



Project Title:	IPv6 Ad-hoc Networking for Future Distributed Systems and IMS Applications
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Department:	Computer Science

Project Description:

This project aims to demonstrate that distributed, IMS-based applications can communicate – efficiently and securely – over a heterogeneous network by taking advantage of mobile ad-hoc networking techniques over IPv6. In order to facilitate this, a software architecture is being designed and a laboratory prototyping environment is being used for development, testing and evaluation purposes.

Currently, communication between IMS applications is limited within a single platform and is performed in a strictly deterministic manner. On system startup, IMS creates virtual channels (VC), thus configuring communication between two applications. IMS controls which device transmits through which VC and when. Virtual channel setup and application scheduling is dictated by predefined configurations (blueprints). Therefore, IMS can switch from configuration A to B and later back to A at run time. However, a new configuration C would have to be loaded into the platform's systems at next startup. This project aims to extend the existing blueprint model in order to establish a method for creation, destruction and reconfiguration of VCs at run time, in order to achieve better resource utilisation within a platform utilisation within a platform and higher efficiency.

Inter-platform communication is limited to specific services (for instance, voice over radio). Such long range communication is conducted over heterogeneous lower-layer technologies, often employing proprietary standards. Communication hardware is often old and bandwidth is not always amply available. The project's goal is to investigate the potential of employing MANET techniques as an enabling technology for inter-platform communication between IMS-based applications, while using existing networking hardware. This involves proposing solutions for platform discovery and association; routing; service discovery, selection and invocation.

Lastly, among the project's goals is to install and configure a distributed computing environment, to be used for the solution's development and the evaluation of its performance and viability.