Introduction to Tools & Technology

Information Resources & Technologies Symposium – Tools & Technologies to Reach Resilience

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Achieving a Resilient Future
Achieving a Resilient Future
Overview & Framework

People

Process

Tools

Technology

Achieving a Resilient Future
Day 1: People & Processes

Tackling Productivity in the Building Industry

Collaboration
- People and their effective engagement in project teams are the foundation of a project's success. Project management and the project manager's role must transform to achieve integrated, cohesive teams that enable productivity.

Contrasts/Risk Allocation
- Contracts and risk allocation structures should create collaborative and cohesive relationships. Contracts should support collaborative and performance-focused delivery processes that engage design, construction, and operations stakeholders. Risks should be identified, discussed openly, shared fairly, and problems resolved cooperatively and be allocated to the entity in the best position to mitigate that risk.

Technology/BIM
- Technology including BIM, virtual and augmented reality, 3D printing, and 3D printing provide a wide range of opportunities to improve productivity throughout the project lifecycle, as well as to attract new talent to the industry. Effectively capitalizing on these tools and their underpinning data—particularly its interoperability—will allow the industry to improve quality, make process improvements, and incorporate transformative innovation.

Metrics & Knowledge Sharing
- Consistent metrics must be developed and adopted for use across projects and the industry. Systems and processes that encourage the sharing of knowledge drive continual improvement should be implemented.

Safety & Quality
- Hazards during the design stage for the entire facility life cycle should be eliminated through use of strategies like Prevention through Design. Such strategies can reduce injuries, the physical challenges of construction work to reduce manpower needs and increase attractiveness of the industry to young people. A proactive and effective focus on quality, from early design and throughout the project, will enable productivity improvements and deliver higher quality facilities.

Life-Cycle Focus
- Projects should be focused on delivering the best possible performance across the facility life cycle to include design, construction, operations and reuse/deconstruction. Contracts and project teams should be set up to focus on optimizing life-cycle performance. Performance verification is a key piece in assuring long-term project performance.

Workforce
- Efforts should continue and expand to attract more high school and college-age students to career opportunities and provide them with the basic skills they need to work in the industry. Such programs include career and technical education opportunities. Advancing training of the existing industry workforce through competency-based programs that demonstrate individual mastery which leads to performance improvements.

Off-Site Construction
- Off-site construction offers many advantages including better control of quality, schedule, job site safety and budgets. Consider utilization of off-site construction early in the project and in a collaborative manner to capture the most benefits. Other productivity enhancements facilitate the expansion of off-site construction including BIM, collaborative delivery methods, and project management strategies.

Recommendations from a Representative Hearing on Productivity and the Workforce

National Institute of Building Sciences

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People – Finding Talent

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People: Developing the Workforce

Federal Buildings Personnel Training Act (FBPTA) - 2010

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People & Process Alignment

Processes – Systems Thinking

U.S. Climate Resilience Toolkit

1. Identify the Problem
2. Determine Vulnerabilities
3. Investigate Options
4. Evaluate Risks & Costs
5. Take Action

Mission + Vulnerable = Priority

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Processes – OSC & P3

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Process - Codes & Standards

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Day 2: Tools & Technology

High-Performance Data & Information

Interoperability
BIM
BIM-GIS Integration
COBie

High-Performance Tools & Technology

Energy Modeling
IRVS
Knowledge Mgmt.

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New FM Technologies

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"Reliable and appropriate data and information are essential for measuring and predicting beneficial outcomes of investments in maintenance and repair and for predicting the adverse outcomes of lack of investment."

It’s About the Data!
Managing Information

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Managing Information

BETTER

BIM

FASTER  CHEAPER

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Technology Integration

Integrated FM Information

- Space & Move Mgt.
- O&M Mgt.
- Energy & Sustainability
- Security Resilience
- EH&S Compliance

- GIS
- IWMS
- CMMS
- BAS
- GIS

- Master Planning
- Capital Planning
- Leasing & CRE Mgt.
- Project Mgt.
- Events Mgt.

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Technology Interoperability

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Knowledge Management

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Knowledge Strategy

Knowledge Management

Knowledge Library
Knowledge Management
[Neural Networks]

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Thank You!

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# FM/Built Environment Trends

## Summary of Trends

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<tr>
<td><strong>1. High-Performance Buildings</strong></td>
<td>Sustainability</td>
<td>Sustaining Sustainability</td>
<td>Sustainability*</td>
<td>High-Performance Buildings</td>
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<td>Information Technology</td>
<td>Emerging Technologies</td>
<td>Complex Building Technology</td>
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<td><strong>2. Facility Reinvestment</strong></td>
<td>Facility Reinvestment &amp; TCO</td>
<td>Aging Buildings / Asset Management</td>
<td>Aging Building Stock</td>
<td>Infrastructure Investments</td>
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<td><strong>3. High-Performance FM Organizations</strong></td>
<td>Resource Scarcity and Affordability</td>
<td>Broadening Diversity in the Workforce</td>
<td>Finding Top Talent</td>
<td>Building Information Modeling</td>
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<td></td>
<td>Workforce Issues</td>
<td>Linking FM to Strategy</td>
<td>Workforce Integration/Alignment</td>
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<td></td>
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<td>Enhancing Workplace Productivity</td>
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<td><strong>5. FM Technologies</strong></td>
<td>Laboratory/Classroom of the Future</td>
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<td>Changing Workplace</td>
<td>Excess Facilities</td>
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<td>Energy / Resource Management</td>
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<td>Leadership*</td>
<td>Aging Buildings</td>
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<td>Globalization</td>
<td>Infrastructure Interdependency</td>
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<td><strong>7. Preparedness / Resiliency</strong></td>
<td>Customer Service</td>
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My Top 10 Trends

1. Communicating FM value
2. Managing information
3. New FM technologies
4. Enhancing resiliency
5. Sustaining sustainability
6. FM leadership development
7. Developing FM standards
8. Evolving workplace
9. Elevating service levels
10. FMs & quality of life

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