

# Analytics in Business

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# Scott's Career Journey

- Education:
  - St. Joseph's College: 3 year Pre-engineering program, BS - Economics
  - Purdue University: BS - Industrial Engineering
  - Programming languages: BASIC, Pascal, C
- Work
  - Percscio, Vice President & Advisor
    - Develop and manage data projects for clients in variety of industries including agriculture and healthcare
  - Wyndham, Vice President, Revenue Management
    - Integrate revenue management, marketing, and call center processes related to seven acquisitions to build new business unit
  - Fireside Group, President
    - Develop distribution strategy for vacation ownership secondary market
  - Starwood, Vice President of Inventory Planning and Operations
    - Develop team analytic approach
    - Implement forecasting process and system
  - RCI, Vice President of Revenue Management
    - Develop team analytic approach
    - Dynamic pricing implementation
    - Global process optimization (including forecasting)
  - RCI, Analyst
    - Algorithm development to drive inventory trading currency
  - Naval Air Warfare Center, Industrial Engineer
    - Parametric modeling for manufacturing costs and Life Cycle Cost modeling

# Questions & Analytics Evolution

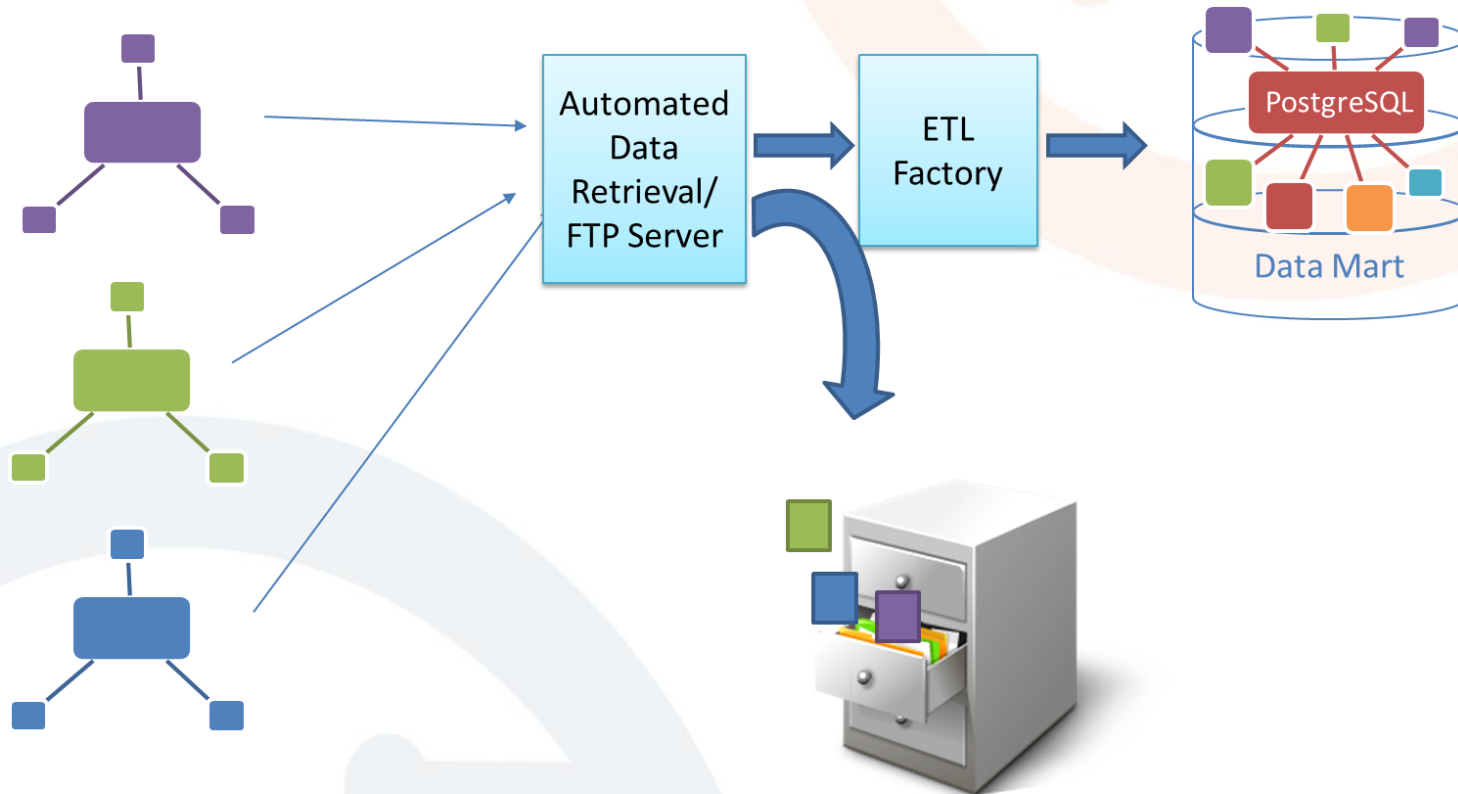


- Descriptive
  - Green bar reports, transactional figures
- Predictive
  - Who will buy my product?
  - Example: What are your supply, demand, and utilization forecast?
    - Drives business decisions
    - Informs Wall Street analysts
- Prescriptive
  - What course of action should I take?
  - Example: What surgery patients should be kept overnight?
    - Improve success rates
    - Decrease recidivism rates

