

# Southern California Edison Unleashes the Power of SAP HANA

Ron Grabyan, Manager Business Intelligence Services, Southern California Edison  
Meyyappan Meyyappan, Principal Consultant, Infosys, Ltd.  
Ranjeet Panicker, Practice Manager, SAP America

May 15, 2012



# Agenda

## SAP HANA Appliance Software

- What Is It?
- SAP HANA Strategy

## The Southern California Edison SAP HANA Story

- Business Drivers
- Business Intelligence Journey
- SAP HANA Program
  - Pilot Plan
  - Pilot Results
  - Production Implementation
- Technical Highlights
- Total Cost of Ownership
- SAP HANA – *The Game Changer*



Decision maker obtaining business intelligence



SAP HANA

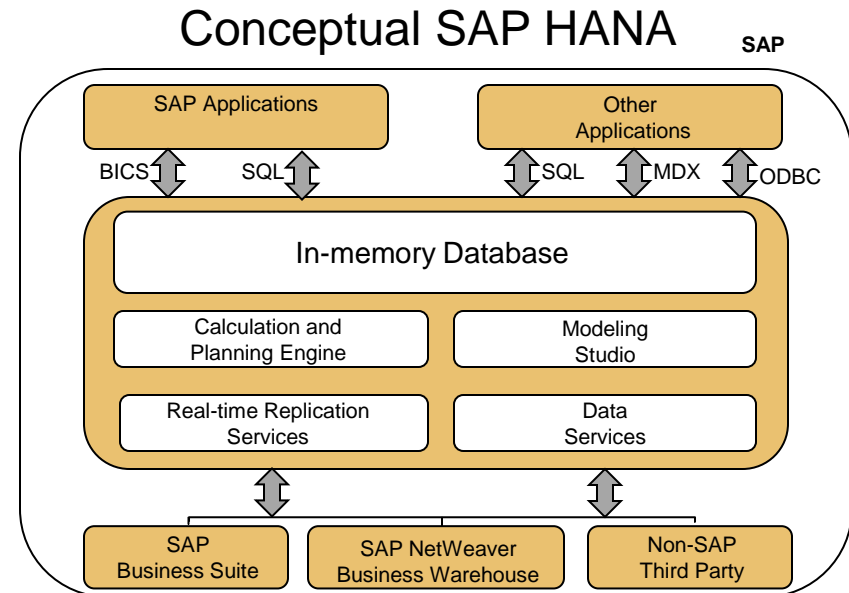


Data in enterprise business applications

# SAP HANA – *What Is It?*

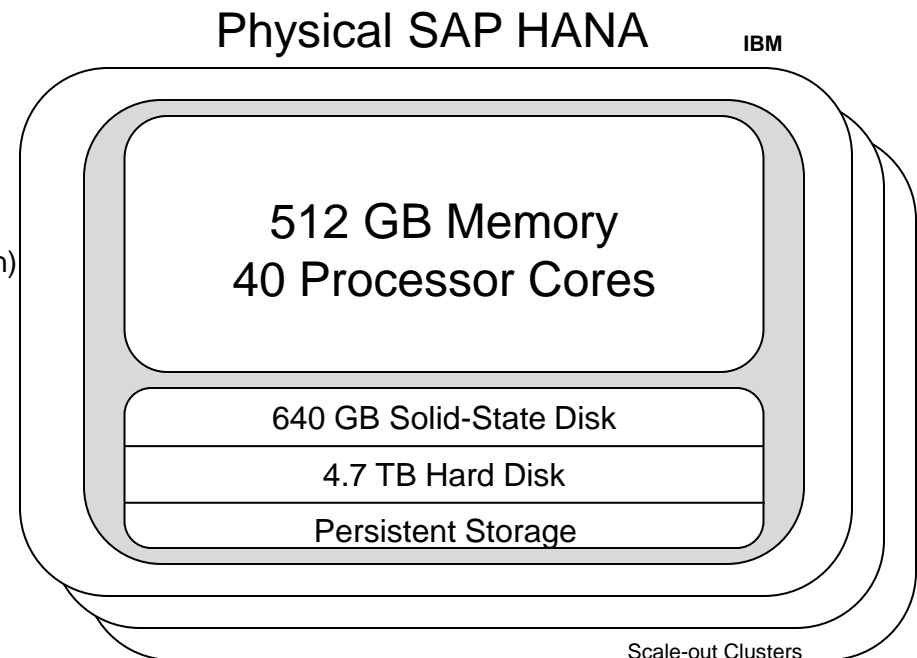
## Conceptual SAP HANA

- Data modeling and data management
- Real-time data replication
- SAP Data Services software for ETL
- Analyze information at high speeds
- Create flexible analytical models
- Foundation for new category of applications

