

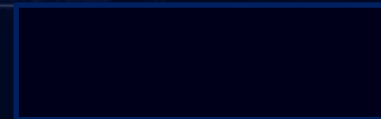
# **Breaking the laws of physics (within the laws of physics):**

## **Connecting the Micro and Macro**

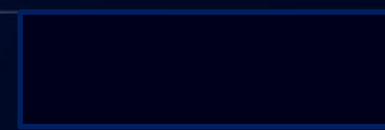
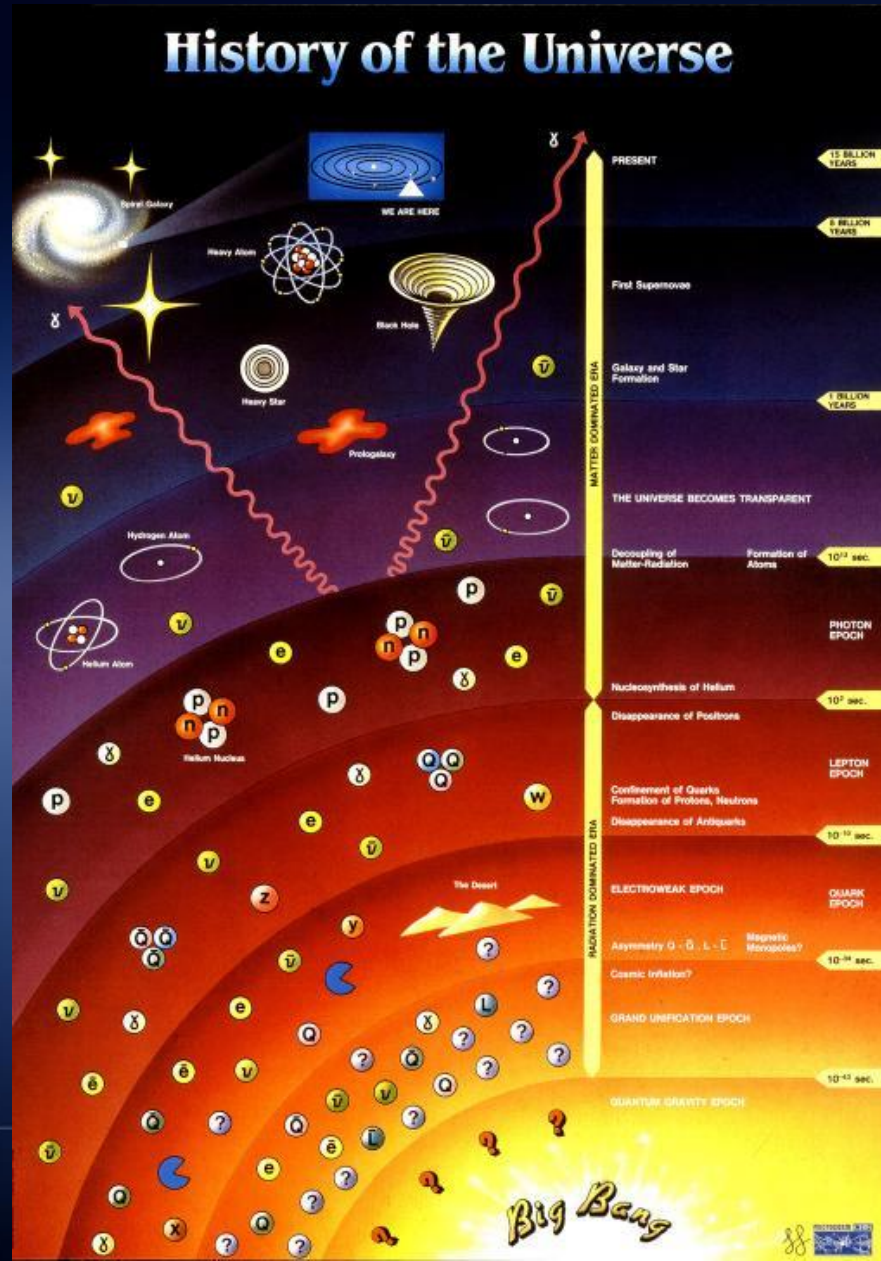
### **About CERN, Physics, and Innovation**

oBot, January 9th, 2018

Markus Nordberg (CERN)

