

MWC22 Impressions

Min He 3/31/2022

Outline

- Overall Impression
- Hot Topics
- Zoom in on Rakuten Symphony



Overall Impression

- The return of a major in-person industry event
- Half the size, still crowded. Heavy weight keynote speakers.
- Held against the backdrop of a difficult geopolitical situation
- 5G Build-up no longer the headline story, focusing on applications
- Fewer phone launches
- Sustainability a major topic
- 4YFN attracts big crowd
- Strong presence of Huawei



5G 2B Applications

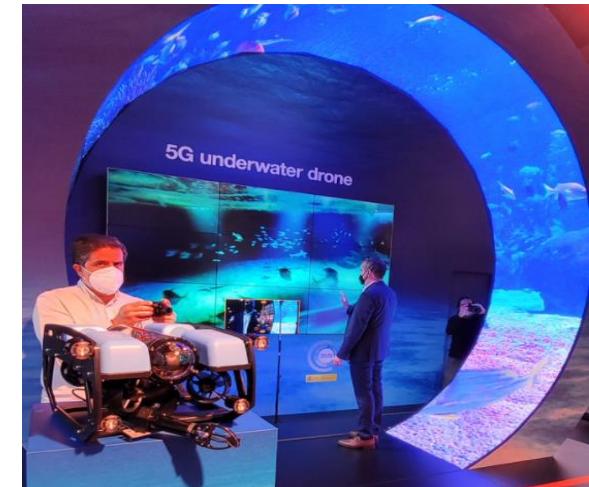
- Robots, drones, holograms, remote control using 5G links .
- Plenty 5G applications on the show floors.



Telefonica robot bartender



DT 5G slicing for live TV
broadcasting



Orange remote control
underwater drone

vRAN and ORAN

- 4 GLOMO awards including Samsung vRAN Solution won the CTO choice GLOMO awards
- Strong support by Europe Tier-1 carriers and global CSPs
 - Vodafone: 30% European network will run Open RAN by 2030;
 - Orange: Deploy only ORAN equipment across Europe from 2025;
 - Germany O2: Explore cloud-based technologies such as ORAN to deploy 5G networks
 - Telefonica、DT, VF, Dish, ATT, VZ, NTT ...
 - And many suppliers.
- open RAN merchant silicone vendors
 - Qualcomm's X100 Accelerator
 - Marvell's Octeon-based Solutions
 - Xilinx launched a telco accelerator card some time ago and has an open RAN 5G vRAN
 - Nvidia announced its AI-on-5G platform last year and is working with Mavenir, Radisys and Wind River.
 - EdgeQ and Picocom RISC-V based
- 46 demos of O-RAN in MWC22.
- Many announcements from Rakuten Symphony, the poster child of ORAN



However, there are some more cautious views

Chief Architect Neil McRae doesn't think open RAN on its own will make any difference in pricing, with the operator's current findings indicating as much. "We need more underlying component providers for the prices to really change."

"They're (Rakuten) taking that model and [they're applying it elsewhere](#). But again, it's their ecosystem, so it is not, I don't think it's the truest definition of open RAN per se,"

"Effectively, open RAN is almost like the operators starting to move on to the turf of the big box vendors, the Ericssons, and the Huaweis, and the Nokias". "Open RAN communities lacks Dependency"

Private 5G

- Many announcements.
 - Qualcomm partners Microsoft to deliver end-to-end, easy-to-deploy, scalable 5G private network solution
 - ZTE demonstrates full process of private network-as-a-service
 - Cisco announces go-to-market strategy for private 5G offering
 - Microsoft Azure Private 5G Core to be integrated with Capgemini's private network solutions
 - HPE introduced a private 5G solution that offers seamless interworking across both private 5G and Wi-Fi networks. The solution is based on the HPE 5G Core Stack and comes pre-integrated with RAN solutions from Airspan and other leading vendors
- Telco has “given-in” initial resistance and starts to embrace the private 5G opportunity with partnership.
 - Verizon Business CEO Tami Erwin suggested the advanced capabilities delivered by dedicated private networks are now critical to many enterprises which understand having a future-ready infrastructure is a must in the current environment.
 - AT&T teamed up with Microsoft to develop AT&T Private 5G Edge by integrating its 5G network with Azure private MEC. The service is still under preview and details on commercial availability will be announced later in the year.
- On-demand cloud pricing models, scalability and simplified procurement and deployment process are the key highlights of these announcements.

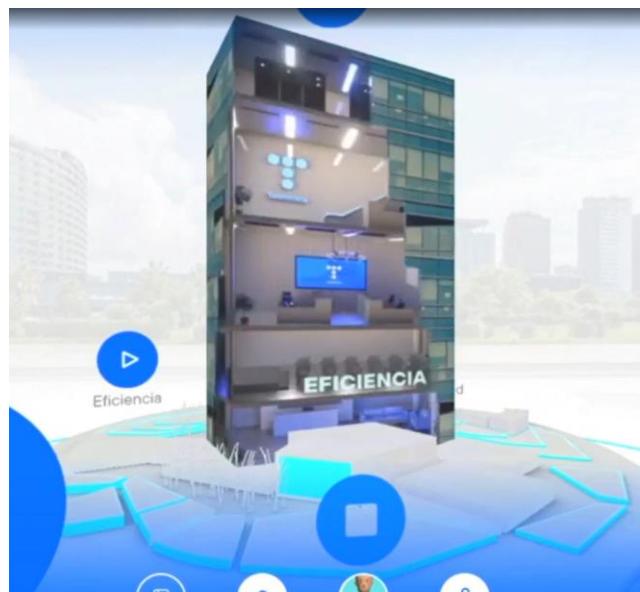
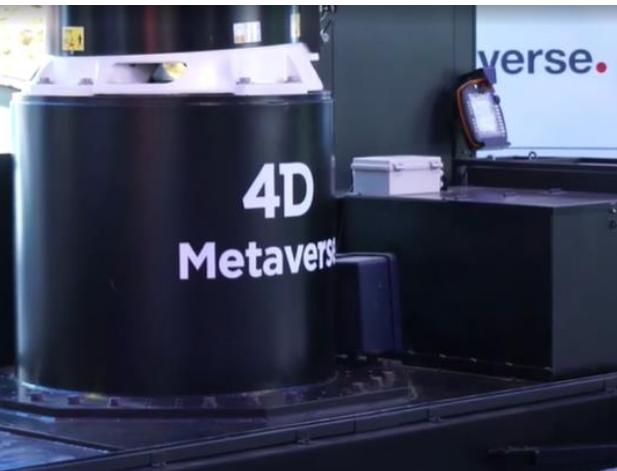
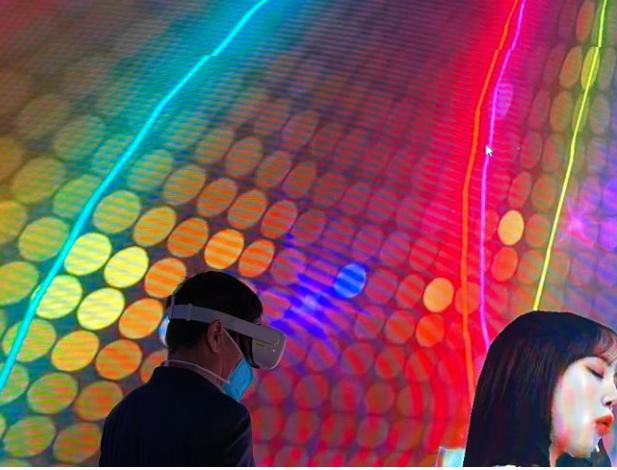


Metaverse

- Lots of talks on how metaverse can change the society.
- Various demos, especially from SKTelecom, Telefonica, Orange
- Head of Meta Connectivity Group of Meta Platform (facebook) gives a keynote .
 - Still in the process defining what is “metaverse ready” connectivity.
 - Will heavily leverage the TIP eco-system

Perspective:

The technology industry is so used to pushing supply-led technologies that when a potential demand-led opportunity presents itself, it doesn't quite know what to do. In the case of metaverse, the telecoms sector hasn't quite worked out how this dropped into its lap without it having to lift a finger.



6G

- Still early stage, preparation is underway.
- Regulators
- Vendors
- Component Suppliers

NGMN Alliance:
Release 6G Use Case white paper
Release 6G Project Milestone



NGMN CEO: Anita Döhler

South Korea:
Push operators to commercial use 6G around 2028



South Korean MSIT Minister: Lim Hye-sook

US:
FCC said they should learn from 5G experience and start 6G spectrum planning early



FCC Chairwoman: Jessica Rosenworcel

EU:
Outlined Europe's plans for technology and infrastructure investment to foster resilience, and pave the way to 6G



Pearson O'DONOHUE
European Commission – DG CONNECT
Director, Future Networks
Governing Board Member
Smart Networks and Services
Joint Undertaking
EU

Nokia:
6G will enable Metaverse in multiple dimensions, Cloud will be important technology



Nishant Batra
Chief Strategy and Technology Officer



Mark McHugh
Senior Vice President,
Head of RAN Product Line Management



Nishant Batra
Chief Strategy and Technology Officer

ZTE:
Release RIS solution to focus on evolution to 5.5G and 6G



ZTE RIS Solution
The RIS solution proposed by ZTE

Nokia's view: 6G will be commercial in 2030 and first standardize early in 2025, Bell Lab started research 18 months ago.

Network Operations

"Expect the AI conversation at MWC to shift from customer experience automation to AI in the network," said Josh Builta, research director at Omdia.

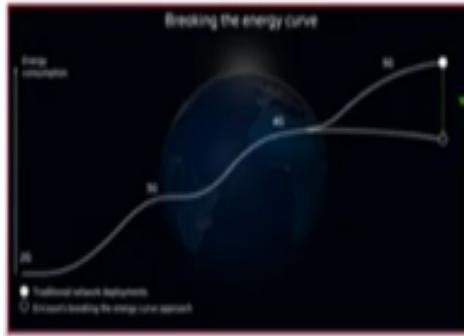
- Automation with data generated inside, more intelligent and agile network O&M.
- Many software companies on network automation, AI based solution.
- OSS/BSS vendors are very active.
- MTN and Huawei ADN co-submitted project shortlisted in GLOMO "Best Network Software Breakthrough" category.
- Orange targets to achieve TMF DMM L4 in 2025.
- Nokia launches Adaptive Cloud Networking to transform service provider cloud networks to be consumable, agile and automated



China Mobile AN L4 Approach

Sustainability

- Solutions of cutting power consumption at cell sites
 - Ericsson
 - Huawei
- Green energy
 - Deutsche Telekom showcase GenCell's Innovative Green Power Solutions, Fuel Cell based.
 - AWS launched a carbon footprint cloud tool to help businesses understand their emissions output and is attempting to become net-zero carbon by 2040.



Ericsson 5G
green solution



Huawei
green networking



DT Fuel-cell based
power station for cell site



AWS CEO
Adam Selipsky

Hyperscalers

Amazon AWS for Telecom

4 main themes

- Networks, cloudified
- Operations, simplified
- Customer experience, reimagined
- Growth, unlocked

AWS Experiential Demos: Networks, Cloudified
LOCATION: ATRIUM

SG network transformation including hybrid and multi-cloud solutions

1. Using AWS Outposts to roll out cloud-native 5G networks
2. AWS mobile private networks
3. End-to-end security for public 5G networks using AWS security services
4. End-to-end observability for public 5G networks with AWS monitoring services
5. Automated deployment of public 5G networks using AWS DevOps tools

AWS Experiential Demos: Operations, simplified
LOCATION: ATRIUM

BSS, OSS, and enterprise IT innovation

1. Improving agility & efficiency using next-generation cloud-native billing
2. Serverless OSS on AWS for near-real-time network performance and insights
3. Redefining digital & operational abilities with serverless BSS/OSS on AWS
4. Monetizing 5G enterprise use cases with cloud-native commerce on AWS
5. Accelerating the DSP journey using BSS orchestration on ROSA
6. Unifying 5G service orchestration from network edge to the cloud using AWS

AWS Experiential Demos: Customer experience, reimagined
LOCATION: ATRIUM

Data, AI/ML, customer experience, Communication as a Service (CaaS), Amazon Connect

1. Drive viewer engagement using personalized content discovery and recommendation
2. Accelerating data-driven outcomes via a telecom data mesh
3. Transforming customer experience using 5G customer insights
4. Using ML-based analysis on AWS to optimize 5G RAN
5. Simplify operations and use ML to monetize media workloads with AWS

AWS Experiential Demos: Growth, unlocked
LOCATION: ATRIUM

Innovation Factory: IoT, Wireline & Cable, Private Networks, Edge, and Digital Innovation

1. Mobile edge computing with AWS Wavelength
2. Revolutionizing industrial automation with robotics and private 5G
3. Transform mobile networks for predictive maintenance and computer vision use cases
4. Secure Access Service Edge (SASE) for the modern telco
5. Monetize TV services with subscriber-targeted advertising

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Microsoft Azure for Operator

- Empower your workforce
- Streamline your operations support system (OSS) and or business support system (BSS)
- Accelerate network transformation
- Elevate customer experiences
- Monetize 5G and edge



Main Equipment Vendors



- Release 7 RAN product
- Sign contract with Indosat for 4/5G RAN
- No GLOMO Award
- Deep in the ISIS scandal, shares have fallen 35% since mid-February



- Win 1 GTI Award(5G Liquid cooling site)
- No GLOMO Award
- Cooperate with AT&T to improve 5G uplink with D-MIMO
- Speech focus on green energy, 6G, Cloud and ToB



- Win Best Connected Consumer Device Award with Cloud AI Home Security Camera Pro
- Win 3 GTI Awards(iCube 5G private network, 5G TSN for Green Power Grid)
- Release UniSite NEO solution, including:
 - New generation M-MIMO:192 antenna elements/320W/200MHz
 - Industry's lightest M-MIMO: 32TR/9kg
 - Enhanced BBU with all-RATs large capacity and network intelligence
- Release GreenPilot solution
- Release RIS solution
- Release Cluster DSS solution and Cloud Network Core Capability Innovation Achievement with China Telecom

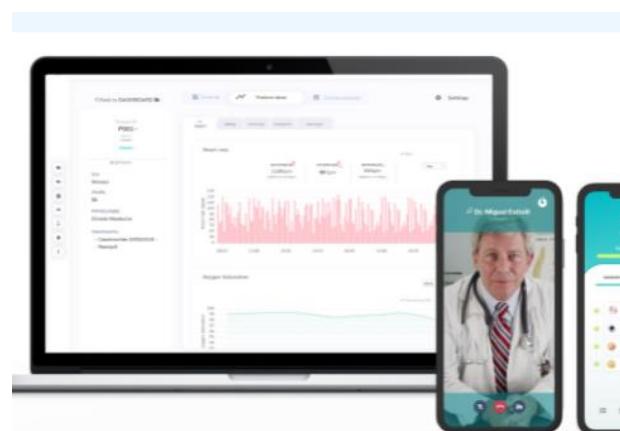
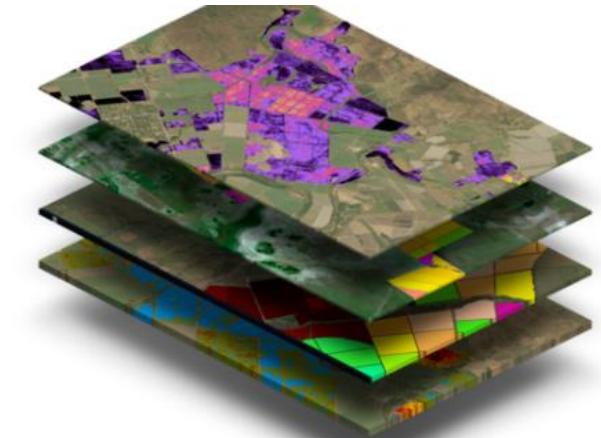


- First time to win 2 GLOMO Awards with 5G vRAN for CTO's Choice and Best Mobile Technology Breakthrough



4YFN

- The start up event of MWC22.
- 500 startups, 300 speakers, €24B investment fund
- GLOMO Awards Shortlist
 - Authena
 - IoT & blockchain-based technology solutions for product and brand protection
 - NAX Solution
 - Use AI to predict agriculture production
 - IDUN Technologies
 - Guardian Neuro-Intelligence Platform
 - Citibeats
 - Understand how society changes in real time
 - ROBY
 - Multilingual Educational Companion For for kids and families
 - HumanItCare
 - Bring health care to home



Huawei's Presence in MWC22

- One of the largest stands at the shows.
- Consumer, Carrier, Cloud, Enterprise BGs
- Keynotes from Guo Ping, Ryan Ding, Richard Yu
- Won 6 GLOMO awards
 - **Best Mobile Innovation for Connected Economy Award**– Tianjin Port
 - **Best Mobile Infrastructure Award**-- New FDD Giga Band MIMO Module
 - **5G Industry Partnership Award** – China Unicom Beijing for Capital's Meta Life on Giga Society
 - **Best Mobile innovation for the Connected Human Award** – China Unicom, Health Commission of Hainan Province and Huawei for 5G Smart Healthcare Lights up Hainan Healthy Island.
- Won 3 GTI awards
- Richard Yu: survive current “hard winter”, unveiling a range of new products aimed at the B2B sector and consumers under its Smart Office brand.
- Key Messages from Guo Ping's keynote
 - Under pressure but will not withdraw from the international communities.
 - Increase fundamental technologies investments. Now the second largest private company in R&D spending.
 - “Just look up! Let's light up the future!”



