PrEstoCloud: Proactive Cloud Resource Management at the Edge for Real-time Big Data Processing

Overview

- Factsheet
- Objectives
- Challenges
- Concept and Architecture
- Use cases
- Next steps

PrEstoCloud factsheet

Partners

- Management
  - Software AG (DE)
- Research
  - **ICCS (GR)**
  - CNRS –I3S (FR)
  - JSI (SI)
- Technology Providers
  - **ActiveEon (FR)**
  - **NISSA Tech (SR)**
  - UBITECH (GR)
- Uses Case providers
  - LiveU (IL)
  - CVS Mobile (SI)
  - ADITESS (CY)
  - N.AMRAM tech. (IL)

Pole SCS

Organization

- Start on January 2017
- 3 years
- 518 MM (42 MY)
- Budget : 4,2 M€
- 12 partners
- 7 countries

H2020 Program

- ICT-06 Cloud Computing
  - Cloud
  - Edge
  - Virtualization, software defined
  - Big Data on the Edge

Objectives

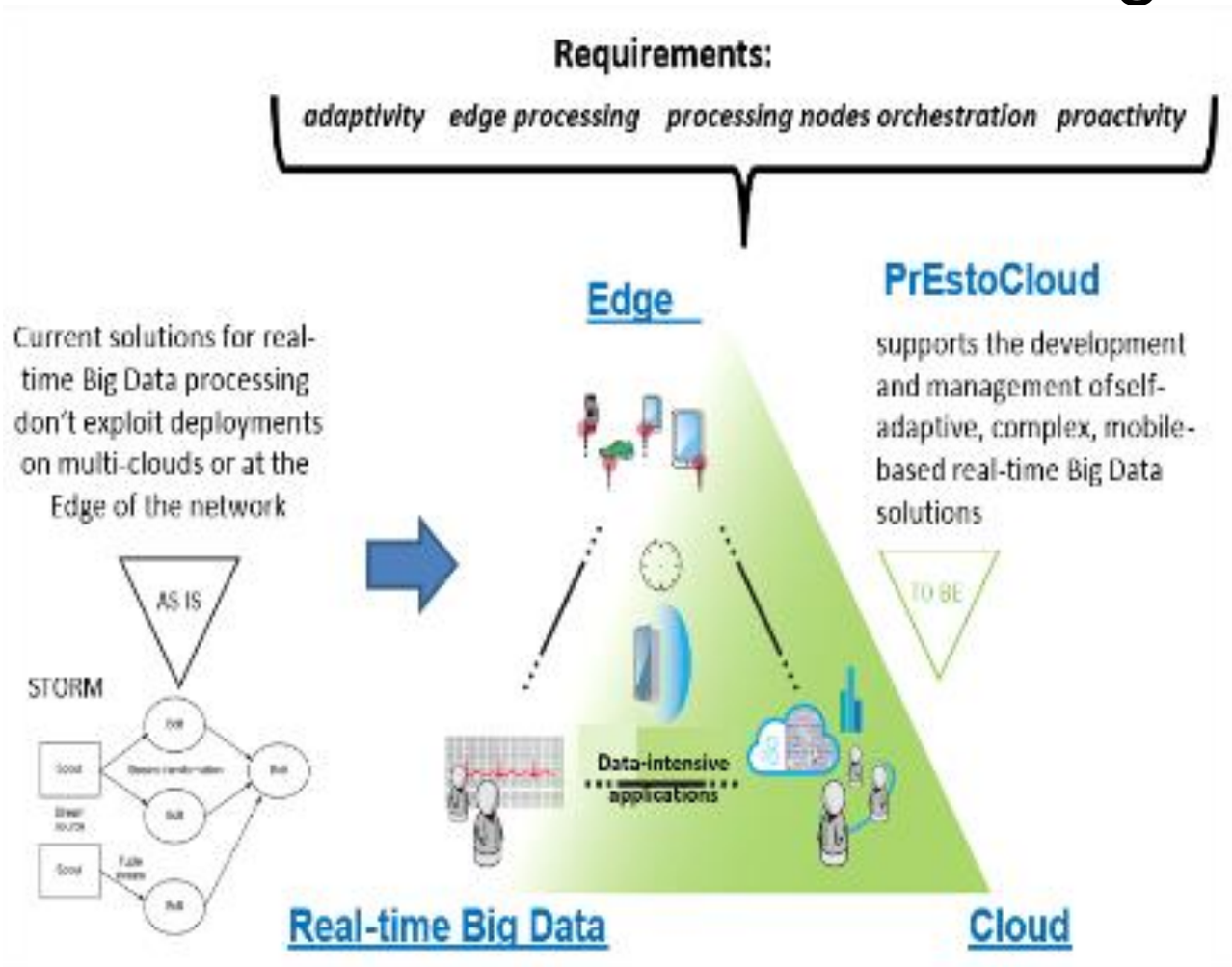
- Lambda-like framework for Real-time big data processing
  - Resource provisioning in new cloud computing paradigm
    - Extended to Edge
    - Tight interaction between computing and networking infrastructure
    - Hybrid multi-clouds
    - Data-centric
    - Monitoring cloud resources
  - Application and resource deployment and management
  - Adaptive scheduling of IoT Big Data processing
  - ProActive Cloud adaptation

