



# The Convergence of the Virtual Building Environment and Data Standards

Andy Fuhrman, CEO

Virtual Builders Roundtable Workshop  
GSA Headquarters  
Washington, D.C.  
December 12, 2005



# Setting the Groundwork



*“If I (we) have seen further it is by standing on the shoulder of giants”* Newton/Chartes

- Vladimir (Vlado) Bazjanac - IAI, LBNL
- Francois Grobler - IAI, USCERL
- Martin Fischer, Chuck Han, Kathleen Liston, Calvin Kam, Andrew Arnold - CIFE
- David Hammond, Lt. Cmdr James Dempsey & Dianne Davis - USCG – AEC Systems
- Stephen Hagan, Thomas Graves – GSA, Office of the Chief Architect
- Dan Gonzales & Dean Reed – RQ Const. & DPR Const.
- Mieczyslaw (Mitch) & France Boryslawski – View by View
- John Mack – Therma/Southland
- Greg Luth - Gregory P. Luth and Associates
- Others – IAI, BLIS, AISC, Finland, Singapore.....Also in the Audience and Unknown

# Business Challenge



NIST GCR 04-867



U.S. Department of Commerce  
Technology Administration  
National Institute of Standards and Technology

Advanced Technology Program  
Information Technology and Electronics Office  
Gaithersburg, Maryland 20899

## Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry

Michael P. Gallaher, Alan C. O'Connor, John L. Dettbarn, Jr., and Linda T. Gilday

**\$15.8 Billion AEC/FM Industry Loss Due To The Lack of Interoperability**

**\$10.6 Billion Borne by Owners/Operators  
Probably more if not all if you figure the  
Owner pays the Arch/Eng/GC and Subs**

*Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry—Final Report*

**Table 6-1. Costs of Inadequate Interoperability by Stakeholder Group, by Life-Cycle Phase (in \$Millions)**

Stakeholder Group	Planning, Engineering, and Design Phase	Construction Phase	Operations and Maintenance Phase	Total
Architects and Engineers	1,007.2	147.0	15.7	1,169.8
General Contractors	485.9	1,265.3	50.4	1,801.6
Specialty Fabricators and Suppliers	442.4	1,762.2	—	2,204.6
<b>Owners and Operators</b>	<b>722.8</b>	<b>898.0</b>	<b>9,027.2</b>	<b>10,648.0</b>
<b>Total</b>	<b>2,658.3</b>	<b>4,072.4</b>	<b>9,093.3</b>	<b>15,824.0</b>

Source: RTI estimates.



# Data Standards Landscape Across Real Estate Supply Chain



OSCRE OPERATING VISION - BUSINESS PROCESS FRAMEWORK									
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Level 1 - CoRE Competencies	<b>LEADERSHIP AND GOVERNANCE</b>	<b>FINANCE</b>	<b>PLANNING</b>	<b>REAL ESTATE</b>	<b>PROJECT MANAGEMENT</b>	<b>FACILITIES MANAGEMENT</b>	<b>INVESTMENT</b>	<b>LEGAL</b>	<b>GEOPOLITICAL</b>
Level 2 - Business Process Categories	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail	Select Level 1 Hyperlink for Section Detail
Level 3 - Business Processes								<p>Land Registry</p>	

© Copyright 2003, 2004 - OSORE - Open Standards Center. All Rights Reserved.

# Extending Use of Model Data



**Air-Conditioner 70**

New Delete +/- Details...

