IDRIS Supercomputing Center

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- What is IDRIS?
- French National Supercomputing Centers
- Focus on IDRIS
  - The supercomputer: Jean Zay
  - The users
  - The teams
- Getting compute hours

What is IDRIS?

What is IDRIS?

- CNRS' Intensive computing center

  → Research Support Lab created in 1993

  → Hosting Jean Zay supercomputer

  → Free compute resources
  for French open research

What is IDRIS?

- Jean Zay supercomputer

  → **28** PFLOP/s (**86 499** CPU cores and **2696** GPUs)

  → more than **2600** active accounts (March **2022**)

  → **11** thematic commities for HPC and AI

National computing centers

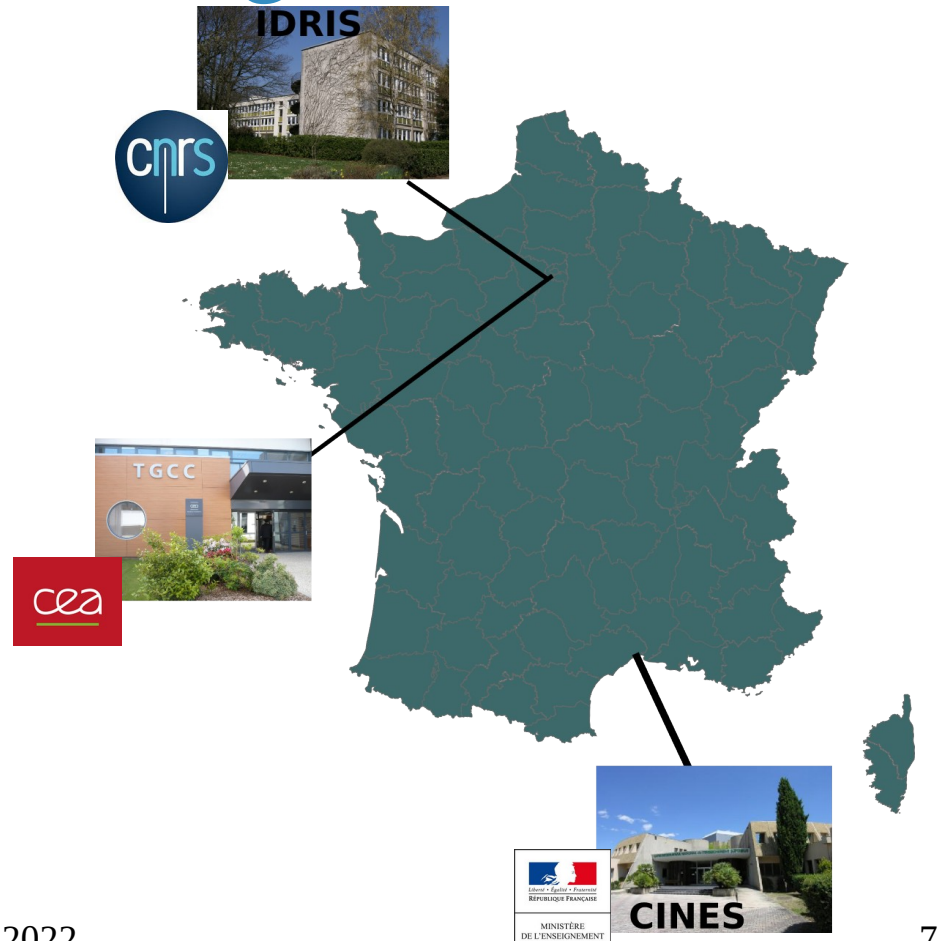
National computing centers

- 3 national centers:

  → IDRIS (CNRS / Jean Zay)

  → TGCC (CEA / Joliot-Curie)

