Efficient Management of Virtualized Information-Centric Networks

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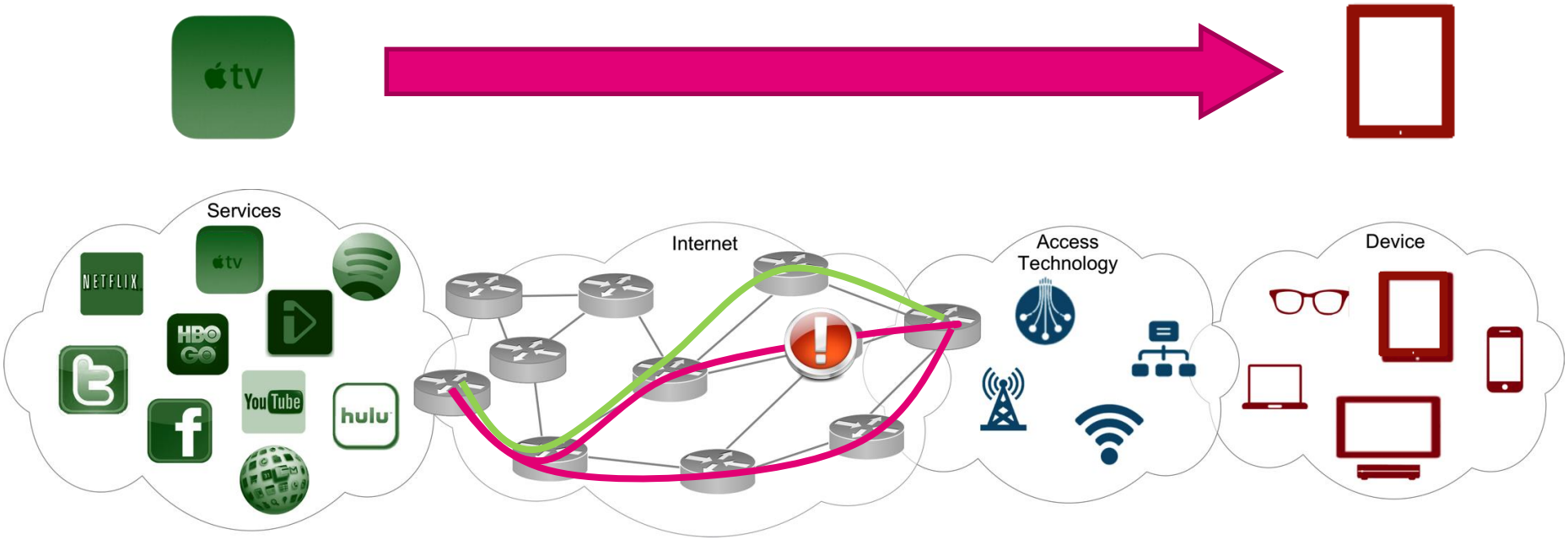
Management of virtualized ICN-networks

Problem definition

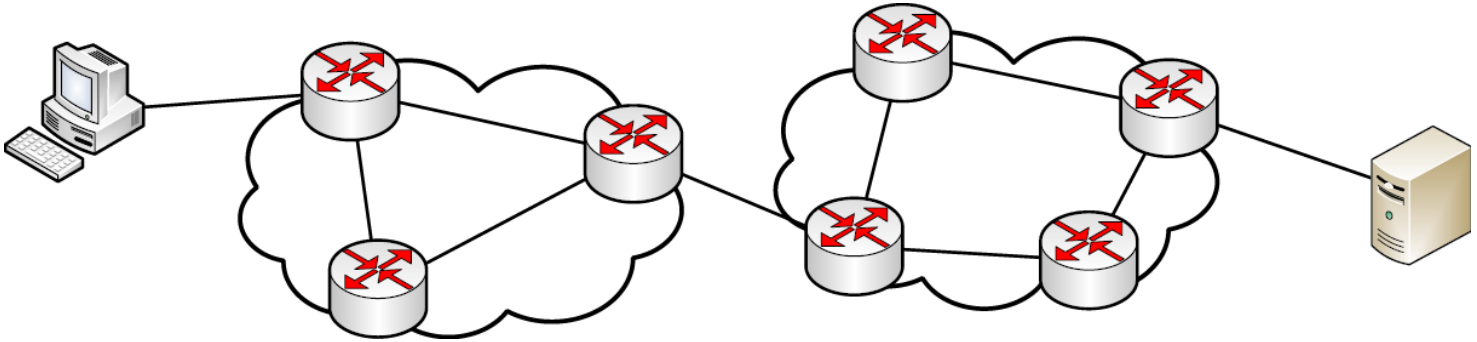
Evolution of the Internet



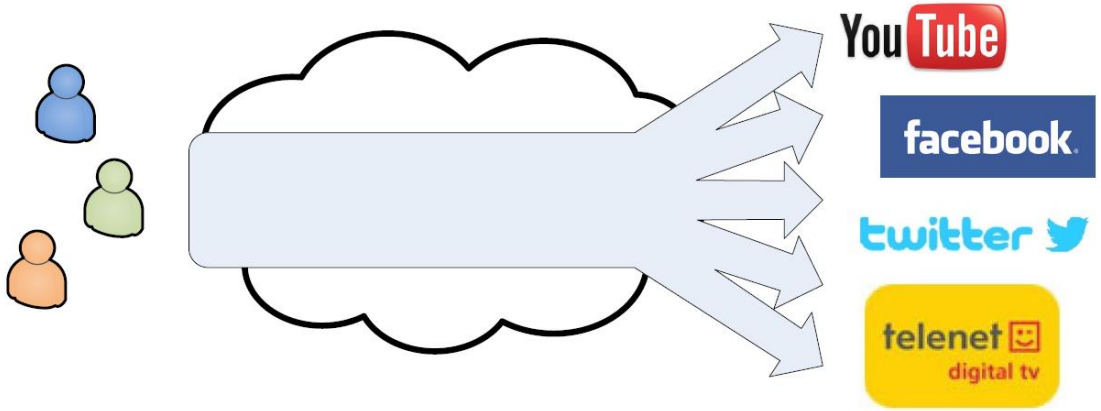
- Focus on content (ICN)
- Dynamic networks (virtualization)

