



# BIG DATA ANALYTICS

## EVOLVING TOWARD ANALYTICS 3.0



 @guidooswald

**BIG DATA**

**BIG DATA**

**SAY BIG DATA**

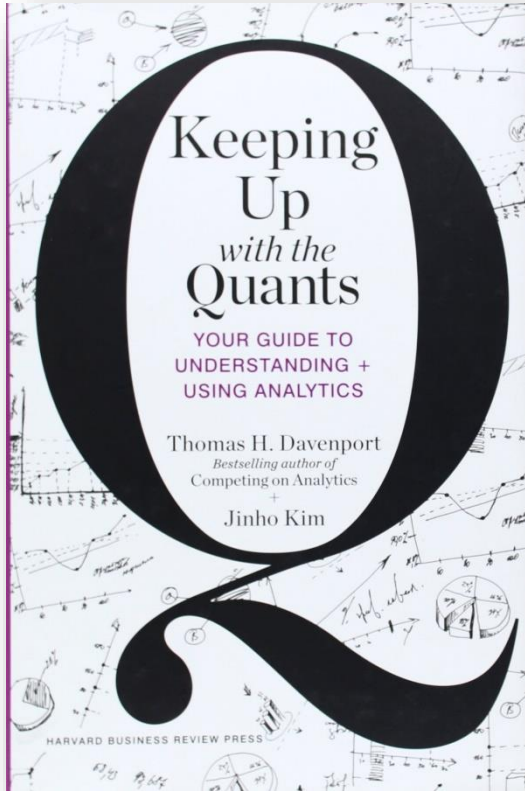
**ONE MORE TIME**



# Analytics 3.0 ?

**TOM DAVENPORT**

# Keeping Up with the Quants: Your Guide to Understanding and Using Analytics



“All industries will be affected by Analytics 3.0. The benefits from effectively leveraging big data, embedding data into decision making and truly becoming an analytical competitor will apply to any firm in any industry.”



