From Data Warehouse Models to Analytical Reports

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Agenda

• Introduction to Data Warehouse Architecture

• IBM Industry Models

• IBM Data Warehouse and Business Analytics software portfolio

• 5 steps to build a Cognos Report from an Industry Model

• Use Case: Telekom Srbije
Introduction to Data Warehouse Architecture
BI Maturity Model

The World of Reporting
- Reporting
- Spreadsheets
- Manual effort
- Disjointed solutions

Information Access
- Improved information access & delivery
- Departmental & functional data marts
- Subject area data warehouses

Enterprise Information
- Information Integration
- Enterprise Warehouse and Integrated Reporting Strategy
- Single version of truth
- Enhanced delivery
- Consistent, high quality information

Performance Management
- Integrated Business Performance Management
- Self-sufficiency
- Enterprise alignment, accountability
- Advanced Analytics

The Intelligent, Agile Enterprise
- Information on Demand
- Information to the “masses” (internal & external)
- Actionable, focused, relevant delivery
- Embedded analytics

Information As a Service
- Integrated MDM
- Unstructured data integration
- Advanced Math Research easily leveraged
- SOA

Effectiveness

Value

Efficiency

Time
Aligning DW and BI to strategic business goals

- Vision
- Goals
- Objectives
- Improvements
- Opportunities
- Business Initiatives
- Business Questions
- Key Performance Indicators
- Logical Data Elements
  (e.g. Enterprise Data Model)
- Physical Data Elements

- Refined/Driven By
- Executed with
- Results Measured By
- Translated into
- Requires
- Defines
Key Industry Initiatives to Leverage the DW

**Banking**
- Profitability
- Relationship marketing
- Risk management
- Asset and liability management
- Compliance

**Financial Markets**
- Risk management
- Asset and liability management
- Compliance

**Health Plan**
- Claims analysis
- Medical management
- Provider and network
- Sales, marketing & membership
- Financials
- Disease Management

**Insurance**
- Customer centricity
- Claims analysis
- Intermediary performance
- Compliance
- Risk management

**Retail**
- Customer centricity
- Merchandising management
- Store operations and product management
- Supply chain management
- Compliance
- Inventory management

**Telco**
- Churn management
- Relationship management and segmentation
- Sales and marketing
- Service quality and product lifecycle
- Usage profile

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DW - Possible Approaches

Two-tier data warehouse
- "Corporate data warehousing"
- DataMarts with a "broad scope of interest"

One-tier data warehouse
- DataMarts and simple departmental solutions

"Virtual" data warehouse
Main Components of a DW Solution

- **Application Architecture**
  (Reports, Queries, Dashboards, ...)

- **Data Architecture**
  (Data Models, DB)

- **Data Integration Architecture**
  (Data capture/movement, Cleansing, Transformations ..)

- **Hardware and Software Architecture**
  (Servers, OS, Network, Databases, App. Servers, BI Tools, ETL Tools ...)

- **Governance**
  (Metadata, Performance Mgt, ..)
The Data Warehousing: Design Considerations

• Start with the right skills and organization in place
  • DW requires discipline to implement
• Plan for consolidation view of the data (aka “Single source of truth”)
• Structured and unstructured data
  • Should enable to search all data
  • Uncover all insights about customers, products, organization, etc
• Plan the solution to deliver real time information
  • At least have it as a roadmap when architecting the solution
  • In the future you might need to be more dynamic to support business decisions
• Predictive analytical capability
  • Proactive and smarter decisions
• Re-use of assets (data, process, etc) as a standard
The Data Warehouse: Design Considerations

• Seamless Scalability
  • Linear scalability
  • Allow growth at the right time with minimum impacts and interruptions

• Modular growth with predictable cost
  • Predictable costs based on business growth
  • Predictable performance for a predictable cost

• Choose a solution that provides low adoption risk
  • Proven solution

• Reliability and integrity
  • Ensure business continuity
  • Support mission critical applications
  • Information integrity
The Data Warehouse: Design Considerations