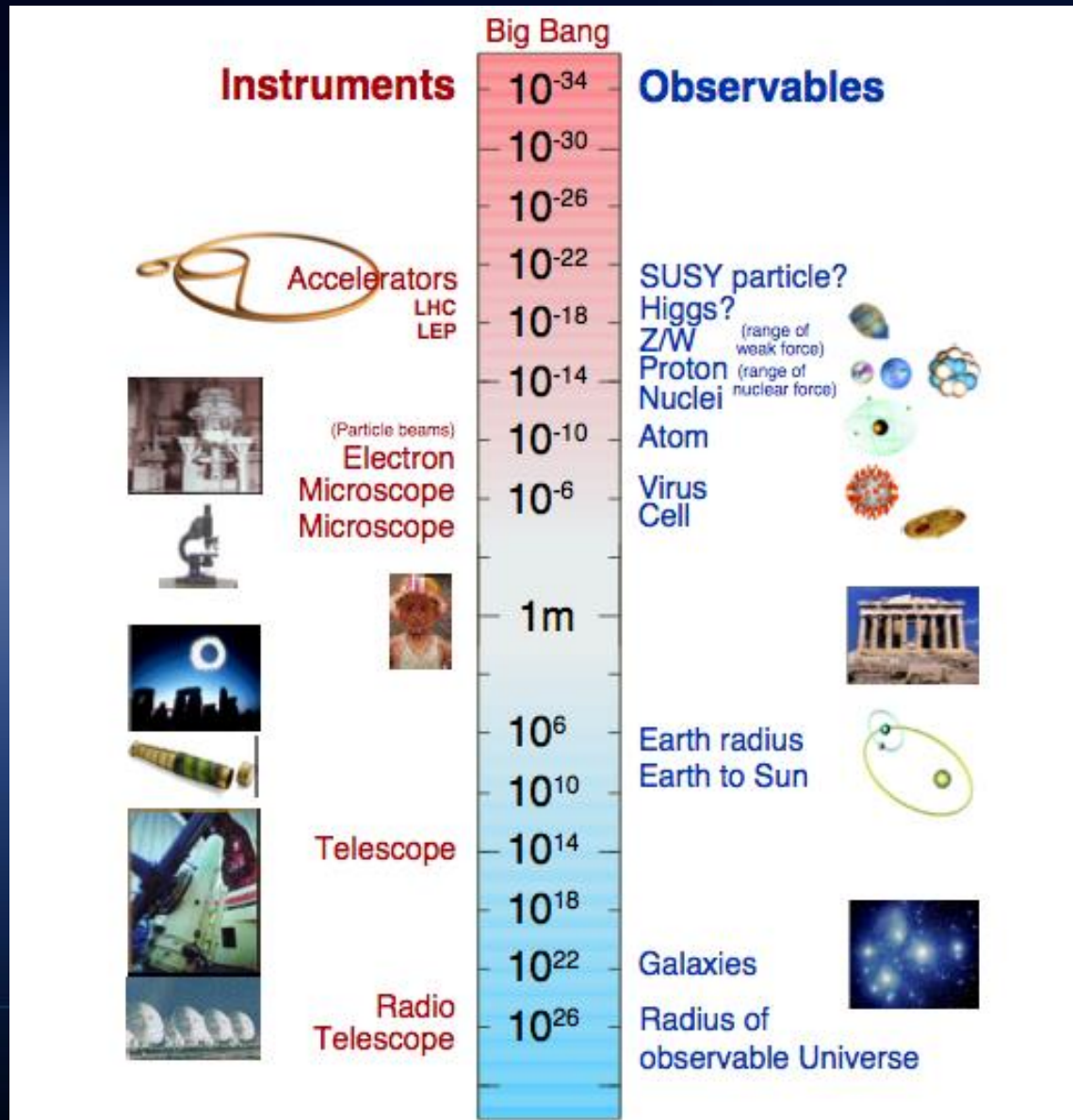


# How does CERN Connect?



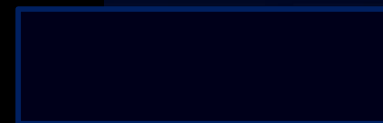
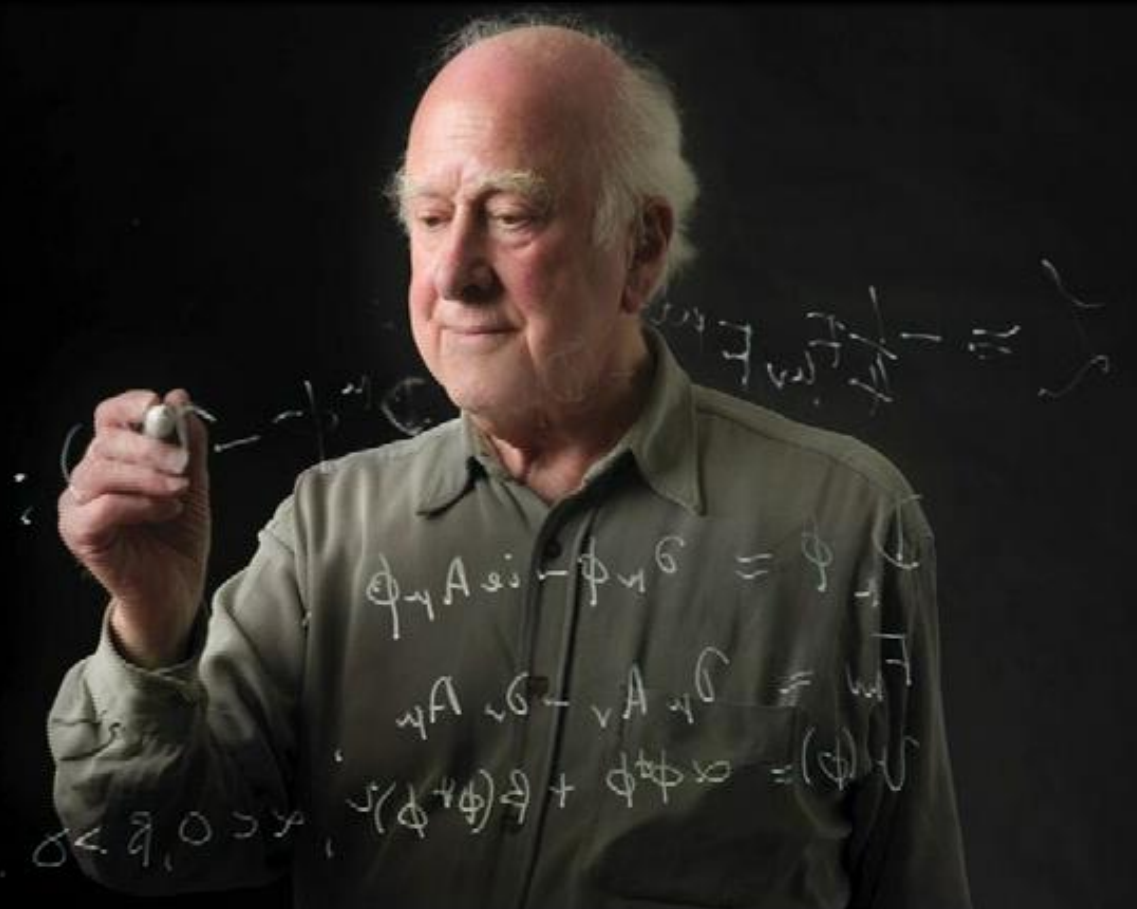
# Size of things

