

4th July 2012 seminar at CERN on the
“Observation of a new boson with mass around 125 GeV”

CMS Communications Group[†] report

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On the 4th of July 2012, the ATLAS and CMS collaborations at CERN presented their latest results on the search for the Higgs boson. CMS, presenting first, announced the “observation of a new boson with mass around 125 GeV”. ATLAS followed with very similar results.

In anticipation of a discovery announcement, 88 journalists from 55 media organisations attended the seminar, including 11 global news agencies, 21 print, and 20 TV companies. After the seminar, the CERN Director General and the ATLAS and CMS Spokespersons hosted a press conference. This then followed by discussions between journalists and physicists, including twenty from CMS, and TV and radio interviews. Media events were also held at the ICHEP 2012 conference in Melbourne and at CMS institutes around the world.

This note describes the CMS communications activities for the July 4th seminar, including preparation of material for the media and public, communications systems, and logistics. It is an “aide memoire” for future events and identifies several lessons-learned. The communications for the event were hugely successful, as reflected in the statistics below.

Media Coverage

The CMS (and CERN and ATLAS) communications efforts were extremely effective and the media impact of the announcement was huge. An estimated 1 billion people saw TV footage from CERN¹.

A media analysis report commissioned by CERN from NASDAQ OMX found 17,000 articles in the world’s media about the discovery, between 27th June and 10th July 2012, as shown in Figure 1. The analysis found the coverage to be 47% positive, 36% neutral, and 18% with negative tone (due to the leak of a video by CERN, as discussed below).

The numbers of news articles per country, shown in Table 1, indicate that the news coverage was indeed global, with articles appearing in the media of 108 different countries. An archive of PDF files of more than 200 major articles has been created².

1 billion
Viewers of CERN video
on 1,034 TV stations
(5,016 broadcasts).

17,000
News articles written
about the discovery in
108
countries

CMS Statement

CMS prepared a written statement³ about the CMS results, with many links to more information, images, video, etc. The statement was posted prominently on the CMS website⁴, where it was viewed 53,000 times. It was translated into 24 other languages⁵, the PDF versions of which were downloaded 12,000 times from the DocDB database.

The CMS statement was linked to the CERN press release⁶ and was given to journalists worldwide by CMS collaborators. The first paragraph – a self-contained summary of the statement – was used in at least 6,600 news articles. The images and plots were also made available via CDS.

65,000
downloads of the CMS
statement and
6,600
news articles used the
CMS statement text

[†] With special thanks to key collaborators in CMS communications: David Barney, Marzena Lapka, Thomas McCauley, Loic Quertenmont, Achintya Rao, Eleanor Rusack, Lucas Taylor, and Vidmantas Zemleris.

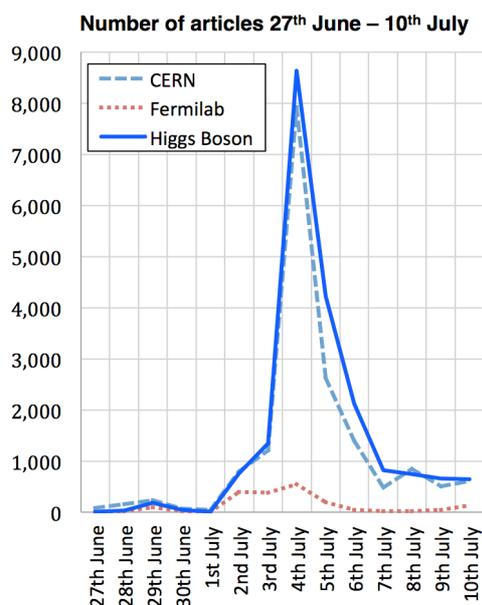


Figure 1: Number of news articles (27th June – 10th July, 2012) by date.

Europe	6529	Americas	6893	Rest of World	3495
Spain	1196	USA	4834	Australia	1021
UK	1004	Brazil	630	India	805
Germany	952	Canada	422	S. Korea	427
Italy	613	Mexico	279	Bangladesh	164
France	610	Argentina	233	Philippines	114
Greece	445	Chile	157	Indonesia	113
Switzerland	344	Columbia	59	S. Africa	94
Netherlands	280	Venezuela	46	China	94
Russia	241	Paraguay	46	Bahrain	86
Ireland	174	Peru	40	New Zealand	80
Austria	131	Ecuador	37	Malaysia	48
Sweden	120	Bolivia	21	Singapore	46
Denmark	94	Uruguay	20	Pakistan	46
Belgium	88	Panama	14	Taiwan	45
Portugal	52	Puerto Rico	11	Japan	39
Ukraine	27	El Salvador	10	UAE	38
Turkey	20	<i>Other (Americas)</i>	34	Israel	34
Cyprus	17			Thailand	24
Bulgaria	17			Jordan	20
Finland	12			Guineau Bissau	20
Malta	11			Qatar	15
Armenia	11			Nepal	15
Rumania	10			Zimbabwe	11
Luxembourg	10			N. Korea	11
<i>Other (Europe)</i>	50			Kuwait	11
				<i>Other (Rest of World)</i>	74

Table 1: Number of news articles (27th June – 10th July, 2012) per country. Countries with less than 10 articles each are combined into the “Other” categories.

CMS Event Display Images and Animations

The iSpy event display programme⁷ was used, with “press-tuned” graphics settings, to make event images, which were stored in CDS⁸ and sent to the CERN press office. As usual, these images were extremely popular – 81% of all event images appearing in the media were from CMS. Moreover, CMS images comprise 78% of those found by Google search for “Higgs Boson” events.

Animated videos of event collisions were made with the Frog program⁹. They were stored in CDS, posted on YouTube¹⁰ (136,000 views in one month), and incorporated into the standard CERN footage that was used by many TV channels, including the BBC.

