Facilities Management and Maintenance in the Digitally Disrupted Workplace

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FM in the Digitally Disrupted Workplace

• Part 1: The Age of Disruption
  – Disruption in buildings
  – the built environment, esp. the public sector?

• Part 2: Digital Disruption
  – Impact to date?
  – Future digital technology trends

• Part 3: Digital Disruption and changes to FM
  – Opportunities and impacts
  – Impact on the workplace

• Part 4: Challenges for FM Practice

• Part 5: ”Take Home” Tips Summary
Part 1: The Age of Disruption

Key technology changes since the dawn of time

- Fire
- Stone tools
- Wheel
- Bronze & Iron Ages
- Trades / Masonic Guilds
- Industrial Revolution
- Internal Combustion Engine
- Electronics
- Space and Satellites
- Digital
Disruption in Buildings

- Agrarian (8000 – 5000 BC) Villages formed
- Religious (2600 BC – 1880 AD) NB: La Sagrada Familia
- Industrial (1750 – 1914 AD) Factories, large towns
- Commerce (1880 – 2000 AD) Birth of the skyscraper
- Environmental (1980 – Present) Sustainability
- Digital (2000 – Present) The workplace practice revolution?
Disruption in construction

- 1852: Safety Elevator - Elisha Otis
  - 1854: demonstrated at New York exposition
  - 1857: First installed in New York City
  - 1880: First electric elevator - Werner von Siemens, Germany

- Combined with steel frame construction
  - 1885: Birth of skyscrapers!
    - Home Insurance Building, Chicago
    - 42m (10 floors) high
    - Tallest ‘building’ in the world for 5 years

- Upper floors now became more accessible, desirable and expensive.
An iconic outcome

Empire State Building

- Completed 1931
- 381m high - 102 floors
- 5th highest free-standing building in USA
- The world’s tallest building for 39 years
- Remains as the 25th highest free standing building in the world
Disruption in construction continues...

Great Pyramids of Giza, Egypt
148m, 7000 workers, 20 years

T30 Hotel. Hunan, China
101m, 200 workers, 15 days
New challenges for buildings / FM

To deliver function & value within constraints of:

- **Investment:** utilisation, current, future relevance & growth
- **Permanency:** Lifespan, option of repurposing, refit, retire?
- **Compliance:** changing regulatory constraint, BCA, IR, OH&S
- **Productivity:** cost, design & utility vs. utilisation
- **Sustainability:** environmental and financial
- **Community:** contribution, acceptance
- **Workplace Design:** environment, talent attraction, flexibility
- **Accessibility:** roads, transport, supplies
- **Technology:** systems & controls, data, connectivity, mobility
And, in the public sector...

- Community-driven purpose vs. net ROI imperative
- Heritage constraints
- Limiting finds – rate pegging
- Governance
- Disposal restrictions
- Modern structures & services
  - Leadership in initiatives – eg: sustainability
  - Updated recreation & social facilities
  - Multi-purpose & operating times
Changing buildings for function

Change in buildings has always been a constant:

“... the technology of trade has changed in response to advances in the ability to communicate.

From its origins on the streets of Chicago, the Board of Trade moved to a building housing 'trading pits' for the open-outcry exchange by brokers ...”
(Dale T. Mortensen)

How will buildings change in an age of digital disruption?
Part 2: Digital Disruption!
Digital Disruption

“... changes enabled by digital technologies that occur at a pace and magnitude that disrupt established ways of value creation, social interactions, doing business and more generally our thinking.”

- The Big Opportunity Blog. June 5 2013
## The Onset of Digital Technology

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Some examples of digital disruption

• MS Encarta (1993) vs. Encyclopedia Britannica (1768-2010)
• Digital cameras vs. Kodak
• Amazon / Kindle vs. Book retailers eg: Borders Books
• E-mail, Twitter, Facebook vs. Australia Post
• Uber vs. Taxis - (then, Driverless Cars?)
• Air BnB vs. Hotel chains
• Fitbit vs. Weight Watchers
• Netflix, Presto & Stan vs. Video store rentals
• Business process outsourcing (BPO) vs. local employment
• Self scanning / RFID shopping vs. checkout assistants
Our behaviour is changing...

