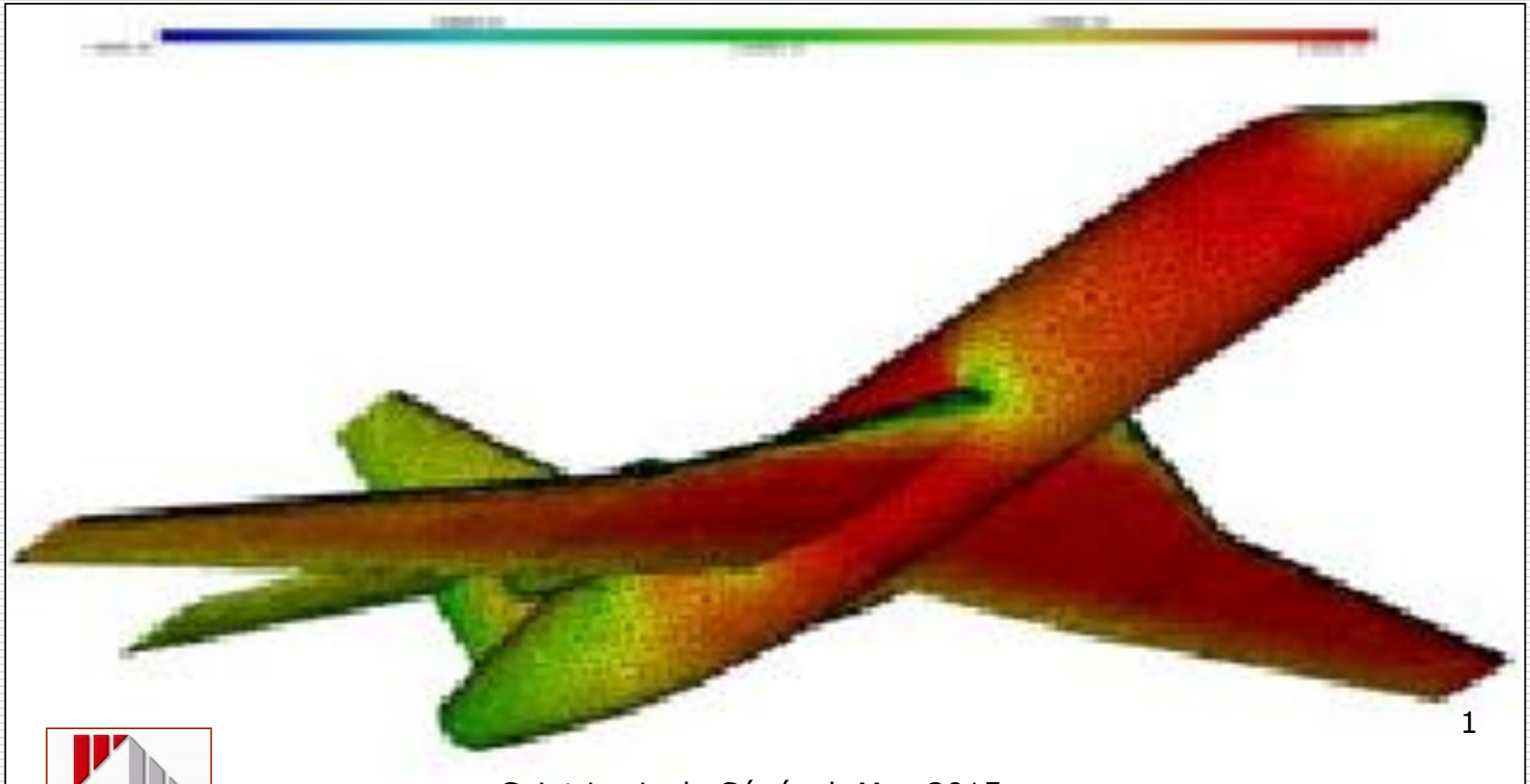
Building scientific computing capacities is an asset for development

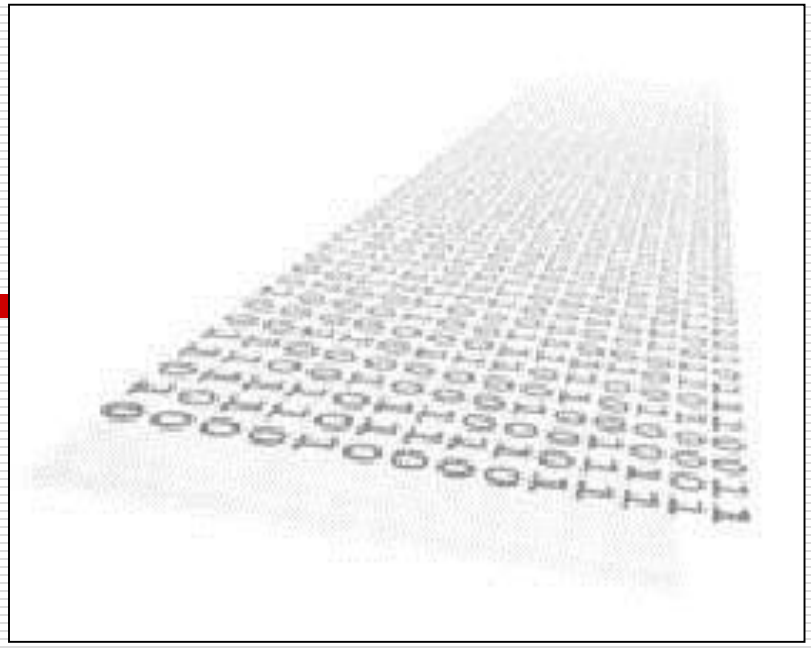
Mohamed JAOUA



الجامعة الفرنسية في مصر
UNIVERSITÉ FRANÇAISE D'ÉGYPTE

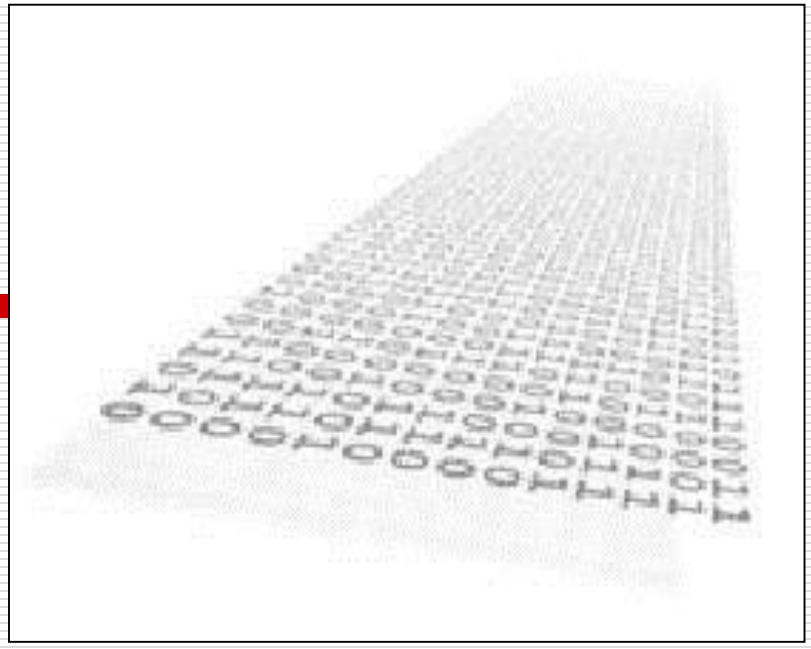
Saint Louis du Sénégal, May 2015

Computing



Computing

- **Computers capacities are rising sharp**
  - **TeraFlops = a million billions Flop/s**



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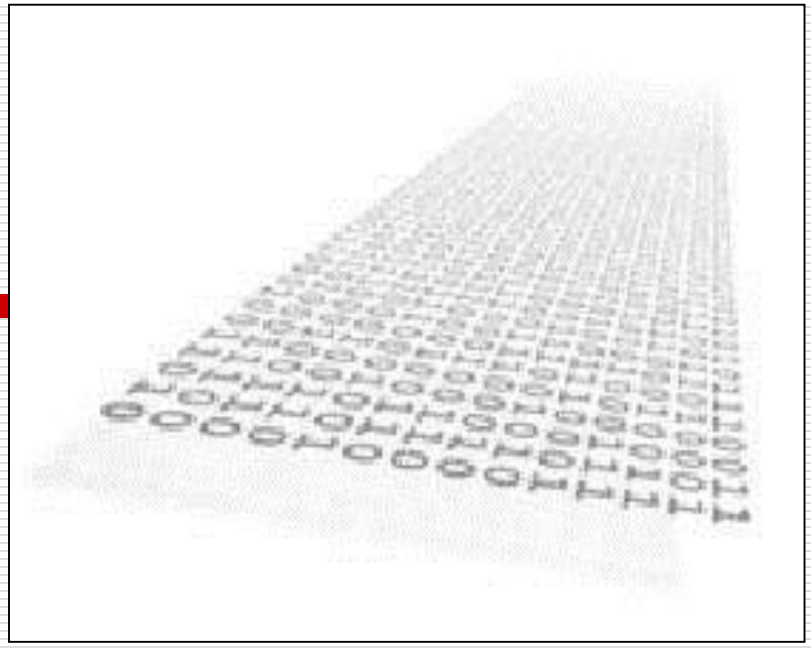
  - The MB memory is 1,3 million times cheaper than it was 30 years ago



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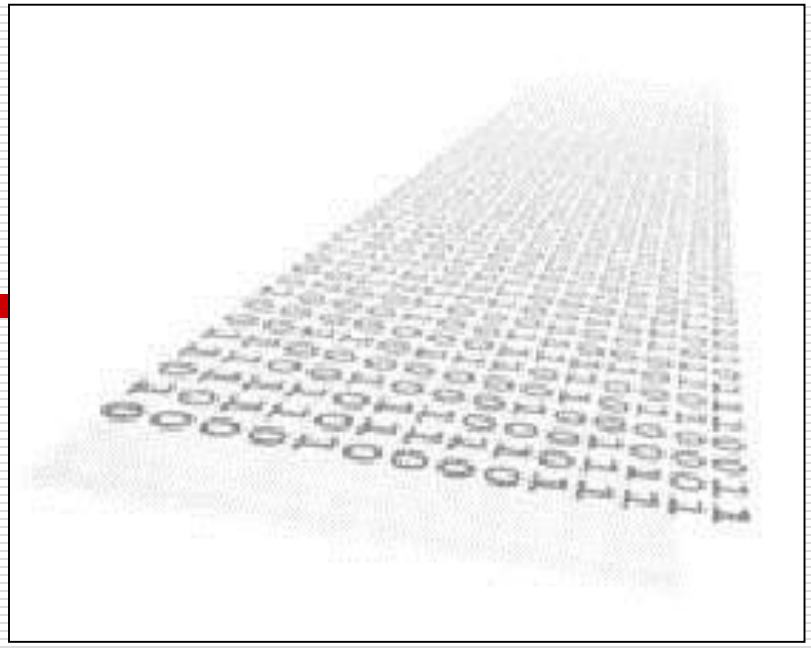

