



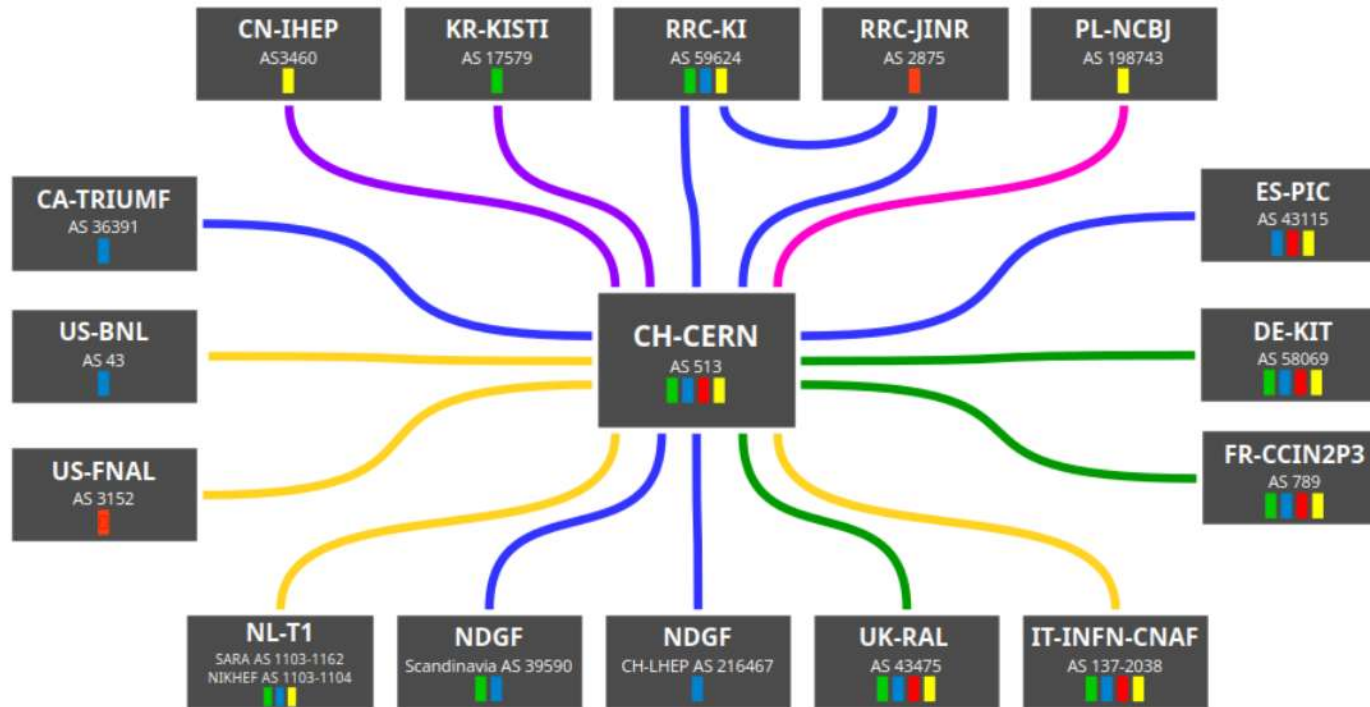
# LHCOPN update

LHCOPN meeting #54, Manchester UK

18<sup>th</sup> March 2025

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# LHCOPN



<b>Line speeds:</b>	<b>Experiments:</b>
20Gbps	= Alice
10Gbps	= Atlas
100Gbps	= CMS
200Gbps	= LHCb
400Gbps	
800Gbps	
<b>Last update:</b>	
- 20241003	
- edoardo.martelli@cern.ch	

<https://twiki.cern.ch/twiki/bin/view/LHCOPN/OverallNetworkMaps>

## Numbers

- 17 sites for 15 Tier1s + 1 Tier0
- 14 countries in 3 continents
- 2.88 Tbps to the Tier0



