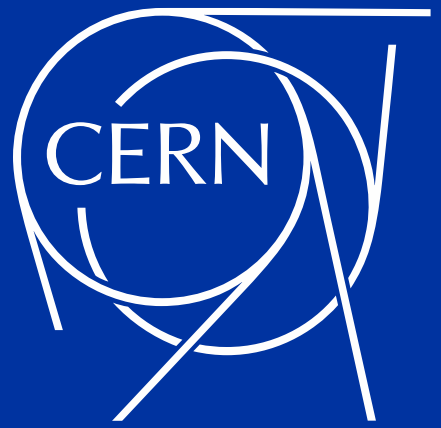
Story up until CERN

- BSc in Computer Science @ **University of Tartu**
- Thesis about impersonating real base stations (SMS interception, IMSI catching, SMS phishing etc..)
- Worked for **1.5 years** on **Estonian digital health** mission-critical systems @ Nortal
  - end-users are the whole country (1.3 million)
  - implemented vaccination rules for COVID QR code passes
  - helped transgender individuals get their driving licenses
  - implemented automatic medical check-up invitations for women in breast-cancer risk category



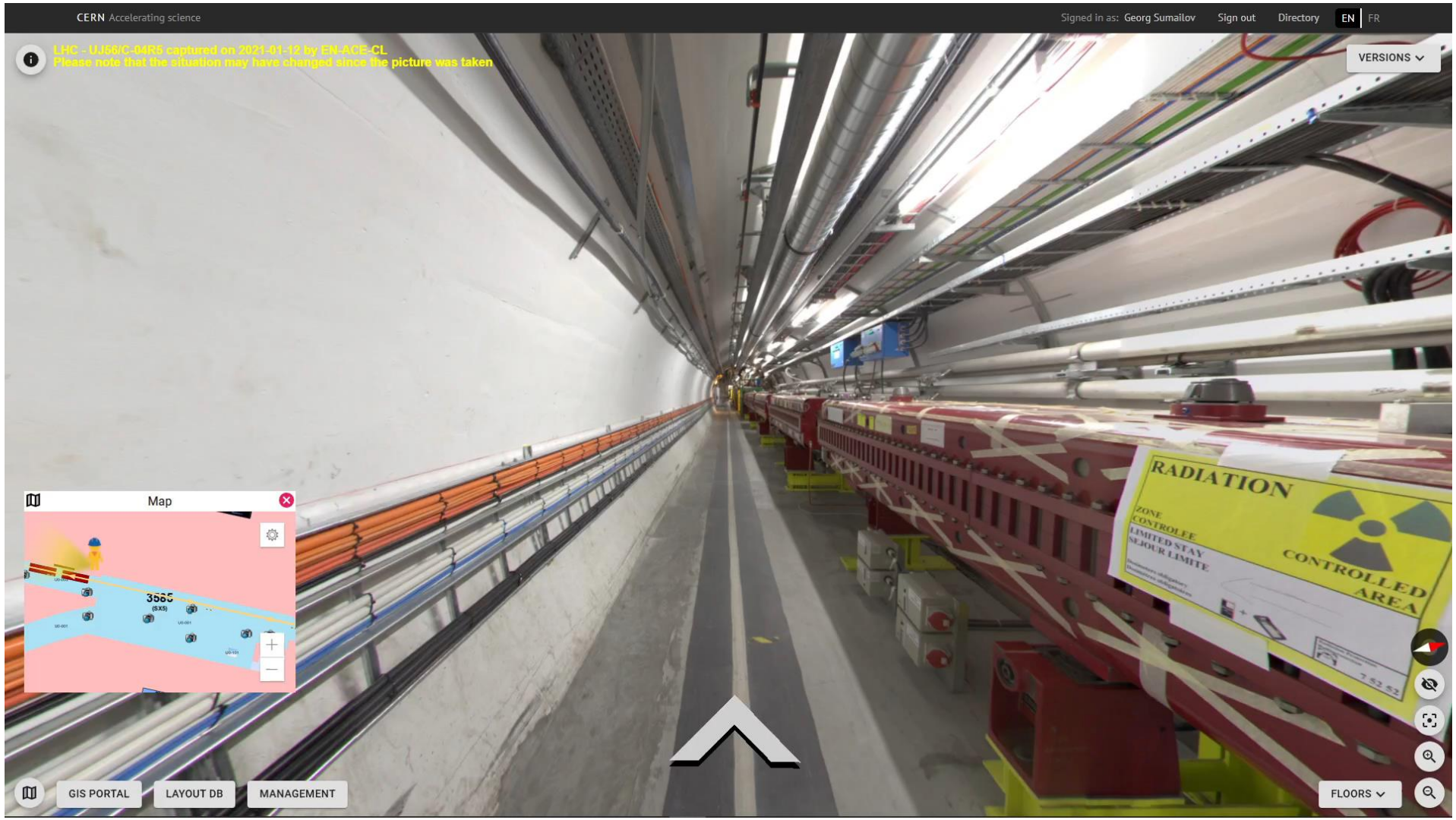
Panoramas: CERN’s Own Street-View

ACE Seminar #28 – Georg Šumailov – Software Engineer