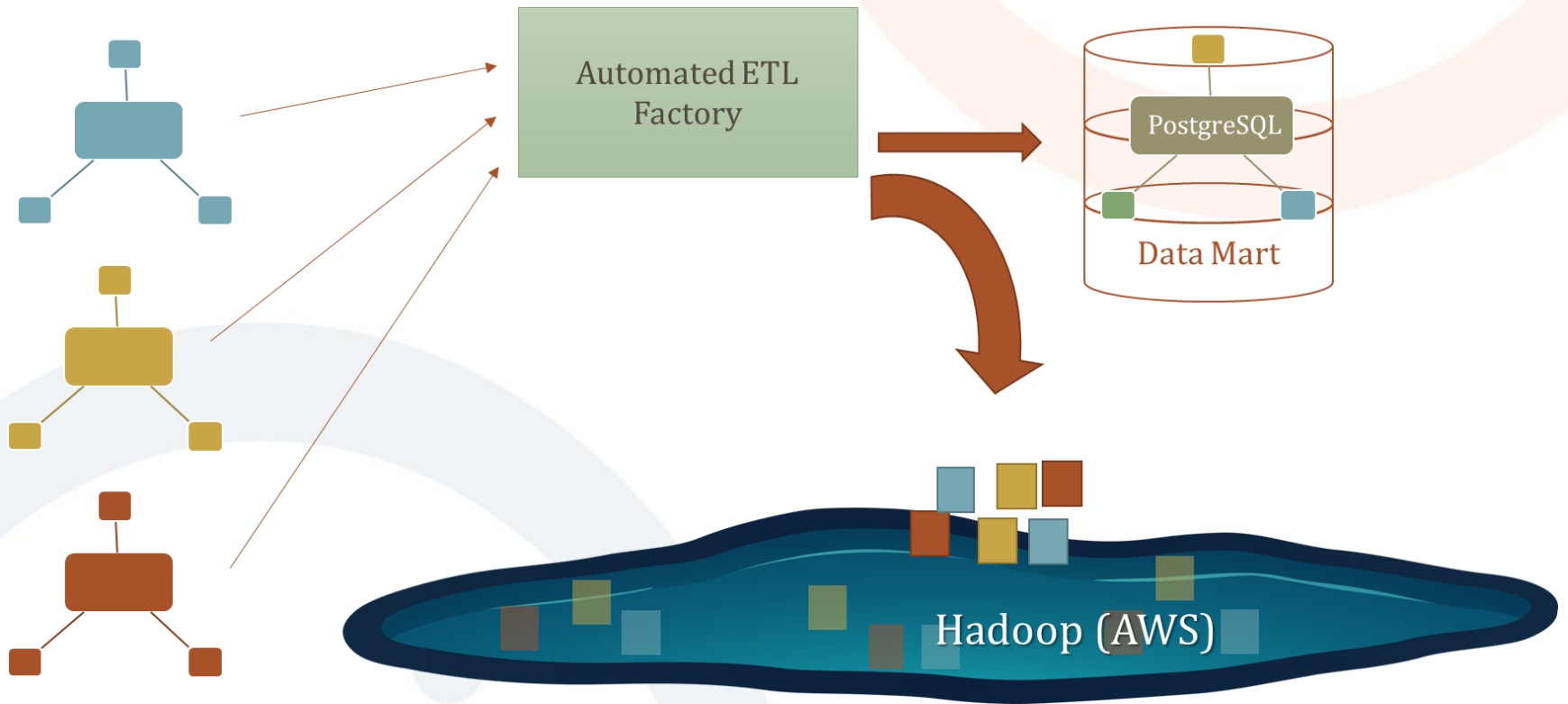
# Environment & Tool Evolution

- Mainframe environment
  - Terminals
    - DB2 Query Management Facility (SQL tool)
    - Lotus 1-2-3 (WYSIWYG)
- AS/400
  - SAS
  - PCs and Microsoft applications
- Cloud
  - On-demand Computing: AWS, Google Cloud
  - Learning tools: R and Python
  - Data management: PostgreSQL, Hadoop
  - Visualization: Tableau, Power BI

# New Technical Architecture



# New Technical Architecture



# Business Use Cases

# Hospitality

- Revenue Management
  - Pricing
    - Understand supply and demand trends
- Customer satisfaction
  - Room assignment
- Finance
  - Drive revenue projections based on occupancy and rate projections



