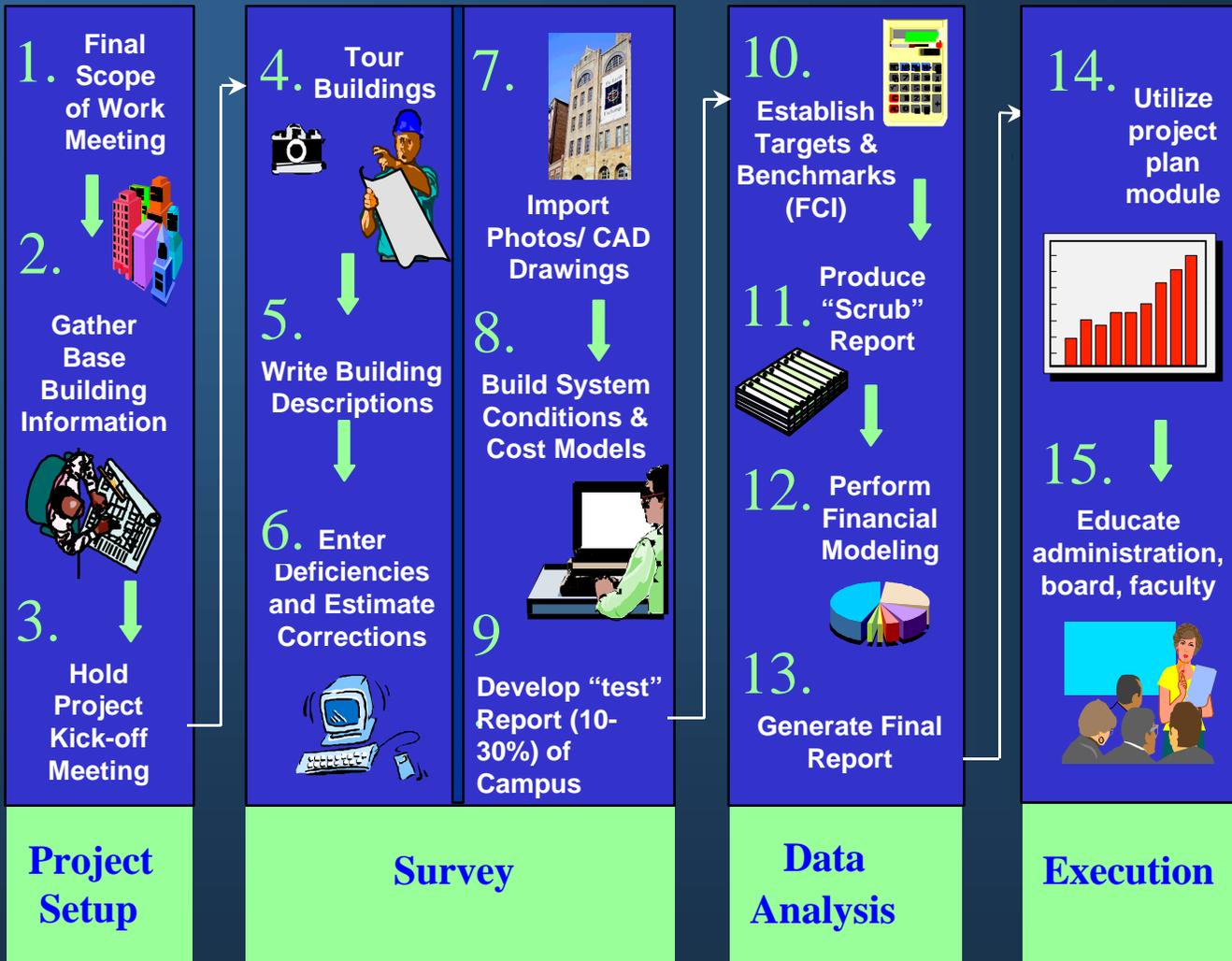
- Space Inventory Management
- Fixed Asset Management
- Work Order Processing
- Accounting/CPMS links
- Central Help Desk
- Purchasing links
- Scheduling and PM Links
- Preventative Maintenance Systems
- Equipment / Inventory Data Management (intelligent bar coding)
- Maintenance Procedures (SOPS) / Standards



