New Information Governance Challenges

By Bassam Zarkout

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About Bassam Zarkout

- Experience in IG, RM, ECM, BPM (25 years)
  - RSD: CTO, Chief Strategy Officer
  - IGnPower: Founder
  - IG prototype research with US DoD
  - Design and develop IG/RM products/solutions
    - eManage ByteQuery design, DoD 5015.2
    - GLASS creative design, patents
  - IG projects: Government, Banking, Automotive, Utilities, etc.

- Experience in Internet of Things (IoT)
  - IoT, Industrial IoT, Smart Cities
  - Artificial Intelligence
  - Industrial Internet Consortium

- Public Speaking on IG, RM, IoT:
  - ARMA, MER, AIIM, IGI, ThingsExpo, etc.
New Information Governance Challenges

Corporate Information Assets

Internet of Things Data

Artificial Intelligence

Discussion
Corporate Information Assets

Benefits of Digitalization

- March towards digitalization of business has delivered significant benefits to organizations
- Corporate information is “lifeblood of organization”… hence the Information Asset

Challenges of Digitalization

- Exploding volume of corporate information created, stored and consumed
  - Exabytes, Zettabytes and Yottabytes
  - Curiosities few years ago… reality today
- Information landscape increasingly complex
  - Human-created documents and emails, high-volume reports from business systems, social media content, IoT data
- Information scattered across many systems
  - Many platforms
  - On-premises and cloud
- Growing Data Residency issues
  - Differences in regulatory and legal requirements across jurisdictions

A new term has emerged: The Information Asset
Corporate Information Assets: Lifecycle

**Lifecycle policy based on…**
- Business requirements
- Operational requirements
- Regulatory requirement
- Legal requirements

**Retention during lifecycle…**
- Maintain integrity, accessibility and compliance with privacy
- Duration may be decades long
- Lifecycle may be longer than lifecycle of systems used to create it and store it

**At end of life of asset…**
- Decision needed re what actions to take
- Regulations and laws may require disposition of asset
Information Governance (IG)

- **Information Governance**: term used in industry for “looking after” information
  - Splitting hair? “Looking after” or “Take care of”?

- Need sustainable IG program with clear objectives:
  - Reduce cost of ownership of corporate information
  - Reduce legal and regulatory compliance risks associated with owning this information
  - Increase business value of this information

*Different from the governance of systems that generate information.*
Growing gap between increasing volumes of Information Assets and limited amounts of governance controls being applied to them is resulting in an Alarming IG Debt.
Information Assets in the Organization

(A) Formal Business Records:
- Record Policies
- Immutability
- Retention & Disposition

(B) Essential Business Content:
- ECM stores, Shared Drives
- Cloud Stores
- May become Corporate Records

(C) Non-essential Content:
- ECM stores, Shared Drives, Cloud Stores
- Will not become Corporate Records
- May become ROT after time period (?)

(D) ROT (Redundant, Obsolete, Trivial) Content:
- Can be anywhere
- Can be deleted

(E) ESI (Electronically Stored Information) Content:
- Can be anywhere
- Must be placed on hold
The IG Program

The “Program” Strategy
- Vision
- Mission Statement
- Mandate
- Culture

Sponsorship
- Executive Level
- CxO Leadership
- Budget

Operational
- Steering Committee
- Roadmap
- Sustainable

Engaged Stakeholders
- IT
- Business
- Finance
- Compliance
- Legal
- Other

Add value to internal groups
- Connect the dots
- RACI

Enforcement
- Processes
- Reporting
- Litigation Support
- Technology Deployment
- Integration

Several players from different backgrounds try to cope with the pressures of playing football at a major university. Each deals with the pressure differently, some turn to drinking, others to drugs, and some to studying.

Director: David S. Ward
Writers: David S. Ward, Aaron Latham
Stars: James Caan, Halle Berry, Omar Epps | See full cast & crew »
The IG Program... Adds Value and Connects the Dots

Connecting the dots within the organization...

Corporate Policies for Governance
- Legal & Regulatory Requirements
- Business Requirements
- Operational Requirements

Value-add various groups in Organization

Information Governance Program
- Risk: Reduce cost of ownership of corporate information
- Cost: Reduce legal and regulatory compliance costs associated with owning information
- Value: Increase business value of information
Challenges facing Information Governance

Despite its short history, IG has had its fair share of challenges...

