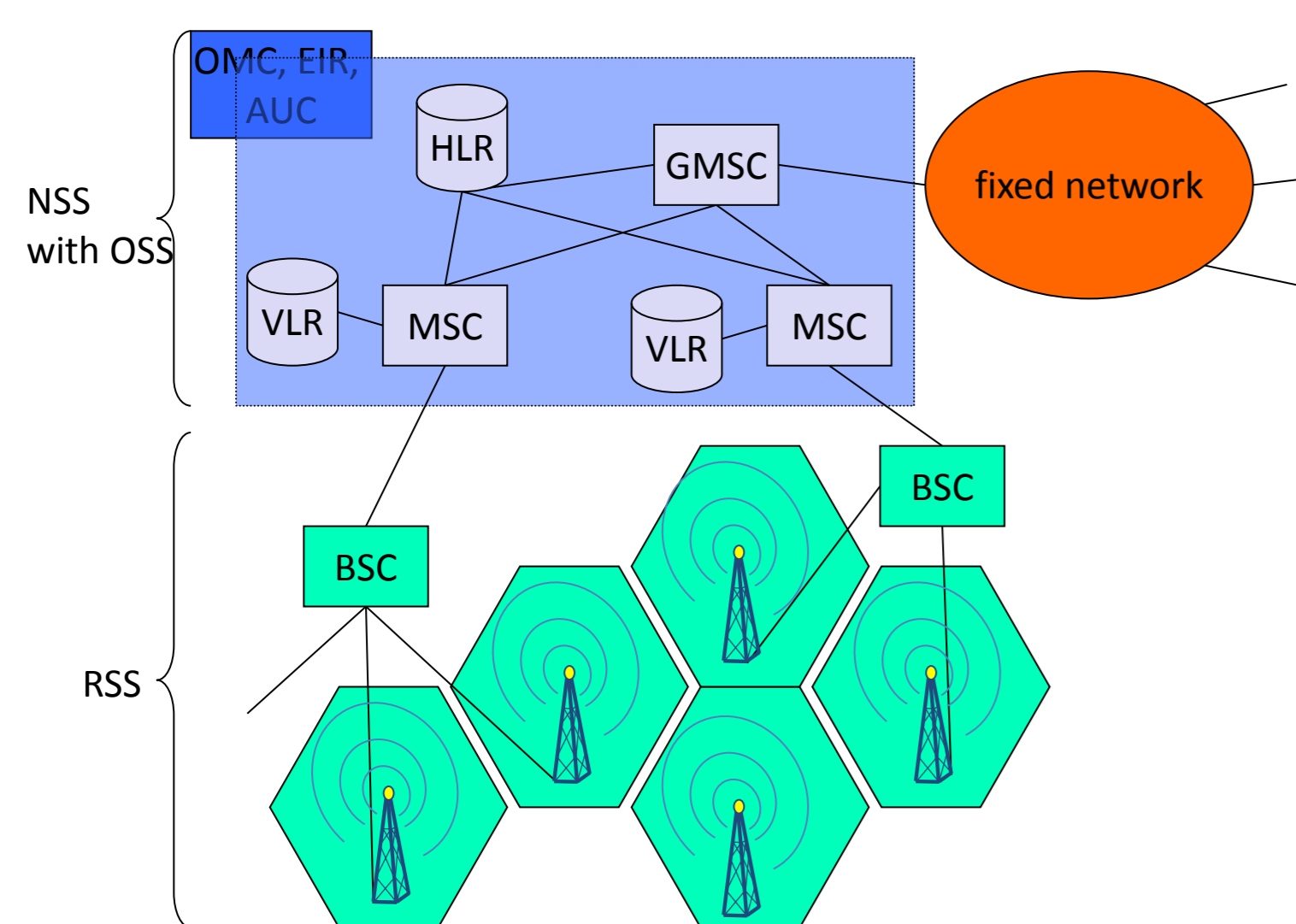


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Motivations

- Billions of mobile devices and growing
- Devices are becoming resource rich (clock speed, memory, multiple interfaces, and media)
- Do not require massive cooling, proximity to cheap energy suppliers
- Traditional cloud have high infrastructure costs (real estate and equipment)

