SOA ARCHITECT SUMMIT

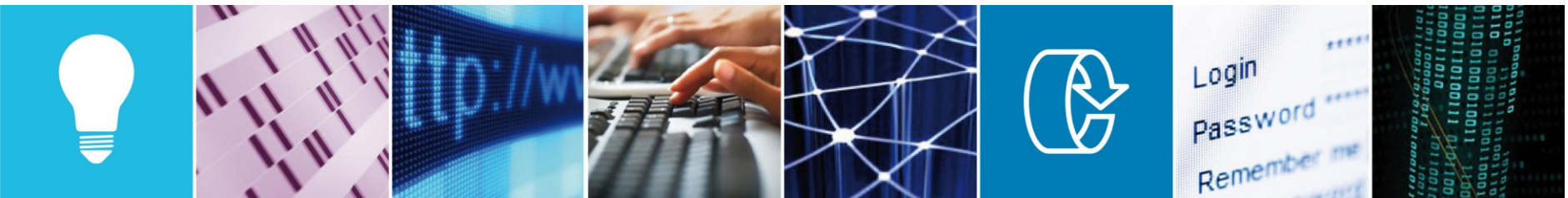
Turn your ideas into practical solutions.

IBM

Service Design and Creation

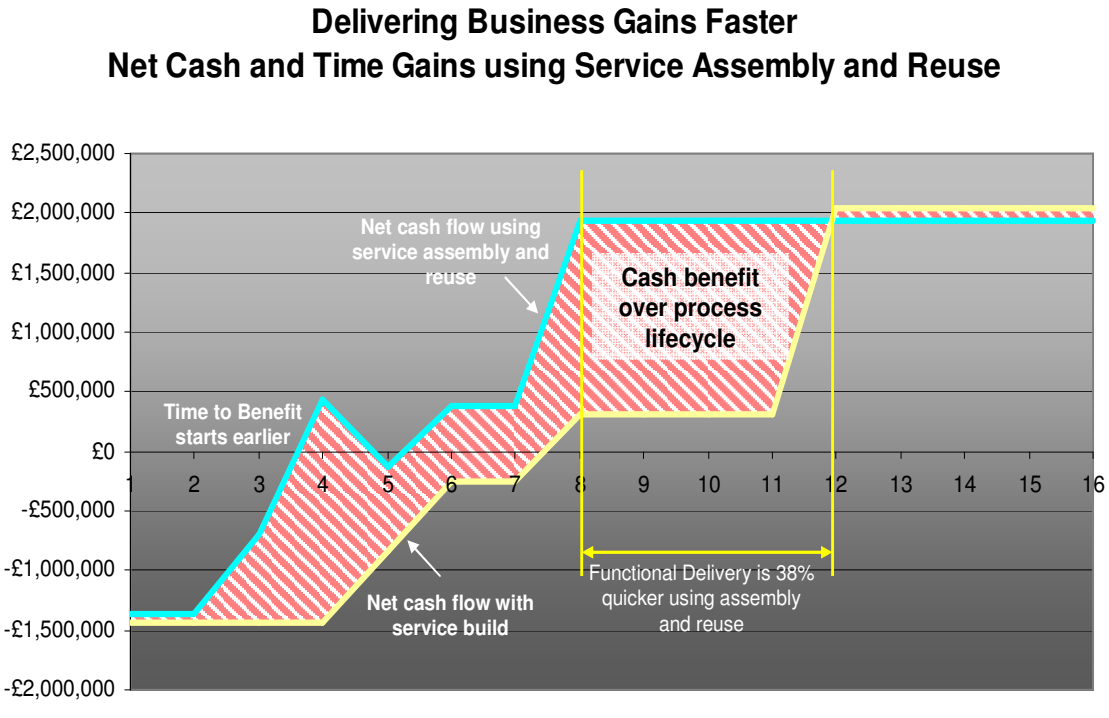
Andrew Joss

Wednesday 9th September



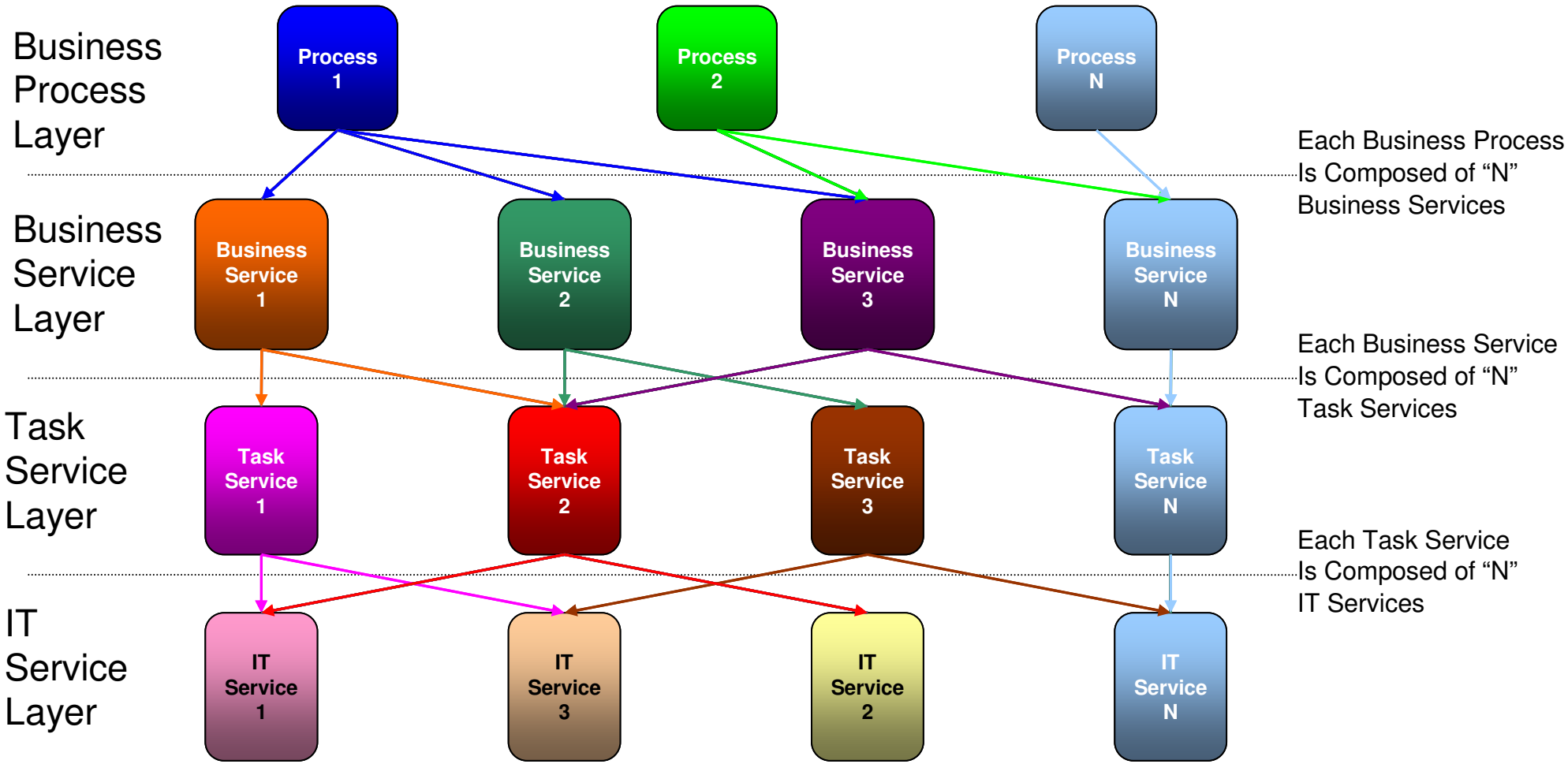
Why is Service Design & Creation Important?

- **If you get this right it will**
  - Reduce project delivery times
  - Reduce the costs of projects
  - Deliver project value quicker
- **But, how do we**
  - Know which services to build?
  - Know which services can be reused?
  - Know if everything is a service?
  - Manage funding & costing models
- **Service Decomposition is a technique to define a language used to break down project/silo barriers**



Service Decomposition Model

Applying a top down and a bottom up approach means we can determine the relationships between the layers



Business Services

- **Business Services are considered to be coarse grained business capabilities that**
  - Are composed of lower level service
  - That can provide functional capability in their own right
  - That can be composed or choreographed into business processes or composite applications
  - Drive value in their own right
  - Typically tend to be:
    - A function step within a business process
    - A value entity in it's own right
    - A function step which is part of a business or composite application
    - Services that function across multiple applications