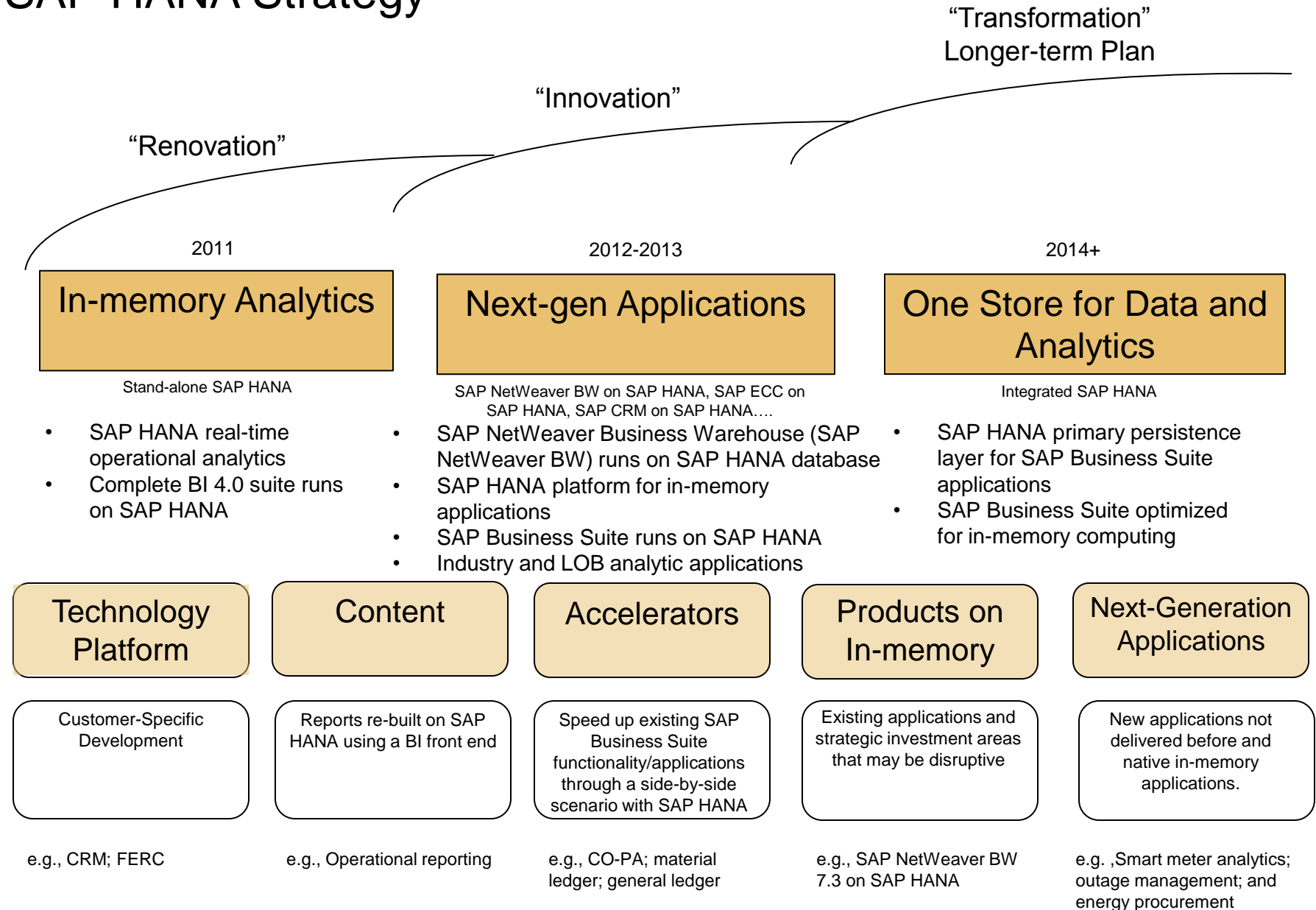


## Physical SAP HANA

- Large memory footprint (1m faster than disk)
- Multi-core CPUs (computational power)
- Row and column store (column = fast aggregation)
- Compression (5x+, 1 TB = 200 GB)
- Non-materialized views (flexible modeling, no data duplication)
- Multi-core direct memory data loading (fast data loads)
- Partitioning (analyze large data sets; complex computations)



