Section 1 – INT1ARCHINTRO

Introduction to the BI Architecture Framework and Methods
What is a Methodology

- Architectural Framework
- Intellectual capital
  - Cost estimates, project plans, designs, code, ROI justifications, case studies
  - Best Practices, education, certification
- Processes for execution
- Why do you care?
  - Trust your supplier for repeatable reliable delivery
    - Reduced risk, higher quality results, faster
  - Someone who has done it before – new skills & insights
  - Lowers costs and transfers skills faster
What is a Reference Architecture?

- Provides architectural guidance
- Incorporates best practices
- Can be used as a blueprint for designing and deploying solutions
- Defines hardware, software, and environmental components that are needed to build end-to-end solutions to help meet specific business needs
Why is a reference architecture important?

- It describes the major foundational components or candidate building blocks of an end-to-end architecture solution
- It spans all industries and all solution areas
- It provides a common language and facilitates collaboration
- It provides a framework for
  - Identifying the scope of a project
  - Defining a roadmap for building a total solution
  - Identifying building blocks which if not considered may increase project risk
  - Assessing current infrastructure, tools and technologies to identify gaps
- It provides us with a framework to pre-integrate technologies and "prove things out" so we know they work
- It’s key benefit – allows us to reduce the complexity, cost, and risk of solution deployment
The IGS services organization has developed an extremely broad and deep family of methods. It includes processes for literally all of IBM’s service offerings, ranging from custom software development to packaged software implementation to infrastructure (software and hardware) implementations to networking. To deploy GS Method, IBM developed a common methodology architecture on top of which all of the specific processes are built. Each IBM GS process differs but all share a common set of vocabulary, high-level steps and activities and overall framework.

PwCC SUMMIT Ascendant is a mature offering and includes both a toolset and rich library of software development and project management processes. A unique strength of SUMMIT Ascendant has been its strong customer advisory group. Over the years, PwCC has demonstrated an ability to respond to its customers’ needs - in terms of new/improved processes and tool support - driven largely by the inputs of this group. The annual user group meeting provides a key forum for client interaction and feedback to the SUMMIT Ascendant team. No other methodology product on the market has this level of involvement from its customers. SUMMIT was one of the few methodologies for sale where customers could buy and deploy it.

Rational Unified Process: RUP has really taken off as a de facto standard methodology. Many companies and consulting firms have adopted RUP as the core of their methodologies. RUP excels by addressing the variety of life-cycle processes common to just about every project: requirements management, testing, change management and issue tracking. It is also very strong in supporting object- and component-based modeling and design activities.

Dan Graham
The BI Reference architecture inherits numerous services and capabilities from the overall BCS methodology. It is the rallying point for a number of process steps, technologies, and people.

The BI Reference Architecture is a framework for developing BI solutions. The Reference Architecture was developed by a cross-IBM team including BCS, SWG, Research and Others so it is truly an IBM BI Reference Architecture.

What is a Reference Architecture? It provides architectural guidance, incorporates best practices, defines hardware, software and the BI environment using implementable components. It is used as a blueprint or roadmap for helping clients build BI solutions.

Why have a BI Reference Architecture? It defines the building blocks to a BI environment. Without knowing how those pieces fit together, some components may be overlooked, introducing risk to the implementation. It spans all industries and solution areas, but can be customized to a particular industry. The BI Reference Architecture also helps establish a common language for communicating with a customer. It forces a common language and terminology from which to build upon. It helps with defining scope for what is going to be built. It can be used almost as a checklist to make sure key pieces are not omitted. It forces the clients to think about the components they do have, those they still need and how they have approached their BI environment. The Reference Architecture can also be used as a gap analysis tool for identifying those components that a client may be missing. It does not imply the client must have all the components in the architecture, but rather implies the standard list of components they might consider.