Information-Centric Networking (ICN)

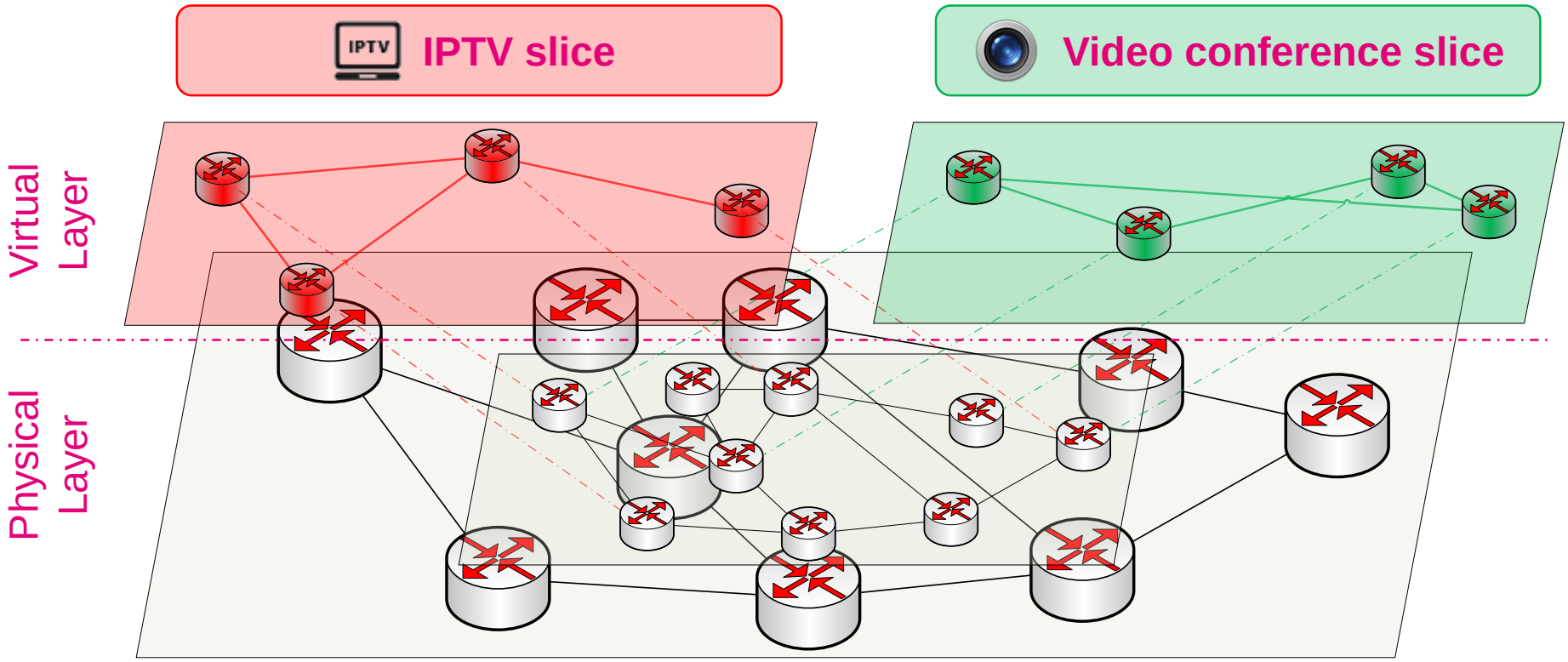
Node-centric



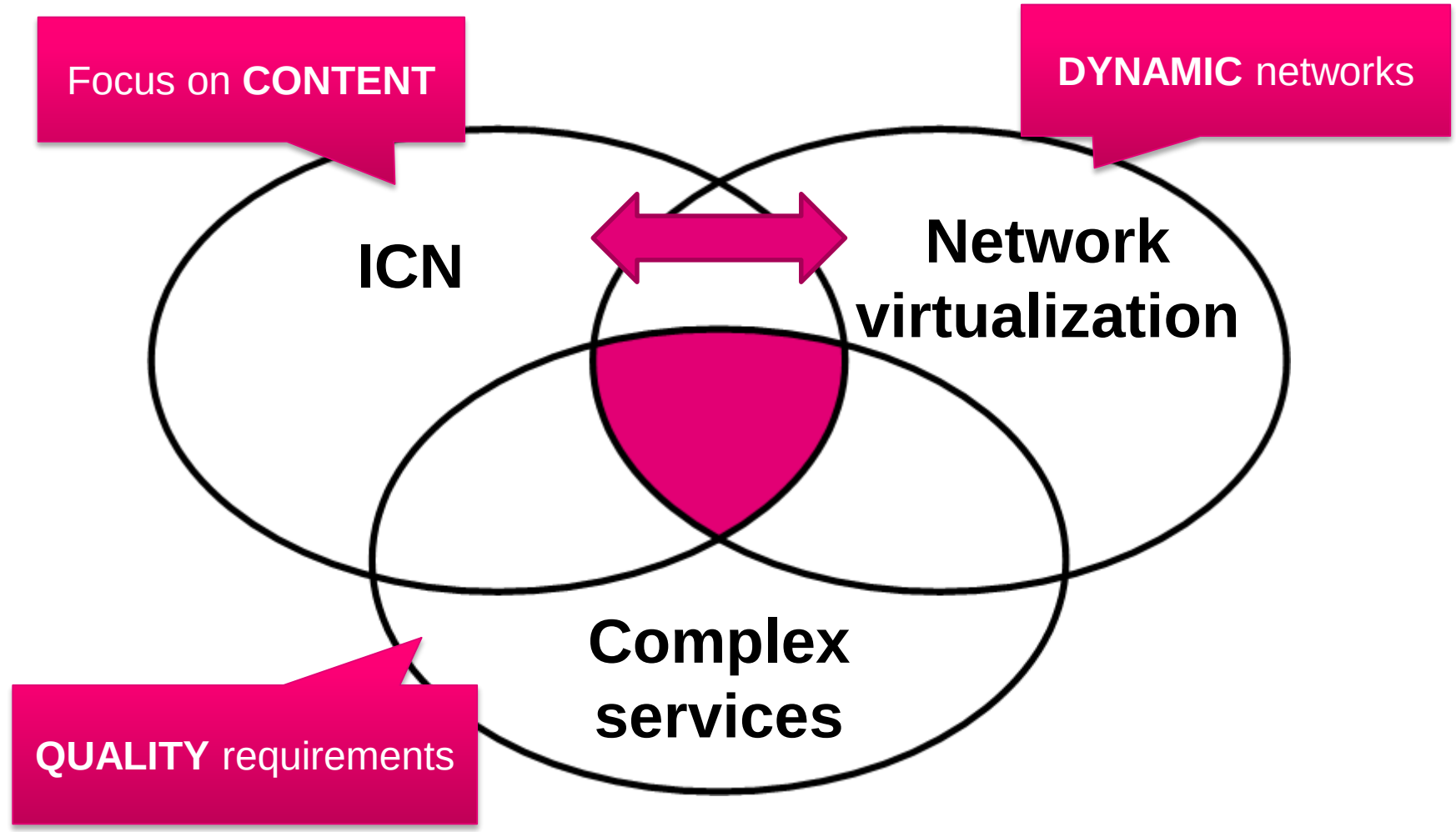
Information-centric



Network virtualization



Problem domain



Management of virtualized ICN-networks

