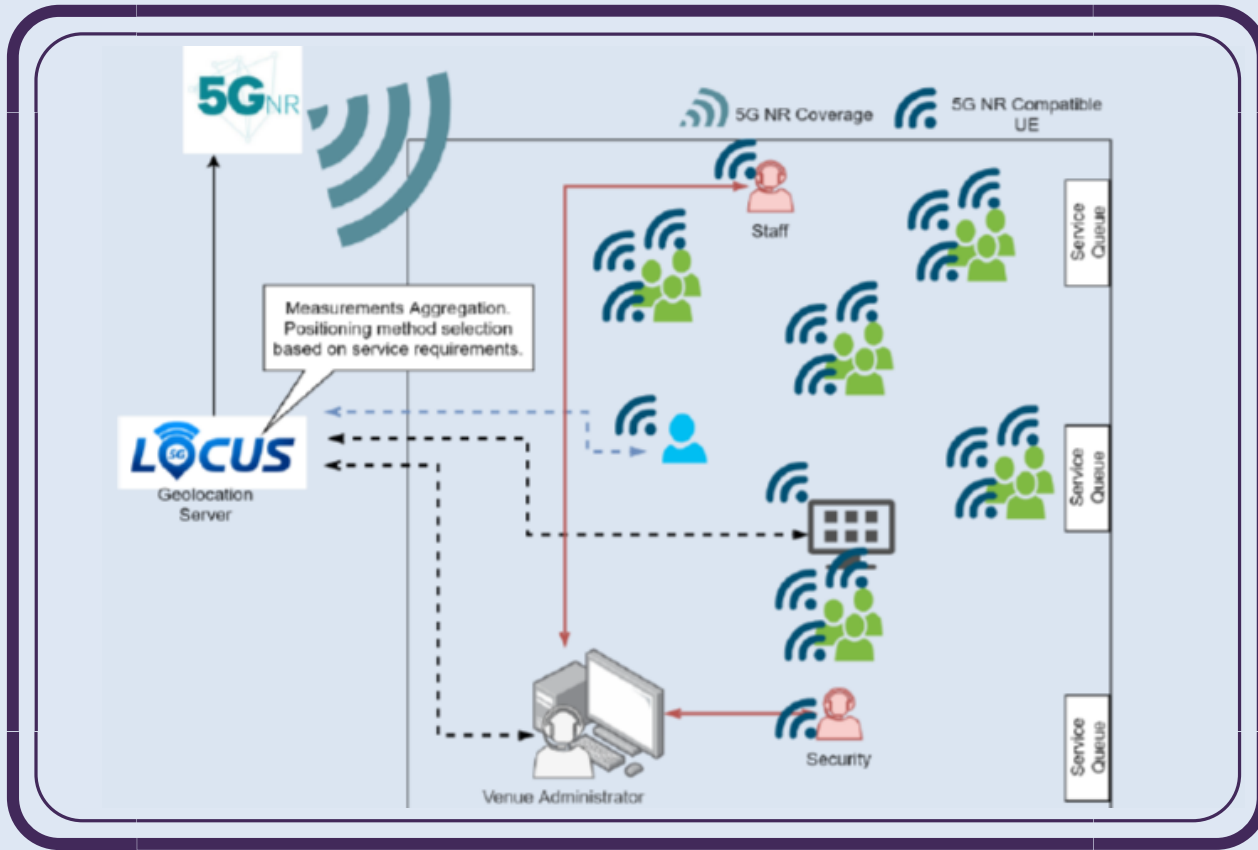


## LOCALIZATION AND ANALYTICS ON-DEMAND EMBEDDED IN THE 5G ECOSYSTEM, FOR UBIQUITOUS VERTICAL APPLICATIONS

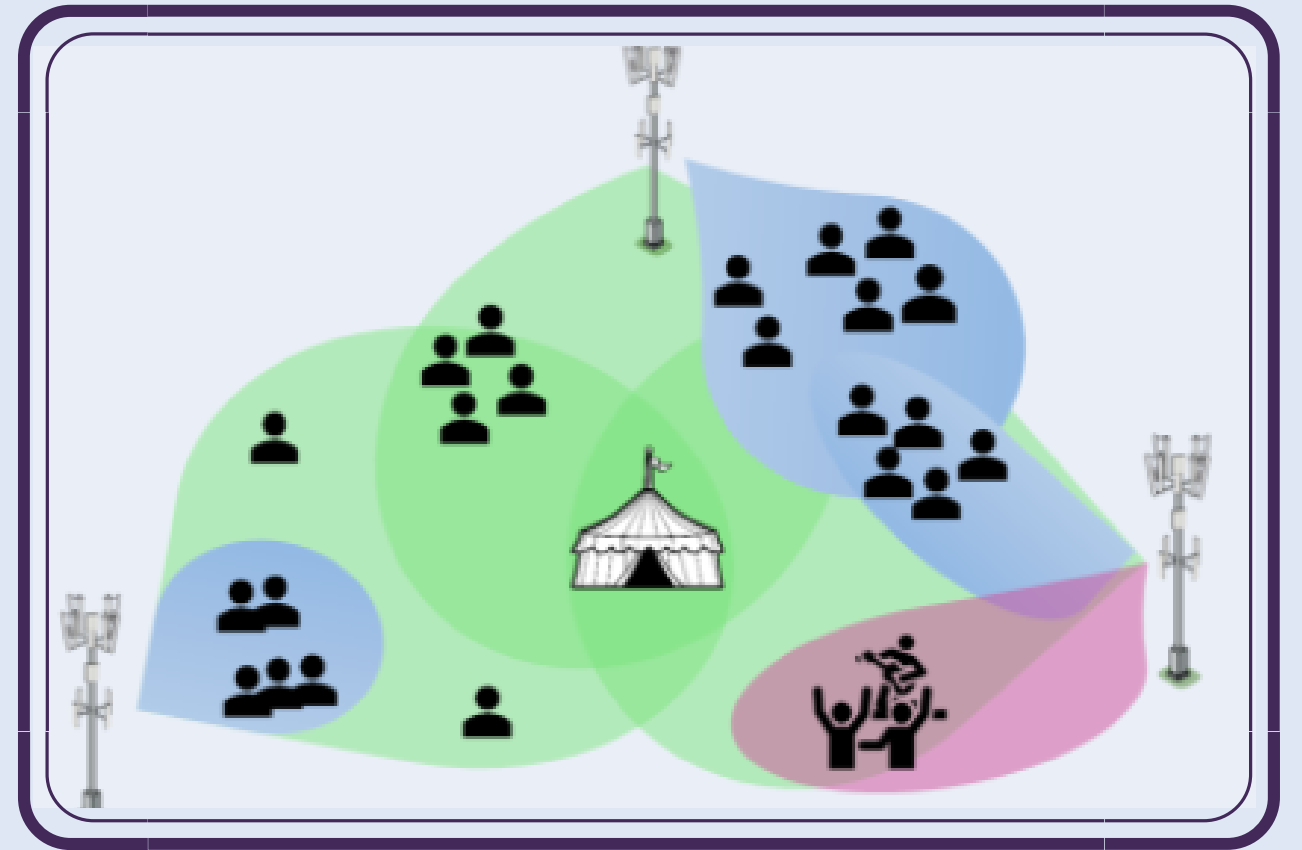
POSITIONING AND FLOW MONITORING IN LARGE VENUES AND DENSE URBAN ENVIRONMENTS



**USER STORY 1:**

LARGE VENUES AND TRANSPORTATION HUBS (AIRPORTS, TRAIN STATIONS ...) EXHIBIT GATHERING OF CROWDS, WITH COMPLEX MOBILITY BEHAVIOUR. THIS AFFECTS INDIVIDUAL QUALITY OF EXPERIENCE (E.G., LONG QUEUES), AND PUTS A STRESS ON MANAGEMENT RESOURCES (STAFF, SECURITY, ETC.). SECURITY AND SAFETY ISSUES COULD ARISE AT EMERGENCY EVENTS (E.G., FRENZY FANS). LOCUS WILL EXPLOIT 5G BASED REFERENCE SIGNALS TO COLLECT MEASUREMENTS AND DEPLOY HYBRID POSITIONING METHODS TO EXTRACT LOCATIONS AND TRACK MOBILITY.

NETWORK OPTIMIZATION BASED ON GEOLOCATION KNOWLEDGE



**USER STORY 2:**

DESIGN OF A SYSTEM THAT ALLOWS THE NETWORK OPERATOR TO DECIDE THEIR NETWORK OPTIMIZATION POLICIES IN ORDER TO ENHANCE THE NETWORK CAPACITY, NETWORK COVERAGE OR THE