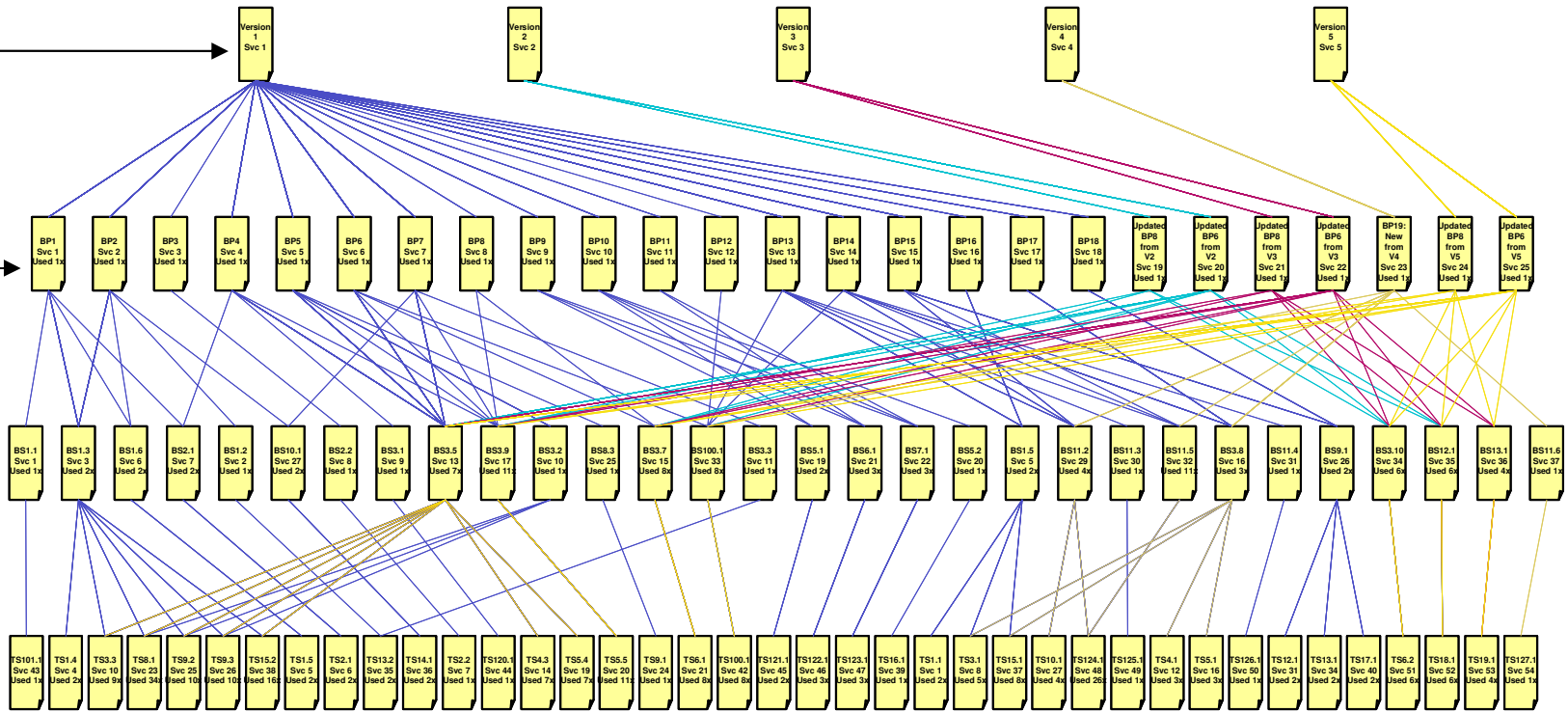
Service Decomposition Model

The diagram below shows the Service Decomposition Model for a customer programme

- **There were 5 phases to the programme (i.e. 5 projects)**
- **The colour of the lines denotes a relationship between a higher and lower level service**
- **Lower level services with multiple coloured lines pointing to them show reuse**
- **Higher level services are composed of the lower services connected by the coloured line**

