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SMARTWATT

Solutions for Energy Systems

bună după-amiază
Boa tarde
Good afternoon

- ARTIFICIAL INTELLIGENCE -

The perfect tool to empower your business

TIAGO SANTOS

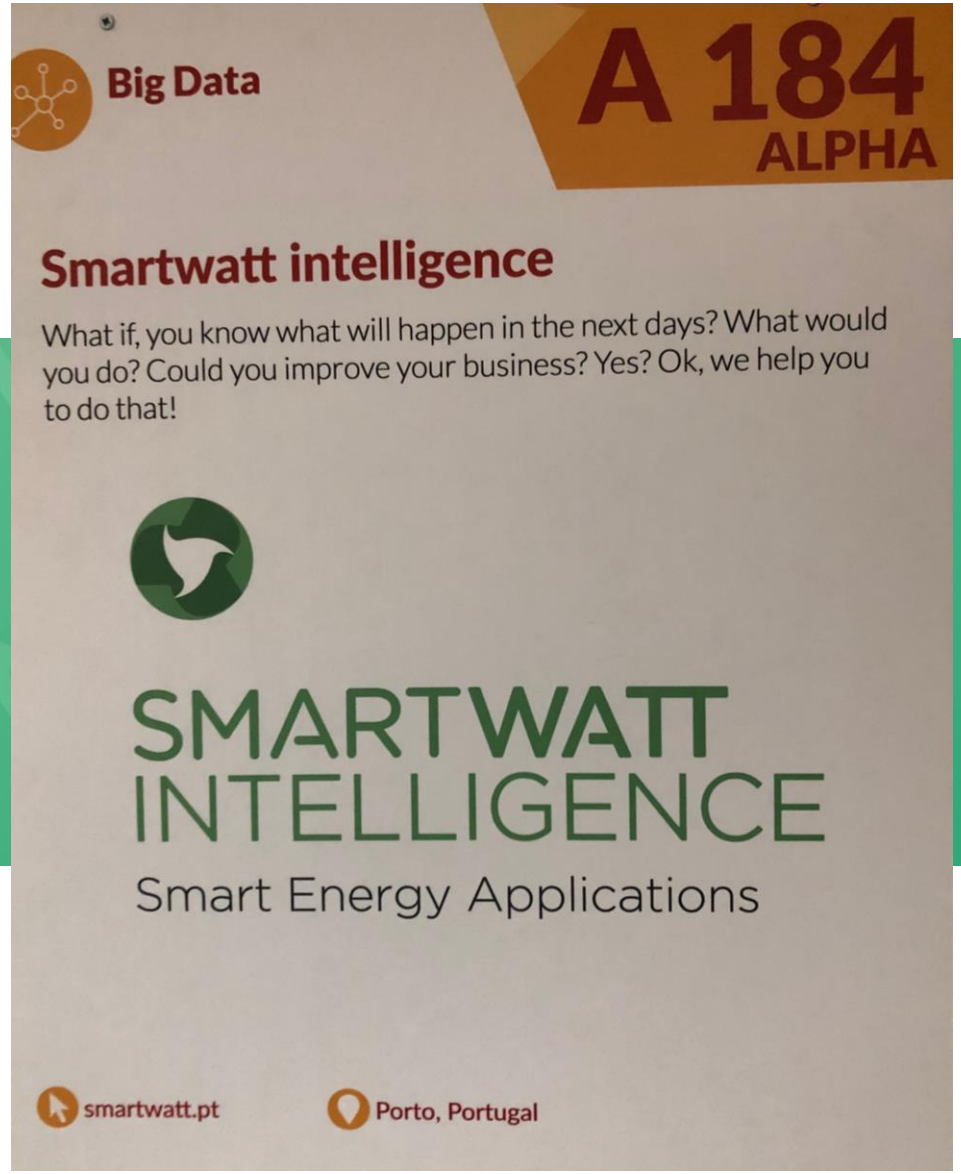
#Electrical engineer

#Sports #Biology #Travel #Technology #Innovation

