

OPEN SOURCE IP IN THE DESIGN OF SYSTEMS

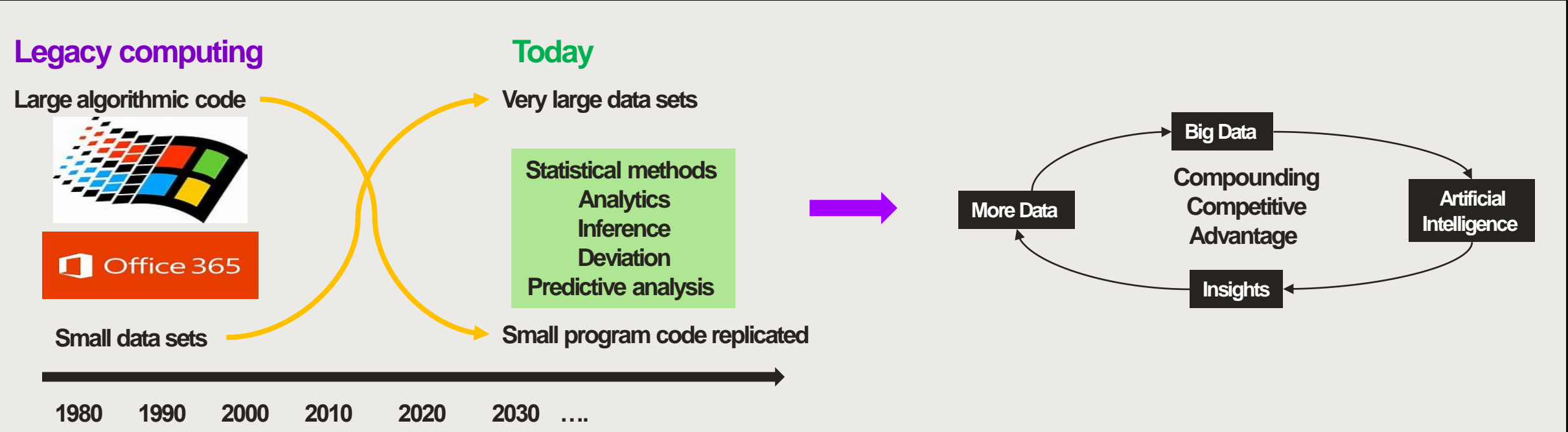
Industries are driving data analytics use cases

- Finance
- Banking
- Healthcare
- Fraud detection
- Science
- Manufacturing
- Retail
- Advertising
- E-commerce
- Education
- Automotive



- Image & video processing
- Natural language
- Fraud detection
- Patient diagnosis
- Anomaly detection
- Inventory optimization
- Demand forecasting
- Recommendation system
- Intrusion detection

