Nano Innov Seminar

Tuesday June 27th 2013 at 14h00
Nano-Innov, Building 862, Amphi 33

LESLIE LAMPORT

Senior Scientist at Microsoft Corporation
Mountain View, CA, USA

Specifying Systems with Mathematics:
the TLA+ Language and Tools

A specification is a written description of what a system is supposed to do. Specifying a system helps us understand it. It's a good idea to understand a system before building it, so it's a good idea to write a specification of a system before implementing it.

Our basic tool for writing specifications is mathematics. Mathematics is nature's way of letting you know how sloppy your writing is. It's hard to be precise in an imprecise language like English or Chinese. In engineering, imprecision can lead to errors. To avoid errors, science and engineering have adopted mathematics as their language.

More info : http://www.lamport.org/

Everybody is welcome!

The speaker:

Leslie Lamport is an American computer scientist. Lamport is best known for his seminal work in distributed systems and as the initial developer of the document preparation system LaTeX. Professionally, Lamport worked as a computer scientist at Massachusetts Computer Associates from 1970 to 1977, SRI International from 1977 to 1985, and Digital Equipment Corporation and Compaq from 1985 to 2001. In 2001 he joined Microsoft Research in Mountain View, California. Lamport's research contributions have laid the foundations of the theory of distributed systems.
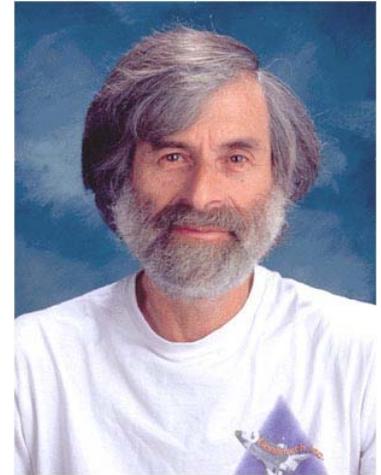
Summary:

TLA stands for the Temporal Logic of Actions, but it has become a shorthand for referring to the TLA+ specification language and the PlusCal algorithm language, together with their associated tools. TLA+ is based on the idea that the best way to describe things formally is with simple mathematics, and that a specification language should contain as little as possible beyond what is needed to write simple mathematics precisely. TLA+ is especially well suited for writing high-level specifications of concurrent and distributed systems.

PlusCal is an algorithm language that, at first glance, looks like a typical tiny toy programming language. However, a PlusCal expression can be any TLA+ expression, which means anything that can be expressed with mathematics. This makes PlusCal much more expressive than any (real or toy) programming language. A PlusCal algorithm is translated into a TLA+ specification, to which the TLA+ tools can be applied.

The principal TLA+ tools are the TLC model checker and TLAPS, the TLA+ proof system. All the tools are normally used from the Toolbox, an IDE (integrated development environment). Go to the TLA home page to find out more about TLA.

Local Contact : Belgacem BEN HEDIA (DACLE/LaSTRE) belgacem.ben-hedia@cea.fr

Nano-Innov Seminar

Nano-Innov access (GPS N 48°42,736' - E 02°11,708')
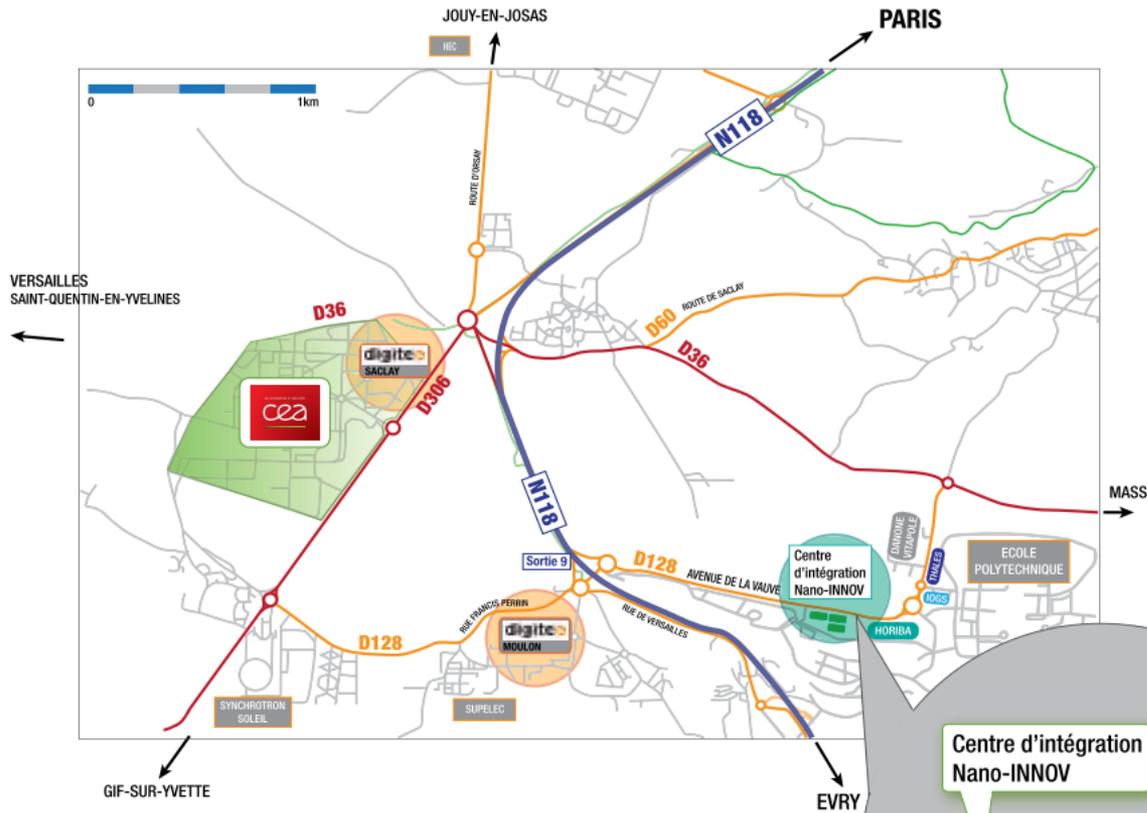
Nano-INNOV Integration Center
"Next to HORIBA building"
Avenue de la Vauve
91120 PALAISEAU
Tel : +33 (0)169082501

Public transport:
- RER B (direction: Saint-Remy-les-Chevreuse) : *Massy-Palaiseau* or *Le Guichet* stations, RER C or TGV : *Massy-Palaiseau* station
- From *Massy-Palaiseau*, bus line 91.06 (Massy ← → Saint-Quentin-en-Yvelines) *Thomson-Corbeville* stop.
- From *Le Guichet* : pedestrian itinerary ≈ 15 minutes (300 steps)

**The amphitheater is located in N2 building,
In front of the reception desk.**