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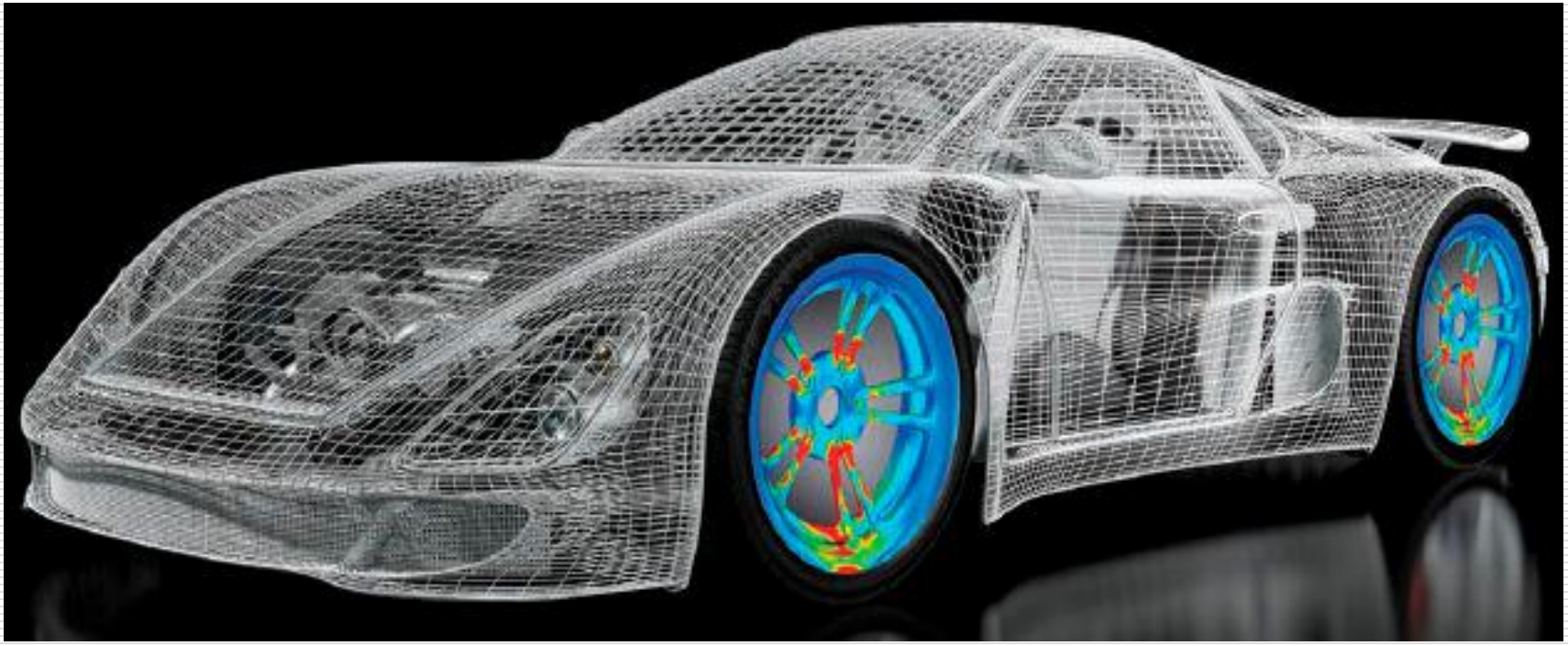

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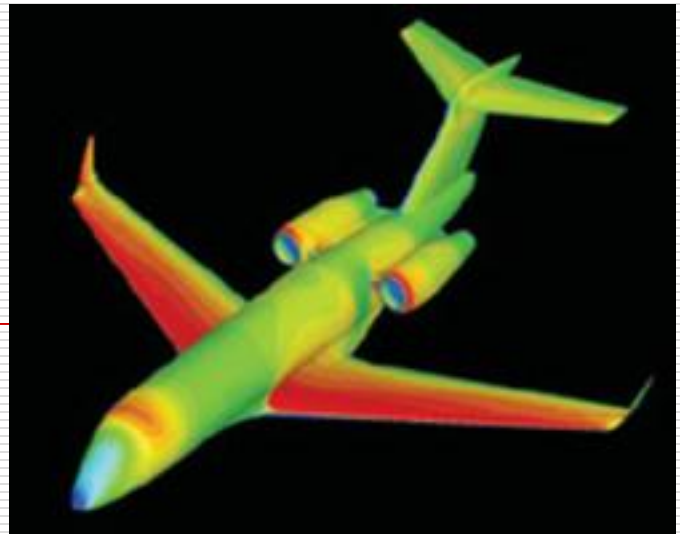

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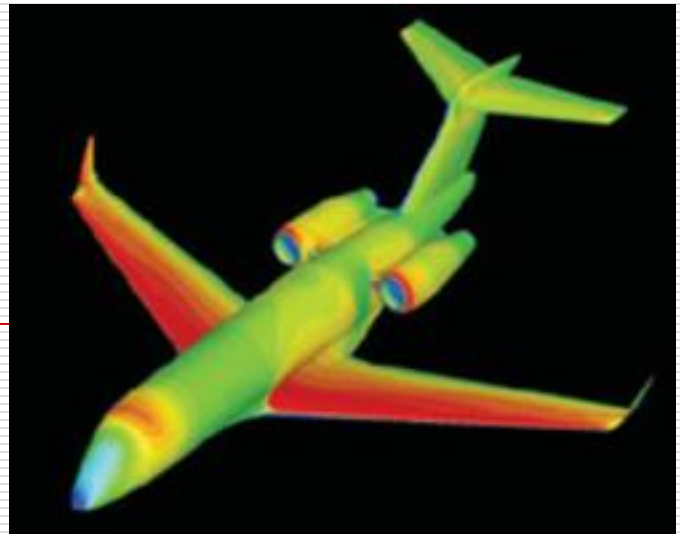

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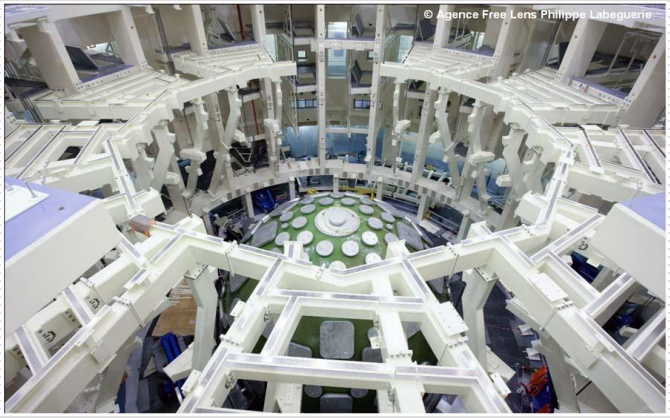

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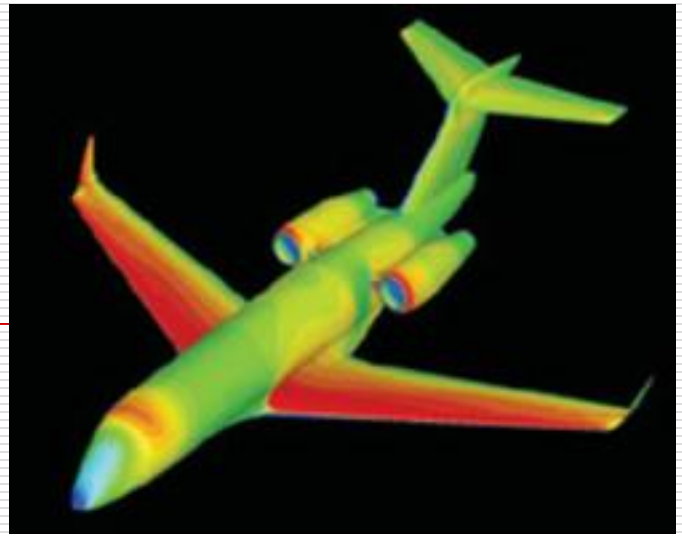

