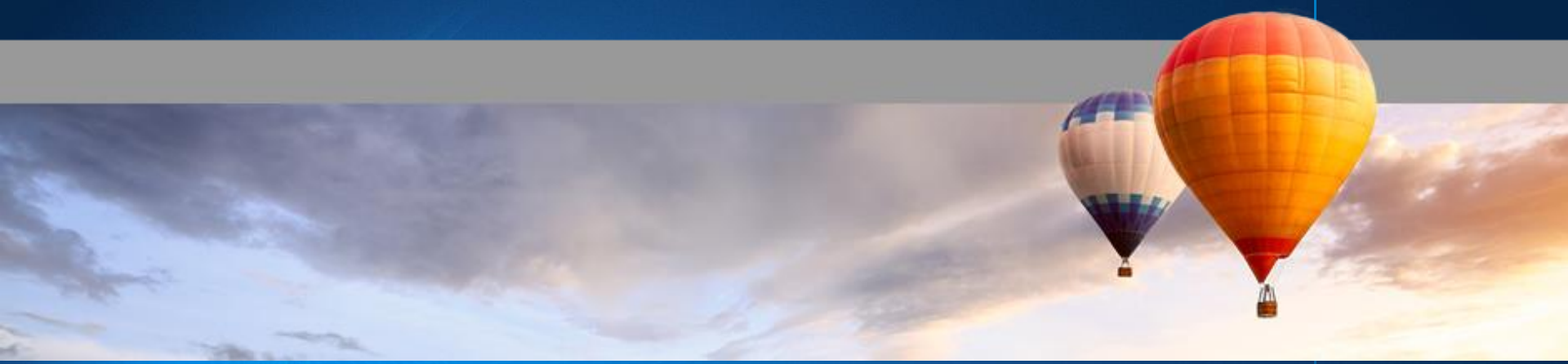


APPROACHABLE ANALYTICS

MAKING SENSE OF DATA

sas
THE POWER TO KNOW.

ATHENS
PROGRAMME

U
LISBOA
UNIVERSIDADE DE LISBOA

AGENDA

About SAS

SAS Business Analytics Framework

Approachable Analytics

SAS for Learning, Teaching and Research

SAS DELIVERS PROVEN SOLUTIONS THAT DRIVE INNOVATION AND IMPROVE PERFORMANCE.

Jos van der Velden

- Academic Program
- Partner Support
- Knowledge Sharing

jos.van.der.velden@sas.com

SAS Iberia

ABOUT SAS

ABOUT SAS | COMPANY INFORMATION

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions, SAS helps customers at more than 75,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world The Power to Know.®

SAS (pronounced "sass") once stood for "statistical analysis system." It began at North Carolina State University as a project to analyze agricultural research. Demand for such software capabilities began to grow, and SAS was founded in 1976 to help customers in all sorts of industries – from pharmaceutical companies and banks to academic and governmental entities.

YouTube www.youtube.com/watch?v=XtO8hT8jZrM

sas THE POWER TO KNOW.

ABOUT SAS | COMPANY STATISTICS

70
Professionals in Portugal

3.769
professionals in Europe, Middle East and Africa

More than
13.800
employees wordwide

And in more than
75.000
sites

We have customers in
139
countries

93 of the
top 100
companies on the 2014 Fortune® Global 500 list use SAS

sas ♥ data

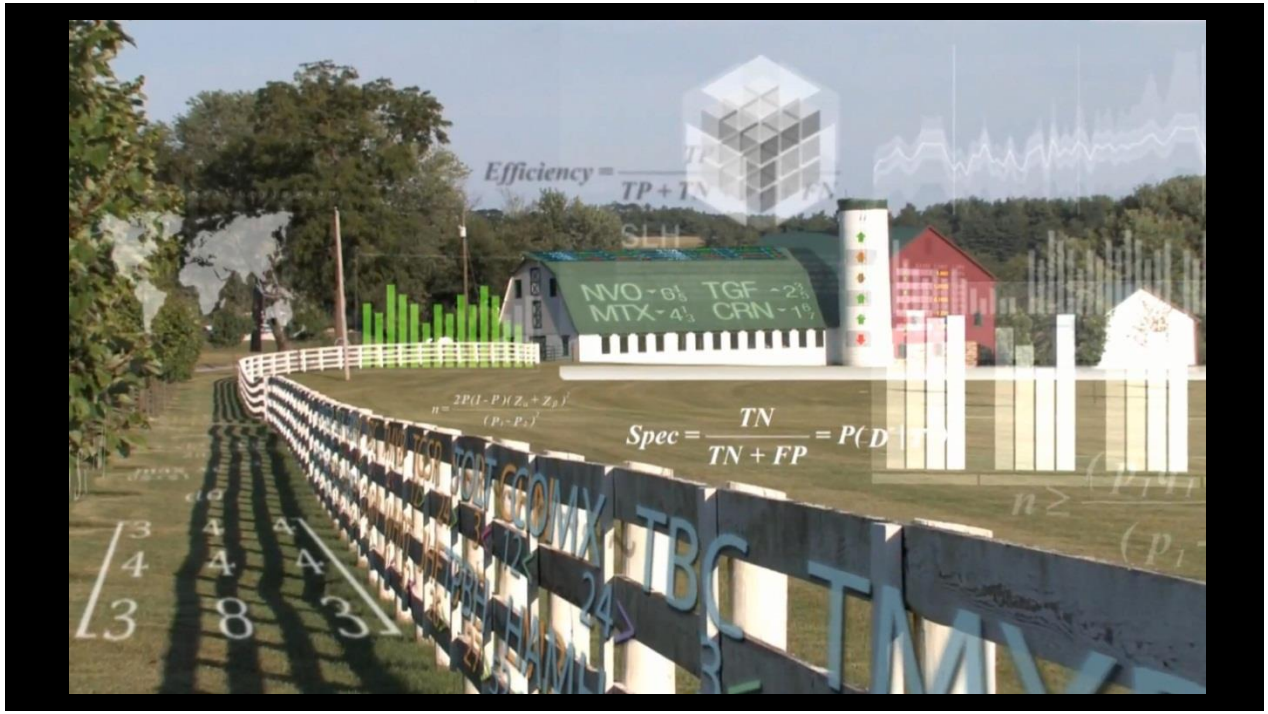
Privately owned since
1976
2014 turnover
$3.1B

R&D annual investment
23% of revenue

39
consecutive years of revenue growth

sas THE POWER TO KNOW.