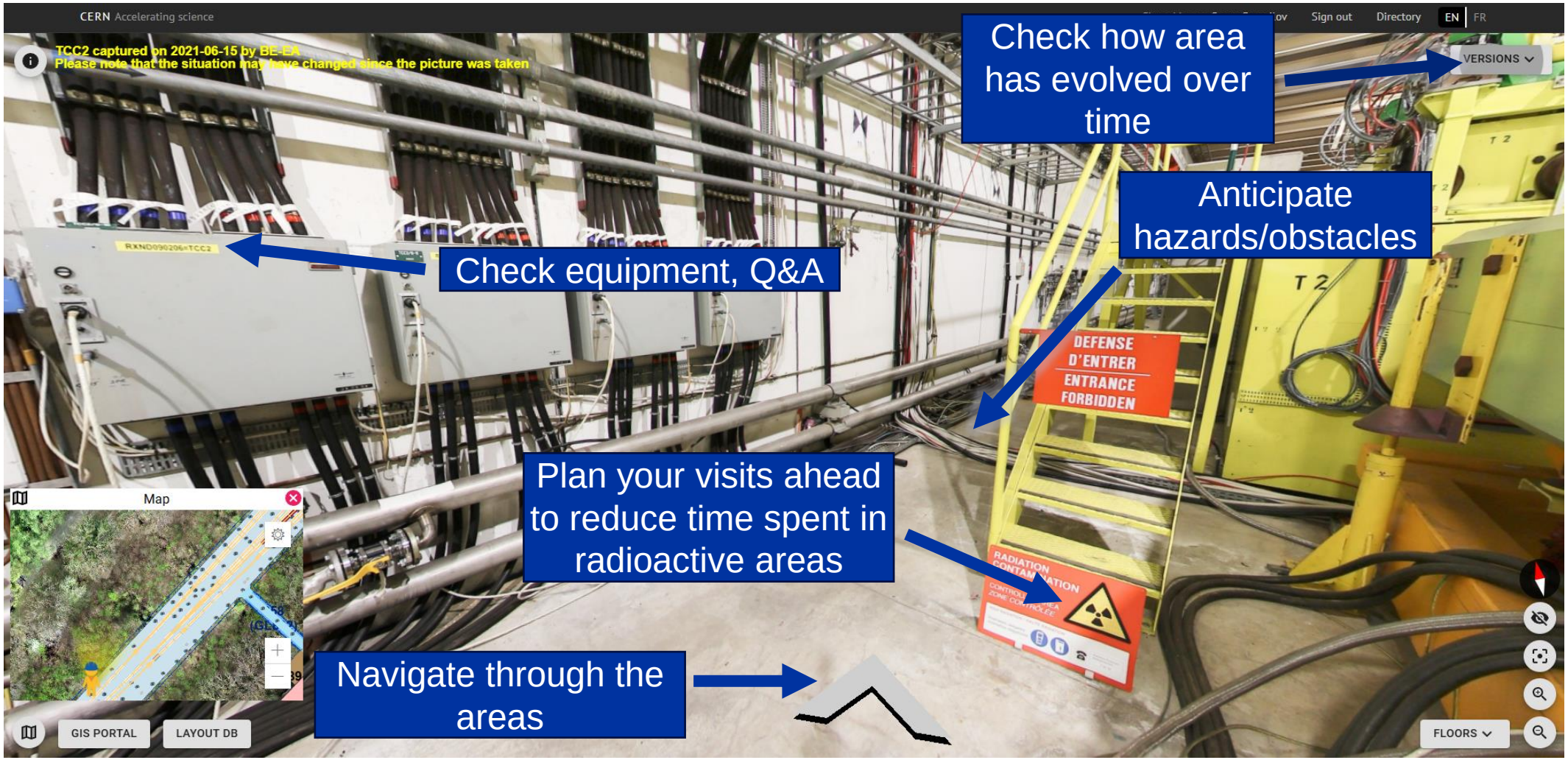
15-11-2024

https://indico.cern.ch/event/1379520/

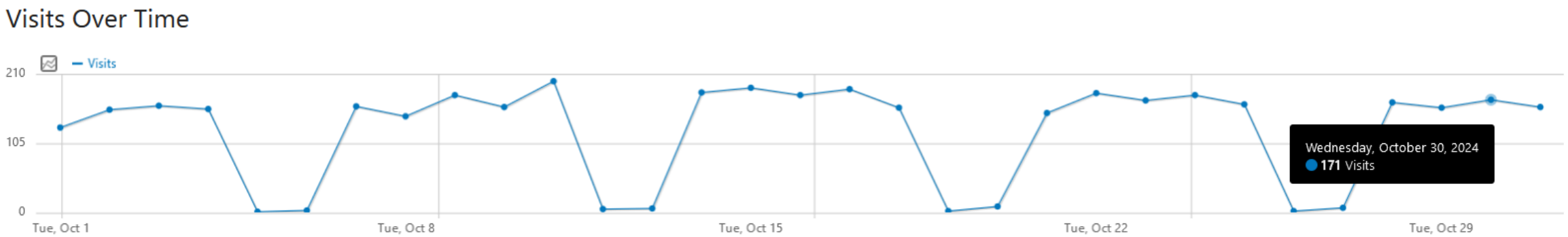
What is Panoramas?

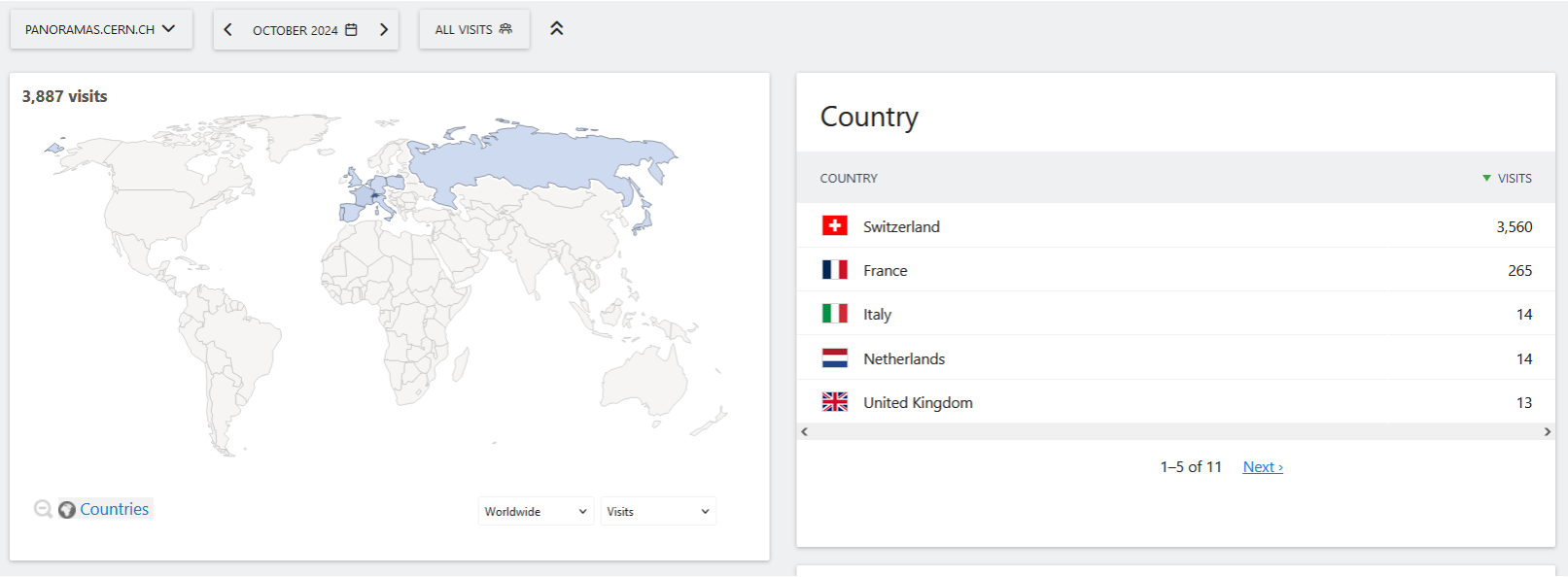


What is it used for?



Who is using it? * October 2024





Visits Overview

3,887 visits, **1,053** unique visitors

6 min 36s average visit duration

14% visits have bounced (left the website after one page)

11.7 actions (page views, downloads, outlinks and internal site searches) per visit

476 max actions in one visit

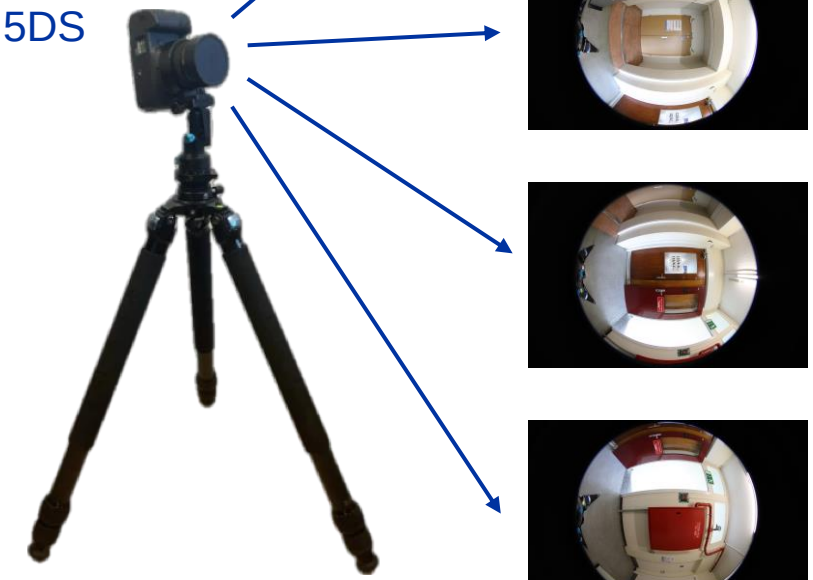
45,528 pageviews, **3,927** unique pageviews

48,135 panoramic images available!

How do we capture panoramas?

