

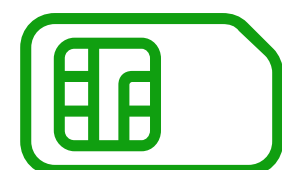
International Connectivity overview & trends

Titia Houwing
Bram van den Nouweland
Tsambiko Pusch

2023 Let's Connect Webinar Serie



Connectivity
Today



RSP & eSIM
June



Control Center
September



Security
December

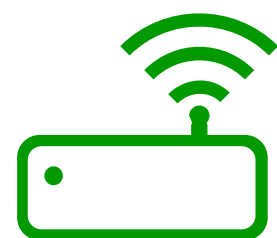
Topics



Typical IoT solutions



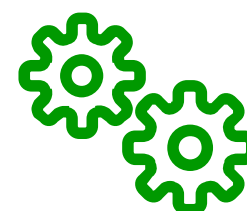
The full chain of an IoT Solution



Devices



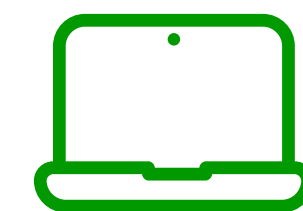
Connectivity



Data Processing



Destination



Application

The different types IoT Propositions



Freemium

For testing the functionalities and PoC of your IoT solution.



Explorer

A standard and more basic KPN IoT solution. Only available online.



Modular

Build an IoT solution based on our standard 5 building blocks.



Tailored

The tailor-made solution for your dedicated needs.

M2M Corporate

The KPN Things Portal

The screenshot displays the KPN Things Portal interface. At the top left is the KPN IoT logo. The top navigation bar includes links for Overview, Things manager, FOTA, Support (which is highlighted with a green underline), and Shop. In the top right corner, there is a user profile icon and a dropdown arrow.

Below the navigation bar, a heading reads "All **help and resources** in one place". To the left is a sidebar menu with the following items: Support home, Disturbances, News, Manuals & Forum, Support Tickets, Invoices, Documents & Reports, and Contact info.

The main content area features a grid of six service tiles, each with a green icon and a title:

- User manuals**: User documentation of the Things applications (icon: document with checkmark)
- SLA reports**: See how we delivered (icon: smiley face)
- Network Status**: Current status of your network components (icon: antenna tower)
- Invoices** (icon: smiley face)
- Installed Base** (icon: smiley face)
- Shop** (icon: shopping basket)

On the right side of the page, there are two sections:

- Active Disturbances**: Includes a link for "All disturbances" and a status message "No open issues" with a small icon.
- Previous Disturbances**: Lists "Planned maintenance | Change number: 275794" and "Renew the Cisco IoT SLL certificate".

Your Takeaway

- Device - network interactions become more relevant.
- KPN invests time and resources in hardware.
- KPN is integrating all IoT solutions in one Things Portal.
- KPN delivers off-the-shelf devices (e.g. routers).



Network Modernization

Planned maintenance Radio network modernization

Dear customer,

In the attached list you will find zip codes for week 14.

In order to implement these improvements, we will be carrying out work on the antenna systems in the coming period. The work will be carried out between 7 a.m. and 6 p.m. during the day in connection with legislation and regulations on safety, working conditions and nuisance. In general, this will cause little inconvenience to customers, as the surrounding cells will temporarily absorb the coverage. But on the day that the antenna you are connecting to is replaced, you may experience 4 to 8 hours of inconvenience.

Immediately after the work, it will be noticed that the quality of the network is back to what you are used to from us. If your equipment does not have a trigger to automatically restart after work, it is advisable to manually restart.

In the following weeks we will optimize the configuration of the network and you also experience the aforementioned quality improvements.

Should you nevertheless experience a structural decrease in the performance of the network, please report this to the Service Desk.

Kind regards,

 KPN IoT
Operations Team

If you have any questions about this planned maintenance, we are happy to assist you. Please contact the IoT Service Desk through the [MyKPN Business portal](#) or by phone on number +31(0)881200043. In case of high urgency / high impact, we ask you to use the P1/P2 procedure. Open a request in the MyKPN Business portal and call the IoT Service Desk.

You receive service e-mails from KPN IoT based on your subscription preferences. You can update your preferences via the [IoT Service Portal](#) under 'MyProfile'.



Planned maintenance | Change number: 296639 Standard Control Center Platform failover

Dear customer,

We would like to inform you about the following planned maintenance.



What

Cisco IoT will perform a standard Control Center Platform fail over from SAN JOSE to AMSTERDAM data center.



When

Start: Thursday 06 April, 23:00 (CET)
End: Friday 07 April, 03:00 (CET)
Duration of interruption: approximately 240 minutes

Interruption / impact

During this maintenance window, access to the Cisco IoT Control Center Web UI and API services may not be available for a short period of time. No impact on other services (Data/Voice/SMS etc.) is expected during this maintenance window.

Action required

During the maintenance, no action is required from the customer / end user.

Kind regards,

 KPN IoT
Operations Team

If you have any questions about this planned maintenance we are here to assist you. Please contact the IoT Service Desk through the [MyKPN Business portal](#) or by phone on number +31(0)881200043. In case of high urgency / high impact, we ask you to use the P1/P2 procedure. Open a request in the MyKPN Business portal and call the IoT Service Desk.

What do you think of this email?

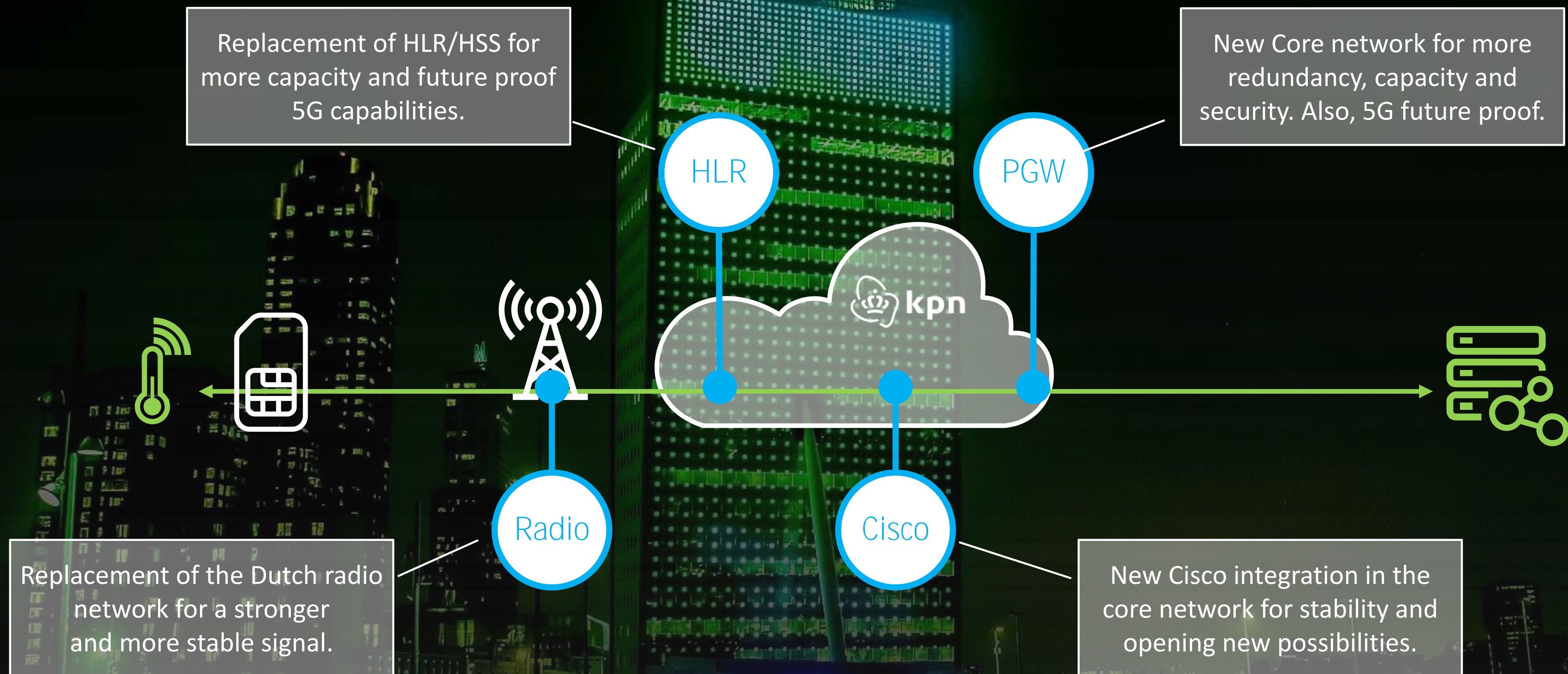


You receive service e-mails from KPN IoT based on your subscription preferences. You can update your preferences via the [IoT Service Portal](#) under 'MyProfile'.

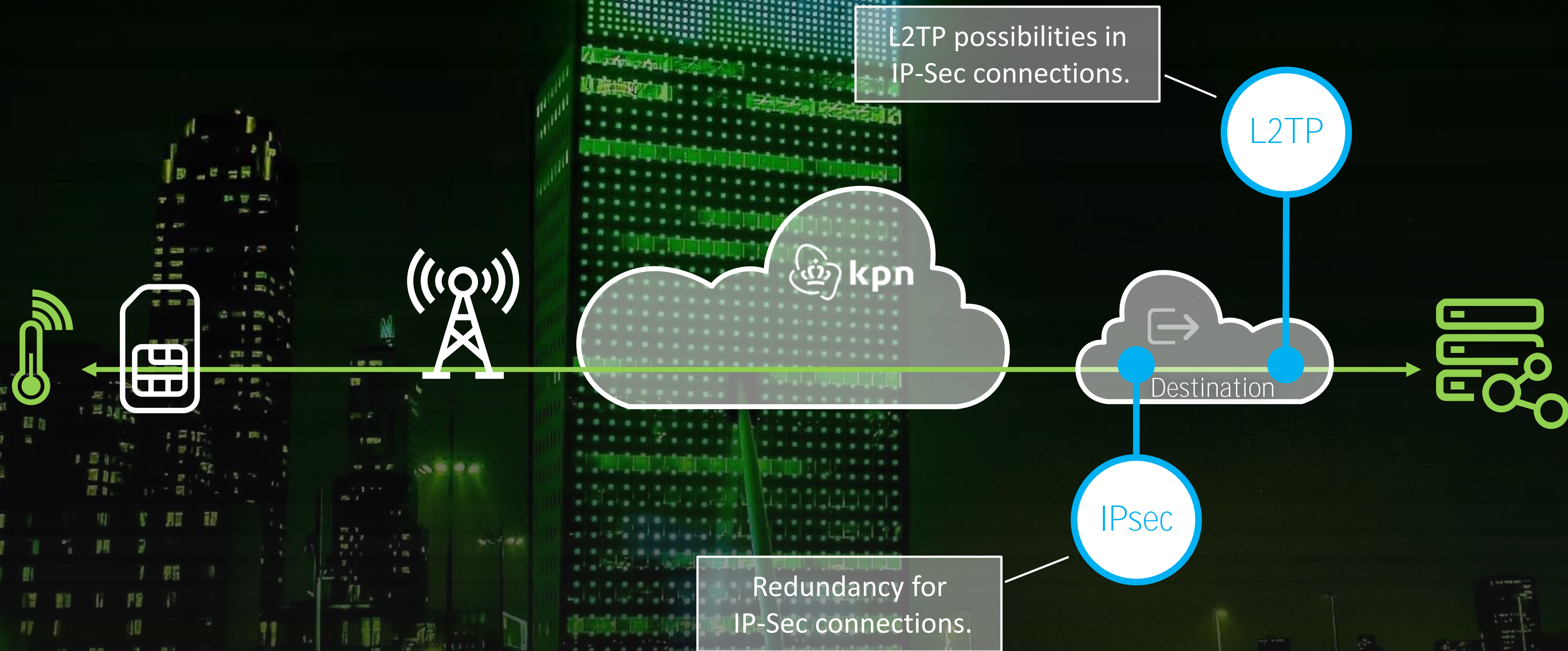


KPN B.V. - Postbus 30000 - 2500GA Den Haag - KvK nr. 27124701

KPN Network modernization



KPN Network modernization



Your Takeaway



- Extra functionalities in our Destinations to your BackEnd.
- A lot of work behind the scenes, to keep delivering a stable and future-proof service.