#Artificial Intelligence #Machine learning #Deep learning #IoT #Blockchain

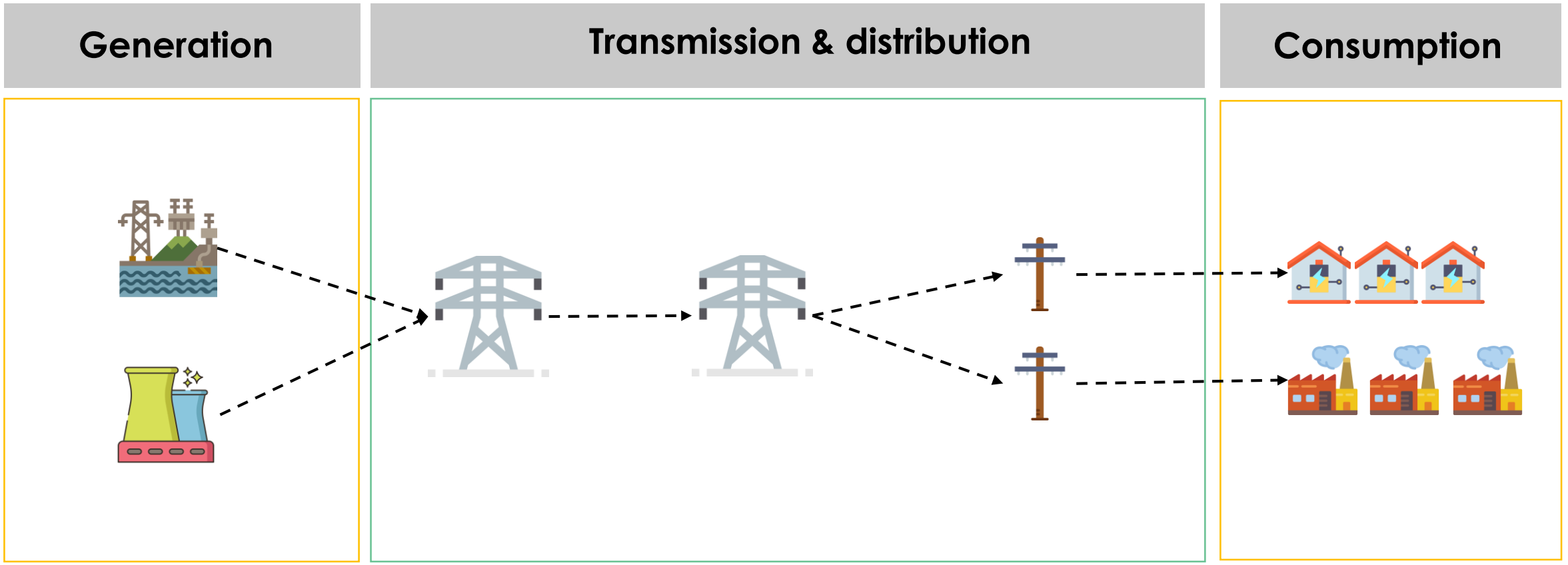
WHY?

What can we do **differently** today if we knew what will happen in the next days?



Energy System

How does it work?



Production = Consumption + Losses

Energy System

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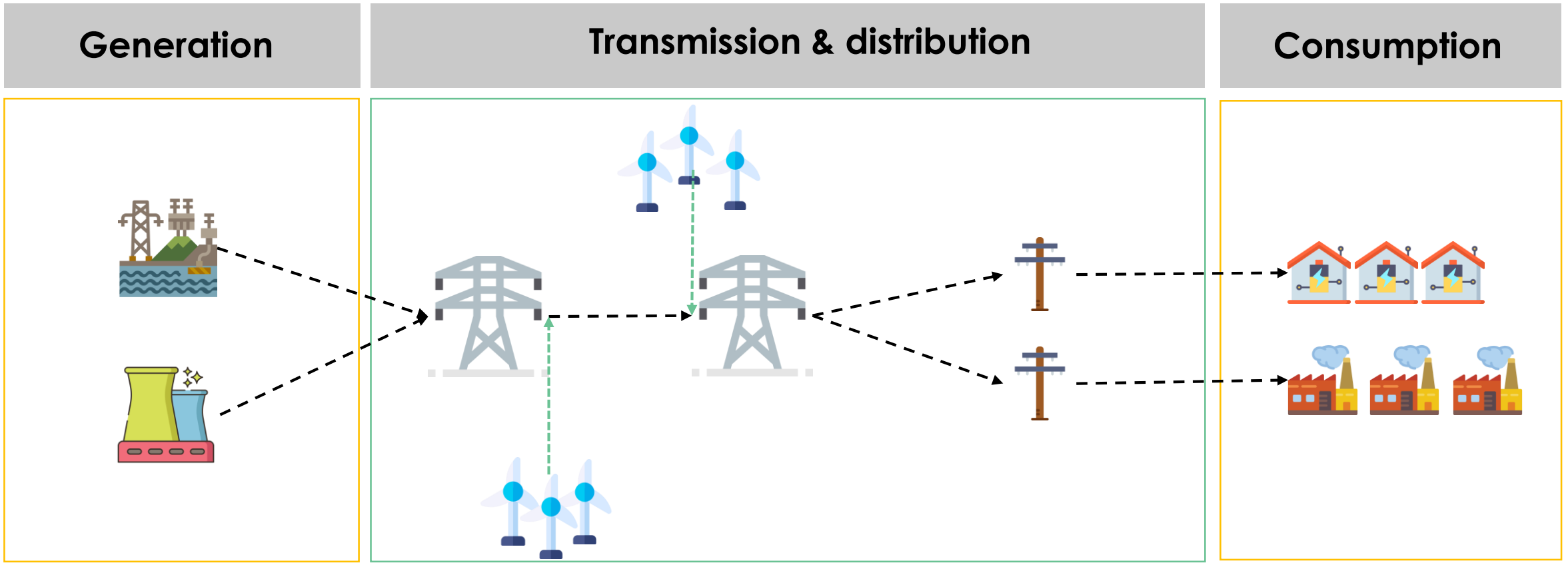

