Enterprise Architecture at Sellafield

Geoff Smith

BCS Enterprise Architecture Specialist Group
2nd Annual Conference

Tuesday 26 June 2018
London, UK

#BCS
#BCSEASG
#EASG2018AC

www.bcs.org

BCS Enterprise Architecture Specialist Group

Experiences and practices from the Real World

Geoff Smith

26th June 2018

Enterprise Architecture in Sellafield

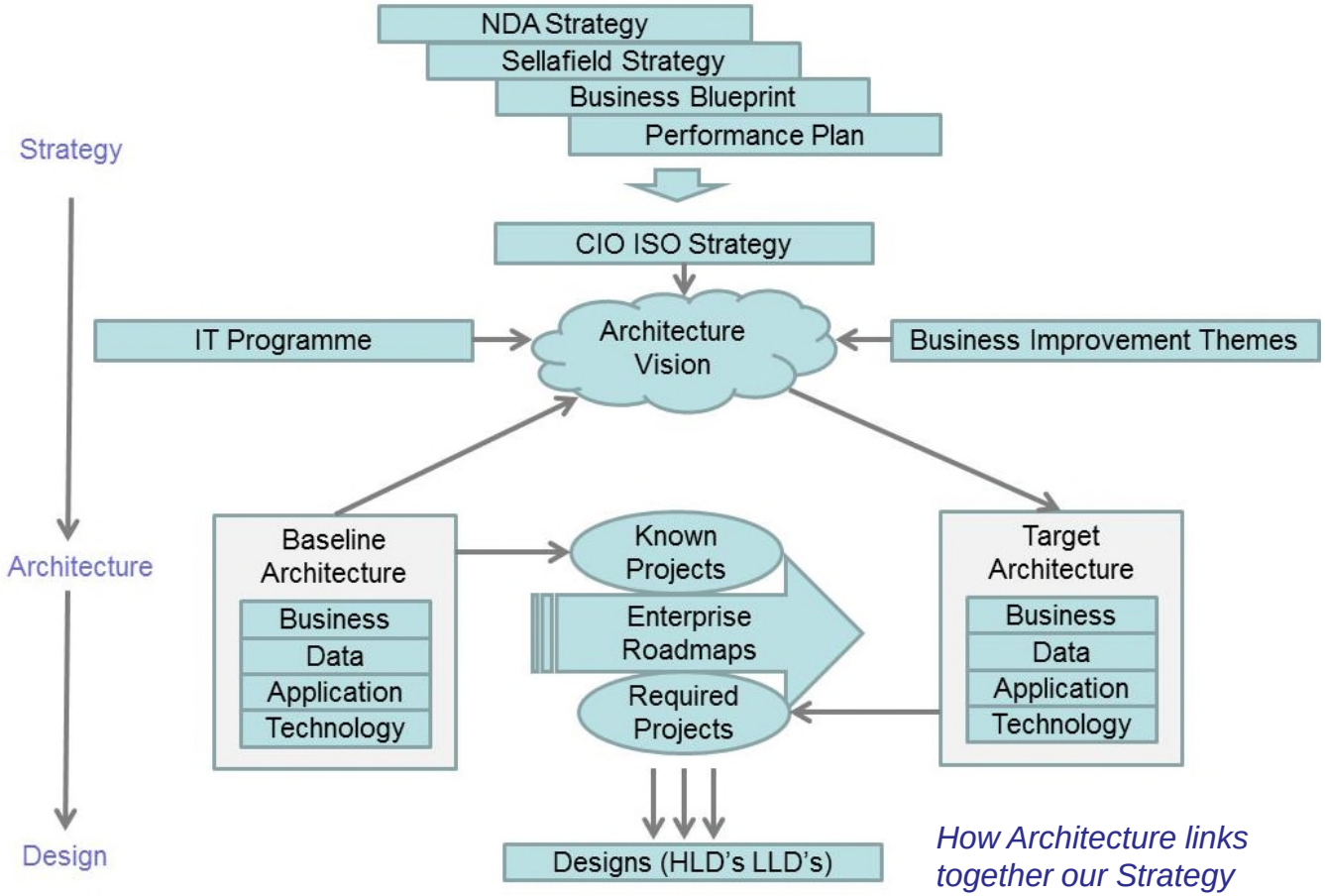
- **Background**
  - To Sellafield
  - To Enterprise Architecture in Sellafield
  - ‘Selling EA’ and Sellafield’s Transformation - our catalyst for change
- **The Steps We Took**
  - Build the basics
  - Demonstrate the framework
  - More detail and repeatability
- **The Lessons Learnt**
- **Our Next Steps**
  - Business Architecture
  - Information and Data Architecture
  - Strategic Decisions

