

Seamless Air Alliance Presentation to GSMA

20th October 2020 12:00 PM CEST



AGENDA

- I. Who is SAA...
- II. Why we were created...
- III. How we operate...
- IV. Progress to date
- V. IFC Forecast
- VI. Call to action



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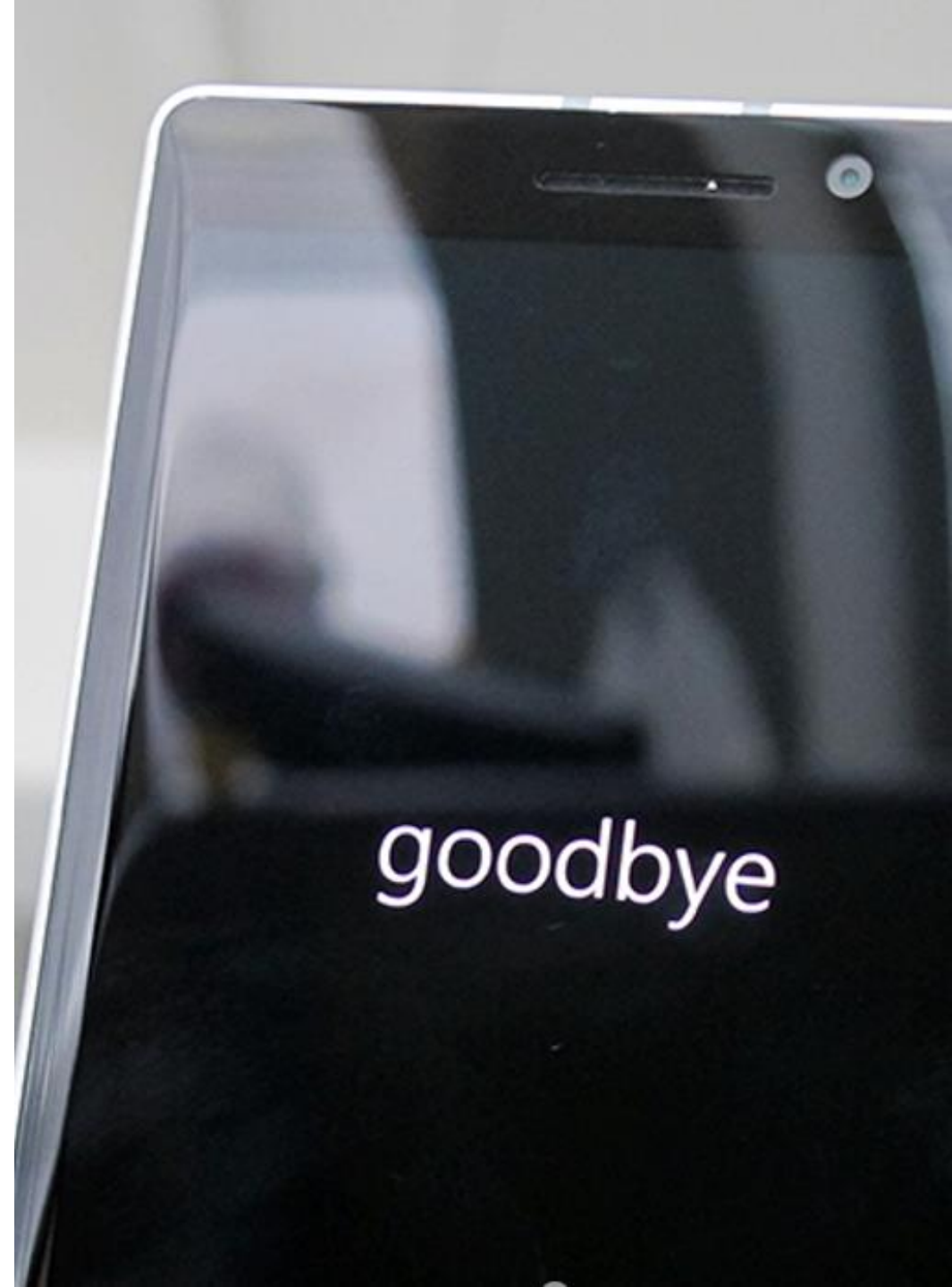