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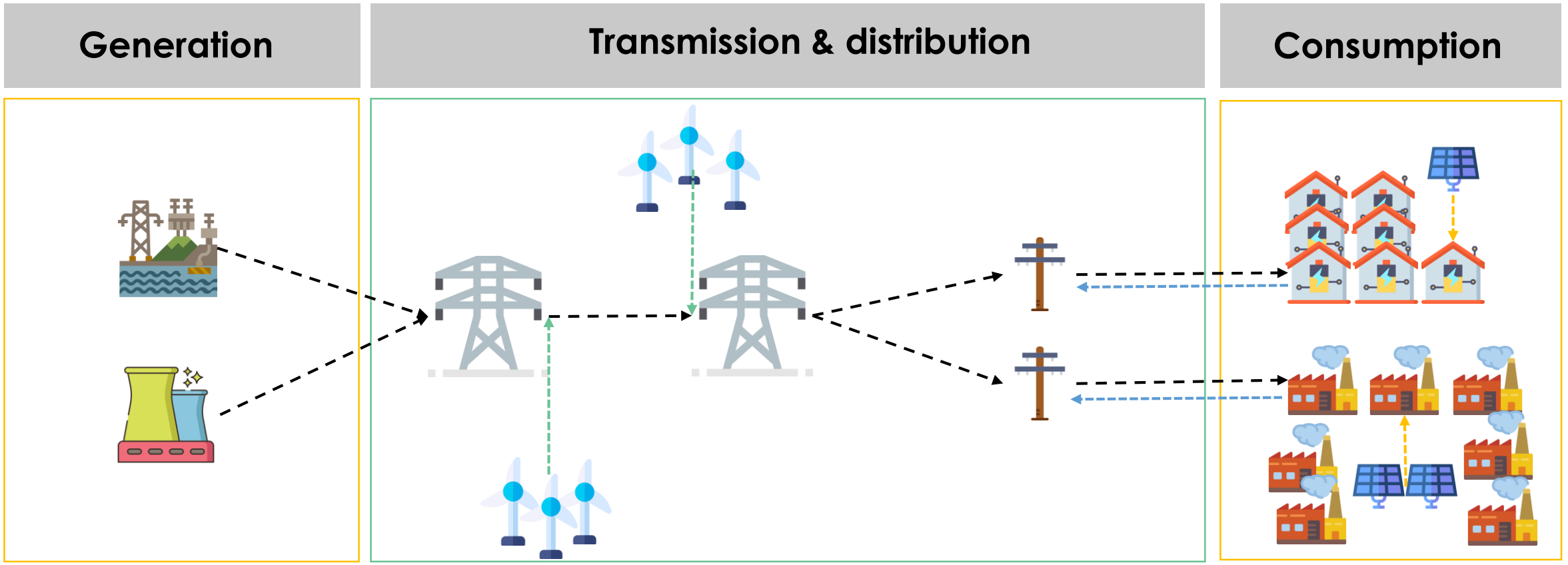

