



SMART City Transformation: Leadership and How EA Fits

Presented in:

Berlin, Germany on the 24th of April 2017

Presented by:

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SMART City Transformation: Leadership and How EA Fits

One of the main challenges of Smart City transformation is who leads: CIO or City Manager ?

This presentation examines how EA can help both to ensure that the implications of the significant insertion of technology is wholly understood by all stakeholders and provides business value both qualitative and quantitative.

EA will also play a key role in managing expectations and, using capability based planning, help determine when technological innovations are mature enough to be introduced and that the social innovations to effectively leverage the technology are fully understood and planned for.

The presenter is currently involved in Smart City planning.



Robert Weisman, MSc, PEng, PMP, CD

Robert Weisman MSc, PEng has been actively working in the field of Enterprise Architecture and Portfolio Management since the late 1980's in both public and private sector.

Robert is also heavily involved in governance and audit in consulting and is Vice President of the Information Systems Audit and Control Association (Ottawa Chapter). He has worked with the Auditor General of Canada in the conduct of Audits and has specialized in EA and Cybersecurity. Robert's audit, portfolio management and EA Governance experience has made him realize the value of continuous audit and he has seen the good, the bad and the ugly with respect to governance.



Robert is a civil / military engineer who also has completed Army staff college and undergraduate and graduate studies in Computer Science (artificial intelligence / decision support. Currently Bob is Engineer in Residence, part-time professor and Phd candidate at the University of Ottawa where he is studying in the multi-disciplinary domain of e-Business (e-Society, e-Management and e-Technology) specializing in the business of government.



Agenda

1. The SMART City Landscape
2. Case Study and Lessons Learned
3. Where Does EA Fit
4. Concluding Material





Part 1 The Landscape

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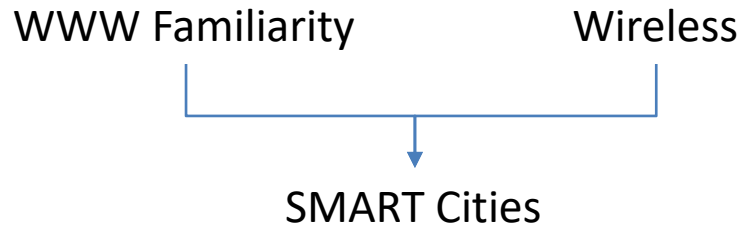
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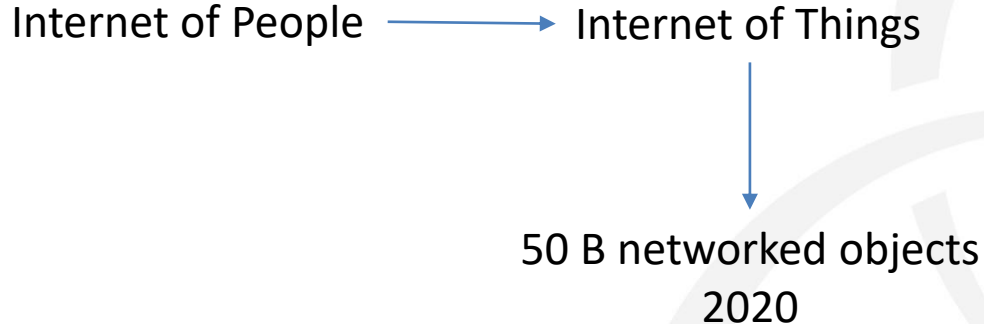
SMART CITIES

(Based on “Smart Cities” Townsend 2014 Page 3)



SMART Cities

Places where information technology is wielded to address problems old and new ... cities can adapt [to changes in the environment] on the fly (Townsend 2014 P. Xii)



SMART Cities (More general)

Use of Technology to enhance the quality of life for city residents.
(Weisman 2017)
More than Information Technology



Technology Centric Cities

Unintended Consequences - 1930



Displaced
Residents

Urban Sprawl



Pollution



SMART Cities

<http://www.thestorypedia.com/news/pm-modis-constituency-city-varanasi-makes-it-third-list-of-smart-cities/>



Is there more ?
Does it improve the quality of life ?

BUILD THE
VISION



Everything You Want to Know London 2017

CityDashboard: London - Mozilla Firefox

New Tab × Media Box by Me... × The Open Group Berl... × The Open Group × SMART Cities - B... × Smart Cities Data... × The Third List Of ... × CityDashboard: L... ×

citydashboard.org/london/ 130% Search

London

51.51 N, 0.13 W

Sun 23 Apr @ 10:29:12

[Go to Map](#) - [Go to Grid](#) - [Change City](#)

WEATHER STATION (CASA TEAM) 5

STATION	WIND SPEED	WIND GUSTS	DIRECTION	TEMPERATURE	HUMIDITY	RAIN TODAY	PRESSURE	FORECAST
CASA Office: Bloomsbury W1	6.0 mph	14.0 mph	NE ✓	16.7 °C	44%	0.0 mm	1022.35 mbar	Night Showers
EM Weather: Walthamstow	0.0 mph	0.0 mph	NE ✓	0.0 °C	58%	0.0 mm	1059.9 mbar	Clear Night
SJG Weather: Pinner HA5	0.0 mph	11.0 mph	NE ✓	-1.3 °C	57%	0.0 mm	1014.73 mbar	Cloudy

WEATHER (METAR) 768

London City

Winds S-210 at 09kt, Vis 10km, Scattered clouds at 3000ft

SW at 9 mph **15 C**

TRAFFIC CAMERAS (TFL) 10

A4 Great W Rd/Macbeth St

TUBE LINE STATUS (TFL) 20

Bakerloo	Good Service
Central	Good Service
Circle	Part Closure more
District	Good Service
H & C	Part Closure more
Jubilee	Good Service
Metropolitan	Good Service
Northern	Good Service

LONDON CYCLE HIRE (TFL) 139

3.5 % Stations Full	8.1 % Stations Empty
8099 Bikes Available	313 Bikes or Docks Faulty

IN SERVICE (TFL) 22

4603 London buses
90 Underground trains

AIR POLLUTION (DEFRA) 1668

µg/m ³ TIME AVGD	OZONE	NO ₂	SO ₂	PM _{2.5}	PM ₁₀
Bloomsbury	62	21	4	10	15
Marylebone Rd	27	86	9	10	18
N Kensington	?	?	?	8	?

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UCL **CASA** **NCRM** **JISC**



Part 2 Case Study

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Typical City

(Service Map – Baseline Business Architecture)

Emergency and Protective Services

- Police
- Fire
- Paramedic
- Disaster Management



Public Works

- Buildings
- Parking
- Vehicles (Green Fleet)
- Cycling
- Pedestrian Safety
- Forest Cover
- Waste Diversion (Recycling)
- SMART Energy



Transit Services

- Buses
- Trains
- Scheduling



Environmental Services

- Surface Water Management
- Wastewater and Storm Water
- Waste Management / Green Buildings
- Drinking Water



Parks, Recreation and Culture

- Urban Parks
- Ice Rinks
- Revitalization
- Arts and Heritage
- Economic Development and Tourism
- Services for Seniors
- Recreation Activities



Corporate Services

- Human Resources, Finance, Procurement, IT, IM ...



