

**Kickstart your machine learning journey for  
yourself and your company**

# Kick-off your Machine Learning journey

- This is a level 100 session for IT Professionals, developers and business management that want to have a practical introduction to machine learning with a focus on Azure technologies.
- The different technologies and tools will be presented filled with use cases and demos

Hello – happy to see  
you

- Morten Nordli
  - +9 years at UiO with data science - linguistics, informatics, text analytics, statistics, social media, learning
  - 35 years in the IT-business with data management– start-ups, consultant, manager ....

# AGENDA

Do you really  
need to be a  
data scientist  
to do great  
things with  
ML?

No – you  
don't

1. What is Azure Machine Learning?
2. How to create a model with your own data and existing algorithms
3. How to consume existing models with cognitive services and additional tools
4. The data science process for all sorts of ML-projects
5. A recap: how to kick-start Azure ML for you or your company

# What is Machine Learning



The image is a screenshot of the Microsoft Azure Machine Learning Studio homepage. At the top, the 'Microsoft Azure' logo is on the left, and 'SALES 800-19-656' and 'MY ACCOUNT' are on the right. Below the logo is a navigation bar with links: 'Why Azure', 'Solutions', 'Products', 'Documentation', 'Pricing', 'Training', 'Marketplace', 'Partners', 'Support', 'Blog', and 'More'. The main content area features a large background image of a man and a woman looking at a screen. Overlaid on this image is the text 'Azure Machine Learning Studio' in a large, white, sans-serif font. Below this, in a smaller white font, is the tagline 'Simple, scalable, cutting edge'. Further down, a paragraph of white text reads: 'Welcome to Studio, the Azure Machine Learning solution you've grown to love. Studio is a powerfully simple browser-based, visual drag-and-drop authoring environment where no coding is necessary. Go from idea to deployment in a matter of clicks.' At the bottom left of the main content area, there is a bright green rectangular button with the text 'Get started now' followed by a white right-pointing chevron.

Microsoft Azure

SALES 800-19-656 | MY ACCOUNT

Why Azure ▾ Solutions Products ▾ Documentation Pricing Training Marketplace Partners ▾ Support ▾ Blog More

## Azure Machine Learning Studio

Simple, scalable, cutting edge

Welcome to Studio, the Azure Machine Learning solution you've grown to love. Studio is a powerfully simple browser-based, visual drag-and-drop authoring environment where no coding is necessary. Go from idea to deployment in a matter of clicks.

Get started now >

# Today's perfect storm for machine learning

## Exponential data growth

- We are virtually sitting on mountains of highly valuable historical transactional data, most of it digitally archived and readily accessible.
- There is an increasing abundance of real-time data via embedded systems and the evolution of "the Internet of Things" (IoT) connected devices.
- We have an ability to create new synthetic data via extrapolation and projection of existing historical data to create realistic simulated data.

## Cheap global digital storage

- Vast quantities of free or low-cost, globally available, digital storage are readily accessible over the Web today.
- From personal devices to private and public clouds, we have access to multiple storage mechanisms to house all our never-ending streams of data.

## • Ubiquitous computing power

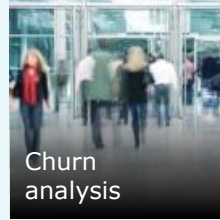
- Cloud computing services are everywhere today and readily available through a large selection of cloud and hosting partners, all at competitive rates.
- Access is simple. A credit card and a browser are all you need to get started and pay by the hour or minute for everything you need to get started.

## • The rise of big data analytics

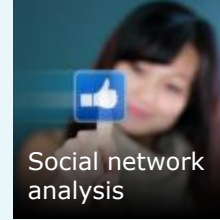
- The economic powers of predictive analytics in many real-world business-use cases, many with extremely favorable financial outcomes, are being realized.