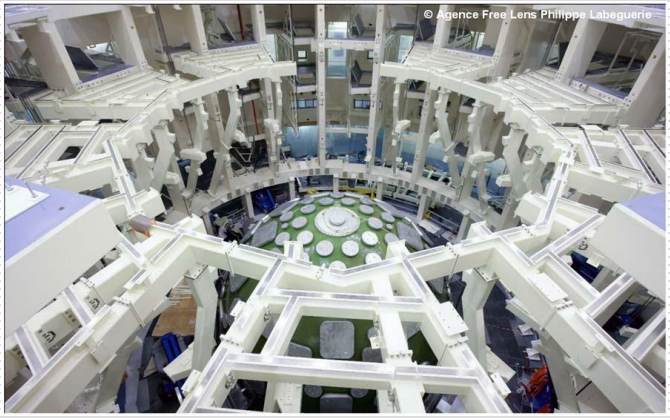

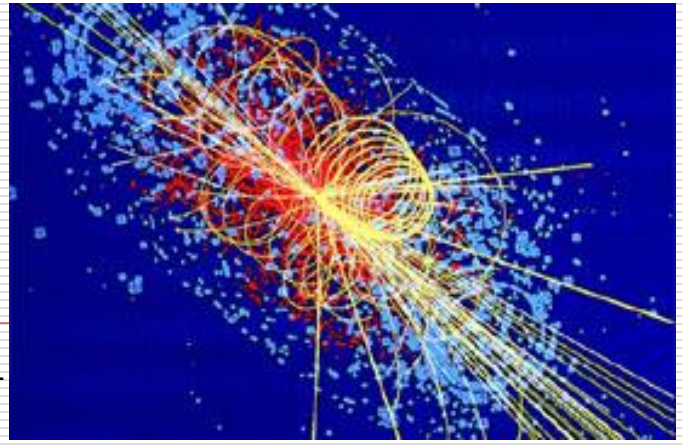

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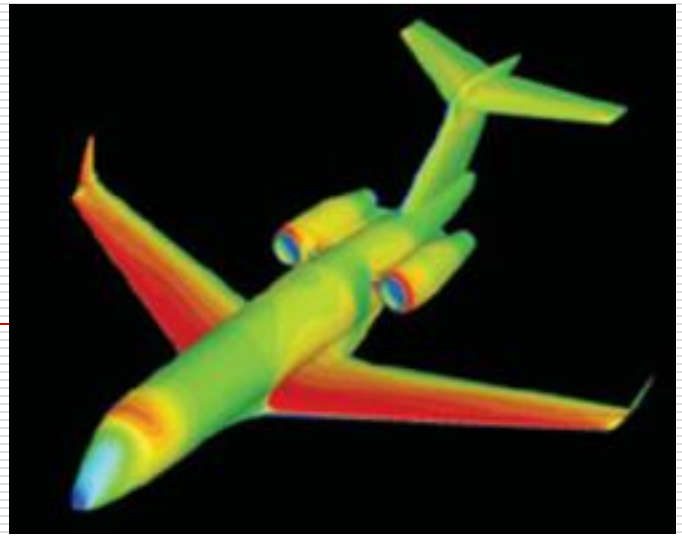

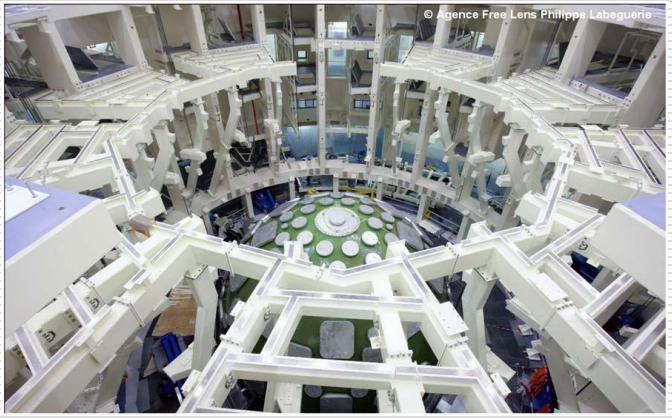

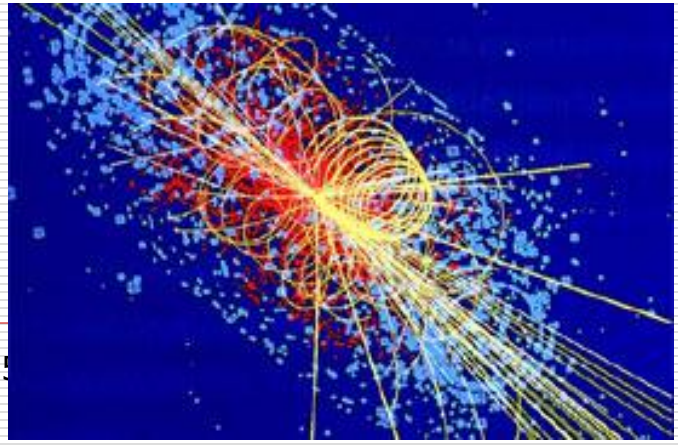

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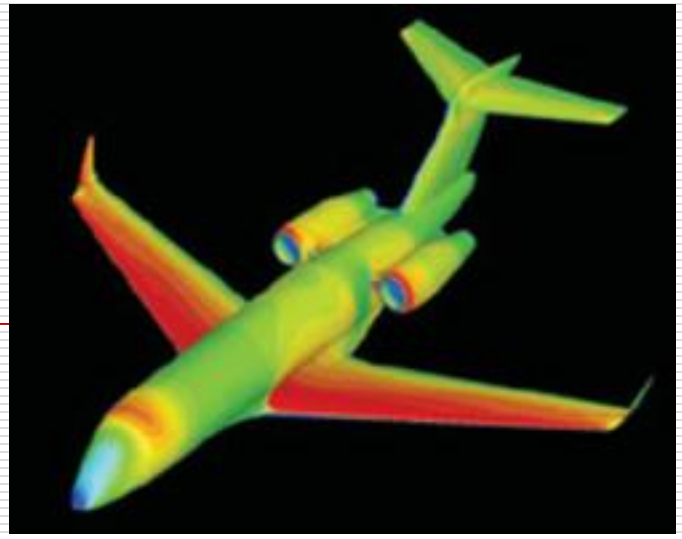

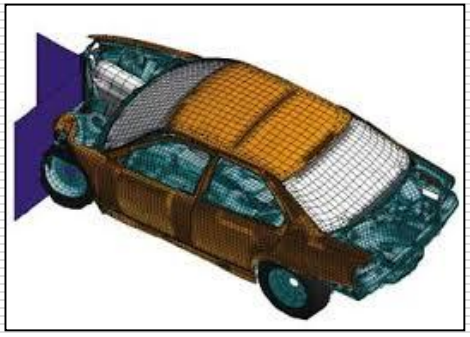

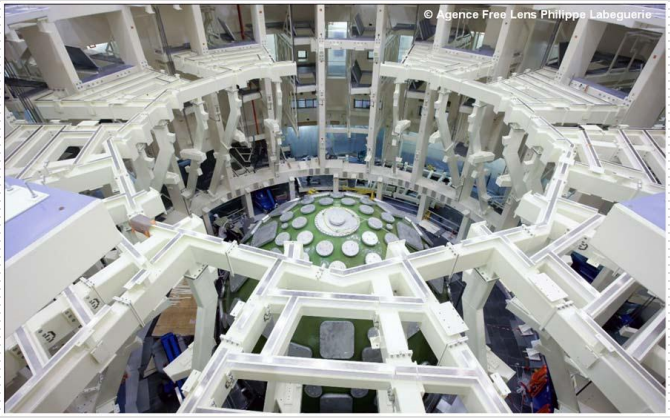

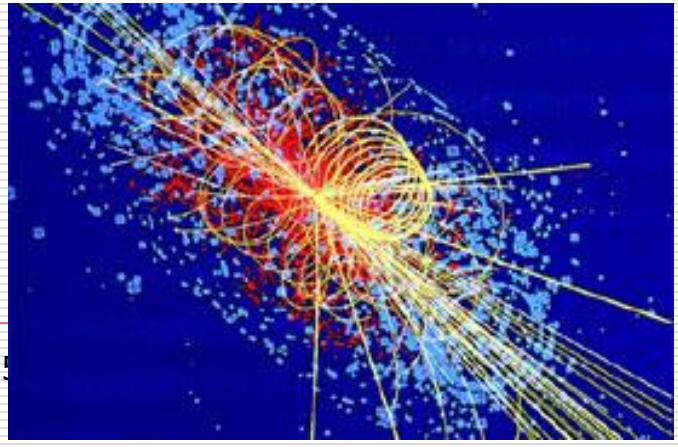

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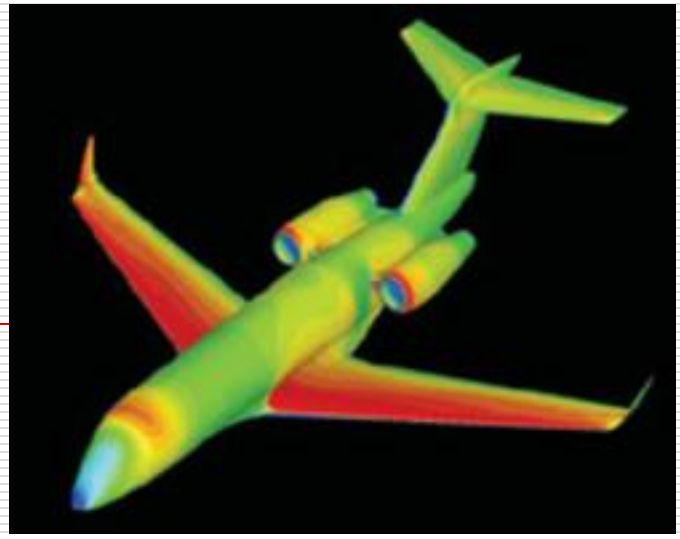

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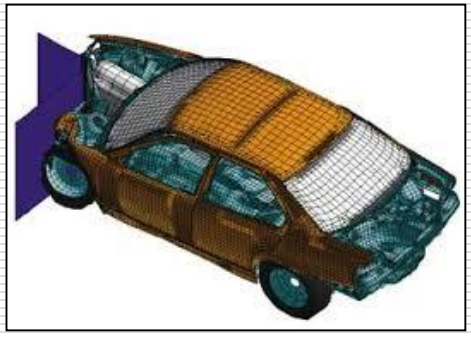

