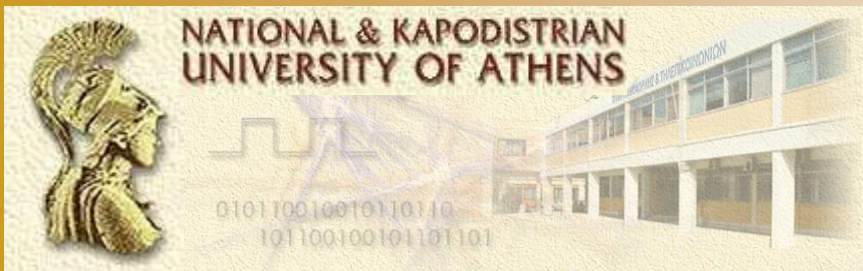


Exploring Self-Growing Aspects in LTE Advanced



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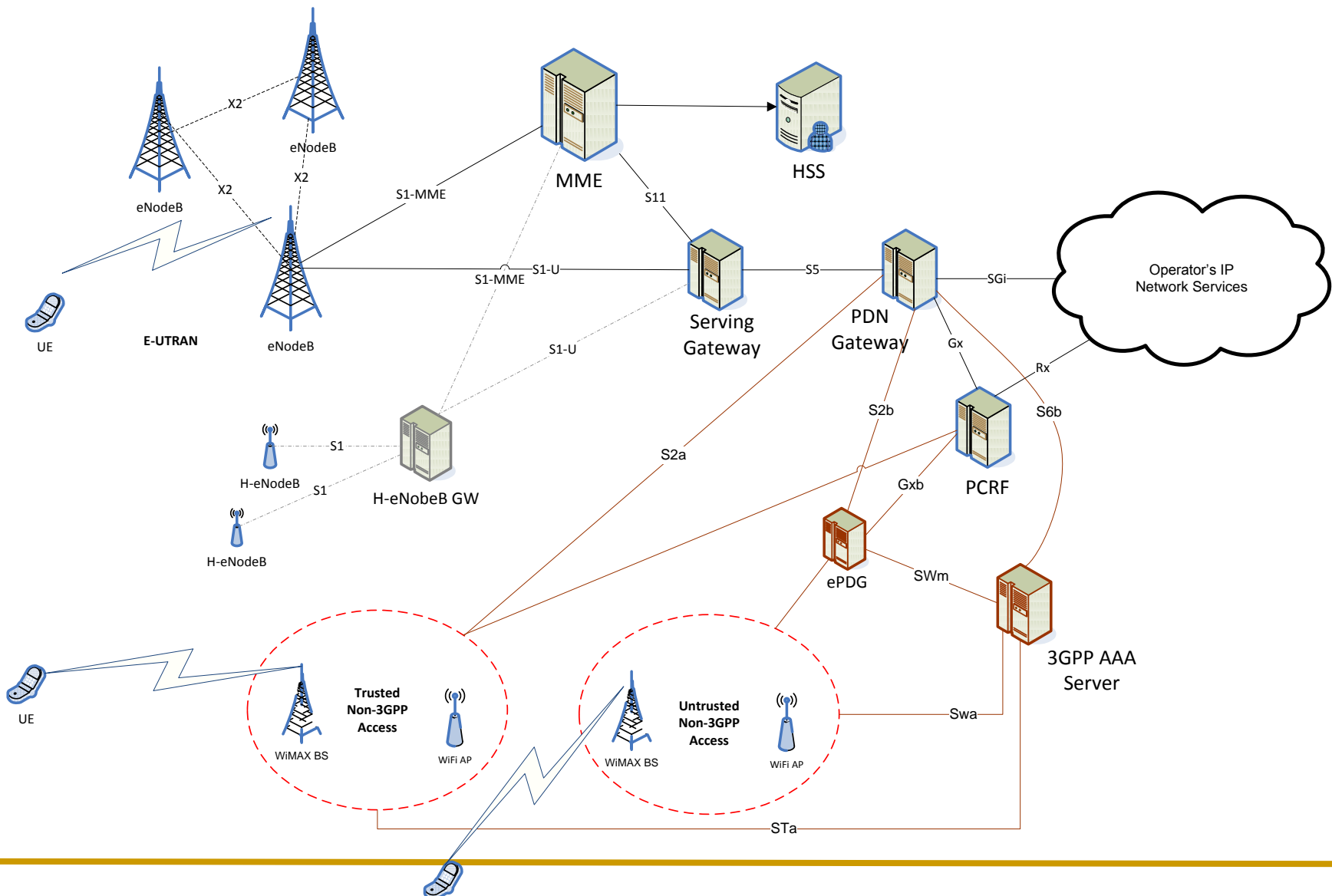
Outline