# SAP HANA Strategy



# Southern California Edison Business Drivers

## Next-Generation Analytics

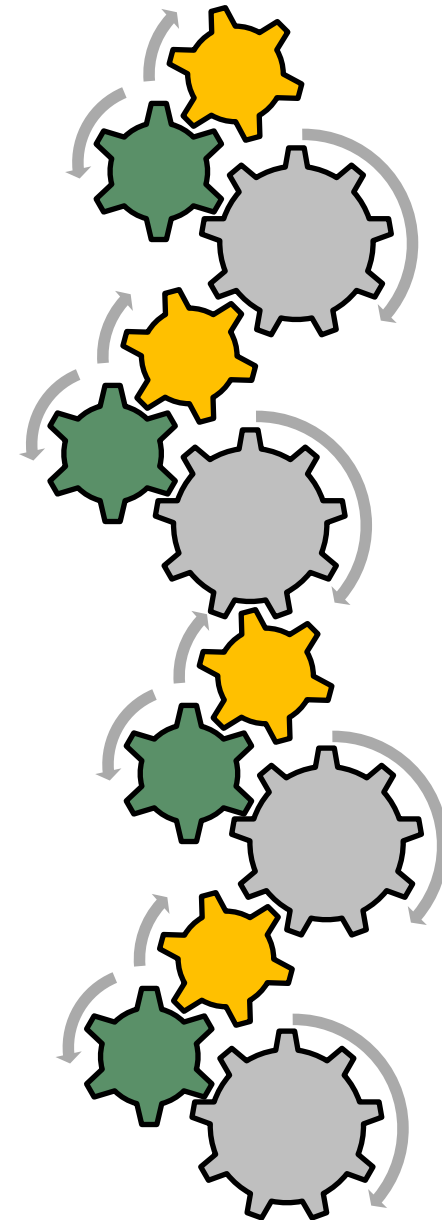
Stand-alone SAP HANA

- Faster analytics
- Modeling flexibility
- Near real-time data replication
- Calculation engine and built-in functions
- Big Data footprint
- New applications – potential examples:
  - Smart meter analytics
  - Power outage management
  - Power procurement
  - Predictive analytics

## Operational Improvement

SAP NetWeaver BW running on SAP HANA database

- Faster reporting
- Faster data loading
- Lower TCO
- Reduced maintenance costs
- Reduced development costs



# The Southern California Edison Business Intelligence Journey

Operational Improvement ( <i>SAP NetWeaver BW Running on SAP HANA</i> )				Analytics ( <i>New Capabilities</i> )	
SAP NetWeaver BW 2007 (1)	SAP NetWeaver BW - BWA 2009 (2)	SAP NetWeaver BW - BWA 2011 (3)	SAP NetWeaver BW Running on SAP HANA 2012 (4)	Stand-alone SAP HANA 2012 (5)	Integrated SAP HANA 2014+
Legacy DB Without BWA or SAP software	Legacy DB - BWA With SAP BusinessObjects BI SP2	Legacy DB - BWA With SAP BusinessObjects BI SP4	SAP HANA With SAP BusinessObjects BI 4.0 FP3	Calc Engines	SAP ECC, SACRM, SAP NetWeaver BW, and Stand-alone Integration
<u>Baseline</u>	<u>Faster Report Speed</u>	<u>Faster Report Speed</u>	<u>Legacy DB repl with SAP HANA</u>	<u>SAP HANA Stand-alone Database</u>	<u>SAP HANA Stand-alone Database</u>
<ul style="list-style-type: none"> <li>No SAP NetWeaver BW Accelerator</li> <li>No SAP BusinessObjects BI</li> </ul>	<ul style="list-style-type: none"> <li>SAP NetWeaver BW Accelerator 2.5x faster reporting</li> <li>Early version of SAP BusinessObjects BI not stable</li> </ul>	<ul style="list-style-type: none"> <li>SAP BusinessObjects BI SP4 very stable</li> <li>Reports are faster: Avg (20%) CRM(7x)</li> </ul>	<ul style="list-style-type: none"> <li>Reports are faster 5.0 times</li> <li>Delta Data Loads are much faster (3.2x)</li> </ul>	<ul style="list-style-type: none"> <li>Optimized calculation engines with parallel processing</li> <li><i>Radical Improvement</i></li> </ul>	<ul style="list-style-type: none"> <li>SAP HANA environments virtually or physically merge</li> </ul>
<ul style="list-style-type: none"> <li>Reports:                             <ul style="list-style-type: none"> <li>Avg 90 sec</li> <li>CRM 400 sec</li> <li>Data Loads 15 hrs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Reports:                             <ul style="list-style-type: none"> <li>Avg 40 sec</li> <li>CRM 161 sec</li> <li>Data Loads 15 hrs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Reports:                             <ul style="list-style-type: none"> <li>Avg 32 sec</li> <li>CRM 23 sec</li> <li>Data Loads 15 hrs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Reports:                             <ul style="list-style-type: none"> <li>Avg 6.4 sec</li> <li>CRM 4.6 sec</li> <li>Data Loads 4.6 hrs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Analytics:                             <ul style="list-style-type: none"> <li>Telecom CRM 55:1</li> <li>Smart Meter Analytics 40:1</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>More agile</li> <li>Seamless</li> <li>Less costly development</li> </ul>
Based on Pilot Results					

