Business Intelligence

Un Enfoque Consultivo (perspectiva de negocios)

Marzo 2007

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Por qué Business Intelligence ?

▶ Porque los datos por sí solos no dicen lo que necesitamos saber *(…para tomar decisiones claro está)*

 – "Data must provide answers, not more data."

  Randy Mott, Senior VP and CIO, Dell Computer

▶ "Business intelligence (BI) is a business management term which refers to applications and technologies which are used to gather, provide access to, and analyze data and information about their company operations. Business intelligence systems can help companies have a more comprehensive knowledge of the factors affecting their business, such as metrics on sales, production, internal operations, and they can help companies to make better business decisions. Business Intelligence should not be confused with competitive intelligence, which is a separate management concept"

 – Wikipedia, the free encyclopedia
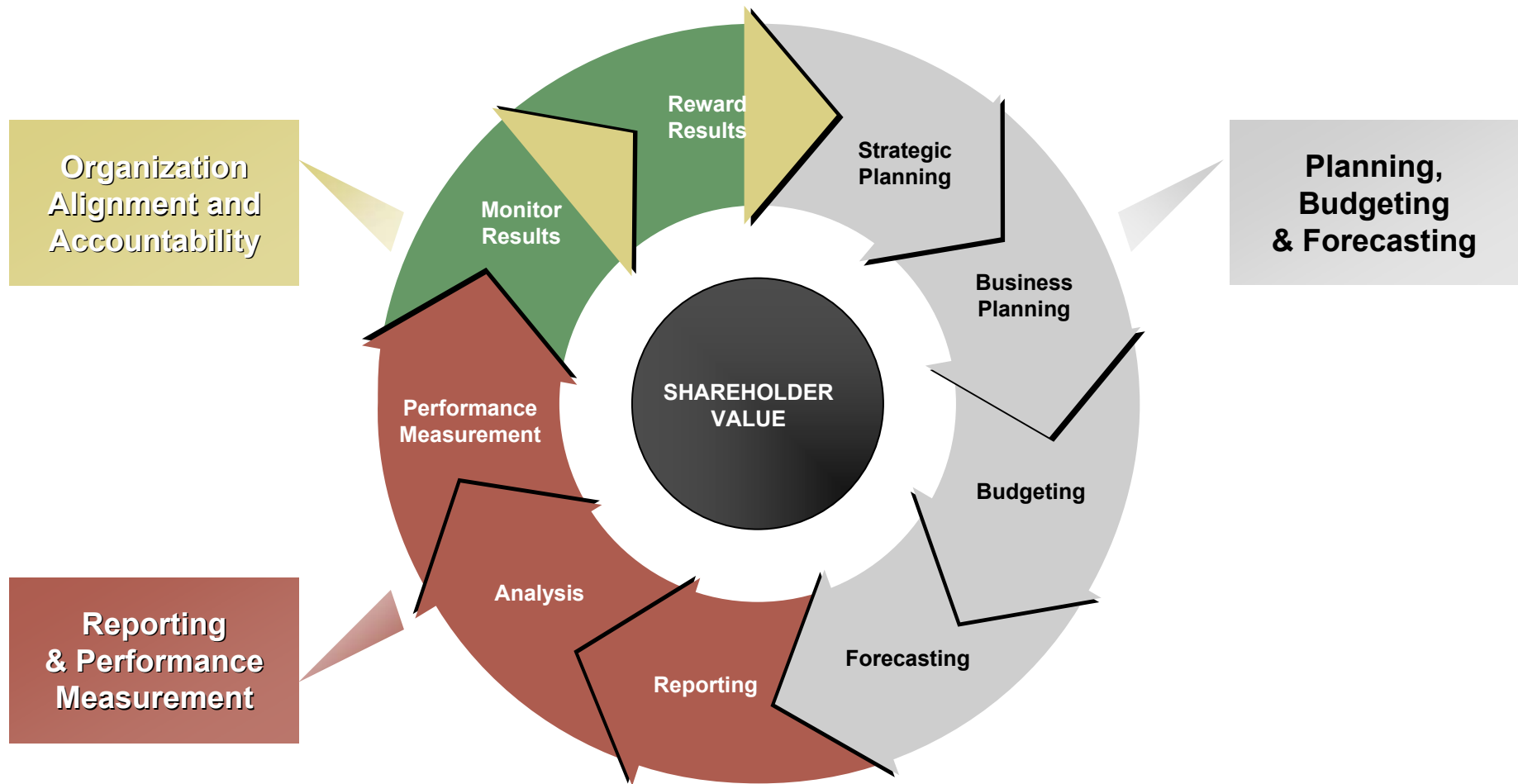
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Cómo usamos Business Intelligence ?
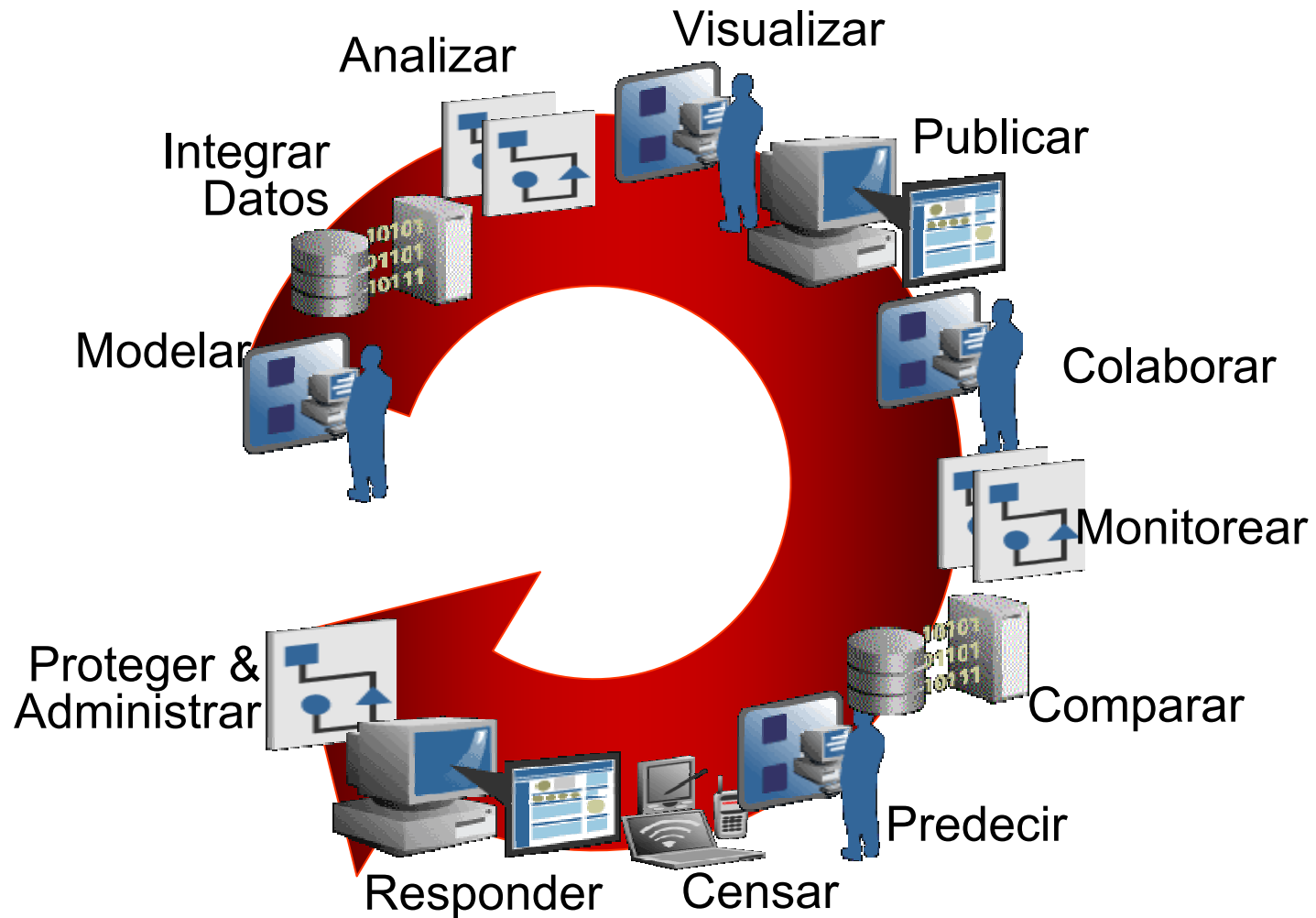
A quiénes se orienta Business Intelligence ?

