Why Programmable Networks?

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My background

INTERNET FACTORIES
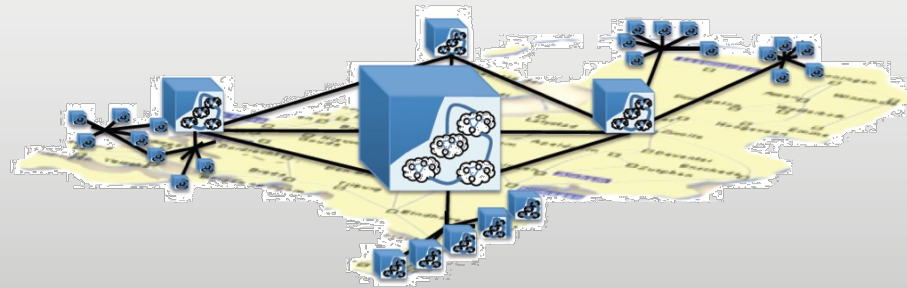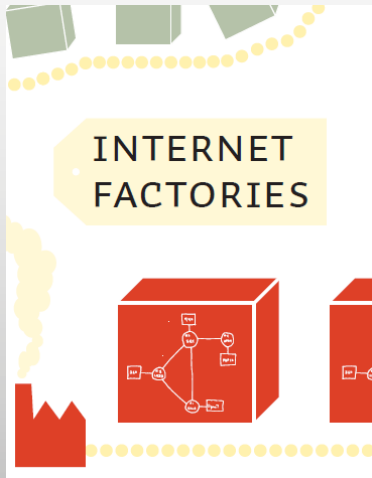
The Network is in the Cloud

Head of Wireline Operations

Responsible for Broadband conn. of:
- Fixed (67% market share CH)
- Mobile (60% market share CH)
- Telephony, TV

220.000 KM fiber
45000 network elements
20000 new elements per year

UNIVERSITY OF AMSTERDAM

TNO innovation for life

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Ph.D. Computer Science

Research Scientist

Senior Enterprise Architect
Intercloud / datacenter / Business connectivity

Building the best infrastructure.

24 hours a day, seven days a week. Our network ensures that Switzerland and the people in our country are always connected.

Operators need programmable networks to survive the transition into the digital ecosystem

Reduce OPEX
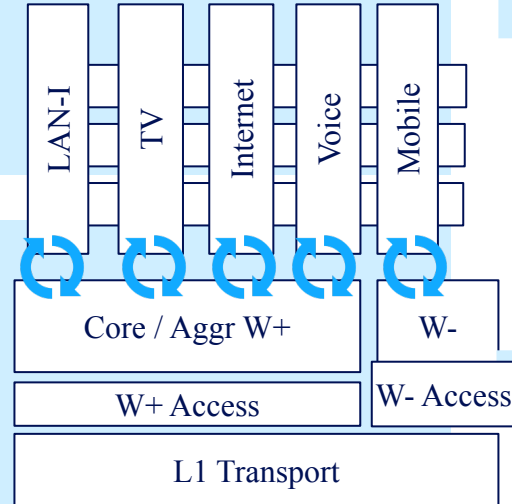
Faster Service Delivery

Higher reliability

Better manage innovation life-cycles

Adapt to new and different collaboration models

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What comes after All-IP? Setting the scene for programmable networks…

All-IP, one network for telco services

> Services coupled to the network
> Feature development impacts whole stack -> expensive, slow
> Layered architecture
> Monthly releases

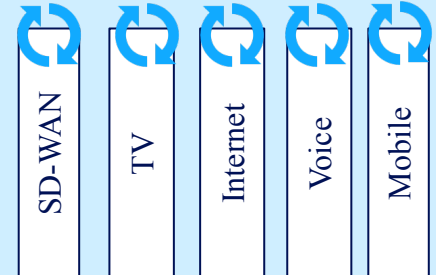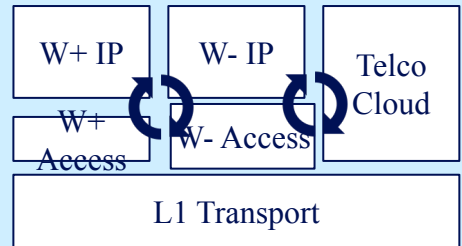> One IP network
> Provisioned with services
> Life-cycle > 5 years

