RECAP: NGMN's TRANSFORMATION IN 2021

Building upon NGMN's strengths
Operator driven with focus on requirements level

Technology – and Ecosystem Changes required a Change
NGMN revised strategy and culture, way of work

New Strategy
New Strategic Focus Topics address the industries' main challenges

New Brand launched in 2021
In line with new strategy

STRATEGY

ROUTE TO DISAGGREGATION

Leading in the development of open, disaggregated, virtualised and cloud native solutions with a **focus on the E2E Operating Model**

GREEN FUTURE NETWORKS

Building sustainable & environmentally conscious **solutions**

6G

Emergence of 6G highlighting **key trends across technology and societal requirements plus use cases** to address

80 COMPANIES IN NGMN TODAY, GROWING

80 COMPANIES IN NGMN TODAY, GROWING

ADDITIONS IN 2021/22: 3 MNOS, 4 VENDORS INCLUDING HYPERSCALER, ADDITIONAL MNO JOINING NOW

MEMBERS

airtel | 1&1 | A1 Telekom Austria Group | Bell | BT | 中国移动 China Mobile | 中華電信 Chunghwa Telecom | T·· | HKT | kpn | docomo | orange

Singtel | SK telecom | Smart | Telefónica | Telia | T··Mobile· | TELE2 | TIM | TELUS the future is friendly· | TURKCELL

uscellular | vodafone | W3* WINDTRE

CONTRIBUTORS

Amphenol ANTENNA SOLUTIONS | Anritsu envision:ensure | Apple | AVANCI | CISCO | Comba | COMMSCOPE® | 大唐電信 | Deloitte. | ERICSSON | FUJITSU

Google | Hewlett Packard Enterprise | HUAWEI | HUBER+SUHNER | IBM | intel | interdigital | JUNIPER NETWORKS | KEYSIGHT TECHNOLOGIES | lenovo

LG Electronics | MAVENIR | Meta | NEC | NOKIA | PreHCM Services | Qualcomm | Radiall | ROHDE&SCHWARZ Make ideas real | R&S

Rosenberger | SISVEL | SPINNER | Telegärtner KARL GÄRTNER GMBH | umlaut | Vecta | VIA LICENSING® | ZTE

ADVISORS

ASTRI | EURECOM | Fraunhofer | 工業技術研究院 Industrial Technology Research Institute | 財團法人資訊工業策進會 INSTITUTE FOR INFORMATION INDUSTRY | JOHNS HOPKINS APPLIED PHYSICS LABORATORY | KING'S College LONDON | NYU POLYTECHNIC SCHOOL OF ENGINEERING

RWTH AACHEN UNIVERSITY | Technische Universität Braunschweig | TECHNISCHE UNIVERSITÄT DRESDEN | TNO innovation for life | UNIVERSITÄT DUISBURG ESSEN Offen im Denken | Universität Stuttgart | UNIVERSITY OF TORONTO

