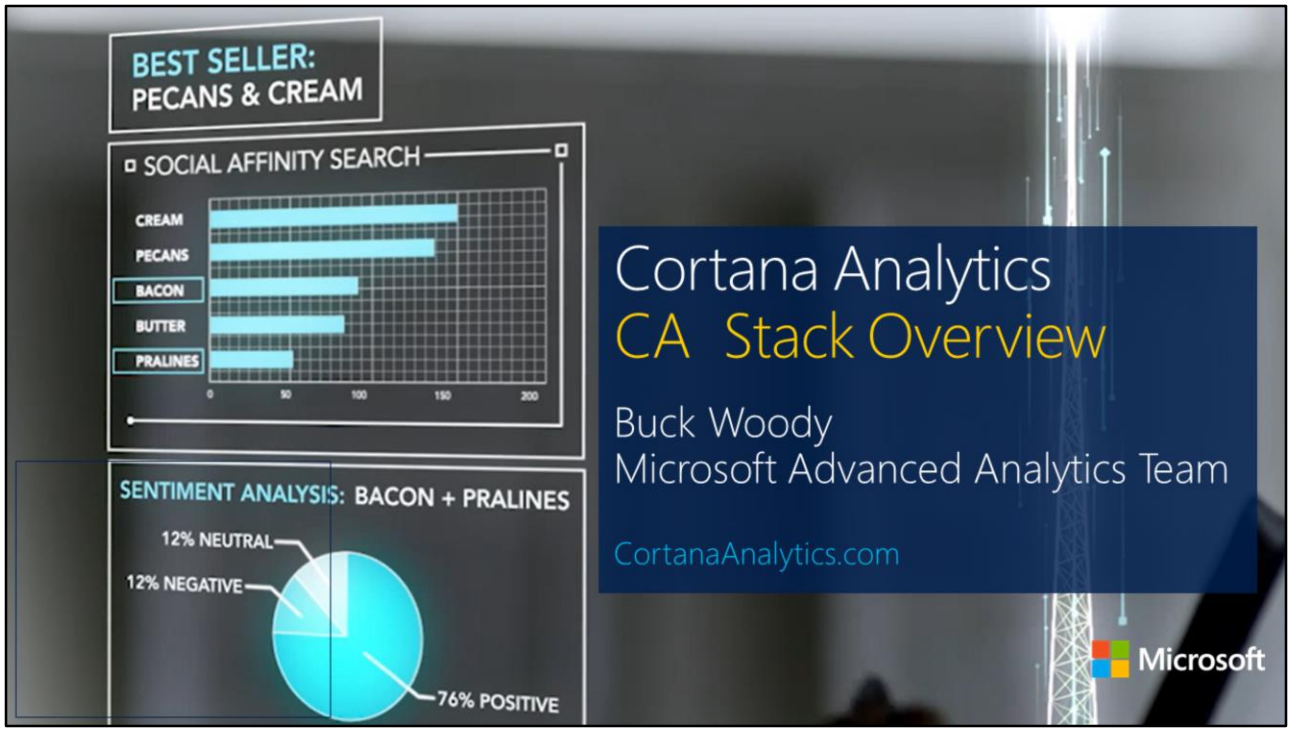


1. Main page: http://cortanaanalytics.com
2. Pre-Requisites:
    1. General Azure Awareness
    2. Ability to instantiate IaaS VM's
    3. Ability to create Azure Data stores, basic ingress and egress of data
    4. Ability to deploy Azure Web Site
    5. Ability to deploy Azure Web Application
    6. Ability to access and use an Azure Service, such as HDInsight or Azure ML

Module 3 Learning Objectives

1. Understand the Cortana Analytics suite of products and their capabilities
2. Create a viable design for a given solution using the CA suite of products
3. Understand which components to leave on-premises versus in-cloud based on requirements and constraints

When you are done with this Module, you should be able to:

