

# 분석 플랫폼으로의 클라우드, R, Machine Learning

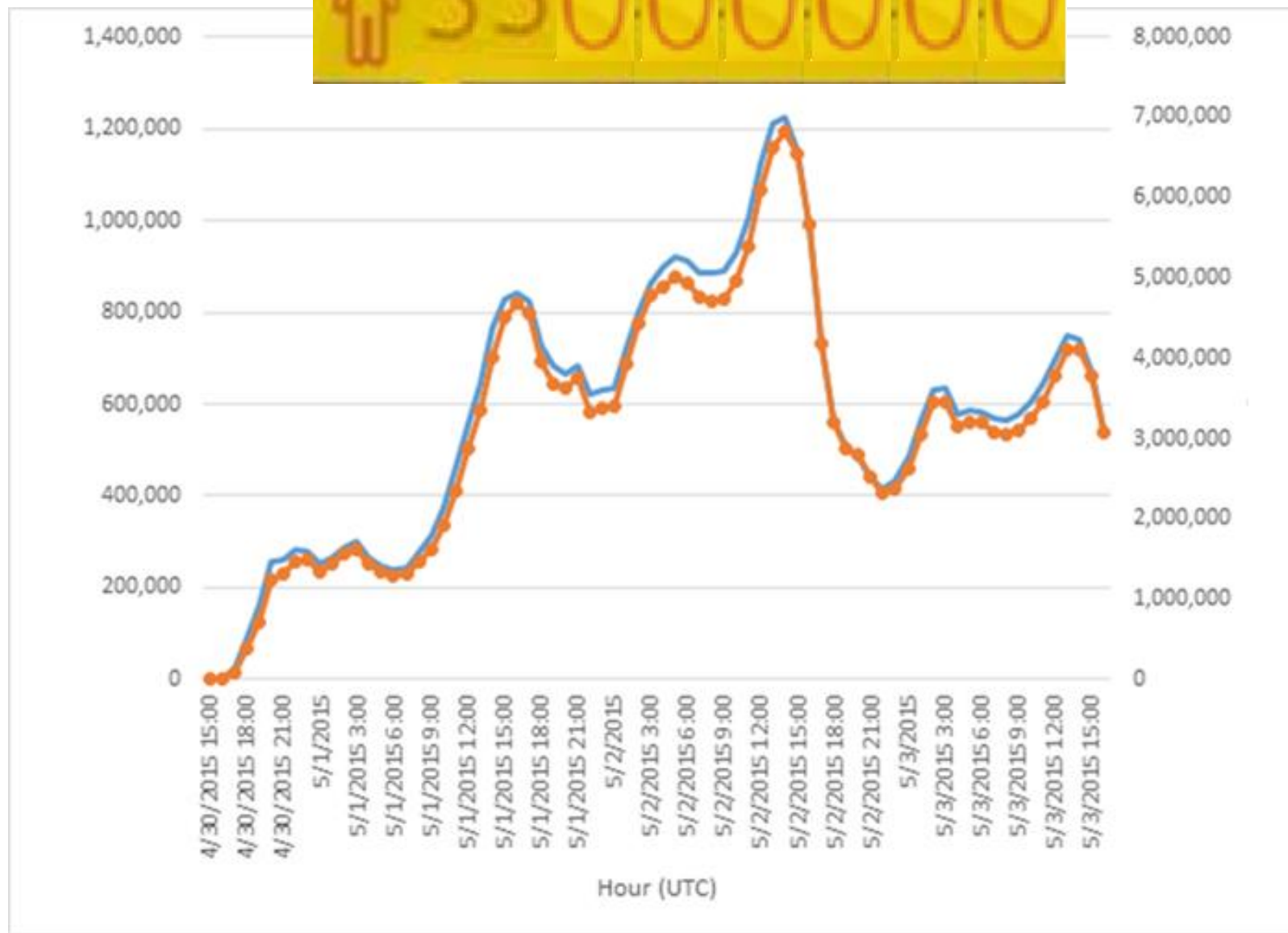
김대우 / daewoo.kim@live.com  
한국마이크로소프트

[illegible]



무슨 서비스?