- No Duplication of Services
- Basis for Organization Structure

Elaboration of a Strategy Map

Conceptual Target Business Architecture

Strategic

Long-Term Sustainability Goals

- Governance and Decision-Making
- Climate Change
- Biodiversity and Ecosystem Health
- Culture & Identity
- Economic Prosperity
- Energy
- Connectivity and Mobility
- Materials and Solid Waste
- Water and Wastewater
- Housing
- Food and Agriculture

Balanced Scorecard (For Each Line of Business)

Tactical

Generic Council Priorities / Concerns

- Economic Prosperity
- Transportation and Mobility
- Environmental Stewardship
- Healthy and Caring Communities
- Service Excellence
- Governance, Planning and Decision-Making
- Employee Engagement
- Financial Responsibilities

Client and
Stakeholder

Process

Employee

Financial



The SMART City Approach

Service Transformation

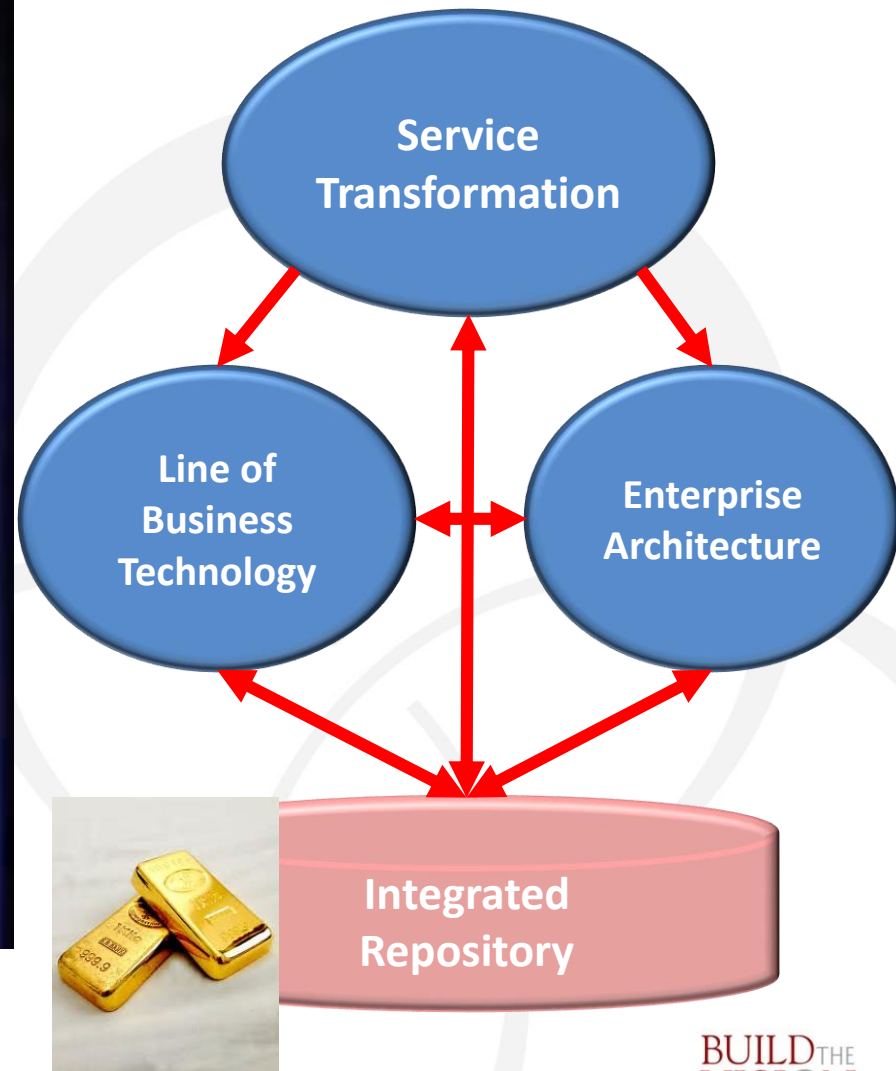
- What to Achieve
- Baseline for Change
- Target For Change
- Incremental Changes
- Technology Enablers
- Available Solutions
- Planning

EA

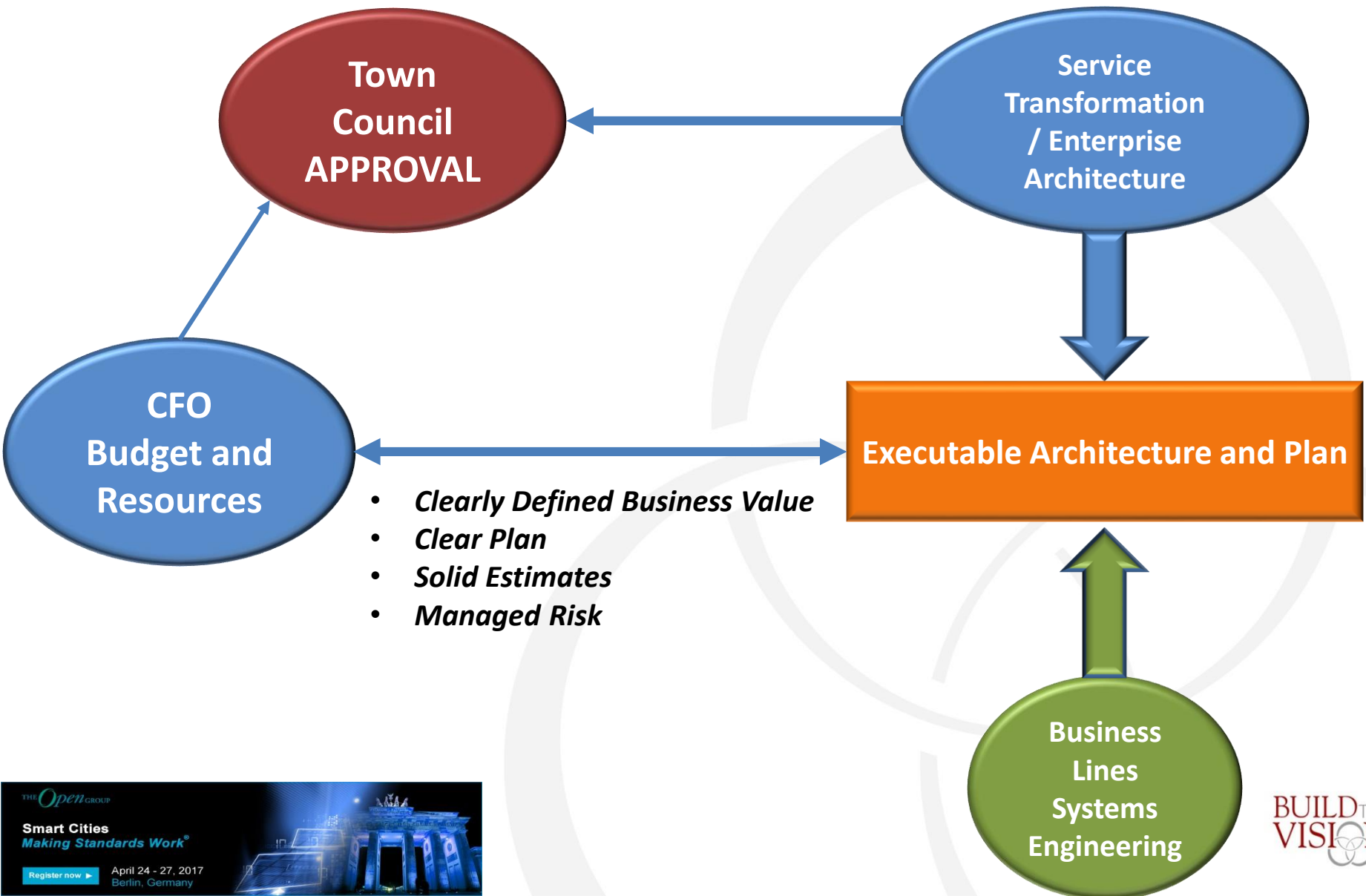
- Business Capabilities
- Baseline Architecture
- Target Architecture
- Transition Architectures
- Architecture Viewpoints
- Opportunities and Solutions
- Implementation and Migration Plan



