ADAm
in a nutshell

António Câmara

2022

ADAm 2022

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ID da reunião: 536 235 3244

Join and follow Explora group
https://www.facebook.com/groups/183536175571026/

Send me an email if you want to receive Sunday News

António Câmara

Failed tennis player

Successful sports manager

Professor at NOVA. Visiting Professor at Cornell and MIT

Serial entrepreneur

- YDreams
- YDX, Ynvisible and Azorean
- The Inventors
- Aromni
- TUGA Innovations

Promoter

- Explora
- Disobedience Lab

A new Internet of Everything

YDX (Toronto, Frankfurt). Explora Inc. (including Aromni and Azorean)

Internet of Things

Ynvisible

Listed in Toronto and

Frankfurt

Smart labels

Lisbon, Freiburg, Linkoping, Vancouver

https://www.teletrader.com/ynvisible-interactive/stocks/details/tts-160188310

Ocean exploration

Azorean Aquatic Technologies

Listed in Euronext Paris

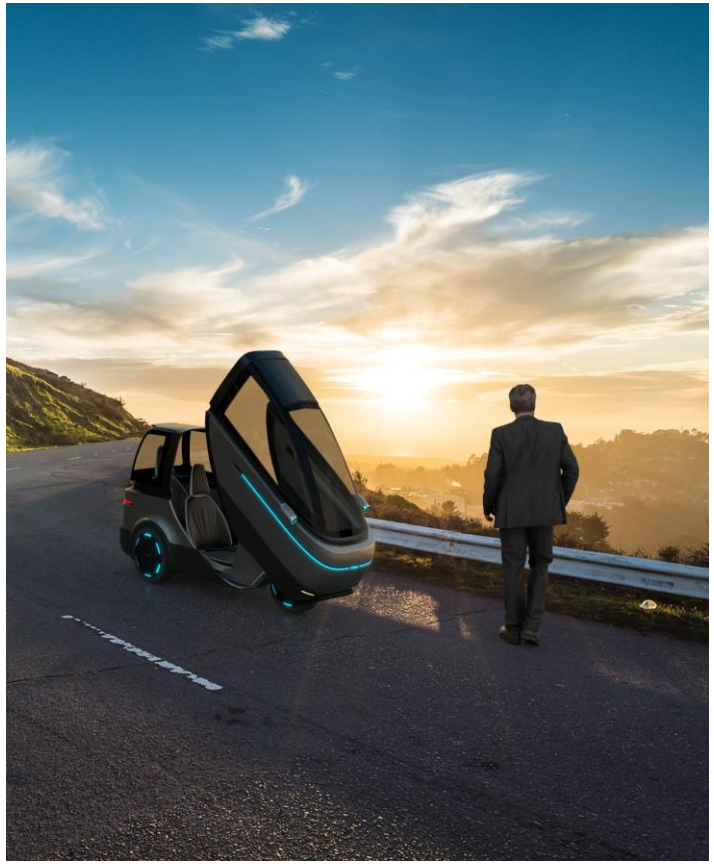
Aquatic drones,
ocean exploration

Lisbon, Ponta Delgada

https://youtu.be/H9W1wmIl8YU

Mobility

TUGA Innovations, Inc.



Lisbon, Holland (Michigan), Vancouver
Filed for na IPO

ADA schedule until the end of the semester

8/11 ADAI in a nutshell. Humans, AI and Nature: the Internet of Everything
11/11 Environmental data types, infra-structures and sensors
15/11 Knowledge discovery
18/11 Machine learning
22/11 Natural language processing
25/11 Generative AI
29/11 Data visualization
2/12 Augmented reality
6/12 Virtual reality
9/12 Student project discussion
13/12 Student presentations
16/12 Student presentations

ADA projects AI/AR/VR

Formulate a problem dealing with ecosystem re-generation. Describe the data, logic and presentation layers of a software solution for that problem. Use AI in the back end and AR/VR on the front end.

Ecosystem re-generation problems (see https://regeneration.org/ for inspiration) may be defined in general terms or be site specific.

Mathematical models

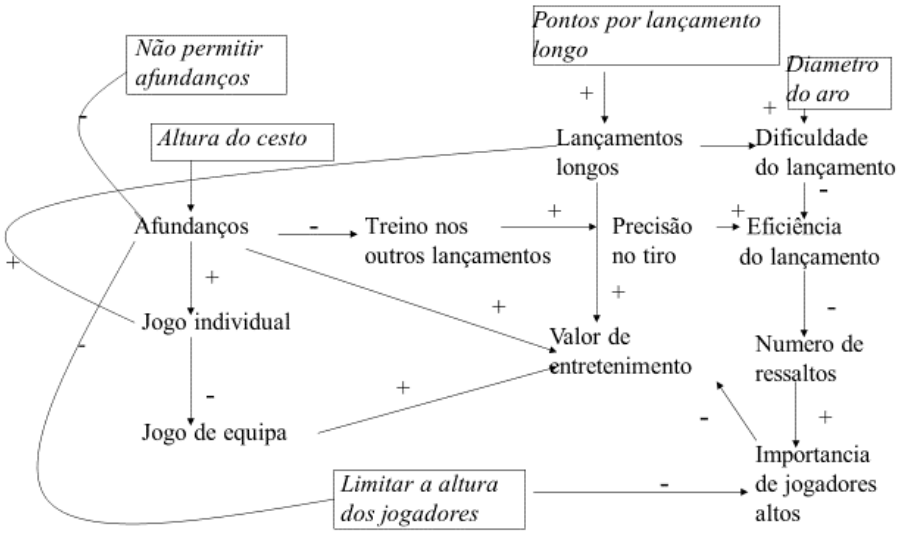
Analyze a system

[Applications of mathematics in real life]

Descrições verbais de problemas

O valor de entretenimento de um jogo de basquetebol melhora com o jogo de equipa, lançamentos longos e "afundanços". No entanto, muitos espectadores acham que a crescente importância dos jogadores altos diminui esse valor. Dizem também que privilegiar afundanços encoraja o jogo individual, reduzindo o jogo de equipa.

Jogadores que tendem a "afundar", treinam menos os outros lançamentos, reduzindo a precisão de lançamento e deste modo a eficiência de lançamento, a percentagem de lançamentos que entram no cesto.



