

eSIM and RSP history and vision

Titia Houwing

Mark van den Berg

Bram van den Nouweland

2023 Let's Connect Webinar Serie



Connectivity
April



eSIM & RSP
Today



Control Center
September



Security
December

Agenda



Mark van den Berg

Bram van den
Nouweland

Why do we have a SIM?



Subscriber Identity Module

SIM sizing



full-size

1991



mini

1996



micro

2003



nano

2012

1975

We just need the chip

Operating System

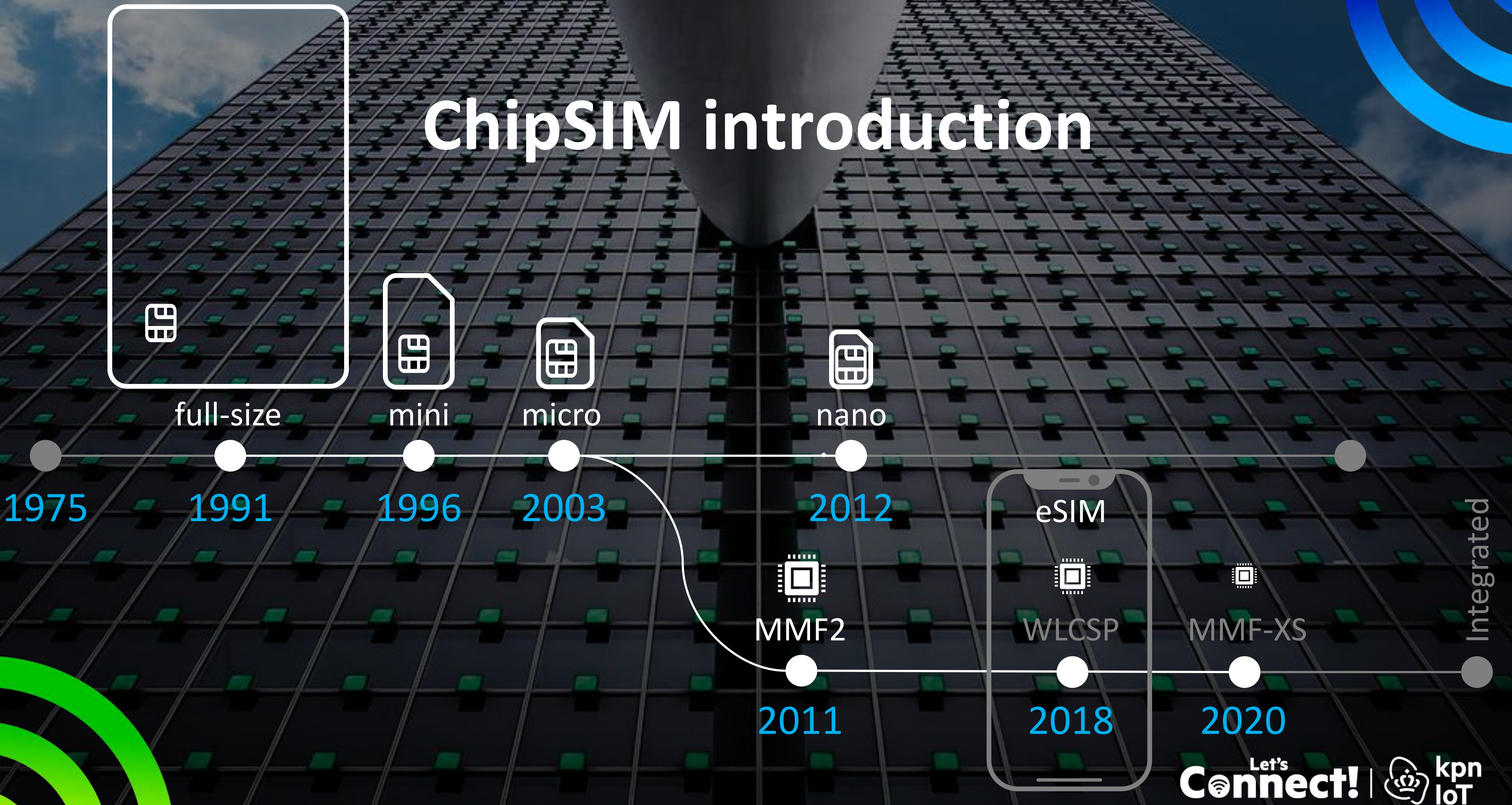
Root

Operator
Profile



Plastic is only there for humans to put it in the device

ChipSIM introduction



Specifications of the SIM



Different sizes

- Less space in device
- Less material in device

Quality of the SIM

- Business Grade
- Industrial Grade
- Automotive Grade

Power usage

shock proof

Life span

read/write cycles

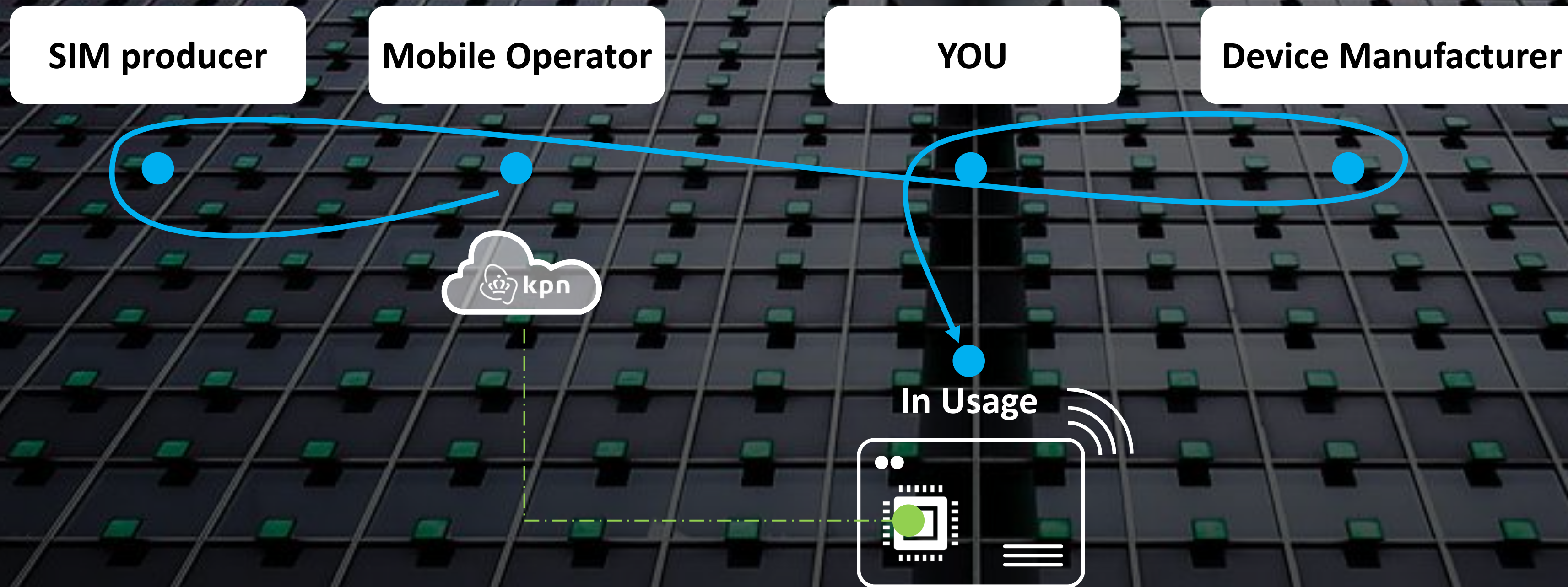
temperature range

RSP-capabilities

SMS security

SIM-card matrix	Form Factor				Quality			SMS security		Technical Details					
	2FF	3FF	4FF	Chip	Business	Industrial	Autom.	All	CUG	Memory Size	Temperature	Read/Write	Lifespan	RSP	Supplier Product
physical															
K003 - Business Grade - 2FF - CUG	✓				✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K005a - Industrial Grade - 2FF - CUG	✓					✓			✓	64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Plug 105 Industrial (GTO007)
K005c - Industrial Grade - 2FF - Non-CUG	✓					✓		✓		64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Plug 105 Industrial (GTO007)
K009 - Business Grade - 2FF - Non-CUG	✓				✓			✓		64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K010 - Business Grade - 2FF/3FF - CUG	✓	---	✓		✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K011 - Business Grade - 4FF - CUG				✓	✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K012 - Industrial Grade ChipSIM - VQFN8 - Reel - CUG				✓					✓	64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Full Quad Industrial (GTO007)
K012 - Industrial Grade ChipSIM - VQFN8 - Tray - CUG				✓					✓	64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Full Quad Industrial (GTO007)
K013 - Industrial Grade ChipSIM - VQFN8 - Reel - Non-CUG				✓				✓		64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Full Quad Industrial (GTO007)
K013 - Industrial Grade ChipSIM - VQFN8 - Tray - Non-CUG				✓				✓		64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Full Quad Industrial (GTO007)
K014 - Business Grade - 2FF/3FF - Non-CUG	✓	---	✓		✓			✓		64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K019 - Business Grade - 2FF/3FF/4FF - Non-CUG	✓	---	✓	---	✓			✓		64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K022 - Business Grade - 2FF/3FF/4FF - CUG	✓	---	✓	---	✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K023 - PIN 0000 - Business Grade - 2FF/3FF/4FF - CUG	✓	---	✓	---	✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Classic MIM (GTO00A)
K025 - Business Grade ChipSIM - VQFN8 - CUG				✓	✓				✓	64 Kb	-25°C --- 85°C	>100K	10 years at 25°C	-	Thales Full Quad Domestic (GTO006)
K030 - Industrial Grade - 4FF - CUG				✓		✓			✓	64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Plug 105 Industrial (GTO007)
K074 - Business Grade - 2FF/3FF/4FF - CUG - V3.2 RSP	✓	---	✓	---	✓				✓	1.25 Mb	-25°C --- 85°C	>100K	10 years at 25°C	RSP-V3.2	G+D CX Hercules
K085 - Industrial Grade ChipSIM - MFF2 - CUG - V3.2 RSP				✓					✓	1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M SMD
K086 - Industrial Grade - 3FF - CUG - V3.2 RSP			✓			✓			✓	1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M
K087 - Industrial Grade - 2FF - CUG - V3.2 RSP	✓					✓			✓	1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M
K091 - Arqia - Business Grade - 2FF/3FF/4FF - CUG - V3.2 RSP	✓	---	✓	---	✓				✓	1.25 Mb	-25°C --- 85°C	>100K	10 years at 25°C	RSP-V3.2	G+D CX Hercules
K092 - Industrial Grade ChipSIM - MFF2 - Non-CUG - V3.2 RSP				✓				✓		1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M SMD
K094 - Industrial Grade - 3FF - Non-CUG - V3.2 RSP			✓			✓		✓		1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M
K095 - Industrial Grade - 2FF - Non-CUG - V3.2 RSP	✓					✓		✓		1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M
K112 - QoS Application Priority - Industrial Grade - 3FF - CUG			✓			✓			✓	64 Kb	-40°C --- 105°C	>1M	10 years at 85°C	-	Thales Plug 105 Industrial (GTO007)
K302 - Industrial Grade ChipSIM - MFF2 - Non-CUG - V3.2 RSP (os update)				✓				✓		1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V3.2	G+D CX 97 M2M SMD
K303 - Industrial Grade ChipSIM - MFF2 - Non-CUG - V4.2.1 RSP				✓				✓		1 Mb	-40°C --- 105°C	>500K	10 years at 85°C	RSP-V4.2.1	G+D CX 97 M2M SMD
K305 - Automotive Grade ChipSIM - MFF2 - CUG - V3.2 RSP				✓			✓		✓	1 Mb	-40°C --- 105°C	>500K	17 years at 85°C	RSP-V3.2	G+D CX 97 In-Car SMD
K400 - Industrial Grade ChipSIM - MFF2 - CUG - V4.2.1 RSP				✓					✓	504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial QUAD RSP
K401 - Industrial Grade ChipSIM - MFF2 - Non-CUG - V4.2.1 RSP				✓				✓		504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial QUAD RSP
K402 - Industrial Grade - 4FF - CUG - V4.2.1 RSP				✓		✓			✓	504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K403 - Industrial Grade - 4FF - Non-CUG - V4.2.1 RSP				✓		✓		✓		504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K404 - Industrial Grade - 3FF - CUG - V4.2.1 RSP			✓			✓			✓	504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K405 - Industrial Grade - 3FF - Non-CUG - V4.2.1 RSP			✓			✓		✓		504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K406 - Industrial Grade - 2FF - CUG - V4.2.1 RSP	✓					✓			✓	504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K407 - Industrial Grade - 2FF - Non-CUG - V4.2.1 RSP	✓					✓		✓		504 Kb	-40°C --- 105°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 105 RSP
K408 - Industrial Grade - 2FF/3FF/4FF - CUG - V4.2.1 RSP	✓	---	✓	---	✓				✓	504 Kb	-25°C --- 85°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 85 RSP
K409 - Industrial Grade - 2FF/3FF/4FF - Non-CUG - V4.2.1 RSP	✓	---	✓	---	✓			✓		504 Kb	-25°C --- 85°C	>1M	10 years at 85°C	RSP-V4.2.1	Thales M2M Industrial PLUG 85 RSP
Virtual															
K075 - Virtual Subscription - CUG - V3.2 RSP									✓	-	-	-	-	RSP-V3.2	-

The production flow



Why is the SIM not part of the
BoM?