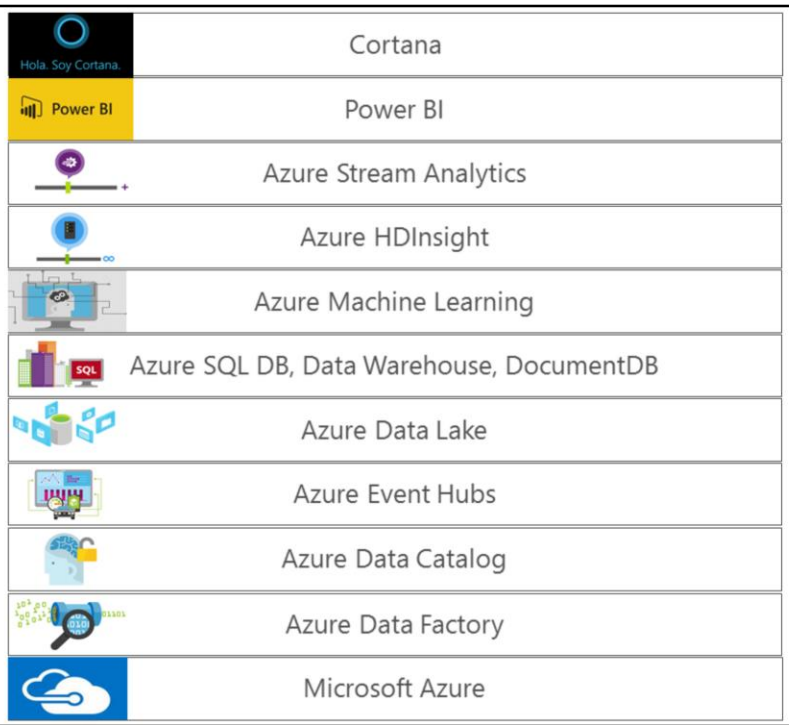
1. Understand the Cortana Analytics suite of products and their capabilities
2. Create a viable design for a given solution using the CA suite of products
3. Understand which components to leave on-premises versus in-cloud based on requirements and constraints

Cortana Analytics

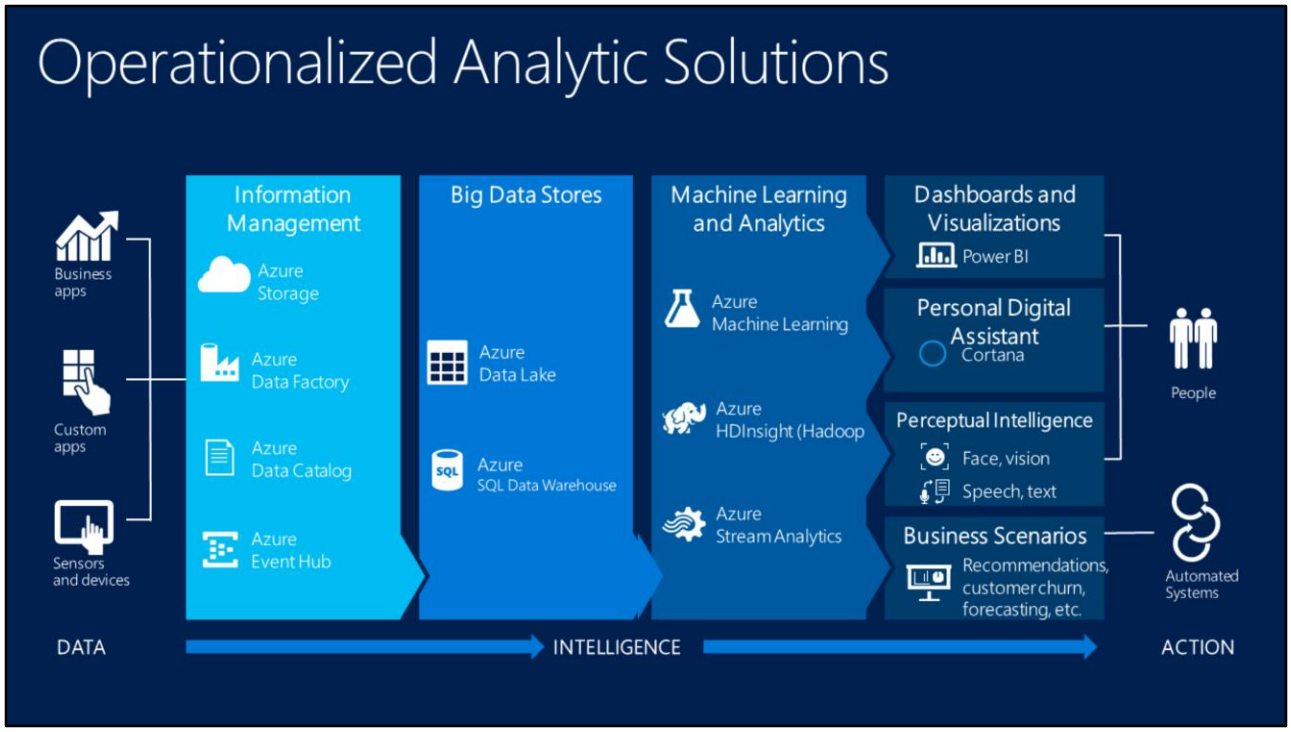
A Suite of Products that allow you to Predict Outcomes, Prescribe Actions and Automate Decisions

