

DevOps Ignition to reach Galaxy continuous integration



Olivier Inizan, Mikael Loaec, Jonathan Kreplak and Hadi Quesneville.

INRA URGI,
RD 10 route de Saint Cyr
78026 Versailles Cedex



Mikael Loaec



Olivier Inizan



DevOps ignition ...

DevOps



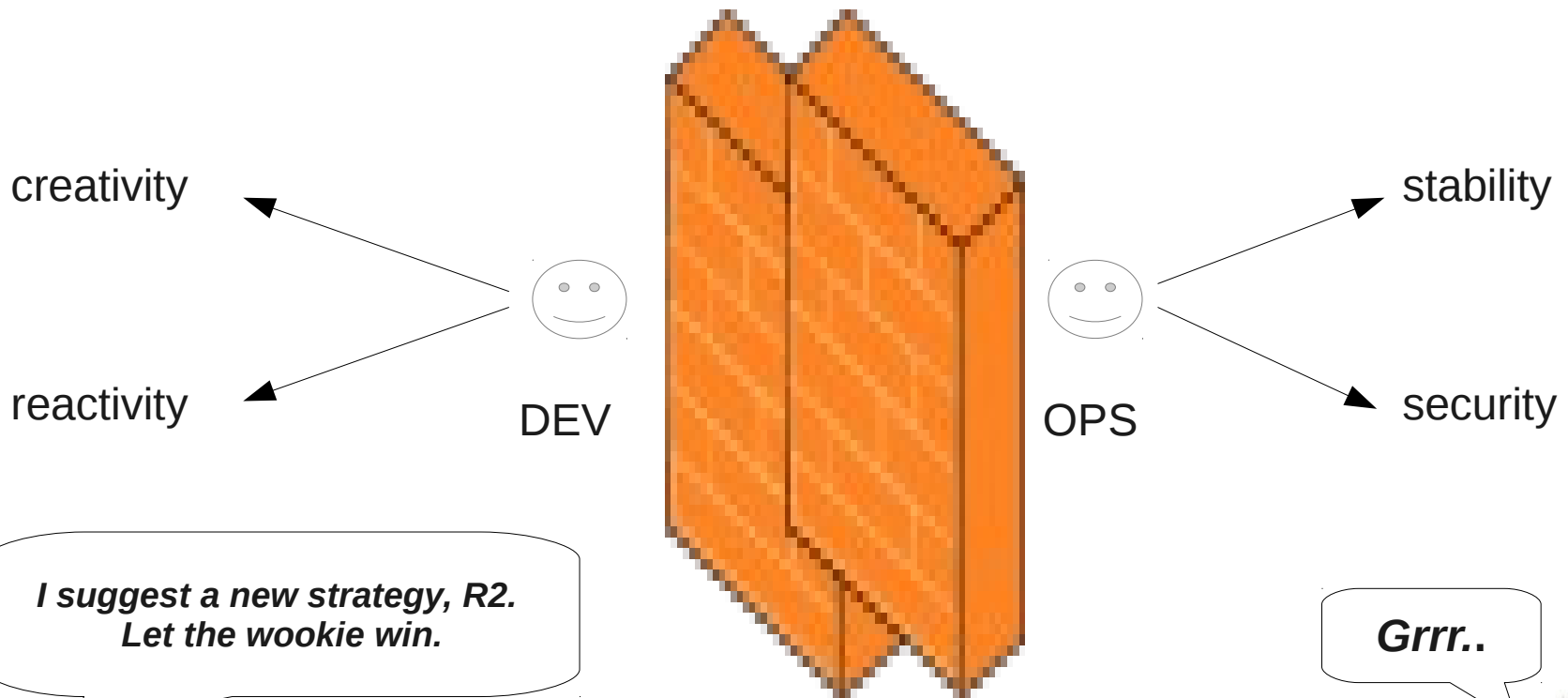


DevOps

- Dev Ops in 2 sentences :
 - « The DevOps is a software development mouvement that stresses a close relationship between software developers and netsys admins. »
 - « The goal is to enhance and speed up the cycle of software production from the creation to the delivery to final users, with a special focus on quick resolution of users issues. »

DevOps

- Usually a **wall** between dev teams and operational (netsys) teams



*I suggest a new strategy, R2.
Let the wookiee win.*



Grrr..



=> how to break the wall ?