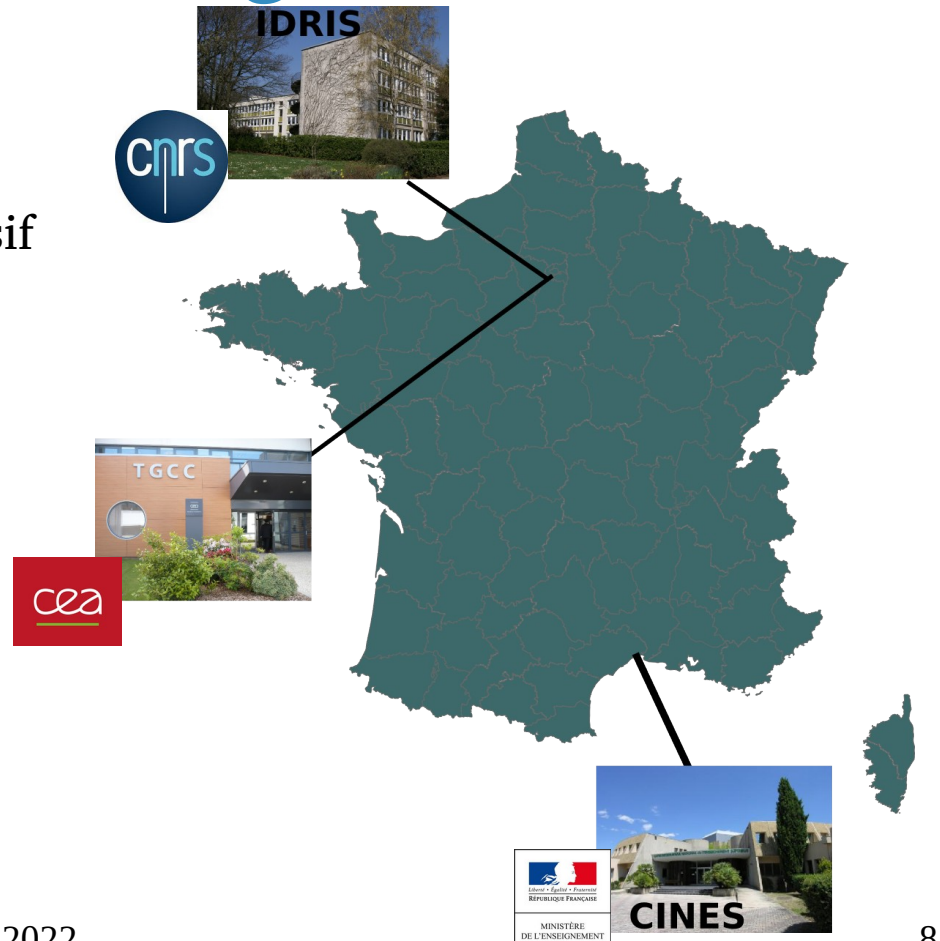
  → CINES (Universités / Adastra)



National computing centers

- Grand Équipement National de Calcul Intensif

→ Civil company managing resources



National computing centers

- GENCI's missions
  - → part of the european HPC/AI system (PRACE)
  - → promote HPC for academic and industrial research
  - → coordination of the 3 supercomputing centers
  - → supercomputers acquisitions
  - → distribution of computational resources
    - → manages calls for resources attribution

- IDRIS/TGCC/CINES missions
  - → hosting and administration of the supercomputers
  - → management of accesses to the machine
    - → account creation, ...

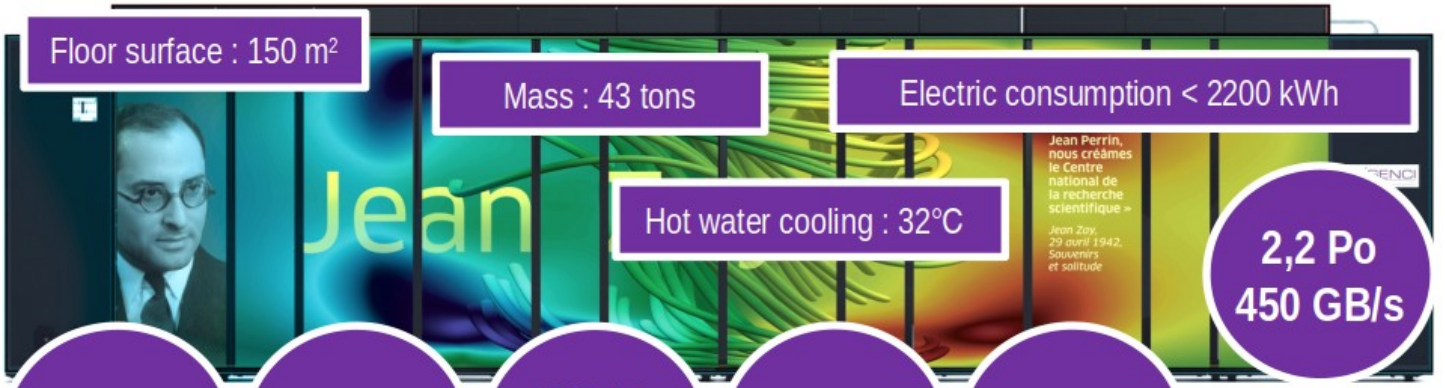
Focus on IDRIS

IDRIS supercomputer: Jean Zay

IDRIS supercomputer: Jean Zay

Hewlett Packard Enterprise

GENCI



IDRIS supercomputer: Jean Zay

- Compute nodes features:

Partition		# nodes	# cores per node	RAM per node	# GPUs per node
cpu_p1		1528	40-cores	192 GB	
gpu_p13	gpu_p1	261	40-cores	192 GB	4-GPUs (32 GB) V100
	gpu_p3	351	40-cores	192 GB	4-GPUs (16 GB) V100
gpu_p2 (AI)	gpu_p2l	11	24-cores	768 GB	8-GPUs (32 GB) V100
	gpu_p2s	20	24-cores	384 GB	8-GPUs (32 GB) V100
gpu_p4		3	48-cores	768 GB	8-GPUs (40 GB) A100

Upcoming : A100 partition. 52 8-GPUs nodes

IDRIS supercomputer: Jean Zay

- Computing environment

→ SSH connection, bash shell
→ Jupyter Notebooks and JupyterLab available

→ Several kinds of nodes:
login, compilation, compute, pre/post-processing, vizualisation

→ Batch script submission or interactive sessions
→ Compute resources allocation with Slurm job manager

→ Compilers, librairies and conda environments available via *module*
→ Singularity containers

IDRIS: The users

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- 11 thematic commities
- One user commitee