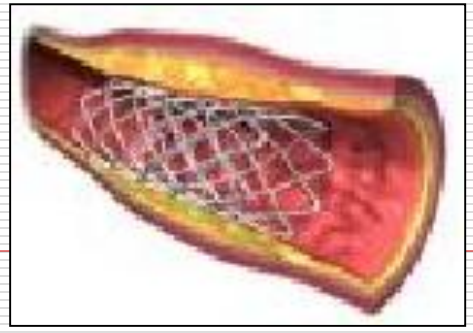

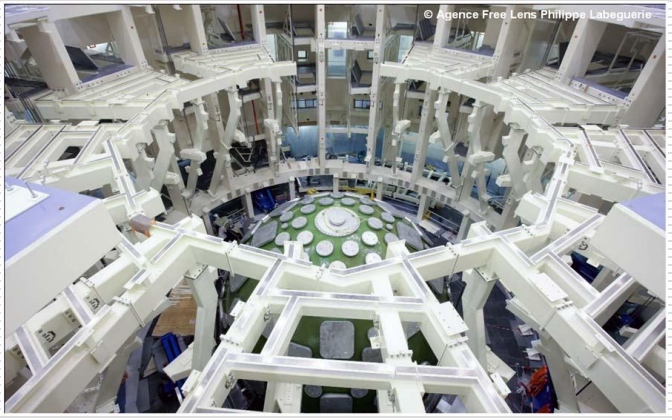

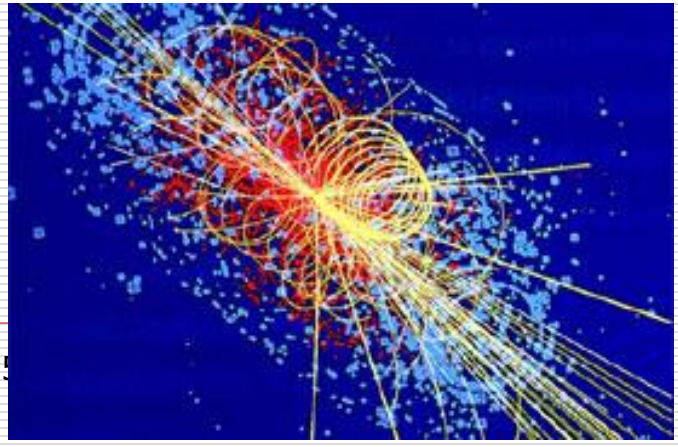

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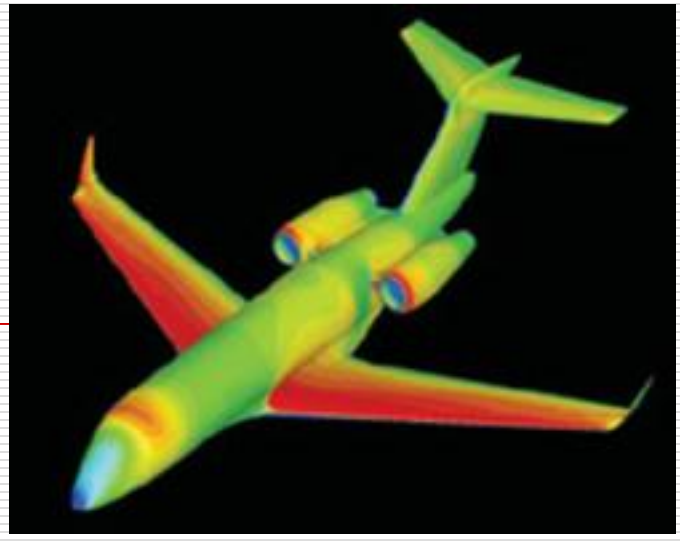

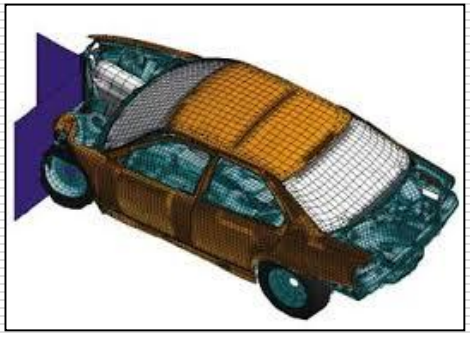

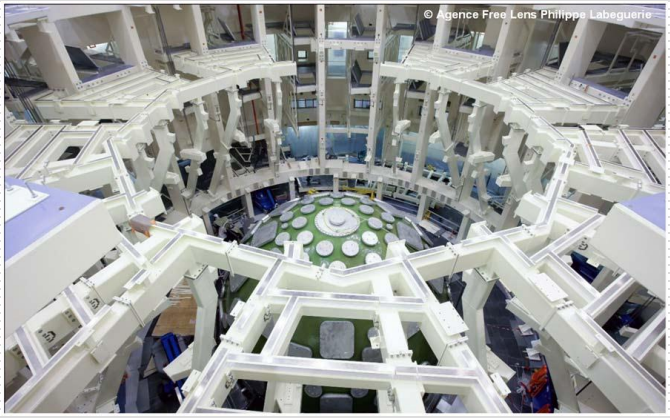

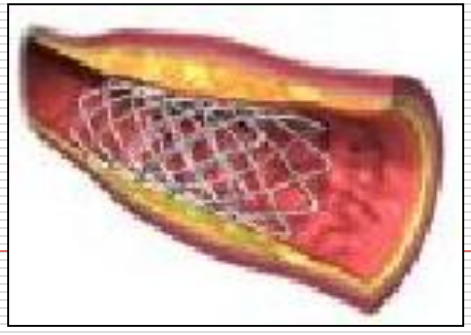

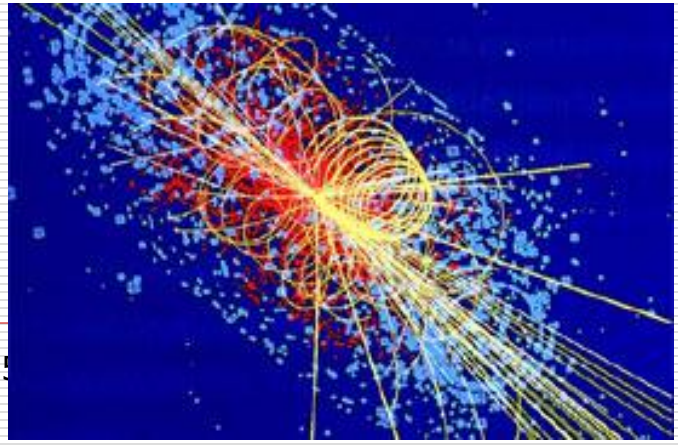

Is this new economy fit for DC ?

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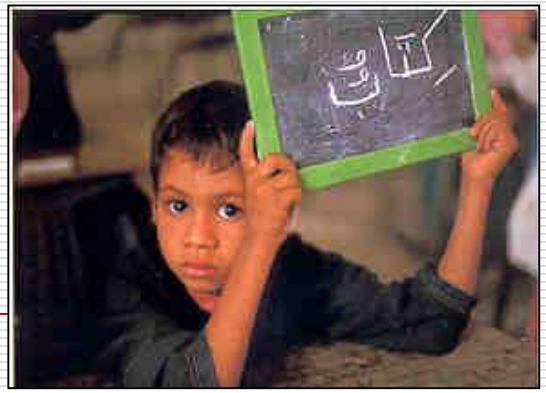

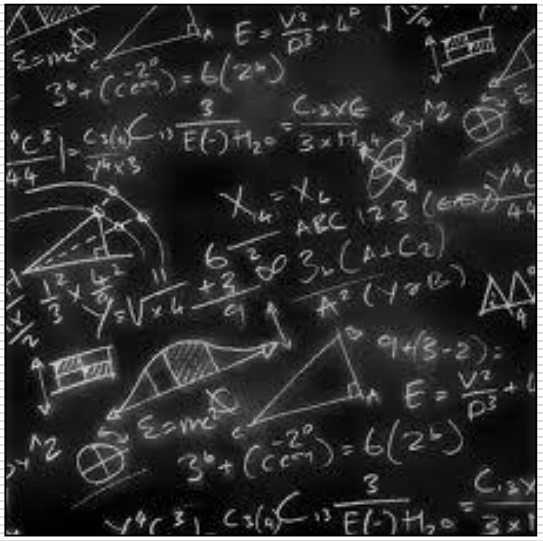

- **What does it need ?**
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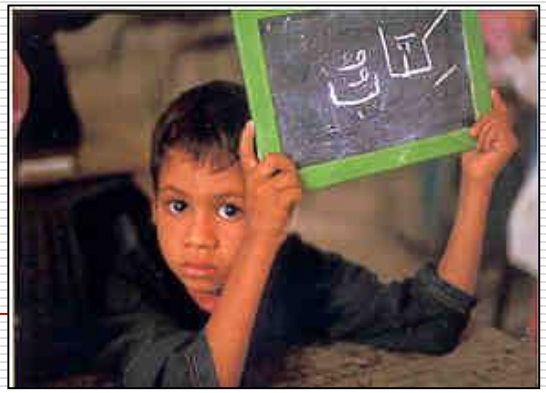

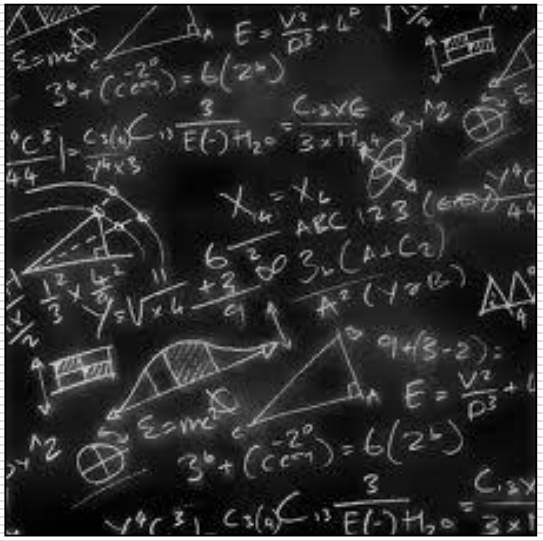

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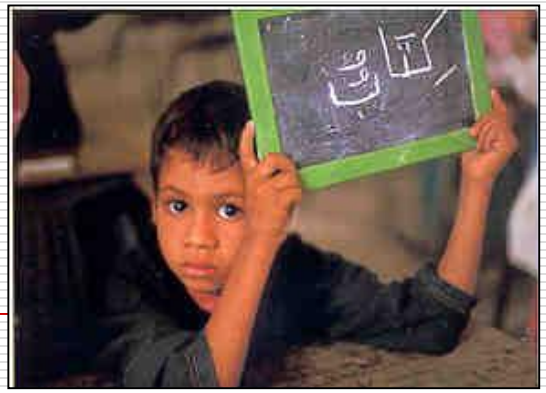