# LHCOPN latest news

## **IT-INFN-CNAF:**

- Tier1 migration to new Data-Centre completed, only IT services left to move
- CNAF-CERN DCI connections migrated to new data-centre
- Considering moving IN2P3 and KIT T1-T1 traffic to LHCOPN

## **UK-RAL:**

- Legacy network disconnected
- Now both 100G links connect to the production network and are used in load-balancing mode

## **CH-CERN:**

- Tendering for data-centre network equipment in 2026

# Latest news

## **Other Tier1s**

- [input from the Tier1s in the audience]

# LHCOPN Traffic – last 12 months

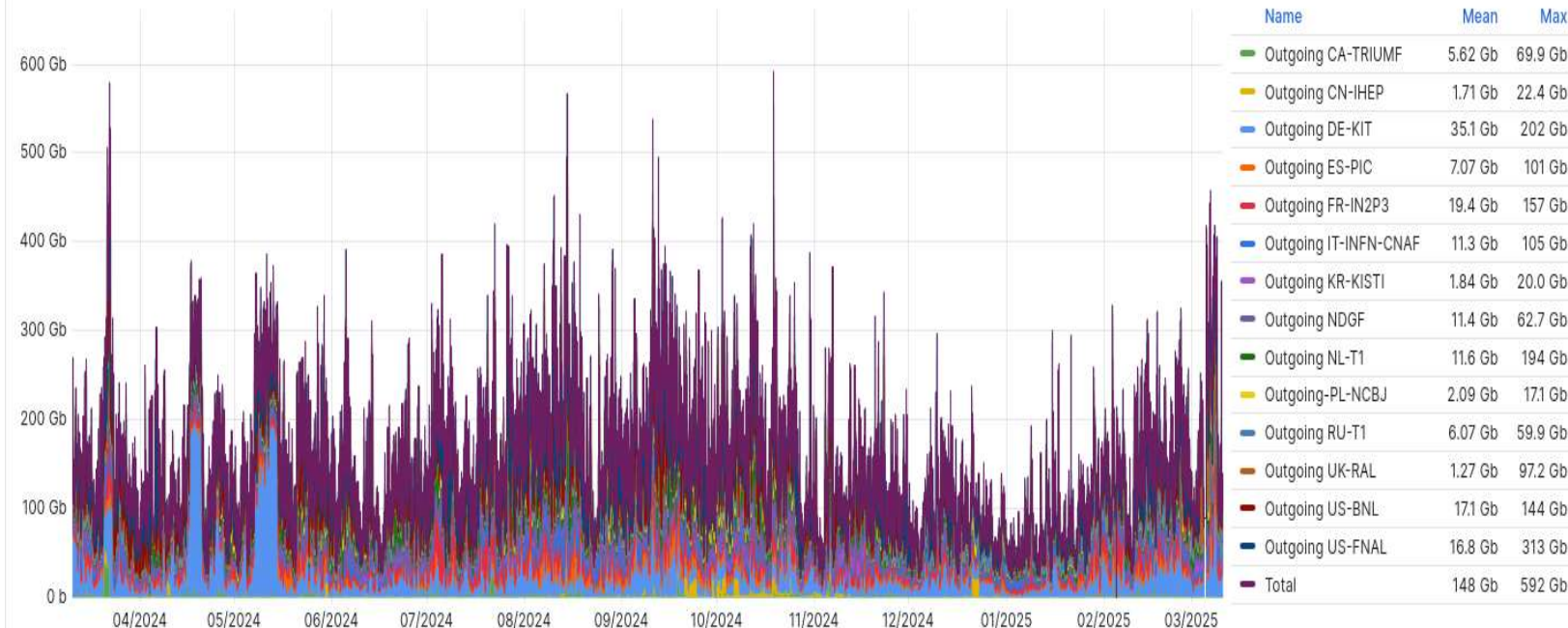
## Numbers:

