

Applied AI Trends in Software Development & Healthcare | LinkedIn

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Disclaimers

- ✓ This presentation represent the view of the author (Not IBM)
- ✓ All opinions expressed in this talk are strictly from the speaker and do NOT represent those of IBM or IBM Management

Today's presentation

- ✓ New developments in AI & SW development
- ✓ Computer Human interactions with Natural Language Processing (NLU/NLP)

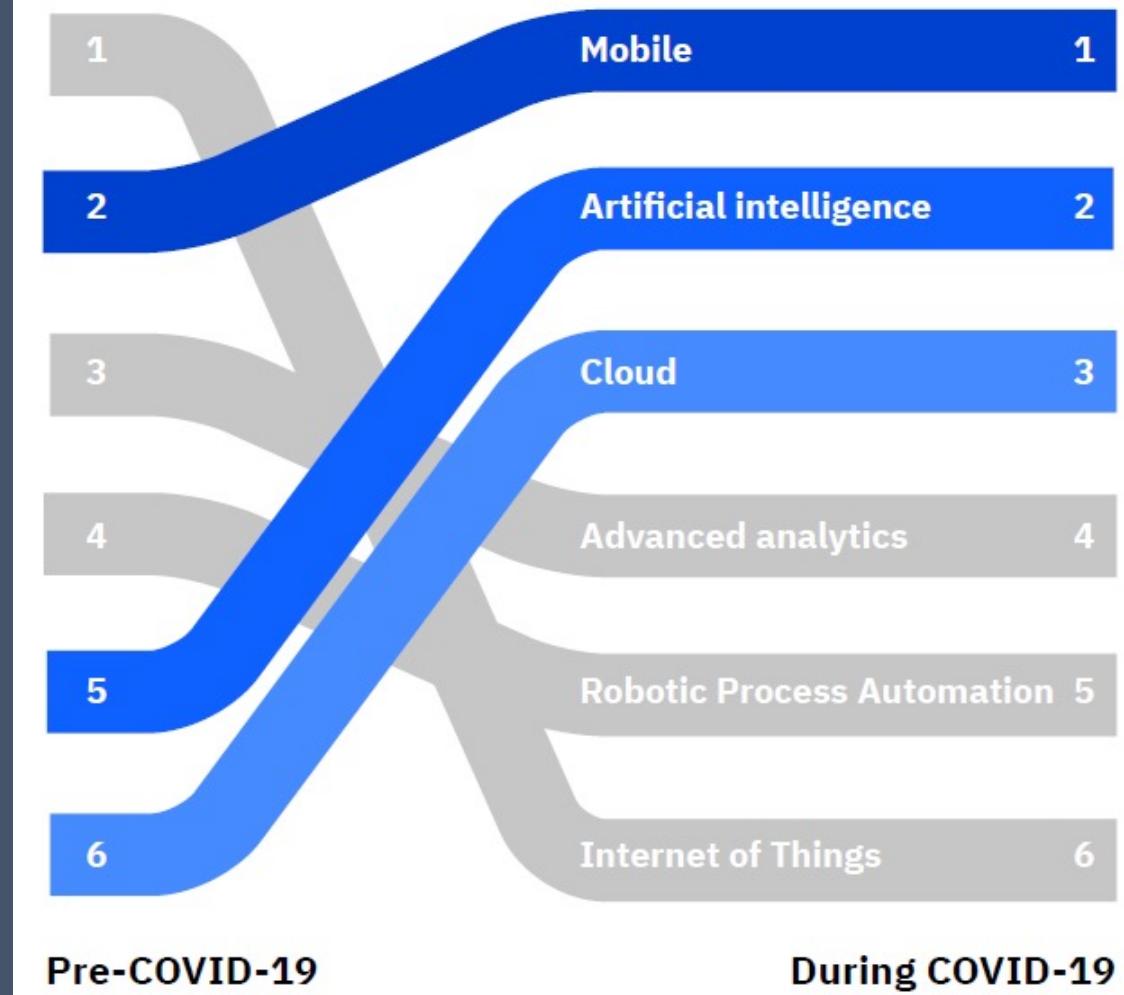
Why AI?
Why now?

