O-RAN Adaptive Agile Integration

Best practice from Bell Canada

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Topics

This document details Bell Canada's experience integrating the Scaled Agile Framework (SAFe) with Open RAN deployment. Our adaptive agile approach addressed the unique challenges of this technology, resulting in improved efficiency and time-to-market.

I. SAFe Scaled Agile Framework and O-RAN hands-on experience

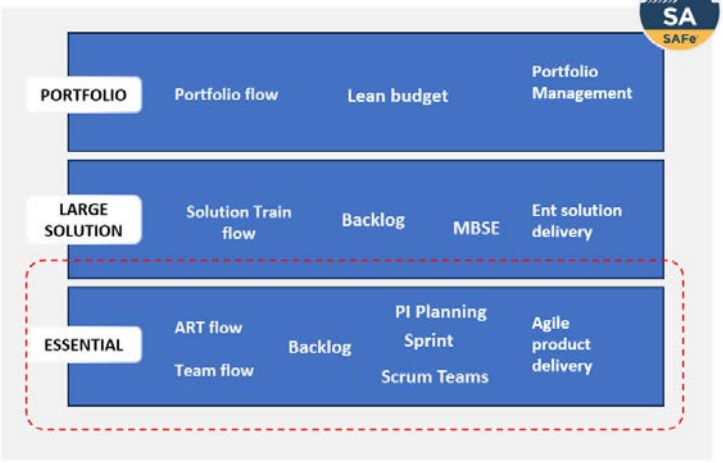
The Scaled Agile Framework (SAFe) serves as an invaluable guide, providing organizational practices, principles, and guidelines essential for supporting large-scale agile projects. Its role in facilitating the effective scaling of agile practices within organizations is pivotal. However, to harness the full potential of SAFe and elevate the execution effectiveness of O-RAN technology, a comprehensive understanding and documentation of both the software (SW) and radio physical aspects are imperative.

As we are developing the O-RAN system in the real production network, team followed the O-RAN Architecture, and specification foundation for open RAN defined by O-RAN ALLIANCE (www.o-ran.org), explored the O-RAN ecosystem development.

The deployment trials of O-RAN have been marked by a series of challenges:

- The intricate nature of disaggregation, necessitating collaboration with multiple partners boasting diverse backgrounds and product portfolios.
- The dual identity of ORAN, functioning on both wireless and software realms, adding layers of complexity to its operationalization.
- RAN teams inherently geared towards telecommunications, lacking the software-centric mindset demanded by ORAN.
- The incorporation of net new internal stakeholders, essential for delivering enterprise-wide solutions.
- The imperative to embrace new operating models for the seamless delivery of virtualized RAN, spanning from Day 0 through Day 2.

II. O-RAN Adaptive Agile Practice



While the Agile nature of the SAFe framework provides a robust foundation, it does not inherently prescribe the delivery specifics of technologies like Open RAN, where the amalgamation of Telco and software aspects are critical. To cater for this need and adaptive approach has been shaped.

We've leveraged the "Essential" layer of SAFe framework as a foundation to shape the Adaptive Agile practice.

Essential: Navigating the Agile Release Train (ART) flow, Team flow, Backlog prioritization, PI (Program Increment) Planning, Sprint execution, Scrum Teams orchestration, and Agile product delivery.

This adaptive approach applied to Open RAN trials delivery allowed an effective execution thanks to a clear set of guidelines that catered for below aspects:

- Harmonize cooperation of multi-partners with heterogenous technology background with conflicting interests' instances, due to the highly disaggregated nature of ORAN
- Accelerate the multitude of ORAN partners SAFe delivery approach adoption towards a successful delivery
- Engineer new processes, way of work to bring in highly siloed type of skill teams to work towards the same goal and understand their inter-dependencies
- Factor the Telecom dimension while developing a working a solution as a SW product e.g. high dependency on radio units' readiness and features

III. Open RAN Adaptive Agile Practice evolution and functionalities

A typical approach for Open RAN deployment, as operators and partners collaborate towards an effective and efficient solution can be delineated into below distinct stages.

