



IBM

# The QMF 10 Product Family

Business Intelligence & Analytics for the Enterprise



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Mike Biere – Technical Marketing for IBM Query Management Facility (QMF)

Joe Sacco - DB2 QMF Product Manager

## QMF 10 introduced a new era for the QMF product family

New Eclipse-based user interface

Powerful new business analytics features and functions

Sophisticated dashboards for the business users and executives

Enterprise data access to many new data sources via JDBC

Access to OLAP information (Essbase, MS Analysis Services, SAP/BW)

Metadata capabilities to facilitate ease of use

Mobile device support

... and more!



\*\* While maintaining and supporting your investment in existing QMF objects (queries, forms, procs)!

## QMF 10 ... why should you care?

### Existing QMF customer

- significantly enhanced
- dramatically different from previous versions
- Investment protection and innovation of existing resources
- TCO is based on an enterprise-wide model. The greater the number of users and databases accessed ... the lower the cost

### Potential new customer

- A managed, predictable analytics solution from IBM with a known cost
- Wide range of deployment options with no additional charge
- Presents a significant new approach and option within DB2 for z/OS... Business Analytics bundled as a feature code

## What we're hearing from enterprise accounts about business analytics ... the Top 7 requirements

1 Modern features: graphical queries, reports, charts, dashboards, KPIs, innovation such as mobile device support

2 An enterprise model that scales and does not wildly vary in cost if the usage increases

3 Support for IBM advancements such as the DB2 Analytics Accelerator for DB2 for z/OS

4 Usage model for all end users and user types

5 Access to all data on all platforms

6 More effective deployment, less "shelf ware"

7 Ease of installation, administration, maintenance



## How QMF addresses the Top 7 customer requirements

1 Modern features:  
graphical queries,  
reports, charts,  
dashboards, KPIs,  
innovation such as  
mobile device support

**QMF includes significant enhancements:  
Graphical queries, reports,  
charts, dashboards, KPIs  
and mobile device support**



## How QMF addresses the Top 7 customer requirements

2 An enterprise model that scales and does not wildly vary in cost if the usage increases

**QMF is licensed for the DB2 you access – no user pricing**

6

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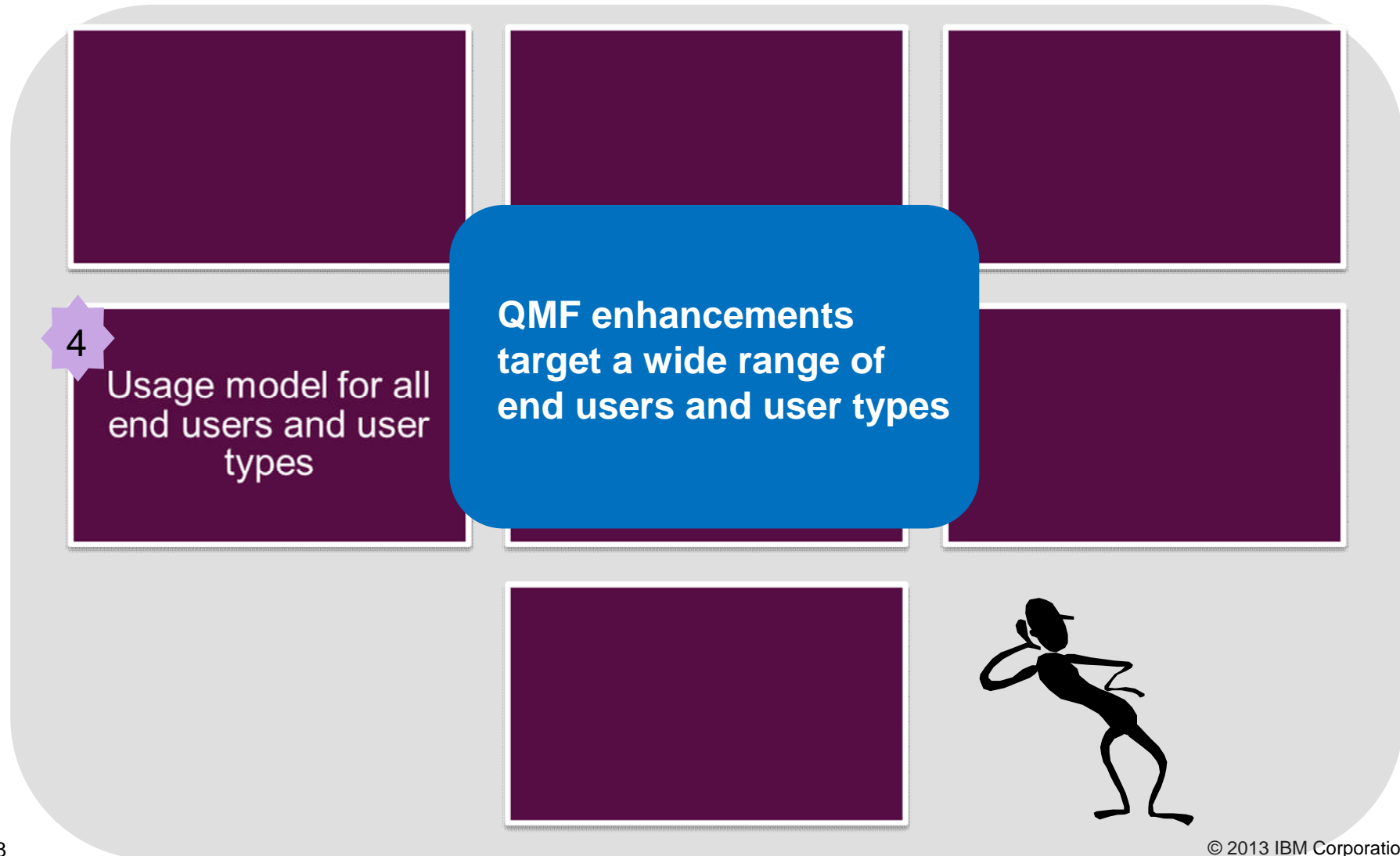
## How QMF addresses the Top 7 customer requirements

**3** Support for IBM advancements such as the DB2 Analytics Accelerator for DB2 for z/OS

**QMF supports the DB2 Analytics Accelerator, temporal data**

**QMF is a feature of DB2 for z/OS**

## How QMF addresses the Top 7 customer requirements





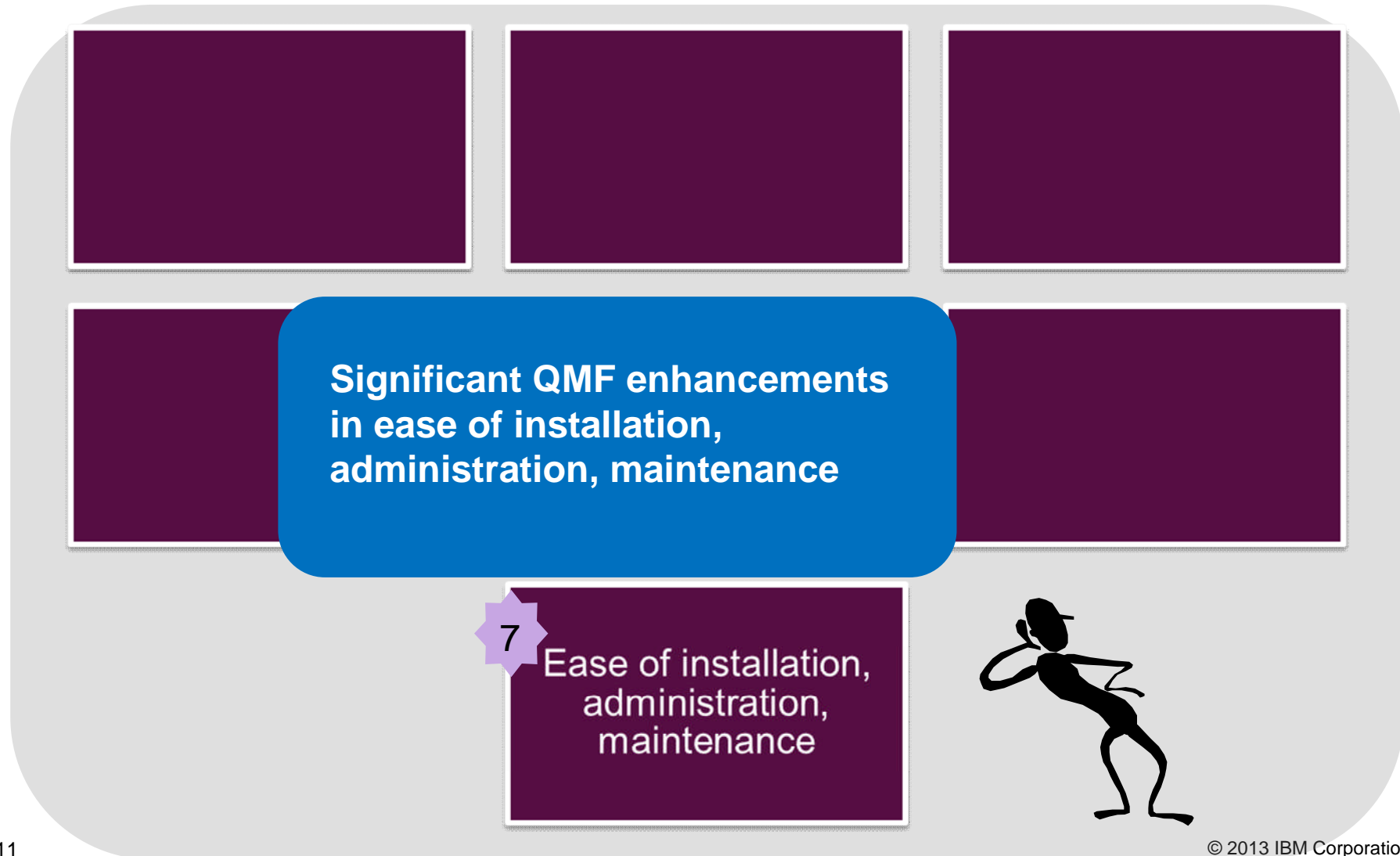
## How QMF addresses the Top 7 customer requirements



