

System Implementation Project Approach

Phase I – Current State Analysis

Goal: Document current state operations and categorize current state procedures and reporting assets as:

- Mandatory Internal Reporting Assets
- External Compliance Reporting Assets
- Redundant Reporting Assets
- Reporting Assets that require manual, post-production transformation
- Scheduled (Proactive) Procedures (Manual and Automated)
- Unscheduled (Reactive) Procedures (Manual and Automated)
- Procedures that can not be executed due to insufficient reporting
- Individual procedures that could / should be combined into a single work stream

Deliverables:

- Fitness-For-Use Document (“FFU”)
Defines what the future state system should do for end users and how end users will interact with the system. This is a non-technical document which details the point and purpose of the future state information reporting and Business Intelligence system

Phase II – Future State Detail Definition

Goal: Define details of future-state reporting services (supply) and end-user needs (demand)

- Definition of required reporting assets (Reports, Dashboards, Scorecards, Alerts, Warnings)
- Definition of desktop user ad-hoc reporting requirements and opportunities
- Narrative detailing information reporting system infrastructure and support model for same
- Narrative detailing Governance Model, Data Steward role and Security Protocols
- Definition of Data Quality Measure and Assessment procedures

Deliverables:

- Technical Specification Document (“Tech Spec”)
Technical document which Includes the architecture and profile of the data source(s), ETL requirements to ensure high-quality data at the source(s), user interface requirements, security and firewall configuration and test case scenarios
- Approved, detailed Project Timeline

Phase III – Programming, Development and Testing

Goal: Complete development, installation, testing and burn-in of hardware and software necessary to support information delivery system services and user needs. Specific components to be addressed in this phase include but are not limited to:

- Primary data source(s) including data warehouses, data marts, data stores, third-party software applications and external data feeds
- Hardware necessary to host all layers in the stack (Please refer to “The Information Delivery Technology Stack” contained herein)
- Metadata Connectivity layer
- Software to support Reporting Interface, Query Processing, Report Formatting and Delivery
- Release 1 Canned Reports promoted to production

Deliverables:

- Series 1 Canned Reports tested and ready for deployment into production environment

Phase IV – Reporting Asset Release & Deployment

Goal: Release reporting assets to end users.

- *Release 1* – Canned Reports available via both Push and Pull delivery
- *Release 2* – Dashboards and Scorecards available via both Push and Pull delivery; Alerts and Warnings available via Push delivery
- *Release 3* – Ad Hoc reporting asset creation available at the end-user desktop
- *Release 4* – Subscription delivery model available for appropriate assets

Deliverables:

End-user facing Reports, Scorecards, Dashboards, Warnings, Alerts and ad-hoc desktop reporting functionality

This phase may repeat as (Phase IVa, IVb, IVc etc.) where staged and staggered asset releases are scheduled

Project Methodology

It is recommended that the implementation team use a gated, cascade / waterfall approach when preparing to deploy an Information Delivery and Business Intelligence System.

There are two primary reasons for this. First – due to the nature of the end state deliverables intermediate reviews of partially completed assets (the Agile approach) is not recommended. Unlike software that can be partially completed with some functionality available for review and other features still under development, Reports, Scorecards, Dashboards, Alerts and Warnings are difficult for end users to evaluate when they are only partially complete or partially functioning.

Second – Until users have had an opportunity to experience the power and flexibility of a well-designed system in a Production environment, it is difficult for them to visualize the breadth of capabilities available in the future state. By deploying a few assets and enabling users to get comfortable with their use, and the system overall, users are better prepared to help define more complicated assets as their thinking will not be limited to the capabilities of the current-state system but will be expanded to include the new functionality of the future-state system.

Think Forward, Work Backward

The most successful Information Delivery and Business Intelligence projects are those that begin with the end-state deliverables and work backward to the data sources that support those assets. With that in mind, the following projects Do's and Don'ts are provided.