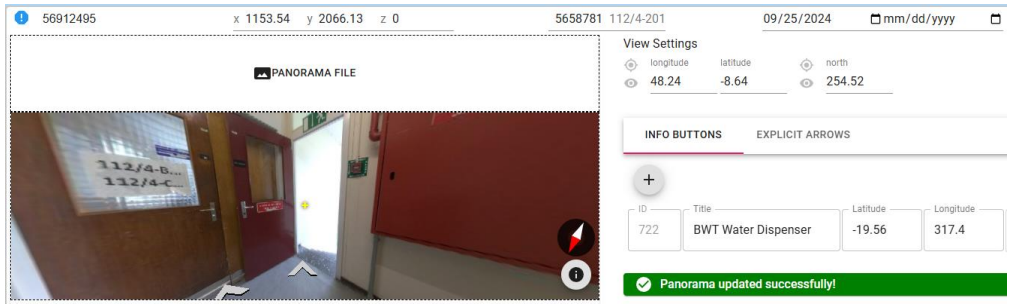
Coordinates through ArcGIS

Canon EOS 5DS

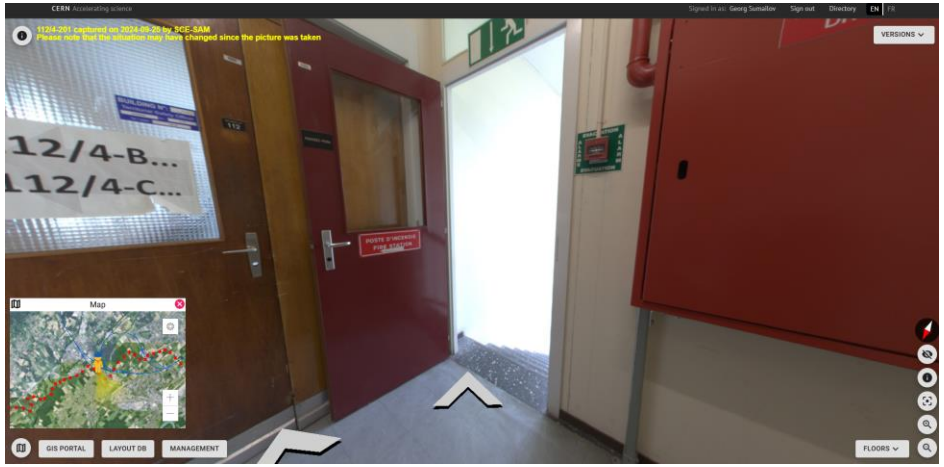


PTGui Photo Stitching Software

https://panoramas.cern.ch manager view



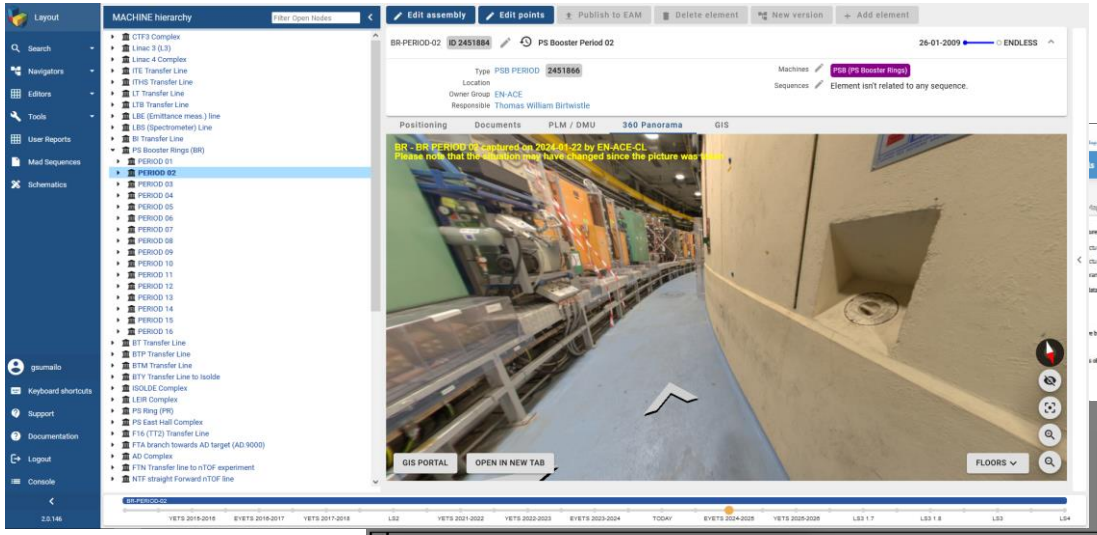
https://panoramas.cern.ch



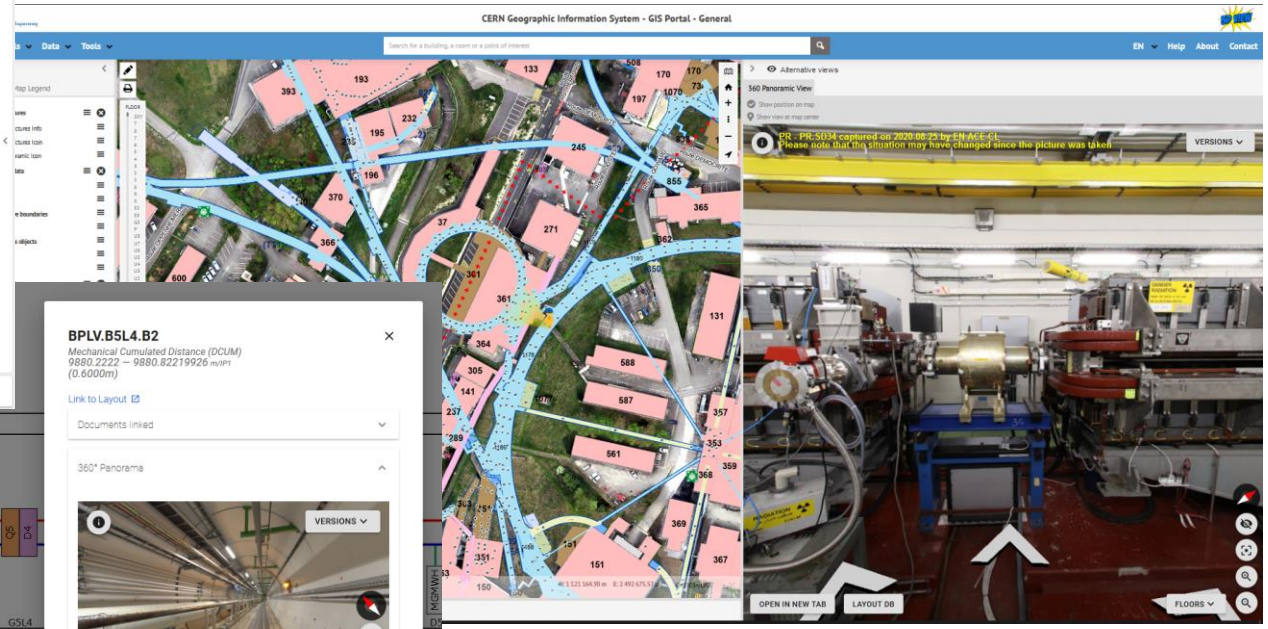
Integrations

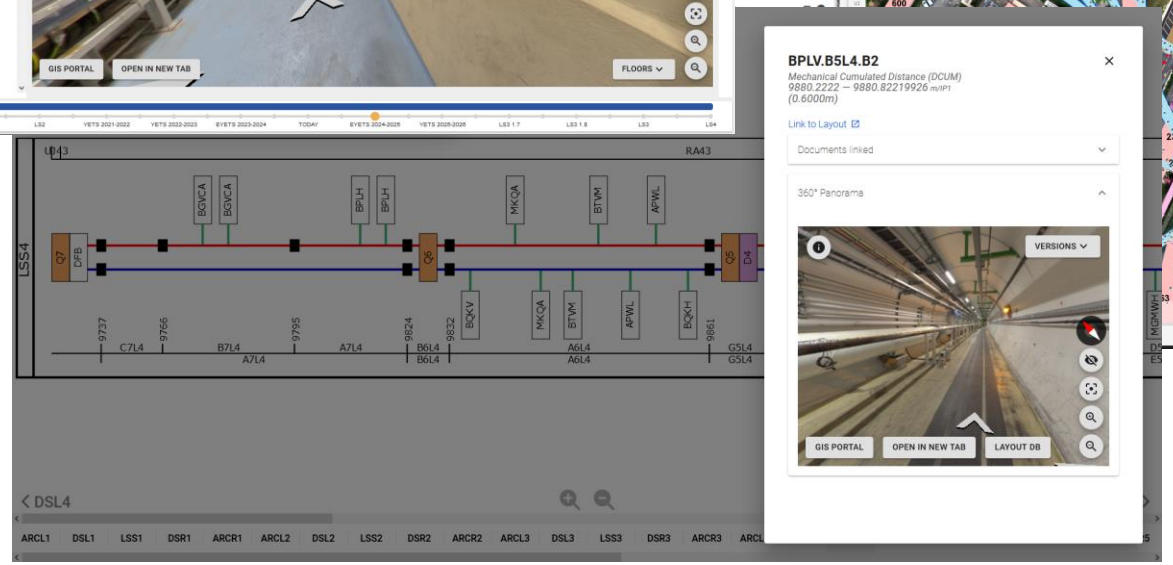
Panorama widget **integration** is **easy**,
Contact us @ panoramas-service@cern.ch to set it up!

https://layout.cern.ch



https://gis.cern.ch

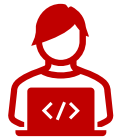




https://accelerator-synoptics.web.ch

Challenge #1 Resources

- 1 developer is not enough

  No industry software development practices 

- 1 task at a time

  Only 1 part of the application gets better

- No code reviews

  No quality control

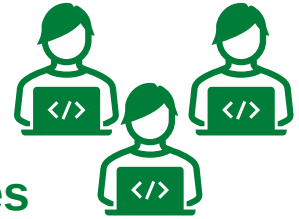
- High bus factor

  What happens if something breaks when developer is away?

Solution #1 Resources

- **3 developers for the price of 1**

  Industry standard software development practices



- **3 tasks at a time**

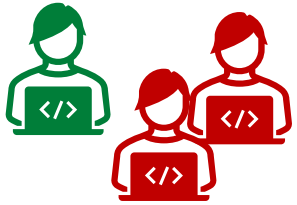
  All parts of the application get attention