Sunset of 2G & 3G Networks

Sunset of 2G & 3G



Sunsets of Networks

2020 — 2025
3G sunset

2022 — 2030 ?
2G sunset



3G sunset April 2022
2G sunset December 2025

Sunsets of Networks



Sunsets of Networks



T-Mobile

3G sunset 2021
2G sunset 2024

verizon

3G sunset 2019
2G sunset 2018

AT&T

3G sunset 2022
2G sunset 2017

2G Sunsets in the World

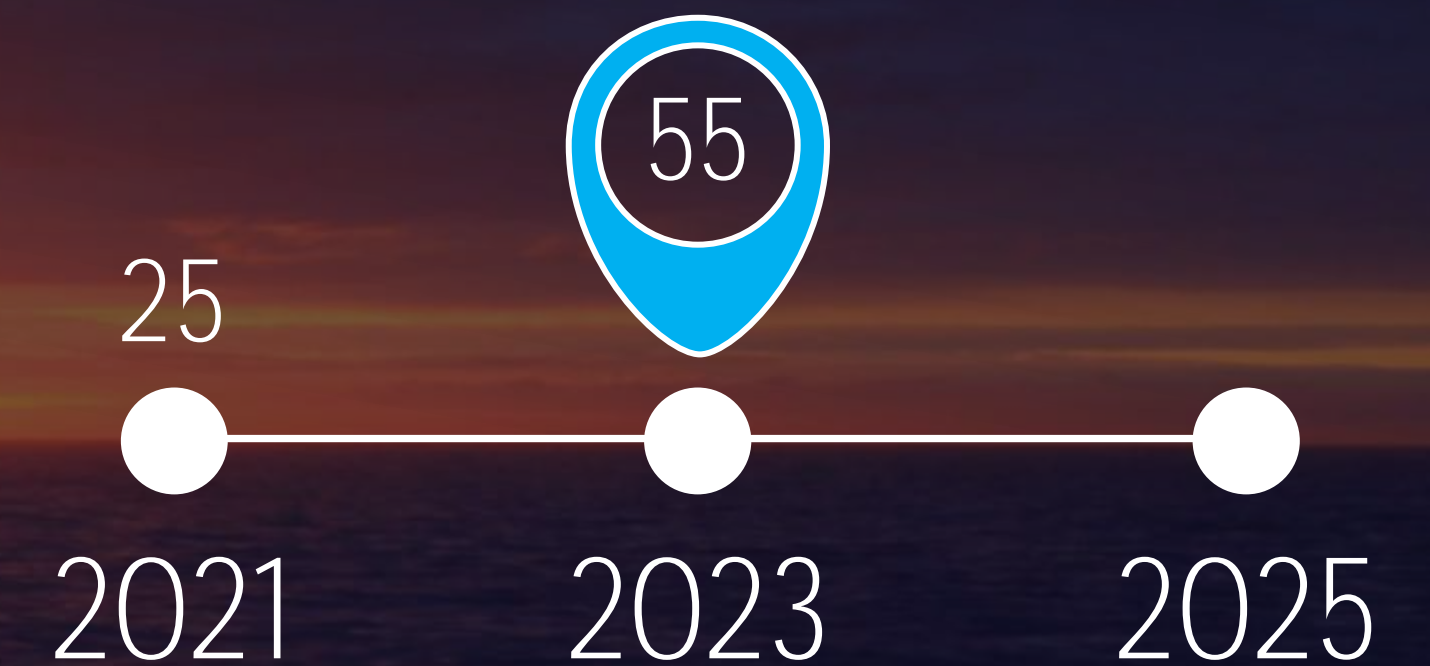
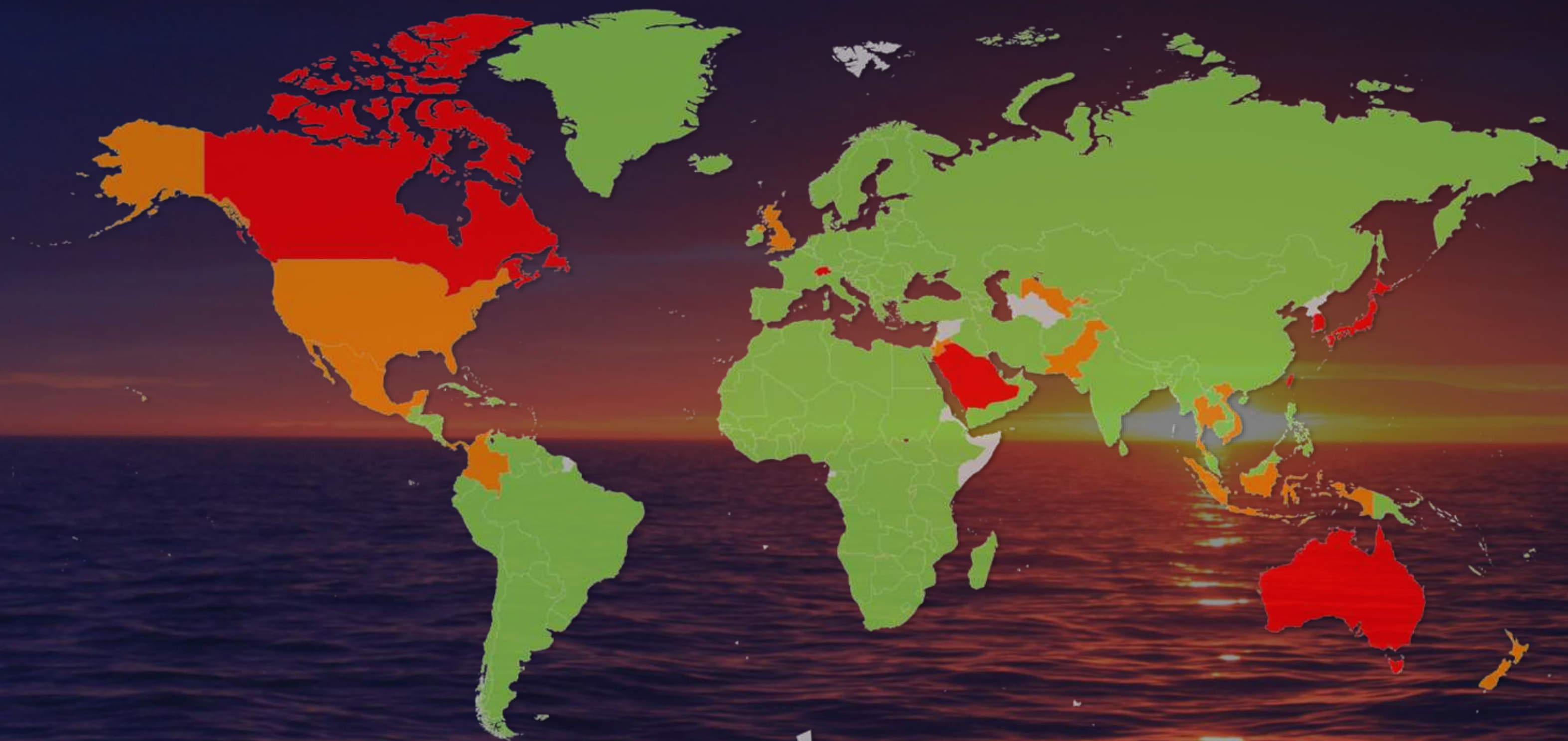





