Enterprise Architecture for the "Business of IT"

Charles Betz
Enterprise Architect & Author
Charlie Betz is Director of Technical Strategy (aka Chief Architect) for a major US telecom and ecommerce hosting provider, currently assigned to one of the largest US retailers.

Previously he was Research Director at Enterprise Management Associates. His EMA responsibilities included IT portfolio management, IT financial management, software asset management, service desks and ITSM suites, and the concept of “ERP for IT.”

Prior to that, he spent 6 years at Wells Fargo as Enterprise Architect and VP for IT Portfolio Management and Systems Management. He has held architect and application manager positions for Best Buy, Target, and Accenture, specializing in IT management systems, ERP, enterprise application integration, data architecture, and configuration management.

He is the author of the recent 2nd edition of *Architecture and Patterns for IT: Service Management, Resource Planning, and Governance (Making Shoes for the Cobbler’s Children)*, and a co-author with Steve Bell’s of the recent *Run Grow Transform: Integrating Business and Lean IT*.

Charlie lives in Minneapolis, Minnesota with his wife Sue and son Keane.
What we will cover

- A formal enterprise architecture for IT management, including process, function, data, and systems models
- Characteristic "design patterns" seen in organizing large scale IT management capabilities
- Defining and distinguishing a true Lean IT process model from older functional representations of IT such as ITIL
- Continuous improvement for IT management, and why a sound IT management data architecture is so important
EA primitives

- Data
- Function
- Process
- IT Service
Business architecture

Business Line A

Data

Process

Function

IT Service
IT support for business

Information Technology

IT management
Data

IT Value Chain

IT Functions

IT Services for IT

Business Line A

Business Line A Data

Business Line A Value Chain

Business Line A Functions

IT Services for Business Line A
The business of IT
The IT Lifecycles

- Application service lifecycle
- Infrastructure service lifecycle
- Asset lifecycle
- Technology product lifecycle
- Service lifecycle
The IT lifecycles all have lives of their own... they are loosely coupled. This is both advantageous and painful. Dynamic, chaotic interactions.
IT Lifecycles and Processes

Application service lifecycle
Supply

Infrastructure service lifecycle

Asset lifecycle

Technology product lifecycle

Service lifecycle

Demand

Accept Demand
Execute Project
Deliver Release
Complete Change
Fulfill Service Request

Execution

Resolve Incident
Improve Service
Retire Service

IT Service

Moment of truth

Complete Change
Fulfill Service Request

Accept Demand
Execute Project
Deliver Release
Complete Change
Fulfill Service Request

Resolve Incident
Improve Service
Retire Service

IT Service
The 2 axes of IT value

User perspective
Includes individuals, business services/capabilities/processes

Sponsor perspective
Service inputs & outputs as they evolve over time
What can we measure?

- User perception
- Data quality
- Inputs
- Constraints & rework
- Execution & delivery
- Security breaches
- Sponsor perception
- Sponsor willingness to pay!
- Lifecycle value

Business performance
Functional view
In order to designate systems of record, you need a conceptual model

- Or at the very least a listing of subject areas, but entities are more precise
The IT Management Systems

Not all system interactions are shown. In particular the demand/portfolio system and the information management systems (IT data warehouse, knowledge management, and metadata) may interact with any other system.
Matrixing

<table>
<thead>
<tr>
<th></th>
<th>Change Management</th>
<th>Service Desk</th>
<th>Event Management</th>
<th>Incident Management</th>
<th>Service Level Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfill Service Request</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restore Service</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Improve Service</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
## SOR matrix
### (Create/Use/Aggregate)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture/CASE Systems</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(IT) Asset Management System</td>
<td>C</td>
<td>C</td>
<td>U</td>
<td></td>
<td>C</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Planning System</td>
<td>U</td>
<td></td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Management System</td>
<td>U</td>
<td>U</td>
<td>C</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration Management System</td>
<td>U</td>
<td>C</td>
<td>C</td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous Improvement System</td>
<td>C</td>
<td></td>
<td>C</td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand/Portfolio Management System</td>
<td>U</td>
<td>C</td>
<td>A</td>
<td></td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>C</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element Management Systems</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(IT) Financial Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incident Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Management Systems</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>A</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security Management Systems</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Level Management System</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Request Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>C</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Configuration Management System</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Systems</td>
<td>C</td>
<td>C</td>
<td>U</td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Continuous improvement

- What is current state?
- Where do we want to be?
- How can we change?
- Did it work? Why or why not?
From continuous improvement to data management

- Data quality is flip side of process quality
- The Five Whys
  - Why was there a mismatch on that server record?
    - Why was the serial # different in the Fixed Asset system?
      - Why was it manually typed into the Fixed Asset system from a paper invoice?
        - Why can’t the vendor send us the serial #s electronically?
          - What if we send them a block of OUR asset ID #s?

- Develop & test a hypothesis for fixing
- Measure if it did anything and *show the trend*
- Repeat as needed
IT data management architecture

- Project portfolio management
- Application Lifecycle Management
- Contract & supply chain
- Corporate Finance
- CMDB/CMS & integrated ITSM modules (incident, change, service desk, IT asset, SLM)
- Risk & security
- HR
- Element management systems
“Measure if the effort did anything…”

History is a must if you want to continuously improve!

Without it, all you have is a snapshot

Drives nontrivial requirements in the data architecture
Obsolescence risk model – a high maturity use case

- Brings all four lifecycles and the business architecture together
- Dependencies, dependencies

Diagram:

1. Business Process/Capability/Service
2. Application Service
3. Infrastructure Service
4. Asset
5. Technology Product

Technology retirement dates
Conclusions

- IT can be viewed as a cohesive set of business activities
- Business architecture techniques are applicable
- Distinguishing between function and process is important, as in other business areas
- Continuous improvement requires attention to data management in IT as elsewhere