

Business Intelligence and Analytics RFI



Presented to:

University of Houston

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University of Houston

Here are answers to the questions you provided. Without some additional research, some answers could not be provided at this time. Throughout the answers, SAP BI Suite and BusinessObjects (BOBJ) are used interchangeably as they refer to the same SAP BI Platform.

1. What all does "business intelligence" encompass for your company as a vendor in the industry?

Response: For Dunn Solutions, Business intelligence encompasses all aspects of turning data into usable information for our clients. That means providing the ability to acquire data from disparate data sources, extracting and cleansing the data, building data warehouses, producing reports and visualization of that data for analytics, and performing prescriptive and predictive analytics. And, as an authorized SAP training partner, offering training on the SAP Analytics platform to ensure our clients are as self-sufficient as they desire.

2. What is your current roster of higher-ed customers?

Response: Dunn Solutions Group and SAP have a wealth of experience with the higher education vertical, delivering solutions at institutions like: University of Kentucky, Columbia University, University of Notre Dame, North Carolina Community College, College of DuPage, Metropolitan State University, University of Massachusetts Medical School, University of Wisconsin Hospitals and Clinics, University of Wisconsin Medical Foundation, The Pennsylvania State University, Georgia Southern University, Georgia Regents University, University of Northwestern and University of Southern Florida.

- a. How many in Texas?

Response: In process of gathering information.

- b. How many are using Oracle Campus Solutions/Oracle HR/Oracle Finance?

Response: In process of gathering information.

- c. Can you provide customer references?

Response: Yes

- c. What type of return on investment do your higher-ed customers typically report experiencing, and within what time frame?

Response: **See Attachment A**

- e. Can you provide case studies?

Response: **See Attachment A**

3. How does your product compare to other BI products in the market; what differentiates your product from the competition?

Response: SAP is the leader in the Business Intelligence and Analytics market with over 22% market share. It is the only end-to-end BI platform.

Feel Confident in Choosing the Analytics Leader



Simply, No. 1

SAP is the market leader with over 65,000 customers



How you want it

All users, All devices
Cloud, on premise,
or both



Complete

Unified solution of all analytics capabilities for every line of business



Supercharged

Unparalleled performance and scale for deployments of all sizes

4. What are the capabilities of your services organization to help clients not just with implementing your BI tool, but with their overall BI strategy?

Response: Dunn solutions has been delivering services around the BOBJ platform since 1995, and after the SAP acquisition of Business Objects in 1997, Dunn has been an SAP gold partner delivering analytics solutions since. Dunn provides services which include BI strategy, architecture, implementation and training. **See Attachment B** for an overview of Dunn Solutions Group.

5. Describe the ways in which your overall platform allows for scalability.

Response: With licensing based on user counts, the SAP BI Suite platform is not constrained by CPUs or cores. This promotes scalability as needed by simply adding licensed users as desired, and supports virtualization.

6. What percentage of your tool is considered proprietary vs customizable?

Response: The SAP BusinessObjects platform is an out-of-the box enterprise ready platform that does not require any "coding" to be effectively used. Users and developer can begin creating BI content right from the start. That said, the platform offers SDKs and RESTful web services that provides integration with other solutions or enhance its out of box capabilities. This link takes you to information regarding the SDK library: <http://scn.sap.com/docs/DOC-27465>

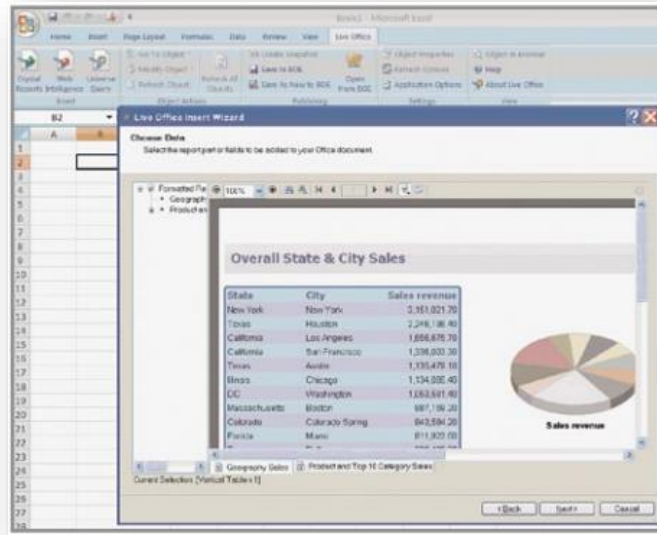
7. What options are available for creating ad-hoc deep dives, ad-hoc reports, and manipulating information?

Response: The primary ad-hoc tool for reporting is called Web Intelligence (WebI for short). There are other tools in the suite i.e. Lumira, which provide self-service data discovery and visualization. The following highlights key features of the platform.

you need to deploy to deliver trusted information analyses throughout the organization. It also reduces report backlog by allowing users to make their own changes instead of having to rely on IT. Users can review report metadata, such as the definition of measures used. They can even determine which data filters have been applied, where the data originated, and when it was last updated, helping ensure better information familiarity, context, and trust.

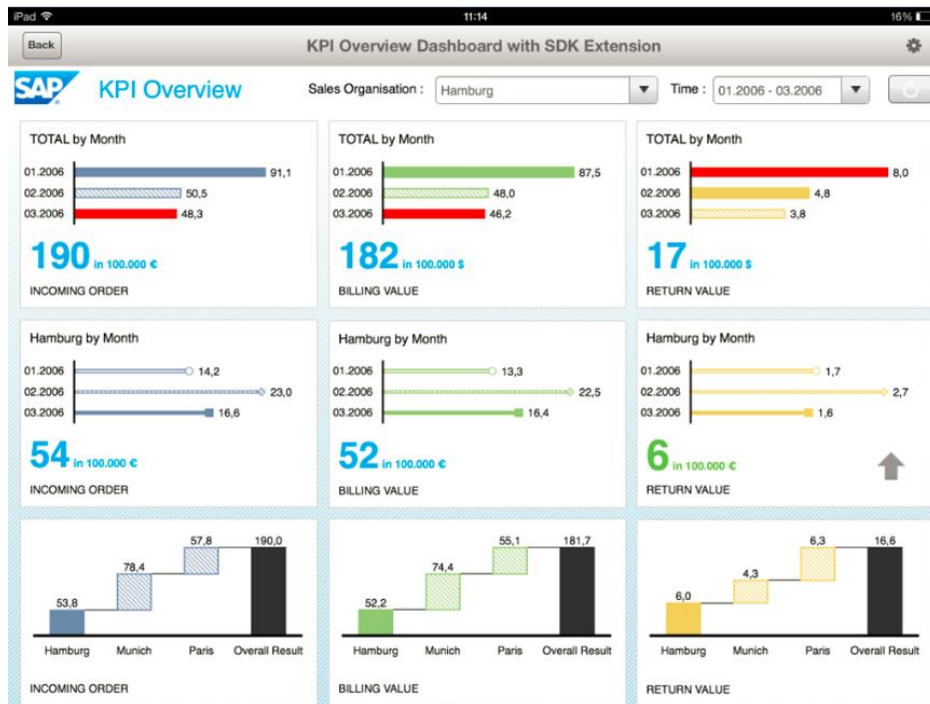
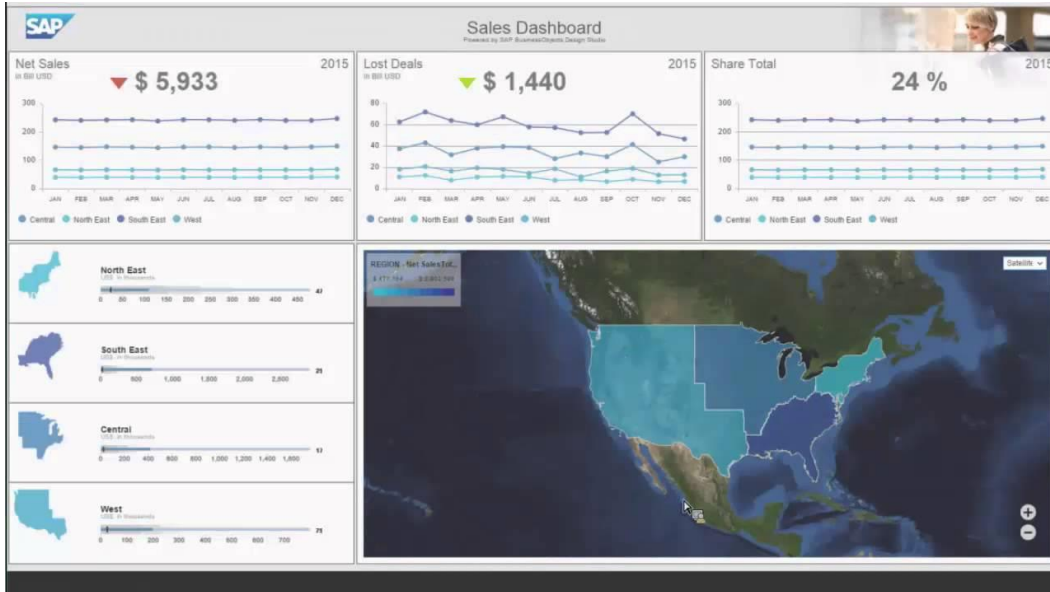
Live data access within Microsoft Office for Business Analysts

