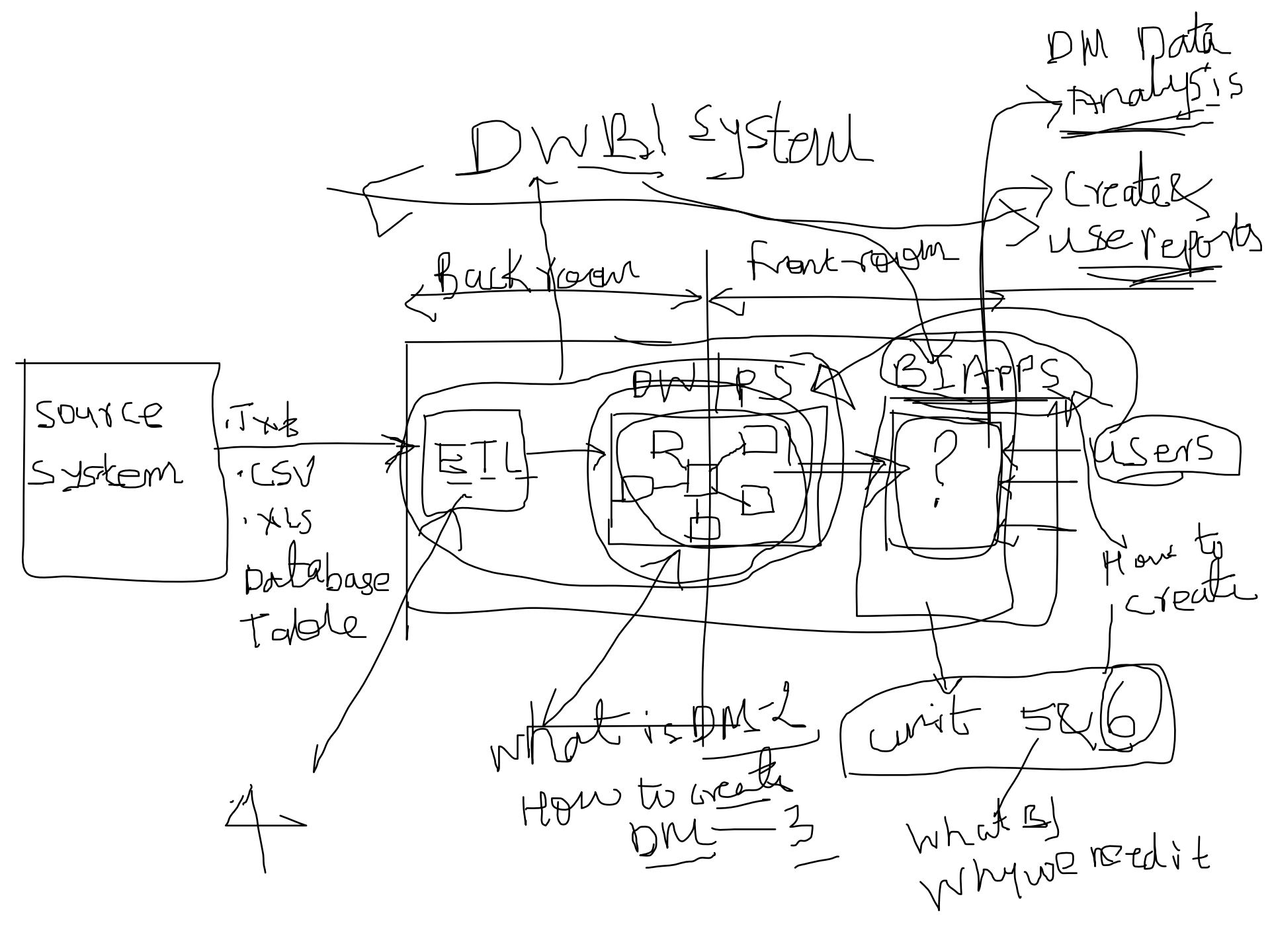
Introducing BI Applications


DW BI system
DM Data Analysis
Create & use reports
Back room
Front-room
Source System
.Txt
.CSV
.XLS
Database Table
ETL
DW/BI
BI Apps
?
Users
How to create
What is DM-2
How to create DM — 3
unit 5 & 6
What & Why we need it