1. Initial Exploration → Waterfall

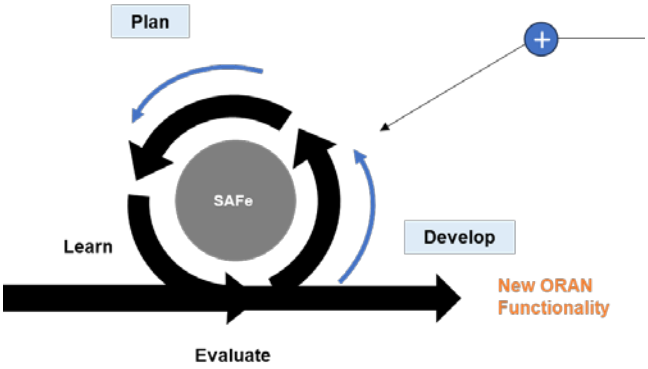
The start involves an initial exploration very similar to a Waterfall methodology, providing a foundational understanding of the technology and its requirements.

2. Onboard into Enterprise-wide SAFe → Shift to SAFe

Transitioning from exploration to the next pivotal step involves onboarding into the Enterprise-wide Scaled Agile Framework (SAFe), marking a significant shift in delivery paradigm. Operators network groups from all domains are adopting this new methodology slowly but surely.

3. Adapt SAFe "Essential" Layer → O-RAN Adaptive Agile Practice

This adaptation injects effective Open RAN delivery imperatives into the PI (Program Increment) Planning phase and the development phases for each PI Sprint.



Although appearing tactical, OAAP provides a set of prescriptive steps essential for the effectiveness and predictability of an Open RAN solution delivery.

Below new considerations captured from our experience:

OAAP new considerations:

a. Right Milestones Breakdown

b. Right Grouping for PI Planning

c. Management of Different Vendor Interests

d. Mapping Bell & Partners Expertise

e. 1:1 Partners Pre-PI Preparation

O-RAN Adaptive Agile Practice functionalities description:

a. Right Milestones Breakdown. The disaggregated nature of Open RAN as well the legacy stakeholders typical involved in a Wireless network deployment – 7 key streams need to be considered:

1. *Lab deployment*: Key for a yet to mature technology before going into production.
2. *Security*: Open RAN comes with a new set of vulnerabilities to be mitigated, requiring a new thinking.
3. *Field design*: HLD and LLD are fundamentally different now, the design function carried by OEMs has moved to operators now.
4. *Cloud*: net new technology with different flavors (VM/CM) in the wireless domain
5. *Automation & OSS*: key value driver for Open RAN.
6. *Field Deployment*: need for adapting current operating model.
7. *Hardware delivery*: the fact it's not a monolithic solution anymore, logistics of multiple suppliers needs to be considered for a streamlined supply chain.

b. Right Grouping for PI Planning for an effective PI planning, consideration around accommodating the disaggregation while not spreading team apart impacting PI objectives, an adequate grouping needs to be done, with no more than 4 groups broken down as follow - Lab/Field Design/Automation/Field deployments.

c. Management of Different Vendor Interests. With the era of softwarization, major OEMs spread their product portfolio to increase revenue channels and grab more market share, this leads to instances where interests are not fully aligned between different partners to deliver a single working solution. These aspects need to be considered to maintain partners relationships while getting the best value solution/product to the Operator.