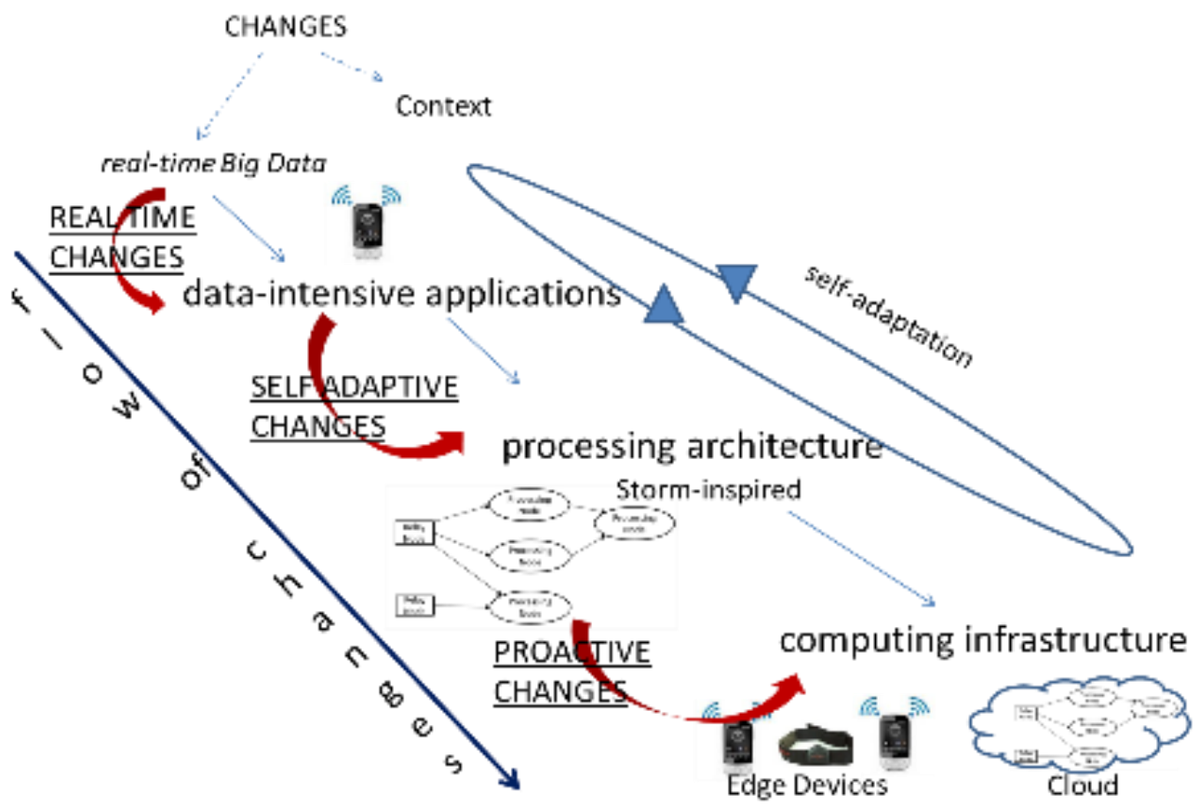
Challenges

- Business driven
  - Personalized innovative and superior user-experience
    - Edge analytics
    - Stream mining
    - Processing and exploitation for QoS
  - Limitation of the traditional Big Data architectures
- Evolution of Real-time big data processing
  - Distributed processing network
  - Real-time mobile processing
  - Spatial complex event processing
  - Self-adaptive big data processing
- Efficient cloud resource utilization
  - Adaptivity
  - Proactivity
  - Efficient and Scalable Process Scheduling
  - Edge processing