- Updated databases



Baseline



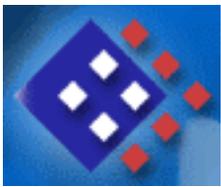
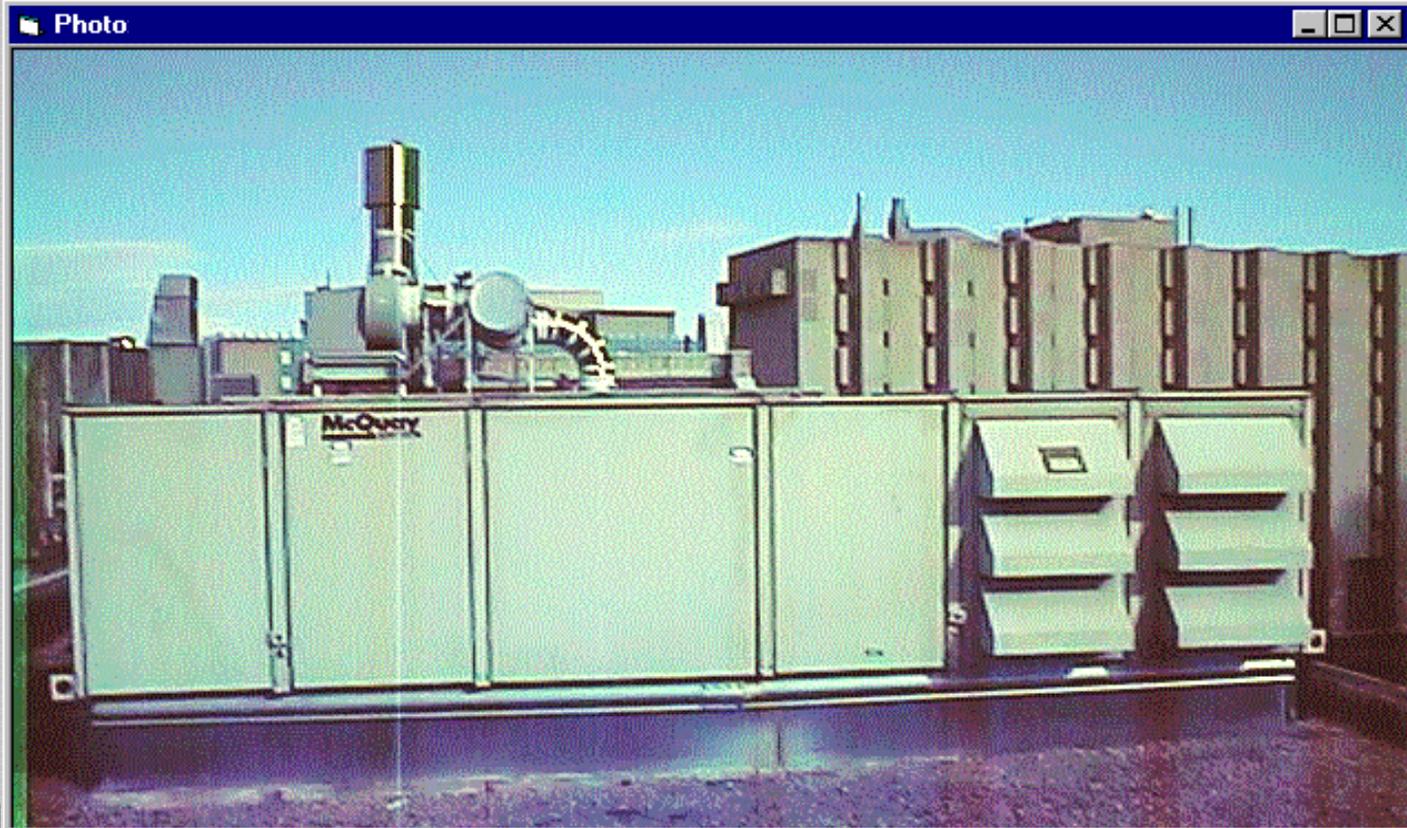
Baseline

Deficiencies linked to Room: 099A in Building: Arnold House

Deficiencies					
Name	Template	Priority	Cost	InspectorID	Flag
					No
					No
					No