Research opportunities

Research opportunities

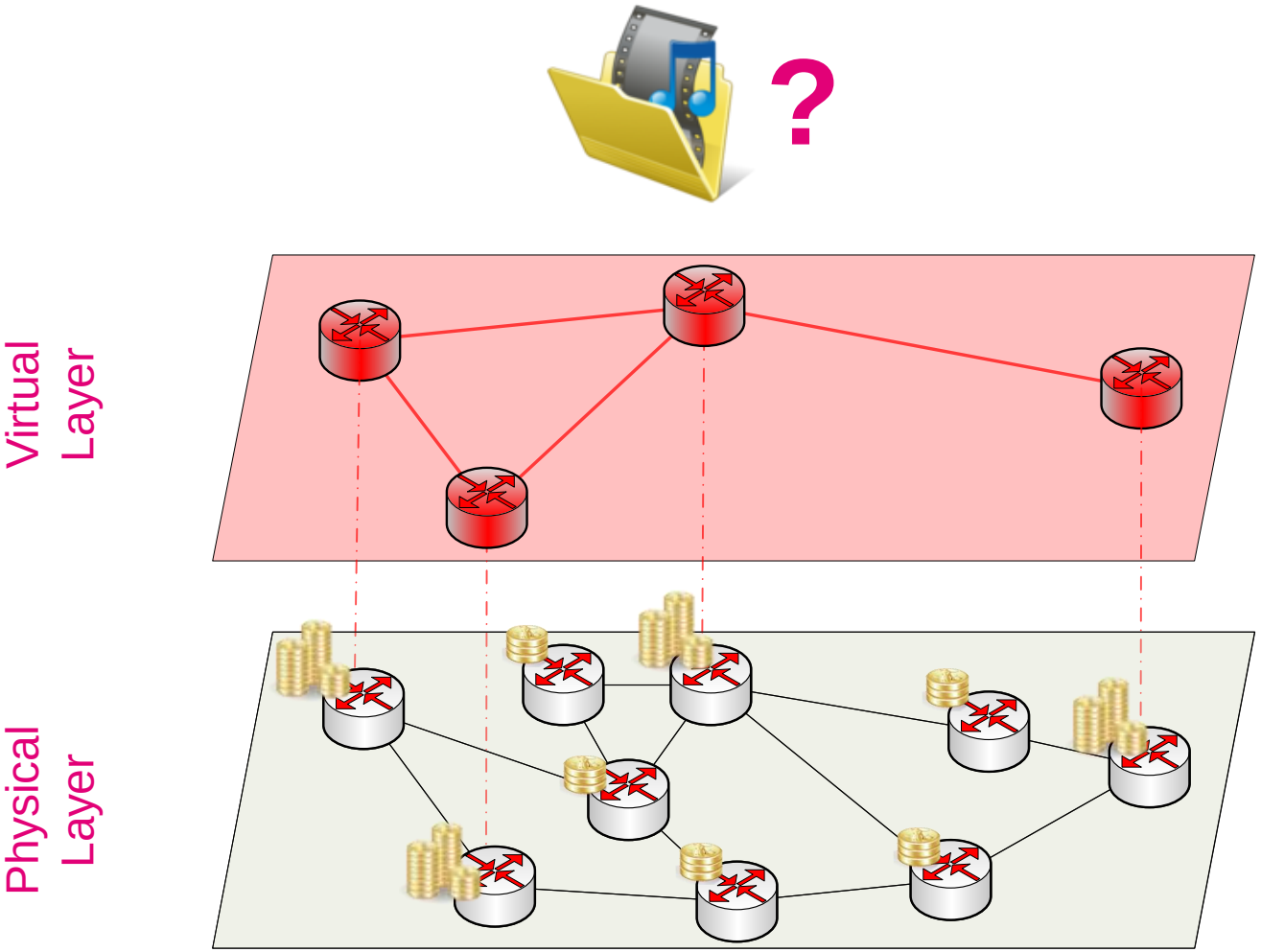
Requirement-based network configuration

- *Content placement*
- *Virtual network allocation*

Elastic network slices

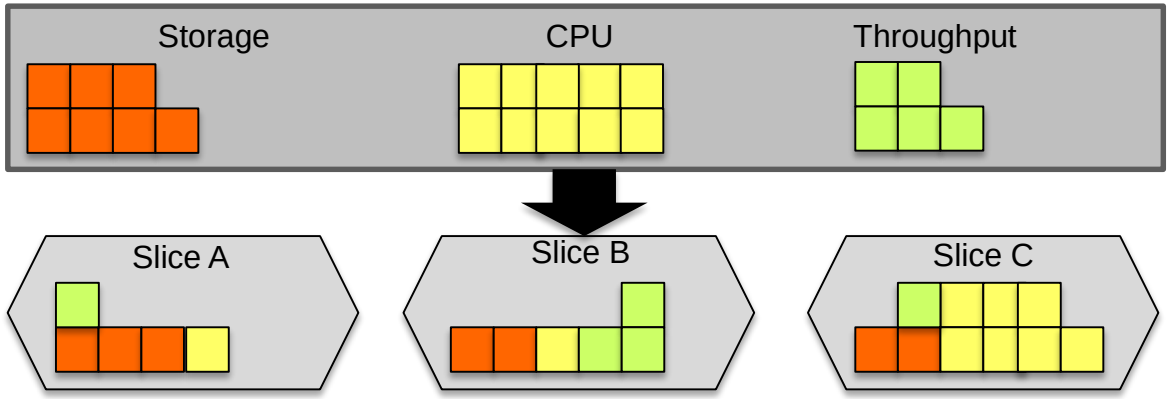
