

# Network slicing: A key technology for 5G and its impact on mobile virtual network operators

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Cyta Hellas, R&D department

1

mobile virtual network operators (MVNO) ecosystem

2

challenges for MVNOs in legacy network architectures

3

network slicing: a 5G key element

4

network slicing impact on MVNOs

5

conclusions



radio spectrum

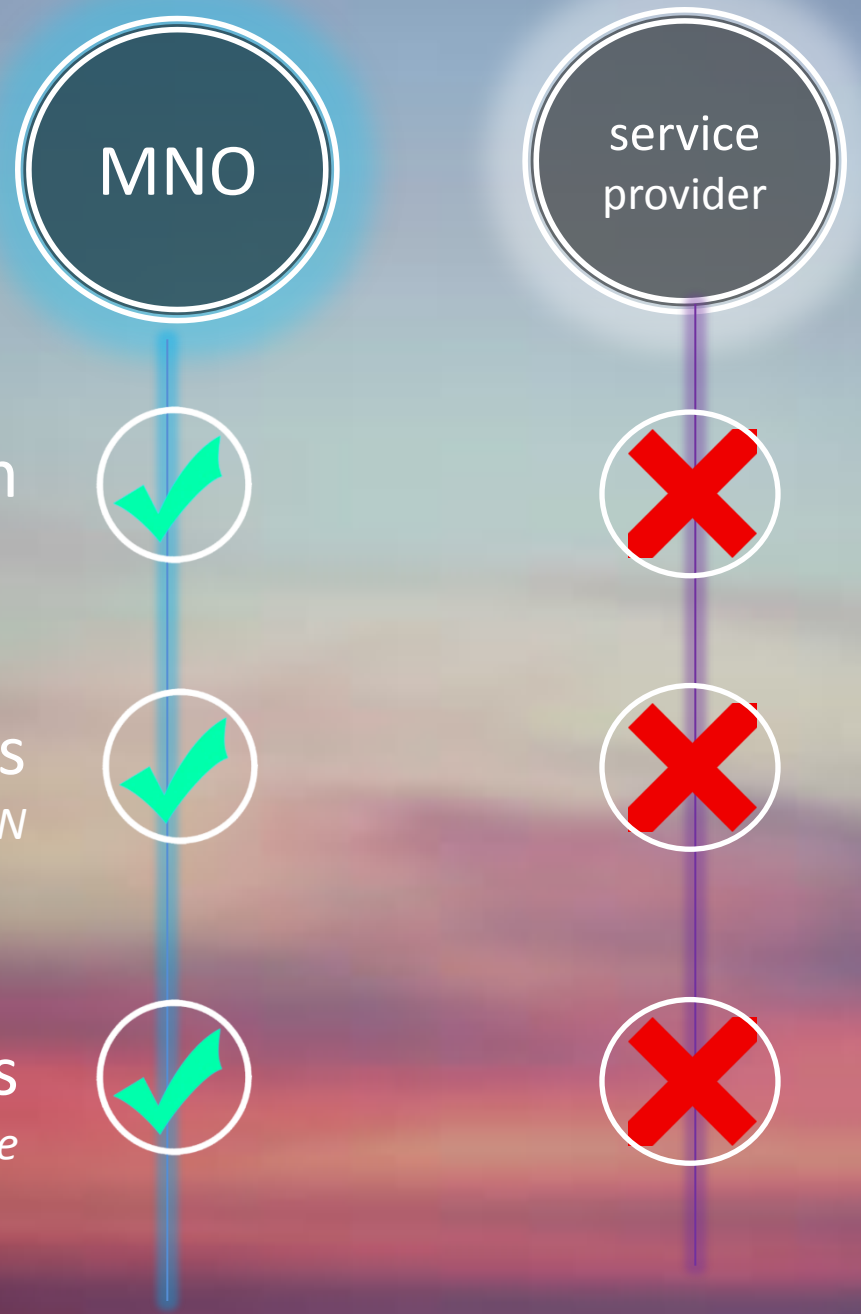


core network elements  
*e.g., HLR, GMSC, GGSN*



retail elements  
*e.g., billing, customer care*





1

# MVNO ecosystem



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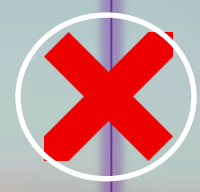
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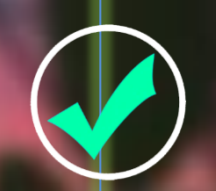
radio spectrum



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# MVNO ecosystem



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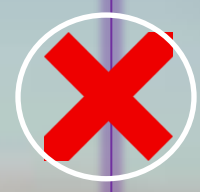
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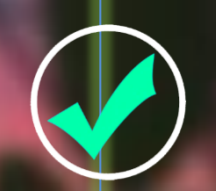
radio spectrum



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1

# MVNO ecosystem



1

Cyta is the only full MVNO in Greece

2

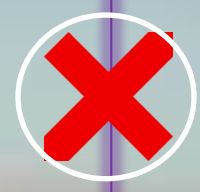
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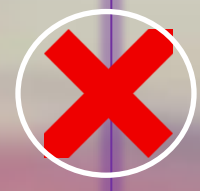
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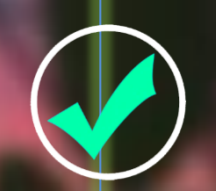
radio spectrum