1.0

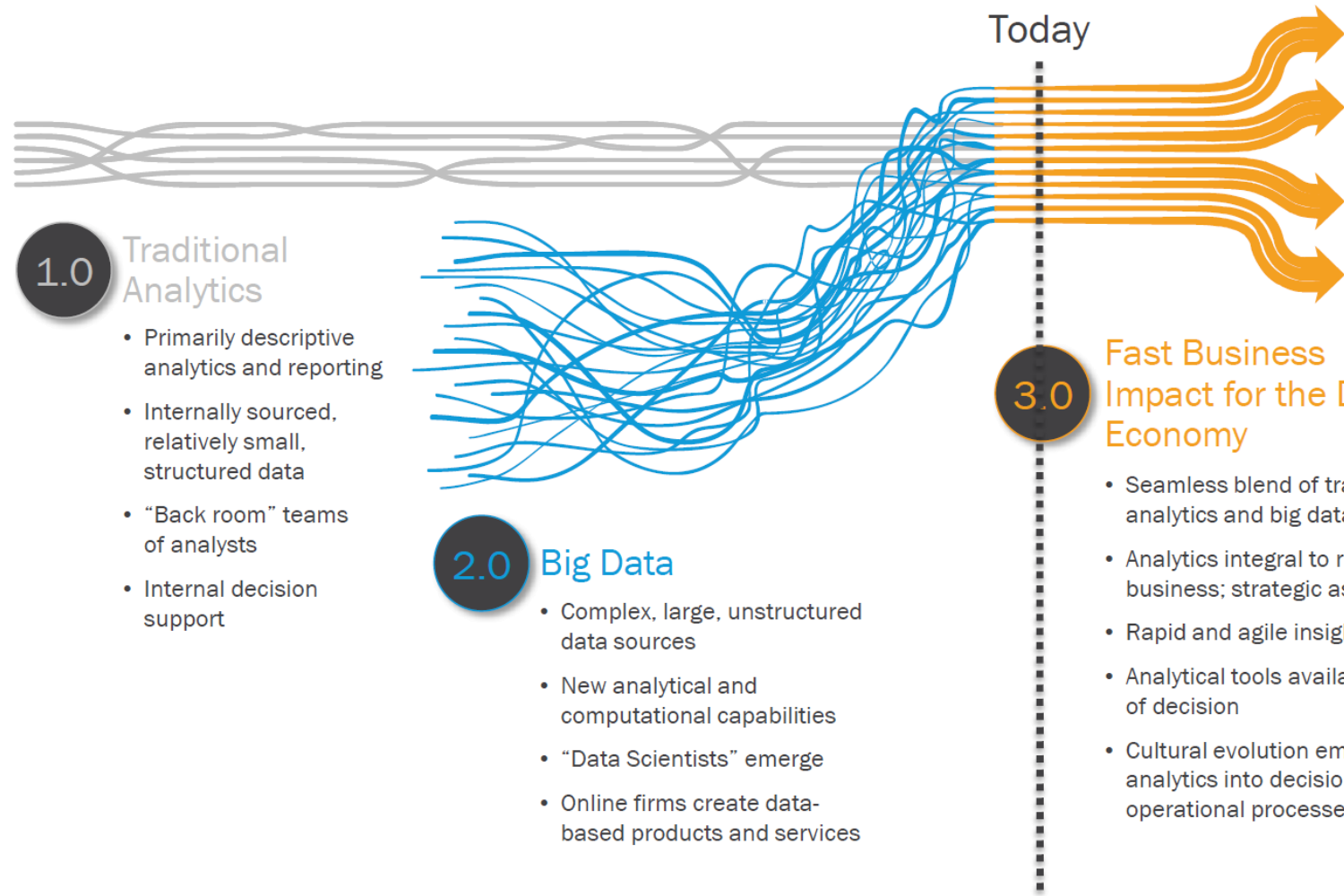
## Traditional Analytics

- Primarily descriptive analytics and reporting
- Internally sourced, relatively small, structured data
- “Back room” teams of analysts
- Internal decision support

2.0

## Big Data

- Complex, large, unstructured data sources
- New analytical and computational capabilities
- “Data Scientists” emerge
- Online firms create data-based products and services



Today

## 1.0 Traditional Analytics

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## 2.0 Big Data

- Complex, large, unstructured data sources
- New analytical and computational capabilities
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## 3.0 Fast Business Impact for the Data Economy

- Seamless blend of traditional analytics and big data
- Analytics integral to running the business; strategic asset
- Rapid and agile insight delivery
- Analytical tools available at point of decision
- Cultural evolution embeds analytics into decision and operational processes

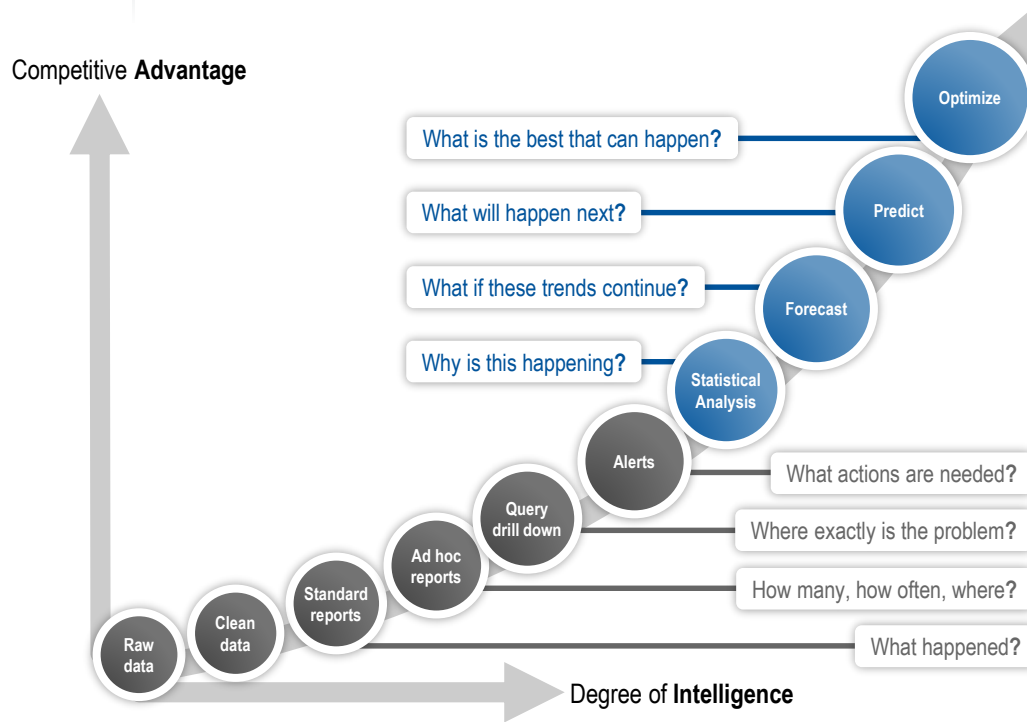
**Descriptive:** report on the past. BI Reporting