BoM = Bill of Material

Back to why we have a SIM

The SIM is the Subscriber Identity Module that mobile operators introduced to sell their connectivity

It's part of the subscription

Your Takeaway

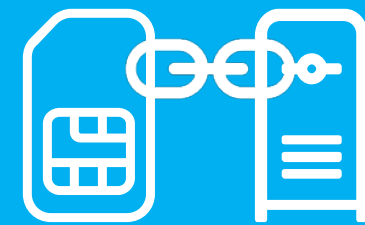
- The SIM is there to identify the subscriber
- Size reducing is mainly consumer-market driven
- Introduction of ChipSIM
- SIM is not (yet) part of the BoM



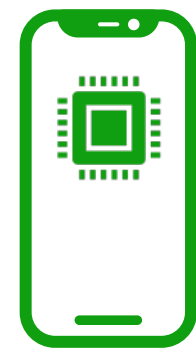
Agenda



History



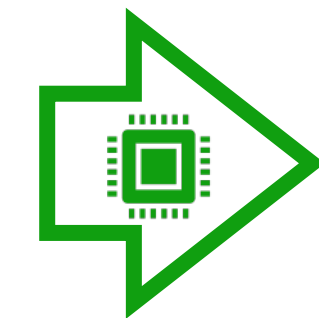
M2M RSP



eSIM

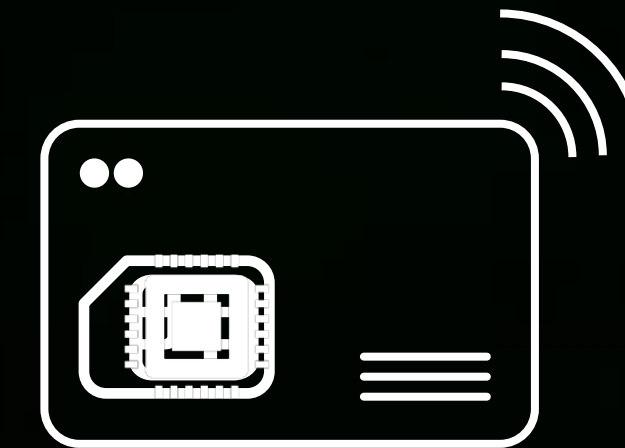


IoT-RSP



Next

How do you switch operators?



IoT devices are everywhere
You can't unmount the chip

The introduction of Remote SIM Provisioning

To add or change profiles on a SIM remotely over-the-air.