Current Research in Cloud Computing – Cellular Cloud

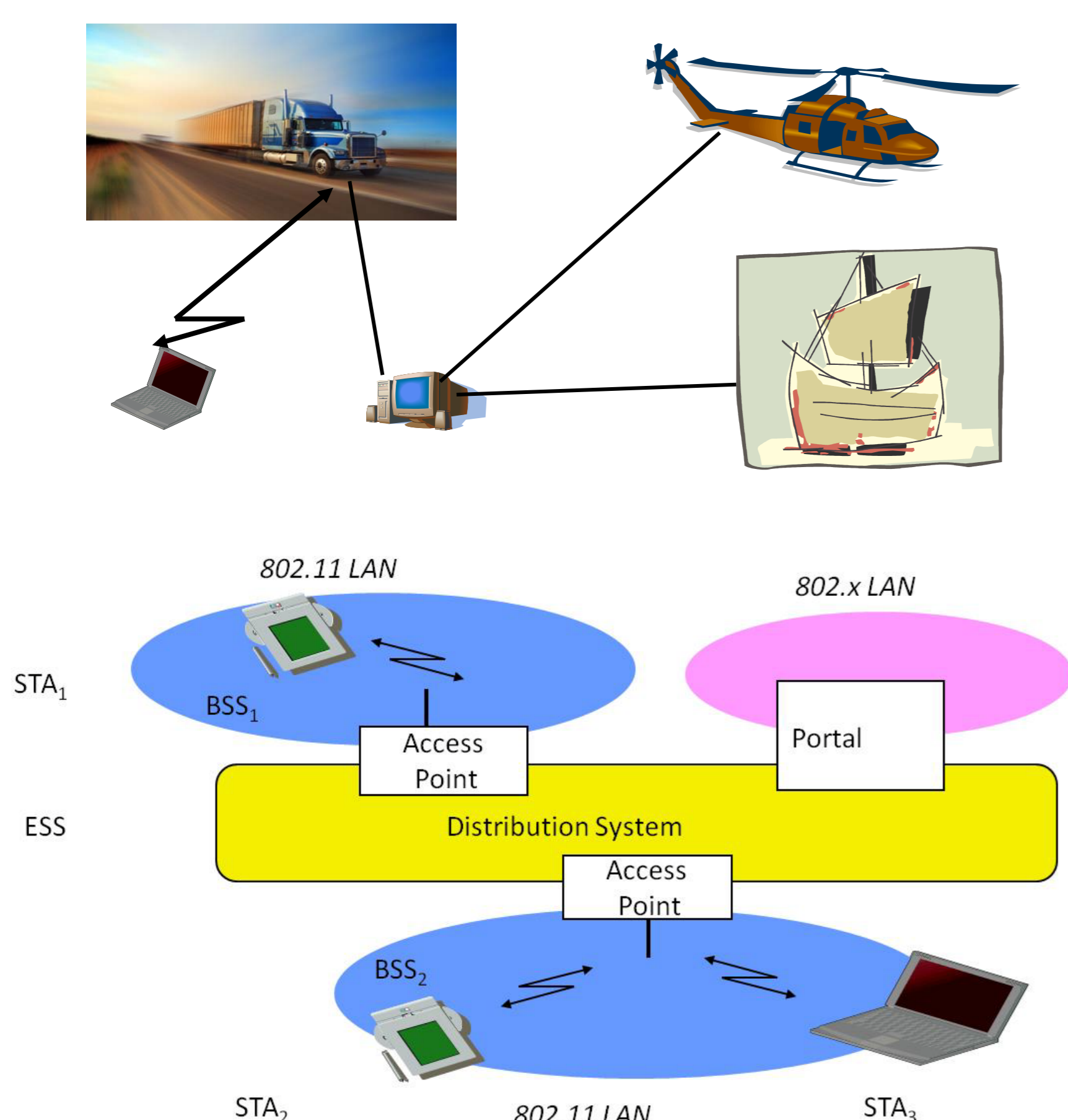


□ Computed the performance of a mobile cellular cloud (GSM based) under following scenarios.

- **Workloads:** Have been chosen mainly for compute bound applications, such as: (1) Common matrix computations such as inversion, eigenvalues and eigenvectors, determinant, fast Fourier transform, and Cholesky decomposition. (2) Sorting of large arrays and linear regression. (3) Fibonacci number calculations etc.
- **Configurations:** No redundancy, Double & Triple modular redundancy.
- **Probability of blocking:** Computations have been repeated for different probabilities.
- **Mobility:** Computed the results with different handoff rates, the probability of handoffs, and probability of handoff droppings under different mobility models.
- **Energy:** For all these scenarios, computed the energy consumption also.

Mobile Clouds: DTN, WiFi, Cognitive, & Others

Vision



- Research cloud architectures of mobile devices operating on heterogeneous wireless networks. Study interworking, efficiency, performance and energy issues.
- Examine **hybrid** cloud architectures consisting of wired clouds (core) and interconnected mobile wireless clouds working in tandem and study performance tradeoffs for scientific as well as emerging social networking applications.
- Develop concepts of coverage, connectivity and capacity for the hybrid clouds.
- Prototype mobile cloud using Droid phones and GNU radios and measure performance and energy consumption in static as well as low mobility environment

- Examine the reliability of computations and evaluate role the redundancy can play in fault masking in mobile cloud environments
- Study security and privacy of hybrid clouds consisting of mobile (DTN) as well as traditional clouds