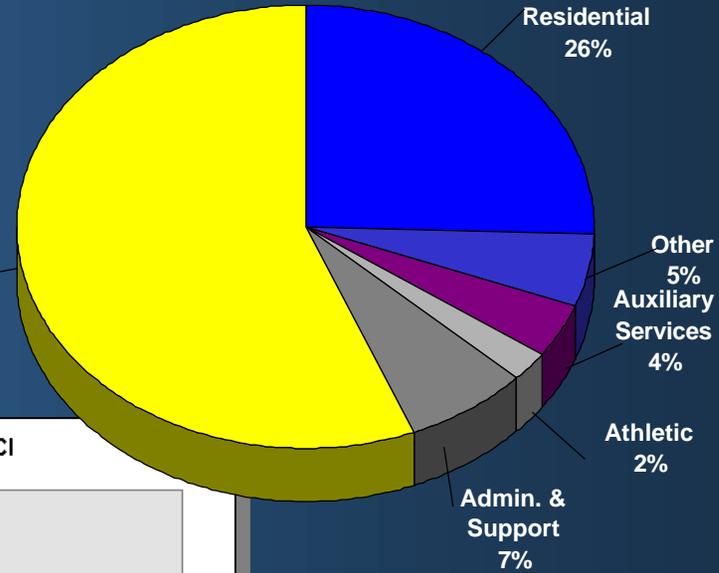
VFACad [min] [max] [close]

File Edit Zoom Add-Ins Data Help

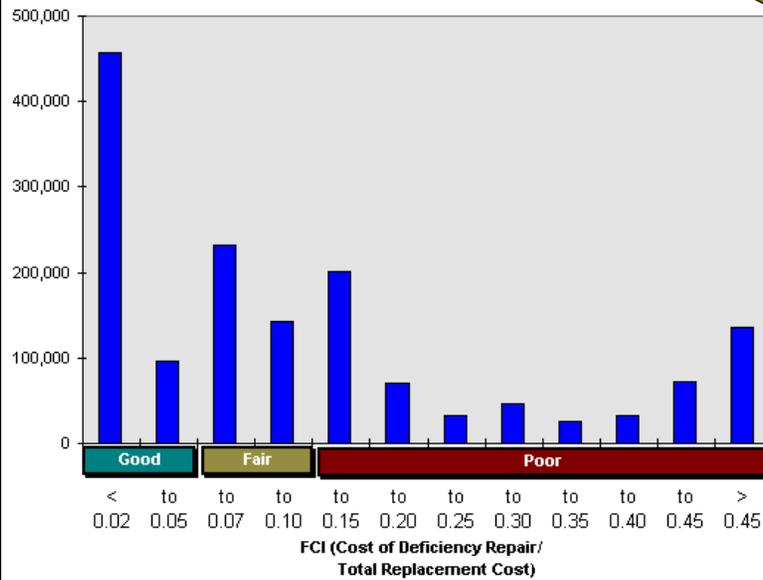




Targeting

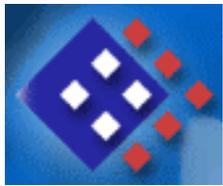


Distribution of Building Area by FCI



data summary

Replacement Value	Total	FCI
\$197,296	69,035	0.35
	25,826	0.13
	\$94,881	0.48
\$197,296	73,788	0.37
	28,475	0.16
	\$94,281	0.48
\$1,248,210	282,819	0.16
	68,035	0.05
	\$262,645	0.21
\$110,180	18,328	0.09
	37,818	0.33
	\$47,938	0.42
\$1,217,499	518	0.00
	0	0.00
	\$518	0.00
\$84,334,345	13,724,429	0.16
	8,050,870	0.10
	\$21,775,239	0.26

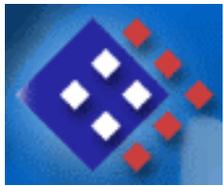




Case Study No. 2:

-ASP: Delivering Software in a New Way-

Brandeis University

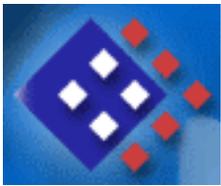




Brandeis University

The Challenge

- 2.4 million square feet
- 110 buildings
- Condition Assessment completed in 1998
- Overstressed IT support
- Employee/hardware turnover
- Lack of data maintenance focus





Brandeis University

The Solution

Application Service Provider (ASP)

- Application and database hosted on ASP servers with IT support, backups, etc
- Access at Brandeis via browsers
- Monthly fee covers hosting, support, software maintenance
- Data update services



Brandeis University



VFA Facility Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address http://production.brandeis.vfa.com