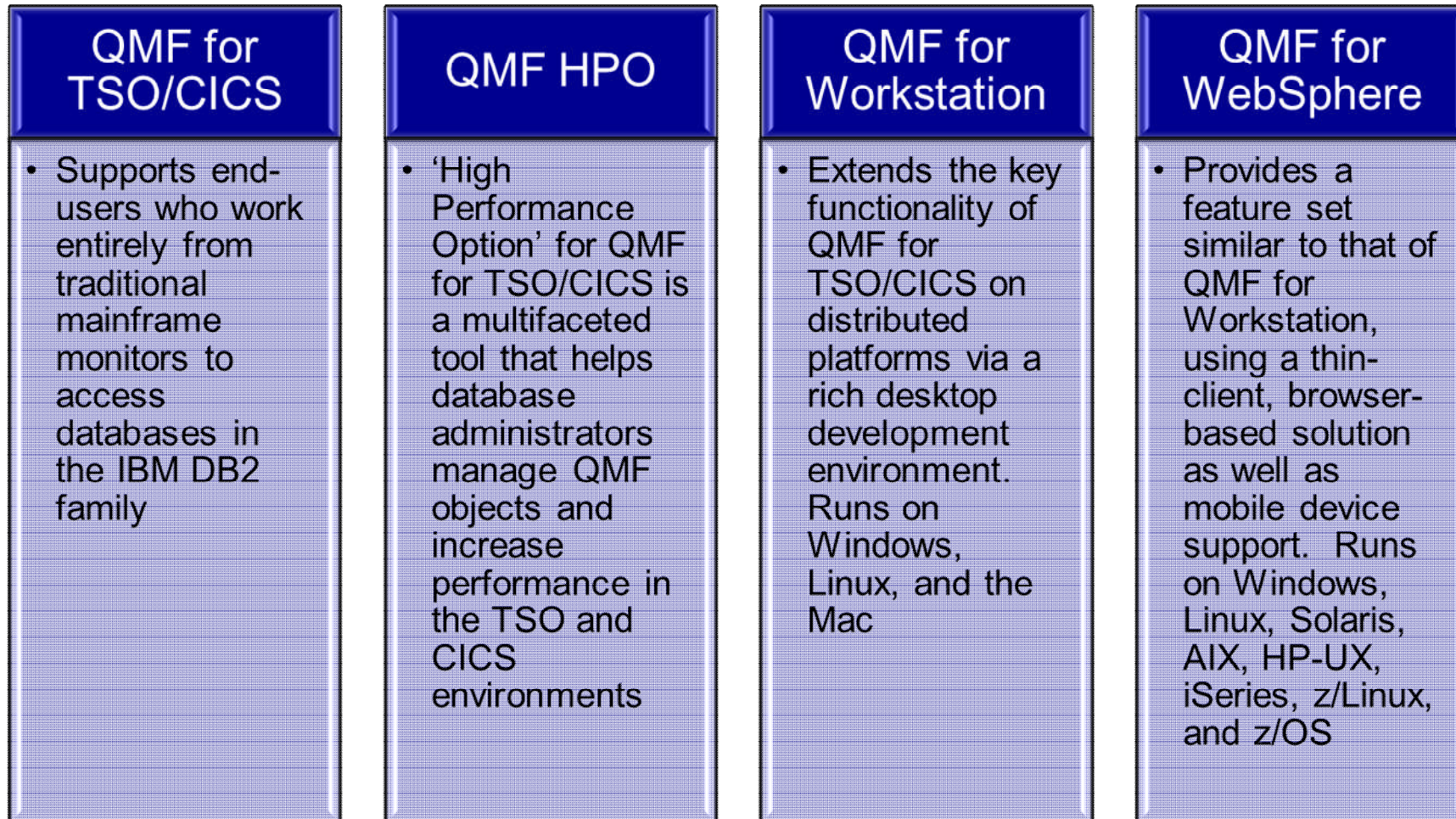
## How QMF addresses the Top 7 customer requirements



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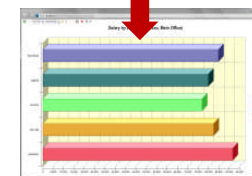
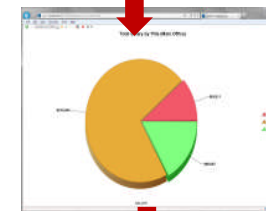
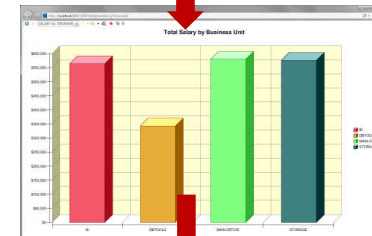
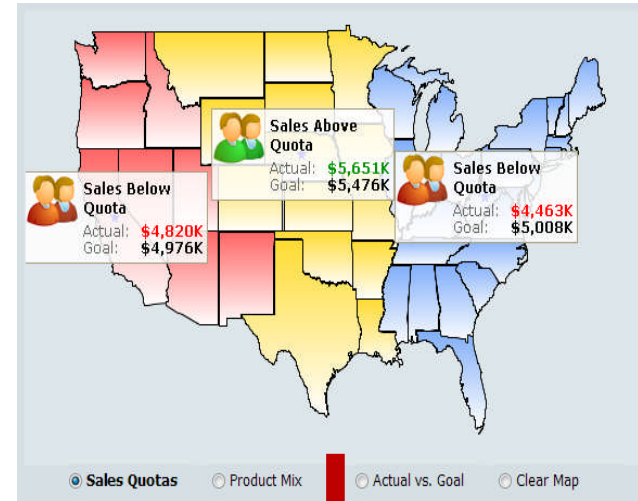
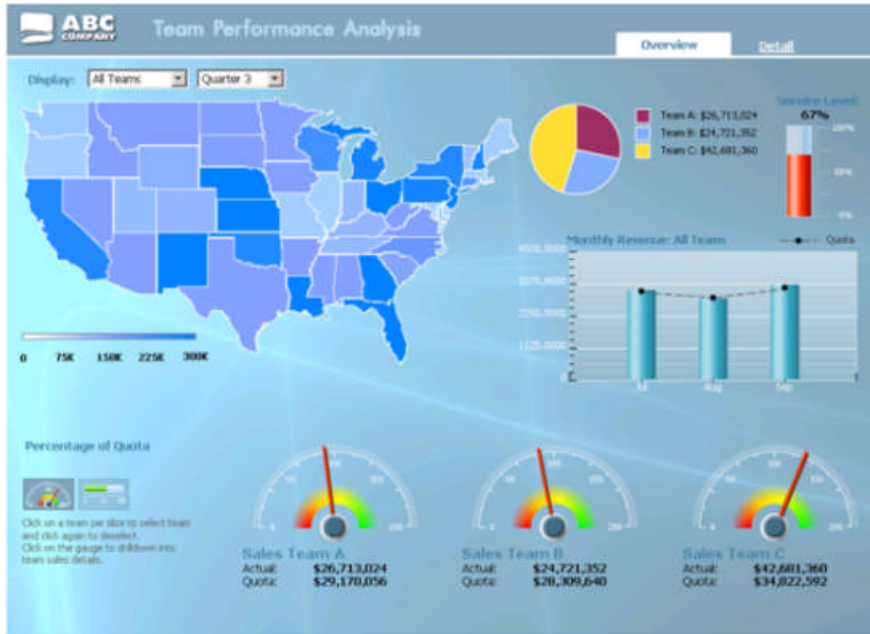