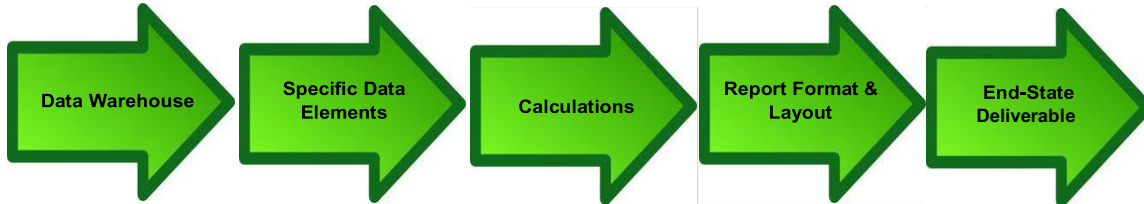
DO	DON'T
Start current-state evaluation and future-state definition phase of the project by categorizing <u>current-state processes</u> as those that (1) should be retained as-is, (2) should be discontinued, (3) should be modified or (4) are not currently possible due to information delivery limitations	Start the current-state evaluation and future-state definition phase of the project by evaluating every <u>current-state reporting asset</u> as those assets, their content, flexibility and value are driven by the system currently in place as opposed to the system that is being designed for the future-state
Identify <u>not more than a dozen information assets</u> that impact current state process effectiveness and/or efficiency; these assets will comprise the Release 1 assets	Attempt to reproduce <u>every current-state reporting asset</u> and release them en mass as soon as the new system is running in production
Give users time to get comfortable with the system while developing an understanding of its capabilities by working with <u>a small sample of information assets (The Release 1 assets)</u> before starting development of the more complicated reports, dashboards, scorecards, warnings and alerts	<u>Attempt to create every report, dashboard, scorecard, alert and warning that the users request</u> as they have not had time to gain an understanding of how the current system works, what its capabilities are and how those capabilities can drive improved operating procedures and reporting assets
Separate all user requests for end-state deliverables into categories of Required for On-Going Operations, Required for Compliance, Requested for Improved Effectiveness ¹ and Requested for Improved Efficiency ² . <u>Proceed with asset development and deployment based on a mutually agreed upon prioritization of these four categories of assets</u>	<u>Have individual users of each information asset drive the prioritization of development</u> as what's good for a small group of users may not be what's best for the Enterprise as a whole

¹ Effectiveness is a measure of the ability to get a job done such that the desired outcome / results / deliverables are achieved. Assets Requested for Effectiveness facilitate procedures that result in the desired outcome where such may not be possible given current-state information delivery capabilities. (Effectiveness = Getting the job done)

² Efficiency is a measure of the financial and human resource costs required to effectively execute a process or work stream. Assets Requested for Efficiency facilitate financial / human resource cost reductions during the course of effective operations. (Efficiency = Reducing the cost of getting the job done.)

Project Flow

The graphic below demonstrates the relationship of the initial building block –Data – to the final product – End-State Deliverables.



Throughout this document, Data has been defined as the starting point – the fundamental building block – of all information and Business Intelligence. Given that, it would seem obvious to begin an Information Delivery & Business Intelligence project by defining the data profiles and architecture for the central data source / data warehouse(s).

From a project flow perspective however, the opposite is true; start at the end – with the end-state deliverable – and work backwards towards the data itself. This is to ensure that end users consider the future-state from a perspective of what is possible in the new system as opposed to being limited to considering only what is possible today. Asset design should be driven by what's most effective and efficient as opposed to what data is currently available.