# Machine Learning is part of your daily life

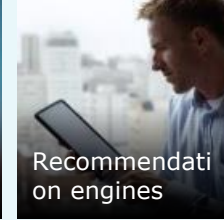
Machine learning & predictive analytics are core capabilities that are needed throughout your business



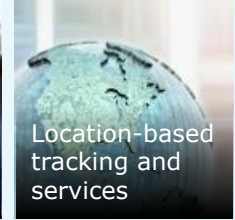
Churn analysis



Social network analysis



Recommendation engines



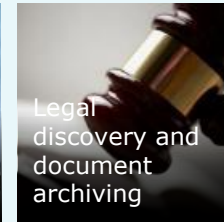
Location-based tracking and services



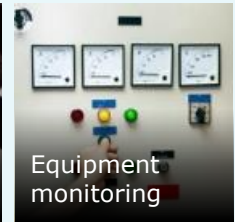
Vision Analytics



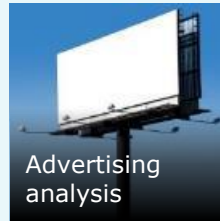
Weather forecasting for business planning



Legal discovery and document archiving



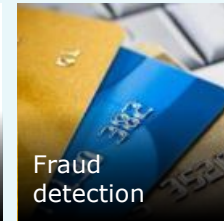
Equipment monitoring



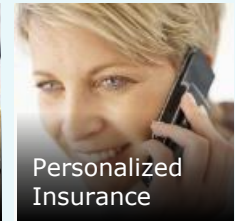
Advertising analysis



Pricing analysis



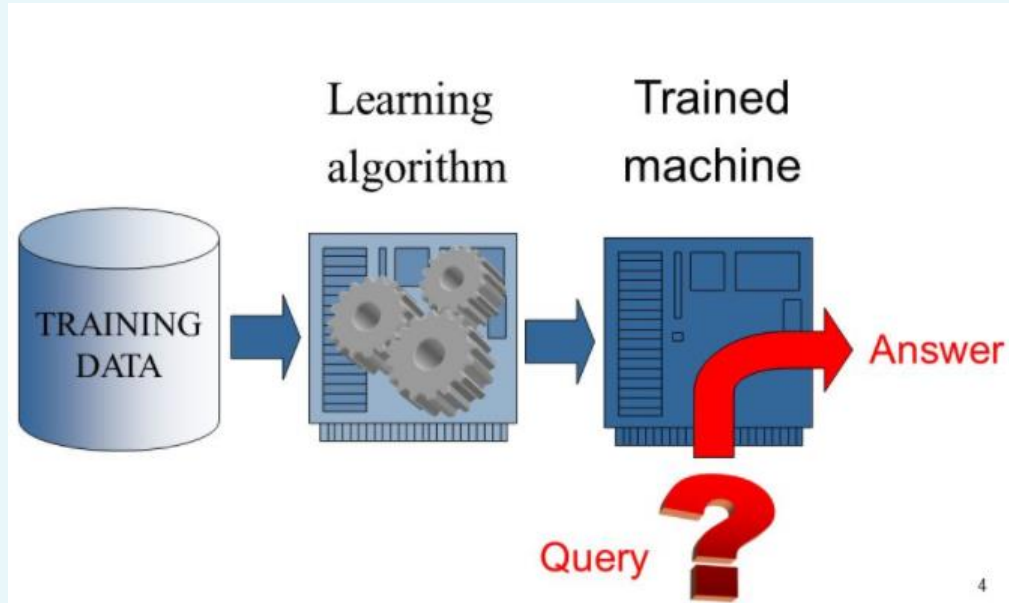
Fraud detection



Personalized Insurance



# What is Machine Learning?



*Churchill once said, "All men make mistakes, but only wise men – or trained machines/models - learn from their mistakes."*

# Machine Learning Capabilities—different algorithms

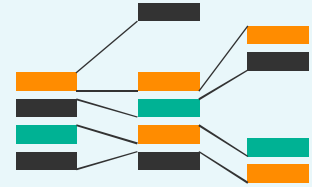
Which  
category  
(*Classification*)



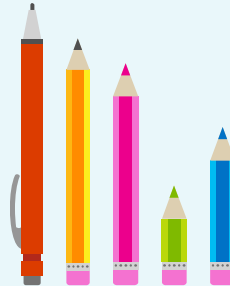
How  
much/many  
(*Regression*)



Which group  
(Clustering,  
Recommender)



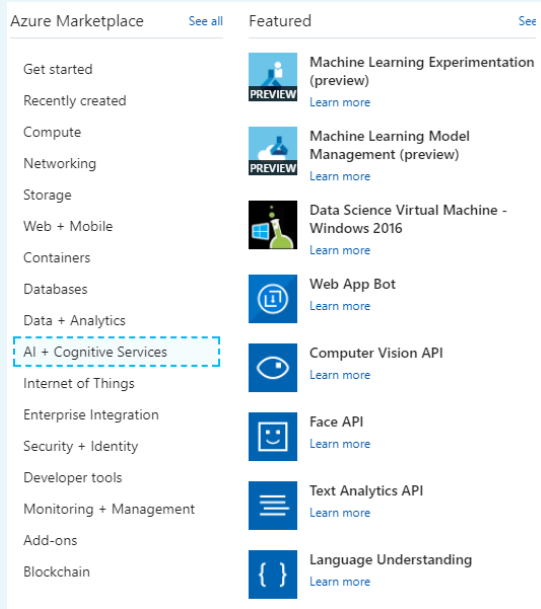
Is it odd  
(*Anomaly*)