Organizations turned to AI to address pandemic-exposed vulnerabilities

<https://www.ibm.com/thought-leadership/institute-business-value/report/digital-acceleration>

Across industries, the mix of critical technologies to performance contribution before and during COVID-19 has changed dramatically

Ranking of technologies according to revenue impact



Recent AI use cases in Healthcare

<https://www.ibm.com/watson/covid-response>

<https://www.youtube.com/watch?v=zmpXJ6ZwhQk>



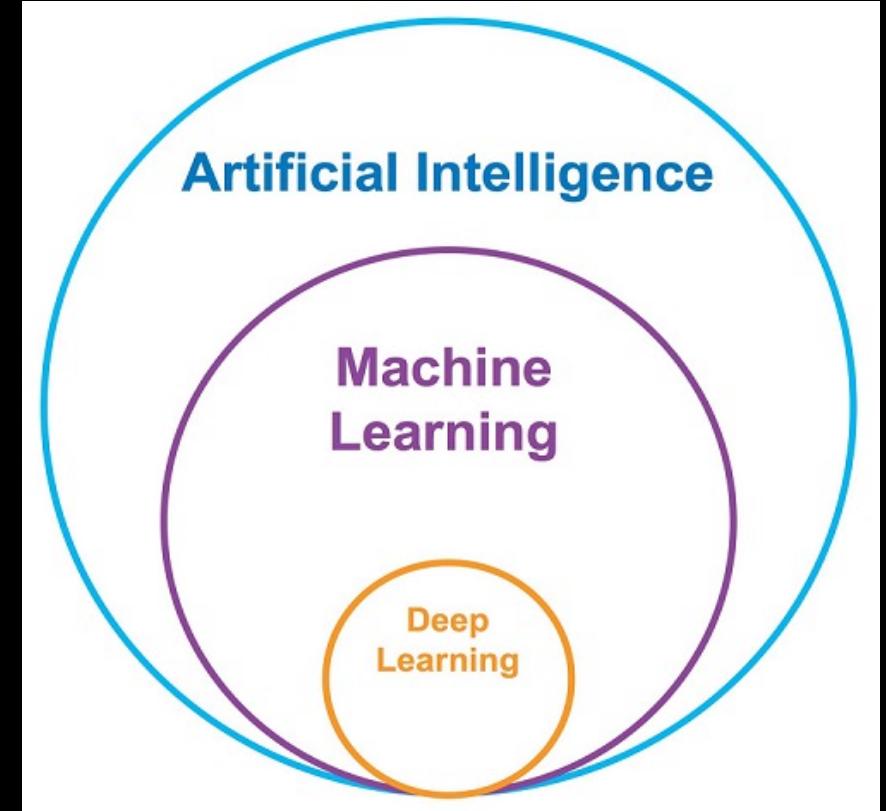
AI Introduction

Artificial intelligence in medicine is the **use of machine learning models** to **search** medical data and **uncover** insights to help **improve** health outcomes and patient experiences.



Definitions

- **AI**: Intelligence demonstrated by machines
- **ML**: Set of algorithms that allow computers to learn from (big) data
- **DL**: Set of learning techniques focused on models and neural networks



AI Medical use cases

- ✓ Clinical decision support
- ✓ Imaging analysis

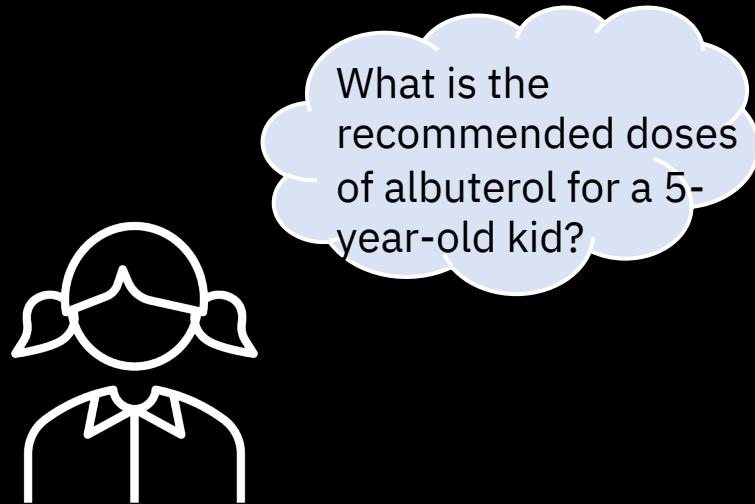
CDS tools help providers make decisions about treatments, medications, mental health by providing them with quick access to information or research that is relevant to their patient.