IMPROVING HUMAN WELFARE IN 2013
INTERNATIONAL YEAR OF STATISTICS



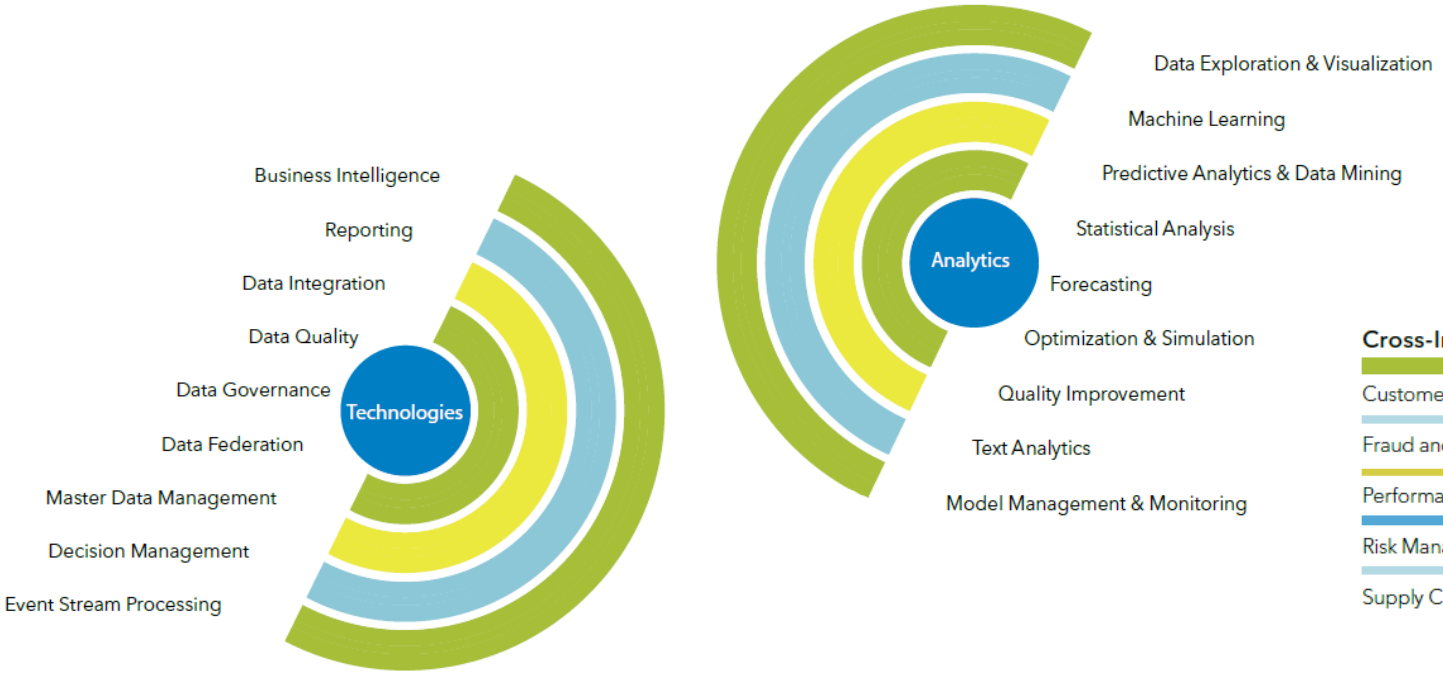
http://youtu.be/nTBZuQR7dRc

WORLDOFSTATISTICS.ORG

THE WORLD OF STATISTICS

SAS BUSINESS ANALYTICS FRAMEWORK

SAS PRODUCTS AND SOLUTIONS



Cross-Industry Solutions

- Customer Intelligence
- Fraud and Security Intelligence
- Performance Management
- Risk Management
- Supply Chain Intelligence

Industries

Banking	Government	Services	Insurance	Life Sciences	Communications
Manufacturing	Health Care	Retail	Energy and Utilities	Education	Capital Markets

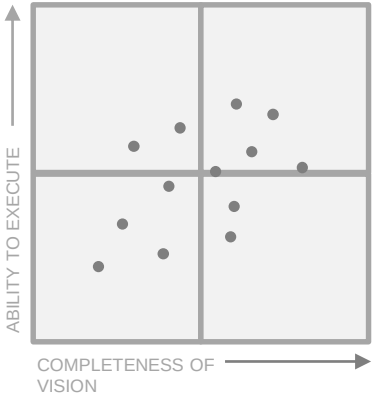
sas THE POWER TO KNOW.