LAN-I | TV | Internet | Voice | Mobile

Core / Aggr W+   W-

W+ Access   W- Access

L1 Transport
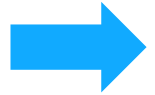
Decouple services from network

> Decoupling service / network
> Modular architecture
> Fast time-to-market
> Short product life-cycles

SD-WAN | TV | Internet | Voice | Mobile

> Rock-solid IP network
> Low-cost scalability
> No services
> Life-cycle > 5 years

W+ IP | W- IP | Telco Cloud

W+ Access | W- Access

L1 Transport

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Network nodes become objects in program code
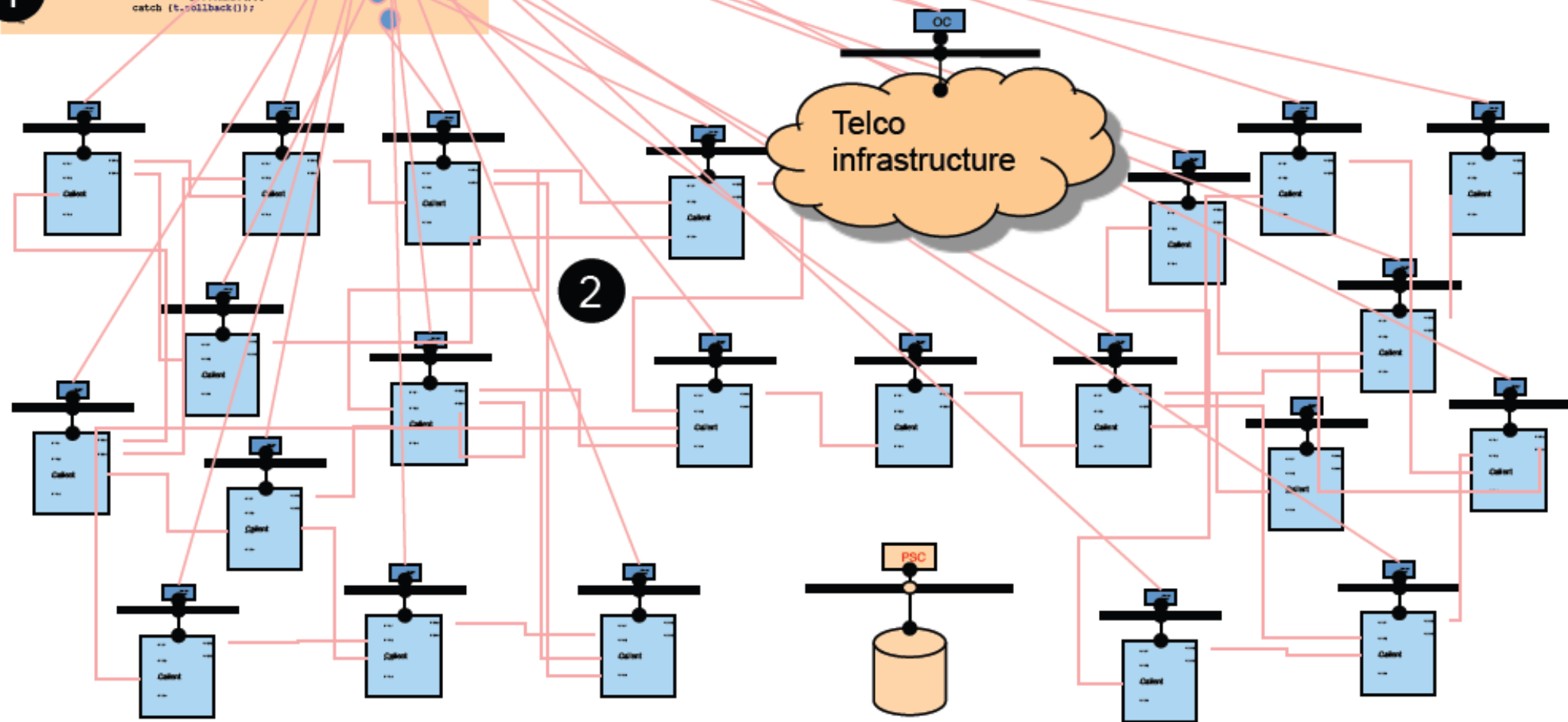
Control Loop

Now we can manage networks in Software!
Pro-active, automated, implementation and re-use of know-how: self-*