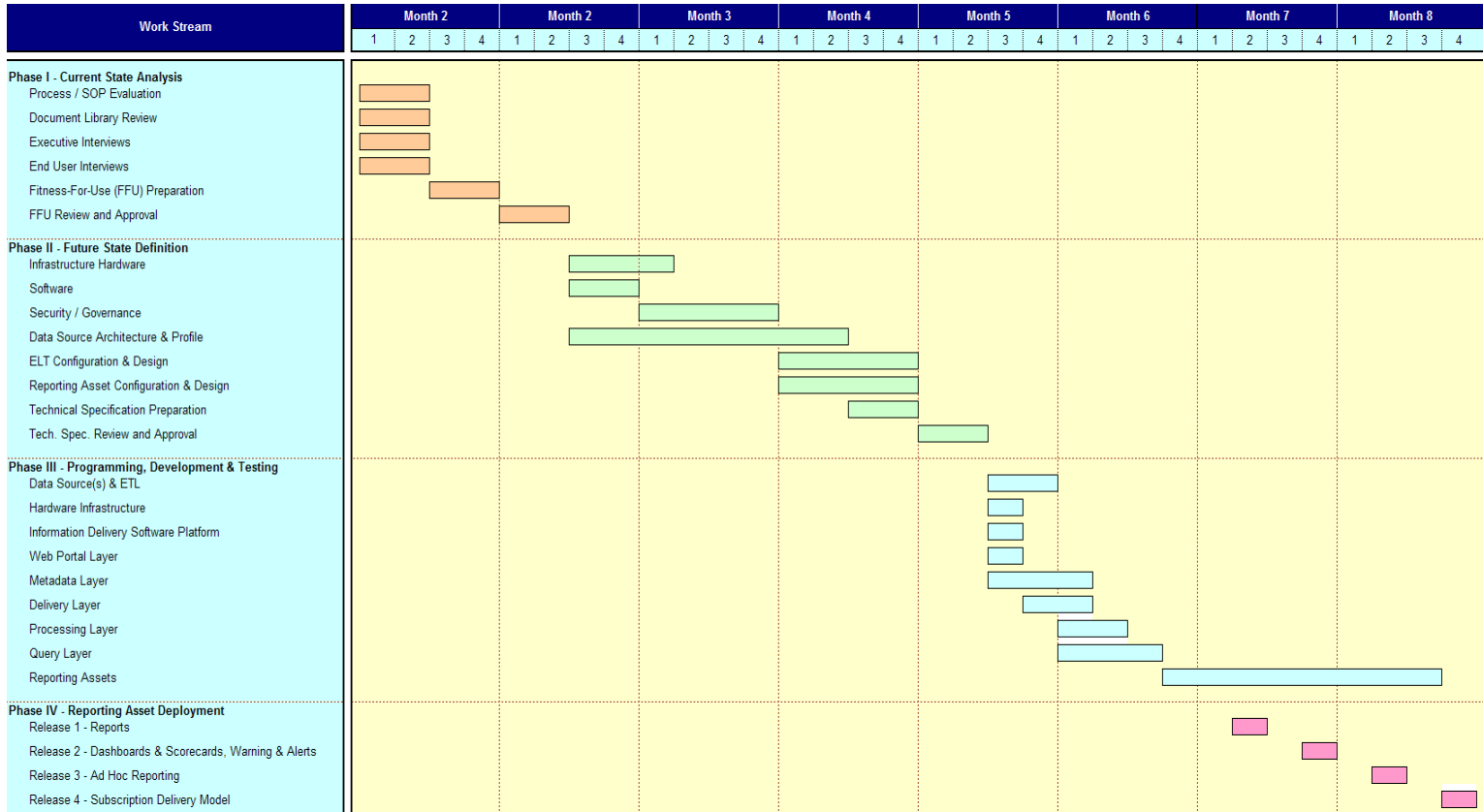
With this “Think-Forward-Work-Backward” concept in mind, the following project work flow is recommended:

1. Work with end users to define and document the end-state deliverables (Information Assets) that they require to be as effective and efficient as possible
2. Compose rough drafts of the end state deliverables and review these with the end users to ensure that these assets, once developed, will meet their needs and fulfill their requirements
3. Document the calculations, algorithms, manipulations, transformations and enhancements that are required in order to have the content necessary to create the asset that was drafted in step 2 above
4. Document which data elements are necessary inputs to the calculations, algorithms, manipulations, transformations and enhancements defined in step 3 above
5. Document the data flow, profile and architecture of the source data warehouse such that the required data elements – as defined in step 4 – are available to support the required end state deliverables¹

Following this process flow will help to ensure that the ultimate result of the project are deliverables that improve effectiveness and increase efficiency and not merely different forms of the “same old thing” that may look better but do little to improve business and/or reduce cost.

¹ If requisite data is not available, it must be determined why data required to ensure maximum effectiveness and efficiency is not readily available. The answer may drive changes and enhancements to the data mining or ETL procedures.

High Level Project Timeline



High-Level Timeline Assumptions

The following assumptions regarding The Enterprise are made in support of the High Level Timeline presented previously herein:

- The Enterprise intends to implement a brand new Information Delivery / Business Intelligence system on newly acquired hardware running newly acquired software
- The Enterprise intends to define and implement a new, centralized Data Storage Structure to serve as the host of the Data Layer referenced in the Information Delivery Stack detailed on page previously herein
- The Enterprise intends to roll out all six classes of Information Assets: Reports, Scorecards, Dashboards, Alerts, Warnings and Ad Hoc Desktop Reporting. The planned asset library consists of the following:
 - Up to 20 Detail, Summary and Exception Reports of medium complexity
 - Up to 8 Executive Scorecards and/or Dashboards
 - Up to 20 defined Alerts and/or Warnings
 - Ad-Hoc Desktop Reporting for up to 4 “Power Users”