The Background to Sellafield Ltd.

- **Covering six square kilometres, the site is home to more than 200 nuclear facilities and the largest inventory of untreated nuclear waste in the world.**
- **We employ approximately 11,000 people who, along with our supply chain partners, are tackling Sellafield's current diverse portfolio of decommissioning, reprocessing, spent fuel management, nuclear waste management and nuclear material management.**
- **2020 will see our completion of reprocessing operations and the shift of focus to high hazard retrievals, risk reduction and broader decommissioning activities.**

Sellafield Site, West Cumbria
Europe's largest nuclear site

Architecture in Sellafield

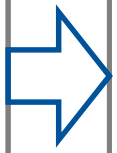


How Architecture links together our Strategy into our Delivery

Transformation - how we ‘sold EA’

Current SL Position

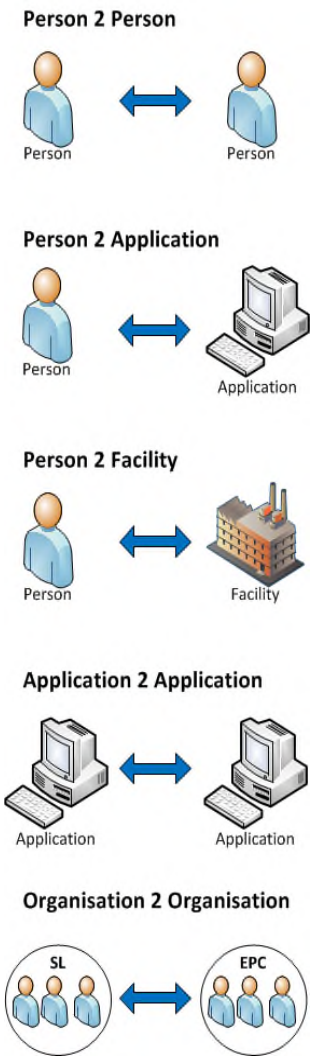
- Business is functionally silo’ d.
- Business Managers have control over their own Process and IT Decisions.
- This results in Process duplication/ misalignment
- IT Solutions for local business problems then leads to a badly fragmented IT Landscape.
- This local autonomy obstructs our integration and ability to standardise.



Future SL (EA Driven)

- Enterprise wide processes and data standardisation
- Exchanges local autonomy for Enterprise flexibility
- Improved information based decision making
- Single source data
- Local managers lose discretion over process/IT decisions
- This reduce applications that perform similar functions
- And consolidates our platforms

Explaining future possibilities when aligned



Current State	Future State
• Authorisations create delays • Physical transport of information • Monolithic Performance Mgt.	• Electronic Workflows • Collaborative working • Agile Performance Management
• Printed Work Orders • Rekeying of information • Require PC to access information	• Electronic Work Orders • In-field information services • Identify management
• Required entry onto facility to know anything • Prepare/learn/option scenarios in physical world	• Internet of Things • 3D models/point clouds as hubs of asset information • Predictive Analytics
• Poor interoperability • No information standards • No single source of truth • Manual data manipulation	• Integration Platform • Data Dictionary / Master Data • Enterprise Reporting
• Poor requirements definition • Poor information exchange • Documents rather than data • Requires rework	• Collaboration Platform across extended enterprise • Formal Information exchange specification

