



Moving Ambient Networks and Mobile Clusters

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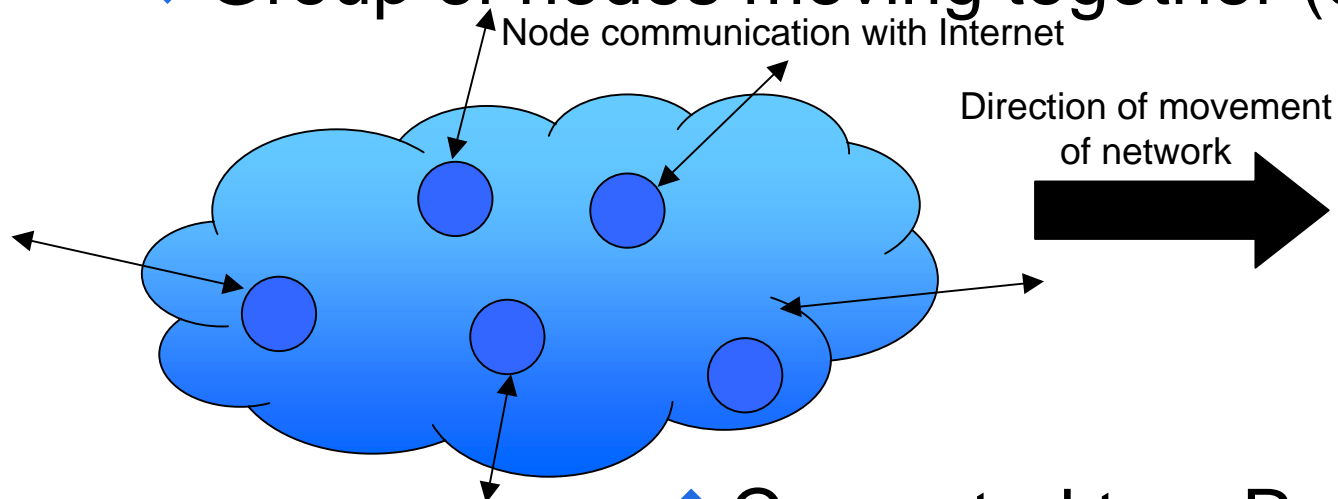