APPROACHABLE ANALYTICS

THE EMERGENCE OF THE “CITIZEN DATA SCIENTIST”

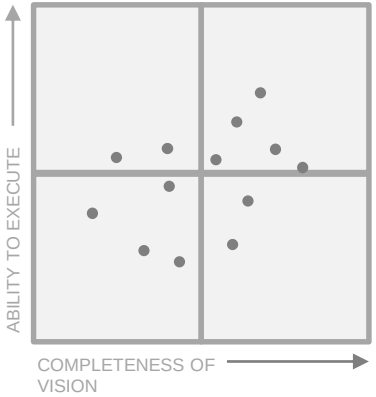
APPROACHABLE ANALYTICS

Increasing analytical maturity



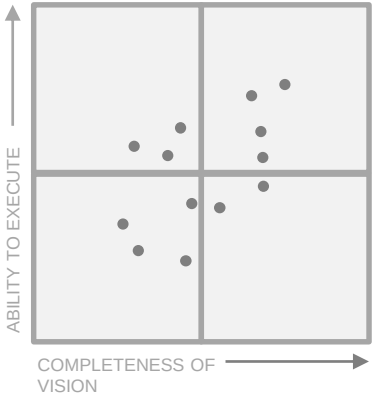
Business Intelligence Platforms

2012



Business Intelligence **and Analytics** Platforms

2013



Advanced Analytics Platforms

2014

The emergence of the "**Citizen Data Scientist**"

"The growing demand for these types of capability is outpacing the supply of expert users, which necessitates higher levels of automation and *increases demand for self-service and citizen data scientist tools*"