## The QMF 10 Enterprise Edition (QMF/EE) solution components

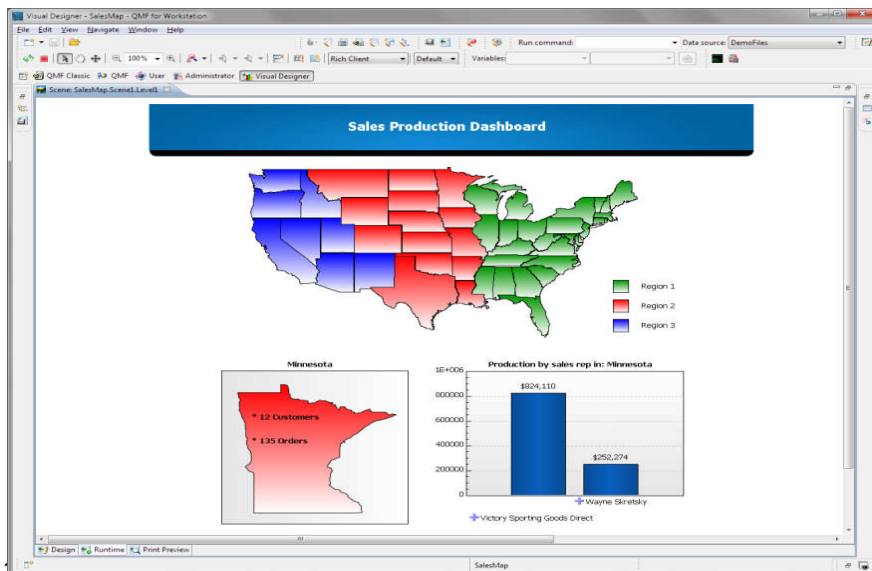


## QMF Enterprise Edition 10 – some enhancement highlights

- ✓ **Graphical queries, reports**
- ✓ **Dashboards and KPIs**
- ✓ **Advanced analytic functions and analysis**
- ✓ **JDBC access to any RDBMS**
- ✓ **Spatial data access**
- ✓ **Multi-dimensional analysis**
- ✓ **Operational Business Intelligence (e.g. access to IMS, Adabas, IDMS)**
- ✓ **Heterogeneous database access**
- ✓ **Federated data in QMF 11**
- ✓ **Virtual data sources (e.g. use queries as input vs SAVE DATA)**
- ✓ **Superlative support of the IBM DB2 Analytics Accelerator**
- ✓ **Mobile device support**
- ✓ **Full DB2 10 for z/OS support (temporal data, etc.)**



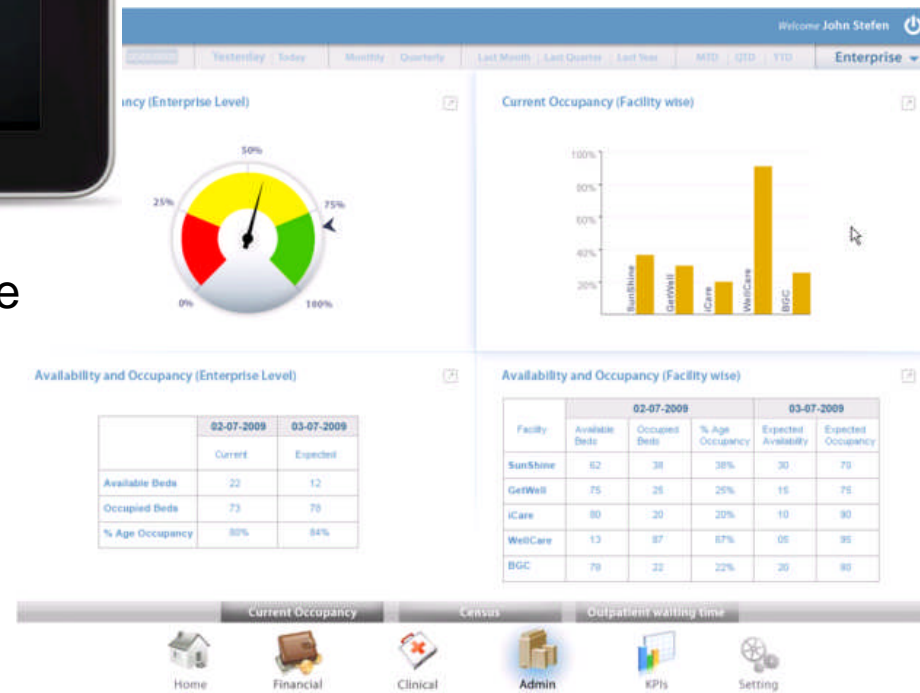
Drill-thru for data discovery with no limits to the number of levels!





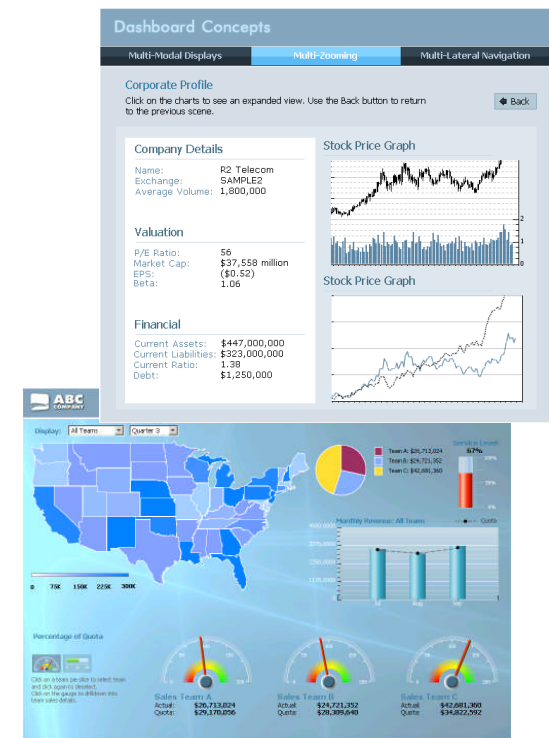
Dashboards of any shape, size, and content are supported. These is no 'typical' dashboard ... a myriad of possibilities are available - such as this one created for an automotive customer.

Dashboards may contain a mixture of output and styles. Objects may be 'wired' together. For example, a query result from DB2 may be used to drive another query from a non-DB2 data source.



## QMF dashboards

- ✓ Provide end users with direct access to enterprise data in real time
- ✓ Highly customizable – provide the functions, options, and capabilities to meet the needs of the end users across the enterprise
- ✓ Able to access, aggregate, and federate data concurrently drawn from heterogeneous relational and OLAP sources
- ✓ Interactive, ad-hoc visualizations with optional write-back capability
- ✓ Publish via the workstation, the web, or mobile devices