33000000



# DEMO

<http://how-old.net/>

# #HowOldNumbers

## 4일간:

- 33M 사용자
- 1.2M 방문자 / 시간
- 236M 이미지
- 10K 이미지 / 초
- 1.7M FB 공유



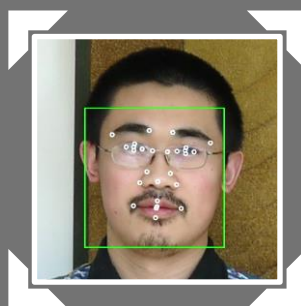


# 얼굴 인식 API – 얼굴 감지



INPUT  
IMAGE

DETECTION



FACIAL  
RECTANGLE + LANDMARKS

ATTRIBUTES

Detection Result:

JSON:

```
[
  {
    "faceRectangle": {
      "width": 109,
      "height": 109,
      "left": 62,
      "top": 62
    },
    "attributes": {
      "age": 31,
      "gender": "male",
      "headPose": {
        "roll": "2.9",
        "yaw": "-1.3",
        "pitch": "0.0"
      },
      "faceLandmarks": {
        "pupilLeft": {
          "x": "93.6",
          "y": "88.2"
        },
        "pupilRight": {
          "x": "138.4",
          "y": "91.7"
        }
      }
    },
    ...
  }
]
```

# 실세계의 ML - 추천 상품

- 전통적인 추천
  - 크로스셀/업셀/가격 디스카운트 제안
  - 대부분 수동 추천, 비즈니스 "규칙"으로 업셀,크로스셀 제공
- 국내외 대부분의 마켓 서비스에서 제공

## Frequently Bought Together



Price for all three: **\$279.70**

[Add all three to Cart](#)

[Add all three to Wish List](#)

[Show availability and shipping details](#)

- ☒ **This item:** Nokia Lumia 920 Smartphone - unlocked - White **\$259.80**
- ☒ ArmorSuit MilitaryShield - Nokia Lumia 920 Screen Protector Shield + Lifetime Replacement \$9.95
- ☒ Nokia Lumia 920 Low Profile Covert Branded PU Leather Wallet Case (Black) \$9.95

## Customers Who Bought This Item Also Bought



Nokia Lumia 920 Low Profile Covert Branded PU Leather Wallet Case (Black)  
★★★★☆ (262)  
\$9.95 ✓Prime



ArmorSuit MilitaryShield - Nokia Lumia 920 Screen Protector Shield ...  
★★★★☆ (335)  
\$9.95 ✓Prime



NOKIA LUMIA 920 HYBRID RUBBERISED BACK COVER CASE - SOLID BLACK  
★★★★☆ (161)  
\$6.95 ✓Prime



Nokia Lumia 920 Black Factory Unlocked 32GB phone 4G LTE  
★★★★☆ (184)  
\$236.99 ✓Prime



Skinomi® TechSkin - Nokia Lumia 920 Screen Protector Premium HD Clear Film with ...  
★★★★☆ (196)  
\$8.95 ✓Prime



Nokia Lumia 920 Low Profile Covert Branded PU Leather Wallet Case (Purple)  
★★★★☆ (262)



Nokia Lumia 920 Premium PU Leather Wallet Case with Floral Interior (Red)  
★★★★☆ (126)  
\$8.95 ✓Prime



The Friendly Swede Bundle of 10 Colorful Silicone Covers Cases Skins for Nokia Lumia ...  
★★★★☆ (134)  
\$12.77 ✓Prime



MP Ant Pro 920  
★



JJ Foods - Churn(고객이탈) 예측

---



# JJ Food 서비스

- Customers

- 패스트푸드 등
- 소매업
- 급식
- 호텔 등
- 이벤트 케이터링

- Year 2014

- 8 지점
- 60,000 고객
- 4,500 제품들
- 1M + 구매 주문





# JJ Food Service

- 상위 20%의 churn prediction을 이용해 3배 이상의 효과(기존 random 프로모션)
- 200개의 상위 예측에 대해 45% 이상의 유지 = 17%의 이탈





# 실세계의 ML – 미 체신부

The United States Postal Service processed over 150 billion pieces of mail in 2013—far too much for efficient human sorting.