Moved ~583 PB in the last 12 months

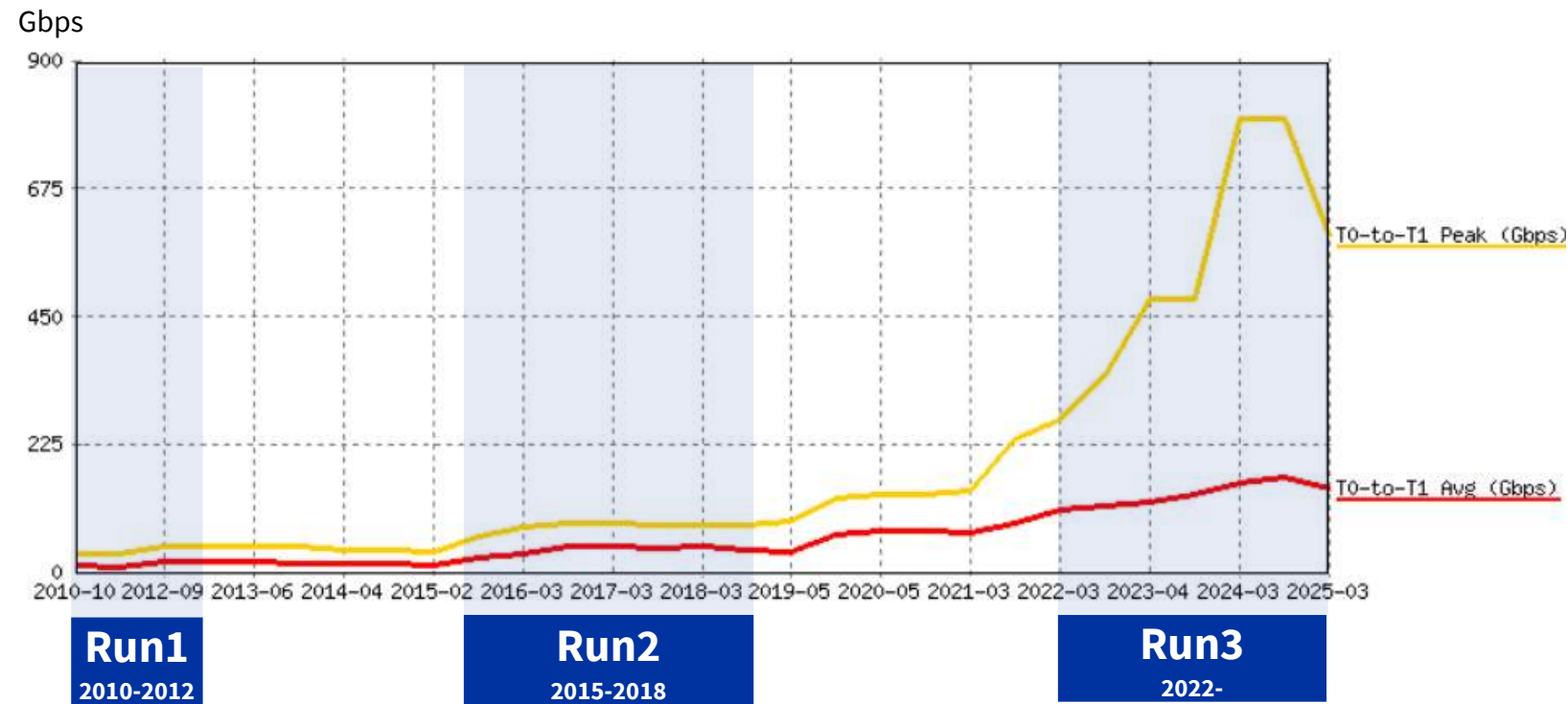
-6% compared to previous year (619 PB).