## How does CERN Measure?



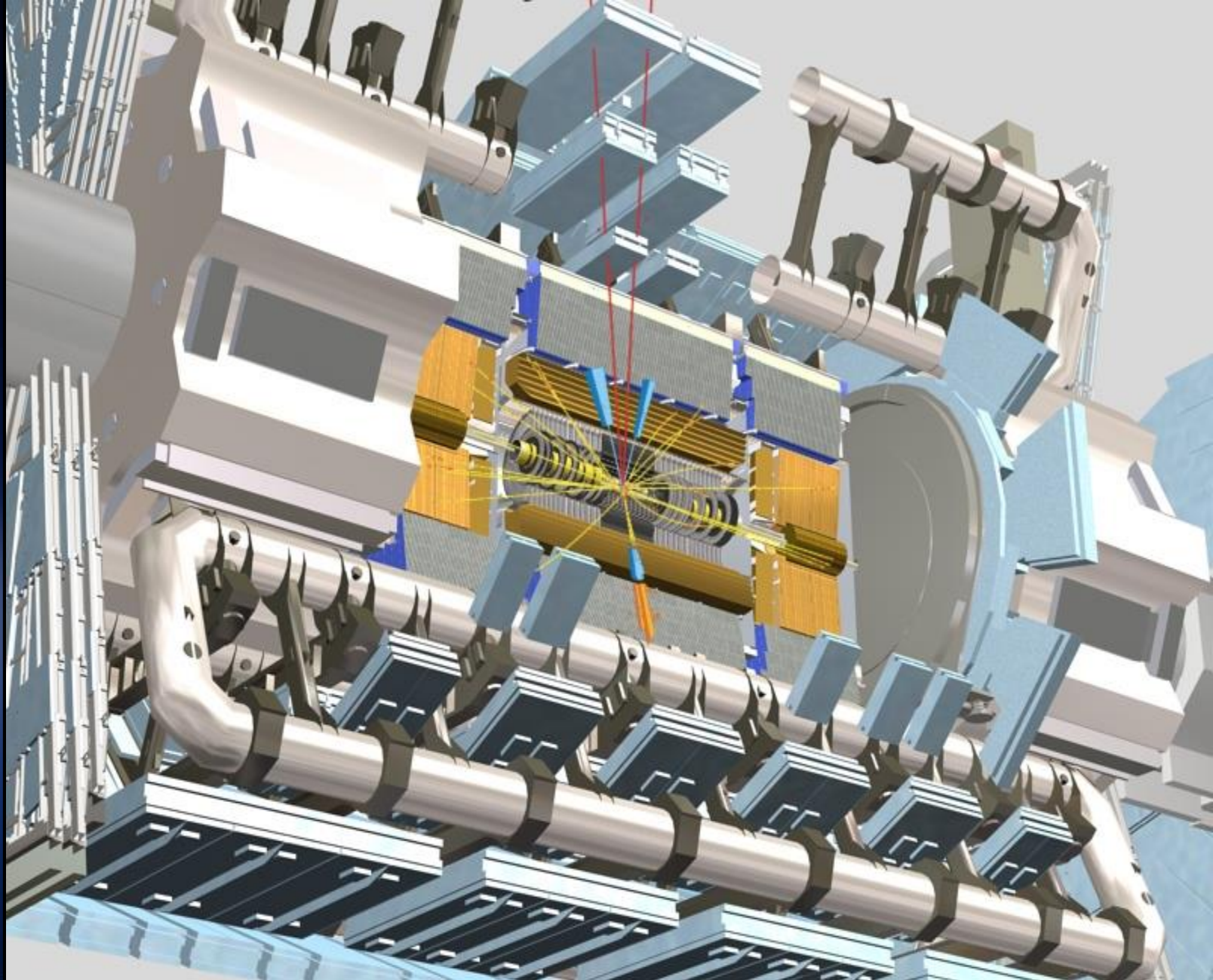


# Where do we start?

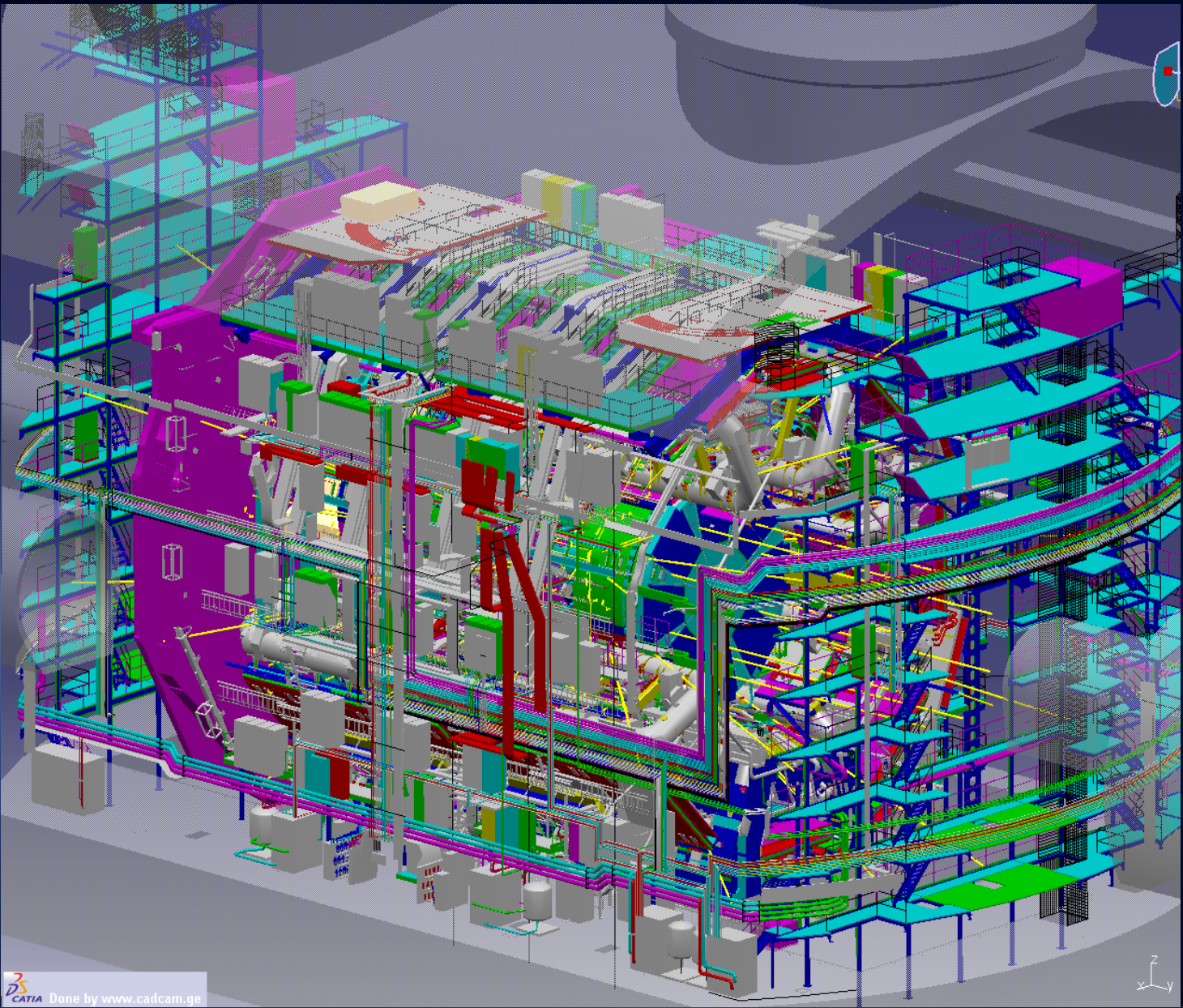