MateStation X



MatePad Paper.



Ideahub whiteboard



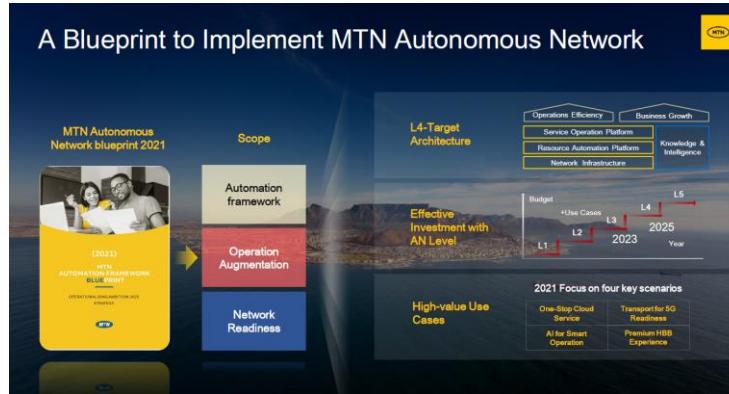
Autonomous Driving Networks.



Huawei Digital Employee Sara

Autonomous Networks

- AN getting strong traction in three big Ts in China.
- Plan to establish 5-6 oversea exemplary CSPs on AN realization in 2022
- During MWC22
 - CxO Round Table on AN
 - Analysts one and one on AN
 - ADN show cases
 - GLOMO “Best Network Software Breakthrough Award” shortlist.



Partnerships in 2022: Industry Development

Category	Item
China	<p>Continue to hold AN China Industry Summit (TM Forum partnership with CCSA)</p> <p>Initiate 2+ AN Catalyst projects</p>
Outside China	<p>In 2022, we suggest to set up two joint development teams (Asia Pacific and Middle East).</p> <p>Goals: 1) develop new members; 2) involve more carriers to participate in ANP; 3) 2+ AN Catalyst projects.</p> <p>Suggestions:</p> <ol style="list-style-type: none">1) Motivate more carriers (VDF/Orange, AIS/True/Axiata, PLDT/Globe, VEON, Turkcell, Zain/Etisalat, MTN,...) to practice AN initiative by CXO visit, workshop, ...2) Hold AN industry summits in Asia Pacific and Middle East
Global Influence	<p>Platinum Sponsor for 2022 DTWS</p> <p>Sponsor the AN White Paper 4.0 and AN Research Report (2022) (<i>AN: Business and Operational Drivers, 2021</i>) .</p> <p>Suggest TM Forum to consider the feasibility of constructing an AN maturity assessment and certification system/service for CSPs</p>

ACG Research

Mark Mortensen

Appledore
Research

Robert Curran

AvidThink

Roy Chua

Omdia

Sammer Malik
Ian Redpath

GlobalData

John Byrne

Takeaways

- Realizing 5G Business Value
 - 2B – Vertical Industry Transformation
 - 2C -- Metaverse
- Simplify Network Build-up and O&M
 - Private 5G
 - Autonomous Networks
- Achieving Greener Networks and Data Centers with hardware and software innovation.
- Social Inclusive Networks
- Applying AI for Intelligent Networks Everywhere
- 6G not yet a hot topic, preparation is underway.
- Huawei stabilized and started to focus on new growth strategies.

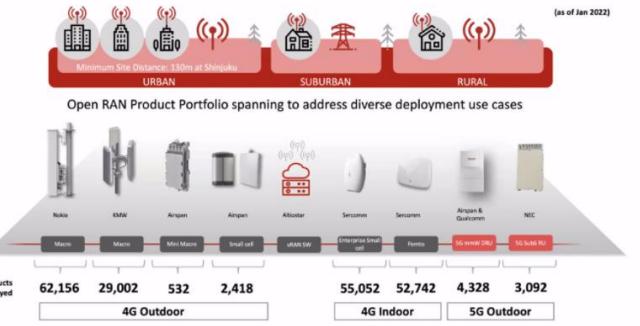


Rakuten Symphony Background

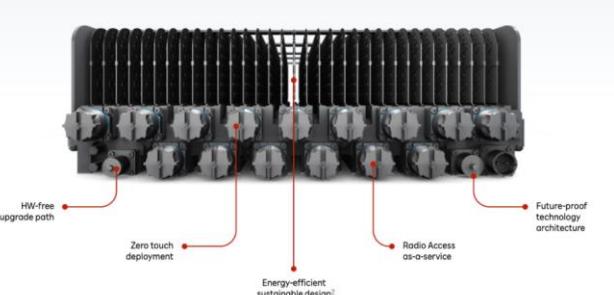
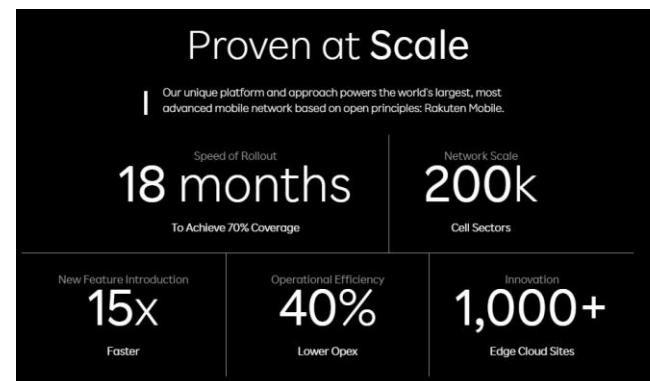
- Rakuten Symphony spin off from Rakuten Mobile in Aug. 2021. Tareq Amin as the CEO
- Repackaging RCP (Rakuten Communication Platform) to Symworld as commercial offers
- **Symworld**
 - provide all of the applications needed to plan, build, deploy, operate, monitor, manage and secure a complex, multi-vendor network.
 - A data driven platform with 50+ integrated applications that provide data into a common data lake and receive AI driven insight. Those applications sharing a common data platform, eliminates integration tax, manual processes, data duplication and fragmented software license management.
- **Symware**
 - a multipurpose edge appliance combines the containerized cell site routing functionality and a containerized distributed unit on a single general-purpose server platform.



One of the World's Largest Open RAN Deployments: 200,000+ Cells Deployed



Courtesy of Rakuten Symphony



Perspective

"Symphony is not a services company, is not a telecom hardware company. It's a telecom *platform* company."

Rakuten Symphony Announcements in MWC22

- Signed a collaboration agreement with At&t to enhance network design and build solutions for operators
 - Site Manager
 - Integrate with At&t's RANFT tool for capacity planning
- Signed a go-to-market MOU with Cisco
- Acquired Robin.io, Cloud Native Platform provider
 - cloud-native deployment, lifecycle management and orchestration.
 - Robin cloud native storage
 - Multi-datacenter automation platform
- Nokia become the first Symworld partner
- Former FCC Commissioner Ajit Pai joined Rakuten Symphony's board
- MTN Group and Rakuten Symphony will conduct 4G/5G RAN trials.



Best Network Software Breakthrough
Rakuten Mobile for 5G Open RAN

Symworld Screen Shots

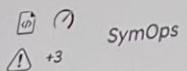
Apps ▾

Search Apps



Symworld
Home

My Applications



SymOps
+3



SymPlan
+2



(3)

Sympulse
Monitor, analyze and provide real-time network performance insights.



SymCare



SymBuild



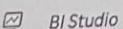
SymLearn



Symworld Platform



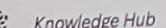
Recent Apps



BI Studio

Retrieve, analyze, and transform structured and unstructured data into valuable insights through dashboard or reports.

● Updated
01-Mar-2022 17:43:33 JST



Knowledge Hub

Manage and navigate through the centralized knowledge management repository.

● Updated
01-Mar-2022 17:02:11 JST



Automation Studio

Enable automation of end-to-end network operation activities and minimize risk of human errors.

● Updated
01-Mar-2022 16:49:48 JST



Orchestrator

Track and plan a broad range of networking activities in a single application.

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OmniDesk

Enable customer support teams to improve NPS, customer experience, and customer satisfaction while optimizing customer care center costs.

● Updated
01-Mar-2022 16:42:33 JST

Symworld

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SymOps

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Enable automation of end-to-end network operation activities and minimize risk of human errors.

Performance Monitor
Proactively monitor your network performance utilizing custom dashboards.

Fault Monitor
Empower the network operations team with actionable intelligence on faults and incidents.