CT1	: Environment
CT2a	: Non-reactive fluid flows
CT2b	: Reactive or multiphase fluid flows
CT3	: Biology and biomedical sciences
CT4	: Astrophysics and geophysics
CT5	**: Theoretical and plasma physics**
CT6	: Computer science, algorithm and mathematics
CT7	: Molecular dynamics in biology
CT8	: Quantum chemistry and molecular modeling
CT9	: Physics, chemistry and material properties
CT10	: Artificial Intelligence and Transversal applications

IDRIS: The teams

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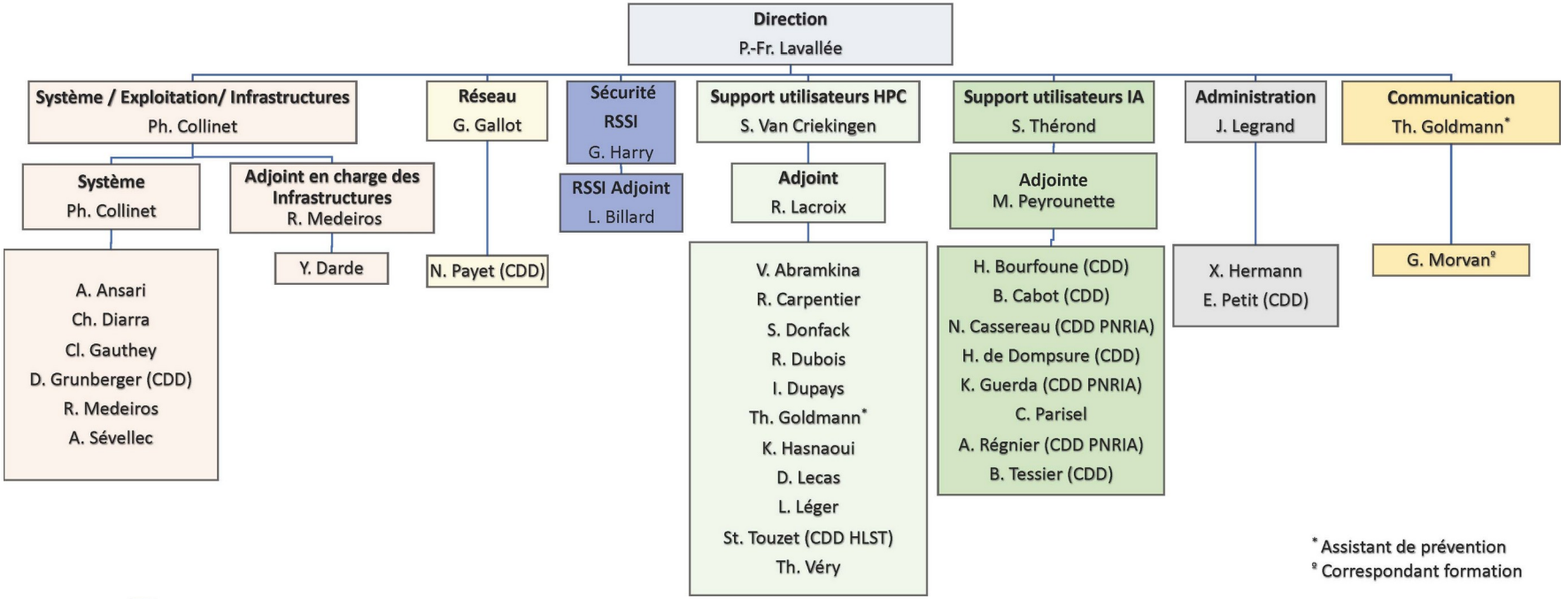