- At the time of project commencement, the Enterprise does have a Governance Model in place and Data Stewards are named and empowered to enforce that model
- At the time of project commencement, the Enterprise does have Data Quality measures and routine review procedures in place

The following assumptions regarding engagement personnel are made in support of the High Level Timeline contained herein:

- This Information Delivery and Business Intelligence engagement will be staffed by at least three full-time personnel. These personnel will have, cumulatively and at minimum, the following skills and capabilities:
 - End User Needs Analysis Collection and Documentation
 - Data Warehouse Strategy and Management Definition
 - Information Delivery Asset Design
 - Data Architecture and ETL Design
 - Business Intelligence Software Setup and Configuration
 - Governance and Data Quality Strategy
 - Metadata Layer Definition and Setup
 - Excellent written and verbal communication skills tailored to business operations and executive personnel in addition to Information Technology personnel
- The project's full-time personnel will be assisted by Enterprise personnel with subject matter expertise related to:
 - The Enterprise's specific data warehousing and business intelligence hardware infrastructure
 - Enterprise Intranet / Extranet / Internet portal to be used by the Information Delivery and Business Intelligence system
 - Enterprise standard operating procedures and internal controls

Appendix A – Glossary

Term	Definition
- A -	
Accuracy	A measure of Data Quality. An objective evaluation of the level of defect or degree of error. Precision and Accuracy are synonyms when discussing Data Quality
Agile Approach	A project management methodology based on constant interaction between the project team and user community where progress is reviewed and priorities updated constantly based on changing project forces and user demand
Alert	High-level message from Information Delivery and Business Intelligence system that predicted future state, based on current operations, may not be within acceptable thresholds
Algorithms	Collection of specifically defined rules, steps and processes, to be executed in a specified cadence in order to solve a problem
Asset	Any end-user facing output of an Information Delivery and Business Intelligence system. Assets consist of Reports, Scorecards, Dashboards, Alerts and Warnings
- B -	
Business Intelligence	“BI”. The third level of maturity in the Data Maturity Model. Business Intelligence is the comparative result of information to internal and external metrics
- C -	
Calculations	Arithmetic operations applied to numeric Data in order to convert it into Information
Concatenation	Method of textual data manipulation where multiple strings and/or sub-strings from multiple alpha-numeric data fields are combined to create a new text string. Concatenation is the opposite of Parsing.
Current State	Systems, operations, processes and work flows as defined and in force at the current time
- D -	
Dashboard	Graphic, dynamic representation of current operations updated continuously
Data	A specific characteristic and/or result of an action, work flow, process or operation
Data Architecture	The underlying structural composition of a data storage unit. Data Architecture documentation represents the “blue print” used to build and support data structures including databases, data warehouses, data stores

Term	Definition
	and data marts. A Data Architecture defines the characteristics and requirements of all data elements within a data storage unit.
Data Freshness	A measure of how recently data has been updated with regards to the most recent operations cycle. The more time that elapses between updates the less Fresh data is considered and the lower the overall data quality measure as less Fresh data is considered less accurate
Data Mart	A collection of data elements grouped according to a common job function
Data Profile	Specific details regarding the characteristics (Type, Format, Picture, Default Value) of each field within a database Architecture
Data Steward	Individual empowered to enforce and oversee the administration of a Governance Model
Data Store	A collection of data elements grouped according to a common reporting asset
Data Structure	The definition and configuration of and relationship between Data Warehouses, Data Stores and Data Marts
Data Update	A revision of existing data and addition of new data to a data storage unit based on all operations and work flows that have been executed since the last Data Update
Data Warehouse	A collection of data elements grouped according to function
Deliverable	See "Asset"
Delivery	Movement of an Asset from the source system to the end user
Downstream Flow	Flow of data from its native source system to a central storage facility (often a Data Warehouse) and the flow of assets from the central storage facility to end users. Data that goes from its native source to a warehouse is said to flow Downstream.
- E -	
Effectiveness	A measure of one's ability to complete a work stream, operation, process or function such that the end result is the anticipated / expected current state and/or Asset. And operation can be Effective irrespective of whether or not it is efficient.
Efficiency	A measure of the human and financial costs required for a work stream, operation, process or function to be Effective. An operation may be Effective without being Efficient, but it can not be Efficient without being Effective.