# History of Revenue Management

**Late 1970s**

American Airlines begins using Yield Management techniques

**Early 1980s**

Other airlines adopt Yield Management practices

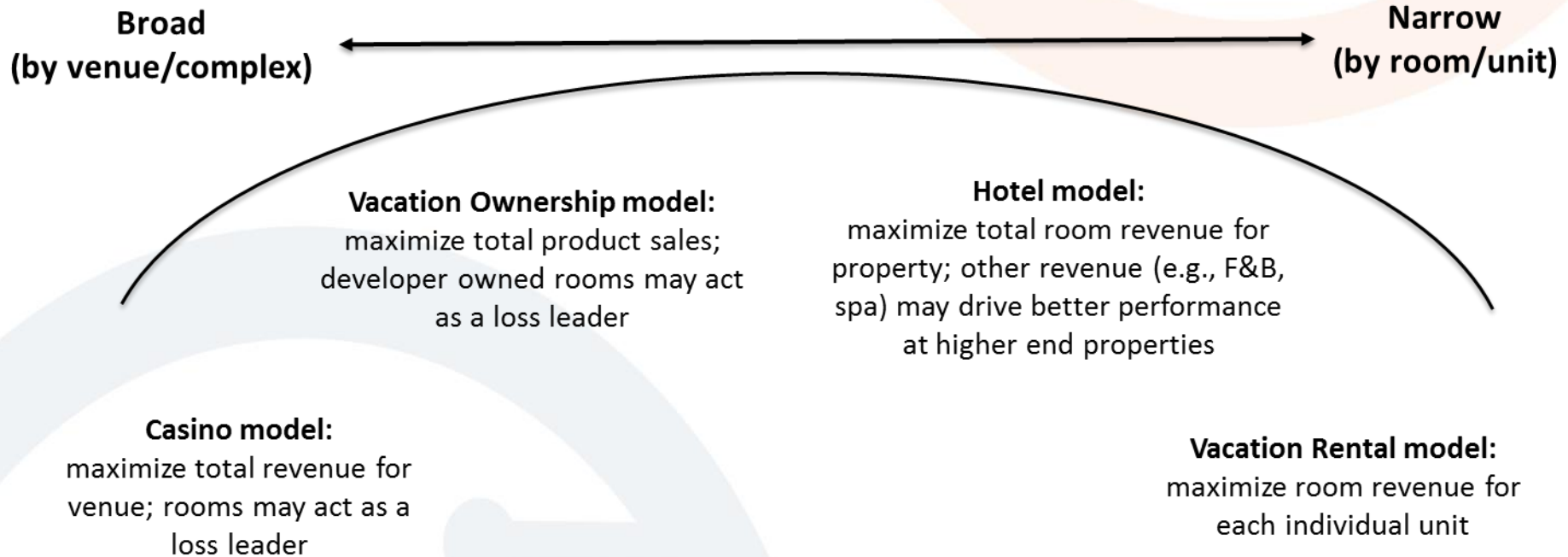