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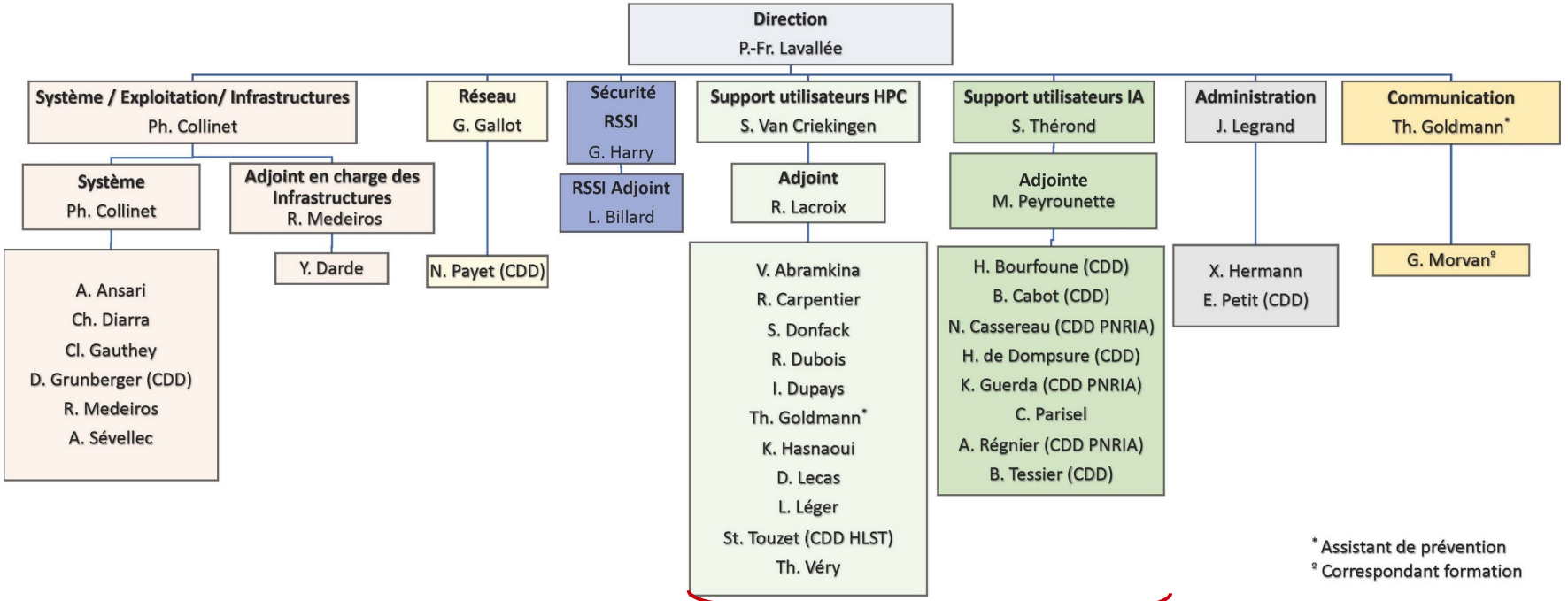
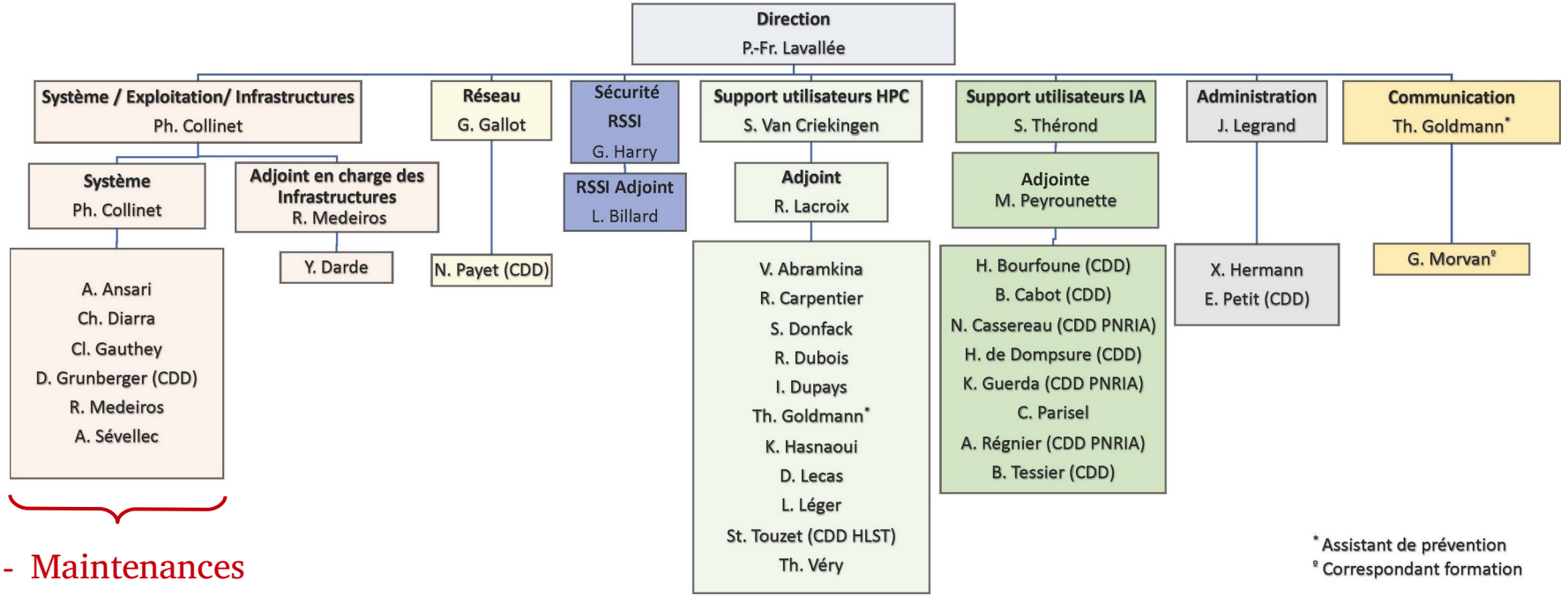
Organigramme du personnel août 2021