Variable	Type	Name	Value
A		X Dimension	1'-11 5/8"
B		Y Dimension	1'-5 3/4"
		Total Height	1'-5 3/4"
zzyc		3D	Detailed
thead	Abc	<b>Plan Symbol</b>	
bt		Background Fill Type	06
bpn		Background Fill Pen	01
cpn		Contour Pen	0
		<b>Materials</b>	
borat		Box Material	10
frat		Frame Material	11
lamat		Lamellae Material	13
		<b>For Listing</b>	
co		Cost	077.00
mf	Abc	Manufacturer	Carrier
pin	Abc	Part or Item Number	Z641222200
zenum	Abc	Serial Number	AB122003
note	Abc	Note/Remark	
loc	Abc	Location	GJ03-RF
MH	Abc	AVG Installation Time	12
mentho	Abc	AVG Operating Life	120
cp3	Abc	Custom Parameter 3	
cp4	Abc	Custom Parameter 4	
cp5	Abc	Custom Parameter 5	
		<b>ArchIFM Parameters</b>	
FM_Type	Abc	Group Type	HVAC Equipm...
FM_InventoryN...	Abc	Inventory Number	
FM_SerialNum...	Abc	Serial Number	CISCO-001233
FM_Production...	Abc	Production Year	1970
FM_ObjectWei...	*	Object Weight	66.00
FM_ObjectWei...	Abc	Object Weight Unit	kg
FM_HeatOutput	*	Max. Heating Output	0.00
FM_Refrigerati...	*	Max. Cooling Output	500.00
FM_PowerCons...	*	Wattage	1000.00

- Purchase Price
- Supplier
- Manufacturer
- Part or Item Number
- Serial Number
- Building
- Floor
- Space ID
- Average Installation Time
- Average Operating Life
- Production Year
- Weight
- Voltage
- Phase
- Amperage
- BTU's
- Maintenance

# Real Estate Supply Chain Stakeholders

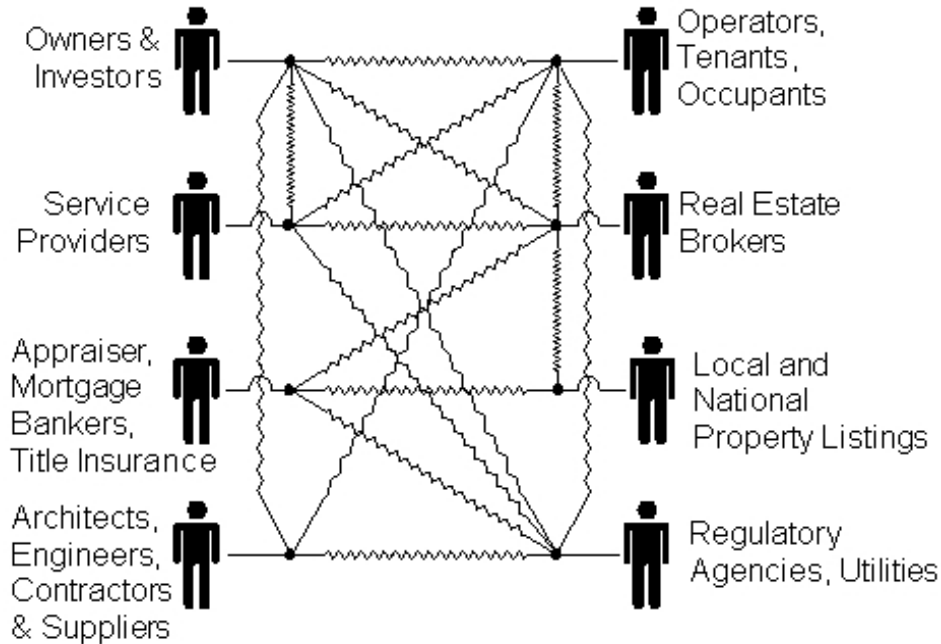


1	Corporations and Tenants	Utilization, metrics, transactions, CAM, financial reporting
2	Brokerage Firms	Listings data, amenities, market opportunities, transactions
3	Information and Content Providers	Market data, listings
4	Owners and Investors	Occupancy, leases, performance
5	Lawyers	Lease terms, leases
6	Appraisers	Market data, valuation templates, values
7	Finance Companies and Banks	Underwriting, values, income
8	AEC Industry of Stakeholders	Design, budgets, contacts/CRM/DBO2, as-built data
9	Facility and Property Managers	TI's, lease terms, expenses, occupancy
10	Public Agencies	Title, permits/CoO, approvals, property taxes, records
11	Asset Managers	Property performance, reporting, leases
12	Accountants	SOX compliance, cost segregation, financial reporting
13	Analysts and Rating Agencies	Investor portfolio performance, income, stock trends
14	Technology Companies	2D/3D/4D, CMMS, CAFM, EDMS, Portfolio Mgmt
15	Consultants and Systems Integrators	Processes, systems integration
16	Associations and Educators	Skills building, knowledge sharing – NextGen Workforce