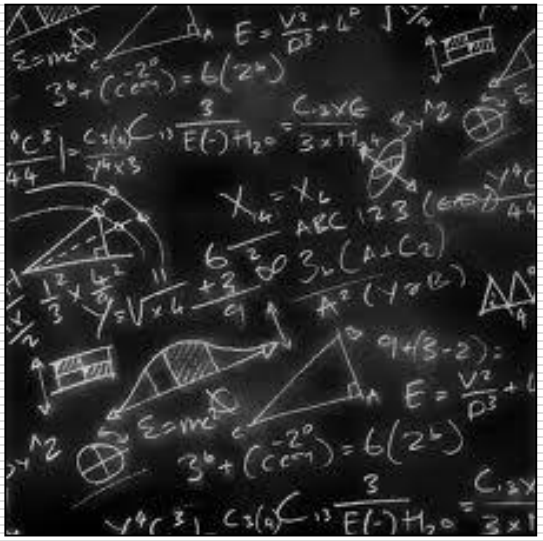

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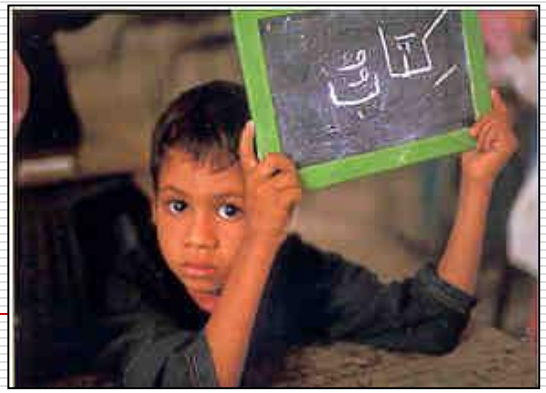

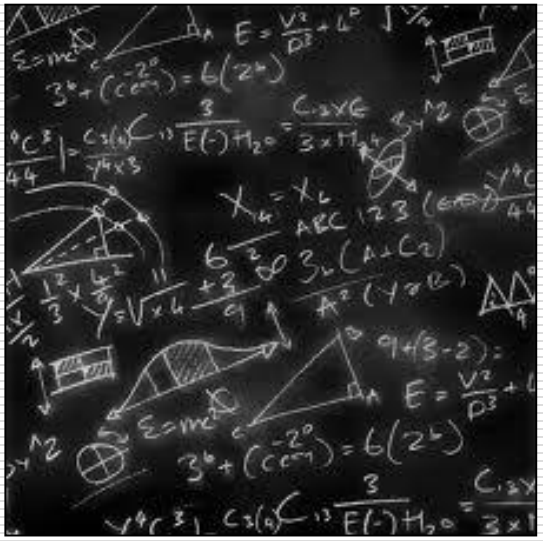

- **What does it need ?**
  - A properly educated population
  - Skills in Maths and computing
  - Computers … but they are cheap ☺
- **New paradigms for development have upsurged thanks to**
  - The digital revolution
    - Modelling has become the core
    - Targets are rapidly moving from high tech applications to every day ones
    - The digital gap is easier to bridge than the industrial one was

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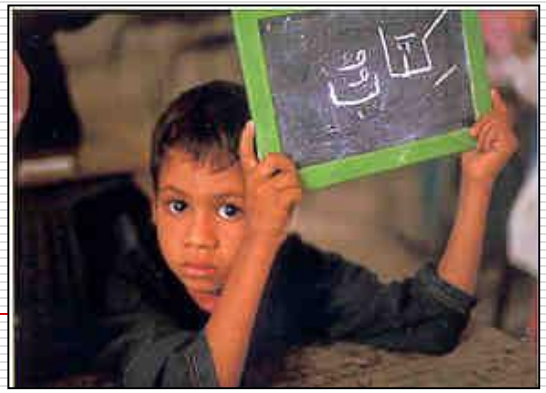

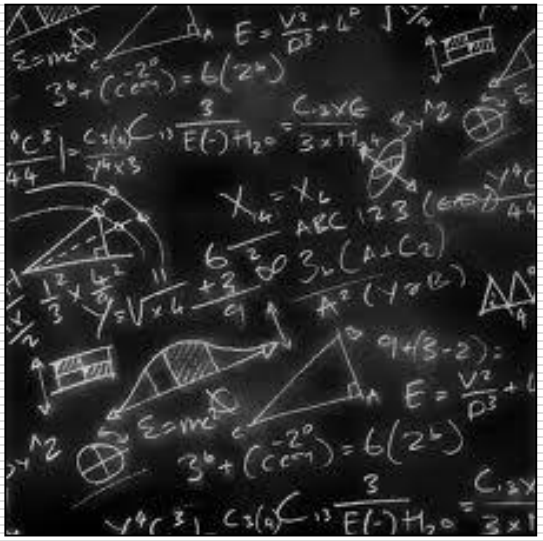

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  - The globalization
    - Industrial production is no longer local
    - Technologies needs to be processed in any place at their current level

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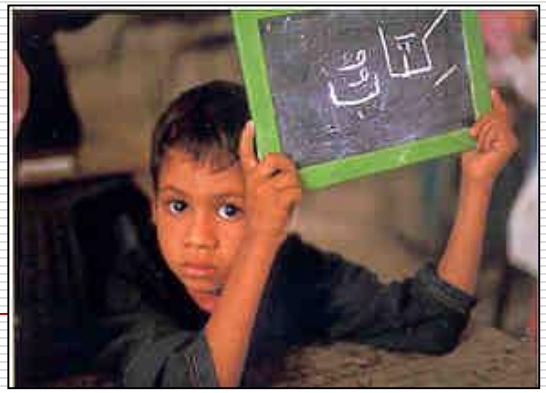

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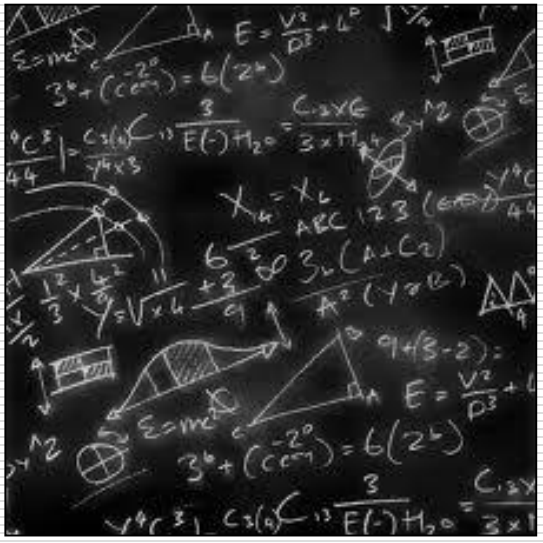

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- **Which gives a second chance to DCs**
  - Required skills are equally new for all
  - And a new deal : those who master the bases can compete, the game is open

Can a DC really compete ?
A mufflers story …

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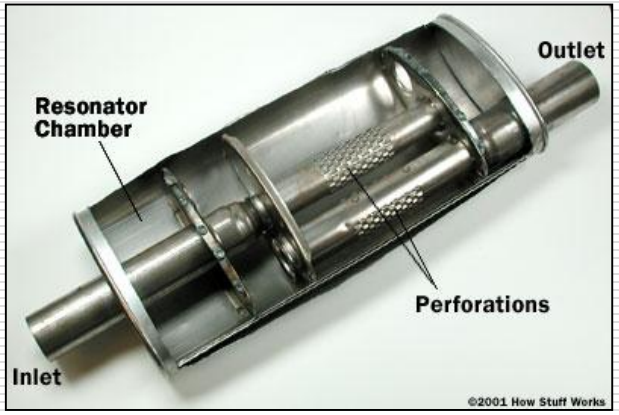

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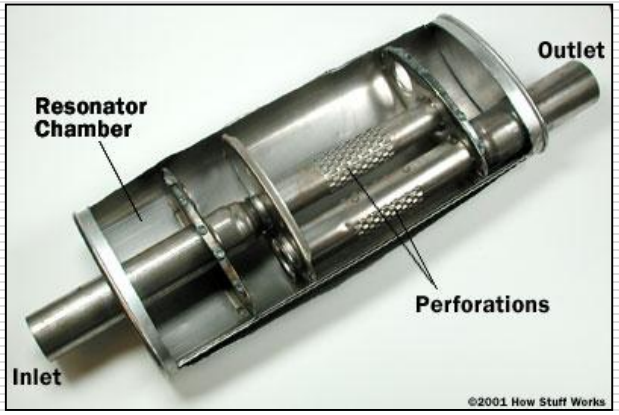

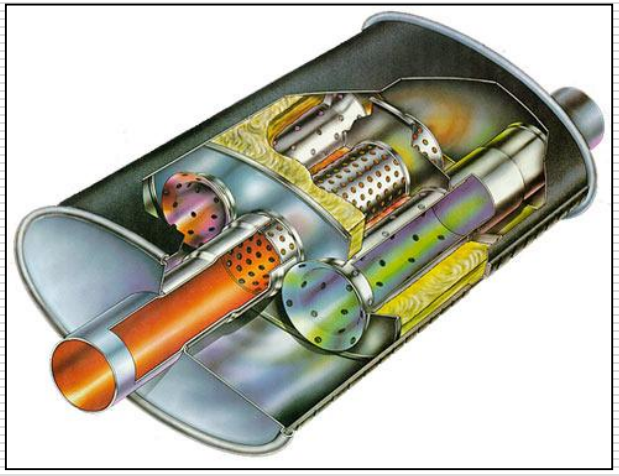

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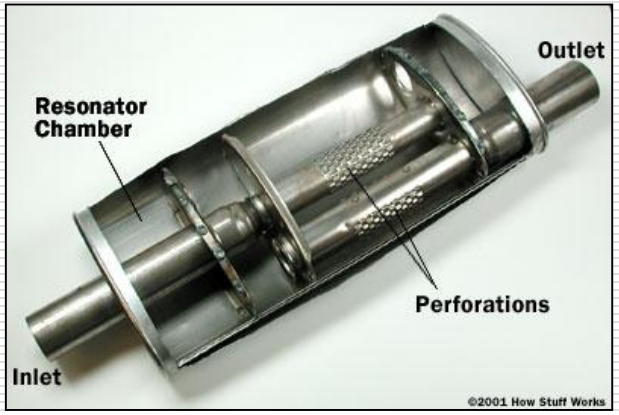