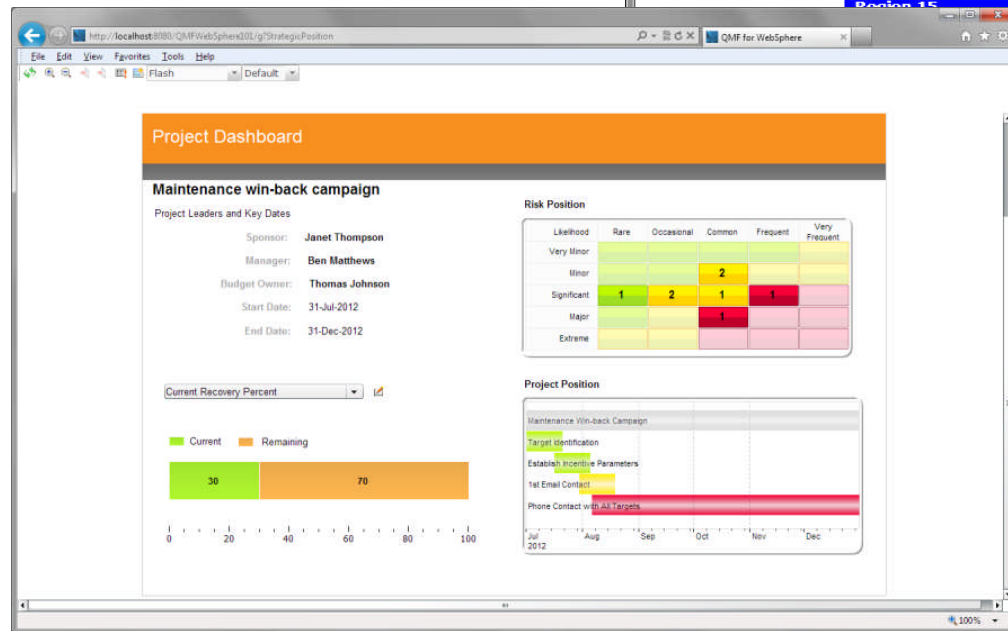
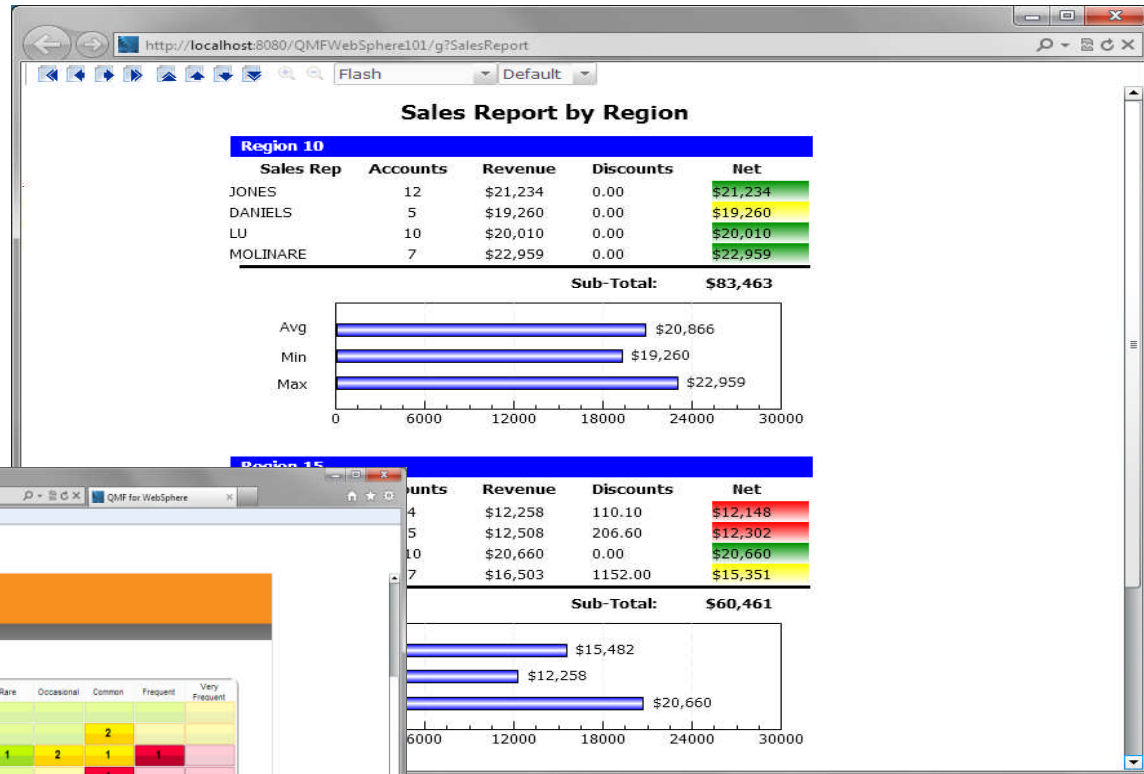


## Additional Dashboard Features

- **All queries can be assigned 'expiration schedules'**
  - **Cache data** and only fetch it when it expires
  - Flexible **scheduling** (e.g. 'first Tues in month' etc.)
  
- **Support for localization**
  - Display report and dashboard text customized by user or group
  - Text loaded into string tables for supported locales
  - Dashboards automatically invoke the locale-specific string table
  - Dashboards/reports support DBCS, Unicode and RTL layouts
  
- **Dashboard security model**
  - Database level or ...
  - Active Directory, LDAP or ...
  - QMF-defined users/groups
  - Ability to tailor dashboard content, based on user's access level
  - Apply access permissions on a per-dashboard basis



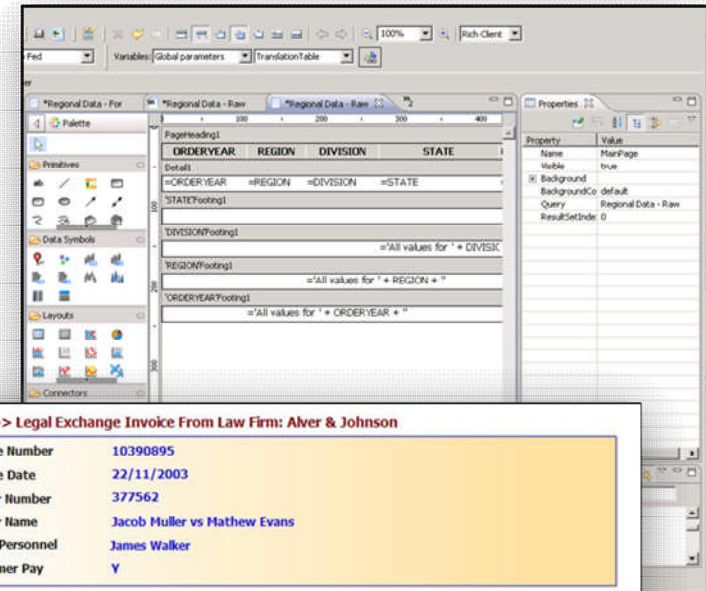
Create any report you require with highlights, graphics, images, and more...



Deliver to workstation clients, web clients, or mobile devices

## QMF Graphical Reports

- Generate HTML or PDF graphical reports
- Draw data from one or more data sources
- Support optional cover sheets, summary pages and report annexes
- Schedule at designated intervals and deploy via the workstation, web, mobile device, or email
- Directly embed reports within portals, custom web sites, or web applications



>> Legal Exchange Invoice From Law Firm: Alver & Johnson

Invoice Number	10390895
Invoice Date	22/11/2003
Matter Number	377562
Matter Name	Jacob Muller vs Mathew Evans
Client Personnel	James Walker
Customer Pay	Y

> FEES:

Date	TK Name	Code	Hours	Rate	Org. Amt	Curr. Amt	Description
21/11/2003	Stephen Hall	L310	40.9	\$153.90	\$6,294.51	\$6,294.51	-
21/11/2003	William Harris	L310	61.3	\$184.70	\$11,322.11	\$11,322.11	-
<b>Total Fees:</b>					<b>\$17,616.62</b>	<b>\$17,616.62</b>	

> EXPENSES:

Date	TK Name	Code	Units	Cost	Org. Amt	Curr. Amt	Description
21/11/2003	Harold Wilson	E120	1	\$958.70	\$958.70	\$958.70	-
<b>Total Expenses:</b>					<b>\$958.70</b>	<b>\$958.70</b>	

> BILLING SUMMARY:

	Original Amount	Current Amount
Fees:	\$17,616.62	\$17,616.62
Expenses:	\$958.70	\$958.70
<b>Totals:</b>	<b>\$18,575.32</b>	<b>\$18,575.32</b>

## More on Graphical Reports ...



**Generated with 'one click' from a query results window**

**Auto-generated to match the result set format, including groupings and aggregations**

**Automatically generated from existing QMF forms**

**Tailor results or accept defaults, no additional edits required**

**Authors have a comprehensive palette of graphical layouts to further refine the report**

- ✓ Standard statistical analysis methods (regression, etc.)
- ✓ Predictive capabilities
- ✓ Forecasting capabilities
- ✓ Interoperate with SPSS or other tools

The image displays several screenshots of the IBM Business Analytics interface. At the top, there are three tabs: 'Multi-Modal Displays', 'Multi-Zooming', and 'Multi-Lateral Navigation'. Below these, there are two main dashboard examples:

**Intelligent Hyperlinking:** This dashboard shows a grid of charts. One chart is titled 'Multivariate Analysis' and includes a 'Beta' chart and an 'Average Volume' chart. Another chart is titled 'Risk vs. Return'. Below this grid is a 'Performance Comparison' chart showing a line graph.

**Dashboard Concepts:** This dashboard is titled 'Corporate Profile' and includes a 'Back' button. It contains several sections:

- Company Details:**
  - Name: R2 Telecom
  - Exchange: SAMPLE2
  - Average Volume: 1,800,000
- Valuation:**
  - P/E Ratio: 56
  - Market Cap: \$37,558 million
  - EPS: (\$0.52)
  - Beta: 1.06
- Financial:**
  - Current Assets: \$447,000,000
  - Current Liabilities: \$323,000,000
  - Current Ratio: 1.38
  - Debt: \$1,250,000

There are also two 'Stock Price Graph' sections, each showing a line chart with a volume bar at the bottom.

