run()

{ ANP104 – Massive Predictive Analytics }

SAP TECHED
Speakers

Las Vegas, Sept 19 - 23
Erik Marcadé - Vice President, Advanced Analytics Products

Bangalore, October 5 - 7
Paul Pallath, Chief Data Scientist, Advanced Analytics Products

Barcelona, Nov 8 - 10
Erik Marcadé - Vice President, Advanced Analytics Products
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Agenda

- Predictive Analytics and Machine Learning Overview
- What is Massive Predictive Analytics?
- A Small Word on Automation
- Some Examples
Predictive Analytics and Machine Learning Overview
There is no such thing as an analytics continuum!

Chasm!!!

- What happened?
- What will happen?
- Why did it happen?
- What should I do?

Maturity of Analytics Capabilities

User Engagement

- Raw Data
- Cleaned Data
- Standard Reports
- Ad Hoc Reports & OLAP
- Self Service BI
- Agile Visualization
- Predictive Analytics
- Prescriptive Analytics

User Engagement
There is no such thing as an analytics continuum!

Humans make decision
Data is aggregated for visualization
UI integration at best

Why did it happen?
What happened?
What should I do?
What will happen?

Chasm!!!
There is no such thing as an analytics continuum!

Chasm!!!

Machines propose/make decision
Data is de-normalized, flattened, fine grain
Process integration at last

What will happen?

What should I do?

Maturity of Analytics Capabilities

User Engagement

Raw Data
Cleaned Data
Standard Reports
Ad Hoc Reports & OLAP
Self Service BI
Agile Visualization
Prescriptive Analytics

Predictive Analytics

Why did it happen?

What happened?

What will happen?
Worldwide Market Sizes… (Guesstimates)

$10B
Query Reporting
Agile Viz
Analytics

$3B
Advanced/
Predictive Analytics

$1B
Content/
Unstructured
Analytics
Solving real world problems
by optimizing resources and improving margins

SALES & MARKETING
- Churn Reduction
- Customer Acquisition
- Lead Scoring
- Product Recommendation
- Campaign Optimization
- Customer Segmentation
- Next Best Offer/Action

OPERATIONS
- Predictive Maintenance
- Load Forecasting
- Inventory/Demand Optimization
- Product Recommendation
- Price Optimization
- Quality Management
- Yield Management

FRAUD AND RISK
- Fraud and Abuse Detection
- Claim Analysis
- Collection and Delinquency
- Credit Scoring
- Operational Risk Modeling
- Crime Threat
- Revenue and Loss Analysis

FINANCE AND HR
- Cash Flow and Forecasting
- Budgeting Simulation
- Profitability and Margin Analysis
- Financial Risk Modeling
- Employee Retention Modeling
- Succession Planning

OTHER SECTORS
- Life Sciences
- Health Care
- Media
- High Education
- Public Sector / Social Sciences
- Construction and Mining
- Travel and Hospitality
- Big Data and IoT

Solving real world problems
by optimizing resources and improving margins
What is Massive Predictive Analytics?
What is Massive Predictive Analytics?

MASSIVE
PREDICTIVE FACTORY

PREDICTIVE FOR
THE MASSES!
Major Investment Areas

The Predictive Factory

- High and Low Touch UX’s
- Predictive IP
- Cloud
- Big Data
- On Premise
- Embedded in Processes and Apps
Crucial Need: Managing a Massive Number of Models

The Predictive Factory

- No coding, just configuration!
- Full predictive lifecycle
- Modeling automation
- Inclusive
More Users through Predictive Automation.. Open to Data Scientists!

Low and High Touch User Experiences

- Low touch user interface using **wizard-based approach** and **automated**
- High touch user interface **supporting open languages**
- Interoperability between both
More Models With Generic/Specialized IP. Monetize your IP.

Predictive Intellectual Property

- Generic proprietary algorithms
- Niche proprietary algorithms
- Niche predictive IP to be available via a marketplace
- Open to data science standards and available resources
Massive Consumption through Cloud. Extend the Native Capabilities.