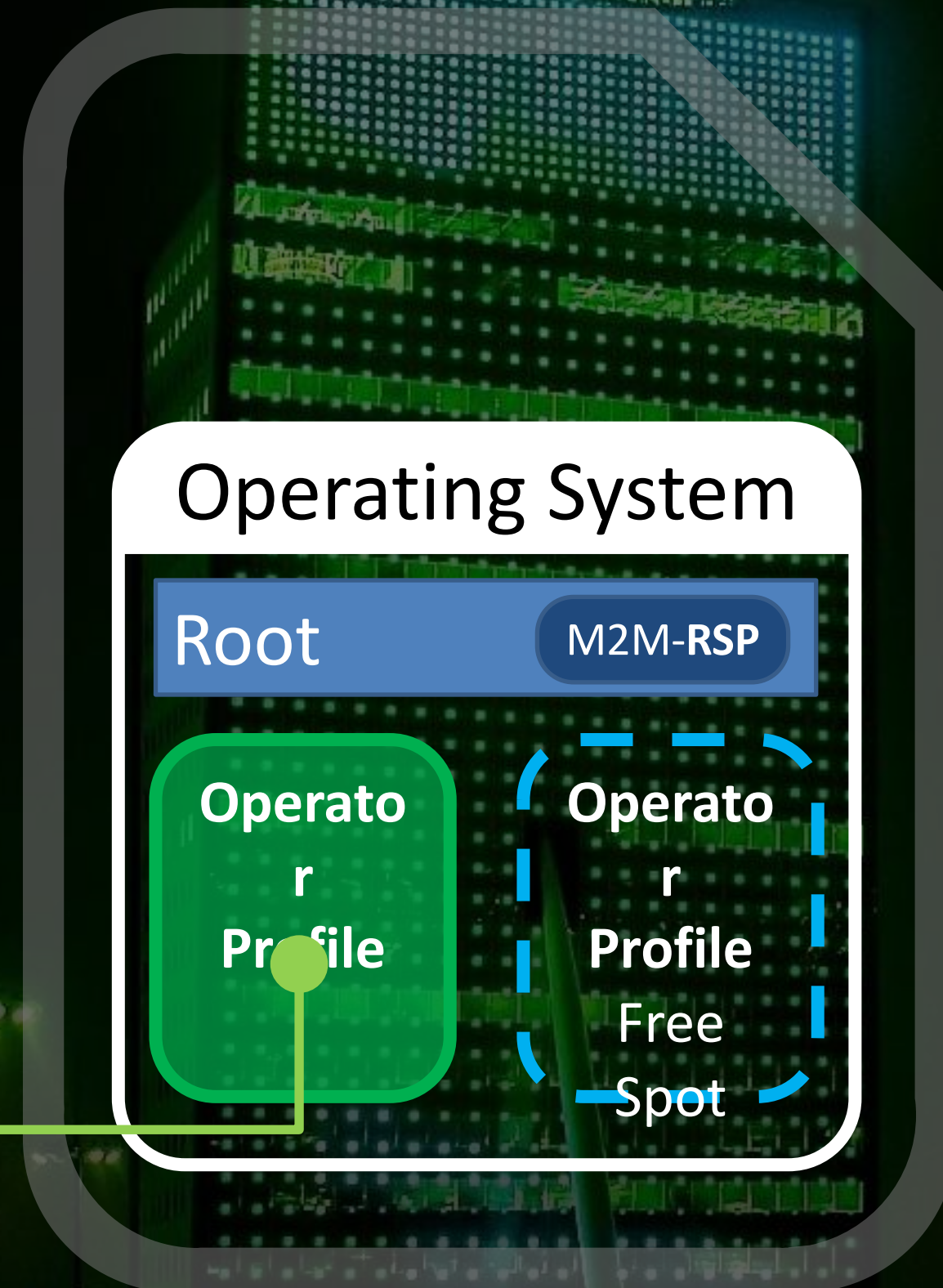


RSP = Remote SIM Provisioning

Platform to manage the Subscription



CMP
Control Center

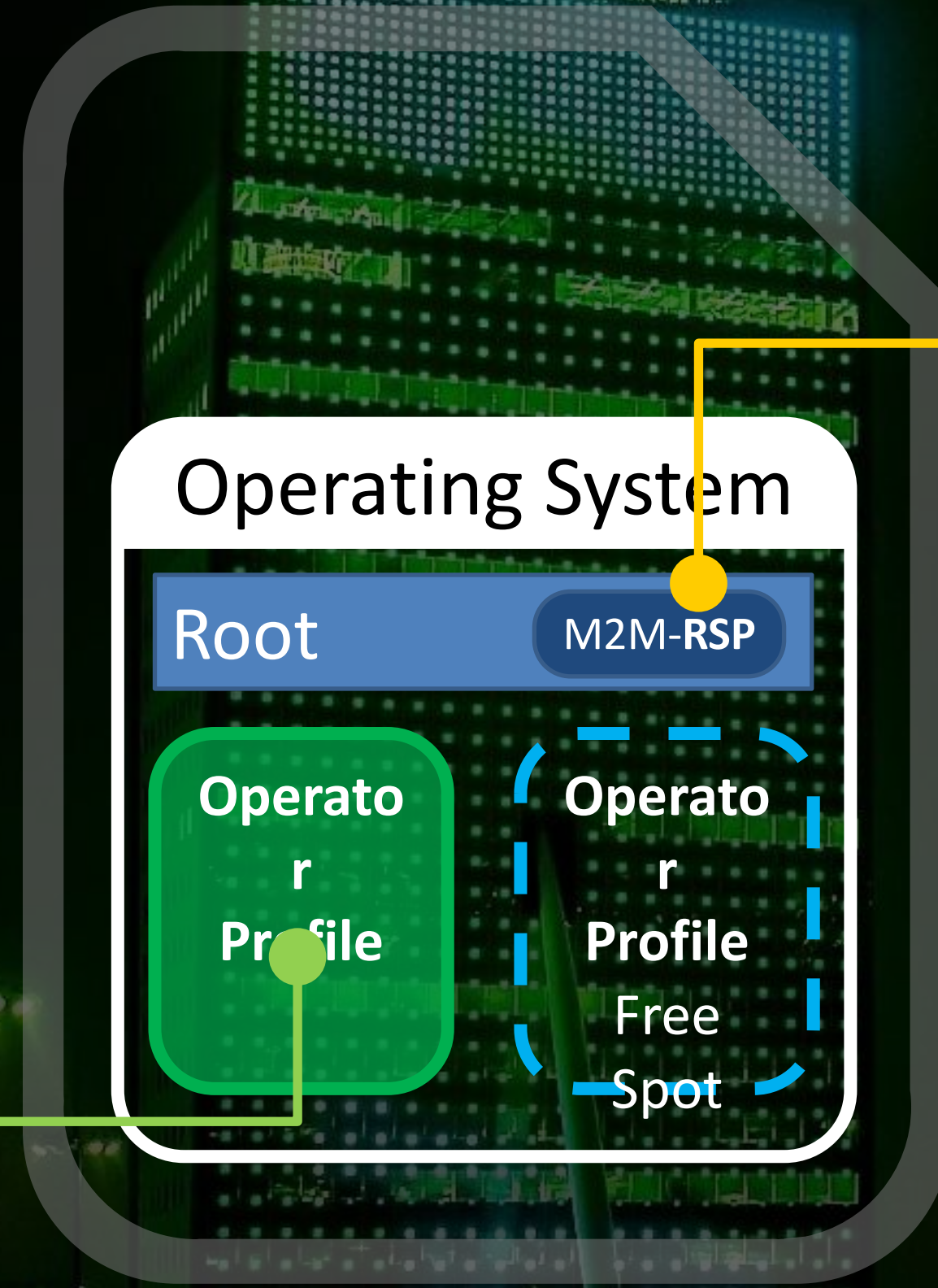


CMP = Connectivity Management Platform

New Platform to control the SIM



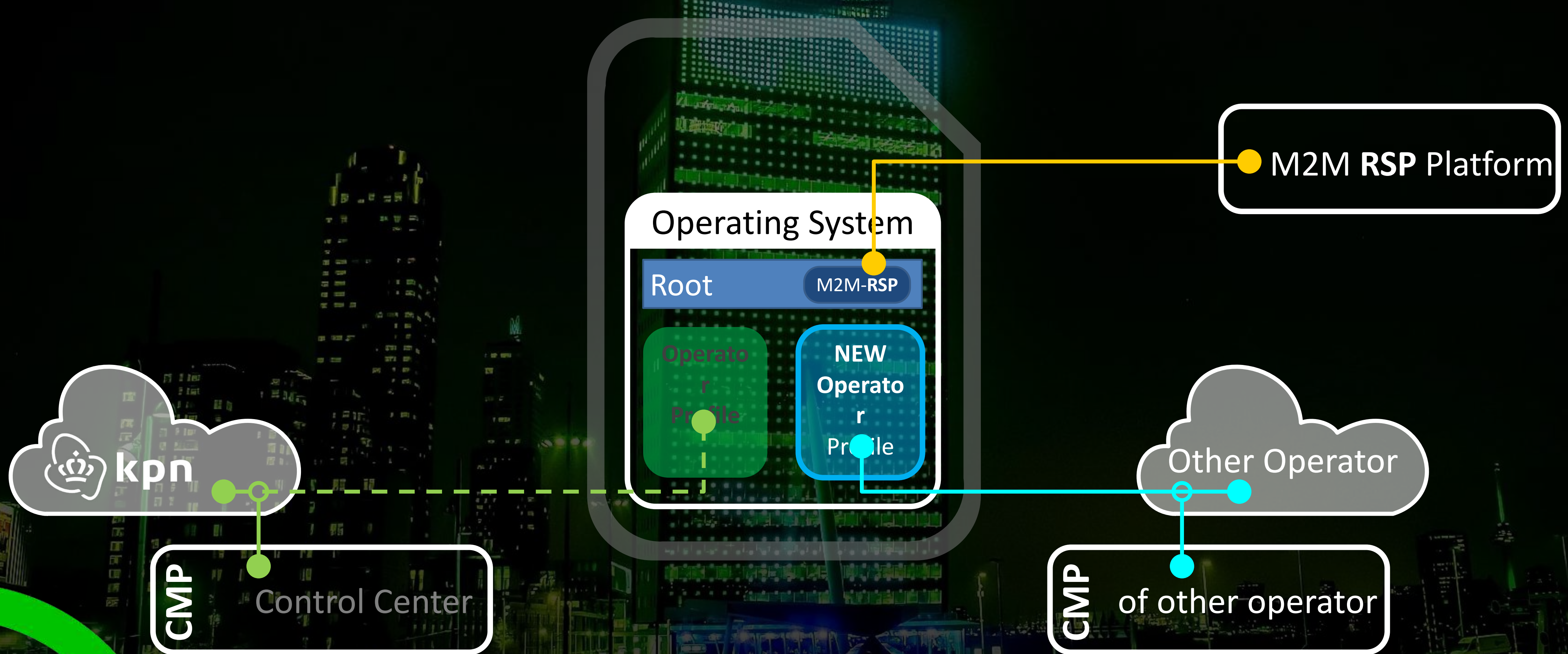
CMP
Control Center



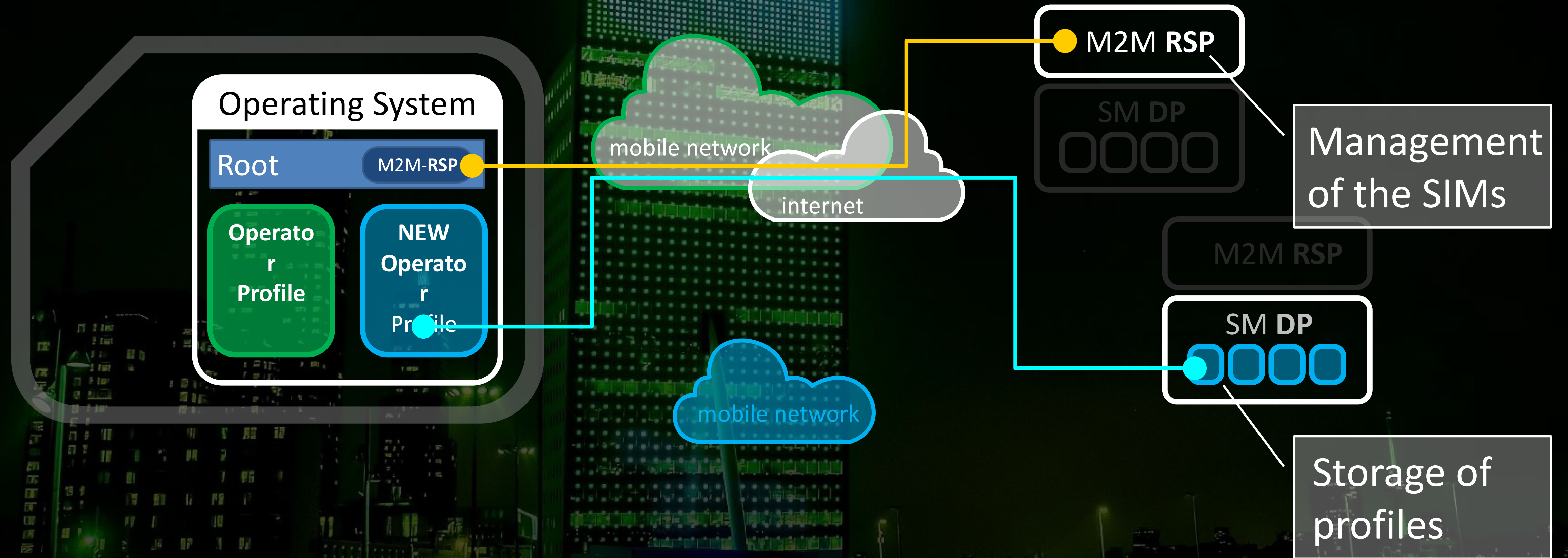
M2M RSP Platform

RSP = Remote SIM Provisioning

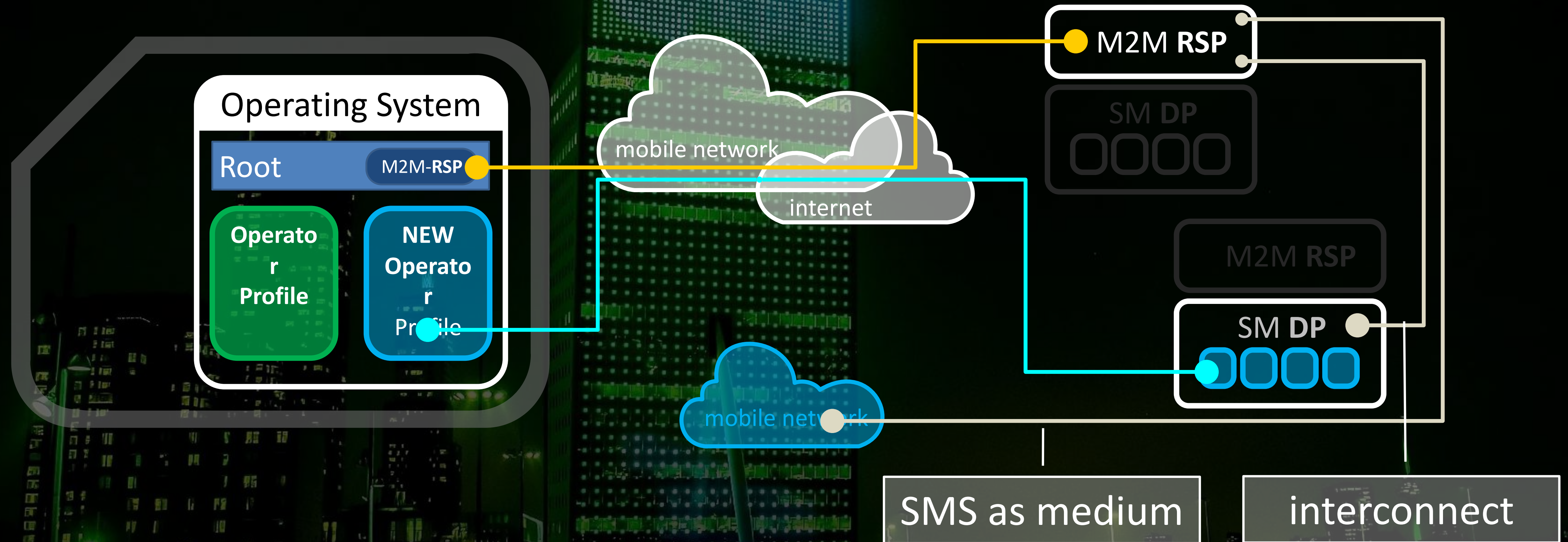
After switch still in control of the SIM



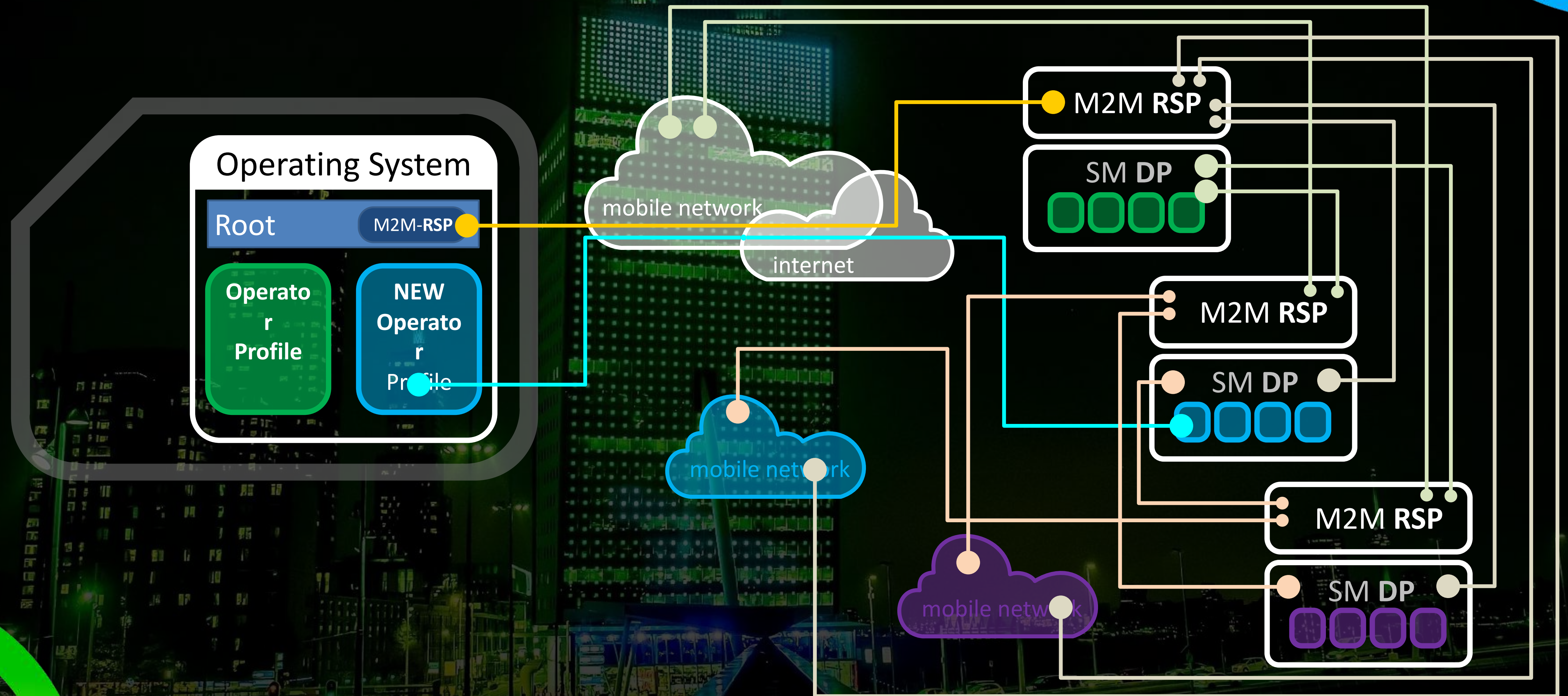
Where do I get a new profile?



Interconnections between platforms



The web of M2M-RSP connections



Results Poll

eSIM and/or Remote SIM provisioning (RSP)

the new buzzwords in IoT. Everybody is talking about it, but what would be the main reason for you to use RSP in your IoT solution?

25%

I can switch providers easily

6%

It will save me money

42%

No more need to swap out sims

28%

You tell me why

Reason to buy M2M-RSP

Local Usage

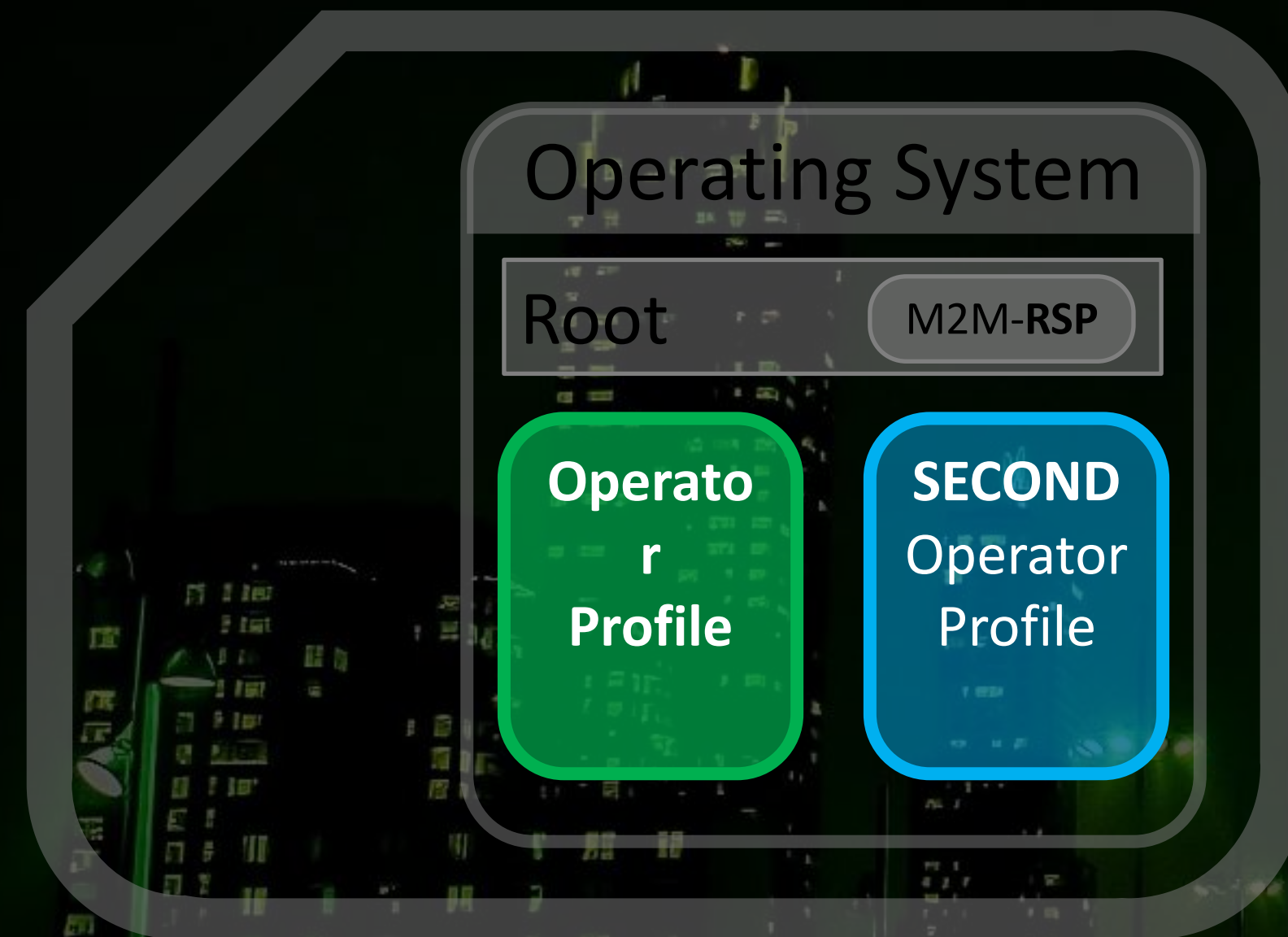
No permanent roaming allowed
Data stays in country
Local Breakout

EXIT scenario

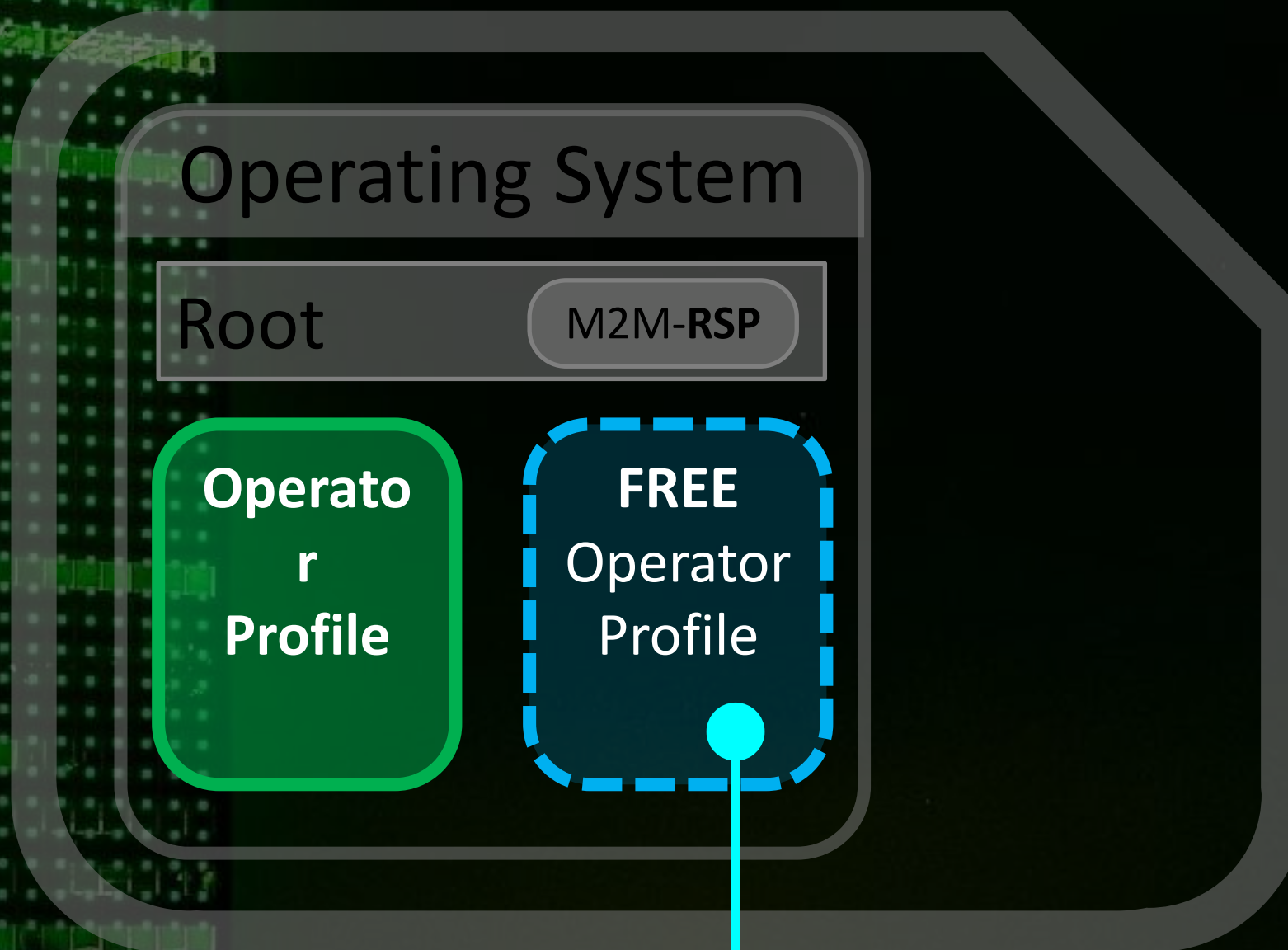
If your base is large enough
for a positive business-case