Each Phase Is

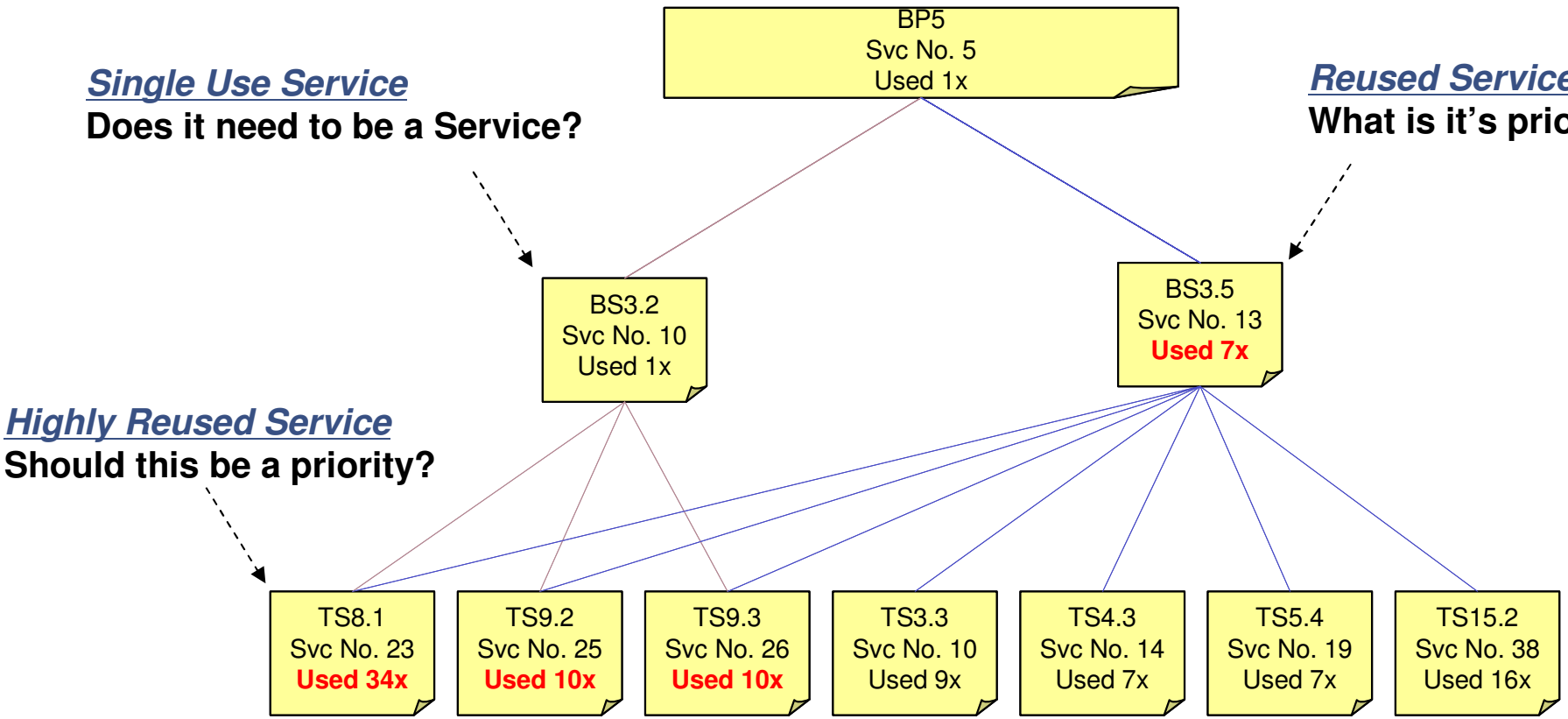
Composed of Business Processes



Service Decomposition Model – Detailed Look

By looking at the Service Decomposition model we can determine

- **Which services are used more than once? (i.e. reused)**
- **How many times is a service reused?**
- **What do I save when I reuse a service as opposed to building a new one (for example)?**