Production peak at 590 Gbps (-25% of DC24 peak)

LHCOPN Total Traffic (CERN → T1s) 



# LHCOPN: traffic growth



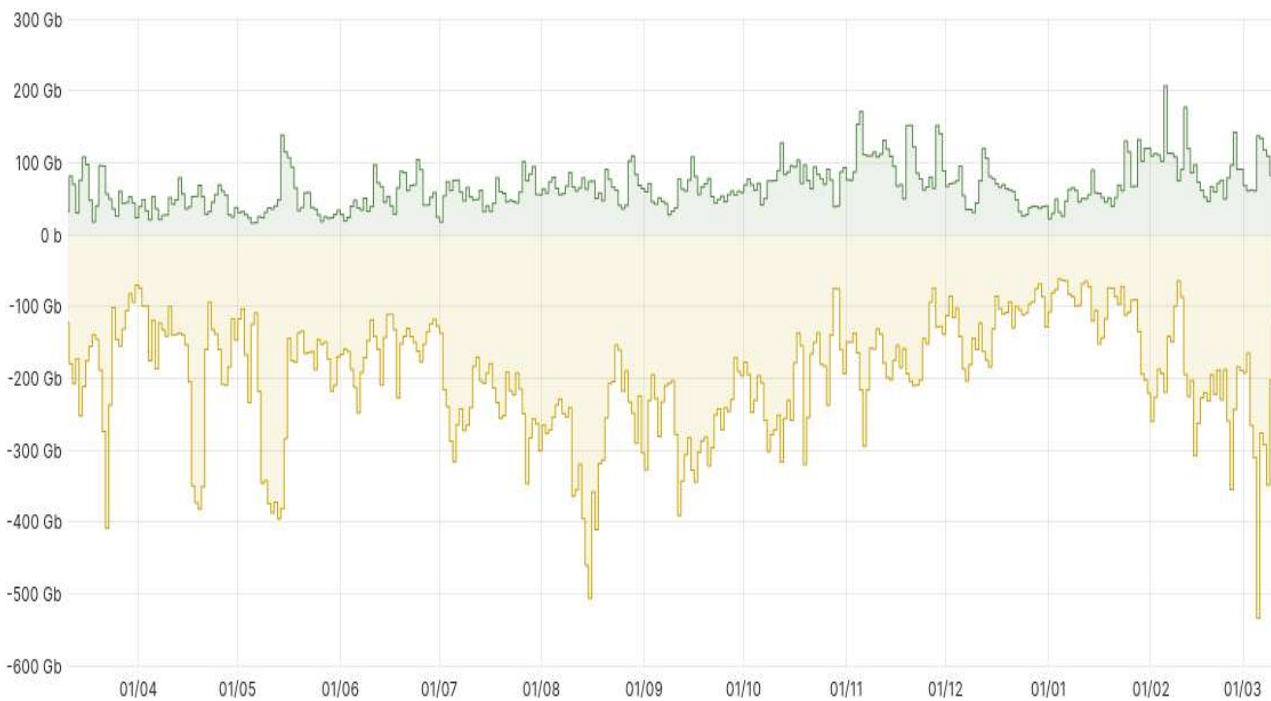
**Run1:** 2010-12  
**LS1:** 2013-14  
**Run2:** 2015-18  
**LS2:** 2019-21  
**Run3:** 2022-26

Y-Axis: Gbps - Average bandwidth of previous 12 months



# CERN total traffic

LHCOPN+LHCONE+Internet



	max	avg
Internet IPv4 In	10.1 Gb	4.30 Gb
Internet IPv4 Out	95.6 Gb	20.7 Gb
Internet IPv6 In	20.8 Gb	4.48 Gb
Internet IPv6 Out	41.1 Gb	10.9 Gb
Internet Total In	27.7 Gb	8.78 Gb
Internet Total Out	95.6 Gb	31.6 Gb
WLCG IPv4+IPv6 In	200 Gb	61.2 Gb
WLCG IPv4+IPv6 Out	520 Gb	184 Gb
Total In	207 Gb	65.4 Gb
Total Out	534 Gb	195 Gb

## Numbers:

Sent out ~768 PB  
in the last 12  
months

+6% compared to  
previous year  
(721PB)