Interesting solutions

Preloaded Profiles



Profiles in KPN SM-DP



● M2M RSP

SM DP
●

Your Takeaway

- M2M-RSP is a technical strong solution
- Integrations are complex and expensive
- With clever implementations specific use-cases are possible



Agenda



The introduction of Consumer RSP



Multi-IMSI

2012



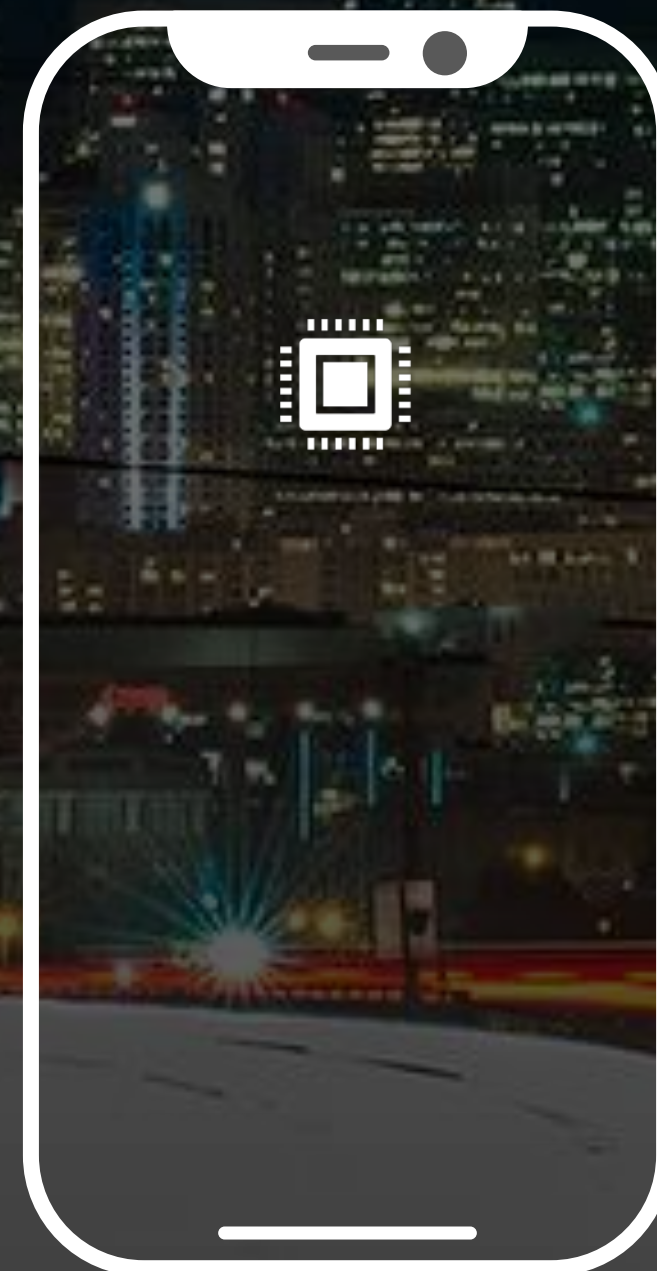
2015

v2.0

v3.x

v4.x

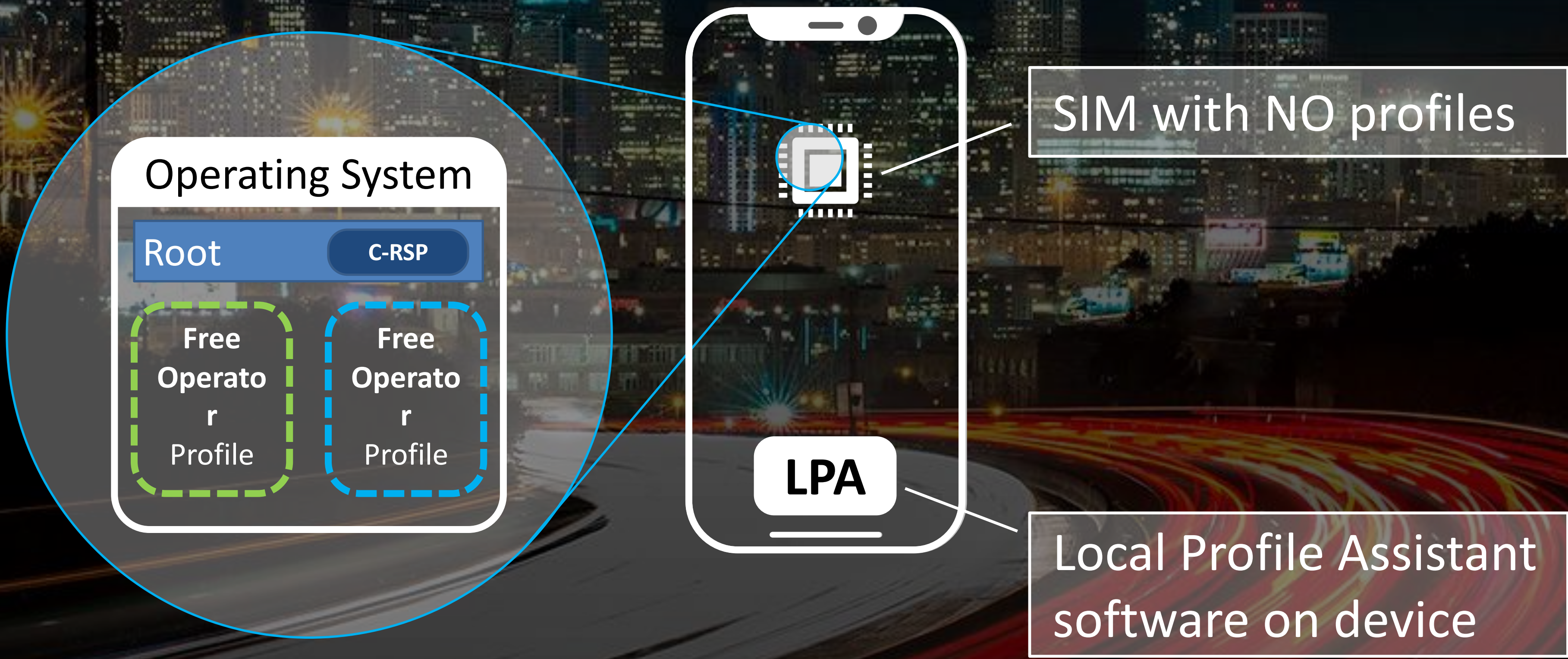
The goal of Consumer RSP



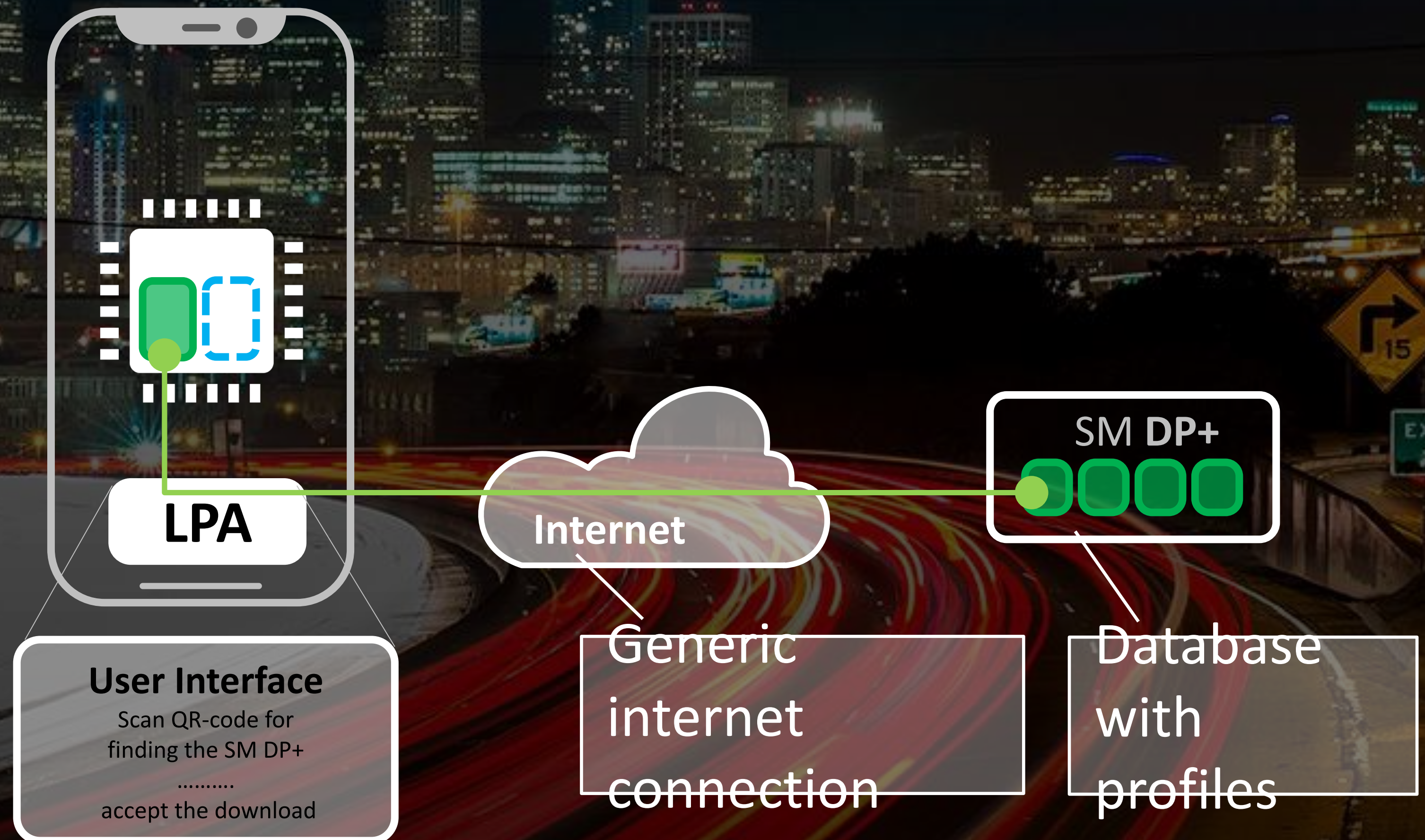
Device manufacturers must be able to place an **EMPTY SIM** in their device

End-Users must be able to **LOCALLY** download an operator profile.

What's in the Device



How to download a Profile



How to download another Profile

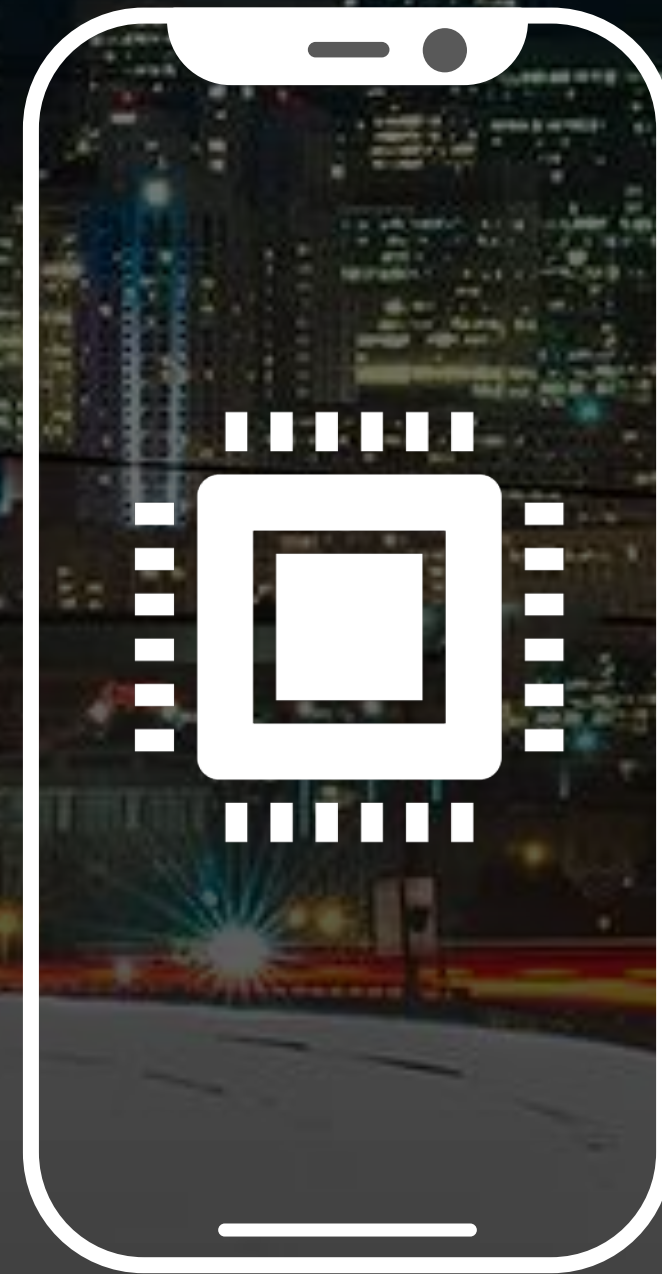


Consumer RSP is all local

SIM is now part of the BoM.