**Ladies and gentlemen, all
electronic devices must be in
flight mode or turned off...**

portable electronic devices must
be set to 'airplane' mode

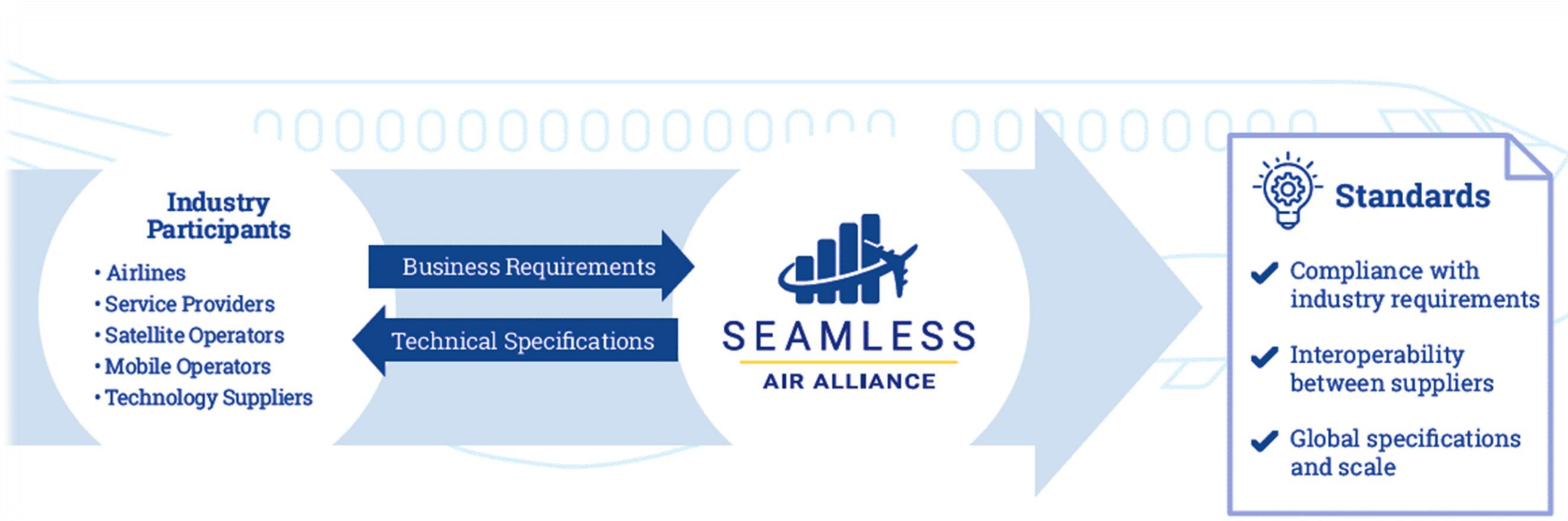
**Please turnoff your device
or switch it to airplane mode**

use of mobile phones is not allowed during flight
unless placed in "airplane mode" or the wireless
capability is turned off

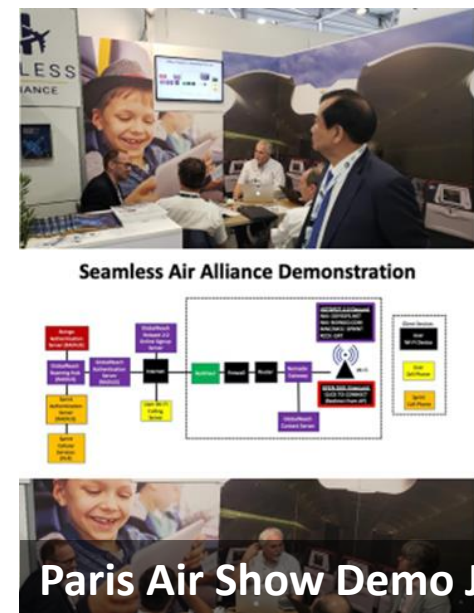
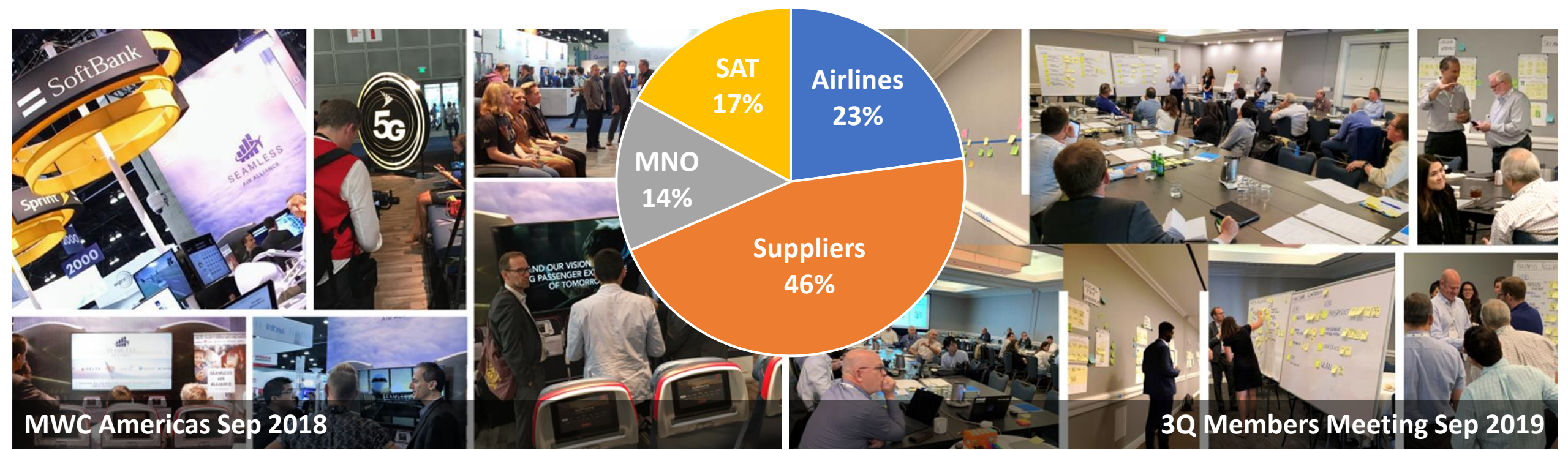