QUALITY OF EXPERIENCE PERCEIVED BY UES. LOCATION-AWARENESS COULD ENABLE NETWORK OPTIMISATION POLICIES/ALGORITHMS USING GEOLOCATION KNOWLEDGE (E.G. RADIO RESOURCE OPTIMIZATION, LOAD MANAGEMENT, GENERAL PERFORMANCE AND QOE DEGRADATION PREVENTION).

**SPECIFIC OBJECTIVES:**

- SYSTEM ARCHITECTURE WITH BUILT-IN SECURITY AND PRIVACY
- 5G TERMINAL LOCALIZATION, A CELLULAR-BASED LOCALIZATION THOUGHT OF AS AN EVOLVING FUNCTIONALITY IN TERMS OF PERFORMANCE
- INTEGRATION WITH NON-3GPP LOCALIZATION TECHNOLOGIES (GNSS, WIFI, BLUETOOTH, ETC.)
- DEVICE-FREE LOCALIZATION TECHNOLOGIES: SOLUTIONS TO USE BASE STATIONS AND OTHER TRANSMITTERS PRESENT IN THE ENVIRONMENT AS "ILLUMINATORS OF OPPORTUNITY" FOR PASSIVE RADAR, AND TO LOCALIZE ALSO PASSIVE TARGETS (PEOPLE AND THINGS)
- ANALYTICS, LEARNING AND INFERENCE: ANALYSE THE BEHAVIOUR OF DEVICES AND TARGETS
- NETWORK MANAGEMENT: EXPLOIT LOCALIZATION INFORMATION AND ADVANCED DATA ANALYTICS TO ENHANCE NETWORK MANAGEMENT
- EXEMPLARY LOCALIZATION-BASED SERVICES: EMPOWER EXEMPLARY SERVICES

