5GZORRO

Zero-touch security and trust for ubiquitous computing and connectivity in 5G networks

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Blockchain-based Zero Touch Service Assurance in Cross-domain Network Slicing

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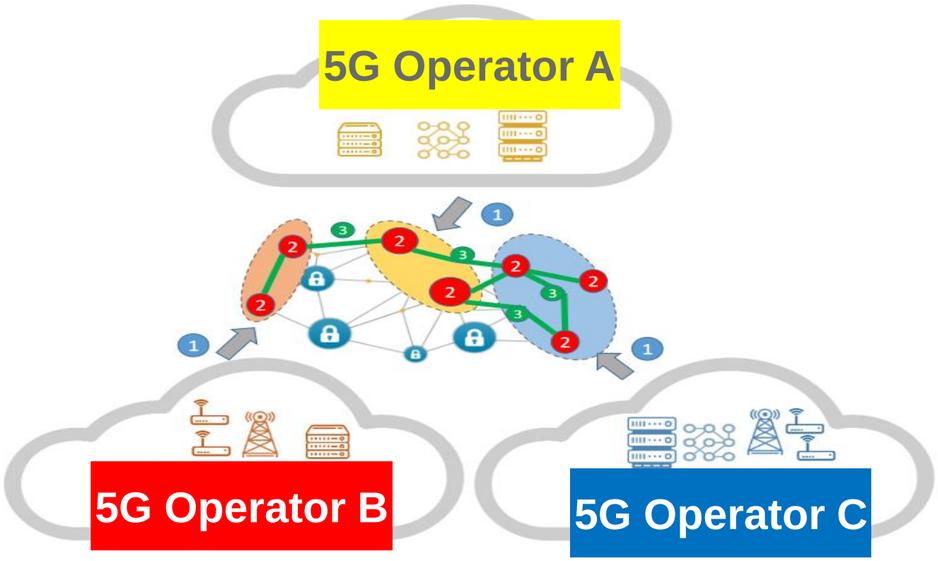


Multi-domain Network Slicing

Network resources & services shared/exchanged among different Communication Service Providers (CSPs)

Optimally utilize underlying infrastructures for versatile requirements of 5G apps

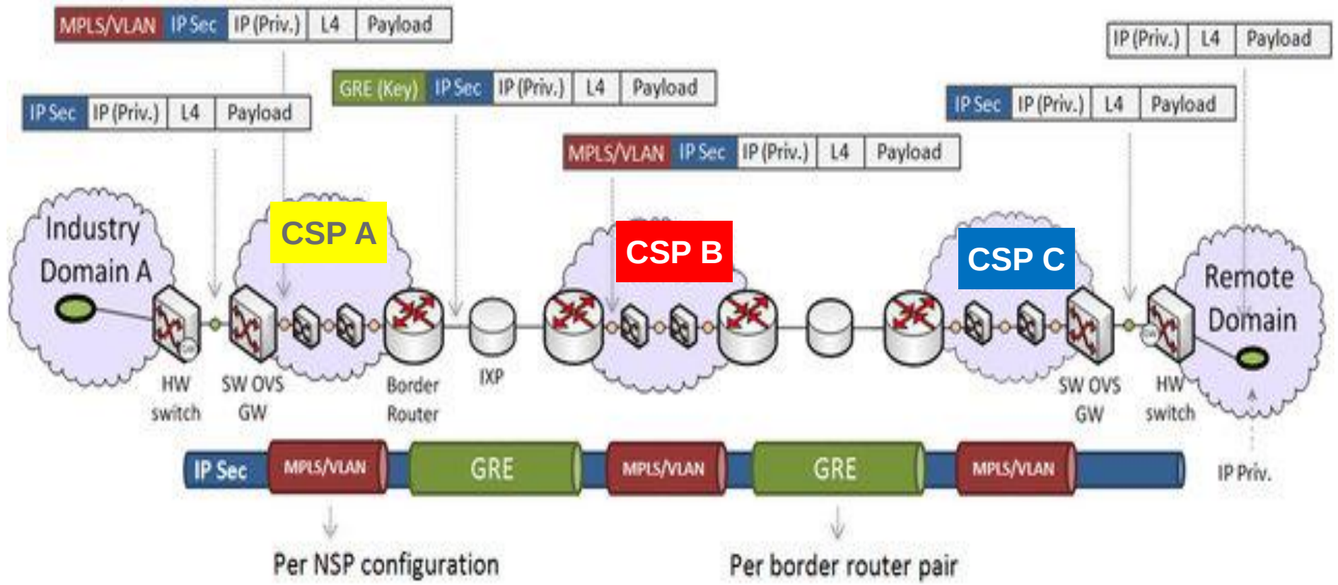
Management & Orchestration (MANO) schemes to support seamless integration or federation of resources

