Framing Business Problems as ML Problems
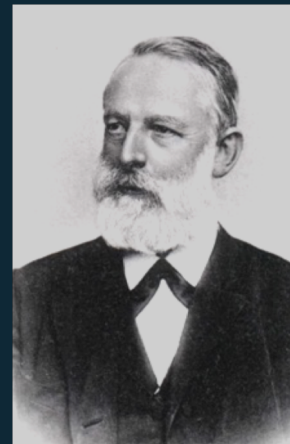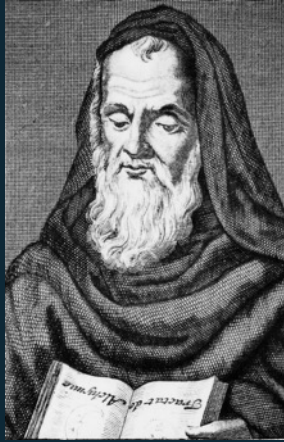
Carlos Escapa, Global Lead AI/ML Consulting Practice
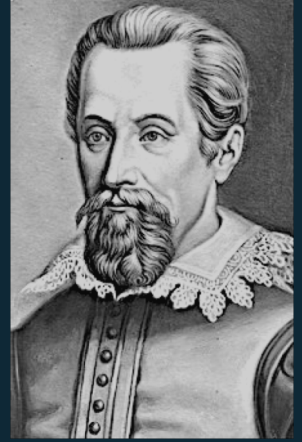
Tabula Æquationum MARTIS.

Anomalia Eccentri Comæquata ut supra præphy	Intervallū Cum Logarithmis	Anomalia coæquata	Intervallū Cum Logarithmis	