

Openness in Mobile Networks and Nokia's approach

Ver2.0

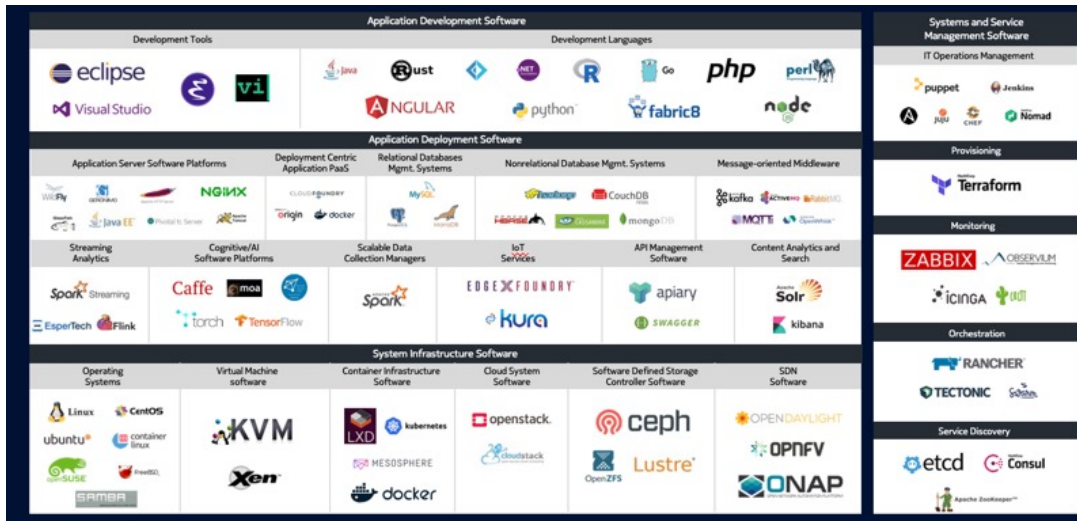
Nokia Solutions & Networks, G.K.