With SAP BI, users can conveniently access and use live company data directly in familiar tools like Microsoft Office and SharePoint, making it easier to incorporate that data into presentations, spreadsheets, and documents. Because the data is live, it can be instantly updated while retaining all formatting and calculations in the Microsoft Office document. Plus, the information is secured to ensure colleagues can only view and access the data they have the permissions to access.



Interactive Dashboard Viewing for Executives and Managers

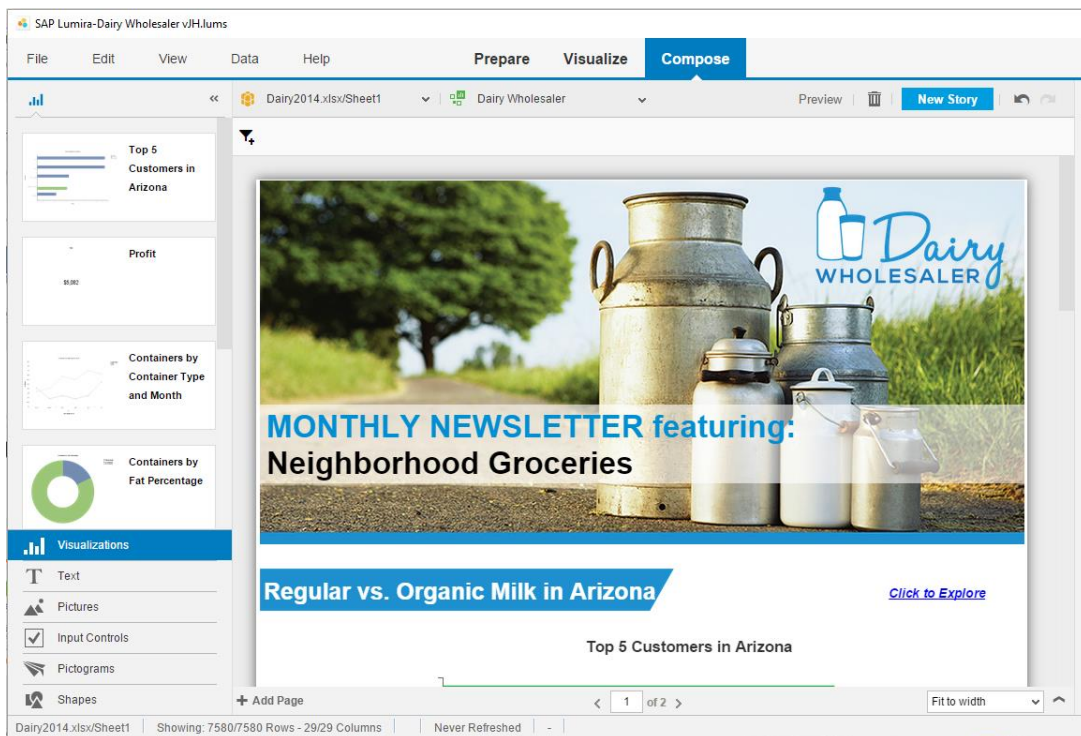
SAP BI helps executives and managers deliver personalized business dashboards and stunning visualizations. It has intuitive point-and-click features, visual sliders, and gauges to help business users identify new opportunities and challenges. ‘What-If’ analysis lets managers proactively understand the impact of decisions before they are made, potentially uncovering critical business issues and opportunities. Users can also present multiple kinds of Bi content in a single view to receive a quick and consolidated look at the company’s groups/divisions business performance.



Lumira

Lumira offers a dynamic visualization tool that empowers the user with capabilities like:

- Acquire data using the desktop tool.
- Combine and transform enterprise and personal data sources in a repeatable way.
- Build visualizations, slice-and-dice data to get answers to ad-hoc questions either using a desktop tool or a web interface.
- Combine visualizations into a story (dashboard or report format).
- Share stories with others.
- Data acquisition and transformation available via desktop tool.
- Data visualization, slice-and-dice, building stories, and consuming stories available via desktop, web, or mobile app.



SAP Lumira is for business analysts. Business users can acquire data, merge different sources of data together, prepare the data and start exploring it. Users can start analyzing the data in different ways. For them, SAP Lumira is the fastest and most engaging way to find and discover their answers, or discover something interesting from the data.

8. What options are available for presenting results, especially with huge data sets?

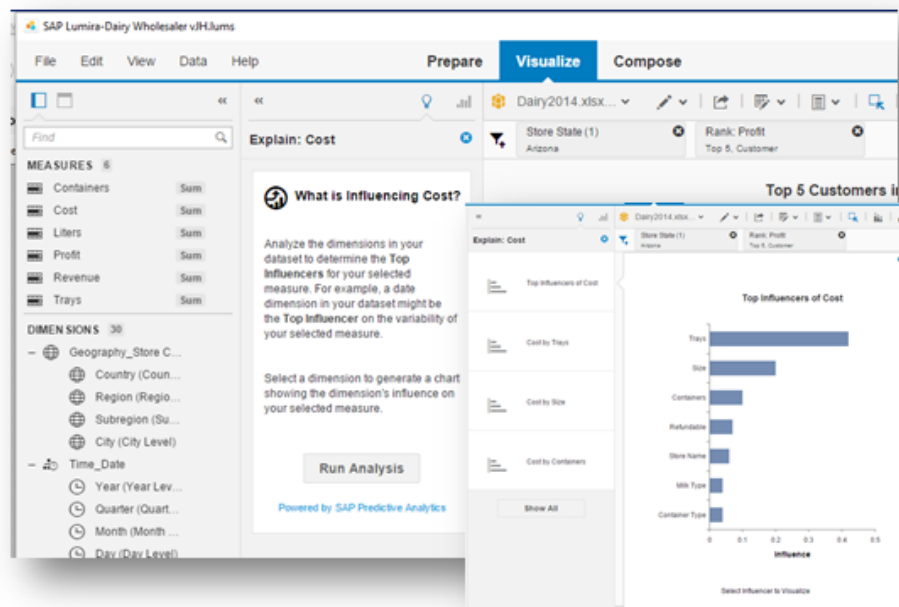
Response: The BI Platform can work with data sets of all sizes. As with any solution, how the data is stored needs to be considered. Our architects work to understand the nature of the data, how it is used, and how it needs to be accessed to ensure the best performance while meeting the needs of the users. The platform supports huge structured relation data sets from databases like Redshift, Oracle or SQL server as well as data from Hadoop. The amount of data it can handle is really only limited by your hardware resources.

9. What features provide capability for obtaining insights into our unstructured data? Are users able to do cross-analysis between the structured and unstructured data sets?

Response: The BI Platform supports structured and unstructured data analysis. With multiple data sources supported, the SAP BI Platform is a great tool for environments with disparate data sources. Included in that, is the ability to connect to “Big Data” sources through the Hadoop connectivity. The platform provides analysis for all data sources to which it can connect.

