

# Towards Programmable Zero-Trust Security for 5G and Beyond

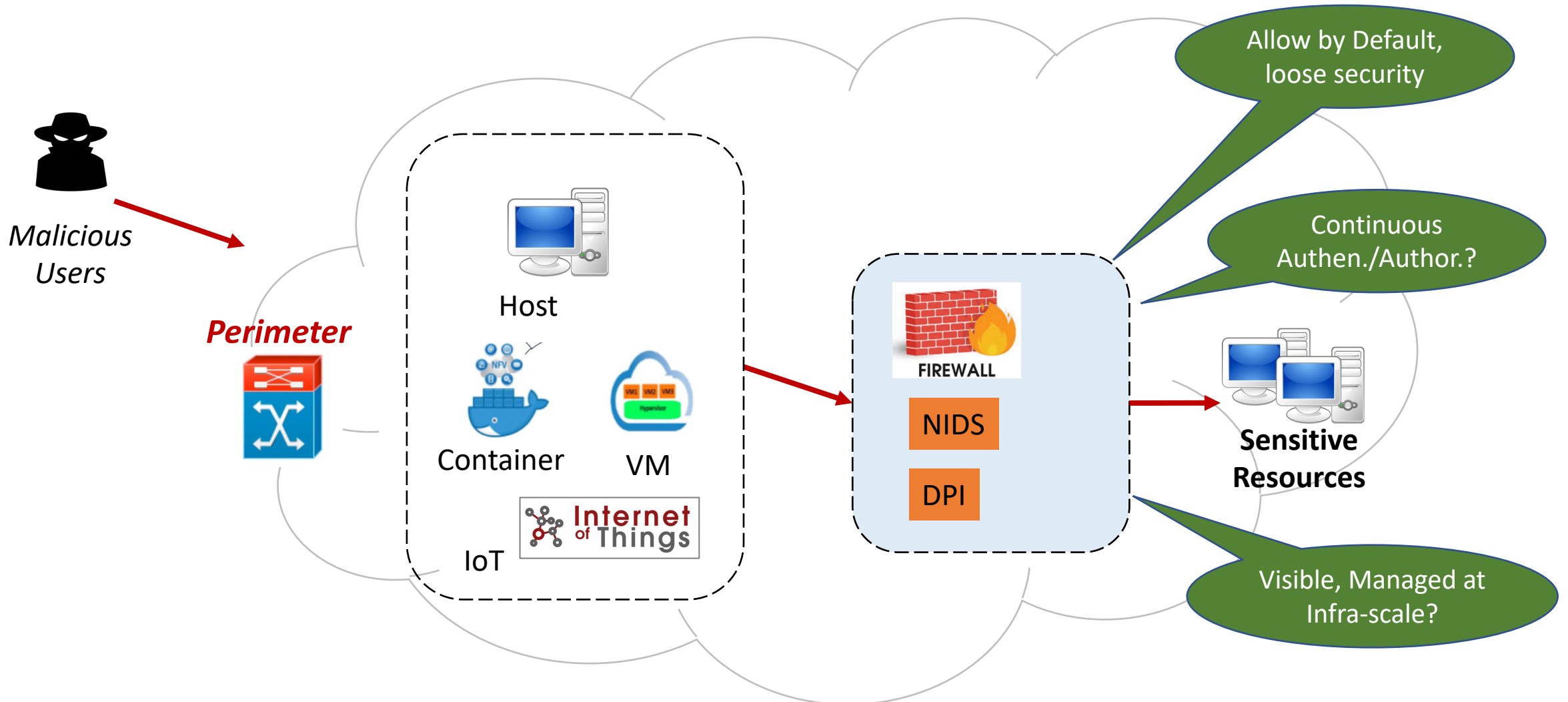
Guofei Gu

SUCCESS Lab

