

Brought to you by:

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

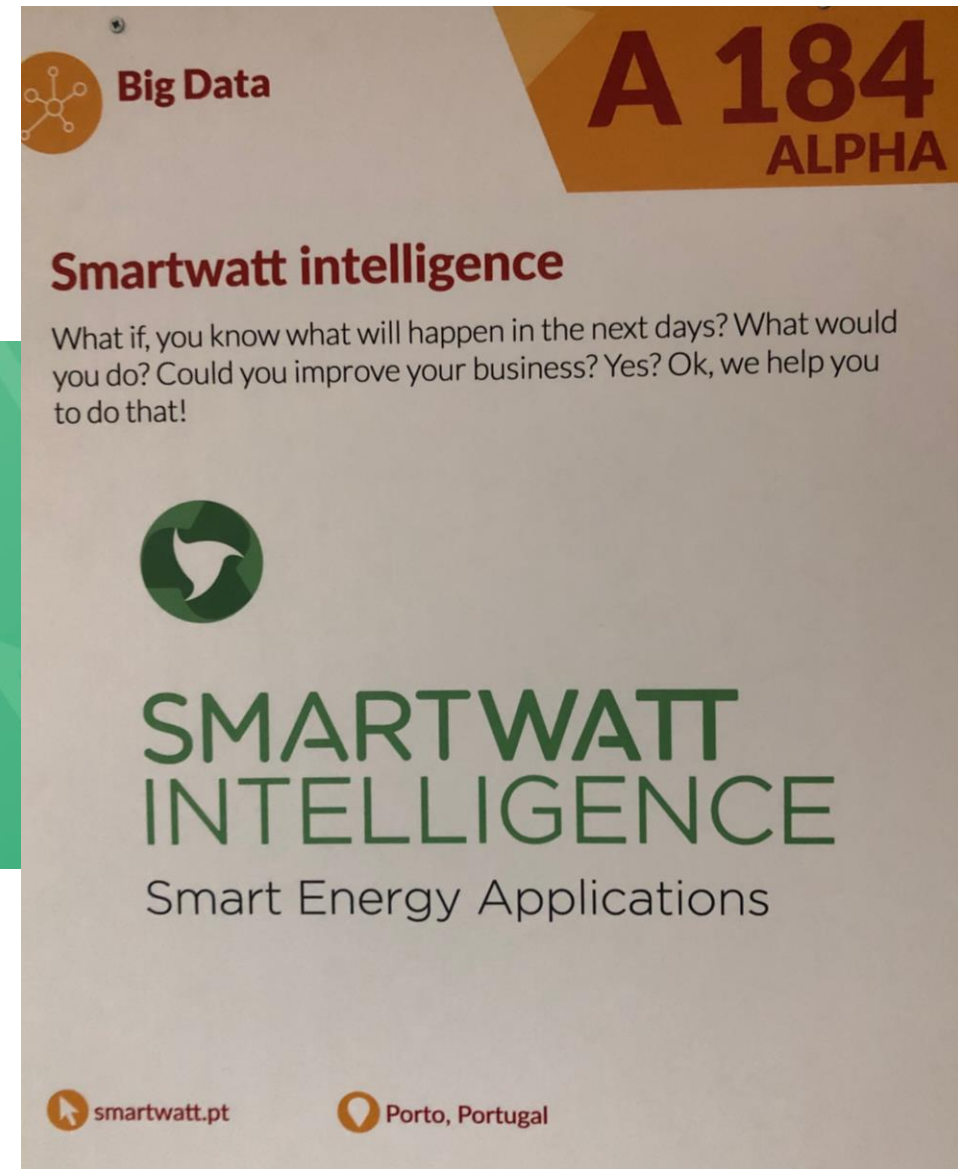
#Deep learning

#IoT

#Blockchain

WHY?

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




A poster for Smartwatt Intelligence. The top right corner features a large orange banner with the text "A 184 ALPHA". The top left corner has a circular icon with a network diagram and the text "Big Data". The main title "Smartwatt intelligence" is in a bold, dark red font. Below it, a paragraph of text asks: "What if, you know what will happen in the next days? What would you do? Could you improve your business? Yes? Ok, we help you to do that!". In the center is a circular logo with a stylized white 'S' on a dark green background. Below the logo, the words "SMARTWATT INTELLIGENCE" are written in a large, bold, dark green font, followed by "Smart Energy Applications" in a smaller, dark green font. At the bottom left is a circular icon with a mouse cursor and the text "smartwatt.pt". At the bottom right is a circular icon with a location pin and the text "Porto, Portugal".

Big Data

**A 184
ALPHA**


Smartwatt intelligence


What if, you know what will happen in the next days? What would you do? Could you improve your business? Yes? Ok, we help you to do that!



