Hot Topic: Artificial Intelligence / Predictive Analytics

Gartner's Top 10 Strategic Technology Trends for 2017

Artificial intelligence, machine learning, and smart things promise an intelligent future.

Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management
Matthew A. Waller1 and Stanley E. Fawcett2

1University of Arkansas
2Wiley State University

"Machine Learning" und "Predictive Analytics" bei der Tour de France

Marketing’s Move to Predictive Social Analytics
Strategic companies now work to identify and participate in conversations on social – whether these conversations are specifically about your brand, or are simply relevant to your brand and/or audience. Marketers can use social to reach out and develop relationships, offer discounts and specials, resolve issues, make sales, and more.
Agenda After Work Event
UNISYS ADVANCED DATA ANALYTICS

16h05 – 16h45
Künstliche Intelligenz mit lernenden Maschinen
Wo stehen wir mit Big Data und Digitalisierung
Prof. Dr. Joachim Buhmann
Leiter Institut für maschinelles Lernen ETH Zürich

16h50 – 17h25
Turning Data into Actionable Insights –
Unisys Advanced Data Analytics
Dr. Rod Fontecilla, Unisys Corporation USA
Vice President & Global Leader Advanced Data Analytics

17h30 – 18h00
Sherlock? Fragen Sie am besten Watson!
Analytics in Action / Live Demo
Peter Höpli & Renato Schmid, Unisys Schweiz
Senior Consultants Analytics

Networking, Apéro riche
Unisys Advanced Analytics Offerings

Analytics Consulting
Machine Learning as a Service
Today’s Businesses Have Complex Data Challenges

Too much data to process

Lack of infrastructure and analytics tools

Not enough trained staff to analyze and correlate data

Digital transformation requires a data-driven organization

Must use machine learning to get business insights and outcomes

Source: www.domo.com
Big Data Landscape

Our Clients Are Inundated!
Advanced Data Analytics Is Much More Than Traditional Reporting

- **Predictive Analytics**
  - Machine Learning
  - Python
  - NLP
  - Chatbots

- **Existing BI Environment**
  - SQL
  - RDBMS
  - ETL
  - OLAP
  - STAR Schema

- **Big Data & NoSQL**
  - Hadoop
  - Spark
  - Hive
  - Kafka
  - Kinesis

**Data Complexity**
Massive Amount of Data, 75% Unstructured and Real-Time
Journey Towards Business Value and Insights

Powerful Business Value and Insights

Data Complexity

Past – Present - Future

Massive Amount of Data, 75% Unstructured and Real-Time

L1: Data Quality, Security, MDM, Data Governance

L2: Data Integration, BI, Basic Analytics

L3: Data Lake Integration

L4: ML, Predictive Analytics, NLP

L5: Prescriptive Analytics, Automation
Our Analytics Processes

Data Wrangling

- Explore
- Organize
- Enrich
- Correlate
- Validate
- Share

Data Scientists and SMEs

Ingest Massive Amount of Data

- Business Data
- Machine Generated Data
- Third Party Data

Cloud (AWS/Azure) and/or On-Premise Data Platform

Business Intelligence
- Reporting/Dashboarding
- Data Mining

Machine Learning
- Predictive Analytics
- Data Driven Decisions

LOB

IT

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Beyond BI – The Need for ML

Imagine Now:
• Hundreds of columns defining the features for the model
• Millions and millions of rows due to our massive data ingestion
• When a new customer gets analyzed, could you say for certain whether he/she will stay as a customer?