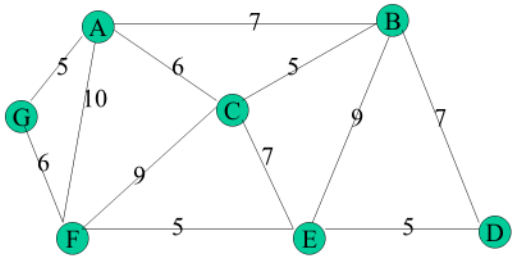
Mathematical models

Obtain an optimal solution

[Applications of mathematics in real life]

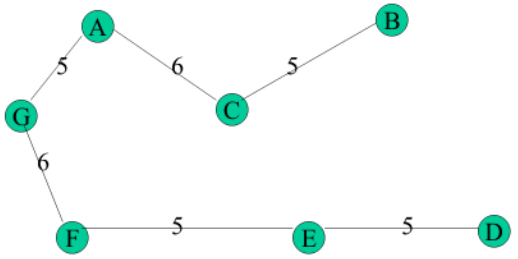
Minimum spanning tree

- Grafo inicial



Minimum spanning tree

- Começando em A, liga-se a G….



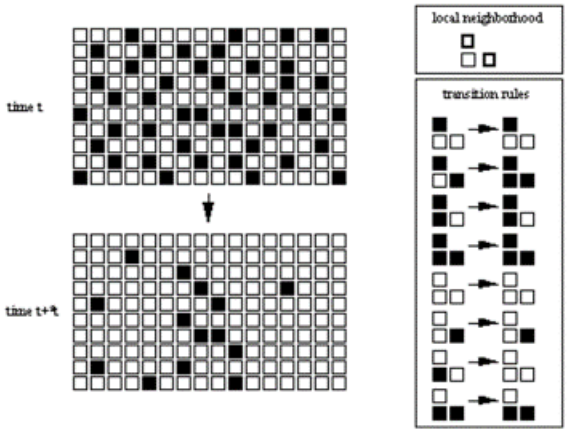
Mathematical models

Predict the evolution of a system

[Applications of mathematics in real life]

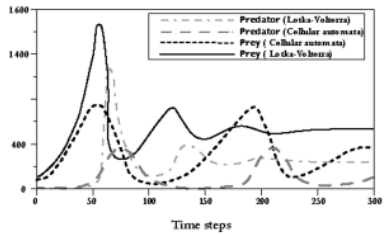
Working with pictures at the pixel level

- Examples of transition rules cellular automata(CA)

