

Deconstructing AI

A Deeper Dive Into
Common AI
Solutions

AI for Business

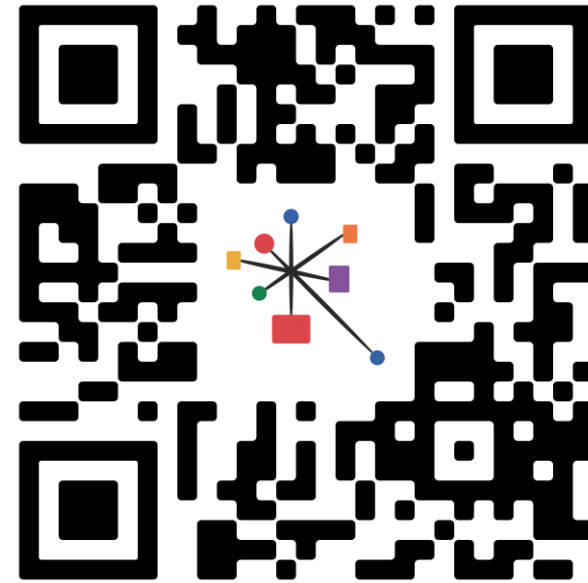
A multipart webinar series focused on AI from a business, not technical, perspective

Session	Description
1	Demystifying AI – Critical Questions for Business Leaders
2	<i>Deconstructing AI – A Deeper Dive Into Common AI Solutions</i>
3	Unforced Errors – Four Common AI Mistakes
4	Change Is Hard – Not Preparing for Change is Harder
5	A Brave New World – A Different Kind Of Governance
6	Transformational AI – Think Program, Not Project

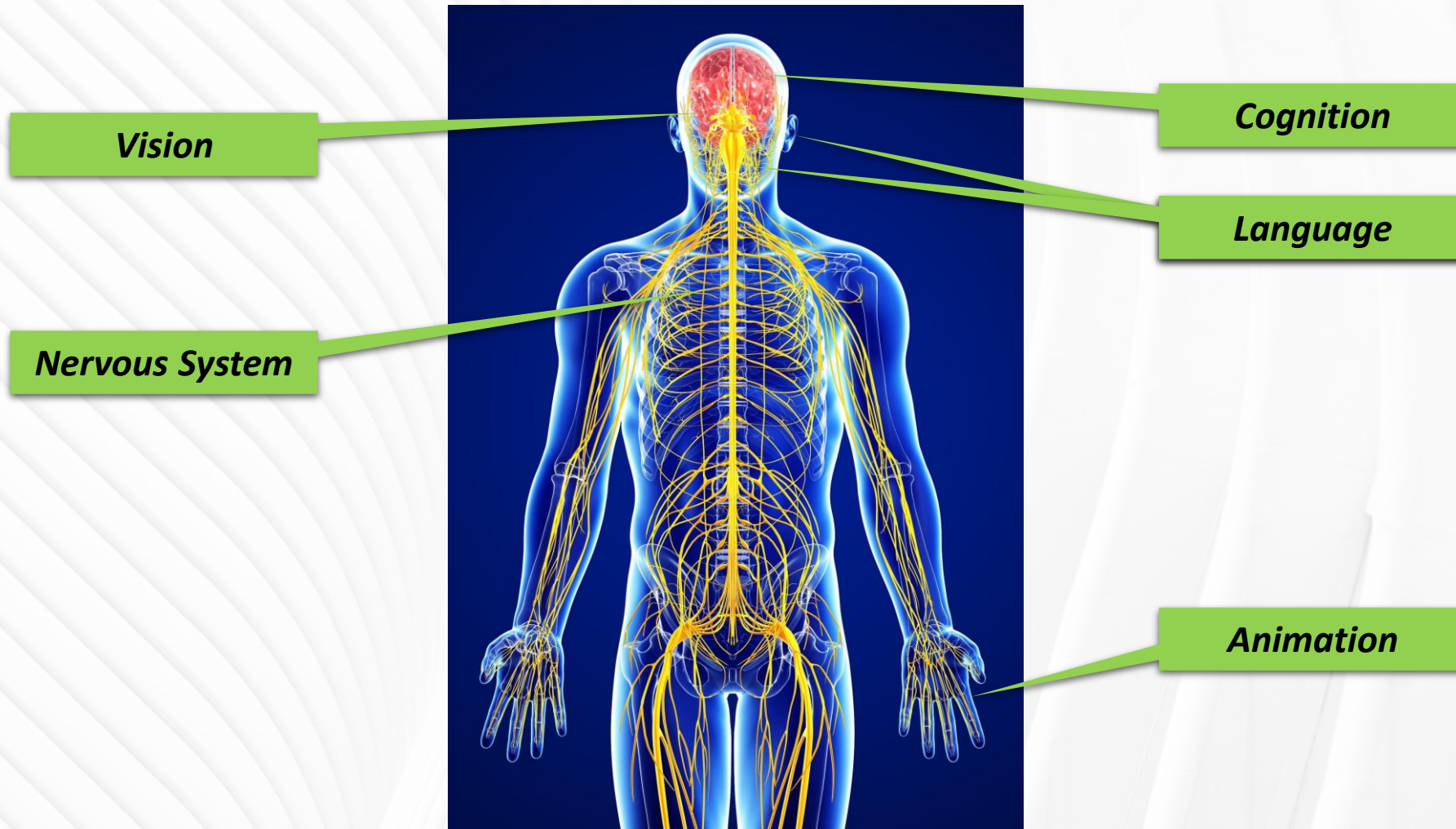
Which AI capabilities are you (or your organization) most interested in?

- 1) Machine Learning
- 2) Text Analytics
- 3) Object Detection
- 4) Robotic Process Automation (RPA)
- 5) Knowledge Graphs