*joining 04/22

OPERATING DISAGGREGATED NETWORKS
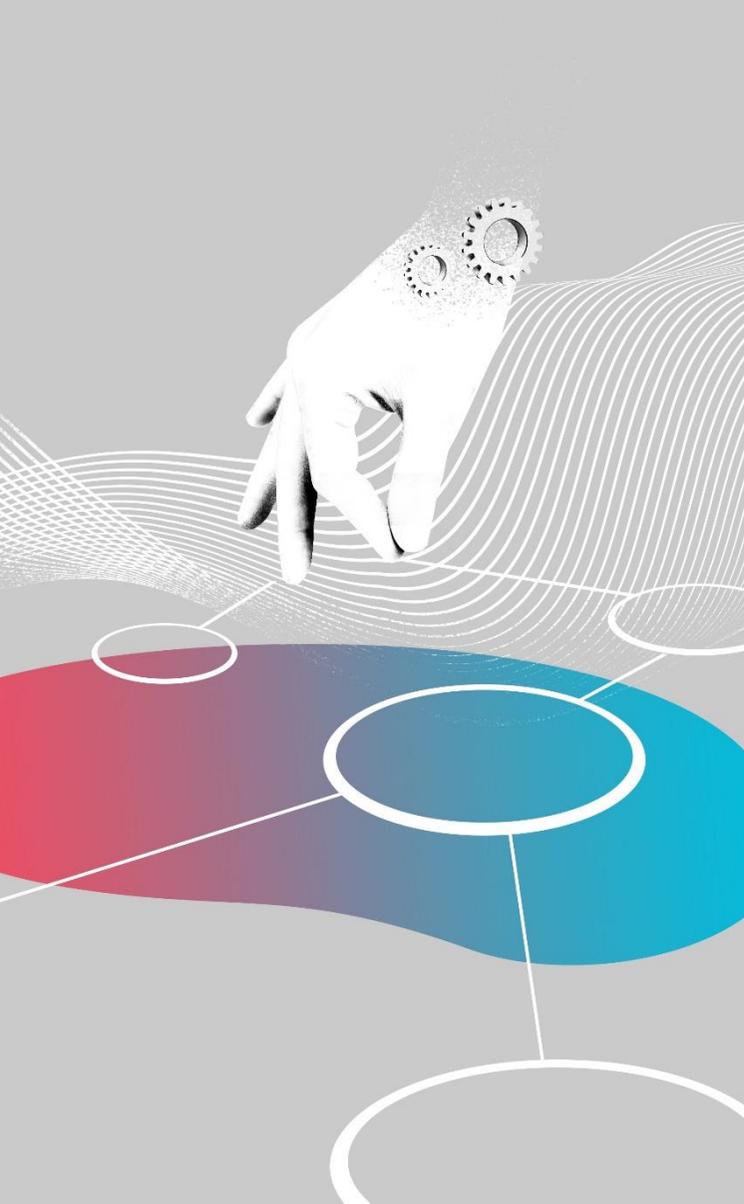
OPERATING DISAGGREGATED NETWORKS

(Project ODiN)

- High relevance to MNOs and the industry

- Currently 26 companies collaborating

- Project co-leads Deutsche Telekom, Bell Canada, Smart/PLDT Philippines
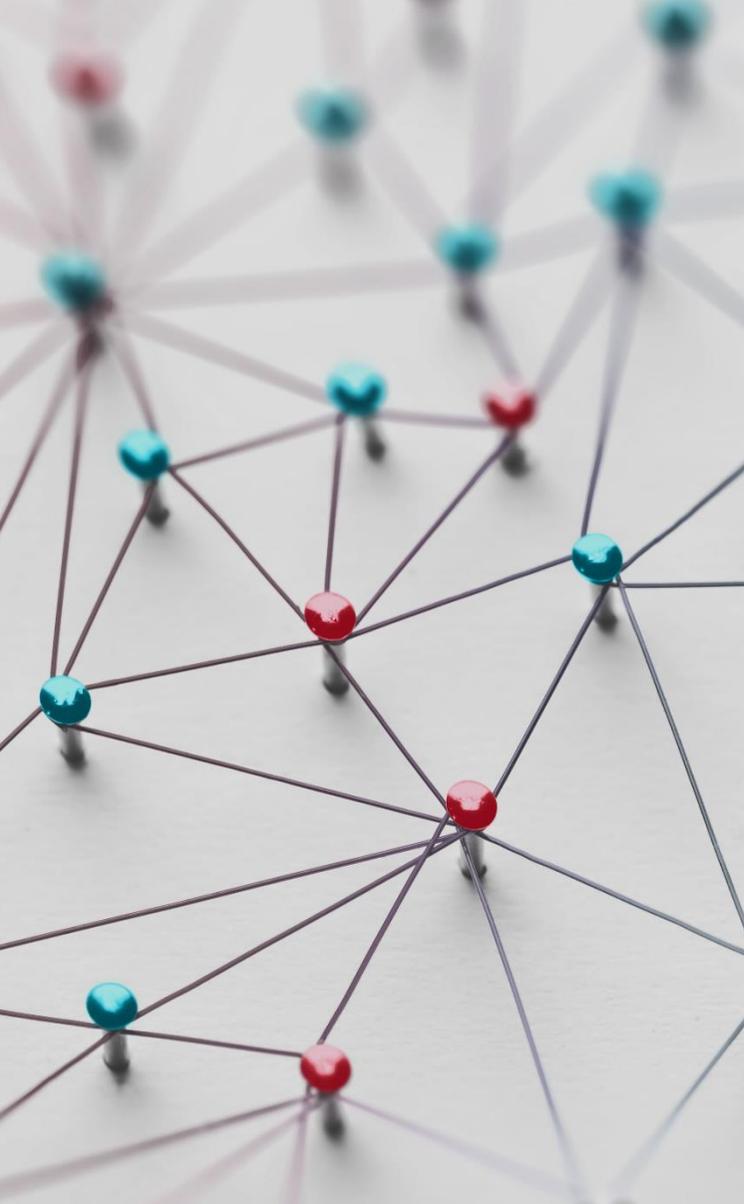
OPERATING DISAGGREGATED NETWORKS SCOPE

