Is Open RAN more energy efficient than traditional RAN?

Monica Paolini, Senza Fili

Is Open RAN more energy efficient? A tricky question

What do we compare Open RAN to?

- Traditional RAN, not old RAN

What is Open RAN?

- Open RAN or open RAN?

What is energy efficiency?

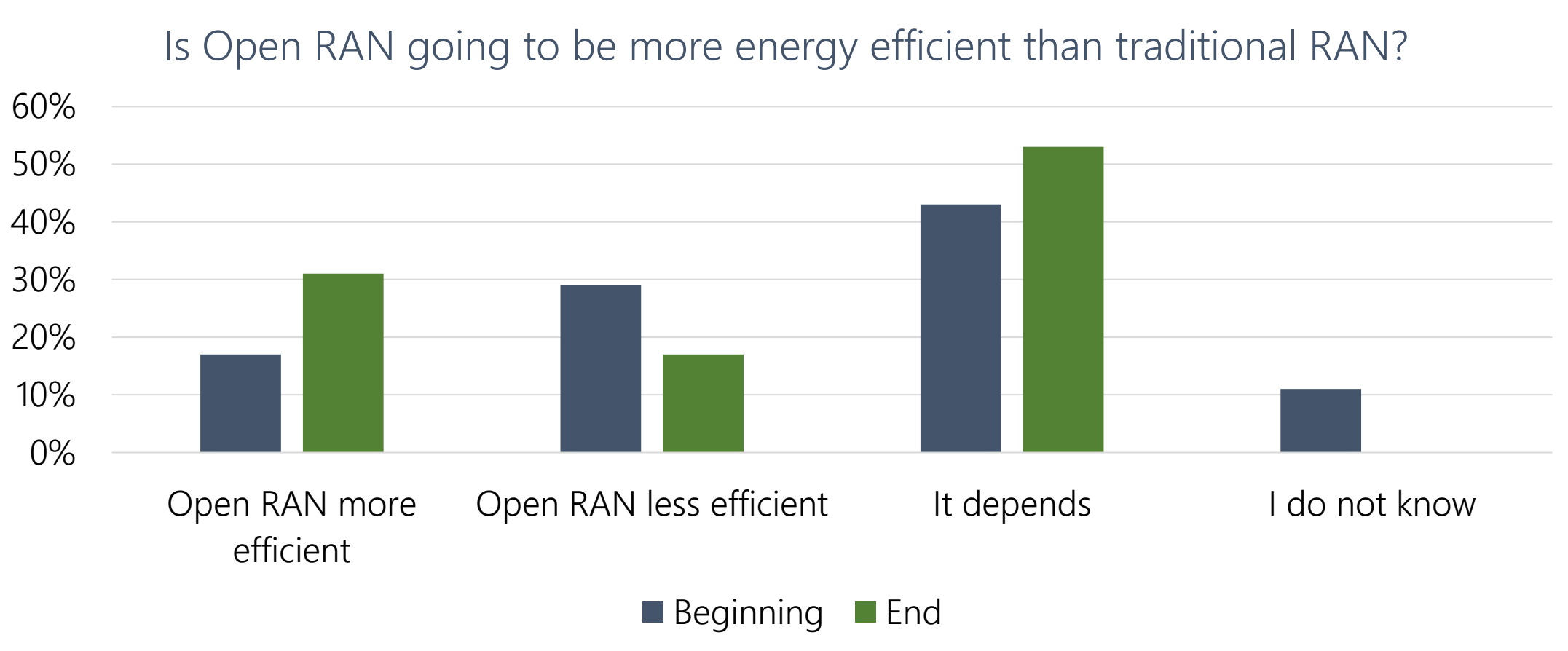
- It is not energy consumption

What affects energy efficiency?

- In traditional RAN
- In Open RAN (or in open RAN)

© Senza Fili

Is Open RAN more energy efficient? No consensus



We asked the same question to our audience at the beginning and at the end of the Sparring Partners.
While some changed their minds, most thought that energy efficiency depends
on how you deploy the RAN, rather than if it is Open RAN or traditional RAN

© Senza Fili

From Open RAN to open RAN: many ways to open the RAN (or to keep it close)

- O-RAN: Open fronthaul interfaces (O-RAN Alliance)
- Disaggregated RAN: multiple vendors, equipment choice
- vRAN: Virtualization, cloud-native architecture, pooling gains
- Chipset choice: from general purpose chipsets, to accelerators, to dedicated chipsets
- RIC and SMO: traffic optimization and network orchestration

All these factors determine energy efficiency

Open RAN deployment may benefit (or suffer) from some or all these factors

Traditional, vertically aggregated RAN can also benefit (or suffer) from these factors

© Senza Fili

How to think about energy efficiency in the RAN

How do we measure energy efficiency?

- It depends on traffic, coverage areas, services, users, topology, and not peak use
- It cannot be measured in a lab, it varies across sites
- It changes over time, as utilization increases and with automation/AI progress

Do we have a consistent way to benchmark energy efficiency?

- Not yet and it may be difficult to have benchmark metrics that fit different operators and scenarios

Equipment power consumption is only the first step in making the RAN sustainable

© Senza Fili

What makes a difference?

Open RAN advantages	No difference	Traditional RAN advantages
▪ More choice among vendors: pick most energy efficient solutions for different scenarios ▪ More likely to benefit from virtualization and cloud-based architectures: pooling gains ▪ More competition: more innovative ecosystem	▪ Equipment and components ▪ Technology ▪ AI/automation efficiencies	▪ Single vendor: more fine-tuned network optimization and traffic control (now) ▪ More likely to use distributed topology: save on transport energy costs

© Senza Fili

Will Open RAN increase energy efficiency?

Open RAN creates the opportunity for higher energy efficiency because of its flexibility

Greenfield operators are the earliest beneficiaries because they do not have to power a legacy network

With Open RAN, operators can choose the best solutions for each scenario, but they need to choose wisely to improve energy efficiency and preserve performance

Operators need to assess the benefits in the long term. In the short term, traditional RAN is likely to be more energy efficient. And in the long term, traditional RAN may also benefit from the increased innovation that Open RAN brings to the wireless ecosystem

© Senza Fili

More resources: New report from Senza Fili

Conversations with:

FUJITSU WNDRVR COMMSCOPE®
vmware® KEYSIGHT intel.
vodafone CATAPULT Satellite Applications T CONNECTIVITREE reliability matters

Download the report, watch the conversations at www.senzafili.com

© Senza Fili

About Senza Fili

Senza Fili provides advisory support on wireless technologies and services. At Senza Fili we have in-depth expertise in financial modeling, market forecasts and research, strategy, business plan support, and due diligence. Our client base is international and spans the entire value chain: clients include wireline, fixed wireless, and mobile operators, enterprises and other vertical players, vendors, system integrators, investors, regulators, and industry associations. We provide a bridge between technologies and services, helping our clients assess established and emerging technologies, use these technologies to support new or existing services, and build solid, profitable business models. Independent advice, a strong quantitative orientation, and an international perspective are the hallmarks of our work. For additional information, visit www.senzafili.com

About Monica Paolini

Monica Paolini, PhD, founded Senza Fili in 2003. She is an expert in wireless technologies and has helped clients worldwide to understand technology and customer requirements, evaluate business plan opportunities, market their services and products, and estimate the market size and revenue opportunity of new and established wireless technologies. She frequently gives presentations at conferences, and she has written many reports and articles on wireless technologies and services. She has a PhD in cognitive science from the University of California, San Diego (US), an MBA from the University of Oxford (UK), and a BA/MA in philosophy from the University of Bologna (Italy)