# Do you really need to be a data scientist? An agenda

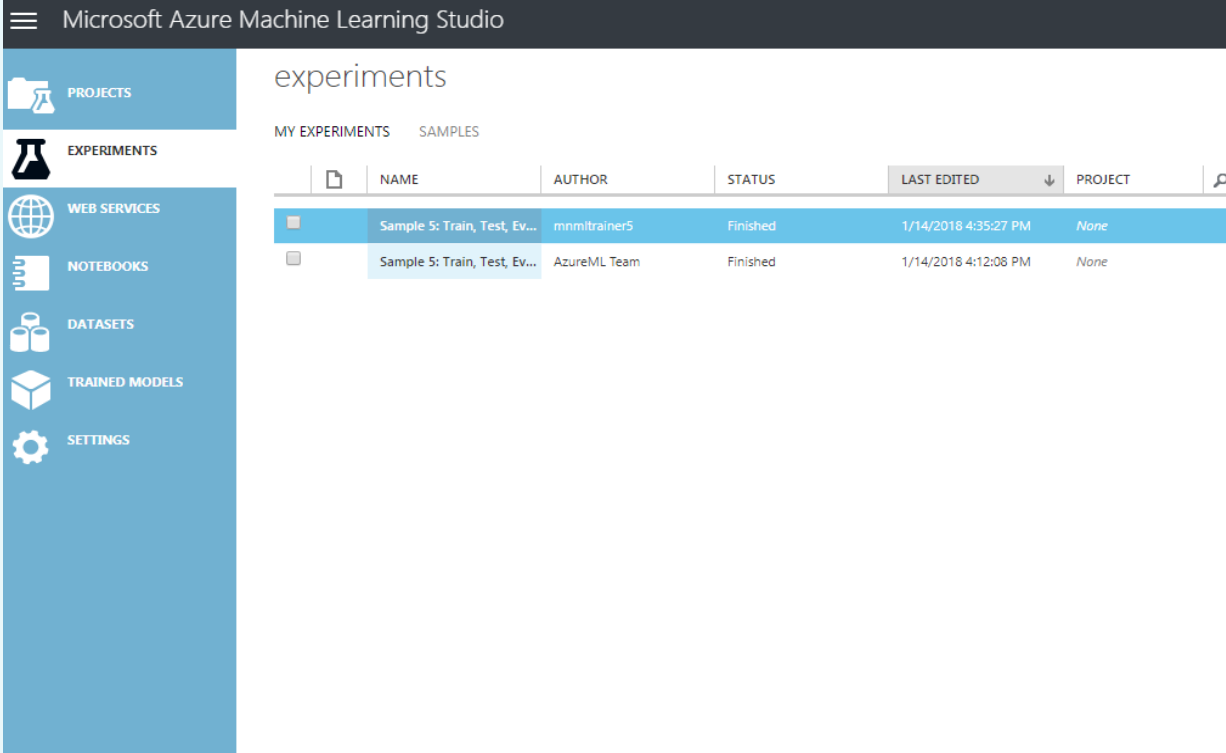
1. What is Azure Machine Learning?
2. **How to create a model with your own data and existing algorithms**
3. How to consume existing models with cognitive services and additional tools
4. The data science process for all sorts of ML-projects
5. A recap: how to kick-start Azure ML for you or your company

# Portal.azure.com - studio.azureml.net



**Create your own model** with Microsoft Azure Machine Learning Studio - a collaborative, drag-and-drop tool you can use to build, test, and deploy predictive analytics solutions on your data.