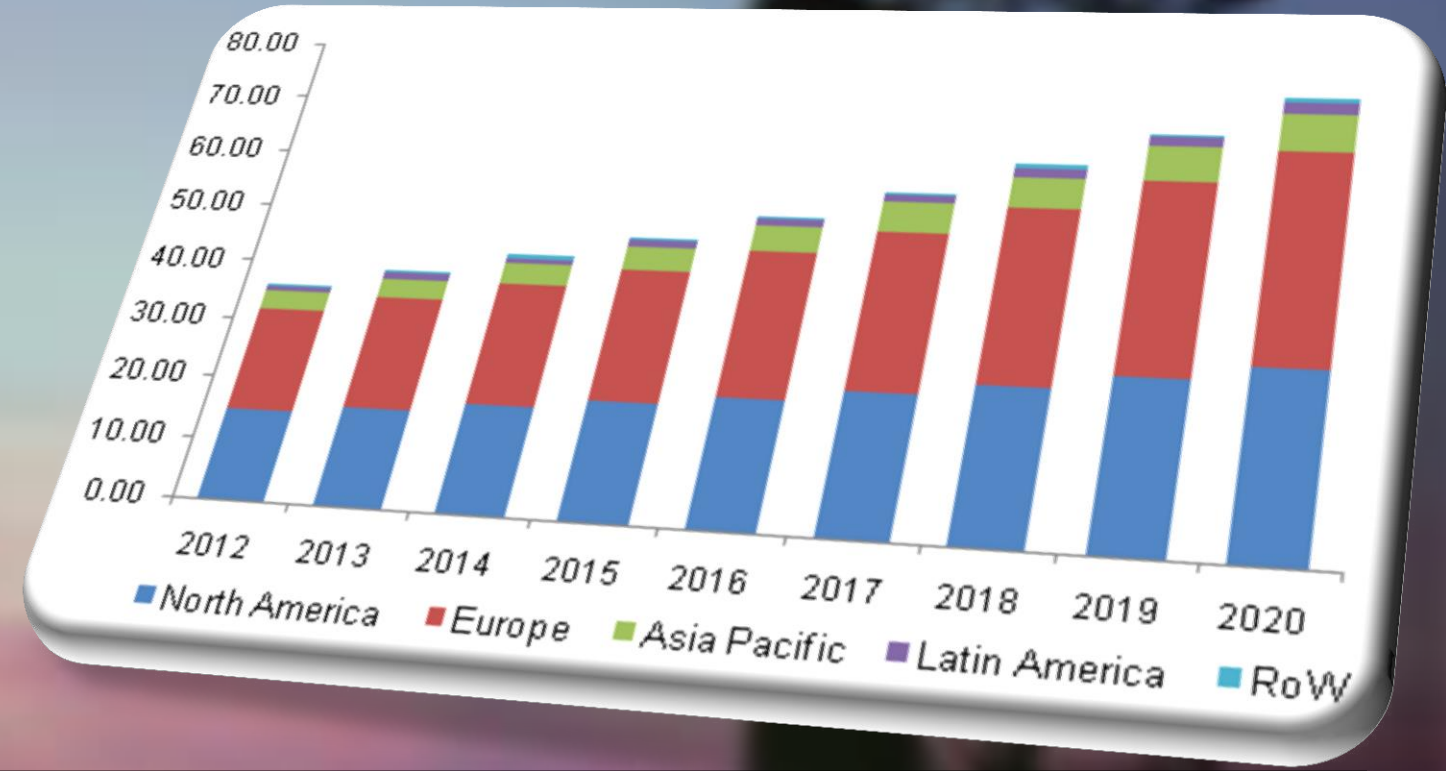
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retail elements  
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MVNO market size increases



Global MVNO market size, by region, 2012 - 2022 (USD Billion)  
\*<https://www.gminsights.com>