- **Mandatory code reviews**

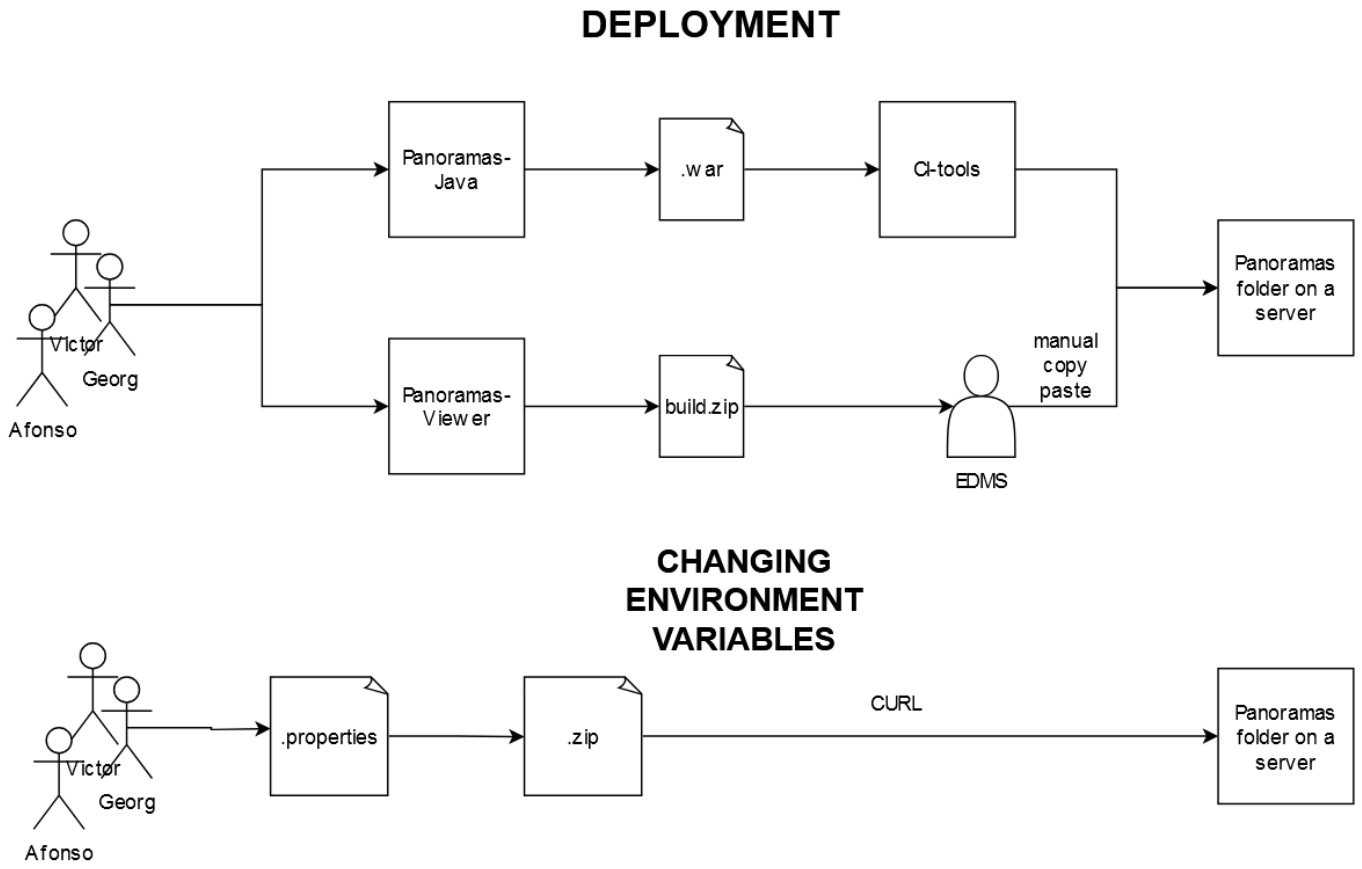
  Quality and assurance

- **Low bus factor**

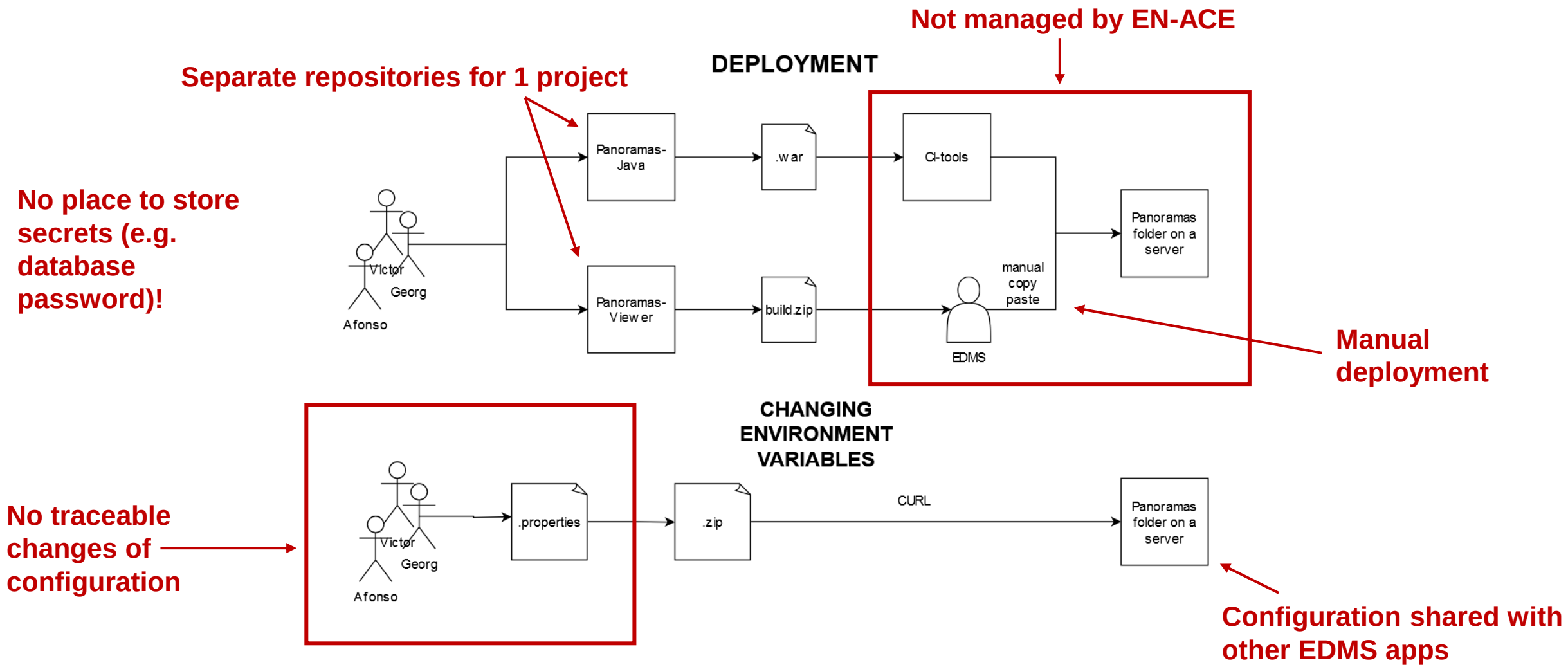