2015

SAS ANALYTICS IN ACTION

Approachable Analytics

Unlimited Data Volumes
- Embrace the potential

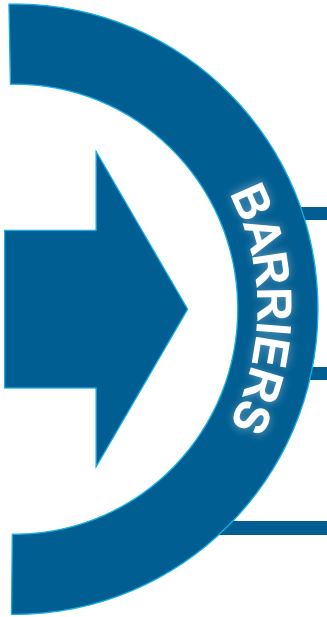
Speed
- The ability to fail fast

Democratized Analytics
- Cater to the citizen data scientist

APPROACHABLE ANALYTICS

Bridging the gap between IT and business

Barriers to the adoption of analytics



Scarcity of analytical skills

The need to grow analytical talent from within

Tools that aren't right for the job

Learning curve to create, share and collaborate

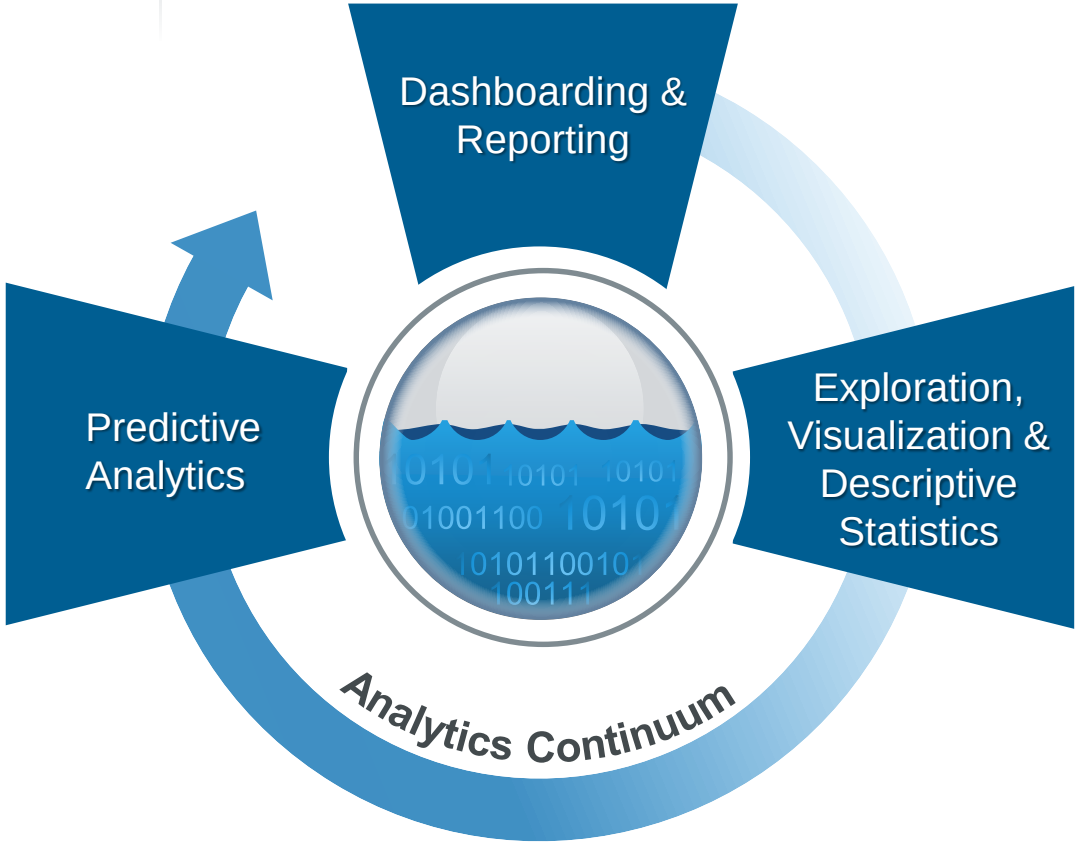
Disjointed, inefficient workflow

How can you fail fast & learn to refine quickly

EVOLVING BEYOND VISUALIZATION AND EXPLORATION

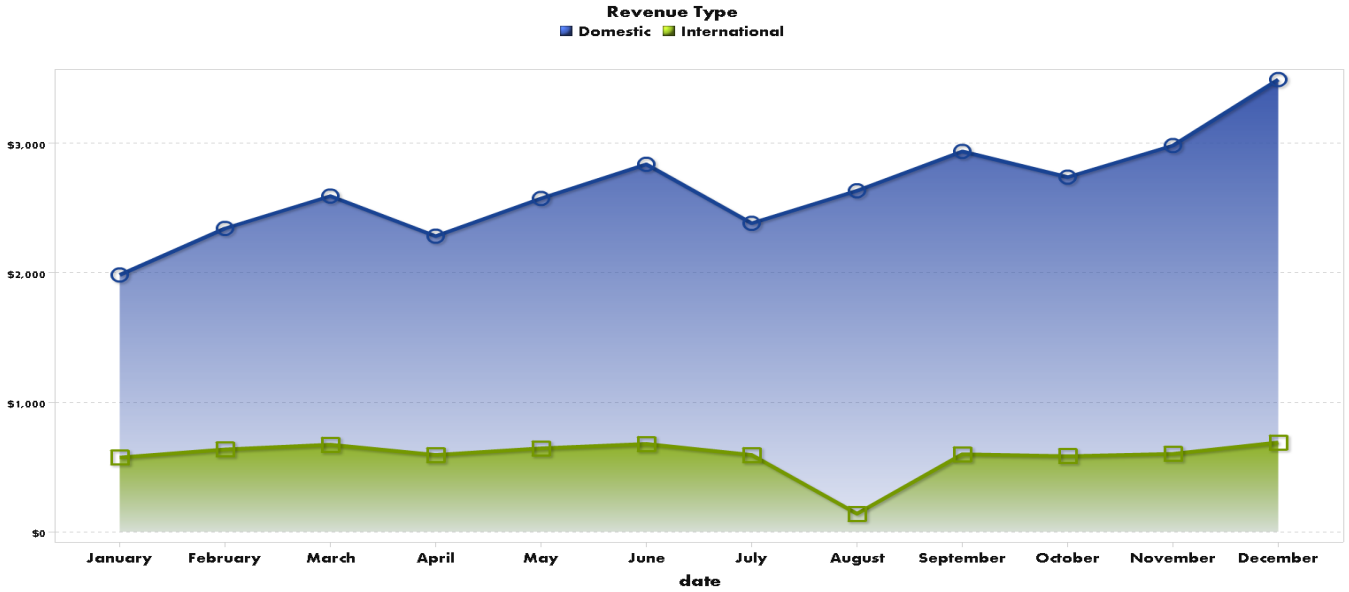
APPROACHABLE ANALYTICS

Analytics Continuum



Data visualization – why it matters

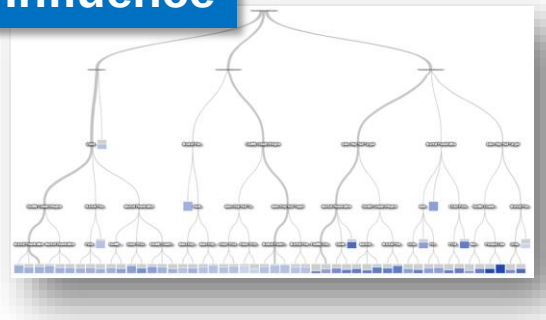
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Domestic	$1,983	$2,343	$2,593	$2,283	$2,574	$2,838	$2,382	$2,634	$2,938	$2,739	$2,983	$3,493
International	$574	$636	$673	$593	$644	$679	$593	$139	$599	$583	$602	$690



APPROACHABLE ANALYTICS

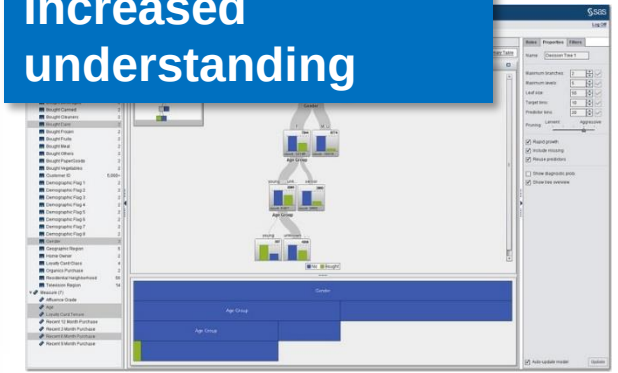
Exploration and modeling – what does it bring?

Influence

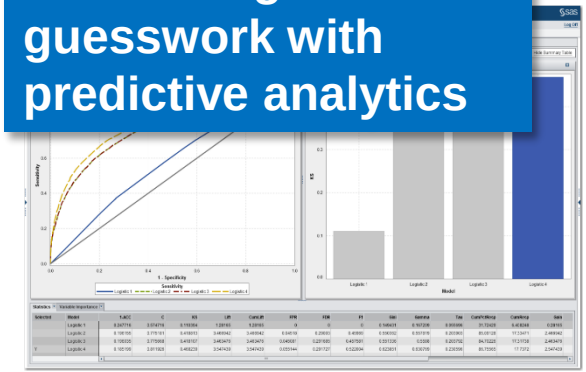


Relationships

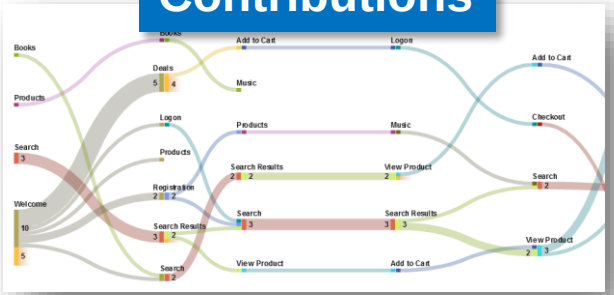
Increased understanding



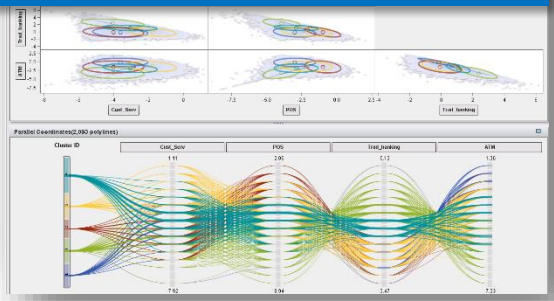
Eliminating guesswork with predictive analytics