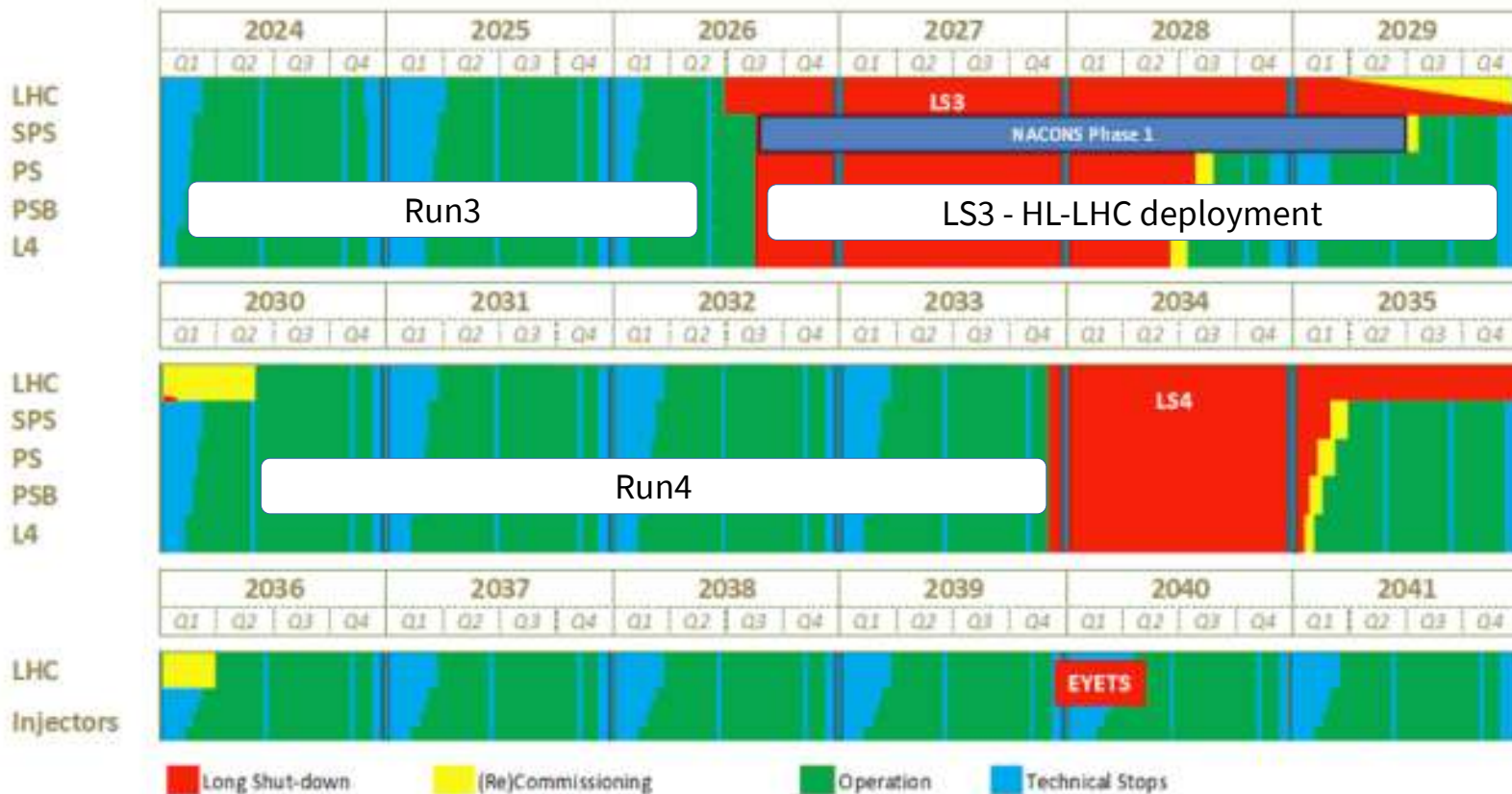
More LHCONE  
and Internet  
traffic have  
compensated  
LHCOPN  
decrease