A Global Collaboration of Airlines and Technology Leaders

Our mission is to drive open, interoperable standards and make inflight connectivity simple to access and delightful to use



Visit <https://www.seamlessalliance.com/members/> for a full list of our members



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Why Seamless Air Alliance (SAA)



Single Focus → Airline Use Case for Inflight Connectivity (IFC)

- Collective drive and expertise from airlines and industry

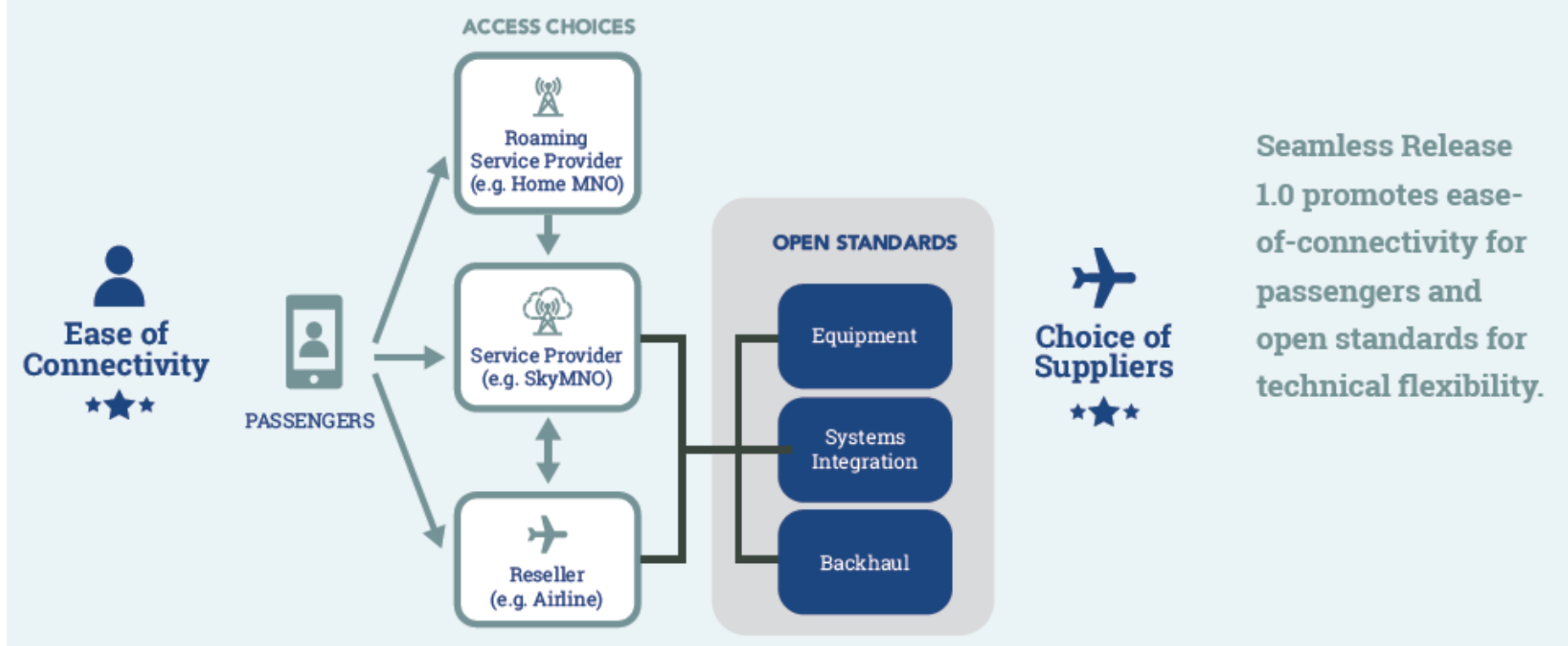
Objectives:

1. Promote new technologies that make it easier to stay connected
2. Define open and interoperable architecture for IFC systems
3. Provide test criteria and certification program

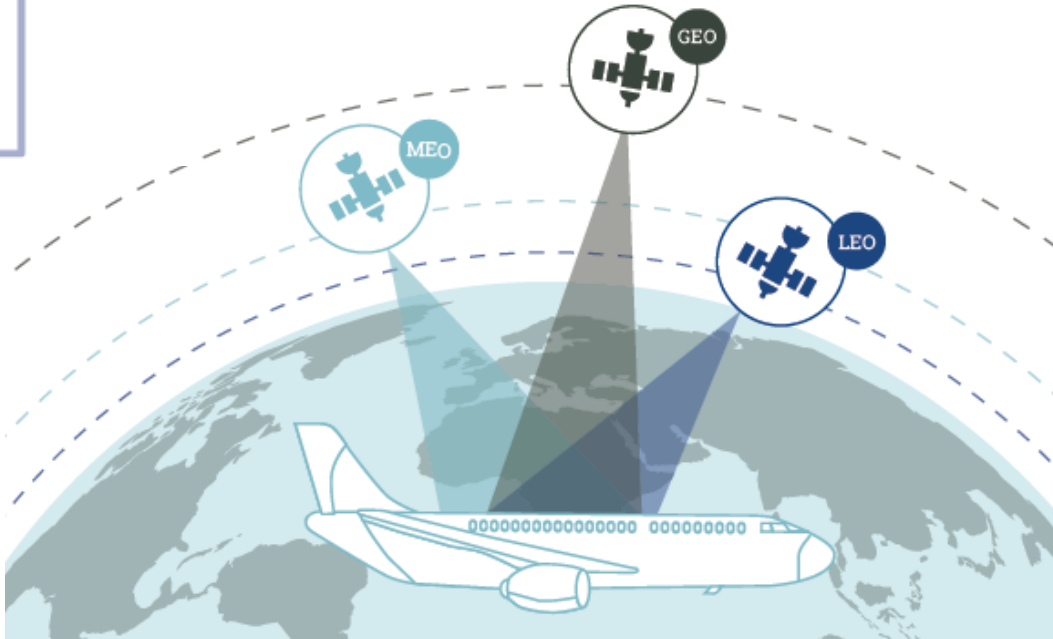
OpenIFC

Standards

- ✓ Compliance with industry requirements
- ✓ Interoperability between suppliers
- ✓ Global specifications and scale



Seamless Release 1.0 promotes ease-of-connectivity for passengers and open standards for technical flexibility.