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Energy System
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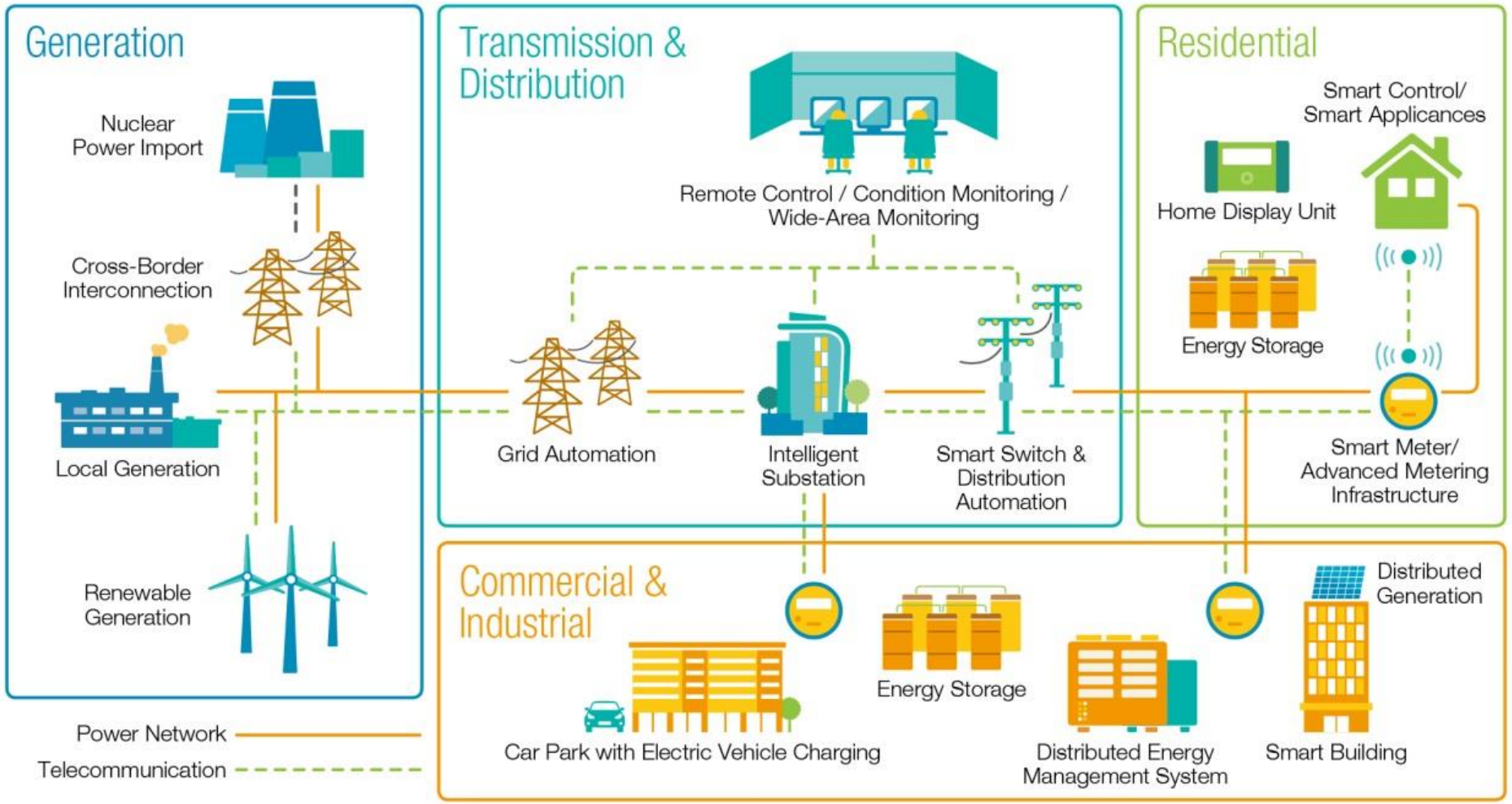