Contributions



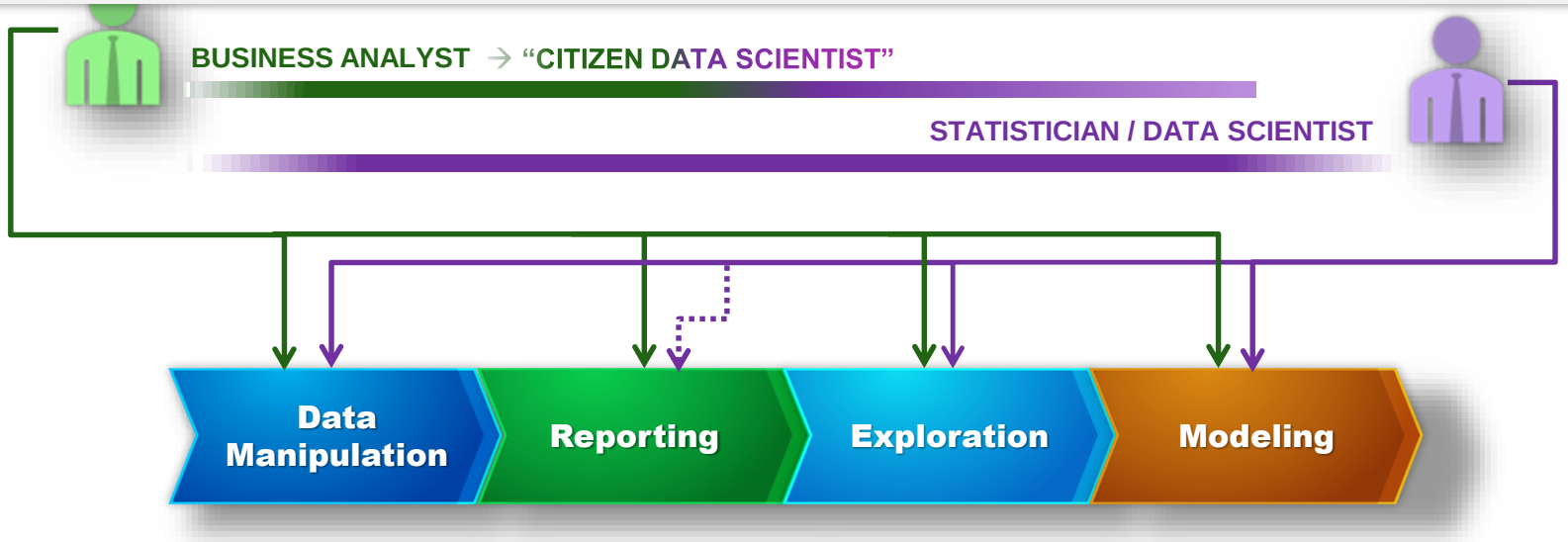
Data driven exploration



APPROACHABLE ANALYTICS

SOPHISTICATED ANALYTICS FOR EVERYONE

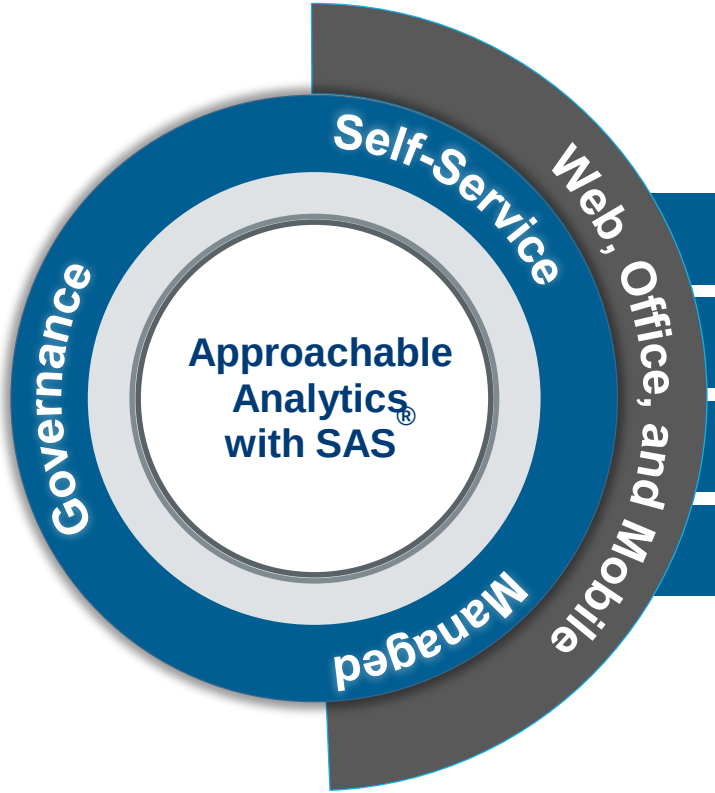
"A person who creates models that use predictive or prescriptive analytics, but whose primary job function is outside of the field of statistics and advanced analytics. They are "power users" who will be able to perform simple and moderately sophisticated analytic applications that would previously have required more expertise. They often reside in the lines of business and have deep domain expertise" - Gartner Inc.