When leaving, totally disconnected from provider

No integration-costs for providers



- Process is 1 by 1
- Process requires User Interface
- Must be done locally

Act now with Consumer RSP

Devices with Consumer RSP Chip onboard

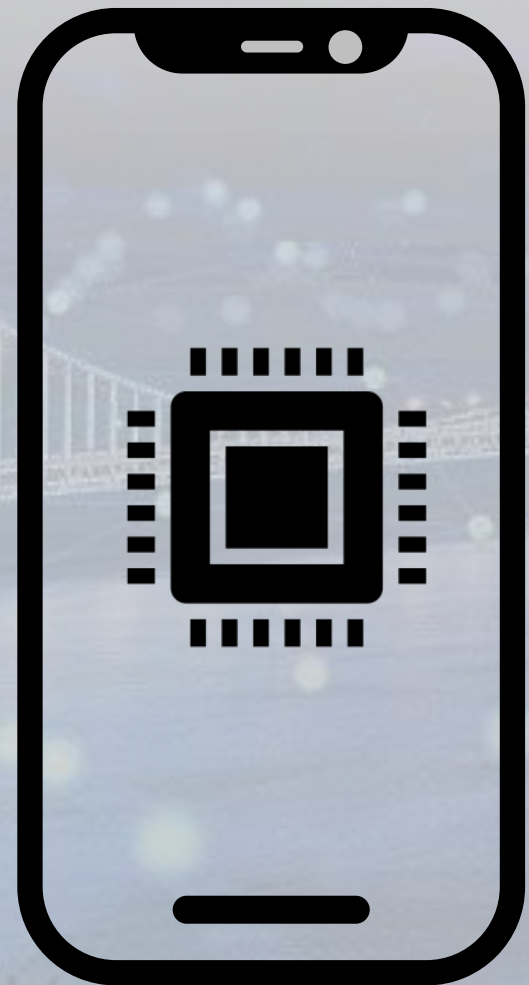


Use external UI when no UI on Device



UI = User Interface

Your Takeaway

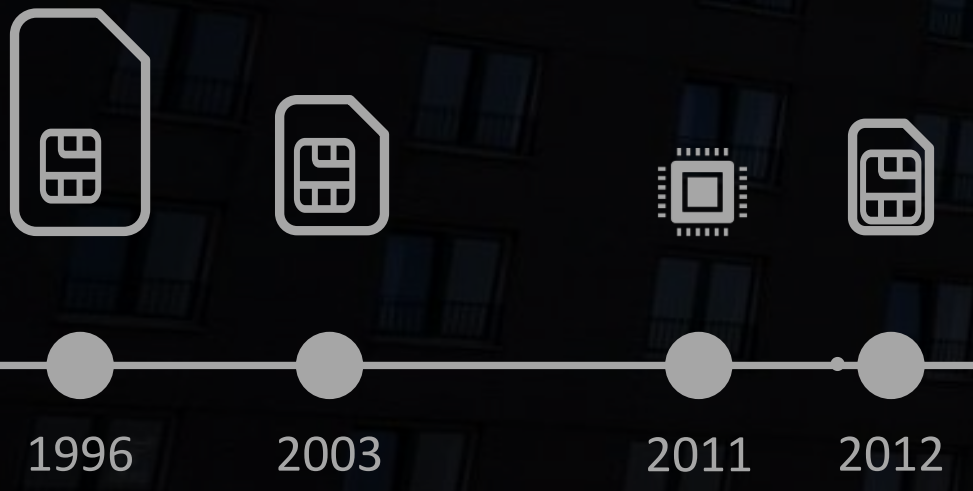


- SIM is part of BoM, Profile is available per Mobile Operator.
- A simple and independent solution with no strings attached.
- For many IoT-cases the local activities don't work.

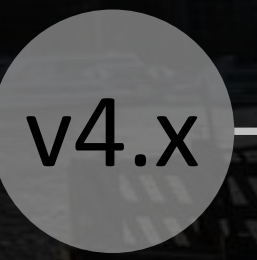
Agenda



The introduction of IoT RSP



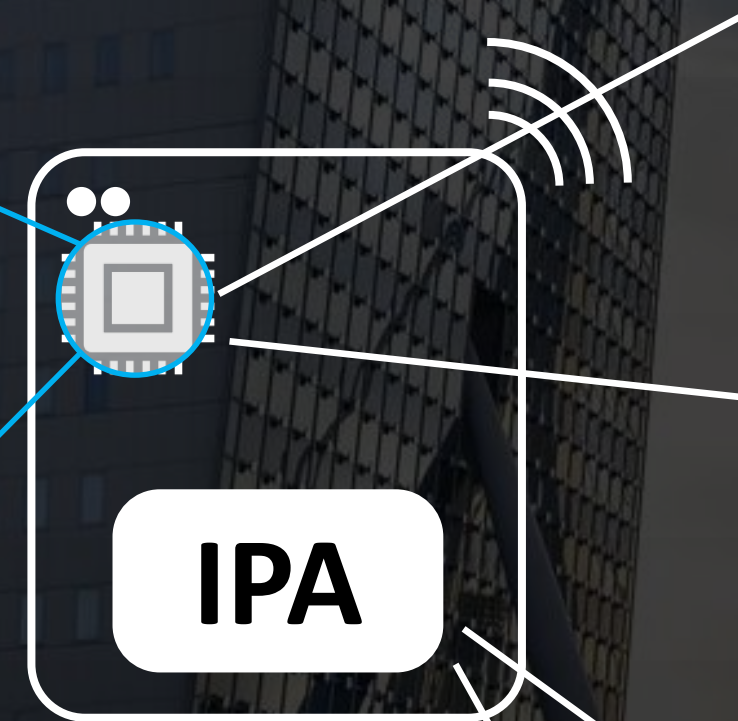
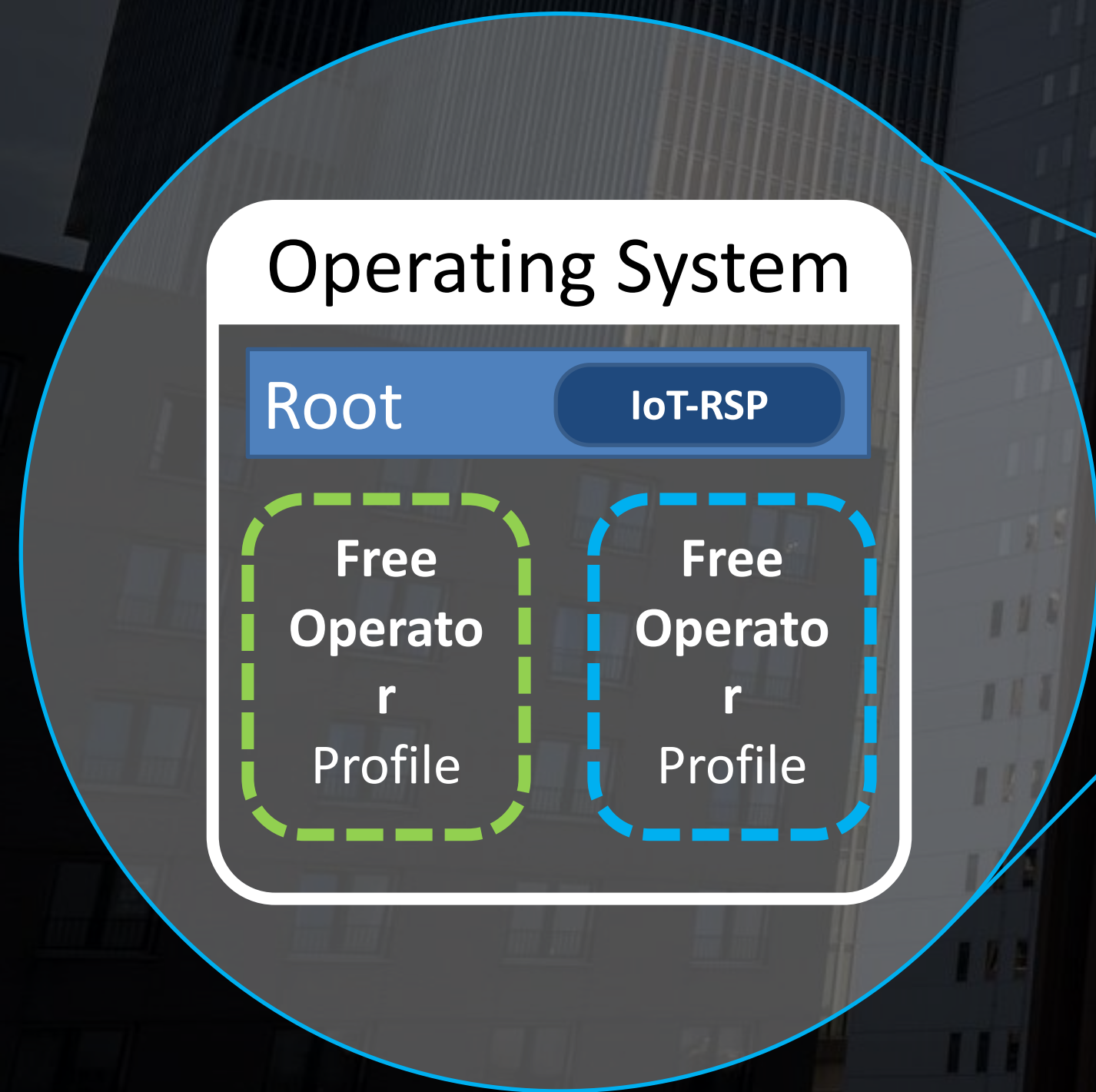
Multi-IMSI



What is the IoT RSP specification?

Based on the concept of the Consumer RSP specification, but modified for IoT cases, allowing remote and bulk actions.

What's in the Device



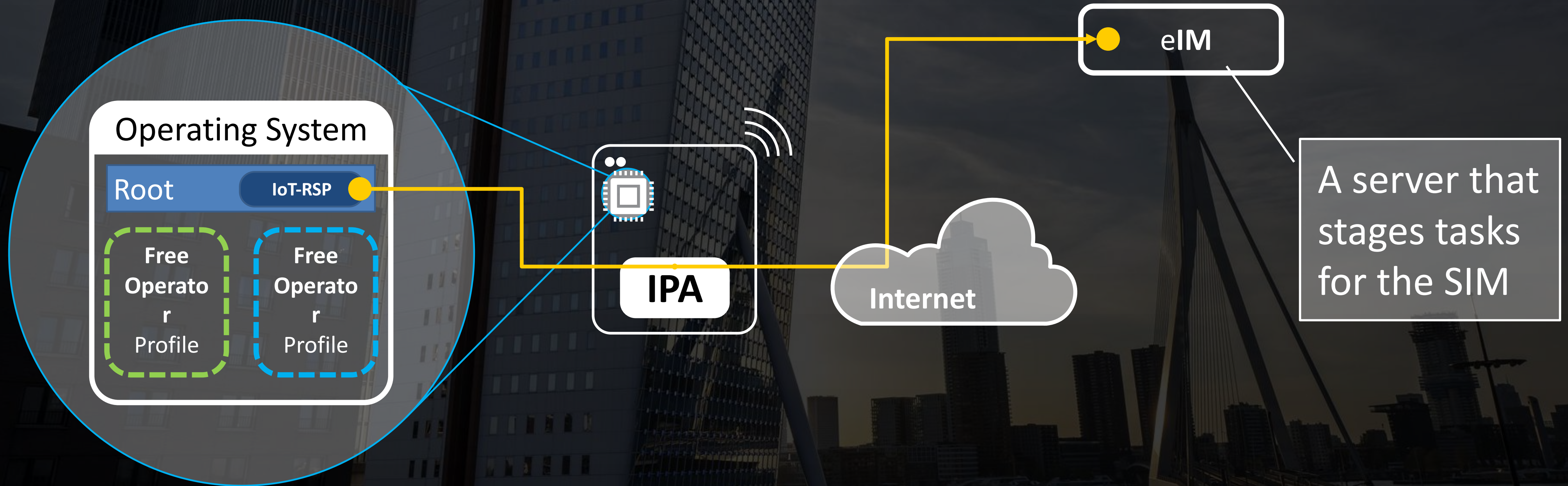
SIM hardware is the same as Consumer RSP

SIM Operating System is different (e.g. extra keys)