Enterprise Architecture in Sellafield

- **Background**
  - To Sellafield
  - To Enterprise Architecture in Sellafield
  - ‘Selling EA’ and Sellafield’s Transformation - our catalyst for change
- **The Steps We Took**
  - Build the basics
  - Demonstrate the framework
  - More detail and repeatability
- **The Lessons Learnt**
- **Our Next Steps**
  - Business Architecture
  - Information and Data Architecture
  - Strategic Decisions

EA Step 1 – ‘Build the basics’

- Socialised, heavily, the benefits that Enterprise Architecture can bring
- Established an Enterprise Architecture Governance Board
- Developed an Architecture Vision to provide alignment on direction
- Developed Architecture Principles to help guide our intent
- Invested in an EA toolset to help consolidate fragmented information

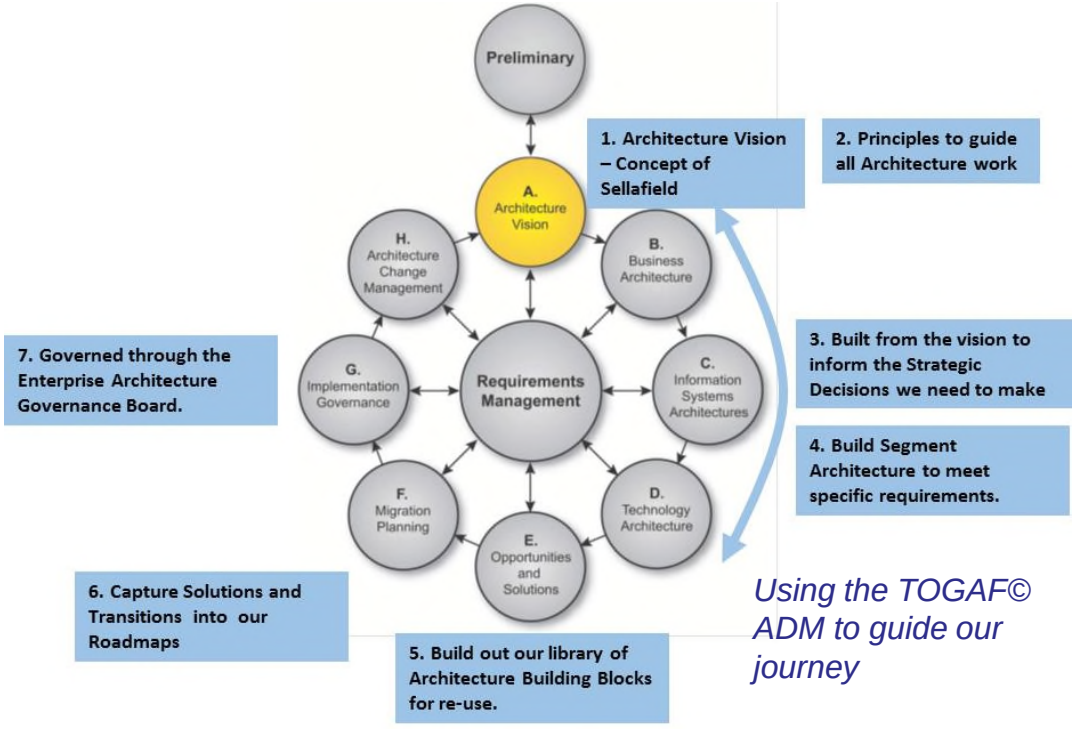
Architecture Vision

Domain	Principle
Business	Solutions must be aligned to the business strategy
	Solutions must maximise benefit to the business as a whole
	The business must accept responsibility for defining data management and service requirements
Data	There must be a common vocabulary and data definition
	Data is a valued asset of the enterprise and must be mastered and shared and guarded
Applications	Applications should ‘exploit the cloud’
	Reuse before buy, before build
	Solutions should meet business requirements for flexibility, mobility and agility as well as being be easy to use
Technology	Technical diversity must be controlled in order to manage technical debt
	Change must be requirements based
	Solutions must be supported and capable of assurance
Security	Security must be proportionate to risk
	Solution design must secure the weakest link
	Solutions must be adaptable to changes in the threat landscape