Brandeis University

VFA Facility 4.1
Production

Enter Site

VFA Facility - Microsoft Internet Explorer

File Edit View Tools Help

Analysis Reports Customize Capital Planning CAD Drawings

List of All Buildings in Brandeis University

Name
118 Sibley Road
130 Sibley Road
15 Ridgewood Terrace
157 Prospect Street
20 Ridgewood Terrace
26 Ridgewood Terrace
34 Sibley Road
987 South St.
60 Turner Street
60 Beacon Ave. (re-acquired 1994)
Abelson-Bass-Yalen Building
Athletic Storage Bldg.
Bioscience Building
Berlin Chapel
Bernstein-Marcus Administration Bldg.
Bethlehem Chapel
Brown Social Science Center
Chao River-110 Angleside - Cohen
Chao River-150 Charles River - Coff
Chao River-154 Charles River - Low
Chao River-176 Charles River - Mark
East-Hazenfield/Innovat/Chapiro Bldg.

Current Selection: 118 Sibley Road

VFA Facility - Microsoft Internet Explorer

File Edit View Tools Help

Analysis Reports Customize Capital Planning CAD Drawings

Correction: Window replacement for Deficiency: Exterior Wall windows, single pane in Brandeis University: 118 Sibley Road

Name: Window replacement Completed: -- --

Deficiency Name: Exterior Wall windows, single pane Estimator: [none selected]

Prime Correction: Difficulty Factor: 1.3

Estimated Cost: \$8,032.47 Actual Cost:

Description: Replace exterior windows with new insulated windows and frame. Demo and prep openings.

Correction Line Items

Qs	Code	Description	Qty	Unit	Each	Extended
H		Prep work	12	EA	150	1800
U	0206120100	Dump charges, typical urban city, less only, bldg constr materials	5	C.Y.	56.76	283.8
U	0206200640	Rubbish handling, dumpster, 40 cu y cap, rent per week	1	EA	799.9	799.9
U	0207342020	Window installation, wood, including trim, to 25 S.F.	12	EA	15.72	188.64
U	0661240250	Dolting with locrent bracing studs/mis mod, 2x4-0" H-insul	12	EA	258.89	3106.99

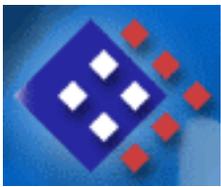
Comments

Current Selection: Window replacement

1 of 1

Campuses Buildings Assemblies Rooms Deficiencies Corrections

oracle Production production.brandeis.vfa.com

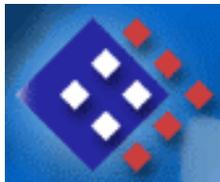




Case Study No. 3:

-Using the Web for Innovation-

General Services Administration

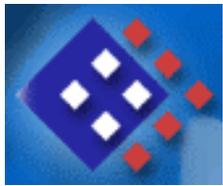




General Services Administration

The Challenge

- 222M SF with huge deferred maintenance backlog
- Mandate by Congress to provide long-term Capital Plan
- Need to identify, categorize & prioritize deficiencies
- Limited budget for FCA