At the bottom of the image, there is a 'Management Dashboard' with several widgets:

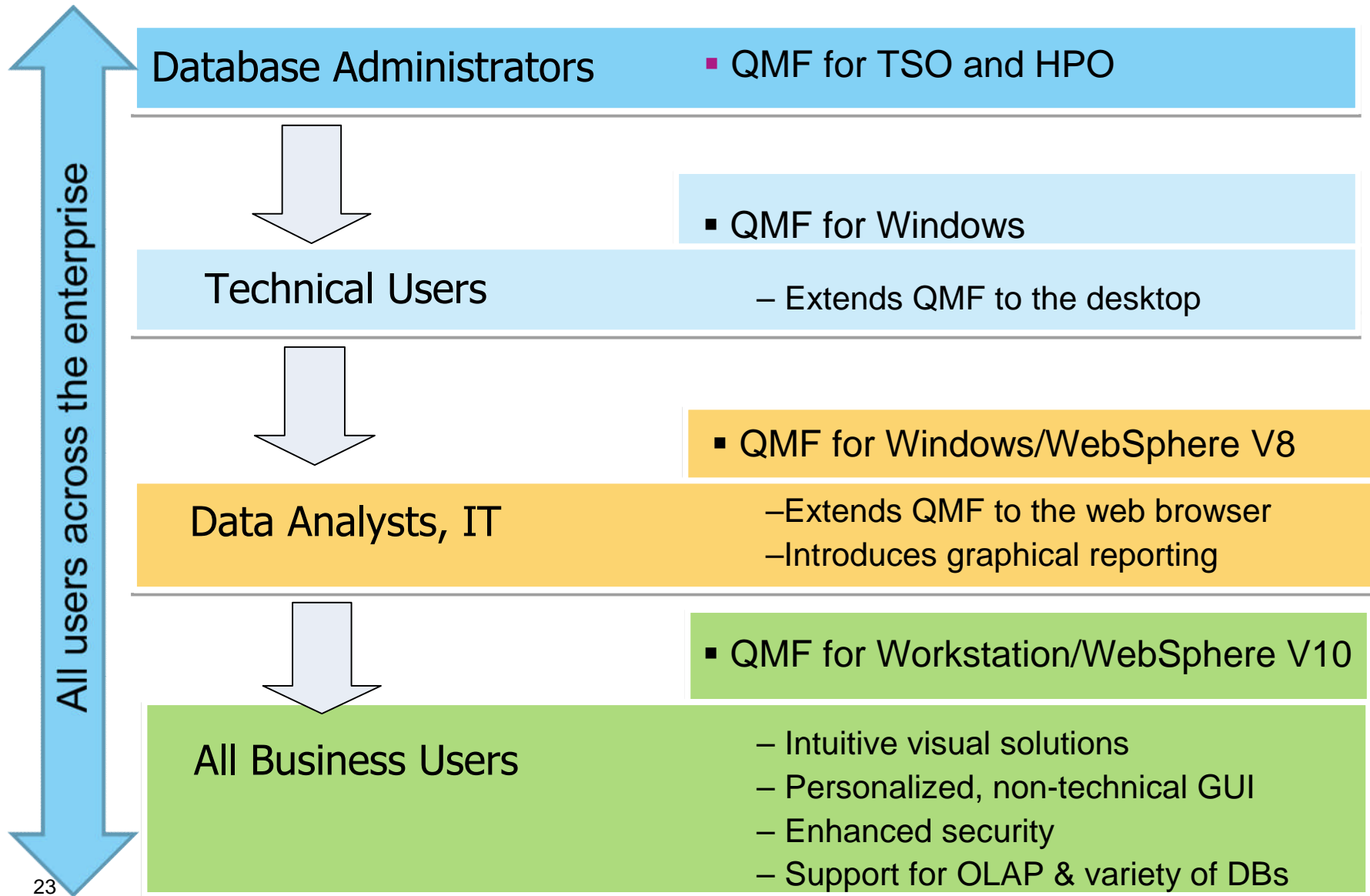
- Backup SLA Report by Domain:** A table showing SLA status for various domains.
- Total GB Backed Up (30 days) by Domain:** A bar chart showing data for domains E-ent, E-ent, E-ent, E-ent, and E-ent.
- Enterprise Resources:** A table showing storage resources.
- Total Storage (30 days):** A pie chart showing 'At Risk 16.6 TB' and 'Overall Storage 2.5 PB'.

## QMF – acquisition and costs factors

- QMF charges are based upon the DB2 for z/OS footprint. Thus, you have managed and predictable cost of acquisition
- Deployment is based upon an enterprise license model with no per-user cost or differences in user types
- Install and access data from any database and any server
- QMF is simple to install, maintain, and administer
  - ✓ Auto-deployed settings & centralized administration
  - ✓ Upgrading between versions requires zero migration
  - ✓ New versions work with existing content
  - ✓ New QMF customers are typically up and running within a couple of hours



## Evolution of Target User Base

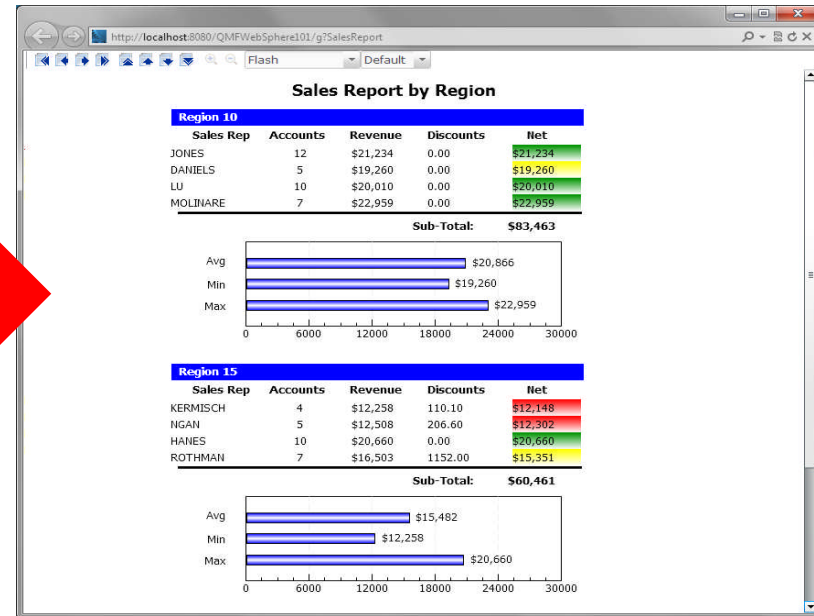
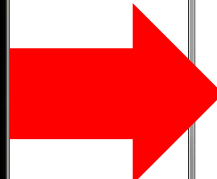


# Evolution of QMF Objects

REPORT

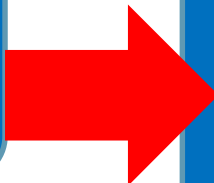
ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
11	SANDERS	20	MGR	7	18360.50	-
21	PERNAL	20	SALES	8	18174.25	612.45
31	MARENGHI	38	MGR	5	17509.75	-
41	O'BRIEN	38	SALES	6	18009.00	846.55
51	HANES	15	MGR	10	20862.80	-
61	QUIGLEY	38	SALES	-	16811.30	650.25
71	ROTHMAN	15	SALES	7	16505.83	1152.00
81	JAMES	20	CLERK	-	13507.60	128.20
91	KOONITZ	42	SALES	8	18004.75	1386.70
101	PLOTZ	42	MGR	7	18355.80	-
111	NGAN	15	CLERK	5	12511.20	206.60
121	NAUGHTON	38	CLERK	-	12957.75	180.00
131	YAMAGUCHI	42	CLERK	6	10508.90	75.60
141	FRAYE	51	MGR	8	21153.00	-

1=Help 2= 3=End 4=Print 5=Chart 6=Query  
7=Backward 8=Forward 9=Form 10=Left 11=Right 12=  
OK, this is the REPORT from your RUN command.  
COMMAND ==>  
SCROLL ==> PAGE  
24/015



**QMF for TSO supports:**

- ✓ Queries, Forms, Procedures



**QMF for Workstation/WebSphere supports:**

- ✓ Queries, Forms, Procedures
- ✓ Enhanced Visual Reports
- ✓ Visual Dashboards
- ✓ Analytical queries
- ✓ Visual queries



## QMF/HPO – a unique feature with QMF Enterprise Edition

- **QMF High Performance Option (HPO) is a multi-faceted offering installed as a companion product to DB2 QMF for TSO.**
- **QMF HPO contains two subcomponents: HPO/Manager and HPO/Compiler**