This is only possible using AI

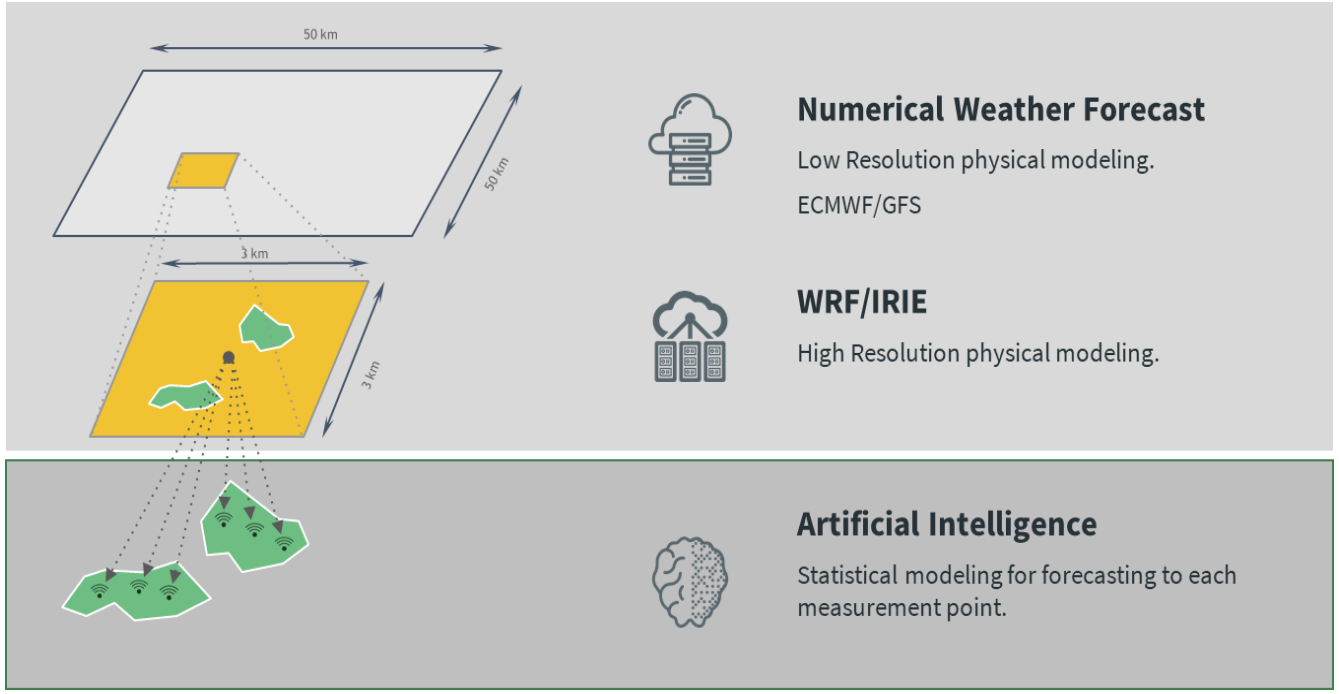
How do we define an AI problem?
Inputs

WEATHER SYSTEM

SCADA

CLIENT'S KNOWLEDGE

How do we define an AI problem?
Inputs



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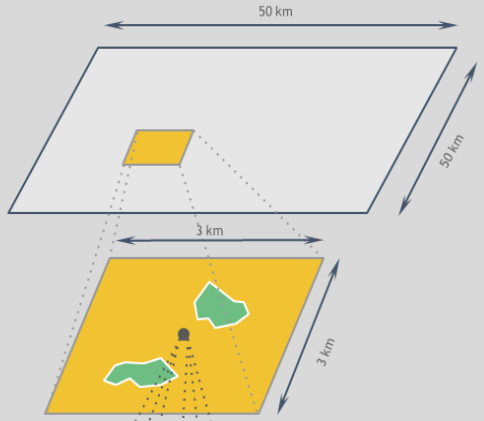


Numerical Weather Forecast

Low Resolution physical modeling.

ECMWF/GFS

WRF/IRIE

High Resolution physical modeling.

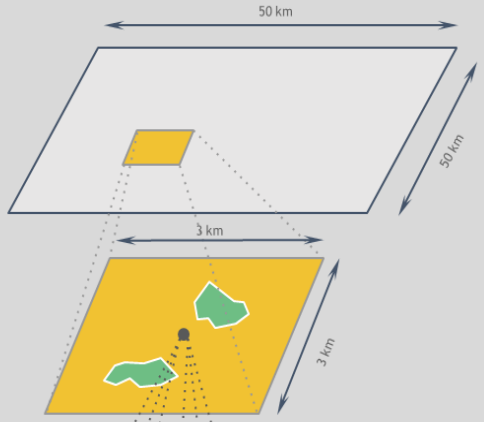
Artificial Intelligence

Statistical modeling for forecasting to each measurement point.

SCADA

Historical and real-time data

How do we define an AI problem?
Inputs



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CLIENT'S KNOWLEDGE

Experience beyond the data

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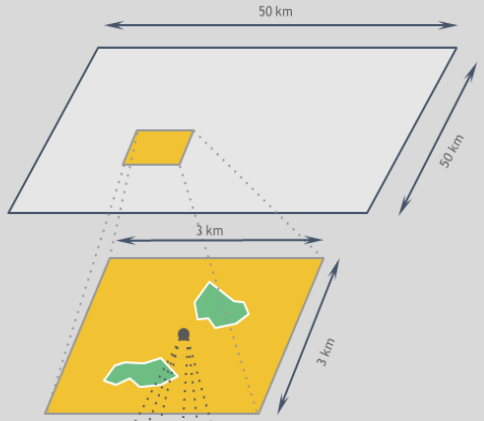