SymLearn

Symworld Platform

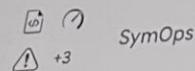


Apps ▾

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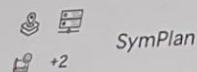
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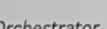
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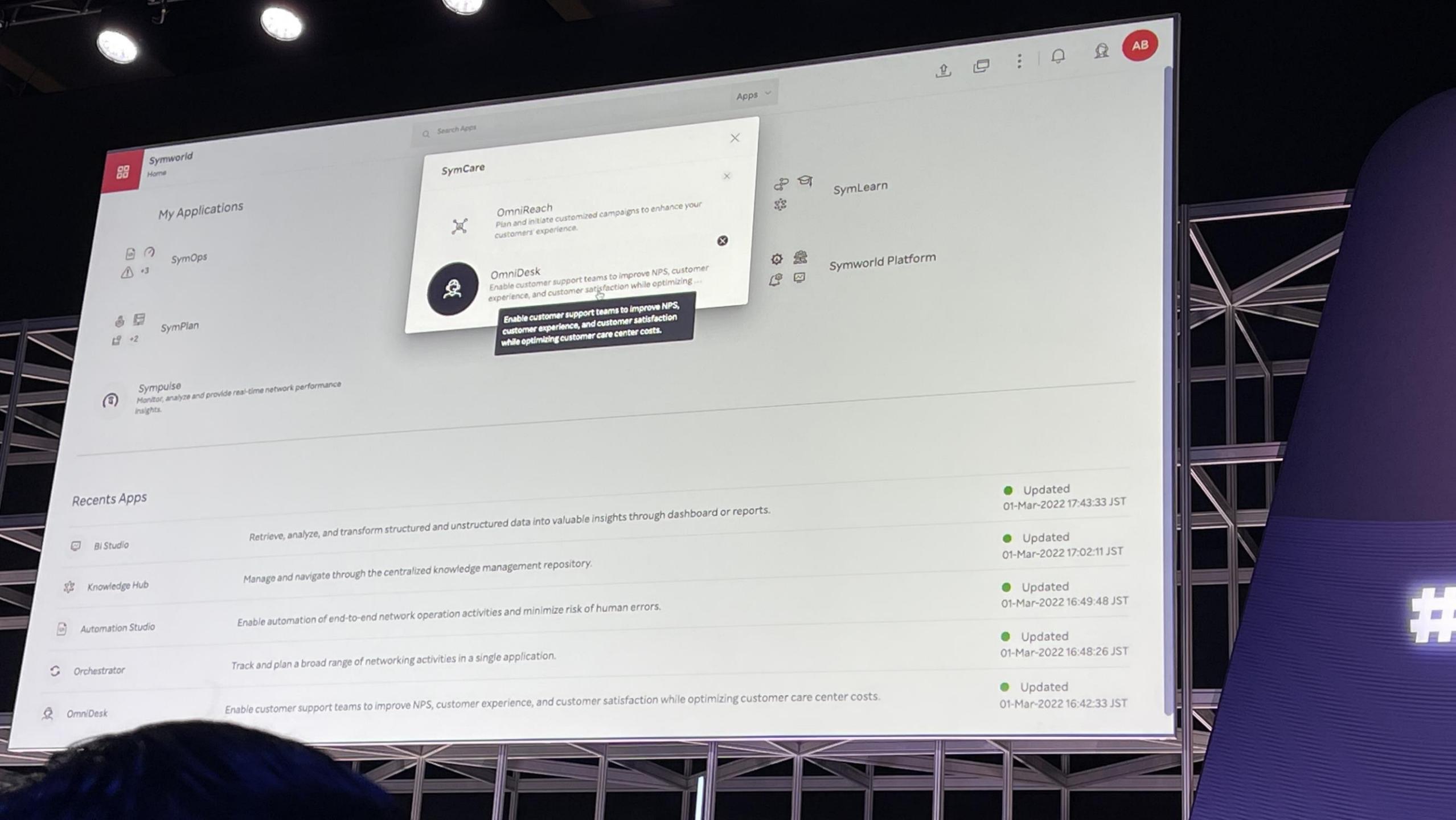
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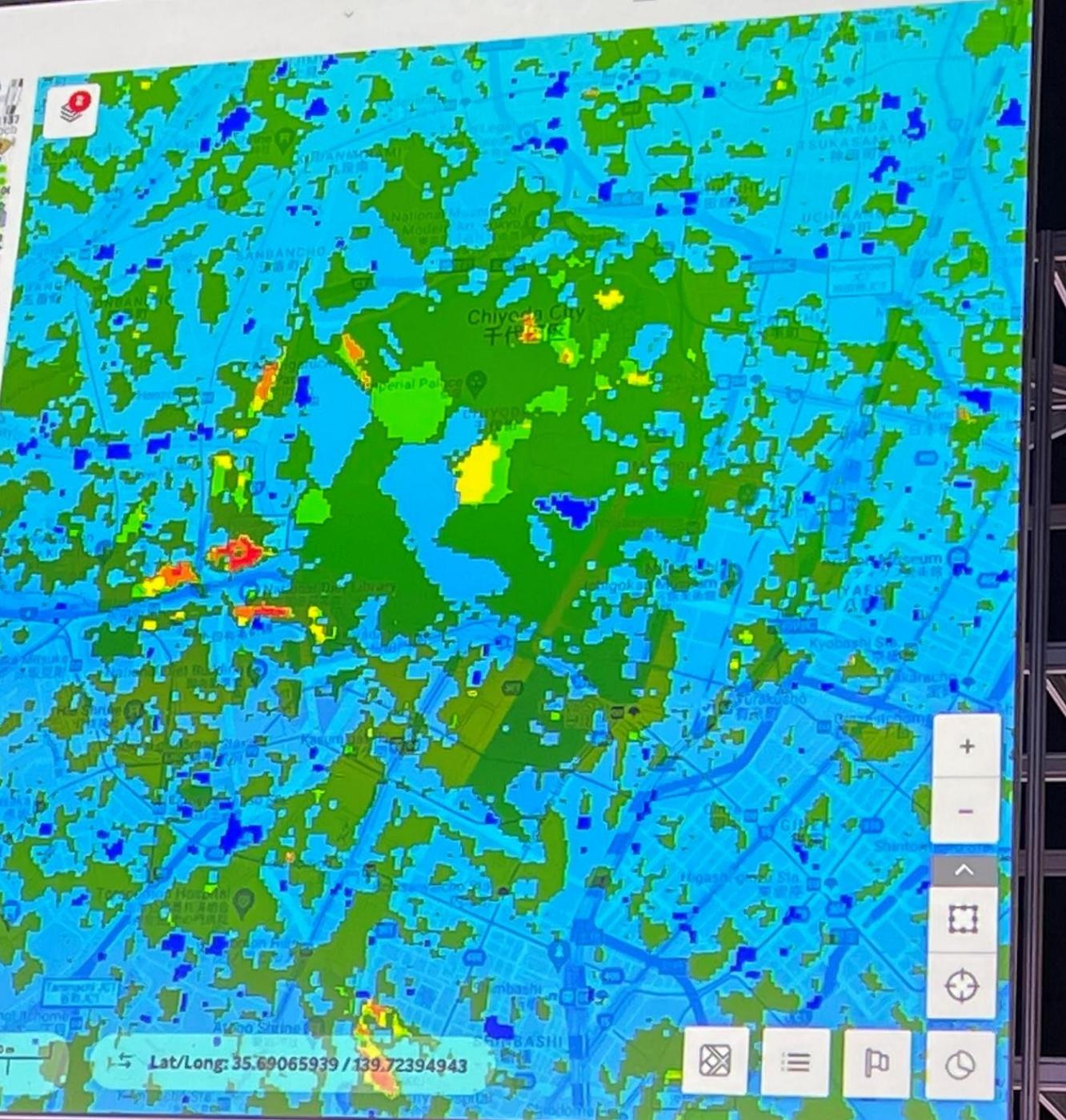
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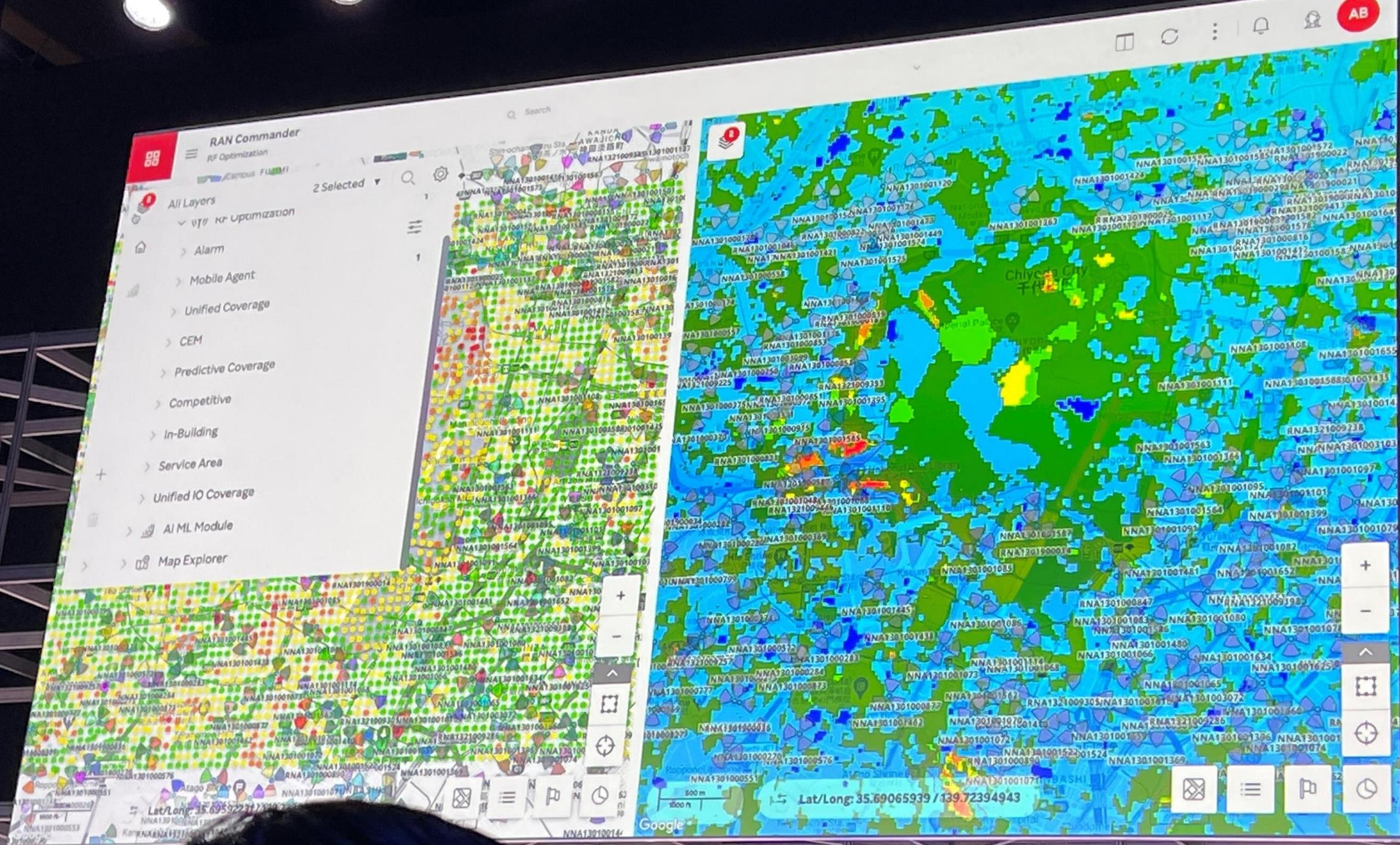


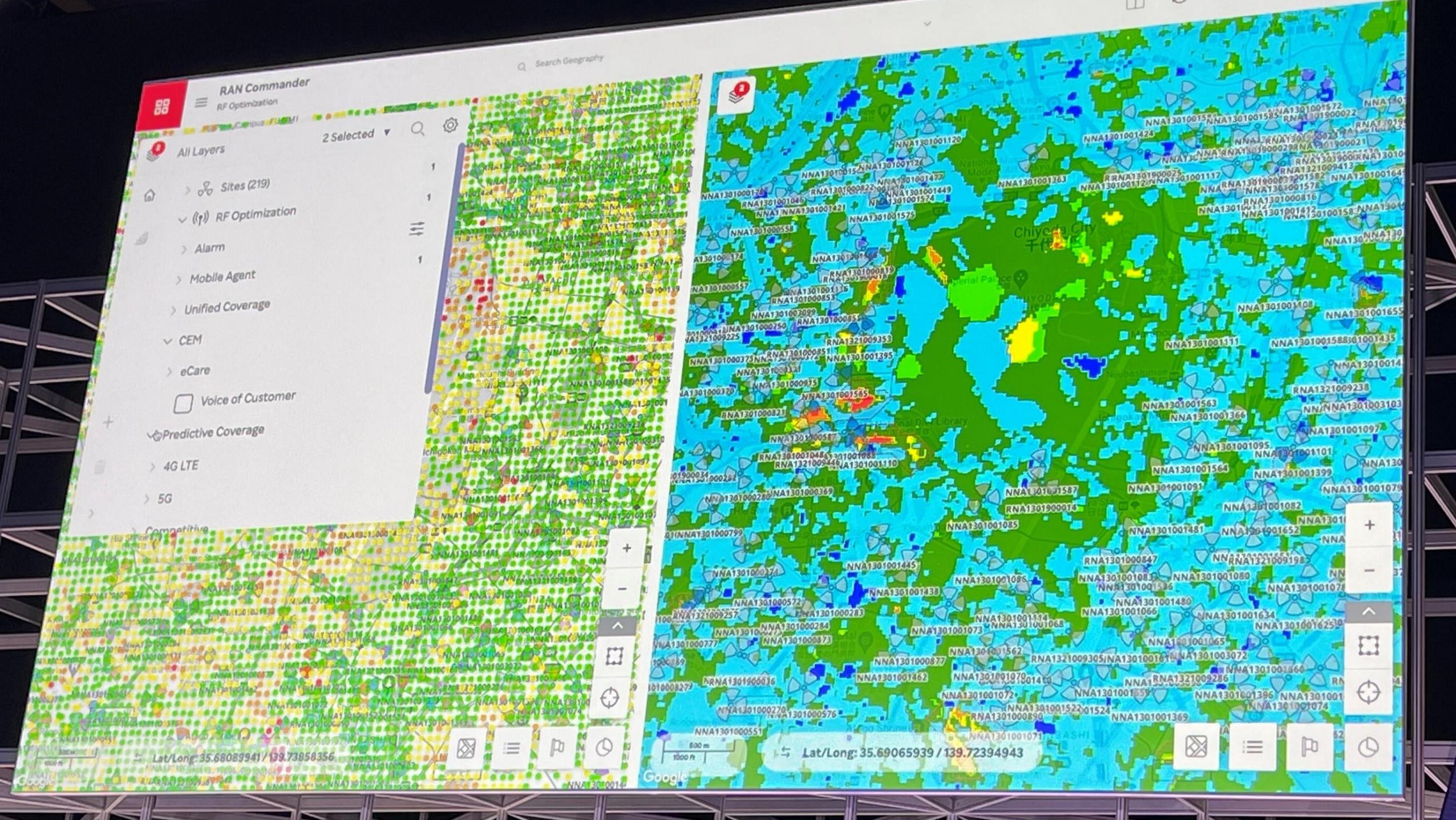
The screenshot shows the Symworld Platform interface. At the top, there's a navigation bar with icons for Home, Apps, and a red circular button labeled 'AB'. Below the navigation bar, the main area has a sidebar titled 'My Applications' containing icons for SymOps, SymPlan, and Sympulse. The main content area displays the 'SymLearn' application details. A modal window for 'SymLearn' is open, showing three sub-components: 'Process Hub' (Manage all stages of the process lifecycle for your processes), 'Learning Hub' (Empower users to enhance their skillsets tailored to their learning requirements), and 'Knowledge Hub' (Manage and navigate through the centralized knowledge management repository). To the right of the modal, there's a preview of the 'SymLearn' application interface. Below the main content, there's a section titled 'Recents Apps' listing several applications with their descriptions and update history:

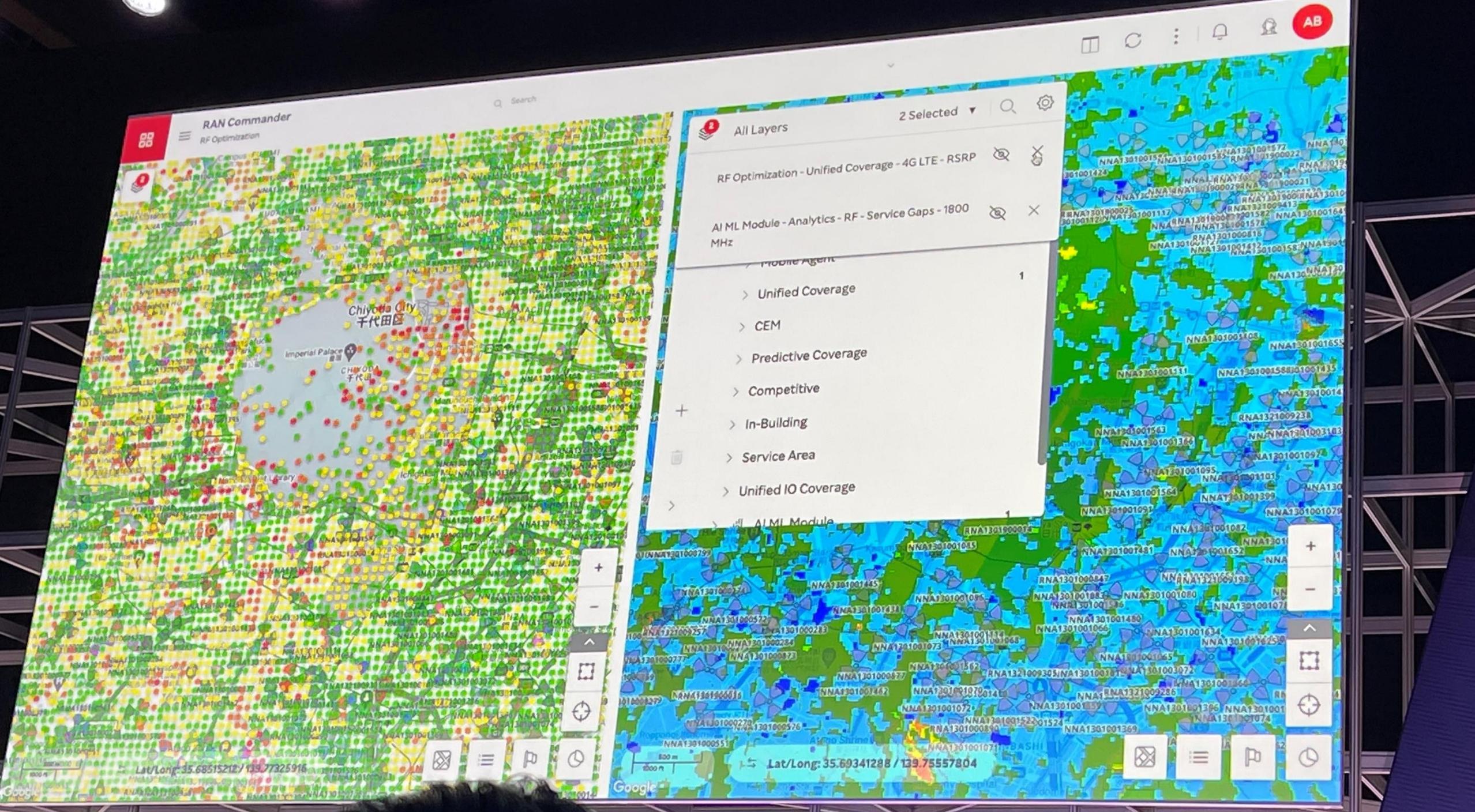
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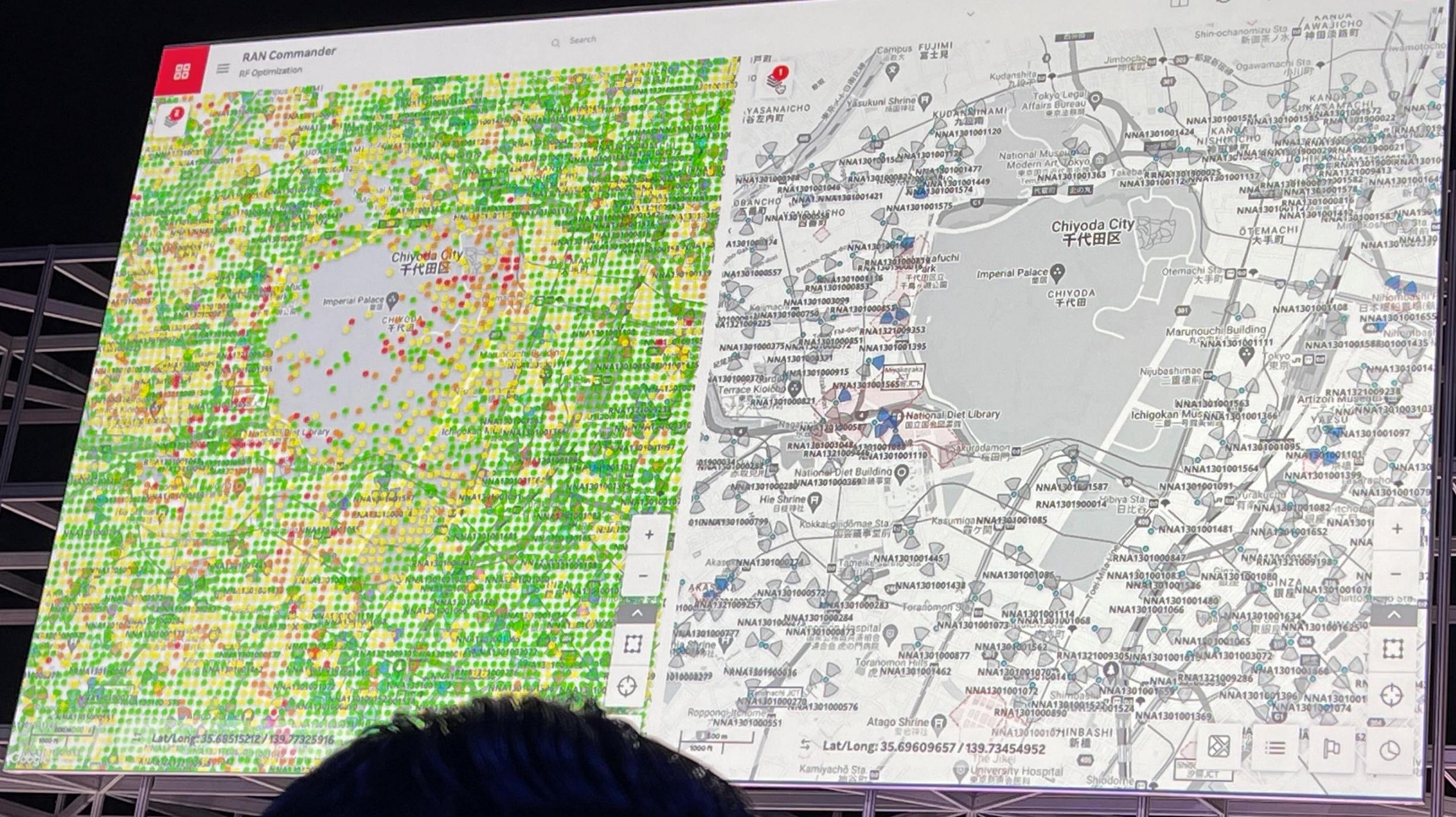


