Centre de Calcul de l'Université de Bourgogne

RE-COOP #2.2
31st Sept. 2015

Guillaume Lemaître
guillaume.lemaitre@udg.edu

Université de Bourgogne

1. Preface
   - Achtung!!!
   - What do we try to solve?
2. The CCUB
3. Case Study
4. Requirements
5. And the Future

Preface
Achtung

What it will be about and will not be about ...

- ~~Tutorial: "How to use the computer cluster of the UB"~~
- "Do we do the right thing?"

Preface
Achtung

What it will be about and will not be about ...

- ~~Tutorial: "How to use the computer cluster of the UB"~~
- "Do we do the right thing?"

Why at RE-COOP?

- The right persons: PhDs and permanents

Preface
Achtung

What it will be about and will not be about ...

- ~~Tutorial: "How to use the computer cluster of the UB"~~
- "Do we do the right thing?"

Why at RE-COOP?

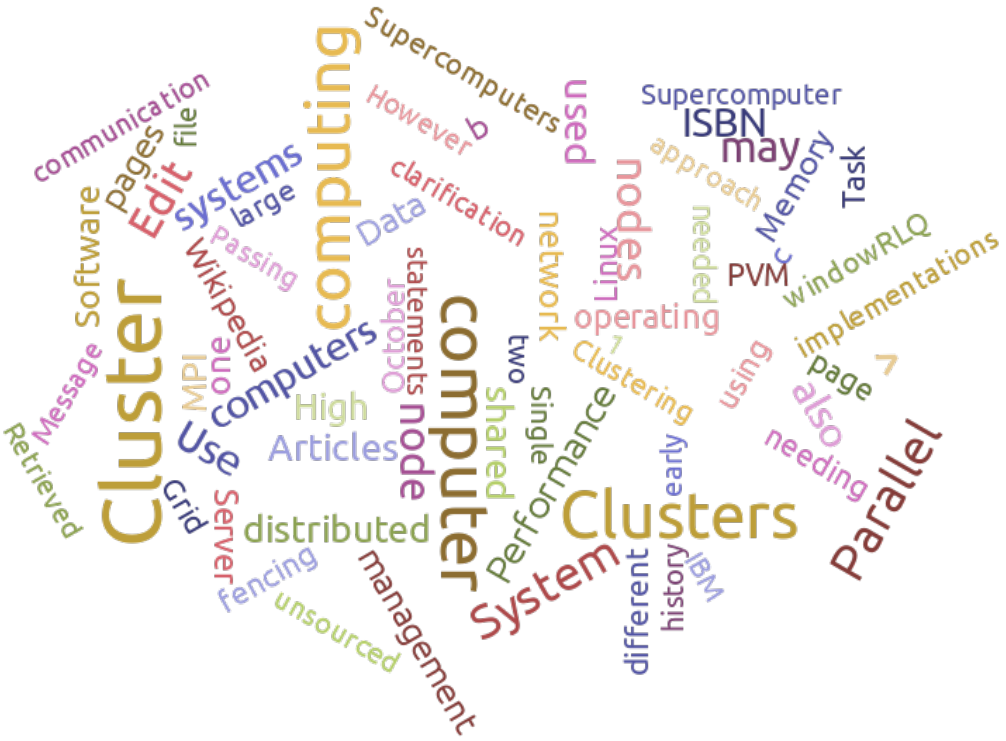
- The right persons: PhDs and permanents
- No polluted conversation in the coffee room

Preface
What do we try to solve?

Data, data, data, ...

Preface
What do we try to solve?

Data, data, data, ...



Preface
What do we try to solve?

Some thoughts ...

- Clusters do not make your research ...

Preface
What do we try to solve?

Some thoughts ...

- Clusters do not make your research ...
- ... they contribute to make proper and fast research

Preface
What do we try to solve?

Some thoughts ...

- Clusters do not make your research ...
- ... they contribute to make proper and fast research
- Solve problem that you could not solve before

Preface
What do we try to solve?

Some thoughts ...

- Clusters do not make your research ...
- ... they contribute to make proper and fast research
- Solve problem that you could not solve before
- And finally save ££££$$$$

The CCUB
Hardware

In numbers

- # cores: 3278 - Typically Intel Xeon 2660 at 2.0 GHz
- RAM: 12792 Go - Typically at least 64 Go per machine
- GPU: 1180 Gflops - 2 x Tesla cards
- HDD: 20 To per users

Organisation

- Interactive computers
- Bash computers

The CCUB
Hardware

Interactive computers

- Large resources: up to 40 cores (80 threads) and 256 Go of RAM
- 3 computers to connect "krenek"
- Work with usual languages: Matlab, python, C++, java, etc.
- Connect through SSH and possibility of Remote Desktop
- ✗ Connection is time limited