1

# MVNO ecosystem

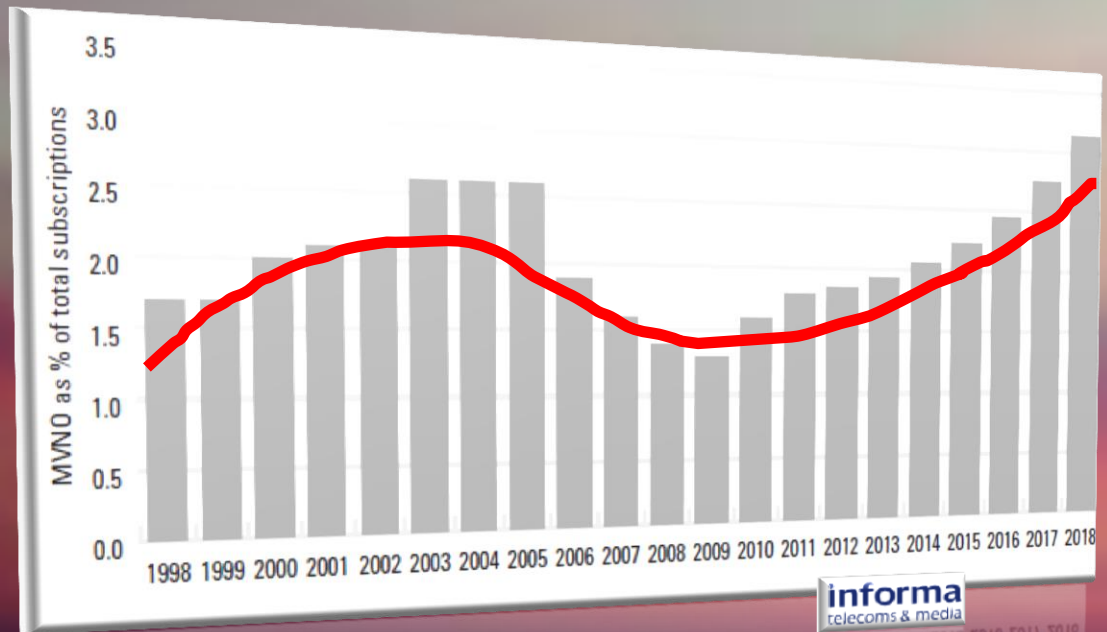
MVNO market size increases

1

High variations of MVNO subscriptions over time

2

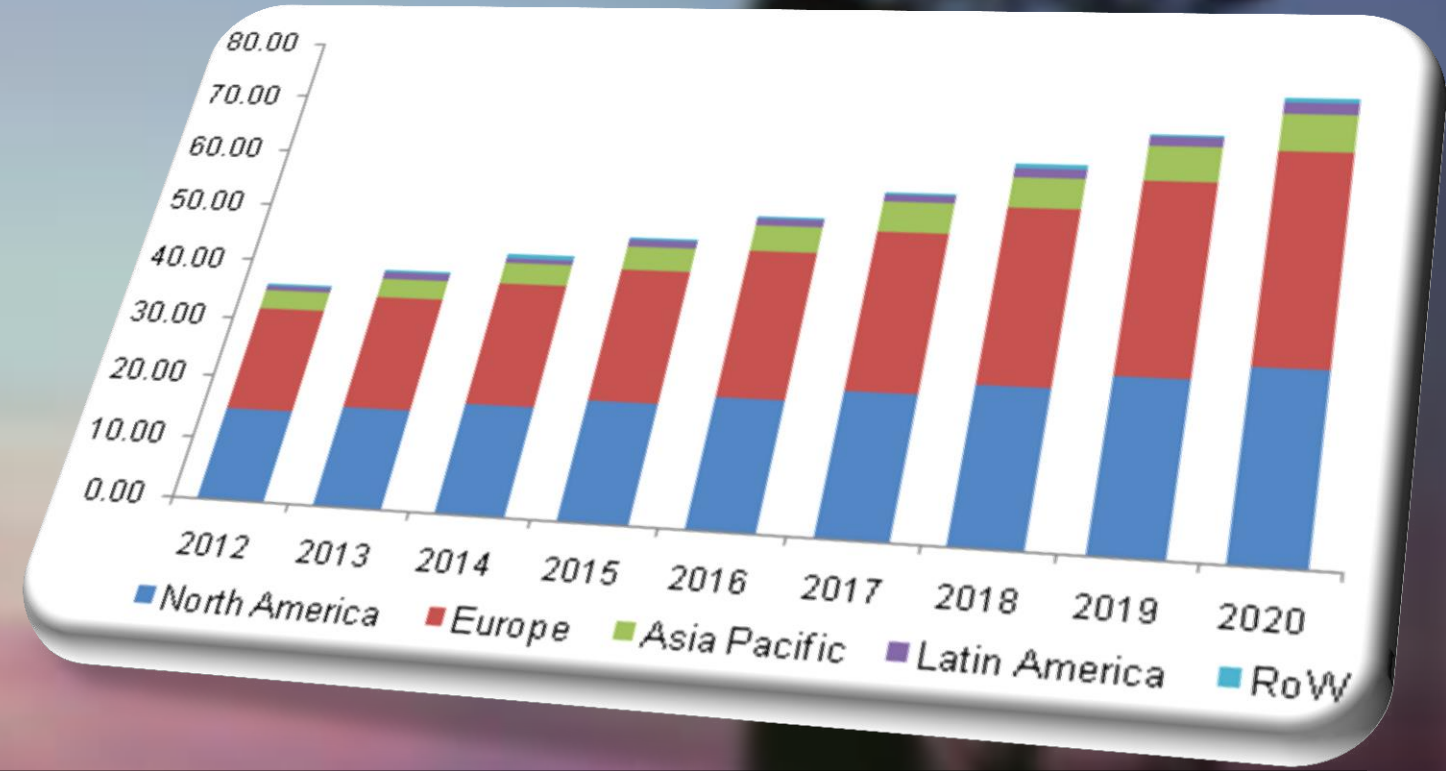
3



MVNO subscriptions (% of total)

4

5



Global MVNO market size, by region, 2012 - 2022 (USD Billion)  
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1

# MVNO ecosystem

MVNO market size increases

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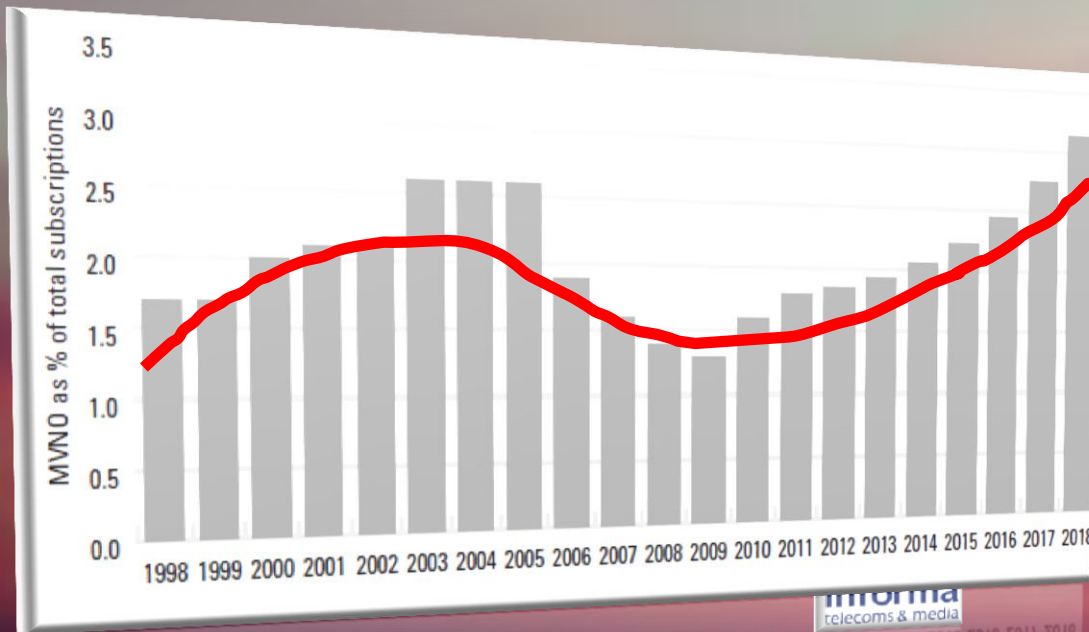
High variations of MVNO subscriptions over time



Many “casualties” !!!  
(end of business within months from launch)