The Service Transformation Team



Top Down (Where Necessary) & Bottom Up from Business and Technology Experts



Example of SMART Technology Approach

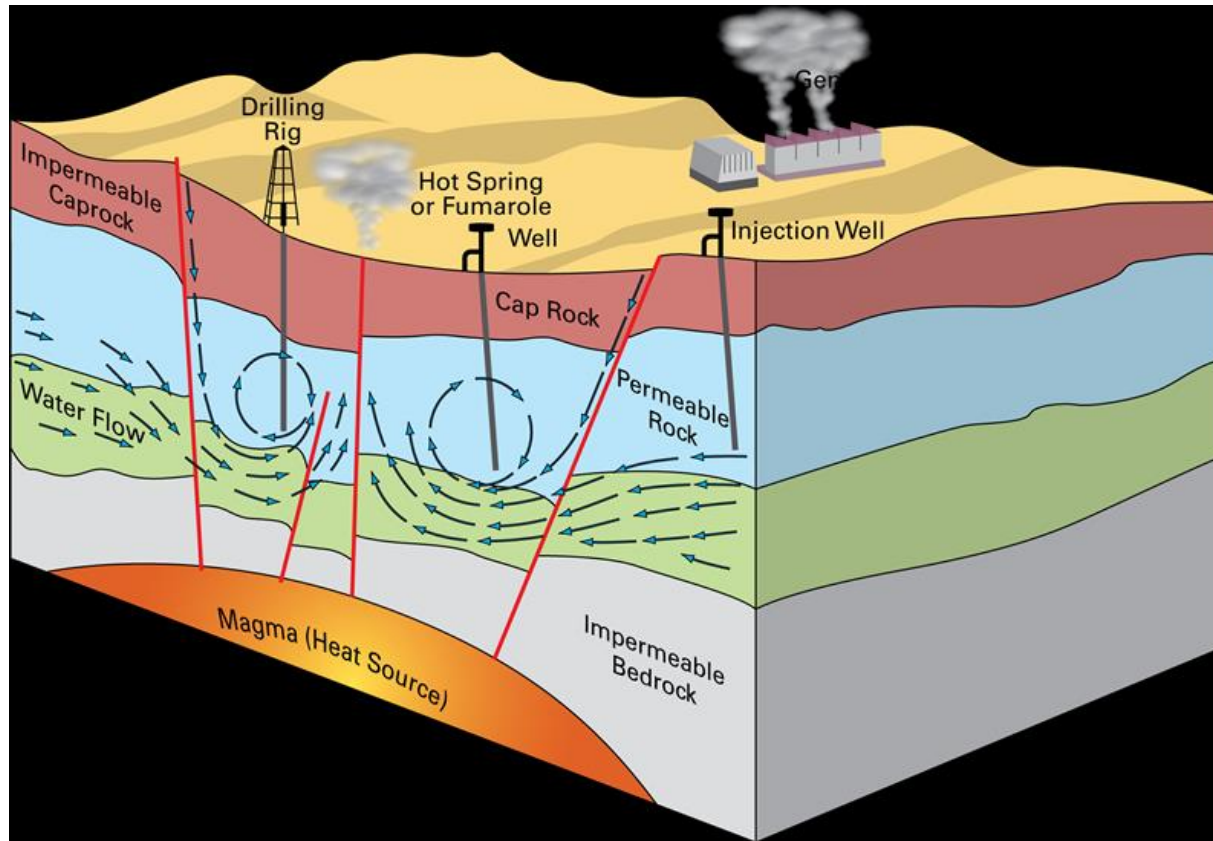


SMART City Proof of Concept

- Simple Drone - \$2K
 - Industry \$50K +++
- Safe Entry to see damage
- How is the Drone Footage Managed?
 - (Information Management)
 - Legal Issues