**SMARTWATT
INTELLIGENCE**

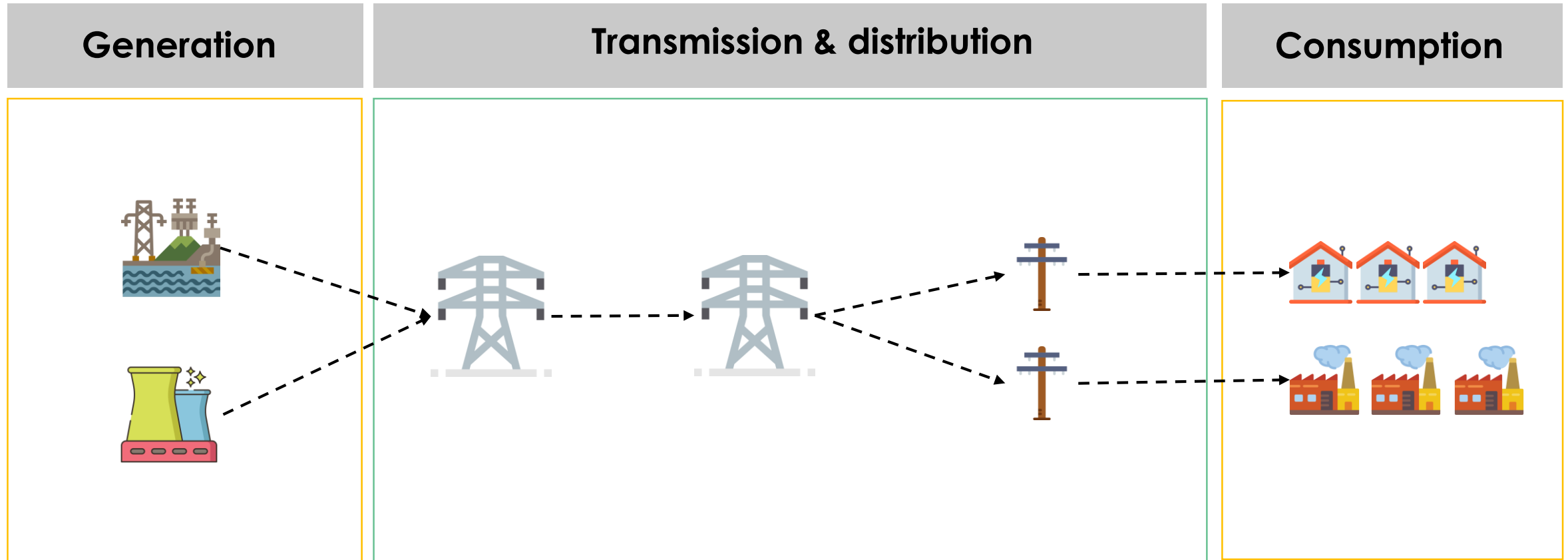
Smart Energy Applications

 smartwatt.pt

 Porto, Portugal

Energy System

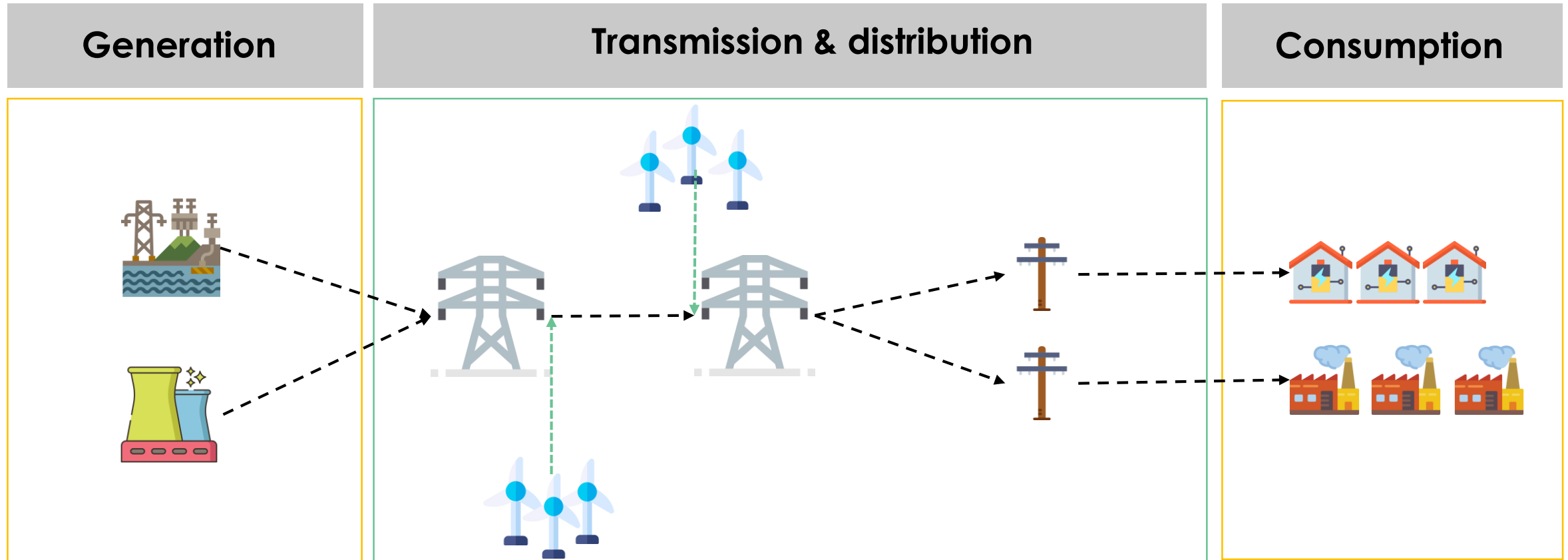
How does it work?



$$\text{Production} = \text{Consumption} + \text{Losses}$$

Energy System

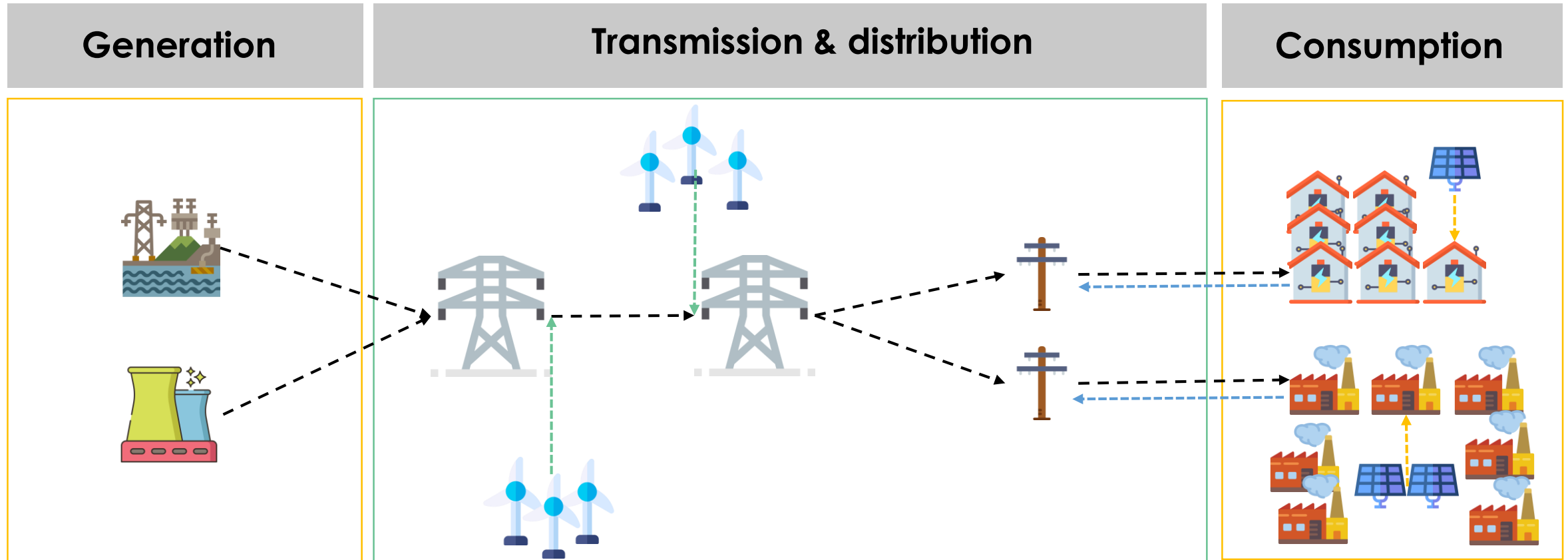
How does it work?