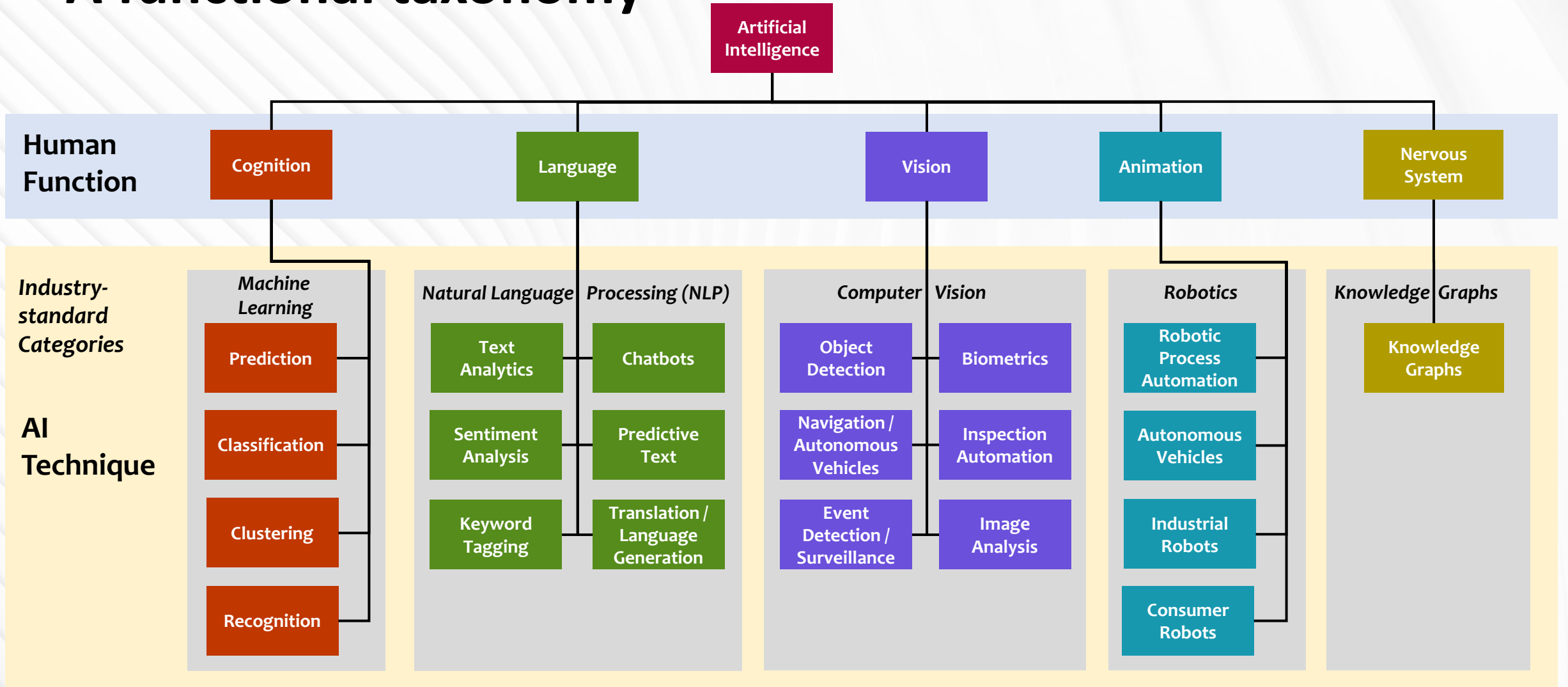
Glen Hilford, VP Corporate Development



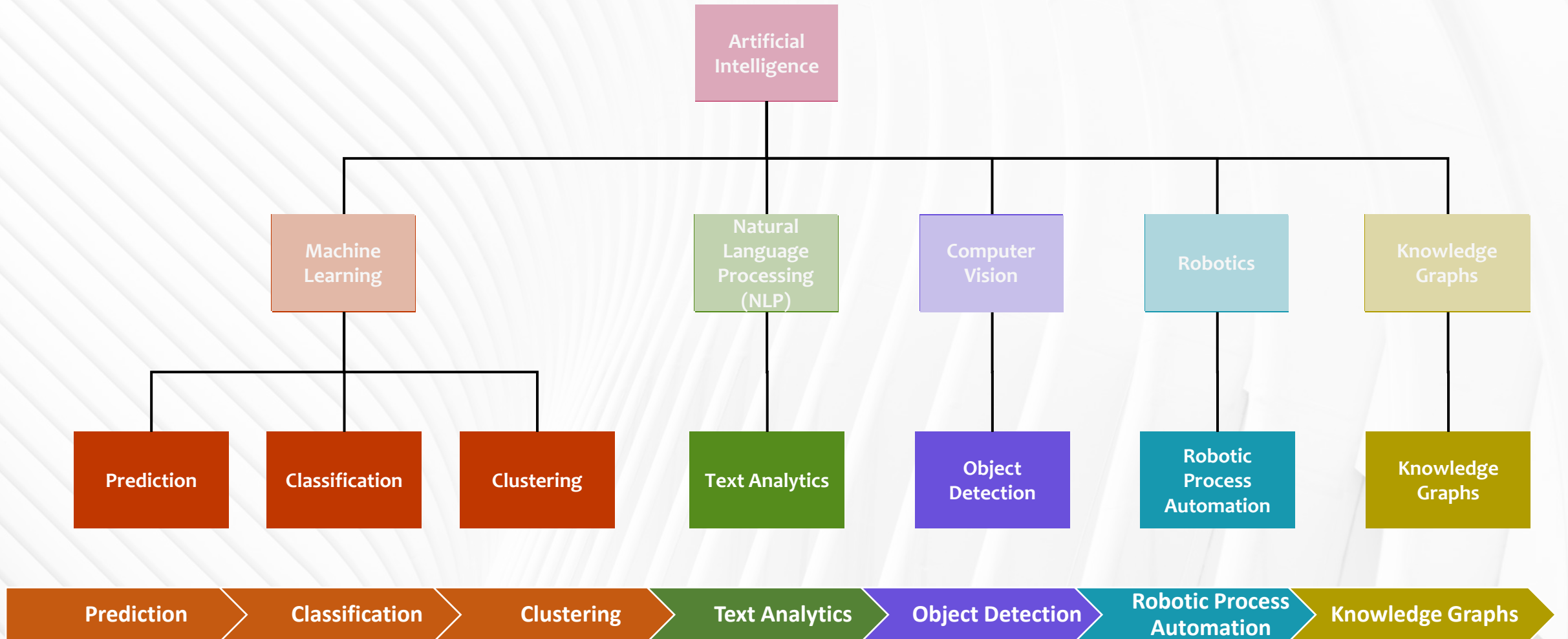
AI mimics human *functionality*



A functional taxonomy



AI techniques that matter most to mainstream business



Prediction

**Learning from the past,
to forecast the future**



Two types of prediction

- **Value**

- Predict (determine) a value based on a set of inputs

- **Time series**

- Predict future values based on previously observed time series values

Prediction

Classification

Clustering

Text Analytics

Object Detection

Robotic Process
Automation

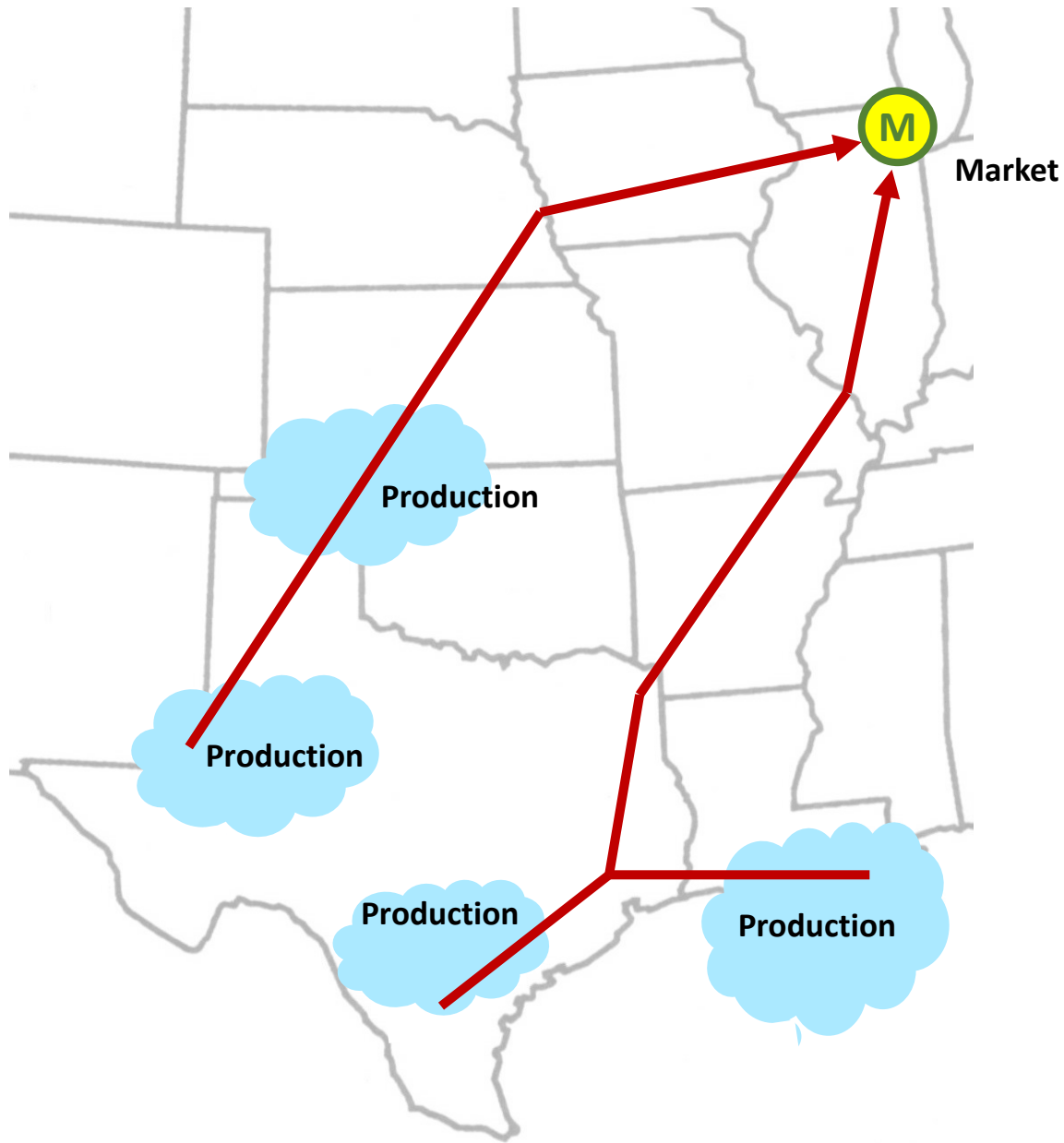
Knowledge Graphs



**Could this have
been prevented?**

A real-world (prediction) success story





Pipeline demand forecasting

If we could

- **Predict** gas demand in the Chicago market area three days in advance;

We could then

- Configure the pipeline system to optimize operations;

Saving millions annually

Prediction examples

- Weather forecasting
- Client churn
- Predictive maintenance
- Demand for hospital beds
- Power grid usage
- Product demand and inventory levels
- A sale lead's likelihood of closing

Prediction

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Classification

Categorizing information so you don't have to

Classification happens





**Image
Classification**
**A picture says a
thousand words**