2

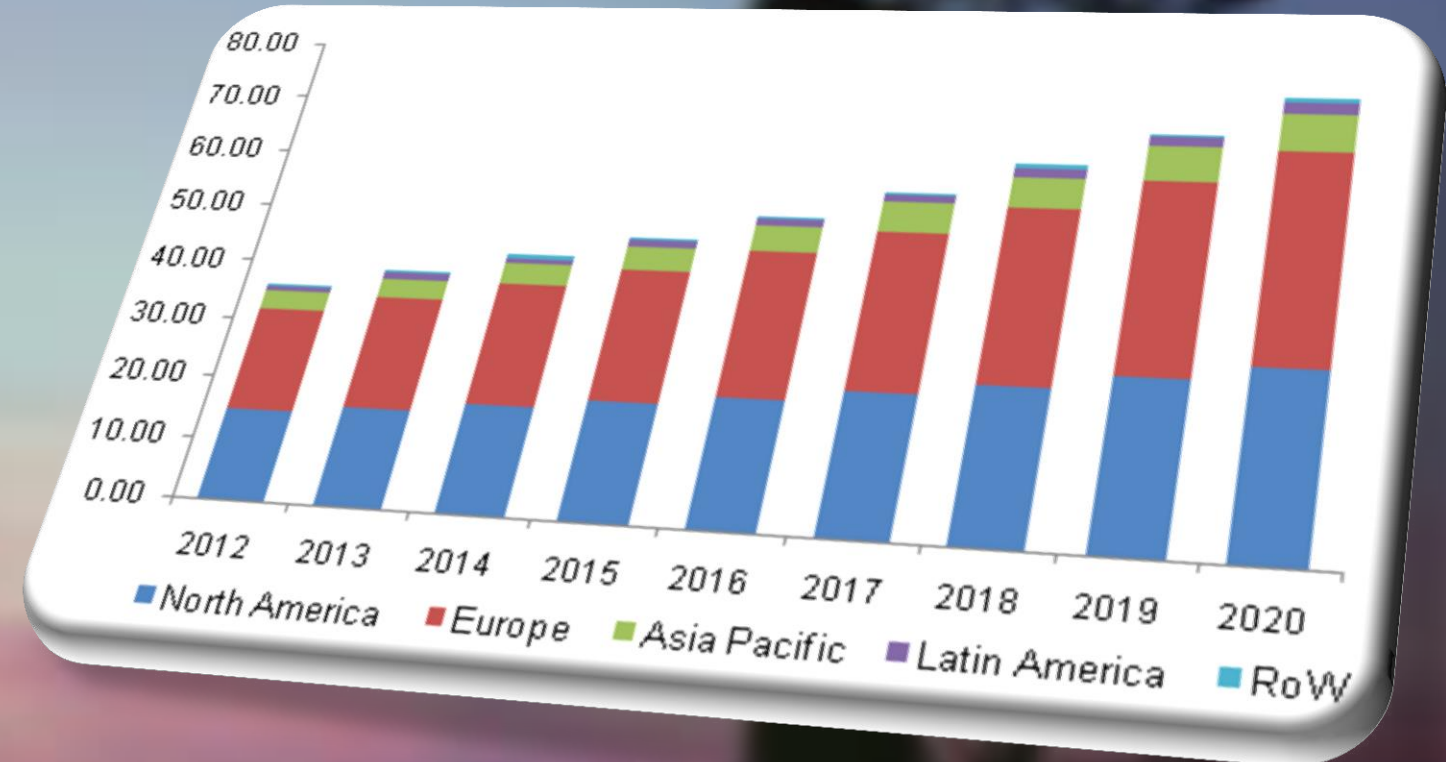
3



MVNO subscriptions (% of total)

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Global MVNO market size, by region, 2012 - 2022 (USD Billion)  
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## 2 challenges for MVNOs in legacy network architectures



low profit margins  
for MVNO

1

2

3

4

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# 2 challenges for MVNOs in legacy network architectures



low profit margins for MVNO

initial contract with MNO

1

2

3

4

5

## 2 challenges for MVNOs in legacy network architectures



low profit margins  
for MVNO

initial contract  
with MNO

ability to be  
served by  
multiple MNOs



low profit margins  
for MVNO

initial contract  
with MNO

ability to be  
served by  
multiple MNOs

optimization of  
wholesale/retail  
profits

2

# challenges for MVNOs in legacy network architectures

*initial contract with MNO*



deep knowledge of the market and the competition

1

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2

## challenges for MVNOs in legacy network architectures

*initial contract with MNO*



deep knowledge of the market and the competition



realistic network/subscribers dimensioning

1

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3

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2

## challenges for MVNOs in legacy network architectures

### *initial contract with MNO*



deep knowledge of the market and the competition



realistic network/subscribers dimensioning



negotiation of wholesale prices

1

2

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2

## challenges for MVNOs in legacy network architectures

### *initial contract with MNO*

1



deep knowledge of the market and the competition

2



realistic network/subscribers dimensioning

3



negotiation of wholesale prices

4

5



avoid getting blocked from services, e.g., 4G

## 2 challenges for MVNOs in legacy network architectures

*ability to be served by multiple MNOs*



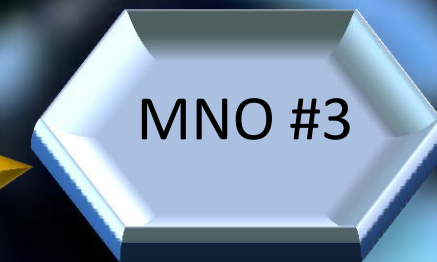
redundancy



flexibility



power to negotiate  
wholesale prices



2

# challenges for MVNOs in legacy network architectures

*optimization of wholesale/retail profits*

1

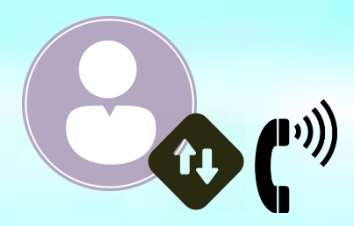
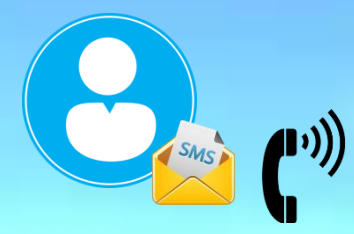
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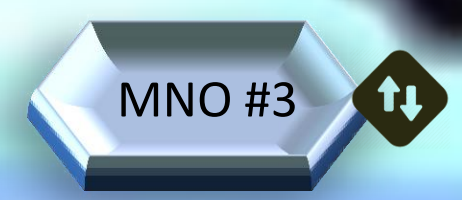
User profiles