Telco infrastructure

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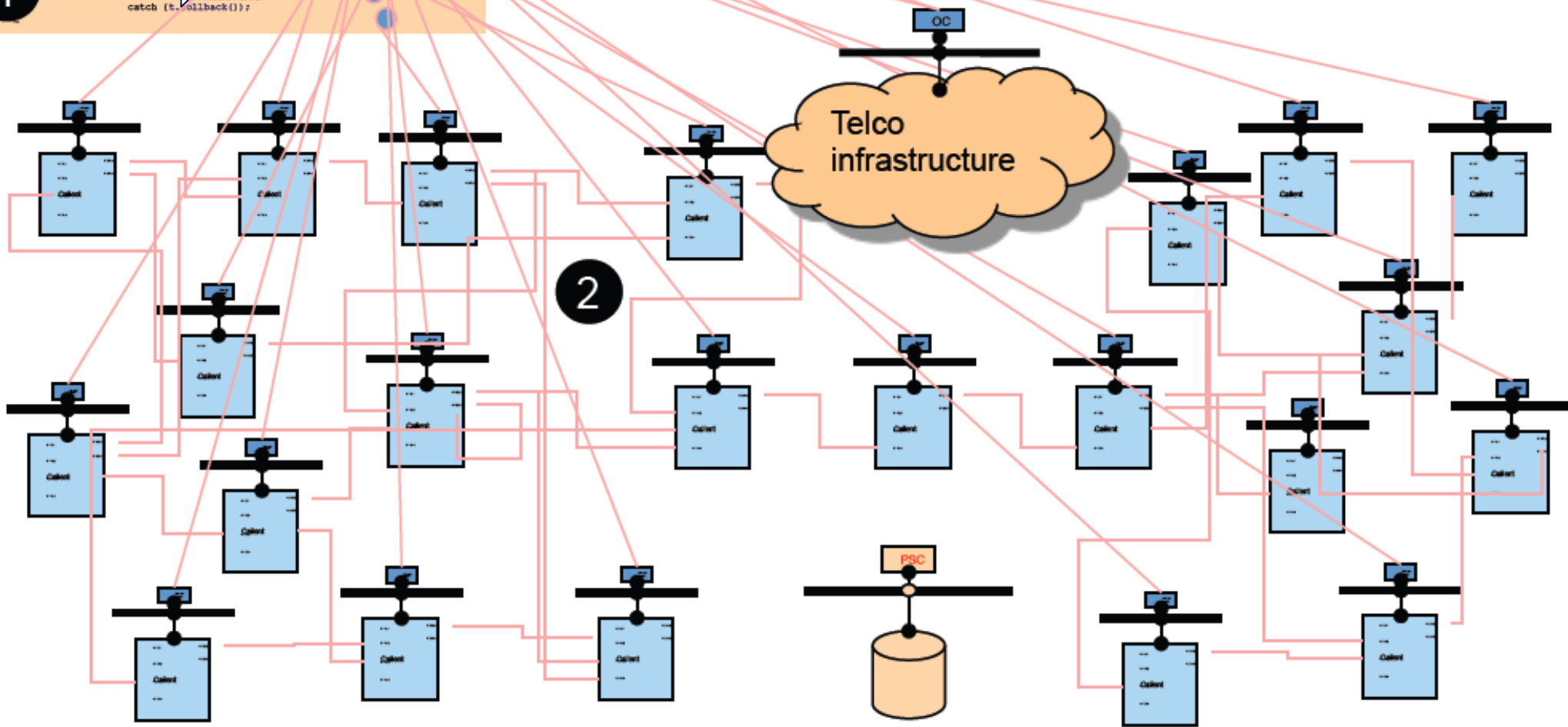
Infrastructure clouds are the basis for future telecom infrastructure. They can be reprogrammed for application-specific exploitation.
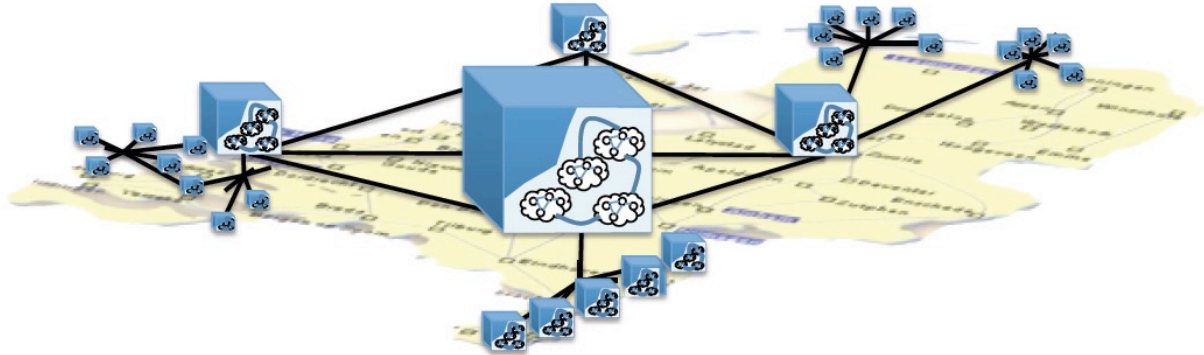
IP transport