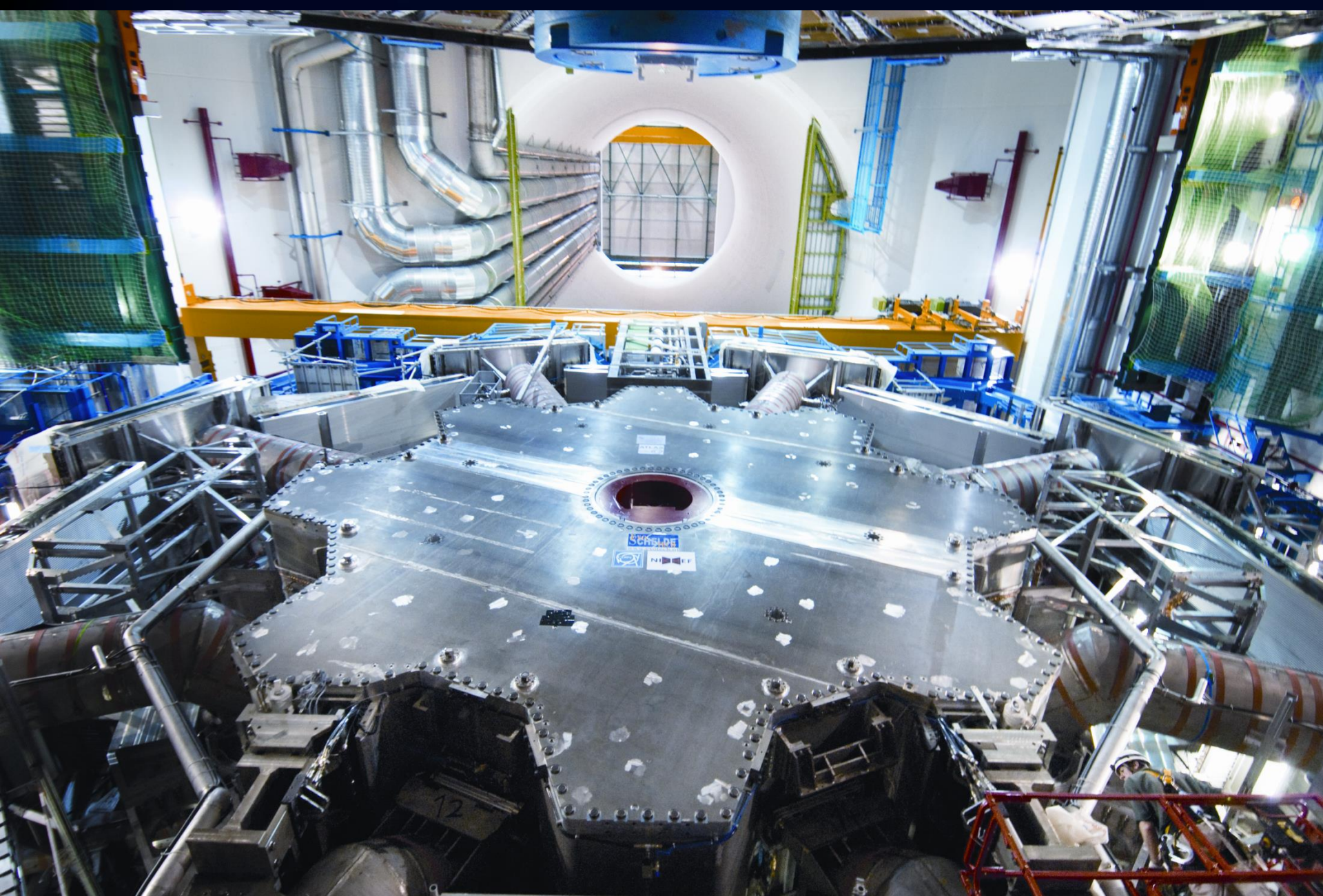






DS  
CATIA Done by [www.cadcam.ge](http://www.cadcam.ge)