Optimizing road repair with image classification

Poor



Substandard



Satisfactory



Good



Classification examples

- Facial recognition
- Decision framework for hiring new employees
- Prioritizing accounts receivable actions
- Detecting fraudulent transactions
- Spam filtering

Prediction

Classification


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Knowledge Graphs

A person wearing dark clothing and blue sneakers is using a metal detector on a sandy beach. The detector is a long, silver, telescopic pole with a black circular coil at the bottom. The person is standing on the left side of the frame, and the detector is positioned on the sand. The background is a vast, flat, sandy beach under bright sunlight. The text "Clustering Discovering hidden patterns that humans can't" is overlaid on the right side of the image in a large, bold, black font.

Clustering

Discovering hidden patterns that humans can't

Document Analysis

Uncovering
underlying themes

Clustering examples

- Discovering customer personas
- Discovering data trends for cross-selling
- Identifying patterns of terrorist behavior
- Medical condition discovery
- Detecting criminal activity
- Forensic analysis
- Legal discovery

Prediction

Classification

Clustering

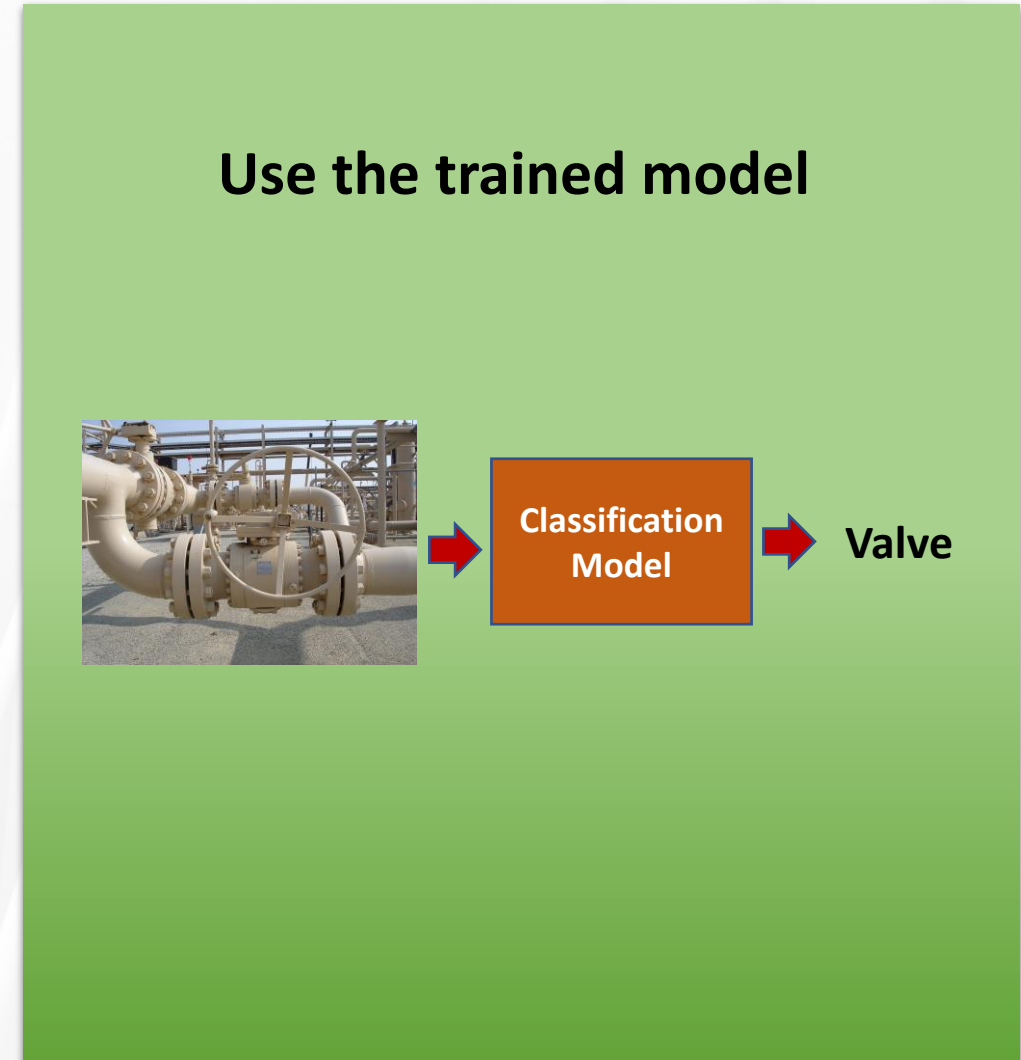
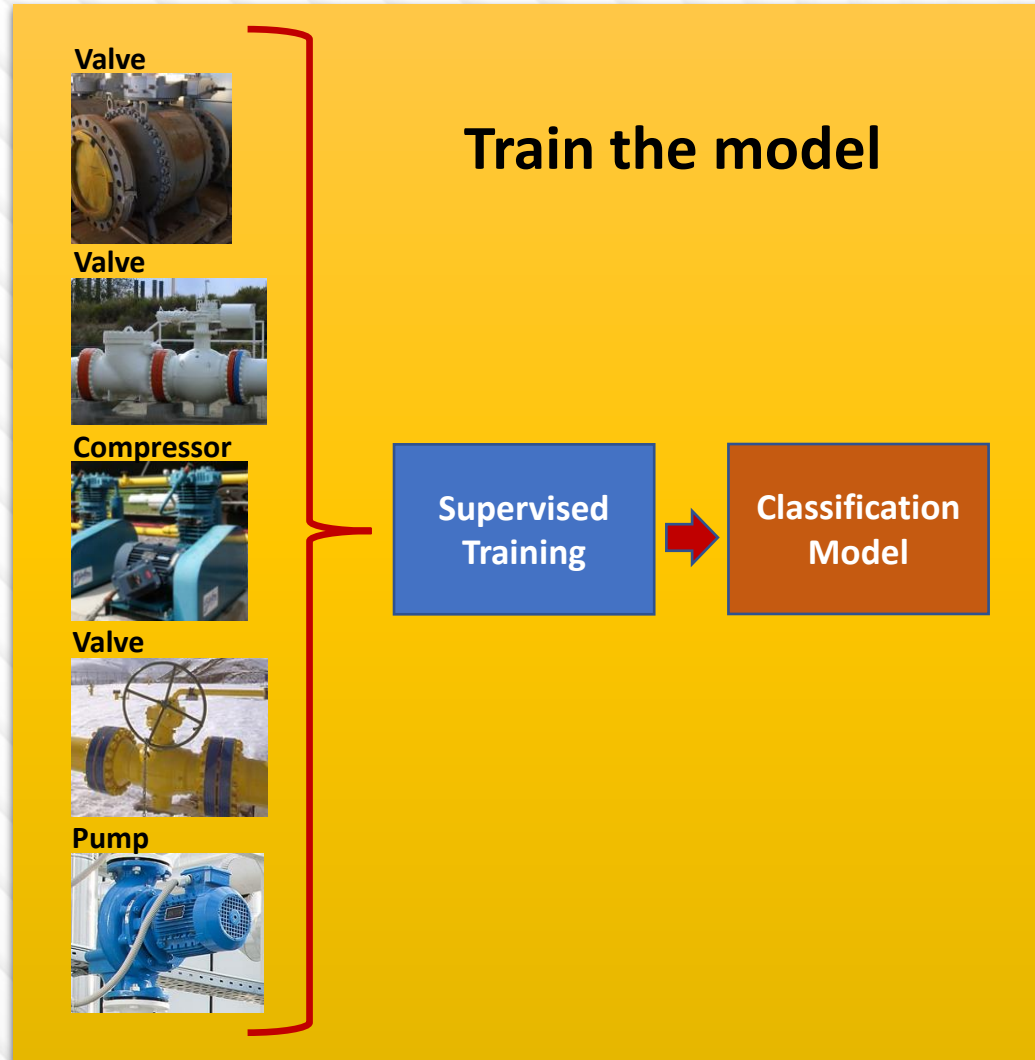
Text Analytics