Research Goals

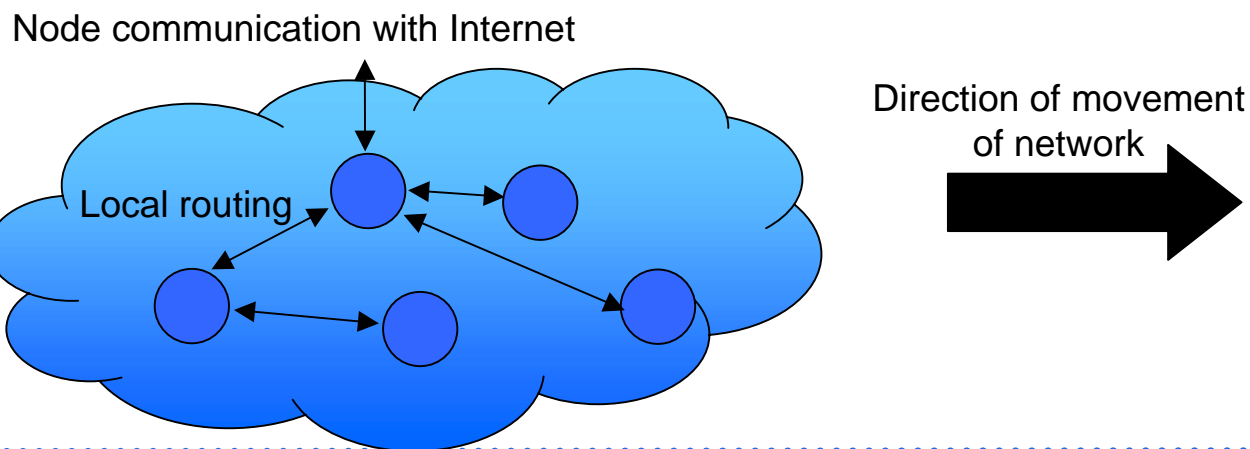


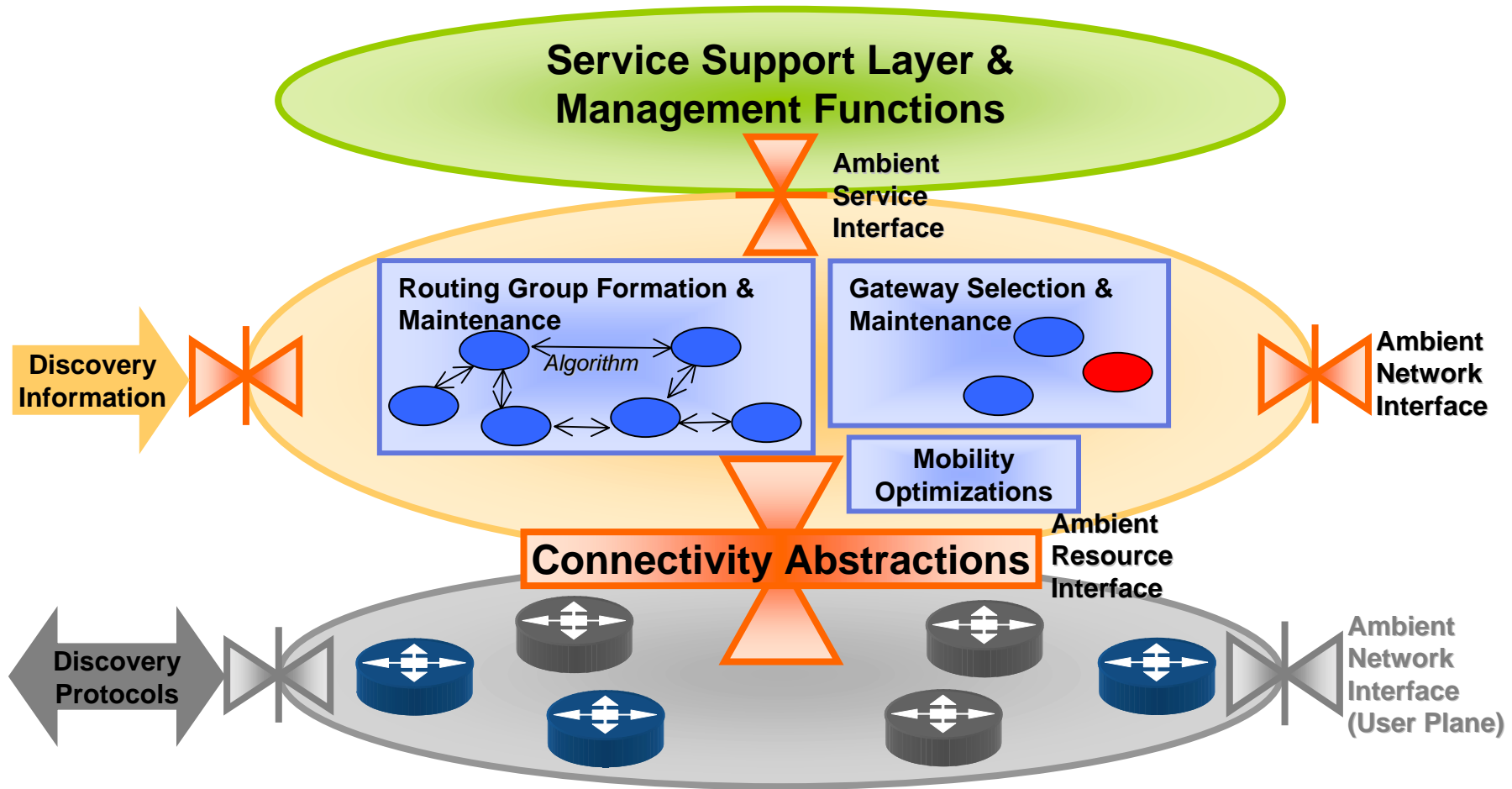
- ❖ Moving Networks consist of multiple devices in close proximity moving together
 - We can take advantage of this characteristic to provide performance optimisations
 - We can also achieve new capabilities, e.g. disconnected operation and local service provision
- ❖ Moving Network support consists of:
 - Formation Algorithms
 - Mobility Management optimisations
 - Routing optimisations