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Unisys Machine Learning Helps Achieve Business Insights and Customer Understanding

Machine learning …ability to learn without being explicitly programmed

Business Problem

Data Scientists

SMEs

Machine Learning

Predictive Model

Business Insights and Business Value
AI COE - Machine Learning as a Service

Predictive Analytics

- Predictive analytics for our focus industries:
  - Financial
    - Churn Analytics, Fraud Analytics, Risk Analytics, Regulatory Compliance, Cross-Selling and Up-Selling, Loan Delinquency
  - Transportation
    - Freight Data Prediction, Loyalty program predictions, Lost Connections Predictions
  - Public Sector
    - Fraud analytics on fleet management
    - Social services segmentation
    - Homelessness predictions
  - Life Sciences
    - Predictive maintenance medical devices

Cyber Threat Analytics

- Behavioral Anomaly Detection Models
  - Prediction of malicious network enhancing SIEM capabilities
- Threat Intelligence Engine
  - Partnering with Recorded Future and Farsight to access the Dark Web data
- Dynamic Micro-segmentation
  - Dynamic real time micro-segmentation using Machine Learning algorithms

Customer Analytics - IoT Digital Transformation

- Customer Segmentation
  - Sentiment Analysis
- Customer 360°
  - Customer behavior
  - Recommendation engines
- IOT Analytics - BeaconBuddy
  - Conferences
  - Airports
  - Retail

Analytics Platform - Cloud (AWS/Azure) and On-Premise Data Scientists and SMEs On-Demand

Machine Learning - Chatbots & NLP - IoT Analytics - Cyber Threat Analytics - Risk & Compliance Analytics – Link Analysis – Customer Analytics
MSS Cyber Threat Intelligence

Unisys Cyber Threat Intelligence Platform

Advanced Predictive Model API
- Malware analysis
  - Open source intel
- Industry licensed intel
- Unisys-specific intel

MSS Cyber Threat Intelligence Team
- Normalization
- Threat actor tracking
- Attacker use cases

Unisys SOC Network

Threat behavior use cases
- Reconnaissance
- Command and control
- Exfiltration
- Lateral movement

Discrete indicators of compromise
- IP address
- Host name
- URL
- UserID
- Hash
- Registry entry and file

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Unisys Combines IoT-Beacons, Mobility and Analytics To Achieve Digital Transformation

- Government sends survey after customer leaves premises
- Airports help passengers have a better travel experience
- Tourism offices can promote and understand user traffic and promote new attractions
- Universities understand student traffic and help promote services
- Retail promotes via coupons and advertisement
- Conferences need to track attendees and promote spaces and speakers

Unisys BeaconBuddy Mobile App

Customer Data

Unisys Cloud Analytics Platform
Advanced Analytics Platform by Unisys
Use Cases & Clients
Providing Business Insights Across Industries
Current Clients
Unisys Builds Large Advanced Data Analytics Mission Critical Knowledge Environments

On a Typical Day, we work with DHS-CBP to:

- Process more than 1 Million passengers and pedestrians and
- Process more than 60 thousand containers

Predicting threats against the US.

We run more than 1.3 Billion transactions a day and 700,000 models a day predicting threats against the US.

Unisys has been supporting DHS for more than 15 years.
Large Software Company
Advanced Analytics for Service Management

Business Problem
• Correlate data from many sources to provide better services
• Optimize service management activities
• Increase quality at lower costs

Business Benefits
• Eliminate tickets before they get created by attacking root cause
• Providing volume forecasting to eliminate waste and increase efficiencies

Our Solution
• Scoring each ticket based on their "closeness" using Eigenvector Centrality algorithm to measure the influence of a ticket in a network
Loyalty Program Data Analytics

Performed analytics* on Customer Loyalty System that predicts:
- The probability of spending within 30/60/90 days
- What will be purchased and classify the level of spending

*with data from a UIS client airline
Malware Predictive Risk

- Which internal IP’s/hosts have the greatest likelihood of malware infection?
- How is the risk aggregated across groups: owner, functional group, owner, OS?
1) The information being provided is all regarding the Cost. Being a new business opportunity it is recommended that you add the margin on the proposal

2) All work being delivered out of India.
   • ODS integration work only have resources in India
   • Power BI development can be done by Europe resources but that will increase the cost. You do have the role codes for calculating if you want.