Stage	Reports (%)	Data (%)
1	100	100
2	48	100
3	40	100
4	22	28
5	10	18

Projected

Performance Improvements

- Reports
- Data

# SAP HANA at SCE – Pilot

Task Name	W1 1/9/2012	W2 1/16/2012	W3 1/23/2012	W4 1/30/2012	W5 2/6/2012	W6 2/13/2012	W7 2/20/2012	W8 2/27/2012	W9 3/5/2012	W10 3/12/2012	W11 3/19/2012	W12 3/26/2012	W13 4/2/2012	W14 4/9/2012	W15 4/16/2012	W16 4/23/2012	W17 4/30/2012
SAP HANA Pilot Program																	
Project Management																	
Pilot Planning																	
Production Planning																	
System Setup																	
Hardware																	
Software																	
Data Migration																	
SAP NetWeaver BW Running on SAP HANA																	
SAP HANA Stand-alone																	
SAP NetWeaver BW Running on SAP HANA Enhancement																	
SAP NetWeaver BW Running on SAP HANA Optimization																	
Data Modeling																	
Design																	
Build																	
Migrate and Validate																	
Security Setup																	
SAP NetWeaver BW Running on SAP HANA																	
SAP HANA Stand-alone																	
Report Development & Test																	
SAP NetWeaver BW Running on SAP HANA																	
SAP HANA Stand-alone																	
Explorer Testing																	
SAS Validation																	
SLT Validation																	
Backup Restore																	

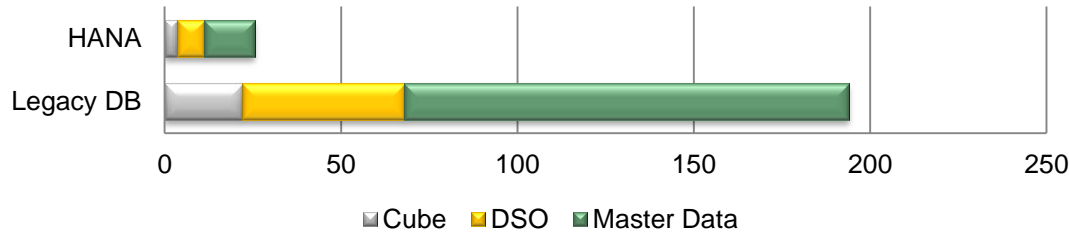
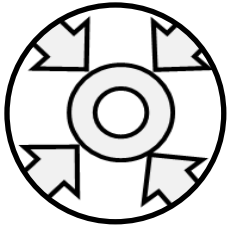
## Validate:

- Compression
- Data loading speed
- Report response time
- Back-up and restore
- Security

# Pilot Results

Comparing SAP NetWeaver BW Running on SAP HANA vs. SAP NetWeaver BW Running on Legacy Database with SAP NetWeaver BW Accelerator

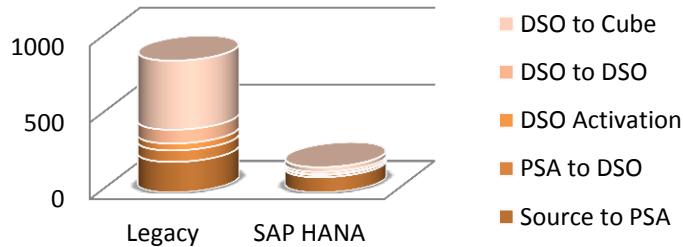
## Data Compression (column store)