$$\text{Production} = \text{Consumption} + \text{Losses}$$

Energy System

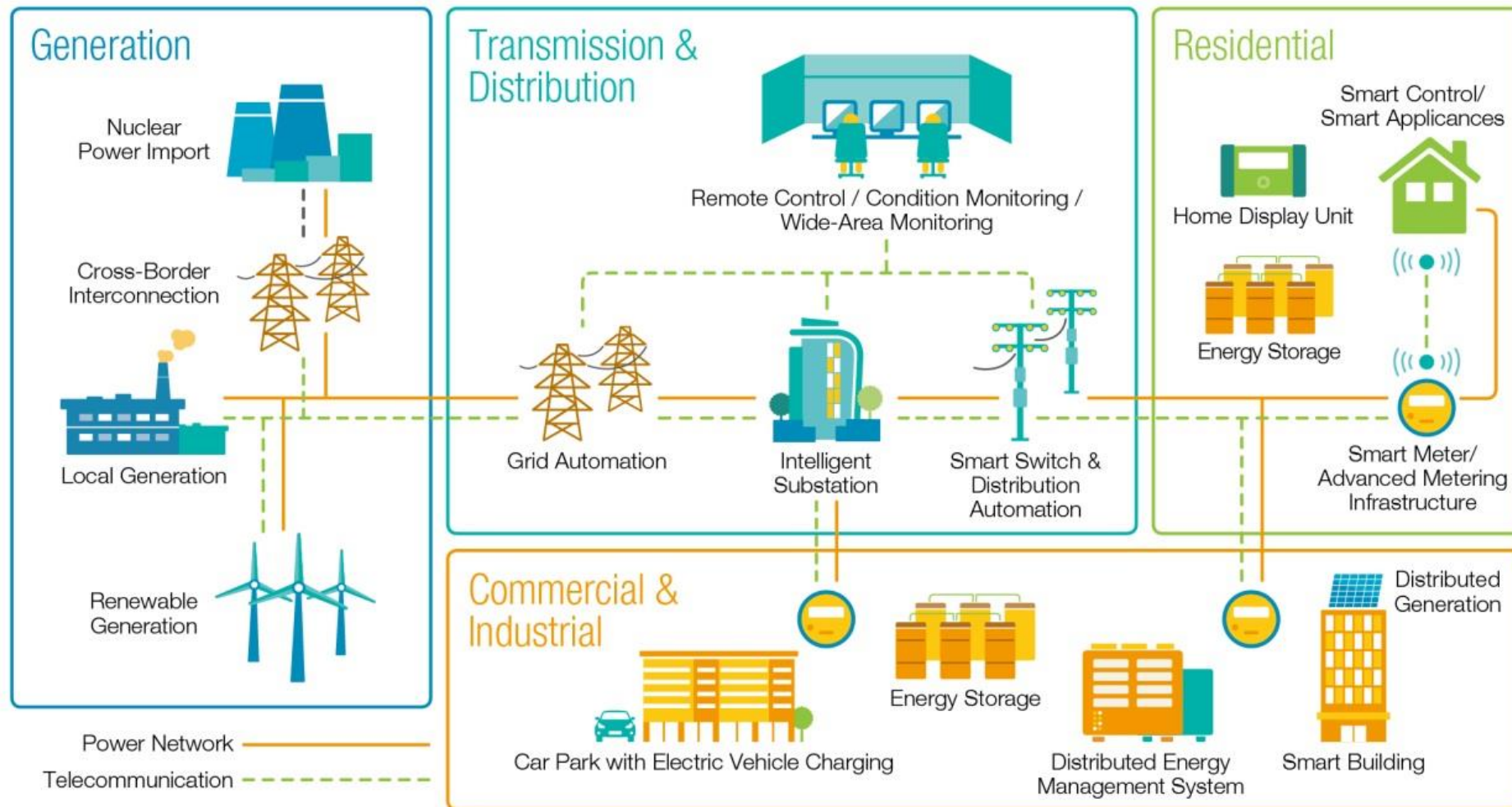
How does it work?



$$\text{Production} = \text{Consumption} + \text{Losses}$$

Energy System

How does it work?



**This is
only
possible
using AI**

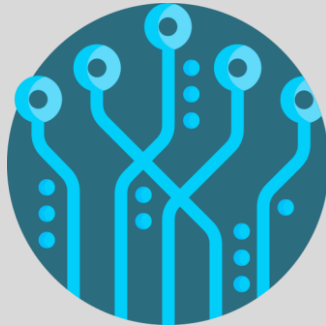
How do we define an AI problem?