IoT Profile Assistant application on device

Device User Interface is optional

SIM checks periodical at eIM



The SIM checks at the eIM, not the other way around

eIM = eSIM IoT remote Manager

First usage, local staging

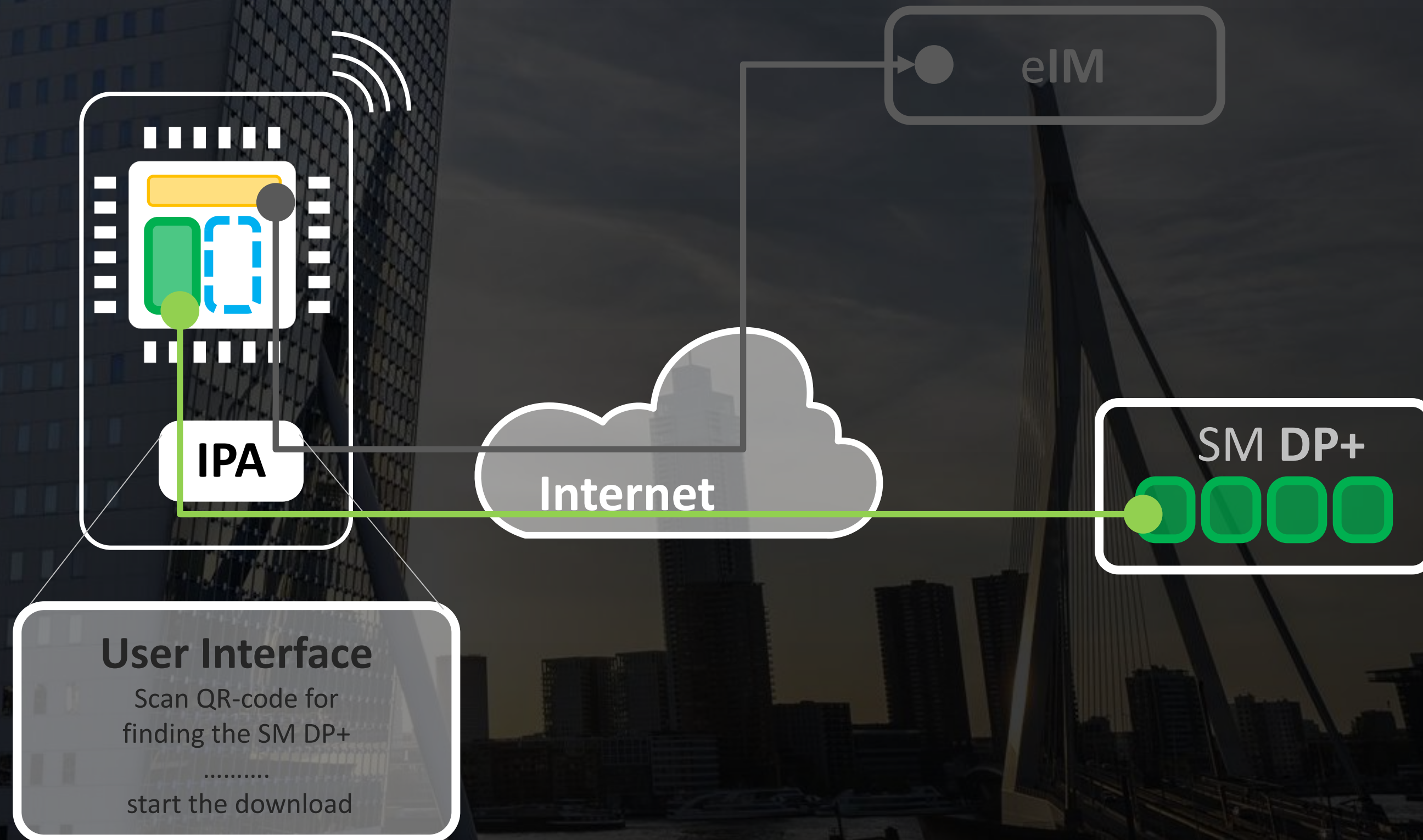
First usage – with UI

First usage – without UI

First usage – preloaded

Remote Operator switch

Remote eIM switch



Local staging with no UI or WiFi

First usage – with UI

First usage – without UI

First usage – preloaded

Remote Operator switch

Remote eIM switch



UI = User Interface

First usage, preloaded on the SIM

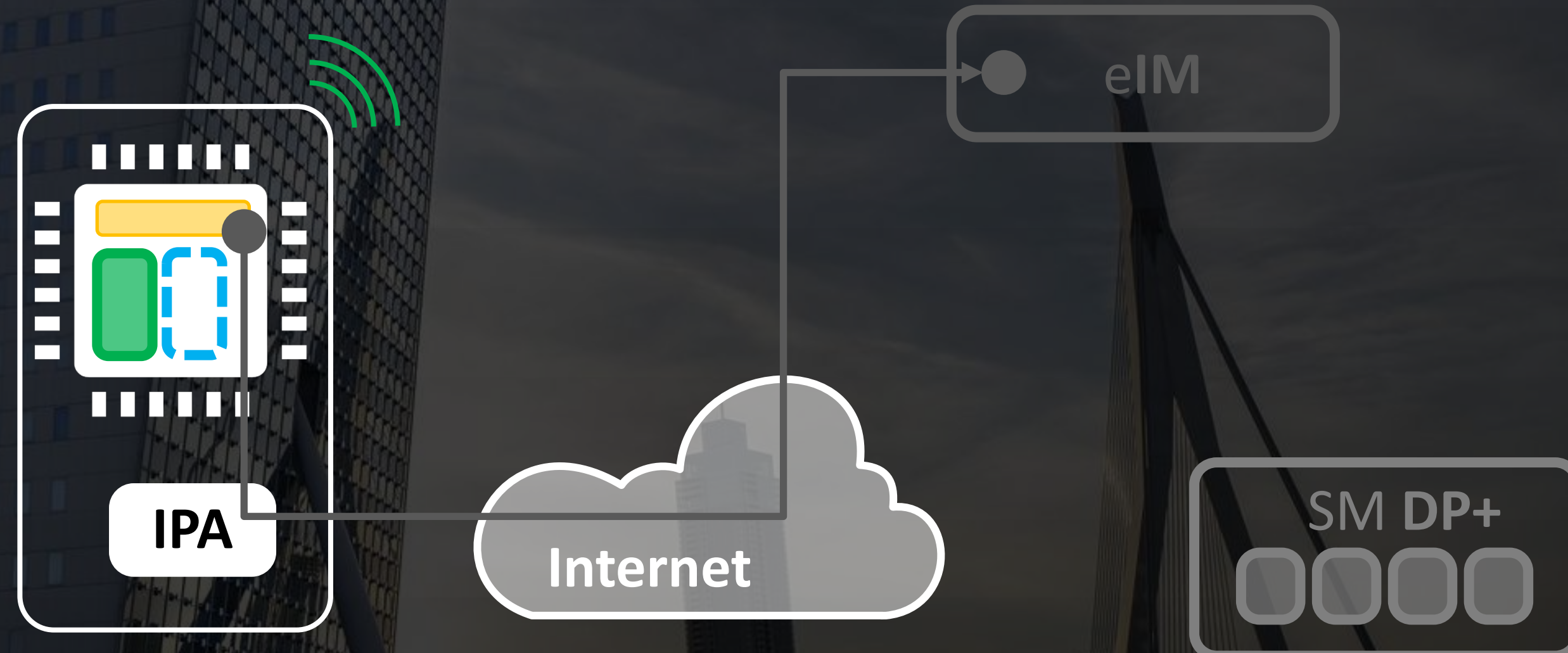
First usage – with UI

First usage – without UI

First usage – preloaded

Remote Operator switch

Remote eIM switch



Remote downloading a profile

First usage – with UI

First usage – without UI

First usage – preloaded

Remote Operator switch

Remote eIM switch



Remote downloading a profile

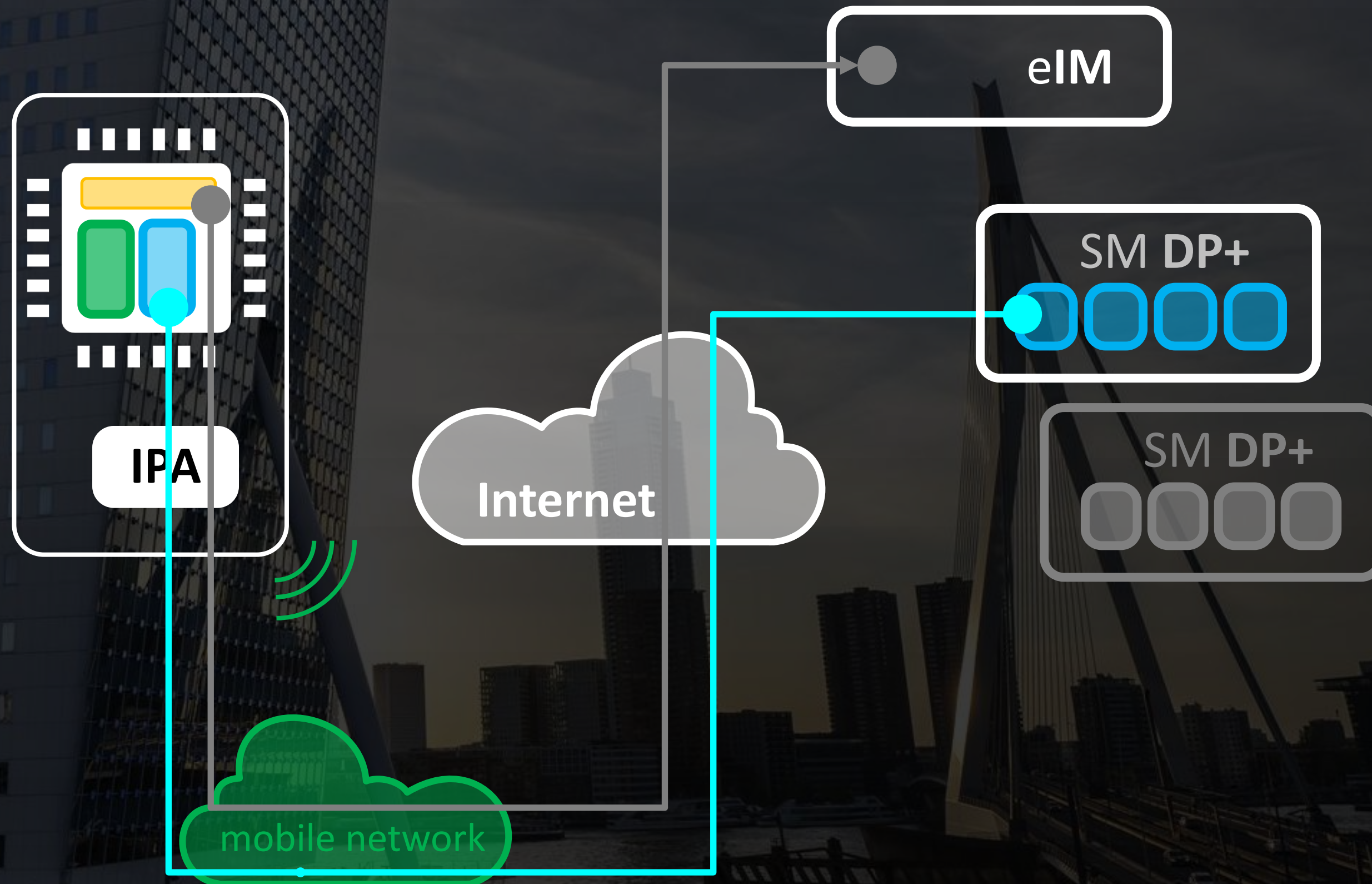
First usage – with UI

First usage – without UI

First usage – preloaded

Remote Operator switch

Remote eIM switch



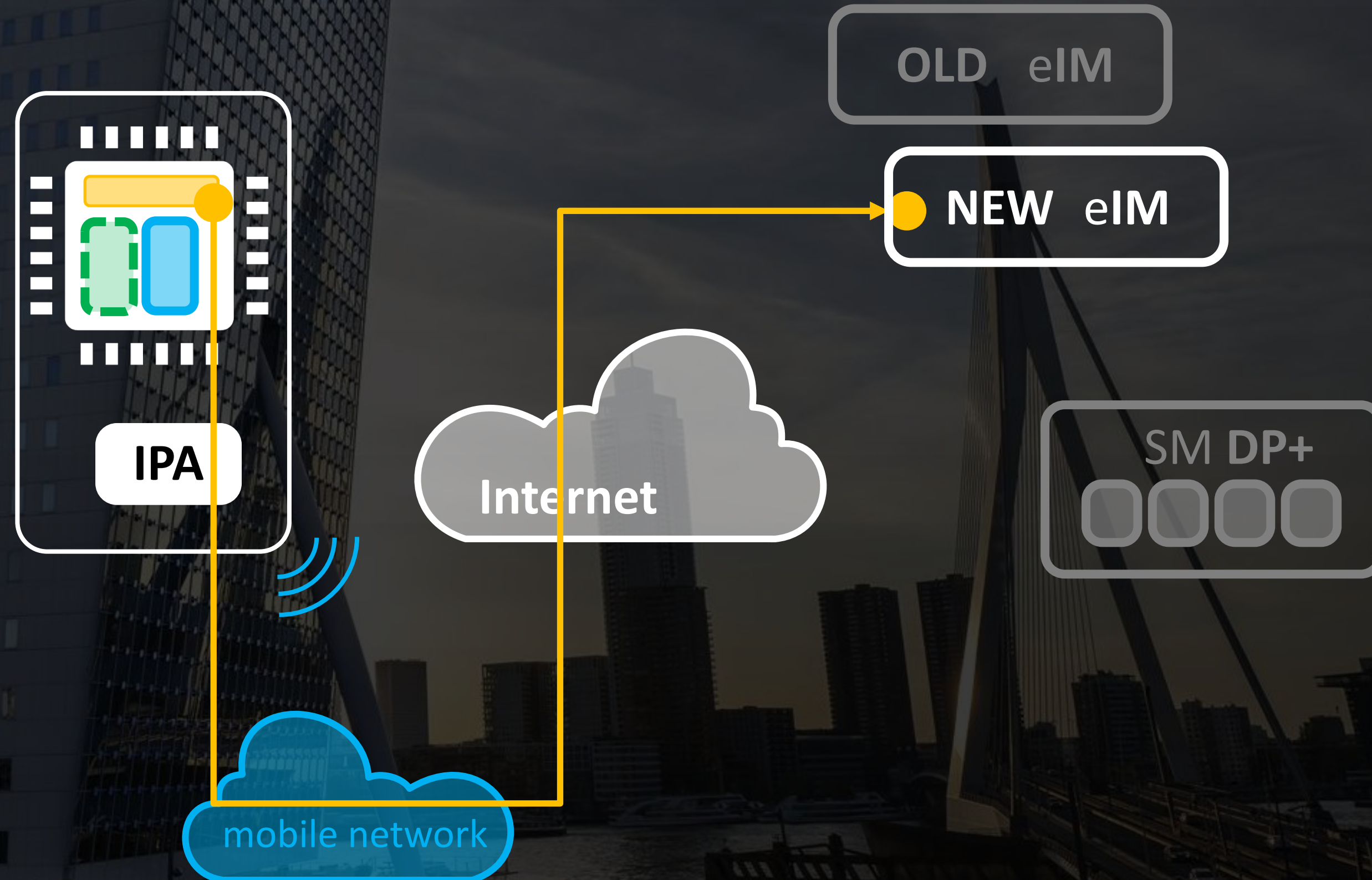
Changing the eIM

- First usage – with UI
- First usage – without UI
- First usage – preloaded
- Remote Operator switch
- Remote eIM switch**