Importance of BI

- BI application must provides BI reports which BI users won't build
- Must meet design requirements including
- -Be Correct
- -Perform well
- -Be Easy to use
- -Look good
- Be a long term investment-Applications must be properly documented, maintained, enhanced and extended

- Fill the gap of data access needs of organization
- Direct access query, reporting and data mining for adhoc access
- Standard reports for push button access
- Analytic applications for pushbutton access
- Dashboards and scorecards for pushbutton access
- Operational BI for operational reporting

Analytic Cycle for BI

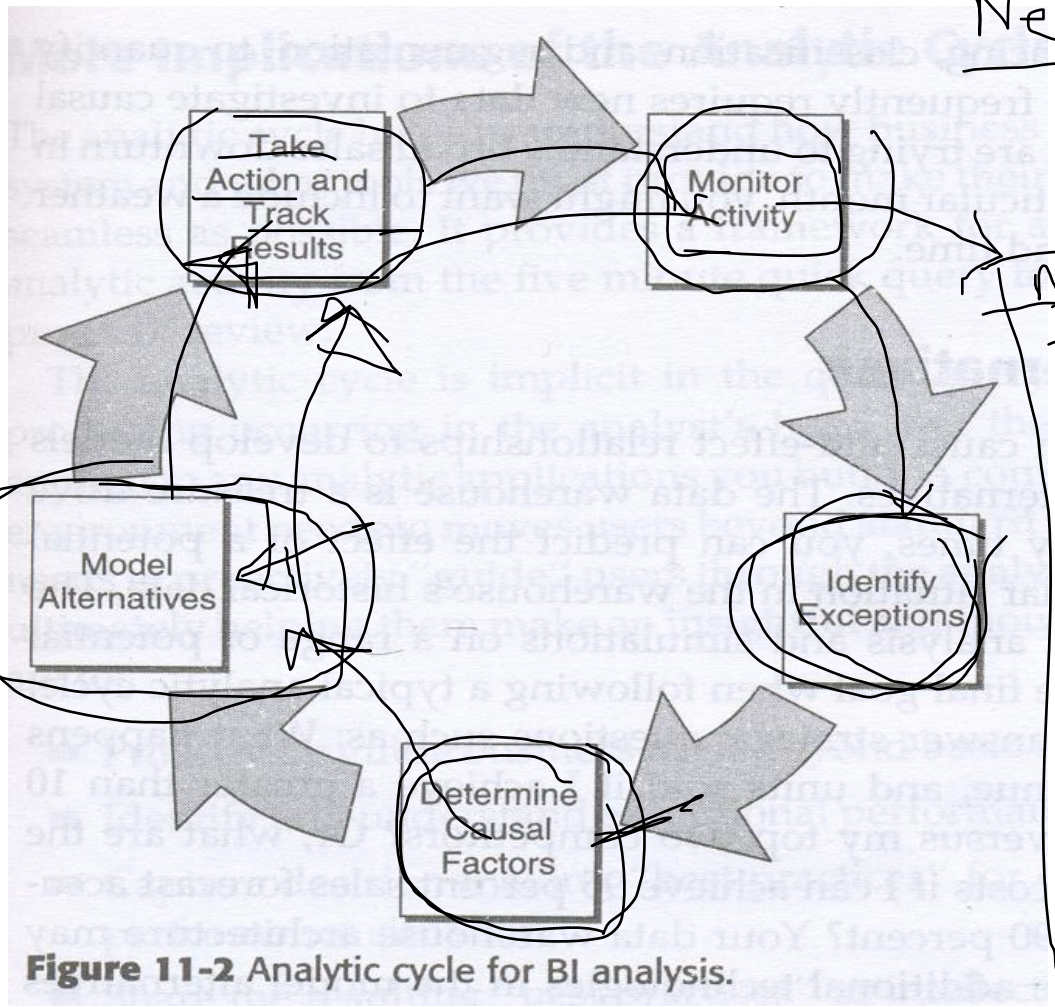


Figure 11-2 Analytic cycle for BI analysis.