- Data collection, connection, communication & analysis - is faster & easier than ever before.
- We expect to **communicate** to anyone, anywhere, anytime at high quality & minimal cost.
- We expect **access to information** anywhere, anytime at minimal cost.
- Our **work devices are our social devices**
- Our **digital behaviour** is shaping how we are communicated with and what about. (Also that of our customers)
- This way of working and living is **all that the next generation knows**.
The Future… Faster! Smarter!

• Decision-making: Algorithm analysis transcends from social and recreational to commerce, business strategy, research
  – Algorithm based purchasing, marketing, risk (Facebook, Emu, Woolworths)
  – Wearable data collection & analysis – (Fitbit, Garmin, Strava)
  – GPS guidance & traffic avoidance – (Google)
  – Smart meter controlled electricity
  – Automated stock trading

• Capacity: Hyperscale, linked, digital infrastructure

• Connected Intelligence: Collective device sensing

• Life simulation: Real-time digital connection & interaction

• Strategy: Digitally conceived businesses
How will this be possible?

We will make this happen.

• 2014: 7 billion (B) mobile subscriptions
  – 2.3B mobile broadband subscriptions:
    – 5 times increase since 2008
• Internet connected devices:
  – In 2015: >10 billion (B).
  – >50B in 2025 = 140 for every human
• Data production growing x 1000 p.a.
• 99% of world data already digitised
  – 50% has an IP address
• 6 billion hours of YouTube viewing per month – all linked to Google analytics
• Loyalty programs
• Unprecedented access, connectivity, sensing and analysis \((Evans & Forth 2015)\)
It’s just a matter of connecting the pieces...
‘Take Home’ Point #1

Today, our willing, collective digital activity is generating and analysing unprecedented levels of data, in turn creating new practices and new markets.
Part 3: Digital Disruption and FM

Purpose of FM:

“Facility management is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology.”

IFMA – International Facility Management (www.ifma.org)
Technology in FM

Building Information & Management Systems

Virtual Tour / Reality Systems

Instant, Mobile, Community Reporting

Asset Management and Maintenance Systems

Vehicle / Plant Tracking

GIS

Technology enablers

EAM landscape
Integrated Best practice EAM Software solution overview

Use your smart phone to help remove graffiti.
Report graffiti at www.goodbyegraffiti.wa.gov.au

Sponsored by Technology in FM
Building Information & Management Systems
Virtual Tour / Reality Systems
Instant, Mobile, Community Reporting
Asset Management and Maintenance Systems
Vehicle / Plant Tracking
GIS
Sponsored by
“Take Home” Point #2:

The ease of availability, rate of development and low cost of technology is democratising FM service providers and end users alike.

- Existing processes more efficient, not new processes
- Enhances current use, not replace
- How to keep up with rate of change?
- What is the value-adding role of the provider?
Emerging FM issues in the workplace

1. Activity based workspaces (ABW)
   - NB: NOT hot-desking
   - > 100% population
   - designed for growth, productivity & flexibility

ABW emphasises new issues:
   - Mobility systems add complexity
   - Optimising productivity or utilisation?
   - Ownership of space – authority?
   - Cost allocation of services?
   - Communication for maintenance?
   - Access and timing?
Emerging FM issues in the workplace

2. De-centralised workplaces
   - Mobility technology
   - Productivity
   - Flexible working patterns / BPO
   - Access / Parking / Public Transport

3. Workplace Design
   - Staff attraction & retention
   - Impacted by workplace form, systems, norms and practices,
   - Values driven – Sustainability?
‘Take Home’ Point #3:

(Under Digital Disruption) **the asset is** no longer singular but **all places, including informal workplaces and the network** that connects them.

– FM providers and custodians need to embrace this
Emerging Issues in the Workplace

4. Technology vs. work practices

- Outpacing traditional, formal controls such as IR, OH&S, contractor engagement
- Less centralised physical presence
- Data based work able to be carried out anywhere / any time – staff mobility
- BYO Technology & Devices
- Privacy, security of data
- Blurring of social and professional boundaries
- Access to neutrally ‘owned’ periods – Travel
‘Take Home’ Point #4:

Formal HR, IR, OH&S, IT policy, tenant and contractor agreements have not kept up with current practice or future requirements to meet asset user and custodian expectations.