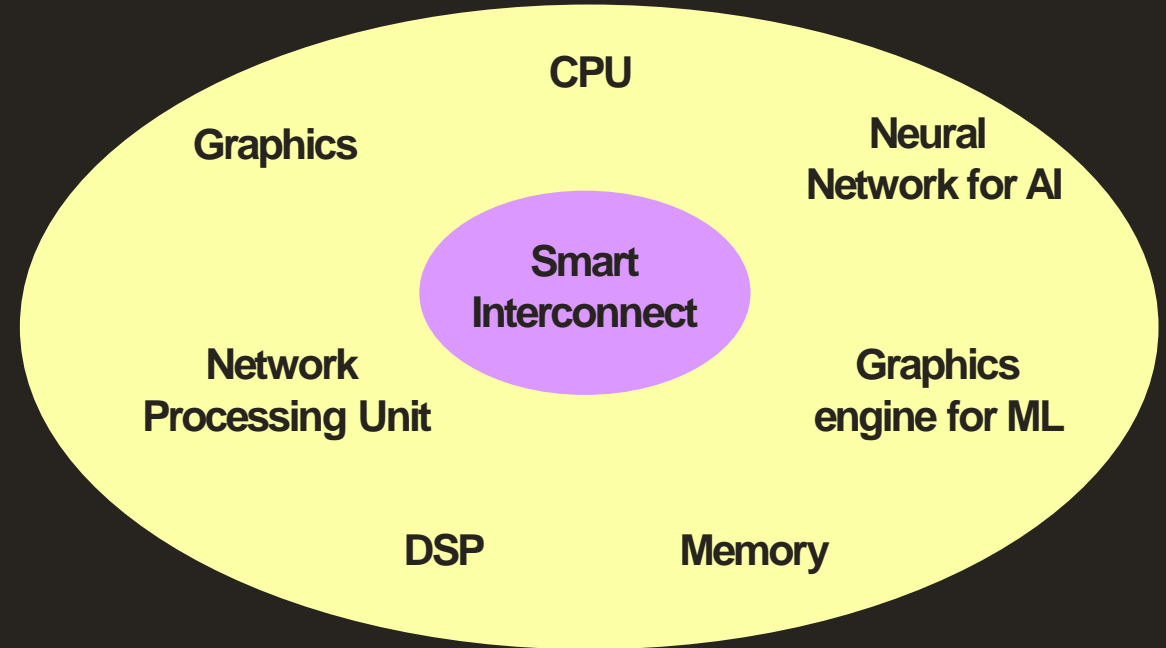
Computing paradigm shifts



Scalable System Design integrating various processors – targeting specific use cases

Around Smart Interconnect, SoC architecture integrates:

- CPU
- Graphics
- Graphics engines for ML
- Neural Network for AI
- Network Processing Unit
- DSP
- Memory



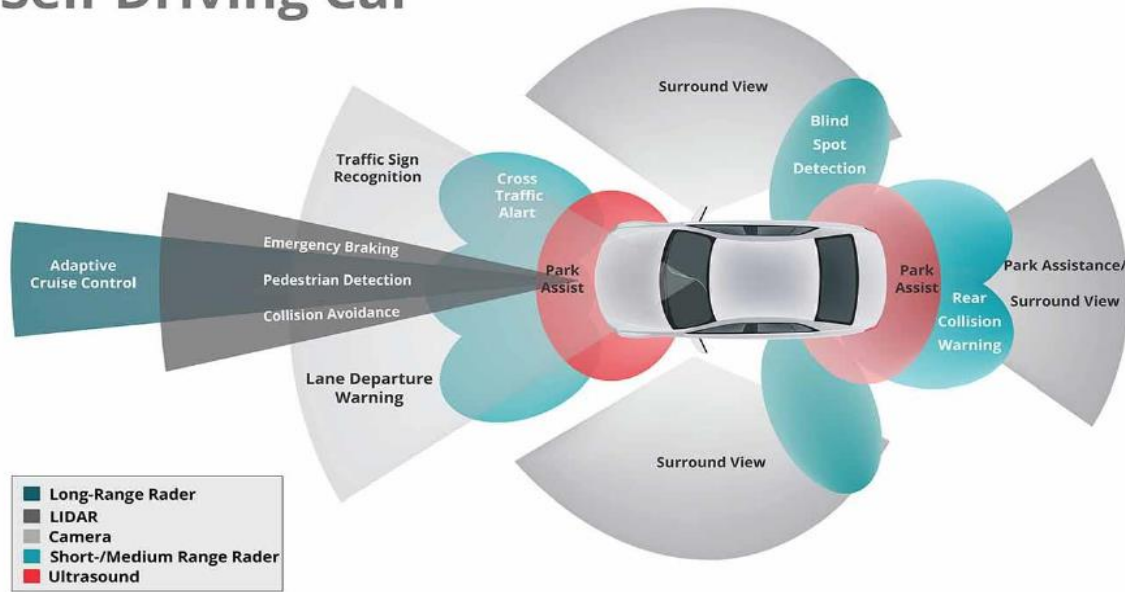
The CPU will always play a critical role in the system architecture

Flexibility, transparency in the CPU ISA are fundamental requirements

- Flexible and Open architecture (custom instructions, data paths, accelerators)
- Custom extensions
- Transparent security model