Really hard with legacy technology



MNO wholesale prices



# 3 network slicing: a 5G key element

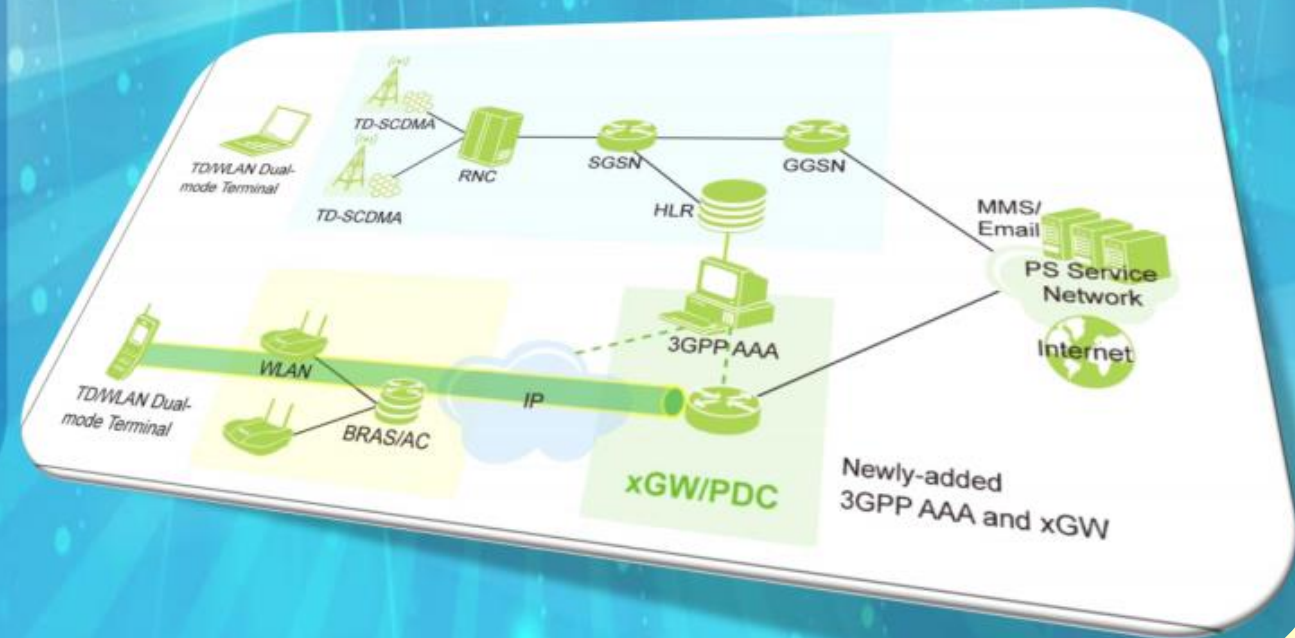


Marie Skłodowska-Curie  
Actions

Wireless Visionaries - 2020



- Spectrum Flexibility & Coexistence
- Application Defined Networking
- Heterogeneous Access & Virtualization



# 3 network slicing: a 5G key element

- E2E Optimization



1

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# 3 network slicing: a 5G key element

- E2E Optimization



- Enhance the network slicing concept

- UE based slicing (e.g., VIP users)
- Service based slicing (e.g., video stream, smart home)
- Inter-slice resource allocation

1

2

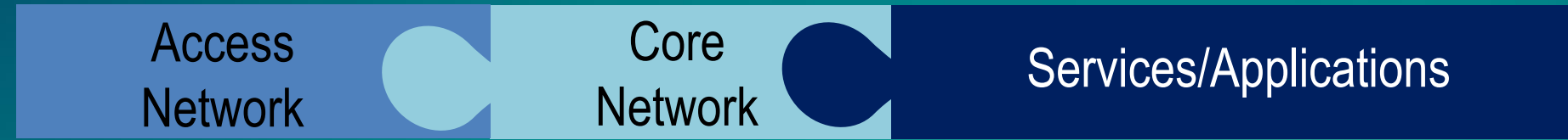
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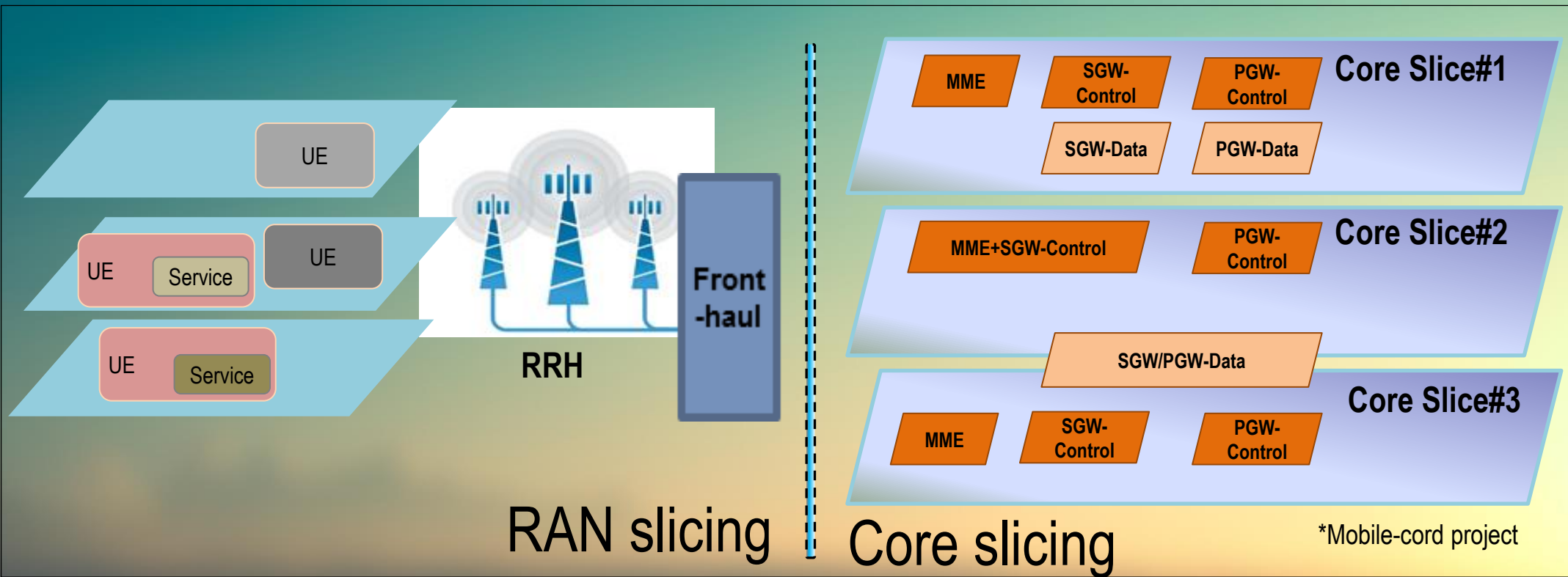
# 3 network slicing: a 5G key element