**IG practices still emerging...**
- Lack of maturity in discipline
- Lack of maturity in organizations

**Most IG programs not well established...**
- Long on vision
- Short on execution
- Lack of effective executive sponsorship

**Unclear who is in charge...**
- Most CIOs focused on infrastructure
- Records Managed stuck in the past
- Business Leaders focused on business
- Tech budgets moving away from IT

Outcomes so far... not so great
- Slow adoption of IG practices
- Increased costs and risks
- New CxO title needed?
  - CDO: Chief Digital Officer
  - CDO: Chief Data Officer
  - CIGO: Chief IG Officer
IG Requirements → Policies → Enforcement → Repositories

Information Governance Policy Requirements

- Legal
- Business
- Regulatory
- IT
- IP
- Operation

Information Governance Policy Definitions

- Classes of Information Assets and their associated governance rules
  - Metadata Definitions
  - Laws & Regulations (by jurisdiction)
  - Legal Storage Locations (systems, jurisdictions)
  - Privacy Rules
  - Event Definitions
  - Hold Processes
  - Value Index
  - Retention Duration (event + time)
  - Disposition Processes
  - Other

Information Governance Enforcement Processes

- Event Processing
- Lifecycle Management
- Predictive Analytics
- Reporting
- Audit Trail
- Notification
- Enforcement APIs

External Event Triggers

Repositories

- Iron Mountain
- NTFS
- SharePoint
- Office 365
- OneDrive for Business
- Dropbox for Business

IG Requirements

IG Policies

IG Enforcement
New Information Governance Challenges

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Internet of Things Data

Artificial Intelligence

Discussion
The Evolution of the Internet of X

Documents | Transaction Data | Social Media Data | Device Data
---|---|---|---
Internet of Documents | Internet of Commerce | Internet of People | Internet of Things

[Diagram showing various companies and platforms representing each category]
What is IoT?

The 4 Ds of IoT

1. Detect
   - Sense events
   - Measure
   - Collect

2. Derive
   - Aggregate
   - Analyze
   - Recognize patterns

3. Decide
   - Predict
   - Prescribe
   - Determine actions

4. Do
   - Perform actions
   - Report

Cloud

Exploit operational data generated by Internet-connected smart objects in order to:
- Gain insight about their operation
- Produce better outcomes

Better Outcomes
- Enhance productivity
- Create new business models
- Eliminate unplanned maintenance
- Increase revenue
- Other…
Lots of hype around IoT... BUT lots of reality too...

**IoT impact on the market is significant, real and it’s here!**

<table>
<thead>
<tr>
<th>Gartner</th>
<th>McKinsey &amp; Company</th>
<th>GE</th>
<th>Microsoft</th>
<th>Cisco</th>
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| • IoT mainstream in 2020  
• IoT one of top 10 strategic technologies for Government  
• Connected “things:  
  • 4.9 billion in 2015  
  • 25 billion in 2020 | • Potential maybe higher than some of the hype around IoT  
• Hard to capture value  
• Benefits require capital and investment in business process innovation  
• Value in 2020: $4-11t | • Industrial Internet may add $10-15t to world economy  
• 7 connected devices per capita worldwide by 2020  
• GE Predix Platform: $6b in 2016, $15b in 2020  
• Aviation:  
  • Avoid unscheduled maintenance, save fuel, improve scheduling...  
  • Manufacturing:  
    • Monitor machine health, optimize maintenance... | • Economic impact: $11.1t by 2025  
• Capture/analyze data to improve business results  
• Monitor assets to improve efficiencies  
• Drive operational performance  
• Enable innovation  
• Transform business by using advanced data analytics  
• Create new business models and revenue streams | • Internet of Everything (IoE): $14.4 trillion Value at Stake 2013-2022  
• Asset utilization $2.5t  
• Productivity $2.5t  
• Supply chain $2.7t  
• Customer UX $3.7t  
• Innovation $3.0t  
• Technology trends:  
  • Cloud, mobile, Big Data, CPU power, etc.  
  • Security and privacy policies are critical |

IoT impact on the market is significant, real and it’s here!
Sample IoT Use Cases

Use Cases for IoT

- Manage Asset Performance
- Enable New Business Models
- Improve Safety
- Improve Energy Efficiency
- Monitor Quality
- Enhance Customer Access

- Detect
  - Sense events
  - Measure
  - Collect
- Derive
  - Aggregate
  - Analyze
  - Recognize patterns
- Decide
  - Predict
  - Determine actions
- Act
  - Perform actions
  - Report
Sample Use Cases

Japan’s National Institute of Advanced Industrial Science and Technology designed little drones. Ultimately drones will be able to crawl inside plants.
Sample IoT Use Case: Smart Cities

- IDC: By 2019, 40% of Local and Regional Governments will use IoT to turn infrastructure into assets instead of Liabilities
  - Roads
  - Street lights
  - Traffic signals
Volume of IoT data growing exponentially