Anomalia Eccentri Comæquata ut supra præphy	Intervallū Cum Logarithmis	Anomalia coæquata	Intervallū Cum Logarithmis

$$F = G \frac{m \times m'}{d^2}$$

Machine Learning ≠ Software Development

Different way to solve problems:

Research then development

Bad data → useless models
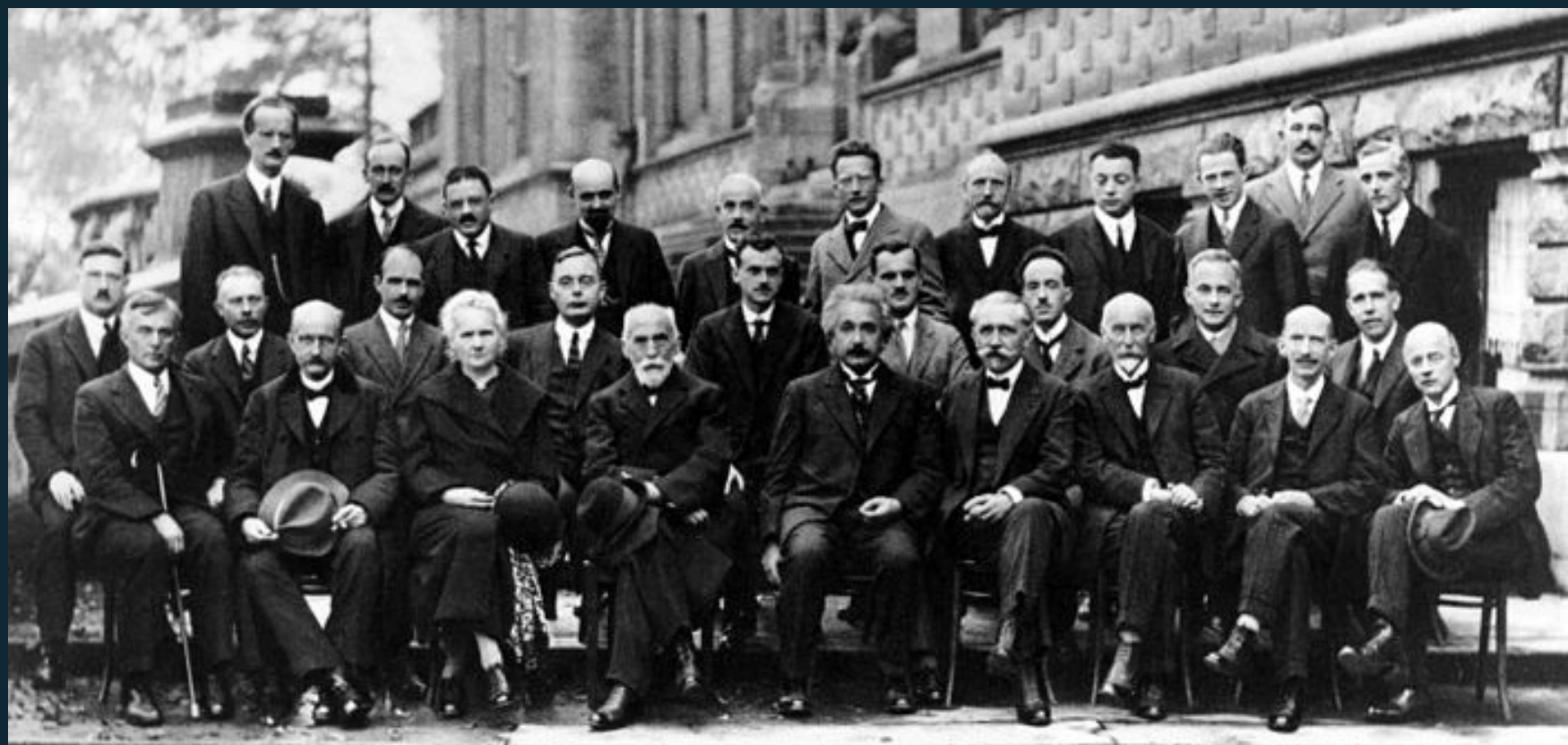
ML Models are a new type of object:

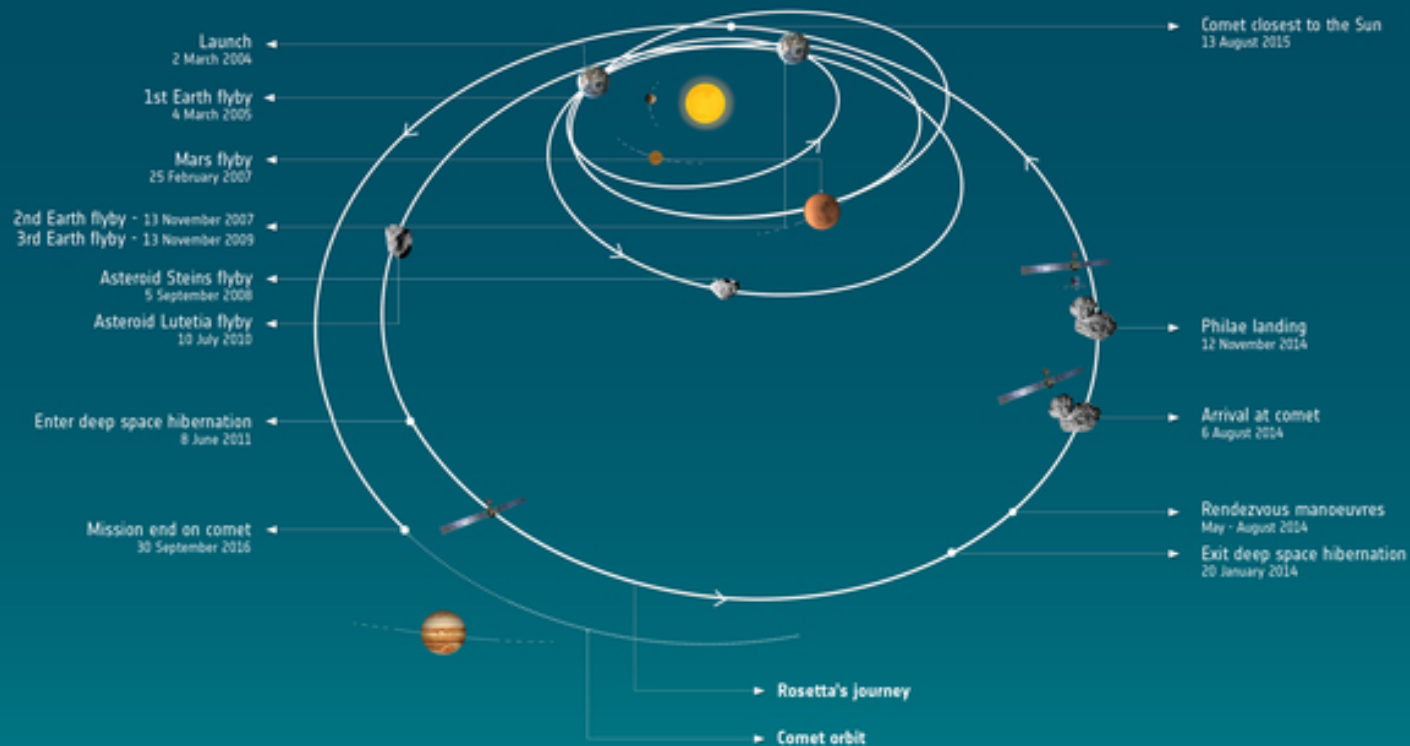Precision and relevance change over time

Non-deterministic

aws

```
{ "Labels": [
    {"Name":"Person", "Conf": 99.23 },
    {"Name":"Sport", "Conf": 87.73 },
    {"Name":"Football", "Conf": 77.76},
    {"Name":"Costume", "Conf": 50.64 }],
"CelebrityFaces": [
    { "Urls": [ "www.imdb.com/... " ],  "Name": "Lionel Messi"}, "Conf": 65.89 } ]
}
```

aws

→ ROSETTA'S JOURNEY 2004–16

esa

Launch
2 March 2004

1st Earth flyby
4 March 2005

Mars flyby
25 February 2007

2nd Earth flyby · 13 November 2007
3rd Earth flyby · 13 November 2009

Asteroid Steins flyby
5 September 2008

Asteroid Lutetia flyby
10 July 2010

Enter deep space hibernation
8 June 2011

Mission end on comet
30 September 2016

Comet closest to the Sun
13 August 2015

Philae landing
12 November 2014

Arrival at comet
6 August 2014

Rendezvous manoeuvres
May - August 2014

Exit deep space hibernation
20 January 2014

Rosetta's journey

Comet orbit

www.esa.int

European Space Agency

Program + Compiler = Application

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Program **+** Compiler **=** Application