- ➔ **SON in LTE**
- ➔ **Self-Growing Concept**
- ➔ **Self-growing in the network operation lifecycle**

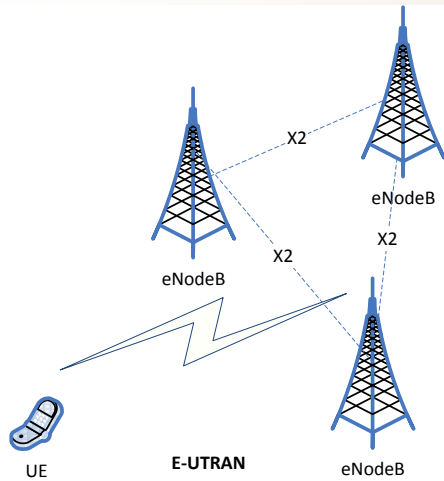
Self-Grow ...3GPP LTE Network

How could it be?



Self-Grow ...3GPP LTE Network

How could it be?

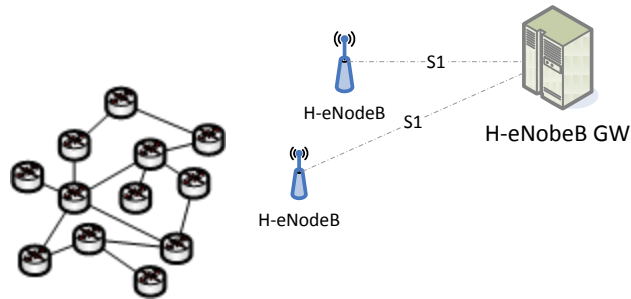


Self-Organization



Federation

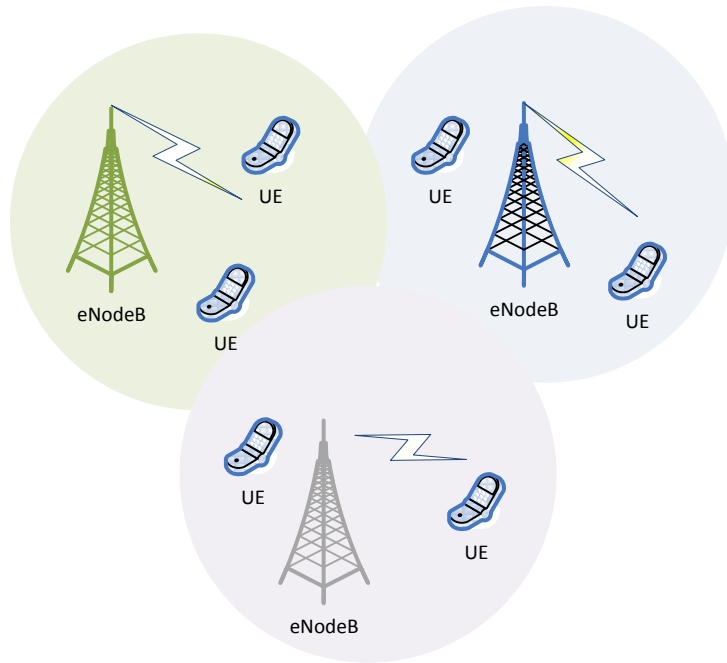
.....Self-Growing



Wireless
Sensor Networks

....assuming a predetermined OR self-learnt evolution path

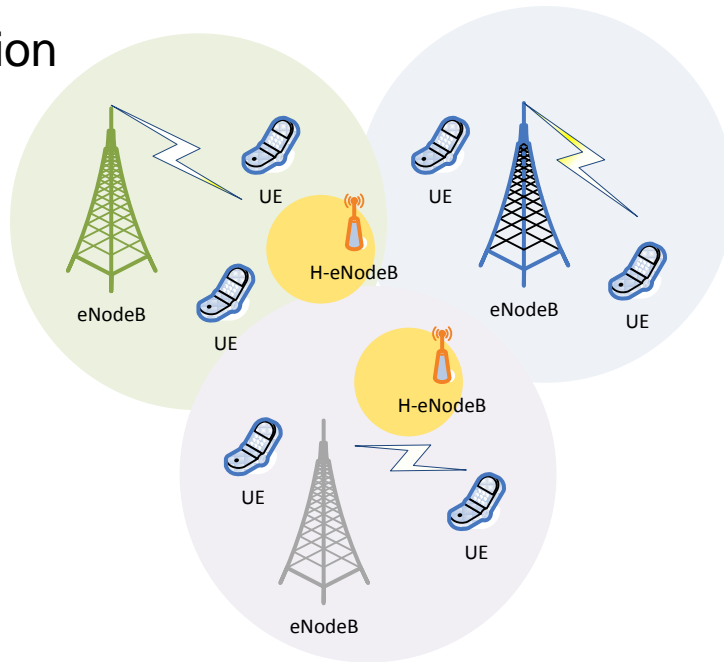
SON Functionalities



SON Functionalities



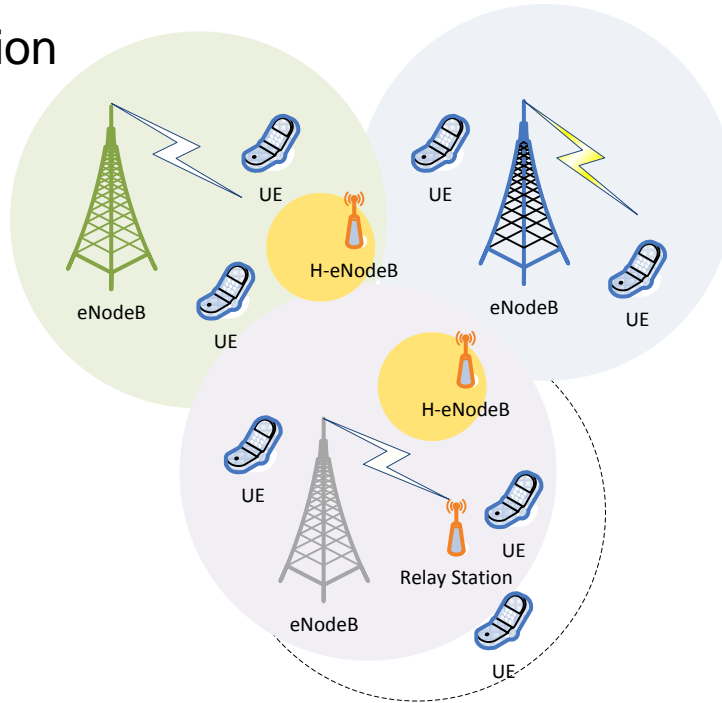
Self-Configuration



SON Functionalities



Self-Configuration

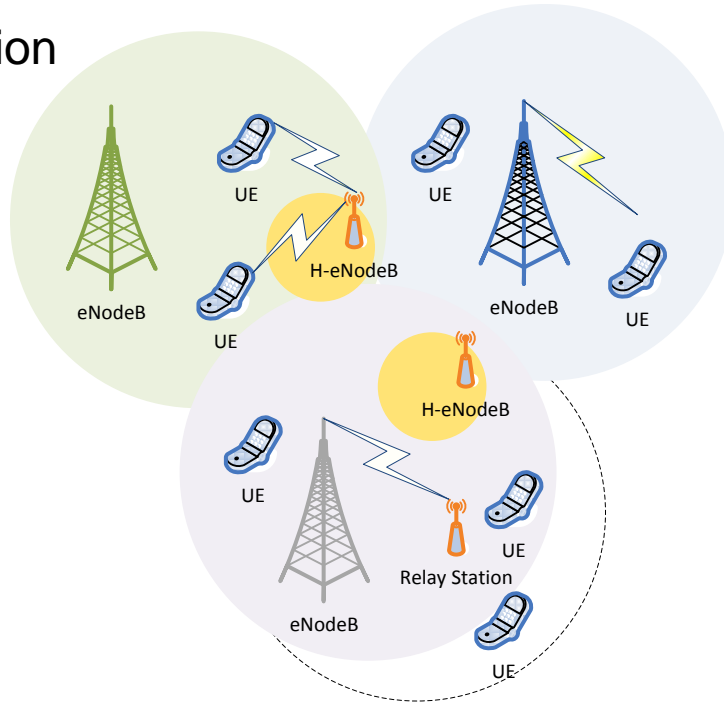


Coverage and Capacity Optimization

SON Functionalities



Self-Configuration



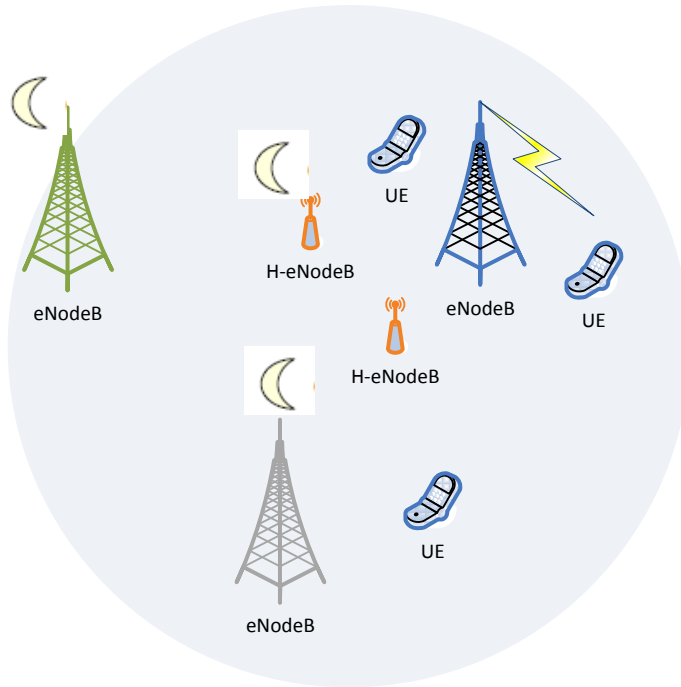
Coverage and
Capacity Optimization

Handover Parameter
Optimization, Load
Balancing

SON Functionalities



Self-Configuration



Coverage and Capacity Optimization

Energy Saving,