IDRIS: The teams

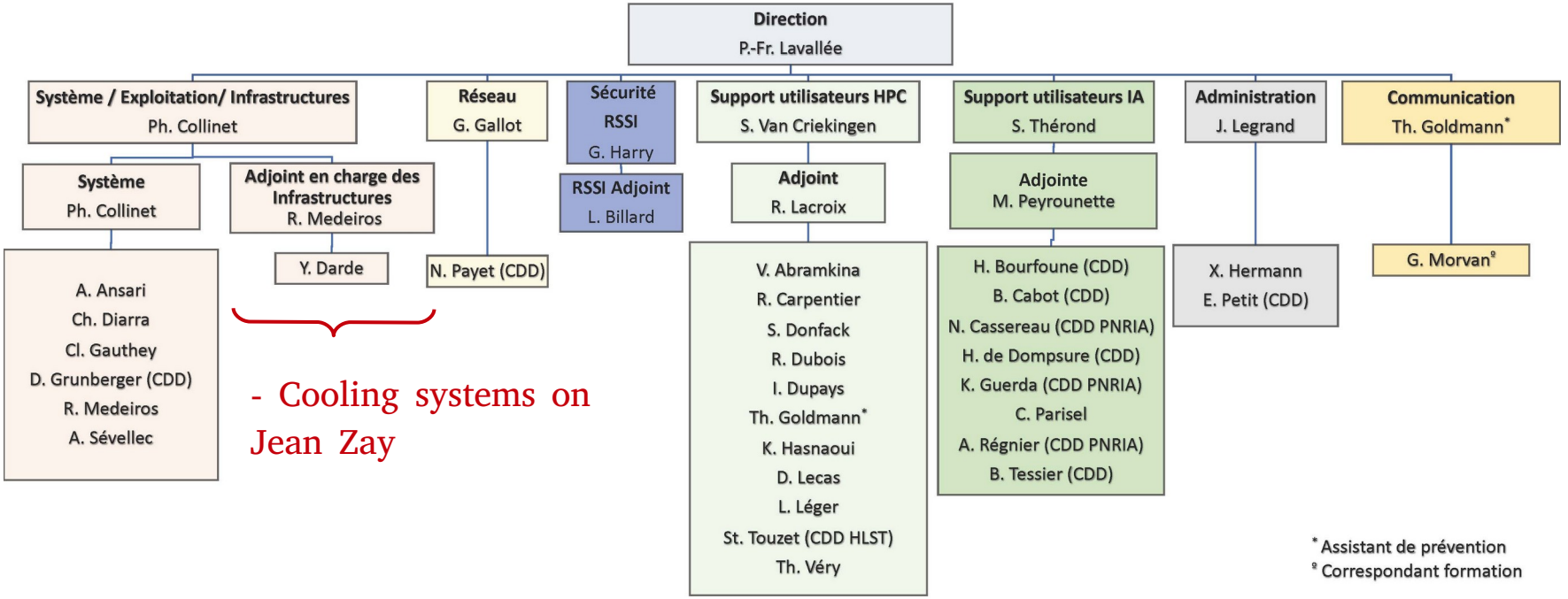


- Permanence
- Software stack
- Documentation
- Advanced support
- Technological wtch
- Trainings

IDRIS: The teams



IDRIS: The teams



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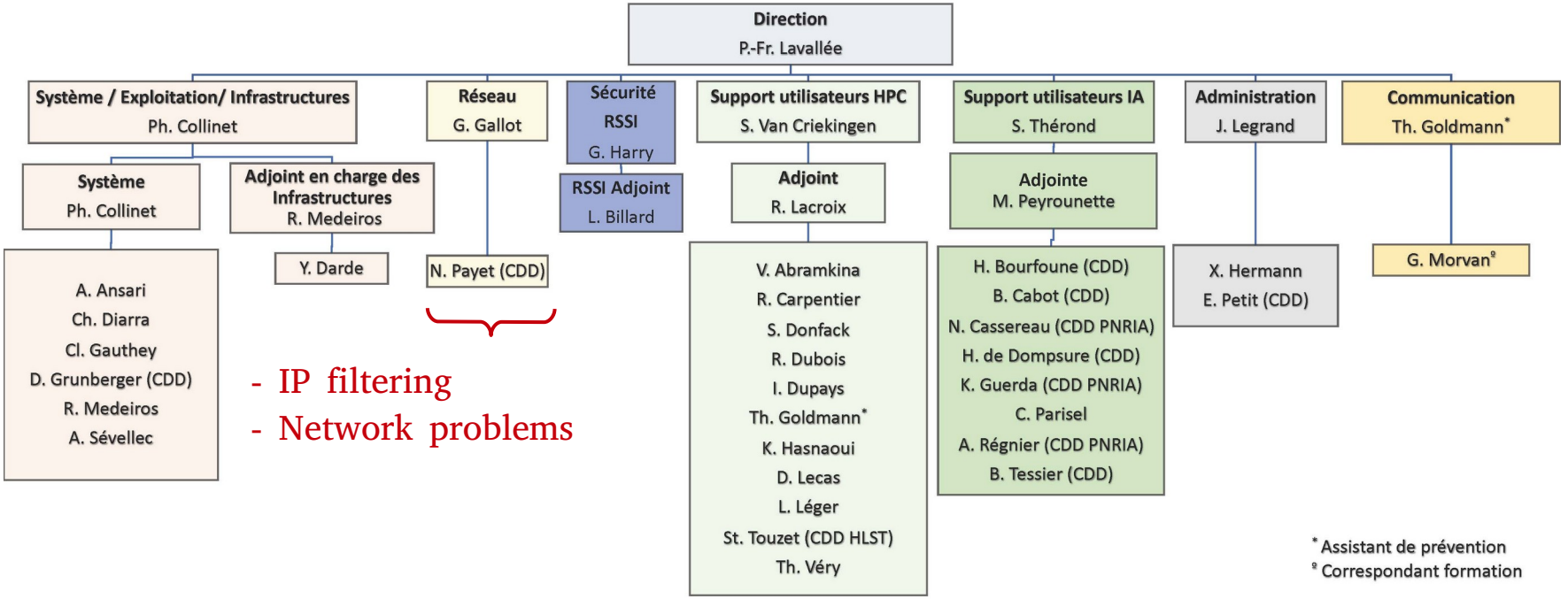