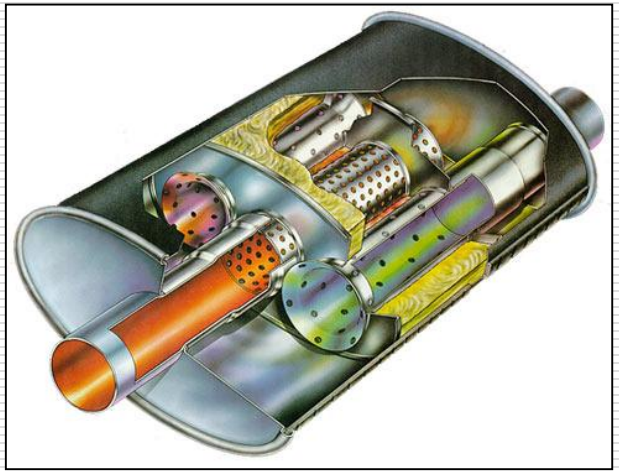

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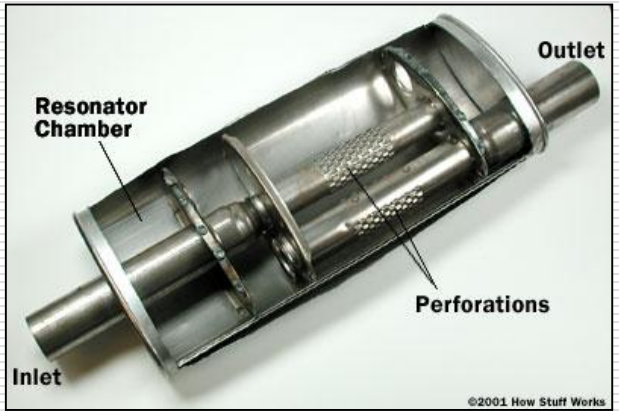

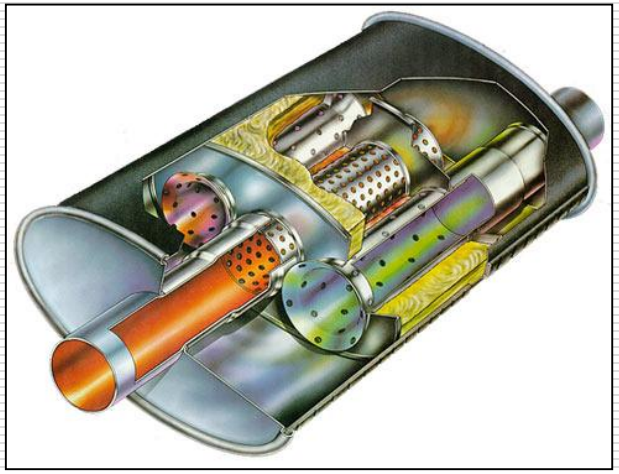

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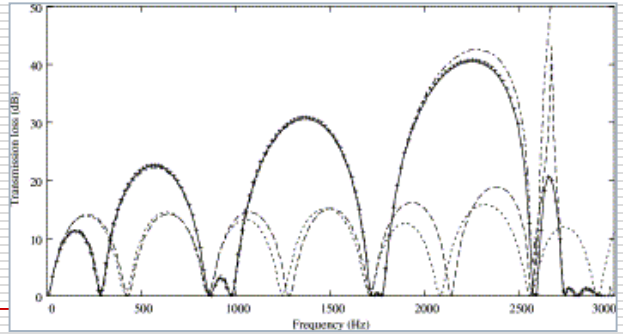
The mufflers story … continued



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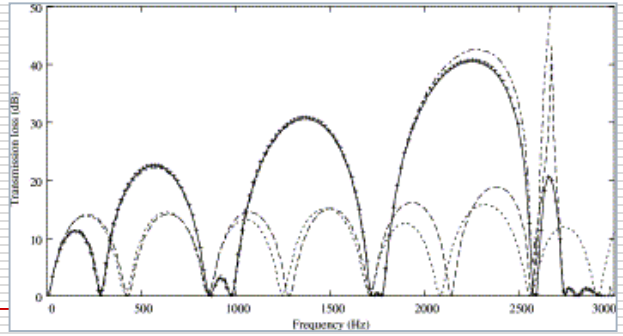

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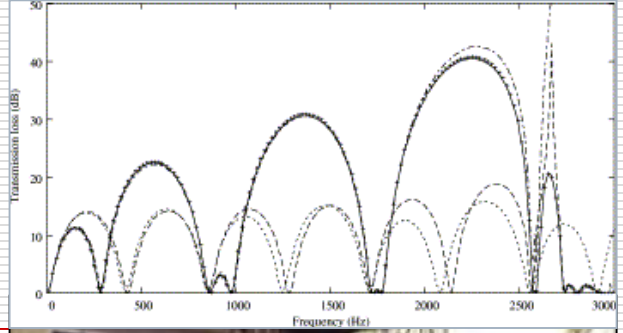

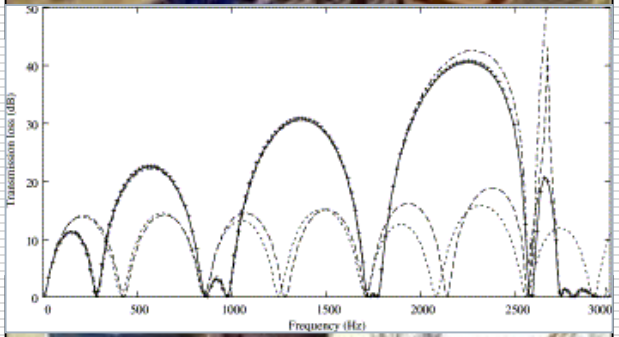

Can a DC compete ?
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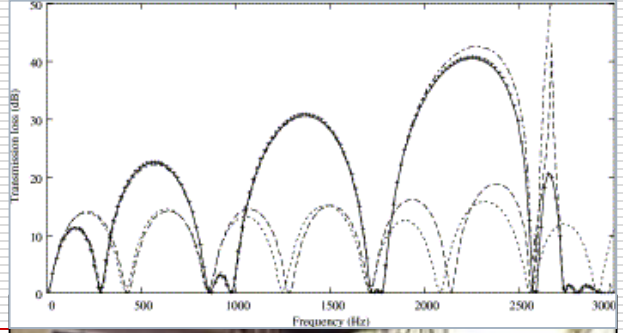

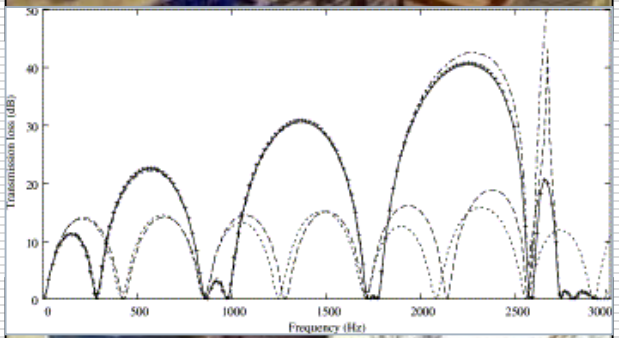

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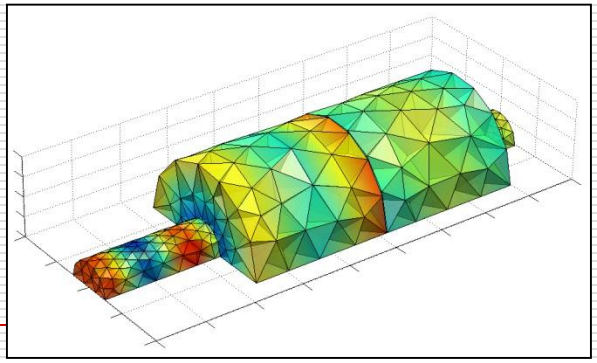

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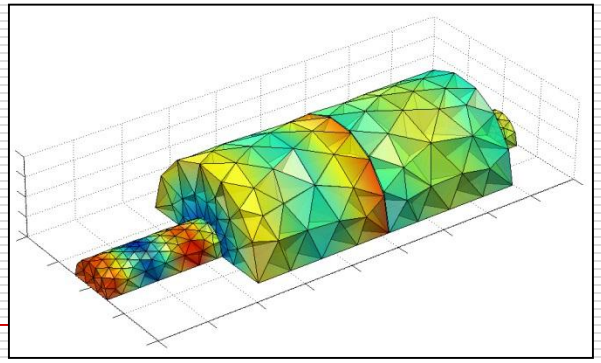

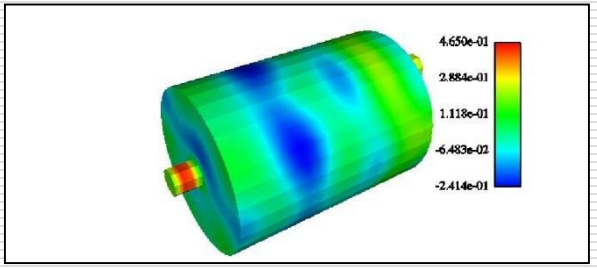

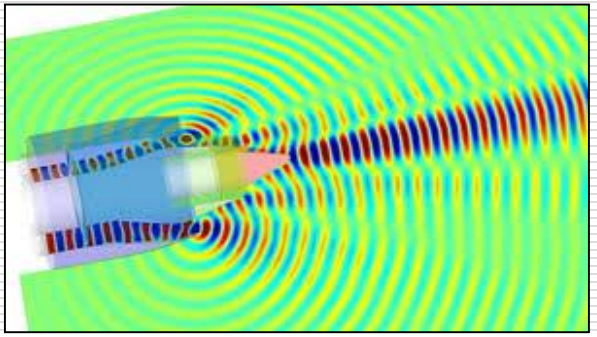

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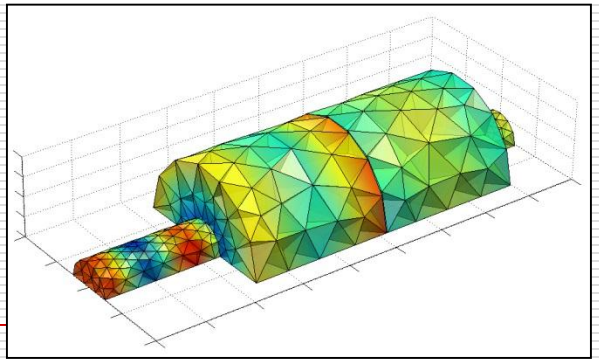