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How do we define an AI problem

AI tools

Supervised learning	**Unsupervised** learning
• Linear regression and Logistic regression • Random Forest and Gradient-boosting trees • Naibe Bayes • SVM – Suport Vector Machines • Neural network • **Knowledge Mapping**	• K-means and Hierarchical clustering • Gaussian mixture mode • Recommender system

FOCUS
Predictive Algorithms

How do we define an AI problem

Clients

Nowadays,
clients
see the value of

…BUT…

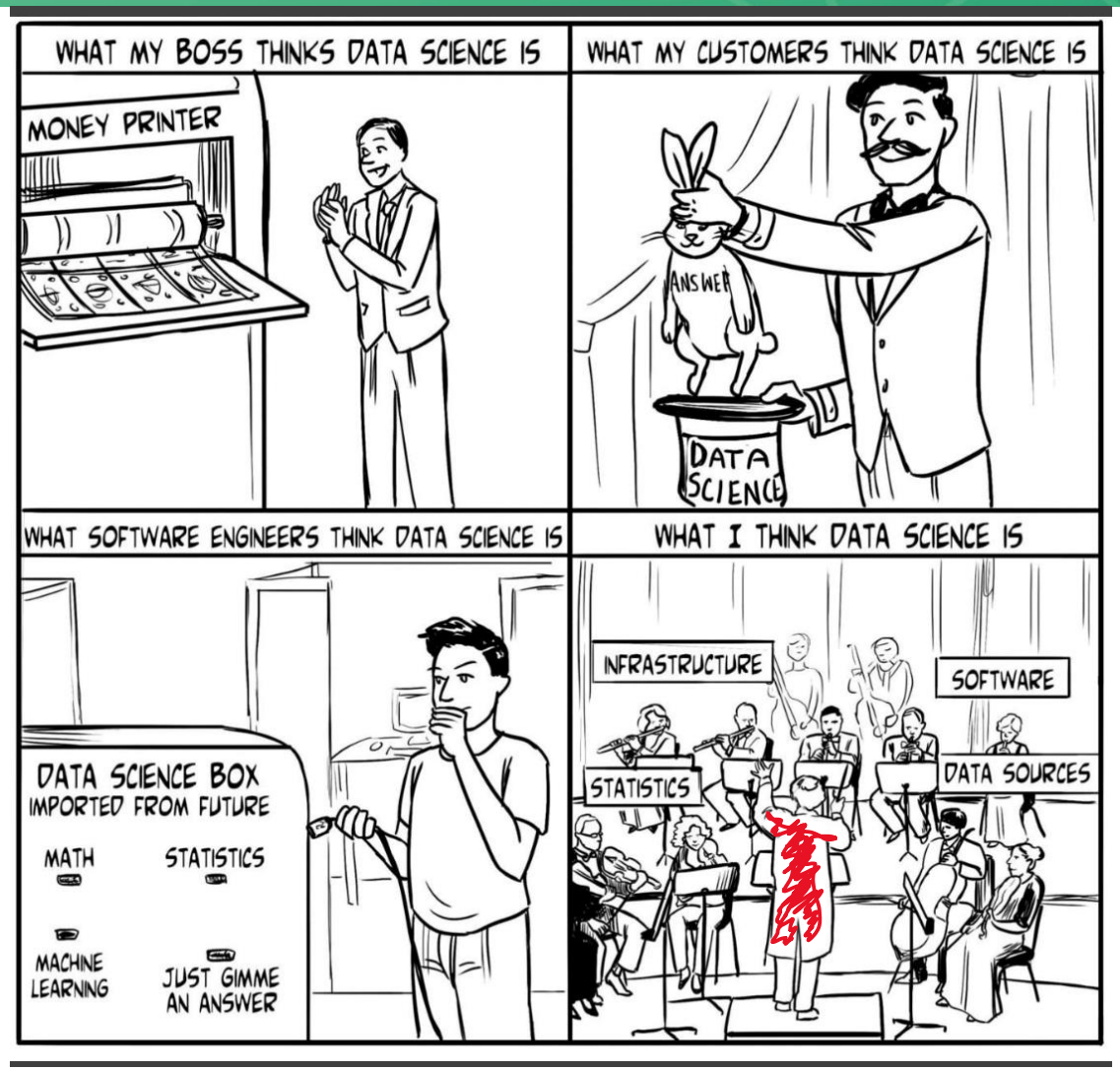
Artificial Intelligence

It's a kind of magic!