- Governance
  - Resources consumption and utilization
  - Performance management
  - Workload Management
    - Guaranty SLAs and availability of resources due to business priorities
  - Traceability (data, process)

- Regulatory compliance
  - Comply with current government and industry regulations and standards, especially regarding the integrity and availability of information

- Security, privacy and data protection
  - Ensure the security and privacy of data, information, systems and people with the right policies, methods, tools and overall governance
Data Integration Architecture

Data-Driven Reference Architecture

Core/Source

Data Acquisition

- Core Applications
- Front Office Applications
- Customer Data
- Market Data
- Products
- Other Source

Data Integration

- Data Standardization
- Data Harmonization
- Data Enrichment
- Data Reconciliation
- Data Transformation

Batch Events

Enterprise Data Store

- Real-Time Data
- Enterprise Data

Data Transformation & Calculation

- Calculations
- Formatting
- Aggregations
- Analytical Engine

Transformation

Data Marts

- LOB ...
- LOB ...
- LOB ...

Analysis & Reporting

- Analytical CRM
- Profitability
- Risk Mgt
- Compliance
- Predictive Modeling

Master Data Management - Data Quality Management - MetaData Management

Governance (Process, Resources, Assets)

Infrastructure
Data Integration and Data Latency

• Data Latency: One of the most important drivers that affect design of the entire DW

• According to Dick Hackathorn, data latency has three components
  • Data preparation latency: The time it takes to get the data ready for analysis
  • Analysis latency: The time it takes to get the results of an analytic operation
  • Decision latency: The time it takes for the person receiving the results to understand what action must be taken.

Data Architecture Design Considerations

• Includes Enterprise Data Warehouse and Data Marts
• Needs to promote a consolidated view of the business - Avoid data redundancy
  • Consolidation of all business process - “Single version of the truth” - “Golden Copy of Data”
  • Guarantee single source of information to be used in the decision process by different LOBs
• Optimization Layers
  • Allow optimization to support specific business need
• Data Syncronization
  • Allow batch and real-time updates of data structures
  • Allow concurrency of process (read and write due to continuous data ingestion)

Data-Driven Reference Architecture
Enterprise Data Warehouse – Building Block Process

Data Sources

Data Acquisition & Staging

Enterprise Data Warehouse

EDW

Data Integration

Business Access

Business Opportunities & Priorities ??
Leverage Data Loads - Load Once and Use by Many
Enterprise Data Warehouse – Building Block Process

Leverage Data Loads - Load Once and Use by Many
Enterprise Data Warehouse – Building Block Process

Data Sources

Data Acquisition & Staging

Enterprise Data Warehouse

Data Integration

Business Access

Marketing

Finance

Risk

Leverage Data Loads - Load Once and Use by Many
Enterprise Data Warehouse – Building Block Process

Leverage Data Loads - Load Once and Use by Many
Enterprise Data Warehouse – Building Block Process

Enterprise Data Warehouse

- Build process directed by business opportunities, impact and priorities
- Data consistency promoting consistency in the decision process
- Data usage leveraged by entire organization
- Efficient data movement process
- Support multiple business perspectives
- Data mart consolidation derived by multiple business opportunities directing roadmap

Data Integration

Leverage Data Loads - Load Once and Use by Many
SW and HW Architecture for Data Warehousing

- Data Integration Servers
- Data Repository Servers
  - DW + DM, MDM
- Analytical Servers
  - Cognos, MicroStrategy, SAS, etc
- Application Servers
  - Calculation engines (Fermat, ILOG, etc)
- Communication networks
  - Switches, etc
- Backup, Restore, Archiving

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Transactional Systems - MPP - High Speed Data Bus - MPP - Dynamic DW - Analytical & Calculation Engines - Corp. Analysis & Reporting
HW and SW Architecture for DW – Considerations

- Typical multiple components solution
  - Components of the solution should be configured/defined to avoid bottlenecks
  - Performance and functional aspects of the solution should be defined based on integrated tests