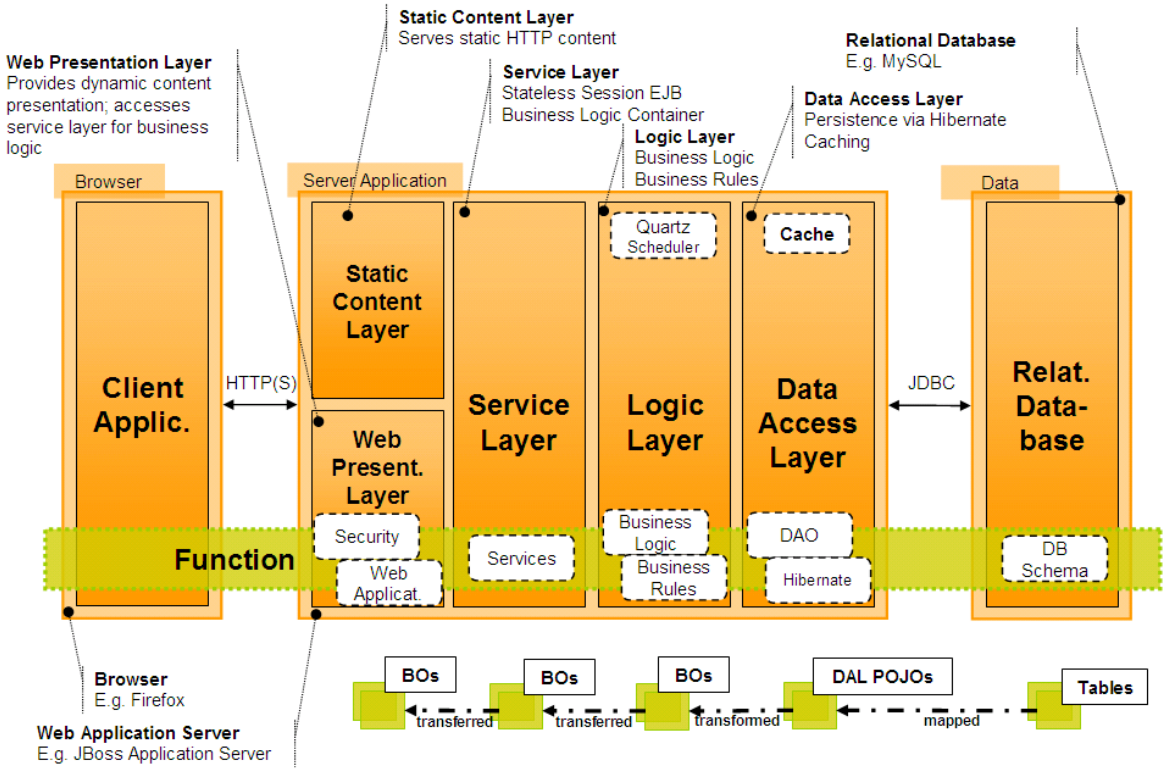


Applications

- Predator-prey models



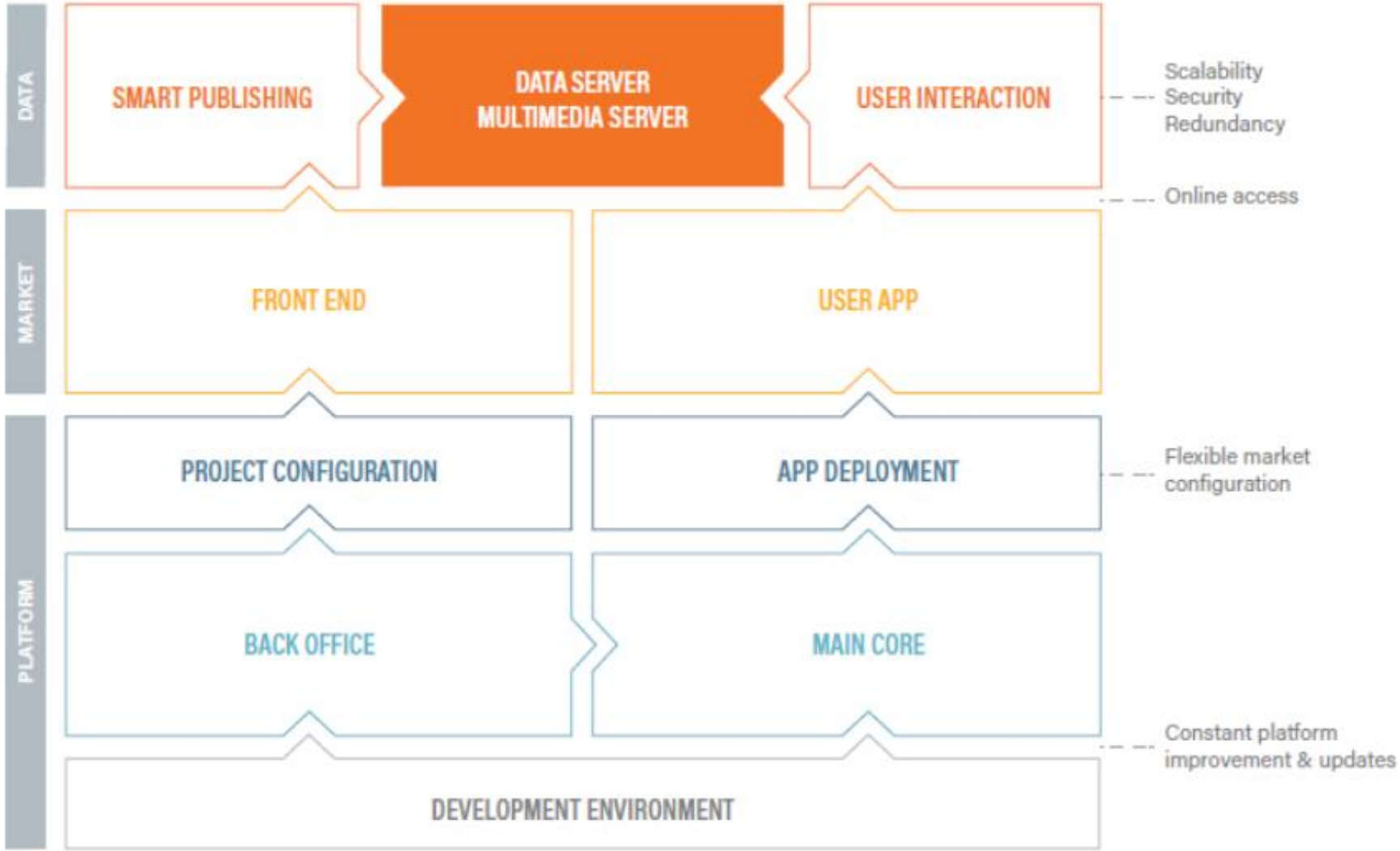
Software architectures



[Ten software architectural systems]

INTERACTIVE APPLICATION
SCRIPTING
DATA DRIVEN ENGINE
DATA LOGGING
SIMULATION
COMPUTER VISION
Open Source
CORE FRAMEWORK
EMBODIED AGENTS
EMBODIED INTERACTION
GUI