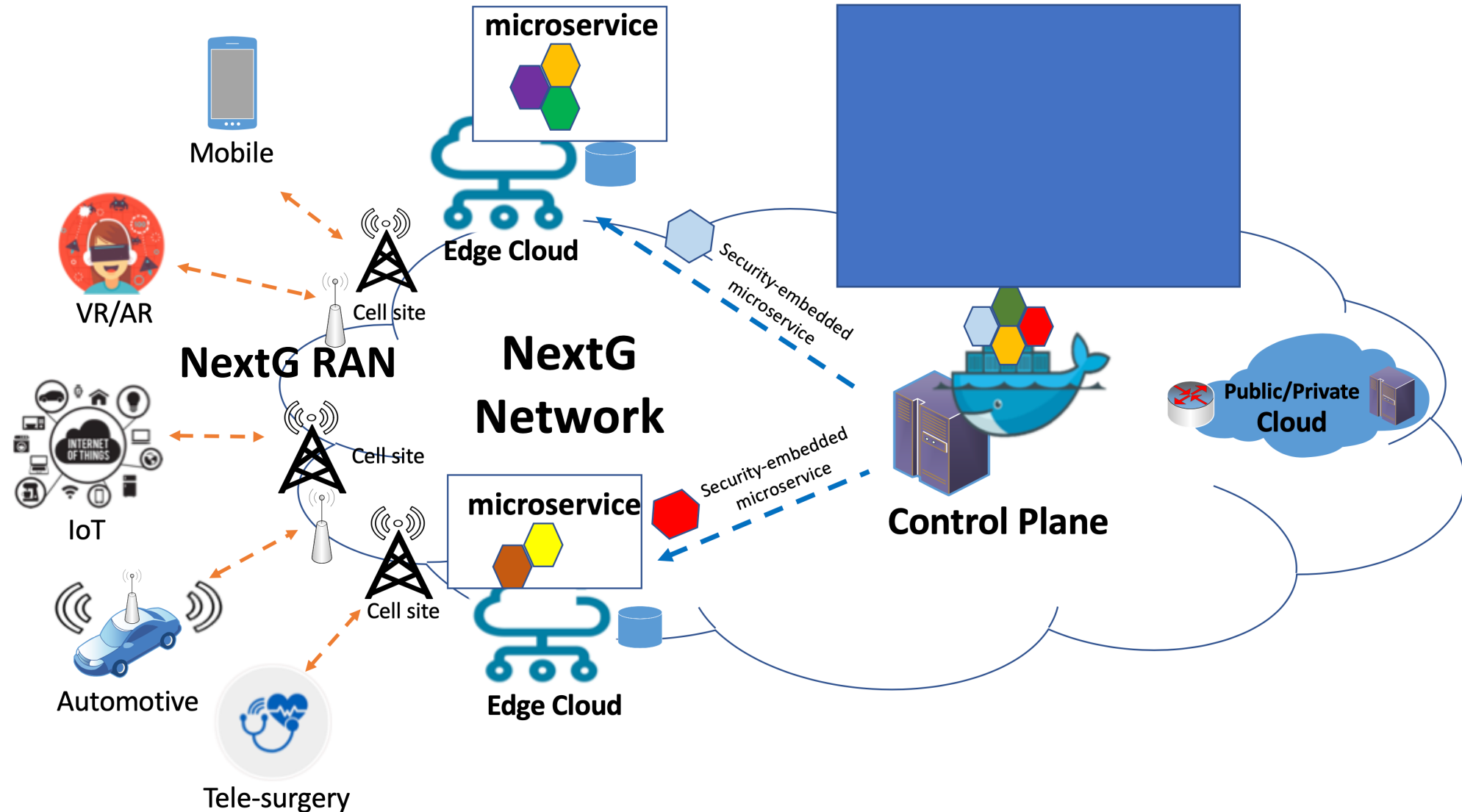
Texas A&M University



# Traditional Perimeter-based Security



# Things are