Main page: http://cortanaanalytics.com

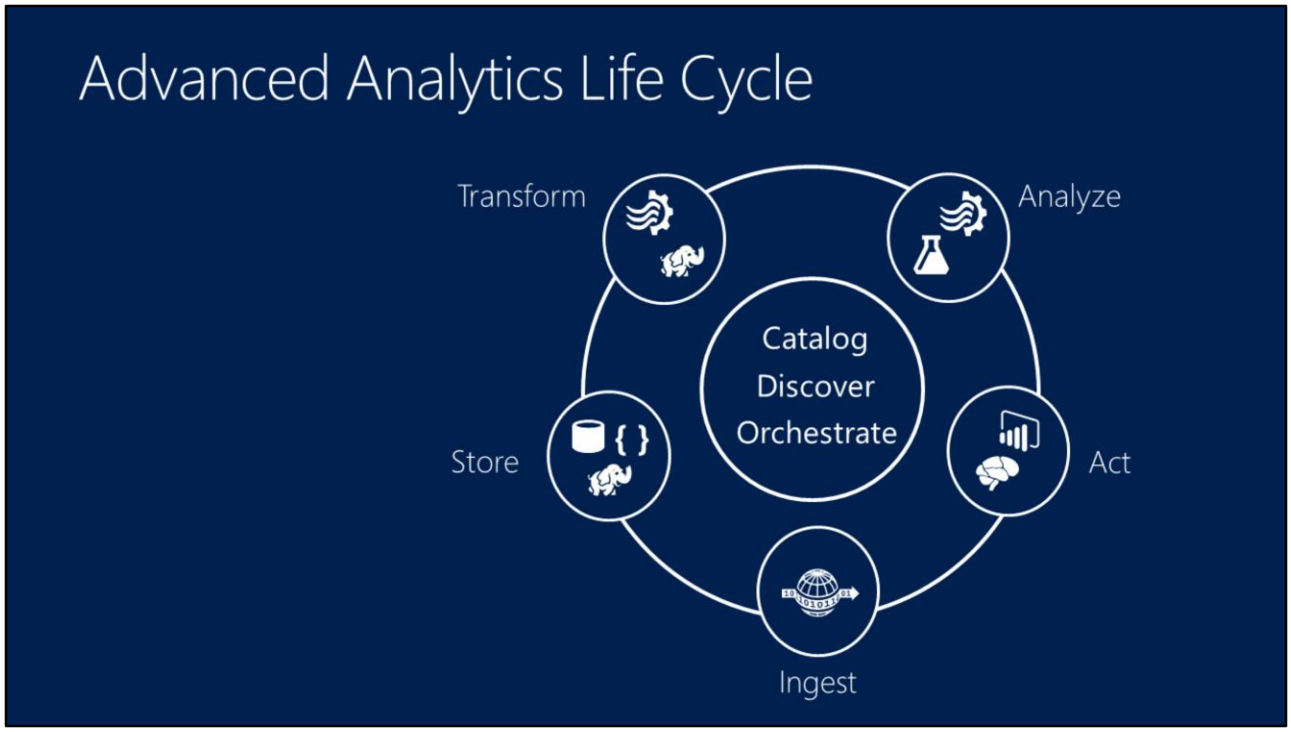
Cortana Analytics Stack



1. Platform and Storage: Microsoft Azure – http://microsoftazure.com Storage: https://azure.microsoft.com/en-us/documentation/services/storage/ (Host It)
2. Azure Data Factory: http://azure.microsoft.com/en-us/services/data-factory/ (Move It)
3. Azure Data Catalog: http://azure.microsoft.com/en-us/services/data-catalog (Doc It)
4. Azure Event Hubs: http://azure.microsoft.com/en-us/services/event-hubs/ (Bring It)
5. Azure Data Lake: http://azure.microsoft.com/en-us/campaigns/data-lake/ (Store It)
6. Azure DocumentDB: https://azure.microsoft.com/en-us/services/documentdb/?WT.srch=1&WT.mc_ID=SEM_JQ3fO8dU , Azure SQL Data Warehouse: http://azure.microsoft.com/en-us/services/sql-data-warehouse/ (Relate It)
7. Azure Machine Learning: http://azure.microsoft.com/en-us/services/machine-learning/ (Learn It)
8. Azure HDInsight: http://azure.microsoft.com/en-us/services/hdinsight/ (Big It)
9. Azure Stream Analytics: http://azure.microsoft.com/en-us/services/stream-analytics/ (Stream It)
10. Power BI: https://powerbi.microsoft.com/ (See It)
11. Cortana: http://blogs.windows.com/buildingapps/2014/09/23/cortana-integration-and-speech-recognition-new-code-samples/ and https://blogs.windows.com/buildingapps/2015/08/25/using-cortana-to-interact-with-your-customers-10-by-10/ (Say It)



1. Full Learning Path: https://azure.microsoft.com/en-us/documentation/learning-paths/cortana-analytics-process/
2. A full video of this being implemented is here: https://channel9.msdn.com/Events/Cortana-Analytics-Suite/CA-Suite-Workshop-10-11SEP15/Using-the-Cortana-Analytics-Process