Term	Definition
End-User	Consumer of assets generated by and delivered from the Information Delivery and Business Intelligence System.
End State	System, operations, processes and work flows projected to be in force as of the completion of specified project or work stream.
ETL	Extraction, Transformation and Loading of data as it flows Downstream from it's native source to a centralized data storage facility
Event	A metaphysical state of being inside the Enterprise that has significance within the Information Delivery and Business Intelligence System. Also see "Trigger"
- F -	
Firewall	A system of related security measures and access devices within a technological environment in place to control and monitor access to data elements
Format	Physical presentation design of assets; Placement and presentation details of Reports, Scorecards and Dashboards. Also see "Layout".
Future State	Systems, operations, processes and work flows projected to be in force as of a point in time that has not yet occurred but is still to occur
- G -	
Gated Approach	A project management methodology based on interim interactions between the project team and user community. The occurrence of these interactions is tied to the accomplishment of certain goals or the completion of some phase of design of an end-state asset
Governance	A system of security measures, data quality measures, data management processes, user password protocols and technology standards administered and overseen by Data Stewards
- I -	
Information	Numeric, Date and Time Data elements that have been manipulated according to arithmetic and/or statistic operations. Textual Data elements that have been manipulated according to alphanumeric manipulations including Concatenation and Parsing
Information Asset	See "Asset"
- L -	
Layout	The physical configuration and design of of an Information Asset. Also see "Format"

Term	Definition
- M -	
Metadata	A component of the Information Delivery and Business Intelligence system that translates user requests for information and BI into executable queries. The Metadata component translates end-user speak into computer-speak
Metric	A unit of measure defined by an Enterprise as an indication of process, operations or work stream results and/or impact
Mining	Collecting data elements from the results of operations, procedures or work streams
- P -	
Parameters	Boundaries set to control Data, Information and Business Intelligence content presented in Reporting Assets. Parameters may be numeric, textual or date/time in format and are often provided in pairs with one upper and one lower boundary. Exceptions include single parameters provided when a standard deviation is allowed as a qualification for content inclusion
Parsing	Separating a single textual string into multiple textual strings. Parsing is the opposite of Concatenation.
Portal	A gateway through which end users can access both the Presentation Layer and certain Information Assets. Intranet Portals are contained within a private internal network while Extranet and Internet Portals are available for use to authorized users outside the Enterprise.
Pull Delivery	Method of presenting Information Assets according to a specific user request
Push Delivery	Method of presenting Information Assets automatically to end users irrespective of a specific request
- Q -	
Query	Commands and parameters passed to a data source resulting in the extraction of a sub-set of data that is valid given the limits of acceptability defined by the parameters
- R -	
Relevance	A measure of Data Quality. A subjective evaluation of the degree of impact Data, Information or Business Intelligence can have at a point in time
Report	A type of Information Asset. Detail Reports contain specified data elements for all records that fall within the defined selection range. Summary Reports contain statistically and arithmetically calculated Information that present a macro view of the content of a related Detail Report. Exception Reports display specific data elements for records that fall outside the defined selection range.

Term	Definition
- S -	
Scorecard	A type of Information Asset. A static, numeric and textual summarized representation of the results of actions, work streams, operations or processes executed during a previous time period.
Security	Protection of the Intellectual Assets that are Data, Information, Business Intelligence and the calculations, methods and processes by which they are created.
Steward	See "Data Steward"
Strategy	Collection of actions, work streams and processes designed to accomplish a defined end state
Subject Matter Expert	Individual with deep level of understanding and extensive experience in a specific area of business operations or function
Subscription Delivery	Method of presenting Information Assets to end users where the asset is automatically Pushed to the end user based on the specific delivery details included in a Subscription. A Subscription is a user request for information that is issued once by the end user and then retained within the system and repeated according to a prescribed cadence
- T -	
Timeliness	A measure of Data Quality. A subjective comparative evaluation between when an Information Asset is received by an end user and when that Asset may impact the end user's actions, decisions and/or work streams.
Trigger	An metaphysical state that, once achieved, will cause an action or series of events to occur. Please also see "Event"
- U -	
Upstream Flow	Flow of data from end users to a central data storage facility. Data that is manually entered into the system is said to flow Upstream.
- W -	
Warning	High-level message from Information Delivery and Business Intelligence system that current-state is not within acceptable thresholds