But as recently as 1997, only 10% of hand-addressed mail was successfully sorted automatically.



reference  
reference  
reference

challenge



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자동적으로 다양한 유형의  
손글씨를 해석하는 기술 학습

- 98% 이상의 정확도

# DEMO

다양한 ML 알고리즘

<http://gallery.azureml.net/>

이분은 누구?



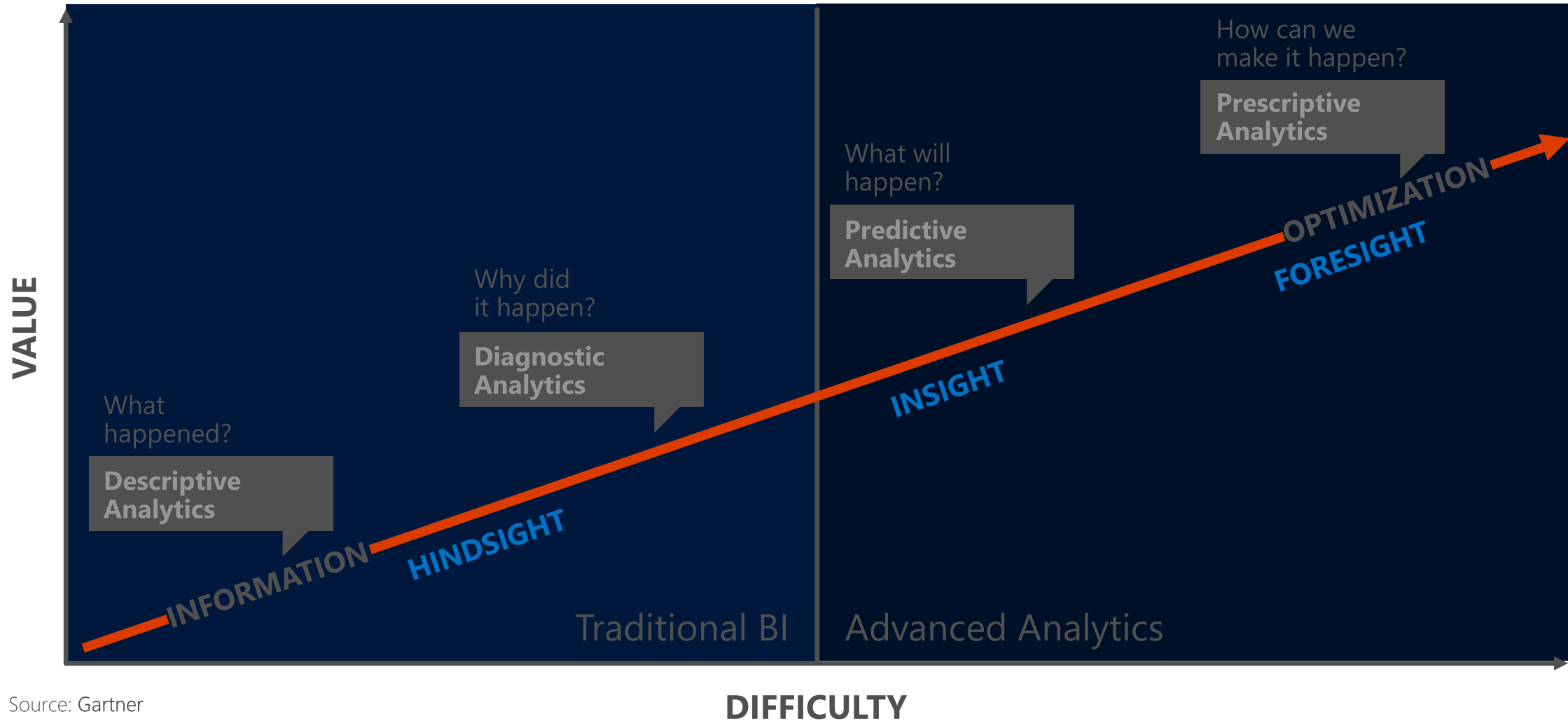
# Transformational trends





# Advanced Analytics

## Business Intelligence와의 비교



# Power - BI DEMO

<https://powerbi.microsoft.com/>

# Advanced Analytics scenarios



## EXAMPLE SOLUTIONS



Sales  
and marketing



Finance  
and risk



Customer  
and channel



Operations  
and workforce



Sales forecasting



Fraud detection



User segmentation



Agent allocation



Demand forecasting



Credit risk management



Personalized offers



Warehouse efficiency



Sales lead scoring



Product recommendation



Smart buildings



Marketing mix  
optimization