In medical imaging, AI tools are being used to analyze CT scans, x-rays, MRIs and other images for lesions or other findings that a human radiologist might miss



Recent advances in AI software development

Differences start right at the start



Conventional

Specify the requirements

Quality/Success: Deliver as per requirements



AI

Express Problem/Aspiration: Define Value

Success: Deliver and optimize Value

Value Definition rather than Requirement definition is the theme

Why Machine Learning?

Traditional Programming



AI-Machine Learning



ML provides systems the ability to **automatically** learn from **experience**
(without being explicitly programmed)



IBM Design Thinking

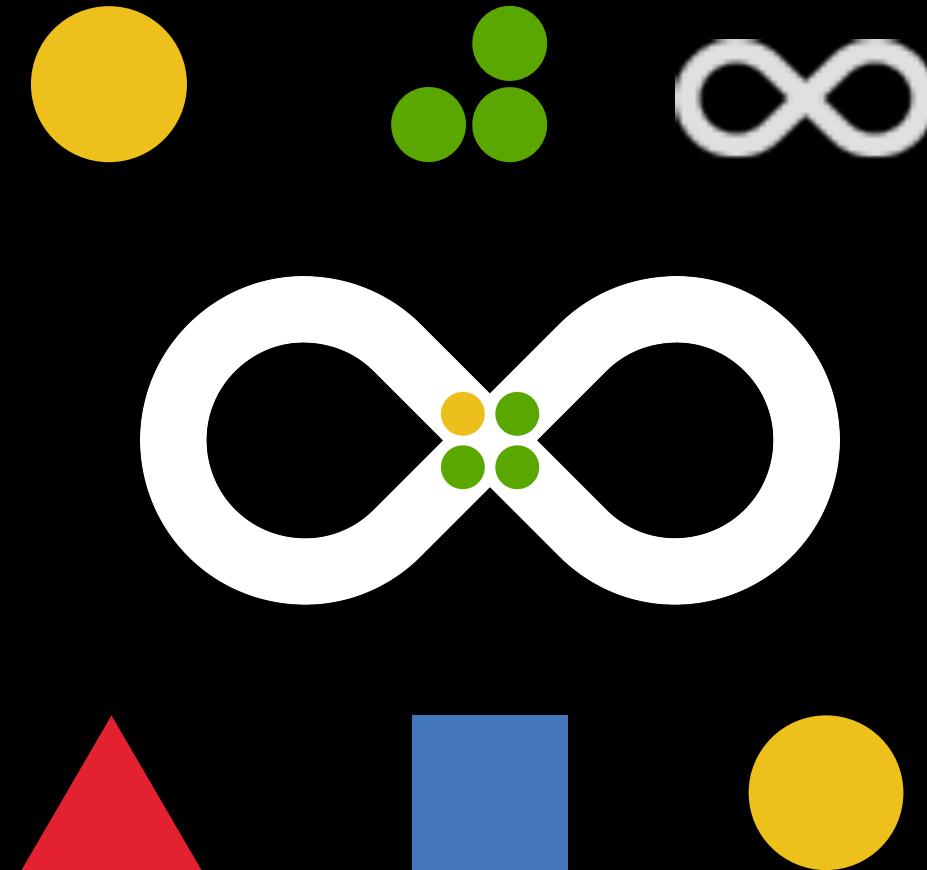
Human-centered outcomes at speed and scale