Bash computers

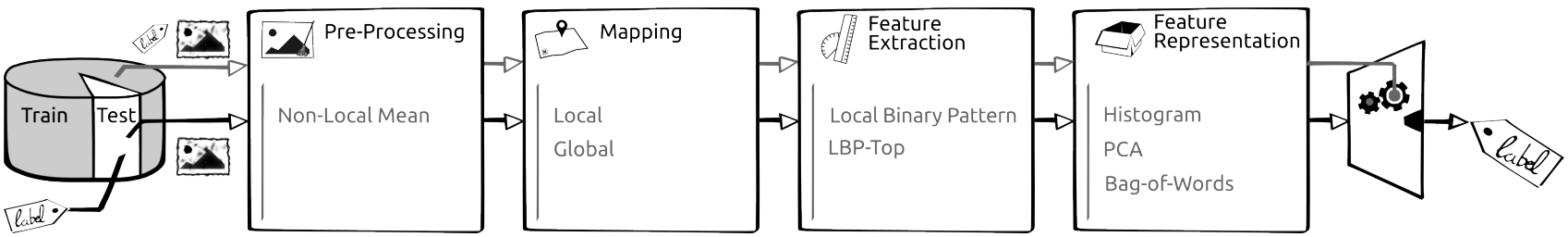
- Execution through script
- Deployment setting up # cores per jobs
- Priority automatically set up depending of the hardware requirements and the time on the queue
- ✓ Up to 7 days by executing scripts

Case Study
Classification of SD-OCT volumes with LBP

Background

- 1 week + 1 week to design, implement, and evaluate an ML framework for DME detection

Framework



What if ...

- NLM denoising → a full working day of processing
- Executing a script per patient → 30 jobs in parallel
- Harder, better, faster, stronger → parallelize in the algorithm & patient processing