- Scalability and Parallel processing
  - Process large volume of data and transactions
  - Support execution of concurrent process
  - Linear scalability

- Modular growth
  - Vertical and horizontal growth to support new business demand

- Continuity of business operations
  - Maintain business operations in the event of an outage—with processes and infrastructures that are responsive, highly available and scalable
  - Reliability to ensure business continuity and resilience with information integrity
  - High availability to support mission critical applications
  - Process recovery
    - Backup and Restore due to processing failures/issues
  - Disaster and Recover
    - Recover system due to unexpected major issues into the infrastructure
Data Warehouse Governance

• Metadata
  • Technical metadata
    • Support documentation of processes and assets of the solution
    • Allow impact analysis of the environment - Critical for maintenance and improvements
  • Business metadata
    • Define business terms, calculations and formulas used in the decision process

• Resource Management
  • Performance management
    • Align I/T computing resources with business requirements
  • Workload management
    • Assign resources to high priority LOBs, prevent low priority work from taking resources
      • ETL, Queries, etc
    • Gerenciamento e monitoração de recursos e performance (ETL, Queries, etc.)

• Capacity planning
  • Provides historical information about utilization and growth of the environment

• Centers of competency
  • End users and IT
  • Define policy for utilization of the DW

• Security, privacy and data protection
  • Access control, Audit
Smart Enterprise Information Management Architecture

Data Warehouse Design

Information Lifecycle Management & Administration
Metadata Management & Metadata Repository

Enterprise Data Integration

Master Data Management

Enterprise Data Warehouse

Core/Sources

Cards
Treasury
Loans
Deposits
External
Other Sources

Business Applications

Customers
Risk
Products
Data Analysis & Reporting
Optimization
Predictive Modelling
Mgt Reporting

Operational Consumers

ESB

OLAP

Business Views

Real-time Data

Staging Area

Data Warehouse

Archiving Area

Real-time Data

SIF

MDM Repository

Business Services

MPP & High Speed

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What can go Wrong?

1. Data Outhouse - Built too fast; full of dirty, incomplete, out-of-date data; no-one will use it.

2. Data Basement - A DW with poor access and/or performance. Not used much.

3. Data Mausoleum - Like the basement, but built with the finest hardware/software.

4. Data Shack - Will soon collapse due to insufficient funding and management commitment.

5. Data Cottage - Individual department's own personal DW's. (Outside the company's full DW architecture, hence not a Data Mart). Allowed to carry on, you end up with a cute data village.

6. Data Jailhouse - Built to such a high spec, with such tight controls, that no-one can get access to the data, even though IT will swear it's there.

7. Data Tenement - The result of a chaos- or ostrich-based implementation strategy, where some outsider is trusted to build the DW for you. It ends up satisfying no particular business requirements but you do get to say you have one.
IBM Industry Models
IBM Industry Data Models

Providing the Industry-specific Content to IBM InfoSphere Landscape

Provides key Industry-specific designs to a number of InfoSphere components

- Conceptual Model
- Requirements Model
- DW Design Model
- Business Vocabulary

DATA WAREHOUSE

SOURCE SYSTEMS, DATA MARTS, SILOS

OLAP

COMMON METADATA

DATA INTEGRATION / DATA QUALITY / ETL /
The Business Conceptual Model enables the gathering of data requirements without misunderstandings.

Are *Contract* and *Account* two different data concepts or are they aliases?

*We need to define a consolidated, definitive and single reference of truth* AND *We need to do it in a highly structured and auditable manner.*
Why use business models?

So why don’t we just jump straight into development?

Imagine trying to co-ordinate and build a data mart / process / service without a plan?

- Who has the complete picture of the business requirements?
- How do you perform impact and gap analysis?
- How do you identify overlap and reduce resource and material requirements?
- How can you validate your deliverables?
- How do you document the overall requirements?
- How do you capture industry requirements beyond your own scope?
- How will you extend it years from now when the requirements change?