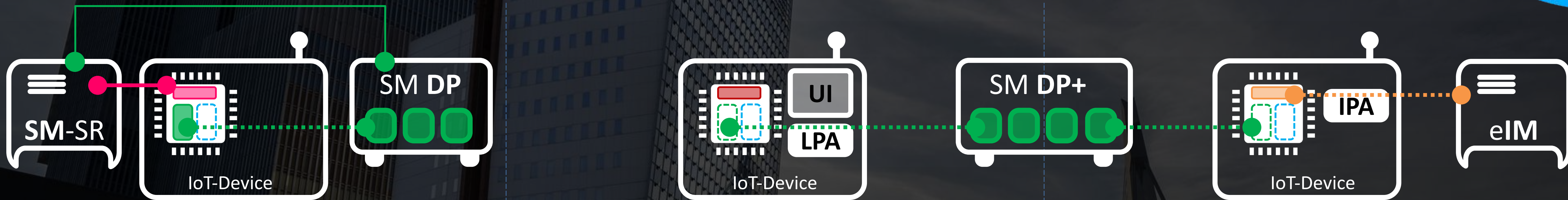


Changing the eIM

- First usage – with UI
- First usage – without UI
- First usage – preloaded
- Remote Operator switch
- Remote eIM switch**



Compare the 3 flavors



M2M - RSP SGP.02

- No hardware requirements
- Always Profile on the SIM
- SM-SR in control of the SIM
- RSP-platform integration needed
- Now available

Consumer - RSP SGP.22

- Requires LPA & local UI
- SIM can be empty
-
- SM-DP+ is stand alone
- Now available

IoT - RSP SGP.32

- Requires IPA
- SIM can be empty
- eIM stages activities
- SM-DP+ is stand alone
- Not yet available

Poll

Which RSP specification would you choose for your product?

M2M - RSP
SGP.02

Consumer - RSP
SGP.22

IoT - RSP
SGP.32

- a. M2M specification
- b. Consumer specification
- c. IoT specification
- d. I hope that you will tell me

Now available

Now available

Not yet available

Your Takeaway

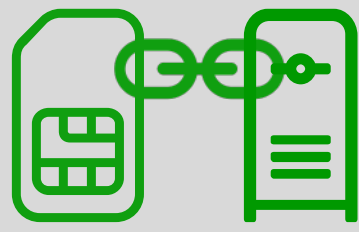


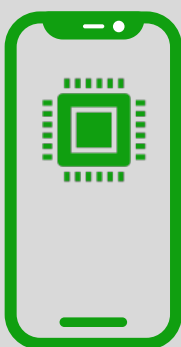
- IoT RSP offers the best of both worlds
- No strings attached, but simple remote access
- Ideal solution for a diversity of IoT cases

Agenda





History


M2M RSP


eSIM


IoT-RSP


Next

Specifications of the SIM

Power usage
shock proof
Life span
read/write cycles
temperature range
RSP-capabilities
SMS security



Different sizes

- Less space in device
- Less material in device

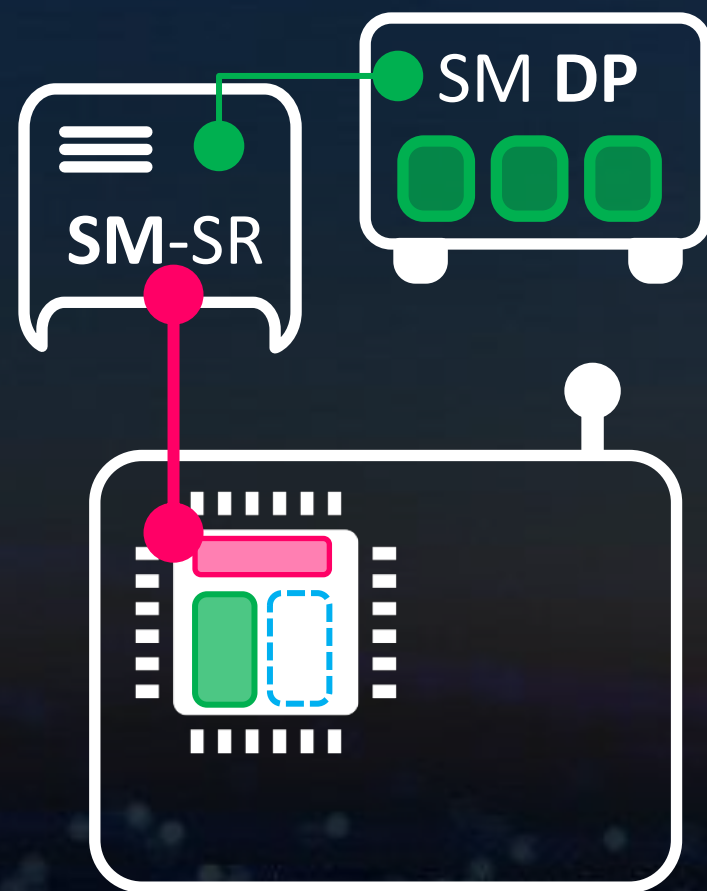
Quality of the SIM

- Business Grade
- Industrial Grade
- Automotive Grade

Type of RSP capability

- None
- M2M-RSP
- Consumer-RSP
- IoT-RSP

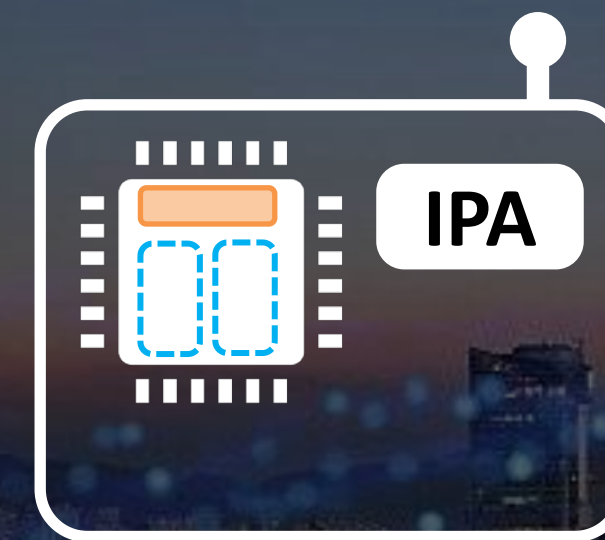
What to do now?



Currently
M2M RSP



Consumer-RSP
Products

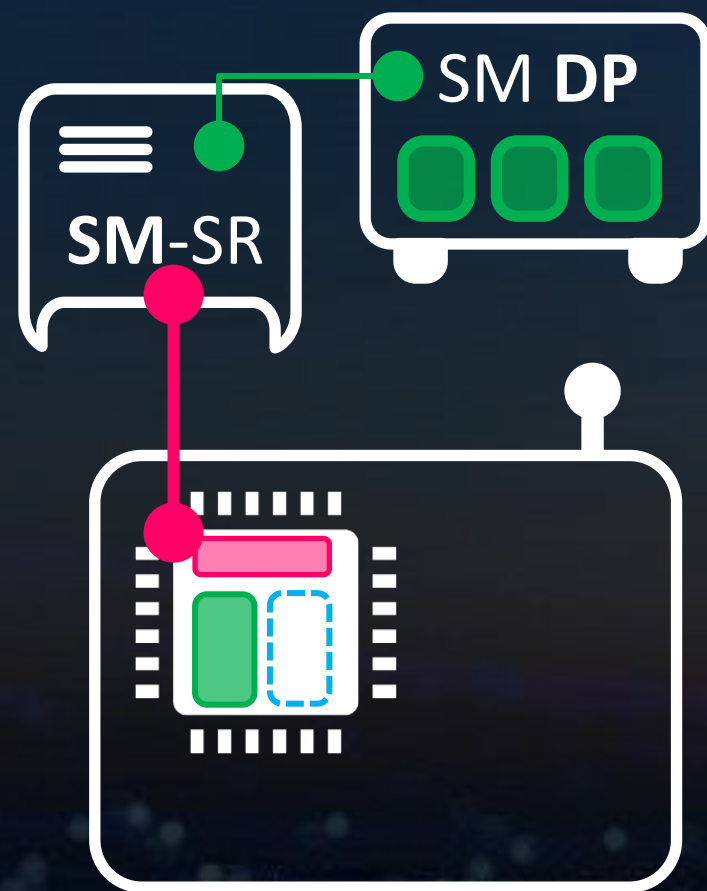


Next version of
your product



Quick Start with
Preloaded SIM

What to do now?

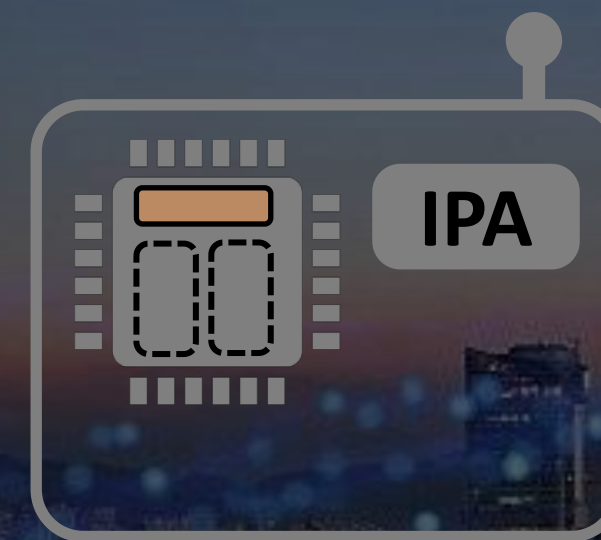


Currently M2M RSP

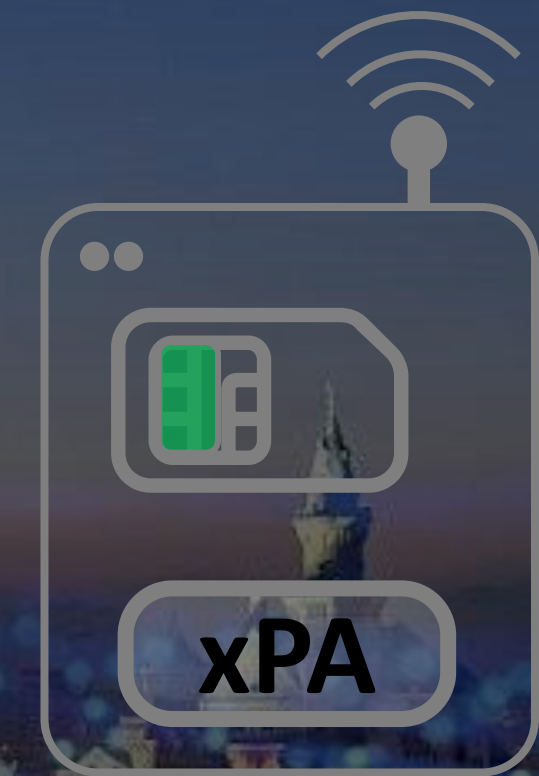
Look at your use-case
Continue to use
Invest for future
in IoT-RSP



Consumer-RSP Products

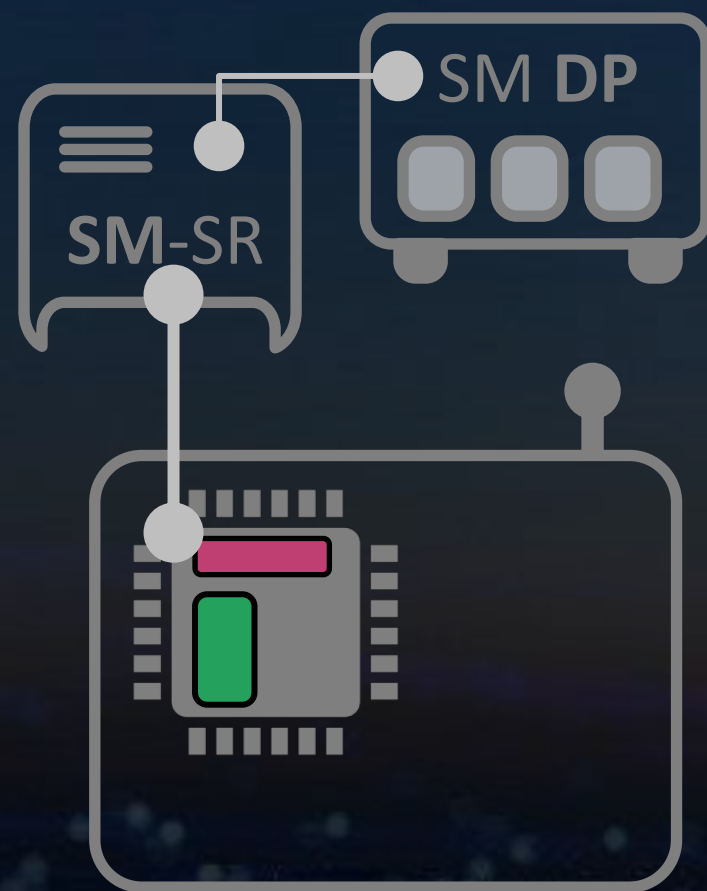


Next version of your product



Quick Start with Preloaded SIM

What to do now?