25



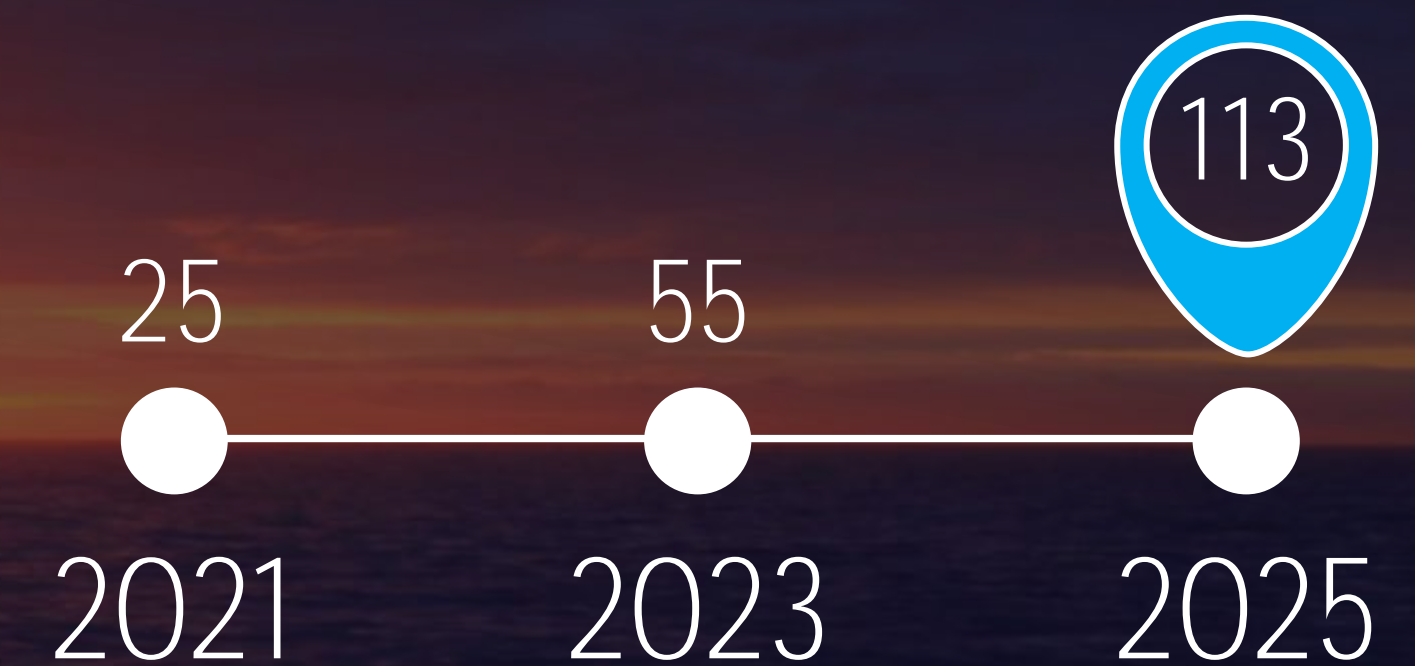
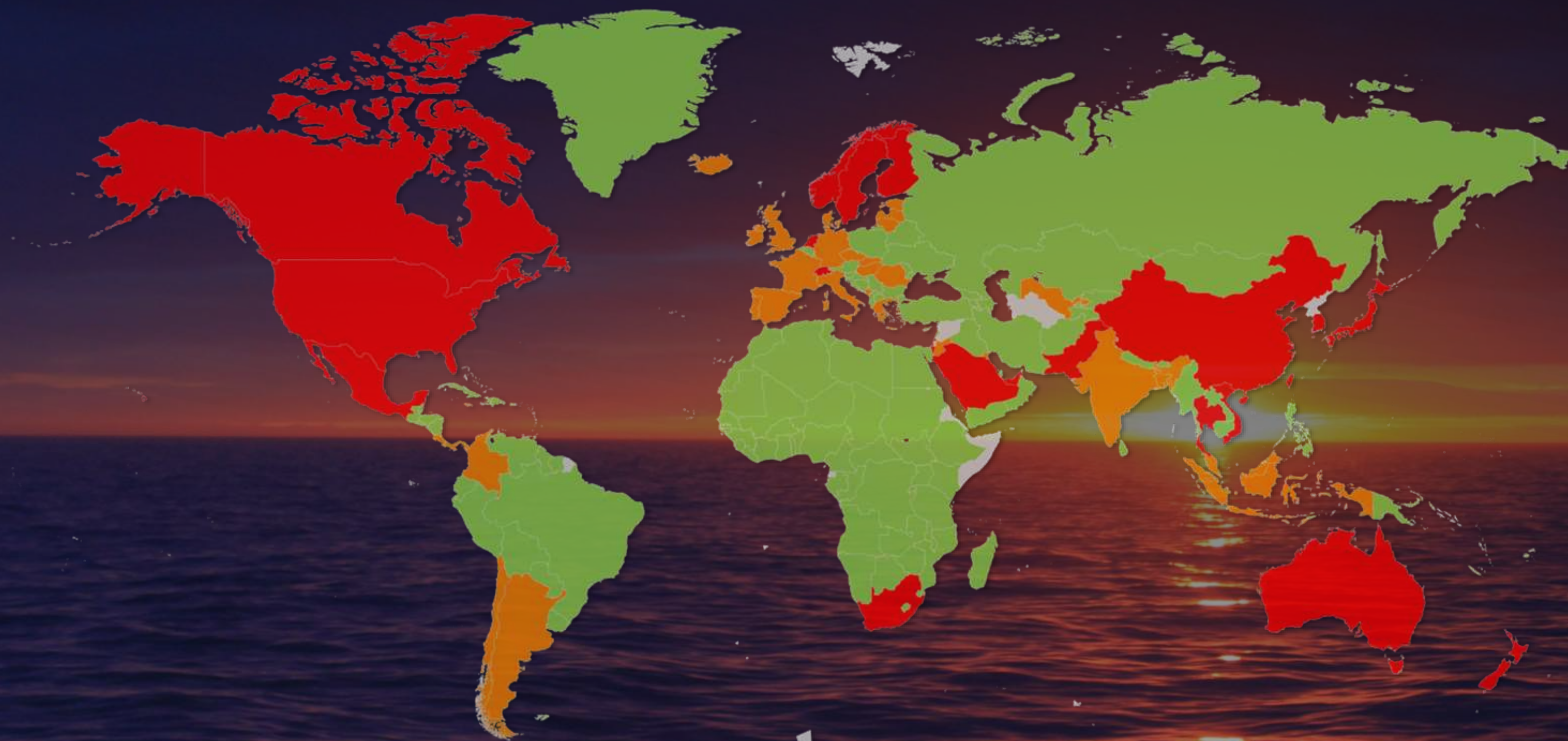
- All operators in that country have phased out 2G
- Some operators in that country have phased out 2G
- Operators in that country haven't phased out 2G yet

2G Sunsets in the World



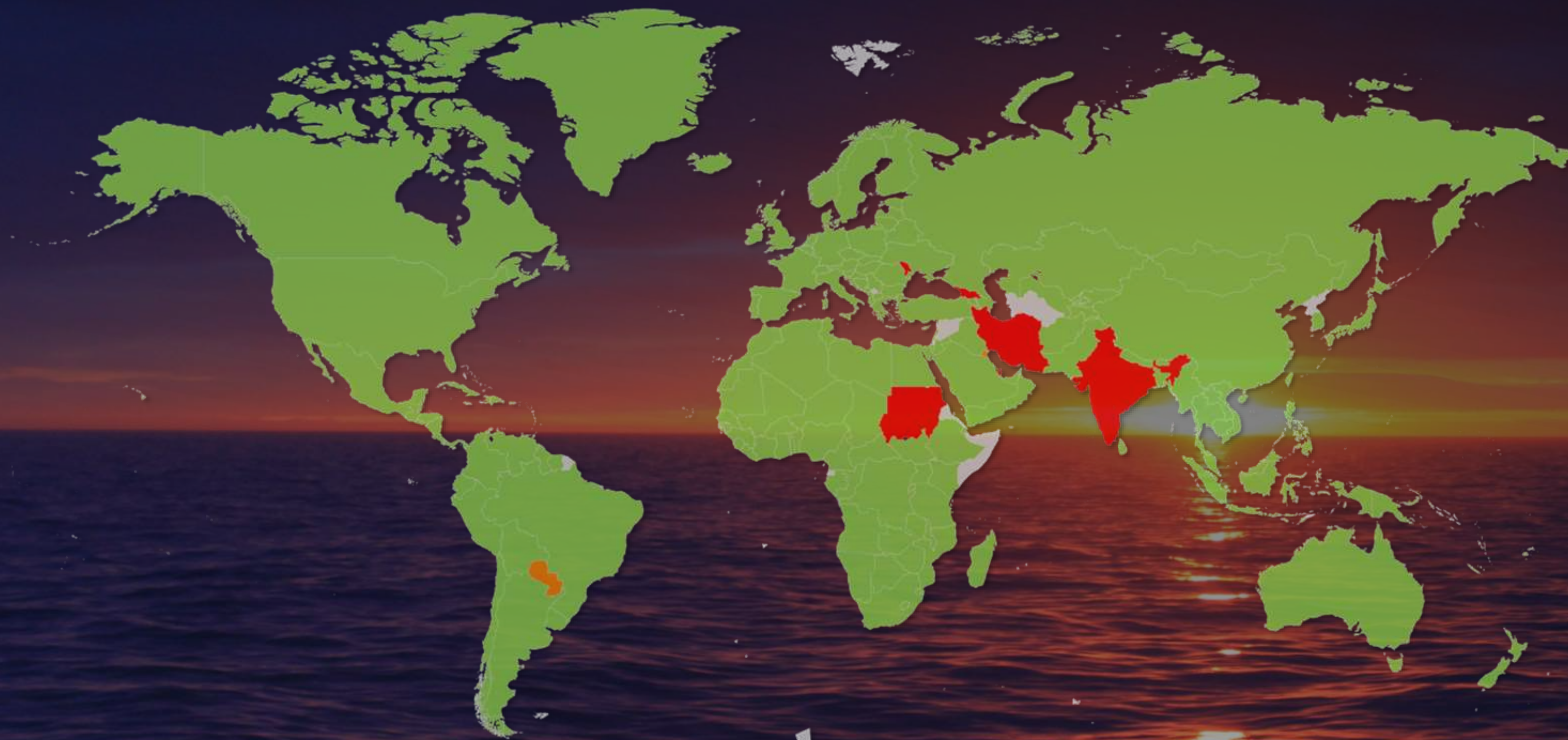
-  All operators in that country have phased out 2G
-  Some operators in that country have phased out 2G
-  Operators in that country haven't phased out 2G yet

2G Sunsets in the World



- All operators in that country have phased out 2G
- Some operators in that country have phased out 2G
- Operators in that country haven't phased out 2G yet