- A business model records the details of the business in a comprehensive, integrated and thoroughly documented form
- It acts as communication mechanism between business analysts and technical specialists
- It drives the development of IT specifications, Reporting & Analytical requirements
- The Industry Models are designed to allowed phased and incremental projects
Business Value of the Industry Models

Why don’t we just build our own model from scratch?

- IM brings together 20 years of experience in different industries
- Predefined and extensive solutions encompassing over 5000 business data items
- Integrated model solutions from business classification, through business process, data warehousing and service oriented architecture.
- Built in support for business challenges such as Basel II, IFRS/IAS, US GAAP, SOX, AML, KYC, KPI, MISMO, MiFID, etc.
- Well documented and tested data models
- Business consultants experienced in specific industry and project implementation
- Pre-empts data requirements often not discovered until late in the project
- Releases to include ongoing data requirements of industry directives and new initiatives

What is the end deliverable?

- Depending on the Business Requirement and in an Industry Model data warehouse context the end deliverable is typically a Data Warehouse / Mart / Process / Service

CONTENT + STRUCTURE
Key Capabilities of the IBM Industry Model Portfolio

- Enables business users to easily scope and customize their own requirements
- Facilitates step-by-step business focused development and roll-out
- Delivers regularly updated business, technical and regulatory content
- Creates open technology platform for any application or integration solution
- Manages definitions and standards in complex IT environments
Two Categories of DWH Models

- **Data Models**
  - Business content blueprint for a Data Warehouse and Data Mart design
  - Provides single analytical view of enterprise data
  - Banking, Insurance, Financial Markets, Retail, Telco, Health Plans

- **Process and Service Models**
  - Industry-specific business process and services designs
  - Used for business process optimization and core systems renewal
  - Banking, Insurance, Financial markets
Data Models

Banking
(Data, Process and Services Models)
- Profitability, Relationship Marketing
- Risk Management
- Asset and Liability Mgmt
- Compliance
- Business Process re-engineering

Insurance
(Data, Process and Services Models)
- Customer centricity
- Claims, Policy, Underwriting
- Intermediary Performance
- Compliance
- Risk Management
- Business Process Re-engineering

Financial Markets
(Data, Process and Services Models)
- Risk Management
- Asset and Liability Mgmt
- Compliance
- KYC and Account Opening
- Middle/Back Office Transformation

Health Plan
(Health Plan Data Warehouse)
- Claims
- Medical Management
- Provider and Network
- Sales, Marketing and Membership
- Financials

Retail
(Retail Data Warehouse)
- Customer centricity
- Merchandising Management
- Store Operations & Product Mgmt
- Supply Chain Management
- Compliance

Telco
(Telecommunications Data Warehouse)
- Churn Management
- Relationship Mgmt and Segmentation
- Sales and Marketing
- Service Quality and Product Lifecycle
- Usage Profile
# Process and Service Models

## Banking (IFW Process Models)
- KYC / Account Opening
- Lending, Syndicated Lending
- Mortgages
- Savings, Investments & Deposits
- Wealth Management
- Sales & Relationship Management
- Product & Marketing Management
- Payments
- Regulatory and Compliance
- Human Resource Administration

## Financial Markets (Financial Markets Process Models)
- KYC / Account Opening
- Lending, Syndicated Lending
- Mortgages
- Savings, Investments & Deposits
- Wealth Management
- Sales & Relationship Management
- Product & Marketing Management
- Payments
- Regulatory and Compliance
- Human Resource Administration
- Trade Processing
- Best Execution / MiFID

## Insurance (IAA Process Models)
- Enterprise Resource Management
- Channel Management and CRM
- Communications Management
- Marketing & Customer Acquisition
- Product Portfolio management
- Claim management
- Policy Administration
- Underwriting
- Financial transaction
- Reinsurance Management
- Investment Management
- Provider Management
Industry Data Models Landscape

- Set of interlinked models covering Data, Process and Services areas
- Focuses on Industry-specific business issues
- Derived from a common Conceptual Model
- Enables/accelerates design-time activities