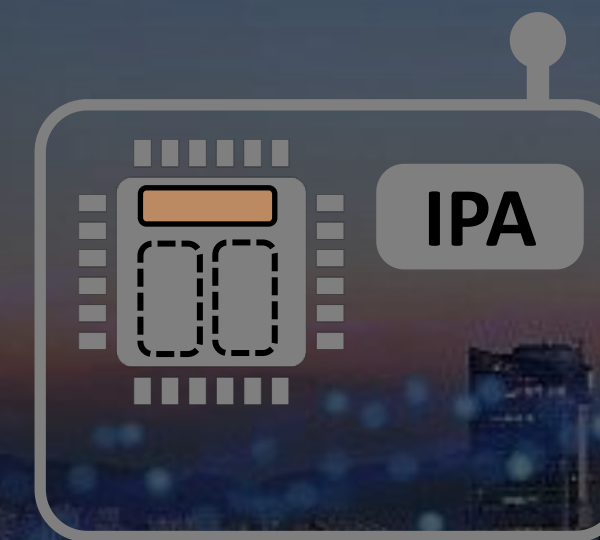
Currently M2M RSP

Look at your use-case
Continue to use
Invest for future
in IoT-RSP

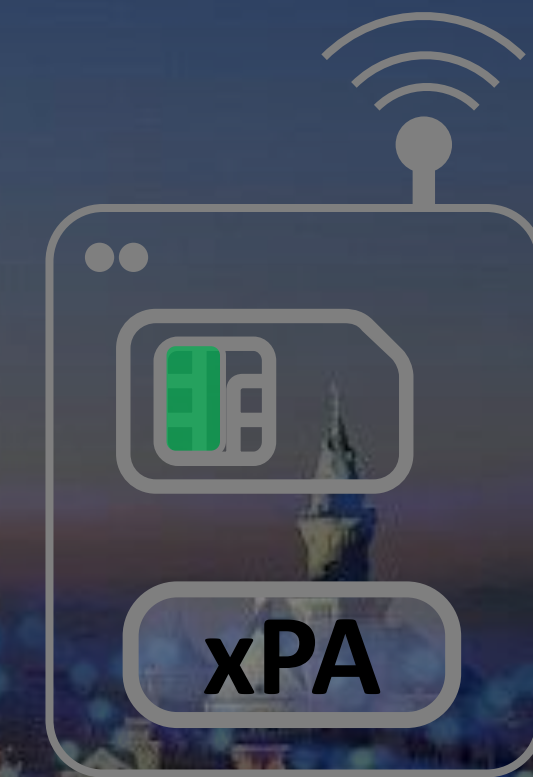


Consumer-RSP Products

Try the KPN profile and
profit from the Cisco
Control Center
capabilities

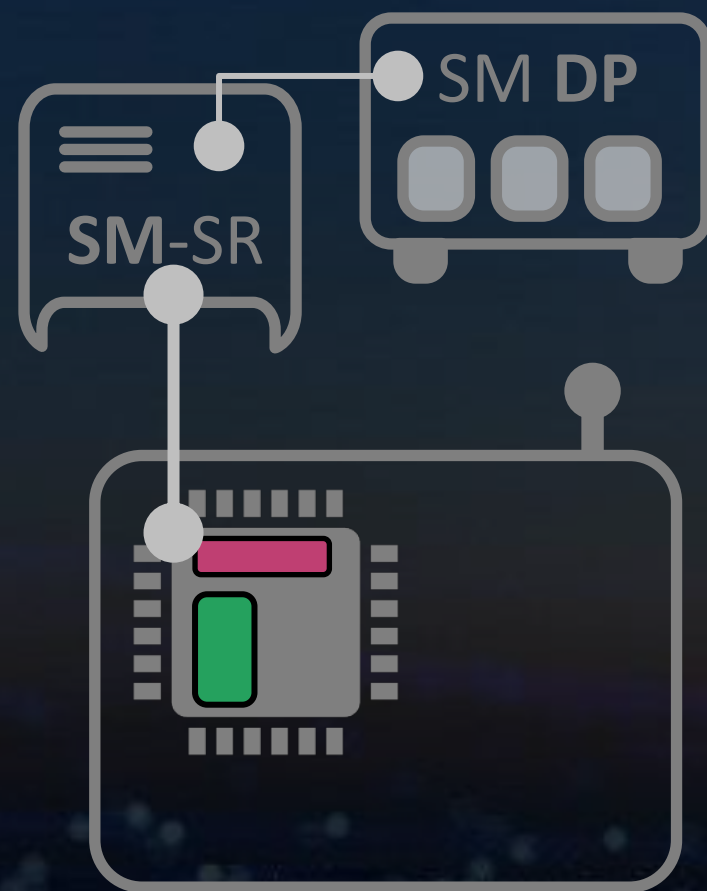


Next version of your product



Quick Start with Preloaded SIM

What to do now?



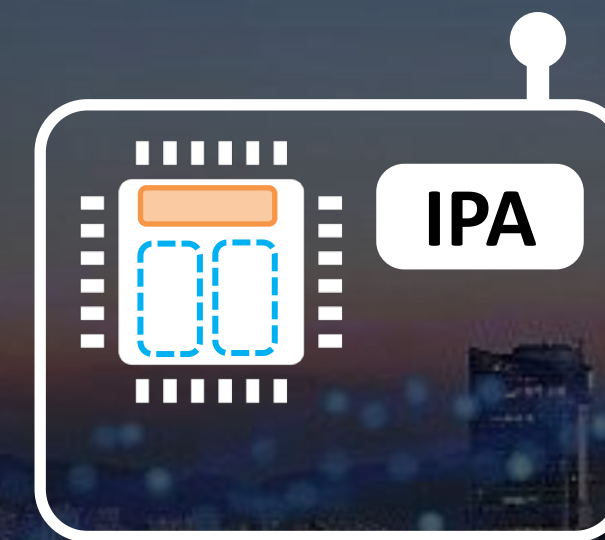
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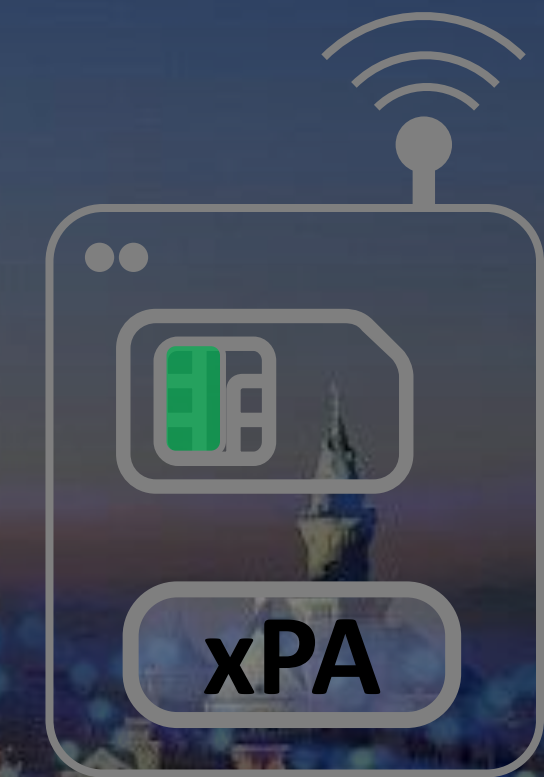
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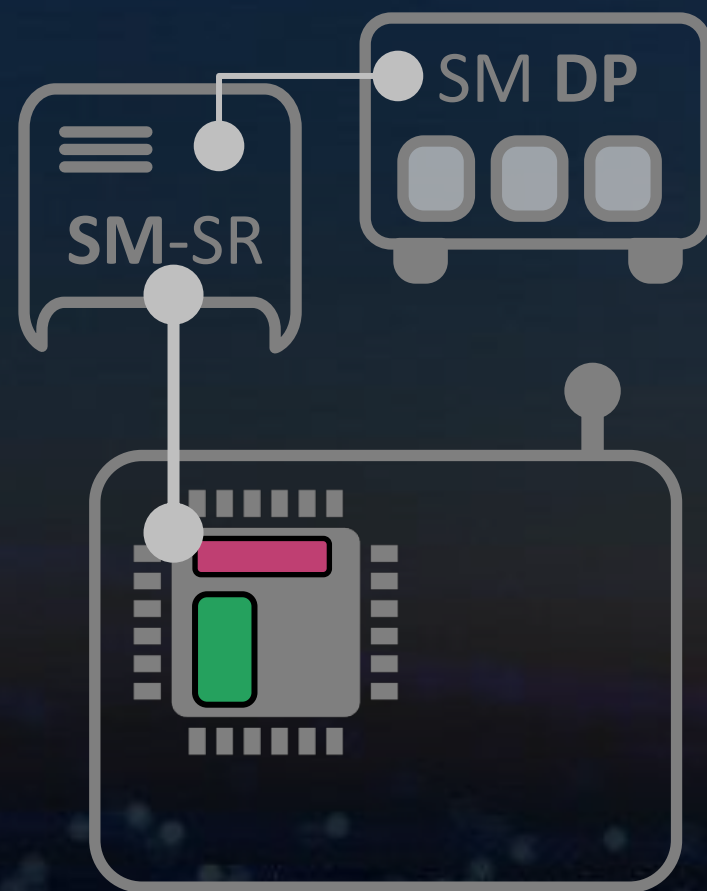
Next version of your product

Start investigating in
building your own IPA



Quick Start with Preloaded SIM

What to do now?



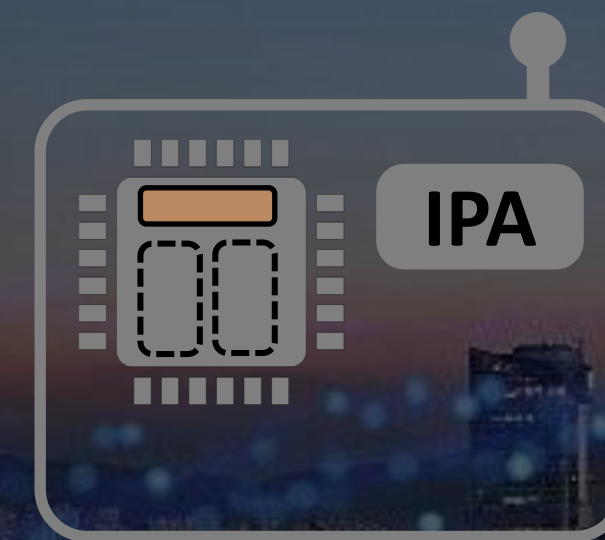
Currently M2M RSP

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Next version of your product

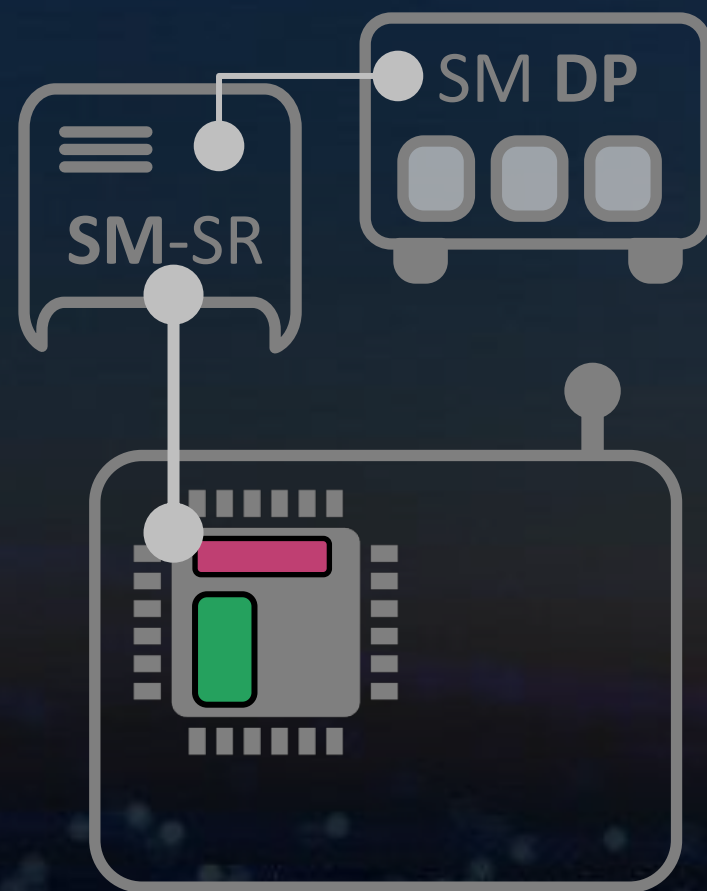
Start investigating in
building your own IPA



Quick Start with Preloaded SIM

Order Plugin- or Chip-
SIMs from KPN IoT and
start directly.
Create the IPA/LPA
later

What to do now?



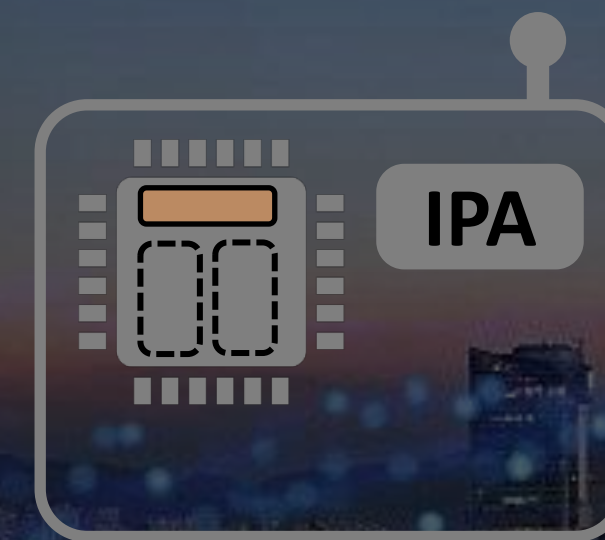
Currently M2M RSP

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Consumer-RSP Products

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Next version of your product

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building your own IPA



Quick Start with Preloaded SIM

Proprietary platform
Remote access of an
LPA (Consumer RSP)

Act later with IoT RSP

As soon as IoT SIMs are available we deliver

SM-DP+

Downloadable profiles with IoT Control Center management

IoT RSP SIMs

Empty or pre-provisioned IoT RSP SIMs

eIM

a KPN platform that can be used for your SIM

LPA/IPA

Support on integrations with LPAs and IPAs

Recap

SIMs

KPN IoT offers a wide range of SIMs dedicated for your IoT project. Find the best flavor for your IoT solution.

IoT RSP SIMs

The new specification resolves the challenges of the current M2M RSP solution, but is not available till beginning 2024.

Act NOW?

The KPN IoT subscription (with Cisco Control Center) is available for devices with Consumer RSP SIMs on board.

Thank you for joining us!

Our next Webinar is about Cisco Control Center
21st of September 2023