Object Detection

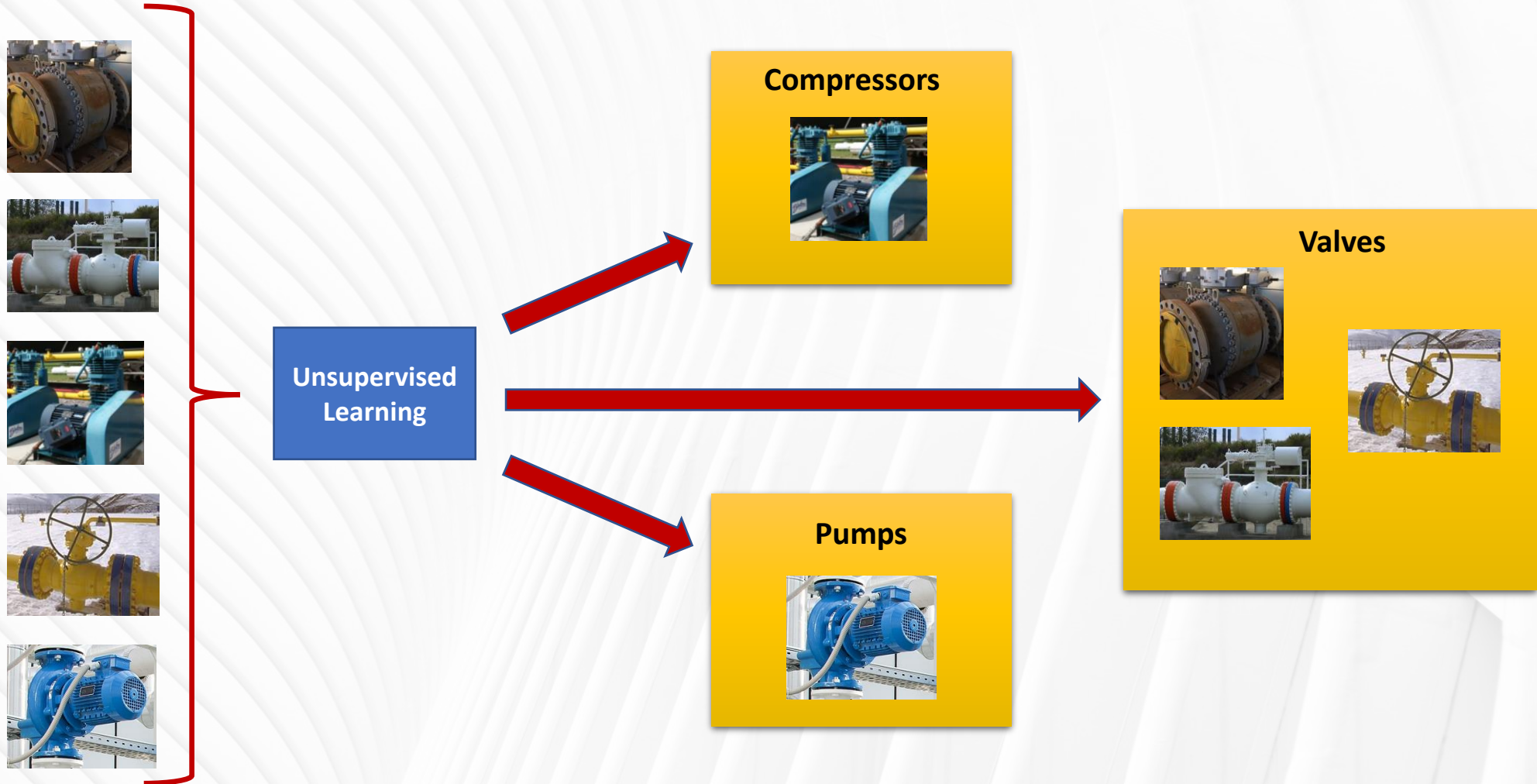
Robotic Process
Automation

Knowledge Graphs

Supervised learning – prediction and classification



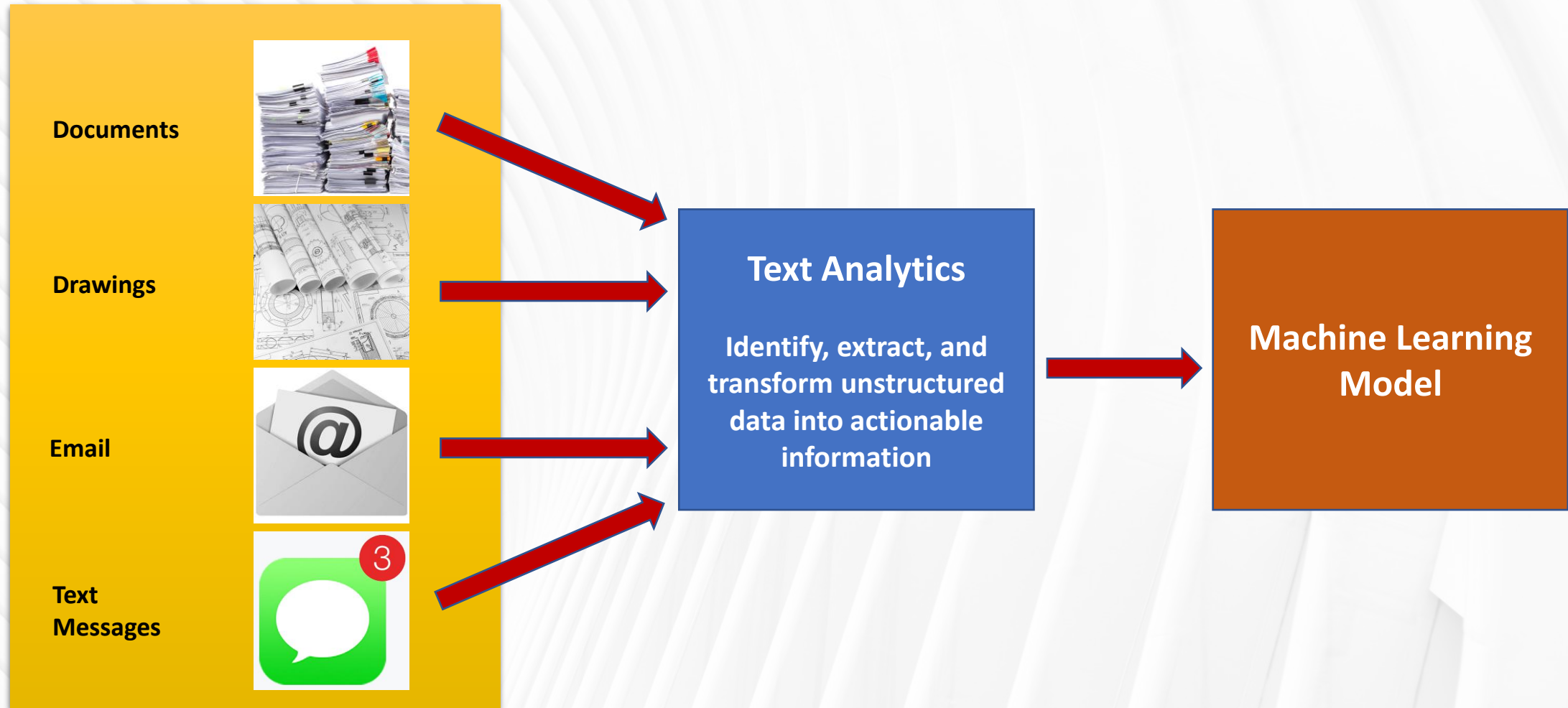
Unsupervised learning – clustering



Text Analytics Mining for hidden treasure



Text mining used as a preprocessor