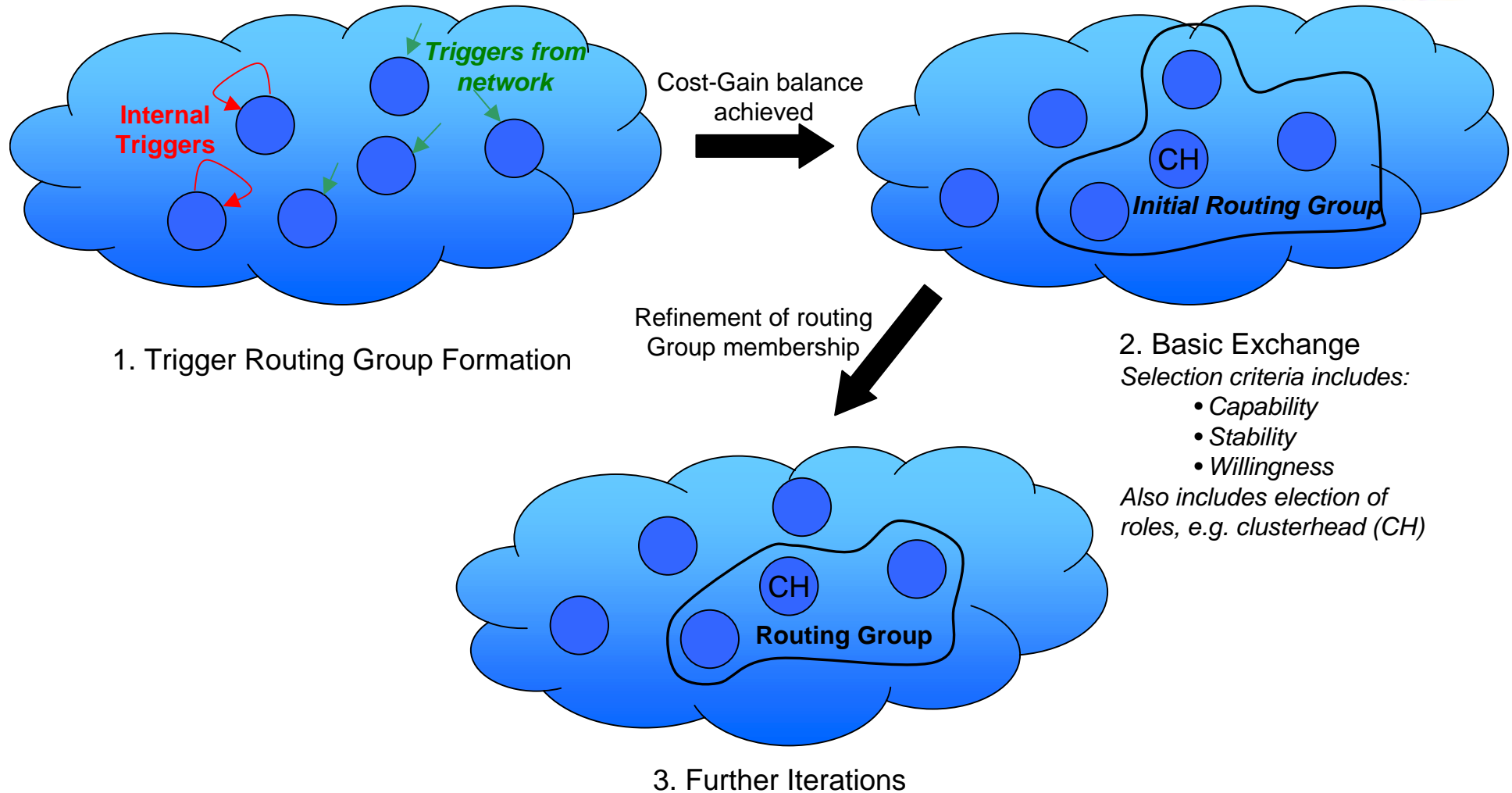
❖ Group of nodes moving together (cluster)