Data **+** Algos **=** Models

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Workflow Deconstruction

Task   Task   Task   Task

Human Decision   Human Decision   Human Decision

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Improved Workflow

Task Task Task Task

Improved Decision

Improved Decision

Human Decision

Inference

Inference

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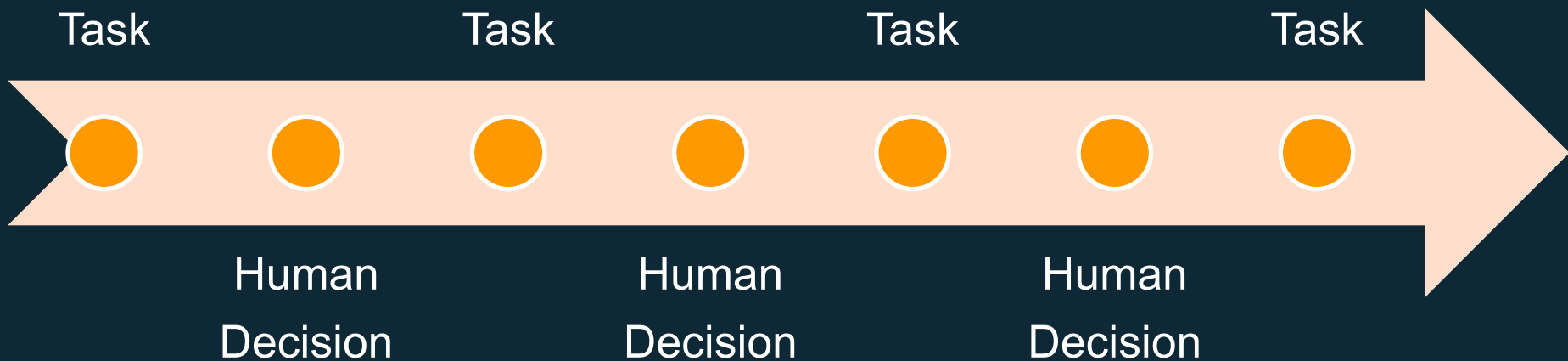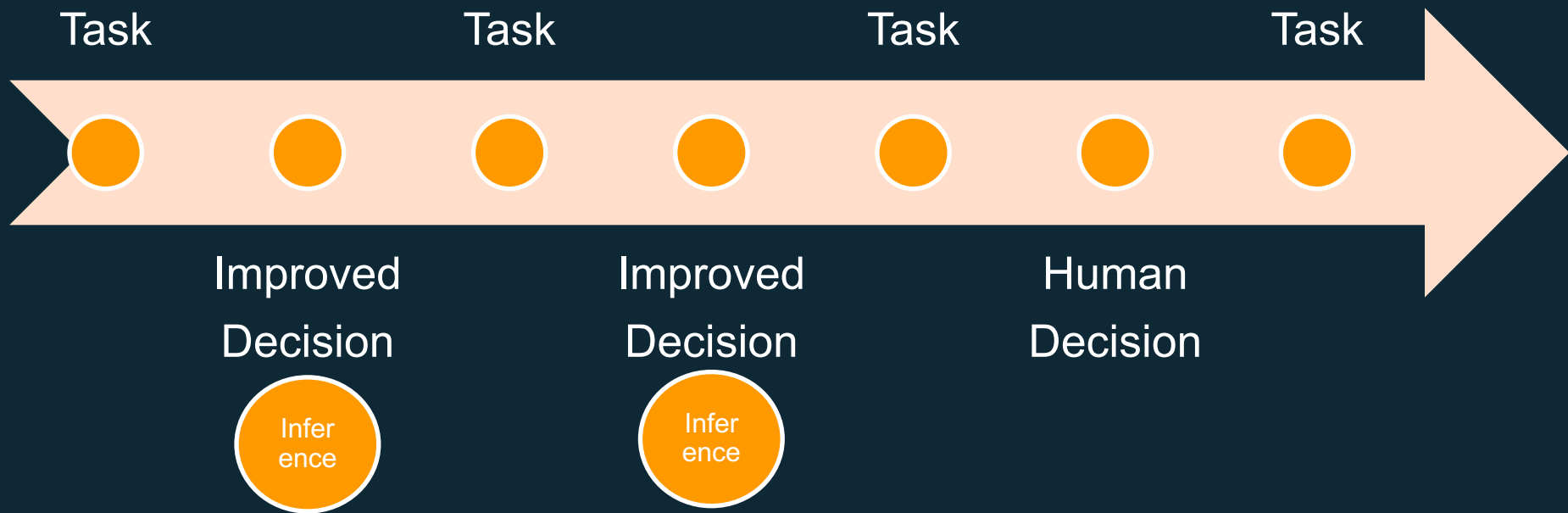
Improved and Automated Workflow