Data Models

- Conceptual Model
- Requirements Model

Process Models

Service Models

- Requirements Model

Data Integration

- Data Models
- Process Models
- Service Models

Source Systems

- Legacy App
- ERP
- Customer
- General Ledger

Data Integration

- DW DB
- MDM DB

Design Time

- DW DB
- MDM DB

Run Time

- Finance
- Risk Management
- Customer Reporting
- Customer Onboarding
- Account Opening

Informational Analytics

Operational Analytics

Operational Activities
Industry Models – Conceptual Model

- Provides a structured data dictionary that defines the business terms and phrases used within a given industry.
- Also provides any inter-relationships that exist between those terms and phrases.
- Provides the foundation for all down-stream technical models.
- Consists of approx 3,000-5,000 fully defined business definitions (varies by Industry).
Industry Models – Requirements Models

- Provides pre-defined groupings of requirements.
- Typically focused around industry-specific issues.
- Designed to provide accelerated scoping of the subset of the models content needed to address a specific business issue.
- Consists of approx 50-90 business requirements groupings (groupings vary by Industry)

**Conceptual Model**

- **Requirements Model**

**Data Models**

**Process Models**

**Service Models**

### Examples

**Relationship Marketing**
- Customer Interaction Analysis
- Customer Satisfaction Profile
- Behavioral Customer Profile
- Marketing Scorecard

**Profitability**
- Transaction Analysis
- Activity-Based Costing Analysis
- Revenue Product Analysis
- Investment Analysis

**Risk**
- Internal Rate Risk Analysis
- Credit Risk Profile
- Credit Risk Mitigation Assessment
- Operational Risk Assessment

**Asset & Liability Management**
- Internally Risk Sensitivity
- Credit Risk
t
- Capital Allocation Analysis
- Capital Lending Decision
- Capital Loss Provisions
- Funds Industry Analysis

**Compliance**
- Credit Risk
- Compliance Risk
- Regulatory Compliance
- Risk Management Framework
- Risk Statement by Function
- Risk Statement by Process
- Risk Statement by Nature
- Risk Statement by Industry
- Risk Statement by Metric
- Risk Statement by Category
- Risk Statement by Source
# BDW – Analytical Requirements

## Relationship Marketing
- Campaign Analysis
- Cross Sell Analysis
- Customer Attrition Analysis
- Customer Behaviour
- Customer Complaints Analysis
- Customer Delinquency Analysis
- Customer Experience Analysis
- Customer Interaction Analysis
- Customer Investment Profile
- Customer Loyalty
- Individual Customer Profile
- Lead Analysis
- Market Analysis
- Wallet Share Analysis

## Profitability
- Activity Based Costing Analysis
- Business Procedure Performance Measurement
- Channel Profitability
- Customer Lifetime Value Analysis
- Customer Profitability
- Insurance Product Analysis
- Investment Arrangement Analysis
- Location Profitability
- Organization Unit Profitability
- Performance Measurement
- Product Analysis
- Product Profitability
- Profitability Analysis
- Transaction Profitability Analysis

## Risk Management
- Authority Profiling
- Collections Analysis
- Credit Risk Analysis
- Credit Risk Assessment
- Credit Risk Mitigation Assessment
- Customer Credit Risk Profile
- Debt Restructure Analysis
- Insurance Risk Profile
- Interest Rate Risk Analysis
- Involved Party Exposure
- Liquidity Risk Analysis
- Location Exposure
- Non Performing Loan Analysis
- Operational Risk Assessment
- Operational Risk Loss Analysis
- Outstandings Analysis
- Portfolio Credit Exposure
- Securitization Analysis
- Security Analysis
- Value At Risk Analysis

## Asset & Liability Management
- Capital Allocation Analysis
- Capital Procurement
- Credit Loss Allowance Analysis
- Equity Position Exposure
- Financial Management Accounting
- Financial Market Transaction Analysis
- Funds Maturity Analysis
- High Value Outward Payment
- Income Analysis
- Interest Rate Sensitivity Analysis
- Inward Payment Rate Tolerance
- Inward Payment User Activity
- Inward Payments
- Inward Payments Volume
- Liquidity Analysis
- Net Interest Margin Variance
- Outward Payments
- Positions Analysis
- Short Term Funding Management
- Structured Finance Analysis
- VWAP Analysis