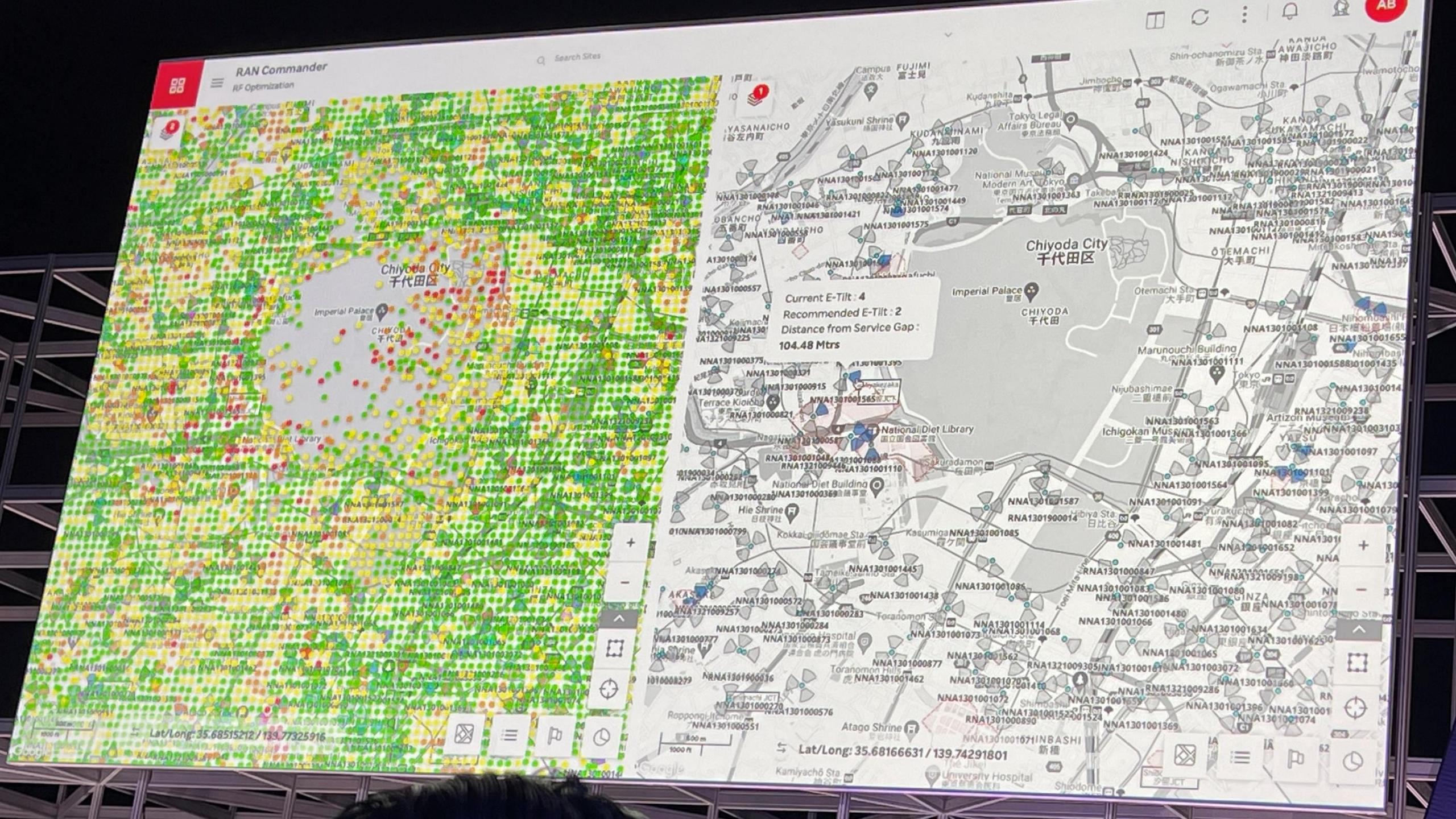




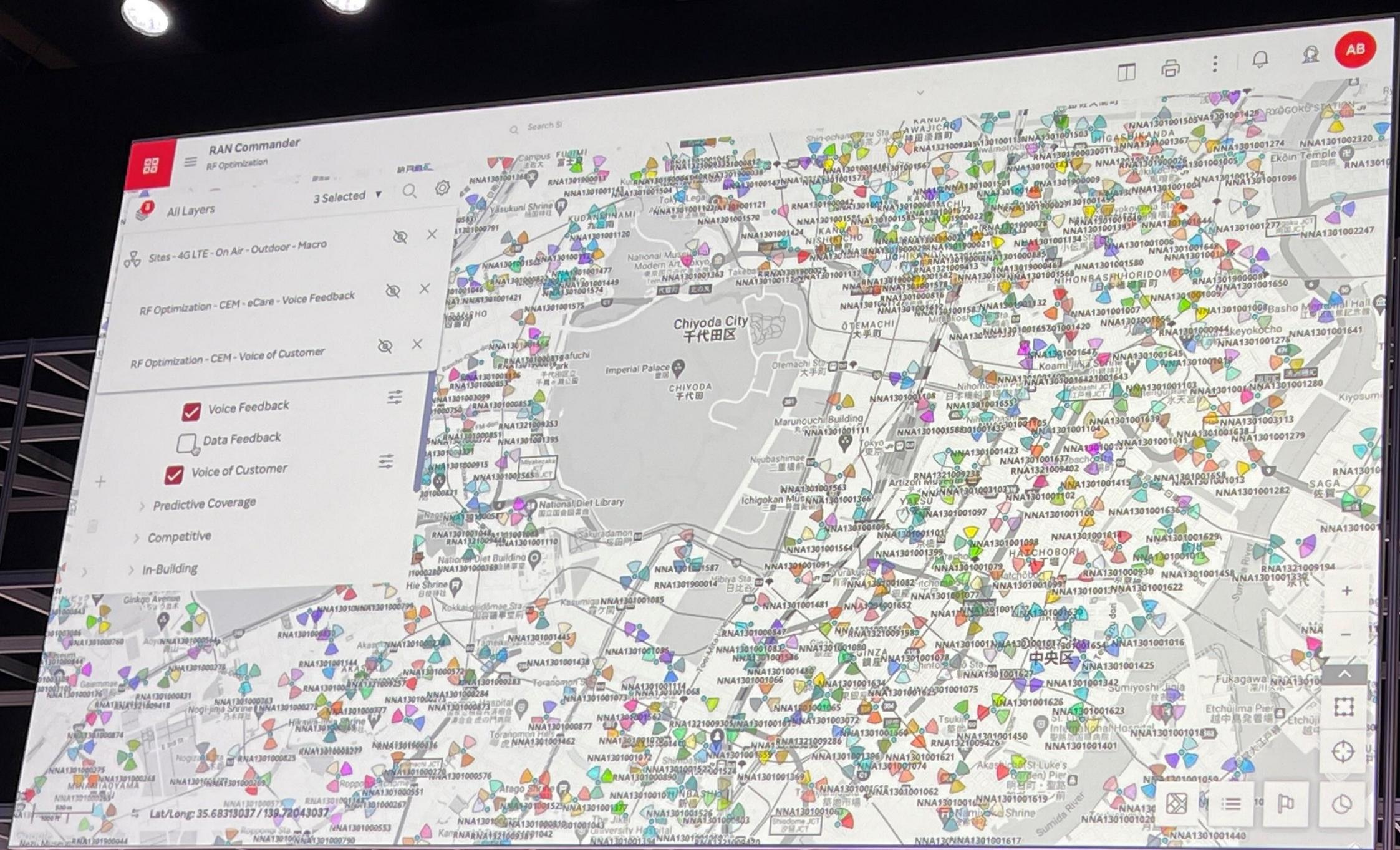


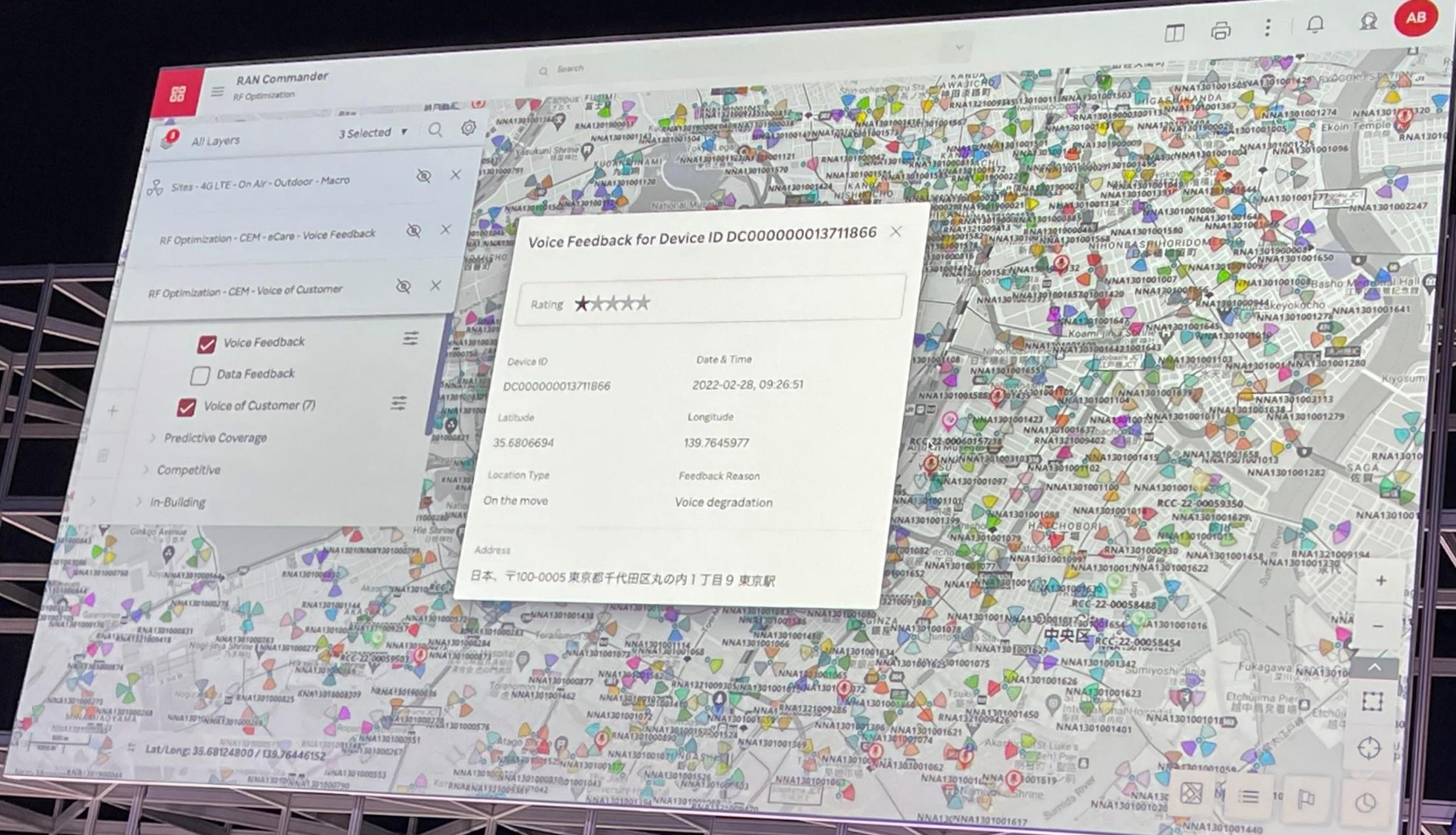




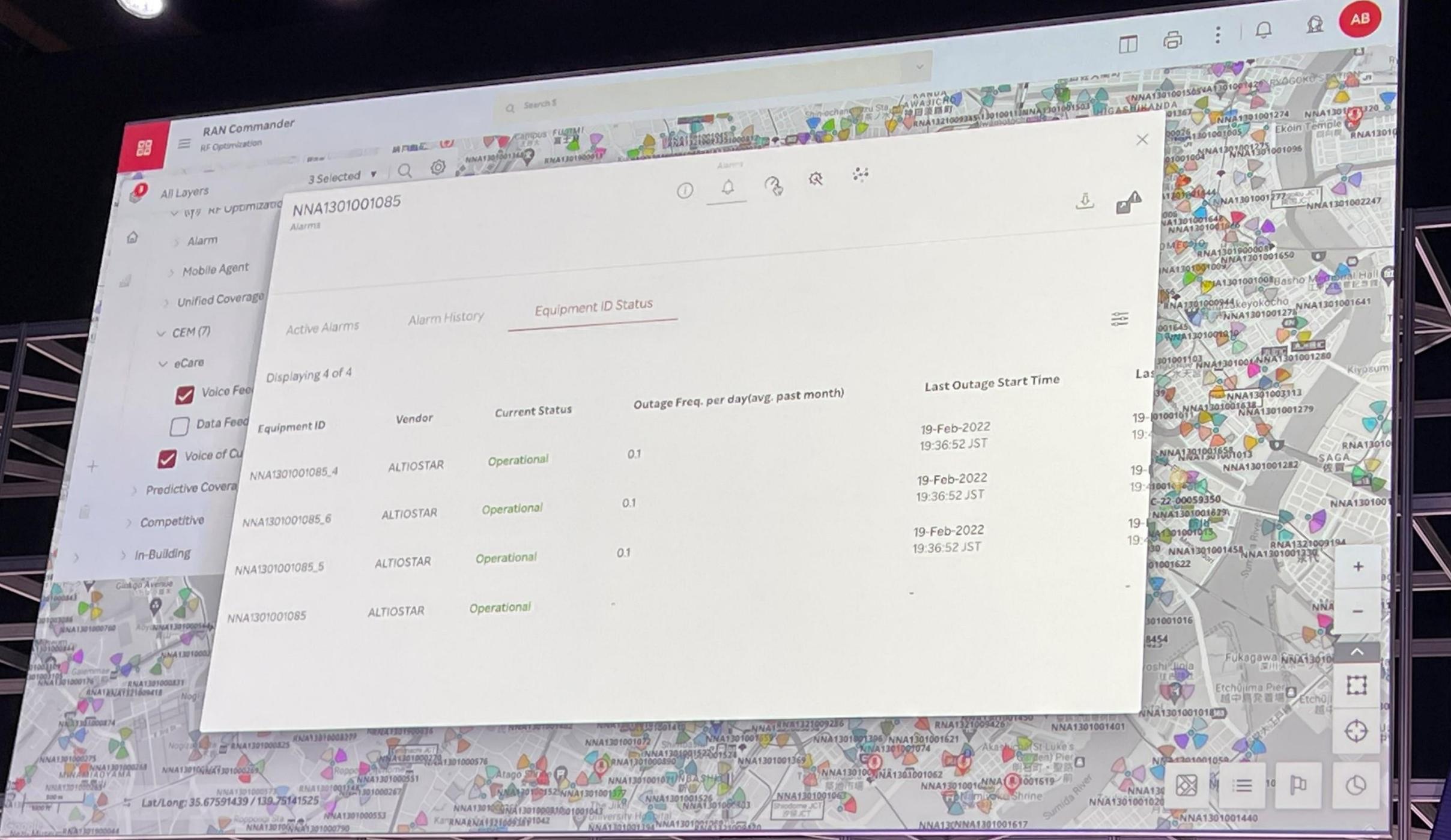


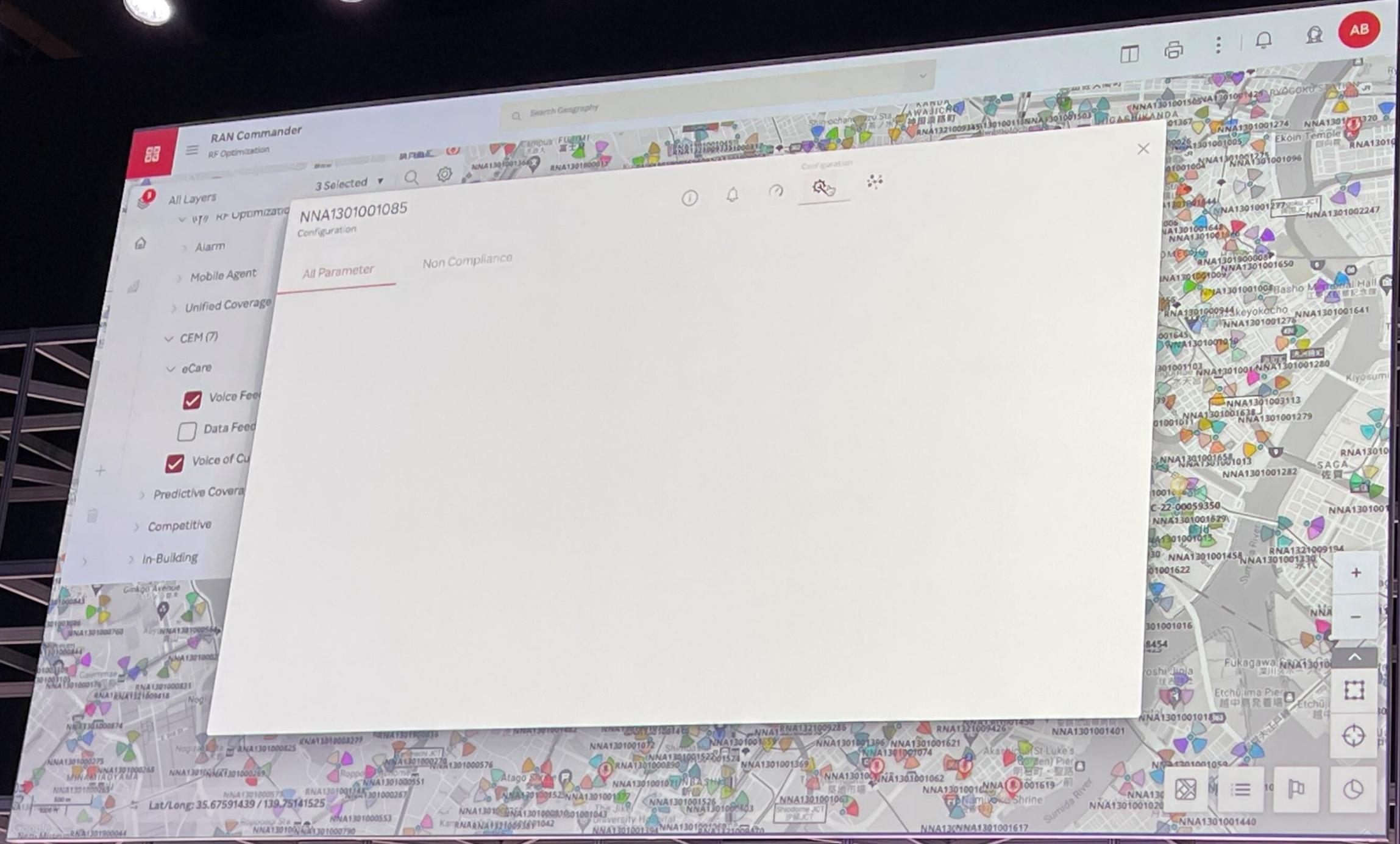


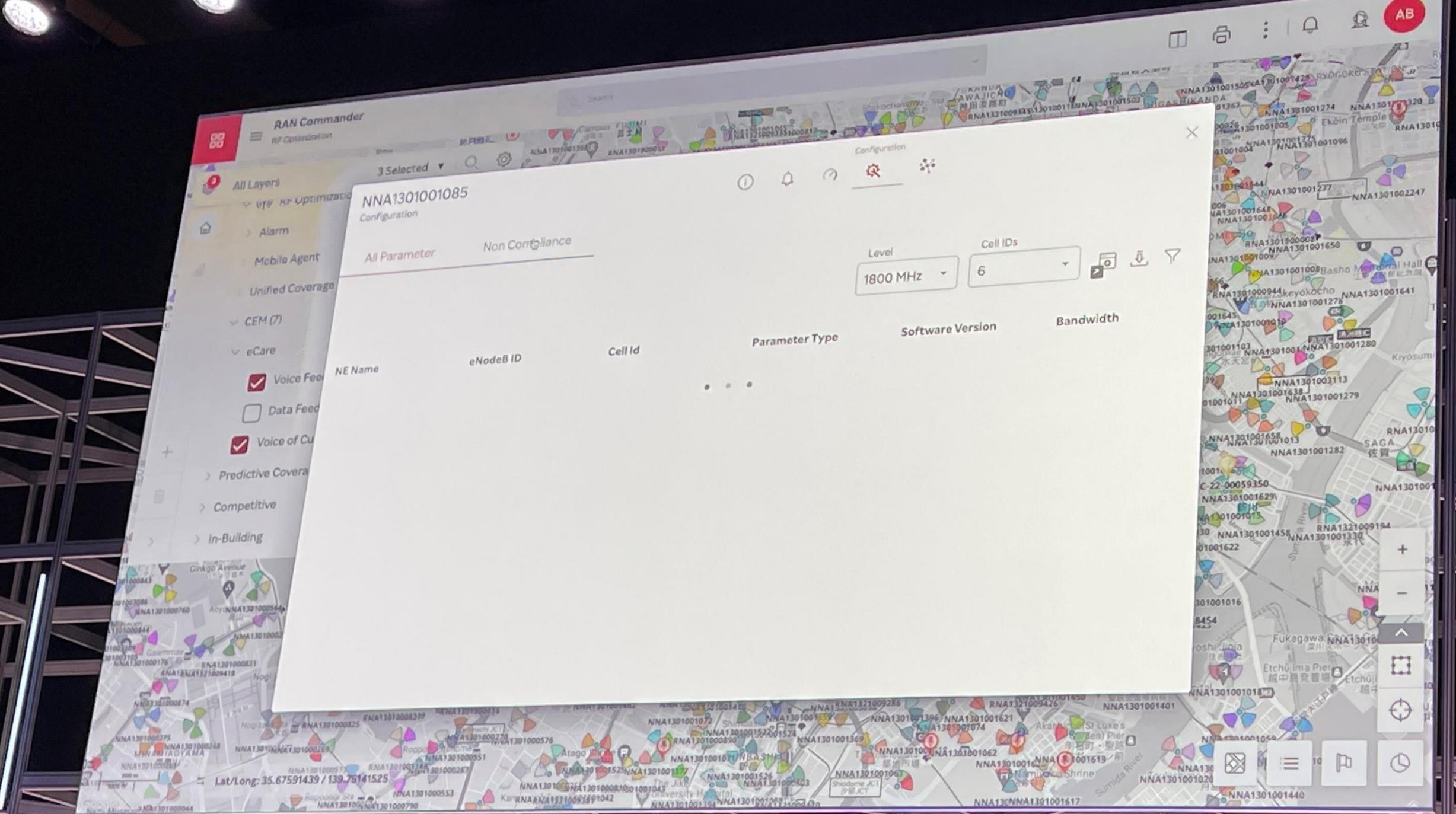


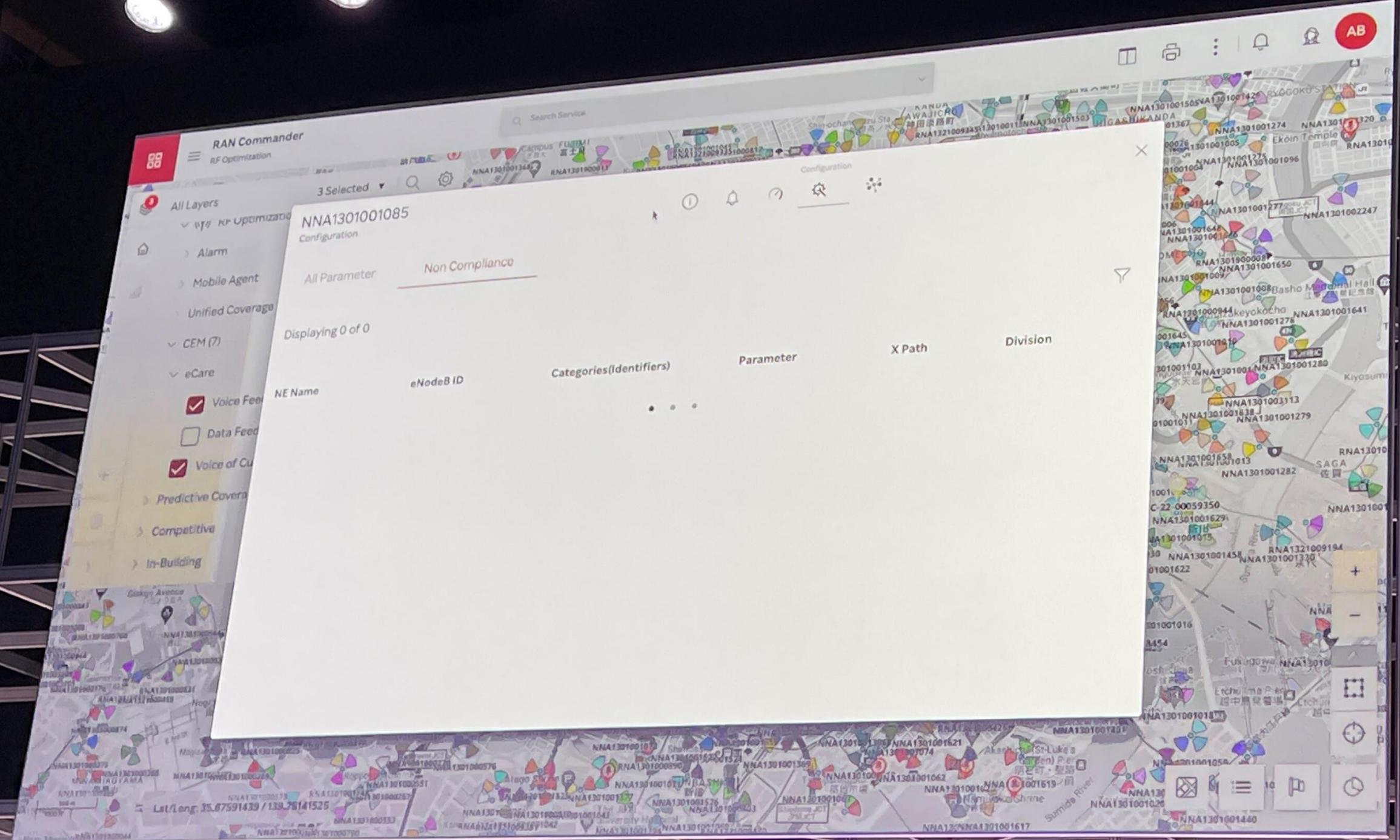


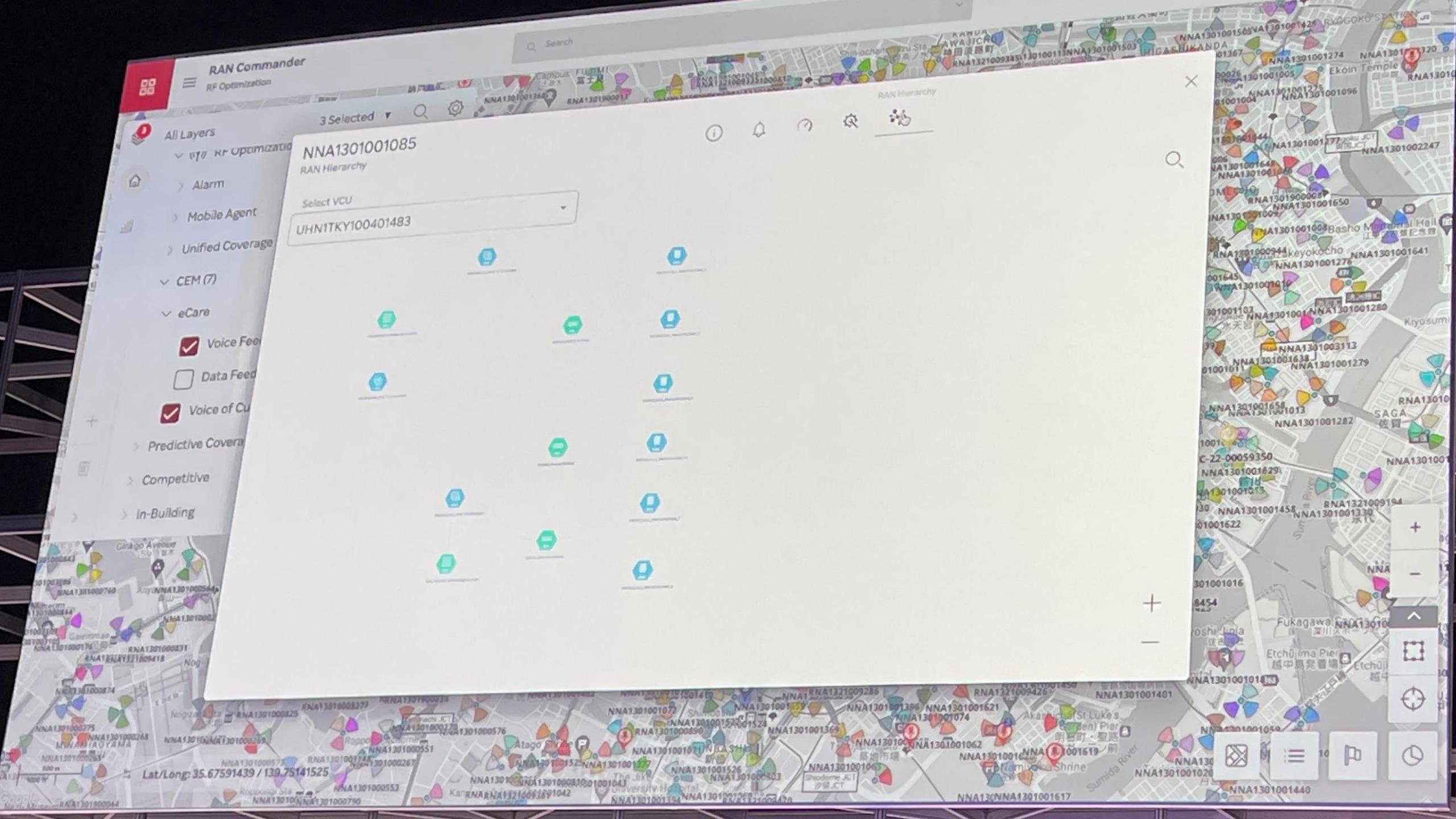
The screenshot displays the RAN Commander software interface, specifically the 'RF Optimization' module. The main window shows a detailed overview of a base station (BS) identified as NNA1301001085, located at the Central Contract Hall 2nd Building in Chiyoda-ku, Tokyo-to, Japan. The BS is categorized as Critical and is currently On-Air. The vendor is ALTIOSTAR, and the technology used is LTE. The BS has a Macro sector morphology and is connected to the KANTO region. The map on the right shows the surrounding area with numerous other BS locations marked by colored icons and labeled with their respective IDs. A legend at the bottom provides a key for these icons.

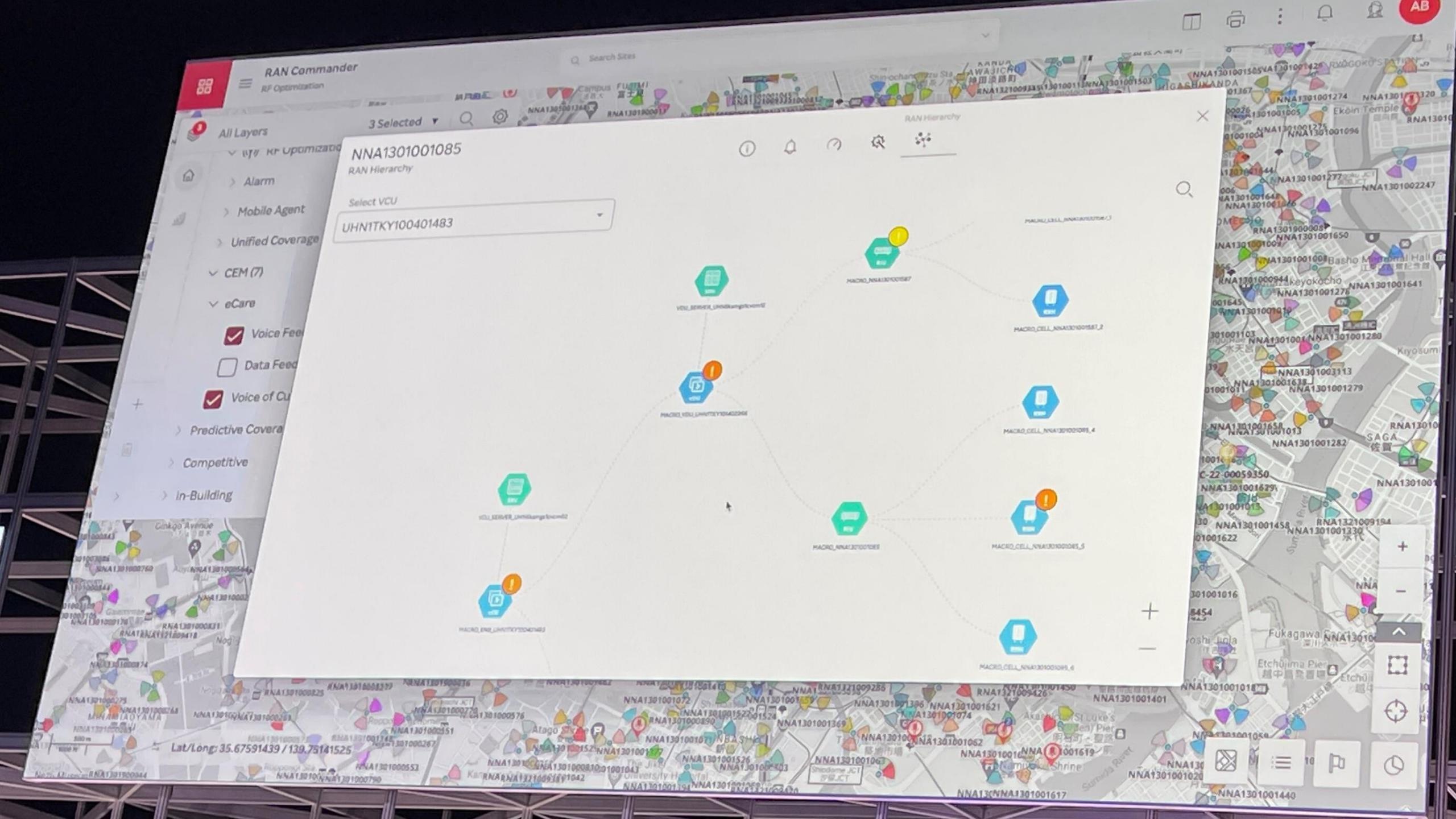












Rack Template

Add Equipment

Normal Tray

Material Name: D52BQ-2... Material Code: NQCD200... Vendor: QUANT...

Voltage(V): 100 Current(A): 5.52 Weight(KG): 35 Equipment Type: Server

QR Codes: D52BQ-2... NQCD200...

Special Objects

Reserved Space: Selected Slots (2) Available Slots (31) Used Slots (9)

Slot From *: 34 Slot To *: 35

Equipment Sub Type *

Search

OOB

Mgmt Node

Zadara HDD+SSD

Zadara 1 HDD+SSD

Cancel Add

Previous Next

Search

Site Manager
Rack Template > Edit Template

Edit Detail Add Equipment Add Connectivity Add PDU Connectivity