**Predictive:** use models based on past data to predict the future

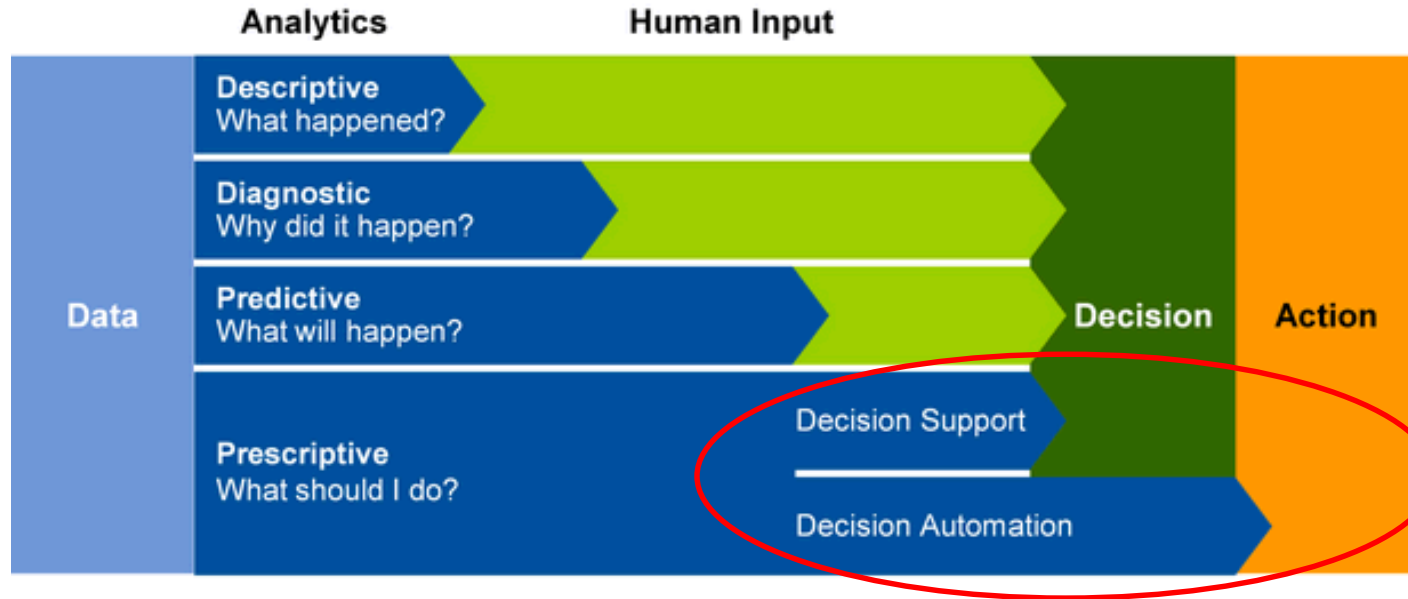
**Prescriptive:** use models to specify optimal behaviors and actions.