10. In what ways does your product simplify efforts that go into Business Intelligence gathering and reporting (both from a non-technical perspective as well as technical perspective)?

Response: The SAP BI Suite is designed to promote self-service. Non-technical users are offered tools like Lumira for visualization – dashboard creation and sharing, and Webi for report creation. Additionally, the SAP PA product (Predictive Analysis) offers the business user a tool to leverage without the need to be a data scientist. Beyond reporting data profiling and the ability to identify variables that influence metrics are built-in (see below).



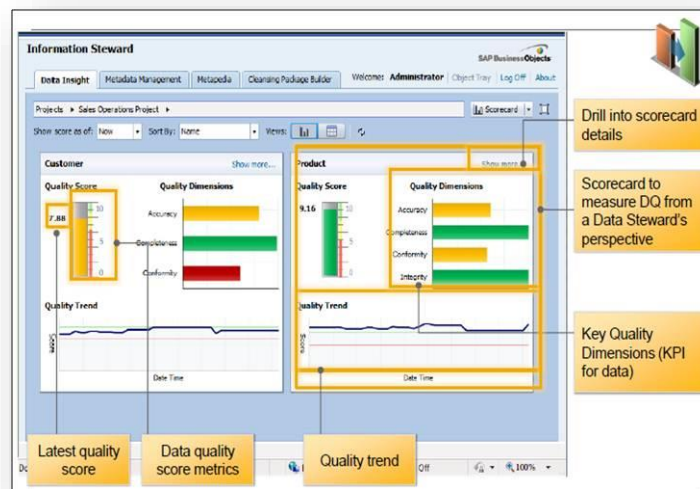
Store Name	Values	Records
24-Seven	64	82
A&A	38	38
Alexei's Specialties	77	77
All-you-need Store	50	50
BC Market	39	39
Choices Franchise 1	268	268
Choices Franchise 2	396	396
Choices Franchise 3	178	178
Choices Franchise 4	267	267
Comm.	313	313
Dairy Mart	127	127
Delikatessen	9	9
Donald's Market	203	203
Donald's Market - Takeout	14	14
Europ. Spec.	124	124
European Specialties	219	219
FastFood Inc	60	60

11. In what ways does your product enforce data quality?

Response: With Data Integrator (the ETL tool) as a standard element of the BI Suite, the first needed step to ensure data quality can be accomplished through the Extract, Transform and Load functions. An add-on product called Information Steward can be implemented to help monitor, enforce and facilitate data stewardship and quality.

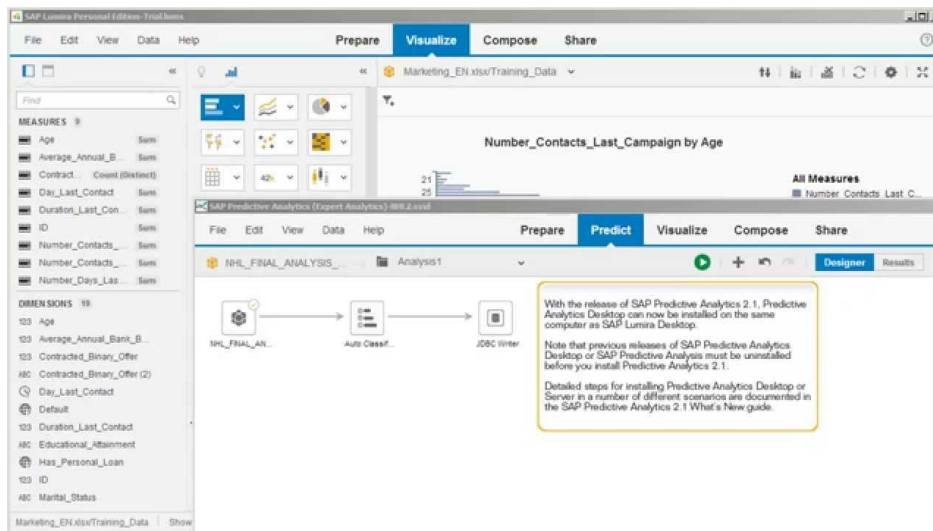
With Information Steward you can monitor, analyze, and improve the integrity of your data. Information Steward (an optional module), a powerful combination of data profiling and metadata management, can provide your business users with continuous insight into the quality of your enterprise information – for enhanced operational, analytical, and governance initiatives.

- Enhance data quality with increased transparency into origins and lineage
- Consolidate, integrate, and audit metadata from all relevant sources
- Improve information governance with consistent data validation rules and guidelines
- Deepen understanding of data quality metrics with intuitive dashboards and scorecards



12. What type of advanced analytics and predictive capabilities does your software provide?

Response: Some basic predictive analytic functionality can be found in Lumira – the visualization tool that comes standard within the BI Suite. For more advanced predictive analytics, SAP offers an add-on tool called SAP PA which can be utilized by Business Users. The tool is also powerful enough to be used by data scientists needing to build their own data models either with the tool or with ‘R’.



13. What out-of-the-box Campus Solutions, Finance, and HRMS data models, dashboards, reports, etc. are available?

Response: Dunn Solutions has created a higher education framework that offers reporting and visualization for 25 identified KPIs - **See Attachment C.**

14. Do you provide all components necessary for an end-to-end BI environment (data integration, data cleansing, data warehousing, performance management, portals, etc., in addition to reports, queries, OLAP and dashboards)?

Response: Yes. The BusinessObjects BI Suite is a complete end-to-end BI Platform. The suite comes with:

- Data Services / Data Integrator – ETL for data integration against any data source or target
- Columnar Database – IQ for fast dimensional data processing
- Enterprise platform to support BI processes, administration, security and BI tools
- Dashboarding
- Ad-hoc Reporting
- Data Discovery, profiling and visualization
- BI portal
- Data Modeling tool

15. Within the top layer of BI, do you provide all components necessary for reporting, querying and analysis such as report writer, query builder, OLAP engine, dashboard/data visualization tool, real time reporting/analysis, text analytics, BI workspace/sandbox, advanced analytics, ability to analyze data without a data model (usually associated with in-memory engines)?

Response: Yes, as stated in previous responses, the SAP BI Platform is an end-to-end platform with capabilities that can provide predictive analytics capabilities. Also see the response to question #7.

16. Licensing: how many licenses will we need?

Response: Without knowing the make-up of your user community, that's impossible to answer. Users that require access to the system at any time or all the time, like super-users, would require a Named User License, while casual users would use the Concurrent Session Licenses. Typically from a licensing perspective, one Concurrent Session License could support 3-4 casual users. In most situations, clients use both types of licensing to meet their user community needs.

17. Can I read through your technical and support web sites?

Response: Yes. Please see these links:

- Data Integration and Data Quality - <http://help.sap.com/bods>
- Data Stewardship - <http://help.sap.com/bois>
- SAP IQ, Columnar database - <http://help.sap.com/iq>
- SAP BusinessObjects - <http://help.sap.com/bobip>
- SAP Design Studio (Dashboards) - <http://help.sap.com/boad>
- Mobile - <http://help.sap.com/bomobilebi>

18. What is a realistic implementation time frame for implementing your solution? What are key caveats?

Response: The SAP BI Platform can be deployed (on premise or in the cloud) within a week. Integrating the platform with your existing data will vary depending on the data sources. For example, integration with an existing data warehouse or reporting database can be done within 2 to 4 weeks. Building a data mart can take 4 to 6 weeks. Integration of your existing sources with Dunn's Higher Ed framework can take 4 to 6 weeks.

19. Can you provide a summary of your typical and/or suggested implementation methodology?

Response: Installing the platform is like following a recipe. There are a series of preparation steps and deployment steps that we follow. Implementing a data mart or data warehouse requires a formal development methodology. Ours is based on a combination of Kimball and the Rational Unified Process. **Please refer to Attachment D.**

20. How flexible is your software in how it can be deployed (is there a specific infrastructure compatibility caveat)?

Response: The software can be deployed on-premise or in the cloud, on a single server, or across servers for higher workloads. It can be deployed on physical or virtual servers. There are some recommended minimums for server size. A sizing effort would be prudent to ensure the platform meets and/or exceeds user expectations.