## Regulatory Compliance
- Best Execution Analysis
- Continuous Auction Analysis
- ECB Reporting
- Financial Capital Adequacy Analysis
- Foreign Financial Account Analysis
- Transaction Activity Analysis
- Transaction Reporting Analysis
- Periodic Auction Analysis
- Quarterly Transaction Reporting Analysis
- Quote Driven Analysis
- Sarbanes Oxley Act Analysis (SOX)
- Sarbanes Oxley Act Balance Sheet Analysis
- Sarbanes Oxley Act Cash Flow Analysis
- Sarbanes Oxley Act Statement Of Income Analysis
- Sarbanes Oxley Act Stmt Chg Shrdr Eqty Anlys
- Structure Of Regulatory Capital
- Suspicious Activity Analysis
Industry Models – Data Warehouse Models

- **Conceptual Model**: Describes the logical data structures needed for the design of a central warehouse.
- **Requirements Model**: Designed to provide generic, flexible blueprint for cross-LOB data storage.
- **Service Models**: Incorporates structures to maximize the efficiency of long-term storage of historical facts and associated relationships.
- **Data Models**: Typically consists of 1,000+ logical entities (or 300-400 table definitions).
Star Schema Basics

- Composed Of:
  - Fact tables
  - Dimension Tables
Industry Models – Process Models

- Conceptual Model
- Requirements Model
- Data Models
- Process Models
- Service Models

- Describes at an analysis level the specific business process flows.
- Provide a pre-defined comprehensive starting point for Business Process re-engineering efforts and SOA implementations.
- Used by Financial Services organizations to accelerate the detailed definition of business processes.
- Over 500 workflows across Financial Services
Industry Models – Service Models

- Provides generic and flexible view of the components and services needed by a Financial Services institution.
- Consists of both analysis and design level pre-defined UML structures, designed to accelerate component or services development.
- Tight linkage to the Process Models.
- Over 350 business Model Objects supporting 400 use cases (for Banking).
IBM Data Warehouse and Business Analytics software portfolio
In Order to Realize New Opportunities, You Need to Think Beyond Traditional Sources of Data

**Transactional and Application Data**
- Volume
- Structured
- Throughput

**Machine Data**
- Velocity
- Semi-structured
- Ingestion

**Social Data**
- Variety
- Highly unstructured
- Veracity

**Enterprise Content**
- Variety
- Highly unstructured
- Volume
Putting it all together … end-to-end big data solution
5 steps to build a Cognos Report from an Industry Model
Step 1 – Select key measures and dimensions

- Simple drag and drop into a project scope

Time Period dimension used as an example during the steps
Step 2 – Create a child project from step 1

- Only selected measures, dimensions, dimension members and related logical design model objects will be created in the child project.
Step 3 – Create a physical data model

- Once the logical design model in step 2 is transformed into a physical model the database can be created using DDL.
Step 4 – Use the data model as a Cognos Data Source

The Database created and populated in step 3 is the input Data Source in Cognos Framework Manager.

Populated Database  see Appendix I

Cognos Framework Manager

Time Period dimension used as an example during the steps
Step 5 – Format the Cognos Report

- Report headers are created from measures and dimensions

Time Period dimension used as an example during the steps
End Result - Cognos Report

- Measures, dimensions and dimension members have linkage to previous steps e.g. Time Period Dimension

Time Period dimension used as an example during the steps
Use Case: Telekom Srbije
Situacija

- > 5 miliona pretplatnika fiksne
- > 5.5 miliona pretplatnika mobilne
- > Cdr-ova dnevna
- Preko 15 izvornih sistema
- Broj potencijalnih korisnika (x1000?)
Izazovi i problemi