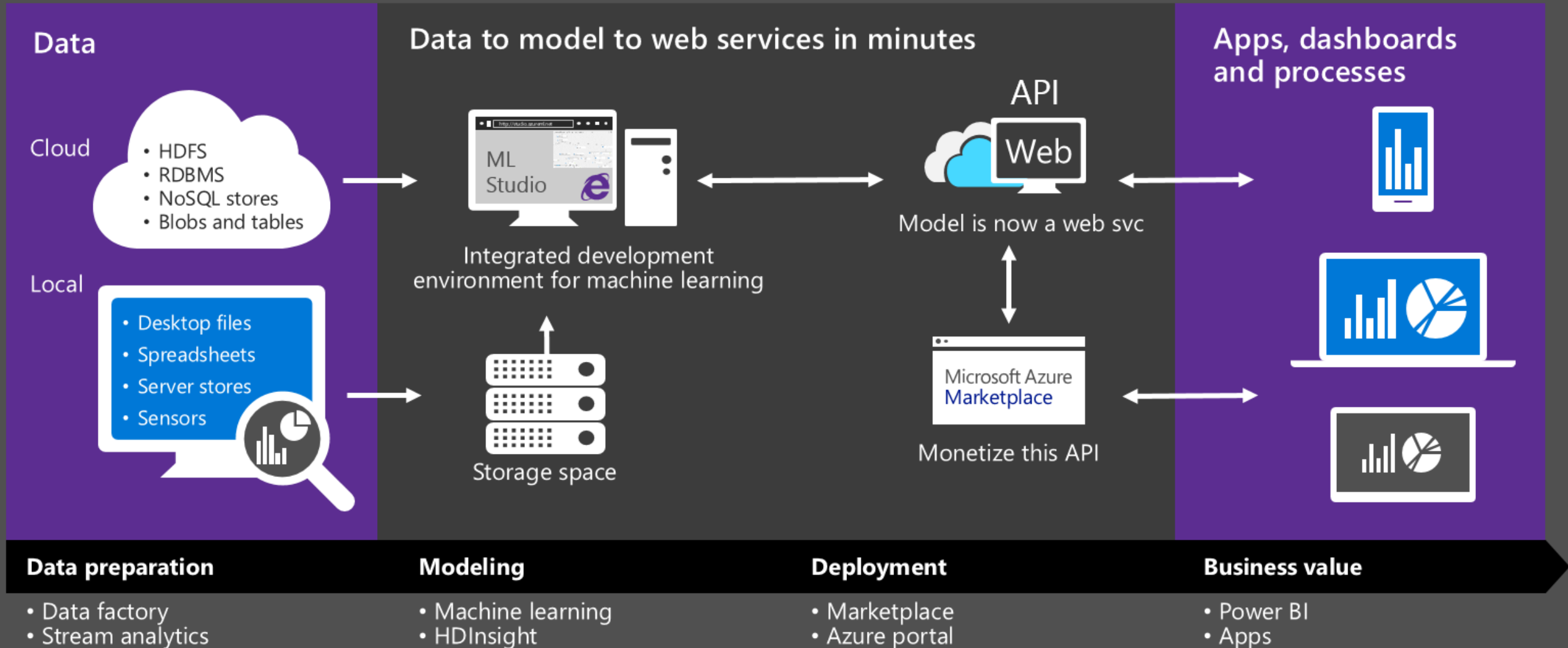


Predictive maintenance



Supply chain optimization

# Advanced analytics architecture



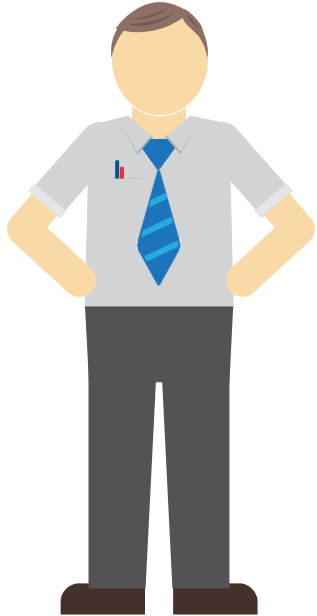


# Machine learning

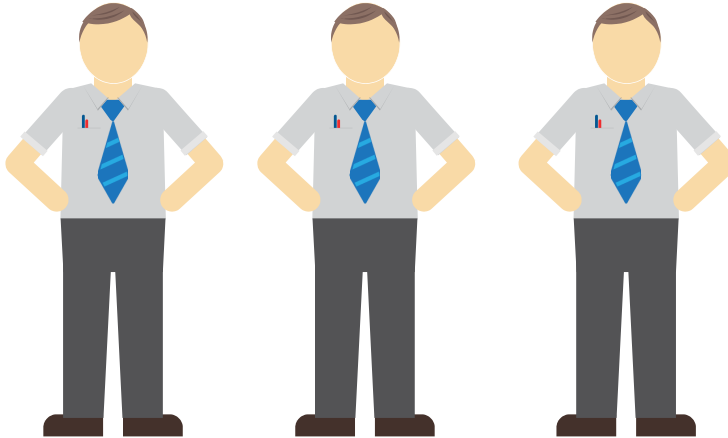
with Azure ML + R

# Scenario

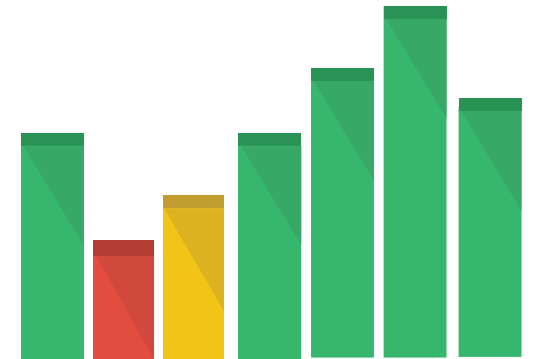
분석적 재무 설계로  
(예측) 소득에 따른 고객  
어장 관리 희망



다양한 통계 변수를 가진 고객  
고객들 중 향후 연봉이  
일정 금액 이상인 고객 대상  
프로모션



기본적인 정보를 통해  
고객의 향후  
가능성 측정 희망



RStudio

File Edit Code View Plots Session Build Debug Tools Help

Go to file/function

Project: (None)

Console

```
R version 3.1.2 (2014-10-31) -- "Pumpkin Helmet"
Copyright (C) 2014 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

Revolution R Open 8.0.1 beta
The enhanced R distribution from Revolution Analytics
Visit mran.revolutionanalytics.com/open for information
about additional features and technical support options.

[Workspace loaded from ~/.RData]

> library(RODBC)
> ch <- odbcConnect("RHappyCars")
> Customers <- sqlFetch(ch, "Customers")
> |
```

Environment History

To Console To Source

```
library(rattle)
rattle()
library(RODBC)
ch <- odbcConnect("RHappyCars")
Customers <- sqlFetch(ch, "Customers")
View(Customers)
View(Customers)
boxplot(Customers$ProfitGenerated)
library(rattle)
rattle()
library(RODBC)
ch <- odbcConnect("RHappyCars")
Customers <- sqlFetch(ch, "Customers")
```

Files Plots Packages Help Viewer

Zoom Export Clear All

# Demo – Azure ML + R 라이브러리



# Azure Machine Learning 목표

*Make machine learning accessible to every enterprise, data scientist, developer, information worker, consumer, and device anywhere in the world.*



# 마침

Azure Machine Learning은  
클라우드 기반  
data science 플랫폼

Microsoft data science =  
SQL + Azure ML + R +  
HDInsight + Azure Stream  
Analytics

# 분석 플랫폼으로의 클라우드, R, Machine Learning

김대우 / [daewoo.kim@live.com](mailto:daewoo.kim@live.com)  
한국마이크로소프트