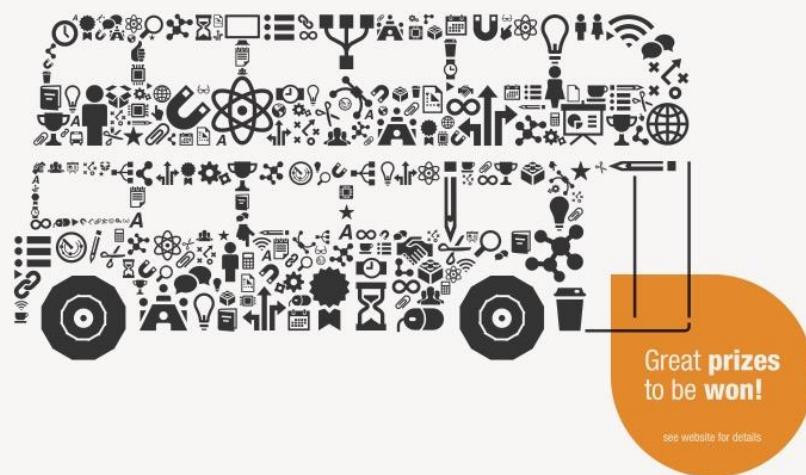




T O U R I S M E



A TWO-DAY EVENT TO CHALLENGE YOUR CREATIVITY



19th - 20th November 2015

IdeaSquare, CERN

Design and develop an interactive exhibit to enhance the visitor experience at CMS Point 5, Cessy



cern.ch/cms-create
Open to all young CMS members



Goal:

Produce a piece of hardware that will illustrate, for the general public, and kids in particular, what CMS does and how it does it.

Participants:

4 teams of
CMS members + IPAC students

Jury

Corinne Chaumontet
Head of **OTPG**

Patrick Parquet
Head of **IPAC Design**

Anne Dabrowski
CMS

Evaluation Criteria

30%: Suitability for visits

30%: Educational content

30%: Product design

10%: Reproducibility



Team 4 = Team Muon
LED strips used to represent
the function of a Muon chamber

Team 3 = Team Greane

An interactive projection of
CMS shows how particles
interact with the detector



Team 1 = Bosonisaurus
Visitors are guided through the
discovery of the Higgs using an
interactive board game



Team 2 = Jump for a Pic
Visitors become 2 colliding
particles to discover what
happens immediately after
collisions.



Diversity

25 participants

15 nationalities

36% of women

4 teams = 4 totally
original Exhibits

2 IPAC students per
team

A 33hour team project supported by advisors

CMS scientists (and guides)

Senior product designers

Tourism professionals

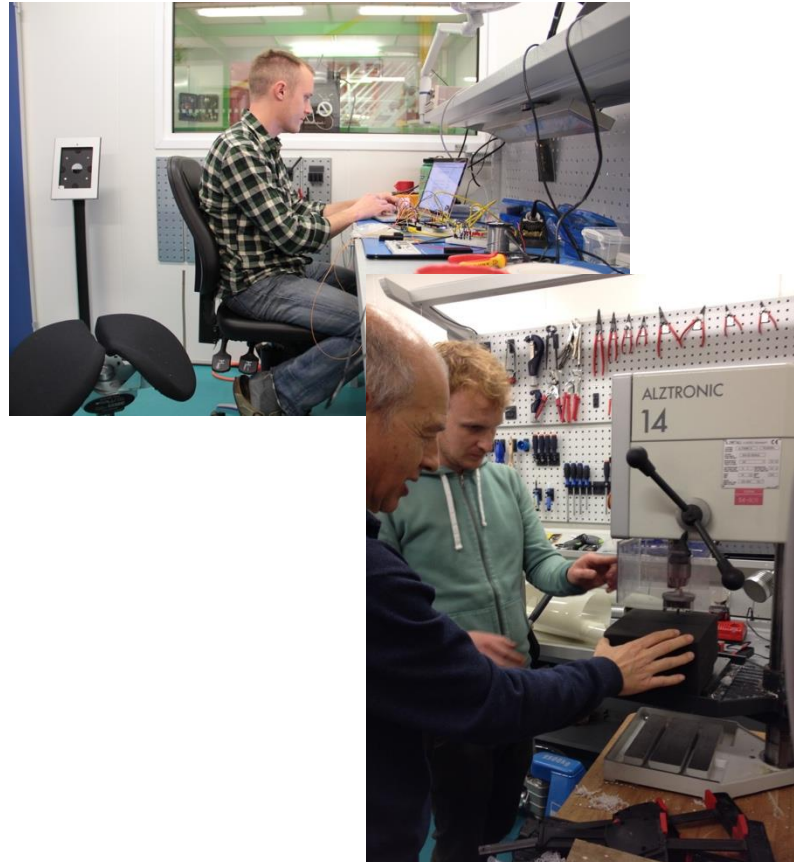


Pizza party
included

Conceptual design



Prototyping



Presentation



The Winners!!

