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TELCOMMUNICATION ENGINEERING

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SIMON FRASER UNIVERSITY

SFU

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THINKING OF THE WORLD

ISITV
UNIVERSITÉ du SUD

Institut des
Sciences de
l'Ingénieur
Toulon - Var

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Roadmap

- Introduction
- ISITV School
- GPRS Technology
- GPRS OPNET Project
- Conclusion

Introduction

- This internship is a part of my continuing education as a second year student at Institute of Engineering Science of Toulon-Var.
- The aim of this internship is to complete my second year, improve my English, and get a deep knowledge in communication networks.
- Our school encourages its students to do the second year internship abroad in order to gain an international experience.
- I have chosen to do this internship at SFU, in Vancouver, Canada.

ISITV School

- The Institute of Engineering Science of Toulon and Var, often abbreviated ISITV, is a French public engineering school at the University of Toulon.
- ISITV was established in 1991 by combining the teaching and research resources of the University of the South, Toulon-Var with support and collaboration from industry.

Toulon

PLAN DU CAMPUS DE LA GARDE

- It is located on the campus of LA GARDE of the University of Toulon and Var.
- It is located in the south of France, between Toulon and Hyères in the French Riviera.

Engineering majors

- The ISITV's diploma is recognized by the French Commission of Registered Engineers (Commission des Titres Ingenieurs) CTI.
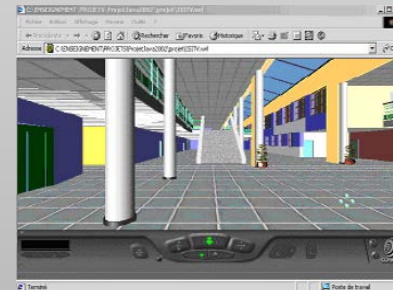- The school offers three types of engineering specialities:

- Marine engineering

- Materials engineering

- Telecommunication engineering

Telecommunication engineering

- Signals
- Systems
- Network

Internships

Three mandatory Internships :
- The first year internship
- The second year internship (abroad)
- The last year internship (industrial internship)

GPRS technology

- The main goal of this project was to help me become familiar with the OPNET software tool.
- The purpose of this project was to update on old version of the GPRS network OPNET model to the latest version of OPNET (version 16.1).

What is GPRS?

- The General Packet Radio Service (GPRS)
- It is an extension of General Service for Mobile (GSM) allowing mobile subscribers to transmit data from their mobile terminals.
  1. enables access to company LAN and the Internet
  2. provides reasonably high data rates
  3. enables the subscriber to be reachable at all times – not only for telephone calls but also for information such as new emails or latest news
  4. offers flexible access, either for many subscribers at low data rates or few subscribers at high data rates in order to optimize network usage
  5. offers low cost access to new services.

GPRS network architecture
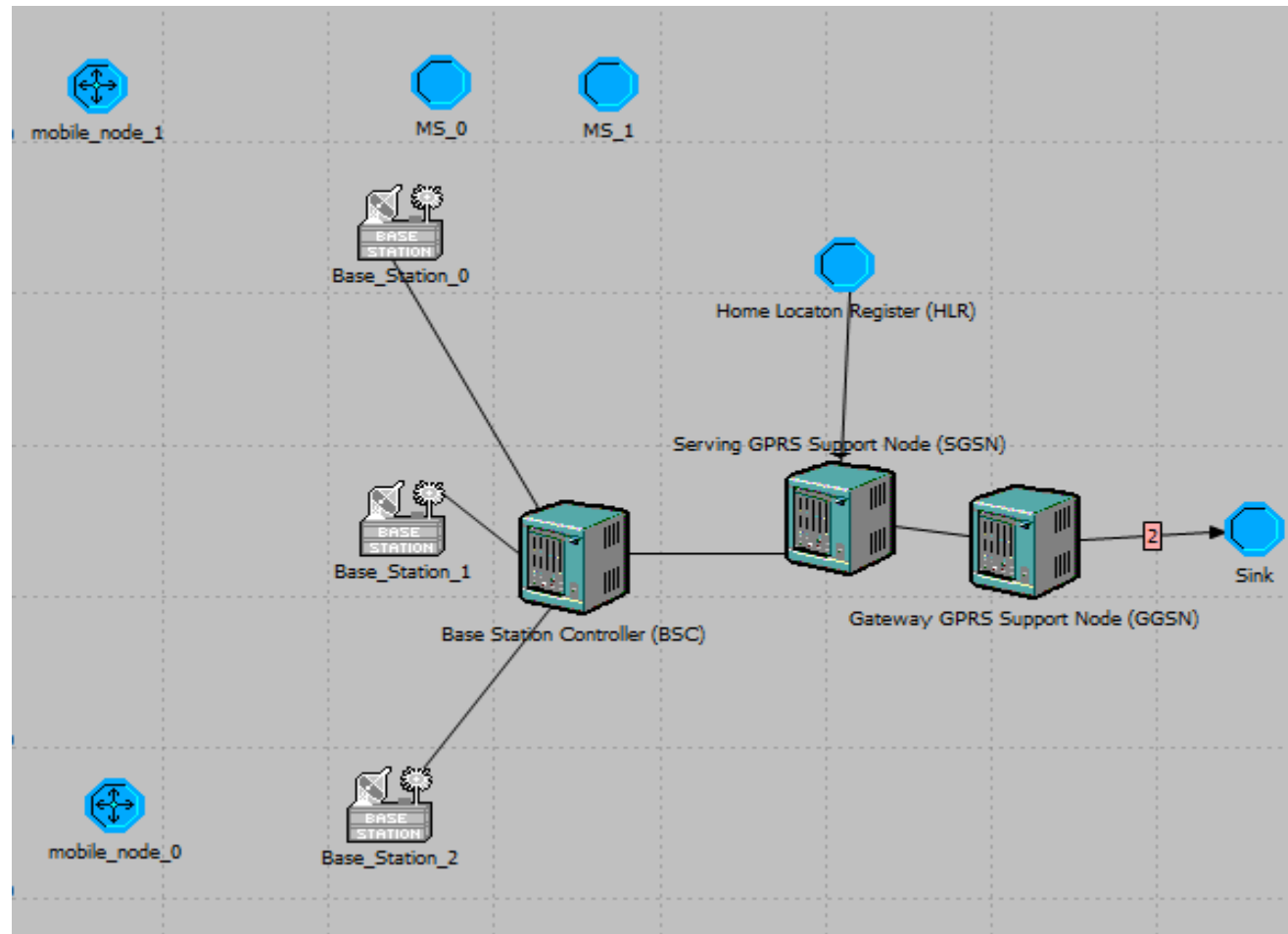
GPRS network OPNET model

