



# **Institute for the Wireless Internet of Things** at Northeastern University

“Technical Enablers for Iterative Regulatory Processes”

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# **A National Spectrum Agenda**

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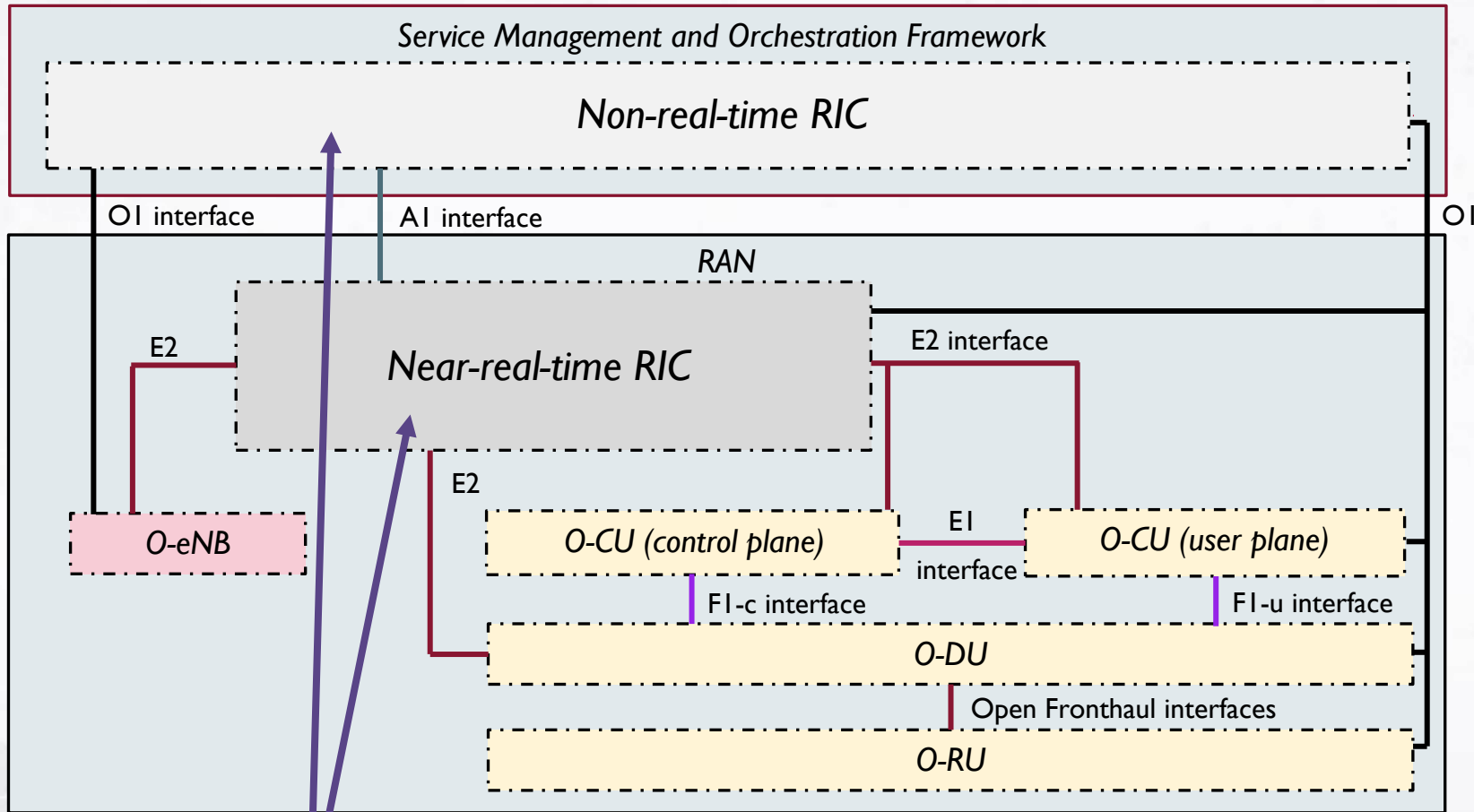
**Conquering the Spectrum**