Architecture Principles

EA Step 2 – Demonstrate the framework

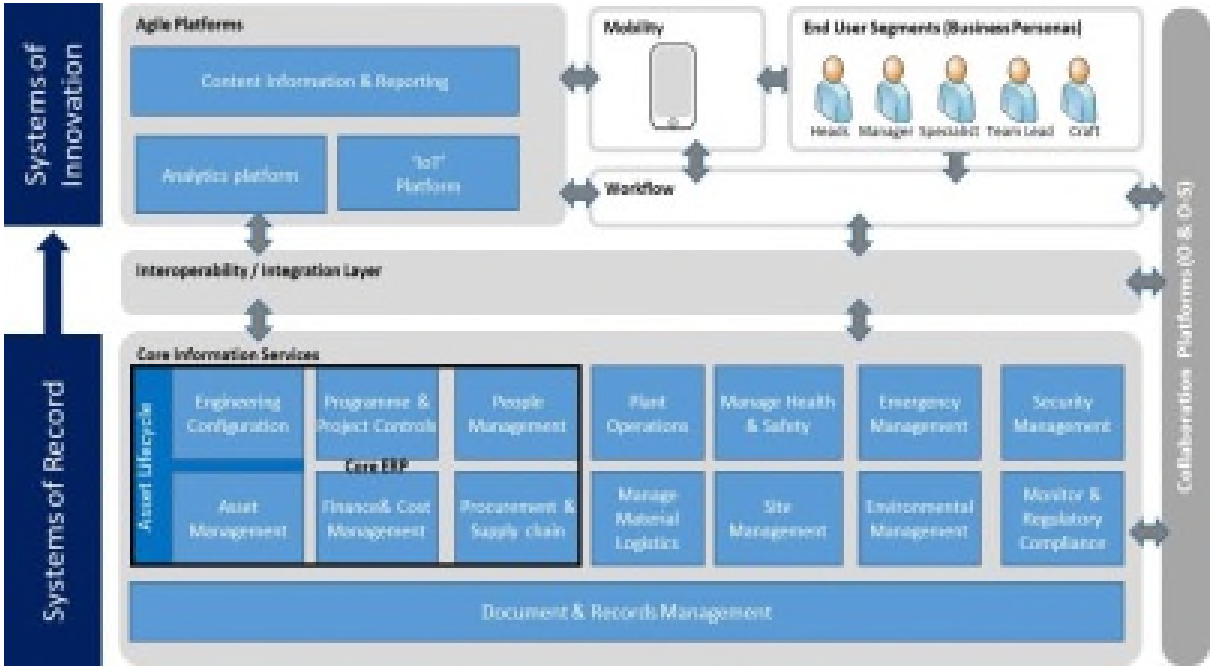
- An ‘Exec’ and ‘Working’ models to target our materials for our audiences
- Business, Information and Technology Architecture concepts
- Captured Assumptions, Risks, High Level Decisions
- Identifying areas for priority attention (for Innovation activity to help address)
- Stakeholder mapping was essential – you always miss one…!