1. Context, current challenges and needs observed by operators ([delivered](#))

2. Industry status and roadmap

3. Target picture

4. Relationship with specific industry verticals

5. Operating Model(s) options, their pros/cons, main decision criteria and blueprints

6. Role and impact of Disaggregated Network Testing

# 26 PARTICIPATING COMPANIES IN NGMN's ODiN PROJECT

OPERATORS

1&1 · airtel · Bell · BT · 中国移动 China Mobile · 中華電信 Chunghwa Telecom · T·· · orange

Singtel · TELUS the future is friendly · TIM · Smart · TURKCELL

VENDORS

CISCO · ERICSSON · Google · Hewlett Packard Enterprise · HUAWEI · intel · JUNIPER NETWORKS · KEYSIGHT TECHNOLOGIES

NEC · NOKIA · umlaut

RESEARCH INSTITUTES

Fraunhofer · KING'S College LONDON

… and more to come!

6G
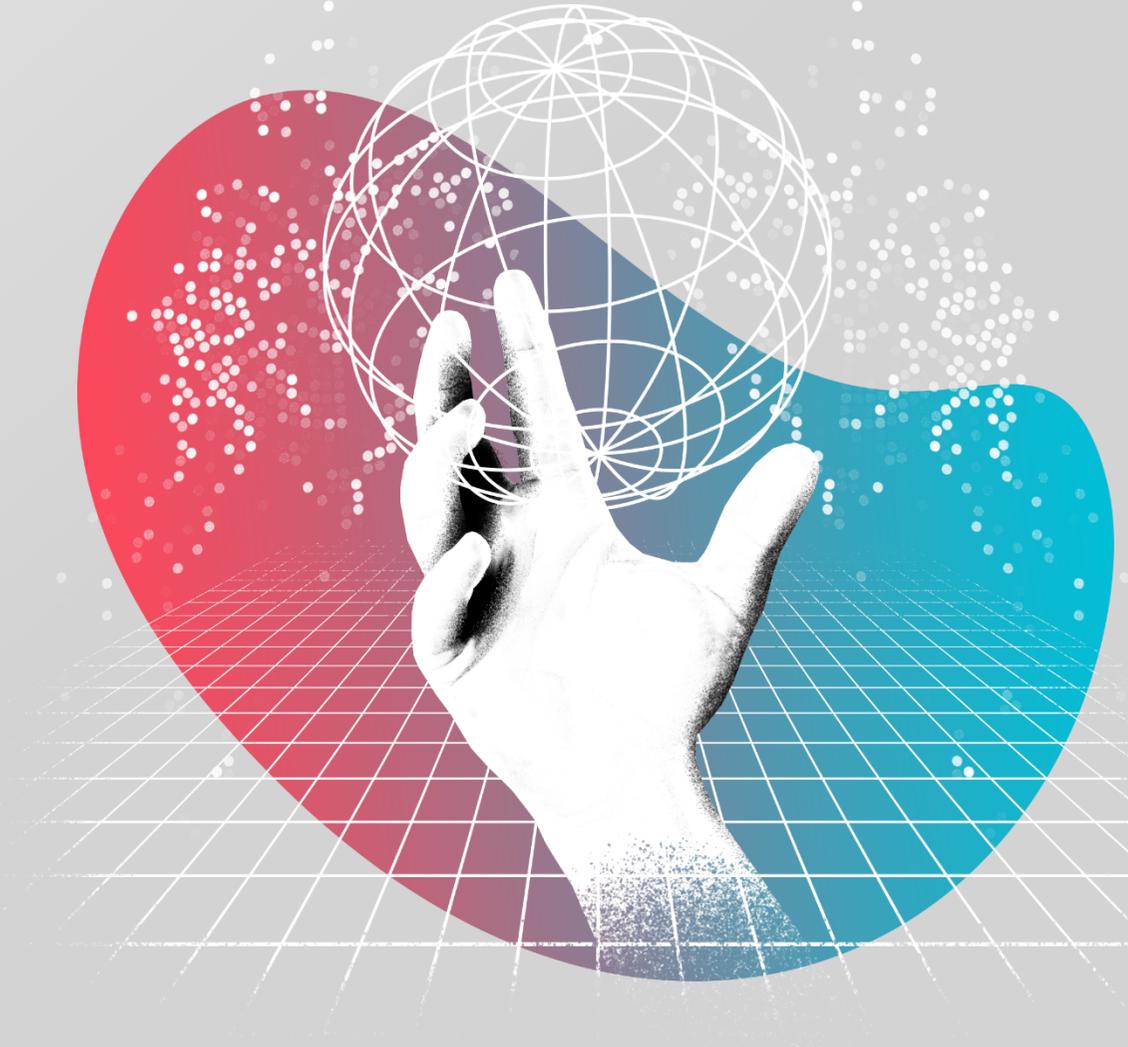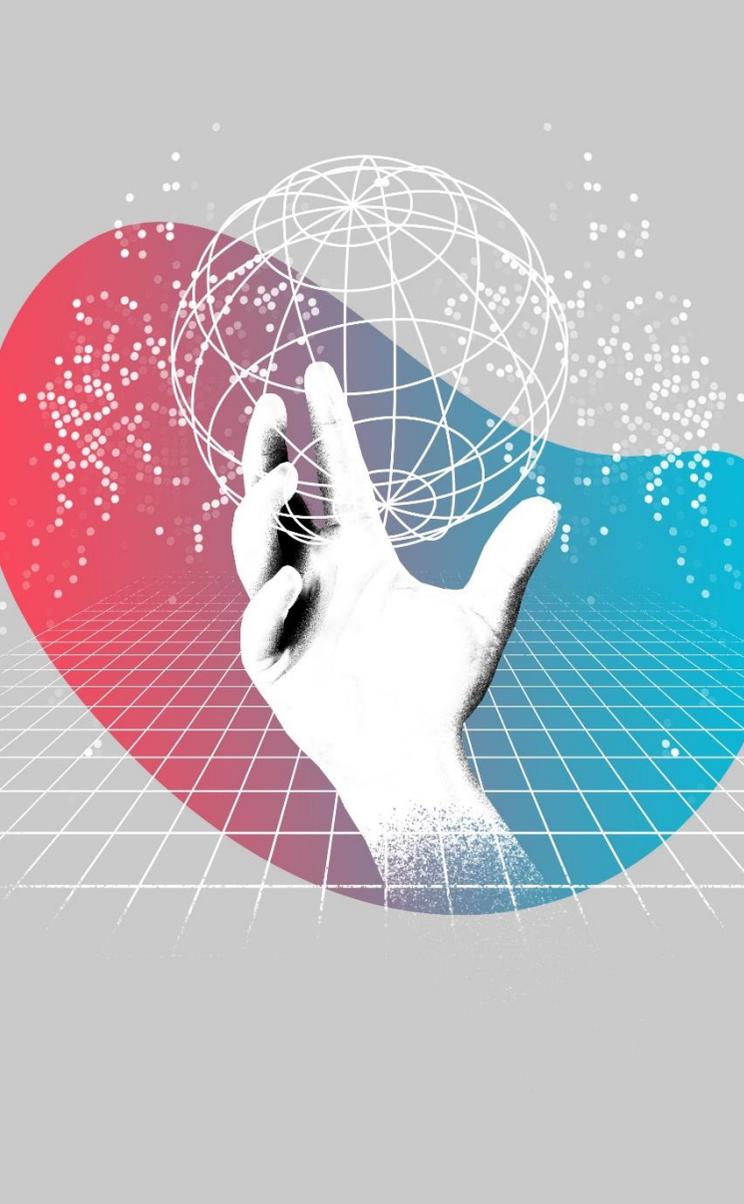
6G