more complicated in NextG (5G & Beyond)



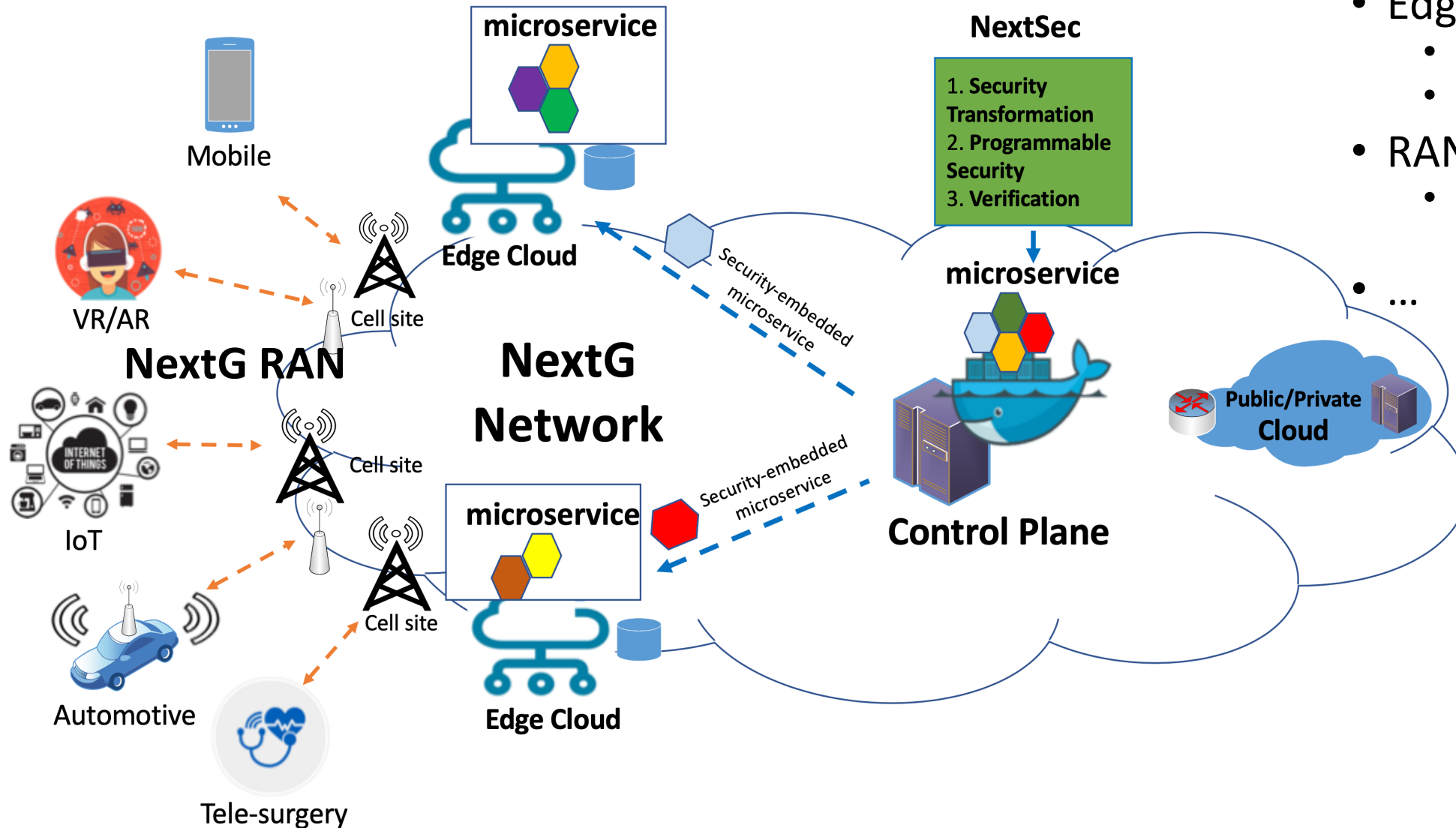
# Programmable Zero-Trust for NextG?