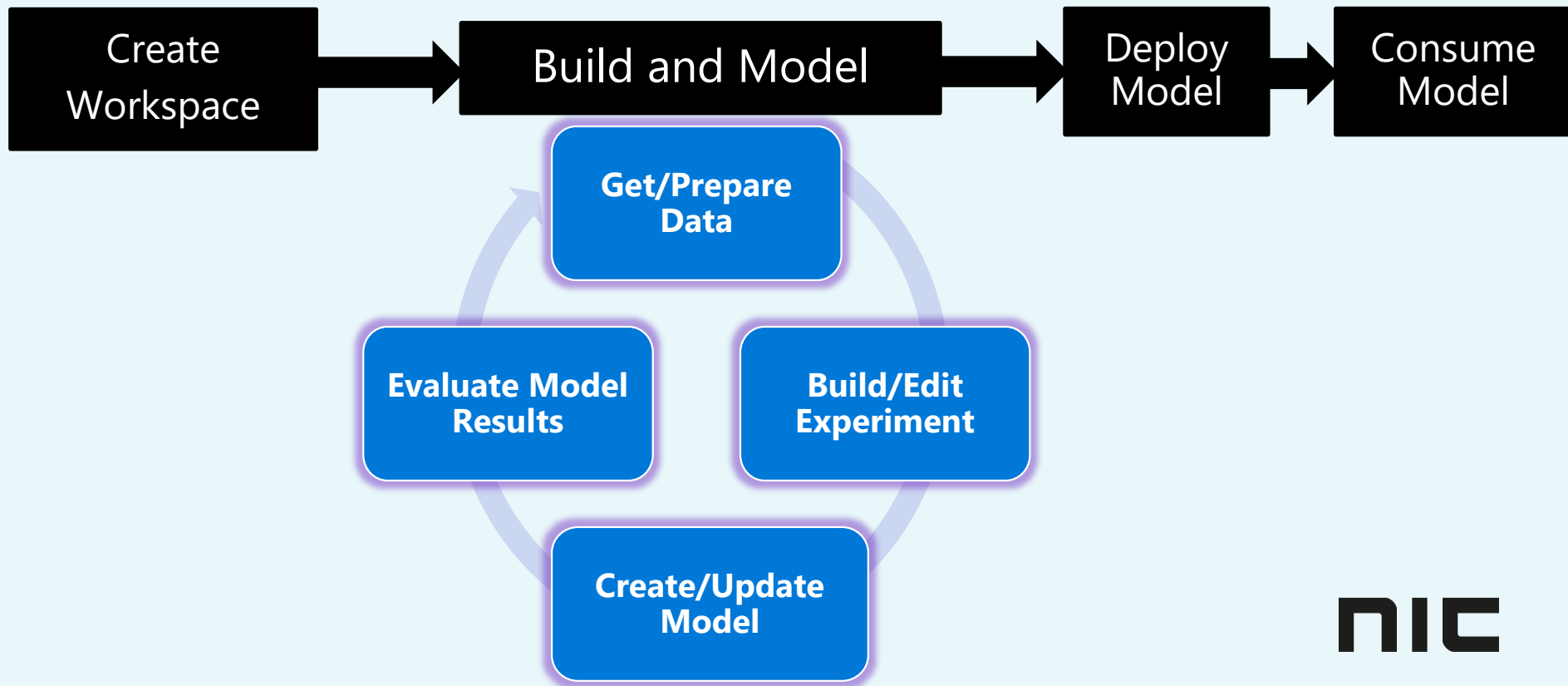
# DEMO 1: Azure Machine Learning Studio



The screenshot displays the Microsoft Azure Machine Learning Studio interface. The top navigation bar shows the title 'Microsoft Azure Machine Learning Studio'. The left sidebar contains a list of navigation items: PROJECTS, EXPERIMENTS (highlighted), WEB SERVICES, NOTEBOOKS, DATASETS, TRAINED MODELS, and SETTINGS. The main content area is titled 'experiments' and includes tabs for 'MY EXPERIMENTS' and 'SAMPLES'. Below these tabs is a table listing experiments.