- High relevance to MNOs, industry and globe

- Currently 43 companies collaborating: MNOs, vendors and research institutions

- Project co-leads China Mobile, UScellular, Vodafone Chief editor: Bell Canada

6G PROJECT MILESTONES

Q3 2020   Q4 2020   Q1 2021   Q2 2021   Q3 2021   Q4 2021   Q1 2022   Q2 2022   Q3 2022   Q4 2022   Q1 2023   Q2 2023   ......

Project Launch

● **Publication: Drivers & Vision**

Drivers & Vision

● **Kick-off with the entire NGMN community**

● **Publication: Use Cases**

Use Cases

E2E System Requirements   ● **Publication: Requirements**

External Engagement
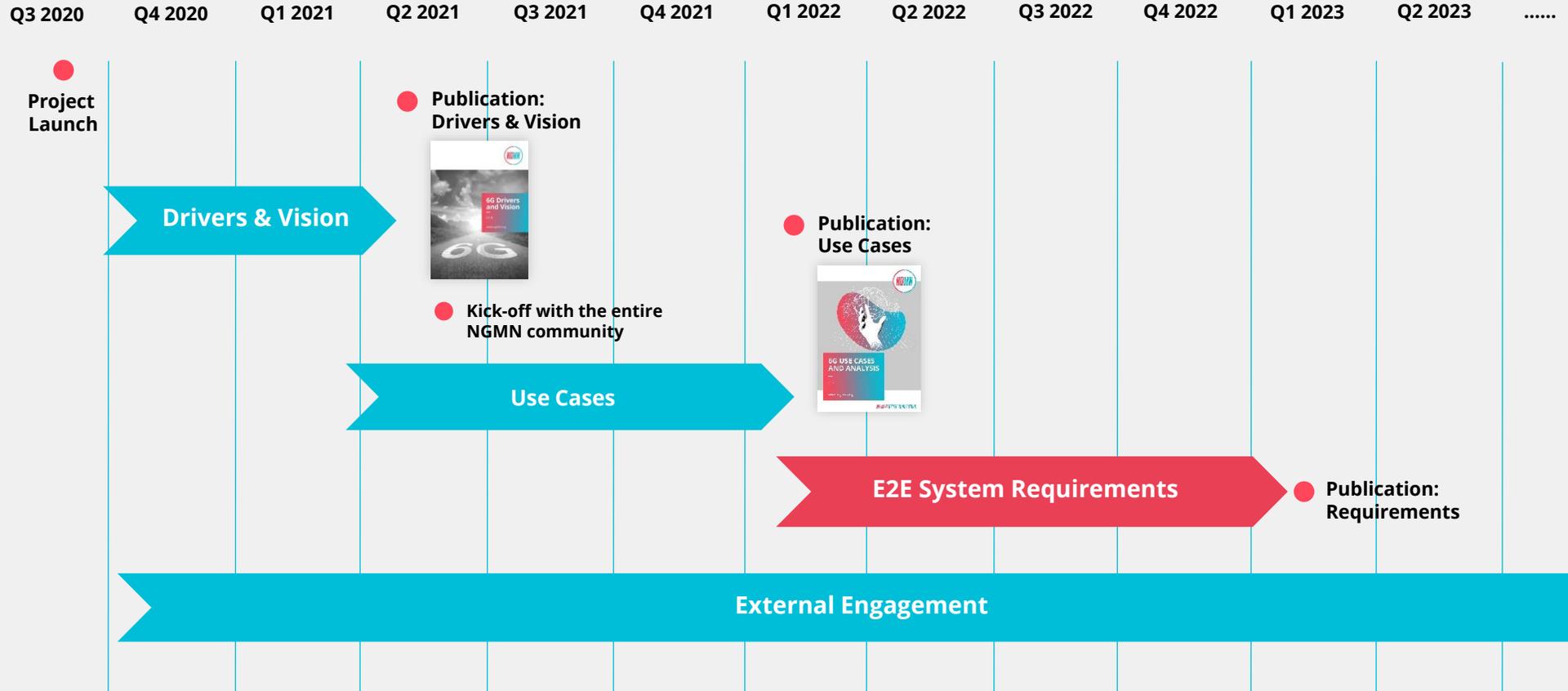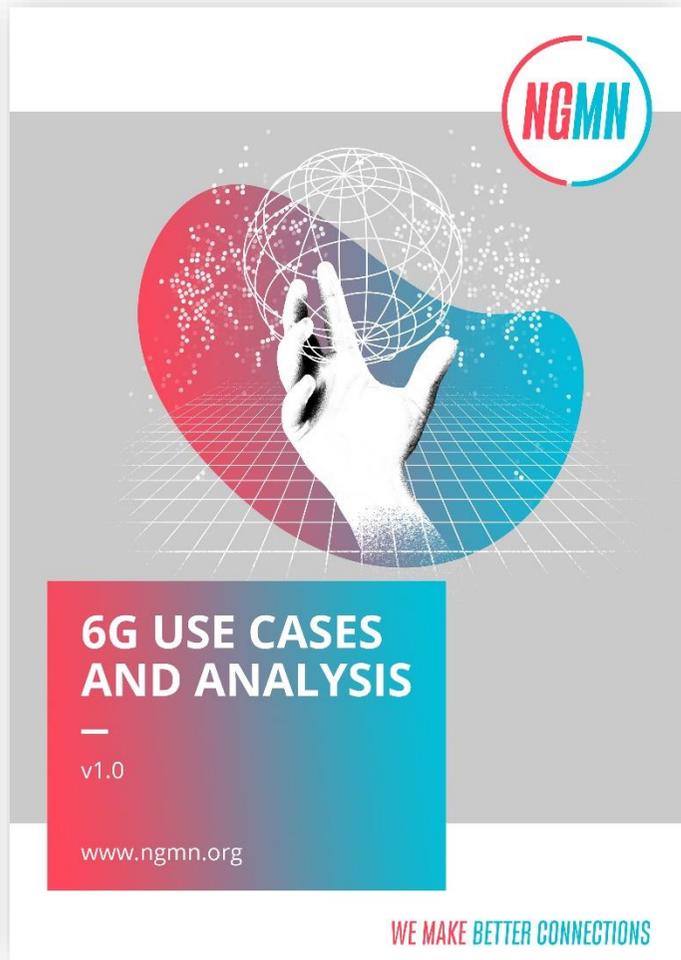
6G USE CASES AND ANALYSIS