"saying you haven't deployed AI yet is like admitting to your high school classmates that you're still a virgin."

How do we define an AI problem?
Clients

How do we define an AI problem?
Clients



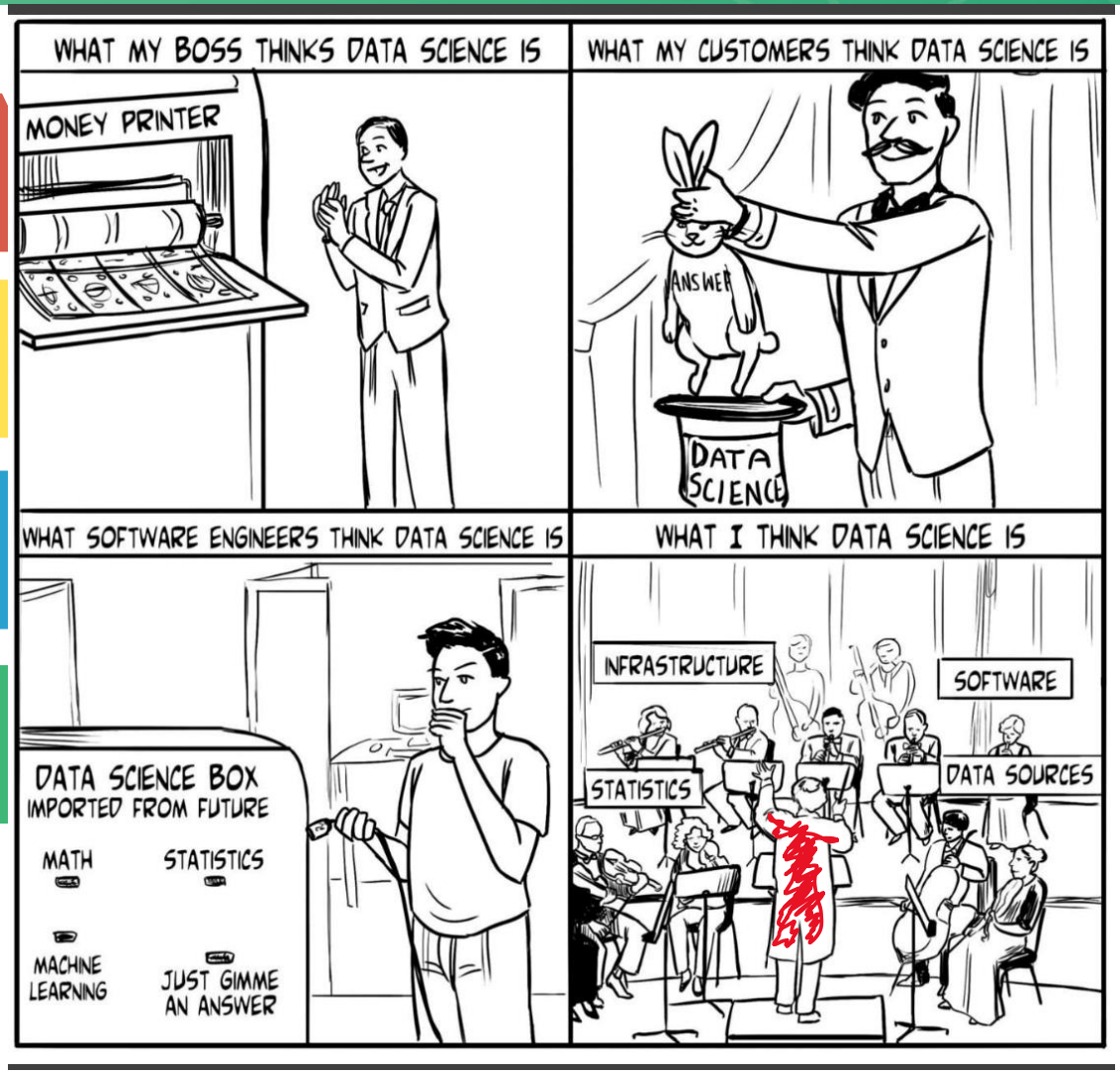
How do we define an AI problem?
Clients

How much money?

What is important?

What client needs?

What client wants?