# ANALYTICS 3.0 ANALYTICAL DECISION MAKING



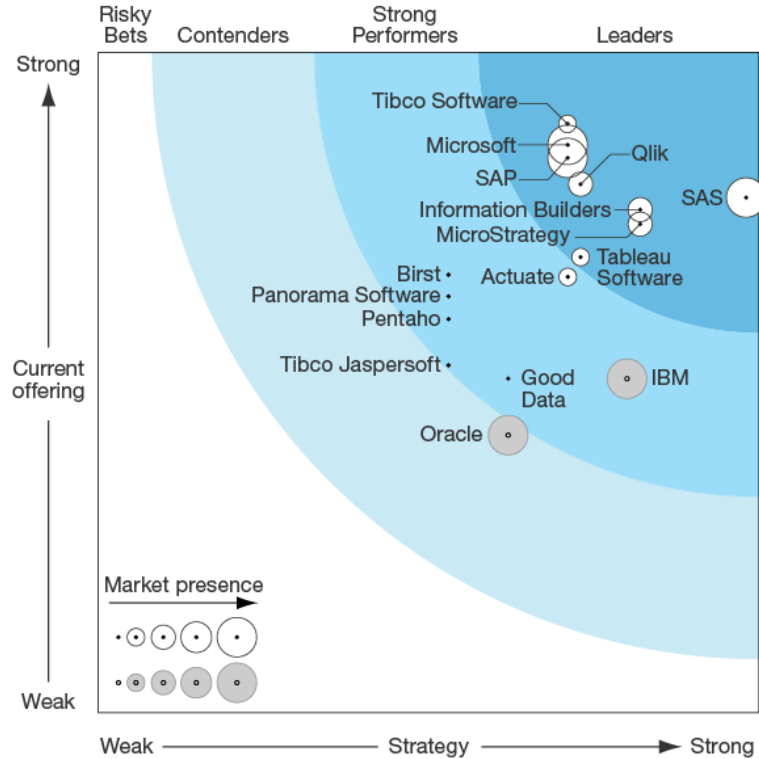
# ANALYTICS 3.0 ANALYTICS CONTINUUM



A diverse crowd of people, including men and women of various ethnicities, are shown in a celebratory mood. They have their arms raised in the air, some with clenched fists, and are smiling broadly or shouting. The background is a bright, slightly blurred crowd, suggesting a large gathering or event. The overall tone is positive and energetic.

# Democratization of Analytics

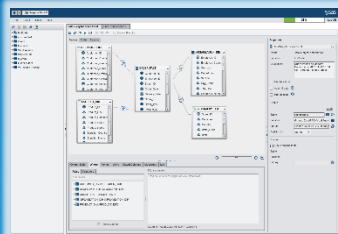
# IN THE FORRESTER WAVE FOR AGILE BUSINESS INTELLIGENCE PLATFORMS



The Forrester Wave™: Agile Business Intelligence Platforms, Q3 2014, Forrester Research, Inc., July 3, 2014.

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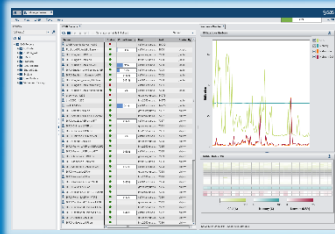
### Central Entry Point



#### DATA BUILDER

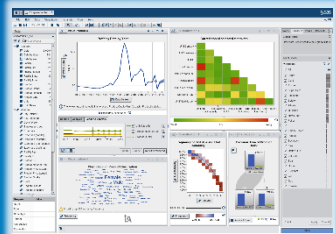
- Join data from multiple sources
- Create calculated and derived columns
- Load data