Infrastructure clouds

5G network slicing

Network Function Virtualization
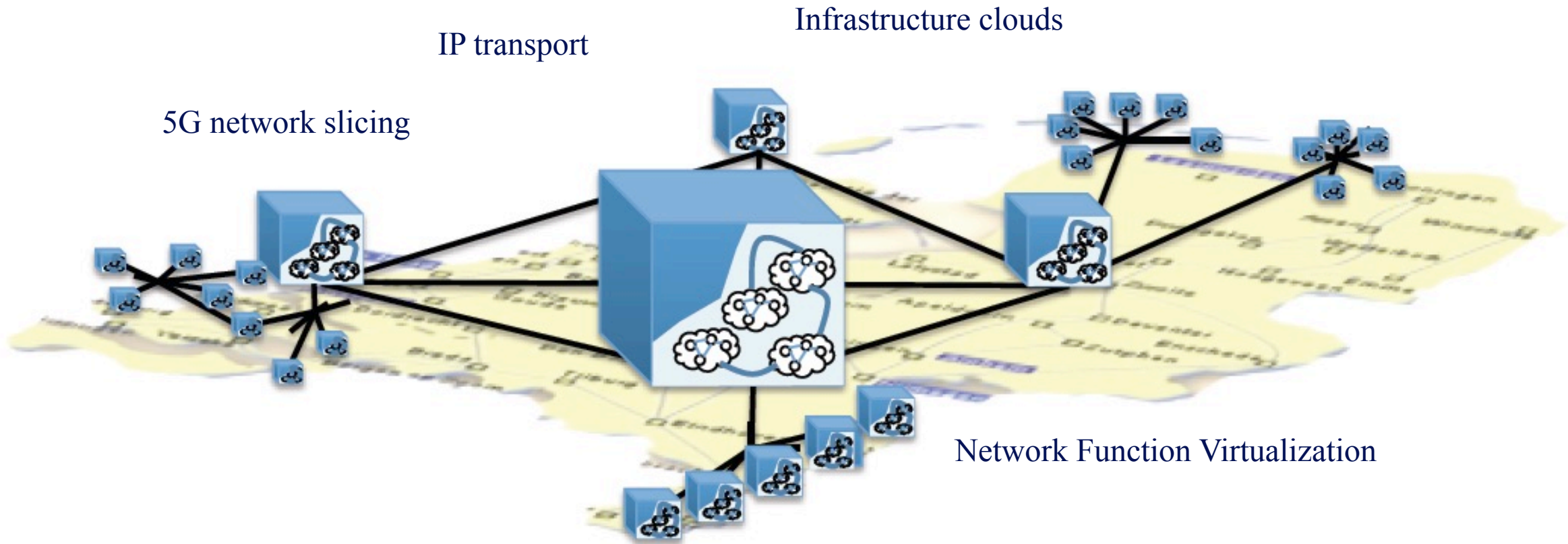
Broadband delivers basic connectivity, Cloud the intelligence

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Next generation telecom services are fully engineered and managed in Software