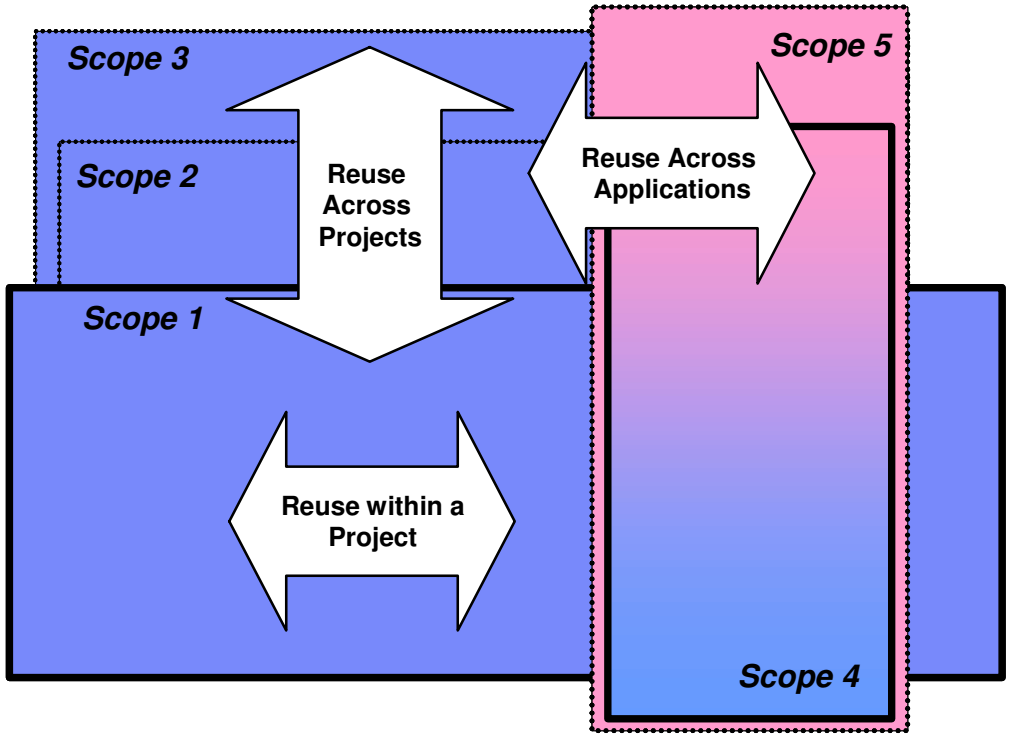


Service Decomposition Analysis

- **Perform high level process analysis of the business operations**
  - Either by documenting the processes of the business or identifying and interpreting process documentation
  - High level views of current and planned business & IT projects
  - Holistic view of the IT architectures that support the business operations
- **Based on process analysis identify conceptual/real business services that relate to business processes and roles within an organisation**
  - Build a Service Decomposition model that links the Business Services to the higher and lower level services
  - Identify IT use & impact as well as IT capability gaps
- **Based on these business services start to identify Business Service reuse potential across processes, projects and lines of the business**
  - Identify reuse potential through the Service Decomposition model and attribute value through reuse
  - Identify IT constraints around reuse and value release
- **Prioritise these Business Services based on business requirements (projects or processes)**
  - Value analysis to determine priority and sequence of service construction

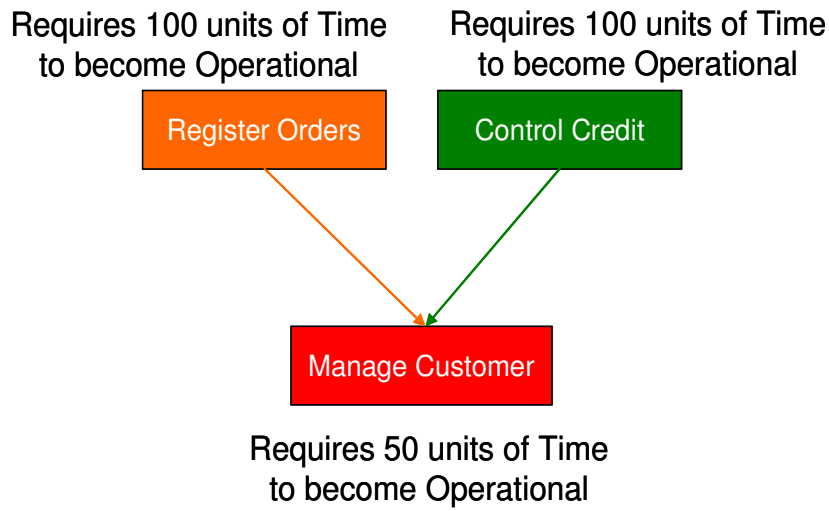
The Value of Service Reuse

- **Services can be identified that would be reused**
  - within a project,
  - across projects,
  - across applications
  - and across differing parts of the business
- **This could be enabled by a Composite Application capability**
- **Building Services and reusing them reduces the time taken to deploy them after the initial build**
  - This should save time after the initial build
- **By saving time, the cost of the projects should also reduce**
- **If the Service is a value adding service for the business, then the time saving becomes a time to value benefit for the organisation.**



How Value Is Built Up

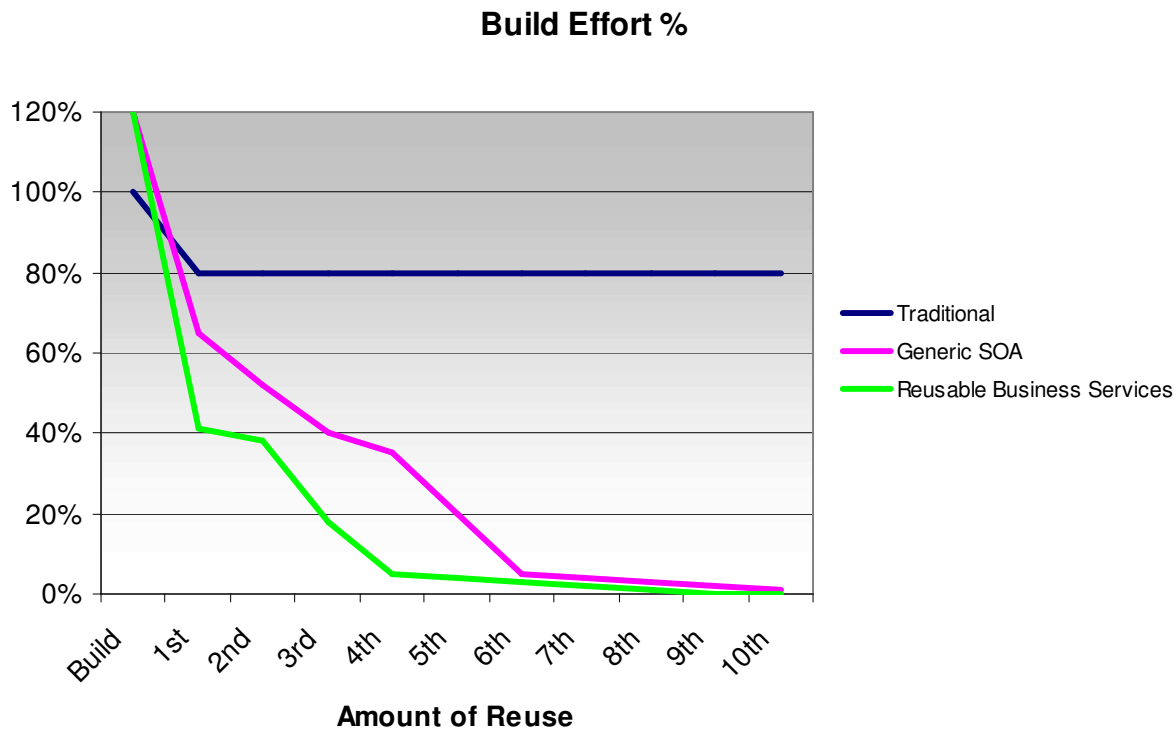
- **By deploying a Reusable Service – the time taken to deploy a higher level Service is significantly reduced**
- **In the example to the right:**
  - **The Register Orders service is composed of Register Orders and the lower level service Manage Customer**
  - **The Control Credit service is composed of Control Credit and the same lower level service Manager Customer**
  - **By Reusing the Manage Customer service the time taken to make operational the Control Credit service is reduced**
  - **As Manage Customer has been** reused **by Control Credit**
    - the time included for this service is reduced by 50%
    - the value of Control Credit is delivered 17% quicker