- *Analogy: cloud computing*

Network configuration: Example

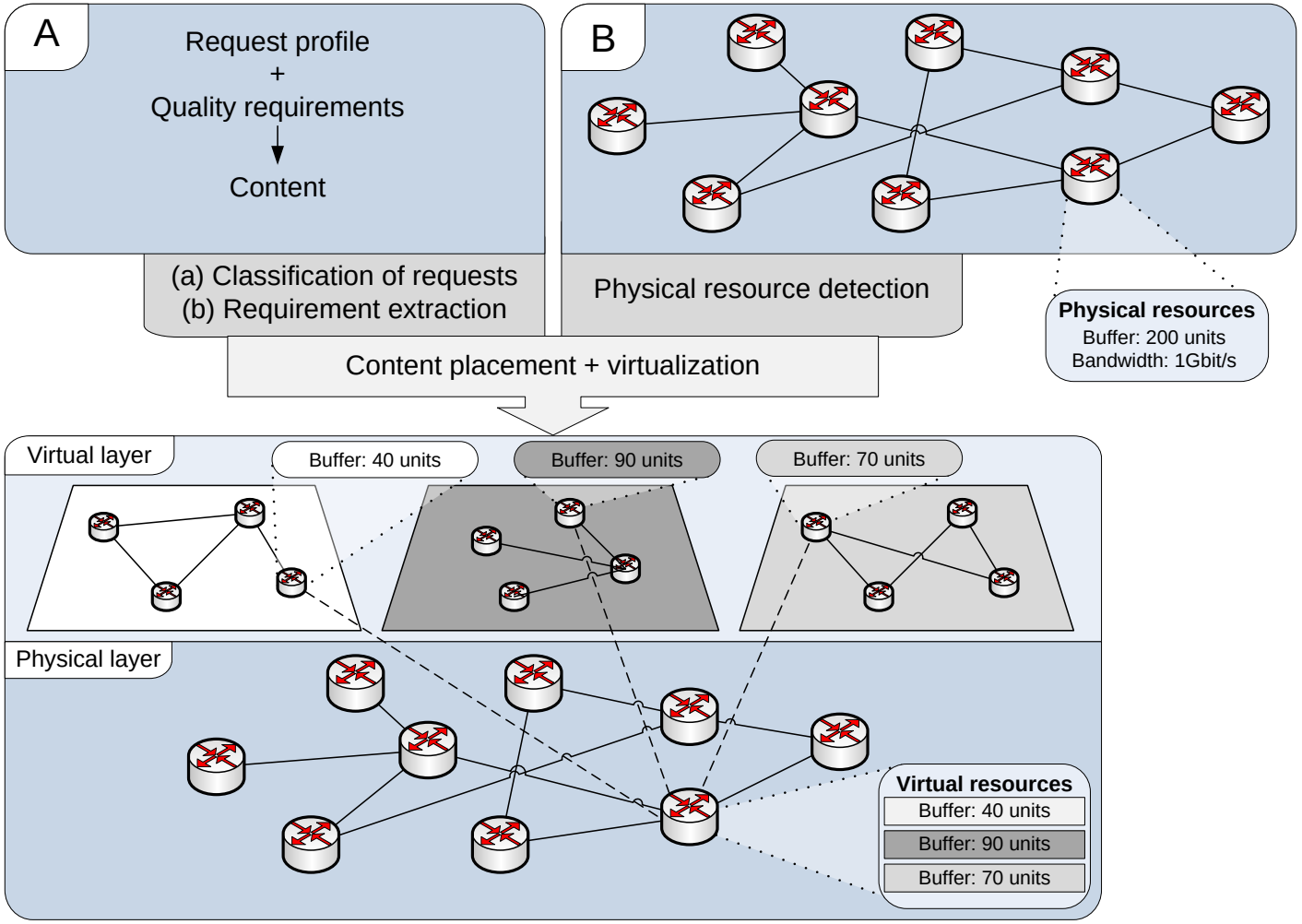


Research goal

- Algorithm to setup efficient network configuration
  - Content placement
  - Virtual network allocation