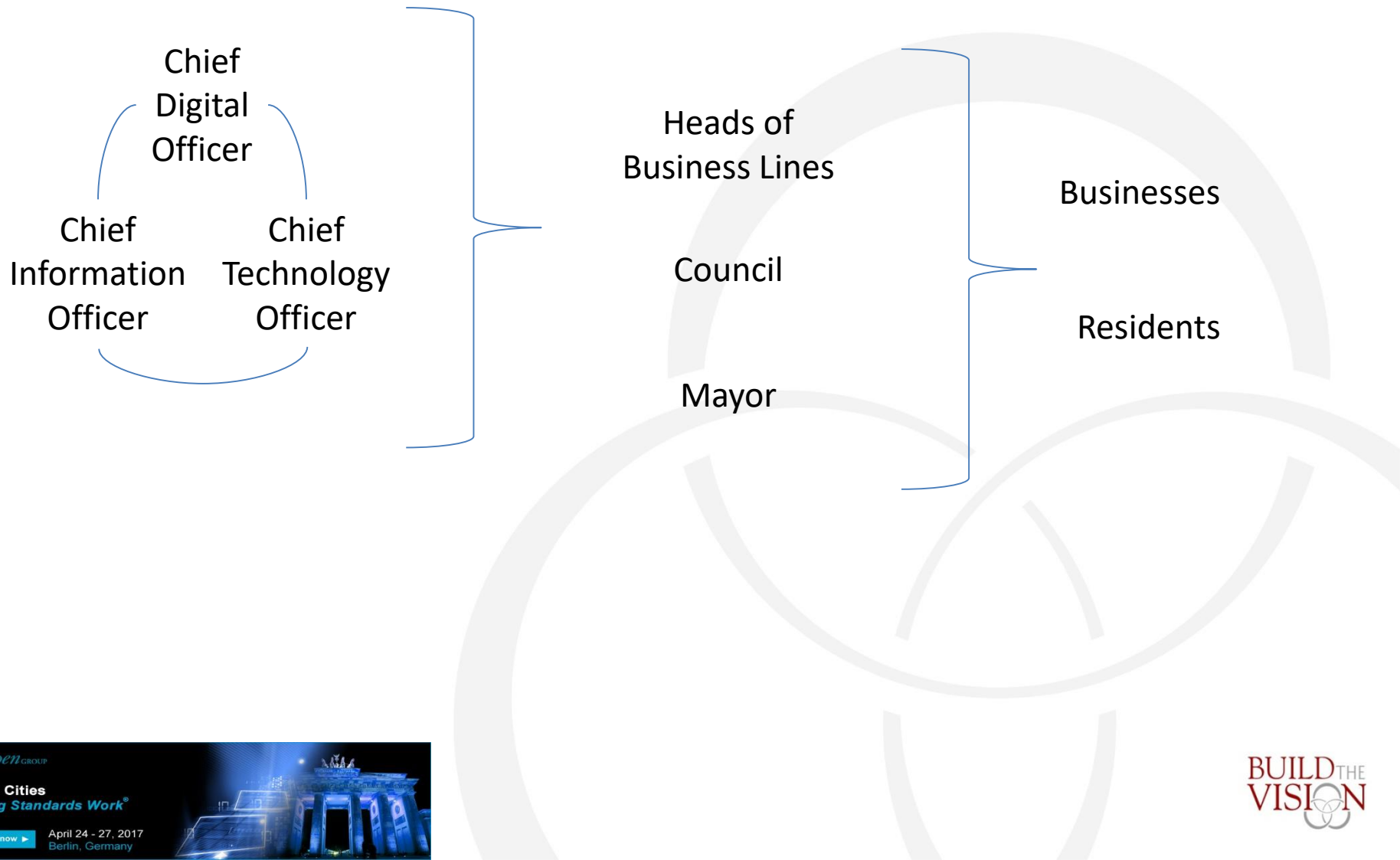
SMART City for Business - Example

Geo_Technical Map



- Integrate data from thousands of boreholes
- Foundation Work 5-10% of construction costs
- Provision of map increase city competitiveness for new investment
- Reduces construction costs
- Avoids accidents / disasters

No Politics Like Municipal Politics



Interoperability – EA Focus

Ability to share information and services (TOGAF 9.1)

Technical Interoperability

- Connectivity
- Bandwidth
- Platform for SMART Environment
- Innovation Demonstration Environment
- Development Environment
- Repository

Information Interoperability

- Common Semantics/Metadata
- Information Quality
- Information Sharing Environment
- Open Data (Data as a Service)
- “Big Data”
- Knowledge Discovery
 - Insight
- Records and Archives

Business Interoperability

- Common Services
- Workflow
- Use of Shared Data
- Analytics



Innovation Demonstrator Capability



Show Me !!!

*Engage City
academia*

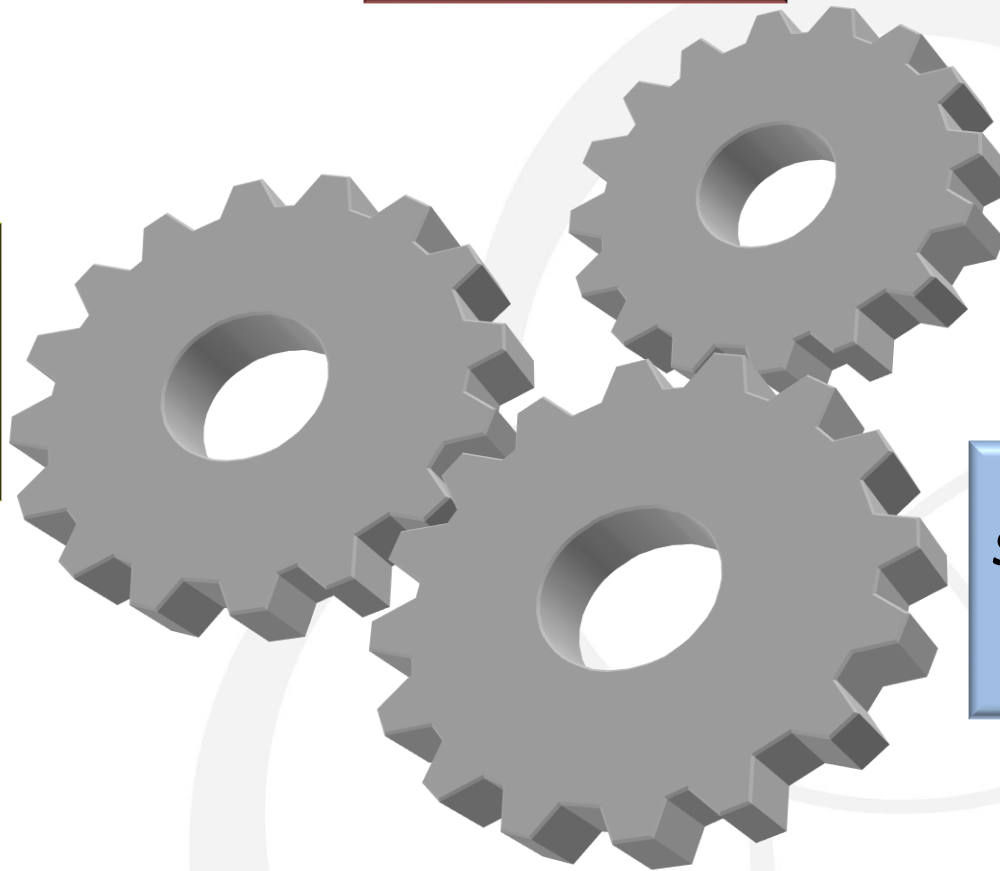
The Three Gears of Business Design

“Design Works” Heather Fraser ©2012 University of Toronto Press (Rotman-UTP Publishing)