Inferencing Workload Evolution

Self Driving Car



Scaling Performance and Redundancy to meet Use-cases and Required Failure Rates



Single Core

Multi-Core

Cluster of Multi-Core

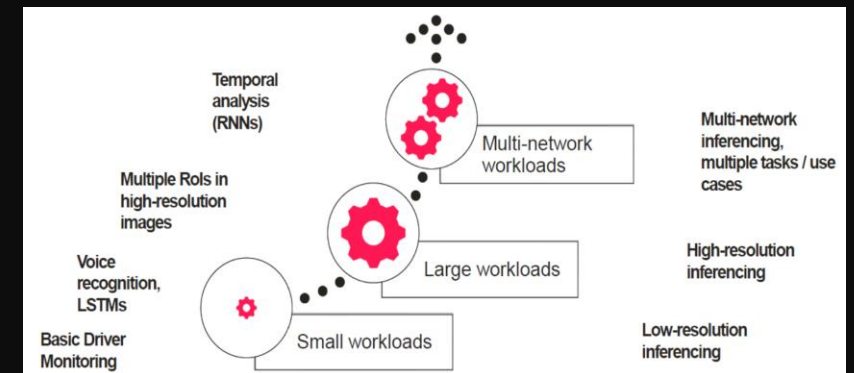
>1 TOPS

>10 TOPS

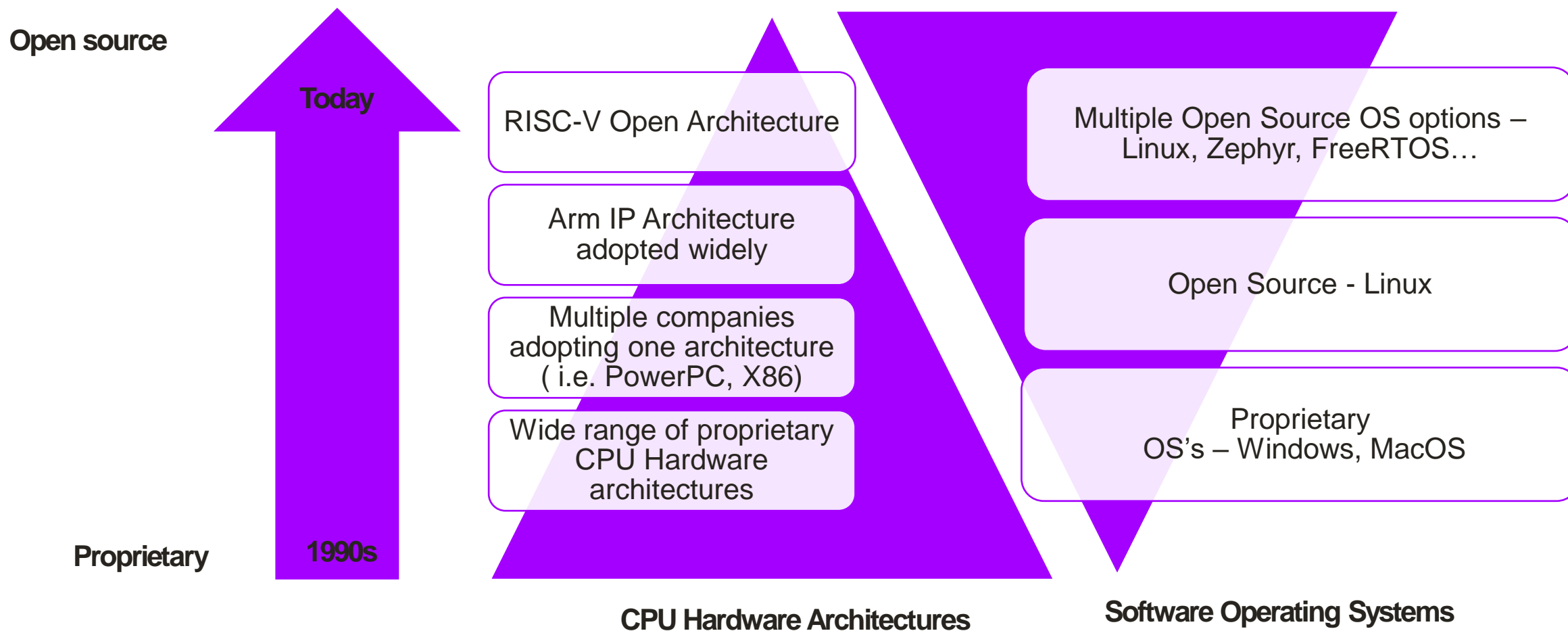
100 TOPS

Source: National Highway Traffic Safety

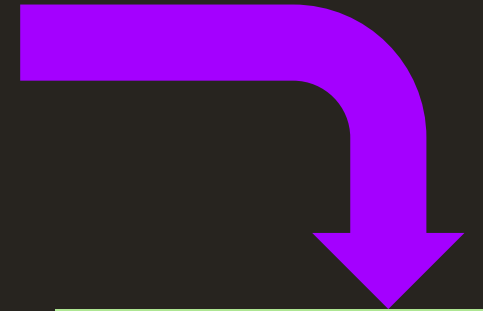
Additional functions drive greater workloads and unique requirements on the architecture of the system



MOVING FROM PROPRIETARY TO OPEN ISA ARCHITECTURES

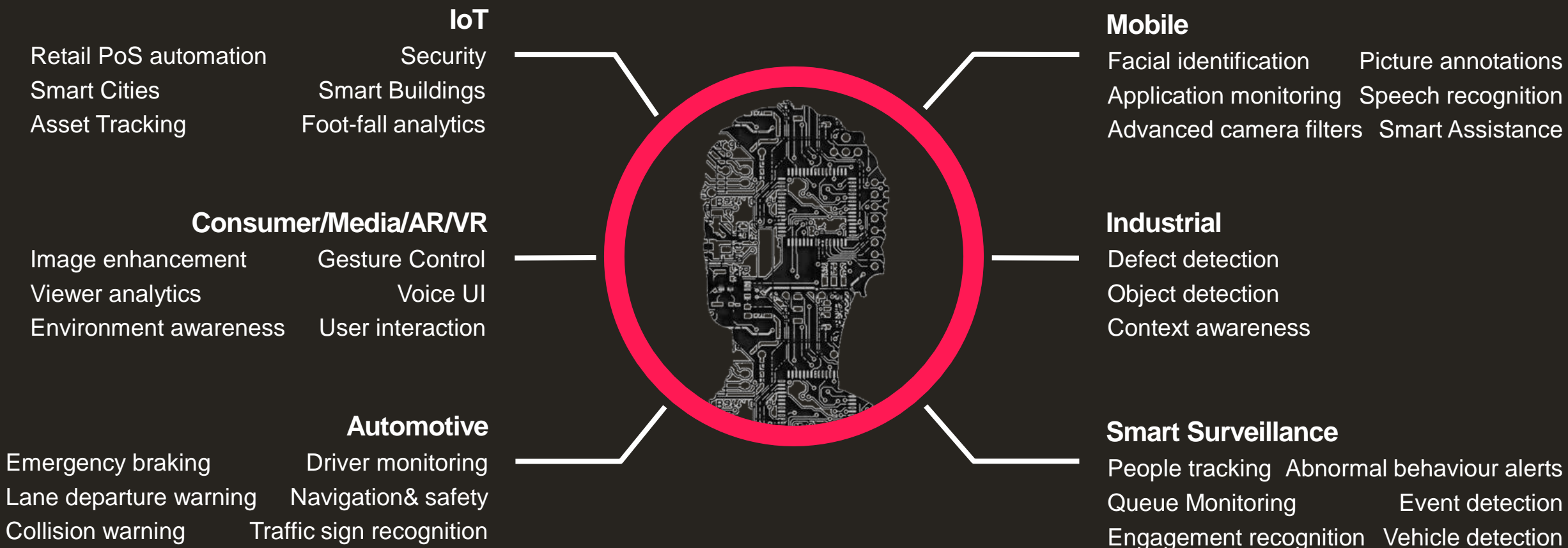


- **RISC-V foundation based in Switzerland – non-profit - neutral vs geopolitical challenges**
- **Driven by contributions of members – no control by one entity – enables independence**
- **Growing ecosystem**
- **Open ISA**
- **Scalable architecture**
- **Custom extensions for unique use cases and operations**
- **Transparent security model**
- **Traction with academic world**
- **Traction across markets**
- **Emerging traction in high end market, including Automotive**
- **Technology of choice for secure enclaves**
- **Linux software ecosystem**
- **Tools chain (GCC, LLVM)**