▶ Enhanced Services & Marketplaces

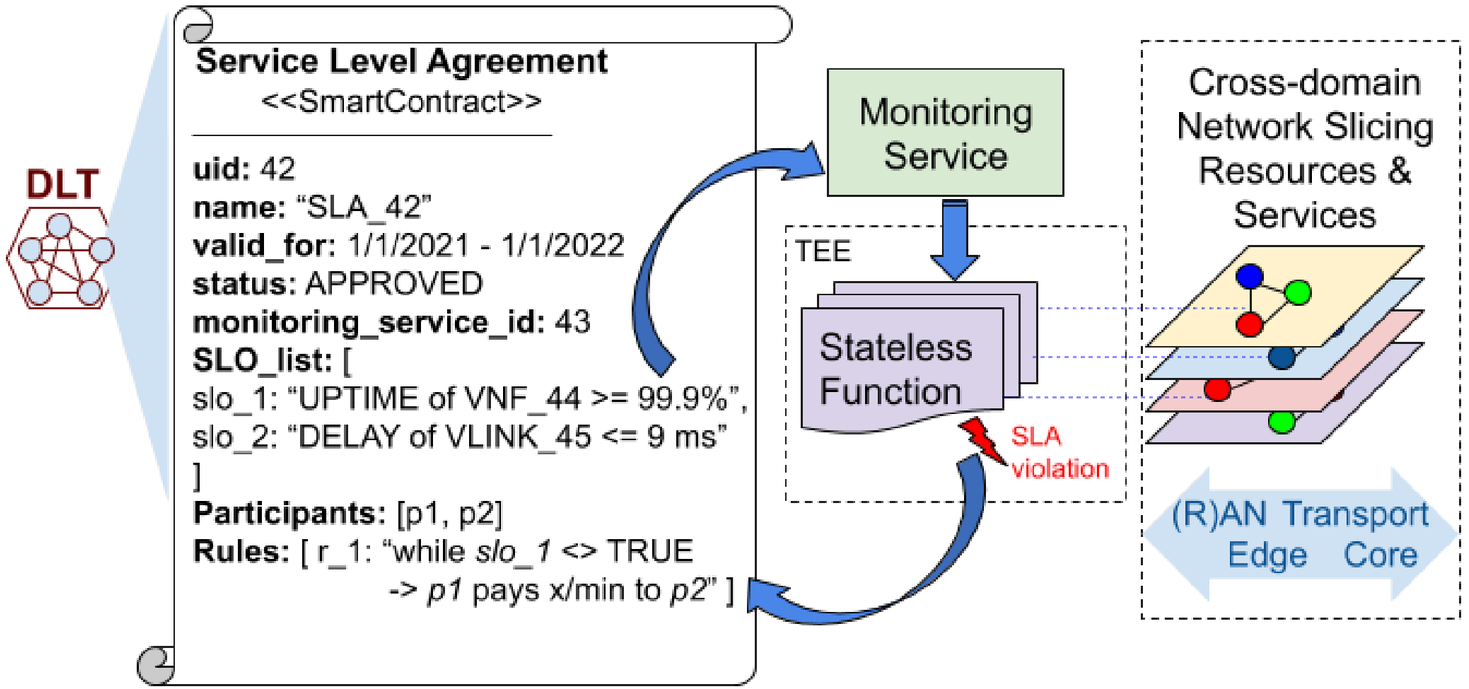
- New revenue streams & market openness
- Need secure, robust, trustworthy mechanisms for service lifecycle management
  - Registration, discovery, instantiation, binding…