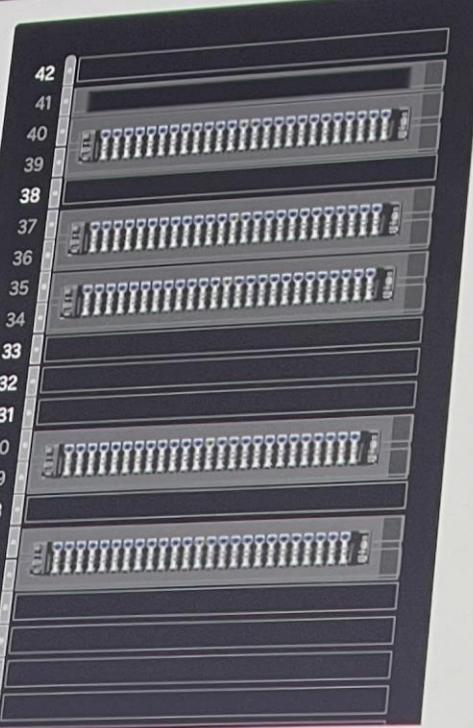
Max Weight(KG)
1000

Max Power(KVA)
1000

Sample...

Slot Range
42Status
PlannedRole
Transm...Type
2-post...Width
19 Inches

Front Rear View PDU View



Special Objects

Reserved Space

Search Equipment

Type in search equipments...

MAT002
CUS003 | 0 Available

D52BQ-2U S...
NQCD2001 | 0 Available

Rack Info

Servers

Switches

Others

Previous

Cancel

Next

Rack Template

Edit Detail **Add Equipment** **Add Connectivity** **Add PDU Connectivity**

Status: Planned **Role**: Transm... **Type**: 2-post... **Width**: 19 Inches **Max Weight(KG)**: 1000 **Max Power(KVA)**: 1000

Front **Rear View** **PDU View**

Rack Info

Servers

Switches

Others

Previous **Cancel** **Next**

Site Manager **Rack Template** > **Edit Template**

Open...

- Site Manager
- Automation Studio
- Knowledge Hub
- Orchestrator
- OmniDesk
- Symworld

Search Equipment

Type in search equipments...

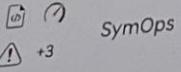
MAT002 CUS003 | 0 Available

DS28Q-2U S... NOCD001 | 0 Available



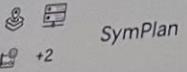
Symworld
Home

My Applications



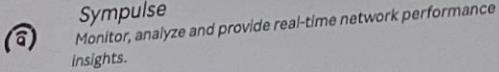
SymOps

+3



SymPlan

+2



Sympulse

Monitor, analyze and provide real-time network performance insights.

Search Apps X

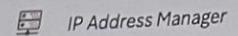
SymBuild

Configuration Manager
Schedule configuration backups, track changes and automate tasks with the capability of instant backups a...

Orchestrator
Track and plan a broad range of networking activities in a single application.

Inventory Manager