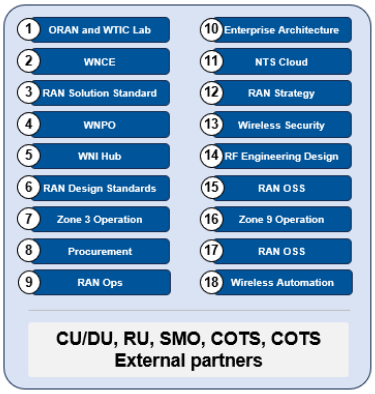
d. Map Bell & Partners expertise, as mentioned before Open RAN disrupts the typical expertise needed to deliver Wireless networks, Operators prime experts need to be mapped against the right PI Planning grouping as well the Develop phase with different degrees of involvement to spread both Network and SW expertise.

e. 1:1 Partners Pre-PI Preparation. Not all partners are familiar with the SAFe methodology, and different interests at apply, a 1:1 pre-PI planning proved very effective getting. Operator-to-partner alignment creates a safe environment for both parties to express thoughts, concerns, and ideas, fostering better commitment to objectives.

V. Applied O-RAN Adaptive Agile Practice

Aligning internal and external stakeholders toward a shared business objective is essential, below view shows different involved groups, the key milestones as well as the PI Day mapping. the below approach was used for each PI planning, for large deployments the same can be repeated driving industrialization in different groups mind.

Bell Groups & Partners



Internal stakeholders required to deploy ORAN technology from Lab through Production

Deployment 7 Miles Stones

1. Lab deployment
2. Security
3. Field Design
4. Cloud
5. Automation & OSS
6. Field Deployment
7. Hardware Delivery

Exhaustive list of milestones for an ORAN deployment

PI Day Milestone Grouping Per Breakout rooms

#	Breakout rooms	COTS	Cloud_1	Cloud_2	RAN SW	Milestones
1	Lab Deployment		x	x	x	1
2	Field Design		x	x	x	2, 3, 4
3	Automation & OSS	x			x	5
4	Field Deployment	x				6, 7

ORAN partners, breakout rooms and milestone mapping is crucial to mitigate challenges around aligning alignment towards PI business priorities

VI. Outcomes and continuous improvement

Critical metrics to a streamlined delivery were achieved through the O-RAN adaptive agile approach reducing effort and cycles needed internally and externally to deliver a working solution.

#	Key achievements	Benefits
1	≈ 30% of internal and external meetings volume reduction compared to the start	Enhanced communication efficiency and accelerated decision-making
2	+ 95% external vendors task completion rate within aggressive deployment schedule	Improved collaboration, leading to higher task completion rates
3	Lab first call made before schedule	Swift validation and testing enabling a fail fast and learn faster
4	Production first call before schedule	Expedited deployment to production, reducing time-to-market

As a crucial element for any delivery approach, O-RAN Adaptive Agile Practice continuous improvement is integral. Regular retrospectives, knowledge sharing, and feedback loops are key ingredients.

Throughout future deployment journeys, we'll be exposed to new business challenges when it comes to Open RAN, to share some, ZTP adoption rate, network and IT organizations need to work closer than ever before and what does that means to decades of operating the same way.

VII. Conclusion

In conclusion, the O-RAN Adaptive Agile Practice represents a strategic and tactical approach to navigate the complexities of Open RAN deployment seamlessly. By leveraging the foundational principles of the Scaled Agile Framework (SAFe) and adapting them to the unique demands of Open RAN, organizations can achieve operational excellence and deliver innovative solutions efficiently.

The comprehensive exploration of functionalities, from right milestones breakdown to multi-vendor management, underscores the depth of considerations essential for successful Open RAN deployment. The expected outcomes and mitigated risks showcase tangible benefits, from enhanced communication efficiency to expedited time-to-market.

As organizations embark on the Open RAN journey, embracing adaptability and agility becomes paramount. The outlined framework provides a structured guide, emphasizing the "Essential" layer of SAFe and tailoring practices to suit the distinctive aspects of Open RAN.

The journey toward operational excellence in Open RAN deployment is ongoing, marked by continuous improvement and a commitment to learning. This POV serves as a guidepost for organizations navigating the dynamic landscape of Open RAN, empowering them to not only address challenges but also optimize their delivery pipeline for a more predictable, effective, and streamlined deployment process.

Thank you for joining us on this exploration of the O-RAN Adaptive Agile Practice. May your Open RAN deployment journey be agile, adaptive, and marked by continuous success.