**1990s**

Hoteliers begin using Revenue Management practices

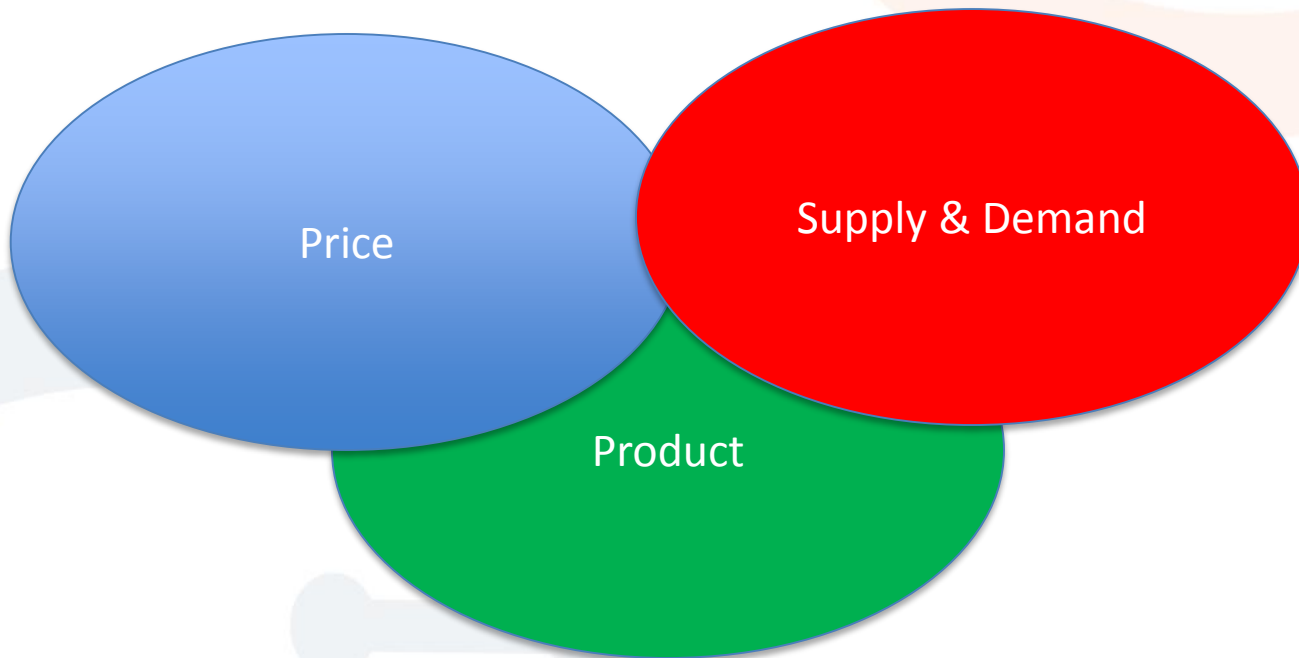
**2000s - now**

Dynamic pricing leveraged for sporting events, concert tickets, attraction admissions