Using the TOGAF© ADM to guide our journey

EA Step 3 – More detail and repeatability

- **Target Architecture Models**
  - Logical models, blending the existing work, emerging requirements, Innovation.
  - Integrating all of these into a complete set of models to show our end-point.
- **Guiding the development of master data management practices.**
- **Architecture / Solution Building Blocks, Components for repeatable solution re-use**
  - Help to optimise our portfolio, focus discussion and investment
- **Maintain communication, alignment and assurance through our monthly Enterprise Architecture Governance Boards.**



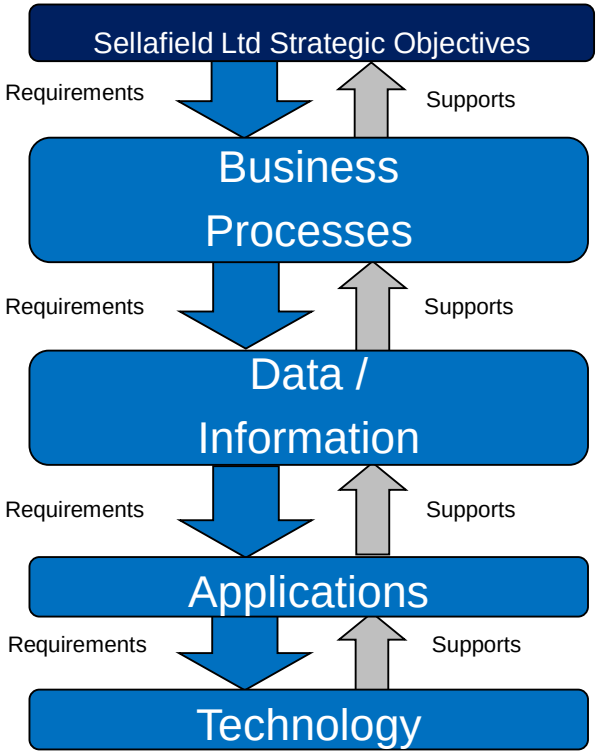
High Level View of our Application Architecture

Enterprise Architecture in Sellafield

- **Background**
  - To Sellafield
  - To Enterprise Architecture in Sellafield
  - ‘Selling EA’ and Sellafield’s Transformation - our catalyst for change
- **The Steps We Took**
  - Build the basics
  - Demonstrate the framework
  - More detail and repeatability
- **The Lessons Learnt**
- **Our Next Steps**
  - Business Architecture
  - Information and Data Architecture
  - Strategic Decisions

