

An aerial, high-angle photograph of a modern cable-stayed bridge with a white deck and a central pylon. The bridge spans across a body of water. In the background, there are various urban structures, including buildings and roads, rendered in a muted, monochromatic color palette. The overall scene is presented in a desaturated, sepia-like tone.

# DATA ANALYTICS – THE FUTURE IS NOW

FUTURELAB - 2021

# INTRODUCTION

## About Your Presenters:

Dr. Bharat Maheshwari

- Faculty, Odette School of Business
- Founder, Future Lab
- Past President, Canadian World Education Foundation

Laura Tetrault

- PMP, CSM certified
- Partner, Future Lab
- Founder, Inquisita Enterprises

## What We Do:

We connect students,  
businesses and  
problem-solving techniques  
to unlock potential

THIS IS **futurelab**

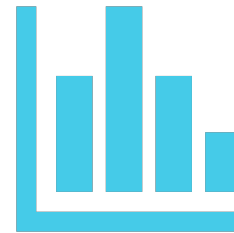
# AGENDA



## How Work is Working

The Past

The Present – what's working now



## The Future State

Data in the future

- Data to Insights
- Scenario Planning



THE PAST



## WHAT WORKED...

- Early Data Analytics - WWII Technology
- German transmissions were just DATA
- Turing's Enigma Machine allowed allied forces to turn the course of the war by turning DATA into INFORMATION
- Instead of GUESSING what the enemy was going to do, the allies could KNOW what they planned



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**Advancements in Data Analytics took  
the guess work out**



# THE PRESENT

# DATA IS THE NEW OIL

- Economy has become a knowledge/information economy
- The trillion-dollar club consists of three tech giants: Apple, Amazon, and Microsoft...along with just one Oil major Saudi Aramco.
- With increased adoption IOTs, Machine Learning and AI, (emerging data technologies) open several new avenues for businesses
- Data provides informational Insights to reduce waste



# DATA ANALYTICS RELEASES RESOURCES TO ESSENTIAL TASKS



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**INITECH**

## T.P.S. REPORT

COVER SHEET

Prepared By: \_\_\_\_\_ Date: \_\_\_\_\_  
System: \_\_\_\_\_ Program Language: \_\_\_\_\_ Platform: \_\_\_\_\_ OS: \_\_\_\_\_  
Unit Code: \_\_\_\_\_ Customer: \_\_\_\_\_  
Unit Code Tested: \_\_\_\_\_  
Dev Date: \_\_\_\_\_ Approved By: \_\_\_\_\_  
Test Date: \_\_\_\_\_ Tested By: \_\_\_\_\_  
Total Run Time: \_\_\_\_\_ Total Error Count: \_\_\_\_\_  
Error Reference: \_\_\_\_\_  
Errors Logged: \_\_\_\_\_ Log Location: \_\_\_\_\_  
Passed: \_\_\_\_\_ Moved to Production: \_\_\_\_\_  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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## THEN

- Prior to the washing machine – the laundry could take up to 15 hours....

## NOW

- How much time does your team spend gathering information, formatting and creating reports?