Ref: [https://monit-grafana.cern.ch/d/cScW82Tnz/00-overview?orgId=14&var-source=long\\_term&var-bin=1d&from=now-1y&to=now](https://monit-grafana.cern.ch/d/cScW82Tnz/00-overview?orgId=14&var-source=long_term&var-bin=1d&from=now-1y&to=now)



# LHC schedule

Long Term Schedule for CERN Accelerator complex



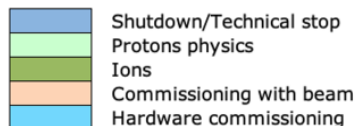
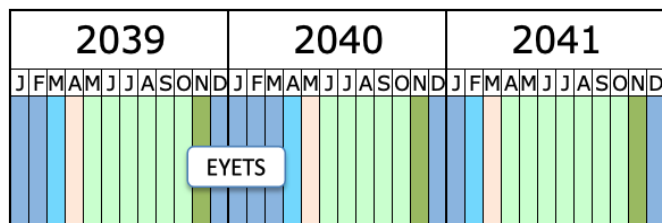
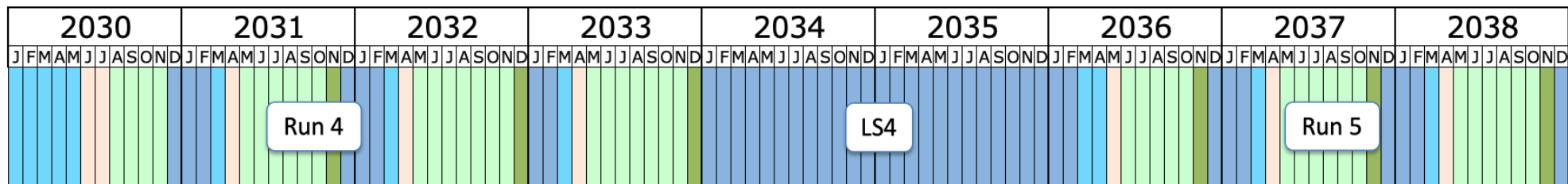
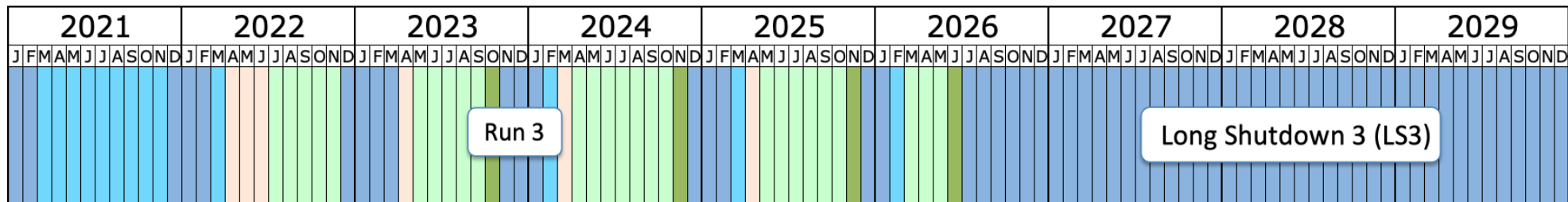
**LS3** now scheduled to begin July 2026, 8 months later than planned.