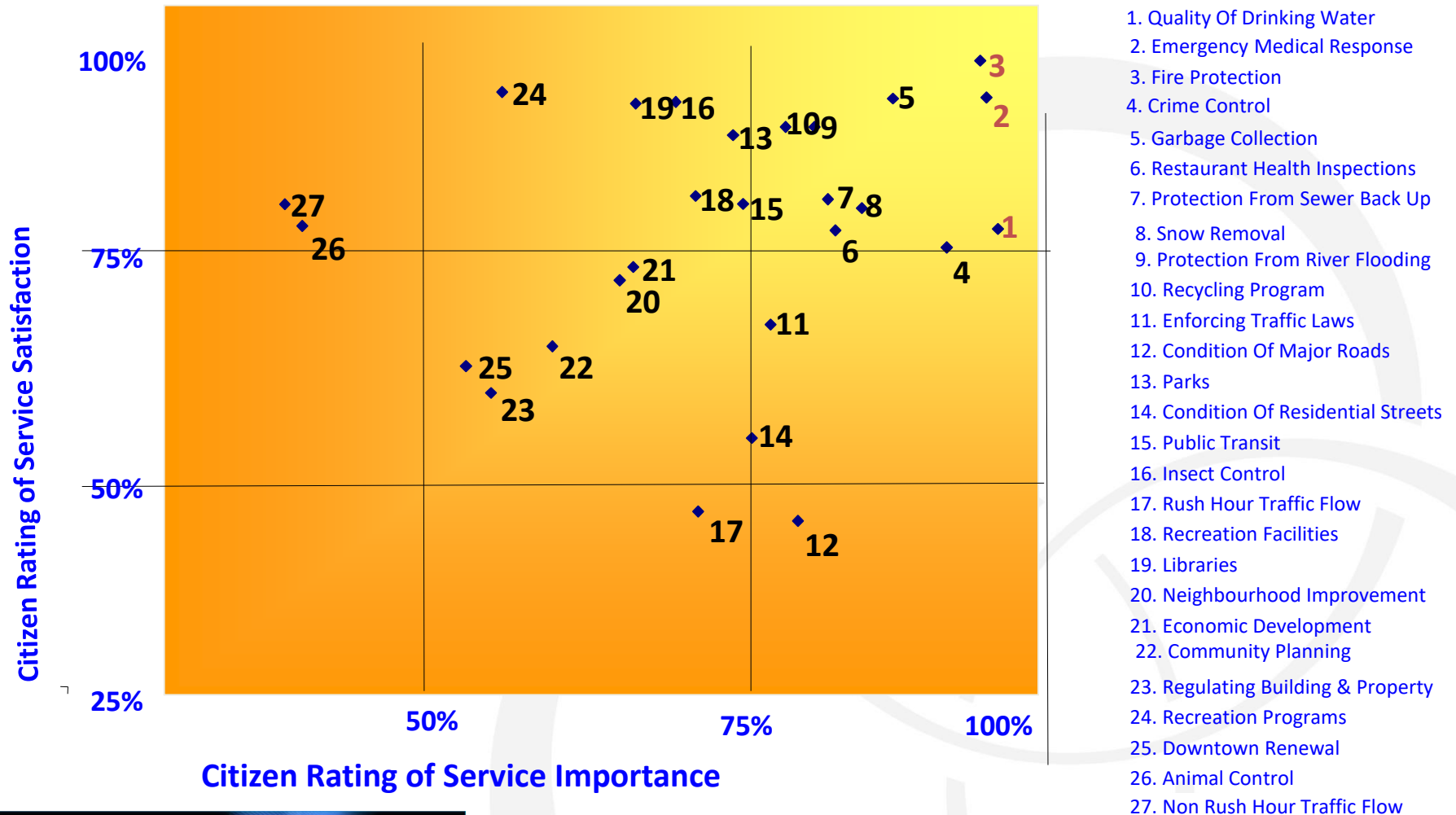
***Gear 2
Concept
Visualization***

***Gear 1
Empathy and
Deep Human
Understanding***

***Gear 3
Strategic Business
Design***



Winnipeg: Citizens' Perception of Comparative Service Value



Unintended Consequences



IoT without Integration Not Very Useful



Unlinked
Sensors

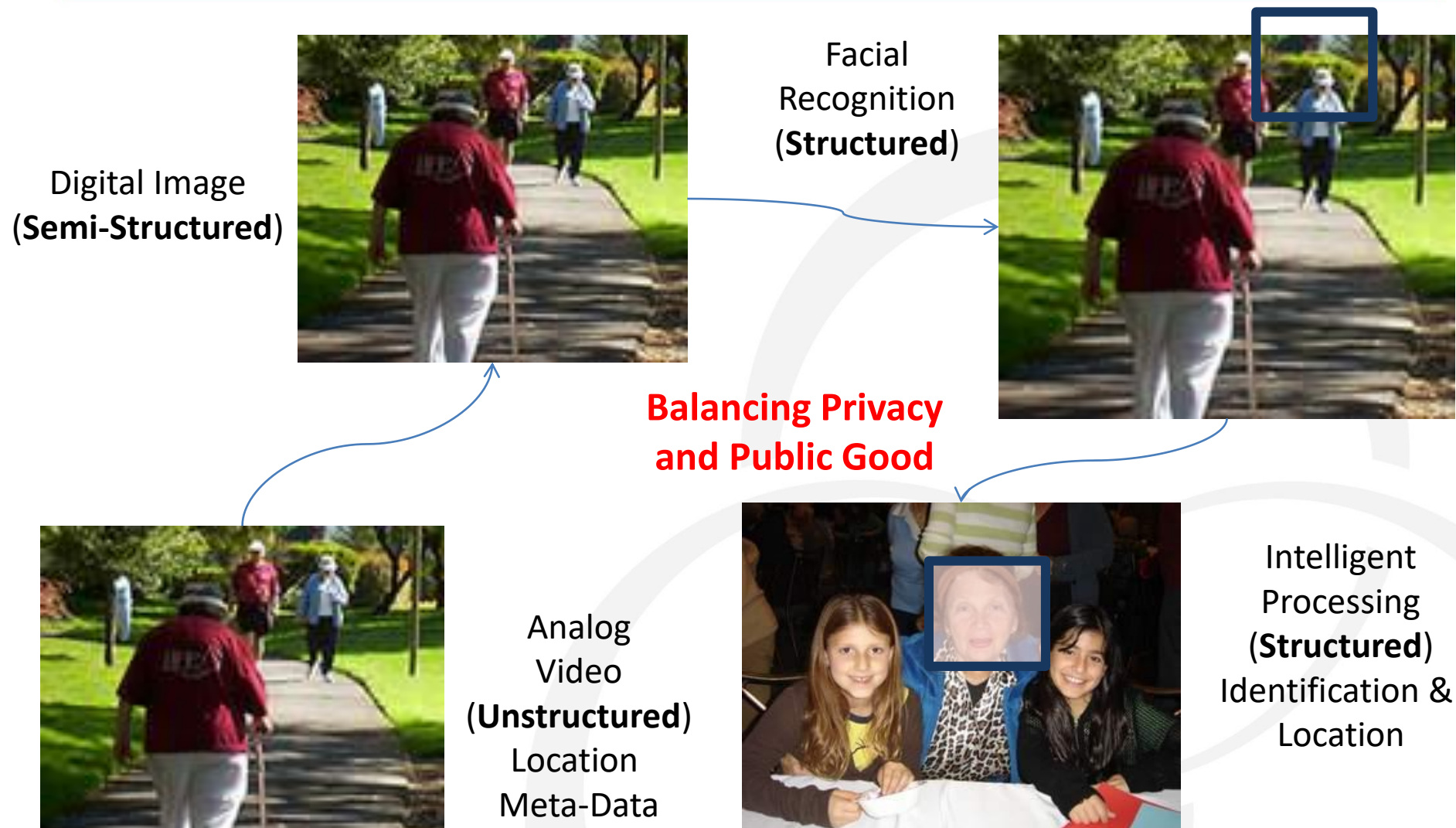


EA is not a luxury; it is the value-add