Tatsuya Yanagibashi, Customer CTO

07-2022

Proliferation of “open networking” in mobile world

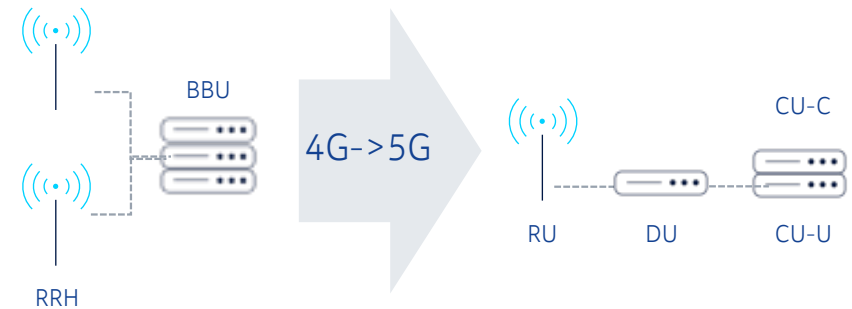
1. Open Source based Networking



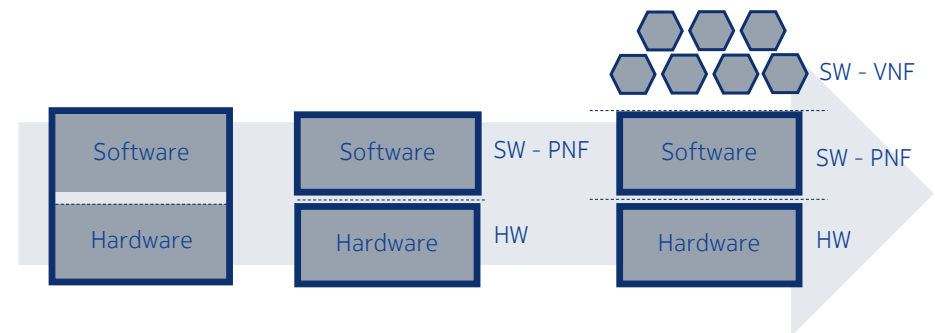
2. Software/hardware disaggregation

Hardware Disaggregation

Example : Open RAN

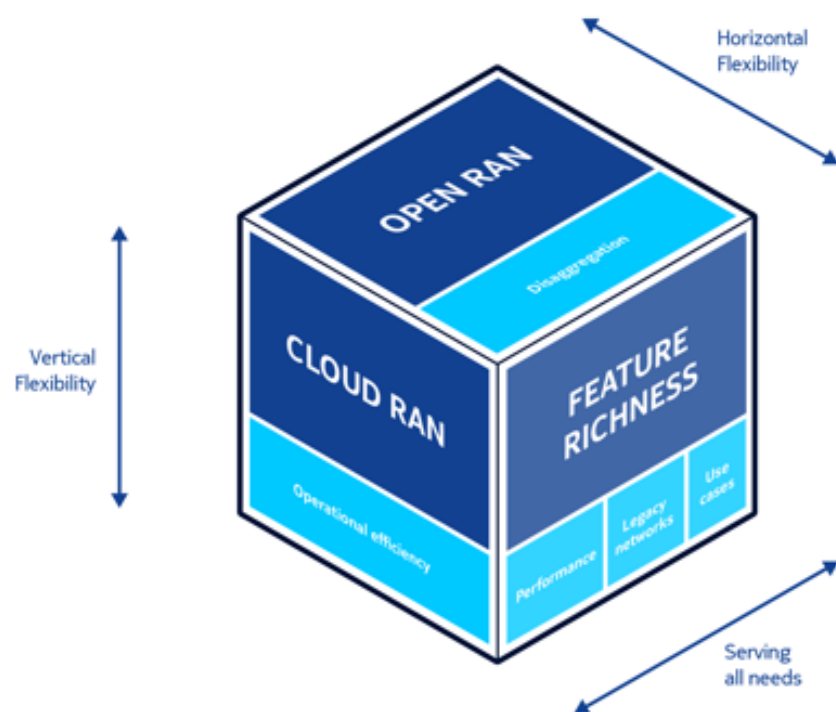


Software Disaggregation



<p>Openness</p> <p>Lower vendor lock-in, more transparent solutions</p>	<p>Joint innovation</p> <p>Get what our customers need, contribute directly</p>	<p>Learn from others</p> <p>Benefit and re-use innovation from other players and industries</p>
<p>Faster development</p> <p>Development can focus on things that make the difference</p>	<p>Security</p> <p>Transparent code that can be fixed quickly by anyone</p>	<p>Quality</p> <p>Widely used, scalable software with many users and contributors</p>

Openness in mobile now arrives at radio access network
Nokia is market leader in both vertical and horizontal openness



End to end portfolio

Nokia is the only vendor having full end to end cloud portfolio, radios, transport, data center and service integration & validation capabilities

O-RAN implementation

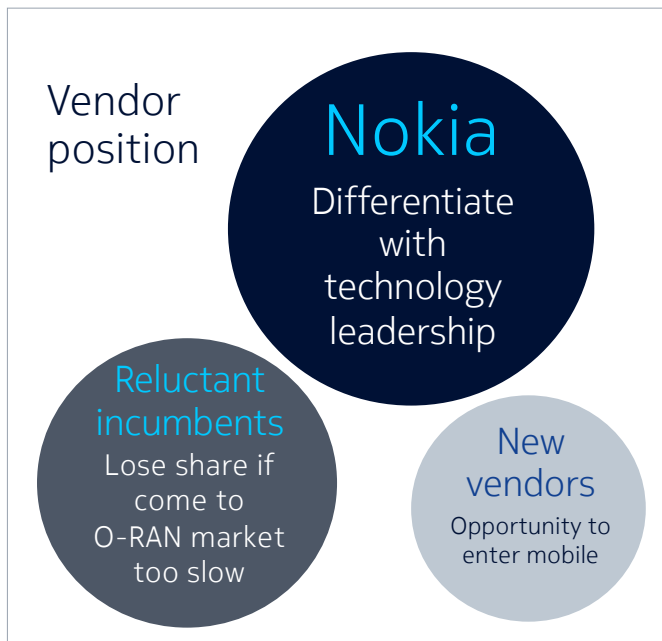
Nokia active in all O-RAN working groups and co-leads RIC and Fronthaul groups. Driving O-RAN compliant open architecture for ecosystem development

Rich feature set and capacity

Nokia 5G Cloud RAN utilizes common SW with 5G classical architecture with a wide range feature set and interoperability with existing networks

Nokia in O-RAN

Nokia can master the complexity of O-RAN



1

Nokia is investing to support O-RAN solutions including non rt-RIC; near rt-RIC and Open FH solutions

2

Nokia is the only major vendor investing in all O-RAN domains, with a strong portfolio

O-RAN based on our E2E solutions and products

3

Nokia is supporting various O-RAN Open FH profiles and collaborating with specific 3rd party RAN vendors