Team 1: Bosonisaurus

The Higgs Playground (Getting the Eureka effect)

The Playground

The centerpiece of the exhibit
Stylized CMS, gentle and engaging

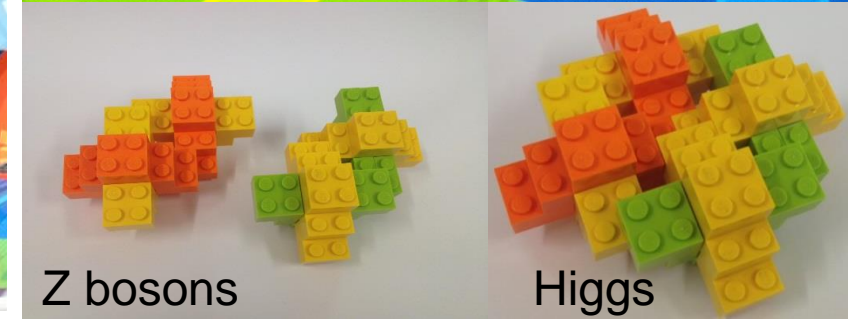
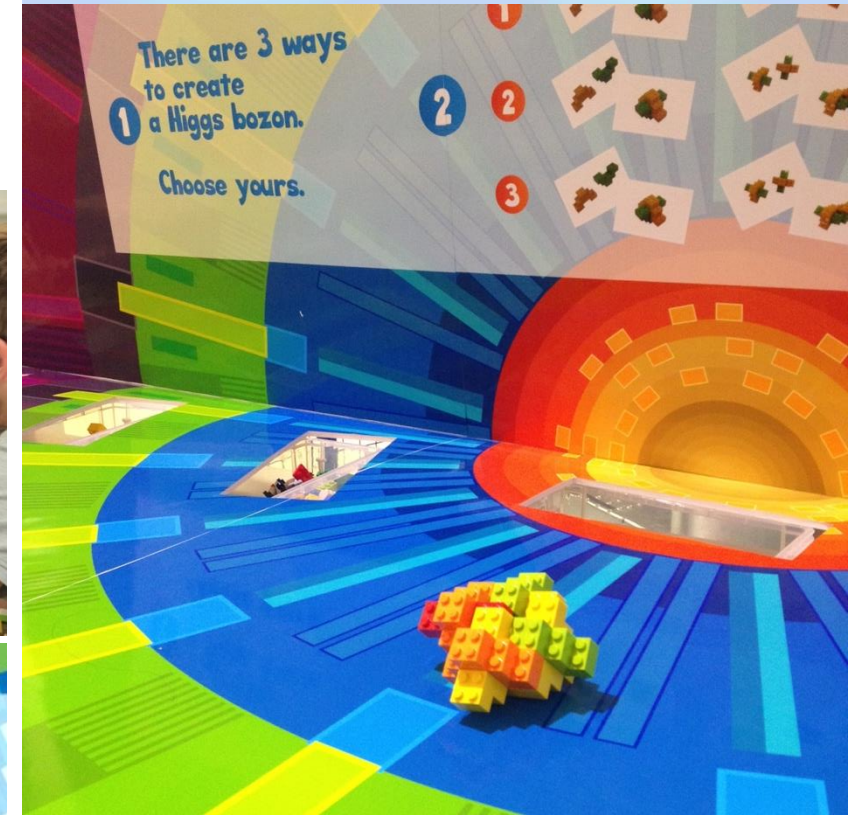
The Animation

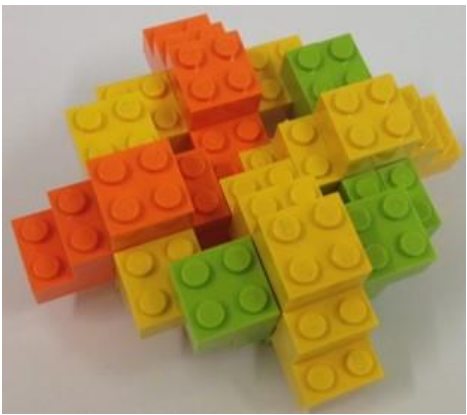
Kind professor needs help finding the Higgs
Designed to attract kids and to show how blocks go together

The Blocks

Energy deposits in subdetectors, color-coded, V-shape
Interlocking with magnets (currently just LEGO)
The main idea: Build particles in the right form starting from deposits ► shape sorter to check whether the resulting particle is a Higgs

The prototype is being turned into a full exhibit and will be installed at Point 5 by April