The BI Reference Architecture is used as a sales tool. It shows IBM's thought leadership in the area of BI. It shows IBM has through this process and done it before. We have received great feedback that this is industry leading and clients are impressed by it. It can be used to position software as part of a well thought out integrated architecture and is a good communication tool in sales presentations and proposals.
Business Intelligence – From Data to Information on Demand

On Demand

Information on Demand
• Information for the “masses”
• Actionable
• Embedded

Extended Enterprise Analysis
• Cross Value Chain Information
• Advanced Analytics
• Integrated Performance Management

Aggregated Information Access
• Integrated
• Consistent

Transaction Data
• Granular
• Operational

Integrated Analytics

Data Warehousing

Transactions

BI Masters Query & Reporting basics © 2004 IBM Corporation
Business Intelligence – Analytic Techniques

The value of Business Intelligence increases as the delivery of information is embedded in the processes and systems of the enterprise.

**Business Intelligence Delivery – 3 types:**

1. **Unstructured Investigative** – Provide a robust database of business information to analysts seeking information to support infrequent and non-recurring business questions (modeling, mining, visualization)

2. **Structured Investigative** – Deliver structured sets of information on-demand to end-consumers to provide answers to recurring business questions (reporting, monitoring, scorecards)

3. **Embedded** – Intelligently “push” information directly to end-consumers by continuously monitoring ongoing business performance against business objectives
There are three virtual views of the BI Reference Architecture. Why have three views? Each view is intended to communicate with a different audience. We often discuss BI solutions with everyone in an organization from end users to DBA’s to business executives.

The first view is the “business” view. It is intended to communicate with a business or end-user audience. It uses business related terms and is non-technical. The diagram shows each layer of the analytical framework from the information consumer through to data sourcing.

A key principle of our analytic framework is the importance of the information consumer and “role based business intelligence”. Role based BI is a concept that suggests we don’t want to drown people with information, but rather delivery just the information they need, customized to their function. This is shown in the first layer to recognize that there are different types of consumers at different levels of the organization. The architecture supports each type, including external consumers to the organization.

This is the first view of the BI Reference Architecture. Each of these views makes up what we call the “BI Reference Architecture”. We will later look at the other two views.
Another layer of the Reference Architecture to highlight is the “Analytics Layer”. This is the layer where the business applications reside. This is the layer handing analysis and reporting around key business areas.

When we talk about Business Intelligence and Analytics, generally we are talking about applications that are built for key business process areas. Those key areas are represented by the smaller circles in the venn diagram. For example “Customer Analytics”, may clients are interested in learning more about their customers. You can see specific types of questions in the bullet list that show key investigation done in this area.

The purpose of the overlapping circles in the diagram is to suggest that not only do we see clients performing analytics in each of these specific process areas, but we want to provide an architecture that will enable them to do “cross value chain analytics”. Meaning, being able to put all of that together in an integrated way to enable clients to ask more detailed and involved questions of their BI environment. Not just, “who are my best customers?”, but “are they really profitable to me?” and “which customers am I having problems with delivery in my supply chain?”. Those are analytics that span the value chain and we need to provide an architecture and system that enables our clients to do that kind of analytics.

Dan Graham
Moving on to the next view of the BI Reference Architecture. This is the second view and you can see that it is a little more detailed. It is slightly more technical. The intended audience of this view is a technically savvy business person, someone from the IT department or the CIO.

This view contains the same fundamental concepts as the Analytical Framework, but takes it a step further. You will see the same layer concept from the Access layer through to Data Sourcing. This view also introduces the concept of cross infrastructure layers. Things like Metadata, Security, and Hardware/Software Platforms. These are layers that play a very important role in a BI architecture, but also span beyond BI in the organization. These are layers for which IBM has deep knowledge in other areas of our organization. IBM has a lot of material, knowledge capital and capabilities in these areas as well.

The dotted lines are also introduced in this view. These are to show the data flow or workflow patterns. The lines are not intended to show every possible combination of the flow of information between the layers. In an effort to simplify the diagram, the arrows were just shown at more of a summary level.
Using the Reference Architecture

- **Find Gaps in your plan**
  - “Maybe I don’t have all this….”
  - “Maybe I haven’t been approaching this right….”
  - “Maybe I need some outside help…..”
  - “Some one else has had this pain so maybe I don’t have to…..”