- Pivotal in attracting and managing the next generation of employees and providers.
Emerging FM Issues in the Workplace

5. The Future ‘Asset’
• Less generic in form and function
• Higher utilisation / less downtime – Micro leasing?
• Higher rate of adaptation
• More flexible (BYOT/BYOD)
• Higher connectivity
• Ownership / custodianship less attributable
• Less commitment to use / must attract
• Greater emphasis on revenue, refit, repurpose or retire
Part 4: Challenges for FM – New Measures

The ‘7D’ Key Performance Indicators (KPIs):

- **Demand**: Ability to track & understand asset duty / life cycle
- **Detection**: Predictive / real time analysis of performance
- **Diagnosis**: Fast, remote assessment of fault and cure
- **Downtime**: Utilisation linked. This cost may surpass service price
- **Disruption**: Intrusion, timing & proactive communication
- **Data**: Collection, Connection and Integration - create knowledge to enhance / assure future asset performance
- **Diminution**: Continuous improvement: Ongoing decrease in waste, cost, failure instances and end user dissatisfaction
Other Challenges for FM Practice

- Adopting the ‘7D’ KPIs means a shift to **predictive maintenance for** key assets, eclipsing **programmed maintenance**
  - Remote sensing and diagnosis places emphasis on IT component of FM
  - Basic service types, eg **trades**, are ‘hygiene factors’, not differentiators.
- Increased **collaboration** with suppliers, contractors, customers and end users
  - **Availability** needs to anticipate needs of all customers
  - **Differentiation** is in innovative service provision and contribution to knowledge ie: management of staff, contractors and **integration of data**
- FM must adopt a **solutions** mentality rather than services.
  - Asset strategies, business cases, applications and alternatives understood, proven and in readiness for their customers / asset owners
- The benefit of customised technology?
‘Take Home’ Point #5:

Increased FM value chain collaboration will be essential to effectively manage and optimise future assets and achieve the required performance standards

- FM providers to be prepared with asset performance data business cases
- Technology must be focused on collection and integration of useable data. Platforms should **not** be bespoke to individual users!
What of the centralised workplace?

‘... the workplace will always exist as a physical place to bring people together to collaborate, create a culture for an organisation and provide professionals with the tools to excel at what they do.’ (‘Activity Based Working’ – JLL, 2012)

- Increased demand in smaller CBD offices
- Increased demand in CBD residential apartments (Colliers, 2015)
- Commercial & social enterprises responding to changes in work hours and practices, centrally and in dormitory suburbs
- BUT, also increased conversion of commercial space to residential
Surgery for an Icon
Empire State Building

- Built before TV, E-mail, Mobile Phones, the Internet, DVDs, Facebook or i-Pad
- 2010: A US $500M refurbishment to improve sustainability performance
- Tallest building in the US to hold a Gold Star Leadership in Energy and Environmental Design (LEED) Certification. – Awarded in 2011
  - More than Eureka Tower or 700 Bourke St
  - Has it prolonged its relevance?
  - For how long??
Future relevance: Not just functional

Ongoing business cases must consider:

- Asset investment vs. unclear permanency
- Changing environmental & compliance
- Technology / systems investment & skills
- Revenue competition from alternatives
- Demand for “Gentrification” of services

Versus:

- Workplace “attractiveness”
- Optimised utilisation and productivity
- Real estate affordability
- Overloading of public transport and roads
- Digitally induced behavioural, cultural & social changes
‘Take Home’ Point #6:

Ensuring future physical workplace relevance will require provision of an environment which addresses the need for a combination of form, function and rapidly changing social & cultural attributes.
A final disrupting thought

Technology does not in itself create a benefit ...

“Thanks to technology, we can instantly communicate across the world but it still doesn't help us know what to say.”

Jonathan Sacks

... unless we use it to change the paradigm.

The first elevator shaft predated the first elevator installation by 4 years!

Improved productivity through driverless fleet cars?
Part 5: ‘Take Home’ Points - Summary

FM in the Digitally Disrupted Workplace:

• Our willing, collective digital activity is creating new services & markets
• Available technology is democratising providers & end users
• Assets are now collective. They include the formal, informal workplaces & connecting network – who is accountable?
• HR, IR, OH&S, IT policy and contractor agreements are lagging actual practice – eg: BYO Technology, Working Hours
• FM value chain collaboration is essential to meet the ‘7D’ KPIs
• Future physical workplace relevance - derived from providing a combination of form, function and social / cultural attributes
• True innovation will see technology potential creating new services rather than simply making old ones more efficient
References

Thank you

Questions?

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