21. Where do you see your technology and business model in 5 years?

Response: A description of the roadmap can be found in **Attachment E.**

22. What is the next several releases of your product?

Response: See roadmap in **Attachment E.**

23. What are the layers of your overall software platform/framework?

Response: In addition to the screen shots and illustrations in this document, please see the following table, illustration and video links. To get an idea of the capabilities and new features of the SAP BusinessObjects platform check out these videos:

What's new in 4.2, <https://www.youtube.com/watch?v=9eXqkQU5ktk>

Lumira, <https://www.youtube.com/watch?v=LSGgMbhTjSg>

Web Intelligence Maps, https://www.youtube.com/watch?v=IW0_XaDep10

Mobile app,

<https://www.youtube.com/watch?v=3hrd4zYqo9Y&index=3&list=PLs5htBlwERYXE8TVn1aKlLaeVhQBy-4bR>

<p>The BusinessObjects suite connects to almost anything from both the ETL tool and directly.</p> <p>Relational databases (SQL Server, Oracle, Sybase, ...) Big Data (Hadoop, Hive, Impala,) Files (Excel, CSV, XML ...) OLAP Cubes Cloud (AWS Redshift, Azure,...)</p>	<p>Comes with SAP Data Integrator. This ETL solution can be deployed on a separate server.</p> <p>Connect to any source (see the box on the left)</p> <p>Supports all data warehouse ETL transformation i.e. SCD, CDC, pivoting, etc...</p>	<p>Can use almost any relational or columnar database.</p> <p>Comes with SAP IQ a columnar database option.</p>	<p>Comes with SAP Business Objects; a full featured BI suite with reporting, dashboards, data visualization, ad-hoc and discovery tools.</p> <p>The platform is managed and accessed via browsers.</p>	<p>Browsers (IE, Safari, Chrome)</p> <p>Desktop Applications (Web Rich Client, Lumira, Crystal Reports)</p> <p>Mobile Application (included with the suite)</p> <p>Optional: Predictive Analytics</p>
Data Sources	ETL	Data Warehouse	Platform / BI Services	User Interface



24. What products/components would we need to purchase to make the tool run, and what are the dependencies and price ranges?

Response: The SAP BI Suite comes with everything needed. For some additional predictive analytics capabilities, the SAP PA tool can be purchased. Prices are based on Named Users (NUL) and Concurrent Users (CS). Once that is established, prices can be provided, but like with the other platforms, they are all comparable.

f. Do you provide all components necessary for an end-to-end BI solution, including within the top layer of BI for reporting, querying and analysis?

Response: Yes, the SAP BI Platform along with add-ons like Information Steward for Data Quality, and SAP PA for predictive analytics provides an enterprise-wide BI Platform.

g. Does your company own all the components in your BI solution?

Response: Yes, the BI Platform and all the components discussed are SAP products.

- h. Is your tool web-based; do any elements require a desktop environment?

Response: There are web-based and desktop components. The development tools are desktop based and run on Windows. The BI tools run in a browser and some have desktop counterparts (i.e. Web Intelligence, Lumira, and Crystal run in the browser and desktop).

- i. What development platform does your tool use?

Response: Enhancements and customization can be done in Java, .NET, COM, and Flex.

- j. What mobile capabilities does your software provide; is additional development required to take advantage of the features?

Response: Mobile comes standard with the BI Platform and does not require any additional development.

- k. What does deployment look like with your tool?

Response: See implementation

25. If we buy your current software version, what else would we need to buy from you to be successful for future growth/future projects?

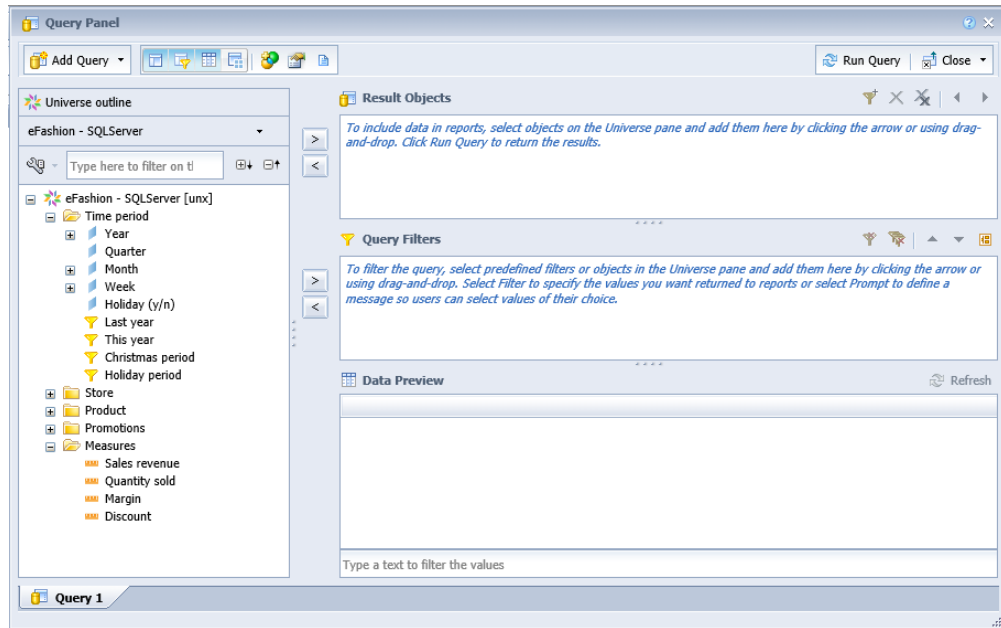
Response: Ongoing releases, i.e. new functionality, is provided via the annual maintenance agreement. Continued access to that functionality that may provide opportunities for future projects, so staying current with the annual maintenance would need to be required.

26. Walk me through in what aspects your product is user-friendly?

- l. How does self-service work in your product? Response: These videos will give you a taste.

- Navigate the interface
<https://www.youtube.com/watch?v=gimBigPCa2M&feature=youtu.be>
- Search for content
<https://www.youtube.com/watch?v=pY1dgFzzEcs&feature=youtu.be>
- Schedule documents
<https://www.youtube.com/watch?v=RNjx3hntioY&feature=youtu.be>
- View a document
<https://www.youtube.com/watch?v=Ug84YSoomCY&feature=youtu.be>,
<https://www.youtube.com/watch?v=xzEfEoA5ANg&feature=youtu.be>

- m. How easily can an end user use the query, reporting, and analysis functions directly against information coming from the data marts? Response: Very easily. The BI tools share a common semantic layer that sits between data sources (i.e. data marts) and the tools. User access information using a common interface (called the query panel). See the image below. The query panel allows users to “ask” questions by dragging and dropping components and then clicking the “run” button. Data is retrieved and ready to use.



With the data retrieved, the interactive tools come alive. See below for two examples:

- Web Intelligence – https://www.youtube.com/watch?v=VGBn_8dHxVA&feature=youtu.be, <https://www.youtube.com/watch?v=BdRM55BybyA&feature=youtu.be>
- Lumira - <https://www.youtube.com/watch?v=LSGgMbhTjSg>, <https://www.youtube.com/watch?v=QiqMbj8crhU&feature=youtu.be>

n. How easy is it to access and integrate multiple sources of data (both internal and external...Oracle dbases CS/HR/Finance; XML; HTML; CSV; TXT; Excel....data linking vs data importing) with your product?

Response: Combining multiple sources can be done in the semantic layer or in the various tools. The following videos will show you how it works in Web Intelligence:

- Adding a query to a document - <http://youtu.be/KP6tWocuISQ>
- Adding a query from Excel - <https://www.youtube.com/watch?v=YzHr6i9GO8w&feature=youtu.be>
- Merging data from two sources - <https://www.youtube.com/watch?v=TzdA-7OG6HM&feature=youtu.be>
- Getting data from a web-service - <https://www.youtube.com/watch?v=47F7b5gSxT4&feature=youtu.be>

o. How much training would it take to get an 'average' non-technical person successfully using your software?