- All-in-one SAP BusinessObjects Cloud
- Guided Machine Discovery
- HCP, Predictive Services targeting partners and integrators
Massive Number of Models on Massive Data Volumes

Big Data

- Data Preparation compatible with ultra-wide data sets
- Distribution of algorithms on scale-out architectures
- Integration into Big Data streaming environments
Massive Deployment requires a Simplified Product Design

**Desktop**
Automated Java Swing Client
Expert (HTML/Java)
KxShell

**Predictive Factory - Fiori**
Automated UI5 scheduling app

**Client**
Automated Java Swing Client, KxCORBAShell

**Server**
Unmanaged

**Predictive Analytics 3.x**
Sapphire 2016

**Predictive Factory - Fiori**
Automated & Expert UI5 app (successor authoring)

**Server**
BIP managed

**Predictive Analytics 4.x**
Future

**Client**
Automated Java Swing Client (legacy features), KxHTMLShell

Evolutions
Existing

SDK (CORBA)

On premise, HANA (XSA)

SDK HTML/services
Predictive Analytics Integrator

- Leveraging powerful predictive libraries (APL, PAL, R) in HANA
- Included in every deployment of the Integrating app
- Out-of-the-box lifecycle management of predictive models (retrain, score, test)
A Small Word on Automation
Traditional Approach

What **competition** does for automation:
Stack several algorithms and hope for the best
Value of SAP BusinessObjects Predictive Analytics Automation

Problem Identified

Aggregate & prepare data
Identify relevant variables
Derived features & encode variables
Develop models
Debrief models
Write code for database execution

Business Results

Data Manager

- Generate SQL for HANA, Hadoop, Hive, SparkSQL, and all major databases
Value of SAP BusinessObjects Predictive Analytics Automation

- Aggregate & prepare data
- Identify relevant variables
- Derived features & encode variables
- Develop models
- Debrief models
- Write code for database execution

**Auto-algorithms**

- Auto-Algorithms make this section obsolete
Value of SAP BusinessObjects Predictive Analytics Automation

**Auto-algorithms**

- Numbers, strings, dates
- Categorical, continuous, textual
- Date parts
- Composite variables (example: position from latitude and longitude)
Value of SAP BusinessObjects Predictive Analytics Automation

**Problem Identified**

- Aggregate & prepare data
- Identify relevant variables
- Derived features & encode variables
- **Develop models**
- Debrief models
- Write code for database execution
- **Business Results**

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**Auto-algorithms**

- Classification, regression, clustering, times series, key influencers
- Link analysis, recommendations
- HANA (APL)
- Hadoop (Scala)
Value of SAP BusinessObjects Predictive Analytics Automation

Auto-algorithms

- All descriptive statistics available
- Key influencers, decision trees, segments, optimal binning and banding
- Communities
Value of SAP BusinessObjects Predictive Analytics Automation

Problem Identified
- Aggregate & prepare data
- Identify relevant variables
- Derived features & encode variables
- Develop models
- Debrief models

In-Database Apply:
- Automated SQL generation
- Optimized with data manager
- HANA: Streaming (CCL)
- Hadoop: Streaming (Java)

Business Results
- Write code for database execution
Some Examples
Some Examples

- **Large video provider**
  - ~1600 models retrained every month for product appetency

- **Chemical company**
  - 400 models in 11 families for more than 6 years for demand forecasting

- **High tech company**
  - 400 models for sales pipeline accuracy improvement (built in 5 days…)

- **Transportation company**
  - 15,000 models for objects routing
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Related SAP TechEd sessions:
ANP101 - SAP BusinessObjects Predictive Analytics – What You Really Need To Know – 1hr Lecture
ANP105 - Turning Big Data and IoT into Intelligence You Can Actually Use – 1hr Lecture
ANP108 - Predictive Business Intelligence: Give Your BI the Gift of Foresight – 1hr Lecture
ANP160 - SAP BusinessObjects Predictive Analytics 101: Discovery Session – 2hrs Hands-On Workshop
ANP205 - SAP BusinessObjects Cloud Brings Predictive Tools to the Business Analyst – 1hr Lecture
ANP260 - Massively Automate Predictive Models with Predictive Factory and SAP HANA – 2hrs Hands-On Workshop
ANP270 - SAP BusinessObjects Planning and Consolidation with Predictive Analytics – 2hrs Hands-On Workshop
ANP360 - Integration and Scripting with SAP BusinessObjects Predictive Analytics – 2hrs Hands-On Workshop
ANP600 - Start developing with the SAP HANA Cloud Platform predictive services – 1hr CodeJam
ANP806 - Road Map Q&A: SAP BusinessObjects Predictive Analytics – 1hr Session

SAP Public Web
scn.sap.com/community/predictive-analytics
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SAP Education and Certification Opportunities
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Thanks for attending this session.