- Key differences from existing solutions
  - System-level visibility shared at NextG infrastructure scale
    - Finer-grained as close as possible to system resources
  - Programmable security
    - Security problems from the dynamics
      - through programmable security applications

# Some Challenges

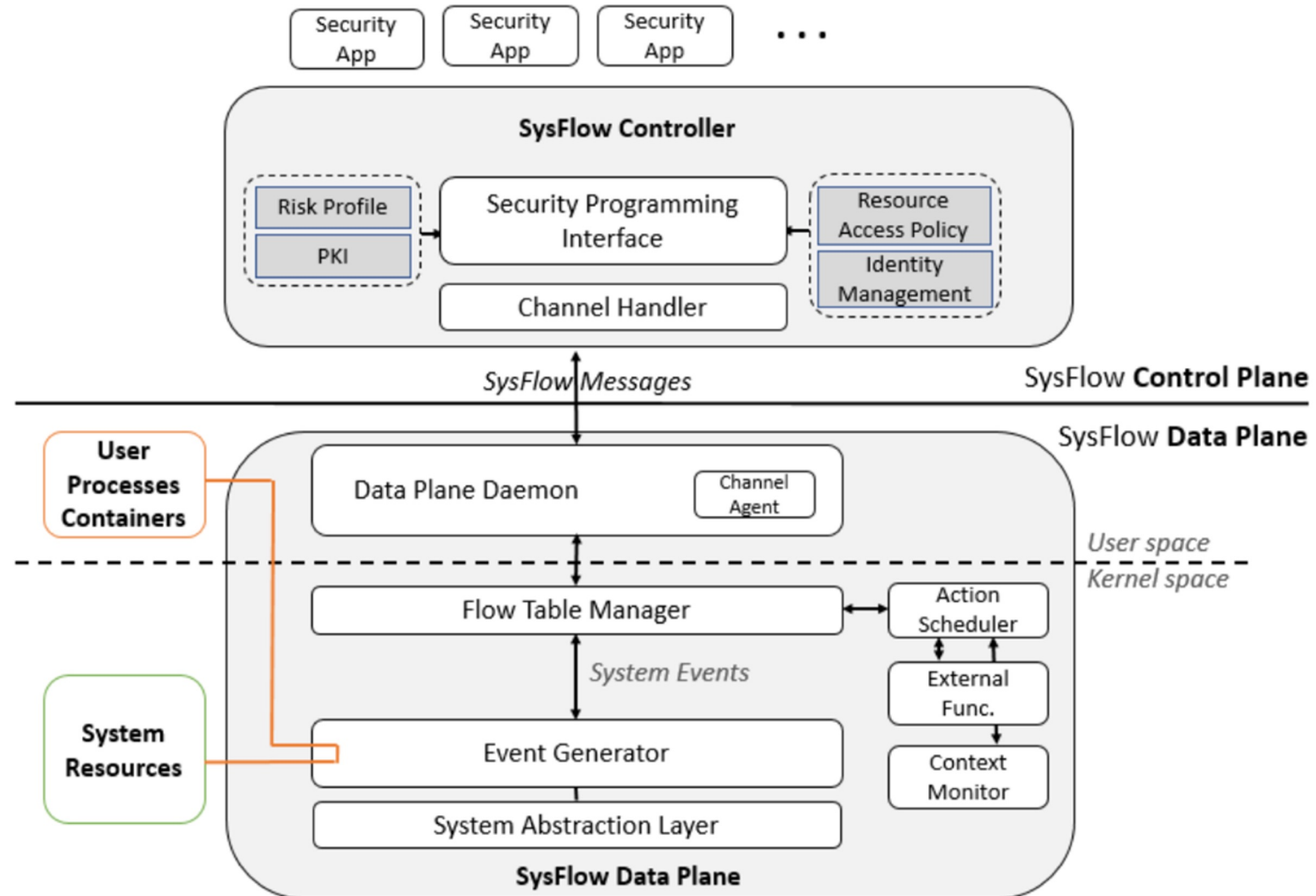
- How to **abstract** system & network activities and model unified programmability in a **generalized** way?
- How to provide **flexible, global visibility** in order to achieve **context-aware** Zero Trust control?
- How to enable a **high-level security programmability** in NextG infrastructure scale?
- How to achieve **minor** performance overhead on a host system?