  Always at least 1 developer available



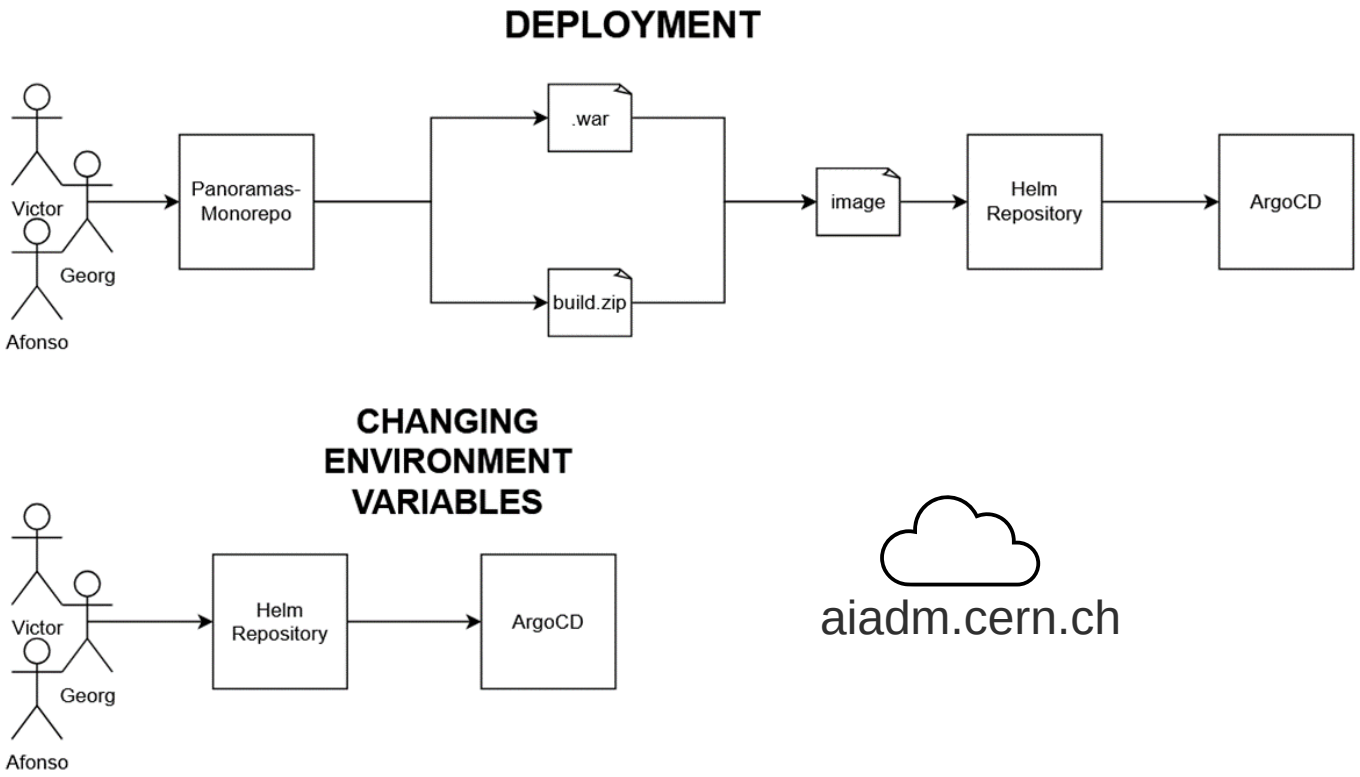
Challenge #2 Deployment & Infrastructure