▸ A los usuarios finales, en todos los niveles donde hay que tomar decisiones de negocio

– "BI is no longer focused on just a small number of power users and producers of BI applications…"

Keith Gile, a principal analyst covering BI at Forrester Research

▸ Nuevos conceptos acuñados alrededor de "Business Intelligence" forman parte actual de soluciones tecnológicas empresariales:

– Corporate Perfomance Management

– Business Activity Monitoring

– Dashboards

– Scorecards

– Drill-down, Roll-up, Drill-trough

– Intuitive Indicators, Alerts

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Cómo incorporar Business Intelligence ?

Deloitte Perfomance Manager Framework:

Creating and Realizing Value Through *Integration.*
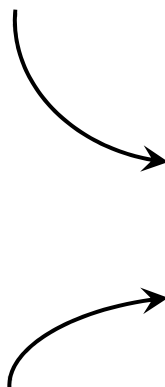
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Cómo incorporar Business Intelligence ?

Deloitte Enterprise Value Map:

El EVM favorece la comprensión del negocio y de sus value drivers, lo que facilita y resulta ser muy efectivo a la hora de construir el Mapa Estratégico y KPIs:

VALOR PARA EL ACCIONISTA

Crecimiento de ingresos	Margen Operativo	Eficiencia en los Activos	Expectativas
• Volumen • Precio de Realización	• Gastos de Administración y Ventas • Costo de los Bienes Vendidos	• Propiedad, Planta y Equipo • Inventario • Cuentas a Pagar y Cuentas a Cobrar	• Fortalezas Organizacionales • Factores Externos

¿Cómo creamos valor?
(Value Drivers)

¿Qué podemos hacer?, para crear ese valor
(Improvement Levers)

En 2 niveles

Cambie lo que hace (Estrategia)

- Qué ofrece
- Hacia quién apunta
- Cómo compite
- Dónde asigna sus recursos
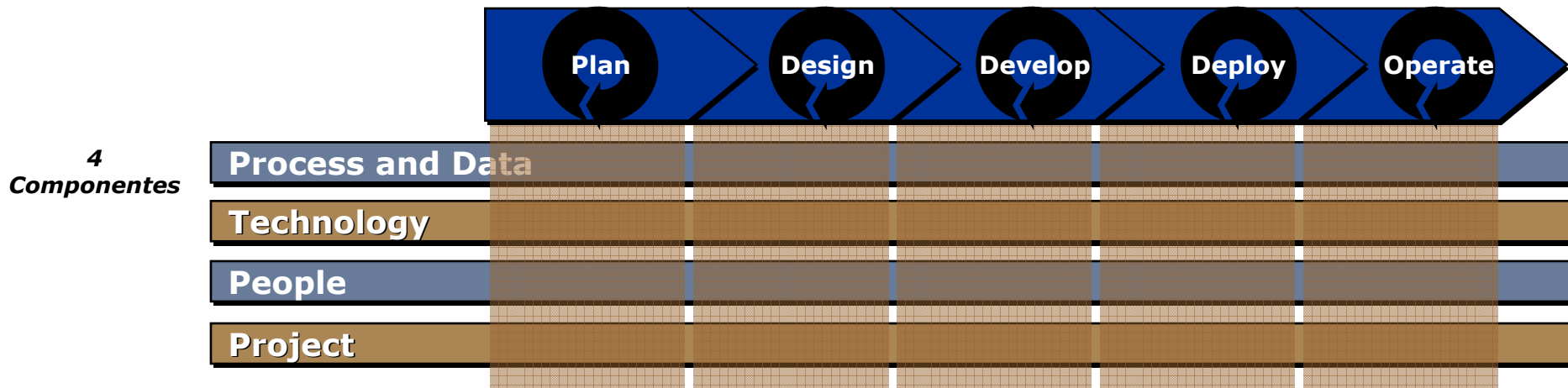- Qué operaciones terceriza

Haga mejor lo que hace (Táctica)

- Procesos de negocio
- Colaboración intra e inter-compañía/s
- Satisfacción del cliente, empleado y otros "stakeholders"
- Desarrollo y asignación de recursos/activos
- Desarrollo de la capacidad estratégica

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Cómo incorporar Business Intelligence ?

Deloitte Informations Dynamic Methodology:

▶ Nuestro framework provee un modelo detallado, que:
  – Representa un enfoque metodológico Best-In-Class
  – Representa un enfoque iterativo para proyectos de administración de datos
  – Permite customización para incorporar necesidades específicas del negocio
  – Incluye los componentes para Personas, Procesos/Datos, Tecnología, y Proyectos

5 Fases (varias iteraciones)

| Plan | Design | Develop | Deploy | Operate |

4 Componentes

Process and Data

Technology

People

Project

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Cómo incorporar Business Intelligence ?

Deloitte BI Project Approach:

Plan	Design	Develop	Deploy	Operate

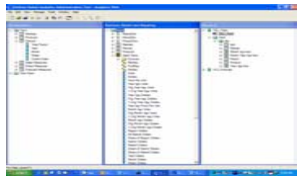**Process and Data**

Plan	Design	Develop	Deploy	Operate
Define Governance Charter	Define Governance Framework		Deliver Governance Program	Monitor Governance
Gather Key Bus Processes	Define Metadata Strategy			Manage Metadata
Analyze Key Bus Processes	Design Key Bus Processes	Develop/Test Key Bus Processes	Local/Deploy Key Bus Processes	Govern Key Bus Processes
Gather Data Quality Req	Define Data Standards	Develop/Deploy Data Standards		Govern Data Standards
Gather Data Presentation Req	Design and Validate Data Architecture		Deploy Data Architecture	Manage Metrics & Dimensions
Gather Data Req	Design Data Management	Develop/Test Data Management	Deploy Data Management	Manage Data Quality
Analyze Metrics & Dimensions	Design Data Presentation	Develop/Test Data Presentation	Deploy Data Presentation	Identify Enhancements
Analyze Source Systems				
Assess Metadata				
Assess Data Standards				
Assess Data Quality				

Technology

Plan	Design	Develop	Deploy	Operate
Gather Technical Requirements	Design Technical Architecture	Install/Configure/Test Environment (Dev, Test, QA, Prod)		Manage Upgrades
Assess Technology Architecture	Conduct Tool Assessment	Implement/Test Security		Monitor System Usage
Define Test Approach	Purchase/License Infrastructure			Manage Security
	Design Security			
	Test Plan			

People

Plan	Design	Develop	Deploy	Operate
Assess Organization	Design Organization	Implementation Organization		Gather User Feedback
	Design Training Program	Develop Organization Transition	Transition to Organization	Manage Training Program
		Develop Training Program	Deliver Training Program	

Project

Plan	Design	Develop	Deploy	Operate
Project Management				
Change Management/Enablement				
Quality Risk Management				

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Cómo lucen las herramientas de Business Intelligence ?

Una ilustración con Oracle Business Intelligence Enterprise Edition:

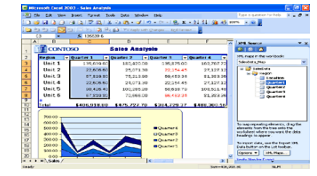|				
Data Integration	**Query & Analysis**	**Dashboards**	**Reporting**	**Collaboration**
Activity Monitoring	**Balanced Scorecard**	**Real Time & Predictive**	**Guided Analytics**	**Intelligent Workflow**