Gartner's predicts that through 2017, the number of citizen data scientists will grow five times faster than the number of highly skilled data scientists

APPROACHABLE ANALYTICS

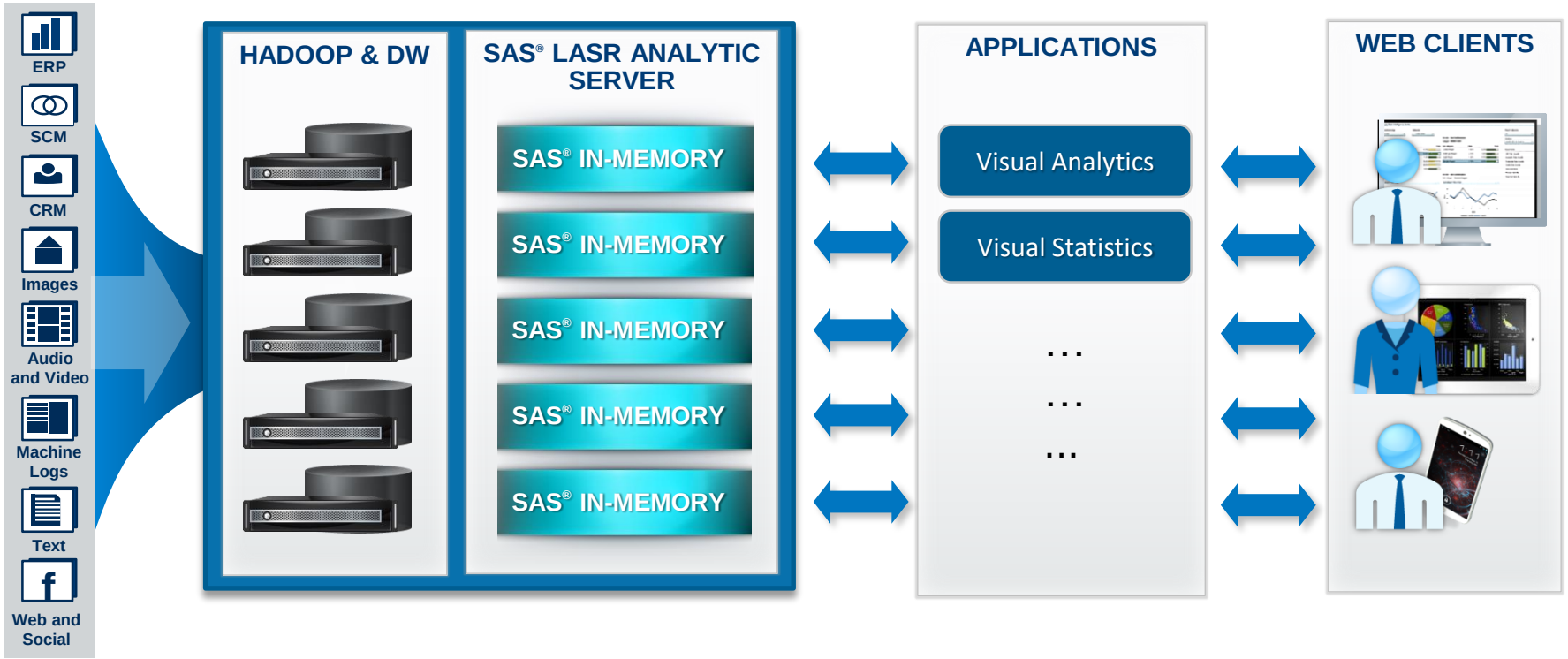
What SAS provides - overview



- Scalable to all your data
- Interactive and Visual Reporting
- Analytical Data Exploration
- Analytical Modeling

APPROACHABLE ANALYTICS

- High Level architecture



APPROACHABLE ANALYTICS

What SAS provides - detailed

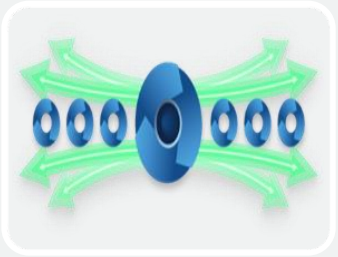
Visual data preparation

- Access structured and unstructured data
- Data filtering, including outliers
- Join tables and compute columns
- Data partitioning for better hardware utilization
- Dynamic Group-By Operations

Reporting and dashboards

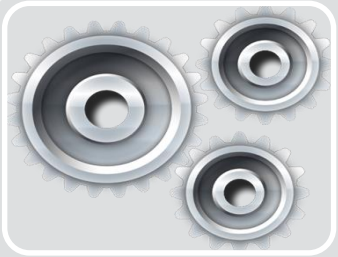
- Robust report design enables you to design reports once, then distribute and publish anywhere.Variable distribution and summary statistics
- Compelling visuals include box plots, heat maps, animated bubble charts and more.
- Dynamic reports and dashboards through native mobile BI apps

Interactive data exploration



- Interactively generate decision trees to graphically depict likely outcomes
- Surface forecasts and perform scenario analysis to see how the forecast adjusts to changes in business drivers
- Show best fit to quantify relationship between variables

Analytical modelling



- Setup regression analysis using both categorical and continuous business drivers
- Work with classification modelling using logistic regression and decision trees
- Data driven segmentation using clustering
- Dynamic Group-By Operations

Assess and compare

- Model comparison using lift charts, ROC charts, misclassification tables etc.
- Interactively evaluate lift
- Interactively define event probability cut-off
- Generate Base SAS code for scoring purposes