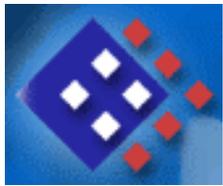




General Services Administration

The Solution

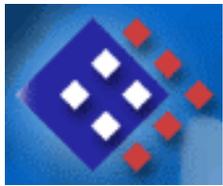
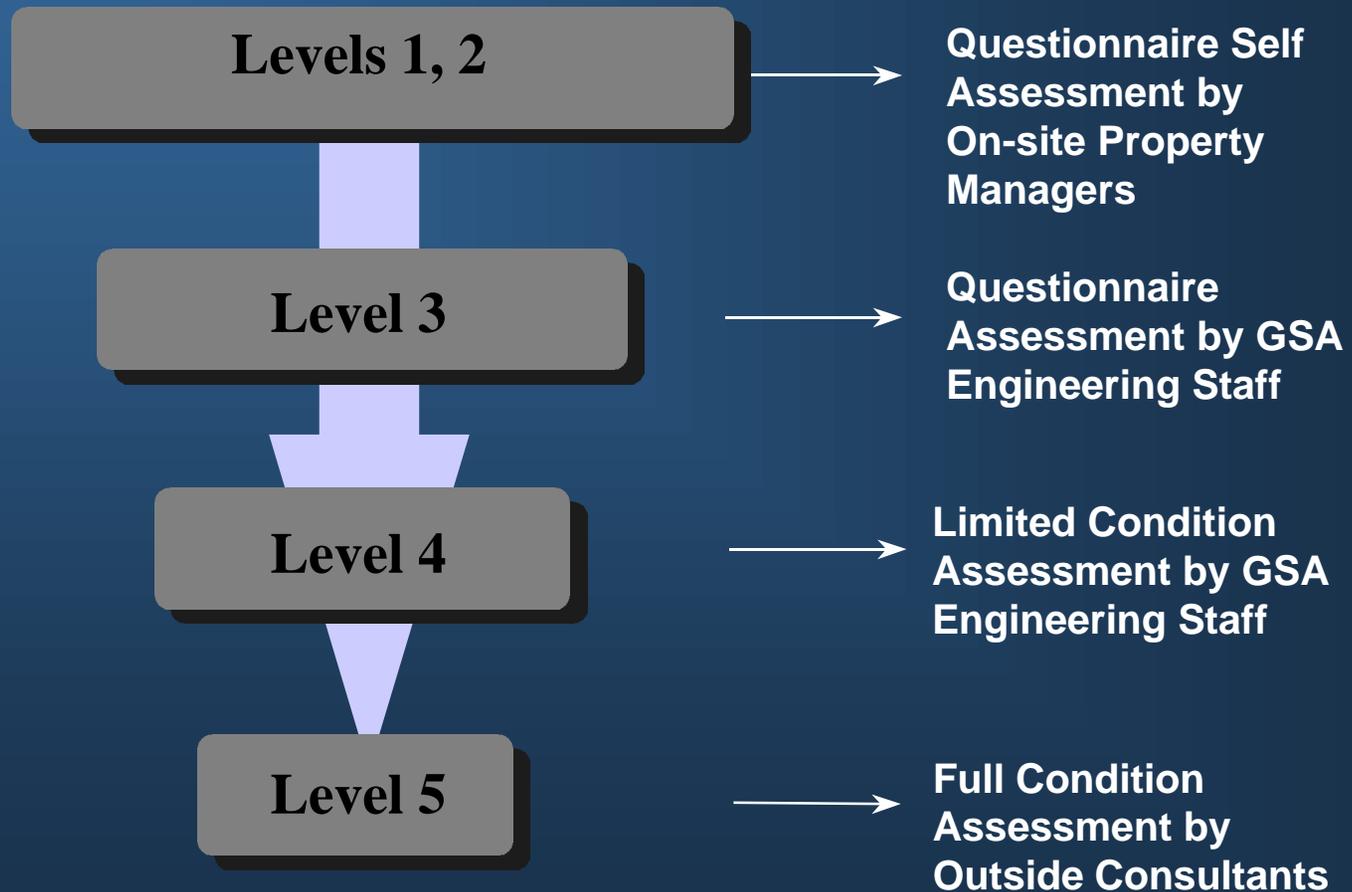
- Multi-level assessment process with increasing detail
- Self assessment questionnaire at early levels
- Quickly identified hot spots
- Some field FCA - verified methodology, questionnaire data





General Services Administration

-Assessment Approach-





GSA - WEB BUILDING EVALUATION - Microsoft Internet Explorer

Address: https://gsa.vfa.com/gsa/BuildingList.asp

GSA WEB BUILDING EVALUATION Level 2 Questionnaire - Microsoft Internet Explorer

Address: https://gsa.vfa.com/gsa/FormGenerator.asp?bldgID=A14A161A2R0501&QNID=GSA_L2

GSA WEB-BER Reports - Microsoft Internet Explorer

Address: https://gsa.vfa.com/gsa/reports/xtTabDefSysPrii.asp?QNID=GSA_L2&BID=A14A161A2R0501

GSA WEB Building Evaluation
crosstab of deficiencies by system and priority
 (Level 2)

State: MD
 Region: 11
 Name: ADMIN BLDG- BLDG "B"
 Number: MD0082BW
 Address: 10901 DARNSTOWN RD