([published in February 2022](#))

- **NGMN Partners' view on 6G Use Cases**

- To predict major trends in usage scenarios

- To steer the needs and requirements for future generational change

- To motivate the identification of differentiated opportunities for future capabilities

6G USE CASES
AND ANALYSIS
—
v1.0

www.ngmn.org

WE MAKE BETTER CONNECTIONS

METHODOLOGY

↓

CONTRIBUTION

↓

CLASSIFICATION

↓

GENERIC USE CASES

↓

ANALYSIS

6G USE CASES UNIQUE APPROACH

- **~50 use cases** contributed from Partners

- **Classification** based on the needs and application trends resulting in **4 classes** and **14 generic use cases** based on common key characteristics

- **Assessment** to understand viability and market opportunity and provide guidance on 6G design and requirements

NGMN 6G GENERIC USE CASES

ENHANCED HUMAN COMMUNICATION

XR immersive holographic telepresence communication

Multi-modal communication for Teleoperation

Intelligent interaction: sharing of sensation, skills & thoughts

ENHANCED MACHINE COMMUNICATION

Robot Network Fabric

Interacting Cobots

ENABLING SERVICES

3D hyper-accurate positioning localization, and tracking

Interactive mapping, digital twins & virtual worlds

Automatic detection protection & inspection

Digital healthcare

Smart Industry

Trusted composition of services

NETWORK EVOLUTION

Trusted Native AI – AIaaS

Coverage expansion

Energy Efficiency

6G USE CASES ANALYSIS

- Alignment with Drivers

- Sustainability and environmental impact

- Potential technology components

- Applicability

- Deliverability

- Differentiation relative to 5G

43 PARTICIPATING COMPANIES IN NGMN's 6G PROJECT

## OPERATORS

VENDORS

RESEARCH INSTITUTES

GREEN FUTURE NETWORKS

GREEN FUTURE NETWORKS

- High relevance to MNOs, industry and globe

- Currently 31 companies collaborating

- Project co-leads Deutsche Telekom and Orange

GREEN FUTURE NETWORKS
2021

Sustainability challenges and initiatives in Mobile Networks

Network equipment eco-design and end to end services footprint

Network energy efficiency

Metering for sustainable networks

GREEN FUTURE NETWORKS
KEY MESSAGES AND OUTCOMES 2021

1   **Specific recommendations for operators and vendors on** activities regarding **eco-design of products**

2   **Services' end-to-end environmental footprint assessment,** common methodology development

3   **Sharing instead of owning, refurbishment options** and **lean packaging**

4   **Importance of levering 5G air interface spectral efficiency, advanced sleep modes,** importance of **deploying sleep mode functions**

5   **Benefits of** Artificial Intelligence (**AI**) **based energy saving solutions**

6   **Standardized metering** shall be defined with **generic unified architecture**

GREEN FUTURE NETWORKS

2022

SUPPLY CHAIN CIRCULAR ECONOMY CRITERIA

REDUCING ENVIRONMENTAL IMPACT

NETWORK ENERGY EFFICIENCY PHASE 2

GREEN NETWORKS BENCHMARK

SUPPLY CHAIN CIRCULAR ECONOMY CRITERIA
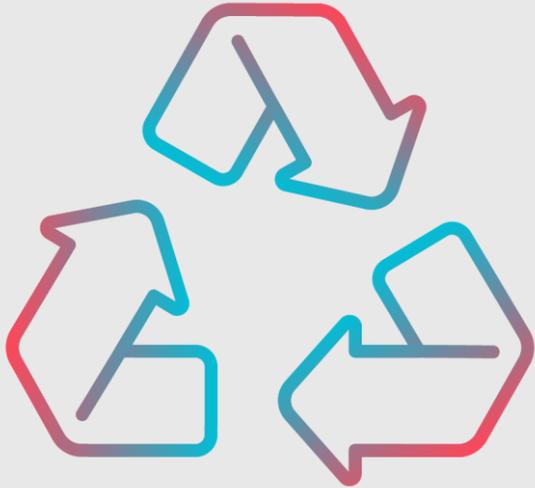
- **Supply chain emissions** form the **largest portion of an operator's carbon footprint** (**scope 3** emissions)