Inputs

WEATHER SYSTEM



SCADA

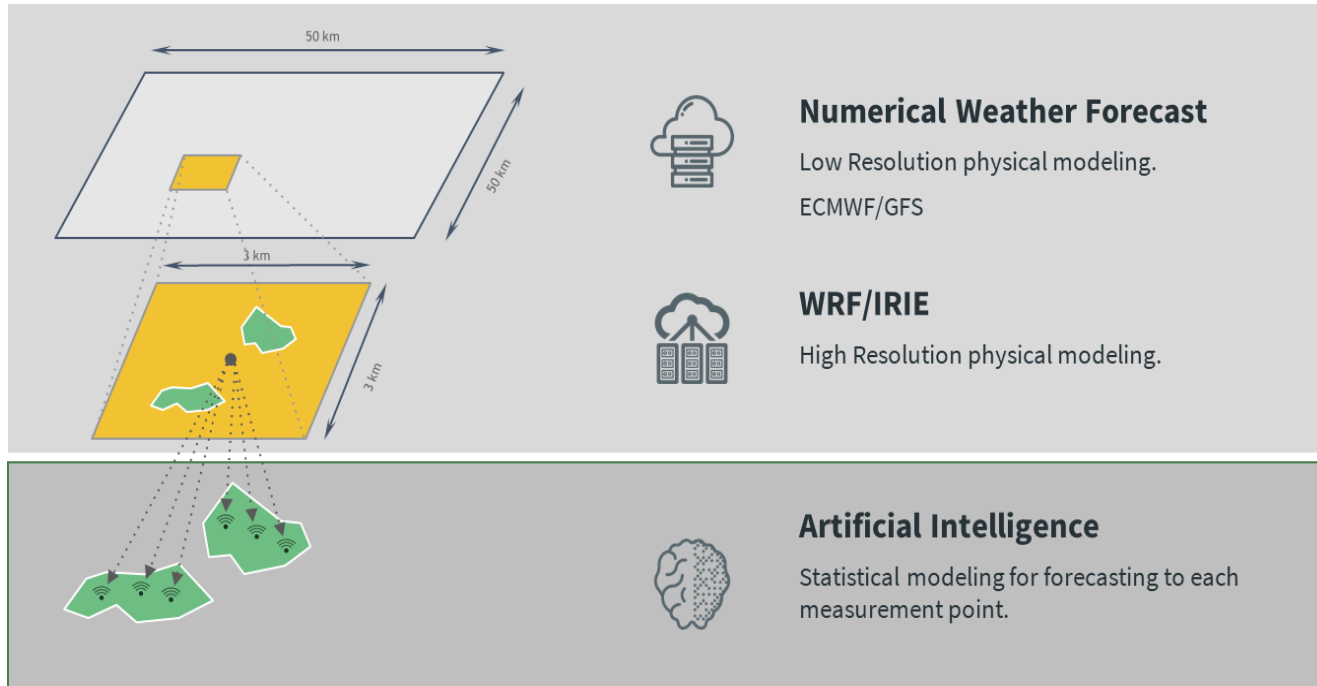


**CLIENT'S
KNOWLEDGE**



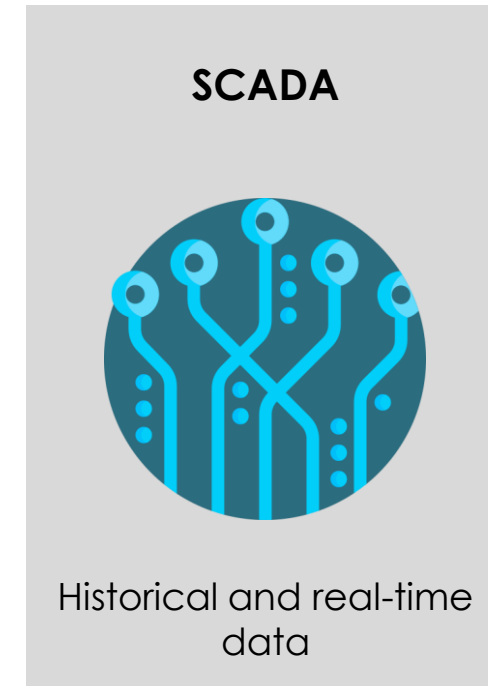
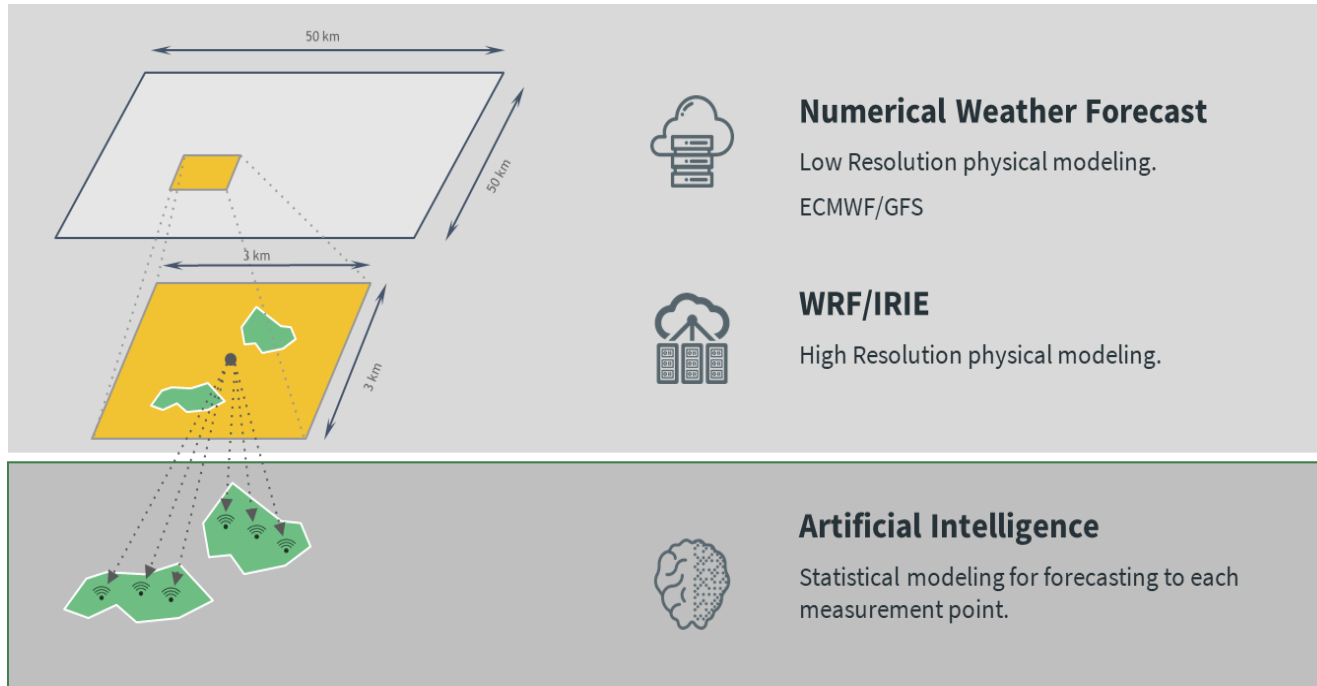
How do we define an AI problem?