Response: A user that is comfortable with MS Excel can start using Web Intelligence and Lumira after a few hours of mentoring. There are formal classes as well (for people that prefer formal training) for each of the tools. The introduction class for Web Intelligence is a two day

instructor led course. As with all tools, proficiency comes from use, experience and reading the manual.

27. Can you provide me an overview of how security is structured to accessing the software and the data housed in the software.

Response: The SAP BusinessObjects platform has a very flexible security structure. It can be set up as straight forward or complex as you require. Access can be provided to users or groups of users at various levels, including: folders, individual reports/content, rows, columns, tools and functionality.

28. Do you have active, formal user groups for your BI solution?

Response: Yes. There is a formal group called ASUG (<https://new.asug.com/>) as well as many independent groups such as CHIBOUG (<http://www.chiboug.org/About>).

Attachment A
University of Kentucky Case Study



University of Kentucky: Continuing a Tradition of Success with a Real-time Data Platform from SAP

From championship basketball to nationally ranked programs in public affairs and healthcare, the University of Kentucky has a strong winning tradition. Faculty and staff work together to ensure a successful experience for every student. Today, the university uses **advanced analytics based on the SAP HANA® platform** to help it retain and graduate a student body of 28,000.

Executive overview

Organization

University of Kentucky

Location

Lexington, Kentucky

Industry

Higher education and research

Products and Services

Graduate and undergraduate degrees in a variety of majors, medical research

Employees

12,345

Budget

US\$2.68 billion

Web Site

www.uky.edu

Partners

SAP® Consulting, Dell Inc.



BUSINESS TRANSFORMATION

The company's top objectives

- Provide holistic view of data by integrating various data sources
- Improve student retention rates by enabling earlier intervention by faculty advisors
- Gain greater insight into finances and use of resources

The resolution

- Product suite that included SAP HANA® platform, SAP® Data Services software, SAP Landscape Transformation software, and SAP BusinessObjects™ business intelligence solutions
- Partnering with SAP Consulting and Dell Inc.
- Rapid 2½-day initial setup

The key benefits

- Better support services with real-time insight into student performance
- Reduced extract, transform, and load process time from 8 hours to less than 1 hour
- Ability to conduct predictive tuition and revenue modeling

Read more ►

TOP BENEFITS ACHIEVED

420x

Faster reporting speeds

15x

Improvement in query load times

\$250K

Projected annual savings in IT costs

See more metrics ►

“We have a challenge in education to use the data we have to build a better experience for our students. SAP HANA is going to be at the center of this effort at the University of Kentucky.”

Vince Kellen, Chief Information Officer, University of Kentucky

Executive overview

Company objectives

Resolution

Business transformation

Future plans

Building better student experiences

Located in the heart of Bluegrass Country, the University of Kentucky (UK) combines a rich history with a commitment to academic excellence. Founded as a land-grant university in 1865, UK now offers programs in 17 different colleges including the renowned University of Kentucky Medical Center.

They call it “seeing blue” in Lexington, and the student experience is paramount to everyone at UK. “We all share the same objective,” says Vince Kellen, chief information officer at the University of Kentucky, “which is helping each of our 28,000 students to be more successful here.”

For the school’s IT staff, part of that mission is leveraging better data integration and advanced analytics to build an even stronger institution. UK

is particularly interested in using its technology to help raise retention rates, optimize the use of university resources, and support what Kellen calls “personalized education.”

Like students studying at the school’s William T. Young Library, UK administrators have a lot of information at their disposal. The school’s production system contains about 1.5 terabytes (TB) of data. Its data warehouses hold another 4 TB.

But in the past, UK had to extract this data from several source systems and load it into a large Oracle data warehouse. Hours were spent each day just moving data around, leaving less time for in-depth data analysis. To maximize this invaluable resource, UK needed a new approach to using its “Big Data.”

“We want to provide analytic capabilities that everyone at the University of Kentucky can use to improve the institution and advance its goals.”

Vince Kellen, Chief Information Officer, University of Kentucky



Executive overview

Company objectives

Resolution

Business transformation

Future plans

University of Kentucky on SAP HANA: Fast. Forward.

As an existing customer, UK was familiar with SAP solutions. But a SAPHIRE® NOW conference gave school leaders the opportunity to learn about something new – the SAP HANA platform. “It became clear to me right then that in-memory computing was groundbreaking,” explains Kellen. “It would provide the technology we needed to address our most complex analytical problems.”

Ultimately, UK chose a real-time data platform that included SAP HANA, SAP Data Services software, SAP Landscape Transformation software, and SAP BusinessObjects business intelligence solutions. Today, UK is replacing its Oracle database with an SAP HANA platform and commodity hardware from Dell Inc. The initial implementation was surprisingly fast. “We installed the hardware, configured it, and

started replicating data in about two and a half days,” says Stephen Burr, business intelligence lead at the school.

By consolidating its tool set and retiring several systems, UK has already seen significant savings. The university was also able to redeploy some IT staff to more strategic activities. These people can now focus on developing new applications and creating analytical objects that school administrators can use to improve the student experience and help manage the rising costs of higher education. “A little bit of analytics can go a long way,” says Kellen, citing one example. “Just a 10% improvement in classroom utilization can help accommodate hundreds more students without the need to build new buildings.”

“We are no longer in the business of data movement – now we’re in the business of using information to make better decisions.”

Stephen Burr, Business Intelligence Lead, University of Kentucky



Executive overview

Company objectives

Resolution

Business transformation

Future plans

Improved performance and more immediate insight

With its new systems in place, UK is managing its Big Data with far greater efficiency. This includes faster query load times and reporting speeds that are more than 400 times faster than before. “A query that once took 20 minutes now executes in only seconds with SAP HANA,” remarks Kellen.

You can also add unprecedented availability to this superior performance. UK reports that 80% of its data warehouse is updated in real time. “An

administrator walking on campus can use an iPad to pull up data in real time from five different systems and take business action based on that information,” says Burr. “Six or twelve months ago that just didn’t exist – it wasn’t possible.” UK leaders are using this instant insight for everything from evaluating complex tuition models to predicting a student’s chances of graduation by analyzing a range of factors such as grades, participation in campus activities, and the use of tutoring services.

KEY BENEFITS

420x

Faster reporting speeds

15x

Improvement in query load times

\$250K

Projected annual savings in IT costs

87%

Reduction in extract, transform, and load times

80%

Amount of data updated in real time



Executive overview

Company objectives

Resolution

Business transformation

Future plans

Seeing blue for generations to come

Graduation day in Lexington represents the culmination of a lot of hard work and the beginning of a promising new future.

Acting upon a deeper understanding of specific success factors can help make a UK degree a reality for even more graduates. For example, the university now uses its analytic capabilities to quickly identify students who need additional support in their critical first weeks on campus. In fact, many of the university's data analysis initiatives directly support its goal to improve retention rates by 10%.

The benefits are far reaching – especially in these times of state funding cuts. Kellen estimates that even a 1% increase in the retention rate will result in US\$1.1 million in added revenue for the school. And better retention rates also mean that thousands of additional students will have the opportunity to pursue their dreams at the University of Kentucky.







Attachment B Dunn Overview

About Dunn Solutions

Corporate Profile

Dunn Solutions is an information technology consulting firm with exceptional strategic experience, design skills and technologic expertise. Our business intelligence and application development practices deliver services through offices in Chicago, Minneapolis, Raleigh and Bangalore, India.

			
<h3 style="color: red;">Application Development</h3> <ul style="list-style-type: none"> • Portals • <u>eCommerce</u> & Content Managed Websites • Mobile App Development • Custom App Development • Search Engine Optimization 	<h3 style="color: red;">Analytics</h3> <ul style="list-style-type: none"> • Analytics & BI Platforms • Data Warehouse & Data Integration <h3 style="color: red;">Predictive Analytics</h3>	<h3 style="color: red;">Training</h3> <ul style="list-style-type: none"> • Certified <u>SAP/Liferay</u> • Classroom, On-site, Computer Based & Virtual • Mentoring & Custom Training 	<h3 style="color: blue;">Frameworks</h3> <ul style="list-style-type: none"> • Accountable Care Orgs (ACO's) • Corporate Legal • Higher Education • Optical Shop

We have cultivated our experience and knowledge in order to provide the most valuable solutions possible. Our solutions help customers increase revenues, reduce costs and improve communication by eliminating barriers and empowering people with the information they need to make smart business decisions.