Manage the end-to-end network infrastructure synchronizing physical and logical inventory with the ...

Recent Apps



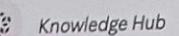
IP Address Manager

Efficiently plan, track and manage your IP address spaces.



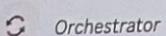
Automation Studio

Enable automation of end-to-end network operation activities and minimize risk of human errors.



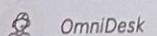
Knowledge Hub

Manage and navigate through the centralized knowledge management repository.



Orchestrator

Track and plan a broad range of networking activities in a single application.



OmniDesk

Enable customer support teams to improve NPS, customer experience, and customer satisfaction while optimizing customer care center costs.

● Updated
01-Mar-2022 16:58:00 JST

● Updated
01-Mar-2022 16:49:48 JST

● Updated
01-Mar-2022 16:49:16 JST

● Updated
01-Mar-2022 16:48:26 JST

● Updated
01-Mar-2022 16:42:33 JST

Orchestrator Network Services

Displaying 15 of 15

Total: 16846

Ready: 17

Failed: 44

Instantiation Failed: 1

Terminated: 511

In Progress: 27

Termination Inprogress: 64

Termination Failed: 206

Inst: 15

Search Network Service Type

Network Services Type

RAN altiostar-enodeb 13288 / 13325

CORE altiostar-ems 61 / 85

TRANSPORT netrounds-ta 784 / 1403

CORE cisco-pnr-local 48 / 63

CORE cisco-epc-saegw-u 140 / 167

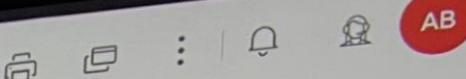
CORE allot-sgve 64 / 70

RAN GnodeB MMWave 1 / 3

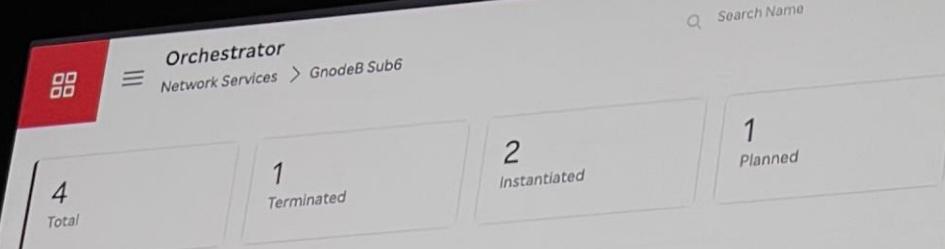
RAN GnodeB Sub6 2 / 4

Legend: Total, Ready, Failed, Instantiation Failed, Terminated, In Progress, Termination Inprogress, Termination Failed, Inst.