Inputs



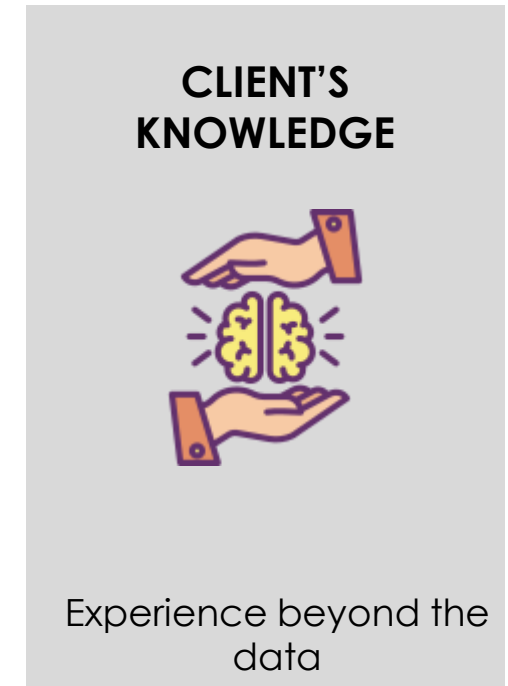
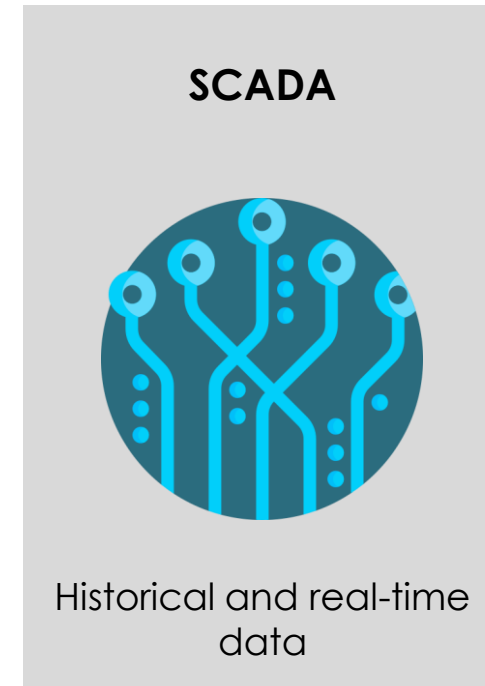
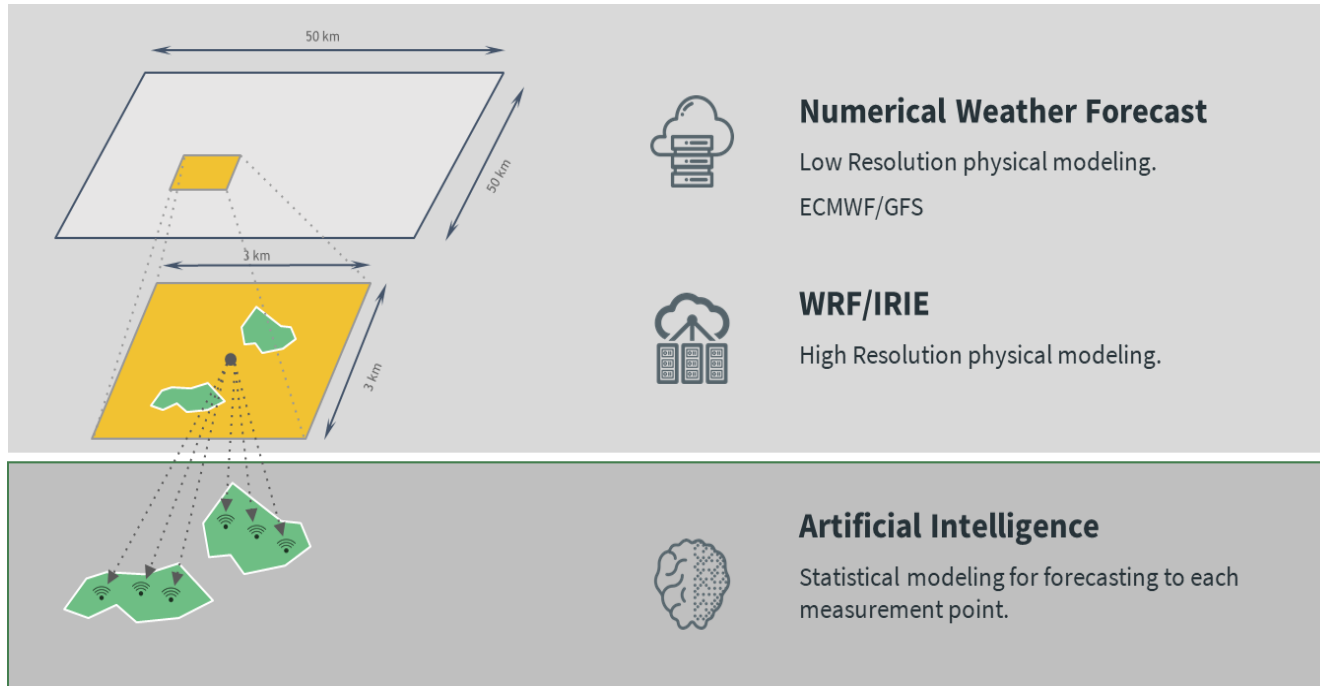
How do we define an AI problem?

Inputs



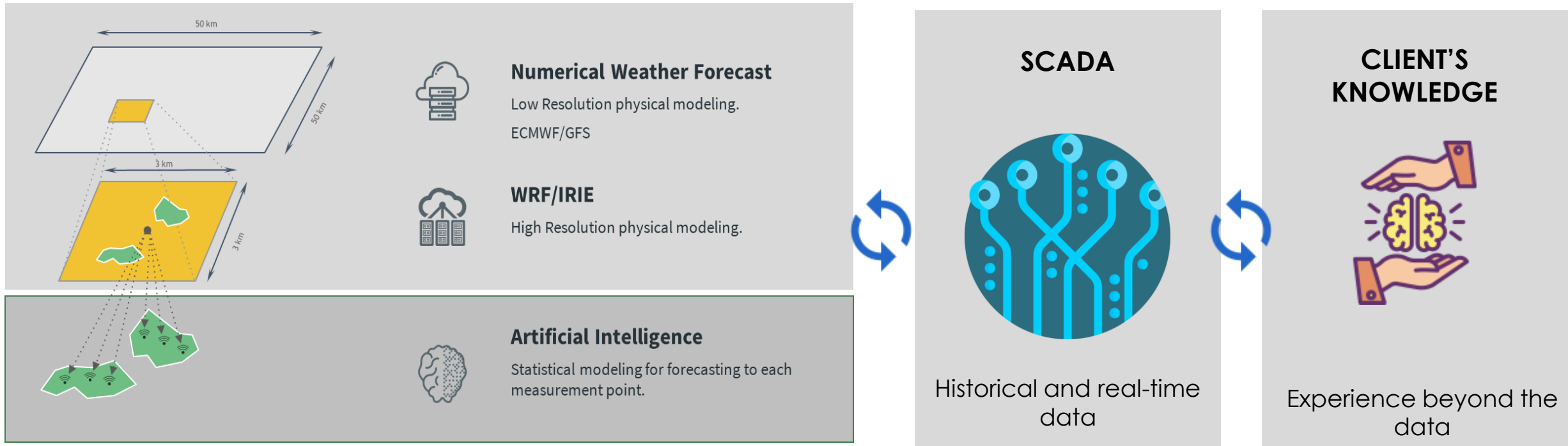
How do we define an AI problem?

Inputs



How do we define an AI problem?

Inputs



How do we define an AI problem

AI tools

Supervised learning	Unsupervised learning
<ul style="list-style-type: none">• Linear regression and Logistic regression• Random Forest and Gradient-boosting trees• Naive Bayes• SVM – Support Vector Machines• Neural network• Knowledge Mapping	<ul style="list-style-type: none">• K-means and Hierarchical clustering• Gaussian mixture model• Recommender system

FOCUS
Predictive Algorithms

How do we define an AI problem

Clients



Nowadays,
clients
see the value of

...BUT...