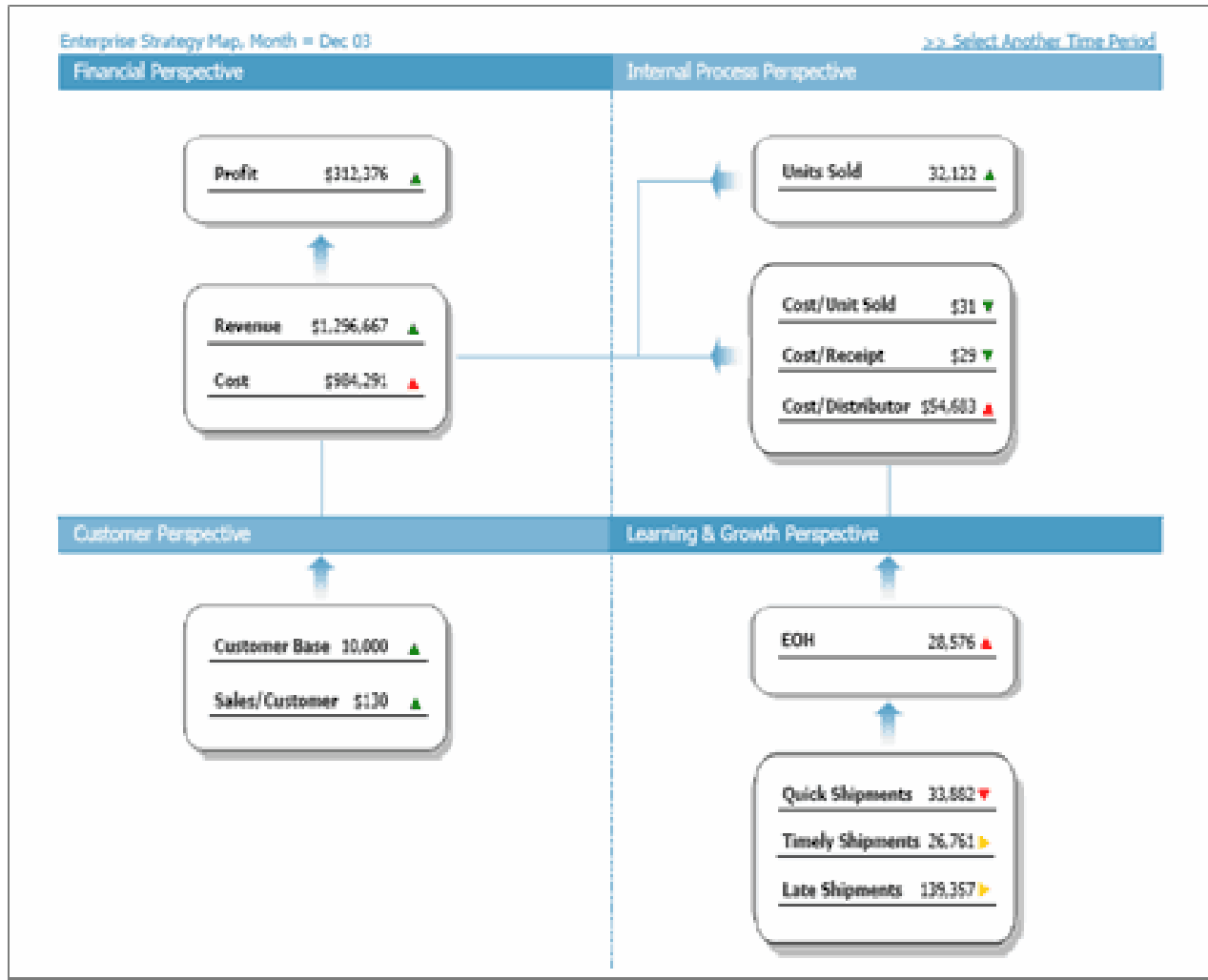**Common Enterprise Information Model**

Unified Business Intelligence Infrastructure

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Dashboards:
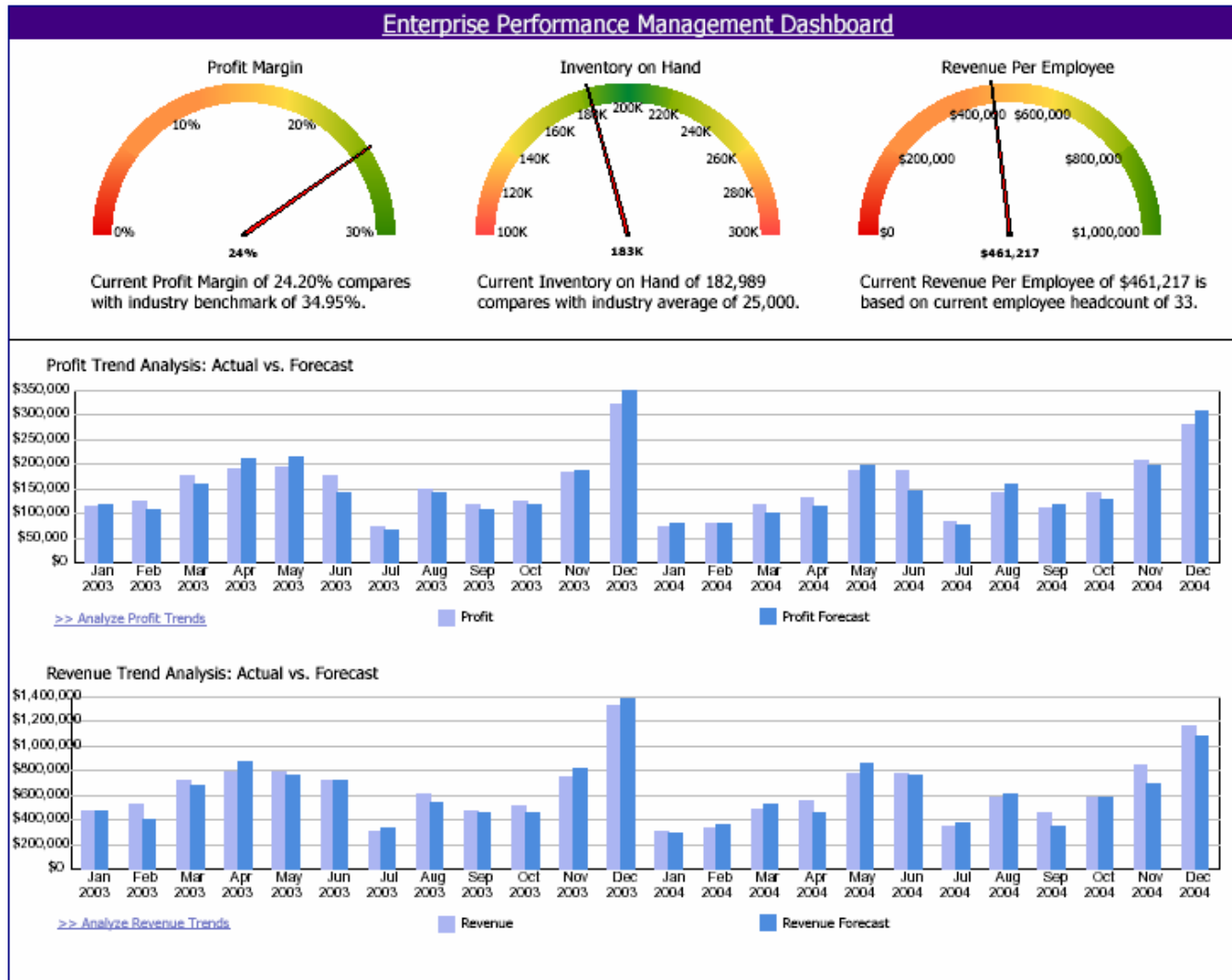
Scorecards:

Informes de gestión:

Department Operational Metrics For Week Ending 11/21/03
11/24/2003 8:57 AM

Status	Trend	Metric	Actual	Target	% Difference
●	▲	Revenue	$756,458	$875,000	-14%
■	▲	Operating Expense	$286,893	$200,000	43%
◆	—	Gross Profit Margin	41%	65%	-37%
●	▲	# Unique Prospective Buyer Visits	227	250	-9%
●	▲	Lead-To-Order Conversion Rate	15%	25%	-40%
◆	—	% Sales To Total Region Sales	30%	40%	-25%
■	▲	# Open Sales & Service Positions	5	3	67%
■	▲	Average Employee Turnover	34%	25%	36%
◆	▼	Average Employee Performance Score	3	5	-40%
●	▲	Sales Of Existing Models	$385,794	$400,000	-4%
●	▲	Sales Of New Models	$226,938	$395,000	-43%
●	—	Sales Of Pre-Owned Models	$143,727	$80,000	80%
●	▲	# New Customers	47	50	-6%
◆	▼	% Customers Returning For Service Within 6 Months	72%	90%	-20%
●	—	Average Customer Satisfaction Score	5	5	-3%
◆	▲	Regional Ad Campaign Expense	$750,000	$750,000	0%
●	—	Quality Level Associated With Brand	5	5	-1%
◆	▲	% Closed Deals With Incentives Applied	81%	50%	62%