### Integration



#### ADMINISTRATOR

- Monitor SAS® LASR™ Analytic server
- Load/unload data
- Manage security



#### EXPLORER

- Perform ad-hoc analysis and data discovery
- Apply advanced analytics

### Role-based Views



#### DESIGNER

- Create dashboard style reports for web or mobile



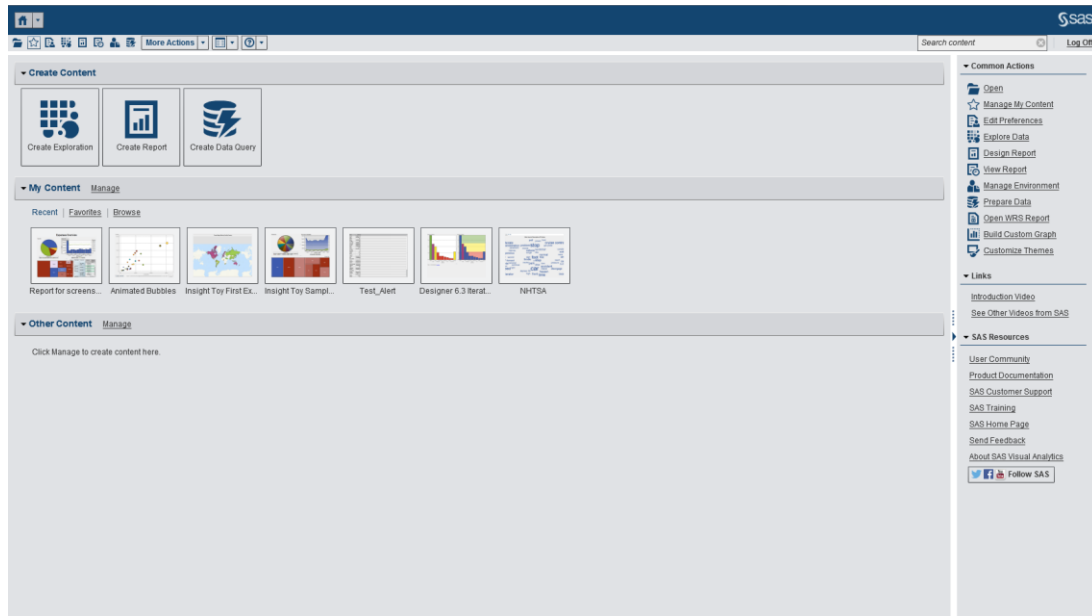
#### MOBILE BI

- Native iOS and Android applications that deliver interactive reports

# SAS® LASR™ ANALYTIC SERVER

# SAS® VISUAL ANALYTICS HUB

- Home page for all users with guest access
- Role based views
- Navigation to varied end user actions
  - Ad-Hoc Data Exploration
  - Report Creation
  - Report Viewing
- Administration tasks
  - Data Preparation
  - System Administration and Monitoring
  - Theme Design
- User content management
  - Recent, favorites, collections
  - Search
- Collaboration via commenting