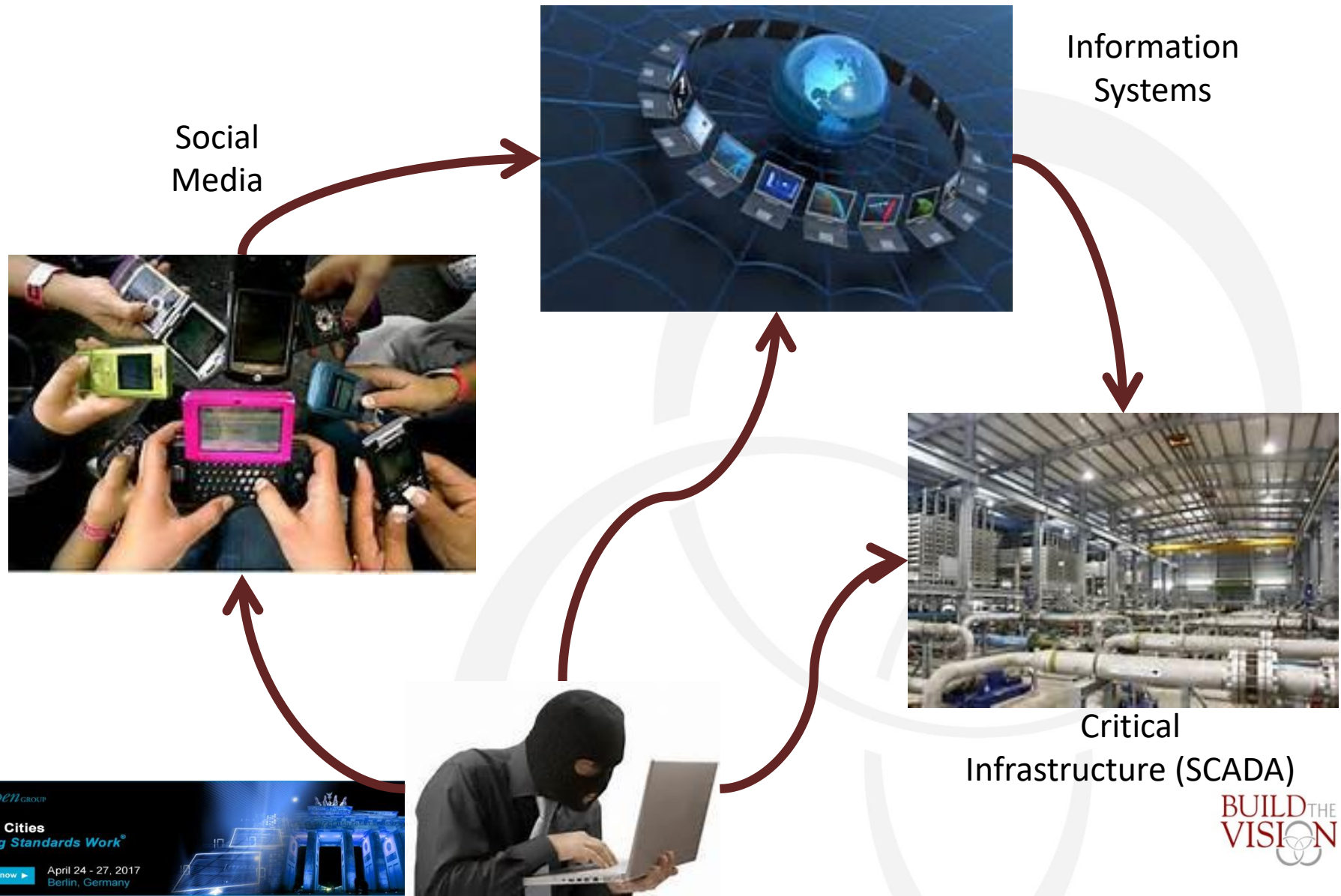


Transformation to Structured Data

Finding a Lost Senior – Security Camera to Outcome



Enterprise Security Architecture and Big Data





Part 3 Where is EA ?

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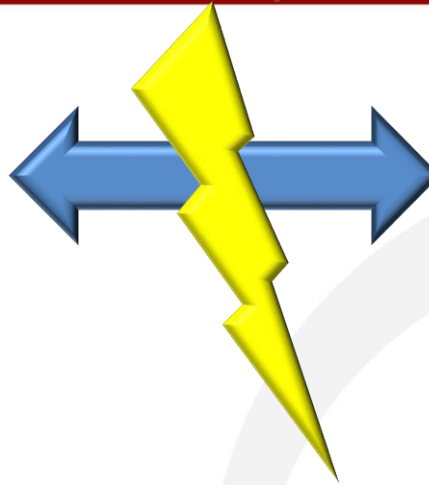
The Challenge

When the toolkit is IT, everything looks like IT !!