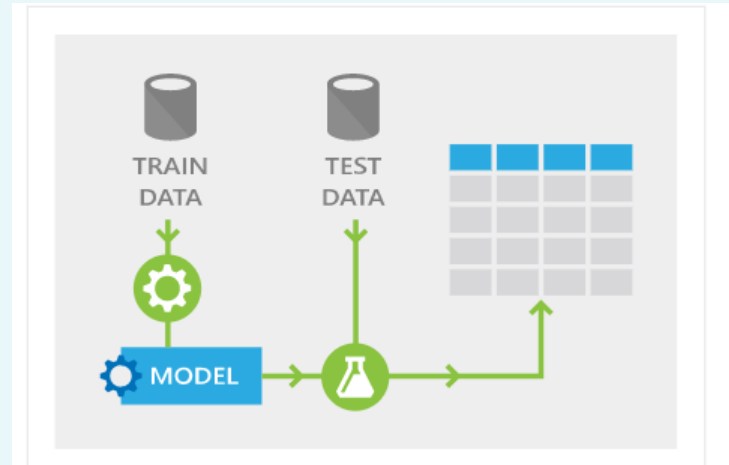
	NAME	AUTHOR	STATUS	LAST EDITED	PROJECT
<input checked="" type="checkbox"/>	Sample 5: Train, Test, Ev...	minitrainer5	Finished	1/14/2018 4:35:27 PM	None
<input type="checkbox"/>	Sample 5: Train, Test, Ev...	AzureML Team	Finished	1/14/2018 4:12:08 PM	None

# Creating an Experiment



# DEMO 1:

- We know the income level for our historical data on the Adult dataset.
- This experiment demonstrates how we can build a binary classification model to predict income levels of adult individuals. The process includes training, testing and evaluating the model on the dataset.







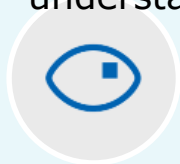
# Do you really need to be a data scientist?

## An agenda

1. What is Azure Machine Learning?
2. How to create a model with your own data and existing algorithms
3. **How to consume existing models with cognitive services and additional tools**
4. The data science process for all sorts of ML-projects
5. A recap: how to kick-start Azure ML for you or your company

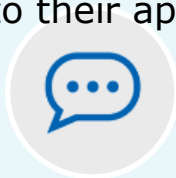
# What are Microsoft Cognitive Services?

**Predefined** models: Azure AI/Cognitive Services – enables developers to easily add intelligent features – such as emotion and video detection; facial, speech and vision recognition; and speech and language understanding – into their applications.



## Vision

From faces to feelings, allow your apps to understand images and video



## Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent



## Language

Process text and learn how to recognize what users want



## Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data



## Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

# ML in practice, some use cases to get started

## Intelligent CRMs

- Cognitive APIs can help small businesses analyze consumer sentiments in recorded phone conversations, emails, social media posts and customer reviews, evaluate the customer feedback

## Intelligent customer service solutions

- Chat bots with ML can suggest or automate answers, and classify tickets and messages to quickly route them to the right team

## ML for marketing

- ML with PowerBI can analyze advertising performance and making informed suggestions about the best budget distributions

## ML for competitive intelligence

- Big Data with analytics/ML can track your competitors across different channels

## ML-ready solutions

- Small businesses can plug AI-ready tools into literally every element of their business workflow that involves data

## DEMO 2: Cognitive analytics

I had a wonderful experience! The rooms were wonderful and the staff was helpful.