Locations

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Minneapolis 8009 34th Avenue South, Suite 350 Bloomington MN 55425 | 651-994-4807
Raleigh 434 Fayetteville St., Suite 1240, Raleigh, NC 27601 | 919.833.0119
Bangalore Times Square, No. 88 M G Road, Bangalore, India 560 001 | +91-080-4112-0000

Management Team

William Dunn, President & CEO – A sought-after technical productivity and performance expert, William founded Dunn Solutions Group (formerly Dunn Systems Inc.) in 1988. A targeted strategist, effective manager and visionary leader, Mr. Dunn has grown his company from a small boutique to a solid consulting firm that serves Fortune 500 companies. William earned both his B.S. and M.S. Degrees in Computer Science from the University of Illinois at Urbana-Champaign, and is a former employee of AT&T Bell Laboratories and U.S. Robotics.

Jose Hernandez, Director – Business Intelligence – Jose Hernandez began his career as a developer and early adopter of the PC as a business tool in corporate America. He joined Dunn Solutions Group in 1991 and has helped the company become a top provider of business intelligence and application development solutions. Today as Director of Business Intelligence, he and his team design, develop and deploy corporate BI solutions across a variety of industries. Jose is a certified SAP BI professional, accredited instructor and sits on the Chicago BI User Group steering committee. Jose holds a degree in EE/CS from the University of Illinois at Chicago.

Kenneth Yeung, Director – Application Development – Ken has been architecting and delivering applications since 1997. Starting out as a Java developer, and then progressing to manager and architect, Ken currently provides leadership for Dunn Solutions Group application development group. Mr. Yeung has a degree in Computer Engineering from the University of Manitoba in Canada.

Joseph Brandenburg, Director – Predictive Analytics – Joe Brandenburg has been delivering Predictive Analytics and has performed retail and online optimization, forecasting and predictive analysis for the last 20 years and has helped raise sales and revenue by billions of dollars for the clients he has served. He has provided consulting and market research to Sears, Kmart, Walmart, CVS, ShopHQ and many more and has worked with the biggest CPG manufactures in the world working with retail data (Pepsi, Mars, Campbells, InBev AB, and many more). Joe has managed retail stores and understands the in's and outs' of everyday life in retail. Joe holds an MBA from Western Illinois University in Marketing and Business Analytics Research, and has a Bachelor of Business in operations management and finance from Western Illinois University.

Jeff Goffinet, Director – Sales – Jeff has spent 25+ years in the IT industry after earning his B.S. in computer science from Purdue University. Gaining a solid foundation of information technology through his IBM technical roles as a developer and systems engineer, Goffinet expanded that knowledge in program management and consulting. Eventually, Jeff leveraged his technical and client-facing experience to lead sales organizations delivering solutions across industry verticals. Upon joining Dunn Solutions Group, Jeff's charter is to continue expand Dunn's capabilities in providing cost-effective solutions to address real business issues.

Attachment C
DSG Higher Ed Overview

HIGHER EDUCATION BUSINESS INTELLIGENCE FRAMEWORK

Today's higher educational institutions are seeing the benefits that come from analyzing their student, alumni, financial and personnel data. And the best managed ones now are using reporting solutions with dashboards to help them better leverage their source system data to make their organizations more efficient, and ultimately more successful.

Designed for colleges and universities, **Higher Education Business Intelligence Framework** is a web-based reporting solution that integrates and consolidates data from your enterprise administrative software solution, and delivers your key performance indicators (KPIs) to your desktop using dynamic visualizations.

These dynamic visualizations – easy-to-understand speedometers, graphs, tables and alerts – highlight trends, expose problems and offer valuable insight into twenty-five Higher Ed specific metrics.

What's more, the visualizations offer the capability to change views, change parameters and drill down to a detailed report.

The result: smarter decisions, increased efficiency, lower costs and an improved ability to achieve your strategic goals.

Higher Education Business Intelligence Framework utilizes sophisticated business intelligence tools and your existing software. And it comes with all the technology necessary to implement and deliver its powerful dashboard and reporting tools across your departments and locations.

Get the insight you need to manage intelligently and effectively. For more information on **Higher Education Business Intelligence Framework**, please contact info@dunnsolutions.com.

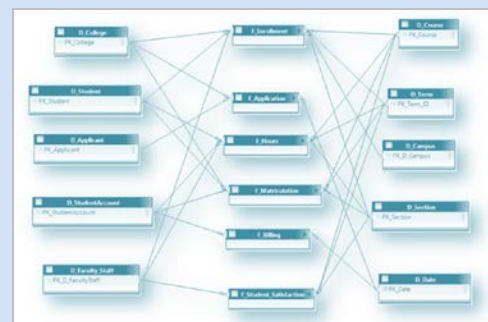


Twenty-five Higher Ed Key Performance Indicators (KPI's) in these categories:

- Student Recruitment
- Graduation
- Academics
- Retention
- Financial
- Faculty

Higher Education Business Intelligence Framework Features:

- Starter dashboards (overview, inventory, procedures)
- Dashboard components (single & multi-value visualizations)
- Supporting detail reports
- Ad hoc reporting capability
- Supporting data mart
- Installation, configuration and customization services



star schema based data model

Attachment D

Dunn Solutions' BI Methodology

The Assurity Business Intelligence Methodology

Dunn Solutions Group provides an end-to-end project management methodology to ensure that we deliver “best of breed” solutions that fully meet all of the requirements of our clients. Based on the proprietary Assurity methodology, Dunn Solutions Group consultants can address all of a client’s technology requirements in a superior fashion.

The Assurity Methodology is derived from the Rational Unified Process and the Kimball Lifecycle. It is composed of four distinct phases, and workflow iterations that span the phases. The process described here is specific to the Business Intelligence Practice Area, it also includes methods and techniques based on Ralph Kimball's data warehousing methodologies.

The Kimball Lifecycle approach has been around for decades. The concepts were originally conceived in the 1980s by members of the Kimball Group and several colleagues at Metaphor Computer Systems. When we first published the methodology in The Data Warehouse Lifecycle Toolkit (Wiley 1998), it was referred to as the Business Dimensional Lifecycle because this name reinforced three fundamental concepts:

- Focus on adding business value across the enterprise
- Dimensionally structure the data delivered to the business via reports and queries
- Iteratively develop the solution in manageable lifecycle increments rather than attempting a Big Bang deliverable

Projects go through a life cycle. The Assurity life cycle is divided into four major phases: Inception, Elaboration, Construction and Transition. As iterations are completed and milestones are met, the project moves from one phase to another. Each phase is further divided into one or more iterations.

The start of the project is determined by the start of the Inception phase. During the Inception phase we will **establish the business case for the system and delimit the project scope**. In addition, more details are determined and added to the project plan. We conclude this phase with the concurrence between our clients and Dunn Solutions Group on scope definition and cost/schedule estimates for the project. Once the Inception phase is completed and its deliverables realized, we move into the Elaboration phase.

During the Elaboration phase, we will **analyze the problem domain, establish a sound architectural foundation, develop the project plan, and eliminate the highest risk elements of the project**. At the end of the Elaboration phase, we will demonstrate that the project vision is reasonable, the architecture is sound and the major risks have been resolved. Once the Elaboration phase is completed and its deliverables realized, we move into the Construction phase.

During the Construction phase, we will **develop, test and integrate the remaining system components and features**. At the end of the Construction phase the product is completed and is ready to put into the hands of the users.

The final phase, or Transition phase, is comprised of the activities and efforts required to deliver the product into the hands of the user community. During the Transition phase, we will **implement the transition plan and deploy the product to the user community**. At the end of the Transition phase the product is in use by the user community and the scope of this effort completed.

Phase: Inception

Identify Project Stakeholders

“Project Stakeholders” are paramount to the success of a BI Initiative because they define the business opportunities that the BI Initiative is being used to assist with and must drive the initiative more than typical IT projects. Our methodology guides your organization to assessing who the correct stakeholders are, what is their level of knowledge, and how can they utilize all aspects of their data/meta data to successfully perform.