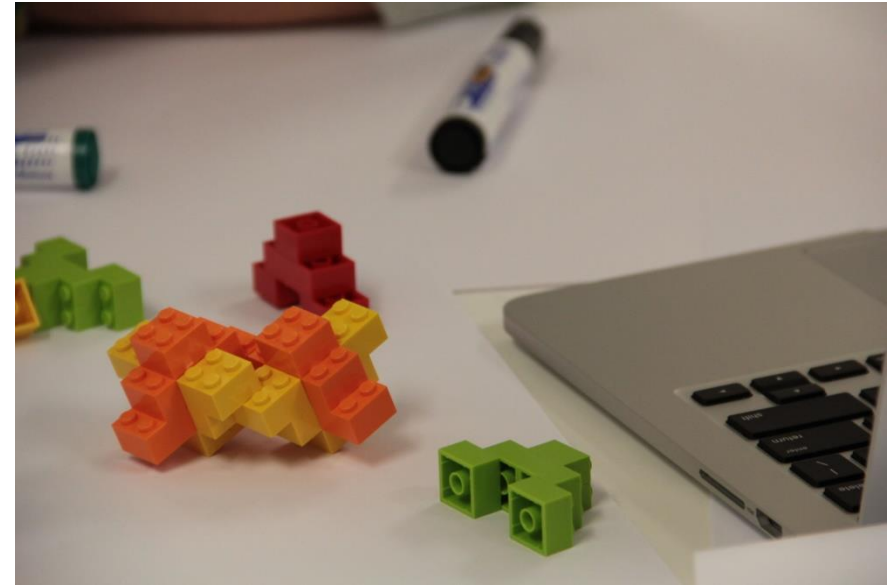


Building the Exhibits

The Higgs Playground

Currently two prototypes have become reality

- Board Game Professionally printed onto a rigid durable plastic
- Building blocks tested and 3D printed
- Thanks to Maf and the P5 technicians for building a support structure which allows the boards to be freestanding and portable
- Tested by Stephanie Beauceron in Lyon 9-10th of April
- An instruction manual is being put together so that the exhibit can be recreated by anyone in the collaboration



Feed Back from Stephanie

- context of the 'Geek and Japan Touch' event was not necessarily appropriate
- Expect it to be very well received when positioned at CMS as the visitors will be able to appreciate the background information much better
- May be preferable to have different shapes for different deposits

Building the Exhibits

Muon CSC exhibit

Currently two prototypes have become reality



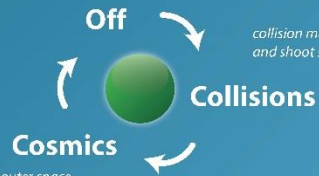
Cathode Strip Chamber *interactive demo*

What is a **cathode strip chamber**?

A **cathode strip chamber** (CSC) is a muon detector. It's made up of layers of criss-crossing wires and metallic strips with a special gas in between. When a muon enters the CSC, it knocks electrons off the gas molecules. We can measure the electrical signals the electrons produce as they race along the wires and strips.

Try it yourself!

Push the green button to change modes!



collision muons are created by the accelerator and shoot straight through

What is a **muon**?

A **muon** is one of the basic particles of the universe. It acts like a heavy electron — **207 times heavier!** Just like the electron, it carries a tiny bit of **electric charge** — the same stuff that shocks you when you touch a doorknob after rubbing your feet on a carpet.

Muons are important to study for two reasons. First, fast-moving muons are **evidence of heavy particles** like the Higgs or Z boson because they're often produced when heavy particles **decay** — or break down. Second, muons are the only particles that punch through the inner layers of the detector, so measurements with muons are **easier to analyze**.

cosmic muons rain down from outer space and shoot down at various angles, less often

as a muon travels through the detector, it produces electrical signals by knocking electrons off of gas molecules, which are picked up and recorded by criss-crossing wires and strips.

you can visualize the muon's path by following the intersection of the lights

- Built by team 4 to demonstrate how Muons interact with the CSC detectors within CMS
- 2 Modes Cosmics and Collisions
- Accompanied by an informative poster
- Installed in the Peter Sharp room at Point 5
- Only been set up for use by the guides this week so haven't yet received any feedback



Thank You for your attention ... and look out for edition 2016

More information: cern.ch/cms-create Any Questions?

We couldn't have done it without....

➤ Sponsors:

- CMS Communication
- CMS Technical coordination
- IdeaSquare
- Host states relations

➤ Event support team:

- Maf Alidra (Machining)
- Lars Roedne (Logistics)
- S. Beauceron, C. Lazaridis, A. Lanaro, S. Buontempo (CMS advisers)
- Constatinos Hoursoglou (Product Design - IPAC)
- Corinne Chaumontet (Tourism expert - OTPG)
- Oliver Keller (Electronics)
- Joonas Juhani Kurikka & Harri Toivonen (3D printing)

➤ Other CERN outfits for their support:

- Graphic design, EDU, COM, LOG