3 hammers to break the wall



- **Collaboration :**

- A collaborative approach : work together, talk together

- **Infrastructure as a code :**

- You manage your infrastructure as you manage a piece of code

- Ex : creating a new image via a script/api execution

- **Continuous delivery**

- « *Continuous Delivery is a software development discipline where you build software in such a way that the software can be released to production at any time.* » Martin Fowler.



The mission ...

- Objective : put quickly new releases in production
 - Tools, workflows
 - New Galaxy releases
- The problem :
 - Big differences between dev env and prod env
 - Galaxy instance difficult to update
 - Only netsys admin team can put in production

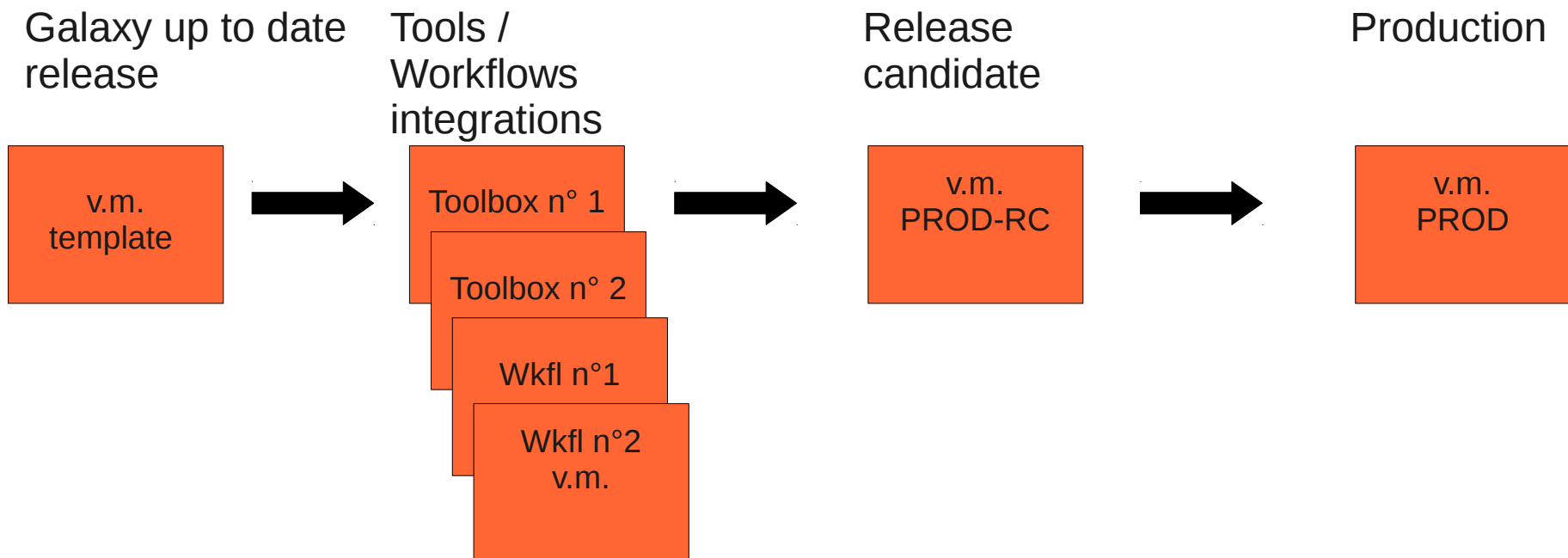


Design a dev workflow

- Virtualization tech are available



- A model for dev workflow :



Fix the problems

- Differences dev/prod:
 - Dev image becomes production image
- Update problem:
 - A template with a fresh version of Galaxy
- Only netsys admin:
 - Ask the developers to “execute” the workflow !