- E2E Optimization



- Enhance the network slicing concept

- UE based slicing (e.g., VIP users)
- Service based slicing (e.g., video stream, smart home)
- Inter-slice resource allocation



Inter-slice resource allocation

\*Mobile-cord project

1

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4

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# 4 network slicing impact on MVNOs

*optimization of wholesale/retail profits*

1

✓ core network evolution

2

✓ network functions virtualization

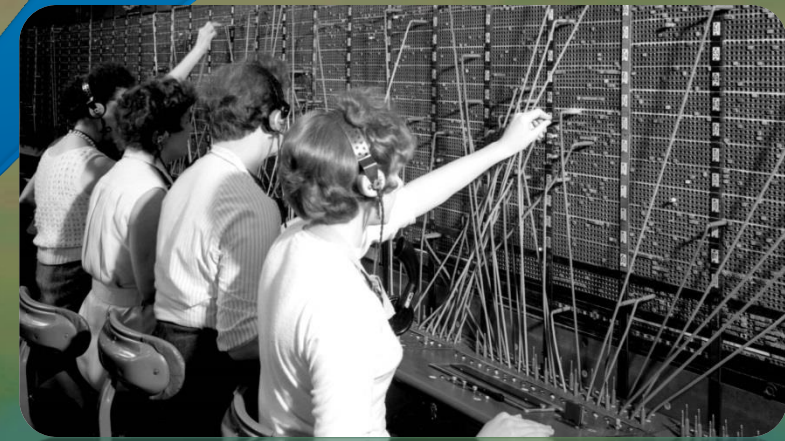
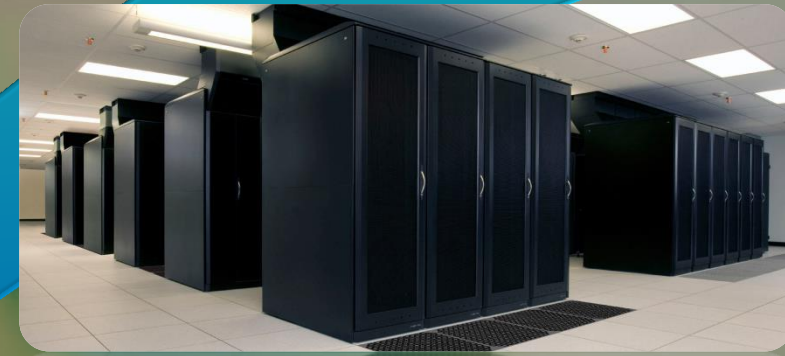
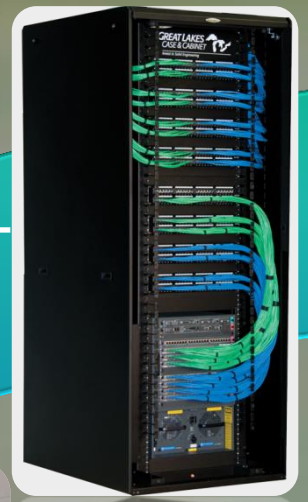
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✓ all IP networks