Object Detection

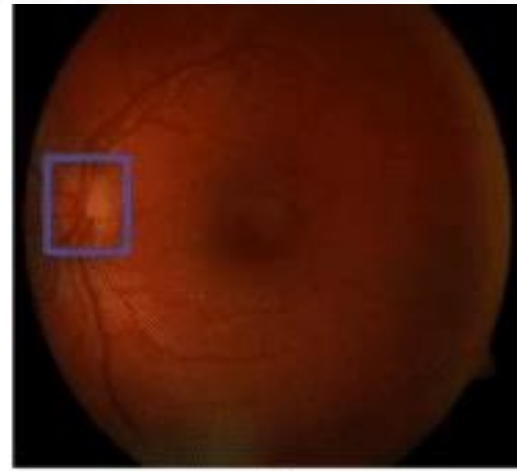
Intelligently augmented vision



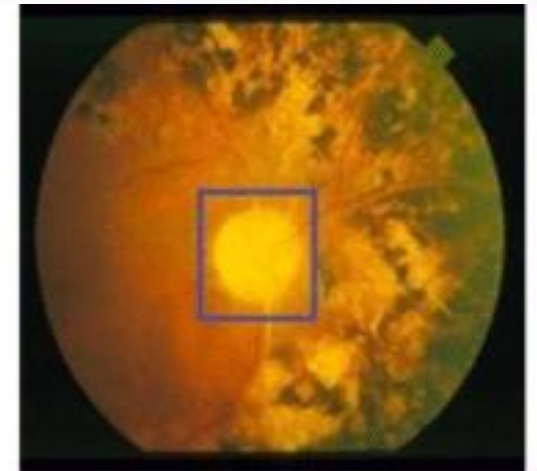
(a)



(b)



(c)



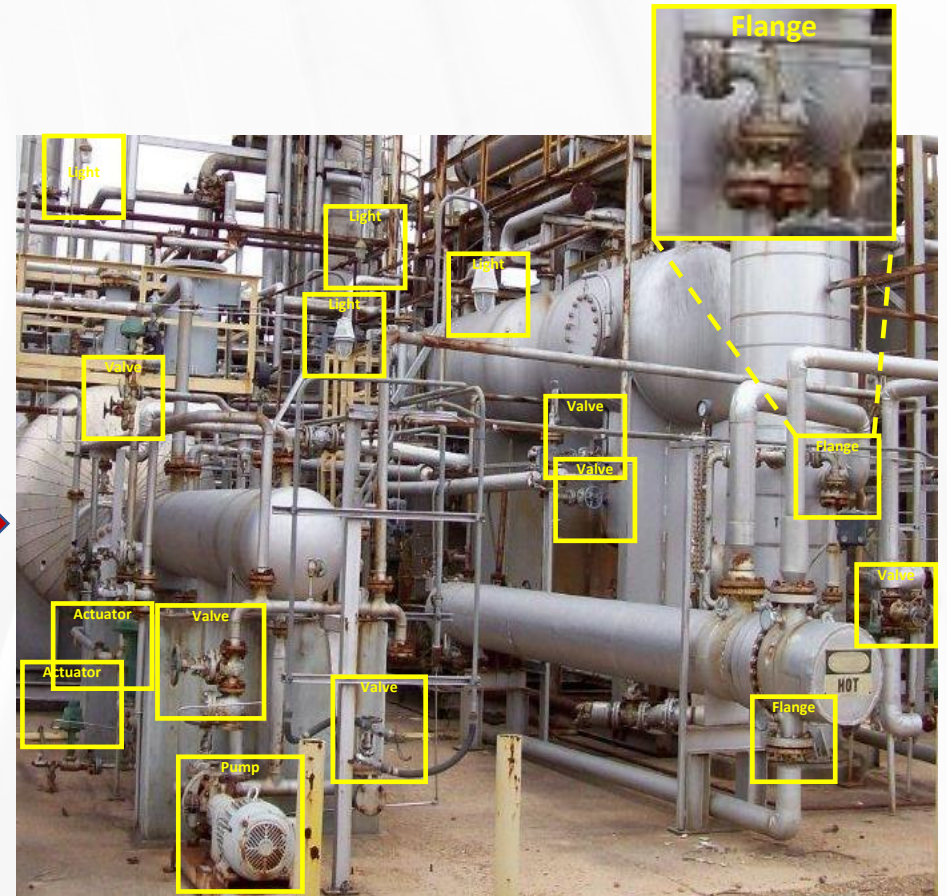
(d)

https://www.researchgate.net/figure/Training-Inception-v3-a-d-Bounding-box-labels_fig3_338976944