Analyze

Analyzed text

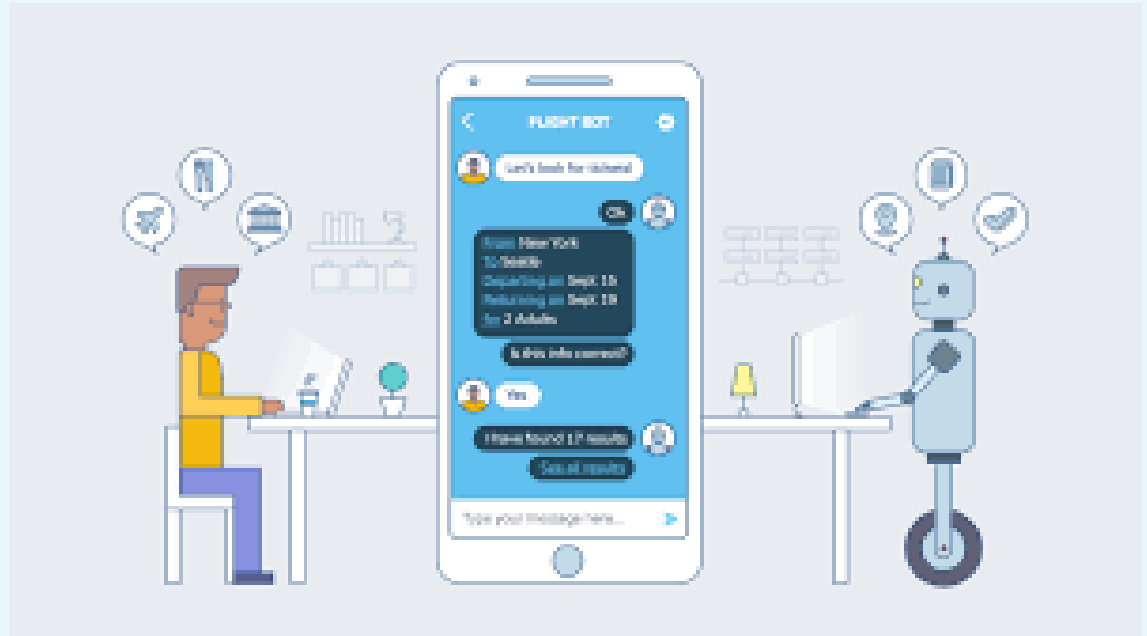
JSON

**LANGUAGES:** English (confidence: 100 %)

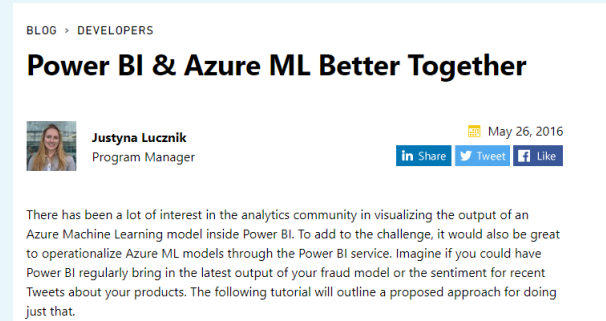
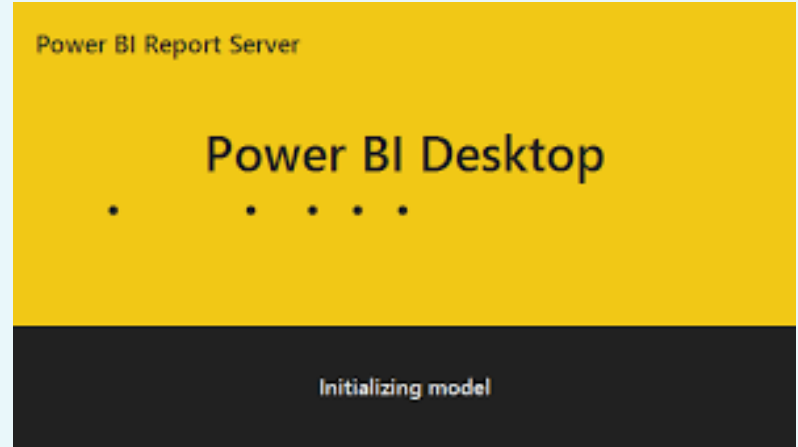
**KEY PHRASES:** wonderful experience, staff, rooms