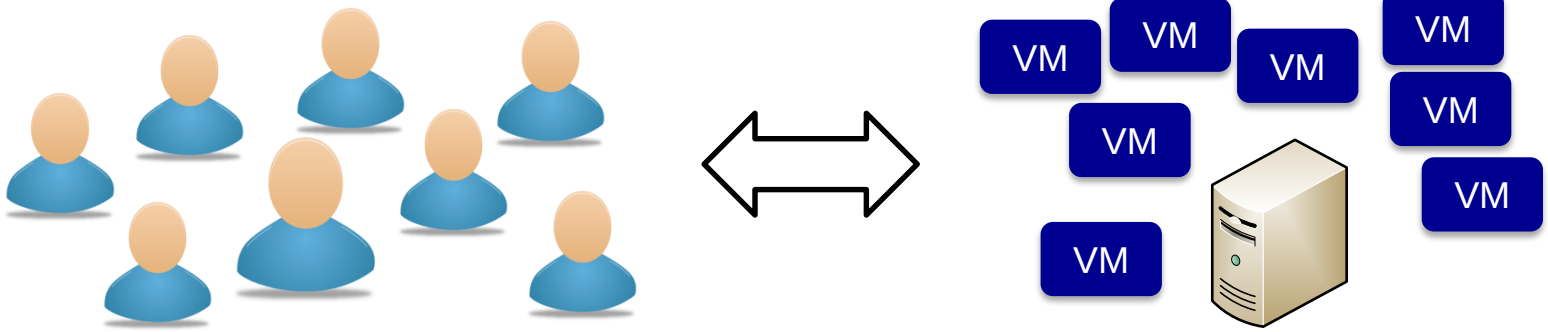


Research goal

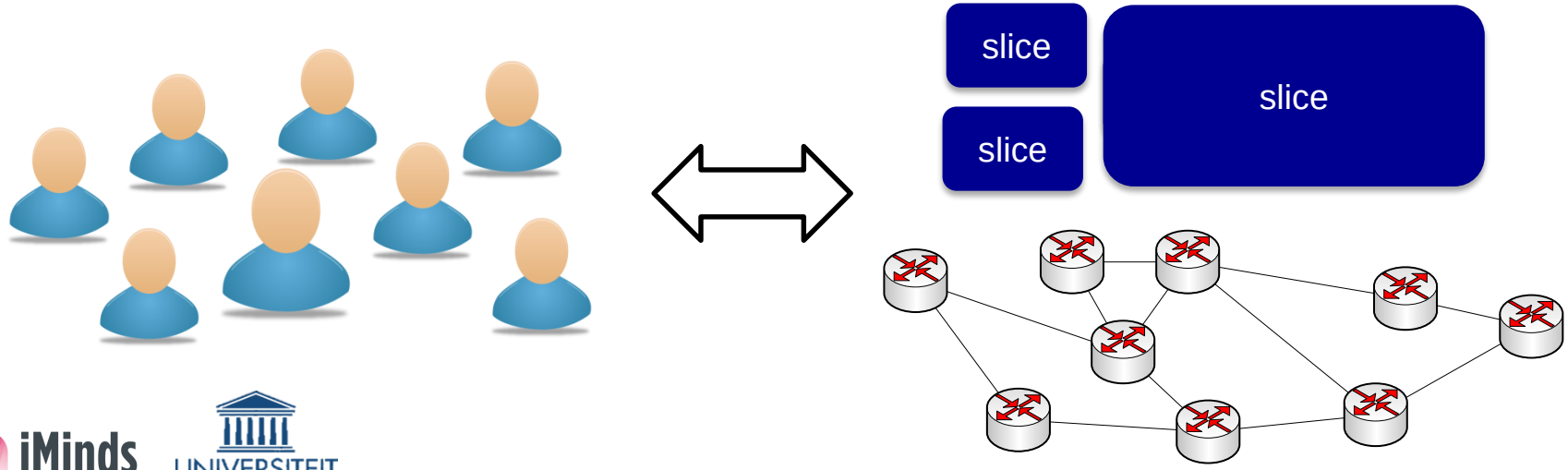


Elastic network slices

- Analogy: cloud computing

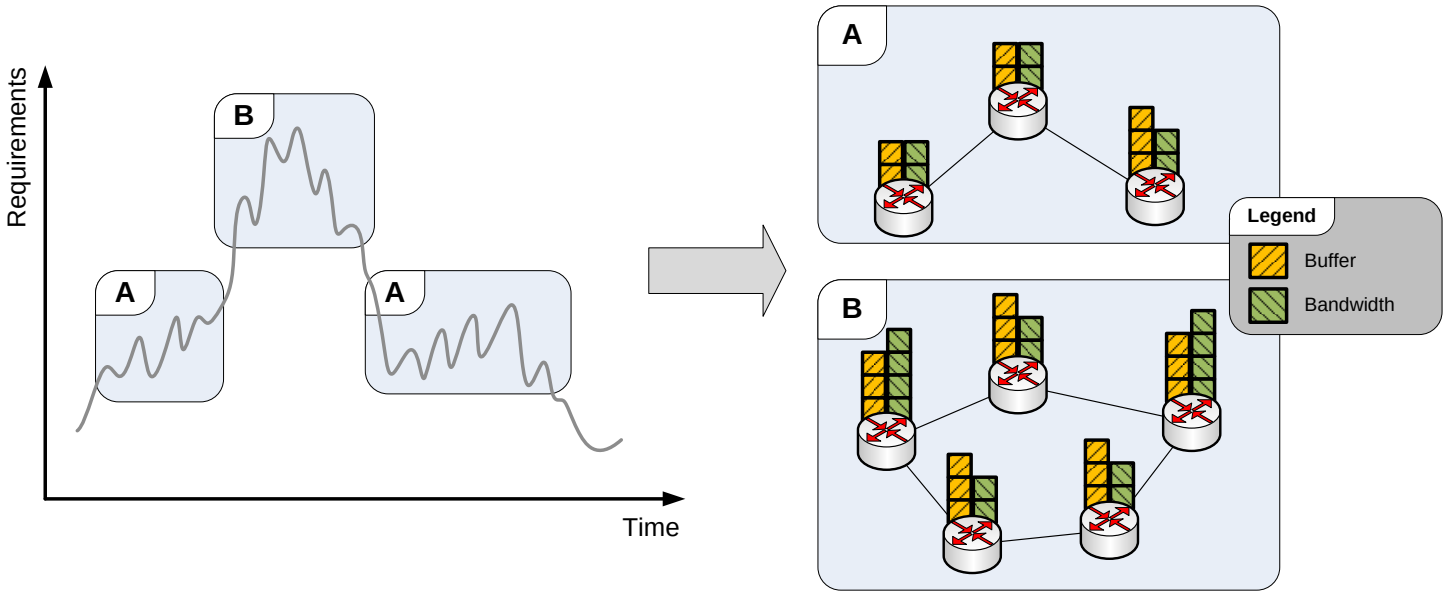