3G Sunsets in the World



6

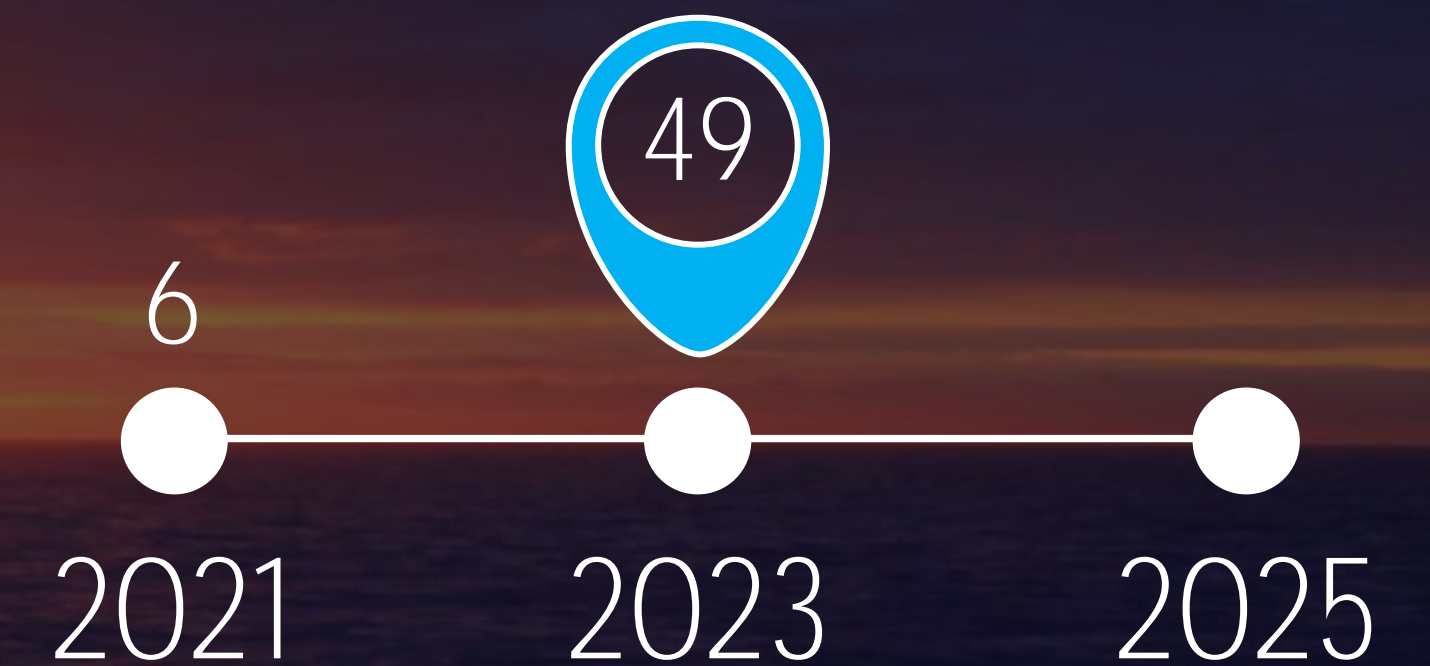
2021

2023

2025

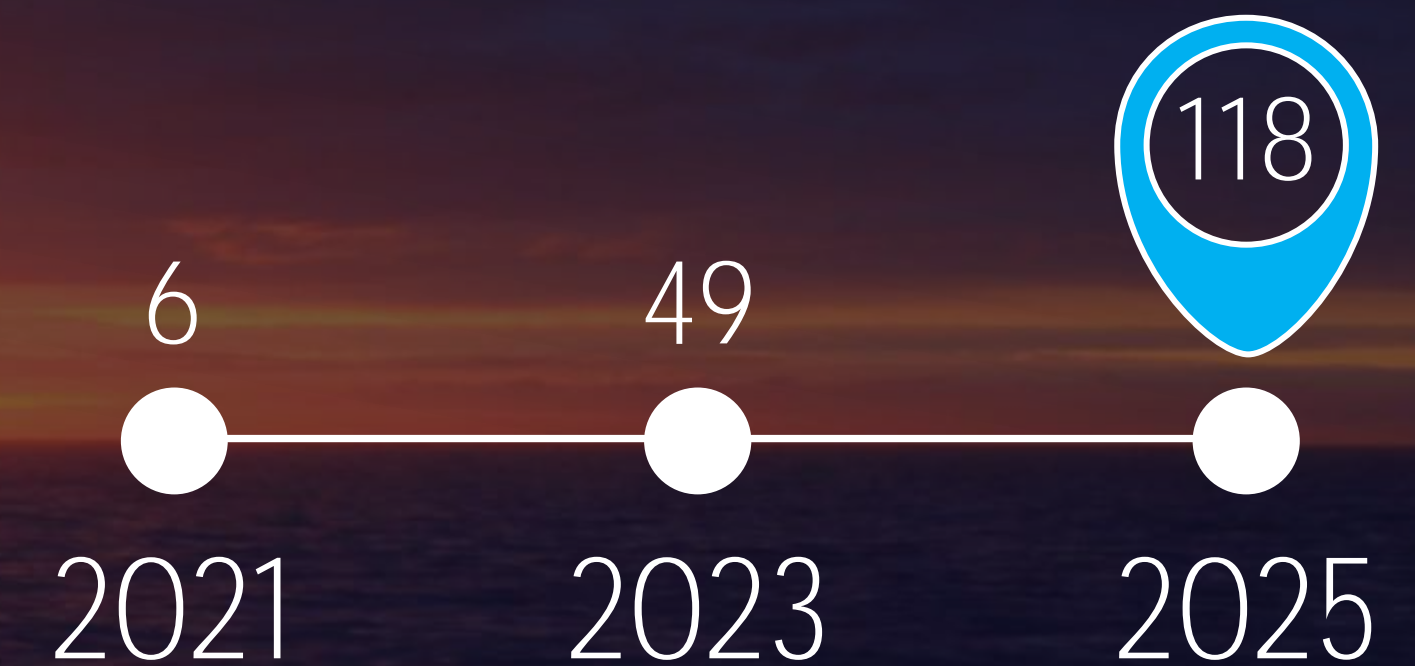
- Red circle: All operators in that country have phased out 3G
- Orange circle: Some operators in that country have phased out 3G
- Green circle: Operators in that country haven't phased out 3G yet



3G Sunsets in the World



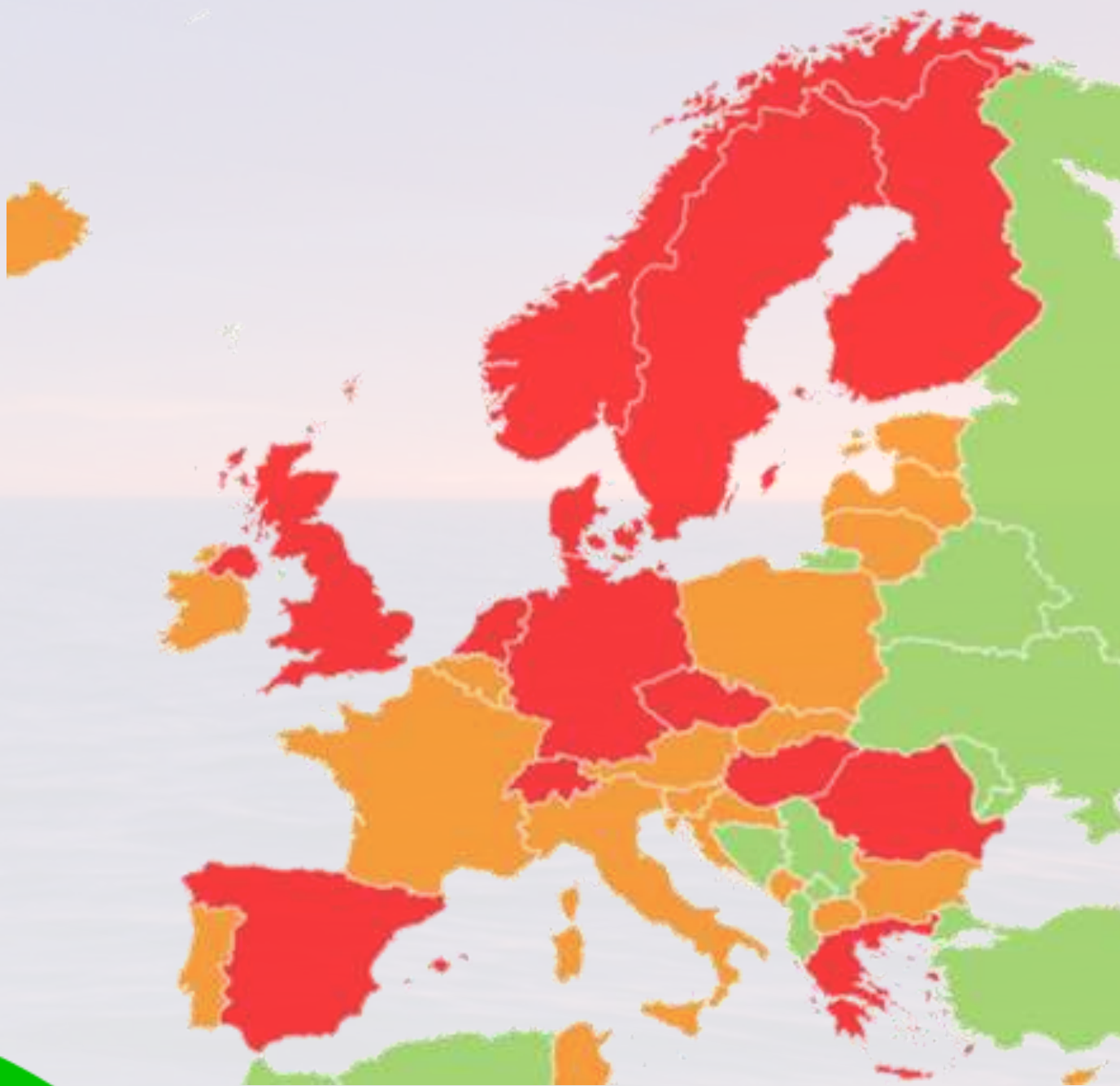
- All operators in that country have phased out 3G
- Some operators in that country have phased out 3G
- Operators in that country haven't phased out 3G yet

3G Sunsets in the World



-  All operators in that country have phased out 3G
-  Some operators in that country have phased out 3G
-  Operators in that country haven't phased out 3G yet

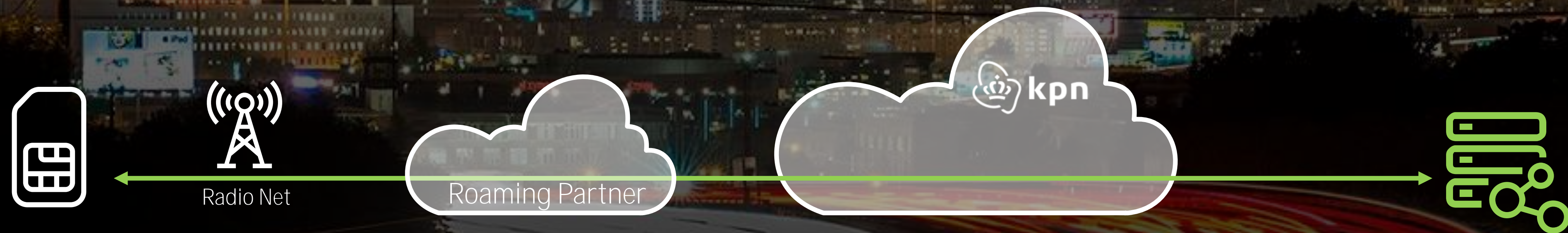
Your Takeaway



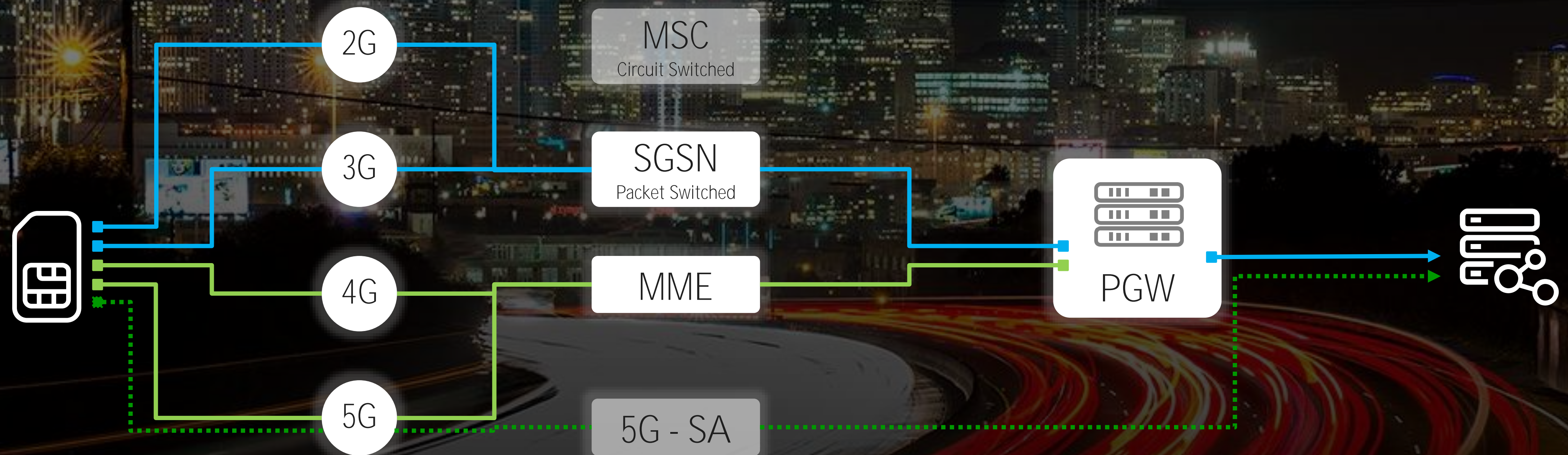
- 2G & 3G Sunsets are in full execution.
- New technology is required.
- Detailed information on the Service Portal.