# Our Ongoing Research

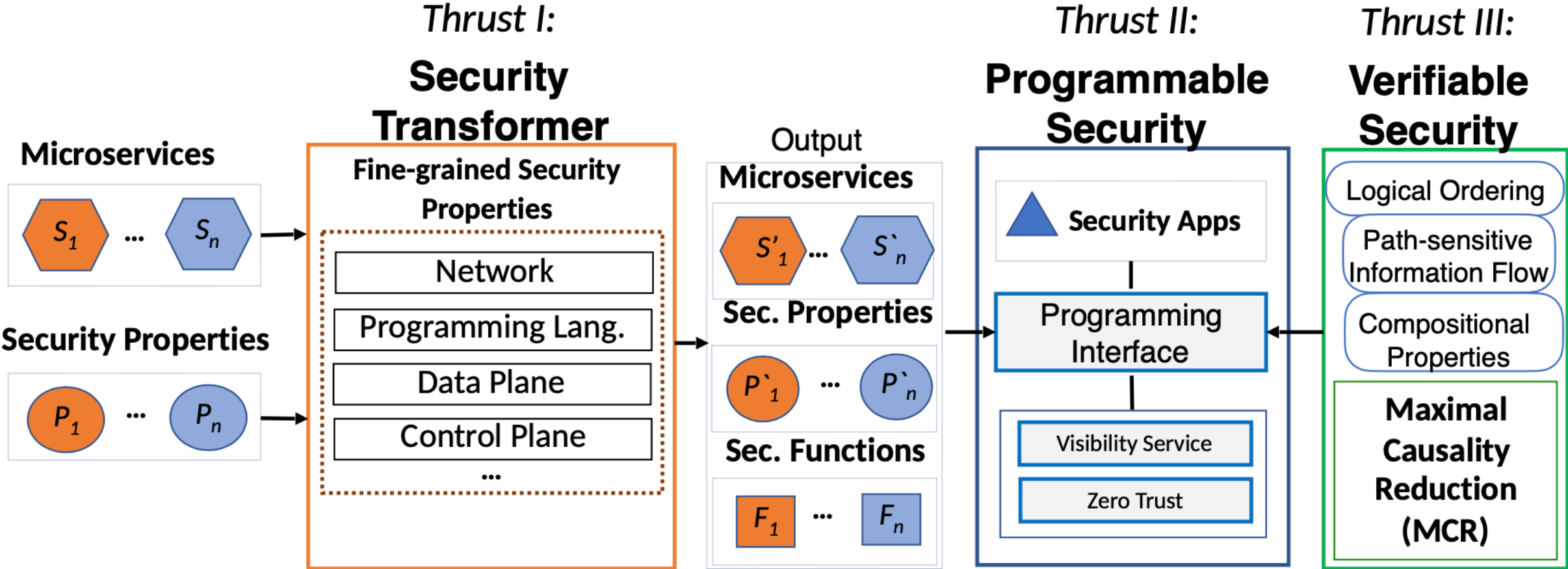


- Cloud level
  - SDN/P4 Security
- Edge-Cloud level
  - Sysflow
  - NextSec
- RAN level
  - Programmable RAN Security
- ...

# Example of Ongoing Work: Sysflow



# Example of Ongoing Project: NextSec





# Q&A



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Our mission is to make networking and computing more secure!