**Programming the Spectrum**

**Protecting the Spectrum**

**Legal, Ethical, Economical, Policy**

# - Enables Fine-Grained Control

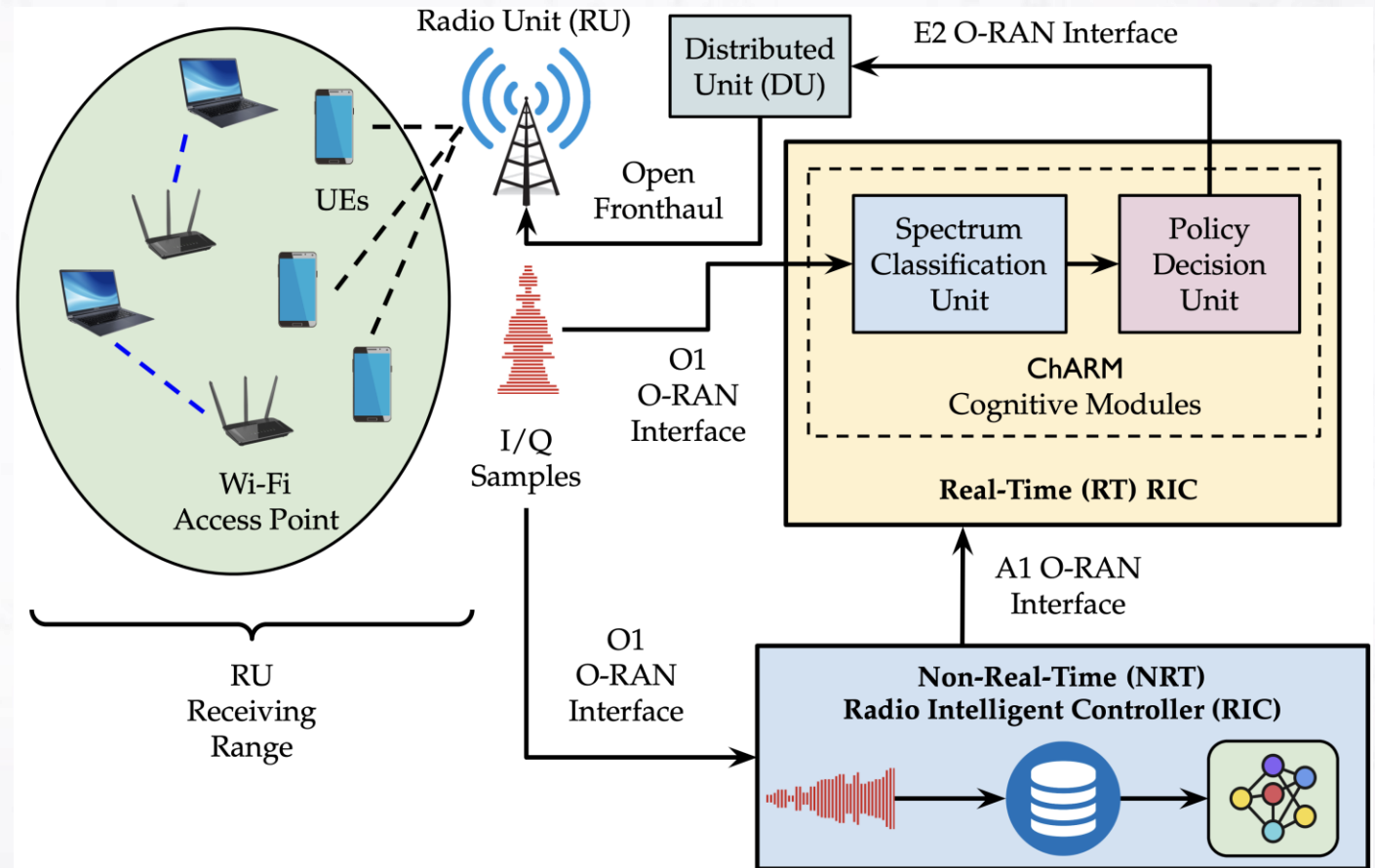


1. Open, standardized interfaces
2. Disaggregated RAN
3. Open-source contributions

## 4. RAN Intelligent Controllers

# CHARM: Dynamic Spectrum Sharing in the Open RAN

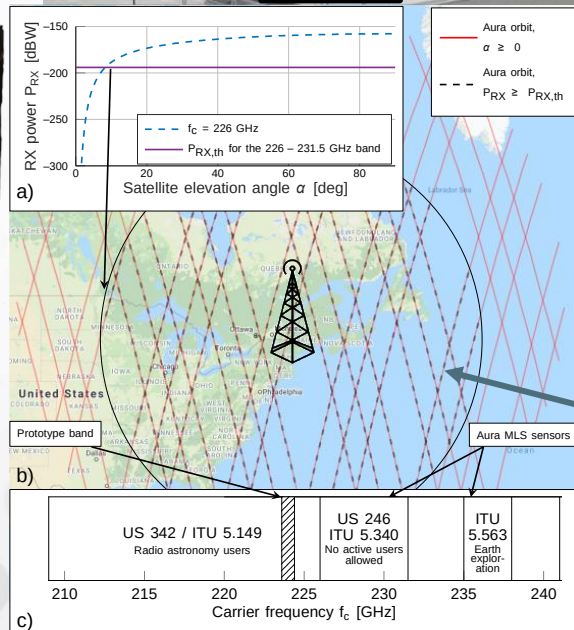
- Dynamic Spectrum Sharing for **mobile** and **WiFi** co-existence in unlicensed **bands**
- **Machine learning** for communication technology classification
- Policy-driven base station **reactions** to spectrum usage
  - Power control
  - Bandwidth change, Frequency change
  - Inter-frequency (LTE-U/LTE-LAA)
  - DSS activation
- Designed as an O-RAN **xApp**





# Dynamic spectrum sharing for coexistence above 100 GHz

*Dynamic spectrum sharing above 100 GHz enables **coexistence** and **more spectrum** for active and passive users*



**First experimental demonstration of dual-band sub-THz backhaul**

- track sensing satellite
- switch band to avoid interference