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Navegación en Cascada:
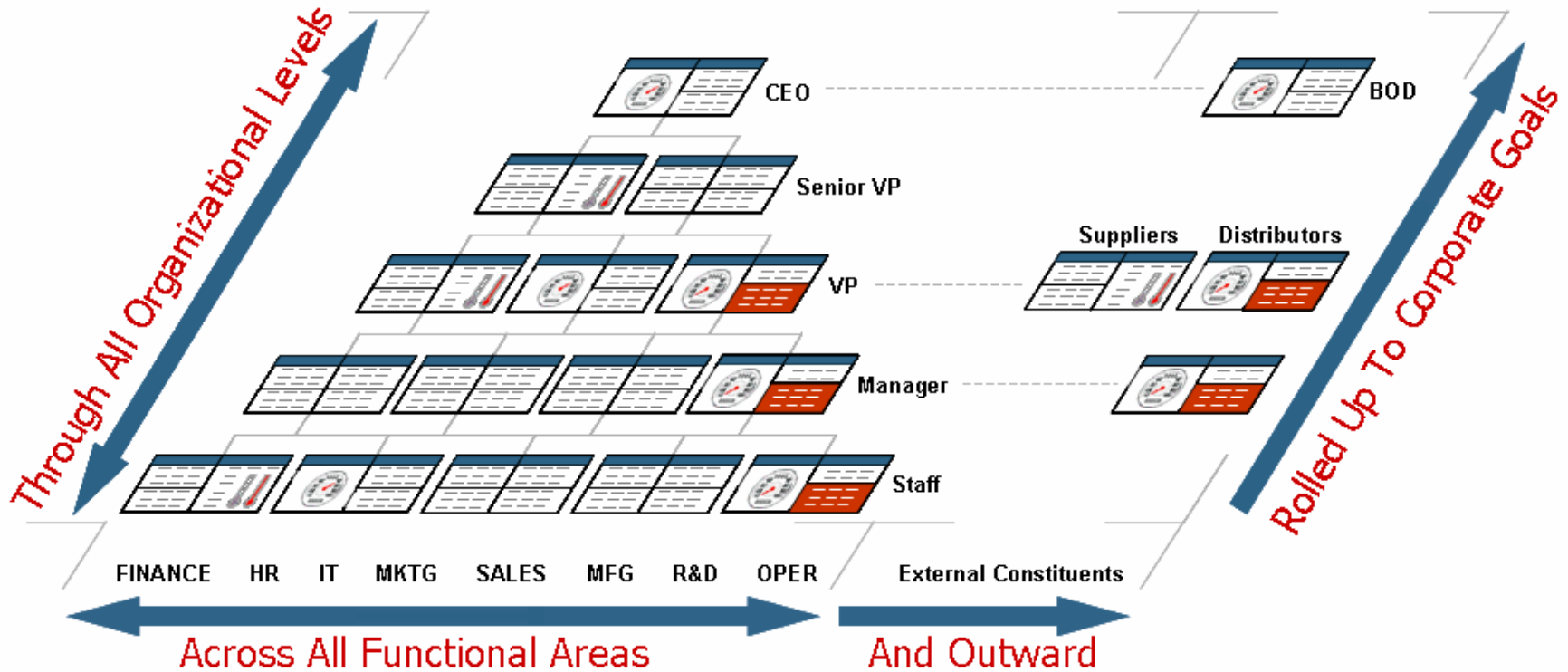
Portales Personalizados:
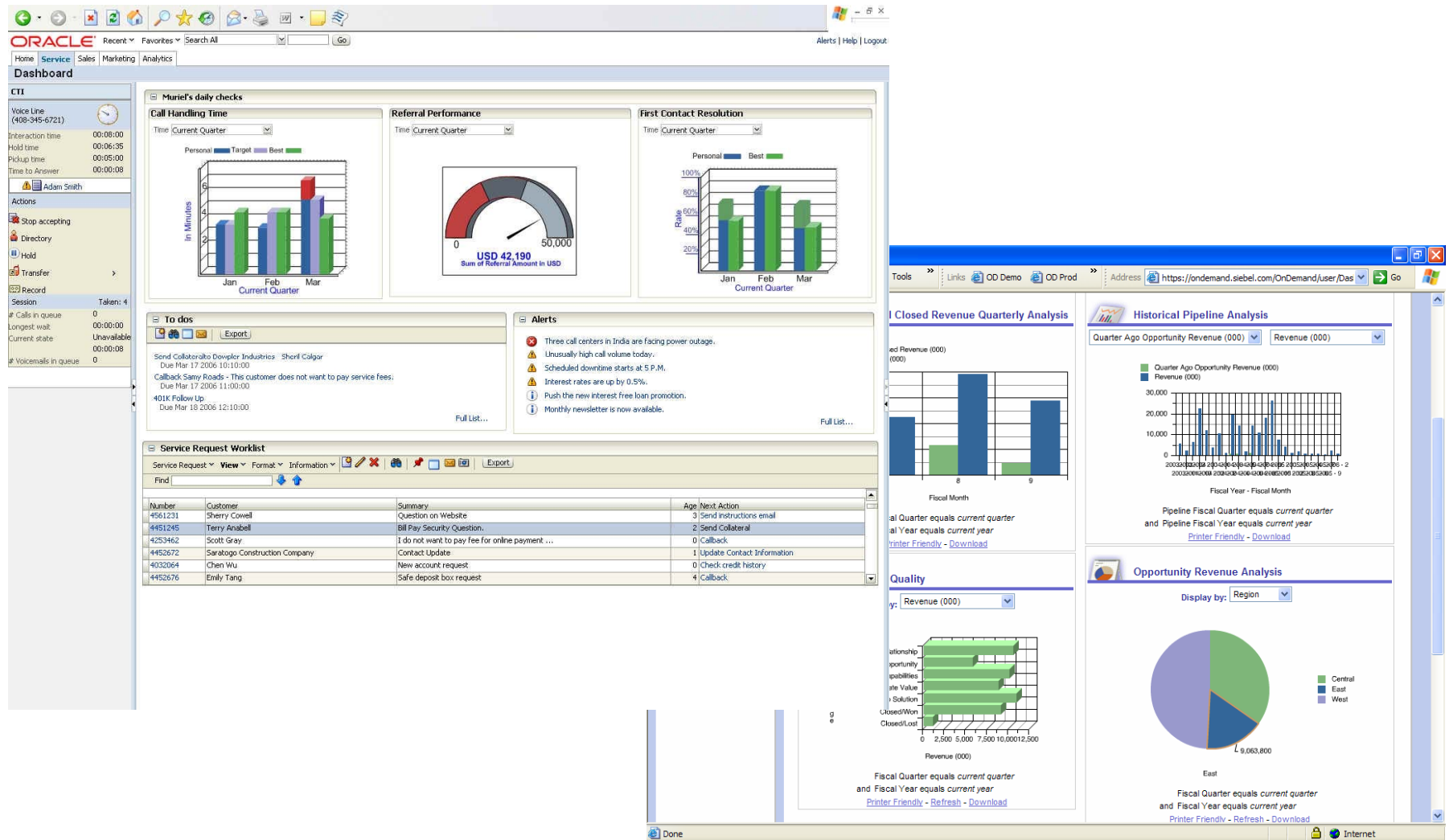
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Alertas y Automatización de Acciones:

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Ilustración Práctica:
Construyendo un BI Dashboard