### QMF HPO/Manager

Govern (pre-emptively and in real time) ad-hoc and dynamic query and reporting activities

Easily collect detailed information to precisely control CPU resource usage at varying levels, according to any number of schedules applied to QMF user groups

### QMF HPO/Compiler

Convert frequently used queries and reports into efficient COBOL programs

Reduce resource consumption and improve performance

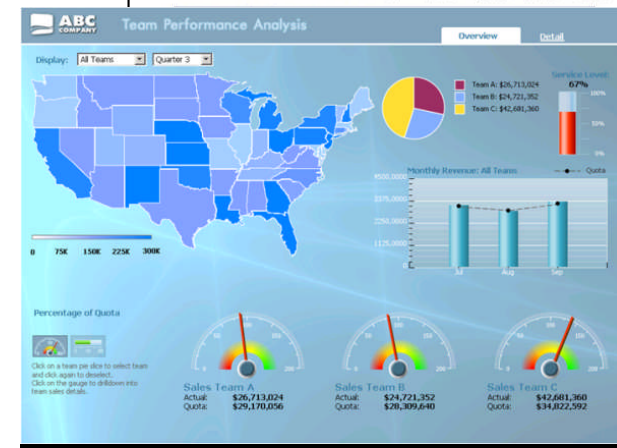
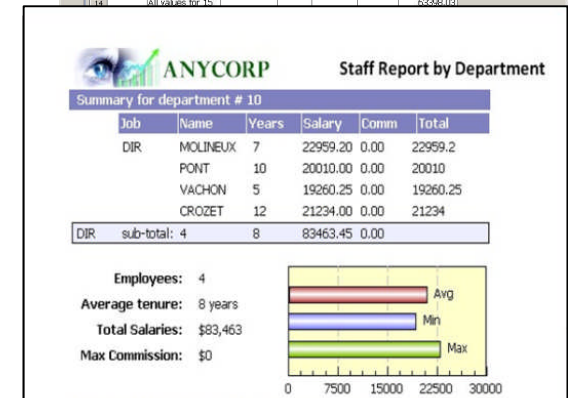
Automatically write a COBOL program to perform the same actions as running a QMF query and form within QMF for TSO

This COBOL program will run as a stand-alone application, independent of QMF for TSO

## QMF for Workstation and WebSphere

- Ad-hoc & prepared queries
  - Create/edit/re-use QMF queries
  - Apply groupings, aggregations and conditional formats and more
  - One-click export to Excel, data files or DB table
  - One-click generation of reports from the data
  
- Tabular and graphical reports
  - Generate QMF tabular reports or graphical *visual reports*
  - Highly customizable page-based layouts
  - Draw data from any number of data sources
  
- QMF Dashboards
  - Customized, interactive data visualizations
  - Rapid authoring model

1	2	3	4	5	6	7
DEPT	JOB	NAME	YEARS	SALARY	COMM	TOTAL
1		JONES	12	21234.00	0.00	\$21,234.00
2		DANIELS	5	19260.25	0.00	\$19,260.25
3	10	LU	10	20010.00	0.00	\$20,010.00
4		MOLINARE	7	22959.20	0.00	\$22,959.20
5		All values for 10				83463.45
6						83463.45
7		KERMISCH	4	12258.50	110.10	\$12,368.60
8	CLERK	NGAN	5	12508.20	206.60	\$12,714.80
9						25063.40
10	15	HANES	10	20659.80	0.00	\$20,659.80
11						20659.80
12	SALES	ROTHMAN	7	16502.83	1152.00	\$17,654.83
13						17654.83
14		All values for 15				63308.03



## QMF on the Web and enhanced mobile support

- QMF for WebSphere

- Disseminate queries, reports and dashboards to users across the enterprise for all browsers and platforms
- Create, run and share queries on the Web
- Run and share reports on the Web
- Deploy dashboards to business users as stand-alone solutions or embedded within web pages and web applications
- Deploy to mobile devices (iPad, Android)

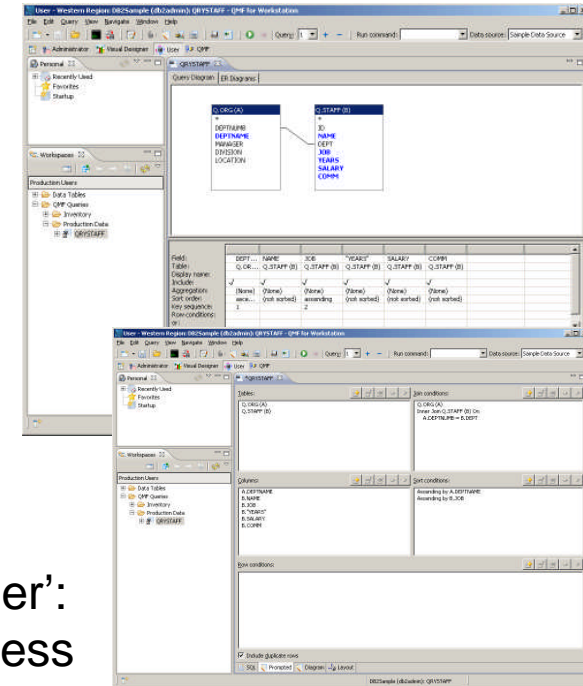
- Ability to render content in

- Pure HTML & JavaScript\*
- Adobe Flash Player
- PDF
- Excel



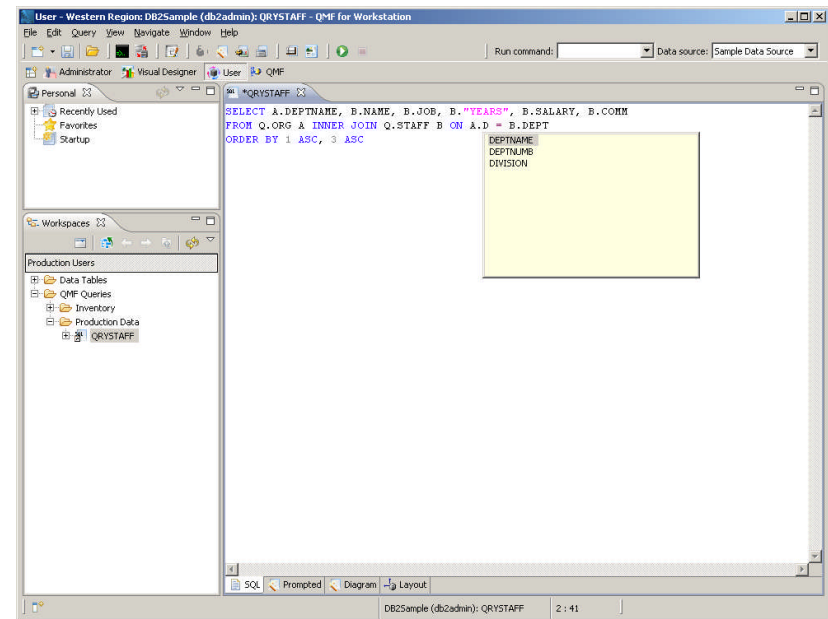
## Query creation for the 'casual' End User

- Rapidly build and execute ad-hoc queries without SQL skills
- Develop queries with a 'query diagram' designer:
  - ER diagrams provide pre-built data schemas
  - Easily define columns, conditions, aggregations, sorting options, and order of columns
- Step-by-step development with a 'prompted query builder':
  - Leads the user through the query development process
  - Each aspect of the query (tables, columns etc.) is assigned a panel for easy navigation
- Diagram designer and prompted interfaces are available in both the workstation and web user interfaces



## Query creation for SQL users

- Enter and edit SQL via the web or workstation
- Full-featured, colorized SQL editor includes code assist, code completion and dynamic parameter hints, increasing development productivity
- Users can move between the prompted diagram and SQL views, refining a given query with all three editor modes
- For example, a user could:
  - Define query tables by selecting elements from a pre-existing data diagram
  - Add query conditions using the expression designer within the prompted query view
  - Add final refinements via the SQL editor (such as nested SQL or unions)



## Metadata Layer enhances analysis

Create custom views of tables or sets of tables

Alter table names, column names, add calculated columns, pre-joined views, etc. without altering the physical structure of the underlying databases – creates a virtual view of underlying data sources

End users access the 'virtual' tables – QMF translates their SQL to that which matches the underlying table schemas