**7.5 x**

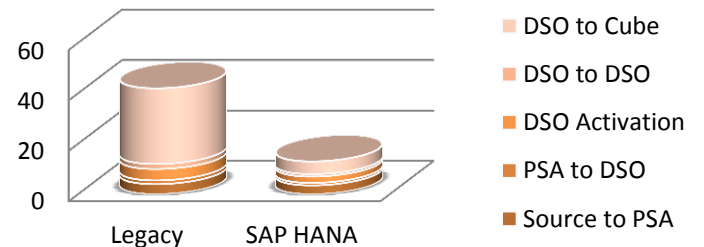
Projected for Production = 5.7 x

## Data Loading - Full



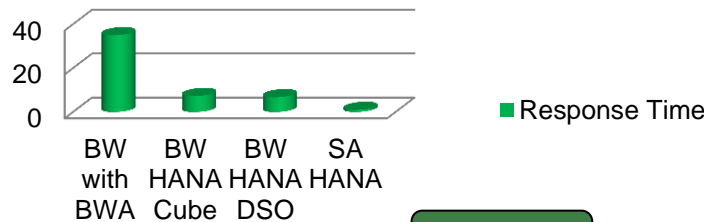
**5.2 x**

## Data Loading - Delta



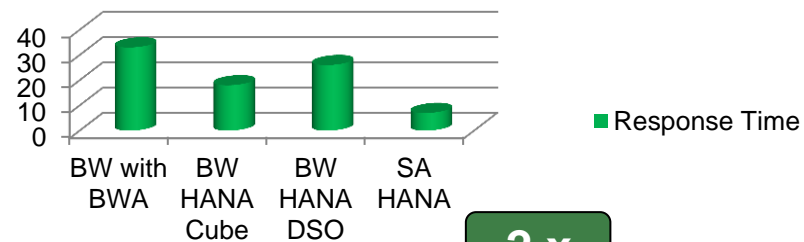
**3.2 x**

## Response Time (Simple)



**5 x**

## Response Time (Complex)



**2 x**



# SAP HANA at SCE – Production

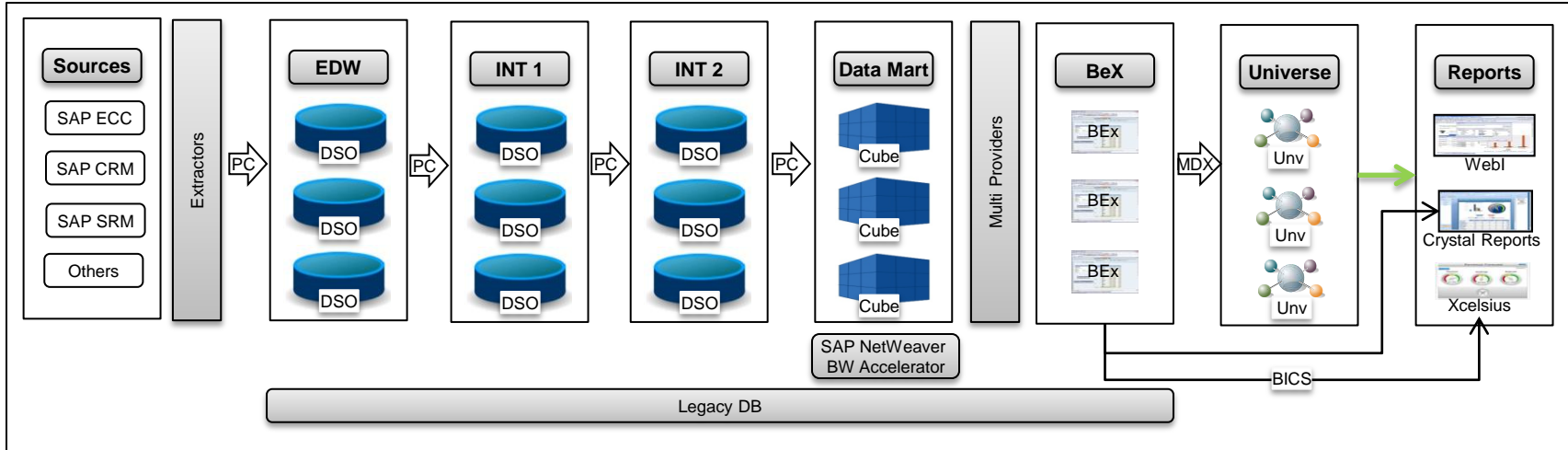
	W1	W3	W5	W7	W9	W11	W13	W15	W17	W19	W21	W23	W25	W27	W29	W31	W33
Phase	5/1/2012	5/15/2012	5/29/2012	6/12/2012	6/26/2012	7/10/2012	7/24/2012	8/7/2012	8/21/2012	9/4/2012	9/18/2012	10/2/2012	10/16/2012	10/30/2012	11/13/2012	11/27/2012	12/11/2012
Planning	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow											
Project Management	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Pre-Trial	Yellow	Yellow	Yellow														
Development/ Unit Test		Grey	Grey	Green	Green	Green											
Reg Testing Cycle 1			Grey	Grey	Grey	Yellow	Yellow	Yellow	Yellow								
Reg Testing Cycle 2					Grey	Grey	Grey	Green	Green	Green	Green						
User Acceptance											Green	Green	Green				
Performance Testing					Grey	Grey	Grey	Yellow	Yellow	Yellow	Yellow	Yellow					
Production Cutover														Green			
Post Production															Yellow	Yellow	Yellow
Stabilization															Green	Green	Green