- Same flexibility in the network

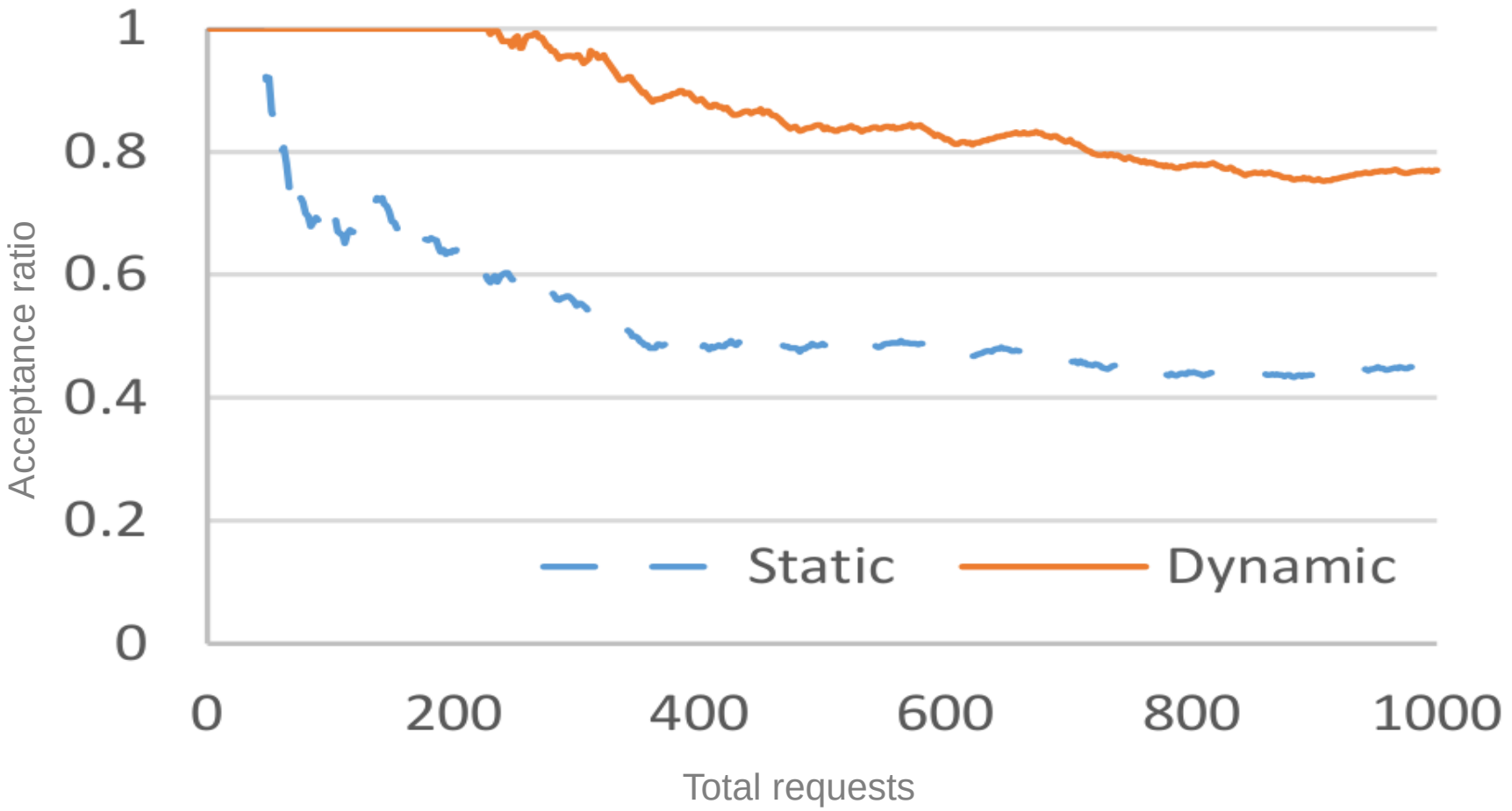


Research goal

- Elastic scaling of network slices
  - Content placement
  - Virtual network allocation