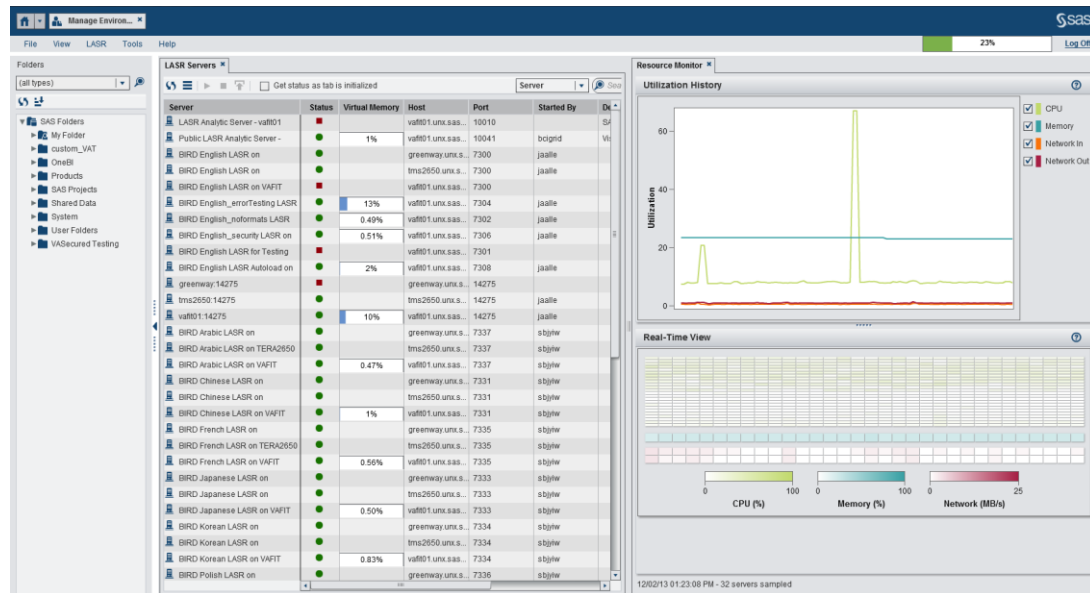
- Search for tables
- Join and append tables
- Import Information Maps
- Create computed columns (full expression builder)
- Filter columns and rows (aggregated data or not)
- Load table, spreadsheet, or star schema in memory
- Quick access to Twitter feeds and Oracle tables
- Allow pre and post-processing steps
- Schedule query execution

The screenshot displays the SAS Visual Analytics Data Builder interface. The main workspace shows a star schema design with the following tables and their columns:

- CUSTOMER\_DIM**: Customer\_ID, Customer\_Country, Customer\_Gender, Customer\_Name, Customer\_FirstName, Customer\_LastName, Customer\_BirthDate, Customer\_Age\_Group
- ORDER\_FACT**: Customer\_ID, Employee\_ID, Street\_ID, Order\_Date, Delivery\_Date, Order\_ID, Order\_Type, Product\_ID
- ORGANIZATION\_DIM**: Employee\_ID, Employee\_Country, Company, Department, Section, Org\_Group, Job\_Title, Employee\_Name
- PRODUCT\_DIM**: Product\_ID, Product\_Line, Product\_Category, Product\_Group, Product\_Name, Supplier\_Country, Supplier\_Name
- GEOGRAPHY\_DIM**: Street\_ID, Continent, Country, State\_Code, State

The interface includes a left-hand navigation pane with folders like 'My Folder', 'custom\_VAT', 'OneBI', 'Products', 'SAS Projects', 'Shared Data', 'System', 'User Folders', and 'VASecured Testing'. The top bar shows 'Prepare Data' and '28%' progress. The bottom section contains a 'Column Editor' with 'Where', 'Having', 'Joins', 'Output Columns', 'Messages', and 'Log' tabs. The 'Fields' tab is active, showing a list of tables and columns. The 'SQL expression' field is empty, with a placeholder text: 'Drop columns here or type the SQL expression. Example: TABLE.COL1 IN ('SOFA','COUCH')'. The right-hand 'Properties' panel shows details for the 'DataQuery for screenshot', including Name, Location, Description, and various options like 'Unique values', 'Append data', and 'Manual code'.

- Monitor Environment
  - Resources (CPU, I/O, Memory)
  - Processes (user session focused)
  - Mobile device logging history
- Manage Server and Data
  - Start/stop in-memory server
  - Load/unload tables to/from memory and local data storage
  - Register tables in metadata
- Manage Security
  - Table and row level security
  - Mobile device blacklisting and whitelisting
- Manage Alerts