Object detection in an industrial setting



Object
Detection



Object detection examples

- Identifying manufacturing defects and anomalies
- Worker safety
- Autonomous vehicles
- Detecting skin lesions
- Video surveillance
- Crowd counting

Prediction

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RPA
**Saving workers one
process at a time**

RPA examples

- Call center operations
- Data migration / entry and forms processing
- Claims administration
- Onboarding employees
- Help desk operations
- Sales process support
- Credit card applications

Prediction

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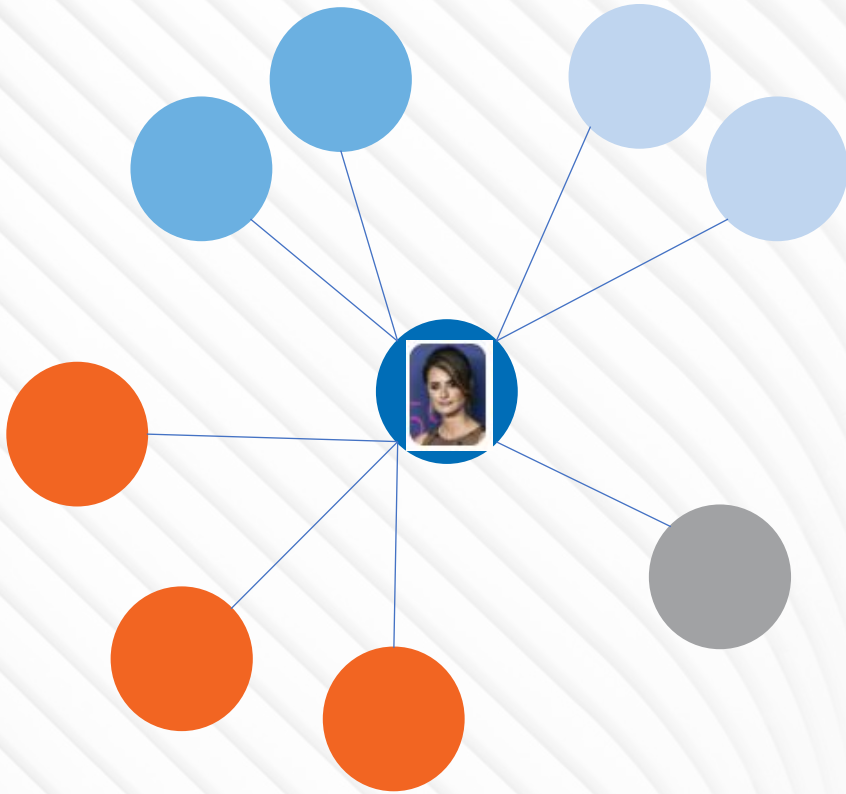
Knowledge Graphs



Knowledge Graphs

Connecting the dots

What is a knowledge graph?



Penélope Cruz

Spanish actress

About

Penélope Cruz Sánchez is a Spanish actress. Known for her roles in films of several genres, particularly those in the Spanish language, she has received various accolades, including an Academy Award ...

[Wikipedia](#)

Born: April 28, 1974 (age 47 years), Alcobendas, Spain

Height: 5' 6"

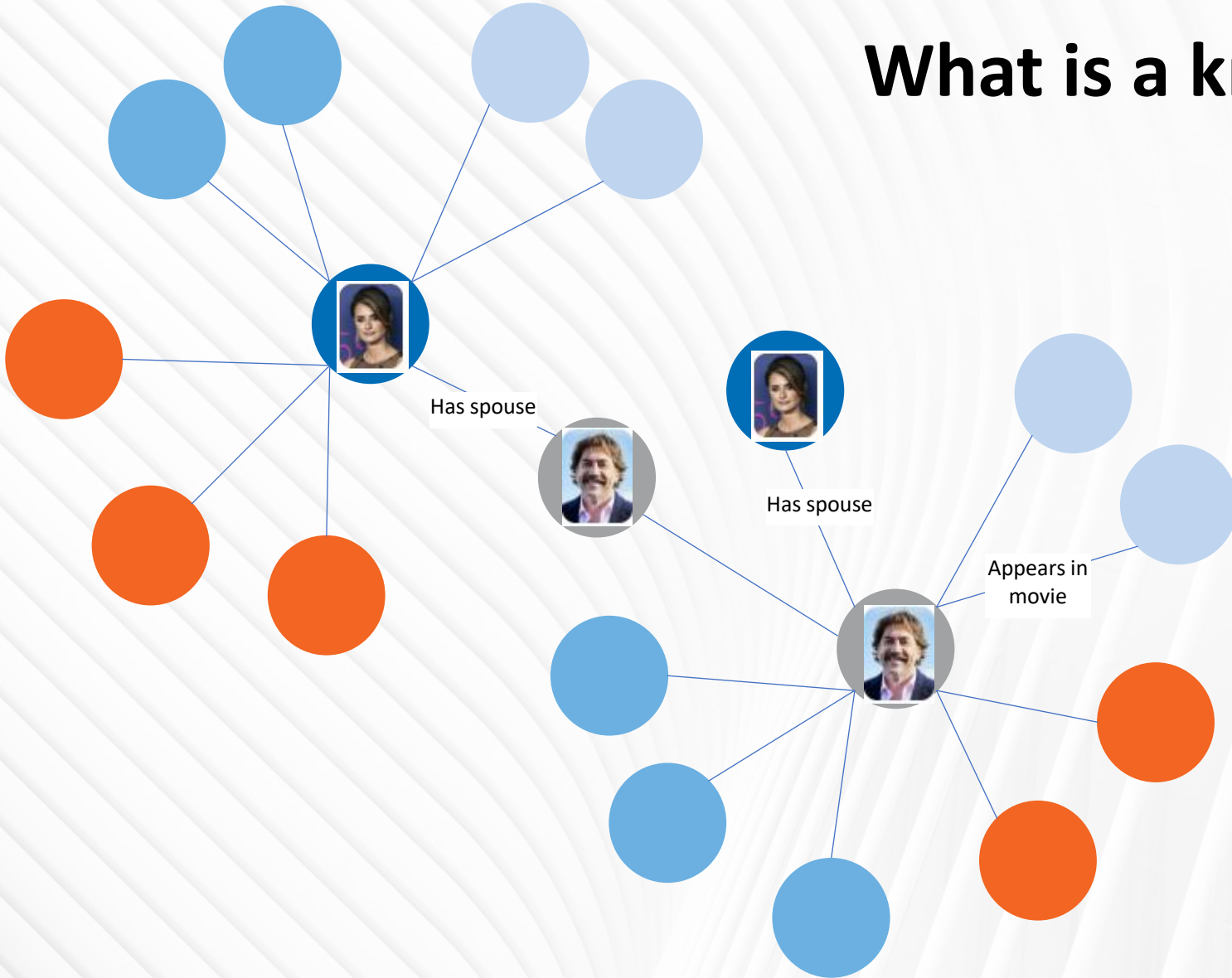
Nationality: Spanish

Spouse: [Javier Bardem](#) (m. 2010)

Children: [Luna Encinas Cruz](#), [Leo Encinas Cruz](#)

Parents: [Encarna Sánchez](#), [Eduardo Cruz](#)

What is a knowledge graph?