Nokia active in all O-RAN working groups

Co-leads RIC and Fronthaul groups



Nokia active contribution / co-leading

Nokia priorities

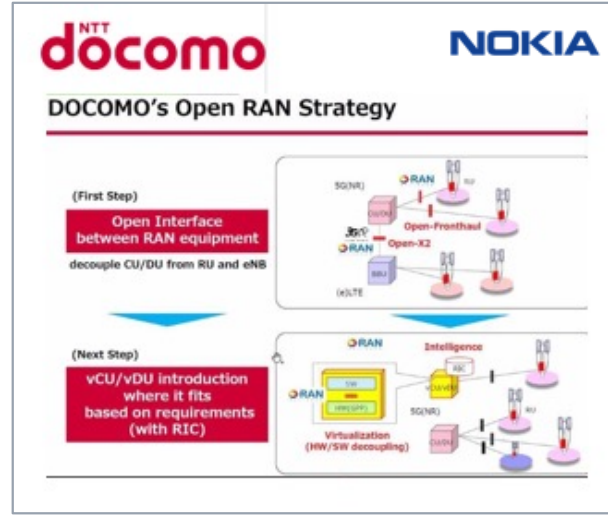
- **Global adoption** of O-RAN with **no market fragmentation**
- **No proprietary solutions** (open CPRI isn't O-RAN)
- **Avoid overlap** with 3GPP and ONAP
- Continued progress and consolidation of **Fronthaul specification**
- **RAN Intelligent Controller**

Strategic engagements increasing as we help build the O-RAN ecosystem

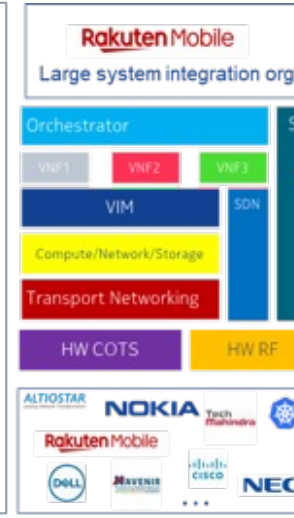


"I am particularly pleased that with Nokia we have also been able to win a strong European partner for our cooperation in O-RAN".
 --**Claudia Nemat**, Chief Technology Officer, Deutsche Telekom

DTAG NetzTag – Dec. 8th



Nokia conducts successful RIC trial over AT&T's commercial 5G network
(ET Telecom, June 2020)



Four major European operators commit to supporting OpenRAN
Telecom news, January 2021

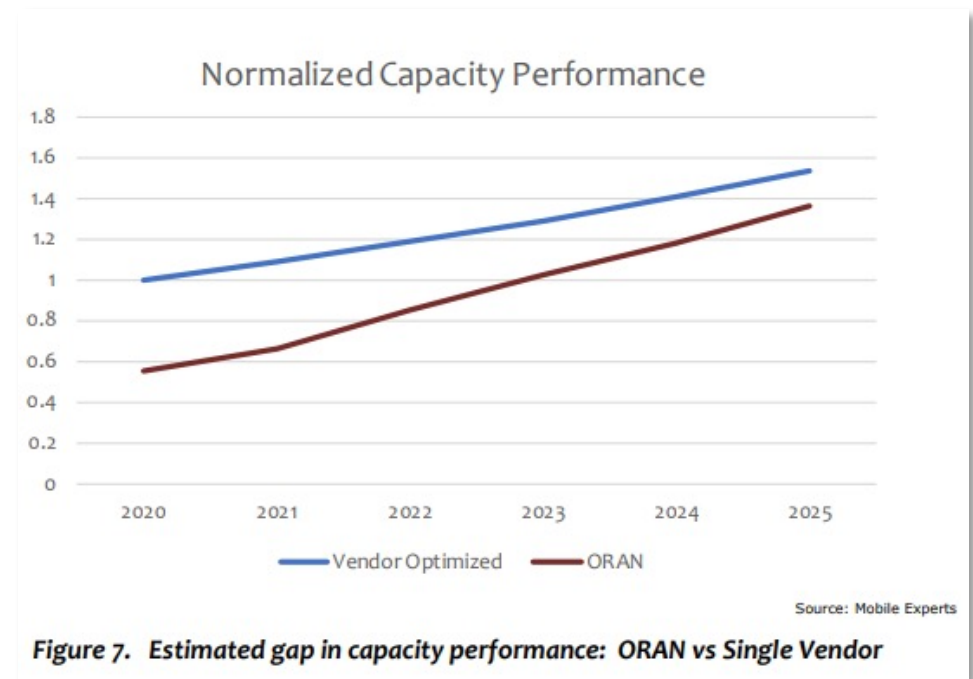


Mobile Experts – Estimation of Open RAN performance gap (09/21)