4G & 5G roll-out

Rethink the communication-flows



The data-flow



Radio Net

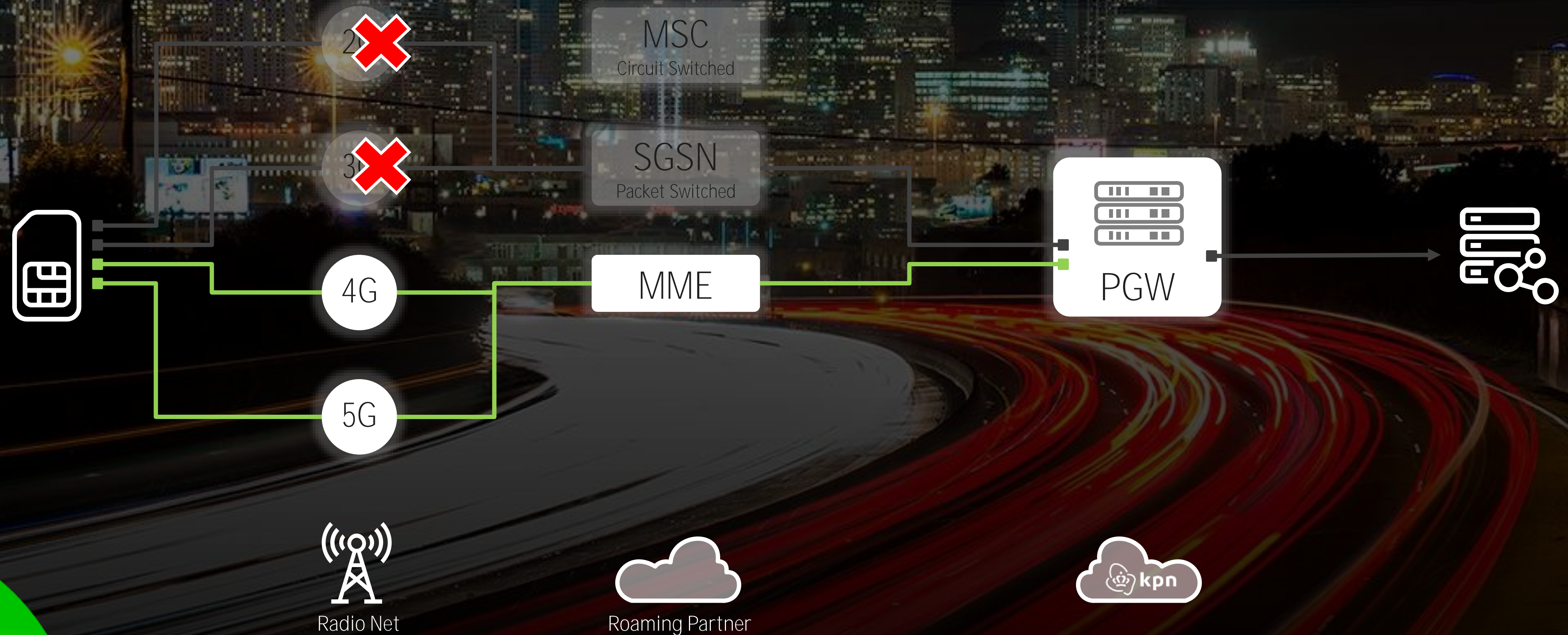


Roaming Partner



SGSN = Serving GPRS Support Node

The data-flow



MME = Mobility Management Entity

4G networks with KPN IoT



296

2021

2022

2023

● One or more operators with 4G radio networks available for KPN IoT

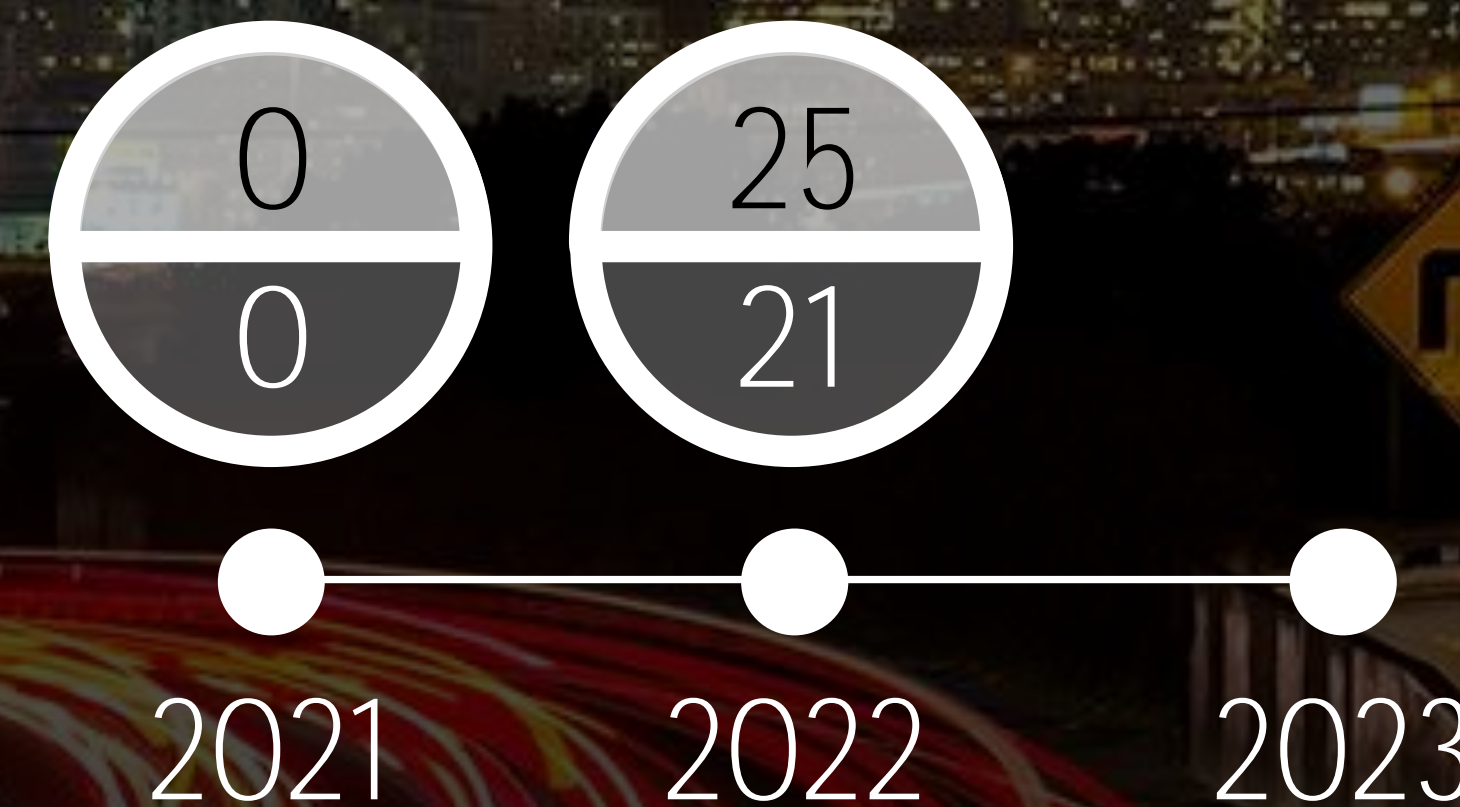
4G networks with KPN IoT



41 new 4G networks
in 39 countries since 2021

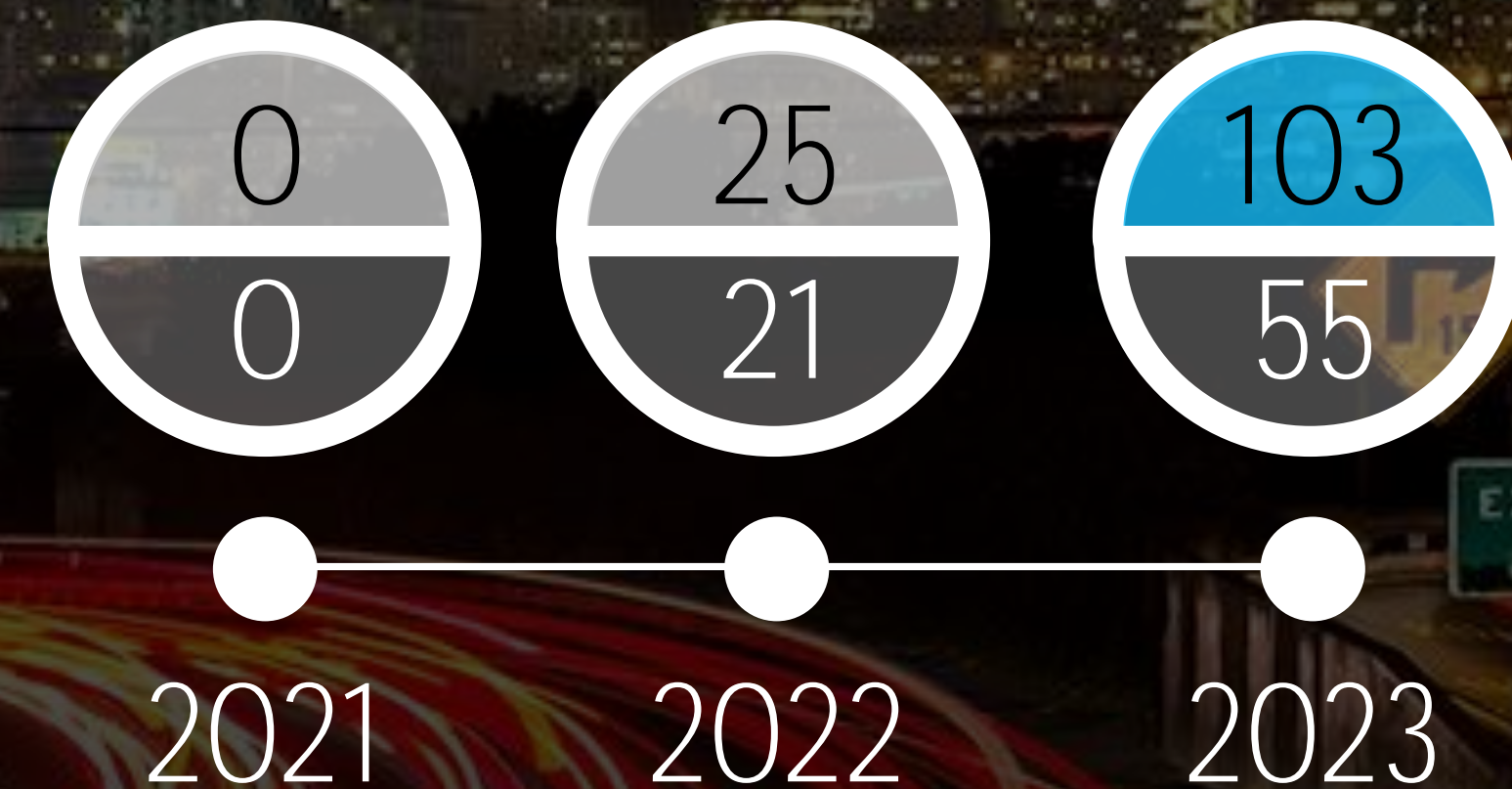
- One or more operators with 4G radio networks available for KPN IoT
- Country with new 4G radio networks available for KPN IoT since 2021

5G networks with KPN IoT in 2022



- One 5G operator
- Two 5G operators
- Three+ 5G operators

5G networks with KPN IoT Today



78 new 5G networks in 1 year

- One 5G operator
- Two 5G operators
- Three+ 5G operators

Your Takeaway

5G
Ready

- KPN invests heavily in worldwide 4G & 5G coverage.
- Detailed information on the IoT Service Portal.