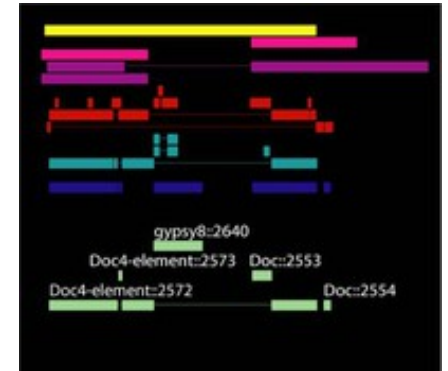
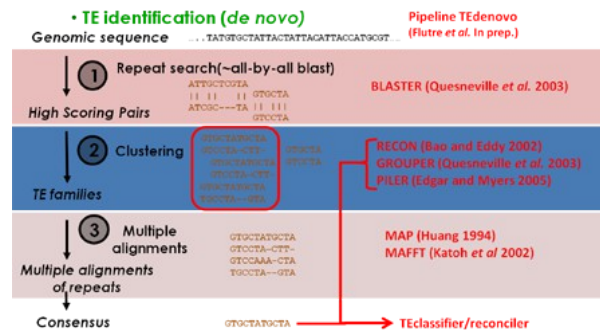




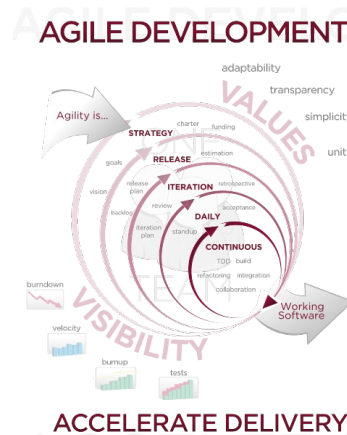
Existing resources : the crew

Software developers team:

(i) working on TEs and mobile elements detection + workflows NGS



(ii) and organize itself according Agile :



```

void Test_BLRMatchMap::test_merge_on_one_query(void)
{
    bool joiningParameter = true;
    bool cleanBefore = false;
    bool cleanAfter = false;
    int verboseParameter = 0;

    SDGString match_file = "match_align";
    Test_BLRMatchMapUtils::writeInputFile();

    BLRMatcherParameter para = Test_BLRMatchMapUtils::createParameter();
    BLRMatchMap matchMap(para);

    matchMap.load();

    matchMap.mapPathJoinAndComputeScoreWithLengthOnly(joiningParameter, cleanBefore, cleanAfter, verboseParameter);

    BLRMatchMap::MapPath inMapPath = matchMap.getMapPath();
    matchMap.merge();

    //Test_BLRMatchMapUtils::viewMapPath(inMapPath);

    BLRMatchMap::MapPath expMapPath = Test_BLRMatchMapUtils::createExpMapPathFor_test_mapPath_only_merge();
    BLRMatchMap::MapPath obsMapPath = matchMap.getMapPath();

    /*
    std::cout<<"<<endl;
    std::cout<<"obs"<<endl;
    Test_BLRMatchMapUtils::viewMapPath(obsMapPath);
    */

    CPPUNIT_ASSERT(expMapPath == obsMapPath;
    FileUtils::removeFile(match_file);
    }
    
```

for project management

for code production

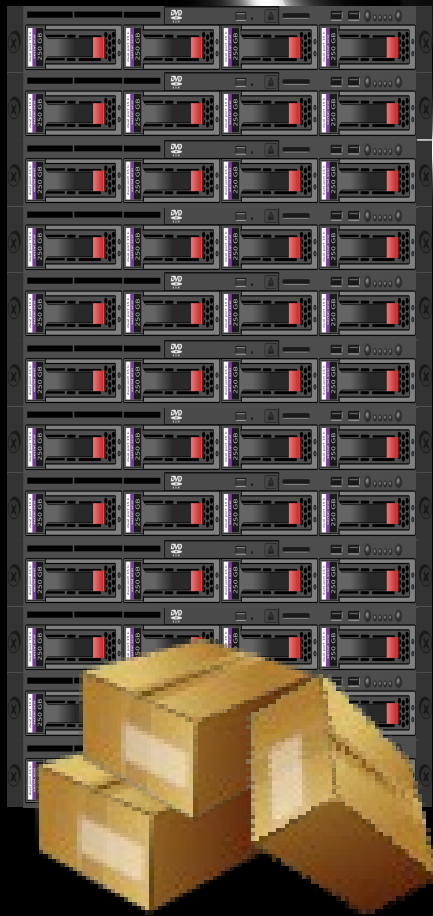
URGI Existing resources:the ship

« You've never heard of the Millennium Falcon? ... It's the ship that made the Kessel run in less than 12 parsecs » H.S.