Name	Units of time	Including Manage Customer	Total
Register Orders	100	50	= 150 units
Control Credit	100	(50 – 50%) 25	= 125 units
Time Saving			= 25 units = 17%

Reuse Profiles

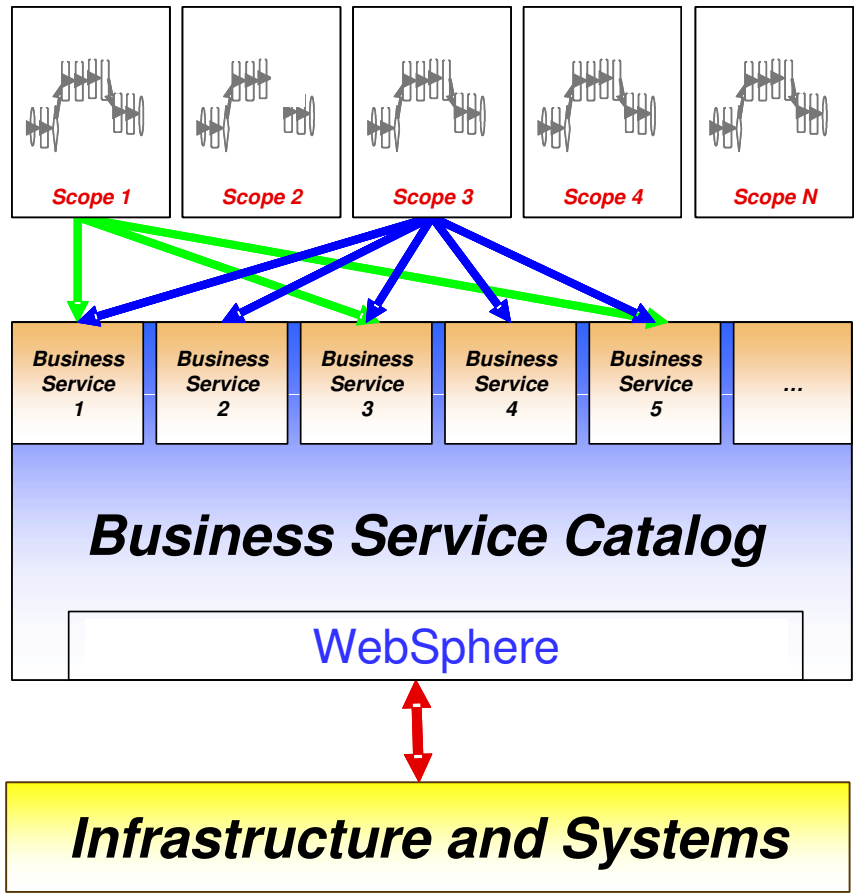
- **Reuse Profiles define how much time is saved by reusing a service each time it is reused**
- **They operate between the Service Decomposition layers**
- **They represent a percentage saving in time during the construction process.**
- **They can vary in scale between each layer i.e. the reuse profile between business process and business services might be different than the profile between business services and task services**



The chart above shows an aggregate Reuse profile between 2 layers of the Service Decomposition Model

Creating a Business Service Catalog

- **The proposed approach is used to construct a set of reusable Business Services that would be available through a Business Service Catalog**
- **This would provide a set of discrete, reusable business functions available to current and future projects**
- **These services would reduce the current and future project time lines as they were designed for reuse at the outset and had been identified as services that would be reused**
- **This approach would provide an insulating layer between the needs of the project(s) and the functional capabilities of the infrastructure and systems.**