Need of various BI apps

Mon 1L

Tue 1.5L

Wed 0.7L

Thur 3L

Fri 1.2L

Sat 1.3L

Sun 1.2L

1.2

1.3

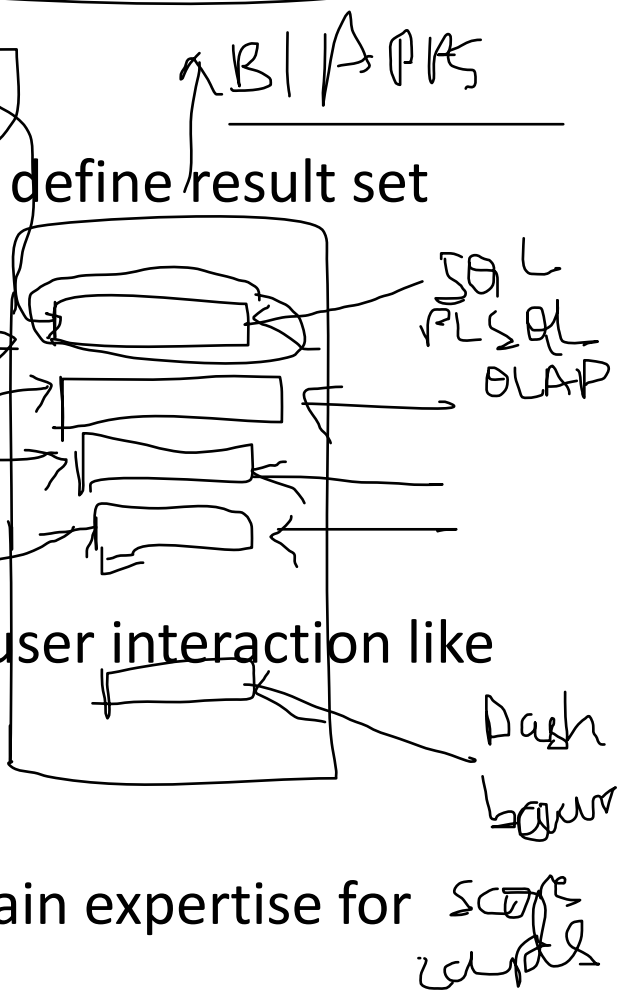
- Stage 1 Monitor Activity
- -presentation layer is useful in activity monitoring
- -includes dashboards, scorecards and portals
- Stage 2 Identify Exceptions
- -identification of problem
- -finding the opportunities
- -this stage requires additional capabilities like distribution servers that distribute alerts to users devices using exception triggers

- Stage 3: Determine Causal Factors
- -this stage tries to understand root cause of exception
- -identifying relationships and interactions between variables that drive exceptional condition to occur
- -requires statistical tools , data mining algorithms
- -ex. Reason for sales down in a particular area
- Stage 4:Model Alternatives
- -Based on cause -effect relationships to develop models for evaluating decision alternatives.
- -can predict effect of a decision by finding a similar situation in warehouse data.

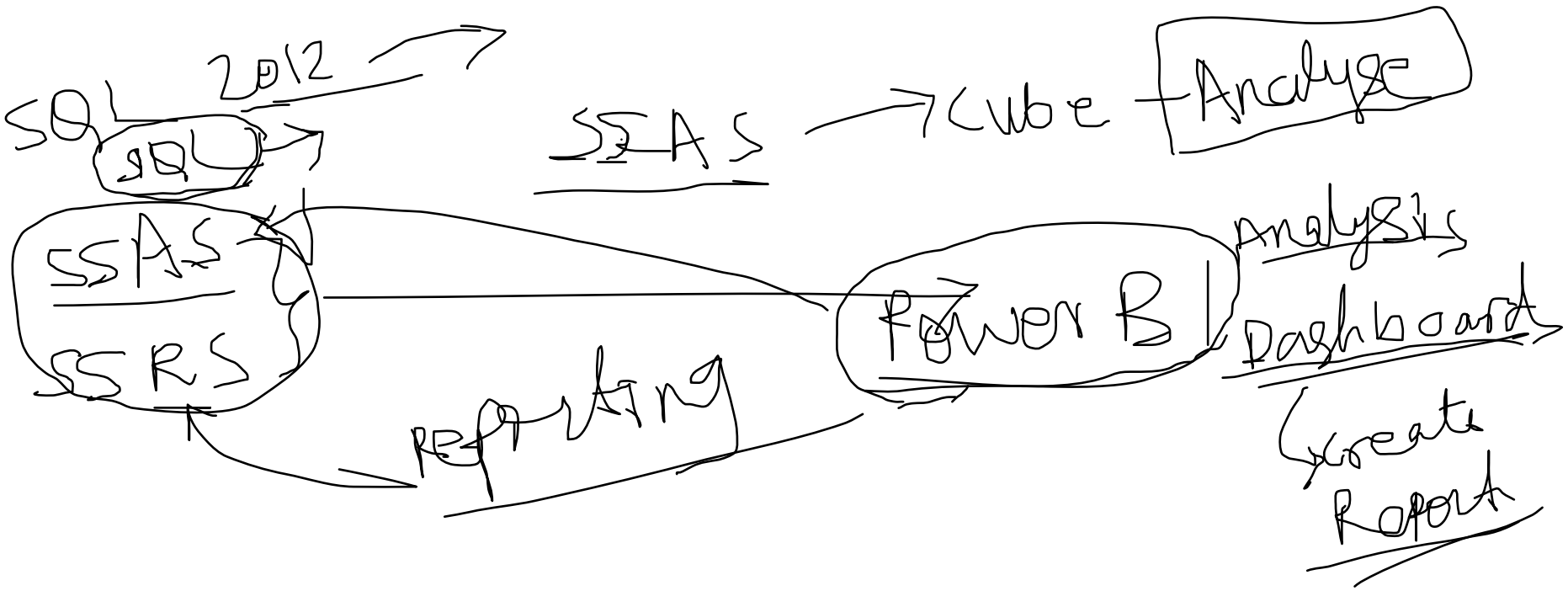
- Stage 5:Take action and track Results
- -feed the actions back to operational systems
- -this places additional demand on DW architecture
- -need access to operational systems
- -need to enhance dimensional models
- -technologies required are distribution services that enable users to respond recommended actions from email

