# Tackling tomorrow's computing challenges today

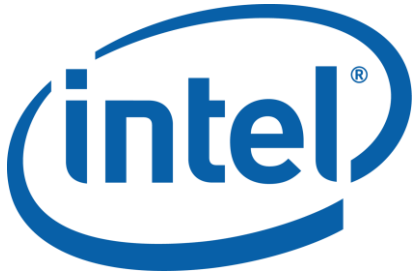
# The challenges we face…

Running largest, most complex machine in world.

Experiments at CERN produce huge amounts of data.

This has to be filtered, stored, shared, and analysed.

# Working with industry to overcome them…




ORACLE

Micron

SIEMENS

IBM

Google

E4
COMPUTER
ENGINEERING

COMTRADE

be|studys
Research and innovation

EXTREME PARTNER
NETWORK

open
systems

CERN
openlab

# You make it, we break it!

Carry out joint research-and-development projects.

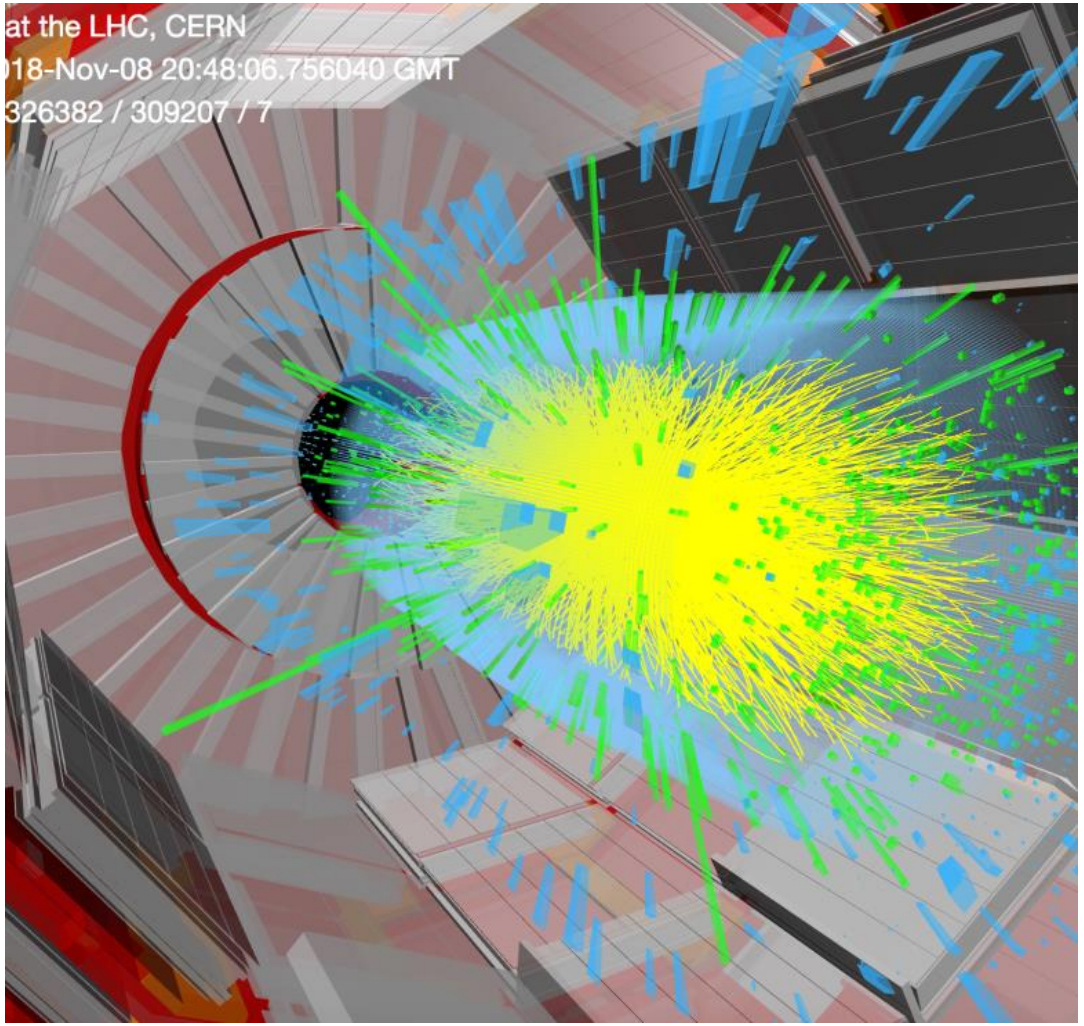
Test new technologies, before they reach the market.

Provide expert feedback to companies, while also helping us to understand tech trends.

# Supporting our research community…

One project with **Intel** is investigating if particle collisions can be treated as images.

This could allow intelligent ‘machine learning’ computer systems to look for patterns in the data, significantly reducing the computing resources needed.



Recent projects with **Oracle** and **Siemens** have used new technologies developed by these companies to help improve the reliability of our particle accelerators.

By feeding in data from millions of sensors, the systems can help us spot patterns that lead to downtime.

Other recent projects have focused on further developing the ‘cloud’ system we use to manage the thousands of computers in our data centre.

This system is a collaborative (‘open-source’) one developed through cooperation of many companies and organisations.

…and supporting wider reseach, too!

Sharing tools used in particle physics with other research communities.

We're also sharing our experience with big data, artificial intelligence, etc.

We learn from these other communities, too.

# Training the next generation

Cutting-edge computing technologies require expertise.

Companies working with us fund an annual summer student programme.

Students spend 9 weeks at CERN working hands-on with latest technologies.

# Thanks!

Find out more at
**openlab.cern**