

# Cellular Network Services in Peril: A Perspective on Control-Plane and Data-Plane Design

<http://web.cse.ohio-state.edu/~chunyi/projects/secvoice.html>

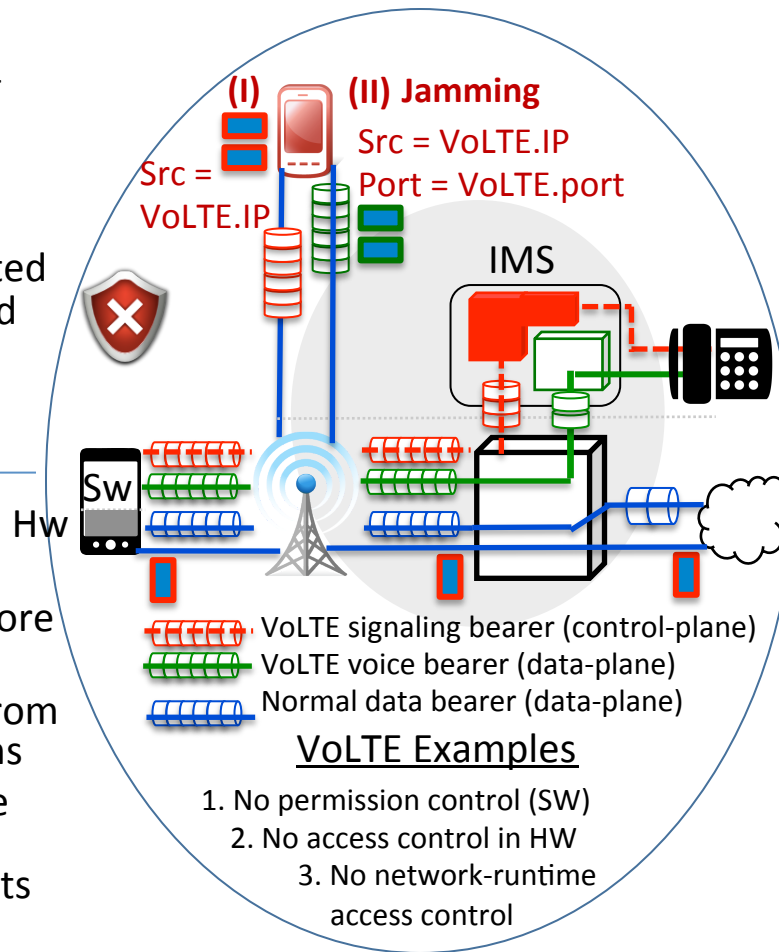
## Challenge:

Both control-plane and data-plane are critical to proper operations.

Our challenge is to disclose security breaches in distributed but coupled, complicated and not fully documented operations in practice.

## Solution:

- Case Study approach by investigating VoLTE. the core voice solution
- Extend security analysis from examples to general claims
- Defense to protect mobile devices and network by leveraging both-side efforts



## Scientific Impact:

- Systematic disclosure of insecurity aspects on both planes
- Explore diversified root for vulnerabilities
- Solution leveraging device's efforts in hardware and software, as well as the network-side protection

## Broader Impact:

- ✓ Led to network upgrade to fix identified issues in US carriers
- ✓ Disseminated findings to the public through media coverage
- ✓ Influence on the industry and upcoming 5G technology standards
- ✓ Education and outreach via

CNS- 1528122, CNS- 1527613

Pis: Chunyi Peng (OSU); Songwu Lu (UCLA)

Contact: Chunyi Peng <chunyi@cse.ohio-state.edu>

- Courses on the state-of-the-art and lessons
- DIY tool released to replay identified attacks
- Talks at GSMA events, industry labs, universities, conferences