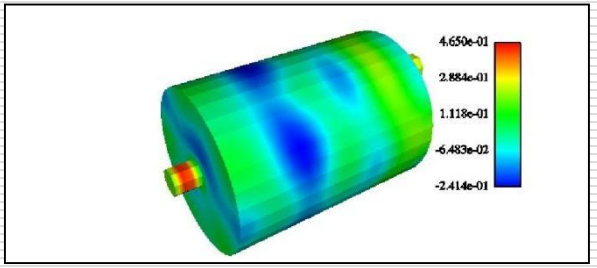

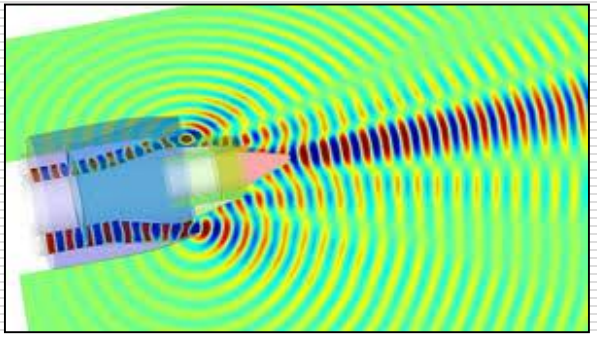

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Can a DC compete ?
… a tunisian experience

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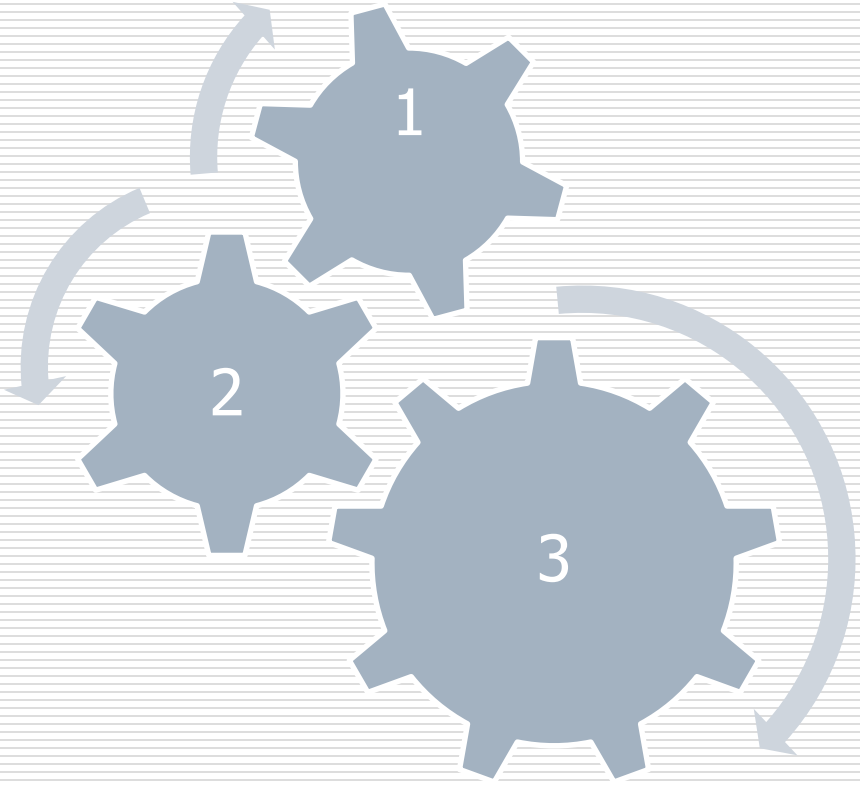
What made things work



Can a DC compete ?
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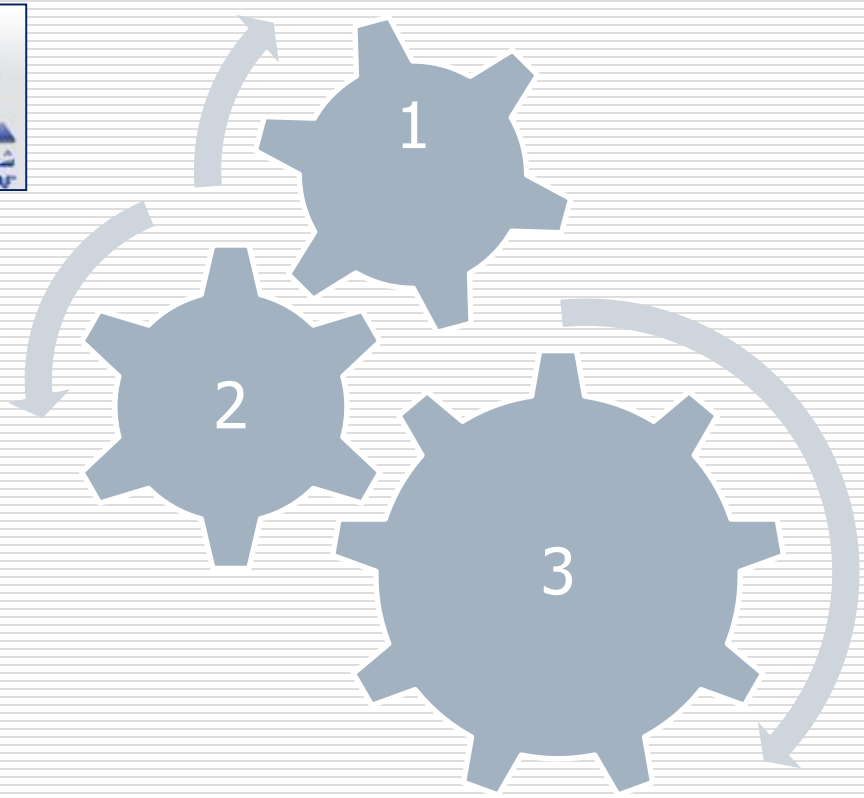

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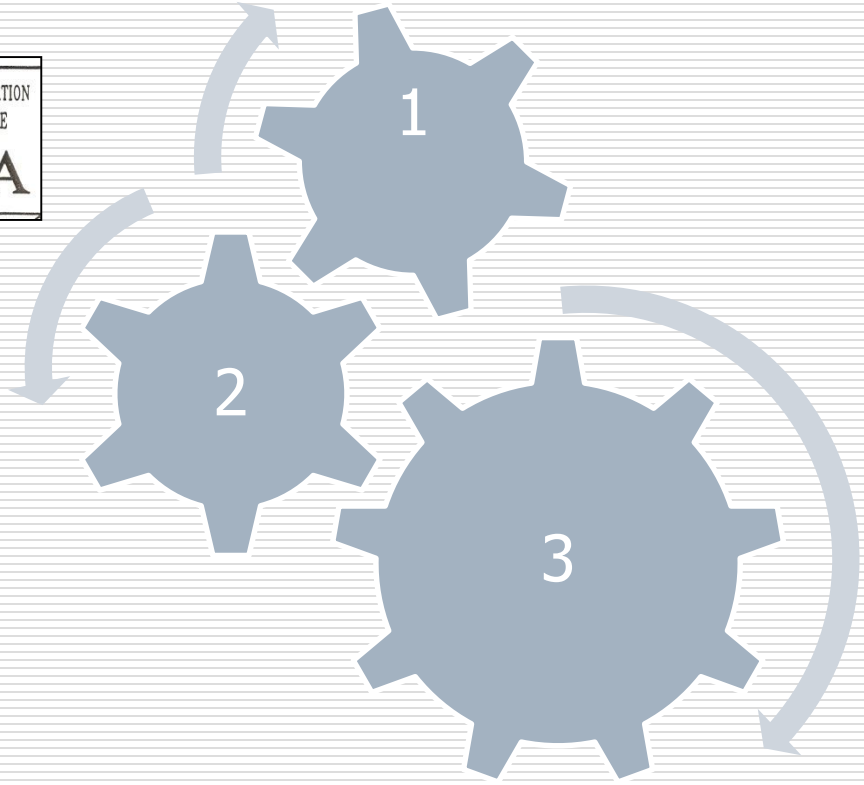
SOCIETE D'ETUDE ET DE REALISATION DES COMPOSANTS AUTOMOBILE
ERECA



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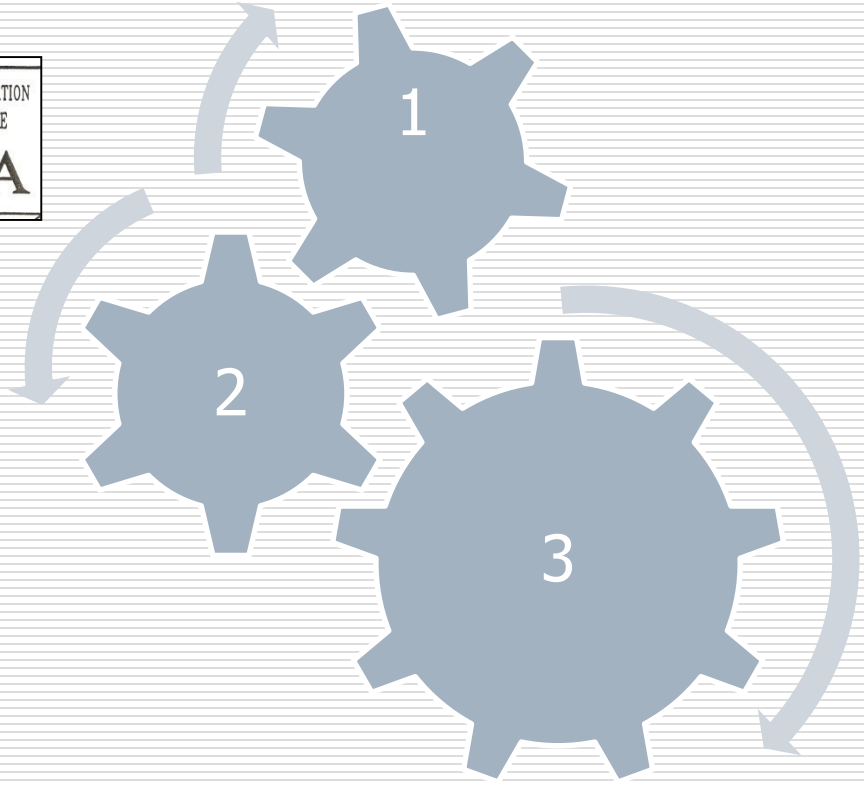