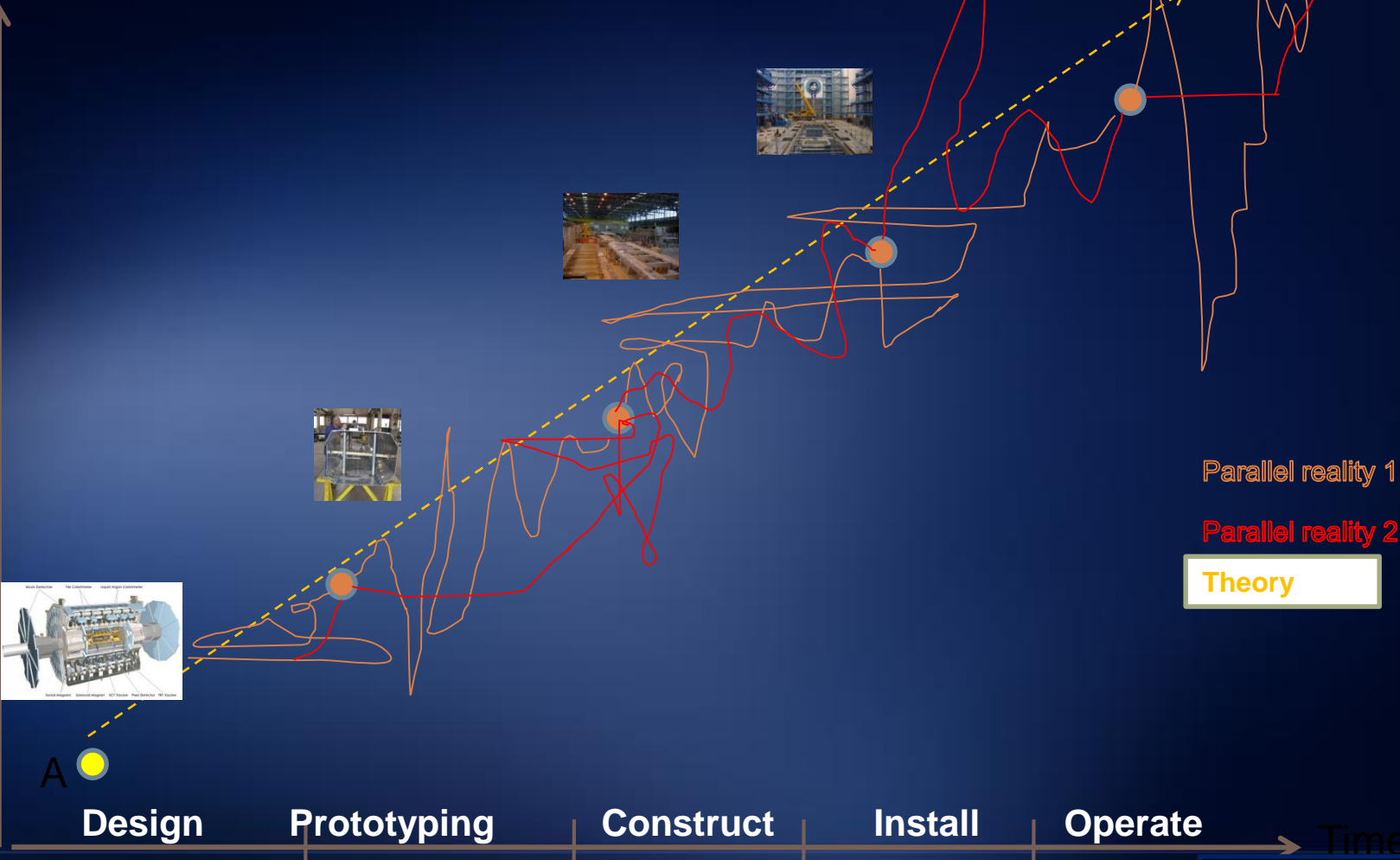




# Implementing Strategy is Not Linear



Progress



Parallel reality 1

Parallel reality 2

Theory

Design

Prototyping

Construct

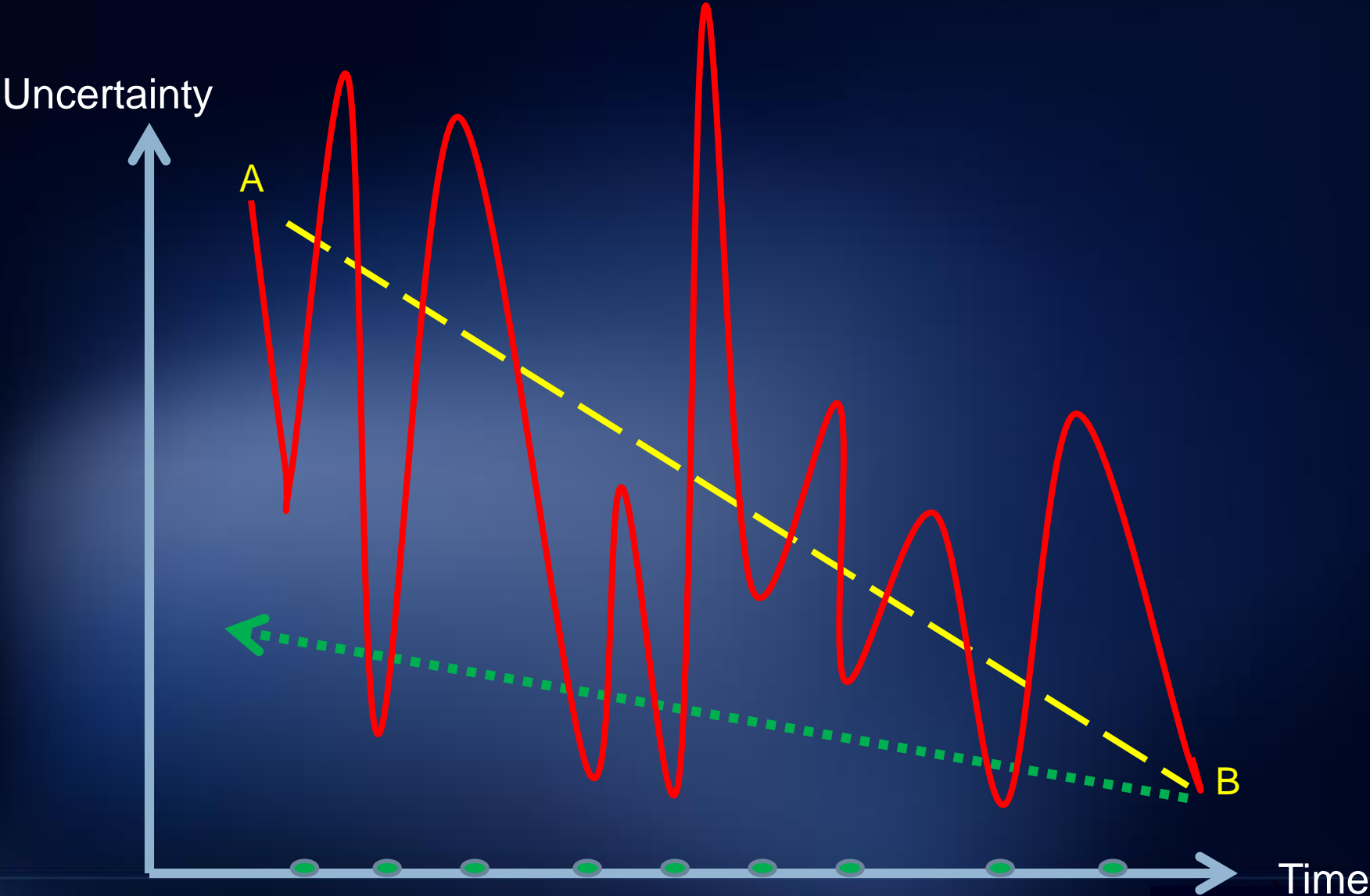
Install

Operate

Time

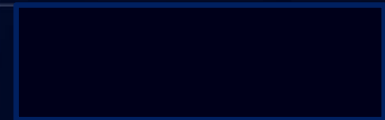
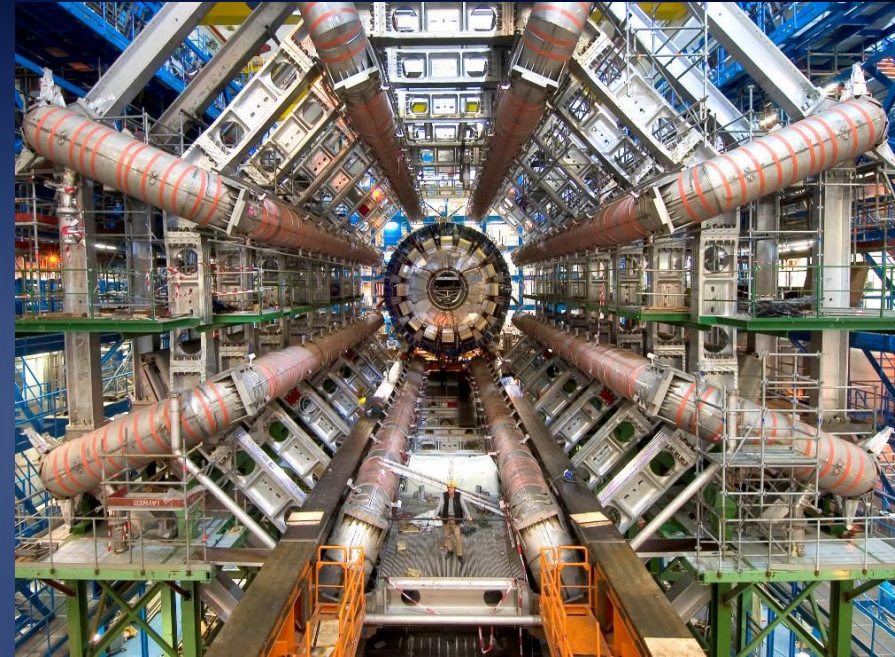
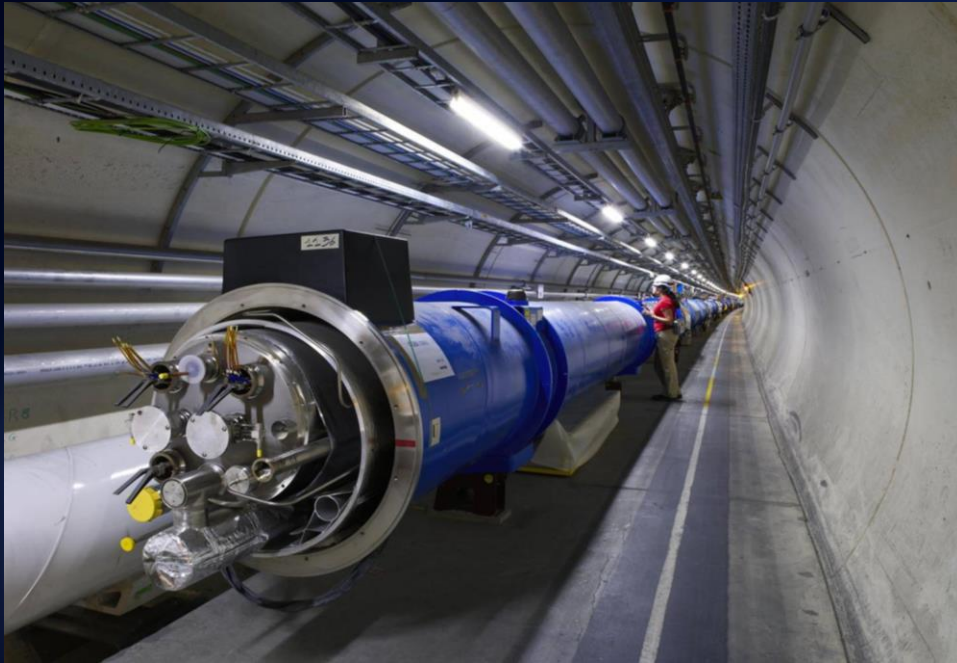


# Absorbing vs. Reducing Uncertainty

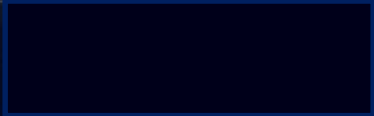




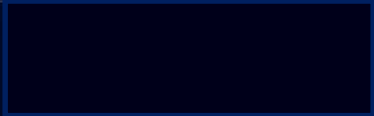
# Seeing the Micro needs the Macro (scopes)













# CERN was founded 1954: 12 European States Today: 22 Member States

- ~ 2300 staff
- ~ 730 other paid personnel
- ~ 13 000 users
- Budget (2018) ~1100 MCHF

- **22 Member States:** Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.
- **2 Candidate for Accession to Membership of CERN:** Cyprus, Serbia
- **8 Observers to Council:** India, Japan, the Russian Federation, the United States of America, Turkey, the European Commission and Unesco