AROMNI'S PLATFORM



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AROMNI

Environmental data sources

SILIAMB

SNIAmb

SNIRH - Recursos Hídricos

SIAIA - Avaliação de Impacte Ambiental

QUALAR - Qualidade do Ar

COSMO

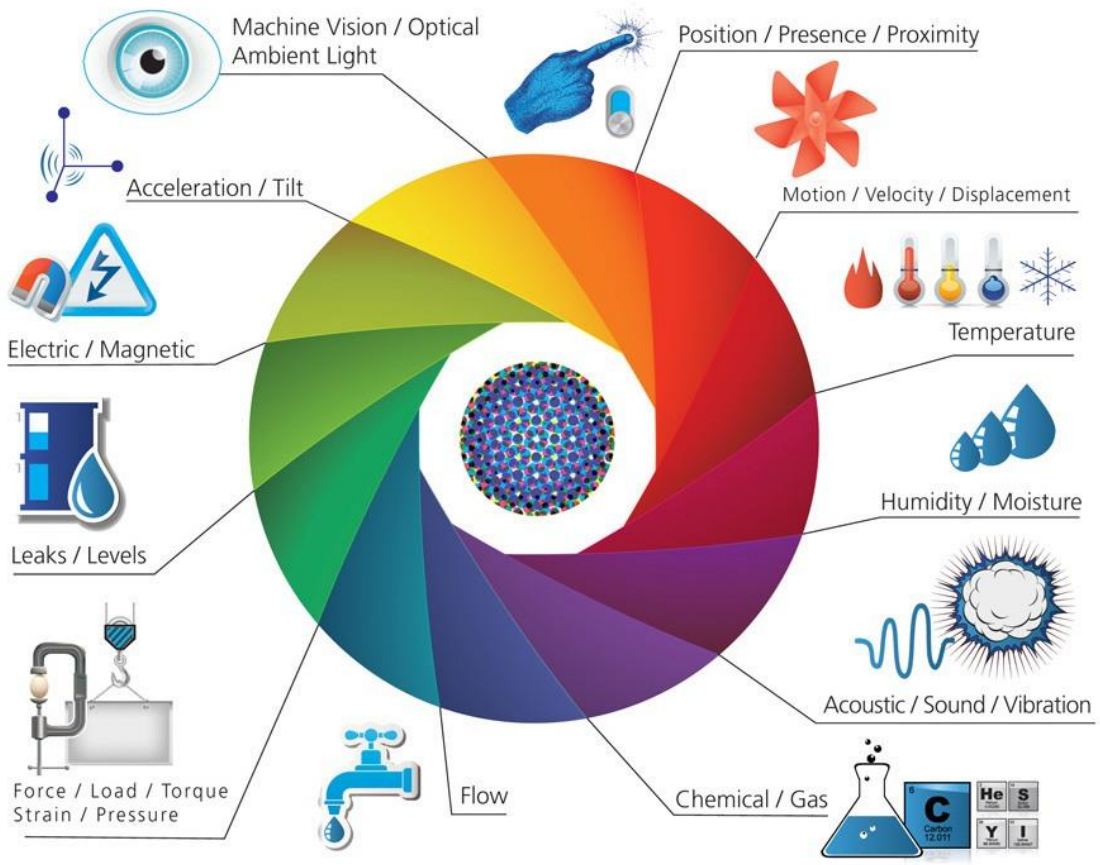
SILOGR

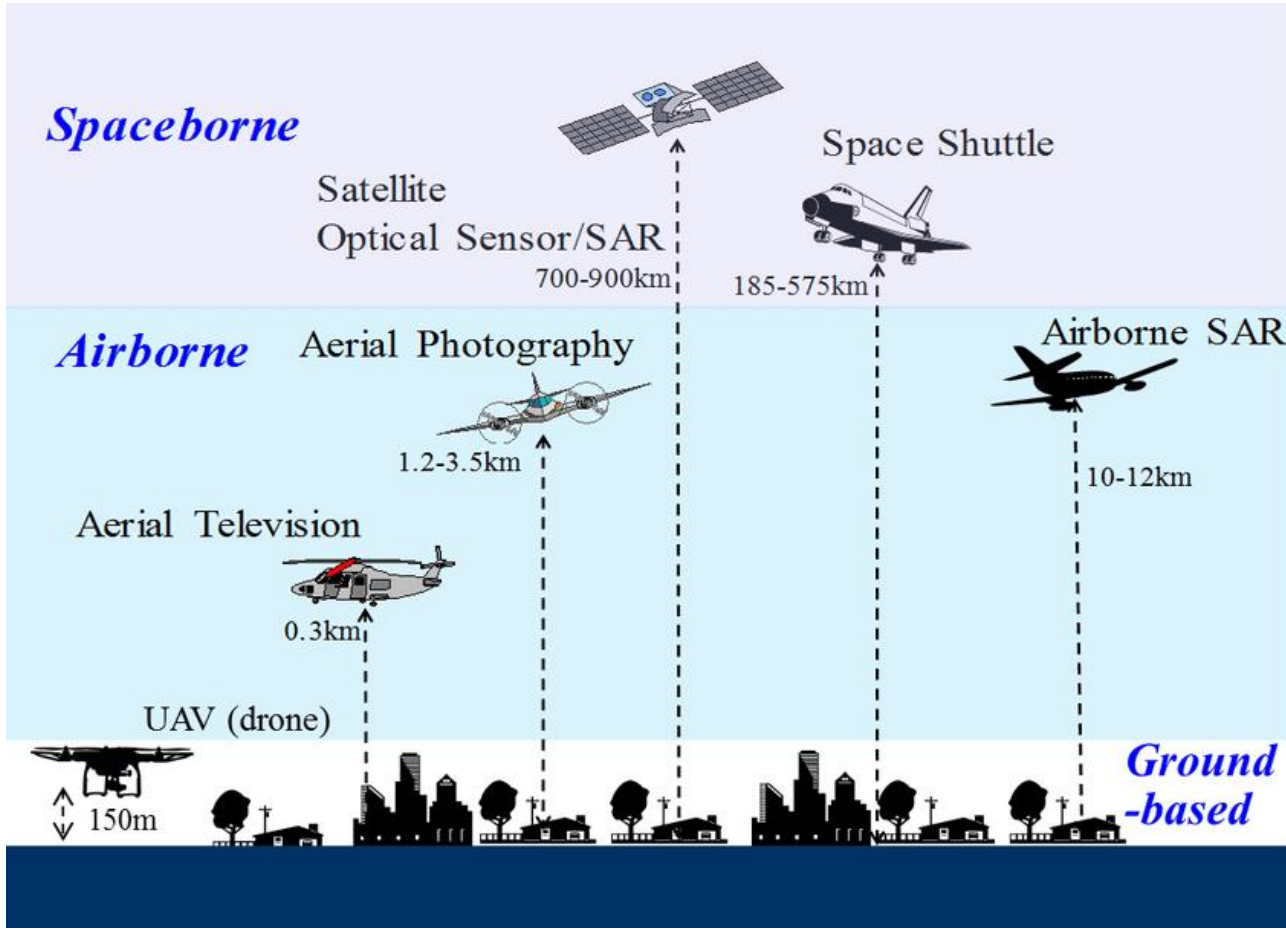
Participa

APA Information systems

Environmental information components

Environmental sensors

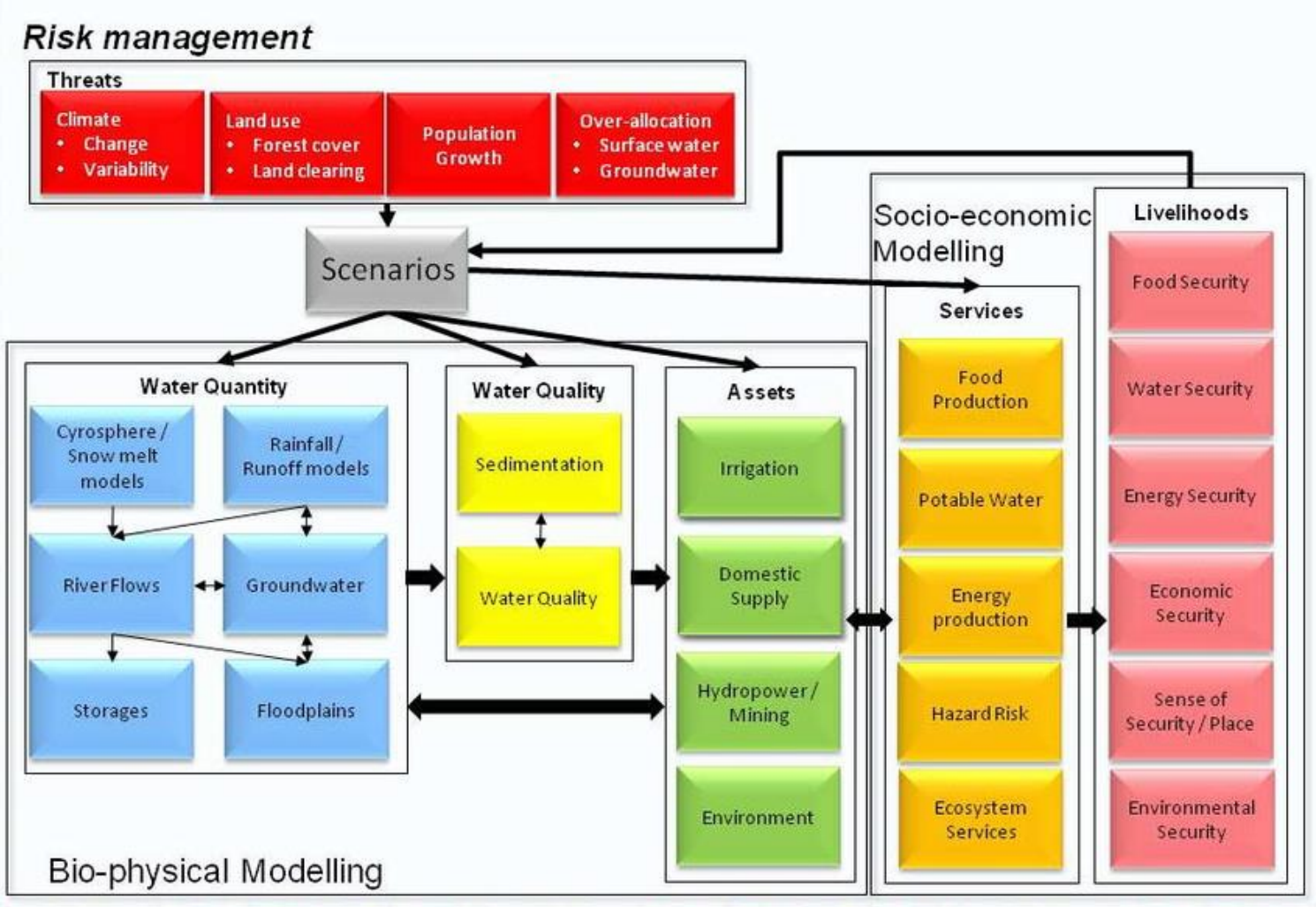




Environmental IoT sensors

Sensors used for remote sensing

Environmental models



[Water resource management models]