5

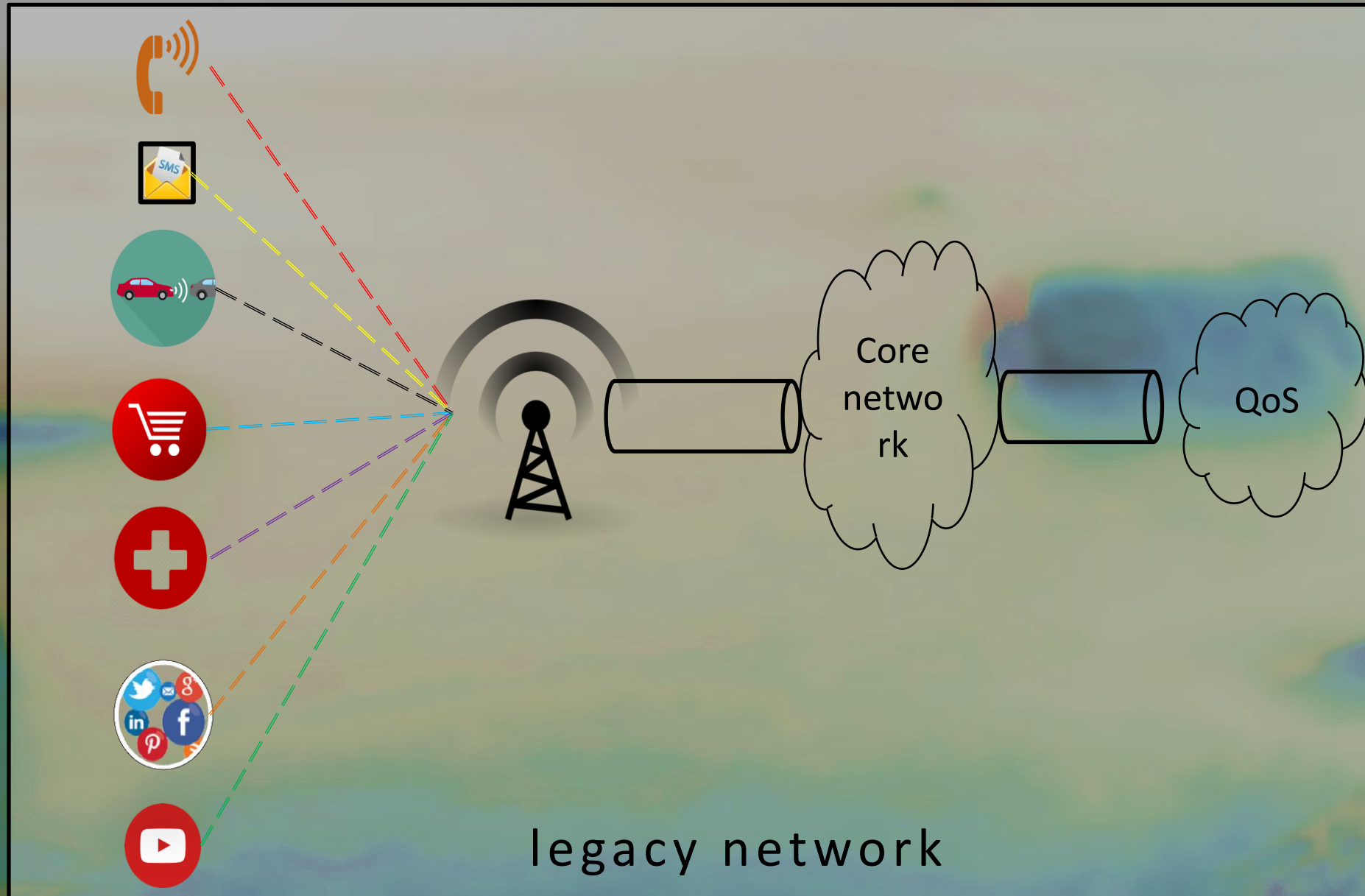
Core network  
in a box



# 4 network slicing impact on MVNOs

*optimization of wholesale/retail profits*

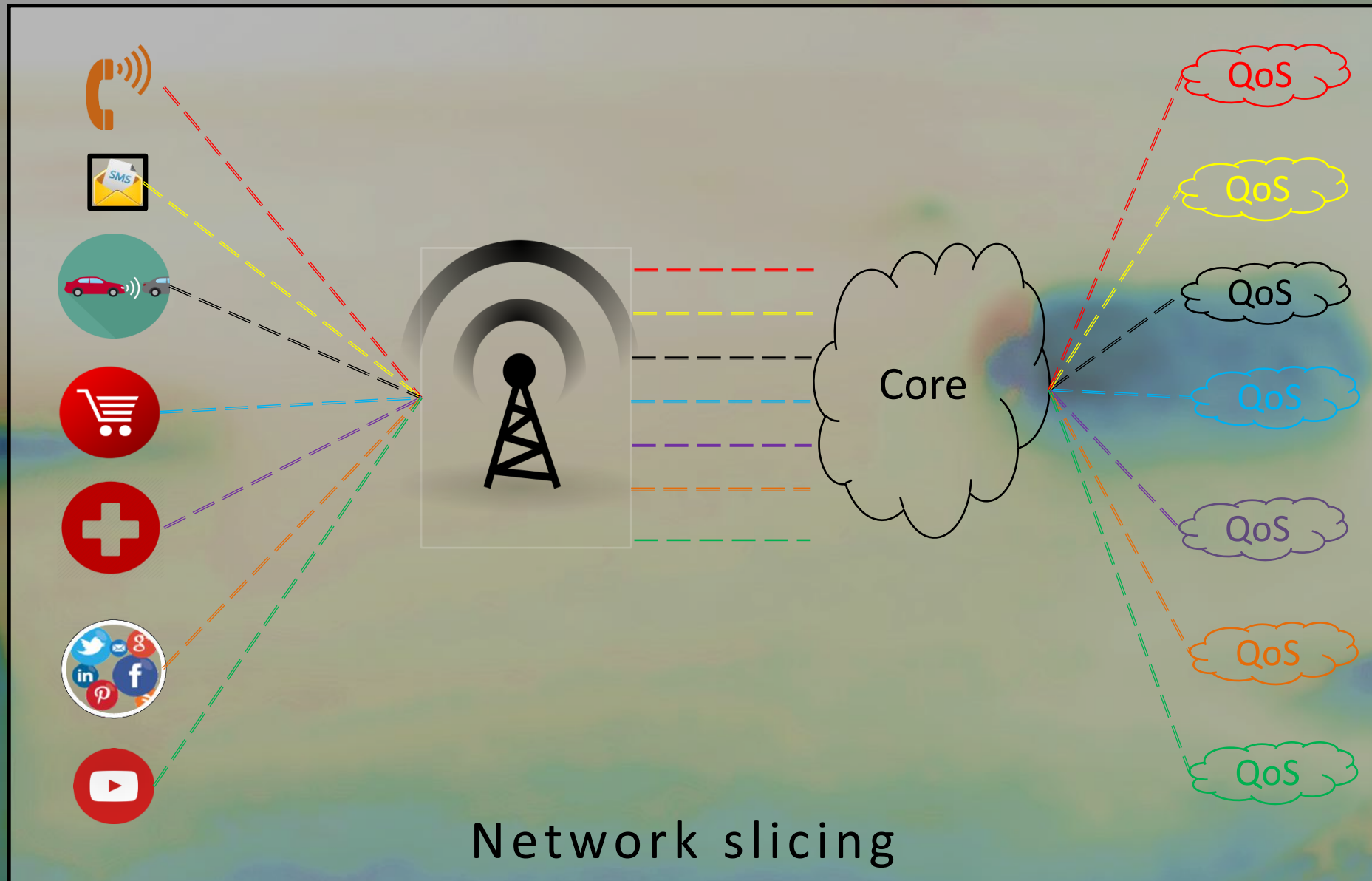
legacy networks are monolithic in terms of QoS differentiation