Task　　　　　Task　　　　　Task　　　　　Task

Infer ence

Infer ence

Improved

Decision

Infer ence

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Beautiful things, updated daily
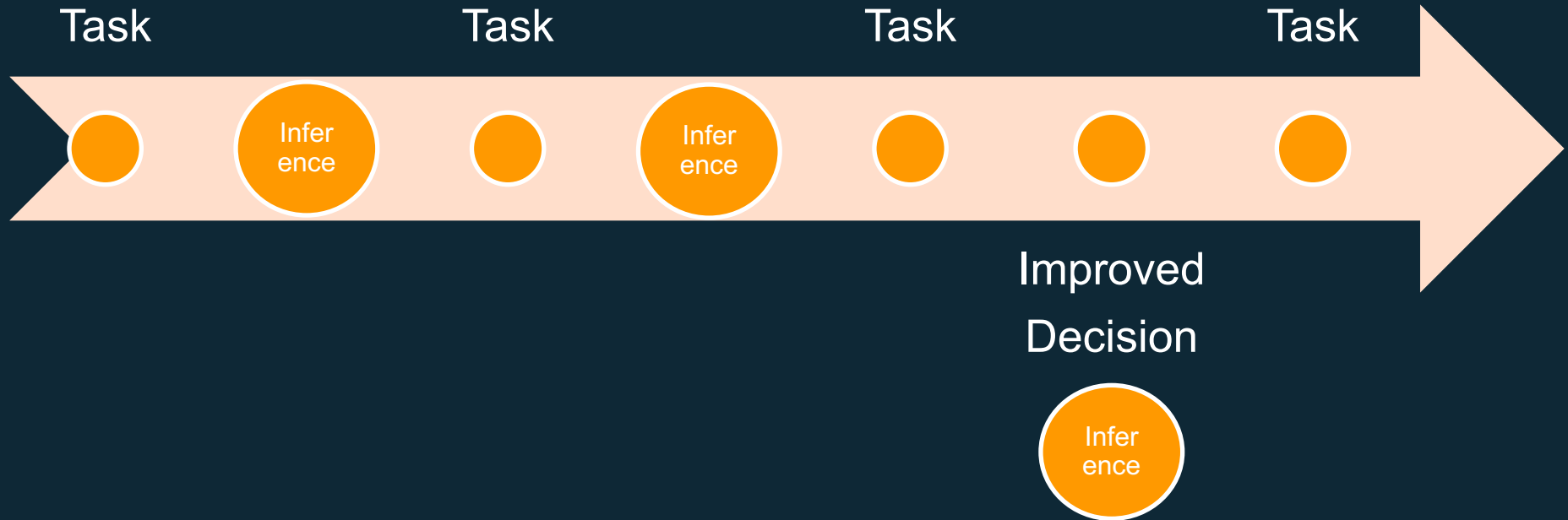
ALL   WOMEN   MEN   YOUR SAVES

amazon Prime Air

NATURE VALLEY

amazon go
amazon go
NO LINES. NO CHECKOUT.