<https://www.ibm.com/design/thinking/>

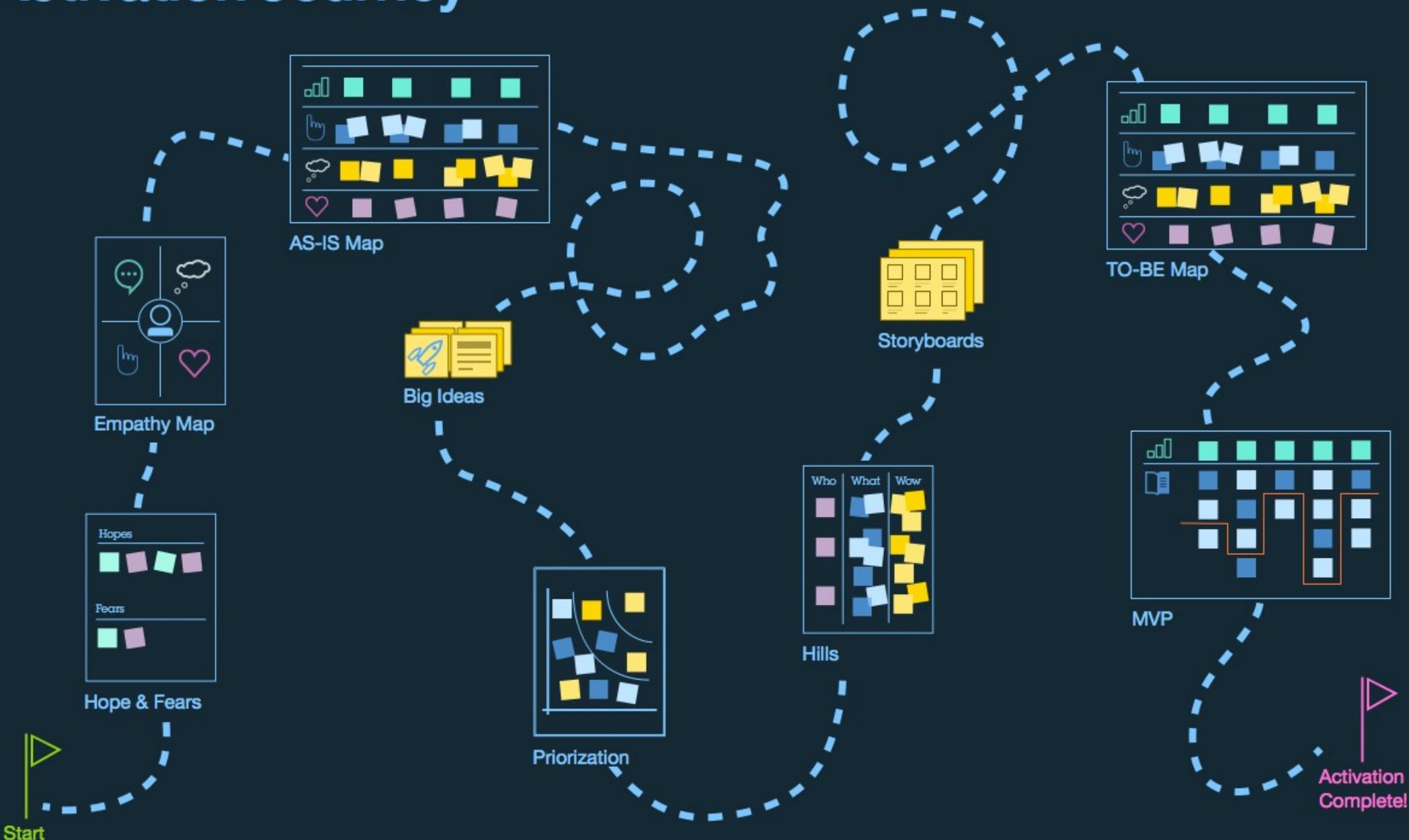
Principles

The Loop

The Keys



