SPRINT
AI IN SECURE PRIVACY-PRESERVING
COMPUTING CONTINUUM

AI-Sprint: An EU
Perspective on the Future
of AI and Edge Computing

Innovation for AI applications in Edge and Cloud Environments

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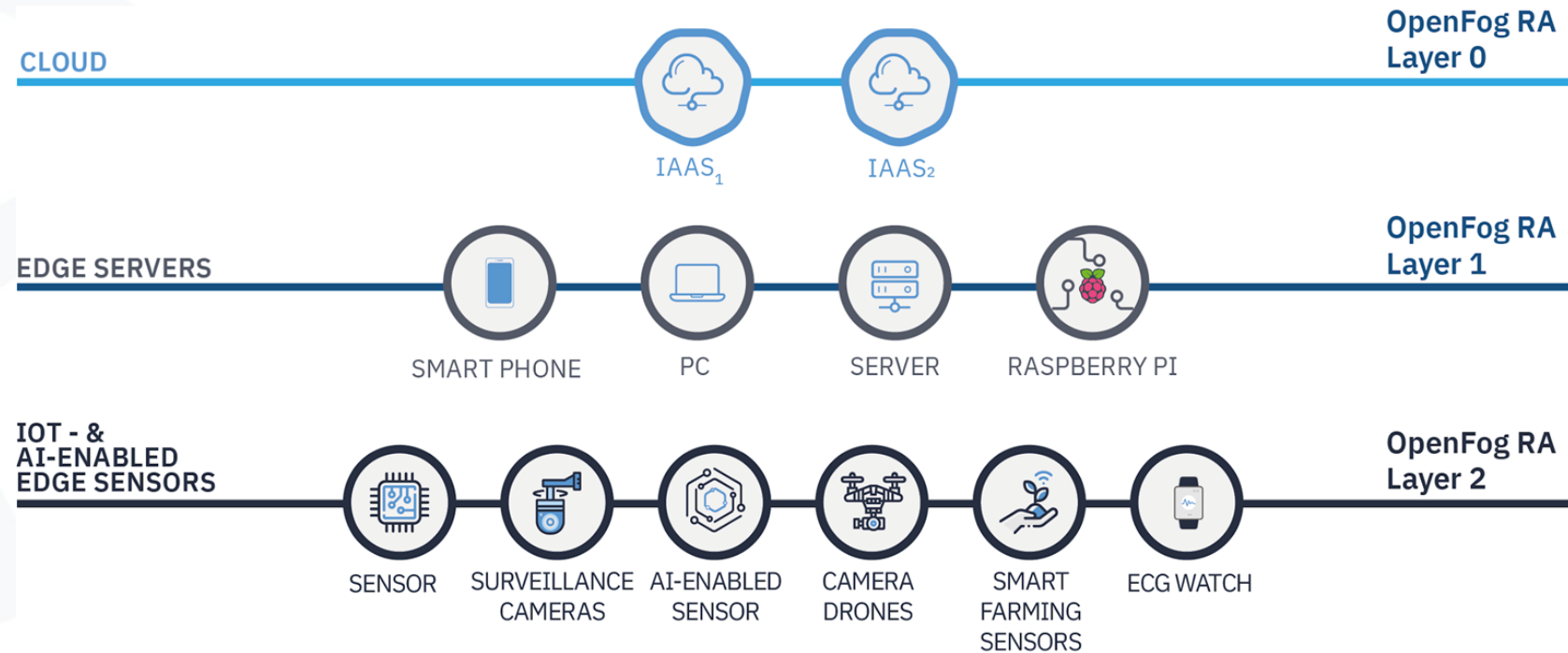# Innovation for AI applications in Edge and Cloud Environments

- By 2024, AI worldwide market will approach $554.3 billion (CAGR 17.5%[1]) while edge computing will reach $250.6 billion (CAGR 12.5%[2])

- AI needs resources at the edge of the network

- New challenges from the infrastructural perspective

[1]IDC Forecasts Improved Growth for Global AI Market in 2021
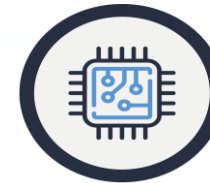
[2]IDC: Edge Spending Guide September 2020