Types of Business Intelligence Application

- Direct access query and reporting tools
- -to query dimensional model directly and define result set
- -simple adhoc tools gives tabular results.
- -advanced tools gives complex reports
- Data mining
- Standard reports
- -predefined ,preformatted some level of user interaction like drill down to lower detail
- Analytical applications
- -managed set of reports embedding domain expertise for particular business process



- Dashboard and scorecards
- -reports and charts highlighting and drilldown capabilities to analyze data from multiple business processes



Direct Access query and reporting Tools

-direct access to dimensional model

-used by power users

-user can drag drop columns, set constraints, define calculations

-end result of ad hoc query tool is report

-ad hoc query tools should include functionality like query formulation, analysis and presentation, user experience and technical features

Query Formulation

- - to formulate query
- - capabilities includes
- -Multipass or multi set queries

  -break the report into multiple queries

  - Allows drilling across different fact tables
- Alerts
- -query tool should help user identify exceptional records
- -used on dashboards and scorecards to measure performance
- Successive constraints
- -result of one query are used as limit or filter on subsequent queries
- -doctors are interested in particular group of people and analyze their progress over time

- Semi additive summations
- ANSI SQL 99 support
- -like WINDOW construct
- Direct query string entry
- -need to view and alter SQL languague generated by tools

Analysis and presentation Capabilities

- Basic calculations on result set
- -math, statistical,string,s equential processing, conditional processing
- Pivot the results
- Drill down
- Column calculations on pivot results
- Column and row calculations
- Sorting
- Complex formating
- Charting and graphs

- Compound documents
- User changeable variables

User Experience

- Following capabilities help improve users experience of analytical environment
- Ease of Use
- -participate users in tool evaluation and ask them to rate the tool about their ease of use
- Metadata access
- -context sensitive help about data
- Pick Lists
- -provide lookup of list of values for use as filters or constraints in query

- Seamless integration with other applications
- -ability to make reports available in another application
- -portal integration components let them display directly in BI portal
- Export to multiple file types
- Embedded queries

Technical Features

- Multitasking
- -user should run other programs and create and run other queries while a query is running
- -Cancel query
- -able to kill a single query without killing all without rebooting
- Scripting
- -scripting and command line is critical for automating report execution

- Connectivity
- -Connecting to all data sources- text, spreadsheets, XML files, other rdbms
- Schedulling
- -allow users to differ the execution of queries
- Metadata driven
- -admin should be able to define subset of warehouse such as those tables involved in a single business process

- Software administration
- Security
- -need to provide authorization functions, limiting users to access to those reports they are allowed to use
- Querying
- -direct querying of database should be supported

- Standard reports
- -basic end of BI application
- -used by non technical users ,push button users every day
- Consist of what most of the users asked during requirements analysis
- Offer parameter selection facility
- Serve official source of enterprise metrics
- Examples are
- YTD(year to date) sales vs Forecast by sales Rep
- Monthly Churn rate by service plan
- Five year Drop out rate Time series by school
- Direct mail response rates by promotion by product
- YTD claims Vs Forecast by vehicle type