Voice with VoLTE

The voice-flow



Radio Net

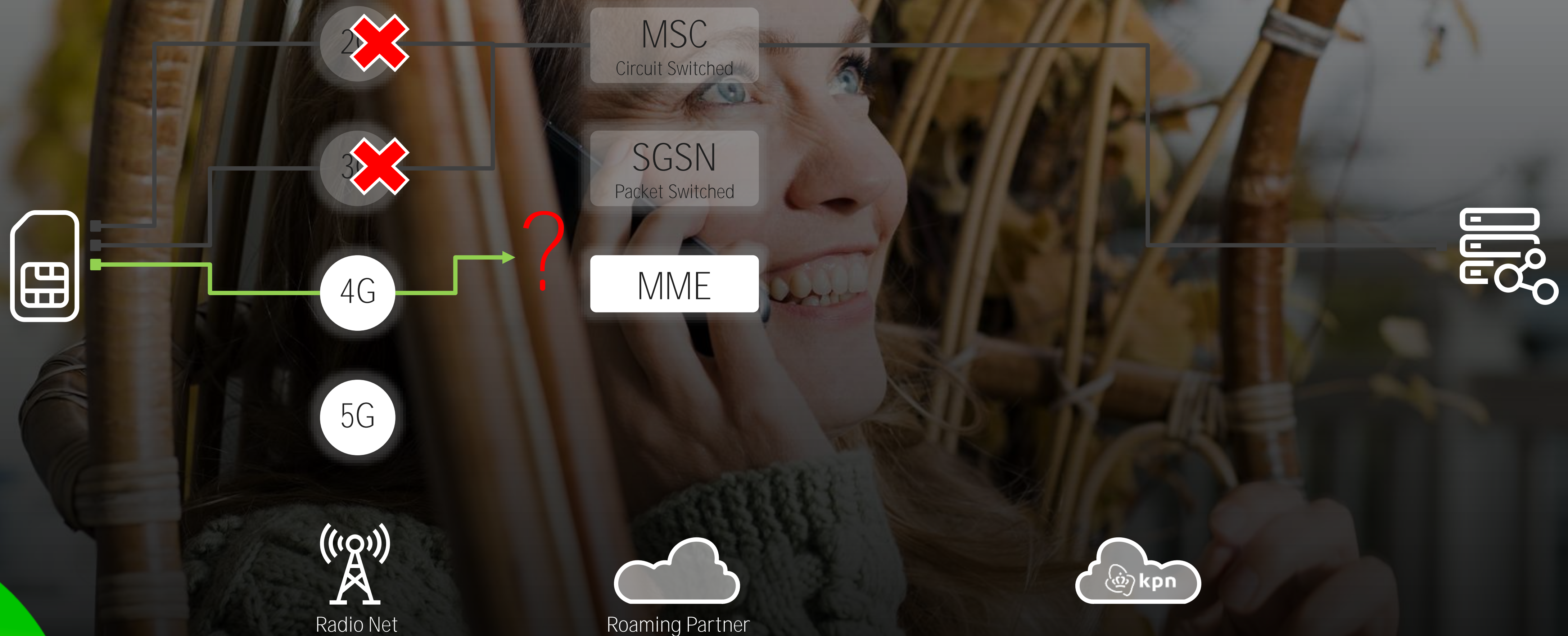


Roaming Partner



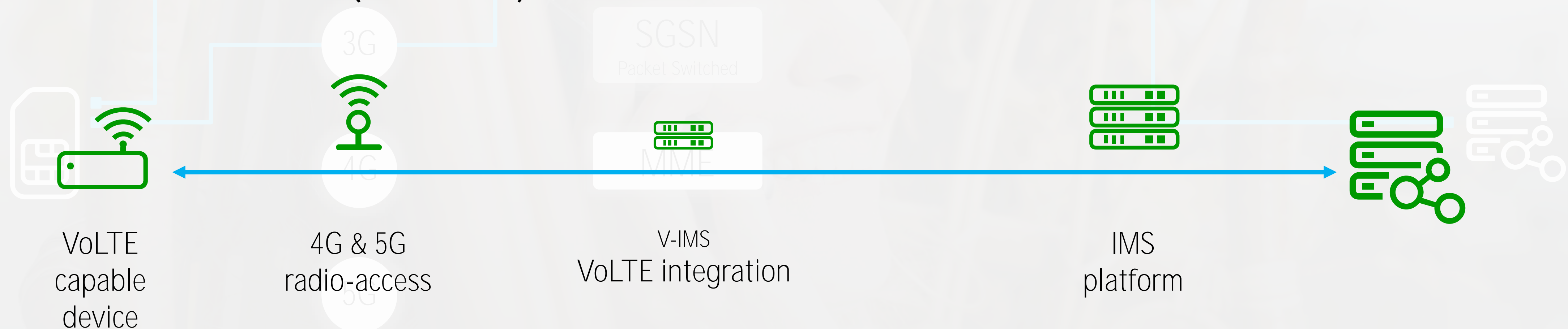
MSC = Mobile Switching Center

The voice-flow



The VoLTE-flow

VoLTE stands for Voice over LTE, which is the voice capability for 4G (and 5G) radio access, based on an IP data-flow.



Radio Net



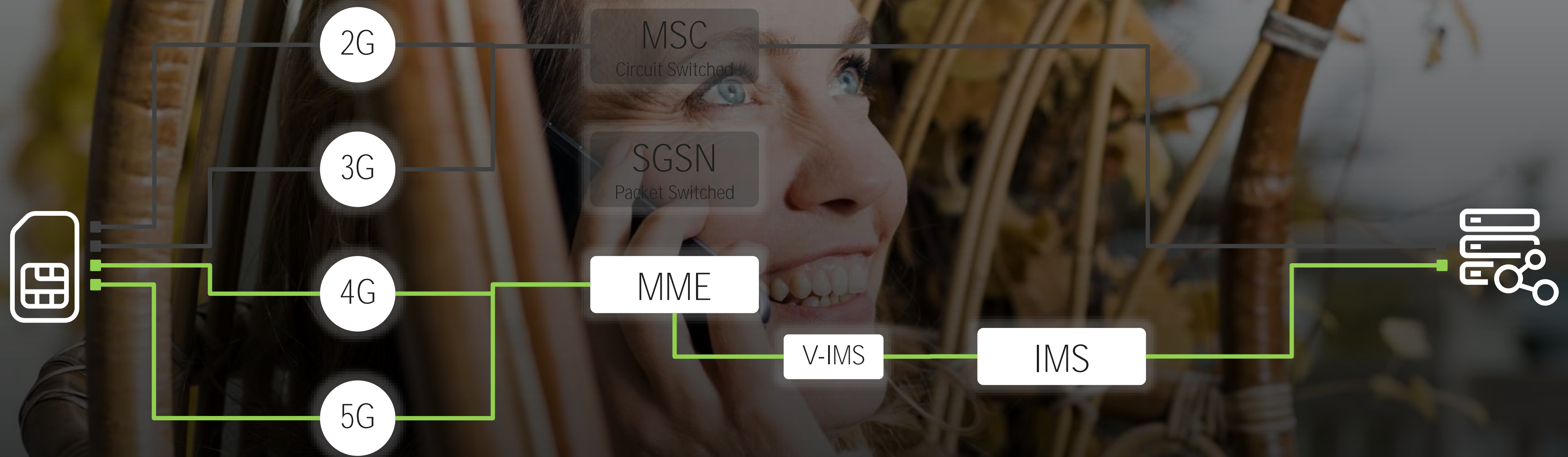
Roaming Partner



IMS = IP Multimedia Subsystem

Let's **Connect!** |  **kpn IoT**

The VoLTE-flow



Radio Net



Roaming Partner



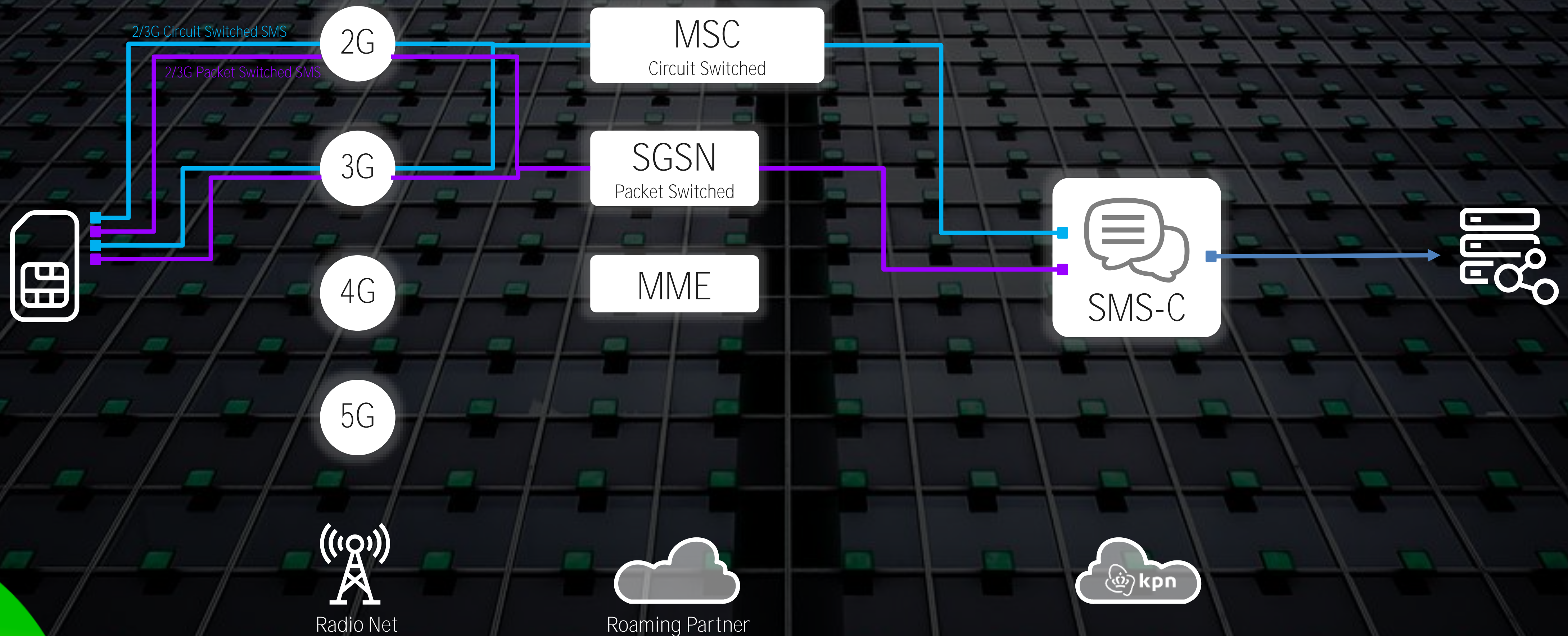
Your Takeaway



- KPN is working on the VoLTE-project.
- KPN introduces VoLTE in Q1 2024.
- First in The Netherlands, then rolling out international.