A woman with long brown hair, wearing a dark jacket, is shown in profile from the chest up. She is holding a small, glowing, multi-colored orb of light in her hands. The background is dark with numerous out-of-focus, warm-toned bokeh lights, suggesting a night scene with city lights or festive decorations. The overall mood is magical and mysterious.

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

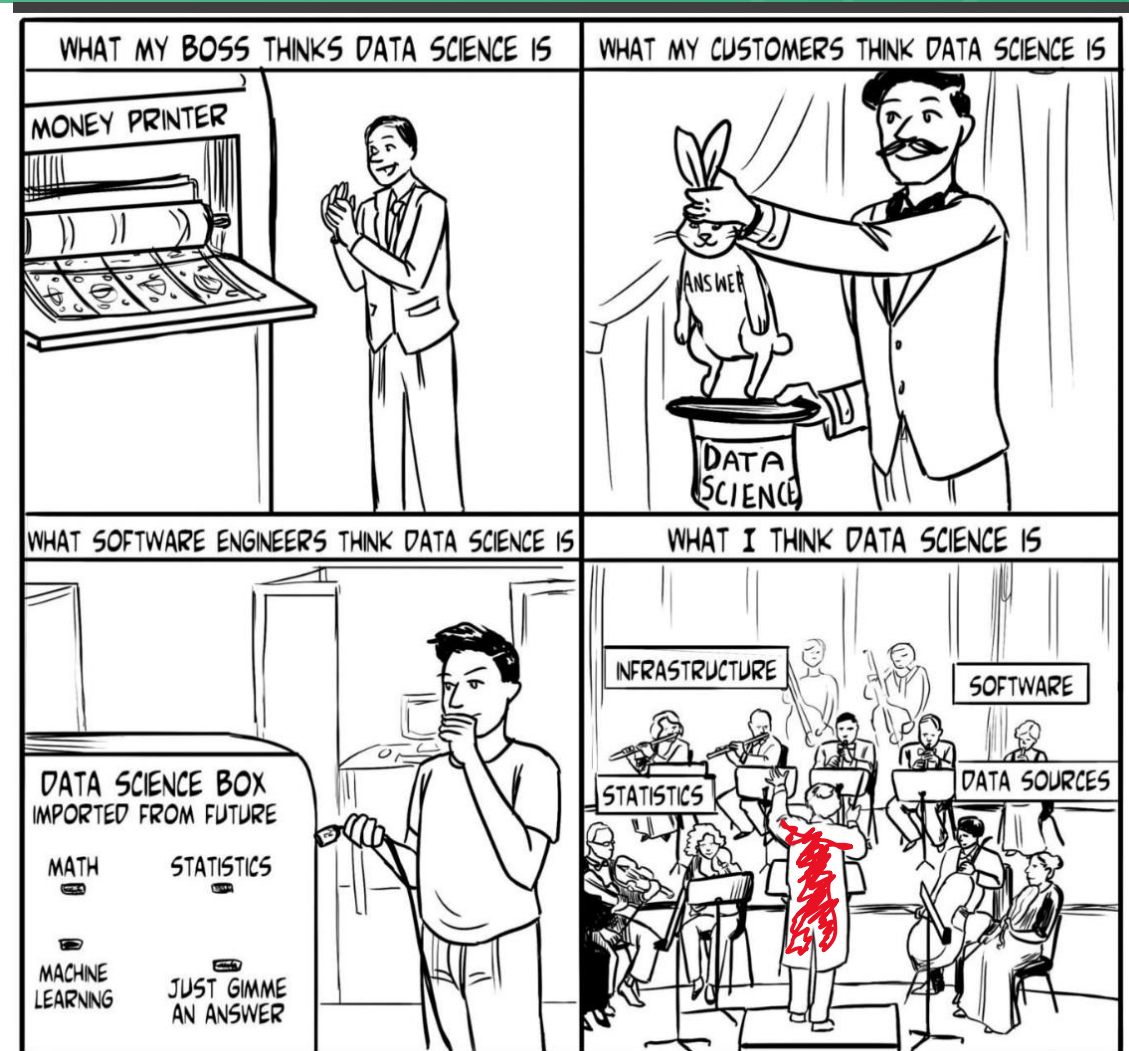


RED
ELÉCTRICA
DE ESPAÑA



How do we define an AI problem?

Clients



How do we define an AI problem?