***Service Transformation
Group***



Lines of
Business



CIO



Solutions

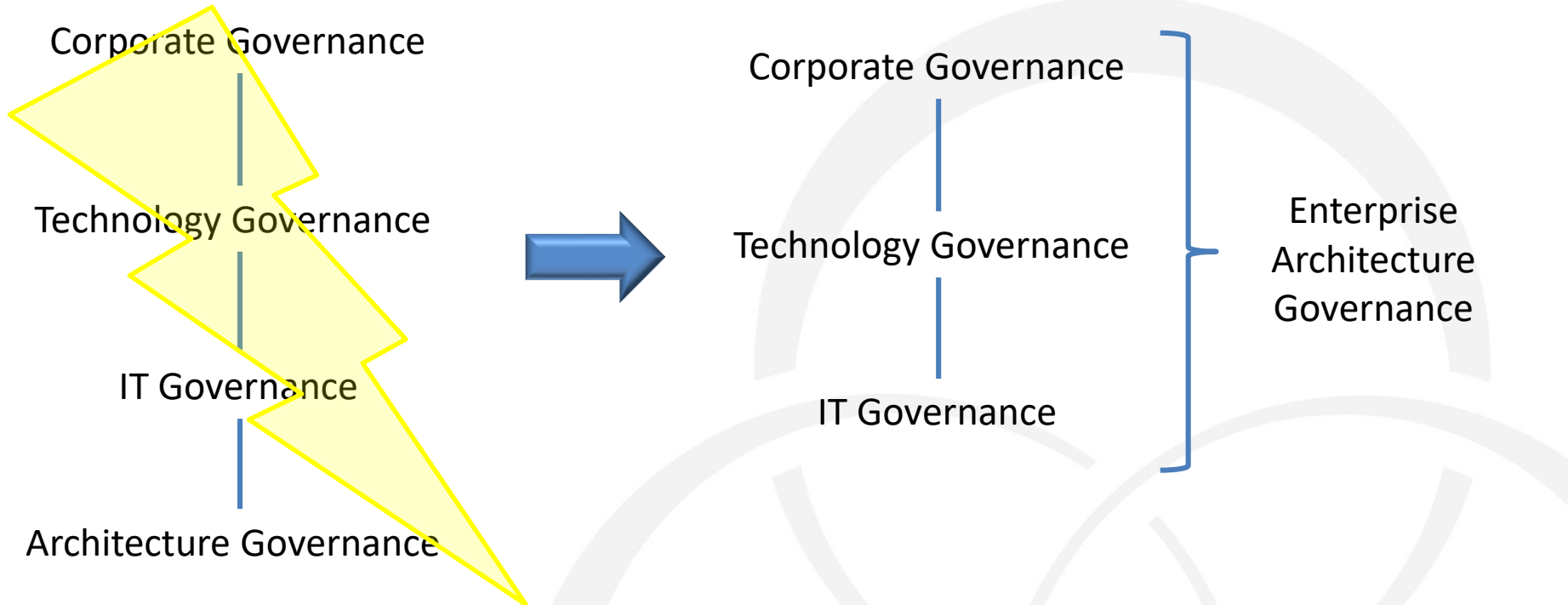


Enterprise
Architecture

**Technology Enabled
Business Transformation**

**IT Enabled
Implementation**

Getting Governance Right – Where is EA ?



Stewardship Vice Ownership

Director EA is Steward for the EA

SMART City business functions have much commonality that has to be shared and managed

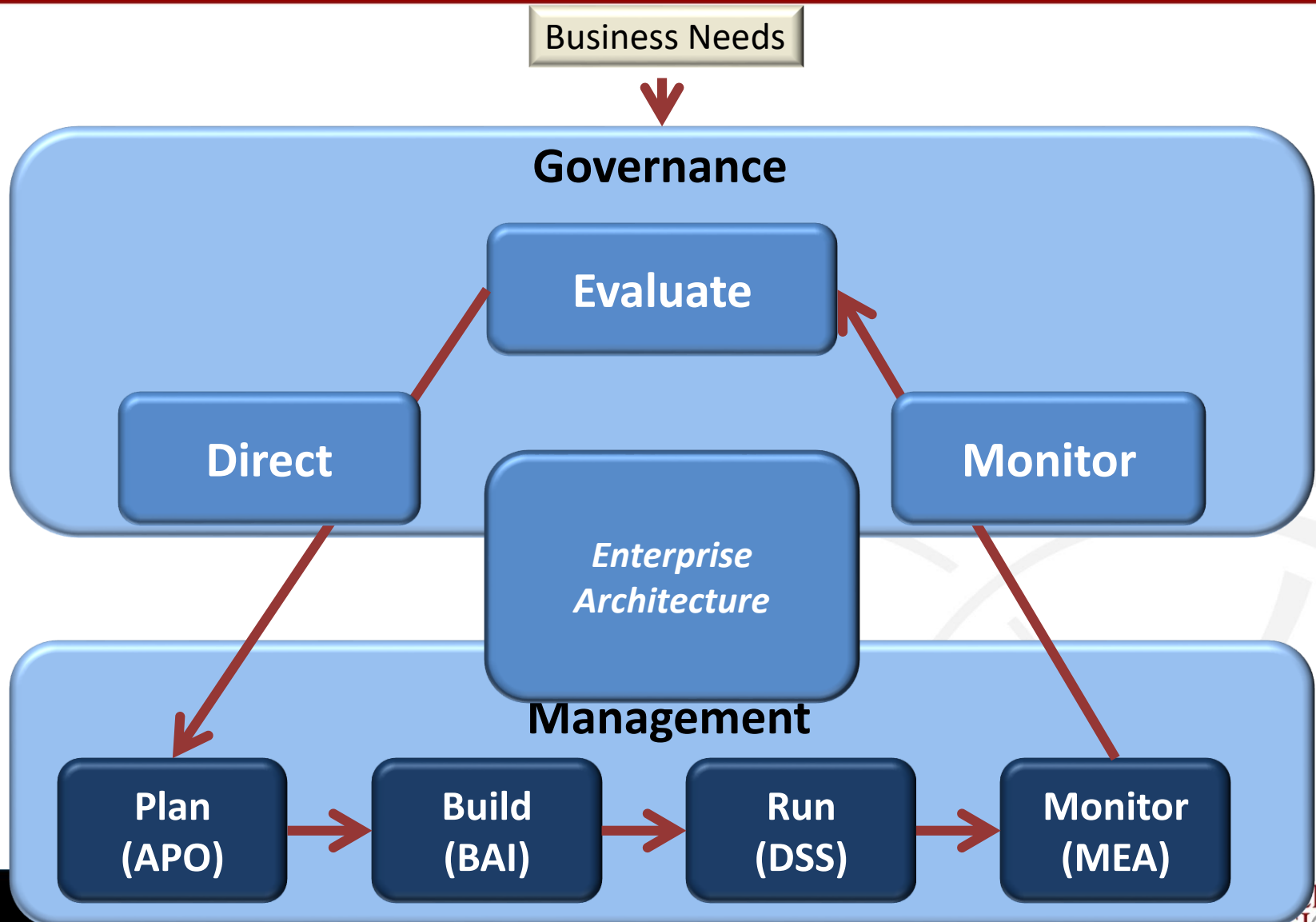


- **Ownership** has poisonous word “Mine”
- Leads to power and “turf” wars

- **Stewardship** has folks responsible on behalf of the enterprise
- Leads to Collaboration as everyone is steward for a piece of the SMART City puzzle

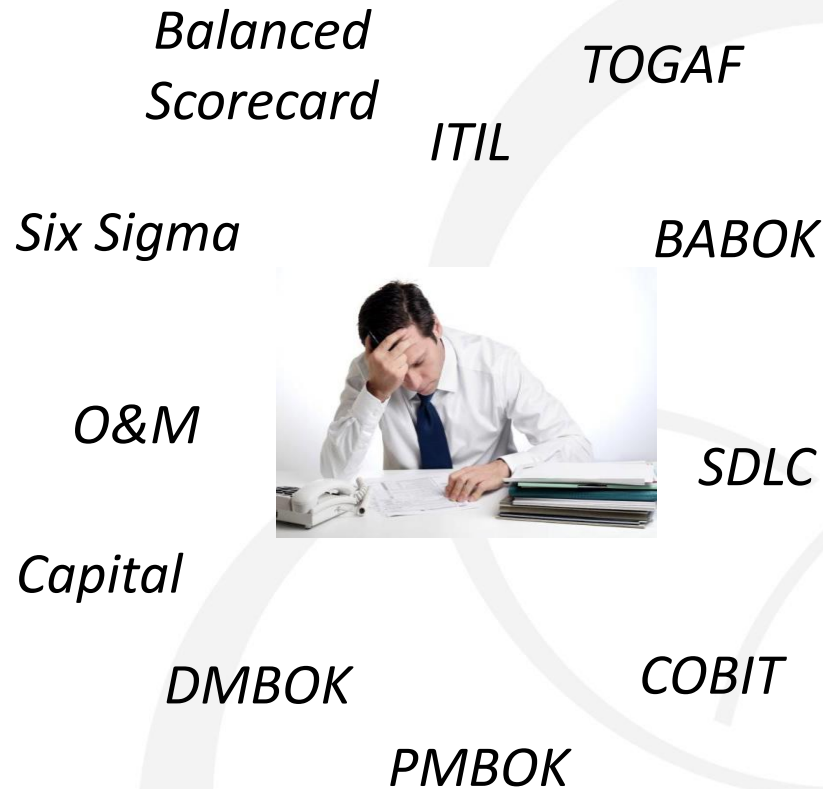


Separate Governance from Management (If You Can)



Methodology Mismatch

The Executive Dilemma How Do They Work Together ?