HPC Cluster :
Nodes: 78 Cores : 888
Powered by Rocks Cluster Linux and
Sun Grid Engine

Netapp powered by DataOnTap
Cluster-Mode
Storage Capacity :
150To

Virtualization Server powered by
Proxmox (KVM)



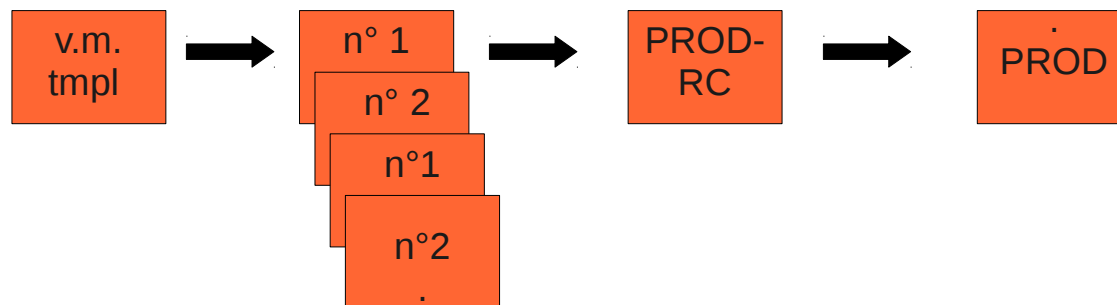
Mission stages



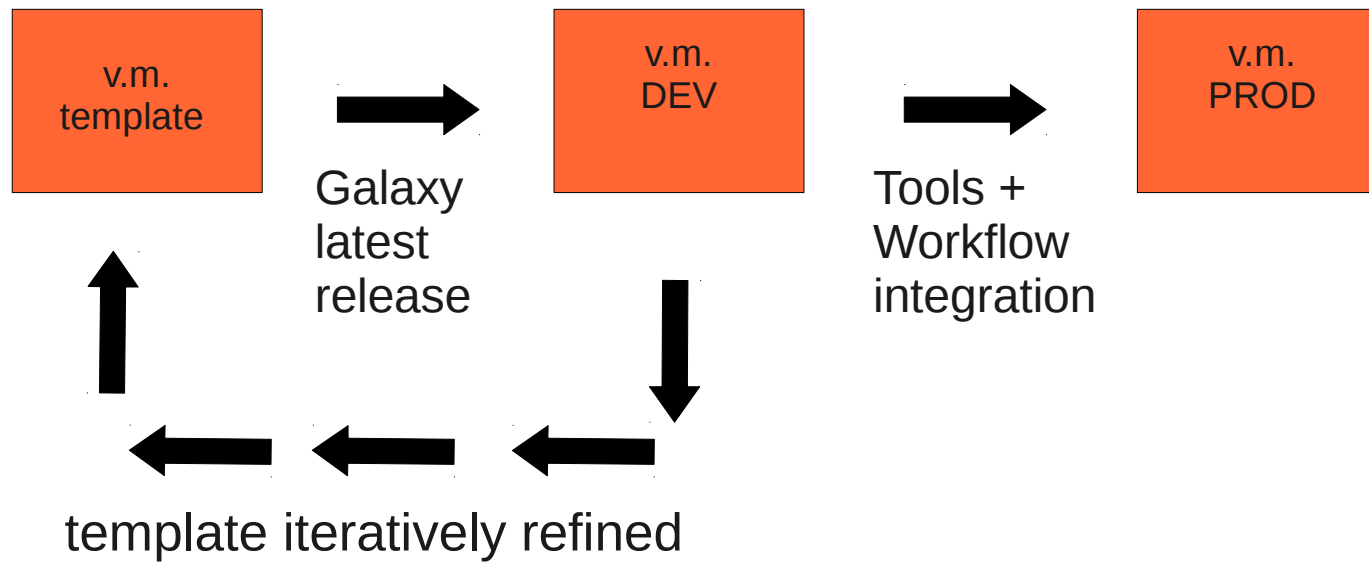
- Stage 1 :
 - Build a VM image with one of URGI's workflow inside
 - Send a small crew for exploration : 1 netsys + 1 dev
 - One month later a prototype :
 - A machine image
 - A template for image creation



- Stage 2 :
 - Improve the prototype with all URGI's workflows and toolboxes
 - All the crew for this mission
 - 3 months later : a new instance in production !



Highlight (i)



- template construction :
 - too huge for a single man (netsys admin)
 - skills transfered to the team ...