Proyecto X – BI Dashboard
Precisar los Cambios Esperados

Situación Actual

- Varios sistemas de información y reportes redundantes para Operaciones, Finanzas, Clientes, BSC, Workflow, etc.
- Los informes e indicadores de gestión (KPIs) son generados manualmente utilizando diferentes plantillas off-line las cuales contienen datos redundantes e inconsistentes.
- Procesos inconsistentes a entre la sede central y las subsidiarias generan costos adicionales y hacen más difícil la comparación del rendimiento del negocio.
- Debido a los varios sistemas y diferentes fuentes de datos, los procesos locales usan métricas que son calculadas de forma distinta.
- Múltiples dueños para cada métrica tanto en la sede central como en las subsidiarias.
- No se toman decisiones globales a partir de una implementación de métricas y reportes funcionales que crucen todo el negocio.
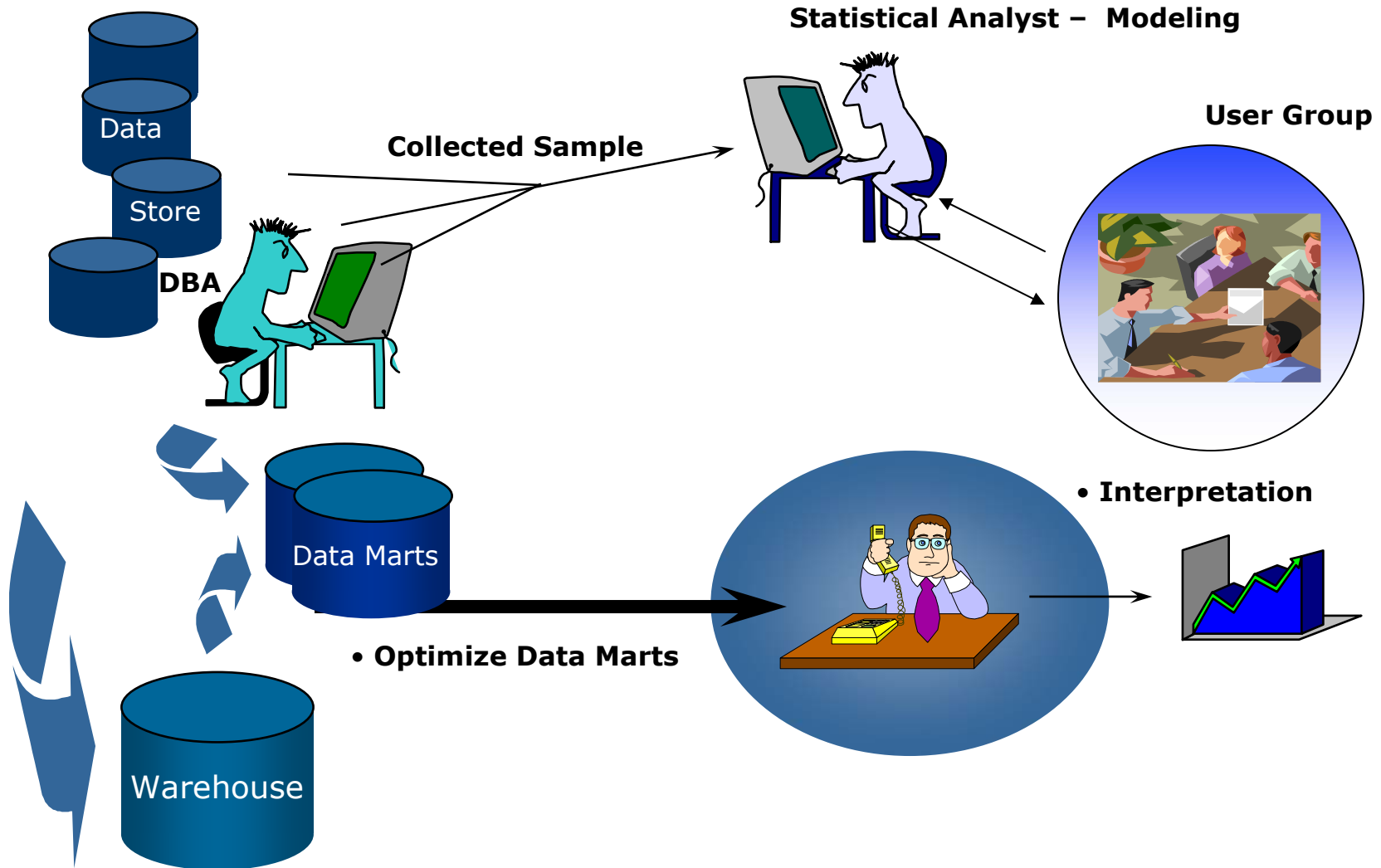
Situación Deseada – Cambios Claves

- Información integrada y centralizada vía un sistema ERP y un Data Warehouse.
- Los informes deben ser generados on-demand donde sea posible por los sistemas en lugar de esfuerzos manuales.
- Los procesos son estandarizados globales para gestionar los informes y KPIs, y permiten "una versión de la verdad", siendo comunes tanto en la sede central como en las subsidiarias.
- Definiciones estandarizadas para las métricas y KPIs con fuentes de datos y procesos de cálculo "limpios".
- Dueños únicos para cada métrica dentro de la sede central y cada subsidiaria.
- Un Centro de Excelencia que mantiene los Sistemas de Inteligencia de Negocios.

Impacto y Beneficios

- Reducción en los tiempos de espera y ciclos para preparar el material de resultados operativos incrementando el tiempo para el análisis.
- Clara propiedad de todas las métricas permiten monitorear los resultados por Cliente y por Oficina.
- Rápido despliegue de informes de gestión para soportar Segmentación de Mercado.
- Mejora la precisión de los datos por un despliegue estandar de los procesos y funcionalidad del ERP.
- Bajo TCO de los Sistemas de Inteligencia de Negocios.

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Statistical Analyst – Modeling

User Group

Data

Store

DBA

Collected Sample

Data Marts

• Interpretation

• Optimize Data Marts

Warehouse

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Proyecto X – BI Dashboard
Aplicar una Metodología

‣ Centrado en el Modelo versus Centrado en los Informes
  – Red flags: "We did not understand the specific requirements so we tried to implement / expose everything."; "We are just trying to replace an existing paper-based reporting system" → ***Instead, try to solve real business problems!***

‣ Requirimientos
  – Subject area, subject area, subject area
  – Fully functional prototype supports iterative requirements analysis / validation with end-users with different roles
  – Exit criteria: fully functional prototype (complete set of dimensions and measures, along with role-based dashboards with navigation/interactivity) validated by end-users

‣ Afinamiento de Rendimiento
  – Recommended for moderate data volumes
  – Mandatory for significant data volumes
  – Otherwise poor performance obscures a key value proposition of SA (interactivity, ad hoc analysis)

‣ Pruebas de esfuerzo
  – Automate data validation!
  – Test efficiency: model testing versus instance testing
  – Stable, open testing API for test automation (i.e. ODBC)
  – Audit scripts: To automatically validate the ETL job, generate audit scripts that validate data warehouse data against source data.

‣ Iteraciones
  – Deploy early and often -- Quick cycle projects (e.g. 90 day cycles)
  – Packaged Application Delivery supports multi-tiered development (e.g. center of excellence or development teams in multiple countries)

‣ Entrenamiento, Expectativas
  – Single tool versus multiple "suite" tools
    • Eliminates user confusion on which tool to use
    • Eliminates redundant training

‣ Producción / Operación
  – Centralized management without the burden of the "Report Bureau"
  – 100% thin client
  – Dashboard usability
  – Lower TCO
  – Large user deployments
  – Usage Tracking, Perfmon counters