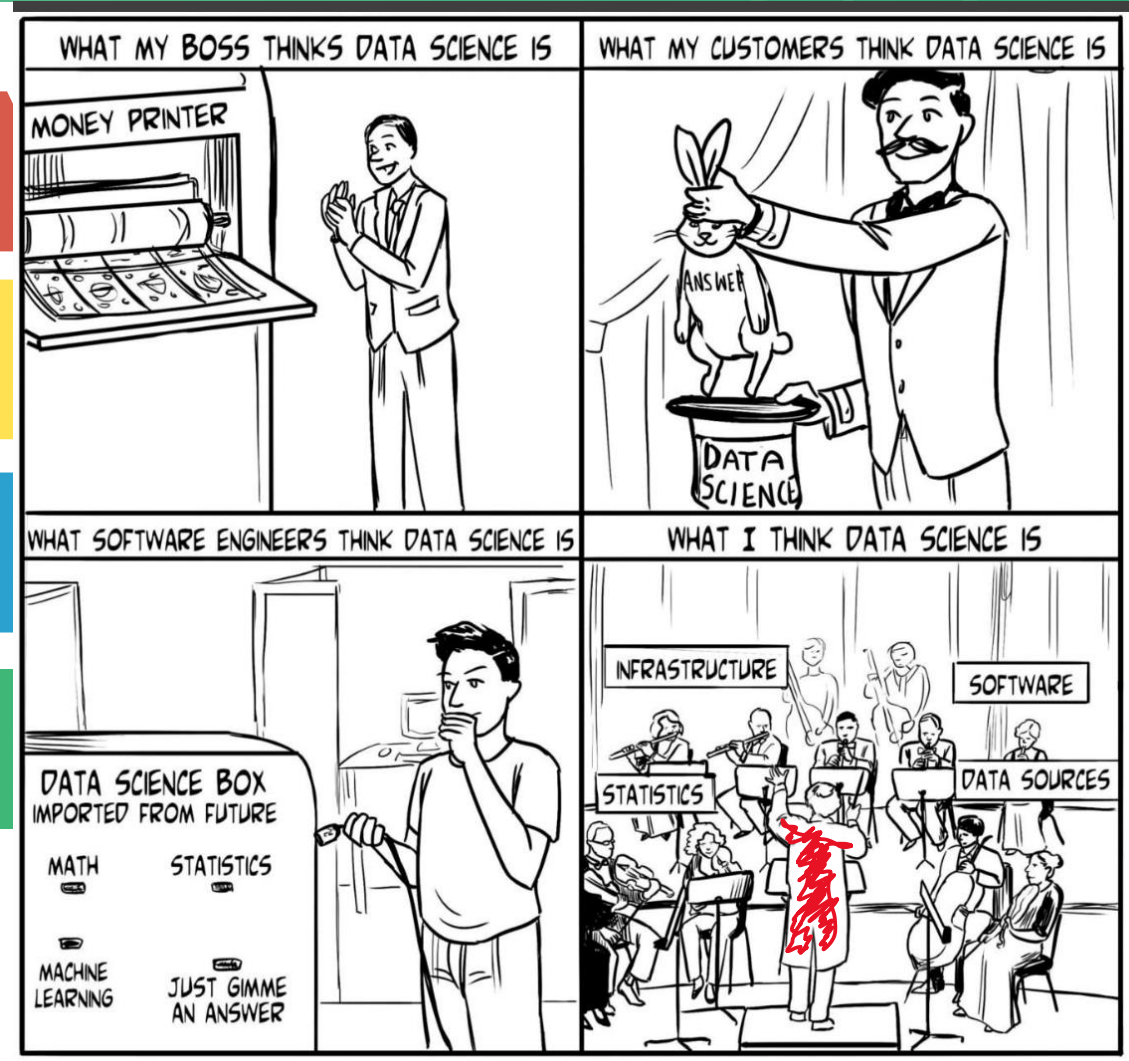
Clients

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
Random Forest
Gradient-boosting
Naive Bayes

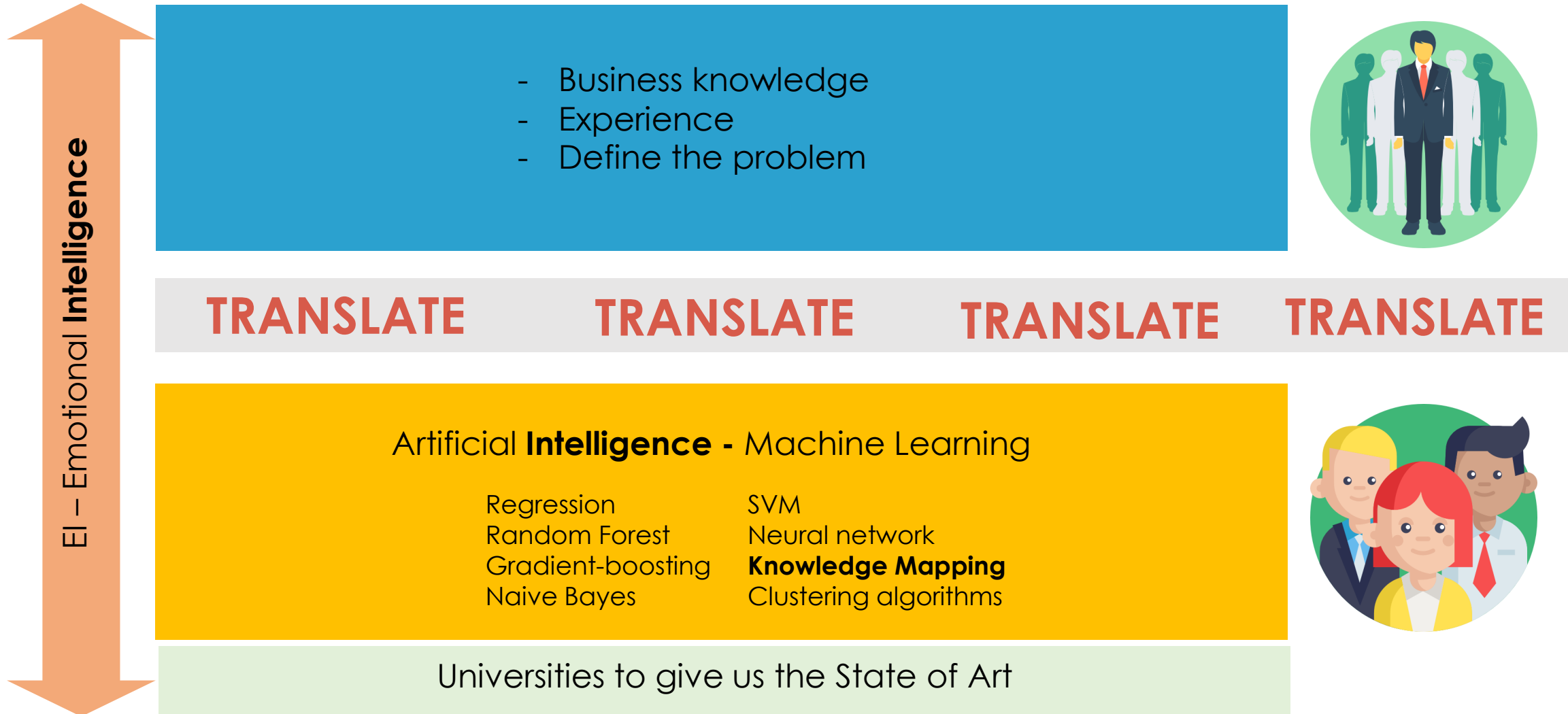
SVM
Neural network
Knowledge Mapping
Clustering algorithms