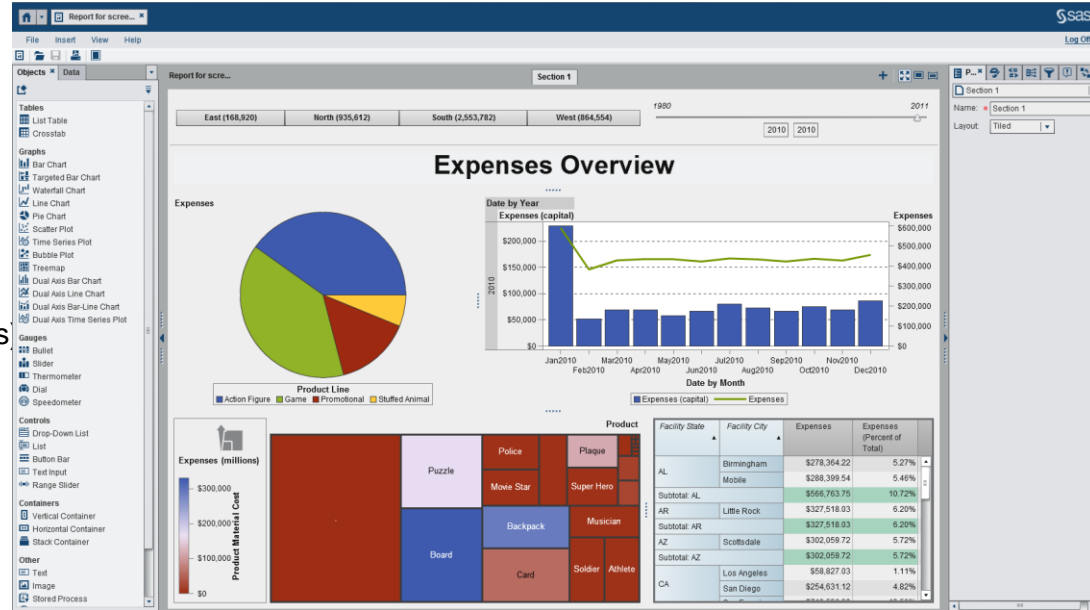
# SAS® VISUAL ANALYTICS EXPLORER

- Visual data exploration and discovery to find relationships, trends, discrepancies etc.
- Auto-charting, visual filtering, etc.
- Various Visuals: Cross tabs, Bar-Charts, Line Charts, Scatter Plots, Bubble Plots, Geo Maps, Box Plots, Heat Maps, Network Diagrams, Word Cloud, and others
- Consumable Analytics: Correlation (relationships), Regression (linear, quadratic, cubic, p-spline, best fit), Forecasting (multiple algorithms), Scenario Analysis, Decision Tree, Text Analytics, Summary statistics
- Comments in the exploration and visualization levels
- Self-service Hierarchies: Drill down, up, and across siblings
- Selection and brushing modes for discovering relationships
- Quickly derive relative time calculations and create new calculated columns via expression builder
- Save and share as exploration, report, PDF, email
- Export data to CSV document format