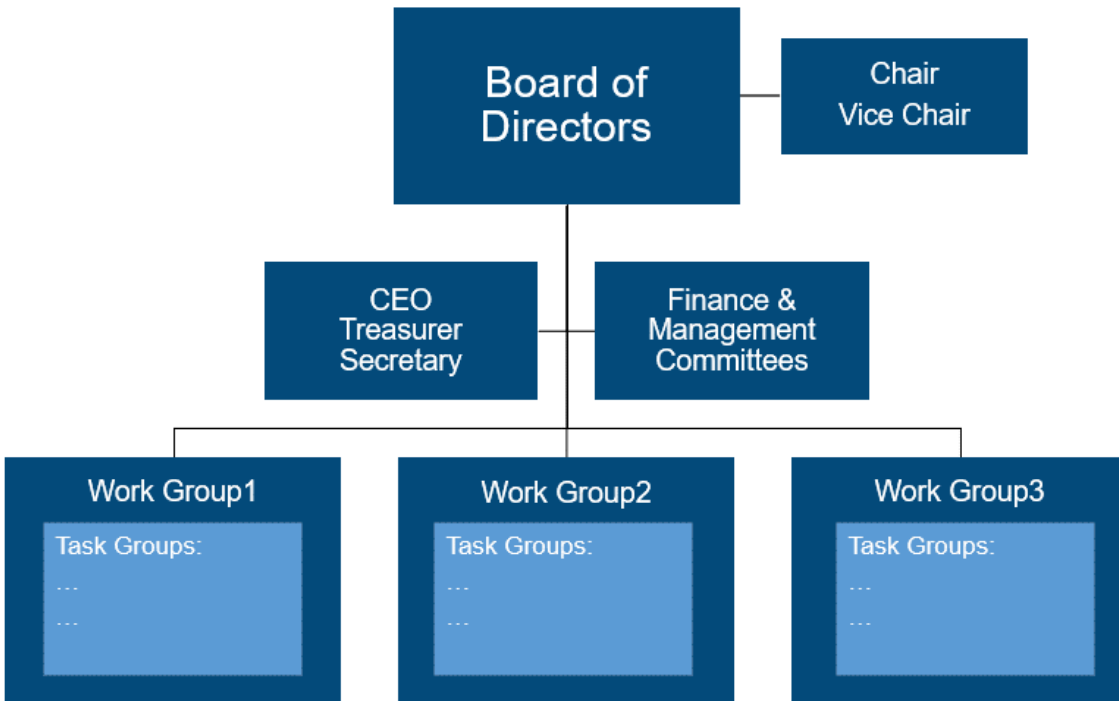
- Use of **any** business model
- Use of **any** constellation
- Use of **any** supplier

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Organizational Structure



- Non-profit
- Independent Board of Directors
- Independent third-party management
- Clear work plans
- Organizational “look & feel” comparable to major industry and standards development organizations

Seamless Objectives

1. **Seamless Roaming** – Improve the passenger experience by promoting standards that eliminate the hurdles of getting connected inflight
2. **Open Standards** – Drive innovation and economies of scale by defining an open architecture and standardized interfaces
3. **Certification** – Establish test and certification programs that ensure equipment interoperability and system level performance

Our mission is to drive open, interoperable standards that enable fast, reliable and easy-to-access inflight connectivity

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ONGOING

Objective #1 – Passenger Experience

Ready-to-Go Technologies



Rich Communication Services (RCS)
allows consumers to interact with their favorite brands and receive timely, relevant, personalized offers in native messaging app, works over Wi-Fi or Cellular

Captive Portal and Venue URL API's
automatically prompts user to connect without relying on redirect/intercept process, also can prompt user with information on remaining session time/data

Open Roaming
Marketplace of identity provider credentials for network authentication

Hotspot 2.0
automatically connects devices with cellular or non-cellular network credentials using 802.1X authentication and EAP protocols

Native Cellular Roaming

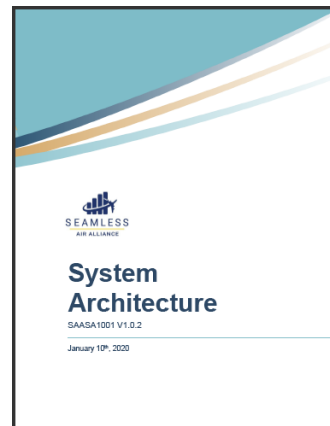
COMPLETE

Objective #2 Open Standards

SAA Release 1.0

- ✓ **Business Requirements** – Unique, testable requirements for open solution
- ✓ **Technical Requirements** – Functional components and open interfaces
- ✓ **System Architecture** – Reference model for open network architecture

100's pages
technical
(members)









20-page
summary
(public)

The SR1 Technology Brief is available for download [HERE](#)

Objective #2 Open Standards

SAA Release 1.0

OpenIFC
Multi-vendor
Architecture

-  AISD
-  PIESD
-  PODD
-  Over-air connection
-  Terrestrial physical connection
-  Cellular private network connection



Available to Membership

The content of this presentation is proprietary and confidential.
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Objective #2 Open Standards

SAA Release 2.0

System Wide Information Manual (SWIM)

- Provides equipment suppliers the ability to build OpenIFC components
- Documents the source of 'data elements' between components
- Testable criteria ensures SeamlessReady plug and play functionality



TODAY!