Patented IBM Service Decomposition Method

- **The amount of time saved by deploying reusable services is calculated using the following patented value method**
  - **APPARATUS AND METHOD FOR DETERMINING THE REUSE VALUE OF A SERVICE COMPONENT**
  - **US Patent Office**
    - **http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PG01&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.html&r=1&f=G&l=50&s1=%2220080127079%22.PGNR.&OS=DN/20080127079&RS=DN/20080127079**
  - **European Patent Office**
    - **http://v3.espacenet.com/publicationDetails/biblio?adjacent=true&KC=A1&date=20080529&NR=2008127079A1&DB=EPODOC&locale=en_EP&CC=US&FT=D**
- **This method calculates the time saved to deduce the cost reduction/avoidance associated with that saving**

Time Saving

- **A Service Decomposition Model has all of the Business and IT Services defined**
- **By using a patented IBM capability to model Reuse across each hierarchy level, it is possible to determine how many times any type of service is Reused across the defined Business Processes (figure 1)**
- **Each time a Service is Reused, the effort to deploy it is increasingly reduced (figure 2)**
  - ***The profile is completely dependant upon the services in scope, the potential for reuse and how the services are built***

Fig 1

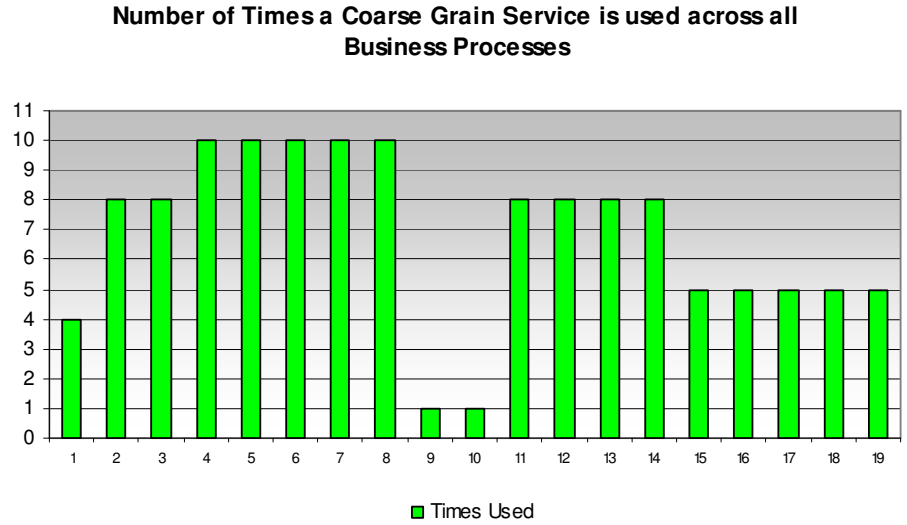
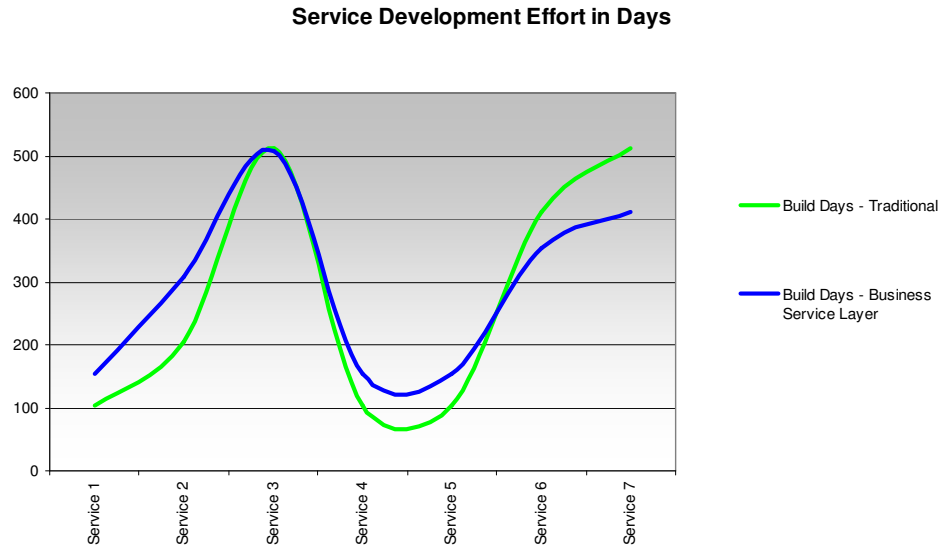
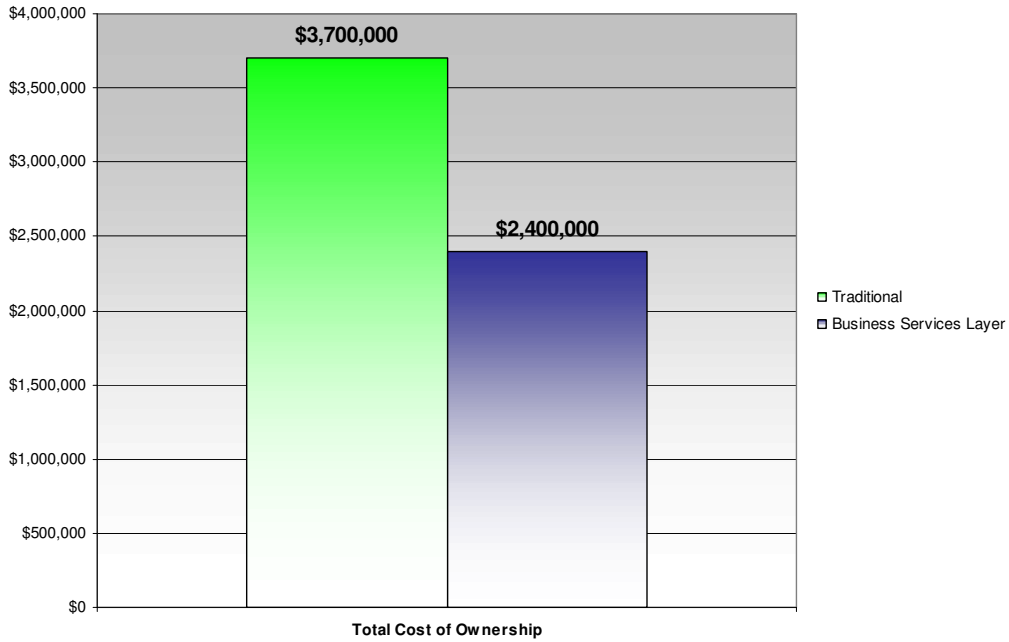