Challenges

- Evolution of real-time Big Data Processing

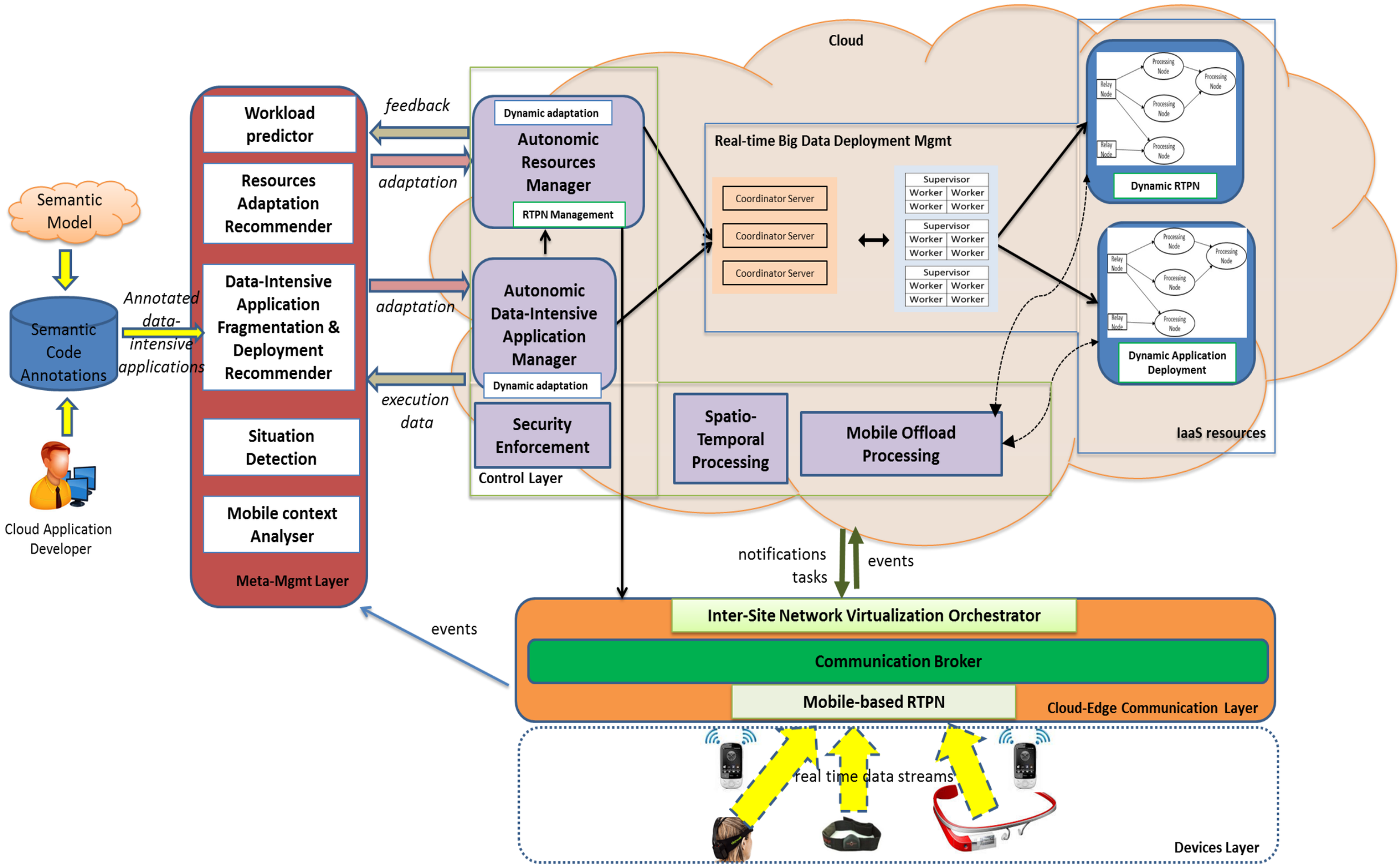




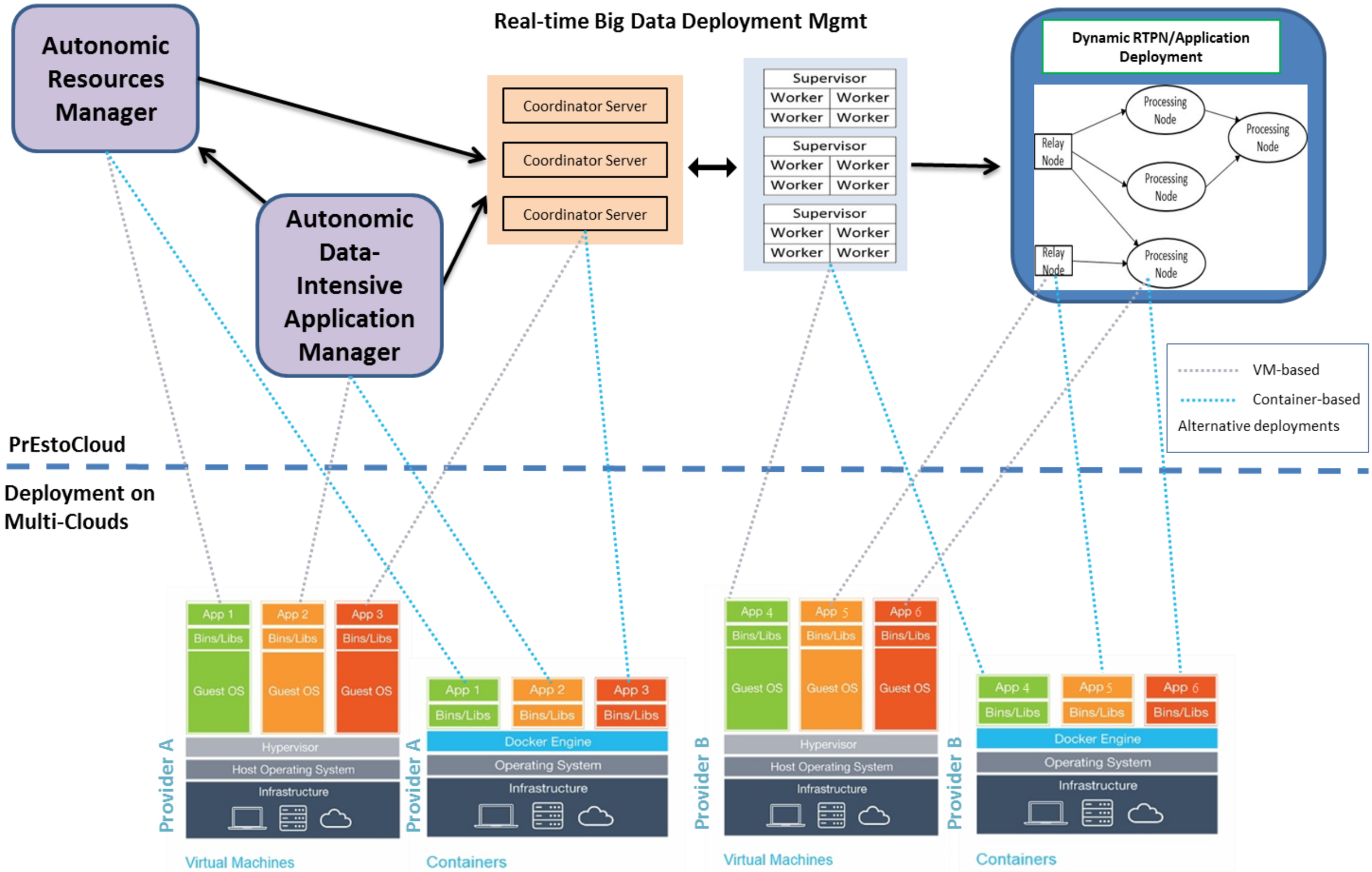
- Self adaptation
- Multi-Clouds
- Mobile&Edge based Processing

- Change: 4th V (variety of velocity)
  - Sensing the change, analyze and predict resource availability