SMART Cities Need Leadership and Management

(From “Leading Change” Kotter J.P. P26. Harvard Business Review Press © 1996)

Management

- Planning and Budgeting
 - Establishing detailed steps and timetables for achieving needed results, then allocating the resources necessary to make it happen
- Organizing and Staffing
 - Establishing some structure For accomplishing plan requirements, staffing that structure with individuals, delegating responsibility and authority for carrying out the plan, providing policies and procedures to help guide people, and creating methods or systems to monitor implementation.
- Controlling and Problem Solving
 - Monitoring results, identifying deviations from the plan, then planning and organizing to solve these problems.



- Produces a degree of predictability and order and has the potential to consistently produce the short-term results expected by various stakeholders (e.g. for customers always being on time; for stockholders, being on budget)

Leadership

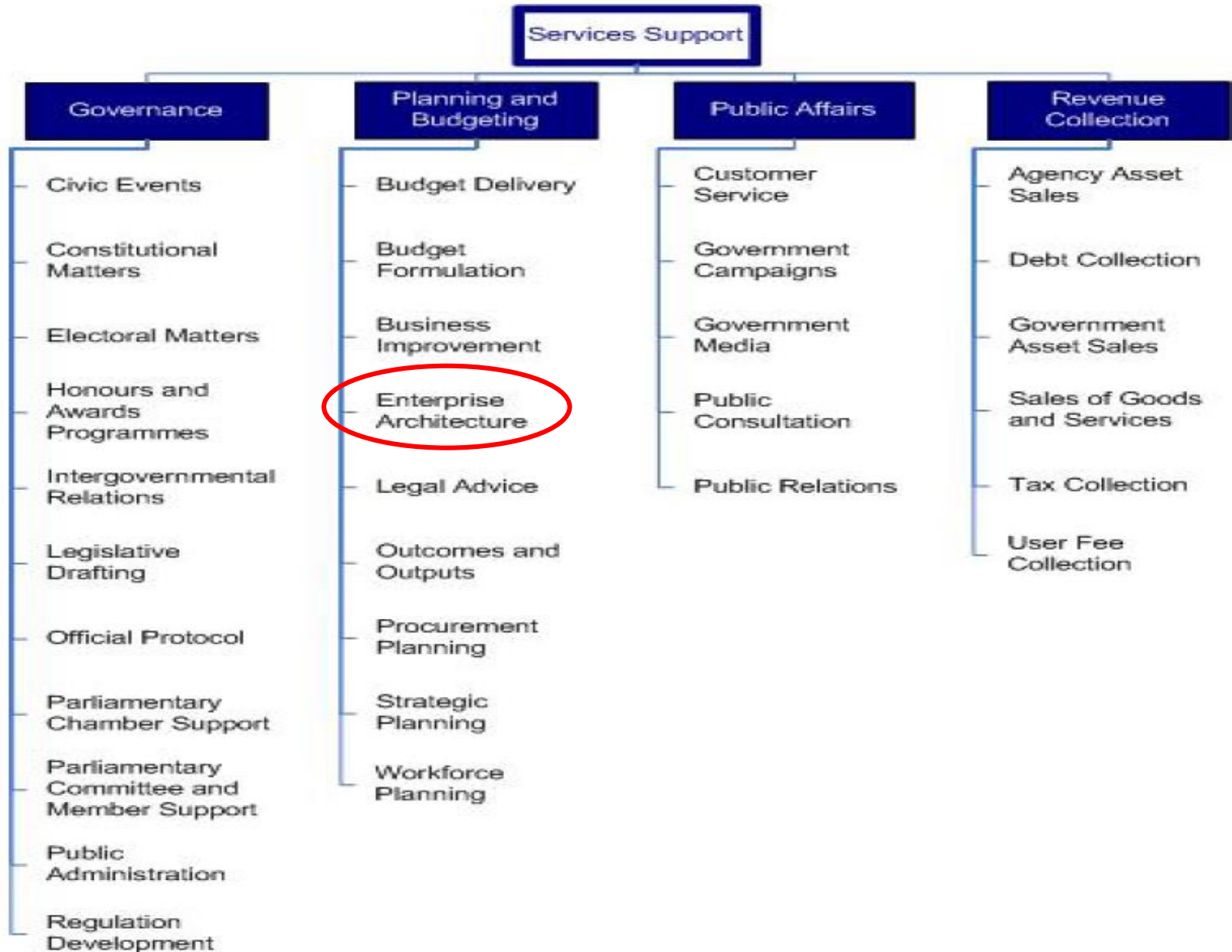
- Establishing direction:
 - developing a vision of the future – often the distant future – and strategies for producing the changes needed to achieve that vision.
- Aligning people:
 - communicating direction in words and deeds to all those whose cooperation may be needed so as to influence the creation of teams and coalitions that understand the vision and strategies and that accept their validity
- Motivating and inspiring:
 - energizing people to overcome major political, bureaucratic, and resource barriers to change by satisfying basic, but often unfulfilled, human needs



- Produces change, often to a dramatic degree, and has the potential to produce extremely useful change (e.g. new products that customers want, new approaches to labor relations that help make a firm more competitive)

EA in Government – Co-Located

(US and Australian FEA – Recommended)





Part 4 Concluding Material

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Concluding Thoughts

- Maintain EA role as enabler
 - Help establish a collaborative / unifying SMART City framework
- Not just value for people but also for businesses
- Focus on Interoperability
- Set up a repository
 - Make sure SMART effort is sustainable and maximize re-use
- Documentation Light
- Demonstration environment
 - Engage Academia
- Promote but help focus initiatives with business value
- Handle technology not just IT
- Security and Privacy
- Learn



Some Recommended Reading

- “SMART Cities: Big Data, Civic Hackers and the Quest for a New Utopia” Anthony Townsend, WW Norton & Company ©2014 ISBN 978-0-393-34978-8 pbk.
- IEEE SMART Cities Forum and Special Interest Group





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Questions ?

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