Fig 2



Time Saving Becomes a Cost Saving

- **The ultimate outcome of all this activity is to demonstrate the benefits associated with identifying and deploying reusable services**
  - If there aren't any benefits – why are you doing it?
  - If there are benefits – how big are they and are they sufficient to make it worth doing?
- **With an understanding of the build effort it will be possible to build up a *total cost* picture. This should be supplemented with the *value* picture as well.**
- **The types of questions this should address include**
  - How much would this cost compared to how we develop capabilities today?
  - Does this drive any time to value benefits for the business and if so - how big are they?



Identifying the Optimal Sequence

- **Using the Service Composition Model, it is now possible to understand the optimal sequence in which to deploy processes to accelerate Time to Value even further**
  - The example in Figure 1 shows an increase in ROI between the Least Optimal and Optimal Process sequences

Optimum Process Sequence

Optimal Sequence			
Least Optimal Sequence		With Reusable Services	
Process Permutation Sequence	5 Year Benefits	5 Year Return on Investment	5 Year NPV
Process 1 ⇨ Process 4 ⇨ Process 2 ⇨ Process 3	£27,963,251	123%	£11,323,197
Process 3 ⇨ Process 2 ⇨ Process 1 ⇨ Process 4	£32,055,901	179%	£16,211,625
Process 3 ⇨ Process 2 ⇨ Process 4 ⇨ Process 1	£31,710,663	206%	£16,899,114
Process 3 ⇨ Process 4 ⇨ Process 1 ⇨ Process 2	£30,228,520	163%	£14,485,139

- **Comparison can also be made with deploying the processes using a traditional approach**
  - The example in Figure 2 shows an increase in ROI between optimal process sequences when using reusable services

Permutations Summary and Analysis

Benefit Area	*Optimal Sequence - With Reusable Services*	*Optimal Sequence - Without Reusable Services*	*Least Optimal Sequence - With Reusable Services*	*Least Optimal Sequence - Without Reusable Services*
5 Year Benefits	*£32,055,901*	*£26,206,781*	*£27,963,251*	*£19,189,959*
5 Year Costs	*£10,340,733*	*£18,825,361*	*£12,620,617*	*£18,825,361*
5 Year Net Benefits	*£21,338,643*	*£7,381,420*	*£15,413,062*	*£364,598*
5 Year Return on Investment	*206%*	*39%*	*123%*	*2%*

In Summary

- **Service Design and Creation is important because if you get this right it will**
  - Reduce project delivery times
  - Reduce the costs of projects
  - Deliver project value quicker
- **Service Design and Creation will help us**
  - Know which services to build
  - Know which services can and should be reused
  - Know if everything should be a service
  - Shape funding & costing models
- **Service Decomposition can be used a technique to define a language used to break down project/silo barriers**