- **Identify points of integration**

- **Identify & weigh alternatives**

- **Simplify communications between project team, Systems Integrator, & Vendors**

- **Used by BCS, DB2 Laboratory, IBM BI Sales specialists**
  - Benefits accrue even if BCS is not your contractor

How can the Reference Architecture be used? It can be used as a communication tool in sales presentations and proposals.

It gets clients thinking… “Maybe I don’t have all this…”, “Maybe I haven’t been approaching this right.”. Showing the complete BI environment may help the client understand that they don’t have it all figured out yet and might need some help. We don’t want clients to think they have to have every component of the reference architecture to have an effective BI environment. That depends on their business needs, but it can be used as a checklist of those components they should consider.

The Reference Architecture can help identify gaps and weigh alternatives. It also serves as a common language for BI components. Use of common terms and framework improves communications among its users including project teams, systems integrators and vendors.

The BI Reference Architecture was developed by a cross-IBM team and is used by BCS, DB2 Laboratory, SWG and IBM BI Sales Specialists.
How do we use and apply the BI Reference Architecture? The architecture we have reviewed is a general architecture. IBM is in the process of developing specific business process views of the architecture, such as a view for CRM, Supply Chain or Finance.

We are also developing Industry views. Not that the concepts are different, but how we apply it to a given industry or sector may vary. It is powerful to show a client a view that is specific to their business. The development of these are in progress.

The architecture is also useful to do a gap analysis to compare against what a client has or does not have in their environment.

We have also mapped IBM and Vendor products to the architecture.

To reiterate, the BI Reference Architecture should be used as a sales tool.
Here is an example of a specific application of the BI Reference Architecture. This is a view of the BI Reference Architecture to support the Basel II accord.

IBM has developed a solution around Basel II. This is a risk management solution for Financial Services companies that have to comply with legislation that first came out of Europe but is now applied globally.

We have taken our architecture and adapted it to fit the components necessary for a Basel II solution. This looks a little different because the sources are on the left and consumers on the right, but the concepts are the same.
This is an example of how the BI Reference Architecture can be applied to do a fit-gap analysis. This came from an actual client example where the highlighted areas show the components the client already had in their environment. The BI Reference Architecture allowed a common way to map those existing components and discuss with the customer other areas they may want to consider.
Reference Architectures Client Benefits

- Keep teams focused on long term strategy
- Between IBM & Partners, all functions are fulfilled
  - Helps client keep the suppliers organized
- Identify overlapping roles & responsibilities
- Methodologies
  - Certified professionals = experience + validation
  - Reusable Intellectual capital
  - Staff substitution – new players fit into structure not rewrite it
- Reliable & repeatable execution
  - Every project uses reference architecture as a guideline
  - Common vocabulary

When deadlines and executives approach, the EDW team can easily get “wrapped around the axle” and lose focus on the enterprise strategy. They can sub-optimize around projects and products in order to meet deadlines. The Reference architecture helps them keep in mind at all times the long term implications of the enterprise needs, goals, costs, and architectural components.

Reference architectures & methodologies reduce project risk and aid skills transfer to the client staff. Lacking a consistent framework for architecture and people, enterprises permit the dreaded EDW “vendor circus” caused by multiple vendors, consultants, and employees who all promote their own vocabulary and deploy their own approaches. Employing and enforcing a single formal process will significantly enhance communication and coordination, resulting in fewer missteps and vastly improved team efficiency.

Project Sustainability. As organizations realize the successful DW is a sustainable initiative, not an end-to-end project, they begin to understand why employing a waterfall, “boil the ocean” (non-iterative, non-time-boxed) SDLC approach does not work, even when sprinkled with “DW-isms.” Likewise, with the strong showing of business intelligence system competency centers within IT organizations, proprietary methodologies that walk out the door when the consultants do are not a rational option upon which to continuously mentor staff or base an internal practice. Instead, IT organizations should evaluate the relative characteristics, components, and coverage of the commercially available methodologies before selecting one for their initiatives and internal practices. Adopting such a formal process is yet another means to mitigate the expense of long-term consulting contracts with pricey DW experts.

Dan Graham