**SENTIMENT:** 96 %

## DEMO 3: A chat bot with ML



# DEMO 4: ML with PowerBI



# DEMO 5: Big Data with analytics/ML

rows	columns
227472	4

rows

columns

16614

2

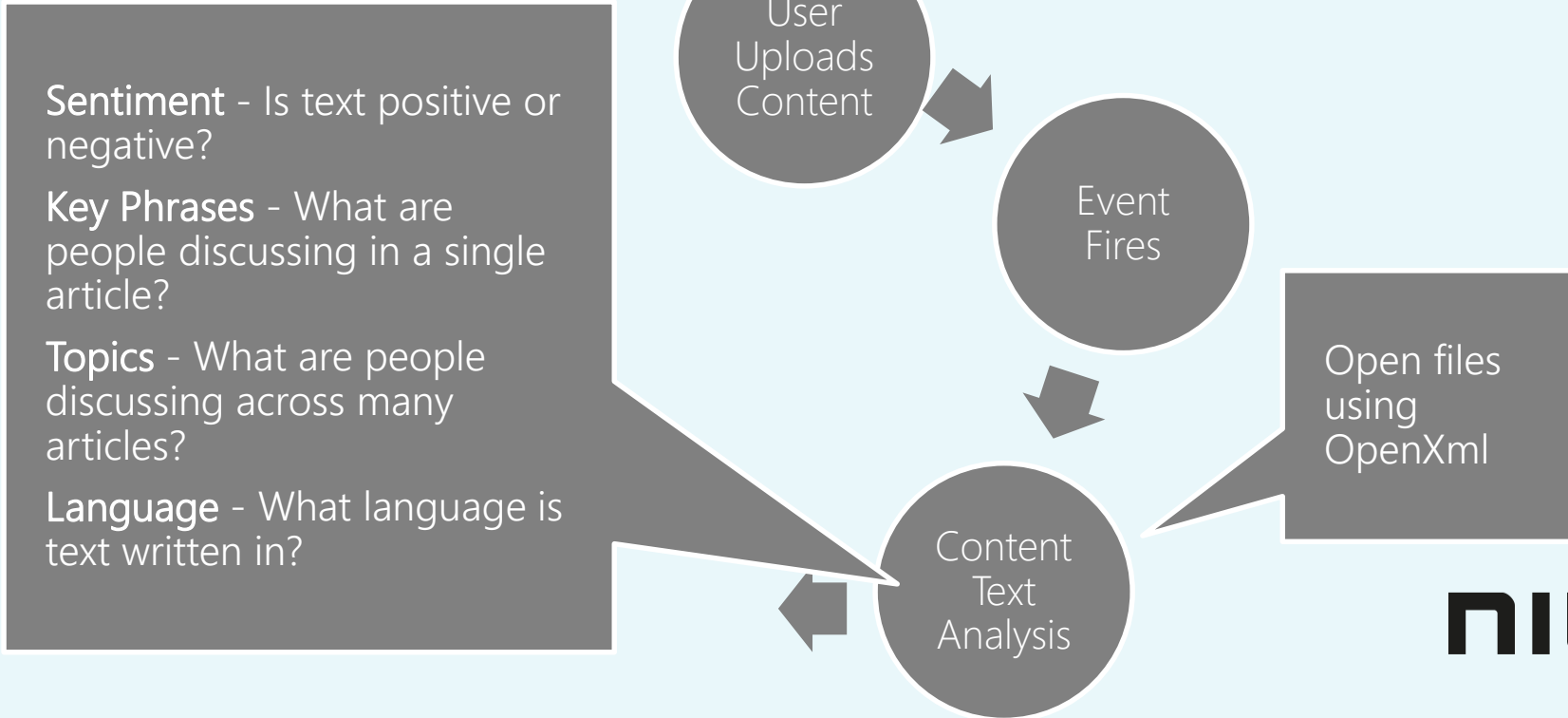
view as





Movie ID	Movie Name
8	Edison Kinetoscopic Record of a Sneeze (1894)
91	Le manoir du diable (1896)
417	Le voyage dans la lune (1902)
628	The s of Dollie (1908)
833	The Country Doctor (1909)

# An example: SharePoint / Microsoft Cognitive Services Usage





# Enhance your creativity with AI in Office 365



## Tap into relevant knowledge

Find and discover relevant content, data, and skills from inside and outside the organization, wherever you are creating



## Unlock new insights

Proactive insights that provide valuable recommendations and information about business and people data



## Amplify your work

Intelligent built-in assistance that cuts steps, extends your skills, and puts focus back on high value work

### Personalized Search across Office

Tap  
Researcher  
LinkedIn + Office 365 Profile Cards  
Data Types in Excel – *Coming Soon*