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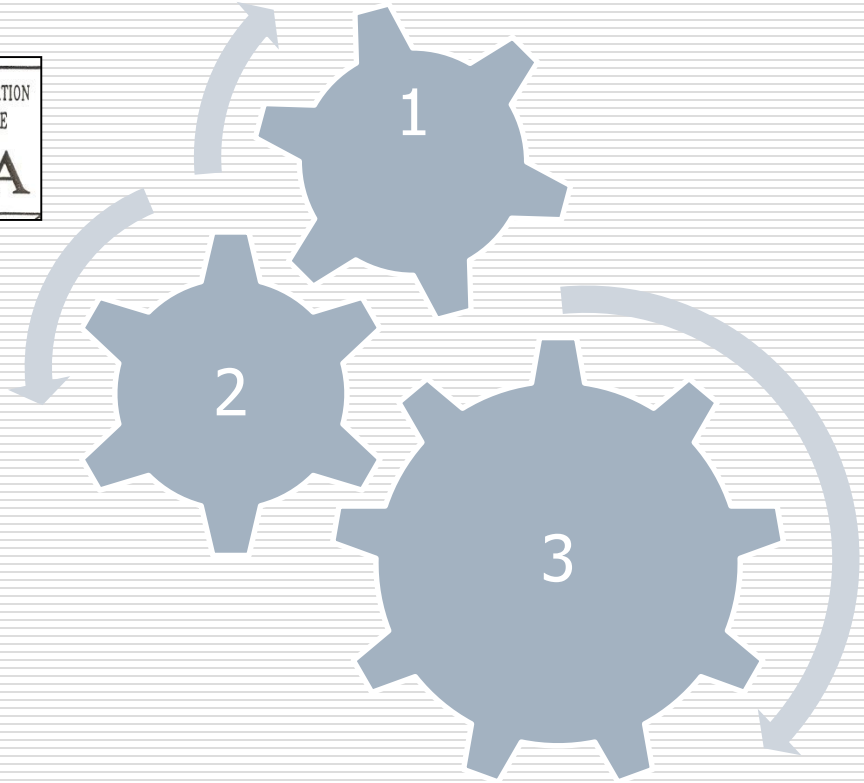

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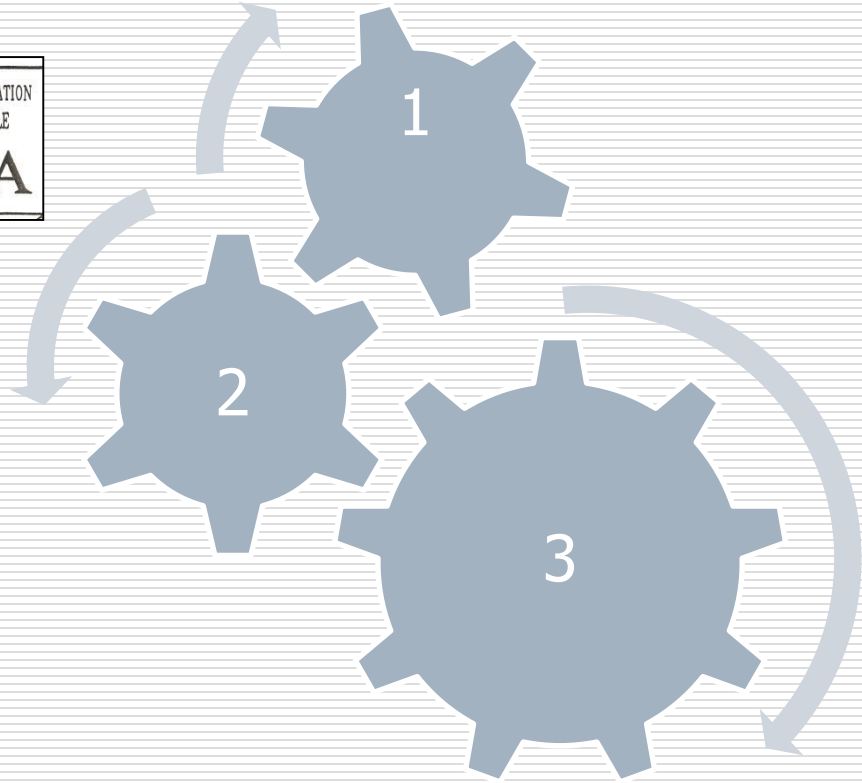

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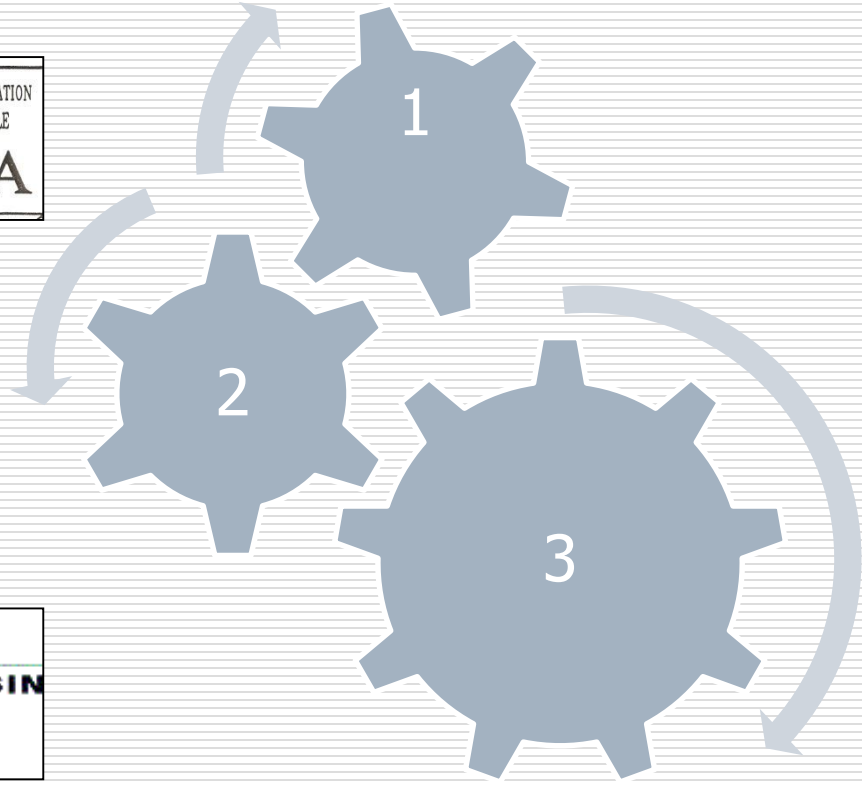
3. Already available skills in numerical modelling

E N I T LAMSIN



Building capacities in numerical modelling …

- **1983-2003 : The ENIT-LAMSIN**
  - A « built from scratch » Applied Math laboratory
    - Relying on a serious mathematical background however
  - 80 researchers : 30 PhDs,12 Professors, dozens of PhD students
  - Fine publication records in international journals
  - Master and Doctoral School in Applied Maths
- **Gained an regional role, and an international recognition**
  - UNESCO Chair « Maths and development » - awarded 2002
  - AUF regional Excellence Pole (2003)
  - Research teams associated to INRIA and CNRS
- **An indeed international place**
  - Collaborative research on mutual interest topics
  - Co-advised PhD theses
  - Conferences and networks (TamTam, PICOF, CARI, Lirima)

Capacities building: Elements of an heuristic strategy

- **Priorities : Research vs Education ?**

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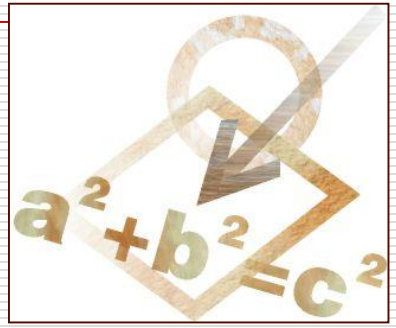
- **And finally, better have a little bit luck ☺**

A couple of lessons we learnt

- **How to deal with thematic transfers ?**

A couple of lessons we learnt



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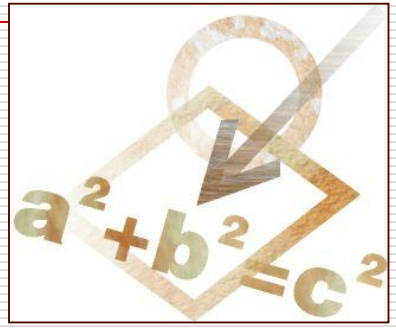

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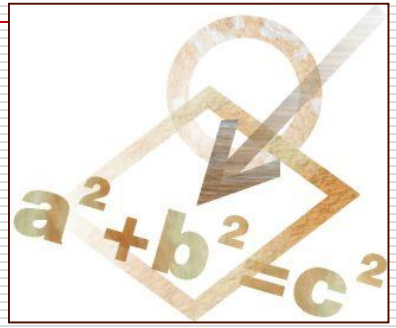

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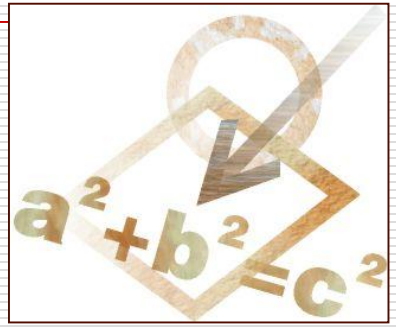

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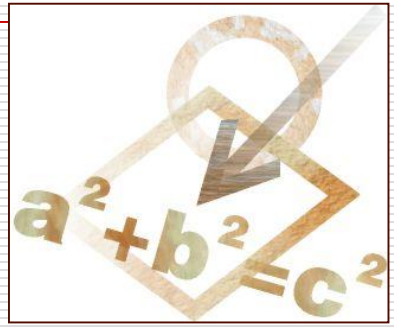

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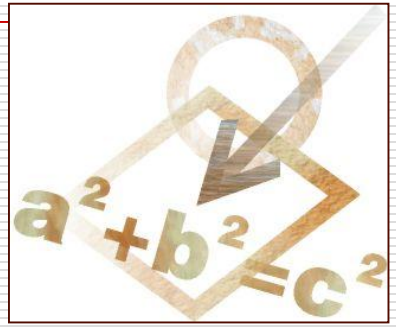

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- **Governance is a crucial issue for the future**
  - Scientists should make the scientific decisions
  - Capacities buiding need « sustainable » scientists, broad vision politicians, and overall a social control

Thank you for your attention …