Javier Bardem

Spanish actor

About

Javier Ángel Encinas Bardem is a Spanish actor. Known for his roles in blockbusters and foreign films, he has received various accolades, including an Academy Award, a British Academy Film Award, and a Golden Globe Award. [Wikipedia](#)

Born: March 1, 1969 (age 53 years), Municipality of Las Palmas, Spain

Height: 5' 11"

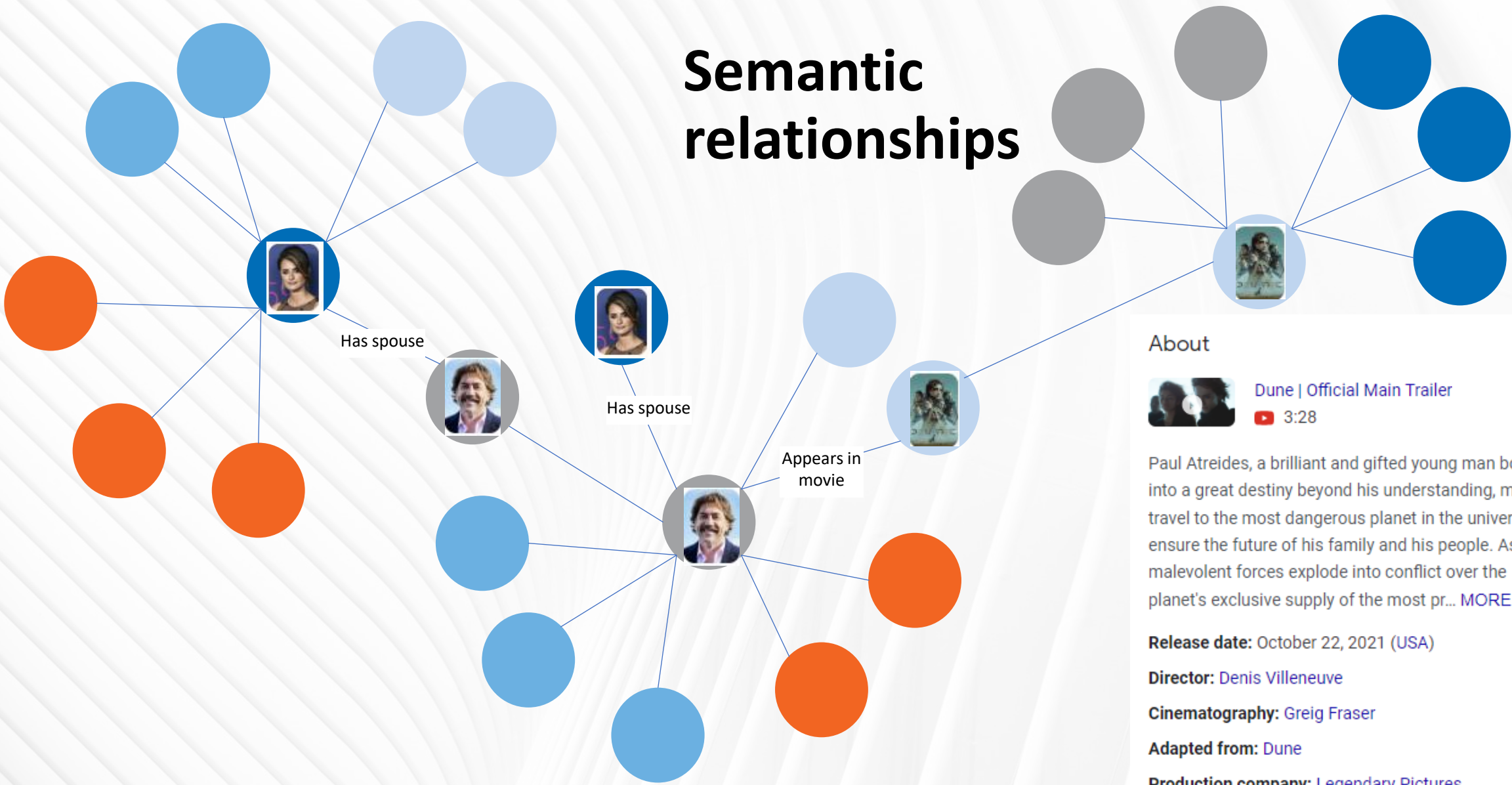
Spouse: Penélope Cruz (m. 2010)

Awards: Goya Award for Best Actor, [MORE](#)

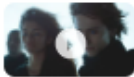
Children: Luna Encinas Cruz, Leo Encinas Cruz

Upcoming movies: [Dune: Part II](#), [The Little Mermaid](#), [Lyle, Lyle, Crocodile](#)

Semantic relationships



About

 [Dune | Official Main Trailer](#)
3:28

Paul Atreides, a brilliant and gifted young man born into a great destiny beyond his understanding, must travel to the most dangerous planet in the universe to ensure the future of his family and his people. As malevolent forces explode into conflict over the planet's exclusive supply of the most pr... [MORE](#) ▾

Release date: October 22, 2021 (USA)
Director: Denis Villeneuve
Cinematography: Greig Fraser
Adapted from: Dune
Production company: Legendary Pictures
Distributed by: Warner Bros. Pictures, Legendary Entertainment, SF Studios

Knowledge graph examples

- Institutional knowledge capture and retrieval
- Search engines
- Wikipedia
- Enterprise data integration

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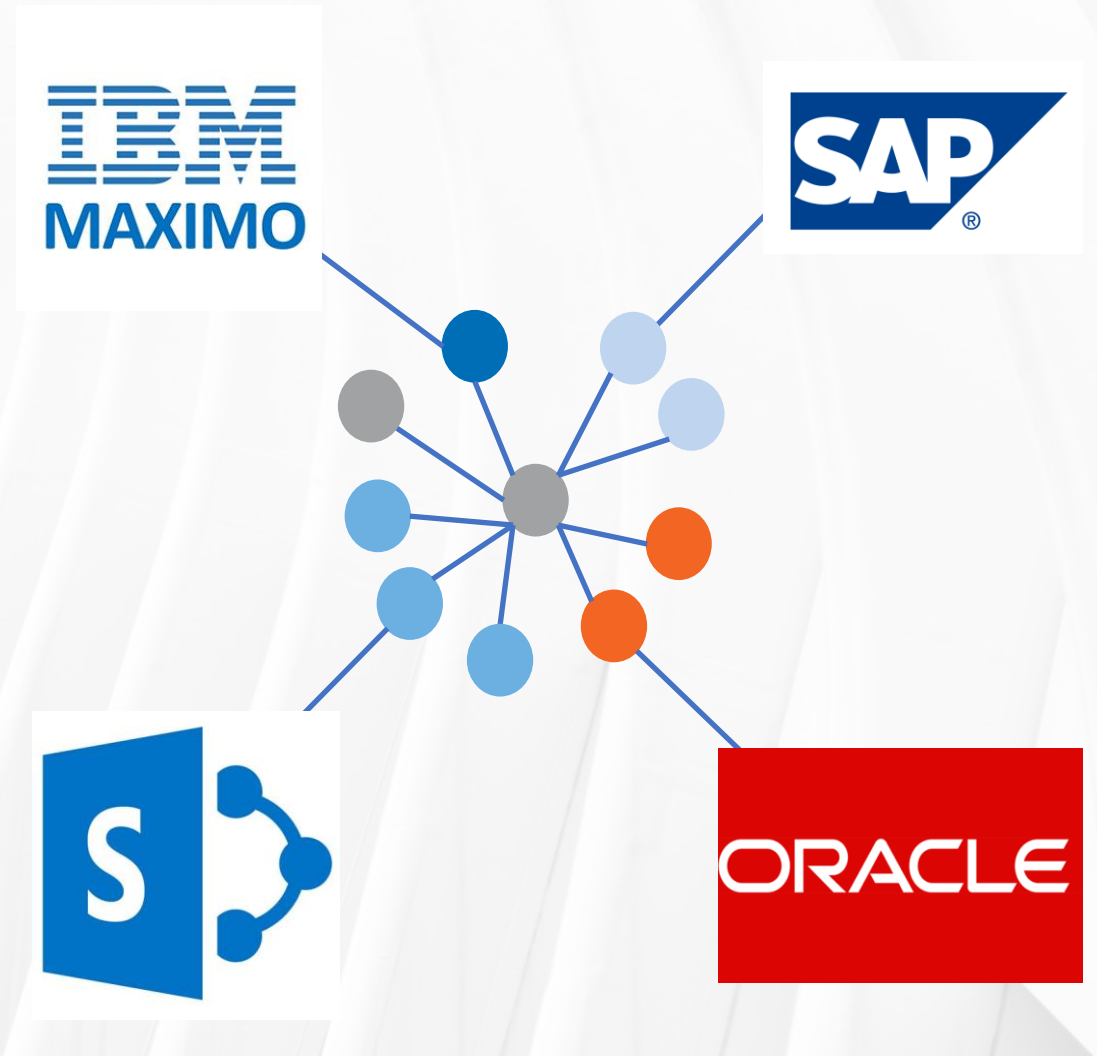
Robotic Process
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Knowledge Graphs