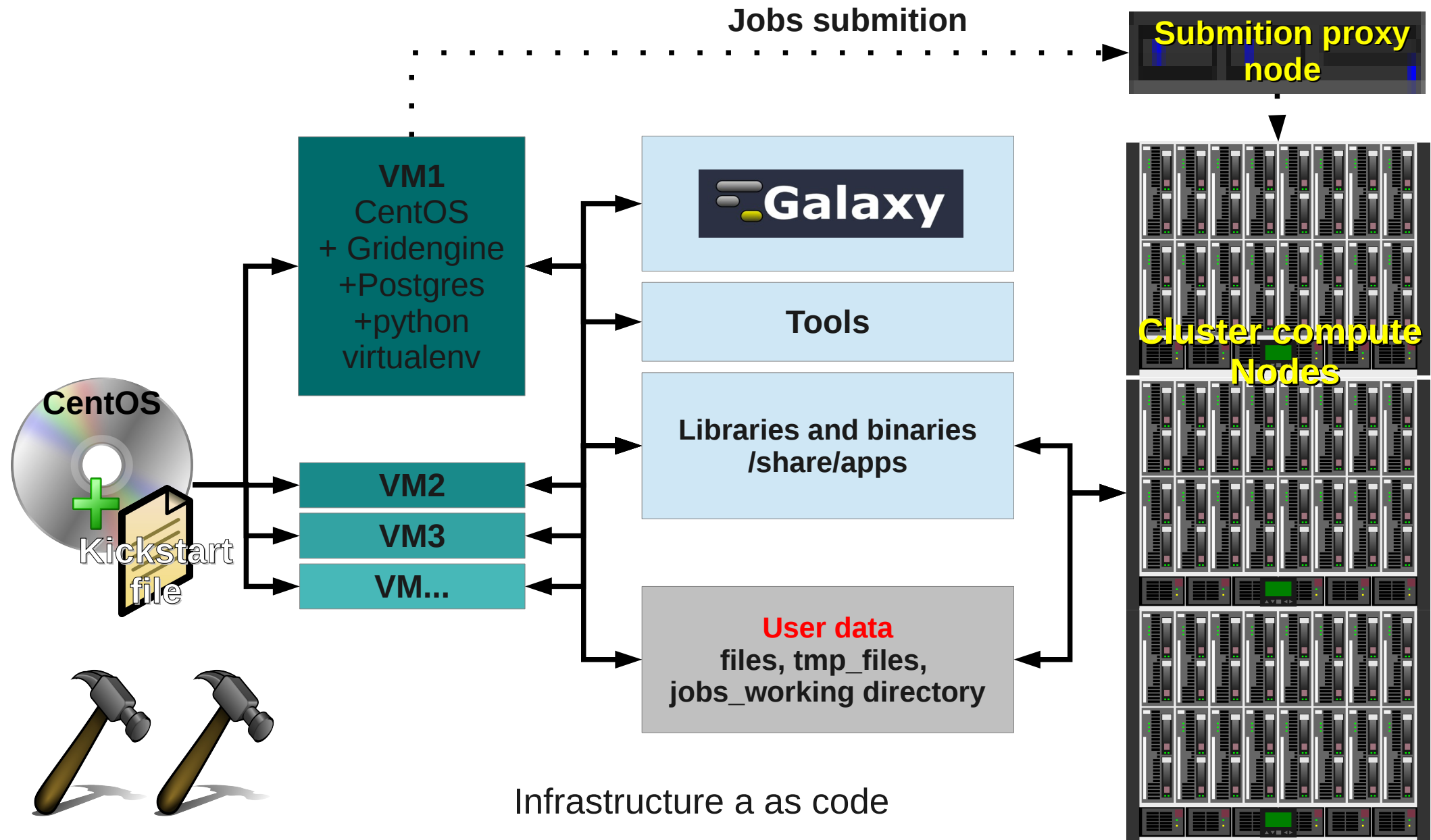
Collaboration



skills



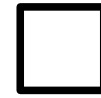
Highlight (ii)