Self-Healing

Handover Parameter
Optimization, Load
Balancing

The Self-growing network concept



➔ **The Self-growing network refers to the capacity of a SON and self-configurable network to dynamically evolve (following a predetermined evolution path)**

- in terms of the number of interconnected heterogeneous network nodes, i.e. augmenting capacity by associating with additional nodes, networks, services and functions in that,
- in terms of the supported operation (multi-objective), i.e. to optimize on-demand for a dedicated (temporary) purpose(s).

The Self-growing network concept



➔ The Self-growing network paradigm considers:

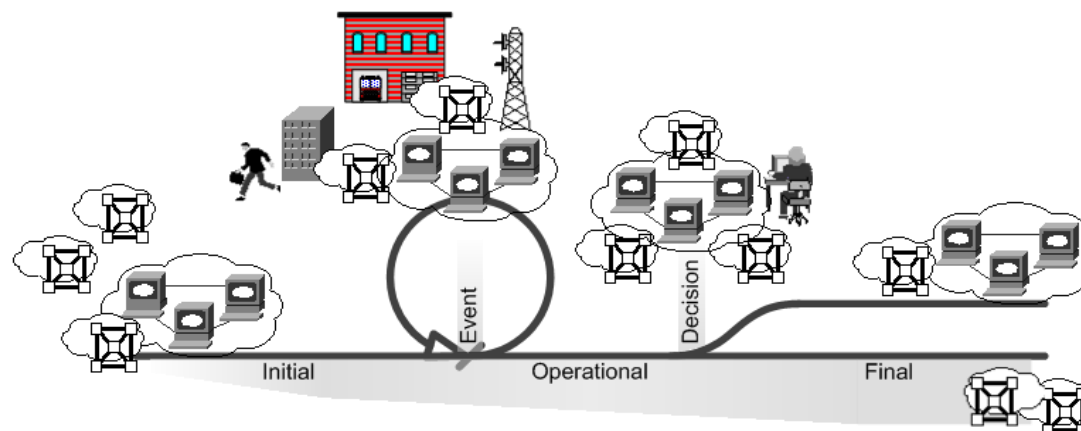
- Mechanisms for the self-evolvement of the network towards a large-scale, multi-purpose network.
- Dynamic and gradual evolvement of the network features deployment in larger infrastructures. These include the development of novel abstractions and scalable methods for sensing, control and decision-making.
- Mechanisms for the reliable and efficient evolvement towards later lifecycle phases.

Self-growing concepts in the network operation lifecycle



➤ Self-Growing network lifecycle phases

- A **Self-Growing network** is set up on-demand, dedicated to a single purpose.
- During its lifecycle, it can evolve to serve **several different objectives as needed**, such as providing general voice and data communications, integrating sensor networks in the vicinity or supporting safety of life applications under exceptional situations
- Towards the end of its lifecycle, the self-growing network may still remain active and may serve as a **dedicated purpose (embedded) network** or as a failover for applications associated with other networks sharing the same area.
- A **lifecycle** is defined as either self-determined or pre-planned path along a sequence of **progression points** that define (potentially temporary) stable points in the evolution of a self-growing network.





Thank you for your attention !!!