Identify Project “Actors”

“Project Actors” are the people/systems that will be interacting with the BI repository on a daily basis. These are not the technical files and fields that will be used to create the data repository but are the business views of the data. They will either be:

- suppliers of the data/meta data
- customers of the data/meta data
- both a supplier AND customer

Data utilized in BI Initiatives come from an unknown and disparate amount of sources that must be consolidated into one target repository efficiently and published to all necessary “actors” in a user friendly method.

Identify and rank high level KPIs

Key Performance Indicators (KPIs) for BI Initiatives differ from indicators for operational systems in that they allow the customers of data to view the whole depth and breadth of the business from one consolidated source as opposed to operational systems that view one specific part or slice of the business.

Utilizing the stakeholders and actors expertise in the data and business needs, high level KPIs must be designed that add value to the strategic direction of the business.

Identify major data source systems and connections

Understanding the KPIs and the business views of the data will allow your organization to understand the major source systems of the data and the connections to the BI data repository.

Identifying these sources at an early stage is necessary so an efficient and correct “Integrated Application Architecture” can be designed. “Integrated Application Architecture” is the application that will extract, transform, and load the data from all sources into the data repository.

The “Integrated Application Architecture” also consolidates correct and complete meta data into the meta data repository and links the meta data repository and the BI data repository.

Identify major meta data sources and connections

The value of the data that is published to the business intelligence users will decrease substantially over time if the meta data is not captured over time to explain any discrepancies or changes to the data over time.

Changes to measures, formulas and sources in the source systems happen over time. This does not affect operational systems because they only are concerned with one view of the data at point in time. Business intelligence systems are highly affected by these changes because they view all the data over a large amount of time and any changes to the unit of measures or calculations in the data can give the users a false understanding of the data.

By integrating the meta data with the data in the BI repository is necessary so that the users will completely understand the data over time.

Phase: Elaboration

Identify database elements

Business intelligence data repositories can take any number of forms depending on the amount of data, the method of publication, and the ease of ETL and access to the data. Some examples of these forms could be a star schema, a snowflake schema, a normalized schema, or a combination of one or more of these schemas.

These schemas are specially designed for the unique reporting needs of business intelligence data initiatives and would not be appropriate for operational systems because of the volume of data that will be stored in the repository.

Develop a complete proof of concept

When creating operational data repositories the danger of differences in the data creating unrecoverable errors is small because of the small size and high homogeneousness of the source data. In a BI data repository; however, there are much larger amounts and lower homogeneousness of the data. This difference will result in a greater inaccuracy of the data and will decrease the ability to quickly understand the source of the inaccuracy.

Our methodology suggests that organizations create an initial “Proof of Concept” (POC) for their business intelligence projects to learn more about the day-to-day ETL process and the reports/KPIs that are generated. Once the POC has completed, a review session is conducted where the lessons learned from the POC are applied to the remainder of the sources and the project plans are modified to reflect the lessons learned.

Our methodology will guide your organization into creating the initial POC that will provide a storehouse of lessons for both the ETL and publication of the data. We suggest that the initial POC entail:

Identify small set of users that will be used for POC
Prepare infrastructure for ETL and reporting/KPI functionality (create proper databases, file structures, load client and server software, verify transmission channels)
Detail of a small number of report(s) and KPI(s)
Detail ETL design for one to four sources to the target
Develop ETL for the planned source to target mappings
Capture meta data for the sources into the meta data repository

Develop sample BI foundation (i.e. Universes)
Develop Report(s)/KPI(s)
Develop meta data to BI data repository connection software or through the use of it's front end tool
Unit test
System test
Obtain user community approval
Hold “wrap-up” session examining the results of the POC and applying any changes to the next iteration

Identify the scope of the remainder of the project

Applying the lessons learned in the POC, the scope of the remainder of the project is created. Once the POC is completed the ability for your organization to accurately plan the completion of the rest of the application design, the ETL construction, report/KPI construction, and testing.

Our methodology will guide your organization into accurately modifying your application architecture based on the lessons learned from the POC. Once this module is completed, your organization will be able to accurately:

- Identify the rest of the users and what business problem the BI initiative is going to solve for them
- Detail any new infrastructure changes or additions
- Detail of the rest of the report(s) and KPI(s)
- Detail the complete ETL design
- Detail of the meta data to be captured for the sources and how it will be used in coordination with the BI data repository
- Detail the iterations that will be used in constructing the BI repository

Phase: Construction

Iteration n+1

Iterative construction of a BI process is taking a BI project and completing smaller pieces of it over and over eventually completing the whole project. Our experience has shown that attempting to complete BI initiatives non-iteratively fail because of political and technical reasons.

Non-iteratively completed BI initiatives fail politically because the length of time it takes to complete them with no public deliverable does not keep the users funding the project happy and confident in continuing funding. A typical BI “enterprise” initiative of 8-25 sources, 25 gigabyte – 15 petabytes of data and 25-200 users over a region will take between 3-5 years to complete and typically become over budget and delayed. If nothing of value is shown to the user community over this time they will lose interest and in turn the IT area loses the commitment of the user community.

Non-iteratively completed BI initiatives fail technically because the sizes and unit of measures of the various sources do not match OR the front-end reporting tool(s) were not ready for the data that they are accessing.

Our methodology suggests that BI development be completed in an iterative fashion. As was explained above, an iterative approach to BI development requires that smaller pieces of the whole project be completed one at a time with a “wrap-up” portion at the end where the lessons learned from the current iteration is applied to the next iteration and plans adjusted accordingly.

Iteratively completing BI initiatives solve both problems. By planning the entire project a budget can be approved. By completing that planned project iteratively:

Allows any lessons learned to be utilized throughout the remainder of the project

Deliverables are completed and users funding the project can derive value throughout the whole project as opposed to waiting until the end of the project

Any changes to the data structures and/or requirements do not necessitate a complete re-write of the entire system

The tasks involved in and iteration of the development of a BI initiative is similar to the proof of concept (POC) referenced above. The tasks are:

- Identify a set of users that will be used for each iteration
- Prepare infrastructure for ETL and reporting/KPI functionality (create proper databases, file structures, load client and server software, verify transmission channels)
- Detail the next small number of report(s) and KPI(s)
- Detail ETL design for one to four more source to the target mappings
- Develop ETL for the planned source to target mappings
- Capture all the meta data into the meta data repository
- Develop BI foundation (i.e. Universes)
- Develop Report(s)/KPI(s)
- Develop meta data to BI data repository connection software or through the use of it’s front end tool
- Unit test
- System test
- Regression test the previously developed reports/KPI(s) and correct any errors
- Obtain user community approval
- Hold “wrap-up” session examining the results of this iteration and applying any changes to the next iteration
- Continue on to the next iteration

Phase: Transition

Prepare for the large-scale rollout of access to BI initiative's data

Rollouts of business intelligence initiatives are different than rollouts of typical operational systems. For one thing, the users of BI repositories may be separated by thousands of miles and utilizing a number of front-end tools and software. The users of operational systems; however, are typically in one region of the world and use one tool to access the data within the system.

Our methodology will guide your organization through preparing for the large-scale rollout of the data and supporting software created by your BI repository.

Implement security roles

Data is correctly viewed as a data asset more now than ever. Business intelligence initiatives take data from many different areas of your organization and consolidate it into one place, which means there might be some areas of your organization that can access data that they should not be able to.