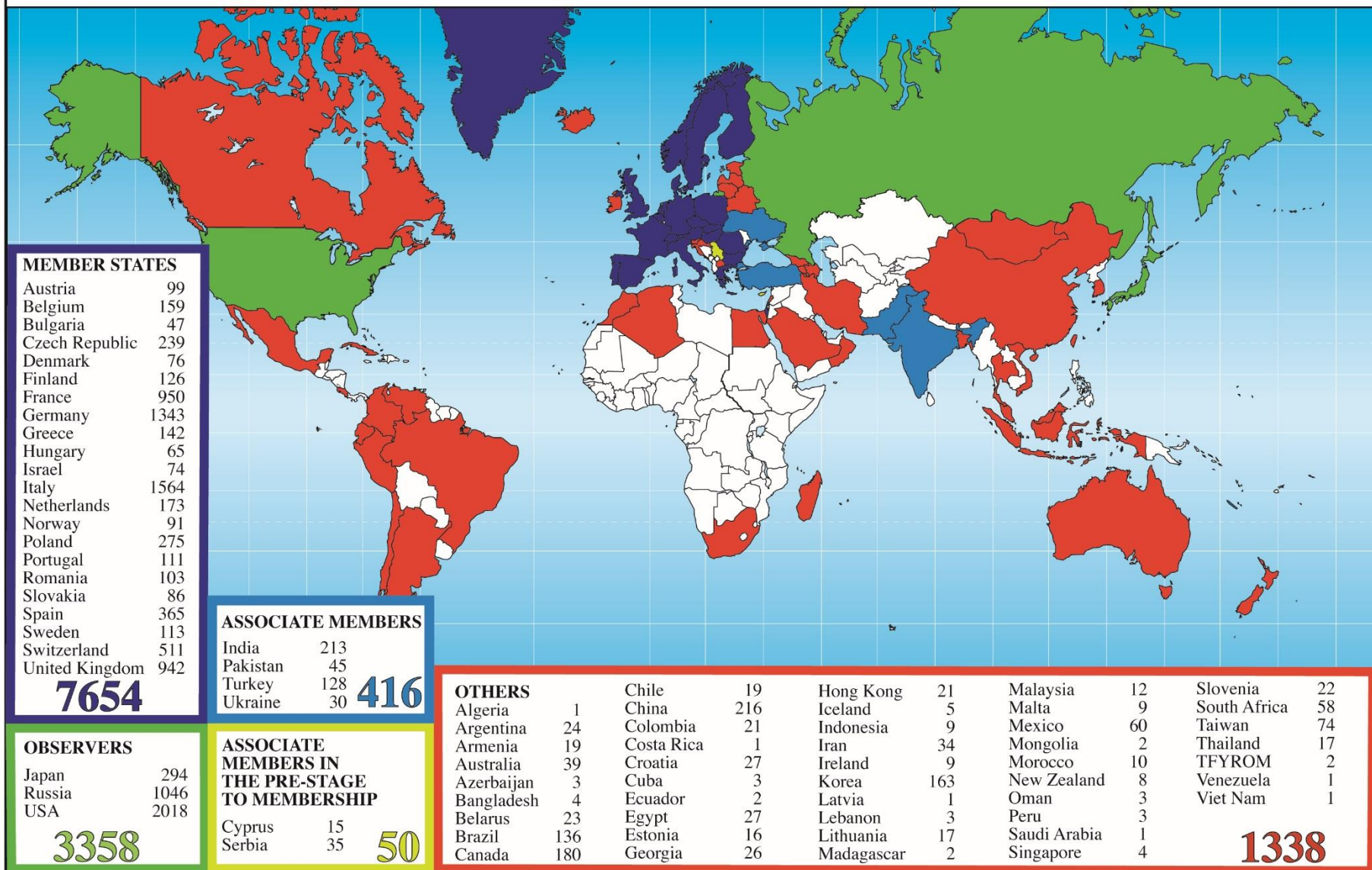






# A Global Reach

## Distribution of All CERN Users by Location of Institute on 12 January 2017





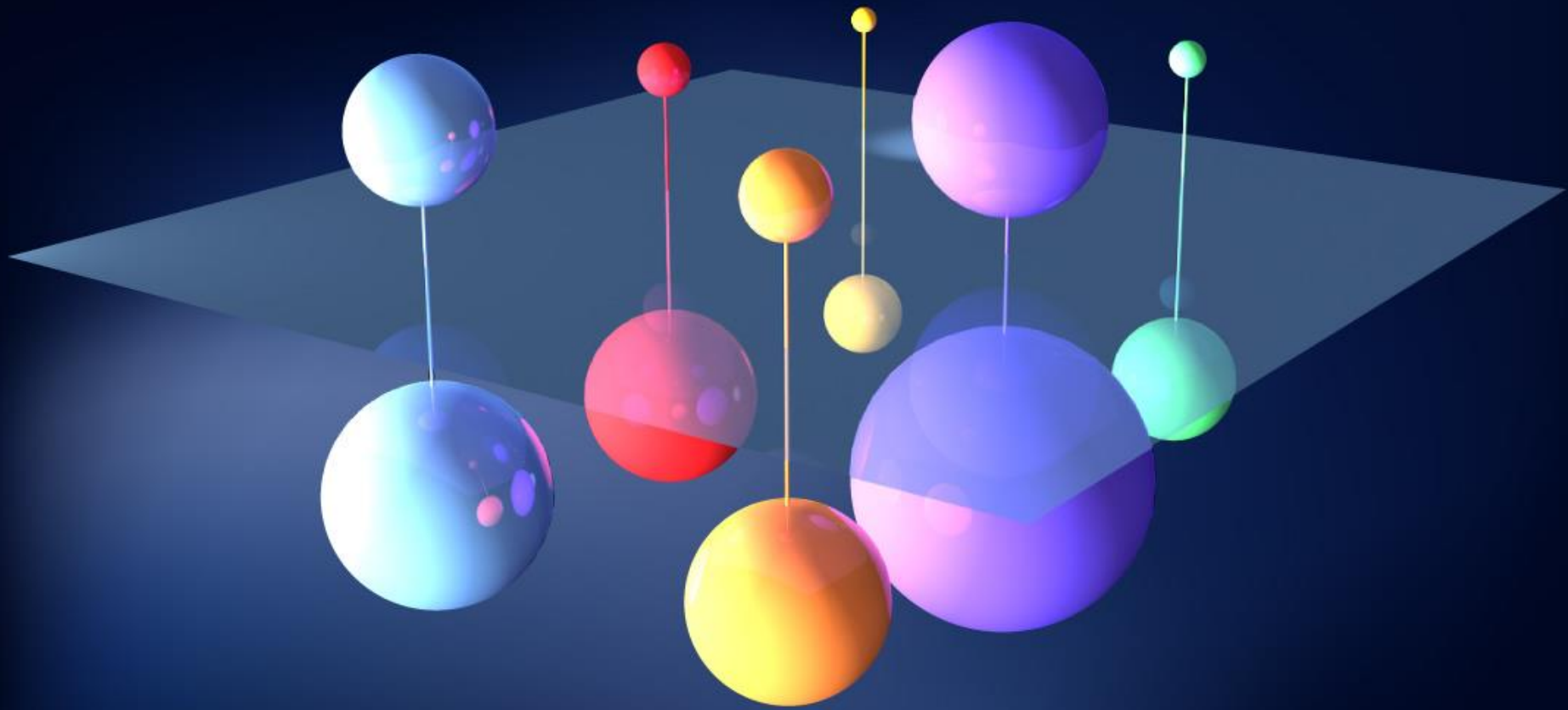
# (How) Do We Manage This?

