

# **A short presentation of the Ecole Polytechnique – Thales chair « Engineering of Complex Systems »**

Ecole Polytechnique

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# What is Ecole Polytechnique (X)?



*Gaspard Monge  
Founder of Ecole  
Polytechnique in 1794*



*French National Day*



*Defence of Paris (1814)*



Ranking	2007	2006
Harvard	1	1
Cambridge	2	2
Imperial College	5	9
CalTech	7	7
MIT	10	4
ENS Paris	26	18
<b>Ecole Polytechnique</b>	<b>28</b>	<b>37</b>
ETH Zurich	42	24
TU Delft	63	86
EPFL	117	64
Université Paris 6	132	93
ENS Lyon	157	72
RWTH Aachen	182	172
Université Strasbourg 1	184	161

*Times Higher Education Supplement (THES)*

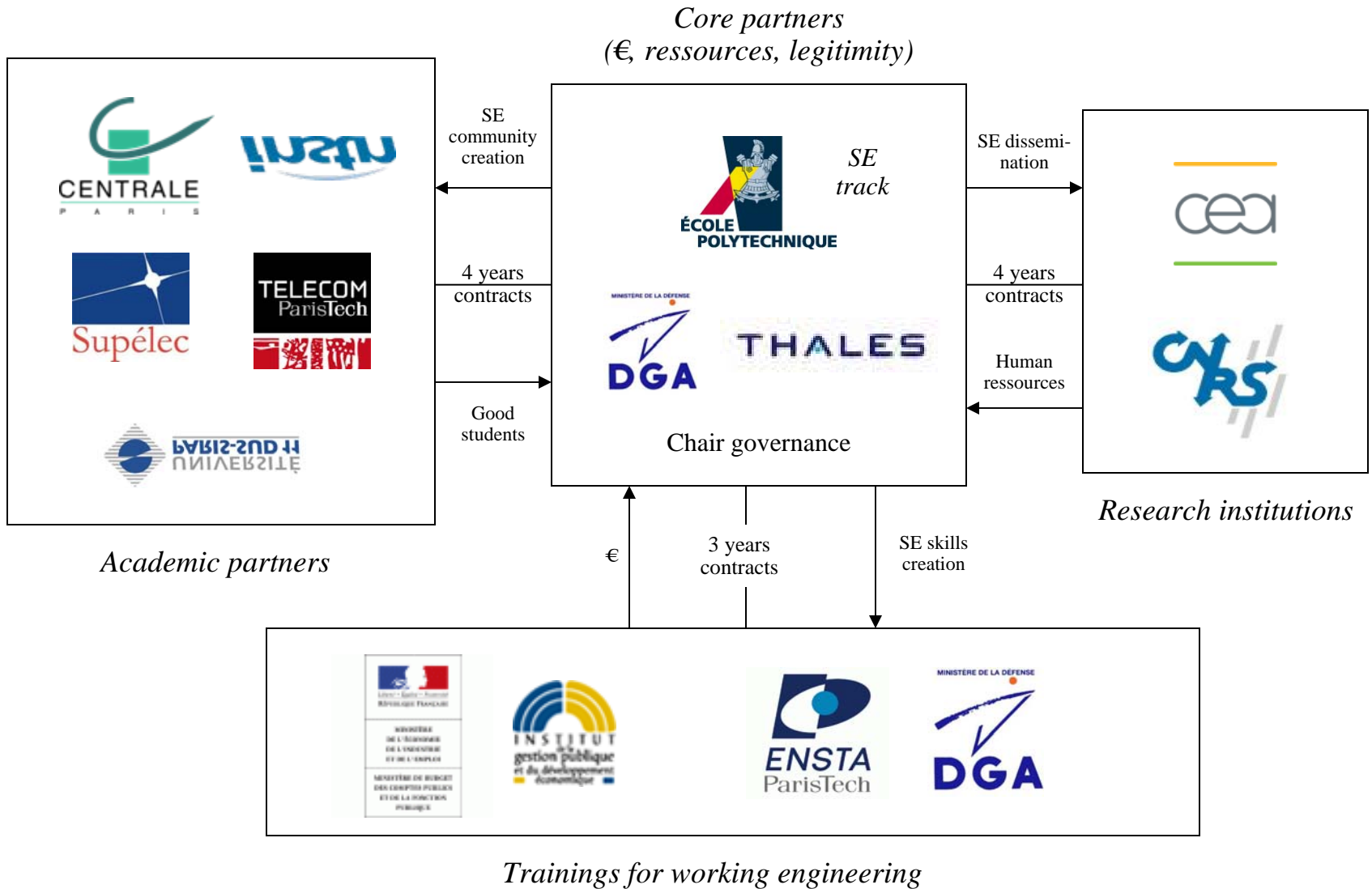
*Ecole Polytechnique appears in first position in almost every ranking for French Universities and « Grandes Ecoles » published regularly in French periodicals (30 % of the top 40 French companies are chaired by engineers of Ecole Polytechnique)*