# Revenue Management – Understand the Goal



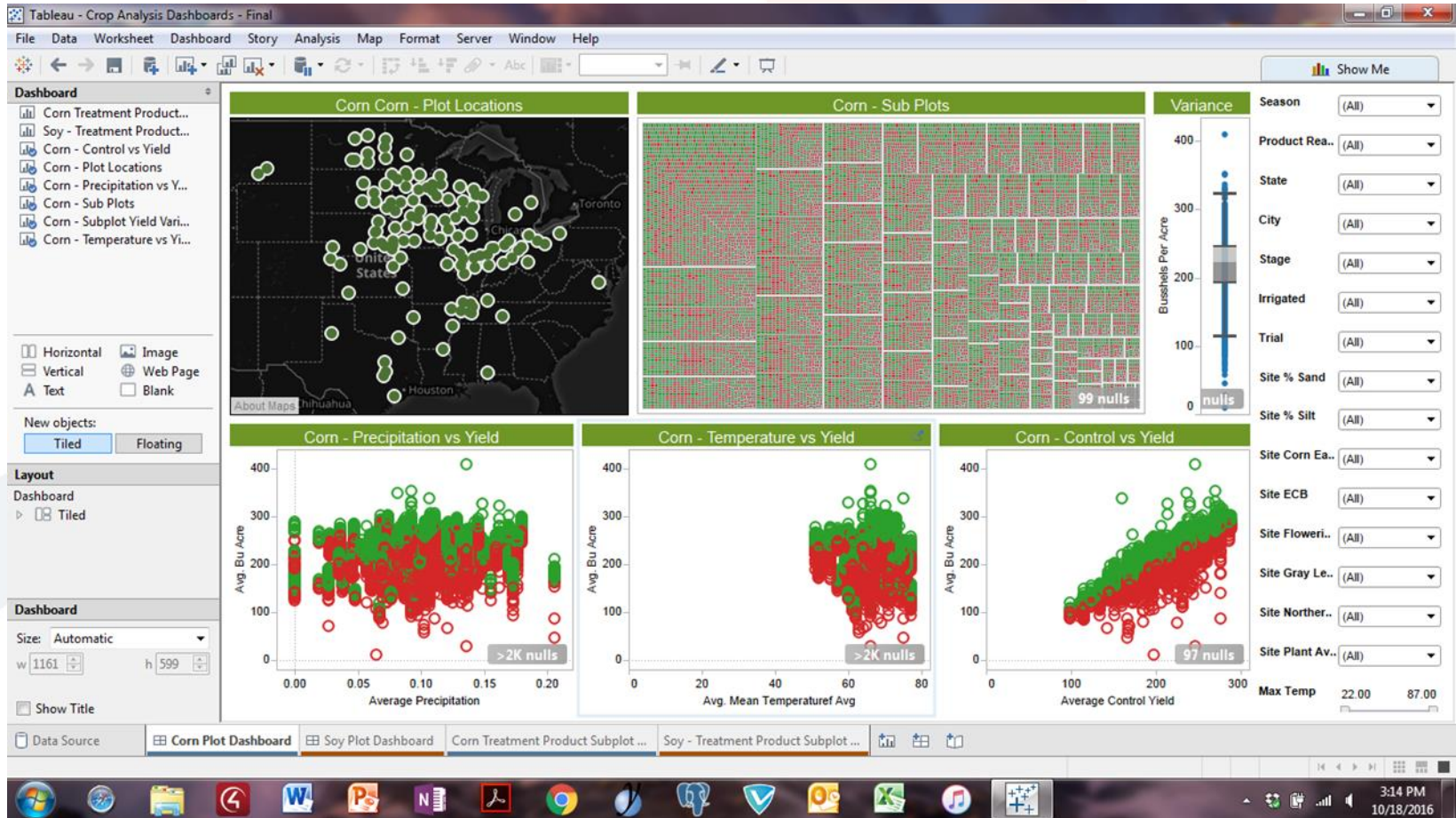
# Revenue Management - Forecasting



# Agriculture

- Crop yield
  - Use seed, treatment product, combined with open source data such soil type (USDA), weather (precipitation, temperature, wind, humidity) to determine best treatment regimen for highest crop yield
- Image analysis
  - Use drone footage to drive specific treatment based on images
- Livestock health
  - Use livestock wearables and social media to monitor potential risks and drive prescriptive decisions

# Crop Analysis Dashboard



# Other Industries

- Healthcare
  - Wellness programs
    - Use analytics to determine if claims were lower
  - How to reduce recidivism rates
    - Treatments to reduce
- Logistics
  - Supply Chain Management
  - Freight Transportation
  - Mining
- Politics
- Law Enforcement

# Analytics - Building Value

- Create transparency
- Decision support systems
  - Efficiently and effectively making the right decisions faster
- Solve the right problem
  - Example: Dynamics pricing implementation
- Apply quantitative approach to business processes (BPR – obliterate, don't automate)
  - Existing processes may be convoluted
  - 80% prep / 20% analysis migration to 20% prep / 80% analysis
- What are insights you're gleaning from the data?
  - Know your audience; provide overview of process
  - What's the value in the findings?