SR2 completes the blueprint that will allow the industry to scale the deployment of future-proof OpenIFC systems

2021 Activities

1. SR2 (Follow-on activities)

- Networking lab integration, model information exchange between components

2. SR3 (Final leg of standard)

- QoE performance metrics
- Both user and network centric measures

3. Formal Certification Programs

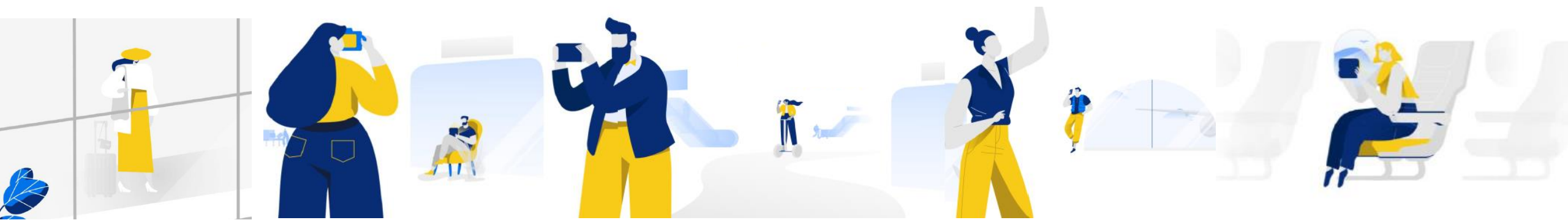
- Finalize testable protocol

4. Trial WG/s

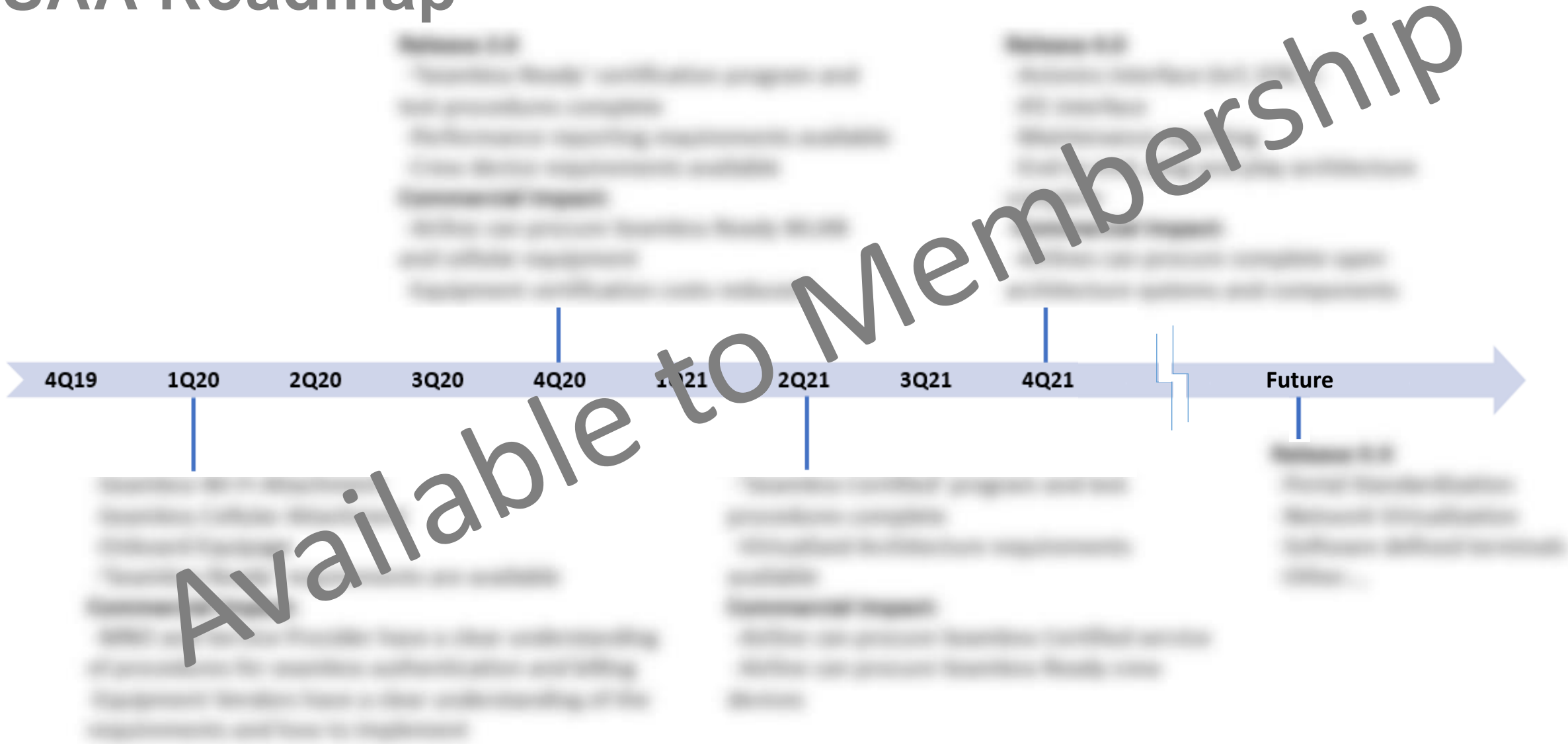
- Leveraging new features on existing hardware