1. http://azure.microsoft.com/en-us/documentation/learning-paths/machine-learning-self-guided-predictive-analytics-training/

Cortana Analytics Solutions

Industry	Sales & marketing	Finance & risk	Customer & channel	Operations & workforce
Retail	• Demand forecasting • Loyalty programs • Cross-sell & upsell • Customer acquisition	• Fraud detection • Pricing strategy	• Personalization • Lifetime customer value • Product segmentation	• Store location demographics • Supply chain management • Inventory management
Financial services	• Customer churn • Loyalty programs • Cross-sell & upsell • Customer acquisition	• Fraud detection • Risk & compliance • Loan defaults	• Personalization • Lifetime customer value	• Call center optimization • Pay for performance
Healthcare	• Marketing mix optimization • Patient acquisition	• Fraud detection • Bill collection	• Population health • Patient demographics	• Operational efficiency • Pay for performance
Manufacturing	• Demand forecasting • Marketing mix optimization	• Pricing strategy • Performance risk management	• Supply chain optimization • Personalization	• Remote monitoring • Predictive maintenance • Asset management

https://gallery.cortanaanalytics.com/collections

1. Real-time recommendation: https://gallery.azureml.net/MachineLearningAPI/3574432384684cac9cc766e57729ea4c
2. Customer churn forecasting: https://gallery.azureml.net/MachineLearningAPI/7d86b89faf2e4cbcabb84a02179da99e
3. Fraud detection: https://gallery.cortanaanalytics.com/Collection/Online-Fraud-Detection-Template-1
4. Predictive maintenance: https://gallery.cortanaanalytics.com/Collection/Predictive-Maintenance-Template-3
5. Perceptual Intelligence - See - https://gallery.azureml.net/MachineLearningAPI/b0b2598aa46c4f44a08af8891e415cc7 and https://gallery.azureml.net/MachineLearningAPI/02ce55bbc0ab4fea9422fe019995c02f and Hear: https://gallery.azureml.net/MachineLearningAPI/89d229231a72471ebf7280fb5bd3e18c abd Read: https://gallery.azureml.net/MachineLearningAPI/6948e0a54fe44e6fb70cbcc143b31298
6. Personal Assistance - Learning, human interaction, proactive - https://gallery.cortanaanalytics.com/browse/?categories=["Collection"]
7. Example Video: https://blogs.microsoft.com/business-matters/2015/07/13/dartmouth-hitchcock-ushers-in-a-new-age-of-proactive-personalized-healthcare-using-cortana-analytics-suite/
8. Example of HowOld.net - https://how-old.net/#
9. Mechanics: http://blogs.technet.com/b/machinelearning/archive/2015/05/04/fun-with-ml-stream-analytics-and-powerbi-observing-virality-in-real-time.aspx?

Understanding Requirements Mapping

1. Statements are Objectives
2. Break objectives into:
    1. Requirements (solution must do)
    2. Constraints (solution cannot do)
3. Nouns become Entities
4. Verbs become Relationships
5. Group like-Nouns into full Entities
6. Lay in requirements into a data flow
7. Apply constraints to refine flow
8. Select components (on-prem or off) that meet the requirements, based on the constraints
9. Create solution diagram
10. Review with technical and business teams
11. Refine based on input

1. Business Requirements process is here: https://www.mindtools.com/pages/article/newPPM_77.htm

Business Case

AdventureWorks is a company that makes and sells bicycles. The sales are conducted around the world. We also support our products. But as we've made more sales in the last 10 year, we've farmed out the support function to various companies that take in maintenance and support issues in call centers around the world.

We're growing. And now we want to take our bicycles to several large retailers, but a few of them want to know a lot about our churn rate.

For over 10 years, we've collected a lot of information about our customers and of course we know a lot about our products. But since we've outsourced our call centers, we don't own the databases that hold their data – they will give us an export, though. (They support multiple customers)

We're not sure about our churn rate – we have the data of who has and has not bought again, and we think we can get the data from the call centers for the complaints and repairs, but we need a way to analyze a lot of data that has different formats to find a prediction of who will churn and who will not.

Ideally we want a list of customers we think will churn, in a structured database we could share out to our potential resellers sales staff, so they know how to target at-risk and new clients.

More on our in-house data: tinyurl.com/hhxsrws

Implementing Architecture Designs

1. There are multiple ways to achieve a solution
2. Take into account all requirements, all constraints
3. Investigate any domain knowledge you are unsure of
4. Question everything
5. Communicate with technical and business teams

1. Full software methodology is here: https://msdn.microsoft.com/en-us/library/ee658084.aspx

1. Examine your architecture notes from Module 1.
2. Using the "Cortana Analytics Components", "Requirements Mapping", "Business Case", and "Architecture Design" slides, create a data path for a solution to the business problem of determining customers likely to churn.