▶ (Enterprise) Blockchain technologies

- Smart contracts, authorized transactions, provenance



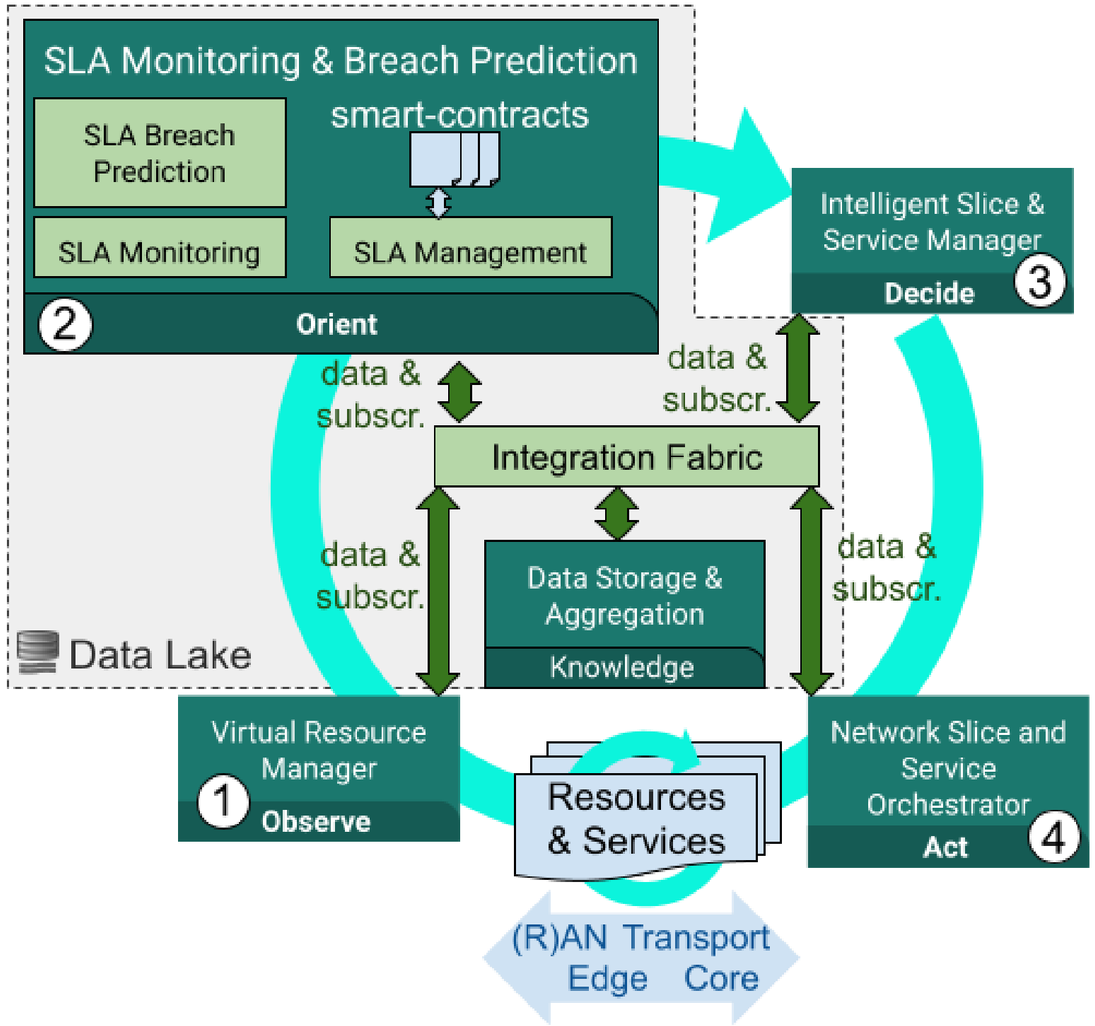
Smart Contracts for SLA Management



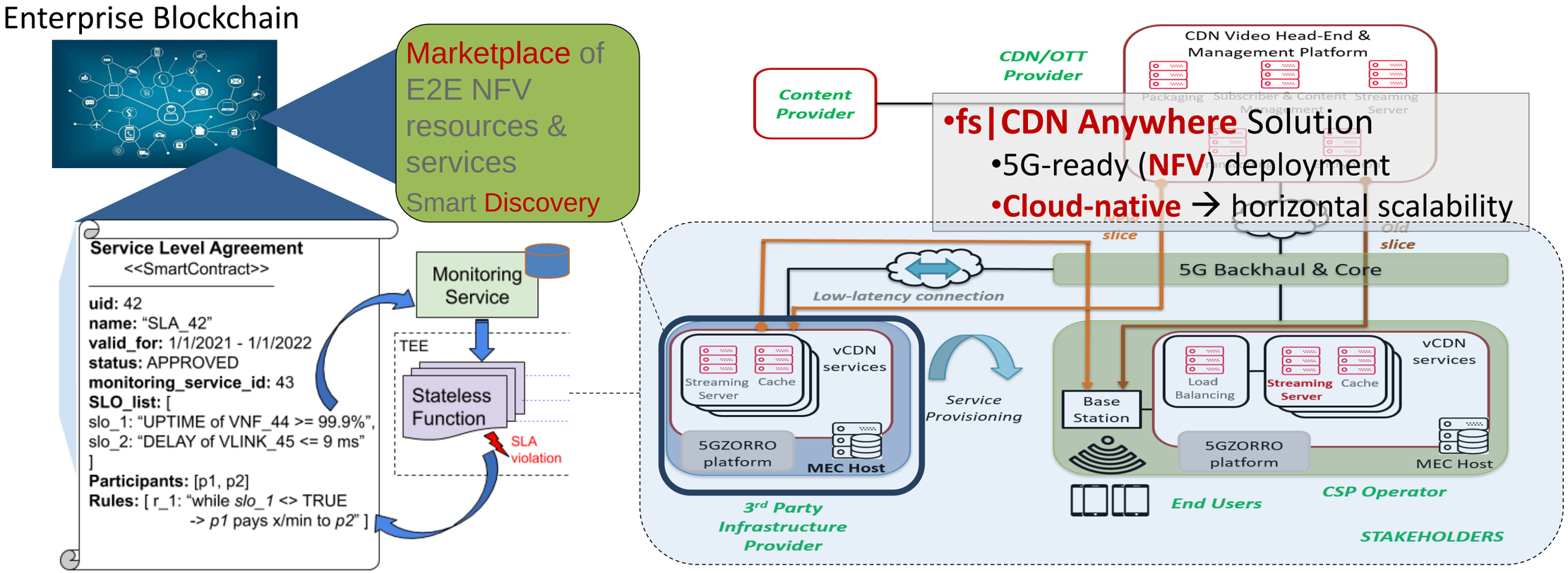
- Distributed Ledger Technologies (DLT) to streamline network service marketplace interactions AND Service Assurance
  - Enterprise Blockchain technologies (Smart Contracts) naturally mapping to Service Level Agreement (SLA) models
  - Blockchain transactions for transparency and traceability of authenticated/authorized interactions
  - Smart Contract logic for secure, proactive and streamlined MANO-based mitigation of SLA violations

AIOps Zero-touch Automation Architecture

- AIOps
  - Exploit AI/ML techniques towards IT operations
    - Monitor & correlate data across different interdependent environments
    - Provide real-time, actionable insights & recommendations over system behaviors
- 5GZORRO AIOps: AIOps entangled with a Closed Loop Architecture inspired by ETSI ZSM