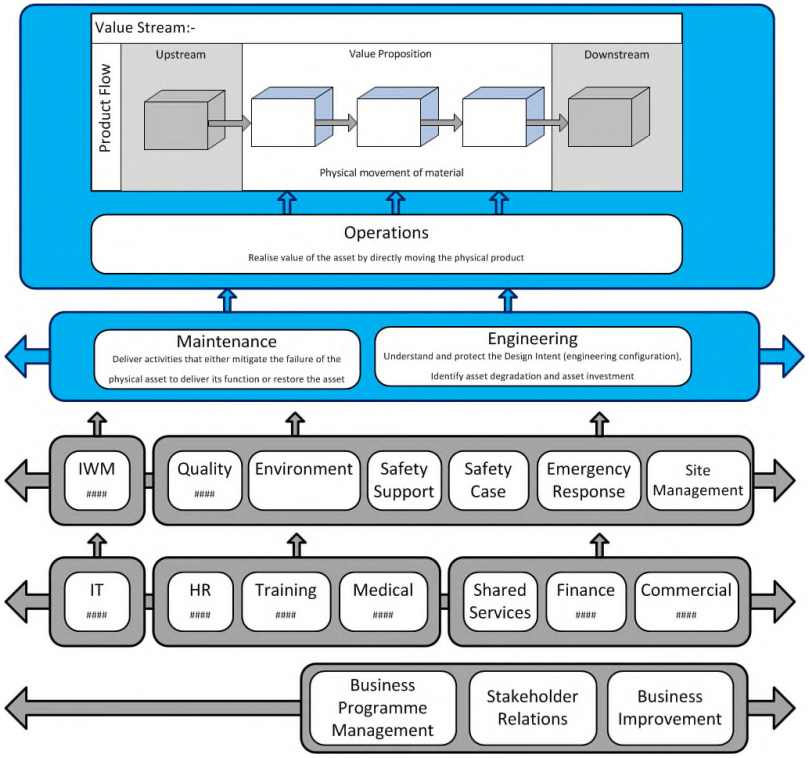
Lessons Learnt #1

- **By adopting an Enterprise Architecture framework it allowed all of the Architecture team, from differing backgrounds and skillsets, to align on process, deliverables and most importantly *vocabulary* and *language*.**
- **Having an industry recognised framework gave the business the *confidence* that we were operating to a recognised industry practice.**
- **The simplicity of our chosen EA framework, around Business, Data, Applications, Technology, when expressed to the business in their terms, made '*perfect sense*' and they could immediately see the benefits of the approach.**
- **Having new, senior members of the Sellafield team who had witnessed EA in action from previous roles and organisations provided further confidence to the business, they acted as *advocates* for our intention.**



Lessons Learnt #2

- **We recognised, quite early, that *communication* was essential but that it had to be targeted communication.**
- **In a 'brown field' environment – you cannot work in a sequential Business then Information then Technology level architecture – you must run these in *parallel*!**
- **By being *collaborative* we were able to develop our models and refine on the go.**
- **By providing *iterative* updates on our observations, direction and recommendations we maintained interest from the business and enjoy good *participation*.**



High Level View of our Business Architecture

Enterprise Architecture in Sellafield

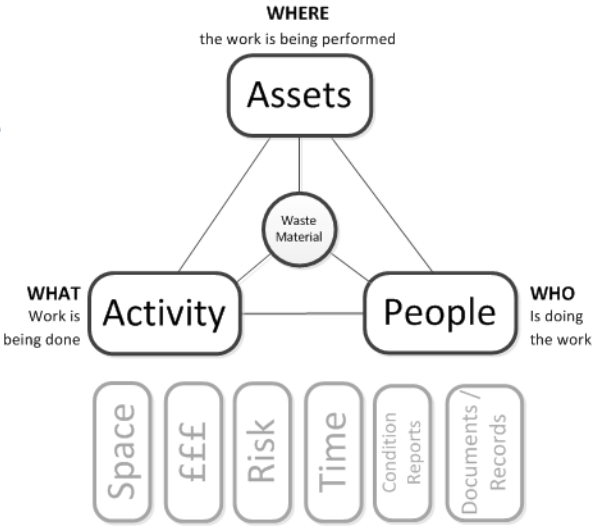
- **Background**
  - To Sellafield
  - To Enterprise Architecture in Sellafield
  - ‘Selling EA’ and Sellafield’s Transformation - our catalyst for change
- **The Steps We Took**
  - Build the basics
  - Demonstrate the framework
  - More detail and repeatability
- **The Lessons Learnt**
- **Our Next Steps**
  - Business Architecture
  - Information and Data Architecture
  - Strategic Decisions

Next Steps

- **Business Architecture**
- **We continue to develop our understanding of the capabilities needed for the future Operating Model, the Processes that we will need to execute, and who will execute them.**

- **Information and Data Architecture**
- **We continue to work with our business to capture the emerging Information and Data needs that we will need to support the future enterprise.**
- **We are also working with Information Management specialists to improve data management.**

- **Strategic Decisions**
- **We have identified 4 Strategic Decisions for our calendar that affected and 13 areas of further investigation to inform decision making. This helped focus Innovation activity.**



High Level View of our Data Architecture

And finally…..

Experiences and practices from the Real World

- Do adopt a recognised framework.
- Always be business outcome driven.
- Seek references and advocates for support.
- Target your language, your material and your communications.
- Identify and engage all the stakeholders.
- Introduce the governance, but as a value add.
- Harness innovation to help address your challenges.
- Work iteratively and be collaborative, influence.
- Demonstrate the progress with value add deliverables.

- And remember, this is a marathon ….. and not a sprint