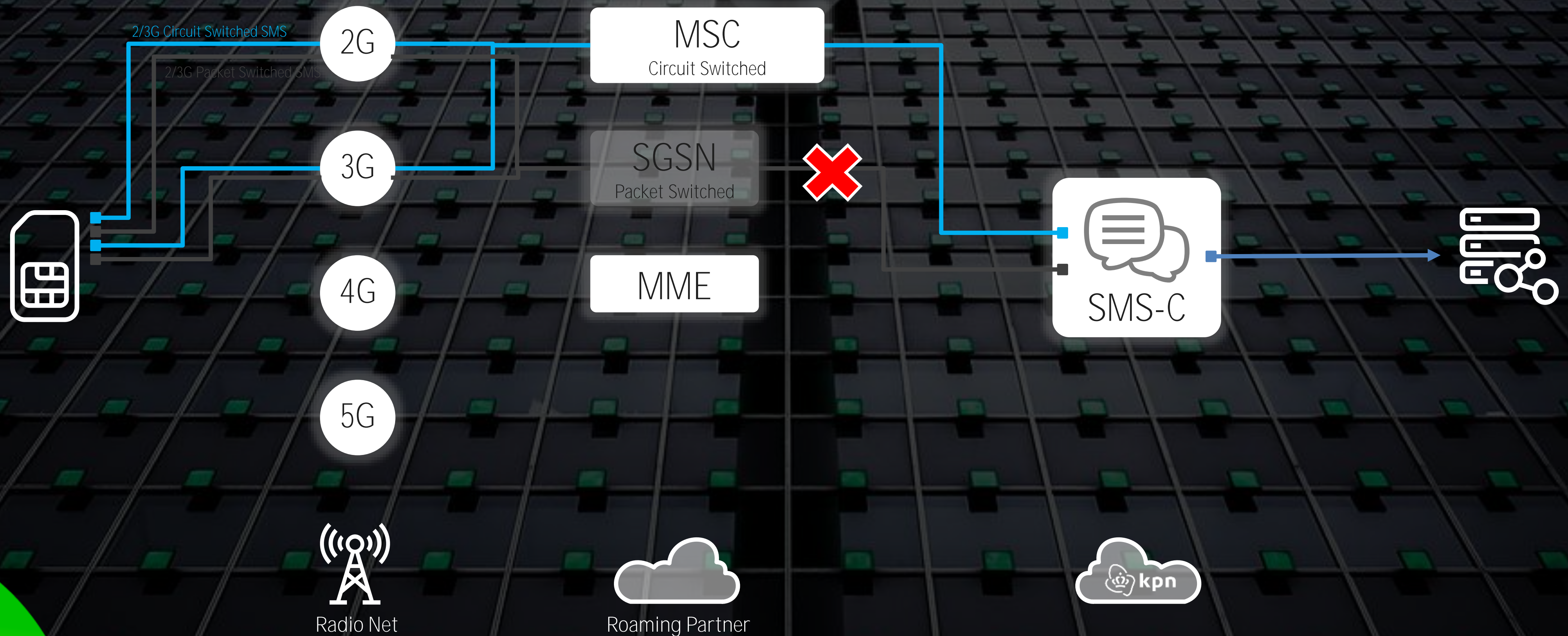
Use cases with SMS

The SMS-flow

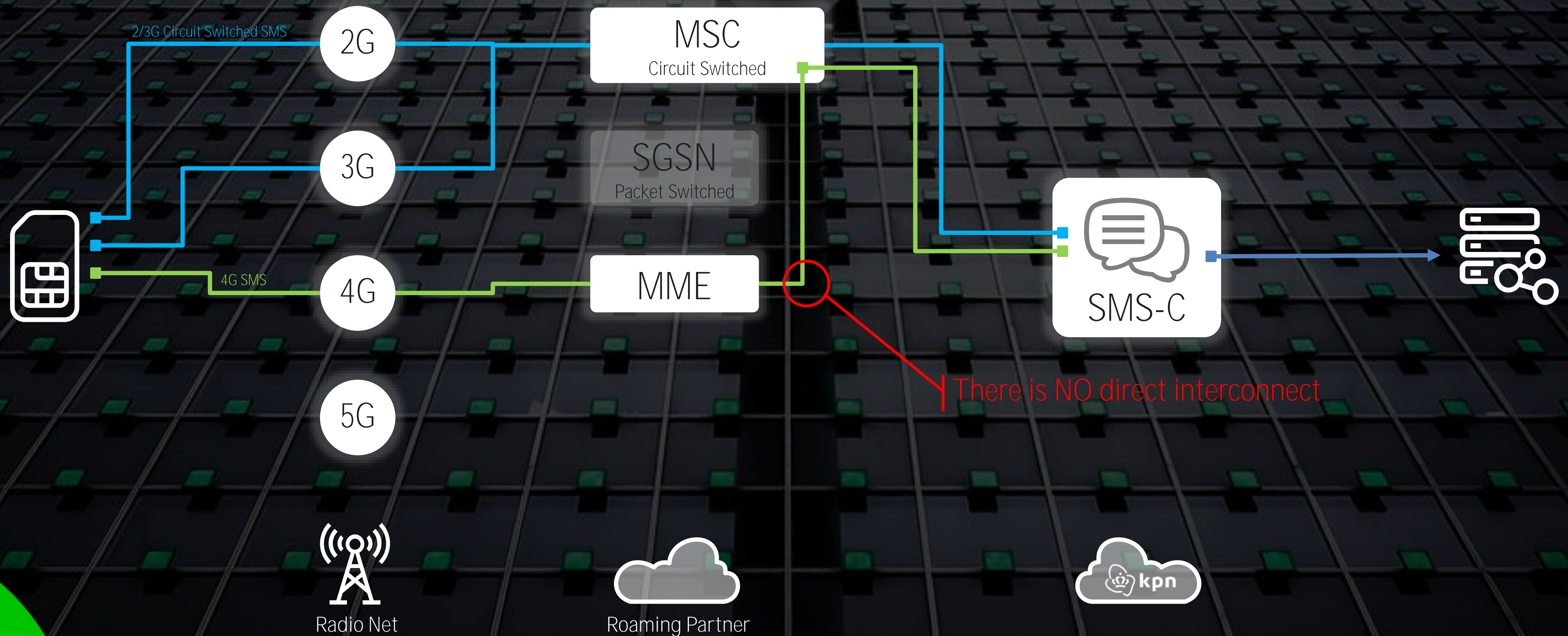


SMS-C = Short Message Service Center

The SMS-flow

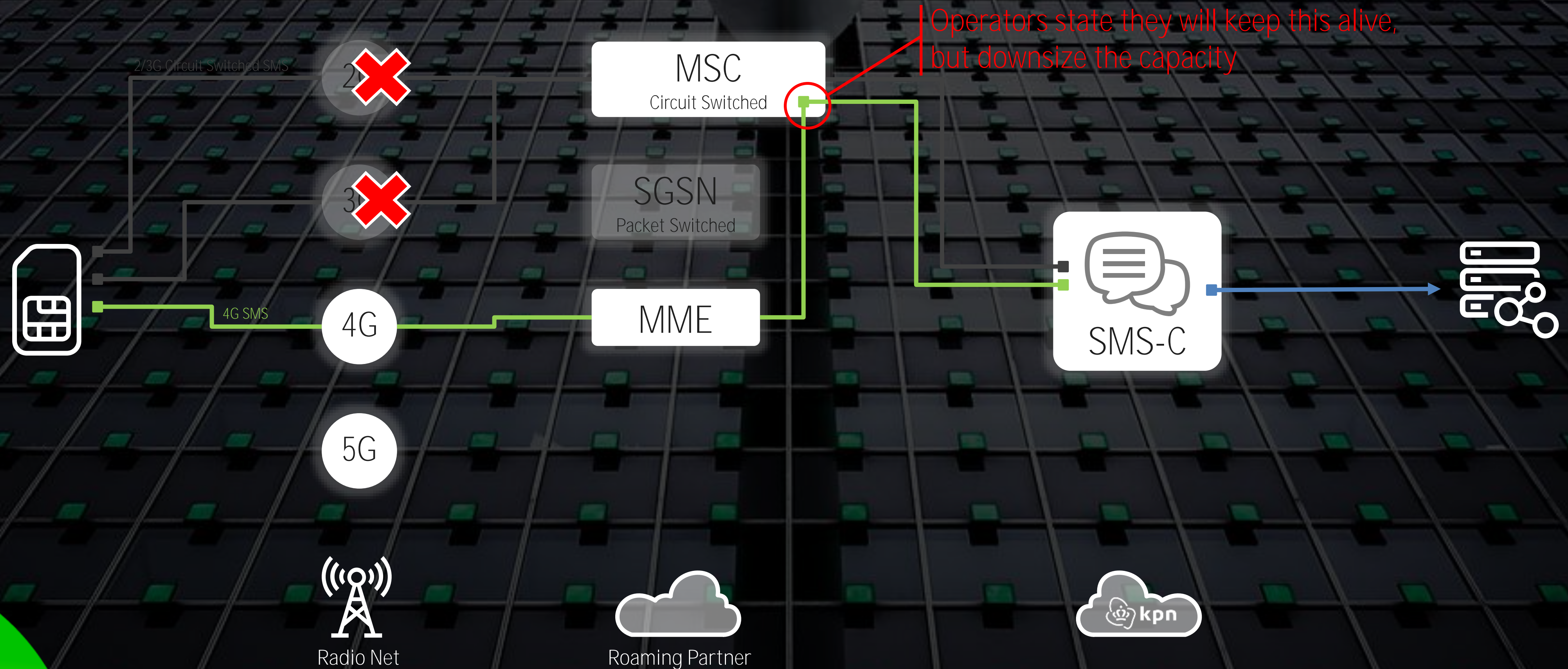


The SMS-flow

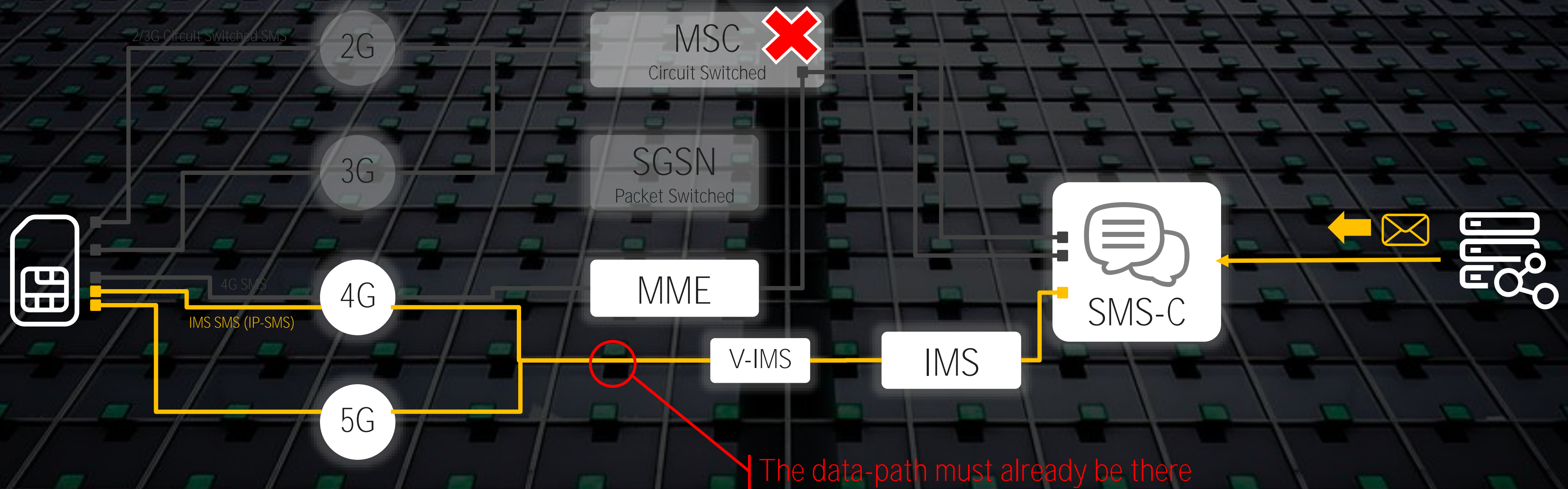


MME = Mobility Management Entity

The SMS-flow



IMS can NOT deliver a Wake-Up SMS



Radio Net

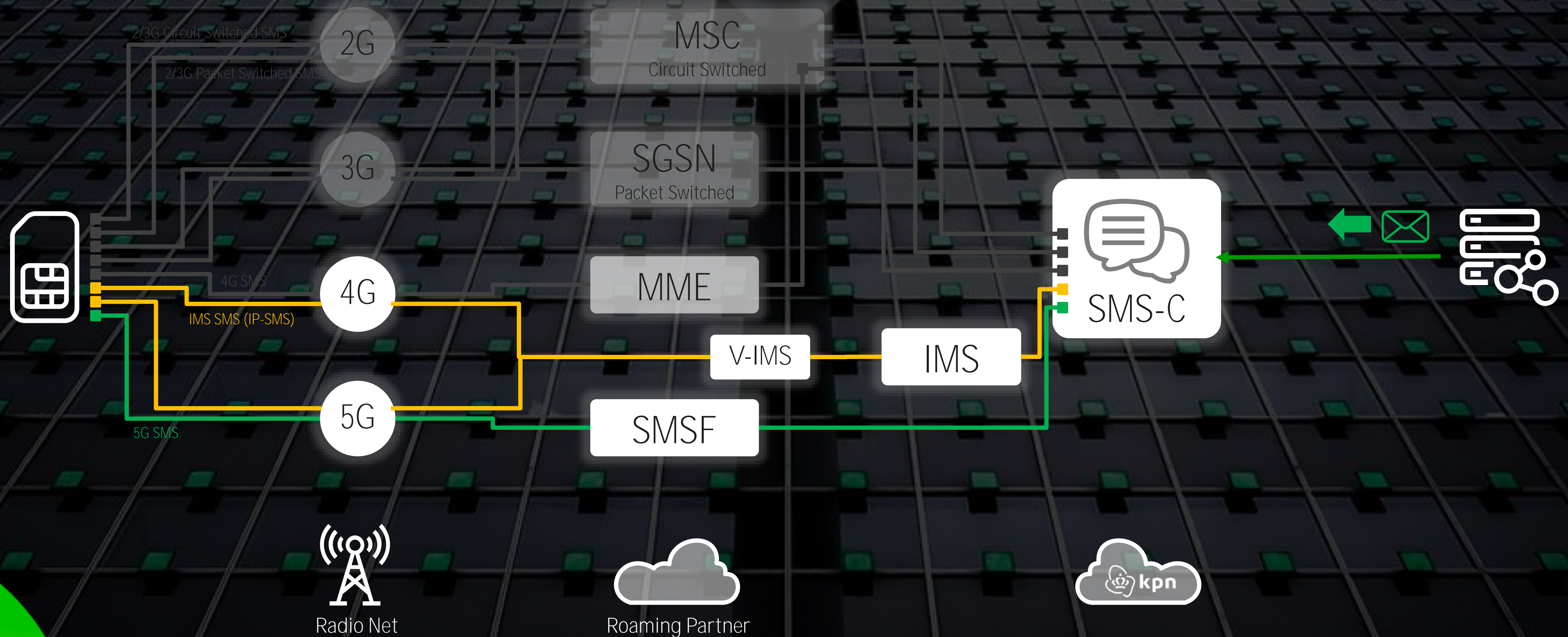


Roaming Partner

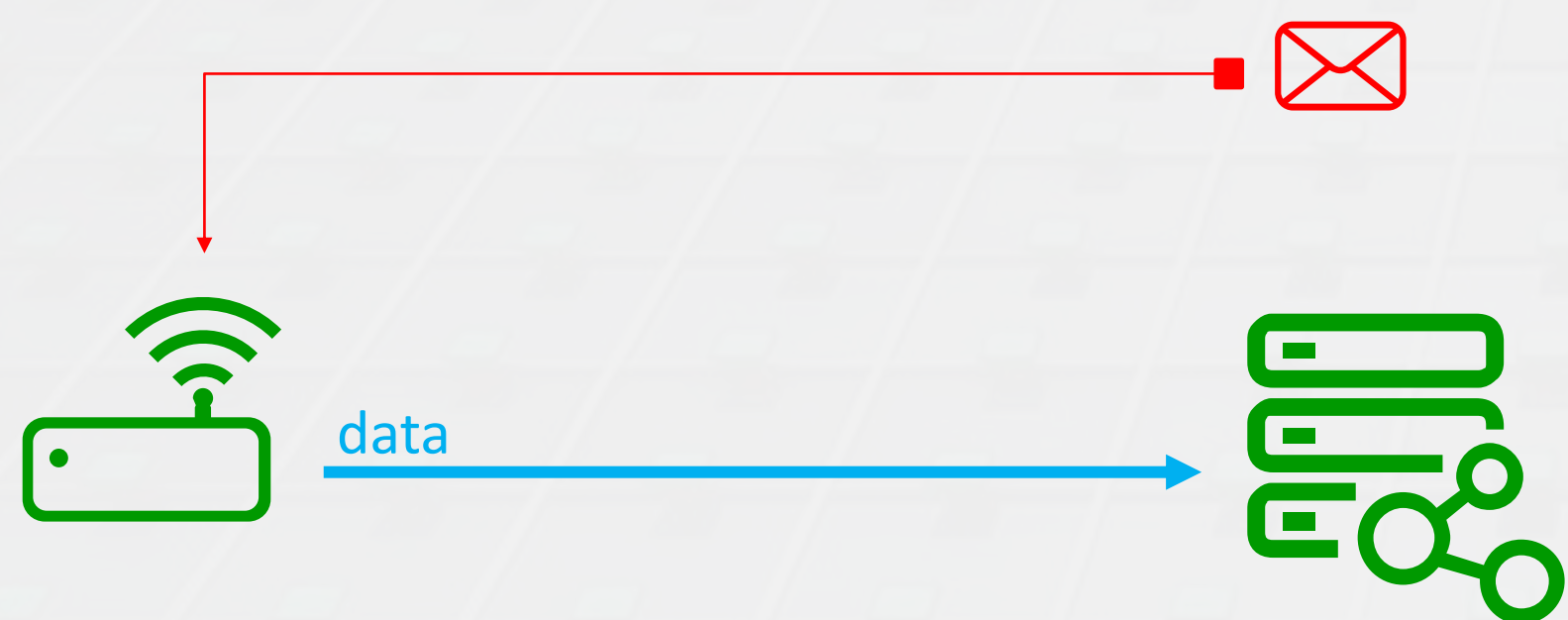


IMS = IP Multimedia Subsystem

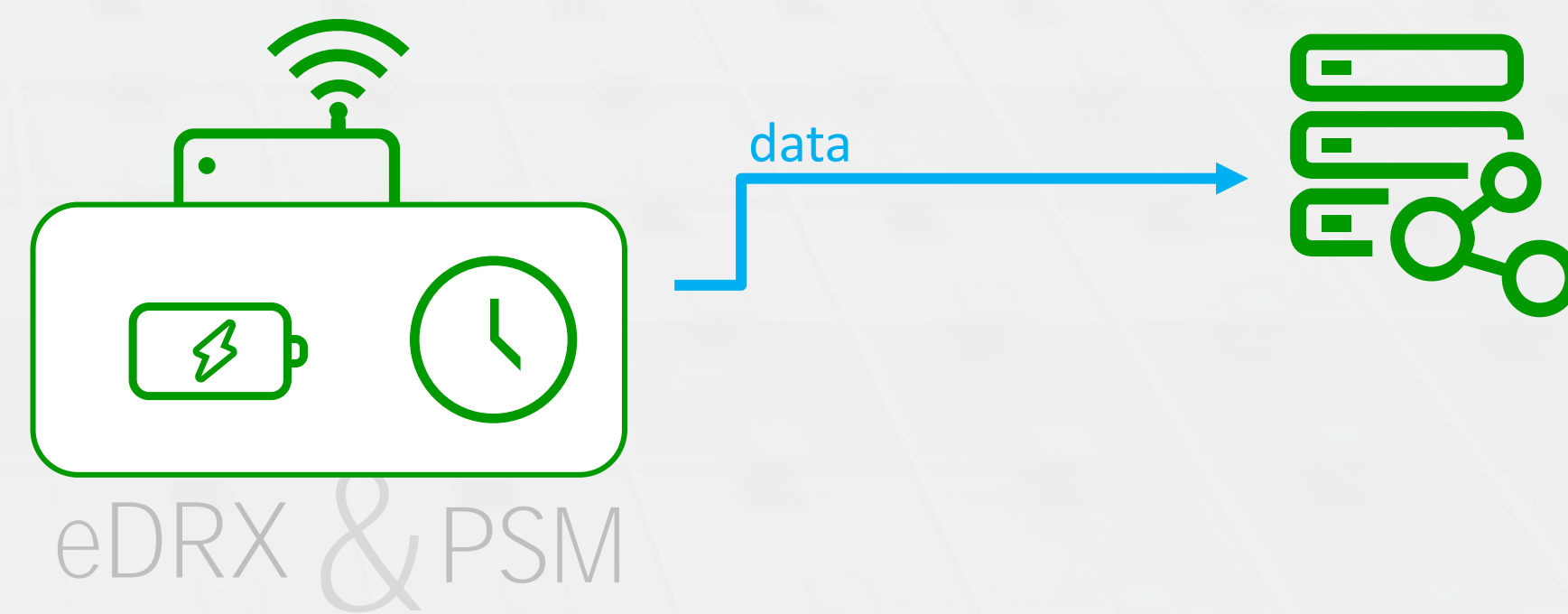
5G will make this possible again



How to start a data-session?



The old SMS Wake Up Way



The new Device Initiative Way

Your Takeaway

- 
- 2G & 3G Sunsets require new ways to set-up a connection
 - Operators will for now keep the 4G-SMS flow available
 - KPN promotes the 5G SMS-flow towards the GSMA

Recap



Portfolio

Our new IoT chain and service in the Things Portal.



2G & 3G

Worldwide sunsets are becoming a reality.



VoLTE

Introduction of VoLTE beginning next year (2024).



Network

Modernization of the KPN network for 5G Core.



4G & 5G

KPN expansion of available 4G & 5G networks.



SMS

Sunsets have impact on SMS Wake-up messages.

Thank you for joining us!

Our next Webinar is about eSIM & RSP
22nd of June 2023