# Objectives & activities of the chair

- **Objective:** *develop systems engineering* within Ecole Polytechnique academic & industrial environment
- **Scope:** software dominant systems (embedded systems, information systems, control & command systems)
- **Training**
  - *For young junior architects:* master program « Design & Management of Complex Software Systems » (2 years)
  - *For working engineers:* certification programs in « Enterprise Architecture » (open) and in « Systems Architecture » (in preparation)
- **R&D**
  - System modeling and optimization
  - System verification & validation
- **Dissemination**
  - Academic (5) & industrial (2) partnerships
  - SE competence referential definition (for the industrial cluster System@tic)
  - Seminars, workshops & conferences (CSDM'10)

3 main types of activities

# Main issues & interactions



# One of our main outlet



Chair Ecole Polytechnique – Thales  
« Engineering of Complex Systems »

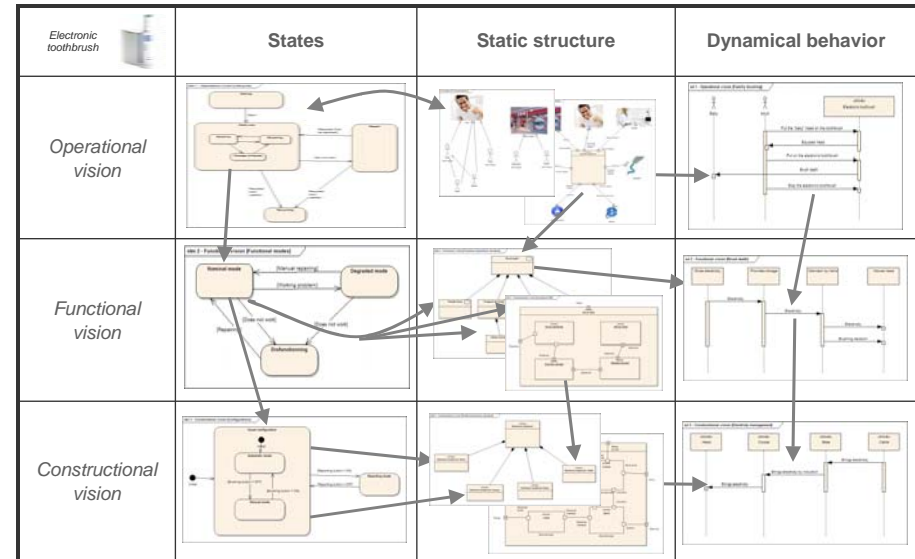


## Elements of complex systems architecture

Daniel Kroh  
January 2009



## Systems architecture description Example of a system model (2)



Elements of complex systems architecture – P. 51



## Panorama d'ensemble

Journée 1	Introduction générale	P. 3
	1er thème Les principes de l'architecture système	P. 7
Journée 2	2ième thème L'ingénierie des exigences	P. 66
	3ième thème Architecture opérationnelle	P. 100
Journée 3	4ième thème Architecture fonctionnelle et organique	P. 149
	5ième thème Quelques thématiques avancées	P. 166
	Conclusion	P. 205

*Main outlet: an « operational »  
complete Model Driven  
Architecture methodology*