3) Power BI will run from Unisys infrastructure (not from Starbucks)
Social Service Agency
Identify and Predict Homelessness

Business Problem
• Improve the targeting and effectiveness
• Help social workers
• Predict risk-factors and triggers for homelessness
• Reduce homelessness

Business Benefits
• Homeless services provided to a much larger number of people than agency is reporting as homeless — identifying waste
• Benefits provided to clients outside of the designated service area — cost reduction

Our Solution
• Logistic Regression algorithms to predict homelessness and estimate how much assistance a person will receive in the future
EMC Failure Estimation: Survival Model

- 60% VNx & CLARiiON devices survive without any incident for ~110 & 60 Days respectively
- 50% VNx & CLARiiON devices survive without any incident for ~145 & 95 Days respectively
- 15-20% VNx devices survive without any servicing after a year; whereas only ~10% CLARiiON devices survive a year.

Benefits of Failure Rate Estimation
- Accurate estimation of required inventory & support/service engineers
- Minimize potential losses due to wrong provisioning of resources and inventory
- Reduce Workload and increase efficiency by deploying right resources and inventory at right time.
Statistics NZ

- **Confidentialisation of data on-the-fly**
  - Software-as-a-service conversion of unit record data to tabular aggregated data with a guarantee of confidentiality for the unit record data.
  - Software-as-a-service differentially private synthetic data generation, to enable the publication of artificial but realistic unit level data as open data.

- **A platform for federated data analysis**
  - Generation of linked tabular data from current data from a variety of sources for provision in protected analysis environments, for highly trusted users.
  - Tools for data analysis which generate *virtual* data tables, and obscure unit record level data and preclude spontaneous recognition, for trusted users.
  - Tools for data analysis which generate *virtual* data tables, and use encryption and other techniques to limit statistical disclosure risks, to enable joint data analysis between parties where there is only limited trust.
  - Tools to semi-automate the integration of diverse schemas through machine learning and semantic labelling.

- **Mechanisms for broad discovery and consumption of open data**
  - Maintain portal for collaborating in the development of a new data discovery framework for open data, an in-browser, open source visualisation platform for spatial data.

Statistics NZ takes over Government open data programme

The Government has transferred its open data programme to Statistics New Zealand saying that, as a world-leader in data and analytics, it is best placed to take the programme forward.
Retail Banking Challenge: Credit Risk, Capacity and Likelihood to Default

Method
Unisys applied 219 variables to a behavioral micro-segmentation model that estimated the likelihood to default for its more than a million loans in their portfolio.

Action
Analyzed loan delinquency lifecycle to identify gates and create predictive models for each specific gate.

Result
Reduced loan delinquency by more than 2% with a revenue value of tens of millions of dollars.
Unisys Advanced Analytics Offerings
How we do it
Our Agile Engagement Model

**Unisys Innovation Data Workshop**

Generate Business Ideas

**Proof of Concept – Data Rationalization**

- Identify Data Sets
- Analyze Data SMEs
- Define Data Products
- Refine Predictive Models
- Validate Analytic Results

**Deployment To Production**

- Identify Production Data
- Integrate Analytic Engine
- Monitor Refine Measure

**Unisys Innovation Data Workshop**

Identify and prioritize business needs

Free

- Proof of Concept 8 to 12 weeks
- Limited Amount of Data – One or two ideas

Proof of Concept

$$

- Continue Refining and Improving

Production 6 weeks Per Data Product

$$$$
Rod Fontecilla Ph.D.
Vice President
Global Lead Advanced Analytics

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Sherlock? Fragen Sie am besten Watson!
Analytics in Action / Live Demo

Peter Höpli & Renato Schmid, Unisys Schweiz
Watson Explorer Architektur (stark vereinfacht)

Durchsuchen Importieren
Crawler

Parsing Indexierung
Annotatoren

Suche Analyse
Facetten

Dateisysteme
Datenbanken
Web
OSINT
SharePoint
Exchange
....
Hallo Paul


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«Datenbeschaffung» bei der Kantonspolizei
Die Zukunft gehört denjenigen, die Möglichkeiten erkennen, bevor sie offensichtlich sind.

(Oscar Wilde 1854 – 1900)

Eventbeurteilung -
http://rigc07.findmind.ch
Herzlichen Dank für Ihre Teilnahme
Wir freuen uns auf angeregte Gespräche

Besuchen Sie https://advancedanalytics.unisys.com/