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▸ Información Transaccional
  – Printing the actual records from the database
    • List of contacts; list of opportunities; cash receipt; ticket; routing list, etc
    • Uses detailed fields (e.g. order number, address, customer name)
    • Typically, single fact or single dimension (or very small number of dimensions)
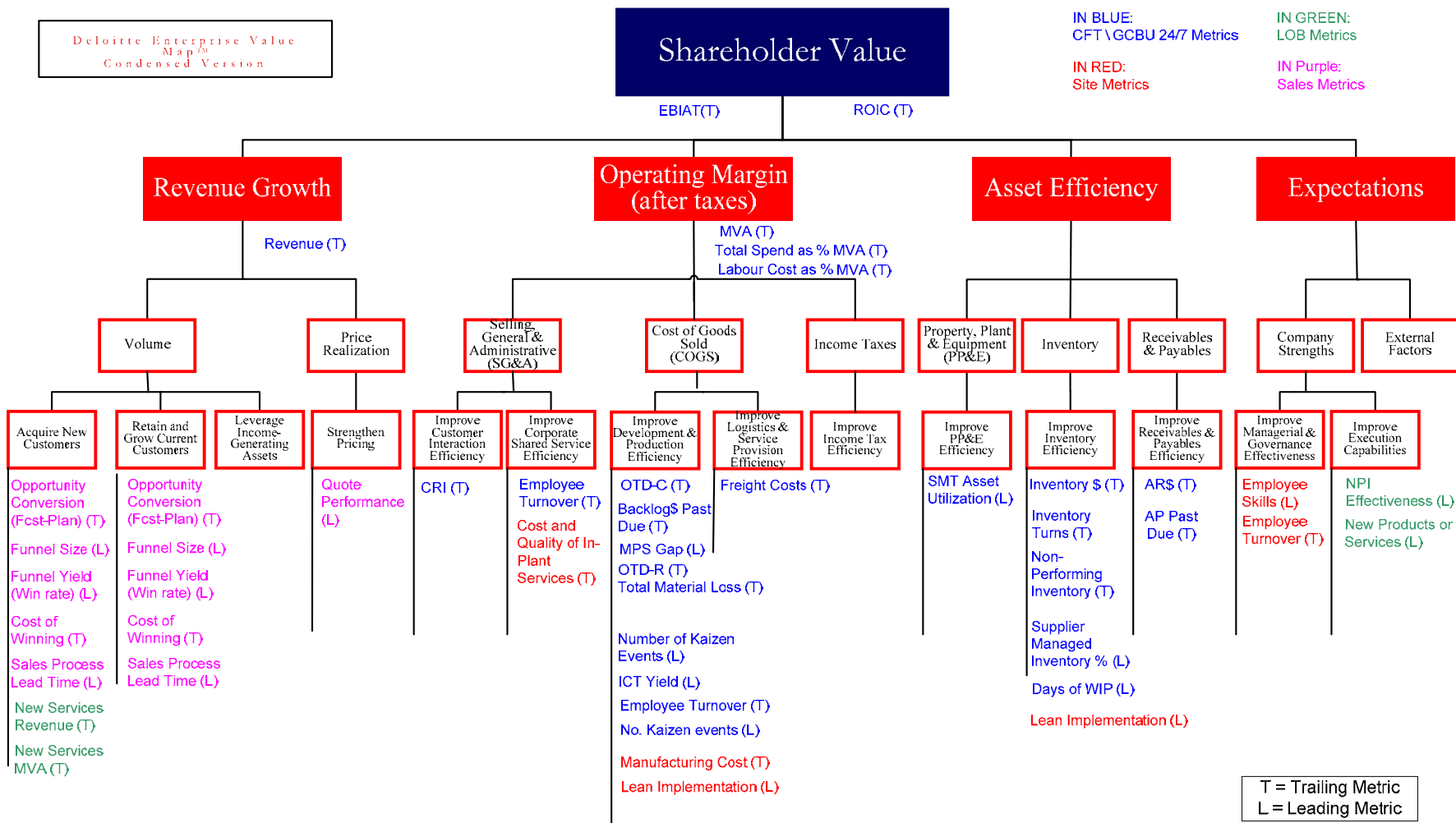   • No real need for dashboards

▸ Información Analítica
  – Summarization, slicing & dicing, interactive dashboards with drill down and navigation
  – By definition, no detailed fields as these large cardinality fields are not relevant and cause performance issues when included as part of an analytical query; measures on detailed fields are fine
  – To be clear, you can still analyze data at all levels of detail. e.g. in finance: "Many of the more difficult questions about enterprise performance can't be answered efficiently because of the separation between the GL and subledgers. By integrating the GL with the subledgers, all the summary and underlying data are in a single repository, thus providing all consumers of financial data access to transaction-level details.
  – Integrate Analytics with Transactional reporting or the Transactional data entry screens by using dashboard navigation / action links.

▸ Mala Práctica:
  – Combinar ambos informes juntos en una misma presentación o en un mismo catálogo: esto ocasiona pésimo tiempo de respuesta y catálogos de presentación no usados, para ambos!
  – Virtual Data Warehousing: eso no funciona si no cuentas con la tecnología apropiada

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Deloitte Enterprise Value Map℠
Condensed Version

Shareholder Value

EBIAT (T)   ROIC (T)

IN BLUE:
CFT \ GCBU 24/7 Metrics

IN RED:
Site Metrics

IN GREEN:
LOB Metrics

IN Purple:
Sales Metrics

Revenue Growth

Revenue (T)

Operating Margin (after taxes)

MVA (T)
Total Spend as % MVA (T)
Labour Cost as % MVA (T)

Asset Efficiency

Expectations

| Volume | Price Realization | Selling, General & Administrative (SG&A) | Cost of Goods Sold (COGS) | Income Taxes | Property, Plant & Equipment (PP&E) | Inventory | Receivables & Payables | Company Strengths | External Factors |

| Acquire New Customers | Retain and Grow Current Customers | Leverage Income-Generating Assets | Strengthen Pricing | Improve Customer Interaction Efficiency | Improve Corporate Shared Service Efficiency | Improve Development & Production Efficiency | Improve Logistics & Service Provision Efficiency | Improve Income Tax Efficiency | Improve PP&E Efficiency | Improve Inventory Efficiency | Improve Receivables & Payables Efficiency | Improve Managerial & Governance Effectiveness | Improve Execution Capabilities |

Acquire New Customers
Opportunity Conversion (Fcst-Plan) (T)
Funnel Size (L)
Funnel Yield (Win rate) (L)
Cost of Winning (T)
Sales Process Lead Time (L)
New Services Revenue (T)
New Services MVA (T)

Retain and Grow Current Customers
Opportunity Conversion (Fcst-Plan) (T)
Funnel Size (L)
Funnel Yield (Win rate) (L)
Cost of Winning (T)
Sales Process Lead Time (L)

Strengthen Pricing
Quote Performance (L)

Improve Customer Interaction Efficiency
CRI (T)

Improve Corporate Shared Service Efficiency
Employee Turnover (T)
Cost and Quality of In-Plant Services (T)

Improve Development & Production Efficiency
OTD-C (T)
Backlog$ Past Due (T)
MPS Gap (L)
OTD-R (T)
Total Material Loss (T)

Number of Kaizen Events (L)
ICT Yield (L)
Employee Turnover (T)
No. Kaizen events (L)

Manufacturing Cost (T)
Lean Implementation (L)

Improve Logistics & Service Provision Efficiency
Freight Costs (T)

Improve PP&E Efficiency
SMT Asset Utilization (L)

Improve Inventory Efficiency
Inventory $ (T)
Inventory Turns (T)
Non-Performing Inventory (T)
Supplier Managed Inventory % (L)
Days of WIP (L)
Lean Implementation (L)

Improve Receivables & Payables Efficiency
AR$ (T)
AP Past Due (T)

Improve Managerial & Governance Effectiveness
Employee Skills (L)
Employee Turnover (T)

Improve Execution Capabilities
NPI Effectiveness (L)
New Products or Services (L)

T = Trailing Metric
L = Leading Metric

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▸ Las dimensiones deben conducir a los usuarios

▸ Único calendario para la dimensión Tiempo:

– Lógicamente, sólo hay un concepto de calendario

– Usar diferentes medidas para capturar diferentes roles del tiempo / fechas de transacción

– Requiere estándares de nomenclatura consistentes en lo que miden y describen como columnas, por ejmplo: Monto Pagado, Monto Pendiente, Cantidad de Ordenes Abiertas, Cantidad de Ordenes Canceladas, etc.

  • Por defecto, se asigna el nombre físico de las columnas (como unidad de medida) permitiendo asignar alguna descripción como comentario en la capa de negocio. Reescribirlas en la capa de presentación.