Challenge #2 Deployment & Infrastructure



Solution #2 Deployment & Infrastructure

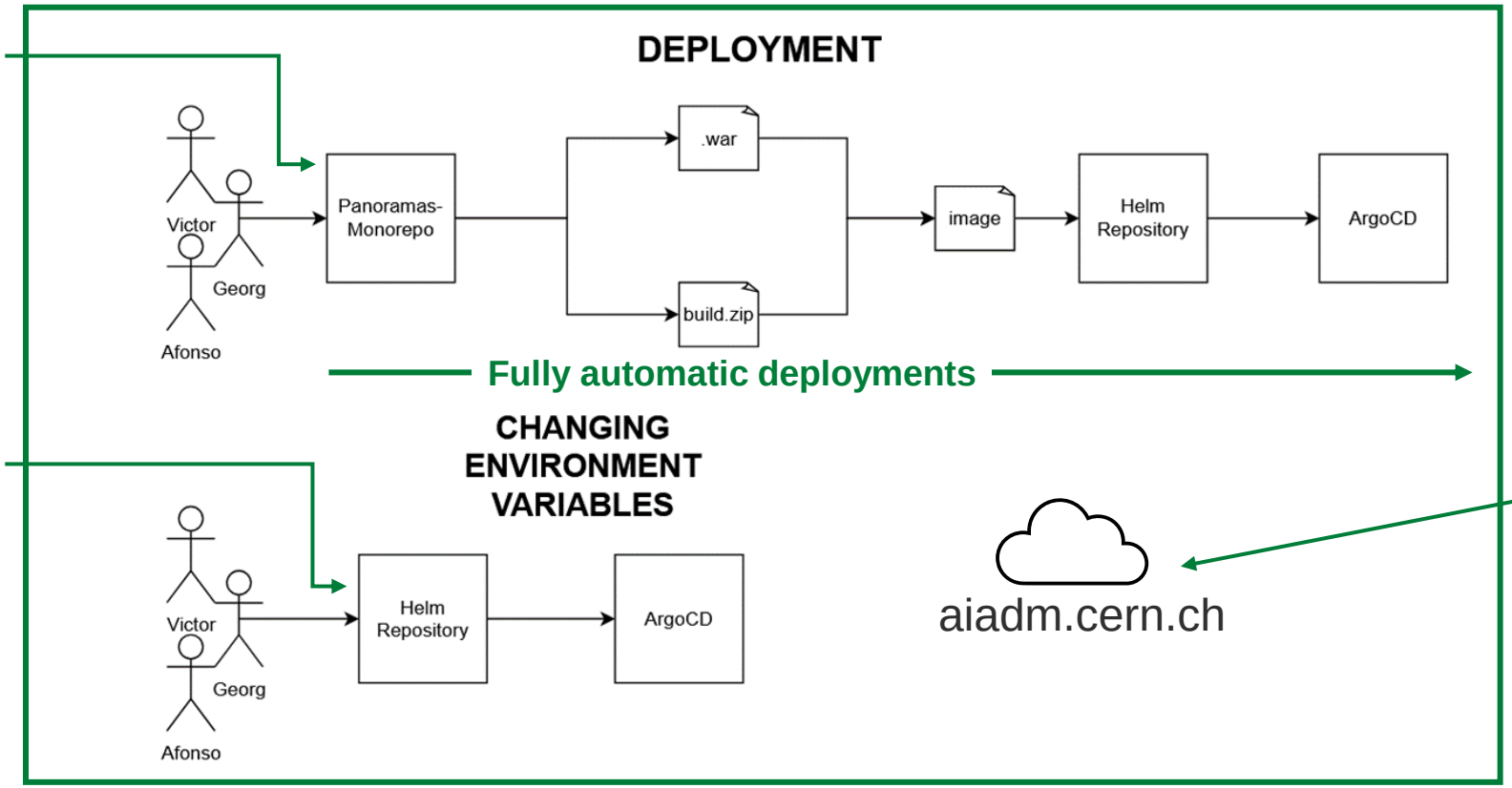


* New solution is **entirely documented in confluence**!

Solution #2 Deployment & Infrastructure

Fully managed by EN-ACE in collaboration with IT

Efficient monorepo approach



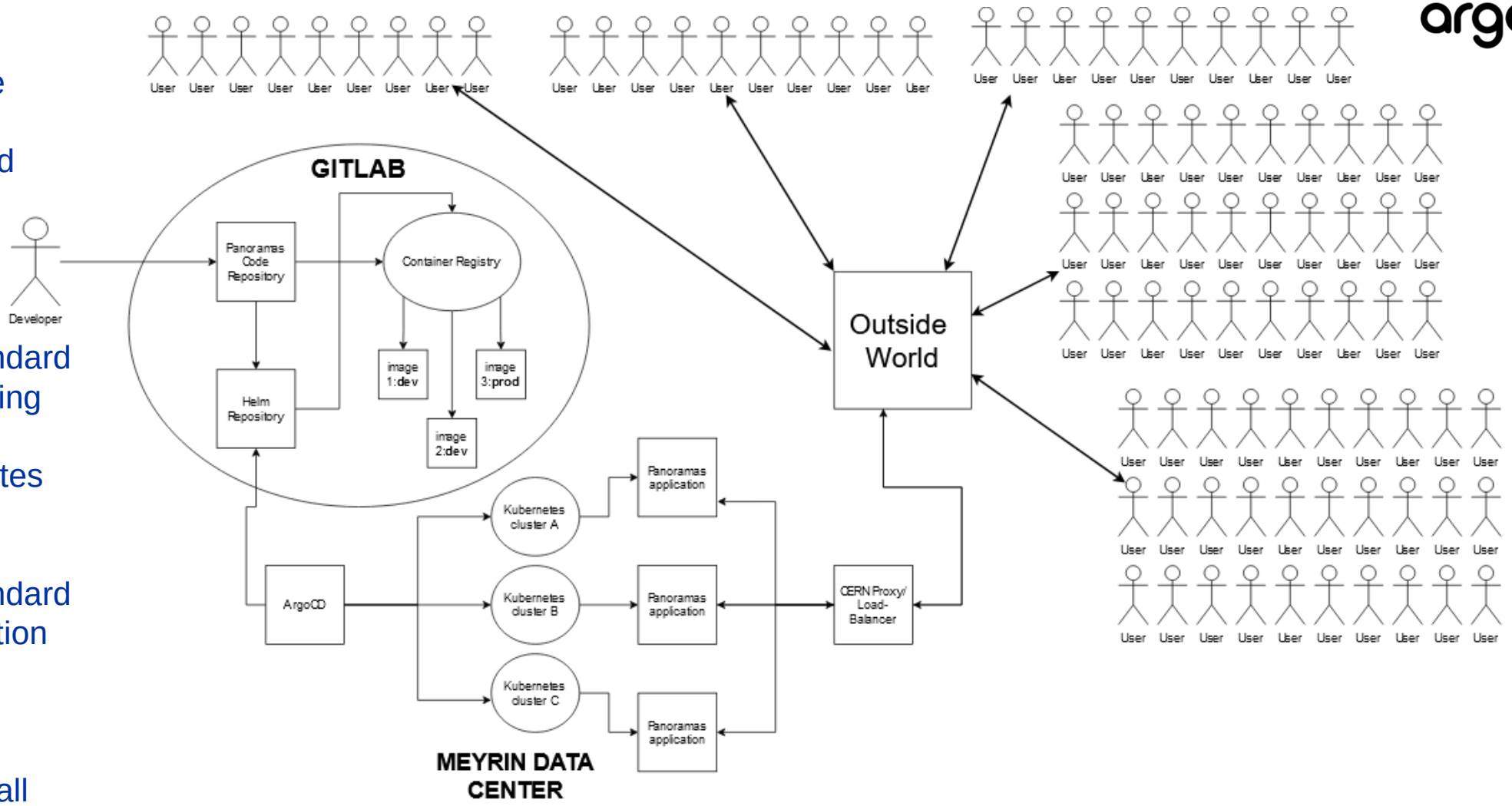
GITLAB, easily traceable

Passwords stored securely!

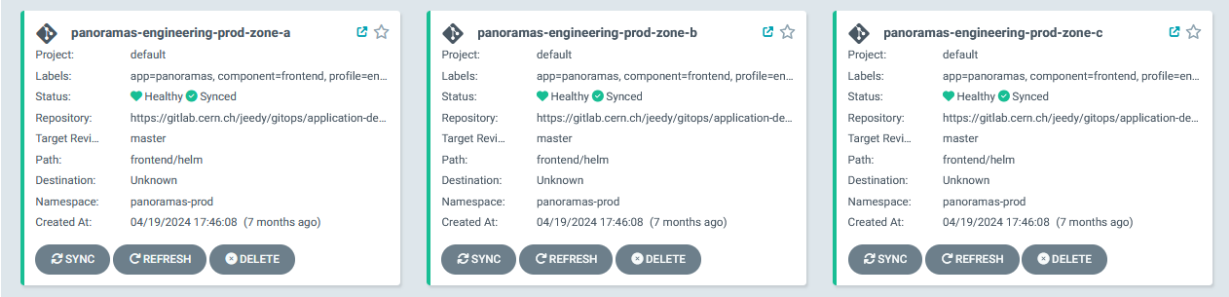
* New solution is **entirely documented in confluence**!