# 4 network slicing impact on MVNOs

*optimization of wholesale/retail profits*

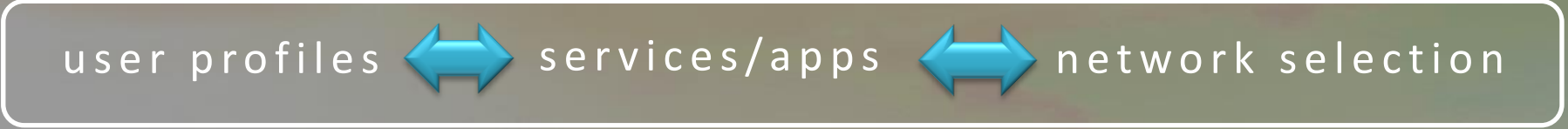
network slicing enables a fully dynamic way of network resource allocation



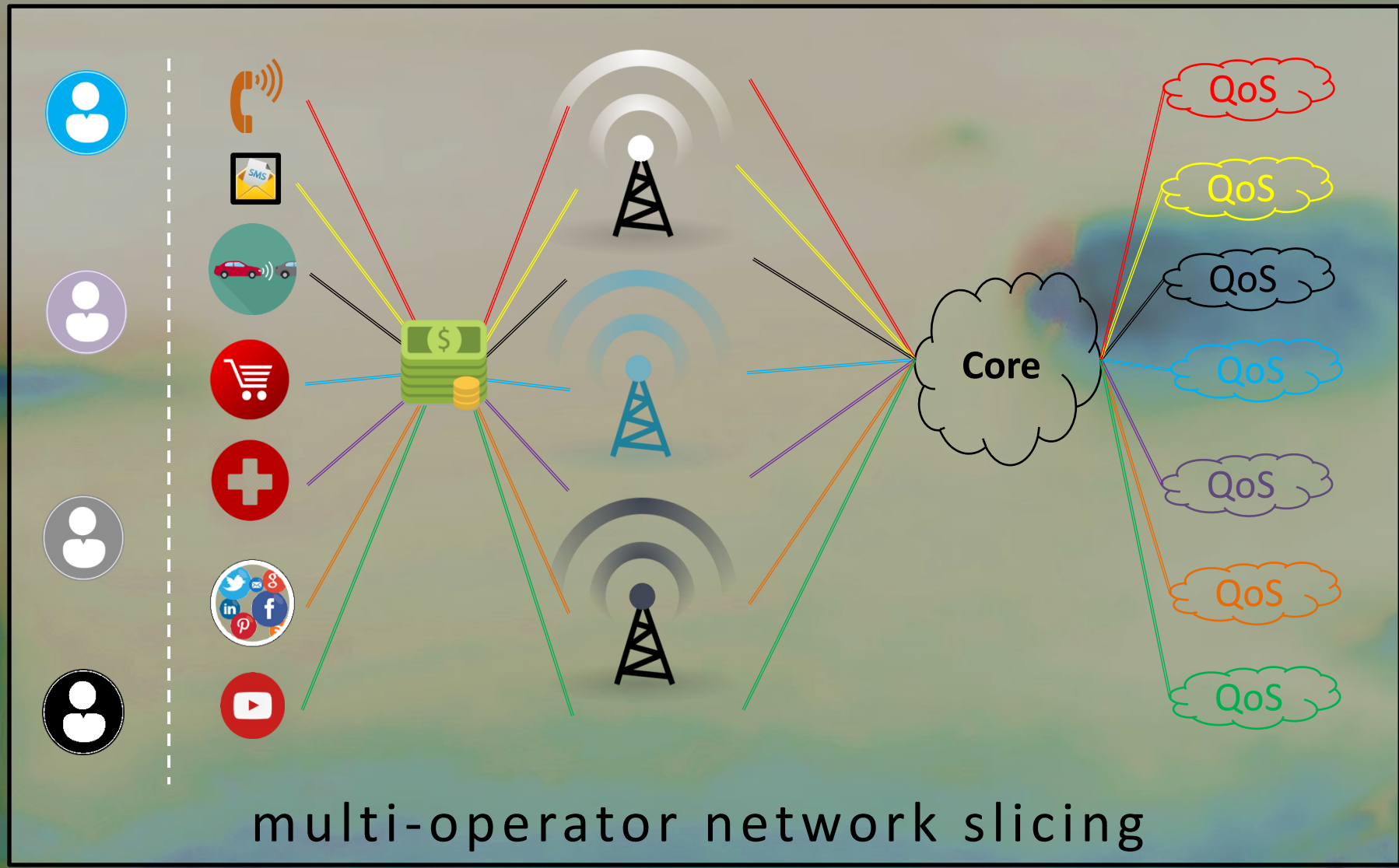
- 1
- 2
- 3
- 4
- 5

# 4 network slicing impact on MVNOs

*optimization of wholesale/retail profits*



Network slicing and NFV are the enablers for a modular dynamic network



- 1
- 2
- 3
- 4
- 5

# 5 conclusions

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5G technologies will:

- 1 • improve user QoS experience
- 2 • help telcos to maximize revenue
- 3 • boost the creation of new business models

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