Environmental apps

[Apple's apps for Earth]

AI approaches

Machine learning and NOVA environmental engineering students

Input

Environmental Enginnering students 1982-2019

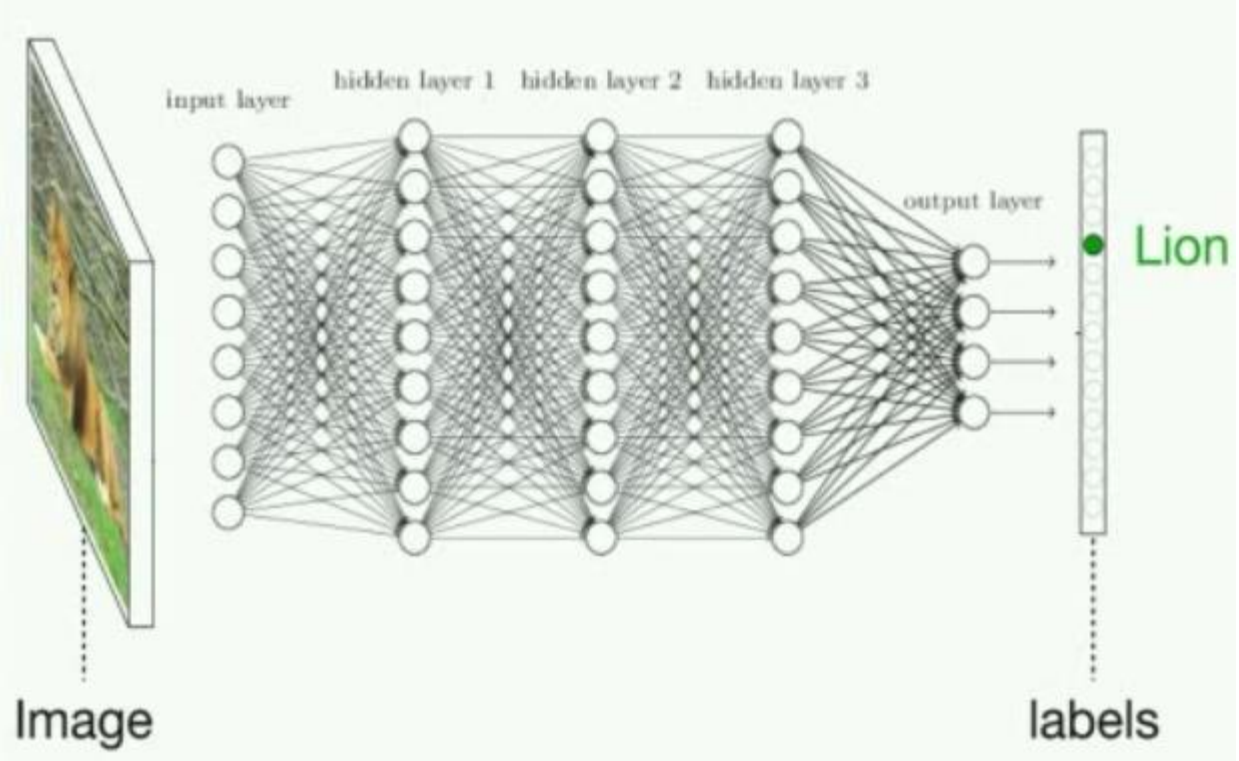
Output

Success (conventional, craftsmanship, societal) 1982-2019

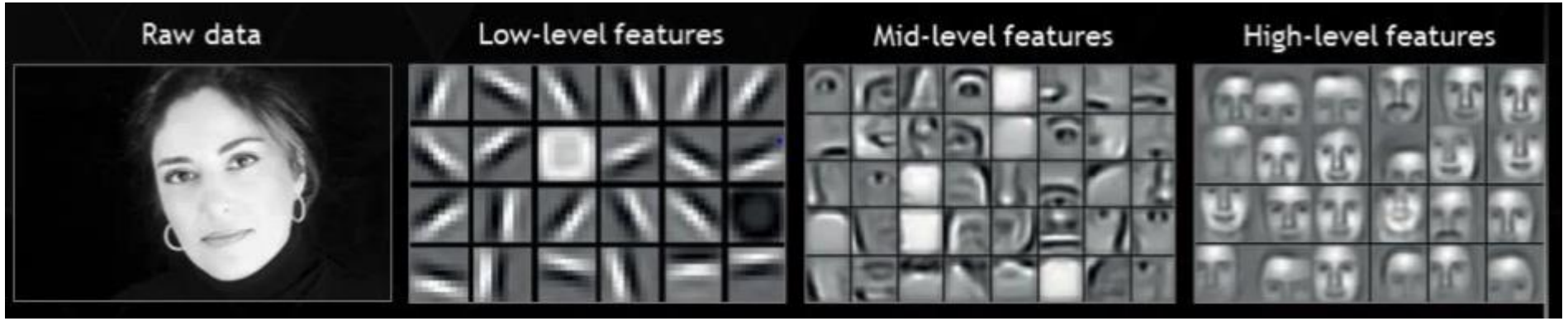
Hidden nodes

Accounting for *F in Output= F (Input)*

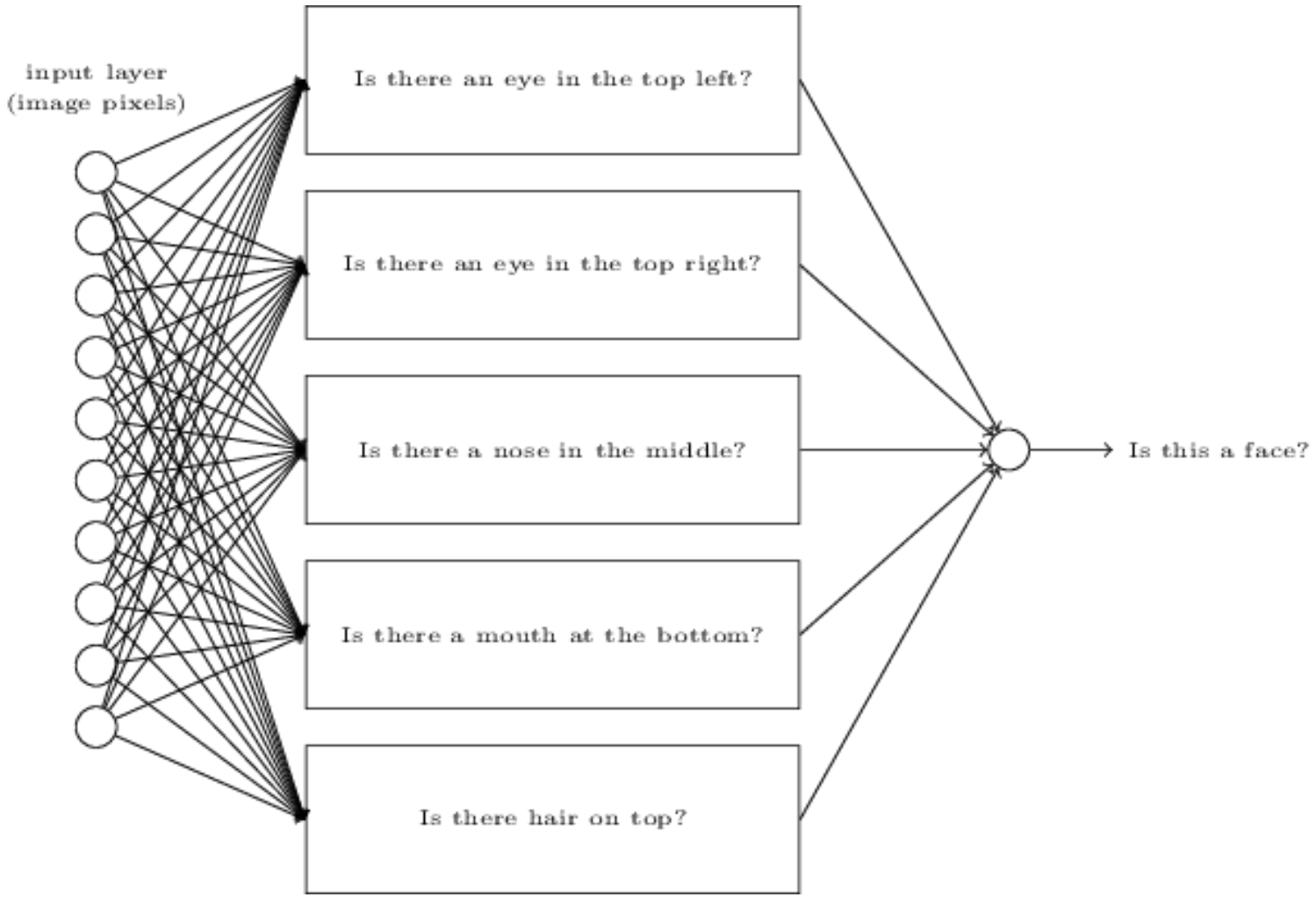
Neural networks



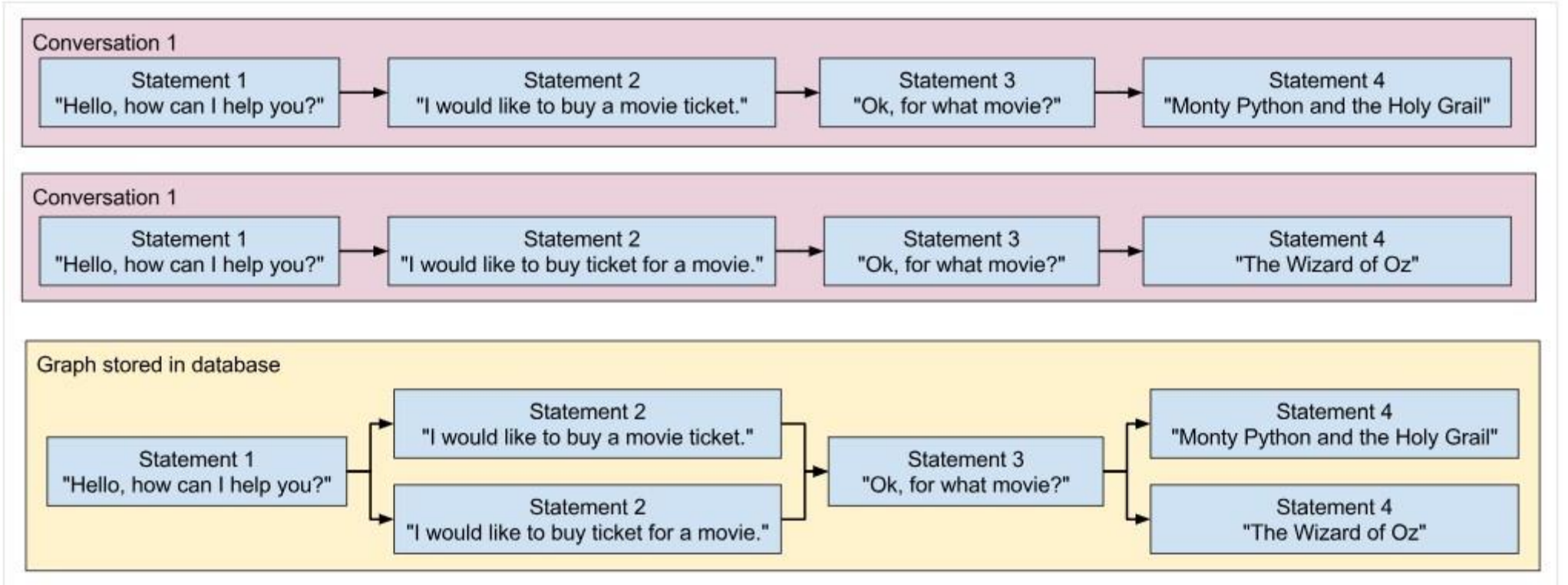
Neural networks



Neural networks



Chat bots


Conversation 1
Statement 1
"Hello, how can I help you?"
Statement 2
"I would like to buy a movie ticket."
Statement 3
"Ok, for what movie?"
Statement 4
"Monty Python and the Holy Grail"
Conversation 1
Statement 1
"Hello, how can I help you?"
Statement 2
"I would like to buy ticket for a movie."
Statement 3
"Ok, for what movie?"
Statement 4
"The Wizard of Oz"
Graph stored in database
Statement 1
"Hello, how can I help you?"
Statement 2
"I would like to buy a movie ticket."
Statement 2
"I would like to buy ticket for a movie."
Statement 3
"Ok, for what movie?"
Statement 4
"Monty Python and the Holy Grail"
Statement 4
"The Wizard of Oz"