Requirements

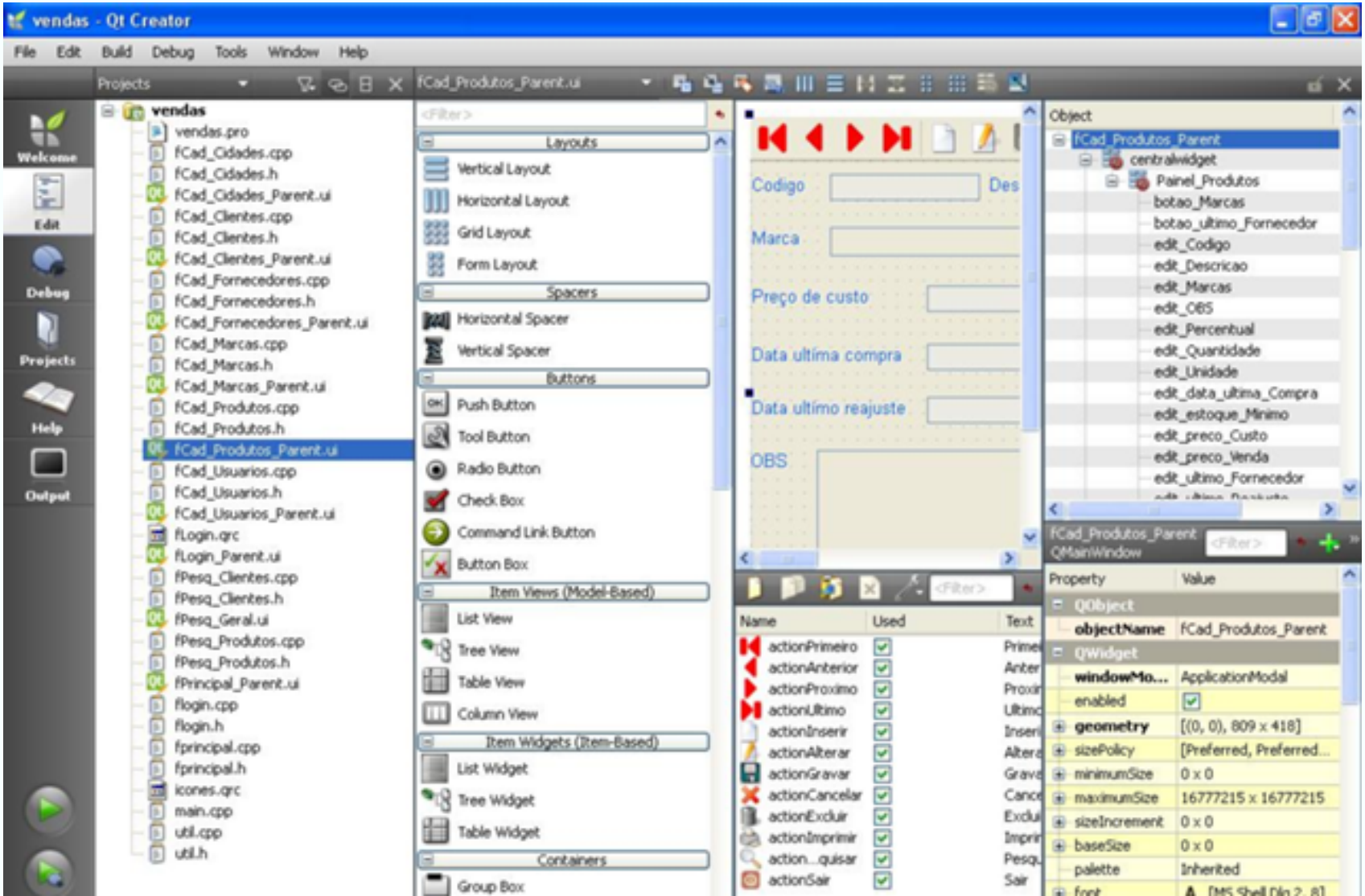
Spirit

- The 2W: Will & Wishes

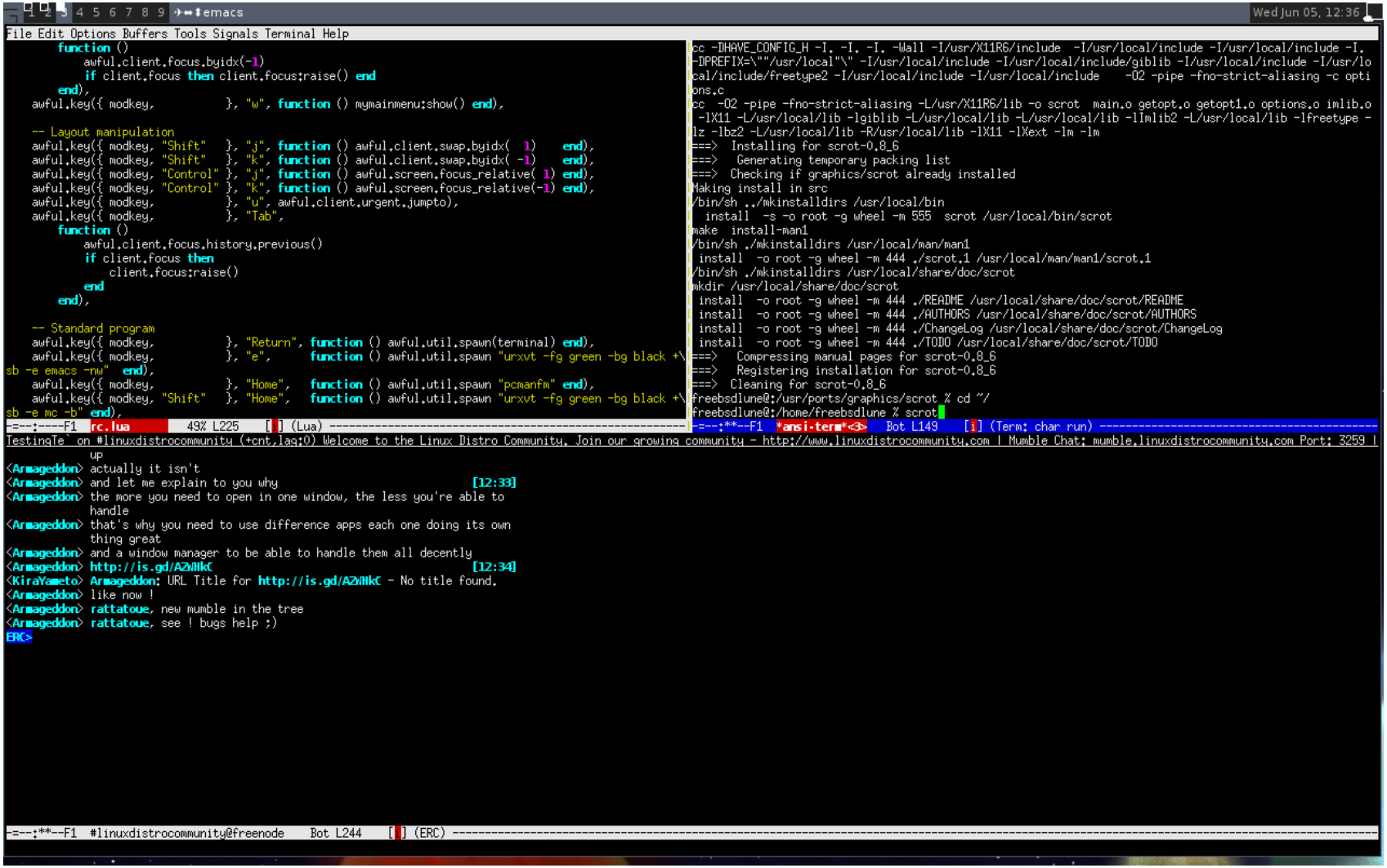
Skill

- Learn & understand to parallelize on CPU and GPU
- Come back to the source - terminal/editor/compiler
- Move to linux

Requirements



Requirements



Requirements

Spirit

- The 2W: Will & Wishes

Skill

- Learn & understand to parallelize on CPU and GPU
- Come back to the source - terminal/editor/compiler
- Move to linux

And the Future

Hardware

- A new server 24 cores Intel Xeon 2700 and 128 GB + Tesla K40
- ODROID XU4: 2k screen capable + Octa Core → 74$
- Investing money in Ultra-laptop or in the CCUB?

→ Invest money in the cluster + odroid + laptop (or ubuntu phone)