Figure 1: Smart City Operating Governance Framework

Gartner

Proactive Maintenance

- Low fuel level - oil level check
- Unplanned maintenance over 50 hours
- Asset lifetime maintenance plan
- Failure prevention and proactive rectification

Data capturing, synthesis, process baselining and alert levels

Key results and actionable items

Body vibration above 10mm

Low hydraulic oil pressure

Hydraulics temperature at 80°C

Spare parts planning

Operation maintenance synchronization

One Airbus 380 generates 1TB of data every takeoff

EXHIBIT 2: Explosion of data in the world – Data created by people, enterprises, and things will attain 44 zettabytes by 2020 (Source: Adapted from IDC)
Governing the IoT Data: the main issues

**Definition**
- What is the data?
- Should this data be governed?

**Ownership**
- Who owns the data?

**Security**
- Cybersecurity
- Privacy
- Leaks

**Authenticity and Integrity**
- How to preserve its authenticity and integrity?

**Rights and Duties**
- Rights and obligation towards this data?
- How to manage it?

**Lifecycle**
- What is its lifecycle?
- How to manage it?

**Maturity**
- What is the IG maturity level of the IoT solution adopters?
- IT vs OT
The 4Ds + 1G of IoT™

1. **Detect**
   - Sense events
   - Measure
   - Collect

2. **Derive**
   - Aggregate
   - Analyze
   - Recognize patterns

3. **Decide**
   - Predict
   - Prescribe
   - Determine actions

4. **Do**
   - Perform actions
   - Report

5. **Govern IoT Data... 4Ds+1G™**
   - Establish Corporate Policies
   - Retain
   - Dispose of
   - Discover
   - Enable Compliance
   - Apply Litigation Holds
   - Assist with Privacy
   - Manage Data Residency
   - Assist Product Development
   - Manage Information Assets as Corporate Assets

Govern function must be integrated with the 4D functions.

Lifecycle of IoT Data

- **Derive**
  - Aggregate
  - Analyze
  - Recognize patterns

- **Decide**
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- **Do**
  - Perform actions
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Artificial Intelligence

Discussion
Artificial Intelligence (AI)

- AI enables software to behave like humans which allows devices to perceive, analyze data, reason, talk, make decisions and act.

- Explosion of AI, embedded in devices around us
  - AI one of top 10 strategic technologies for 2017
  - Impact on world economy in 2020 = $ trillions
    - McKinsey
  - Speech and object recognition, autonomous cars...

- Key breakthroughs
  - Breakthroughs in Deep Neural Nets
  - Availability of large training sets
  - Inexpensive GPU cards
    - NVIDIA
AI-enabled systems can...

- Can plug holes human-led efforts leave behind
- Bring disruptive changes that can challenge economical, legal and ethical fabric of society
  - Jobs
  - Bias
  - Responsibility
  - Privacy
AI-enabled systems can...

- Make calculated decisions more quickly than humans
  - Ingest information, analyze it
  - Example: AI can speed up investment decisions

- Suggest process or strategic changes by analyzing data collected from
  - Regulatory and trade bodies’ feeds
  - Social media
  - News sites
  - Competitor websites

- Assist organizations with GRC and IG functions
Example of Vendor Offerings

Ingest and combine data in any format, from anywhere

REST APIs and Connectors
- RESTful APIs
- Connectors
- Correlation and Similarity Calculations
- Predictive Model Creation
- Multivariate Temporal Reasoning
- Anomaly Detection and Event Prediction
- Event Classification

Our compressed, living in-memory knowledge graph means fast and efficient detection of relationships, temporal correlations, and patterns across disparate data.

Runs on Commodity hardware

Artificial Intelligence For
Predictive Maintenance, Event Prediction, and Anomaly Detection

Flexible, Scalable, Smart, Real Time

Fast and Cost-Effective Deployment

AI at the edges of the IoT
How can AI contribute to Information Governance

- Automate the RM and IG processes
- Other... tbd
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Summary

- **Govern Corporate Information**
  - IG Programs must deal with Information Assets and not just records
  - IG Programs must deliver real value to various stakeholders (especially IT)

- **Govern IoT Data**
  - Produce Better Outcomes
  - Volumes of IoT Data expected to explode
  - IoT Data should be governed
    - The 4Ds + 1G of IoT™

- **Leverage AI in Information Governance**
  - AI software allows devices to perceive, analyze data, reason, talk, make decisions and act
  - AI can assist with GRC and IG functions

Let us discuss...
Thank You...

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