### Workplace Analytics

MyAnalytics  
Group Insights in Yammer  
Insights in Excel – *Coming Soon*

### Designer

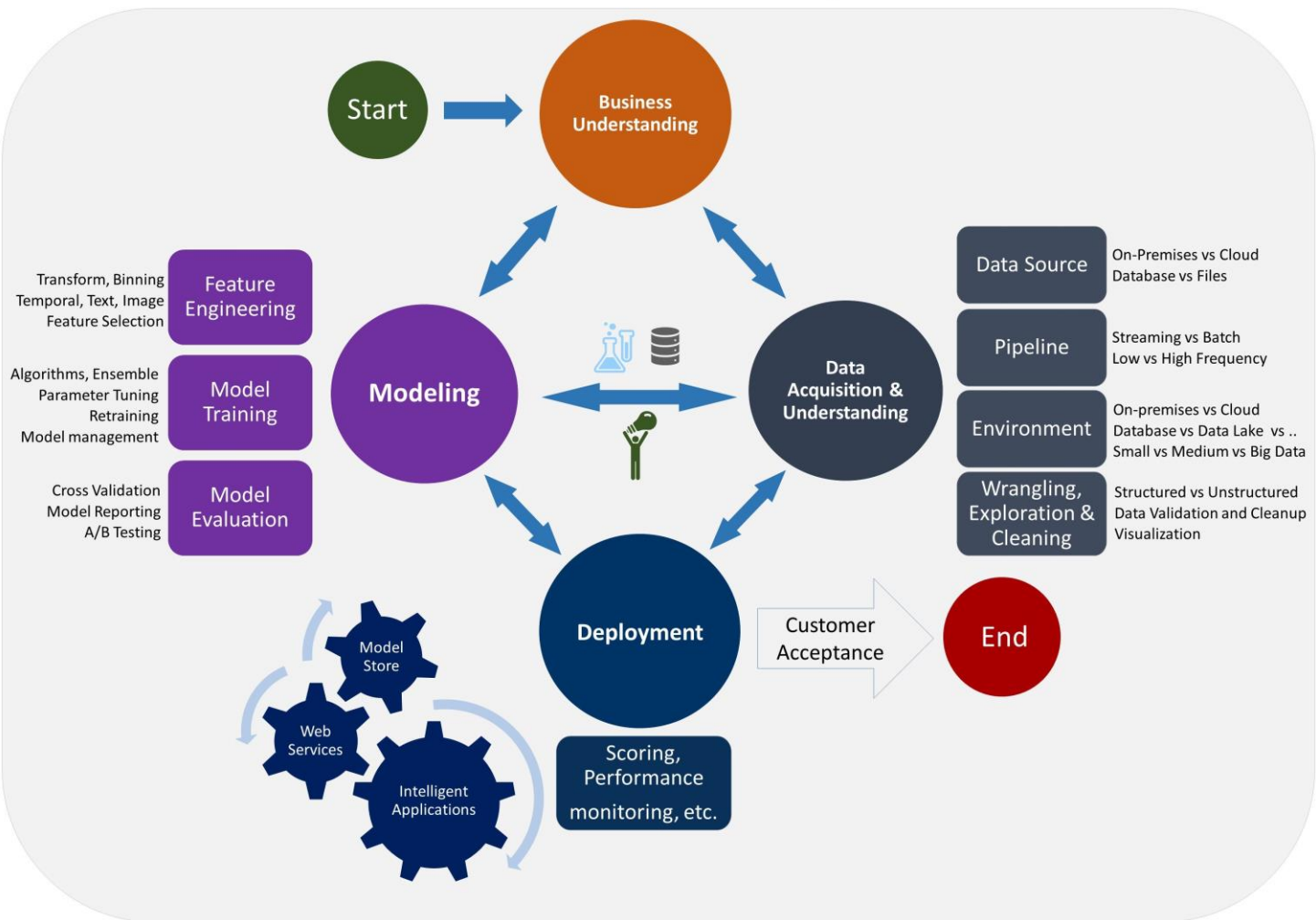
QuickStarter  
Editor  
Focused Inbox

# Do you really need to be a data scientist?

## An agenda

1. What is Azure Machine Learning?
2. How to create a model with your own data and existing algorithms
3. How to consume existing models with cognitive services and additional tools
4. **The data science process for all sorts of ML-projects**
5. A recap: how to kick-start Azure ML for you or your company

# Data Science Lifecycle



# Do you really need to be a data scientist?

## An agenda

1. What is Azure Machine Learning?
2. How to create a model with your own data and existing algorithms
3. How to consume existing models with cognitive services and additional tools
4. The data science process for all sorts of ML-projects
5. **A recap: how to kick-start Azure ML for you or your company**

## A kick-start for you and your company

- You want to become or are already a data scientist:
  - <https://Portal.azure.com>
  - <https://studio.azureml.net> with lots and lots of sample code
  - Microsoft R – in Azure, in a server or in SQL Server
  - Cognitive Toolkit - <https://www.microsoft.com/en-us/cognitive-toolkit/>
  - MS Exams – 70-533/70-534
- You will utilize the tools in a small company OR as a developer
  - Cognitive Services
    - <https://azure.microsoft.com/en-us/services/cognitive-services/>
    - <http://www.luis.ai/home>
    - <https://qnamaker.ai>
    - <https://dev.botframework.com/>
  - OR integrate with other services like Office 365
    - <https://channel9.msdn.com/Events/Ignite/Microsoft-Ignite-Orlando-2017/BRK3221>
- ML Modules: <https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/evaluate-model>

# Resources

Slides and demos from the conference will be available at  
[github.com/nordicinfrastructureconference/2018](https://github.com/nordicinfrastructureconference/2018) ([bit.ly/2y7JhA3](https://bit.ly/2y7JhA3))