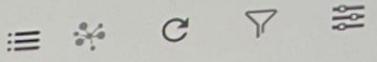
AB



Network Services



Live Ongoing History



Displaying 4 of 4

NS State	Name	Site Name	Domain	NSD Name	NSD Version	Modification Time	NF Draft
● Instantiated	uhn1ngt817500001	REI0402000449	RAN	5G_Sub6_#129_Descriptor	1	09-Feb-2022 23:57:55 JST	-
● Terminated	uhn1ngt817500003	REI0402000106,REI04020C	RAN	5G_Sub6_#129_Descriptor_I	1	21-Jan-2022 22:29:32 JST	-
● Instantiated	uhn1ngt817500002	REI0402000443	RAN	5G_Sub6_#129_Descriptor_I	1	18-Nov-2021 16:56:31 JST	-
Planned	uhn1ngt817500000	NNA0102040176	RAN	VRAN5G_Testing	1	27-Aug-2021 17:12:51 JST	-

Orchestrator
Network Services > GnodeB Sub6

4 Total
1 Terminated
2 Instantiated
1 Planned

Live Ongoing
Displaying 4 of 4

NS State	Name
Instantiated	uhn1ng
Terminated	uhn1ng
Instantiated	uhn1ng
Planned	uhn1ng

View Instantiation
uhn1ngt817500001

NF Instantiation

CU-CP (1)

```
graph TD; NS_REGISTER[NS_REGISTER] --> NF_REGISTER[NF_REGISTER]; NF_REGISTER --> NF_INSTANTIATION[NF_INSTANTIATION]; NF_INSTANTIATION --> CHECK_NF_STATUS[CHECK_NF_STATUS]; CHECK_NF_STATUS --> FETCH_LOGICAL_INVENTORY[FETCH_LOGICAL_INVENTORY]
```

Cancel

Orchestrator

Network Services > GnodeB Sub6

4 Total

1 Terminated

2 Instantiated

1 Planned

Live Ongoing

Displaying 4 of 4

NS State Name

- Instantiated uhngt817500001
- Terminated uhngt817500001
- Instantiated uhngt817500001
- Planned uhngt817500001

View Instantiation
uhngt817500001

NF Instantiation

CU-CP (1)

```
graph TD; NS_REGISTER[NS_REGISTER] --> NF_REGISTER[NF_REGISTER]; NF_REGISTER --> NF_INSTANTIATION[NF_INSTANTIATION]; NF_INSTANTIATION --> CHECK_NF_STATUS[CHECK_NF_STATUS]; CHECK_NF_STATUS --> FETCH_LOGICAL_INVENTORY[FETCH_LOGICAL_INVENTORY]
```

Displaying 1 of 1

Close

State

Name

Instantiated uhngt817500001

Cancel

Orchestrator
Network Services > GnnodeB Sub6

4 Total
1 Terminal

Live Ongoing
Displaying 4 of 4

NS State Name
Instantiated uhning
Terminated uhning
Instantiated uhning
Planned uhning

View Progress
uhningt817500001

RE_INSTANTIATI... | C | X

RE_INSTANTIATION CU CP

Reinstantiate Network Function ✓
Dec 9, 2021, 2:06:48 PM Completed

Receive NF Instantiation Notification ✓
Dec 9, 2021, 2:06:48 PM Completed

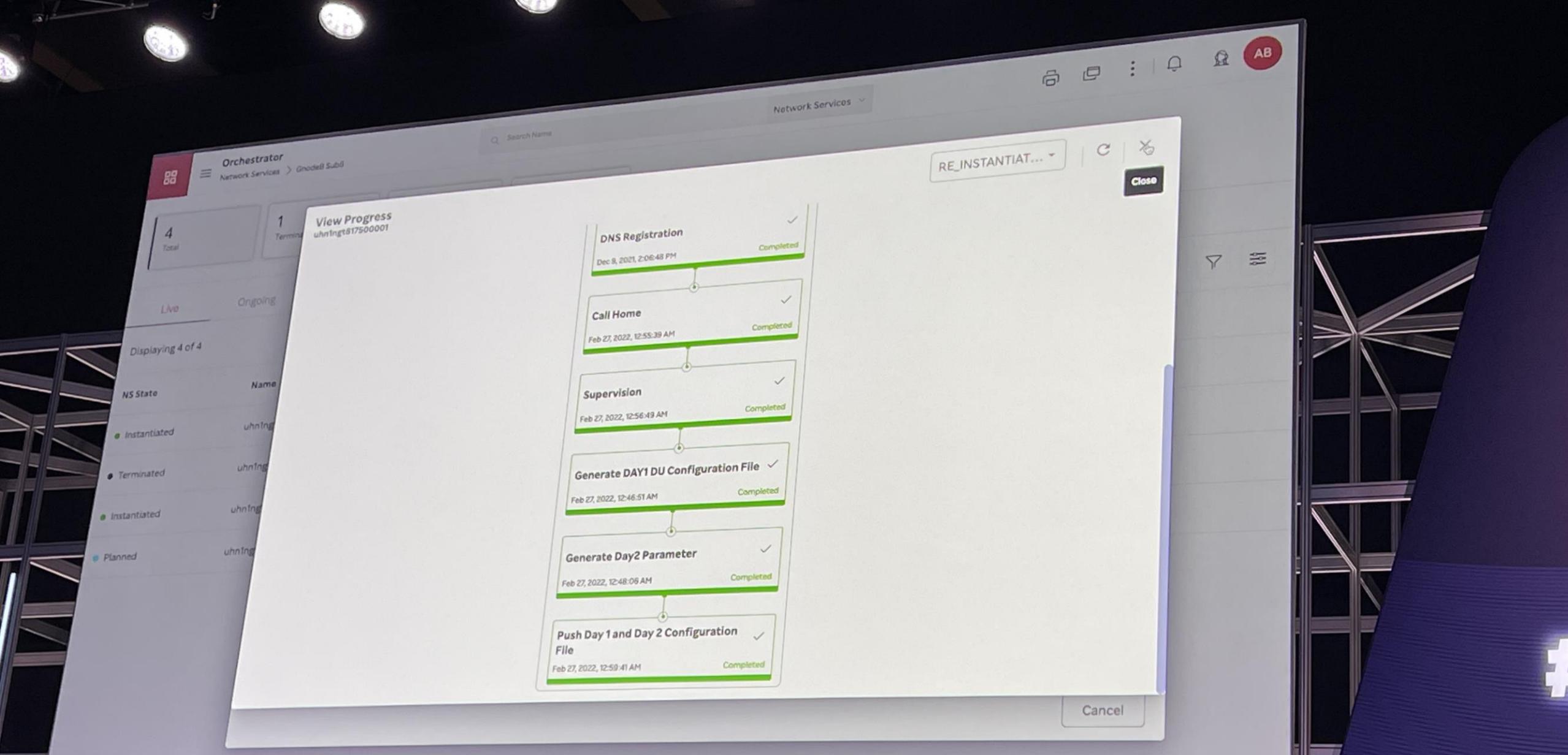
Fetch Logical Inventory ✓
Dec 9, 2021, 2:06:48 PM Completed

DNS Registration ✓
Dec 9, 2021, 2:06:48 PM Completed

Call Home ✓
Feb 27, 2022, 12:55:39 AM Completed

Cancel

```
graph TD; A[Reinstantiate Network Function] --> B[Receive NF Instantiation Notification]; B --> C[Fetch Logical Inventory]; C --> D[DNS Registration]; D --> E[Call Home];
```



Network Services							
Orchestrator		Network Services > GnnodeB Sub6					
Live		Ongoing		History		NF Draft	
Displaying 4 of 4							
NS State	Name	Site Name	Domain	NSD Name	NSD Version	Modification Time	NF Draft
● Instantiated	uhn1ngt817500001	REI0402000449	RAN	5G_Sub6_#129_Descriptor	1	09-Feb-2022 23:57:55 JST	-
● Terminated	uhn1ngt817500003	REI0402000106,REI040200	RAN	5G_Sub6_#129_Descriptor_I	1	21-Jan-2022 22:29:32 JST	-
● Instantiated	uhn1ngt817500002	REI0402000443	RAN	5G_Sub6_#129_Descriptor_I	1	18-Nov-2021 16:56:31 JST	-
● Planned	uhn1ngt817500000	NNA0102040176	RAN	VRAN5G_Testing	1	27-Aug-2021 17:12:51 JST	-

Configuration Manager

Network Tree

Displaying 100 of 4,636

Search

Domain

Status Domain NE Name Equipment Type Software Version Configuration Conflicts Golden Conflicts

Domain	Status	Domain	NE Name	Equipment Type	Software Version	Configuration Conflicts	Golden Conflicts
RAN	<input type="checkbox"/> On-air	RAN	UHN1TKY100400016	MACRO_ENB	V3_0_vf_82	NA	NA
Altistar	<input checked="" type="checkbox"/> On-air	RAN	UHN1OSK100400163	MACRO_ENB	V3_5_4g_115	Violation	NA
UT 4G	<input checked="" type="checkbox"/> On-air	RAN	UHN1OSK100400165	MACRO_ENB	V3_5_4g_115	Violation	NA
5G 5G	<input checked="" type="checkbox"/> On-air	RAN	UHN1OSK100400166	MACRO_ENB	V3_5_4g_115	Violation	NA
Airspan	<input checked="" type="checkbox"/> On-air	RAN	UHN1KNG100400077	MACRO_ENB	V3_5_4g_115	Violation	NA
Sercomm	<input checked="" type="checkbox"/> On-air	RAN	UHN1TKY100400706	MACRO_ENB	V3_5_4g_115	Violation	NA
CORE	<input checked="" type="checkbox"/> On-air	RAN	UHN1KNG100400078	MACRO_ENB	V3_5_4g_115	Violation	NA
TRANSPORT	<input checked="" type="checkbox"/> On-air	RAN	UHN1TKY100400709	MACRO_ENB	V3_5_4g_115	Violation	NA
Security	<input checked="" type="checkbox"/> On-air	RAN	UHN1TKY100400710	MACRO_ENB	V3_5_4g_115	Violation	NA
	<input checked="" type="checkbox"/> On-air	RAN	UHN1TKY100400744	MACRO_ENB	V3_5_4g_115	Violation	NA
	<input checked="" type="checkbox"/> On-air	RAN	UHN1STM100400050	MACRO_ENB	V3_5_4g_115	Violation	NA
	<input checked="" type="checkbox"/> On-air	RAN	UHN1TKY100400745	MACRO_ENB	V3_5_4g_115	Violation	NA

Reset

AB

Configuration Manager

Network Tree

Displaying 100 of 4,636

<input type="checkbox"/>	Status	Domain	NE Name	Equipment Type	Software Version	Configuration Conflicts	Golden Conflicts
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400016	MACRO_ENB	V3_0_vf_82	NA	NA
<input type="checkbox"/>	On-air	RAN	UHN1OSK100400163	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1OSK100400165	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1OSK100400166	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1KNG100400077	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400706	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1KNG100400078	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400709	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400710	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400744	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1STM100400050	MACRO_ENB	V3_5_4g_115	Violation	NA
<input type="checkbox"/>	On-air	RAN	UHN1TKY100400745	MACRO_ENB	V3_5_4g_115	Violation	NA

Apply

Inventory Manager

Data Center > GC > Shibuya

Open Applications

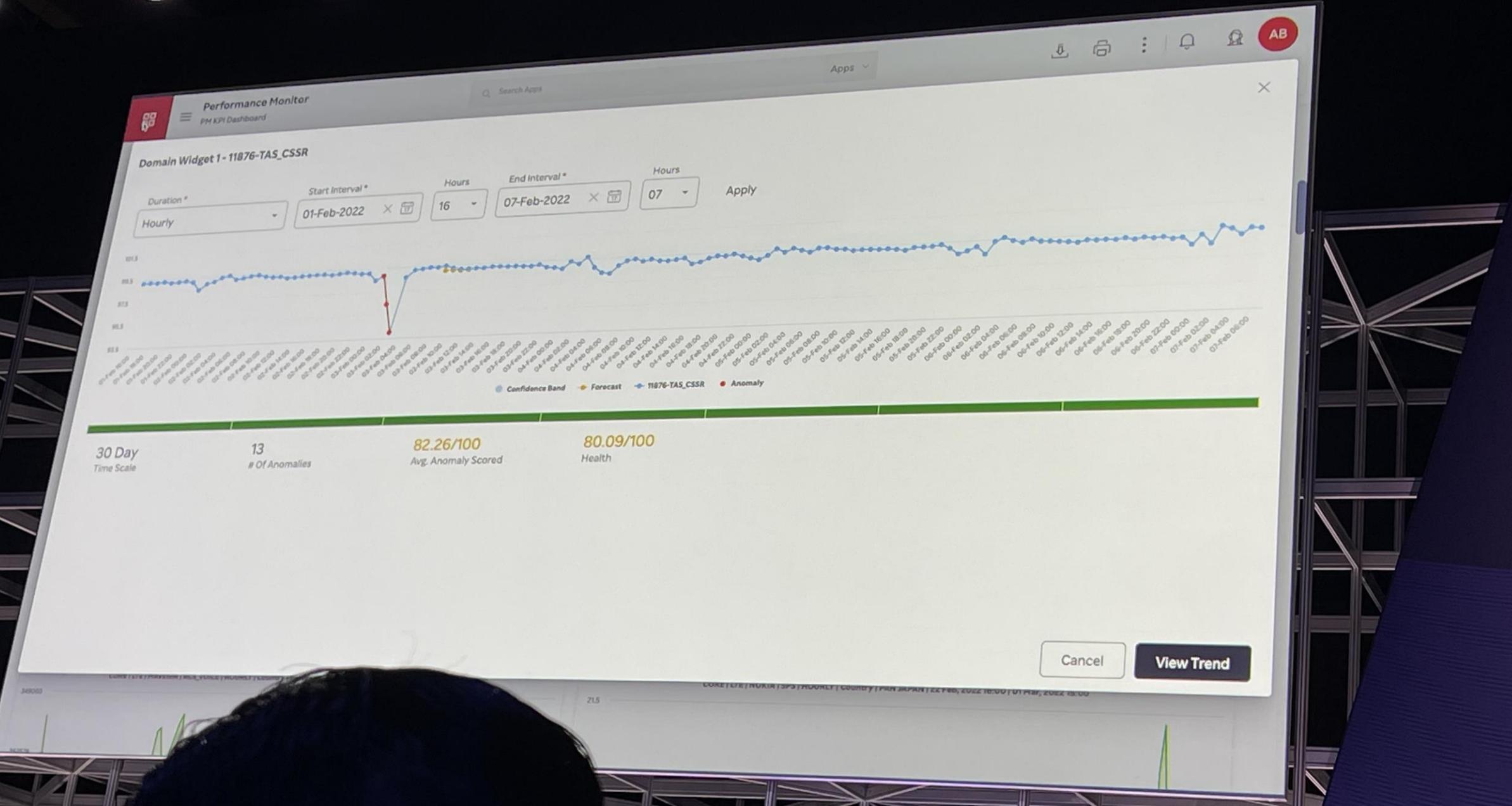
Shibuya
東京都渋谷区渋谷町8-9
Latitude: 35.651563 Longitude: 139.70328