## Goals:

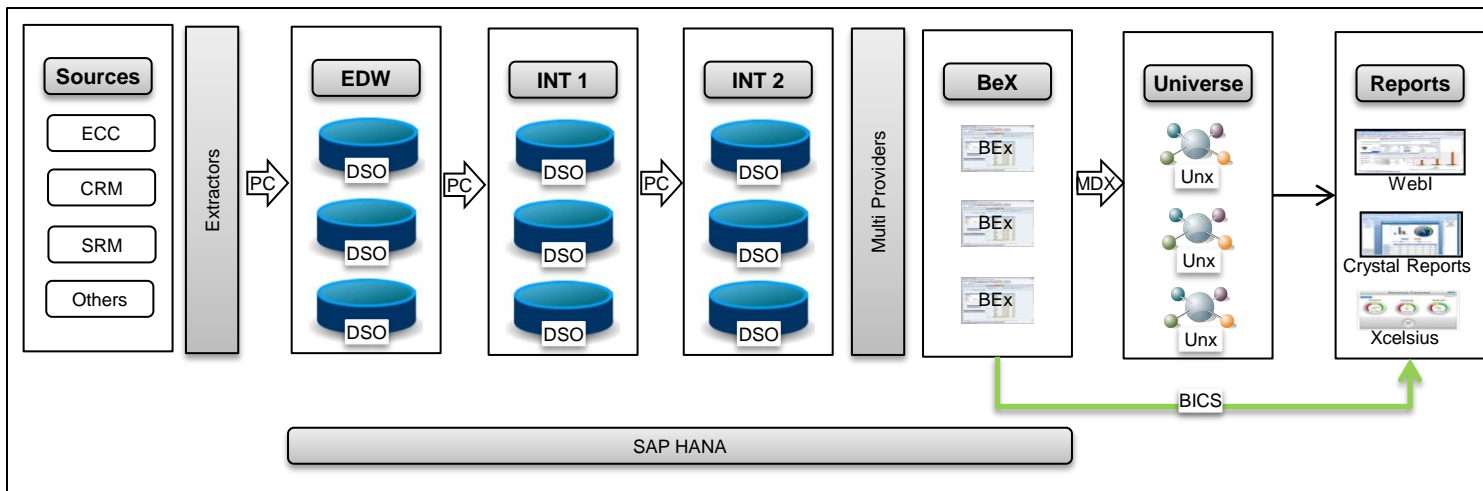
- Migrate all of SAP NetWeaver BW legacy DB into SAP NetWeaver BW running on SAP HANA
- Incorporate BCS and IP into SAP NetWeaver BW running on SAP HANA
- Reduce nightly batch loading
- Improve reporting performance
- Migrate the enterprise SAP BusinessObjects BI from 3.1 to 4.0 (FP 3)
- Create the ability to handle “Big Data” analytics
- Leverage built-in calculation engines
- Create one or more new applications in stand-alone SAP HANA