Podaci
- Nepovezani sistemi – silosi podataka
- Kvalitet podataka

Biznis
- Više verzija istine
- Nepostojanje unificiranog rečnika na nivou kompanije
- IT je neophodan posrednik za većinu informacija

IT
- Ad-hoc zahtevi IT-u "dana za juče"
- Nepostojanje prave metodologije i modela

Izveštajni sistem (MIS)
- Tehnološki zastareli alati za izveštavanje (Oracle Forms)
- Nedostaju (metapodaci, GUI, podrška za lako održavanje u kreiranju koda)
- Deo upita se izvršava na transakcionim bazama
Ciljevi projekta

DWH
- Centralizovano mesto prikupljanja podataka
- Standardizovan model podataka za Telco
- Kategorizacije i klasifikacije u DWH
- Automatizovana integracija sa izvornim sistemima – ETL proces
- Osnov za izveštavanje i naprednu analitu
- Definisana kroz strategiju razvoja “centralno skladište podataka sa standardizovanim modelom po e-TOM standardu”

BI
- Alati za vizuelnu reprezentaciju
- Različiti analitički nivoi/kanali distribucije informacija korisnicima
- Lako pravljenje novih izveštaja od strane korisnika
- Konsolidacija različitih izvora podataka u istom izveštaju
Izbor rešenja

- Standardizovani model
- Iskustvo u telekomunikacionoj industriji
- Predložena arhitektura
- Performantnost, fleksibilnost, lakoća održavanja rešenja
- Poznavanje source sistema kod domaćeg operatera
- Troškovi implementacije
- Primer istiskivanja konkurencije
Tehnologija – IBM InfoSphere i Cognos

InfoSphere Information Server
InfoSphere Warehouse
IBM Industry Models
Cognos BI
IBM InfoSphere Warehouse (ISW)
IBM Telco DWH model (TDWH)

Predefinisan model za Telco po TM forum SID standardu

Akumulirana znanja i “best practice”

Ubrzava analizu i dizajn DWH-a

IBM TDWH Model

Konceptualni biznis model

Logički / Fizički Model podataka

Auditorijum iz biznisa

IT Auditorijum
IBM TDWH komponente

Telecom Services Data Model (TSDM) Classification model for defining business meaning across all models and databases

Telecom Data Warehouse Model (TDWM) Logical E-R Model for designing central data warehouse

Telecom Business Solution Templates (TBSTs) Logical Measure/Dimension Models for defining user information requirements
Arhitektura Telco DWH-a
Faze DWH projekta

Završena I faza
– pretplatnici, fakteure, servisi i rejirani saobraćaj mobilne i fiksne telefonije (14 meseci)

Realizacija II faze
ERP, Trouble ticketing, Call centar, Performance Management, operativni CRM (9 meseci)
Benefiti implementacije DWH rešenja

Centralizovano skladište podataka po Telko standardima za poslovno izveštavanje

Podizanje kvaliteta i obogaćivanje integrisanih podataka

Konzistentnost podataka

Osnov za BI, segmentacije, kampanje, analize mreže, regulatorno izveštavanje...

Jedna verzija istine
BI rezultati: KPI po regionima
BI rezultati: Pretplatnici plan-realizacija
BI rezultati: Struktura ugovornih obaveza

Total Active Subscribers by Remaining Contract Obligation - Monthly

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Summary: 418,439

Broj Aktivnih Ugovora sa Ugovornom Obavezom

Preostalo Vreme Trajanja Ugovora:
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13 - 18
- 19 - 24
- Preko 24

Ukupan Broj Aktivnih Ugovora
BI rezultati: Saobraćaj plan-realizacija
Benefiti implementacije BI rešenja

- Vizuelna prezentacija centralizovanih podataka
- Različiti kanali distribucije informacija korisnicima
- Unapredjeno poslovno odlučivanje
- KPIs za menadžment; pivot i query analize za napredne korisnike (analitičare)
- Personalizovano prezentovanje podataka (self portal)
Questions ???
Thank You