– Mala Práctica: múltiples dimensiones de tiempo: ello destruye la usabilidad al ser típicamente dimensiones inconformes, en adición a incrementar la complejidad de la metadata (innecesariamente)

▸ Si se requiere Hora, debe ser una dimensión separada

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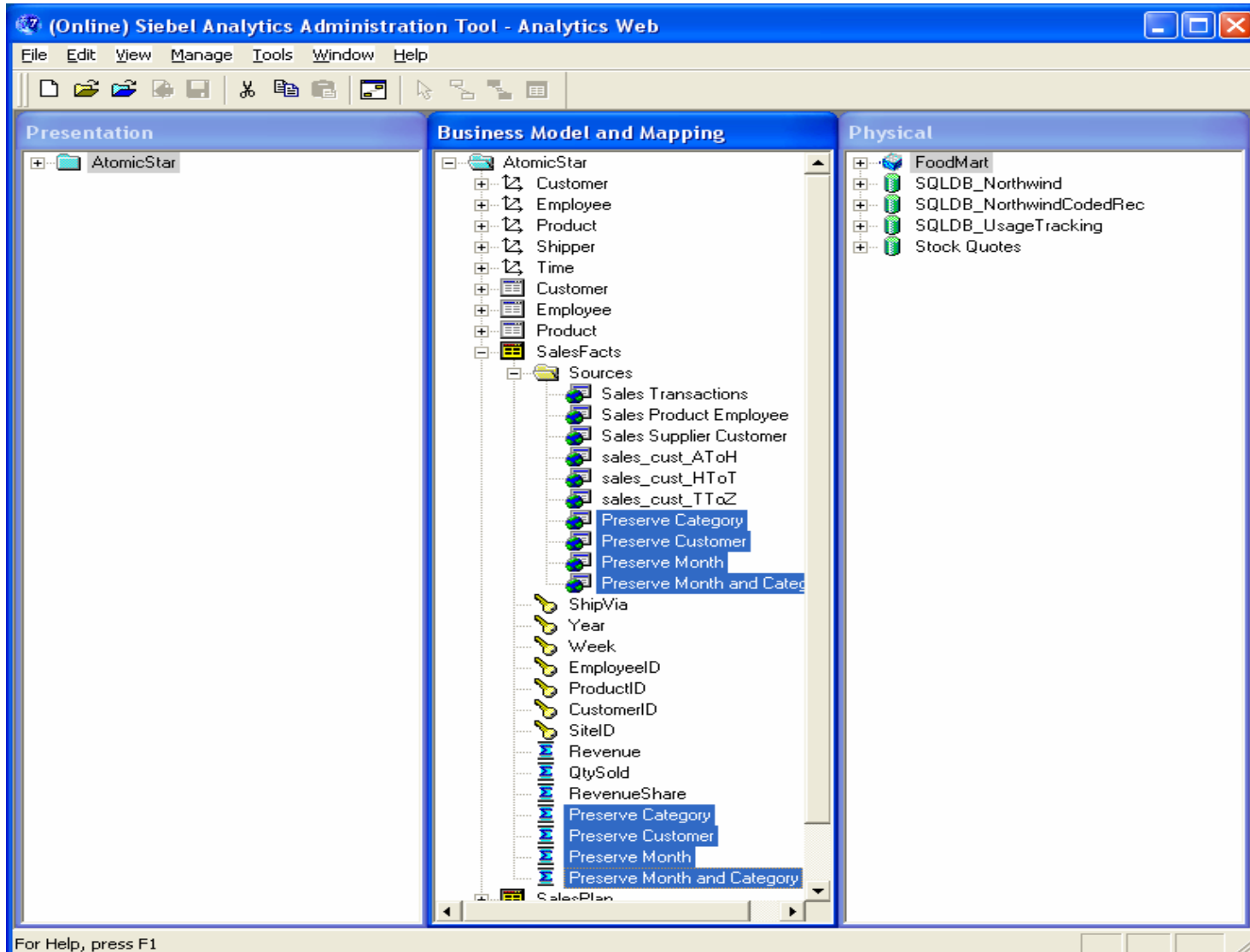
Proyecto X – BI Dashboard
Definir las Métricas y KPIs

Metric	Frequency	Leading / Trailing	Data Dimensions				
			Program	Site	Customer / GCBU	Market Segment	LOB
Revenue	Weekly	Trailing	Y	Y	Y	Y	Y
MVA	Weekly	Trailing	Y		Y		
Labour Cost as % MVA	Weekly	Trailing	Y		Y		
Total Spend as % MVA	Monthly	Trailing	Y		Y		
ROIC	Monthly	Trailing	Y		Y	Y	Y
EBIAT	Monthly	Trailing	Y		Y	Y	Y
Past Due Backlog$	Weekly	Trailing	Y		Y		
Employee Turnover	Monthly	Trailing		Y			
Customer Satisfaction (CRI)	Quarterly	Trailing			Y		
AR	Weekly	Trailing	Y		Y		

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▶ Precisar Tipo de Usuario, Contenido, Frecuencia:

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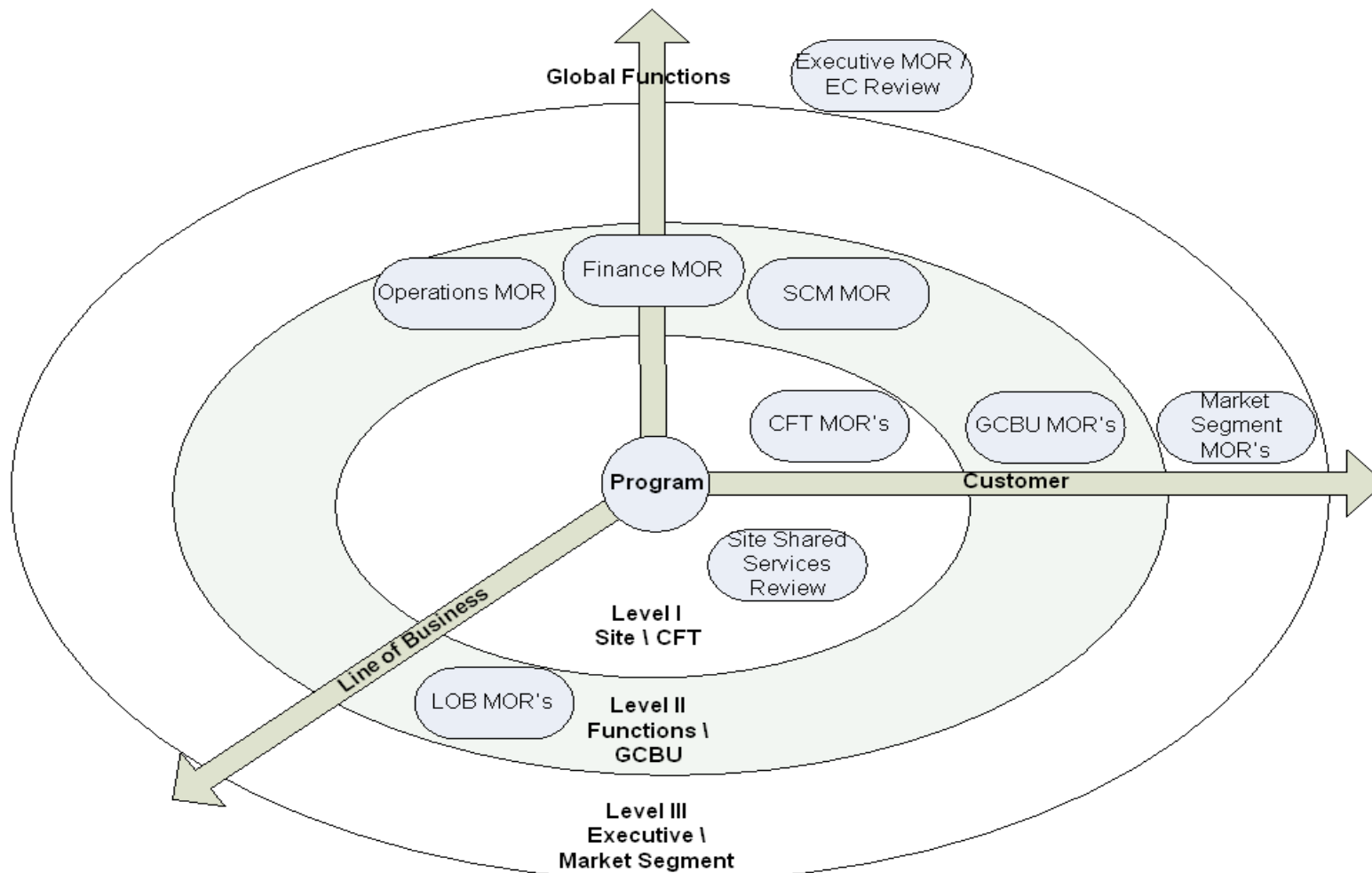
Proyecto X – BI Dashboard
Armar los Catálogos de Informes