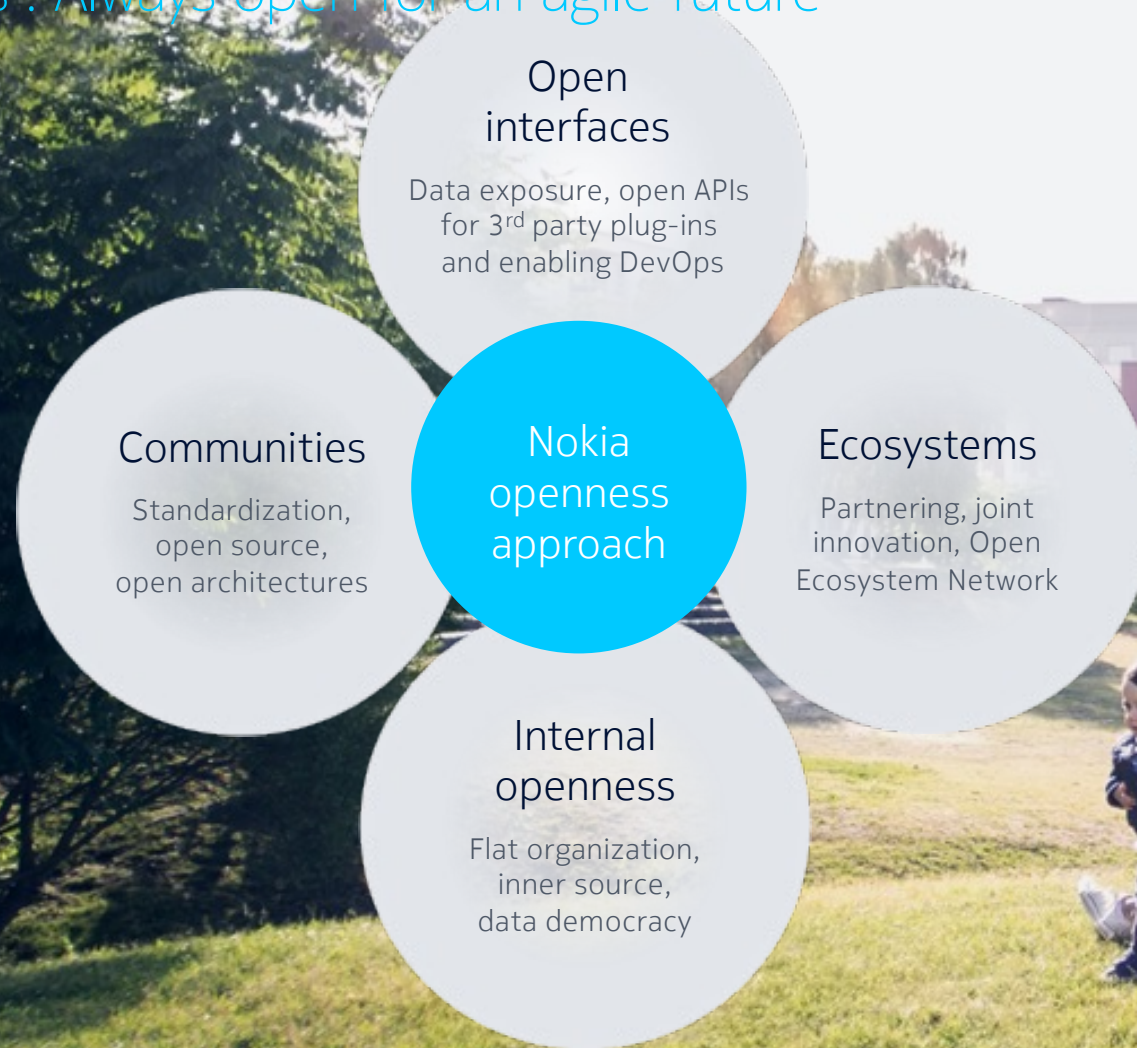
Open RAN vs. Single Vendor performance gap

Mobile Experts Open RAN 2021 report

- “...even the strongest proponents of Open RAN agree that a capacity performance gap exists.”
- Mobile Experts lists LTE and 5G features from where the differences in performance come from:
 - 7-3, DSS, CoMP, eICIC, PIM Cancellation, CA, EN-DC and power saving features
- According to Mobile Experts, some of these challenges will be overcome in time, but others appear to be intractable.



Nokia Openness : Always open for an agile future



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