APPROACHABLE ANALYTICS

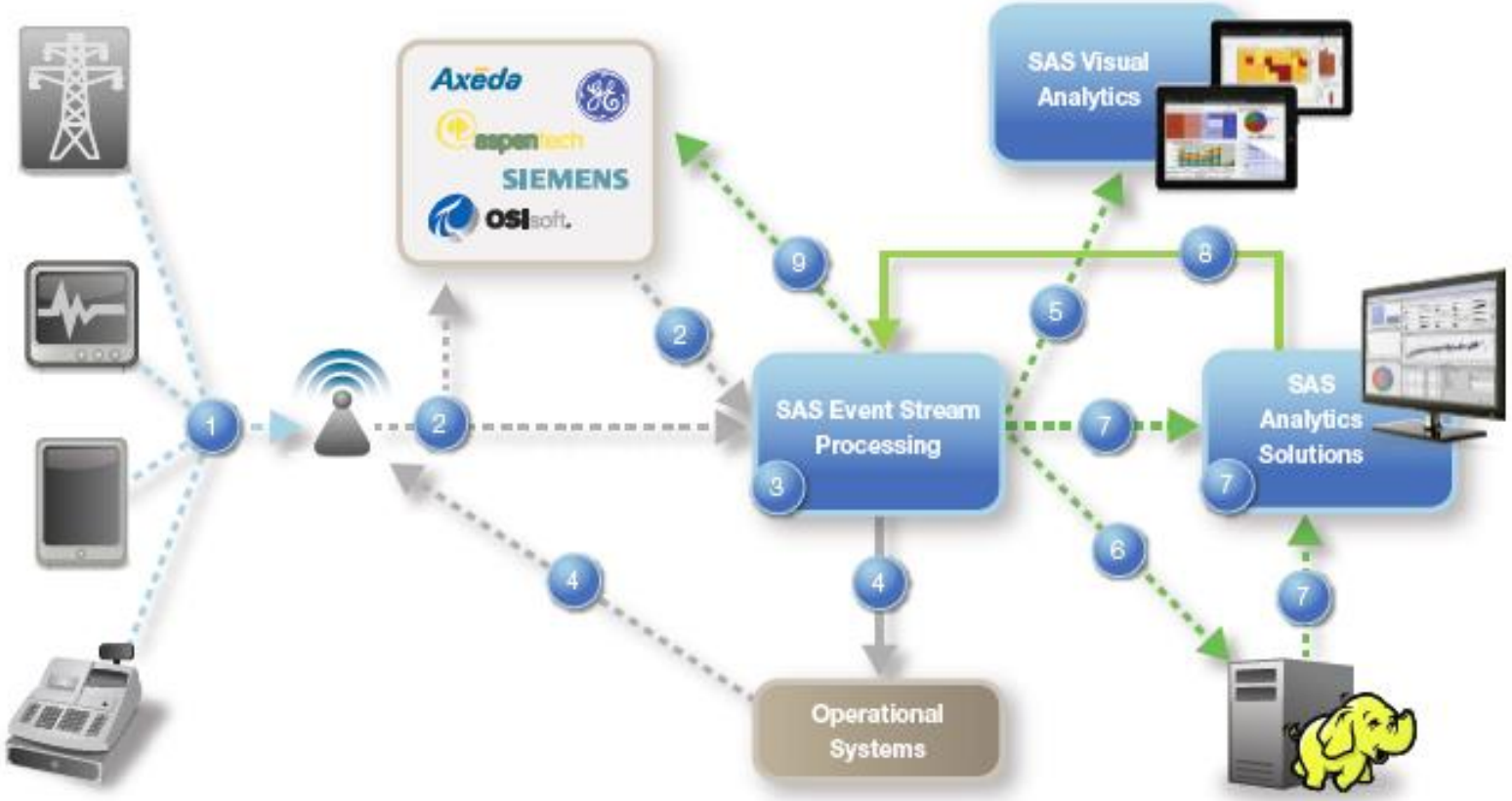
KEY TAKEAWAYS

1. A convergence of increasing analytical maturity, big data and advances in hardware have resulted in the emergence of the "citizen data scientist"

2. Organizations that want to fully leverage this new breed of users need technology that is easy to use, provides sophisticated analytics as well as being easy to deploy

3. SAS is uniquely positioned in this market where the combination of SAS Visual Analytics and SAS Visual Statistics provides "Approachable Analytics"

IOT KEY TECHNOLOGY ENABLERS



TWO STARTING POINTS

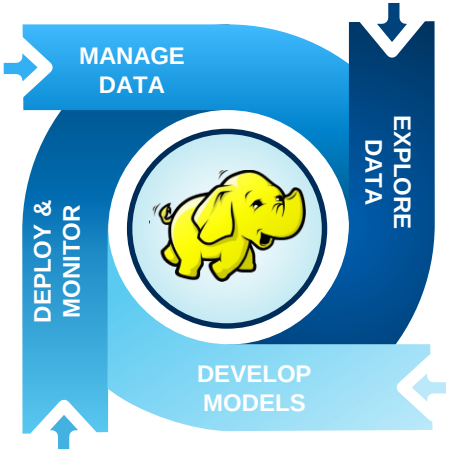
NOT MUTUALLY EXCLUSIVE

… BUT OFTEN NOT SEEN TOGETHER!