No.	Report Name	Description	Process Supported	Report Users
M1	Profitability Statements (ROIC,EBIAT)	CFT's report revenue and inventory position against plan and forecast	CFT MOR, GCBU MOR, Corporate MOR's	CFT,GCBU, Market Segment, LOB, Corporate Finance
M2	CFT Operations Metrics Report	CFT's report against key operating metrics which get rolled up to corporate	CFT MOR, Corporate Operations MOR, Market Segment MOR, LOB MOR	CFT, Corporate Operations, Market Segments, LOB's
M3	Site Key Performance Indicator Report	Site GM metric review	Site MOR's	Site General Management
M4	SCM Global Metrics - Global Asset Management	Global Asset Management metrics (Person…)	Corporate SCM MOR	Corporate SCM
M5	SCM Global Metrics - Logistics & Trade Compliance	Logistics and Trade Compliance (Person…)	Corporate SCM MOR	Corporate SCM
M6	SCM Global Metrics - Order Fulfillment	Order Fulfillment Metrics (Person…)	Corporate SCM MOR	Corporate SCM
M7	SCM Global Metrics - Commodity Management	Commodity Management Metrics (Person…)	Corporate SCM MOR	Corporate SCM
M8	SCM Global Metrics - Invoice and Cost	Invoice and cost Metrics (Person…)	Corporate SCM MOR	Corporate SCM
M9	SCM Global Metrics - Execution	Execution Metrics (Person…)	Corporate SCM MOR	Corporate SCM

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Description
Finance metrics to be presented to board

Audience
Corporate Finance, Board of directors

Data Elements

Metric included in report:
- Revenue
- ROIC
  EBIAT
- Inventory
- Working Capital
- AR past due
- Functional Spend
- Cash cycle days
- EPS

Priority for Project X

- High priority with Khalix being sunset

Frequency

Daily	Weekly	Monthly	Quarterly	Annually
◯	◯	◯	✓	◯

Process Supported
Quarterly Board Review

Data Dimensions

Program / Customer ✓

Market Segment ✓

Site ◯

Line of Business ◯

End Market Segment ◯

Legal Entity ◯

Client X ✓

Data Comparisons

Actuals	Plan	Forecast
✓	✓	◯

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▸ Separar la presentación de los Catálogos para Informes Transaccionales de los Analíticos:

- Transactional reporting
  - Typically single dimension or single fact; adding multiple dimensions decreases usability for transactional reporting users
  - Must have detailed fields
- Analytical presentation catalogs
  - Try to stay to the rule of 7, i.e. 7 top level folders and 7 columns per folders
  - Minimize detailed columns; instead, use navigation to access details
  - Focus on adding measures and cross fact calculations: this is where the value of analytics is achieved
  - Consistent ordering and naming, e.g. dimension folders at the top and measure folders at the bottom; measure folders are named specifically so that end-users can distinguish between dimensions and measures\
  - Degenerate fact folder (detailed dimension) can be a sub-folder of a measures folder

▸ **Mala práctica**

- Muchos fólderes y muchas columnas por fólder.
- Columnas de detalle (como dirección, número de orden) en otras dimensiones suelen degenerar el propósito del fólder.
- Las medidas son simples y un catálogo de presentación determinado debe contener medidas desde una única fact table.

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▸ Debe resolver un problema de negocio!
  – The descriptions and reports on each page should all be related to that business problem.
  – Interactivity: global filters, drilling, and navigation support that business problem
  – Role-based

▸ Asegurar consistencia, visualmente atractivo en su presentación
  – Proper default formatting; conditional highlighting
  – Consistent naming conventions – clarity and brevity

▸ Reducir el desorden entre tableros de mando e informes
  – Minimize scrolling
  – Interactivity reduces the need to place many reports on the same page (as per competitive products)

▸ Usar Múltiples Catálogos de Presentación (de lo Simple a lo Complejo) como para reales usuarios Ad Hoc

▸ Minimizar el uso de Record Sets
  – Search and destroy all superfluous or excluded query columns (particularly in pivot tables and chart views).
  – A few minutes here will often result in 10x performance improvements!

▸ Entender la diferencia entre un pase de subtotales y dos pases de subtotales!

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Proyecto X – BI Dashboard
Entregar un Dashboard simple, interactivo, comprometido con el usuario

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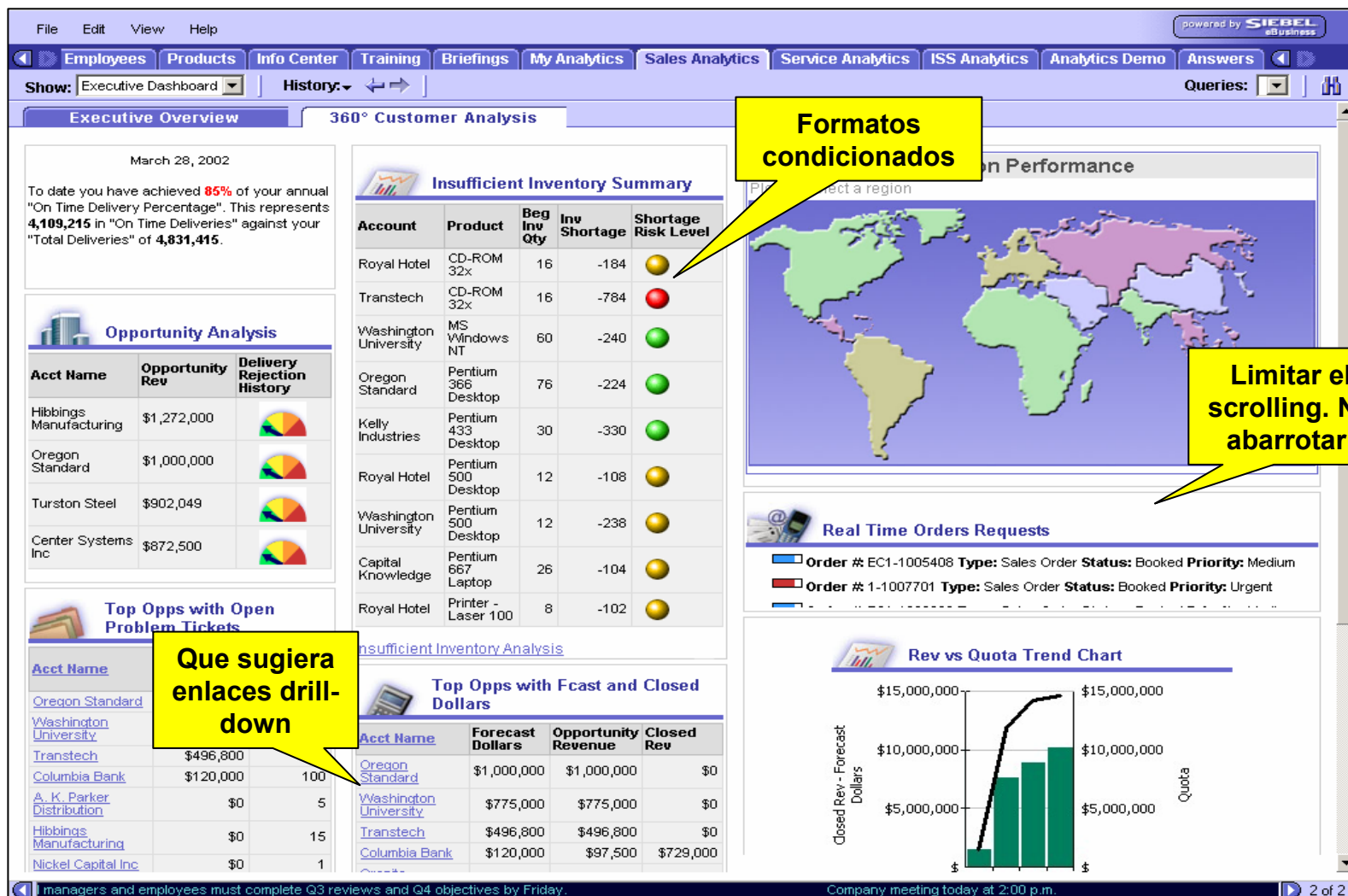
▸ Considerar proactividad en la entrega de información para adoptar rápidamente su uso.

▸ Respeto a la visibilidad de los datos y reglas de seguridad.

▸ Eventos / Alertas Transaccionales

– Single record, e.g. new opportunity with value greater than X, critical SR from platinum-level customer

– Reliable, one-time, time sensitive delivery

– End-user driven subscription

▸ Eventos / Alertas Analíticos

– Multi-record with aggregation

– Possibly multiple fact sources and/or chained

– Supports complex filtering / calculations

▸ Contenedores que conducen los datos.

▸ Subscripción por grupos.

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Víctor Hugo Arce D.

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muchas
gracias

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