Shields users from the underlying complexity of database schemas

Change DBMS schemas with no impact upon reports, dashboards, queries

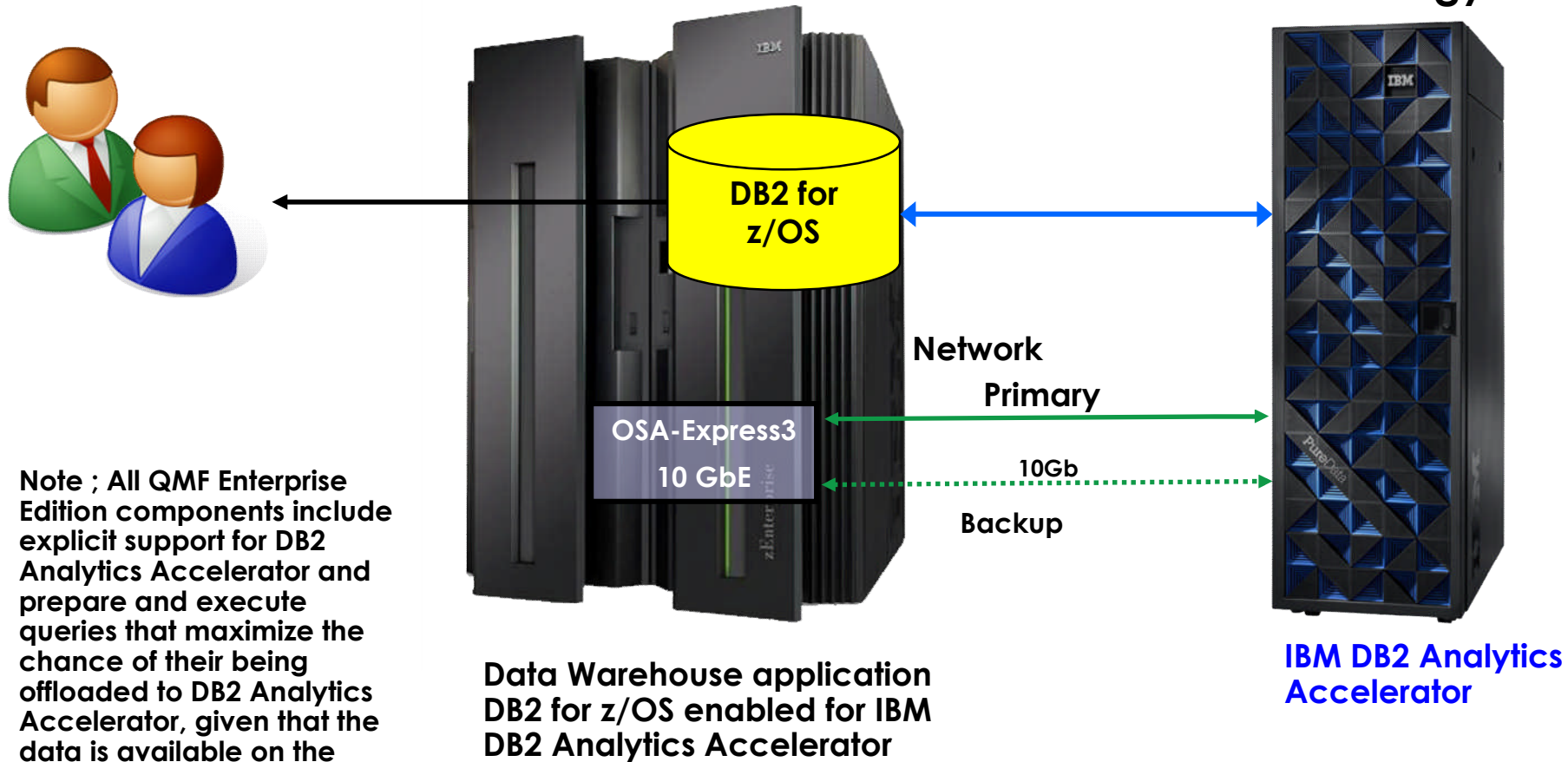
Federate data from different sources on different platforms, thus vastly enhancing the business user's reach to critical information

# Full support of the DB2 Analytics Accelerator

QMF Users &  
QMF BA solutions

zEnterprise

Netezza  
Technology



Note ; All QMF Enterprise Edition components include explicit support for DB2 Analytics Accelerator and prepare and execute queries that maximize the chance of their being offloaded to DB2 Analytics Accelerator, given that the data is available on the system.

## The DB2 Analytics Accelerator

Accelerating decisions to the speed of business

*Blending System z and Netezza technologies to deliver unparalleled, mixed workload performance for complex analytic business needs.*



### Get more insight from your data

- ✓ Fast, predictable response times for “right-time” analysis
- ✓ Accelerate analytic query response times
- ✓ QMF provides a special register to enable/disable the use if needed
- ✓ Improve price/performance for analytic workloads
- ✓ Minimize the need to create data marts for performance
- ✓ Highly secure environment for sensitive data analysis
- ✓ Transparent to the application



## Query acceleration performance & savings

			DB2 Only		DB2 with IDAA		Times Faster
Query	Total Rows Reviewed	Total Rows Returned	Hours	Sec(s)	Hours	Sec(s)	
Query 1	2,813,571	853,320	2:39	9,540	0.0	5	1,908
Query 2	2,813,571	585,780	2:16	8,220	0.0	5	1,644
Query 3	8,260,214	274	1:16	4,560	0.0	6	760
Query 4	2,813,571	601,197	1:08	4,080	0.0	5	816
Query 5	3,422,765	508	0:57	4,080	0.0	70	58
Query 6	4,290,648	165	0:53	3,180	0.0	6	530
Query 7	361,521	58,236	0:51	3,120	0.0	4	780
Query 8	3,425,29	724	0:44	2,640	0.0	2	1,320
Query 9	4,130,107	137	0:42	2,520	0.1	193	13

### Queries run faster

- Save CPU resources
- People time
- Business opportunities
- Less delay for business analytics users

Customer results, October 2011

DB2 Analytics Accelerator: “we had this up and running in days with queries that ran over 1,000 times faster”

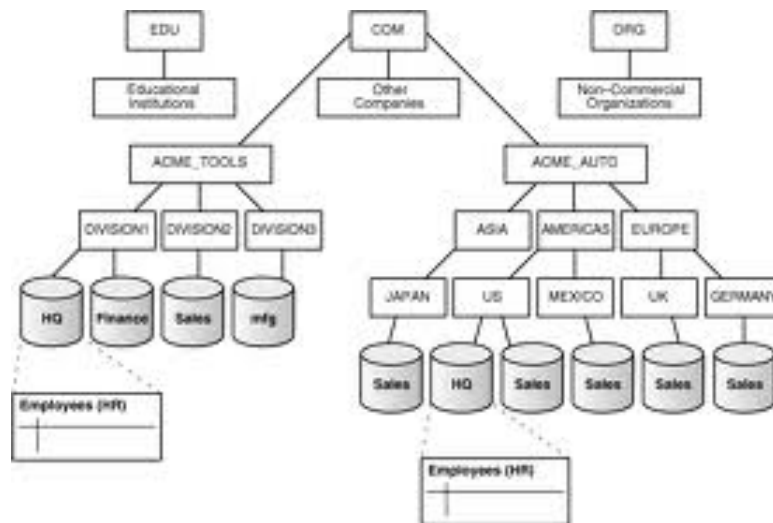
DB2 Analytics Accelerator: “we expect ROI in less than 4 months”

*Accelerating decisions to the speed of business*

# Operational Business Intelligence - IMS access with QMF

- **Increase the value of your IMS investment**

- JDBC Open Data Access to IMS in a managed environment
- Users graphically construct ad-hoc IMS queries
- Create reports and dashboards that draw directly from IMS data
- Roll out web-based graphical content that blends IMS data with relational and multi-dimensional data sources
- Incorporate IMS data within federated queries
- QMF's JDBC workloads are zAAP eligible