**High-Luminosity LHC (Run4)** will start June 2030, 14 months later than planned

**LS4** is delayed one year to 2034



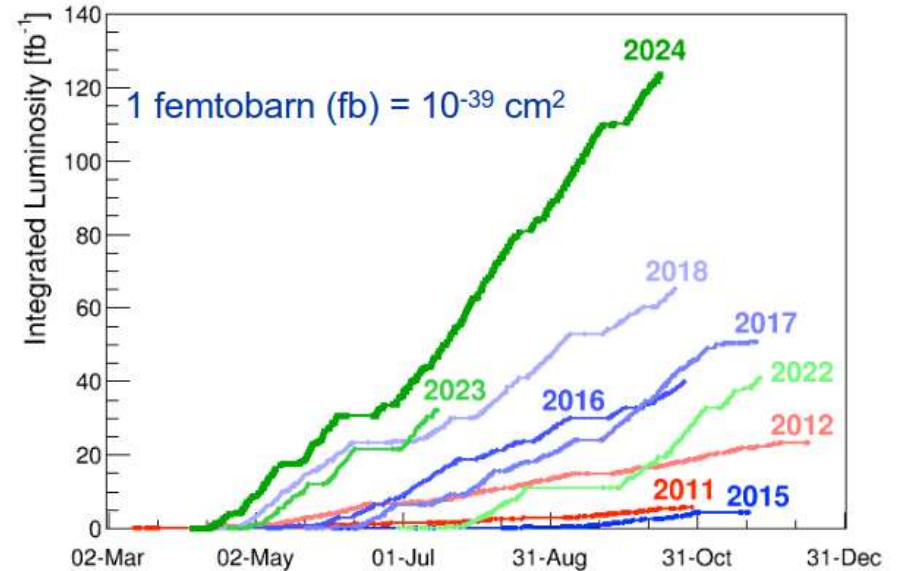
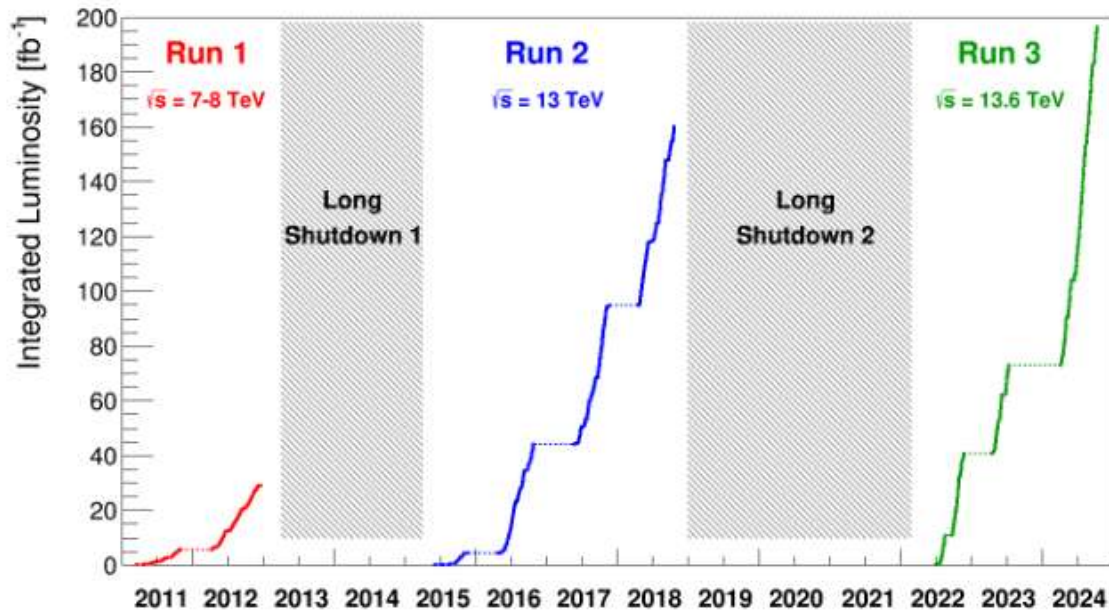
# Updated LHC schedule



Last update: November 24


# LHC performances

Exceeded 4 years of Run2 in less than 3 years, thanks to excellent 2024



# 20 years of LHCOPN

First LHCOPN meeting: <https://indico.cern.ch/event/420981/>  
20-21 of January 2005 in Amsterdam




**Grid Deployment Board - GDB**

*Tier 0/1 Network Meeting*

*Opening Session*

January 20/21 2005

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*Questions?*

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