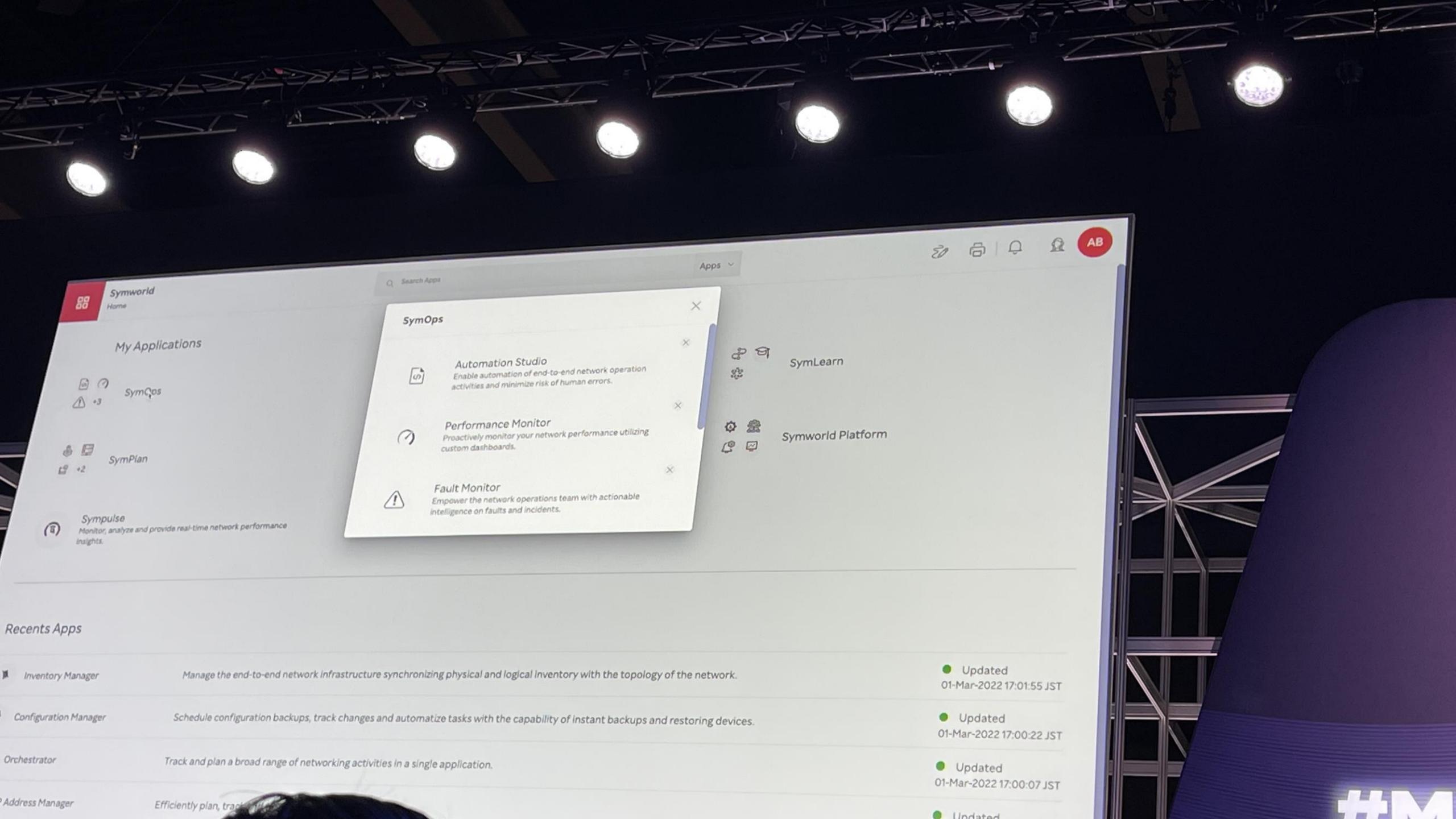
DC Type XA+D+D+D+D Data Center ID 13054 Location TKY-SHIBUYA-EBISU Created On 05-Jun-2019 Status GC READY

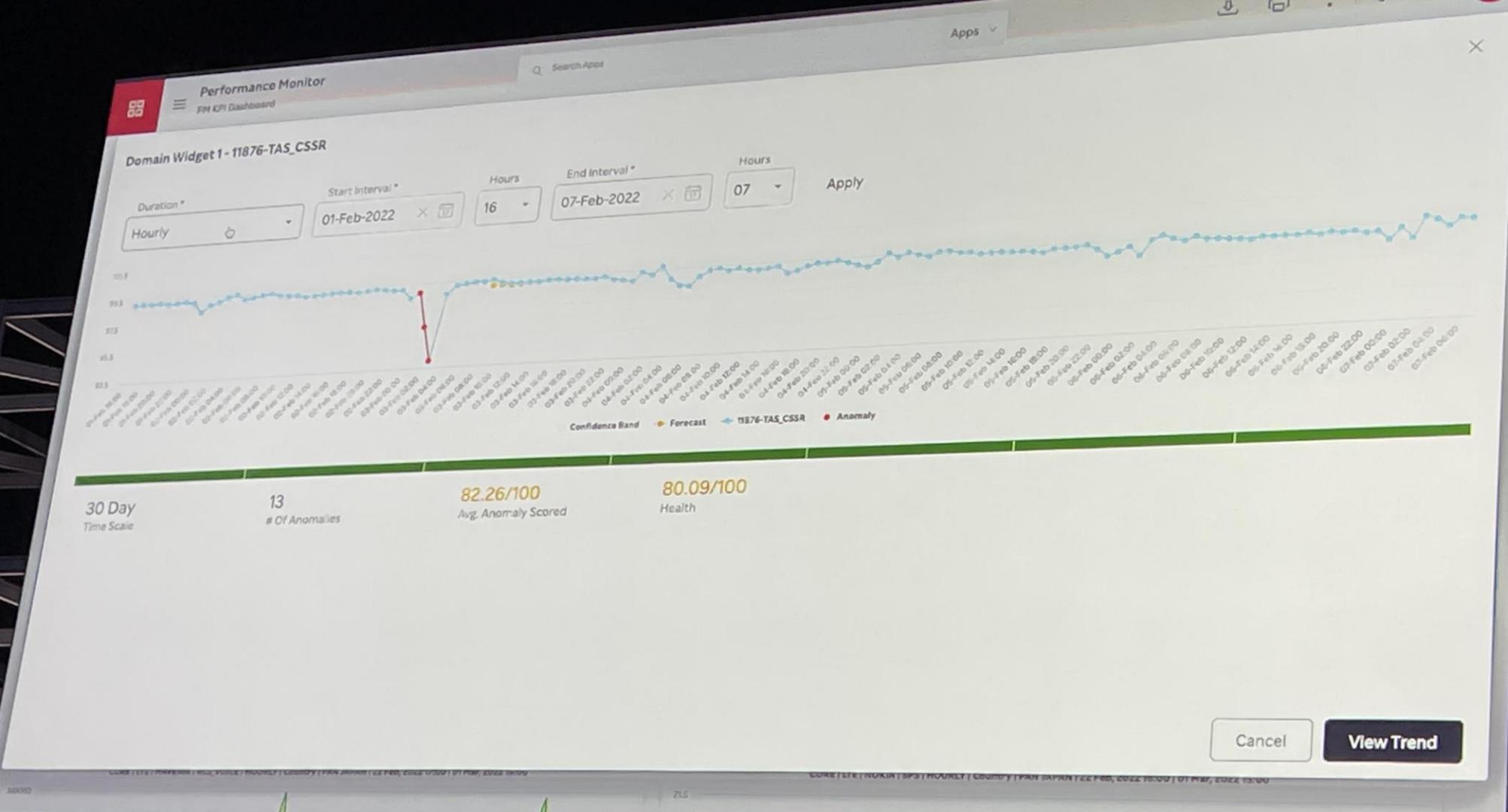
Overview Physical Logical Cell Site Services Notification

Server (131) Displaying 4 of 4

	Host Name	NE Type	Status	Service Status	Security Status	Domain	Vendor	IP Address
Rack	(20)							
Switch	(43)							
Router	(4)	Uhn2tkysiby...	AG1	ENABLED	INSERVICE	Secured	TRANSPORT	CISCO 240b:c01a:5146::1
WDM	(3)	Uhn2tkysiby...	AG1	ENABLED	READYFORSERVII	Insecured	TRANSPORT	CISCO 240b:c01a:5146::1
POD	(5)	Uhn2tkysiby...	AG1	ENABLED	INSERVICE	Secured	TRANSPORT	CISCO 240b:c01a:5146::1
		Uhn2tkysiby...	AG1	ENABLED	READYFORSERVII	Insecured	TRANSPORT	CISCO 240b:c01a:5146::1

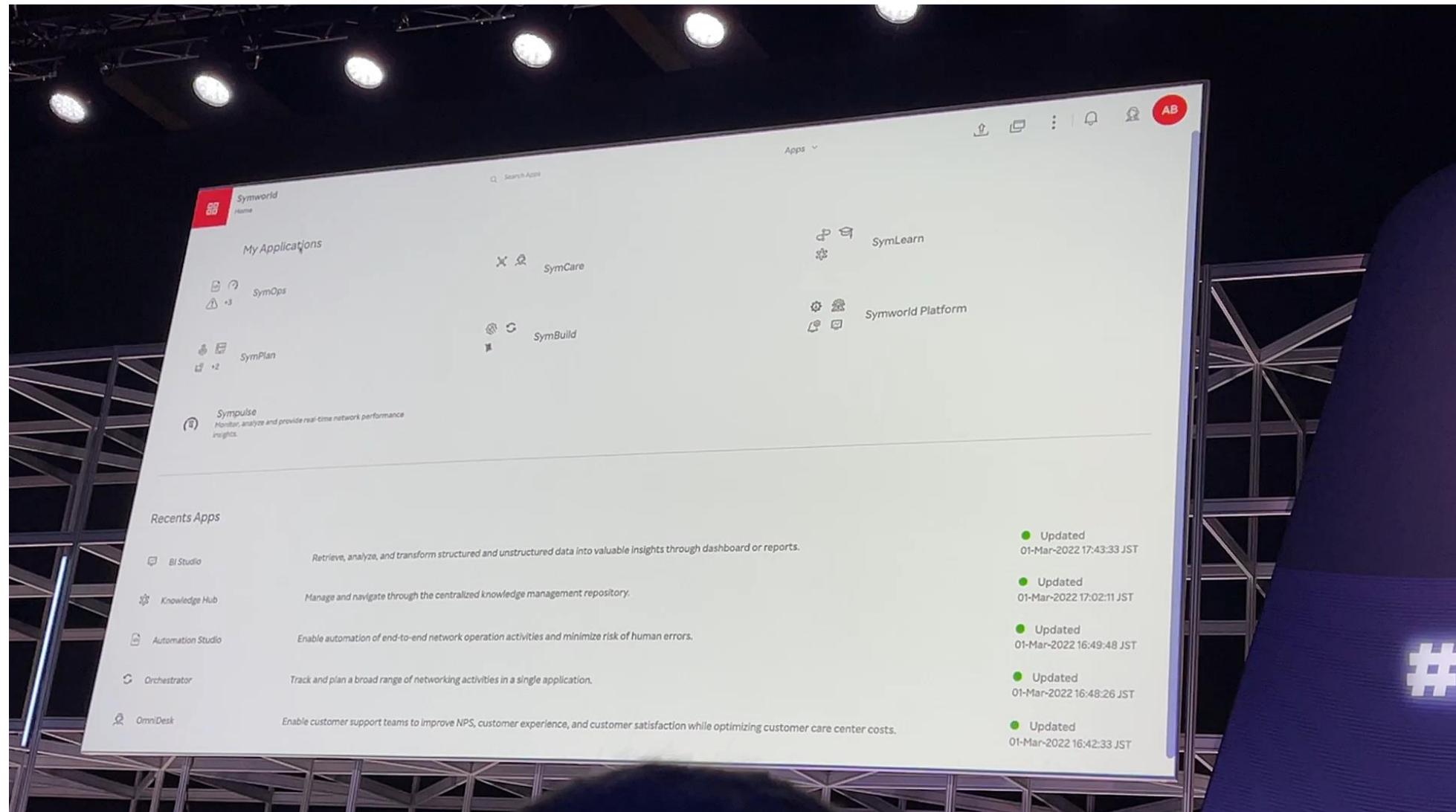






Symworld Demo Video Clips

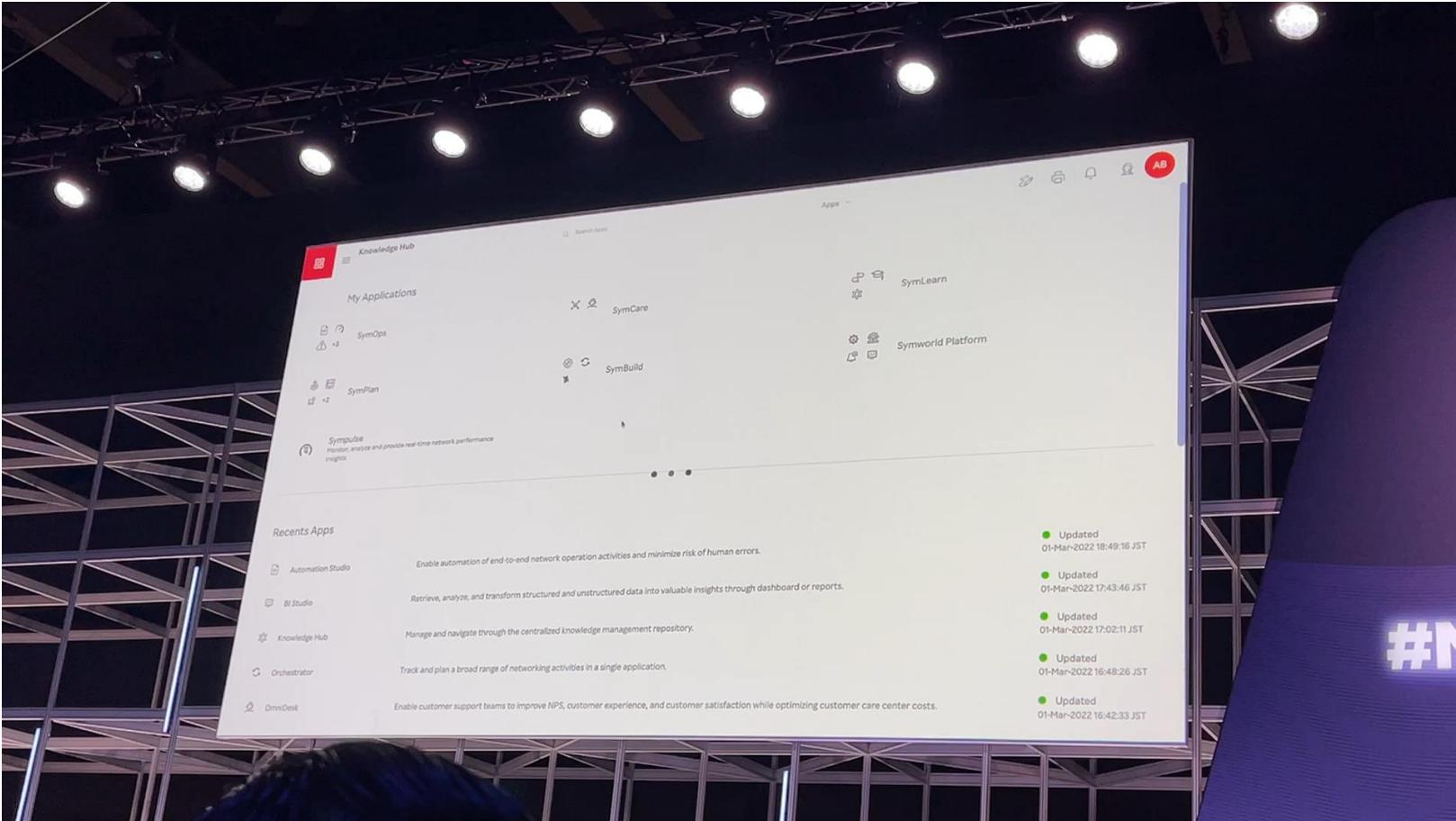
App Store



ML based Monitoring, cloud-native network operations, fault correlations from network to applications, fault management as a service



Knowledge Base, Workflow Automation, Business Processes Repository, BI Generation,



Symworld Observations

- Built in 3 years, Cloud-native architecture
- Evolve from RCP of Rakuten Mobile now become commercial offer to other CSPs.
- Unified platform with 规, 建, 维, 优, 资产, 知识库, 客服 functions
- Common Data Layers
- App Store Approach, initially bundle with 57 apps, will open to include 3rd party apps.
- ML/AI embedded
- Live ORAN network with 200k ORAN cell sectors and 3000 Edge Data Centers in Japan.
- Start out for green field operators, now also brown field operators.
- Solution Competitors: Traditional Vendors, Hyperscaler.