# DATA IS EVERYWHERE

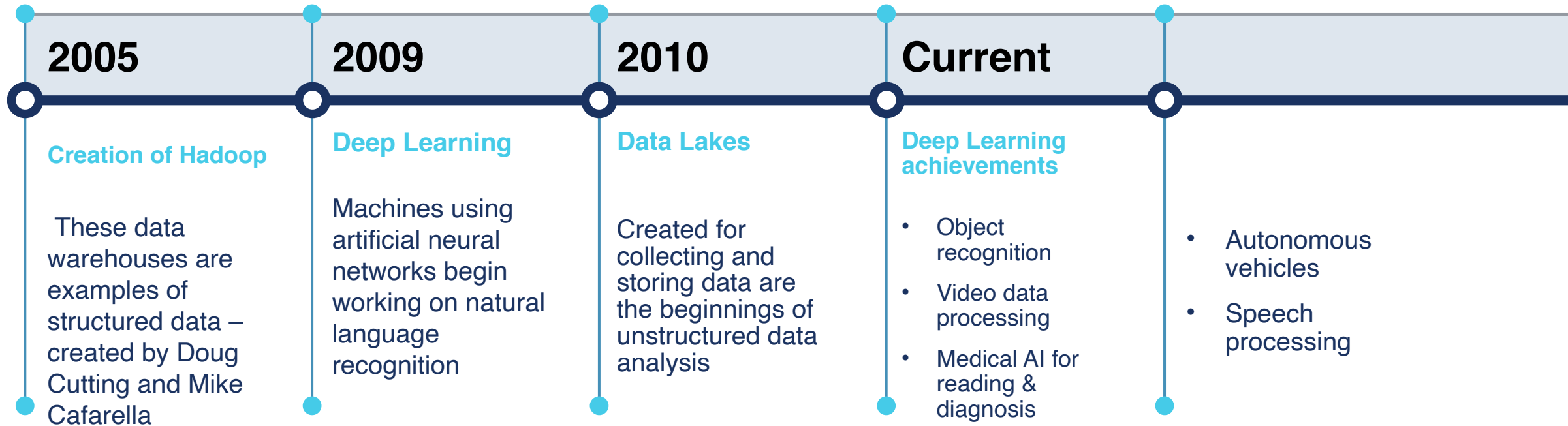
## Data Tools Can Facilitate

- Insight into tasks and resources
- Smoother execution
- Less waste
- Better fit between what the customer desires and the product offering



# EVOLUTION OF DATA TECHNOLOGY

*What's Happening Now*





THE FUTURE



# BRINGING IT TO OUR BACKYARD:

WHAT DOES THE GREENHOUSE OF THE FUTURE LOOK LIKE?

## Harrow Research & Development Centre

- Est. in 1909
- Largest Greenhouse research complex facility in North America
- Mission: Develop and transfer new technologies for the production and protection of greenhouse vegetables and field crops



# BRINGING IT TO OUR BACKYARD: WHAT DOES THE GREENHOUSE OF THE FUTURE LOOK LIKE?

## The Challenge

Create an AI greenhouse control system that could grow a successful crop with limited resources and limited human involvement.

### The Tools

- Cameras
- Sensors

## Team Sonoma

- Harrow RDC's own Dr. Hao and Microsoft AI Research (MSR)'s team

## The Results

- Team Sonoma grew more than 55kg of cucumbers per sq. meter
- Net Profit 25% greater than the second-place team
- Used optimal inputs (fertilizer, water, energy)
- Best score on sustainability

# FROM DATA TO INSIGHTS

## DATA MATURITY MATRIX

### Businesses are using data for **description**

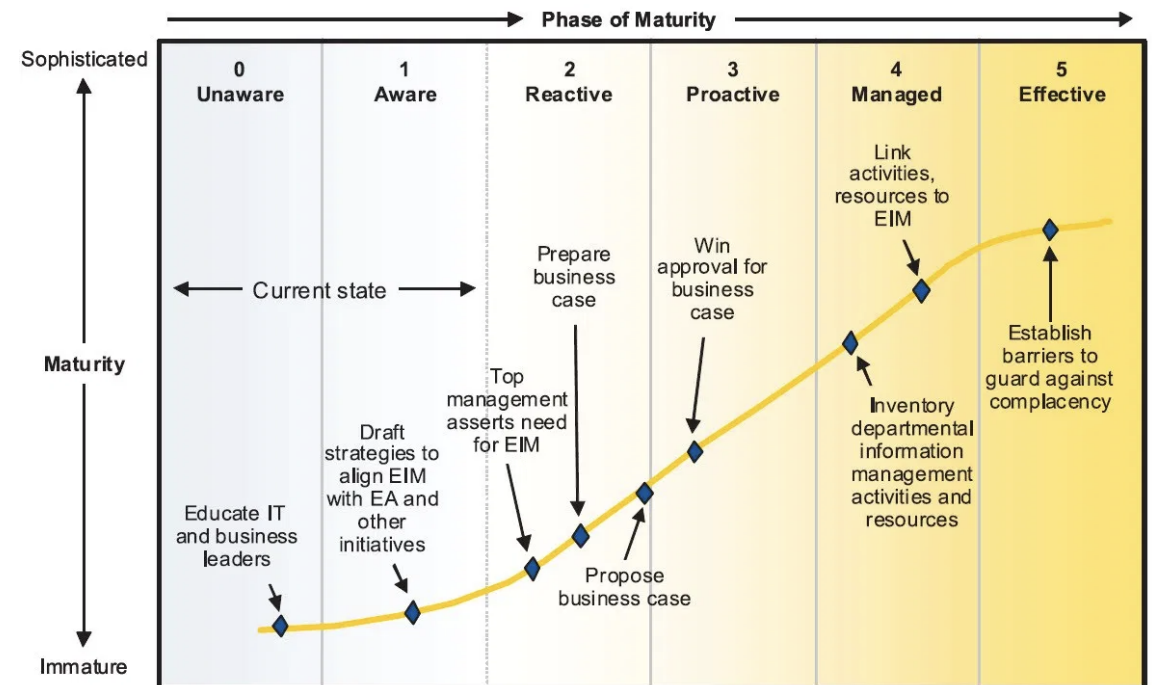
- It is used to improve processes and the data describes an activity – ie. how many days it takes a customer to pay their invoice
- Past data

### Some firms using data for **prediction**

- The more we know, the better the prediction
  - Historical data + analytics + machine learning
- Past & Current Data

### Only a few are using data for **prescriptions**

- Can I prescribe based on my predictions and surprise the customer?
  - Amazon – moves anticipated items to regional warehouses prior to a need utilizing extra truck space



Gartner data governance maturity model



# BRIDGE AS A DESTINATION

(BENEFIT TO THE REGION)



# Data and Destinations

Combining aesthetics, convenience, attractions and deep knowledge of users can create more than a crossing.