Solution #2 Deployment & Infrastructure

- **ArgoCD**
  - Cutting-edge technology
  - UI dashboard
  - Terminal
  - Logs
- **Kubernetes**
  - Industry standard
  - Load-balancing
  - Self-healing
  - Rolling updates
- **Docker**
  - Industry standard containerization technology
- **Java & React**
  - Well-known all around the world



Solution #2 Benefits



- 3 **separate clusters** with 3 Panoramas servers running **Easily scalable**
- **Zero downtime** during deployments **Previously** Panoramas was **unavailable** for **1.5 minutes**
- **Granular configuration**

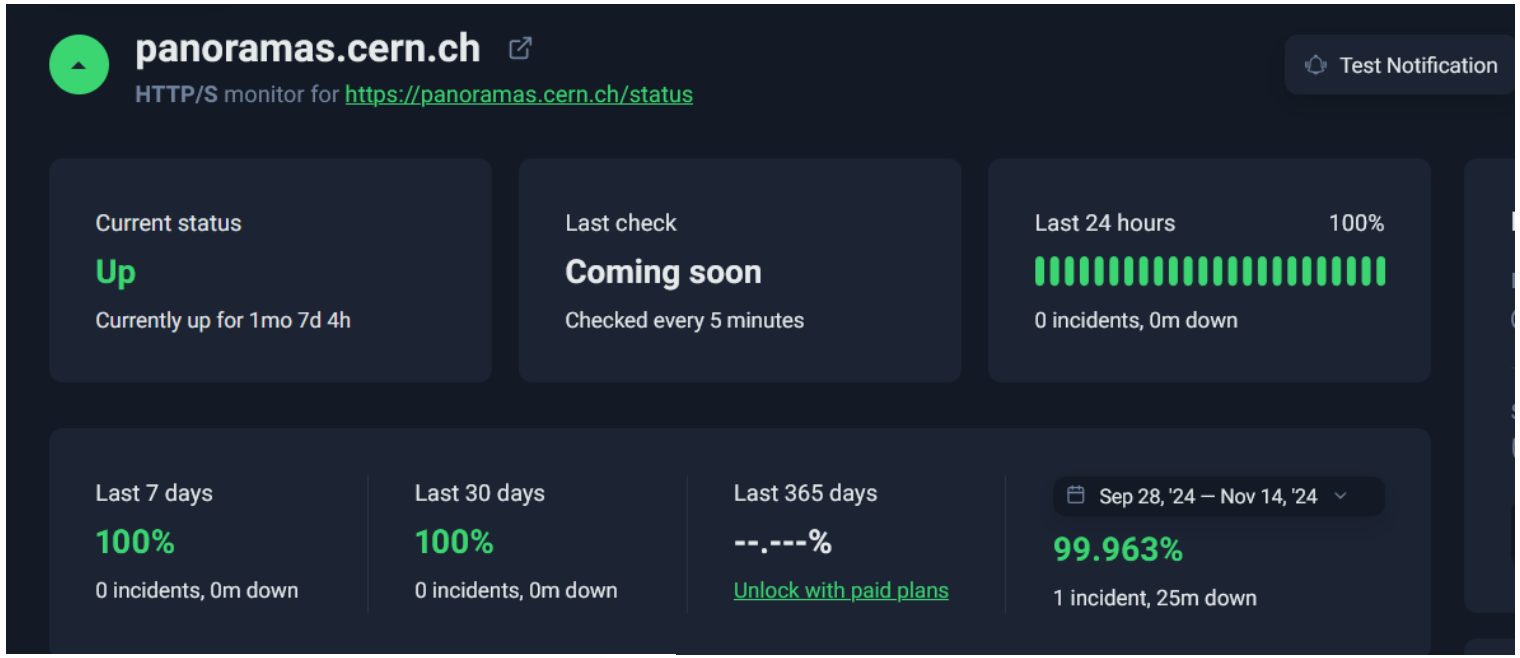
Make **Panoramas** run off **diesel generators** with **1 line change**

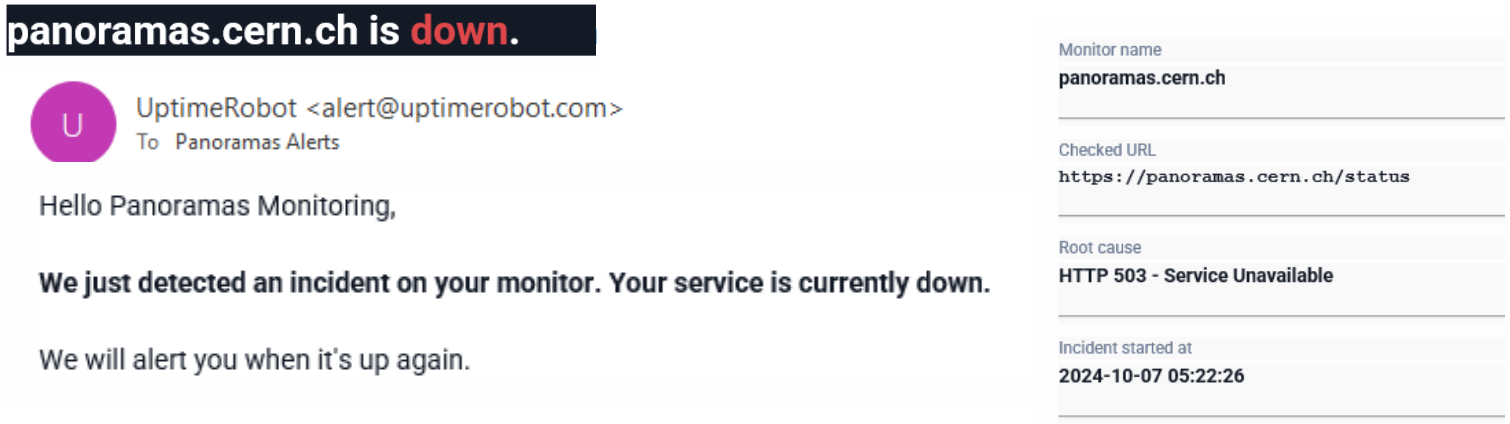
```
generators:                          generators:
- list:                              - list:
    elements:                            elements:
    - cluster: k8s-edms-prod-a-v25  »    - cluster: k8s-edms-prod-barn-v25
```