amazon

KIVA
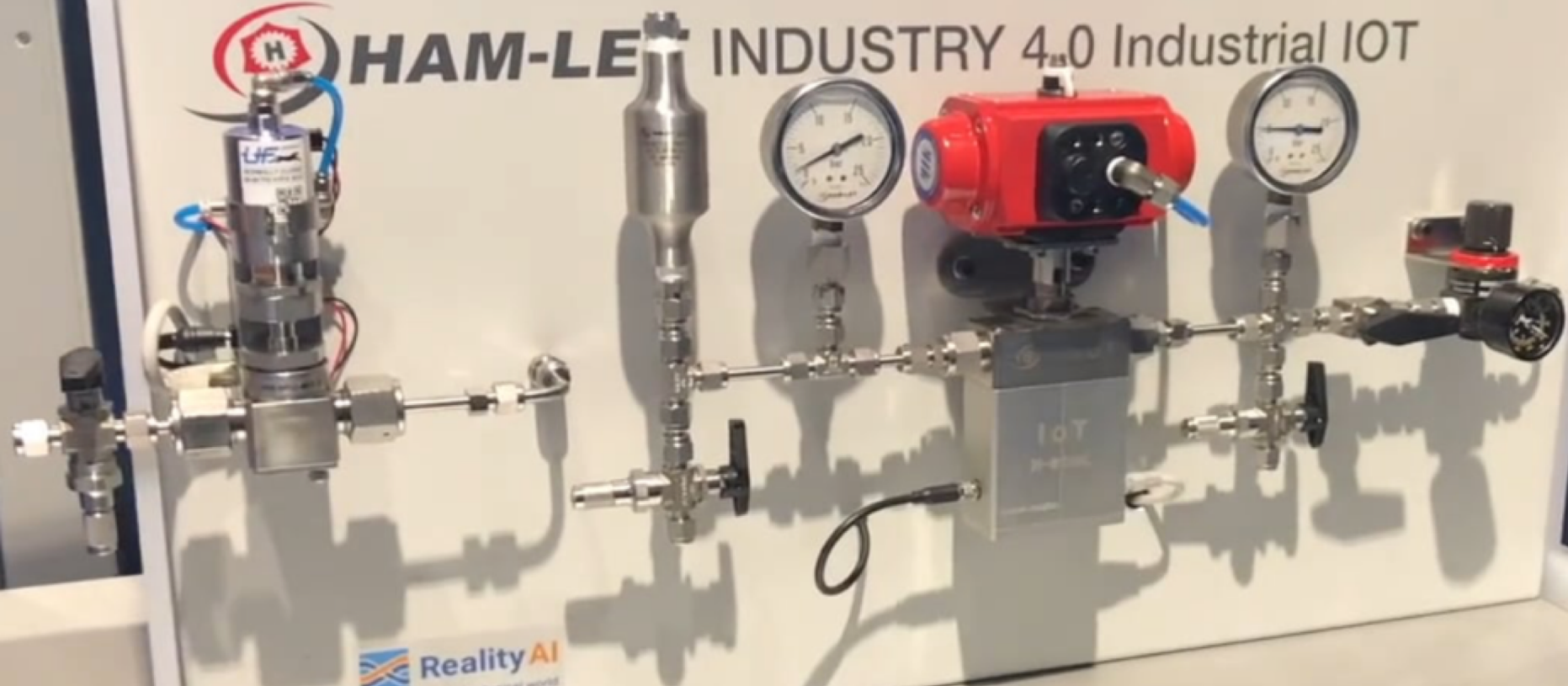
as for the techy stuff ...

aws

The Amazon ML Stack

Easily add intelligence to applications without machine learning skills

Vision | Documents | Speech | Language | Chatbots | Forecasting | Recommendations

ML SERVICES

Build, train, and deploy machine learning models fast

Data labeling | Pre-built algorithms & notebooks | One-click training and deployment

ML FRAMEWORKS & INFRASTRUCTURE

Flexibility & choice, high-performing infrastructure

Support for ML frameworks | Compute options purpose-built for ML

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AI SERVICES

Vision

REKOGNITION IMAGE   REKOGNITION VIDEO   TEXTRACT

Speech

POLLY   TRANSCRIBE

Language

TRANSLATE   COMPREHEND

Chatbots

LEX

Forecasting

FORECAST

Recommendations

PERSONALIZE

ML SERVICES

AMAZON SAGEMAKER

BUILD   TRAIN   DEPLOY

Ground Truth
ML Marketplace

Discrete training & tuning
Neo model compiler
Reinforcement Learning

One-click deployment

ML INFRASTRUCTURE

Frameworks

TensorFlow
mxnet
PYTORCH

Interfaces

GLUON
K Keras

Infrastructure

P3DN   EC2 C5   FPGAs   GREENGRASS   ELASTIC INFERENCE

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Thank you for your attention

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