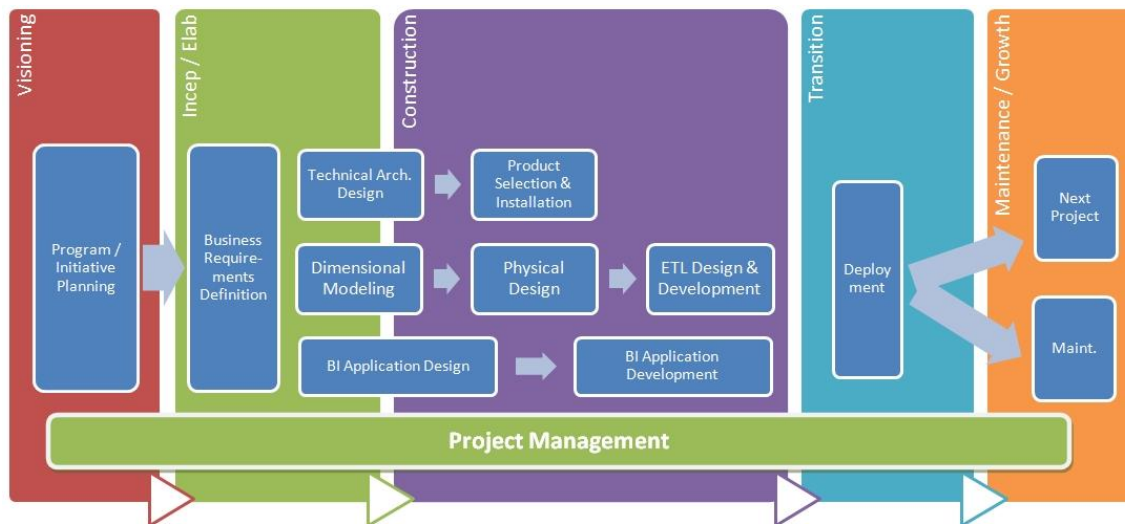
Our methodology considers security to be an important area of concern for all BI initiatives and contains a module that addresses these concerns.

Install all necessary software on the users' machines

Using the information gained by preparing for the rollout our methodology will assist your organization in ensuring that the software and data is installed on all users' machines and that they can access the data in a timely fashion.

Project Management

Throughout the project life-cycle, budget, progress and quality must be measured and reported. Remember, managers at Dunn Solutions Group have both project and HR responsibilities. Please refer to BI Managers at Dunn Solutions Group for more information.



The Data Warehouse Lifecycle Toolkit, 2nd Edition pg. 3

There are four major workflows that make up a BI project that span across the phases: Planning and Management Track, Technology Track, Data Track, and the BI Application Track. These tracks are discussed in more detail in each of the phases; Visioning, Inception, Elaboration, Construction, Transition and Project Management.

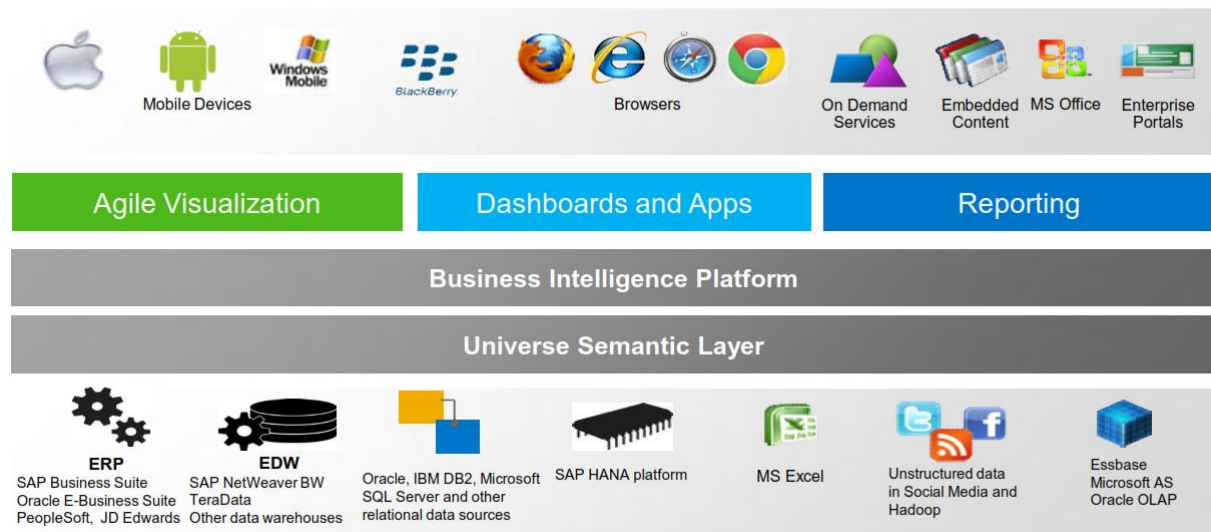
Training

Business intelligence training involves education for the software that the users are going to use but also the theory, uses, and limitations of business intelligence to better educate your knowledge workers because they are your organization's greatest asset in understanding how technology can be used to aid in the improvement of your business' processes and products.

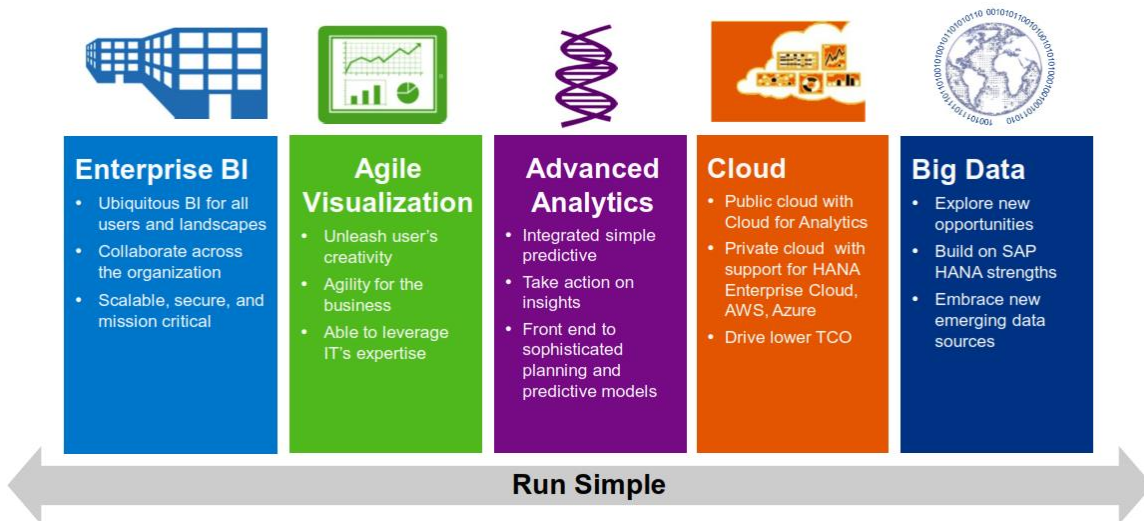
Our methodology will assist your organization in formatting and scheduling the training materials to create the most accessible and efficient training program for both your users as well as your I.T. staff.

Attachment E SAP Roadmap

BI Platform Professional Grade



SAP's Future Strategic Direction on Analytics Solutions



Analytics Solutions – Enterprise BI

Reliable BI Platform

Future
Direction



RELIABLE PLATFORM

Build TRUST with users by operating a platform that is non-stop and always available. With proven 99.9% uptime, near zero-downtime upgrades and enhancements and continuous monitoring.



RELIABLE ACCESS

Ensure that users can trust that all their BI content is in one place by bringing BI content from non-SAP software into the BI management environment and accessible via BI Launchpad.



RELIABLE MANAGEMENT

Ensure that trust by leveraging the suite of BI management tools built into BI to ensure smooth operations with continuous user feedback.

Analytics Solutions – Enterprise BI

Open BI Network

Future
Direction



OPEN ACCESS TO DATA

Any BI tool can now leverage the business knowledge in your Enterprise BI Solution ensuring consistency of information without limiting the experiences



OPEN VISUALIZATIONS

Leverage the community to access and utilize any visualization for any information in any tool. New visualizations can be deployed and leveraged across the SAP BusinessObjects BI suite like never before.



OPEN DATA MANIPULATION

Expand the range of functions for the SAP BusinessObjects BI suite with community developed models and data functions, no matter the source.



AGILE VISUALIZATION EXPLORATION

Ask questions from corporate data more easily on larger collections than ever before by leveraging the power and speed of SAP HANA



AGILE VISUALIZATION SEMANTICS

Develop and extend semantics and business views of data locally with personal or departmental versions.



AGILE VISUALIZATION DATA

For the first time users can share new information via their corporate analytical infrastructure with a single click and IT remain able to manage and govern what information reaches who.