Analytical Applications

- More complex than standard reports
- Targeted at a specific business process
- Used to solve specific problems and used by specific users
- Used by promotions managers, sales managers, cost center managers and brand managers on regular basis
- Sold as stand alone applications
- Include like
- Promotion effectiveness
- Fraud Detection
- Category management

- Promotion effectiveness analytic application might allow the user to investigate impact of several variables on response rate to credit card promotion
- Include several panes, each one containing graph or report
- Main pane shows overall response rate
- Each pane show response rates associated with major variables of campaign

Pre-Built Analytic applications

- Broad range of pre-built applications available from major BI tool vendor and from companies with hands on industry and functional experience
- Comes with domain expertise
- If suites to your requirements then better to buy than built
- Comes with ETL components & dimensional models

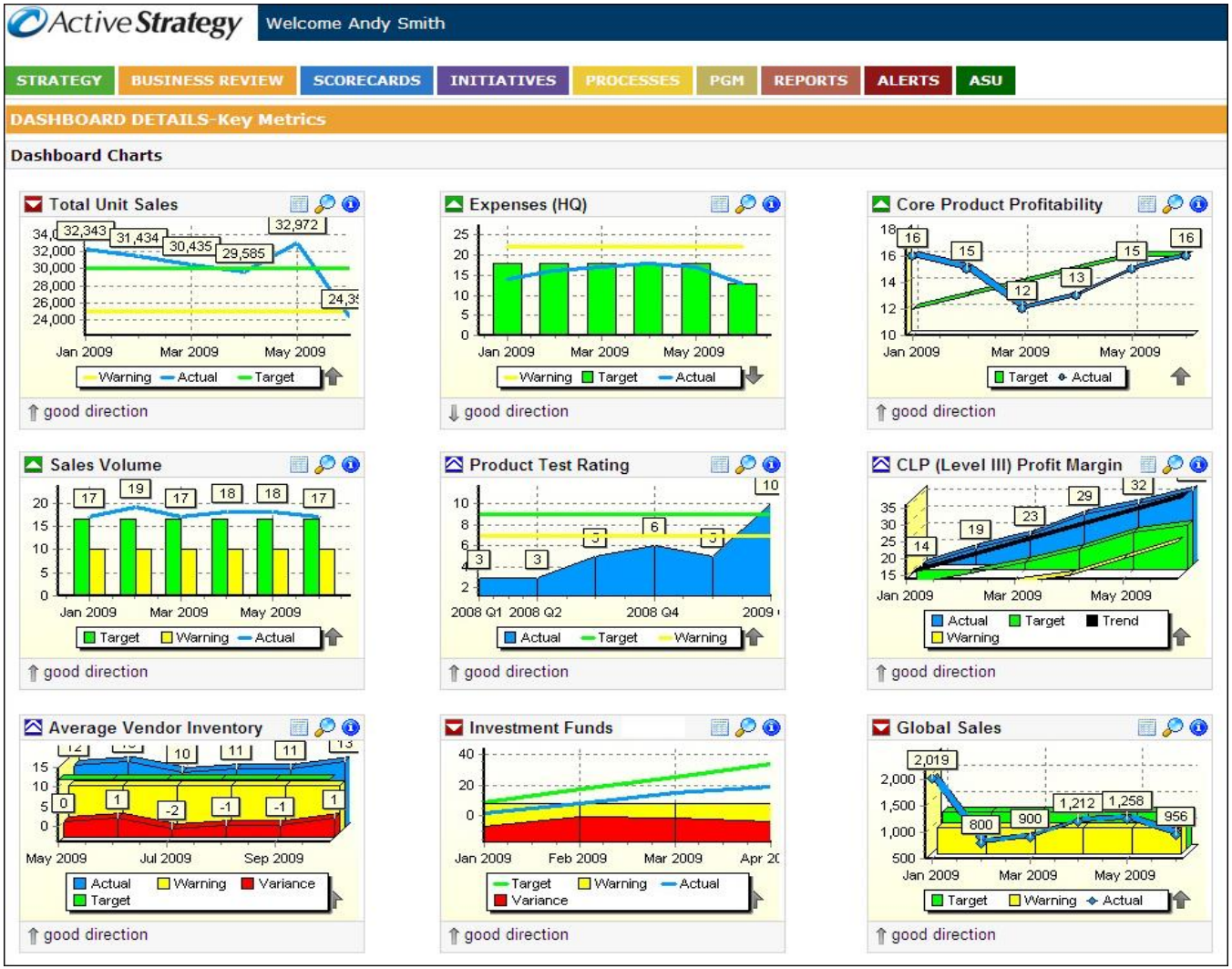
Read/Write Analytic applications

- Requires both read and write access
- Include planning, budgeting, forecasting
- Basically transaction systems but some times connected to DW/BI systems if input data is from DW
- Forecasting process takes historical sales info and projects it into future

Dashboards and Scorecards

- Used by executives
- Dashboard provide interface tools that support status reporting and alerts
- Drilldown to more detailed data
- Aimed for specific user type
- Scorecards used as means to manage performance across organization
- Objective based specific measures are identified
- Measures are used to track performance

Dashboard


ActiveStrategy
Welcome Andy Smith
STRATEGY
BUSINESS REVIEW
SCORECARDS
INITIATIVES
PROCESSES
PGM
REPORTS
ALERTS
ASU
DASHBOARD DETAILS-Key Metrics
Dashboard Charts
Total Unit Sales
32,343
31,434
30,435
29,585
32,972
Jan 2009
Mar 2009
May 2009
Warning
Actual
Target
good direction
Expenses (HQ)
Jan 2009
Mar 2009
May 2009
Warning
Target
Actual
good direction
Core Product Profitability
Jan 2009
Mar 2009
May 2009
Target
Actual
good direction
Sales Volume
Jan 2009
Mar 2009
May 2009
Target
Warning
Actual
good direction
Product Test Rating
2008 Q1
2008 Q2
2008 Q4
Actual
Target
Warning
good direction
CLP (Level III) Profit Margin
Jan 2009