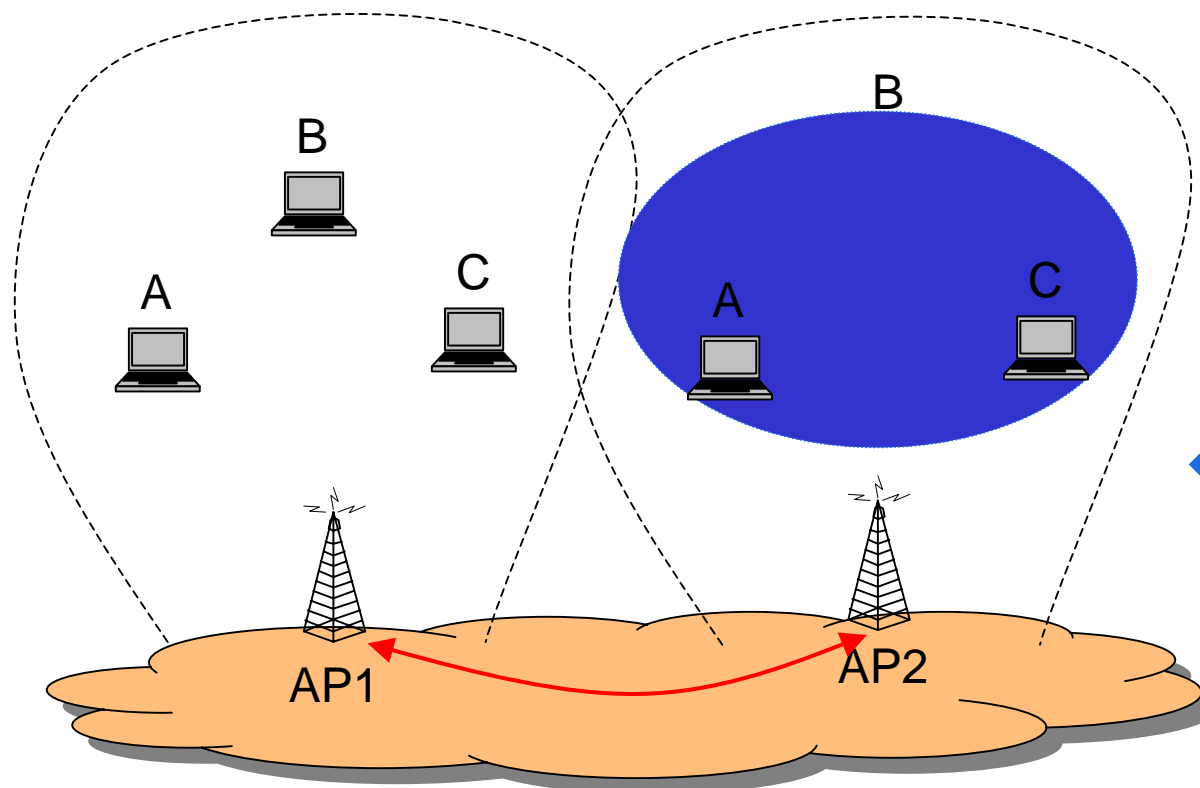


❖ Converted to a Routing Group





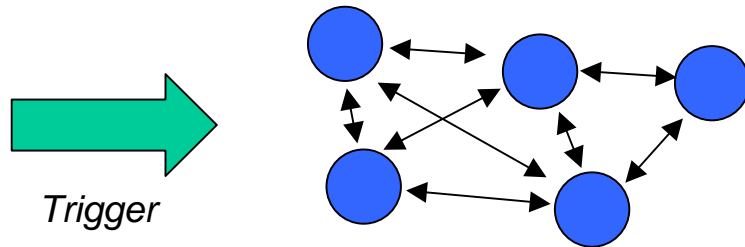




❖ Adjacent APs discover moving groups based on cell associations

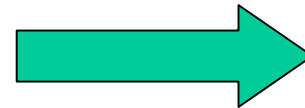
- ❖ AP2 communicates with AP1 if the same set of nodes are passing by
- ❖ ... and triggers RG formation only at the respected nodes

Candidate Set Algorithm Option #1

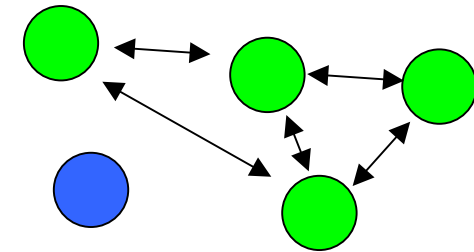


Trigger

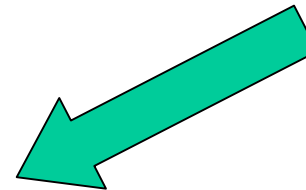
1. Exchange of Hello messages.
The stability estimate is based on
 - Number of received Hellos
 - Packet-error-rate of the link



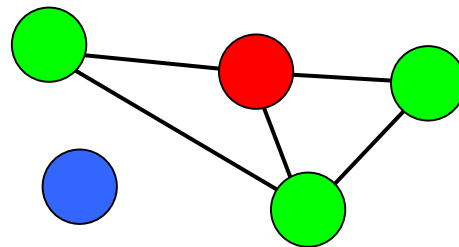
Stable neighbours
(green) identified.