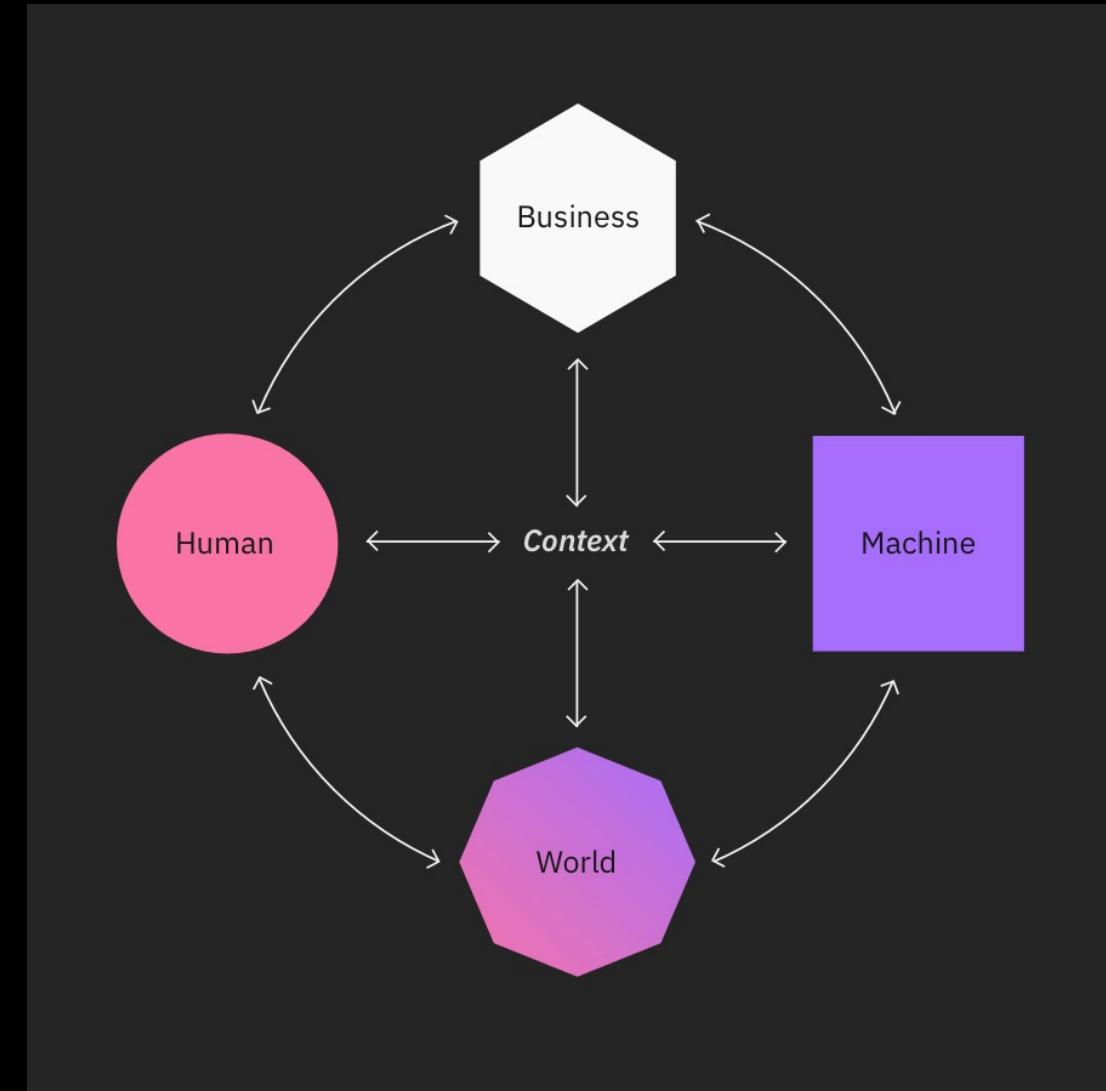
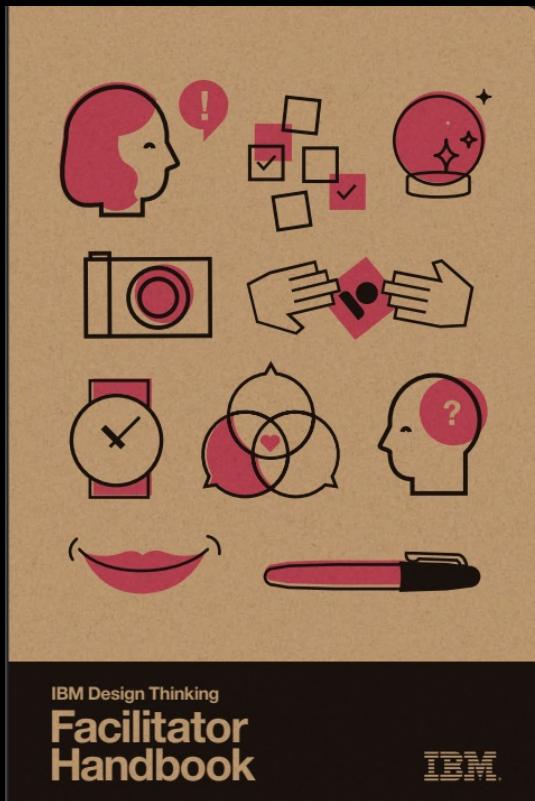
Activation Journey