Hadoop as a Data Platform
(standalone or as part of a broader ecosystem)

.. to support an IT Transformation

Hadoop as a component of the next generation of Business Analytics



.. to support innovative use cases

HADOOP AS A DATA PLATFORM

BENEFITS

Large-scale distributed storage and batch processing

Low-cost scale out; architecture running on commodity hardware

Highly active open source community and fast-growing ecosystem

CHALLENGES

High-availability and resource management support is evolving

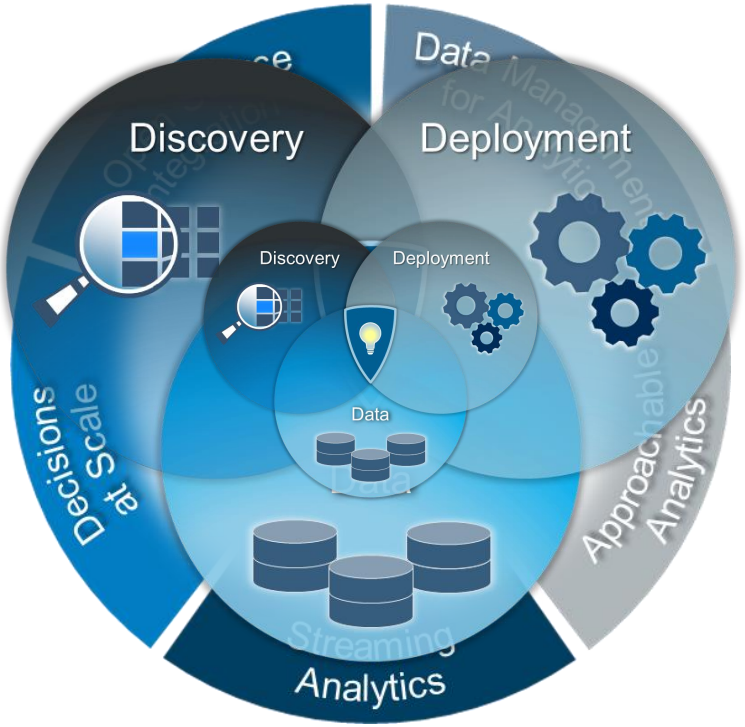
Integration with existing information architecture; basic data security

Skills and staff are at a premium

EARLY USE CASES…SHOW ME THE MONEY

SAS ANALYTICS IN ACTION

SAS IS UNIQUELY POSITIONED



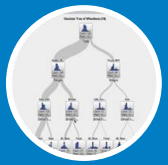
APPROACHABLE ANALYTICS

ENGINEERING USE CASE

SAS® Visual Analytics

Explore overall equipment efficiency and investigate which factors contribute to machine failure using decision trees

SAS® Visual Statistics



Lets you have greater control over how decision trees are built and to compare the results to other predictive methods

Increased value and more granular focus

APPROACHABLE ANALYTICS

ENGINEERING USE CASE

SAS® Visual Analytics

Explore overall equipment efficiency and investigate which factors contribute to machine failure using decision trees

- Explore machine failure data by analysing the distribution of multiple factors grouped by past machine failure.
- Start analysing potential reasons for failure by creating a decision tree via approachable analytics

SAS® Visual Statistics

Lets you have greater control over how decision trees are built and to compare the results to other predictive methods

- Create a decision tree to explain past failures and predict future failure using advanced settings that let you grow and prune the tree to the desired level of detail
- Compare that predictive model to a logistic regression model and select the best performing predictive model

Increased value and more granular focus

THE ANALYTICS FAST TRACK™ FOR SAS®

SPECIFICATIONS

- **High-Performance Hardware Platform**
  - 72 cores – Intel® Xeon® E7v3 processors
  - 3 TB of DDR4 RAM
  - Up to 20 TB of SSD Storage
  - 2 x 40 GbE – Intel® Networking
- **Third Party Software**
  - VMware ESXI 5.50 servers
    - Microsoft® Windows Server
    - Microsoft® Windows Terminal Server – 10 CALs
    - Microsoft® Office – 10 CALs
  - Hadoop instance
    - Cloudera® or Hortonworks®
  - NFS server for shared file system
- **SAS® Business Analytics Technologies**
  - Virtual machines:

    SAS® Data Management, SAS® Grid Manager, SAS® HPA Capabilities, SAS® Accelerators, SAS® in-memory visualization and analytics

- **72 cores – Intel® Xeon® E7v3 processors**
- **3 TB of DDR4 RAM**

SAS FOR LEARNING, TEACHING AND RESEARCH

SAS® for Learning, Teaching and Research

Giving everyone The Power to Know.®

WHERE DOES YOUR JOURNEY BEGIN?

START ANYWHERE!

40% projected growth in global data generated each year.*

K-12

- SAS APPS
- SAS® CURRICULUM PATHWAYS®
- **1,250** online, interactive resources
- STEM OUTREACH
- SAS PROGRAMMING AND AP STATISTICS FOR HIGH SCHOOL
- COMMUNITY COLLABORATIONS

COMMUNITY COLLEGE

- TEACHING AND LEARNING
- CURRICULUM RESOURCES
- ACADEMIC RESEARCH

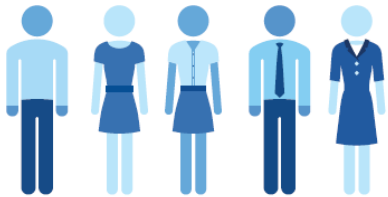
HIGHER ED

- COMMUNITY COLLABORATIONS
- TALENT MANAGEMENT

THE SKILLS GAP: **3 million** big data jobs will need to be filled in the US by 2018*

LIFELONG

- SAS CERTIFICATION
- SAS FLASH CARDS APP
- PROFESSIONAL DEVELOPMENT
- LIFELONG LEARNING



*Source: Big data: The next frontier for innovation, competition, and productivity. McKinsey & Company, May 2011

jos.van.der.velden@sas.com