Universities to give us the State of Art

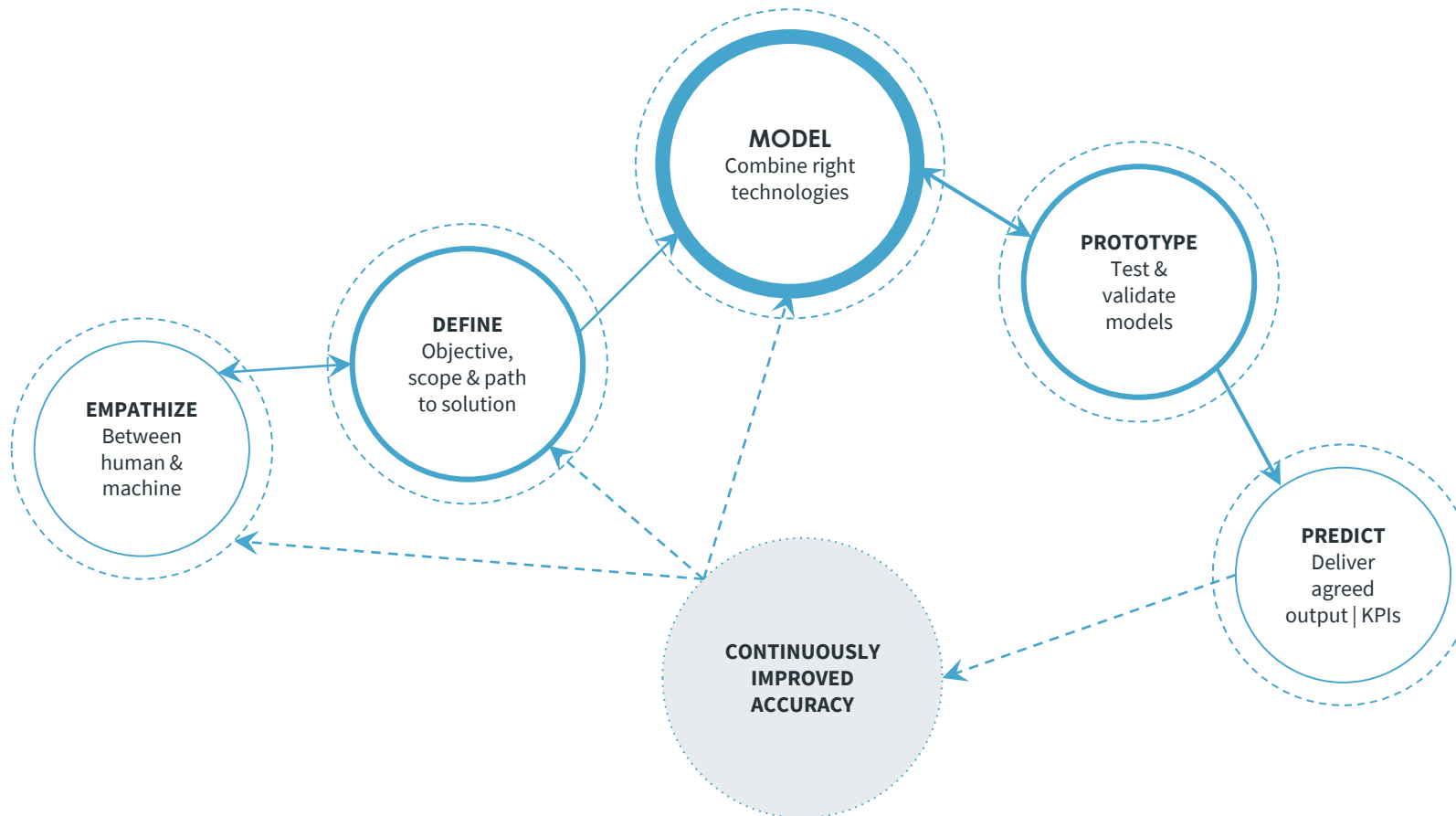
AI challenge

Predictive thinking methodology



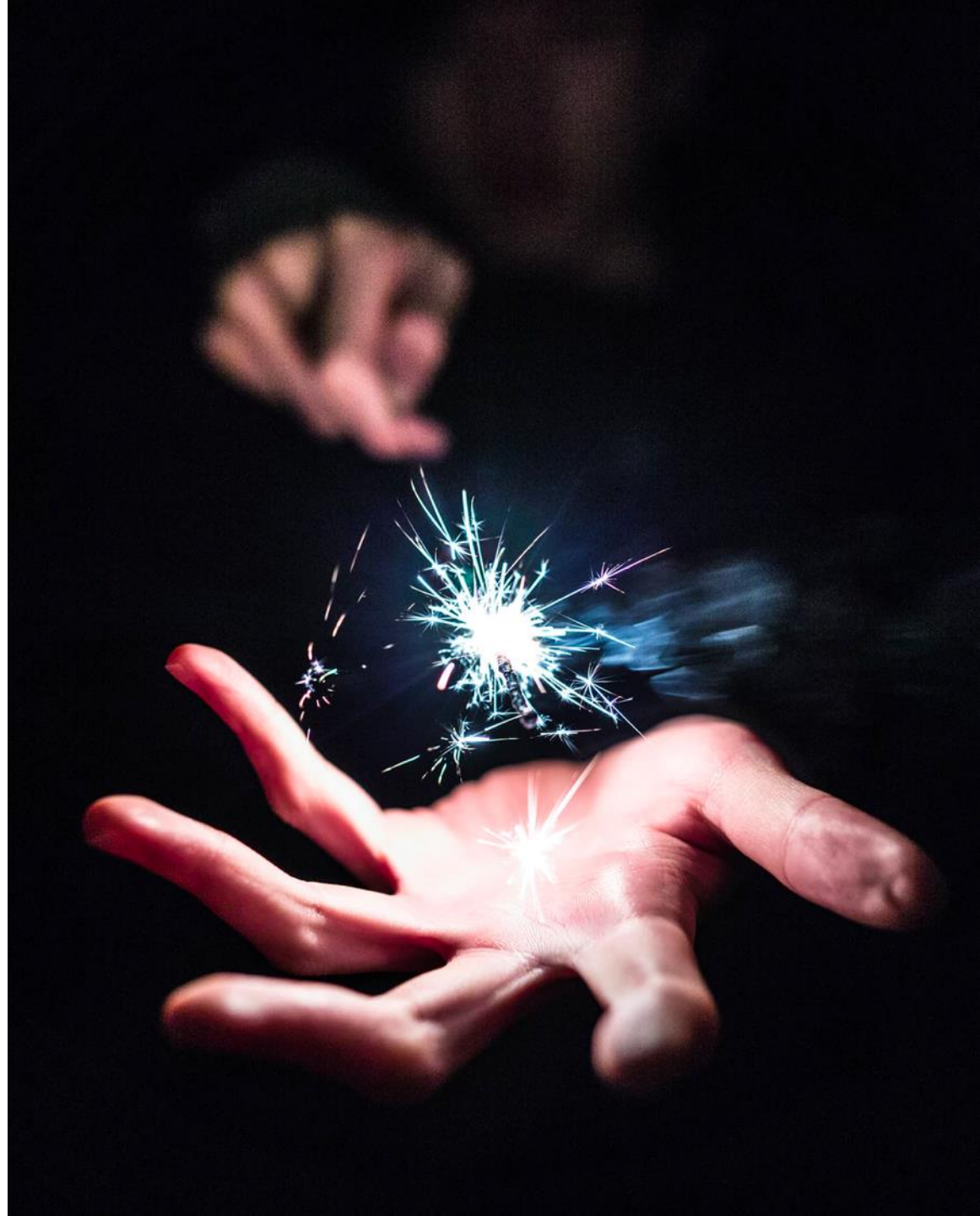
AI challenge

Predictive thinking methodology



**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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