Design Thinking for AI

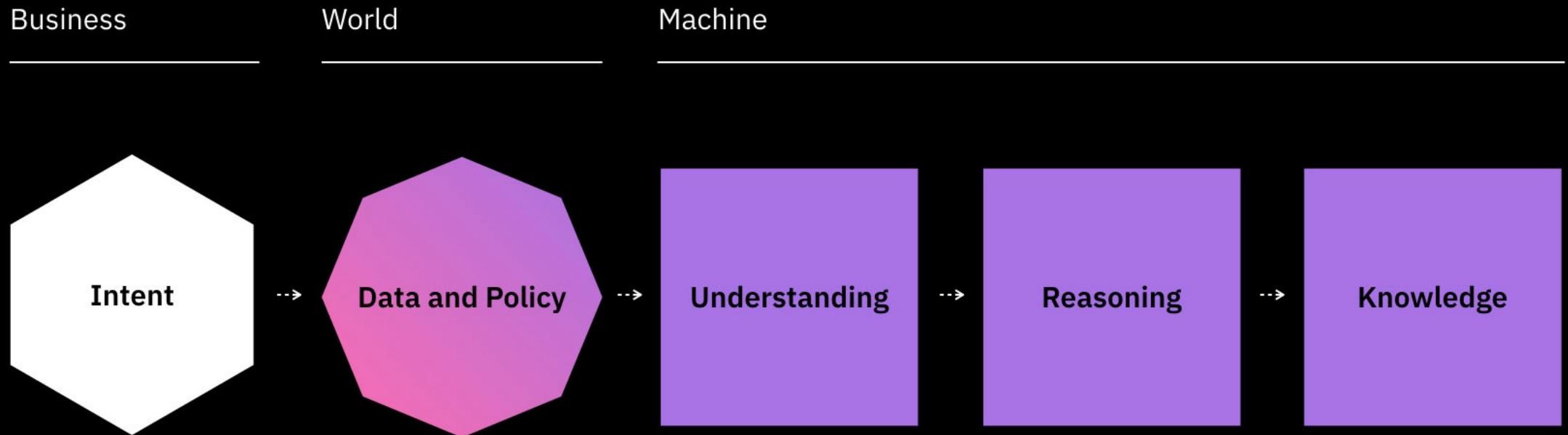
Design Thinking for AI

<https://www.ibm.com/design/ai/fundamentals/>



AI Essentials Framework

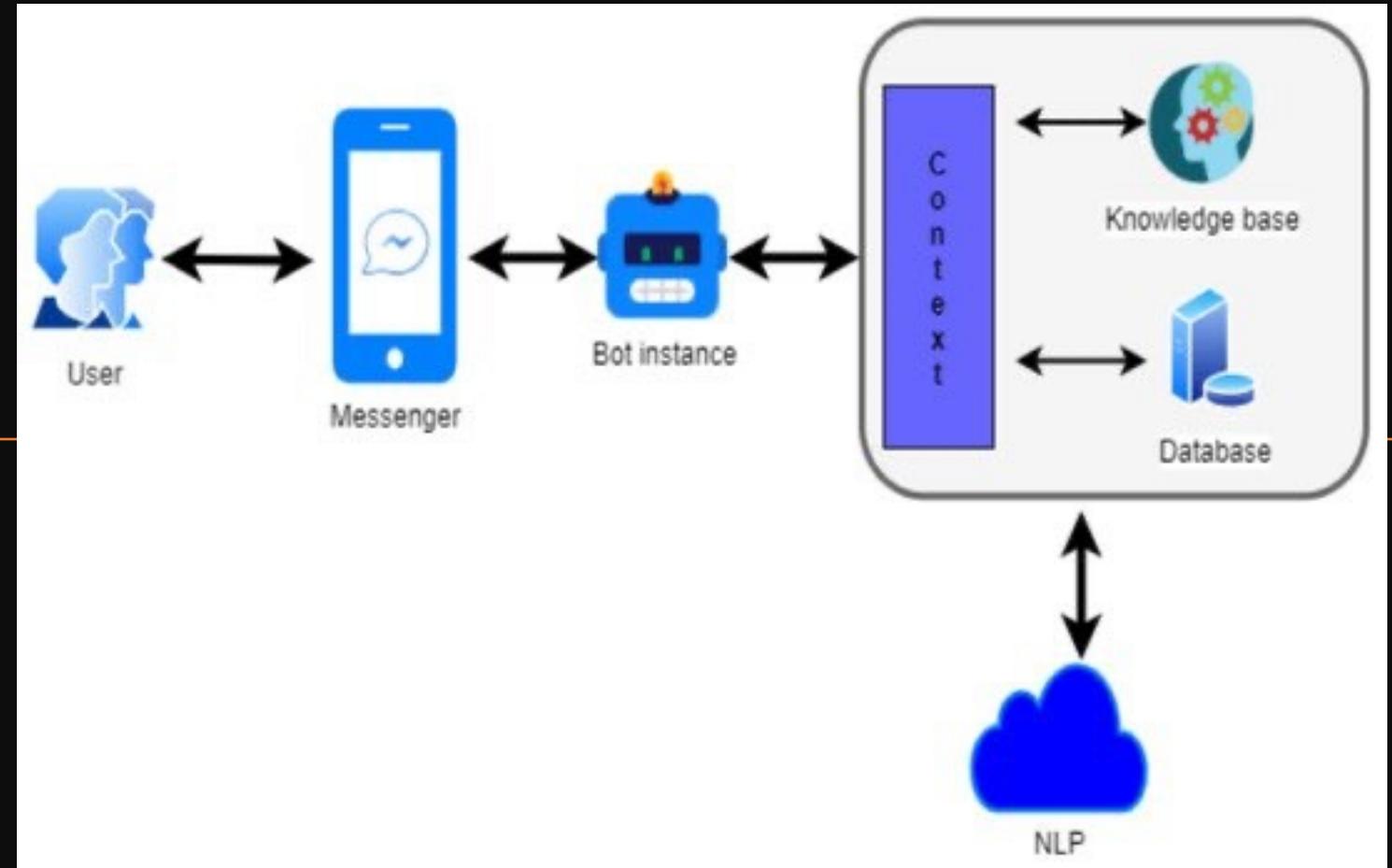
https://www.ibm.com/design/thinking/page/courses/AI_Essentials/topic/Introduction/01/01/01/7