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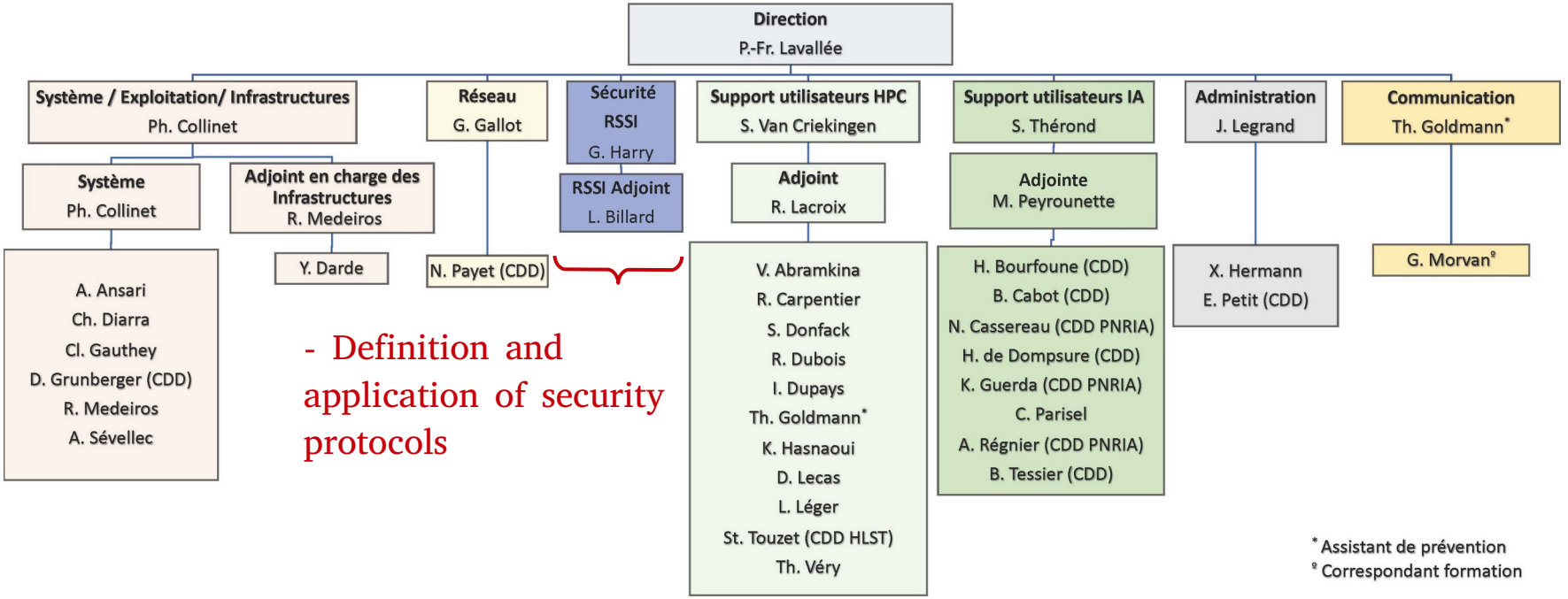