- I have worked with OPNET for 8 weeks.
- First 4 weeks, I learned OPNET tutorials.
- The last 4 weeks, I worked on the GPRS OPNET model.
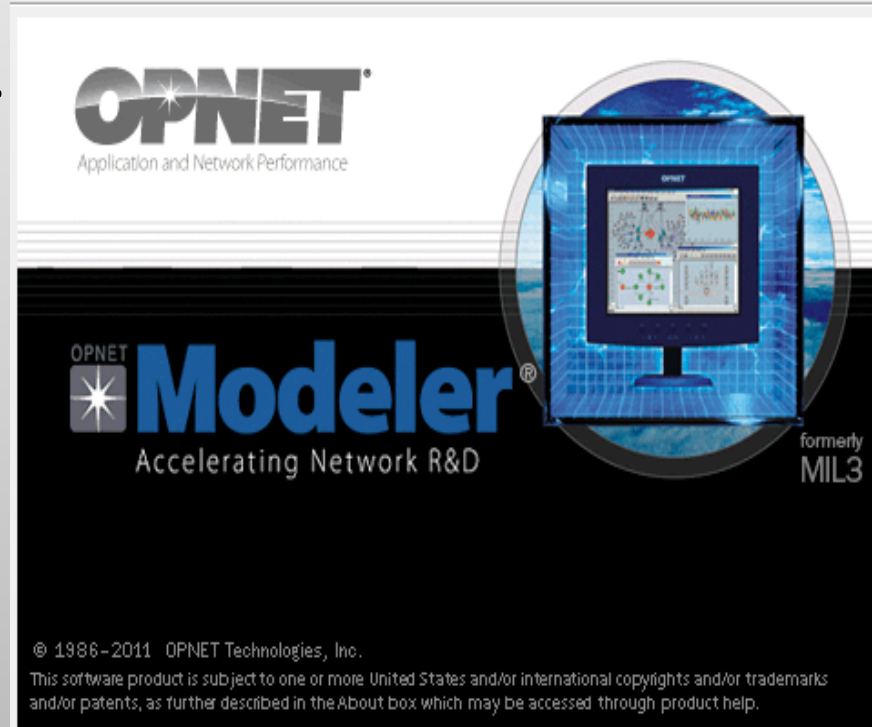
GPRS network OPNET model

- Before I started working with the GPRS OPNET model, I learned about the GPRS technology and how its works.
- Then, I started trying to compile the GPRS OPNET model developed for OPNET v. 10 using the latest OPNET v. 16.1.
- I began to compile the easiest elements of the GPRS model and I succeed in compile them.

GPRS network OPNET model

- I had a lot of errors and I tried to resolve the problems.
- I solved some of them but still did not succeed in correctly compiling two elements of the GPRS model:
  - Home Location Register (HLR)
  - Serving GPRS Support Node (SGSN)
- Searching OPNET tutorials and the Internet did not help to resolve the compiling issues.

Conclusion

- This internship gave me an opportunity to learn OPNET.
- OPNET is great software for simulating networks.
- I still do not know why some elements of the GPRS model did not compile even though I tried many solution by searching the Internet.
- Finally, this internship was a great opportunity for me to discover Vancouver and Canada.
- I appreciate the opportunity that was given to me by SFU and have enjoyed working at the Communication Network Laboratory (CNL).