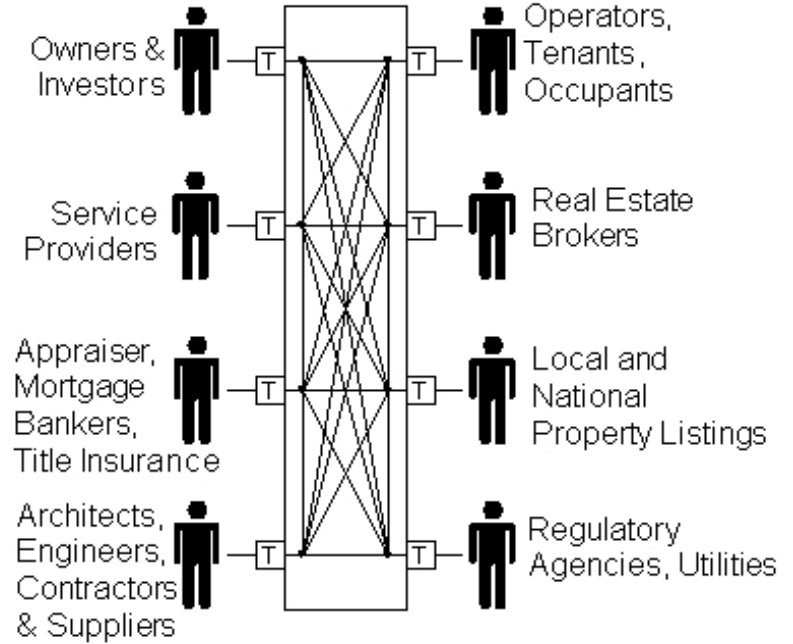
# Technology Improvements Only 50% of the Solution

- Technology Backbone + Transport + Payload
- System Level Data Integrity + Project Level Data Integrity (GI-GO)
- Industry Agreement on Definition of Business Terminology – e.g., U.S. States

# Value Proposition



**Typical Systems Integration  
Without Data Standards**



**Frictionless Systems Integration Using  
OSCRE's Common Data Exchange  
Standards With Translators**

Copyright 2005 © OSCRE America

Number of Components to Integrate	Formula/Calculation (See Last Slide for Calculation Details)	Cost of Integration (FTE's)	Labor Cost (\$50,000/FTE)
20	$N(N-1)$ 20(19)=380	38	\$1,900,000
20	$N=2.0$ 20(2.0)=40	4	\$ 200,000
<b>NET SAVINGS</b>	<b>340 CONNECTIONS</b>	<b>34 FTE's</b>	<b>\$1,700,000</b>

# OSCRE Work Groups



- Commercial Information Exchange
- Strategy & Planning Metrics
- Facility Management Work Order
- Real Property Unique Identifier
- Appraisal Institute
- Legal – Lease Management
- BIM Accelerated Depreciation
- Capital Project Handoff
- Investment

# Value Proposition



- IAI-IFC's on Target – Develop AEC Data Definitions
- OSCRE hopes to leverage IAI-IFC's
- However....Interoperable data exchanges during and after a project require multiple stakeholders working in a collaborative environment.
- Industry must change to foster collaborative, teaming environments via changes in:
  - Contracts
  - Insurance
  - Business Process
  - Vision
  - Owner Driven Support

***Connecting the Real Estate Industry,  
Now!!!***

**OPEN STANDARDS CONSORTIUM FOR REAL ESTATE**

**For Additional Information Contact**

**Andy Fuhrman**

**Chief Executive Officer**

**Tel. 831.458.3346**

**Email: [andy.fuhrman@oscre.org](mailto:andy.fuhrman@oscre.org)**

**Web: <http://www.oscre.org>**