CLOUD — IAAS₁ IAAS₂ — OpenFog RA Layer 0

EDGE SERVERS — SMART PHONE PC SERVER RASPBERRY PI — OpenFog RA Layer 1

IOT - & AI-ENABLED EDGE SENSORS — SENSOR SURVEILLANCE CAMERAS AI-ENABLED SENSOR CAMERA DRONES SMART FARMING SENSORS ECG WATCH — OpenFog RA Layer 2

AI is hungry
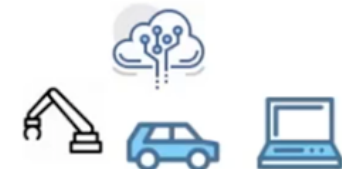

Engineering hungry · Cloud hungry · Silicon hungry
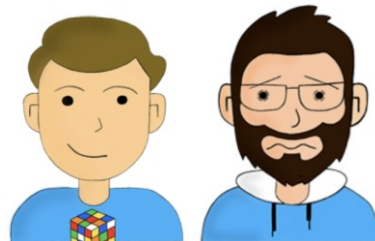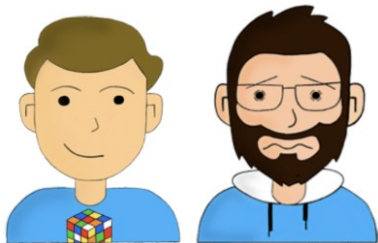
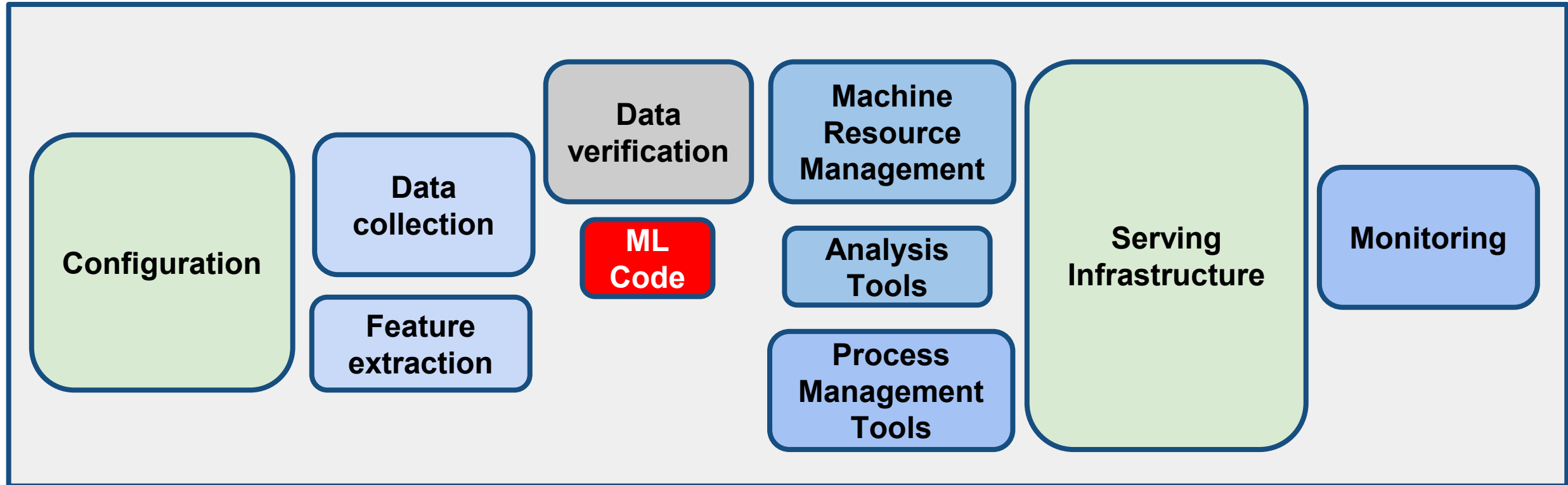Data Collection and Processing → Model Development/Training → Model Optimization/Deployment → Cloud, Mobile, Edge Inference

- Expertise
- Plethora of frameworks
- Trial & Error
- Data volumes
- Privacy and Security

- Heterogeneity
- Elasticity
- Efficient use of resources: costs, energy, ...

Configuration

Data collection

Feature extraction

Data verification

ML Code

Machine Resource Management

Analysis Tools

Process Management Tools

Serving Infrastructure

Monitoring

Only a small fraction of real world ML systems is composed of the ML code

Hidden Technical Debt in Machine Learning Systems, Google. NIPS 2015

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