



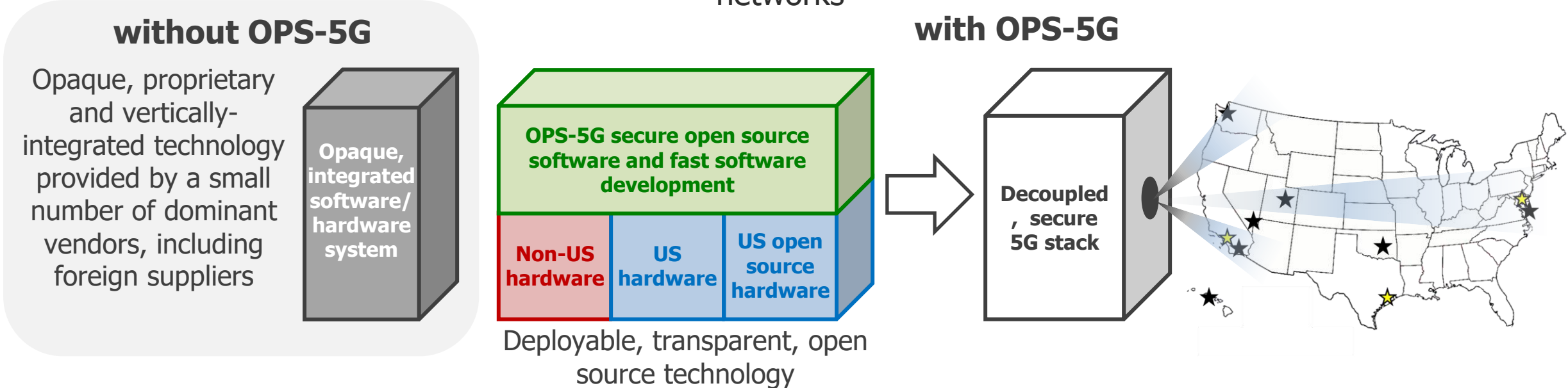
# Open Programmable Secure 5G (OPS-5G) Overview and Use Cases

31 MAR 2021



# Open Programmable Secure 5G (OPS-5G)

**Objective:** Create open source software and systems enabling secure 5G and subsequent mobile networks



### Challenges:

- Hardware/software decoupling
- Security at scale
- Operating over untrusted nodes and nets
- Adaptive adversaries at tera-node scale

### Approach:

- Speed open source software development
- Built-in, cost-effective 5G node and network security
- Secure slices operate over untrusted infrastructure
- Programmable defenses for quick and flexible response

### Transition:

- The Linux Foundation for technology transfer path to military and civilian users
- Nationwide network to enhance DoD ability to test 5G Core security (Multisite OPS-5G Joint Independent Testing Option (MOJITO))