## QMF Enterprise Edition 10 Summary

**QMF is a viable, enterprise-wide business analytics suite**

**It has a new UI, data sources, deployment options, dashboard and predictive analytics capability**

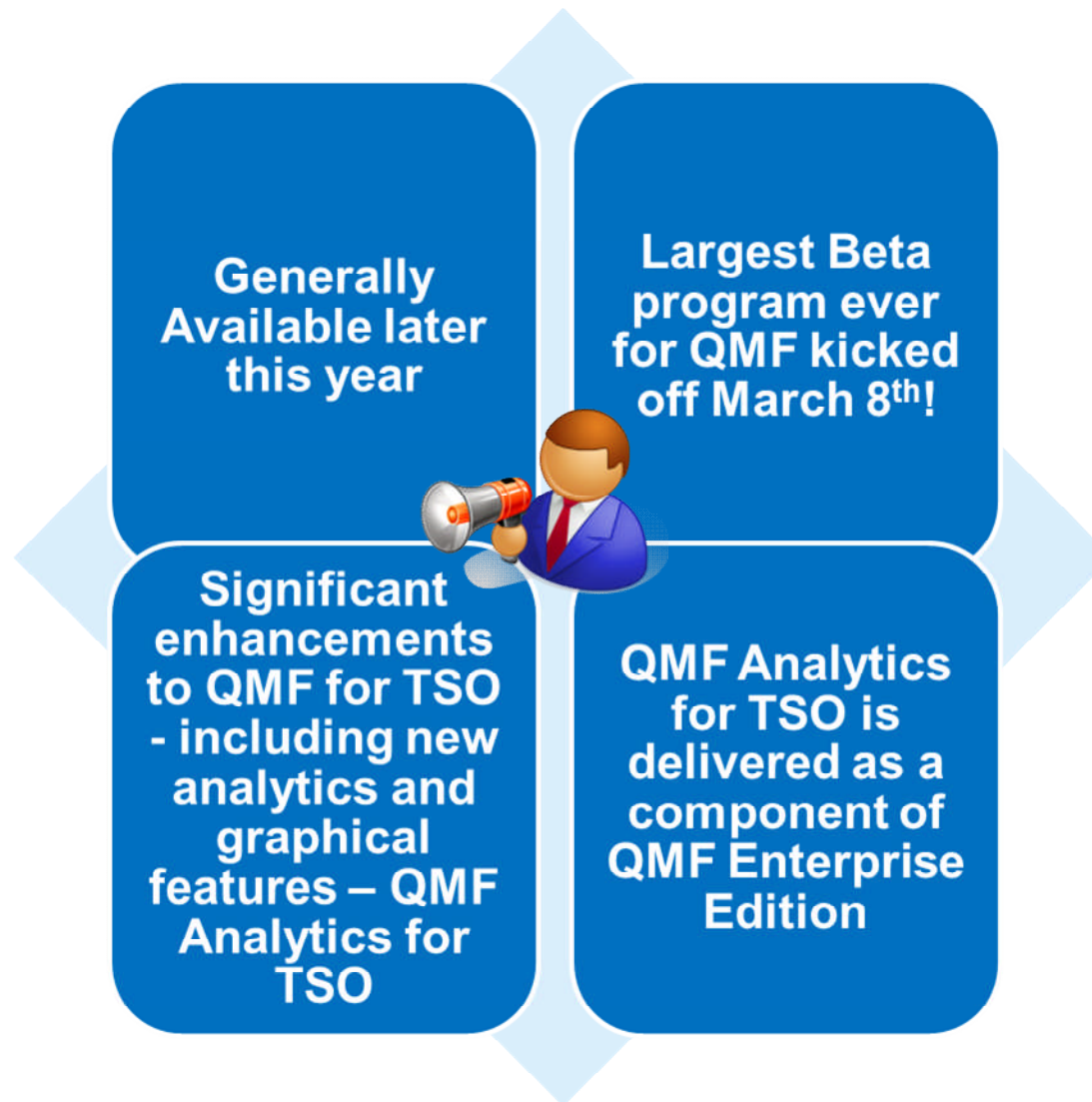
**Administration and installation options have been greatly simplified as well as expanded to provide a wide range of possibilities**

**QMF continues to be a feature of DB2 for z/OS, but may be installed and deployed on any server in an enterprise at no additional cost**

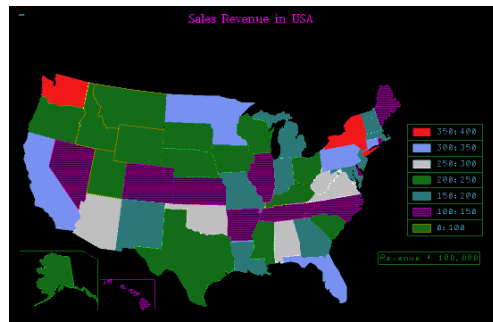
**Sophisticated new functions have been added such as data federation, new metadata support, and a new analytics query style**

**QMF supports an ever expanding number of users and user types such as mobile devices (e.g. iPad and more)**

## Introducing DB2 Query Management Facility 11!!



# Sophisticated new charting and statistical analysis directly on TSO with QMF Analytics for TSO – all menu driven



QMF.ANALYTICS HOME PANEL

**Charts**

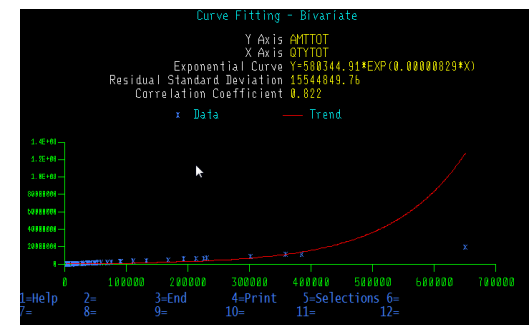
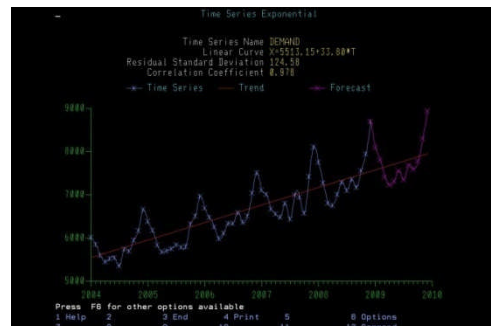
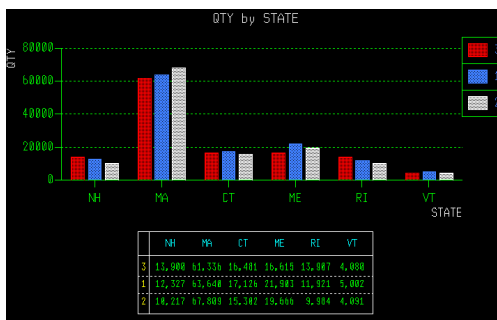
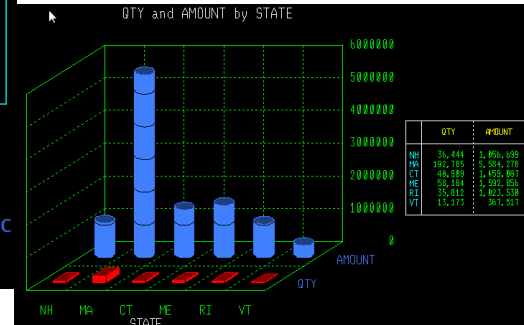
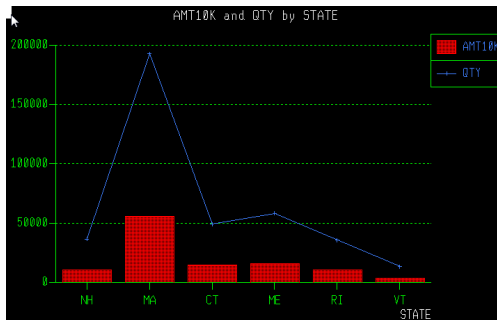
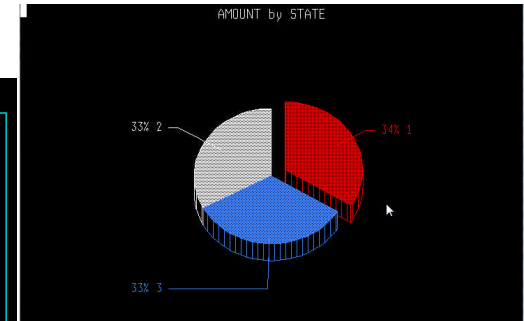
- Histogram
- Map
- Mixed
- Pie
- Plot
- Tower

**Statistics**

- Basic
- Curve Fitting - Bivariate
- Curve Fitting - Univariate
- Discounted Cash Flow
- Linear Trend

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1=Help    2=    3=End    4=    5=    6=  
 7=    8=    9=    10=    11=    12=



# QMF for Workstation and WebSphere V11

## What's New?

- Analytics on free-form text
- Increased support for ad-hoc reporting and dynamic dashboards
- Enhanced scheduling of tasks
- Wizard-driven reporting facility
- Support for saving queries with their data



## QMF Enterprise Edition mobile

- From TSO to your iPad – QMF now has something for everyone
- Allows enterprise users to access QMF dashboards and reports from their tablet devices
- Bookmarks allow users to seamlessly transition between devices, preserving the content currently being viewed



## Collateral and Information

- DB2 QMF family product page:  
<http://www.ibm.com/software/data/qmf/>
- DB2 QMF Redbook – NEW!  
<http://www.redbooks.ibm.com/abstracts/sg248012.html>
- DB2 QMF on YouTube  
<http://www.youtube.com/watch?v=mt5ZEJ57XZs>