What we define an AI problem
Clients

Developer team

Mute conversation

Client team

AI challenge
Predictive thinking methodology

- Business knowledge
- Experience
- Define the problem

TRANSLATE **TRANSLATE** **TRANSLATE** **TRANSLATE**

Artificial **Intelligence -** Machine Learning

Regression	SVM
Random Forest	Neural network
Gradient-boosting	**Knowledge Mapping**
Naive Bayes	Clustering algorithms

Universities to give us the State of Art

AI challenge
Predictive thinking methodology

EI – Emotional **Intelligence**

- Business knowledge
- Experience
- Define the problem

TRANSLATE **TRANSLATE** **TRANSLATE** **TRANSLATE**

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AI challenge
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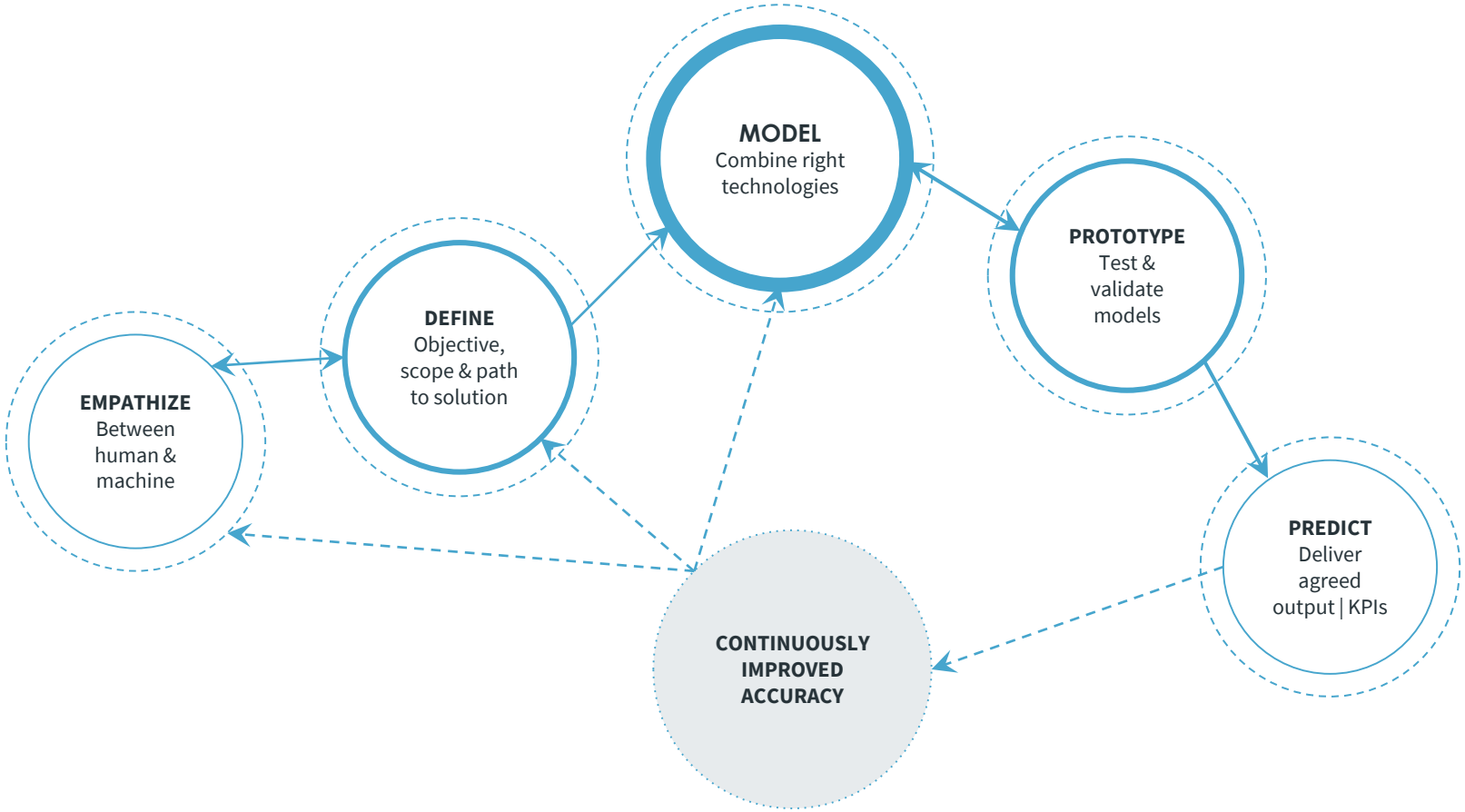

Magic appears when we put all these tools together in order to solve our problem.

This only make sense when we combine the AI tools with client's knowledge

AI World
What we have learned

I am still a developer or data scientist …

Like any AI developer the most important goal is to create something that **makes a difference**…

The most difficult thing that I found was to **manage expectations**

We want to design a system to work in a way that users understand…

But… didn’t expect was possible.

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Thank You!

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