5. Restart

- F2F Member Meetings
- Tradeshow events



SAA Roadmap



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IFC Past and Future

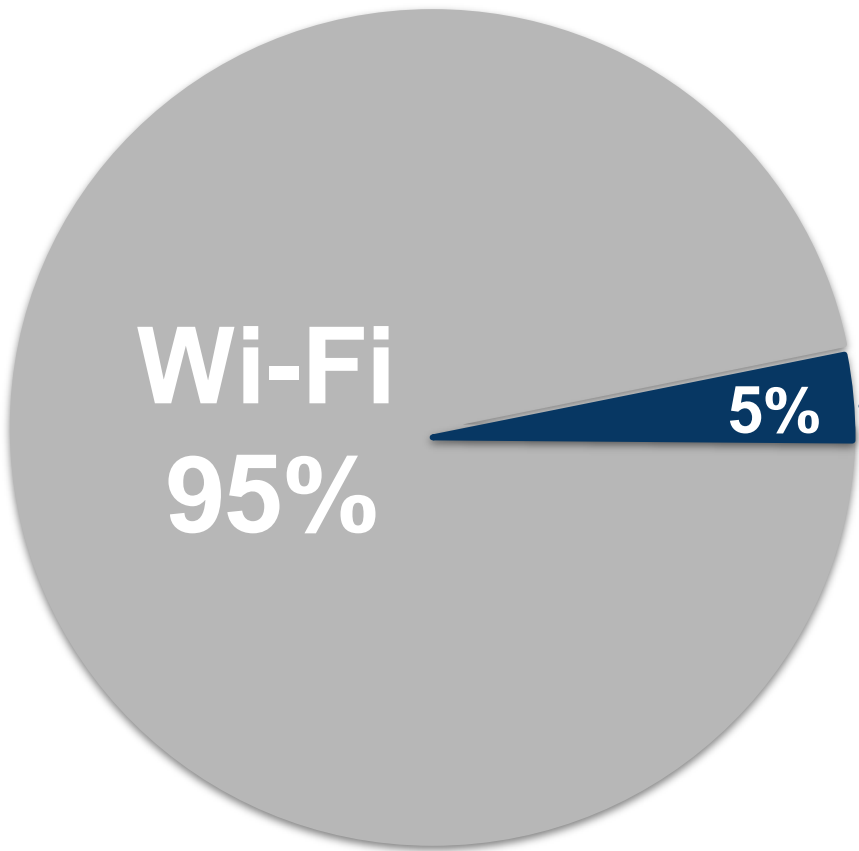
A Massively Underserved Market – Forecast for **7.2 billion annual travelers** and **\$15bn broadband access revenue by 2035**, part of an estimated incremental global market of \$130bn¹

	PAST	FUTURE
Proprietary Systems	Closed systems, vendor-lock, high cost of customization, single source, technical/business risk, 10y contracts	Industry standards drive innovation, de-risk airline investments, allow for supplier diversity, reduced cost and complexity
Performance/Cost	Intermittent connectivity, high latency, limited capacity, high cost	New satellites increasing performance, capacity, availability, and lowering cost
Passenger Experience	Cellular roaming available on limited flights, bill-shock, pay as you go Wi-Fi available by credit card	Cellular or Wi-Fi roaming for ease of connectivity, secure authentication, flat rate plans, MNO billing
IFC Take Rates	~10% (past 15 years)	~60-80%