Mar 2009
May 2009
Actual
Target
Trend
Warning
good direction
Average Vendor Inventory
May 2009
Jul 2009
Sep 2009
Actual
Warning
Variance
Target
good direction
Investment Funds
Jan 2009
Feb 2009
Mar 2009
Target
Warning
Actual
Variance
good direction
Global Sales
2,019
1,212
1,258
956
900
800
Jan 2009
Mar 2009
May 2009
Target
Warning
Actual
good direction


ActiveStrategy
Welcome Ellen Jones
STRATEGY
BUSINESS REVIEW
SCORECARDS
INITIATIVES
PROCESSES
REPORTS
ALERTS
ASU
SCORECARD DETAIL-Bank Personal & Retail Banking Services
Subscribe
Publish
Edit
Options
Score
Details - Base View
1.0 Financial
Name
Actual
Target
1.1 Grow the Business
Assets (in thousands)
$110,060
$120,000
Revenue (in thousands)
$9,791
$11,000
1.2 Improve Profitability
Revenue per Customer
295
300
Expense Reduction (in thousands)
$94
$125
ROE
2.0 %
2.5 %
1.3 Achieve Integration Synergy
Synergy Dollars Saved
$95,629
$100,000
2.0 Customer
Name
Actual
Target
2.1 Increase Customer Satisfaction
Quarterly Customer Satisfaction Survey
A-
A

Data Mining

- Process of data exploration with an intent to find patterns or relationships that can be made useful to organization
- Helps in understand and predict behavior, identify relationships or group items into sets
- The resulting model can take form of rules or equations
- These models are used to provide guidance, alerts or indicators to user
- Also called as KDD
- Five major categories:
- Clustering, classifying, estimating and predicting ,affinity grouping and anomaly detection

- Clustering
- Techniques used are statistics,neural networks and decision trees
- Classification
- Techniques used are statistics, neural networks genetic algorithms and decision trees

- Estimating and predicting
- -numerical measure as result
- -prediction is estimation of event that will occur in future
- Techniques used are neural networks
- Affinity grouping
- -special kind of clustering that identifies events that occur simultaneously
- -market basket analysis
- Anomaly detection
- -identification of process that deviate from norm
- -fraud detection
- -clustering is used

Navigating Application via BI portal

- Usable
- Content rich
- Clean and should not confuse people
- Current
- Interactive
- Value oriented
- Density and structure

Additional portal functions

- Search
- Metadata browser
- User forum
- Personalization
- Information center