Making human-computer
interaction easy through natural
language processing (NLU/NLP)

Recent AI use cases

<https://www.ibm.com/watson/covid-response>



<https://www.mdpi.com/2227-9032/8/2/154>

Recent AI use cases

MDLIVE®

 **Esther Smith**
69yr old patient in Georgia
Height: 5'6" Weight: 197 lbs

Chief Complain:
Flu Symptoms

Conditions:
Hypertension
Psoriasis

Medications:
Prilosec

Allergies:
Penicillin

 Patient Name Confirmed
 Location Confirmed
 DOB Confirmed

Recommended Diagnosis:
Influenza (97% Confidence)



Customer mood: **Frustrated** 

 Video  Audio  Settings  Close

Micromedex

Improving
efficiency
and care
with AI



<https://www.ibm.com/products/micromedex-with-watson>

“You don’t have to think about specific keywords or phrase the query in a certain way to get good information back,” says Dr. W “You can just say, ‘I need to know how to dose ciprofloxacin,’ and the answer comes right up.”

Demos

Future of AI Example (Semantic Analysis)

The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Alice's team won the game. Hooray! It was not a bad kick, after all.

Who won the game?

Why?

Future of AI Example

The Wining Shot

The soccer game was nearly over. **The two teams were tied, one to one.**

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Who won the game?

Answer: Alice's team
Correct

Explanation: Alice's team won the game because Alice's team had more points than the other team

✓ **Correct**

Natural Language Processing Demo

<https://www.ibm.com/demos/live/natural-language-understanding/self-service/home>

SAMPLE INDUSTRY DOMAINS

Legal Financial Media

TRY YOUR OWN

Input Text URL

In the internet age, compelling content is always just a click away. Living rooms boast audio-visual set-ups that can rival movie theaters on quality, while pay-per-view can bring world-class sports and music events into every home. These competing attractions make it more challenging than ever for live-event venues to fill their seats. Building Mercedes-Benz Stadium gave AMB Sports & Entertainment (AMBSE), which runs both the Atlanta Falcons and Atlanta United, the

■ Entities (Out of the Box Model)

Extraction

Classification

Linguistics

Custom

Entities

Keywords

Concepts

Relations

Name	Type
Benz Stadium	Facility
AMB Sports & Entertainment	Company
Atlanta Falcons	Organization
Atlanta	Location

IBM Research demos

<http://bethebot.mybluemix.net/>

<https://guessthewordgame.mybluemix.net>

Be The Bot



Sometimes, conversations with chatbots get ugly.

Try being the bot to see how they work

and what they do when they don't understand someone.

Then learn how IBM researchers can tell when a conversation with a bot is breaking down.

Q&A

Resources

<https://cloud.ibm.com/>

<https://github.com/jiportilla/AI-Intro>

<https://www.ibm.com/design/thinking>

<https://www.ibm.com/artificial-intelligence>