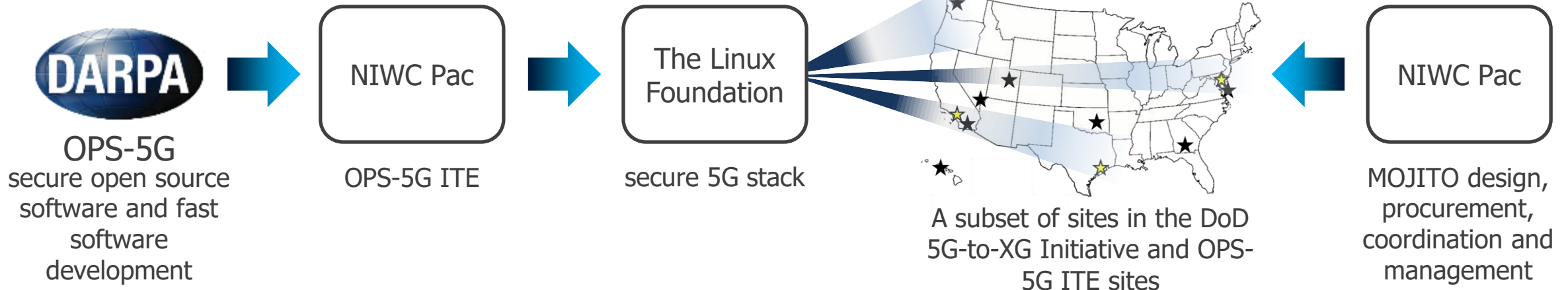
# MOJITO: Connecting OPS-5G and DoD 5G

## DARPA OPS-5G

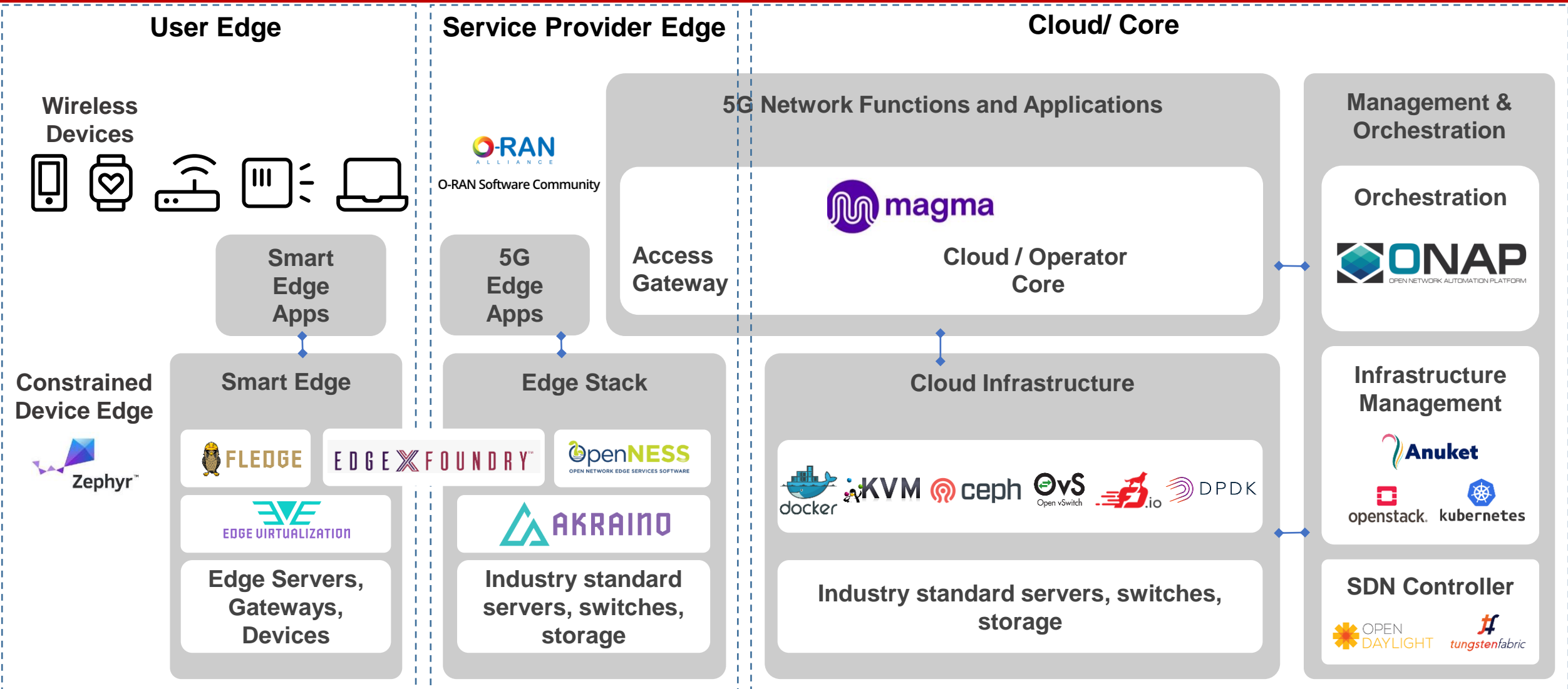
- Focus is on 5G core security
- Create open source software and systems enabling secure 5G
  - Speed open source software development
  - Built-in, cost-effective 5G node and network security
  - Secure slices operate over untrusted infrastructure
  - Programmable defenses for quick and flexible response

## OUSD(R&E) DoD 5G

- Nationwide testbed to enhance DoD ability to test security attributes of 5G networks
  - Equip US military bases for experiments to enable 5G networks
- Many uses for 5G, but one constant across all is security
- Leverage and accelerate innovation of US 5G industry



# Open Source 5G End-to-End Implementation Linux Foundation Component Projects



# DoD Experimentation and Prototyping

## Opportunity to Accelerate 5G Open Source Solutions

3GPP Release 15 Capabilities

3GPP Release 16 Capabilities

3GPP Release 17 Capabilities

### eMBB Requirements

- Warehouse Use Case
- FOB/TOC Use Case
- Training Center Use
- Flightline Use Case
- Pierside Use Case

Competition + Collaboration

### URLLC Requirements

- Warehouse Use Case
- FOB/TOC Use Case
- Training Center Use
- Flightline Use Case
- Pierside Use Case

Competition + Collaboration

### mMTC Requirements

- Warehouse Use Case
- FOB/TOC Use Case
- Training Center Use
- Flightline Use Case
- Pierside Use Case

Competition + Collaboration

Voice Services – All Uses



eMBB

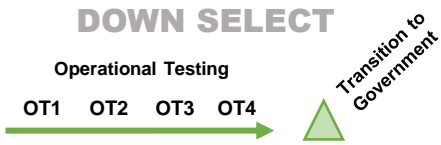
URLLC

mMTC

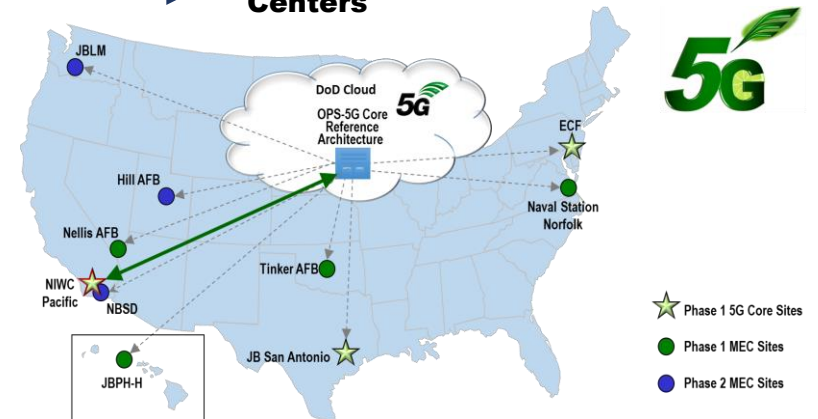
Voice Services  
Voice over NR (VoNR)

5G Full stack end-to-end Open Source Architecture

## DoD Prototypes & Experimentation



- Warehouse
- Forward Operating Base (FOB) / Tactical Operations Center (TOC)
- Shipboard & Pier-side
- Flightline
- Training Centers





# Smart Warehouse Naval Base San Diego, CA



- **Smart Warehouse**

- Digitization, automation, and optimization
- Autonomous systems
- AR/VR systems
- Machine vision
- Integration Navy logistics systems



- **Naval Base San Diego**

- Design and deploy 5G infrastructure in and around warehouse test site
- Employ and test advanced 5G features

# Linux Foundation: 5G Super Blueprint

## Overall Roadmap, building on production ready projects

