

TAKE: Tactical Ad-hoc network Emulation

Development and emulation of new mobile tactical networks based on wireless communications

Realization

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Keywords

- Military applications
- Tactical networks
- MANET networks
- P2P data sharing and communication
- Network emulation

Our skills

Development of intelligent
 and adaptive algorithms
 Telecommunications and
 network simulations

Valorization

Elaboration of new ways to
 deploy reliable tactical
 military applications over ad-
 hoc networks

Partnership

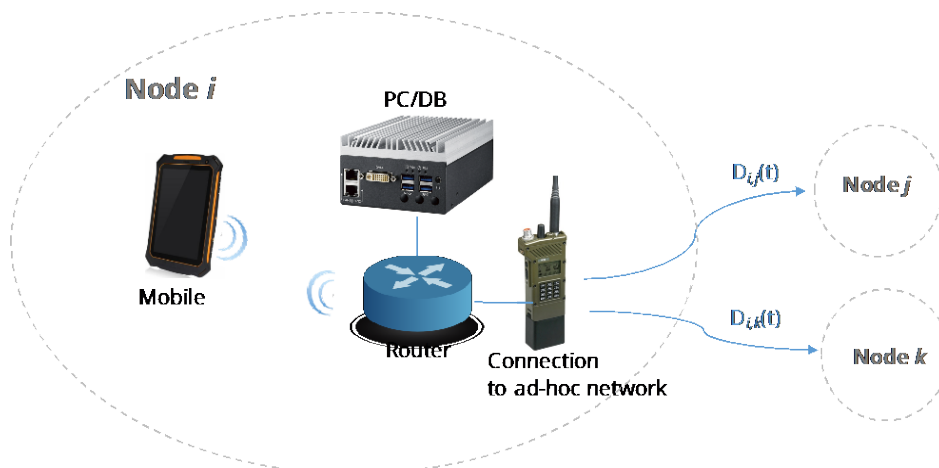
- Armasuisse
- HES-SO Fribourg:
iCoSys & iSIS institutes

Funding

Mandate

Schedule

08/2016 – 12/2016



Armasuisse will test a new mobile tactical network based on wireless communications working with VHF/UHF imposing new challenges for mission critical applications. Every node in the network (see figure above) should be able to communicate at the application layer to all other nodes through an ad-hoc network. The end user will use these applications via a smartphone. Three applications will be developed: Messaging, Blue Force Tracking and Red Force Tracking.

The main objectives of this project are to:

1. conceive and develop a simulator able to evaluate the performance of the developed algorithms over tens to several hundreds of nodes in an ad-hoc tactical network.
2. Develop algorithms defining the parameters and potential role(s) of each node in order to offer communication services for the user applications.
3. Implement the best algorithm(s) on a PC controlling the ad-hoc network radio node for a real use in a field trial.

The use of such algorithms makes a first step towards an automation of communication services, specified by the tactical applications. For example, one application is the deployment of data services for position tracking or for one-way messaging. Another application is maps (i.e., potentially large files) updates.

Unlike nodes in conventional networks, each ad-hoc node to be considered here is capable of storing the data and/or specific critical information and to forward them where and when needed, typically when the best route becomes unavailable.



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