- Necessity for **Operators** to establish **sustainable procurement processes**, **performance indicators to assess** their **supply chain**

- **NGMN** develops a **methodology for Operators to assess their suppliers' sustainability aspects**, for procurement leaders to make informed decisions

REDUCING ENVIRONMENTAL IMPACT
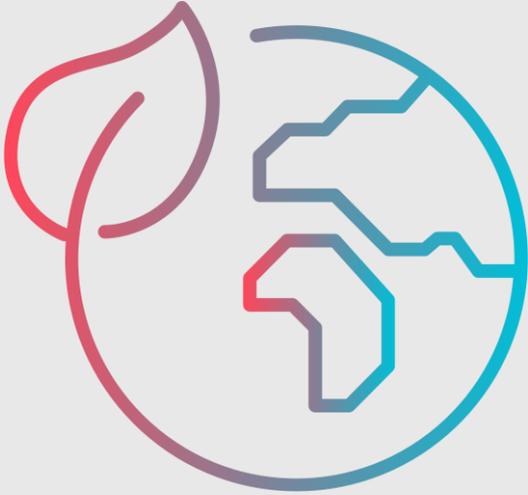
- Development of **common end to end services footprint calculation method**

- **Compendium of new business models** based on LCA

- **Critical** raw **materials** and **Life Cycle Assessment**

- Ecosystem **Water Footprint**

NETWORK ENERGY EFFICIENCY PHASE 2

- Topics **further addressing energy efficiency of networks**, including but not only AI

- **Energy consumption of disaggregated networks**

INDUSTRY STANDARD FOR GLOBAL GREEN NETWORKS BENCHMARK

- to **establish globally applicable KPIs and methodologies**,

- to **define a global evaluation methodology**, and

- to **define the data sources for the assessment** and how such data are obtained

First focus is on high level sustainability indicators, followed by more detailed assessments at subsequent stages.

Criteria: Sustainability, Energy, Technical & Non-technical, other

31 PARTICIPATING COMPANIES IN NGMN'S GREEN FUTURE NETWORKS

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T · · TELUS · TIM · TURKCELL · vodafone

VENDORS

Amphenol · Comba · COMMSCOPE · ERICSSON · Google · Hewlett Packard Enterprise · HUAWEI · IBM

intel · interdigital · Meta · NOKIA · Radiall · umlaut · ZTE

RESEARCH INSTITUTES

KING'S College LONDON · TNO innovation for life

NGMN INDUSTRY CONFERENCE & EXHIBITION INVITE

September 7 – 9, Paris
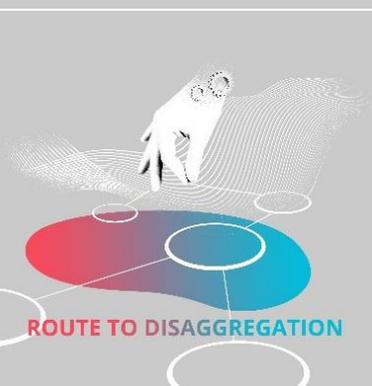
- First IC&E since 2018

- Platform for **unique networking opportunities with world's top leaders** from **operators, telco & IT vendors, academia**

- **Exhibition by leading international industry partners** demonstrating state of the art concepts and solutions

- 400+ senior management level participants on average

- **IC&E 2022 with Green Networks as main focus theme**, as well as updates on Mastering the Route to Disaggregation and 6G

THANK YOU

In case of further questions please contact

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