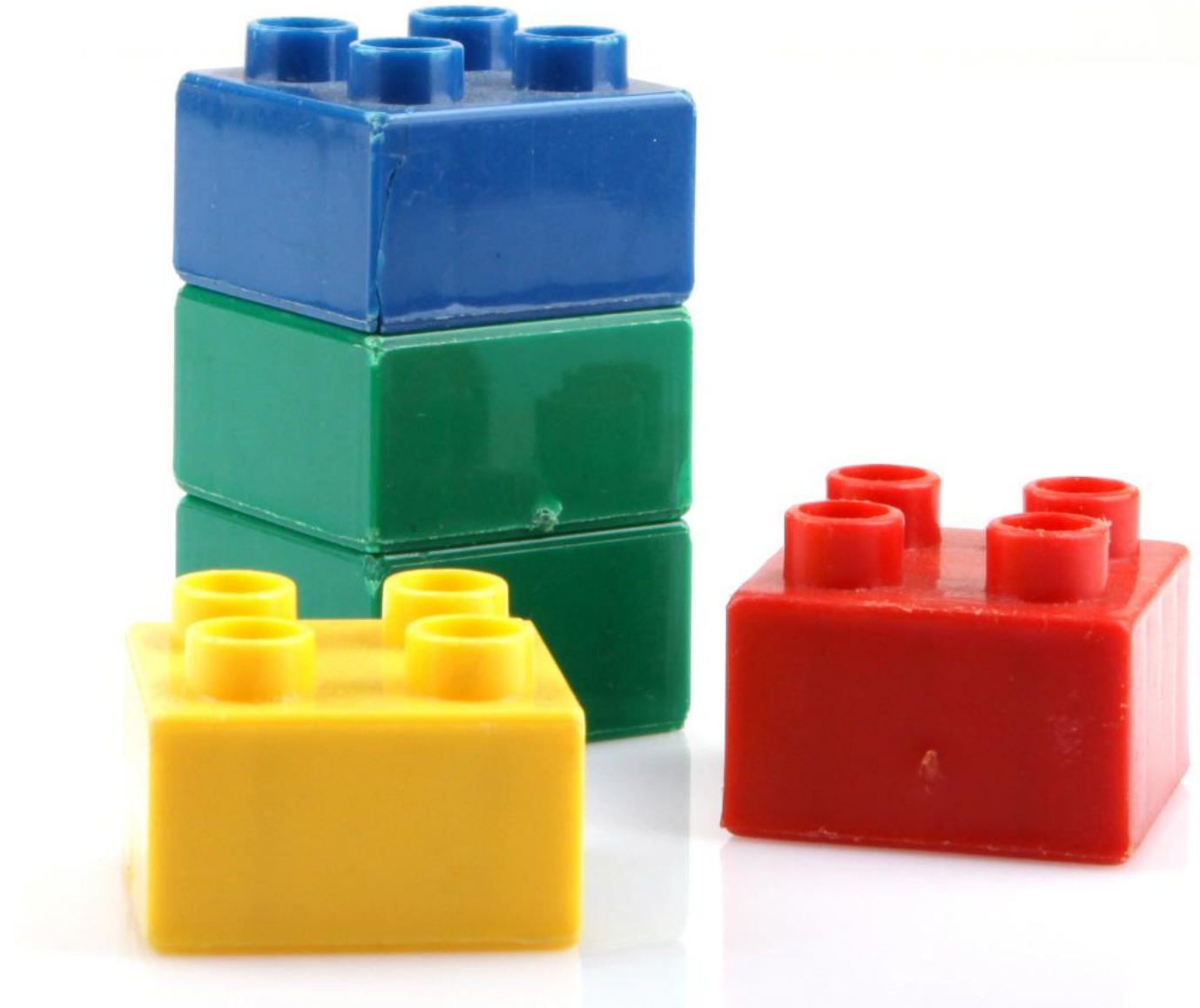
Applying knowledge graphs to enterprises

Knowledge graphs overlay an overarching information architecture across enterprise applications and data silos

- Information management structures
- Security
- Attributes
- Controlled vocabularies



Parting Shots Composite AI



Parting Shots

Embrace the mundane



What we have learned

- AI mimics human functionality
- 7 AI techniques are relevant to mainstream business
- Machine learning is what makes AI “intelligent”
- AI techniques are frequently used in combination to address business problems
- Knowledge graphs are emerging as powerful tool for harnessing enterprise information and knowledge
- Solving mundane business problems can be very valuable



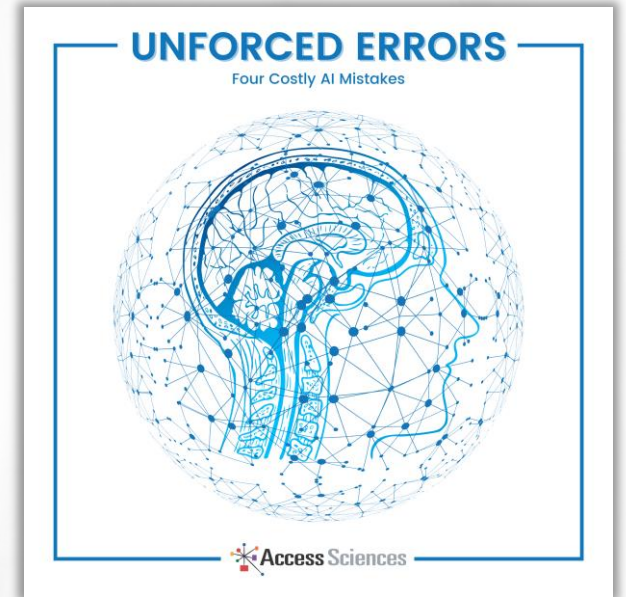
More on AI for Business...



READ



READ



REGISTER



Questions?