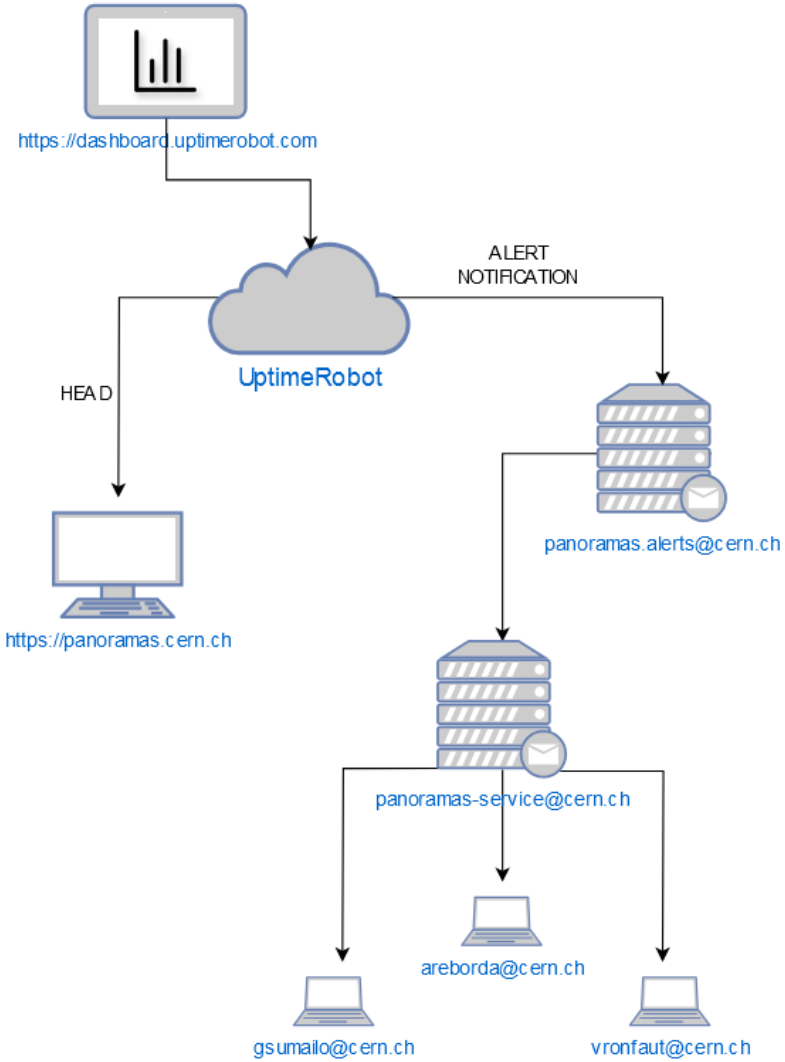
- **High availability**

If **1 server is down** the **traffic** is **routed** to the **other 2**

Monitoring


panoramas.cern.ch
HTTP/S monitor for https://panoramas.cern.ch/status
Test Notification
Current status
Up
Currently up for 1mo 7d 4h
Last check
Coming soon
Checked every 5 minutes
Last 24 hours
100%
0 incidents, 0m down
Last 7 days
100%
0 incidents, 0m down
Last 30 days
100%
0 incidents, 0m down
Last 365 days
--.---%
Unlock with paid plans
Sep 28, '24 – Nov 14, '24
99.963%
1 incident, 25m down


panoramas.cern.ch is down.
U
UptimeRobot <alert@uptimerobot.com>
To Panoramas Alerts
Hello Panoramas Monitoring,
We just detected an incident on your monitor. Your service is currently down.
We will alert you when it's up again.
Monitor name
panoramas.cern.ch
Checked URL
https://panoramas.cern.ch/status
Root cause
HTTP 503 - Service Unavailable
Incident started at
2024-10-07 05:22:26

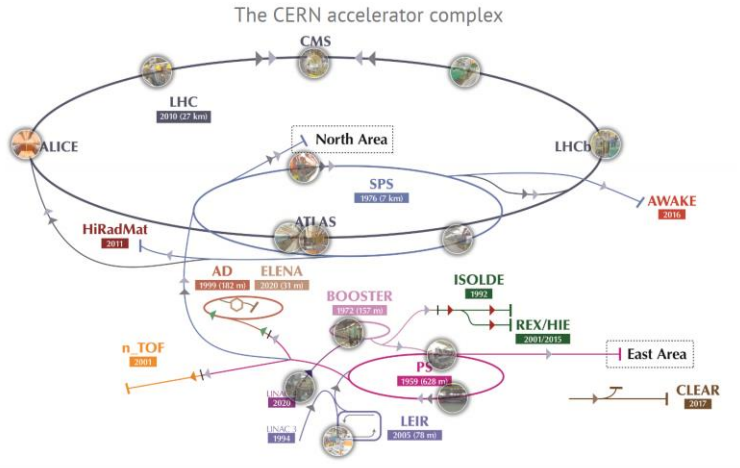

https://dashboard.uptimerobot.com
UptimeRobot
ALERT
NOTIFICATION
HEAD
https://panoramas.cern.ch
panoramas.alerts@cern.ch
panoramas-service@cern.ch
areborda@cern.ch
gsumailo@cern.ch
vronfaut@cern.ch

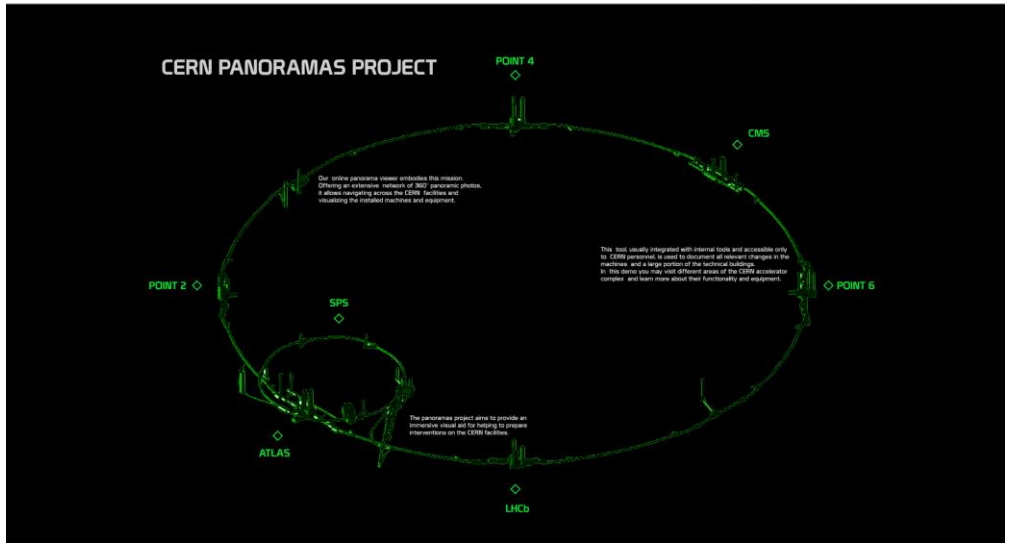
What’s next?

80 daily users world-wide, people from **127 countries** visited in **2024**!

https://panoramas-outreach.cern.ch

- **Outreach**
  - Integrate Outreach version into Panoramas monorepo
  - Engineering & Outreach synergy
- **UI modernization**
  - Refurbish outdated design of the viewer
- **Capture process improvements**
  - Reduce amount of manual labour (automatic stitching)
- **VR**
  - More possibilities for outreach (Science Gateway)





Acknowledgements

Thanks to the EN-ACE colleagues, **Jean-Philippe Tock**, **Samy Chemli**, **Monika Stodulska, Sonia Bartolomé Jiménez, Bruno Feral, João Oliveira, Jean-Baptiste Mayolini, Estrella Fernandez**, in particular **EN-ACE-INT**, **Antoine Ansel** and all the CERN colleagues involved in any way with the Panoramas project

Thanks to **Thomas Birtwistle** for excellent supervision, involvement and trust in making Panoramas a better application

Thanks to the IT department, mainly **Antonio Nappi** & **Artur Wiecek** for making the transition to the new infrastructure possible

Special thanks to fellow developers **Afonso Caiado** & **Victor Ronfaut** for the good vibes and their work on Panoramas

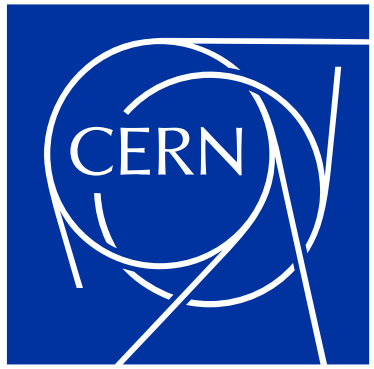
Thanks to the people who make everyday feel special: **Etienne Scaioni, Lisa Berkani, Ayla Borglund, Xavier Palle, Ixone Angulo, Michele Loffredo, Sarah Fleury, Adya Uluwita**

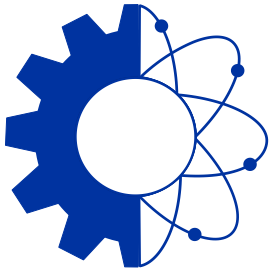
Thank you all!

Questions?

Feel free to contact us @ **panoramas-service@cern.ch**

And **join** our **mattermost** channel to be up-to-date with the new feature drops!





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DEPARTMENT

home.cern