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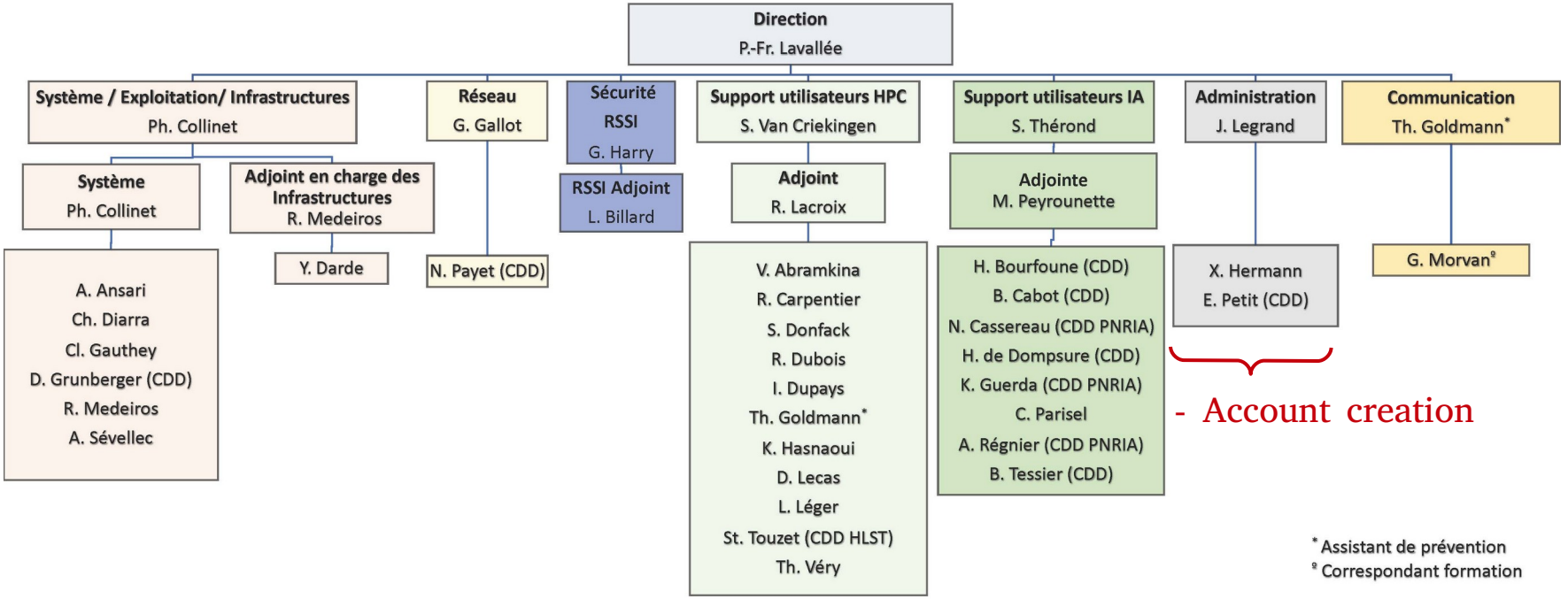

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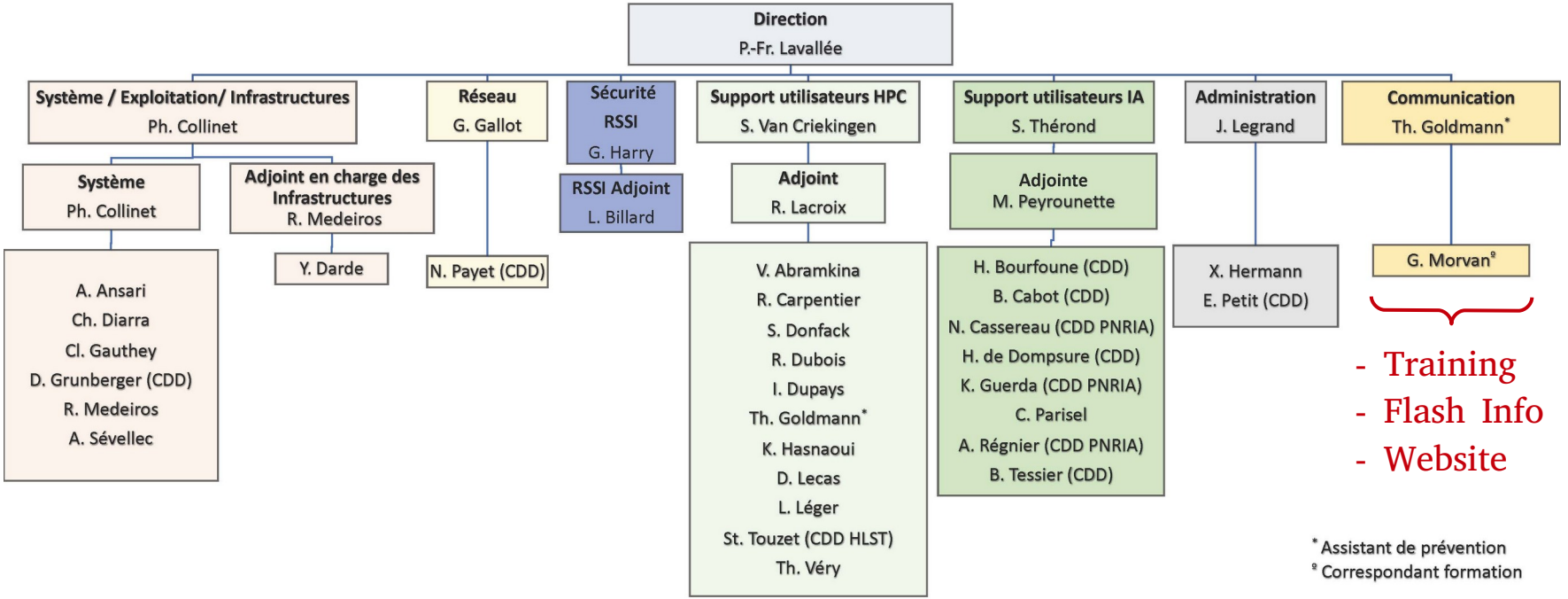