2. Exchange of Role Advertisement messages to select the clusterhead. The CH selection criteria includes:
 - Degree of connectivity
 - Stability
 - Remaining battery level



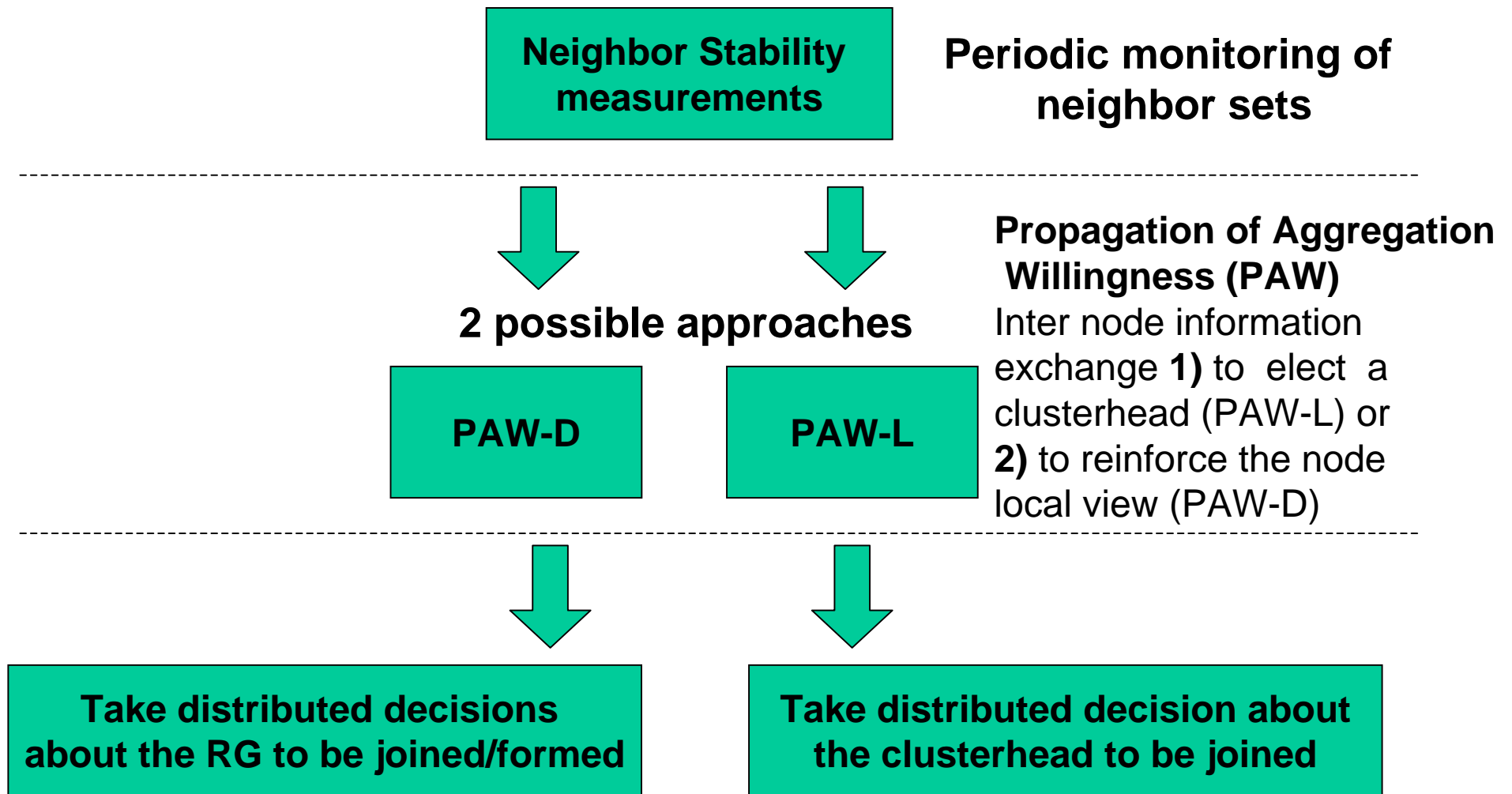
Clusterhead (red)
selected



3. Routing group formed

Further iterations,
selection of roles,
routing optimization
...

Candidate Set Algorithm Option #2





Next Steps



- ❖ Refinement of Algorithms
 - Further develop other aspects, such as maintenance
 - Define the further iterations in more detail, and integrate with overall composition process
- ❖ Further develop interactions with the user plane routing
 - Will support concrete mobility management and routing optimisations
- ❖ Continue simulation work
 - Evaluate different algorithm options
 - Determine what parameter configurations are most suitable for different scenarios
 - Evaluate benefit of routing and mobility management optimisations