Mass customization, segment and customer specific networks

Service A

Service B

Service C
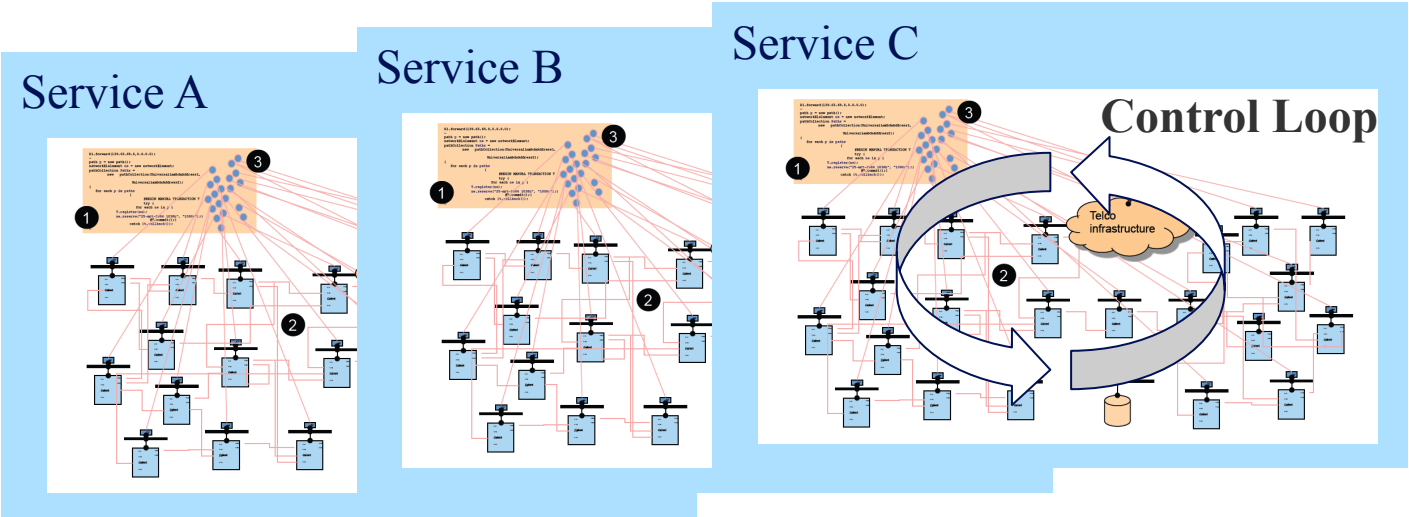
Control Loop

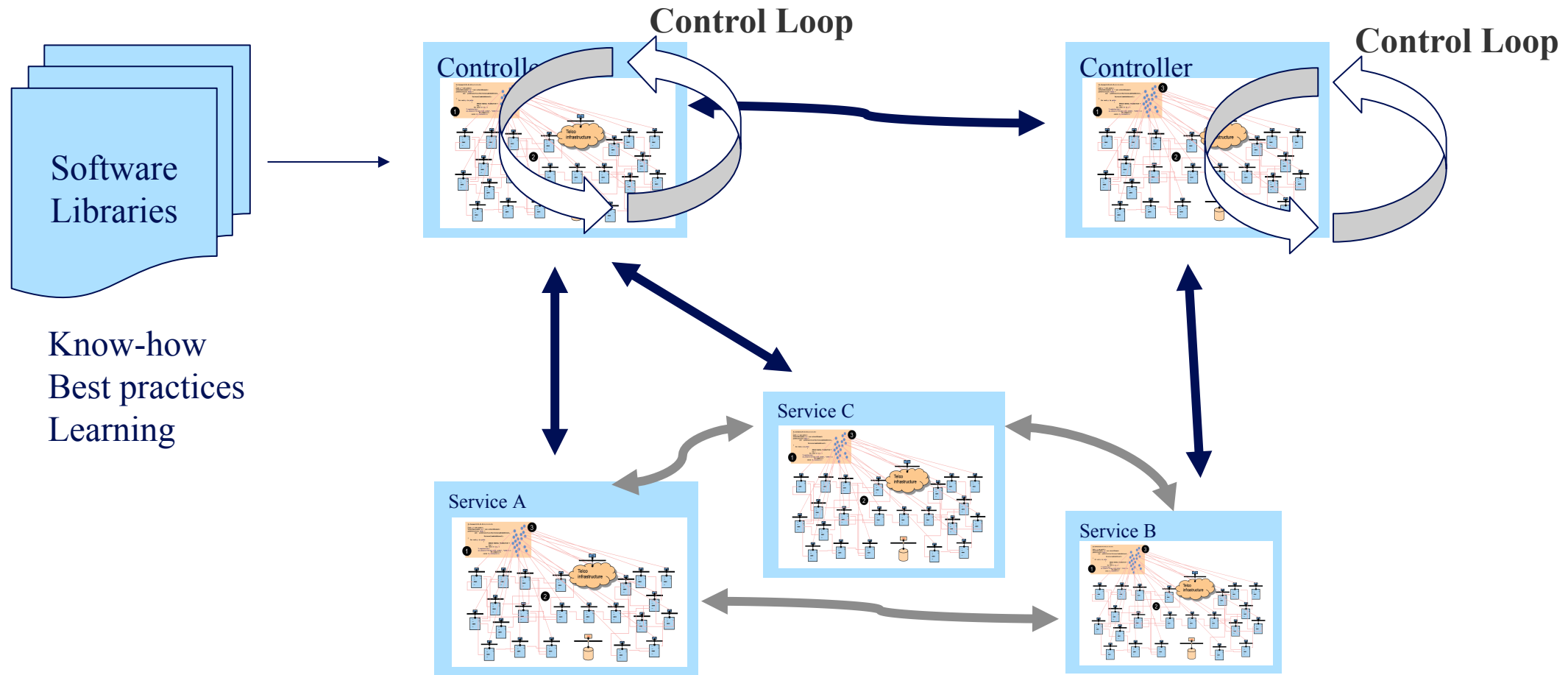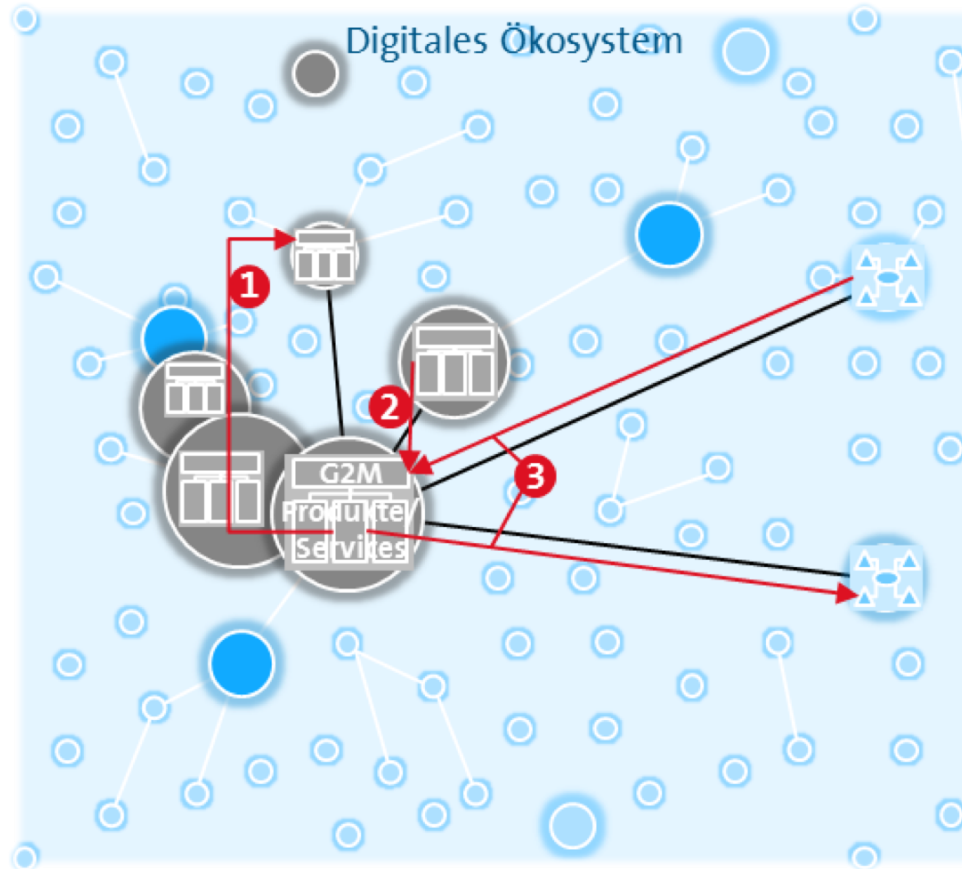# Controllers manage the boundary conditions of services. Companies interconnect their services and networks

Who ensures that these systems and interconnections work correctly and according agreements?

Control Loop

Control Loop

Controller

Controller

Software Libraries

Know-how
Best practices
Learning

Service C

Service A

Service B

The digital ecosystem

Operators need to address three challenges in the digital ecosystem

Digitales Ökosystem

Architekturmodell Telecom-Branche

Architekturmodell andere Branche

Core business will be broken down to different smaller cores with their own portfolios
1) How to deliver a seamless user experience?

Decentralized innovation requires open architectures
2) How to ensure a coherent enterprise architecture?

New collaboration models, b2b2c, integration in businesses
3) How to integrate and adapt to different business architectures?

Thank you. Questions?