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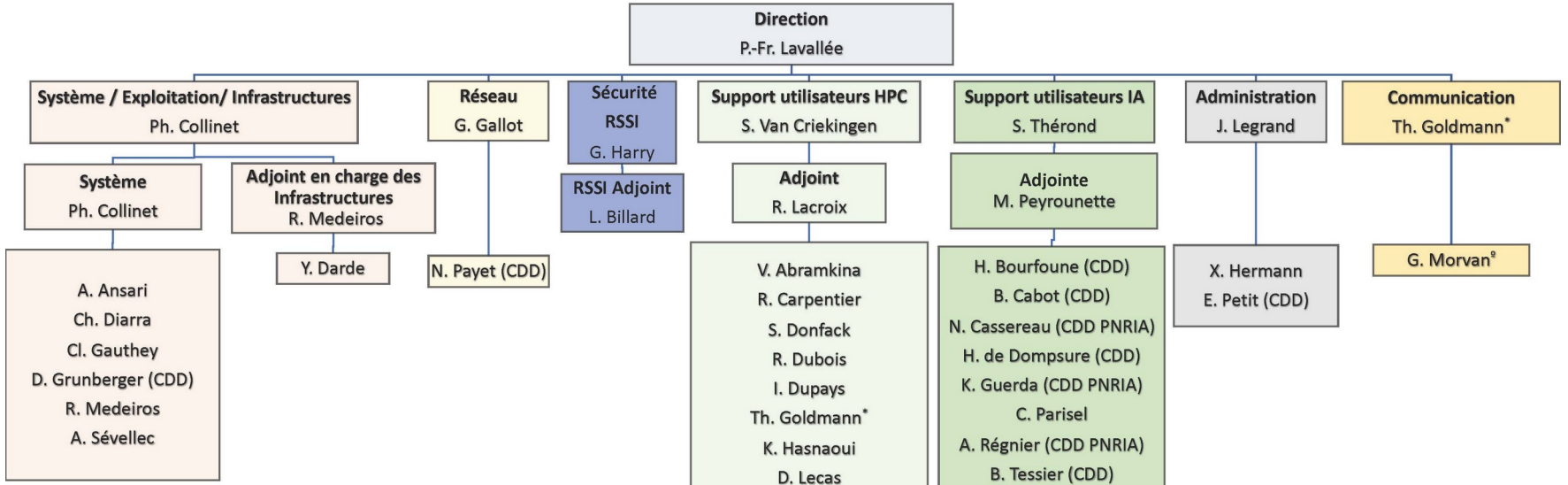

+ HPE/EOLEN teams

Getting compute hours

Getting compute hours

- Two kinds of accesses (same for the three centers)

  → Regular Accesses for large projects

  → Dynamical Accesses for preparatory and medium projects

  → www.edari.fr

Getting compute hours

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Regular access (AR) For large projects	**Dynamical accesses** (AD) For preparatory and medium projects
- ≥ 500 000 CPU hours - ≥ 50 000 GPU hours - allocation for 1 year - 2 calls/per year : → jan-feb (starts in may) → jul-sept (starts in nov)	- < 500 000 CPU hours - < 50 000 GPU hours - allocation for 1 year - continuous call

Getting compute hours

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- Account creation

  → an account have to be attached to a project

  → the procedure depends on the computing center

  → IDRIS = Zone à Régime Restrictif

  → http://www.idris.fr/eng/info/gestion/gestion-des-comptes-eng.html

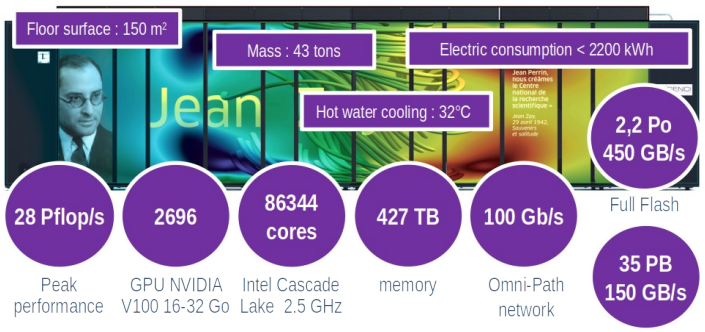
IDRIS: going further

IDRIS: going further

- ✔ Online documentation: http://www.idris.fr/eng/jean-zay/
  - ✔ IDRIS trainings: http://www.idris.fr/eng/formations/formations-eng.html
  - ✔ PRACE trainings: http://www.idris.fr/eng/prace/formationsptc-eng.html
  - ✔ Advanced support: http://www.idris.fr/eng/support_avance-eng.html
  - ✔ Workshops
- ✔ Hackathons

Conclusion

Conclusion



A supercomputer
for French research

- > 1500 CPU nodes
- > 600 GPU nodes

More than 2600 users
Distributed among 11 thematic commities

HPC + AI

Getting hours:
- Regular accesses
- Dynamical accesses

GENCI

Account creation

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Useful links and contacts

Getting hours:
- www.edari.fr
- www.genci.fr

Account creation:
- http://www.idris.fr/eng/info/gestion/gestion-des-comptes-eng.html

IDRIS website:
- www.idris.fr

Documentation Jean Zay :
- general doc: http://www.idris.fr/eng/jean-zay/index.html
- New user doc: www.idris.fr/eng/su/debutant-eng.html
- AI doc : http://www.idris.fr/eng/ia/index.html

Contacts :
- getting hours → acces@genci.fr
- account creation → gestutil@idris.fr
- Resources usage → assist@idris.fr