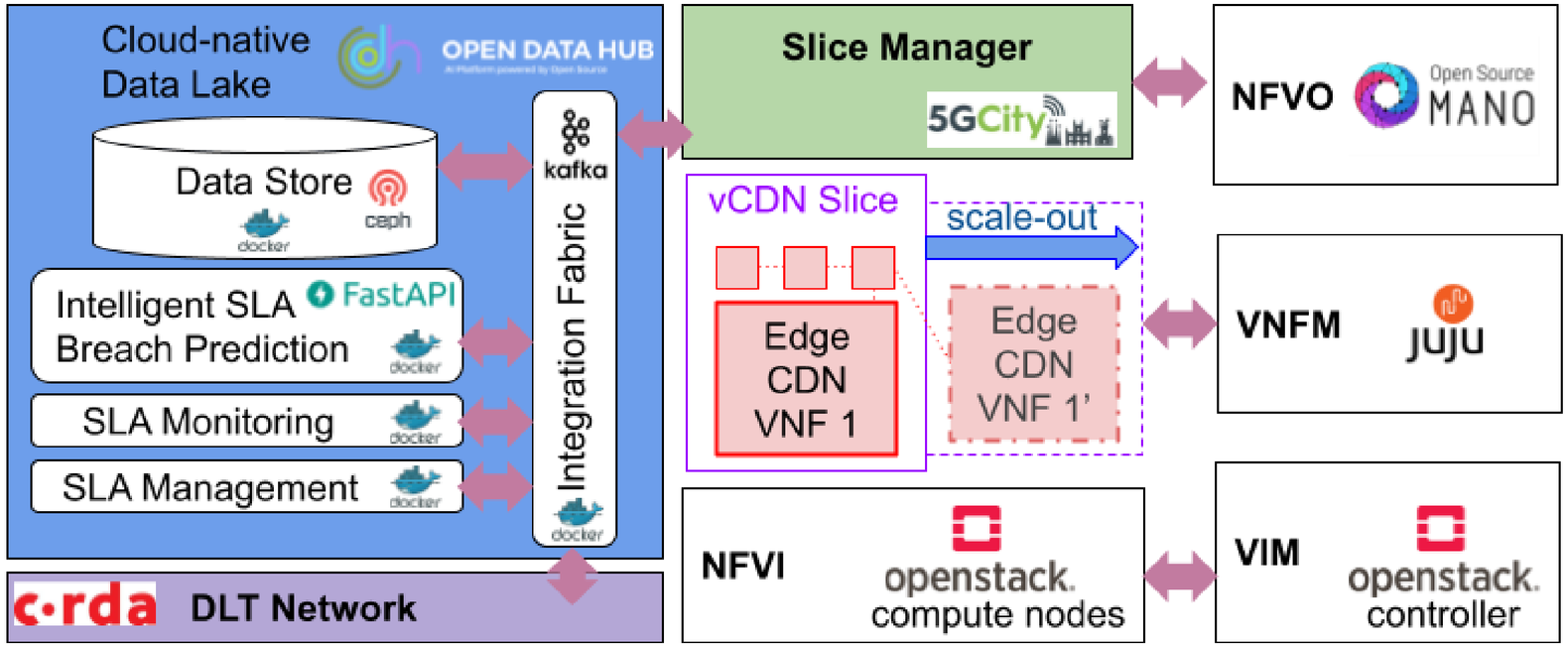


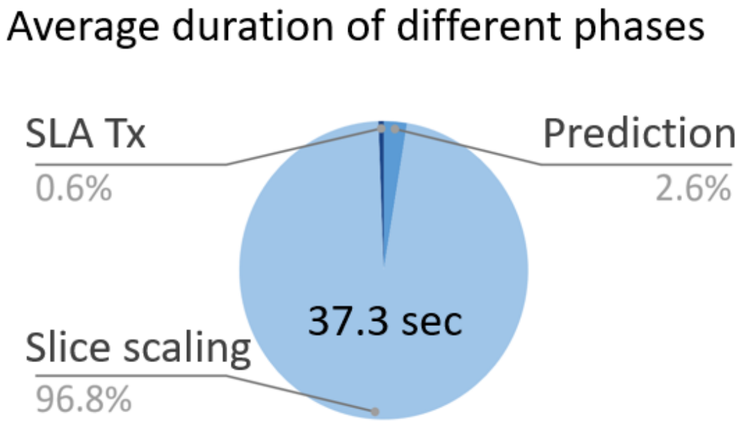
The vCDN Use Case



- Extreme workload situations → CSP's edge infrastructure cannot satisfy SLA
- 5GZORRO auto-scaling mechanisms → (pro-/re-active) AI-based resource discovery process for slice extension over 3rd-party (spare) resources

Evaluation at 5GBarcelona Facility





- Prototype solution using open-source technologies
- Our mechanisms take only a fraction of the time necessary for MANO activities
  - While producing accurate predictions on service performance

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Thank You

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