Summary

- Collaboration
- Infrastructure as a code
- Continuous Delivery





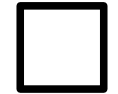
Summary

- Collaboration
- Infrastructure as a code
- Continuous Delivery

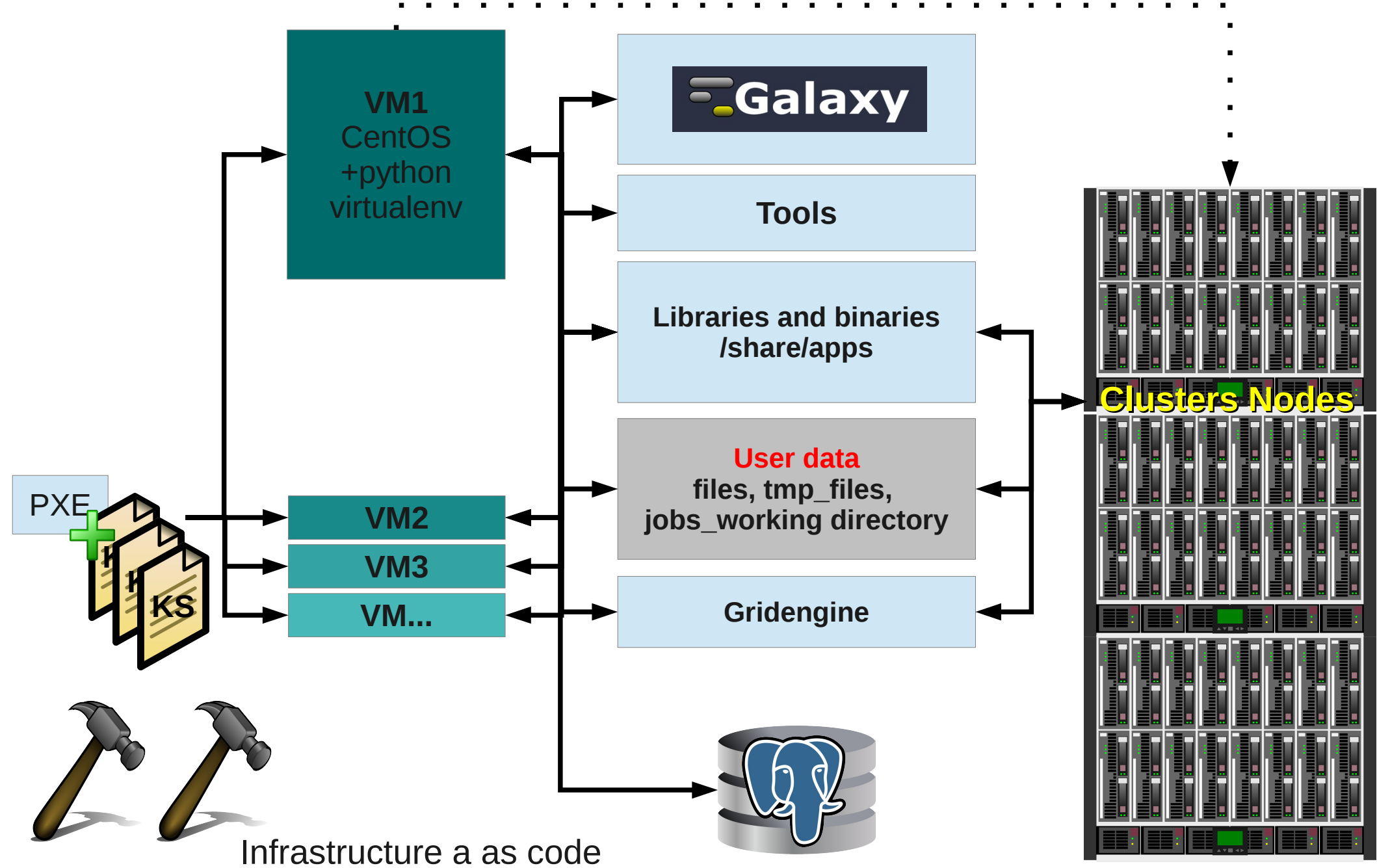


Summary

- Collaboration
- Infrastructure as a code
- Continuous Delivery



Jobs submission



Infrastructure as code

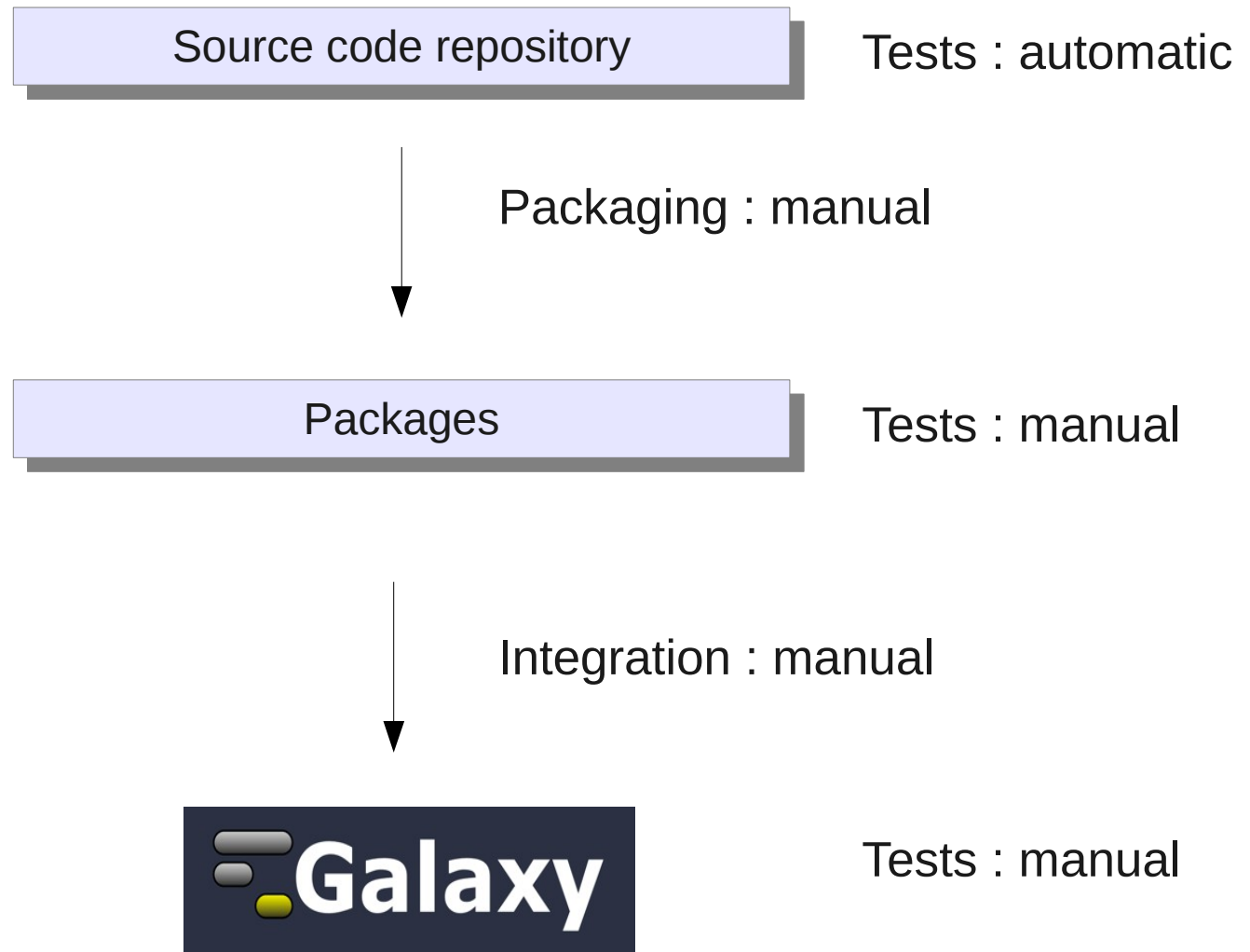
Summary

- Collaboration
- Infrastructure as a code
- Continuous Delivery



Continuous Delivery applied to our code ...

- Today :



Continuous Delivery applied to our code ...

- Tomorrow :

Source code repository

Tests : automatic

↓
Packaging : automatic

Packages

Tests : automatic

↓
Integration : automatic



Tests : automatic



A New Team is born ...

- Jonathan Kreplak
- Véronique Jamilloux
- Françoise Alfama
- Nicolas Lapalu
- Mark Moissette
- Claire Viseux
- Tina Alaeitabar
- Timothée Chaumier
- Hadi Quesneville



Thank you for your attention !

« May the Force be with you ! »



Olivier Inizan
Olivier.Inizan@versailles.inra.fr
Twitter: @OlivierInizan

Mikael Loaec
Mikael.Loaec@versailles.inra.fr