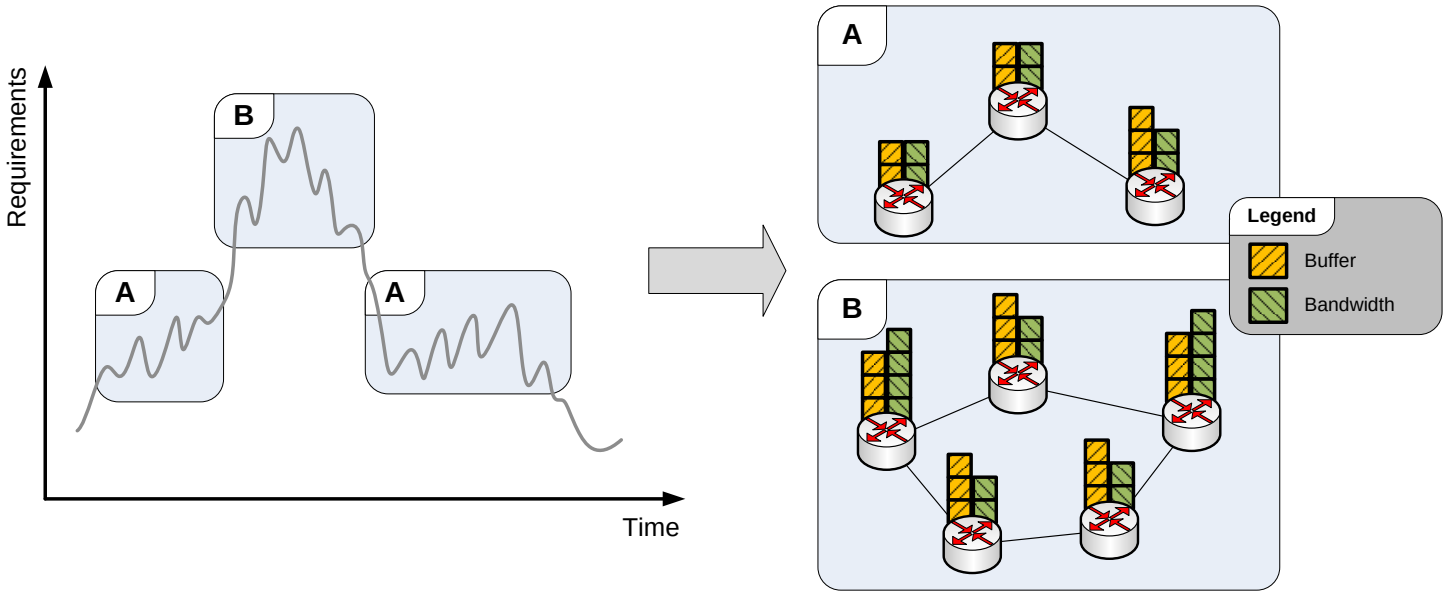


Dynamic resource allocation



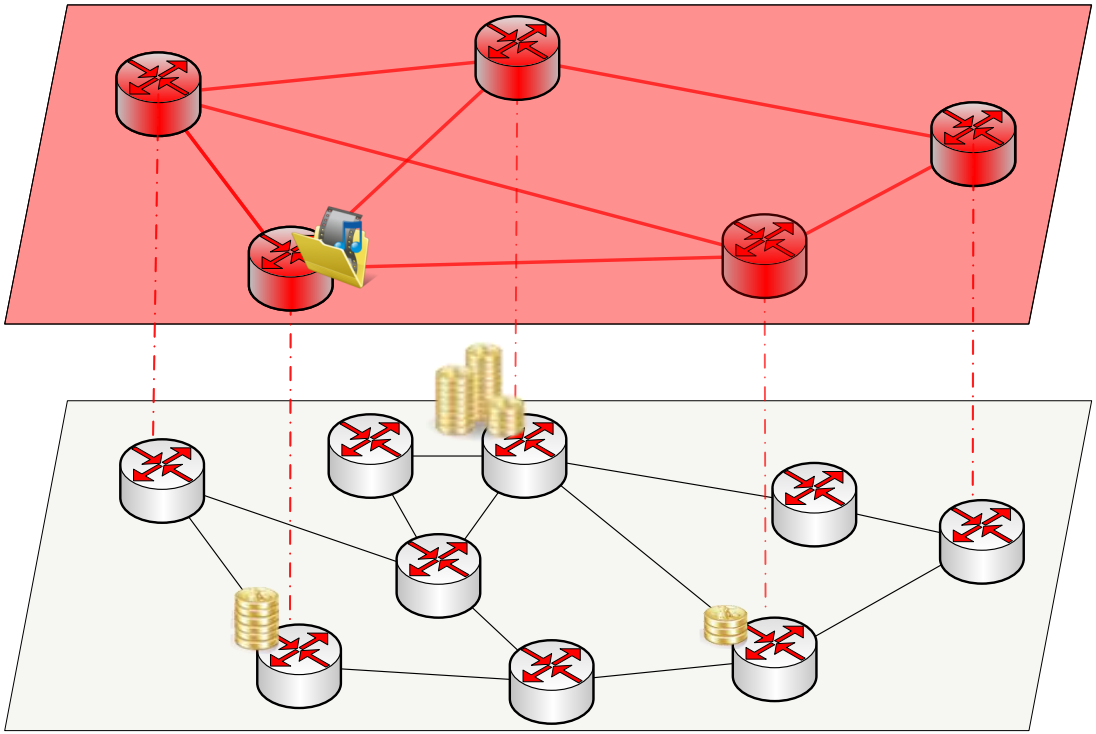
Research goal

- Elastic scaling of network slices
  - Content placement
  - Virtual network allocation
  - **Mutual interaction**



Elastic network slices: Example

- Mutual interaction



Management of virtualized ICN-networks

Virtualized ICN architecture

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- Network virtualization