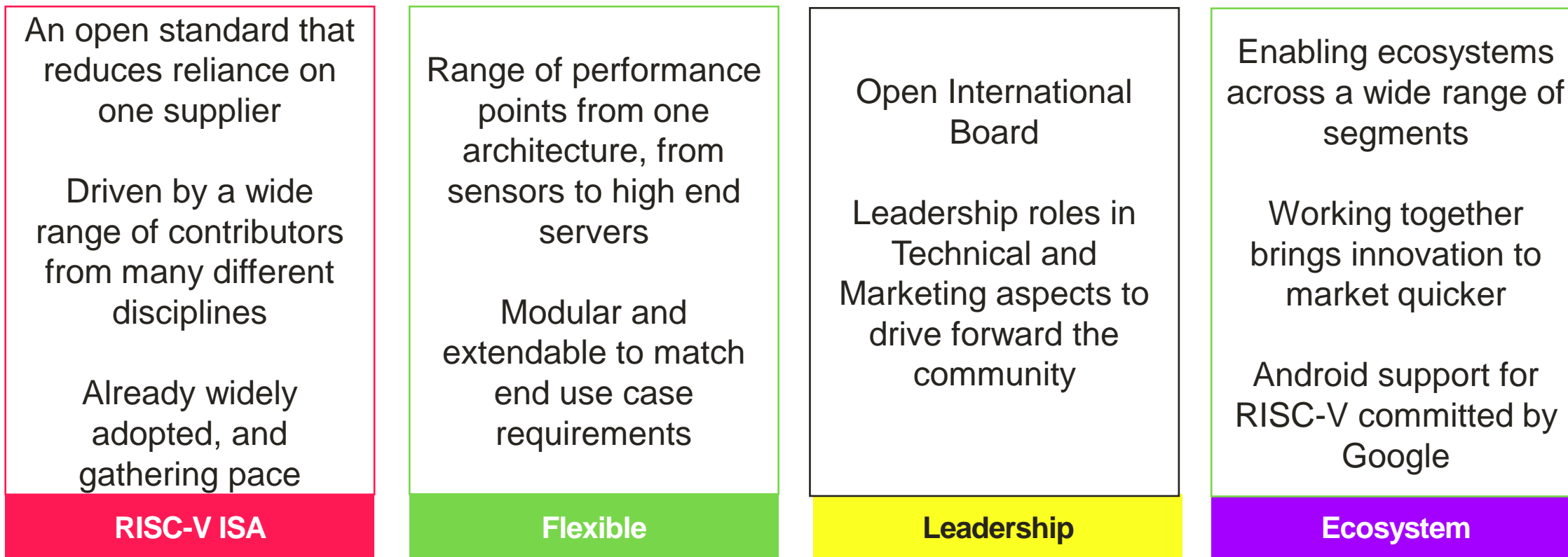


**Opportunity to
create unique
products**

Embedded Intelligence with Open-Source ISA



Why an open-source ISA for Imagination?



Flexibility for the customers of Imagination

Mid tier to high end solutions

Markets = Modems, Automotive, Heterogeneous computing



Software ecosystem: Toolchain (GCC, LLVM, Debug), FreeRTOS, full Linux with bootloader + kernel + file system

Automotive certification ISO 26262

What does an open-source ISA deliver to developers and their customers ?

- **Customization for the use cases of our customers**
- **Optimization for specific performances**
- **Flexibility of the architecture**
- **Ability to certify products all the way to the IP**
- **Breadth of possible solutions**
- **Multiple performance points**
- **Optimized for use cases**
- **Clear and open governance**
- **Neutrality**

**Build uniquely
differentiated solutions
with an open-source ISA**

THANK YOU