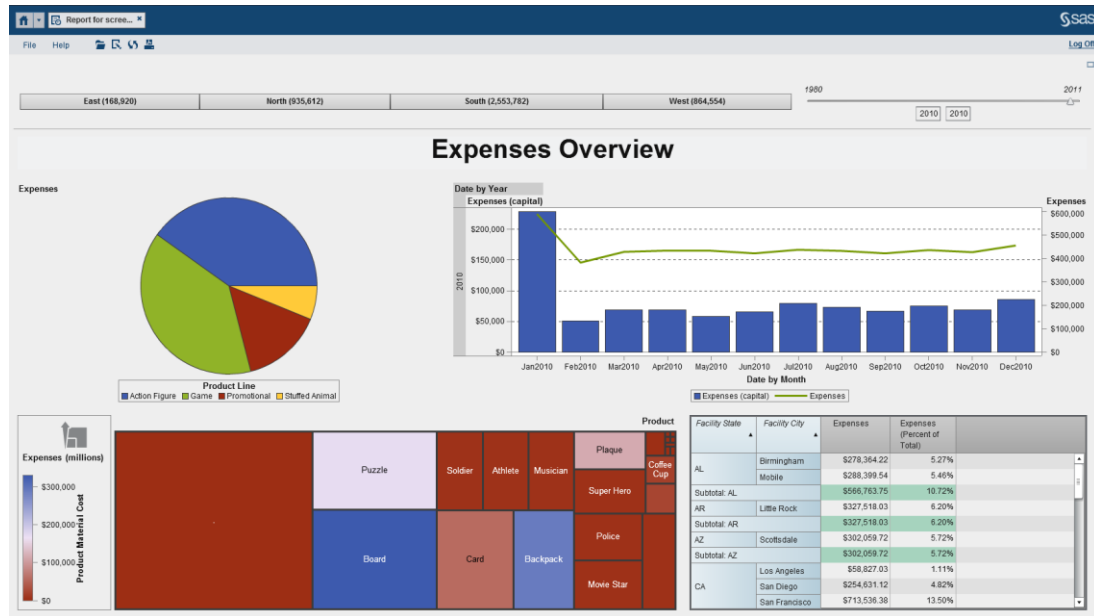


# SAS® VISUAL ANALYTICS DESIGNER

- Interface for designing reports and dashboards
- Leverage existing reports and data to create reports
- Use multiple data sources
- Large number of visualization options with ability to create custom graphs
- WYSIWYG designer with integrated report viewer
- Precision and tiled layout
- Report object interactions and prompts
- Comments in the report and object (charts and tables levels)
- Self-service Hierarchies: Drill down, up, and across siblings
- Quickly derive relative time calculations and create new calculated columns via expression builder
- Print, share report via email, setup alerts
- Export data to Excel and CSV/TSV document formats
- “Adaptive presentation” - build once, access on computer browser, mobile device, MS Office suite and SharePoint



- Visualize reports previously created
  - Multiple data sources
  - Interactions and prompts
  - Hierarchy navigation
- Collaboration via commenting
- Print, subscribe to alerts
- Export data to Excel and CSV/TSV document formats
- Leverage existing SAS security and allow guest access



- Native apps for iPad and Android tablets
- Highly visual and interactive: filtering, highlighting, drill-down, zooming, etc.
- Collaboration via commenting
- Subscribe to alerts
- Share via email with annotation
- Offline capabilities
- Leverage existing SAS security and allow guest access
- Additional security focused on support for device encryption, remote wipe, blacklisting, whitelisting, SSL connections, mobile tethering, application passcode, etc.



# MORE INFO ...SOME LINKS

The screenshot shows the SAS website header with the logo and navigation menu. The main heading is "Was macht einen guten Data Scientist aus?". Below it, there is a paragraph about the importance of fresh ideas and data sources in the economy. A button labeled "Studie Data Scientist" is prominent. At the bottom, there are three sections: "Welcher Typ sind Sie?" with a personality test button, "SAS Cloud Analytics" with an "Infopaket" button, and "Über sich hinauswachsen" with a "Lernprogramm" button.

[http://www.sas.com/de\\_de/insights/big-data/data-scientist-report.html](http://www.sas.com/de_de/insights/big-data/data-scientist-report.html)

The screenshot shows the SAS website page for the Data Scientist training program. The header features the title "SAS® Data Scientist - Wissen, wie aus Daten Entscheidungen werden." and a navigation menu with "Home", "Ausbildungsprogramm", "Beratung zu Beginn", and "Ablauf und Anmeldung". The main content includes a list of topics for the training program, such as "Grundlegende statistische Kenntnisse und Techniken der Datenexploration" and "Anwendung analytischer Methoden und Techniken". A "Data Scientist White Paper (PDF)" is also mentioned.

[http://www.sas.com/de\\_de/events/14/sas-data-scientist/ausbildungsprogramm.html](http://www.sas.com/de_de/events/14/sas-data-scientist/ausbildungsprogramm.html)



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