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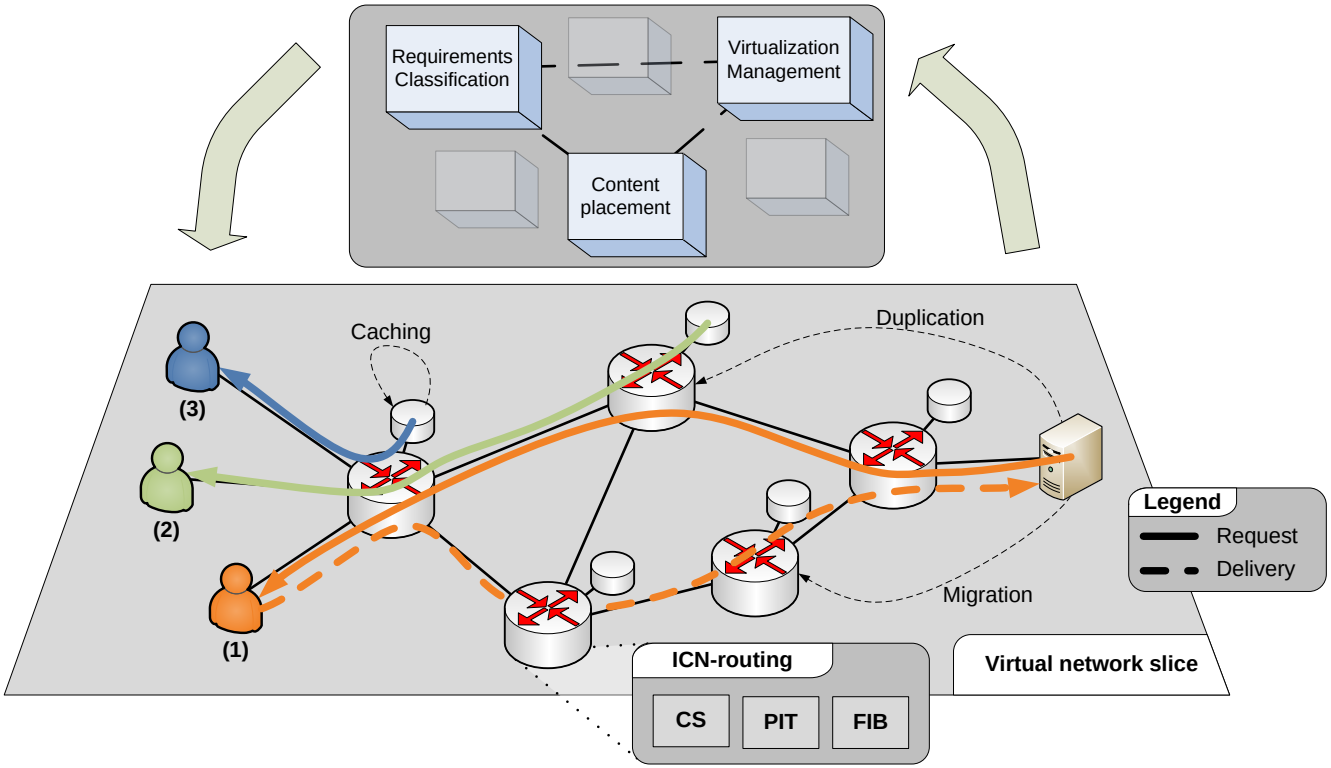
- Information-Centric Networking

coCONET ...

Virtualized ICN architecture

- Investigate combination opportunities
- Scalability?



Management of virtualized ICN-networks

Conclusions

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- Clear evolutions
  - Focus on data ➡ Information-Centric Networking
  - Quality requirements ➡ Network virtualization
- Combined approach needed
- Architecture
- Algorithms