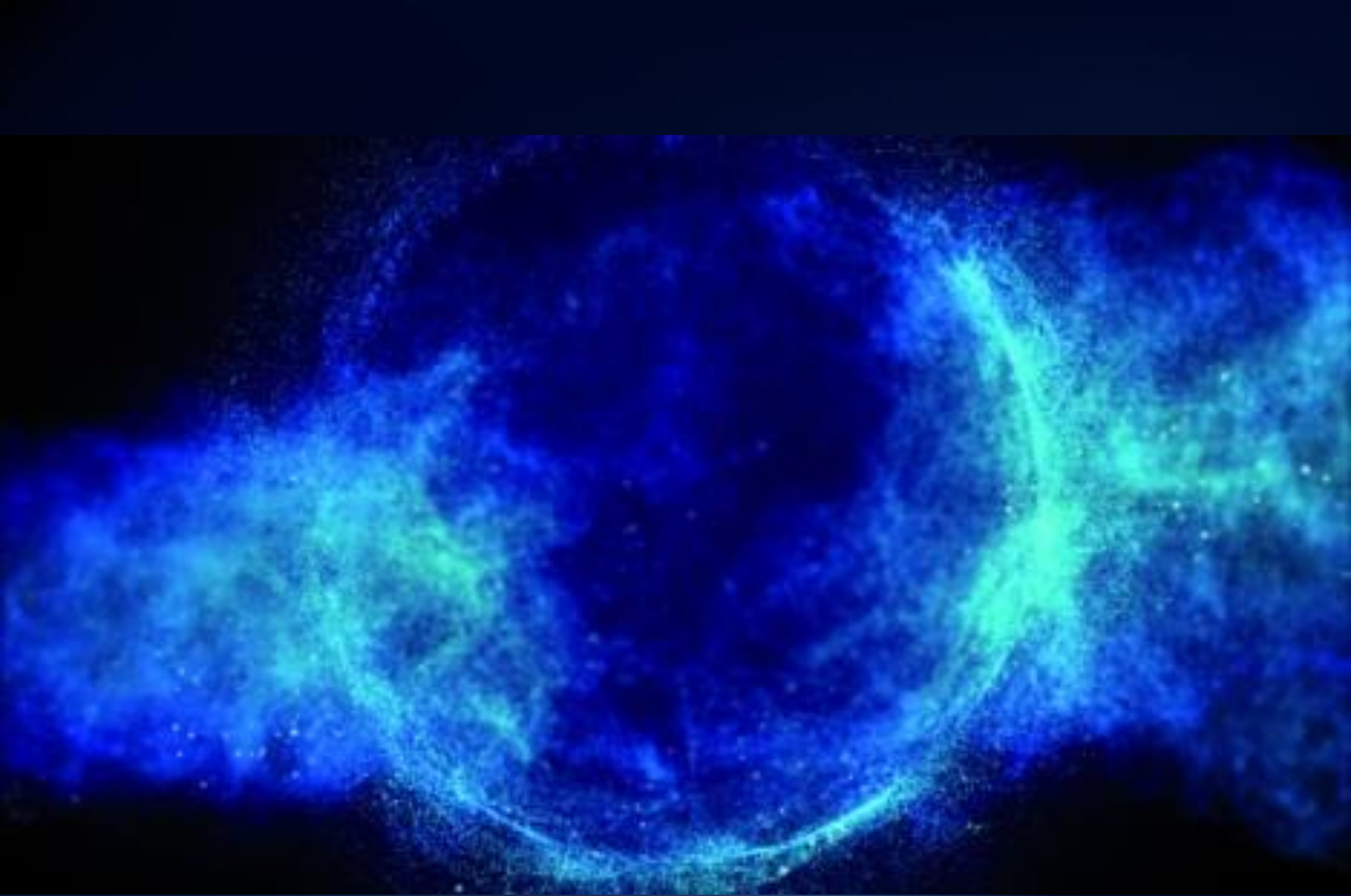
1. Vision
2. Commitment
3. Tolerance

**What is Wrong with this Picture?**



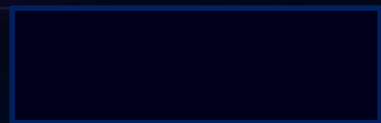




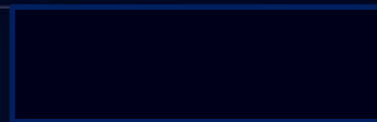
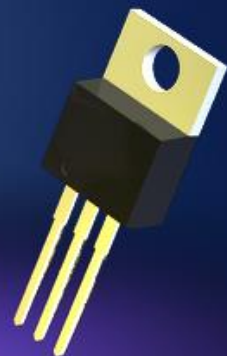
















What do you see differently?