A crossing is a function.

A destination draws people.

A destination becomes a driving force for stimulating economic activity in the region.



## Models

Peace Arch (WA-BC)  
Sydney Harbour Bridge (Aus.)  
Golden Gate Bridge (CA)  
Brooklyn Bridge (NY)

## Buyers



Tourists  
Travelers/Commuters  
Tourist-based businesses



## Technology

Web development technologies  
Backend services  
Online storefront  
Interactive kiosks

## Data Types & Uses



Past crossing usage  
Economic trends  
Technology adoption trends (A.V.s / E.V.s for example)  
User generated data (real time)

**Bridge as a Destination**



# A DESTINATION IS A DRIVING FORCE: It Stimulates Economic Activity

- A bridge connects communities in many ways
  - As part of every major tour of San Francisco, the Golden Gate Bridge is a driver and contributor to the \$8.4B that tourism generates for the local economy
  - It supports over 71,000 jobs



# DATA ENABLED CROSSINGS AND COMMUNITIES

## How Could a Data Enabled Bridge Benefit Our Region

- It could provide better information about how people live and work in our regions can lead to better solutions to challenges
- Facilitates better access to goods available online
- Allows infrastructure to be considered, designed and used for multiple markets
- Data can support new technologies – like the Greenhouse Challenge – in other industries

Let's talk about it. How do you see it?

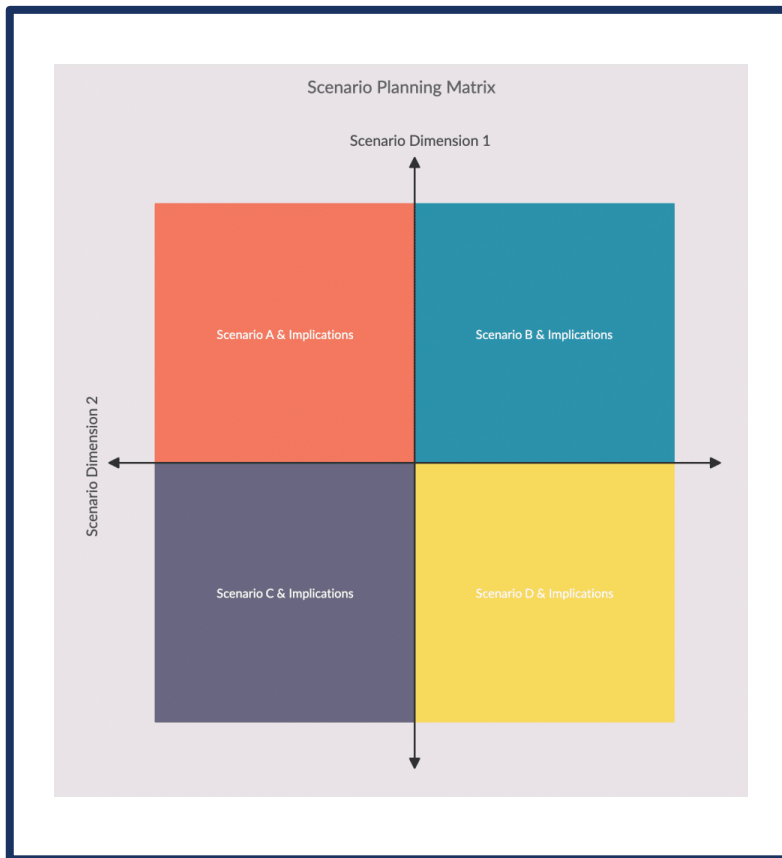


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**END OF PRESENTATION**

# SCENARIO PLANNING



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## LOOKS AT UNCERTAINTIES

- What are key uncertainties in your area?
  - Traffic density, savings and earnings levels, technology adoption in automotive & travel...
- How might the most important key uncertainties change over 1, 5, 10, 20 years?

## CREATES SCENARIOS (POSSIBLE FUTURES)

- To describe potential scenarios
  - How are businesses and people acting?
  - Where is investment happening?
  - What is in the news?
  - What do people care about?
- That allows risk identification and mitigation – which scenarios look more likely?

## TO ENABLE STRATEGIC PLANNING

- what strategies can be used to move closer to the desired outcomes as a response to the likely scenarios?