System	Priorities				Total
	Immediately	1 - 2 Years	3 - 5 Years	5+ Years	
Site Civil (Sidewalks, Walkways & Ramps)	-	-	\$166	-	\$166
Site Civil (Paved Areas)	-	-	\$834	-	\$834
Site Civil (Plaza Surfaces)	-	-	\$1,000	-	\$1,000
Foundation (Footings, Foundations & Retaining Walls)	-	-	\$1,668	-	\$1,668
Substructure (Slab on Grade)	-	-	-	\$333	\$333
Superstructure (Columns and Beams)	-	-	-	\$1,417	\$1,417
Superstructure (Structural Walls)	-	-	-	\$333	\$333
Superstructure (Above Grade Floors)	-	-	-	-	-
Superstructure (Roof Structure - Not Roofing)	-	-	\$1,000	-	\$1,000
Superstructure (Stairs)	-	-	-	-	-
Exterior (Walls)	-	-	-	\$2,635	\$2,635
Exterior (Doors)	-	-	-	-	-
Exterior (Windows)	-	-	-	-	-
Roofing (Roof Coverings & Insulation)	-	-	-	-	-
Interior Construction (Interior Doors)	-	-	-	-	-
Interior Construction (Wall Finishes)	-	-	-	-	-
Interior Construction (Floor Finishes)	-	-	\$2,001	-	\$2,001
Interior Construction (Ceiling Finishes)	-	-	\$1,000	-	\$1,000
Vertical Transportation (Elevators)	-	-	-	-	-
Vertical Transportation (Escalators)	-	-	-	-	-

ts(Crystal)
 lex 0 2474
 Help

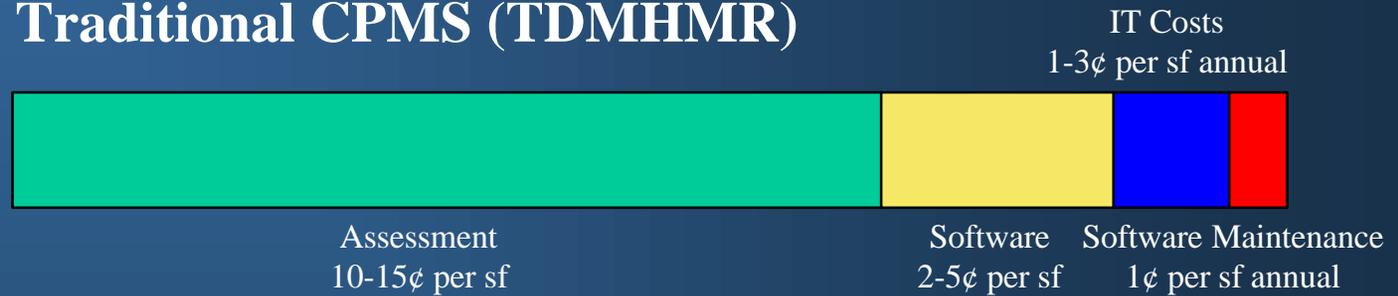
problems.



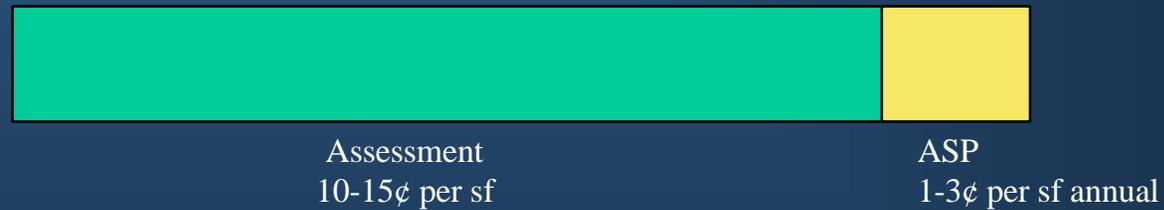


Comparison

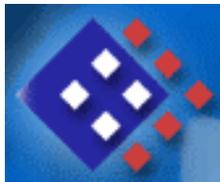
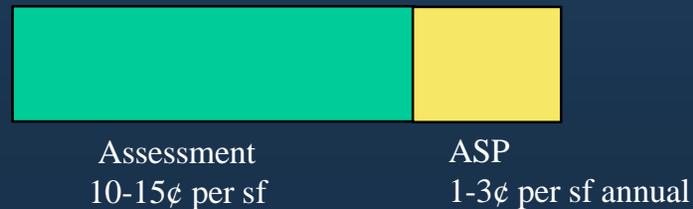
Traditional CPMS (TDMHMR)



ASP (Brandeis)



Alternative (GSA)





Summary

- CPMS provides rational, defensible methodology for capital planning
- Web technology simplifies application service delivery and IT needs for client
- Web allows innovative solutions to data collection and maintenance