# Business Intelligence Development Process

**Current Environment** – SAP NetWeaver BW Legacy DB, SAP BusinessObjects BI 3.1 SP4, SAP Data Services 3.2

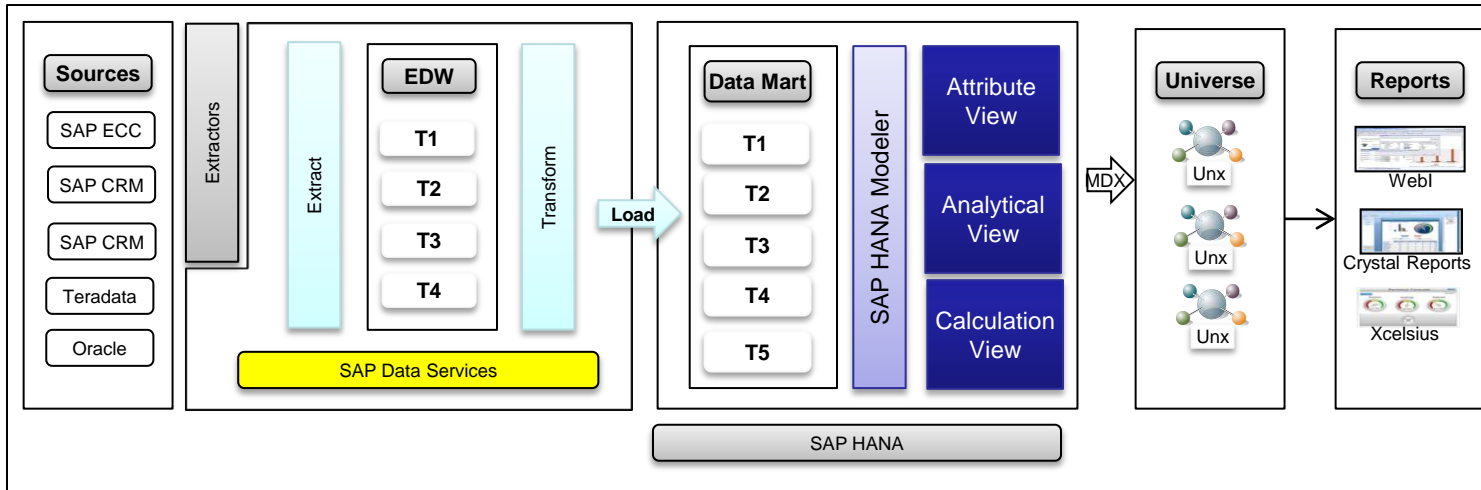


**New 2012 Environment** – SAP NetWeaver BW running on SAP HANA, BI 4.0 FP 3, and SAP Data Services 4.0



# Business Intelligence Development Process

## SAP HANA Stand-alone Environment – Stand-alone SAP HANA



# Technical Highlights

Area	Focus
Sizing	Validate compression Watch your growth forecast Size based on peak usage
Upgrade and Migration	Software add-ons Data volumes Switch off SAP NetWeaver BW Accelerator before migration
Post Migration	Post migration programs Source system connections DB memory parameters for data loads DTP package setting Package size for SAP HANA optimized activation ABAP routines to be optimized for SAP HANA (few cases only)
SAP integration	Connection protocols Authentication Latest fix pack and patch

# Storage Sizing – Projection

Object Type	Current Size in Legacy DB	Tighten SAP NetWeaver BW Housekeeping	Clean Up System Tables	Decommission Unused Objects	Reduce Layers	Near-line Old Data
PSA	5,842	100	100	100	100	100
Legacy DB Overhead	6,141	-	-	-	-	-
Change Log	4,174	-	-	-	-	-
DSO	1,487	1,487	1,487	1,312	1,201	1,201
System Tables	1,167	1,167	300	300	300	300
Cube	708	708	708	648	591	141
Master Data	408	408	408	408	408	408
Temp	7	7	7	7	7	7
<b>Total</b>	<b>19,934</b>	<b>3,877</b>	<b>3,010</b>	<b>2,775</b>	<b>2,607</b>	<b>2,157</b>