Conceptual Architecture



Multi-Cloud Deployment



Use-case: Logistic - Transport

- Pilot
  - Vehicle telematic data sources
- Processing Requirement
  - Complex event detection
  - Smart sampling of Data
  - Situation awareness unsupervised
  - Abnormality detection; complex data
  - Visualization
- Success critiria
  - Applicability
  - Performance
  - Cost effectiveness

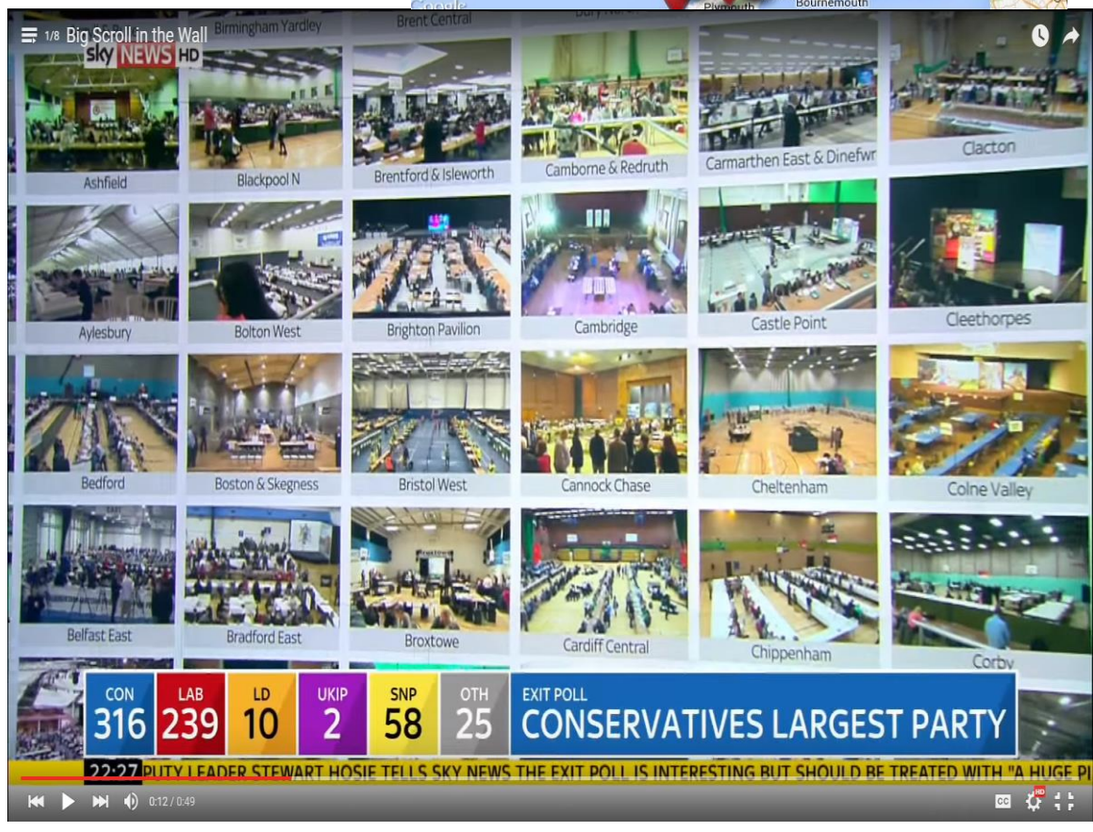
Use-case 2: Media - Journalisme

- Pilot
  - Mobile journalism over Mediacube contribution and consumption service




- Processing Requirement
  - Video transcoding
  - Point to multipoint WebRTC streaming
  - Authentication of the content
  - Augmented reality oriented processing

- Success criteria
  - Applicability
  - Performance
  - User /broadcasters acceptance



Use-case 3: Security/ Surveillance

- Pilot
  - Security video feed with CCTV &UAV surveillance video streams
- Processing Requirement
  - Video transcoding
  - Audio Analytics
  - Security-related events detection
- Success criteria
  - Performance
  - Level of security
  - Variety of data streams

Next

- Looking for
  - Big Data use-case partners with data sets in :
    - Environmental Data analysis
    - Smart Energy
    - Smart Cities
  - New collaboration on IoT with Big Data
    - ICT-14
    - ICT-16
    - IoT-03


PrEsto
Cloud