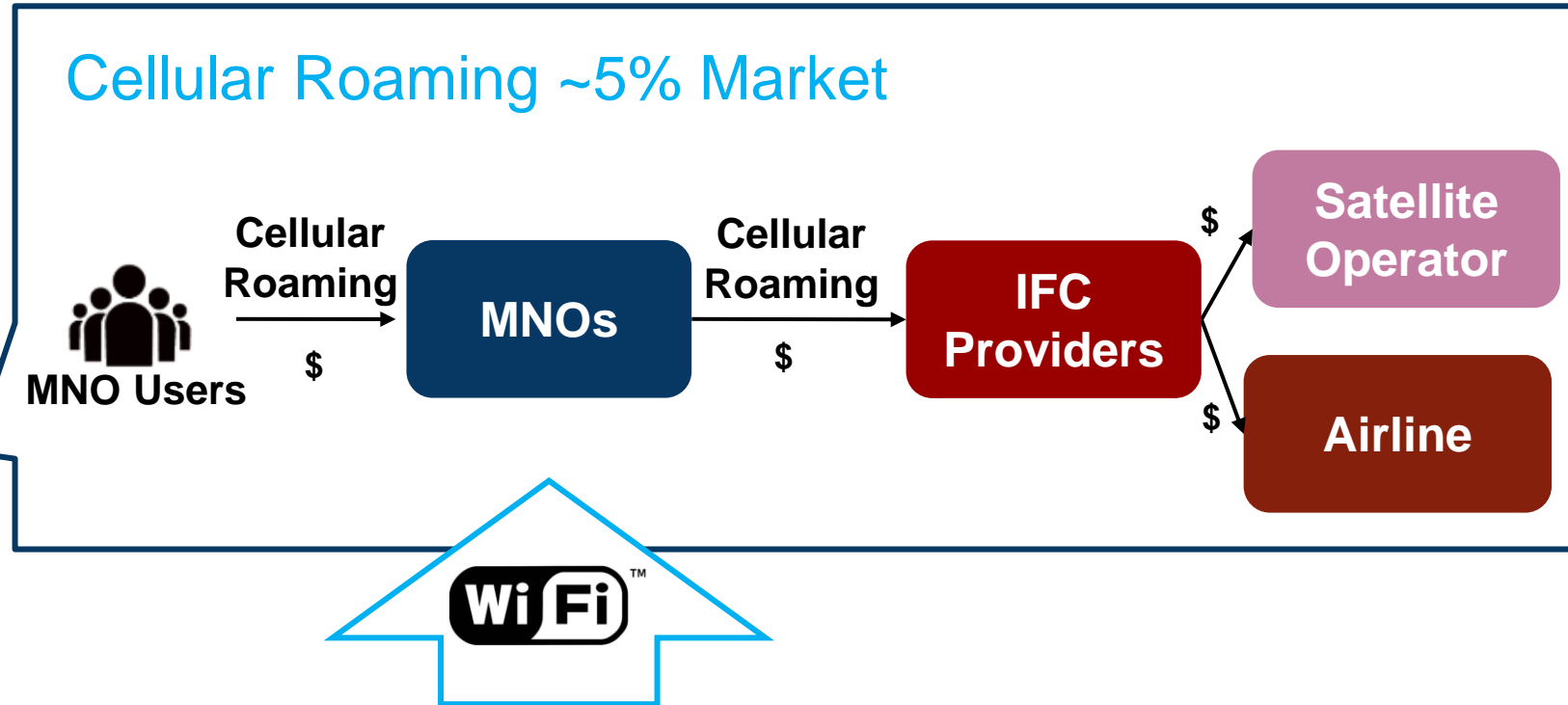
¹ <https://www.inmarsataviation.com/en/benefits/revenue-opportunities/the-skys-the-limit.html>

Wi-Fi Roaming

A Massive Opportunity for Global Operators



IFC Market Share



Wi-Fi Roaming provides MNO access to the remaining 95% Market

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For Passengers

Seamless delivers a streamlined experience, providing a secure and easy to-access service, connecting passengers everywhere they travel.



For Airlines

Seamless component interchangeability empowers airlines to rapidly take advantage of new capacity and innovations at the lowest cost.



For Mobile Network Operators

Opening the next dimension of coverage, Seamless roaming unleashes new services to over 4.5 billion passengers per year.



For Technology Suppliers

Seamless Standards establish confidence that equipment can be upgraded as technology advances, unleashing a backlog of airline commitments.

A WIN-WIN

2020

OpenIFC

Enabling Open Innovation for Inflight Connectivity

Join Us as We Pioneer a New Era of OpenIFC

- Prospective members can find more details and apply on-line at www.seamlessalliance.com
- A one-time [Guest Pass](#) may be obtained from our existing members
- Questions? Contact us at 1.510.492.4028
membership@seamlessalliance.com