THE EVOLUTION OF GAMING

EVOLVING INTERFACES

The Past
Wired Control

Now
Motion Control

The Future
Mind Control

ALTERED REALITIES

The Past
Abstract Reality

Now
Virtual Reality

The Future
Augmented Reality

NEW DIMENSIONS

The Past
2D

Now
3D

The Future
4D

New interfaces: VR/AR/AI

https://www.youtube.com/watch?v=UaC0UoakO7k

https://www.youtube.com/watch?v=qXcIZ1R68SQ

https://www.youtube.com/watch?v=hnMBTU-kyh0

Product development

Generation and selection of ideas

Prototyping

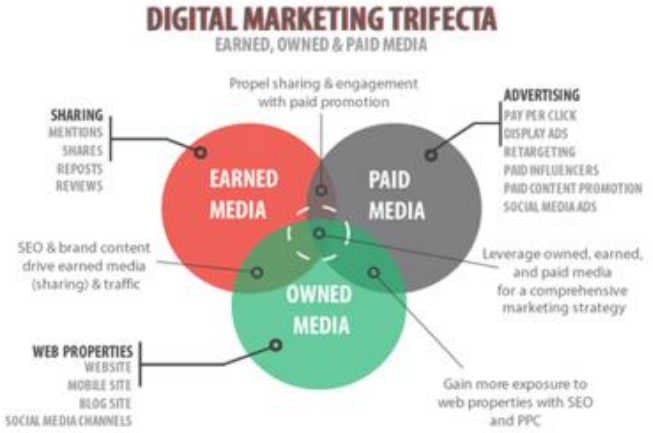
Intellectual property

Communication

Financing

MVP

Marketing and sales



Ars Digita* Layer Cake

Ideas

Management (strategic, financial, IP, operations, product and project management, marketing & communications, human resources)

Design (conceptual, UI, UX, industrial)

Technology (energy, communications, hardware, software)

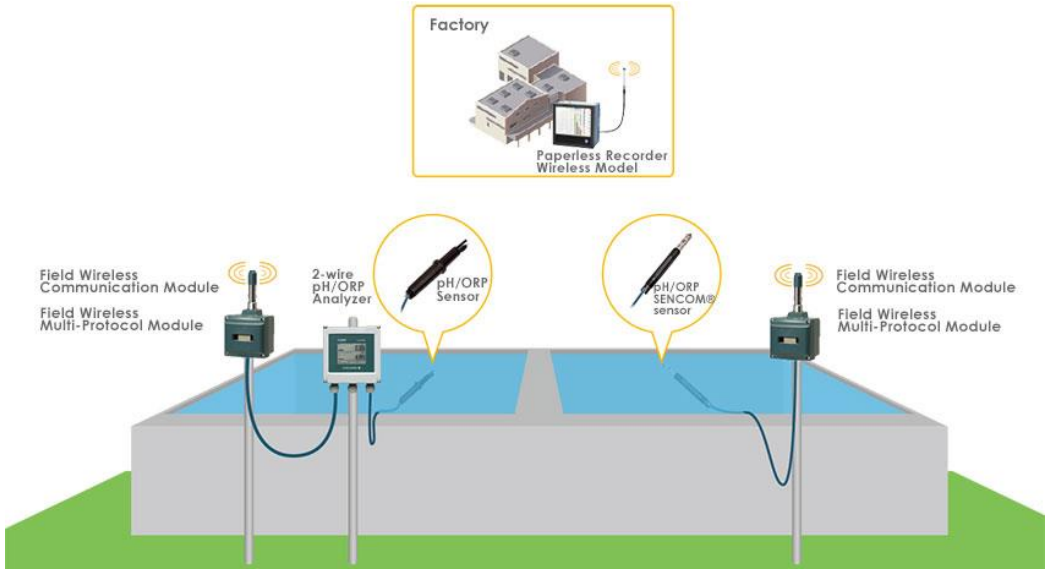
*https://en.wikipedia.org/wiki/ArsDigita

STARBUCKS COFFEE

Pastéis de Belém

Your problems: benchmark levels

Wastewater treatment monitoring



Self-organizing map and clustering for wastewater treatment monitoring (academic)

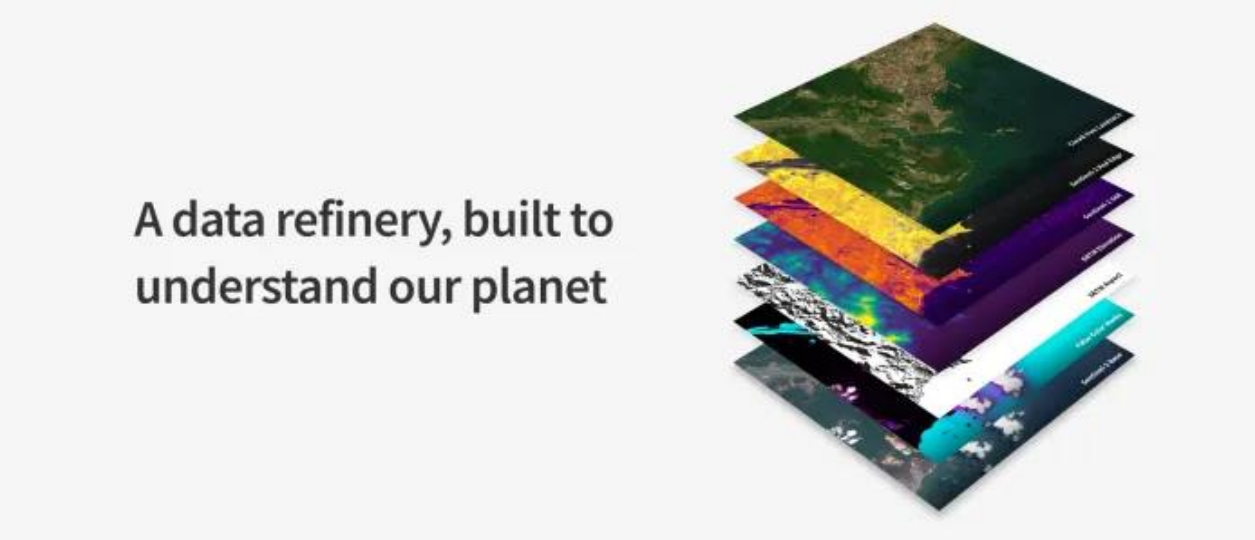
Wastewater treatment system and method (intellectual property)

Wastewater treatment monitoring (industry)

Water market data (market)