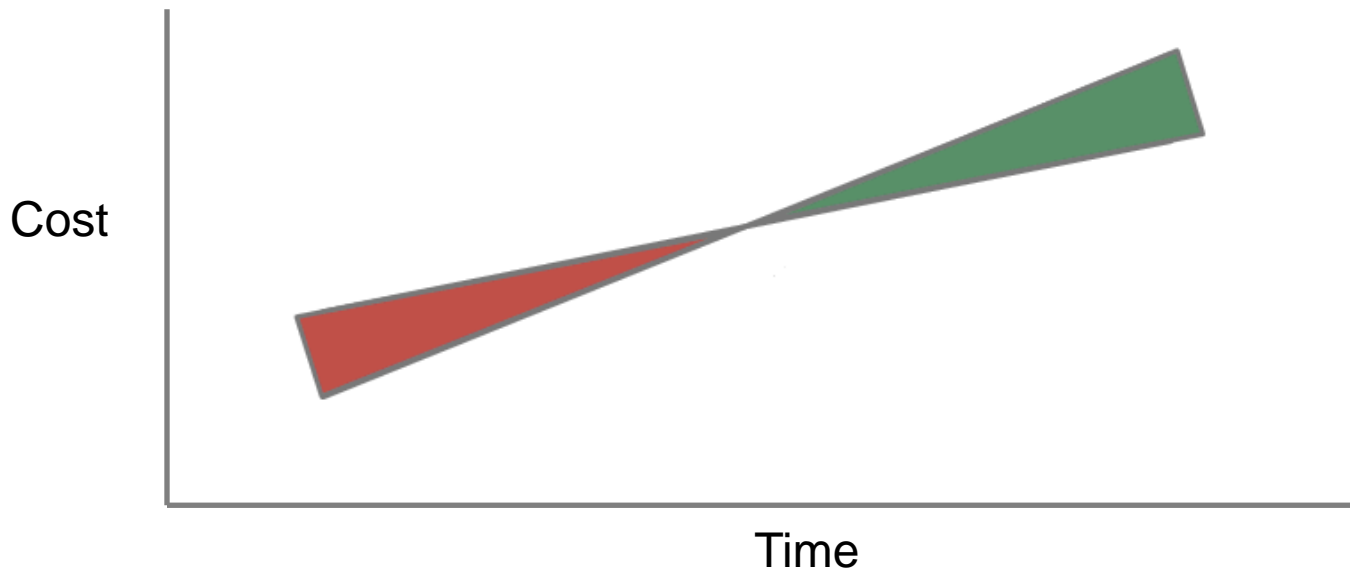
<b>6 x</b>	<b>3,322</b>	<b>646</b>	<b>502</b>	<b>462</b>	<b>434</b>	<b>359</b>
------------	--------------	------------	------------	------------	------------	------------

SAP HANA DB Compression

\* All numbers are in GB

# SAP NetWeaver BW Running on SAP HANA – Total Cost of Ownership (TCO)

One-time Costs / Savings	Ongoing Costs / Savings
+ SAP HANA software license	+ Software license
+ Near-line storage software and hardware	+ Growth software license
+ SAP HANA hardware	+ Hardware maintenance
+ SAP NetWeaver app servers	+ Growth hardware purchases (SAN, servers)
+ SAP BusinessObjects BI servers	+ Growth SAP HANA hardware purchases
- Potential SAP NetWeaver BW Accelerator license credit	- Labor maintenance
- Repurposed hardware (SAN, servers)	- Labor development
	+ costs    - savings



# Stand-alone SAP HANA – Potential Opportunities

## Smart Meter Analytics

- Improve customer energy efficiency
- Improve campaign effectiveness
- Understand consumption behavior



## Power Procurement

- Lower short-term power purchases
- Better forecasting
- Introduce new pricing options



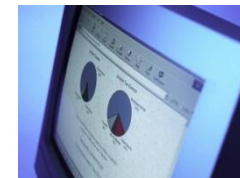
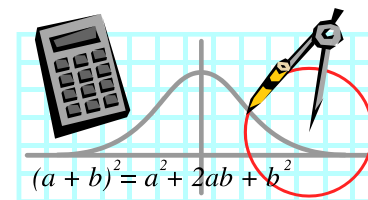
## Outage Management

- Reduce response time and outage costs
- Increase customer satisfaction
- Quickly analyze up-to-date outage information



## Predictive Analysis

- Forecast outages, usage patterns, and cost
- Model customer segmentation
- Rapidly analyze advanced statistical models



## SAP HANA – *The Game Changer*

- Much faster analytics and reporting for significant business value
- Total cost of ownership favoring the investment
- Real-time solutions for business problems
- Providing business results for new opportunities
- Increasing productivity and profitability