Your problems: quality standards

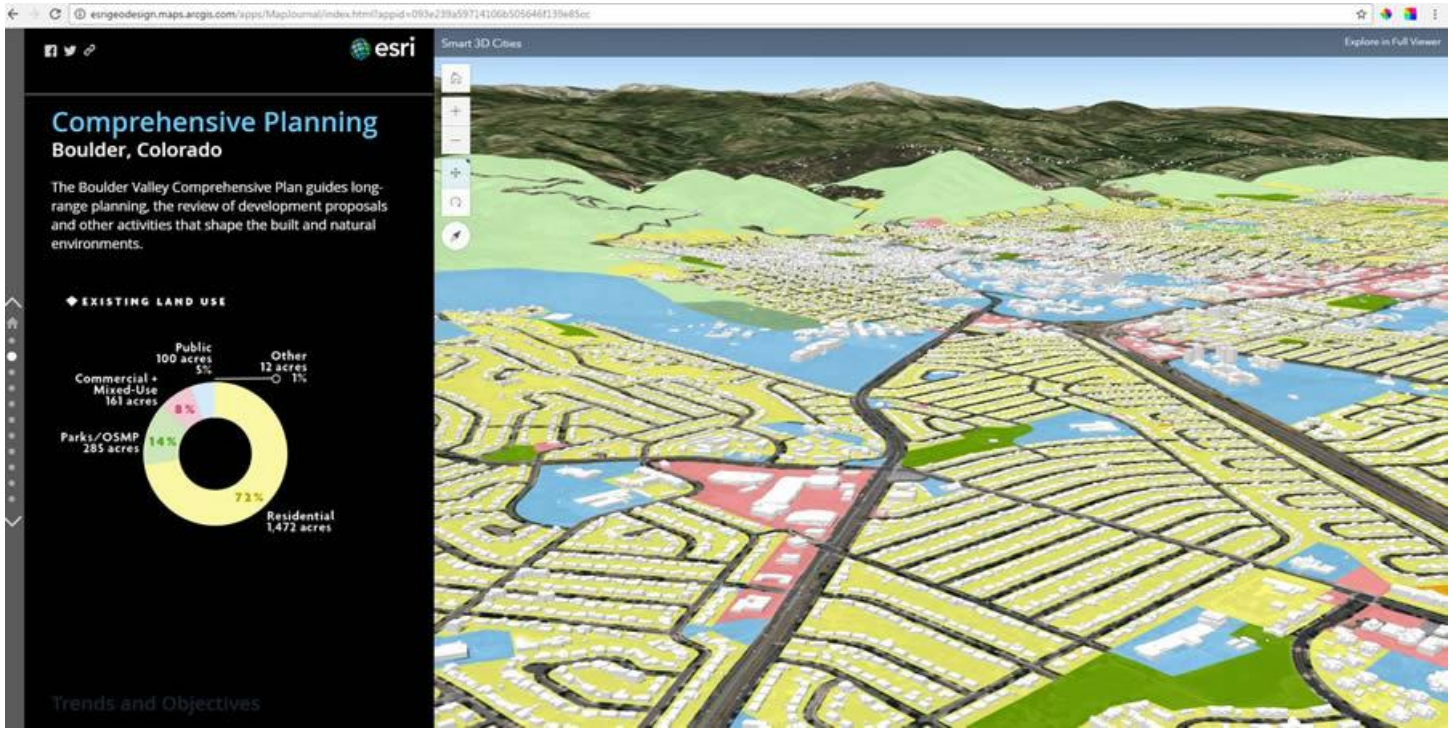
Remote sensing data analysis



https://www.descarteslabs.com/

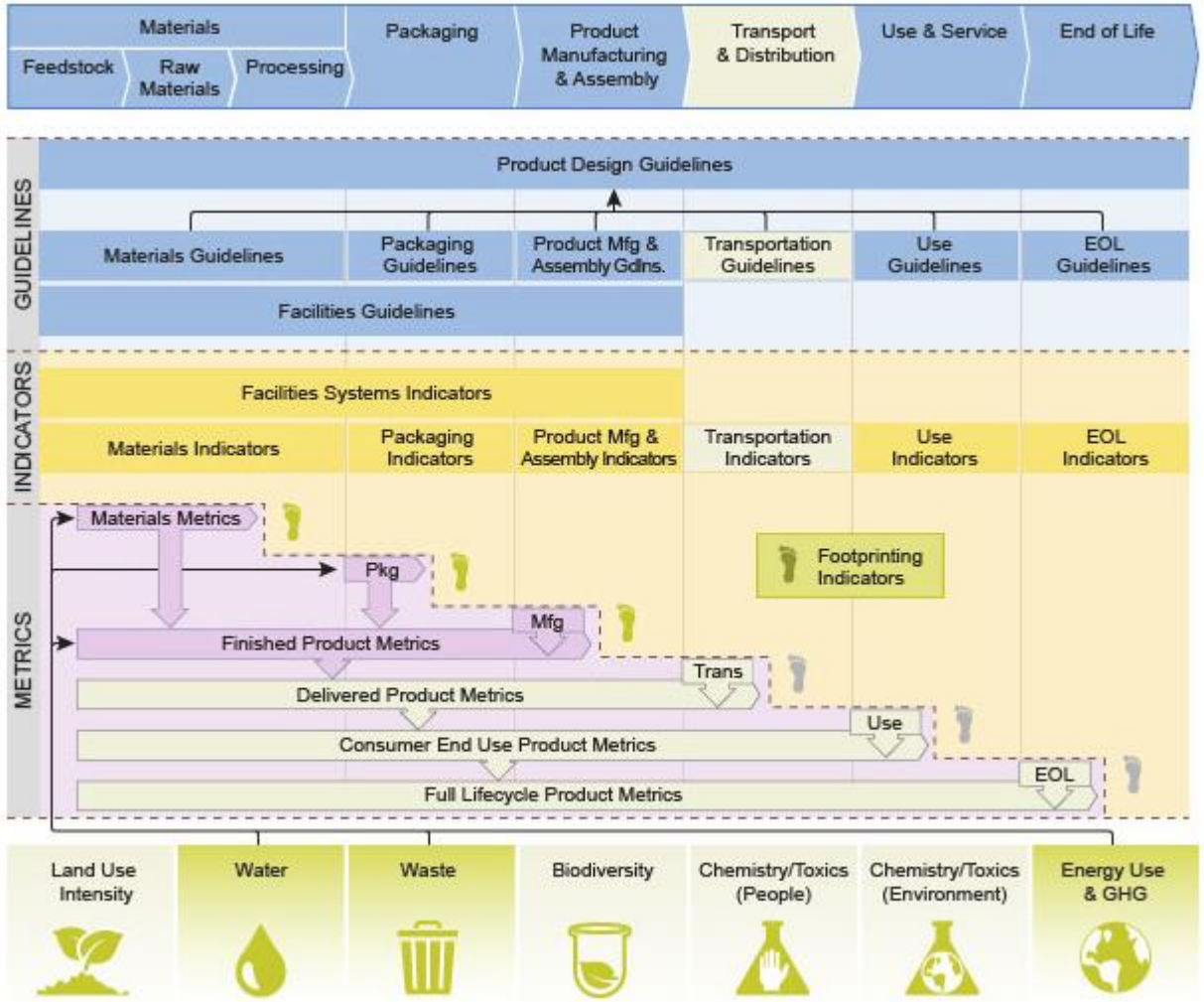
Your problems: quality standards

Land use planning engine



[Building blocks of a smart city]

Your problems: quality standards

Life cycle analysis

[Sustainable design guide by Solid Works]