81%
of event displays in the media were from CMS

136,000
YouTube views of CMS collision animations

CMS website

The CMS Drupal-based website is the main portal to all CMS material. The Higgs background material on the site was reviewed and revised well before the seminar. All content was prepared in advance and switched to “published” at the end of the CMS talk. This worked well.

The website traffic increased dramatically on the day of the seminar (50 GBytes of data served, compared to a few GBytes on a typical day). At worst, the time to load a page was several 10s of seconds, due to poorly tuned website parameters: cache lifetime, simultaneous connections, and database connections. The problems were quickly resolved, with CERN/IT help, but next time the parameters should be tuned in advance.

During the week of the seminar there were 51,000 unique visitors to CMS website who viewed 124,000 Web pages. The most popular was the CMS statement, followed by the backup pages about the Higgs search and the CMS experiment.

51,000
visitors to CMS website in week of seminar

124,000
web pages viewed in the week of seminar

Webcast

The webcast for the December 2011 Higgs seminar experienced some problems. CERN/IT learned from this and provided more redundancy for the July 4th seminar¹¹.

CERN users were served by the CERN/IT streaming infrastructure, protected by CERN single sign on. A high-quality protected webcast was sent to ten CERN auditoria and 150 remote institutes hosting local VIP/media events. This required advance IP registration. The streams showed both the slides and the camera(s) in the seminar room. No CMS users reported problems and many praised how well the webcasts worked.

To ensure a smooth public webcast service, CERN contracted two major external providers (Limelight and GroovyGecko) to operate a single stream that switched between camera and slides. This was accessed by 496,000 distinct IP addresses. In addition, a number of news organisations re-broadcast the webcast, such as the BBC and the Telegraph newspaper.

496,000
distinct connections to
the seminar webcast

Social Media

CMS (and CERN) used web-based social media platforms to propagate the news of the new results, as they were presented. The Twitter message: “#CMS: *“we have observed a new boson with a mass of 125.3 ± 0.6 GeV at 4.9 sigma significance.”* Thunderous applause. #Higgs #ICHEP2012” was re-tweeted 4,300 times reaching an estimated 5.1 million Twitter users.

The CMS statement was tweeted by 870 visitors to the CMS website, to a potentially very large audience, and the number of CMS followers on Twitter increased from 13,700 to 16,500, a gain of 20% in one week.

Higgs-related tweets from celebrities – e.g. rapper MC Hammer and Will-i-am of the Black Eyed Peas – reached many more millions.

CMS postings on Facebook and Google+ were “liked” by thousands of followers. With an average number of 190 “friends” per person, this means that the new CMS results were exposed to a potential audience of hundreds of thousands.

4,300
re-tweets of the CMS
announcement
5.1 million
Twitter users receive
CMS announcement

CMS internal communications

The CMS Head of Communications worked closely with the CMS Spokesperson and Collaboration Board (CB) chair to ensure that CMS collaborators were kept informed. The plans were presented to the CMS CB and emails were sent to all CMS members to inform them of plans, webcast connection details, and locations of materials (statement, slides, etc.).

All this information was also maintained on a single web page¹². A second web page¹³ described the use of social media platforms, notably Twitter that was used throughout ICHEP 2012. Several e-groups were established to help keep people involved in the event informed¹⁴. We prepared a list of typical questions for CMS interviewees¹⁵ and suggested that they fill answers. Nobody did, so this is probably not worth doing another time.

Information security and media leaks

The CMS Communications Group protected all CMS materials (CMS statement, presentation slides, images, videos, etc.) in CDS, DocDB and Drupal prior to the seminar. Access was granted only to CMS members using CERN “single sign on”. To avoid any accidental leaks, we explicitly checked that unauthenticated persons could not access any protected material. Everything was made public immediately after the CMS presentation.

Rumours in the blogosphere and somewhat speculative news stories preceded the full announcement but they were generally short on details and mostly served to fuel the public interest.

There was, however, a significant leak to the media the day before the seminar. This was due to the CERN communications group accidentally making a video discussing the CMS results public in CDS. The technical cause was identified as a bug in CDS that was quickly fixed.

Since technical or human errors can always happen, we suggest that the CERN communications group explicitly checks that access permissions are correct after uploading all sensitive CMS material to CDS or the Web (i.e. as CMS already does for their own uploads).

Coordination with CERN Press Office and Journalists

The CERN Press Office handled most of the logistics relating to journalists at CERN and, in general, the media event at CERN went well. From our experiences and feedback, we suggest some rather modest actions that would improve such events in future:

- Give journalists a printed sheet of logistical details (schedule, map, contact persons, etc.).
- Give journalists the CMS list of physicist interviewees and their contact details.
- Ensure CMS communications staff are identifiable, e.g. by CMS or press office armbands.
- Centrally print, collate and distribute CERN press release and experiments' statements.
- Allow CMS to check that CERN Web and Email press releases have correct links to CMS material. On July 4th the link to the CMS statement was missing (fixed later).
- Establish a clear and reliable process for the CERN Press Office handling of CMS images for the media to avoid recurrent problems, for example:
 - CDS links to new CMS event images appeared so late in the “event displays for the media” collection that some articles used ancient CMS Monte Carlo event images.
 - A month after the seminar, the “CMS event displays”¹⁶ link of the "Press Office Photo Selection"¹⁷ still did not include any of the new CMS di-photon events.

¹ <https://avc-dashboard.web.cern.ch/node/3>

² <https://cdsweb.cern.ch/record/1472531> (CMS access only due to Copyright restrictions).

³ <http://cms.web.cern.ch/news/observation-new-particle-mass-125-gev>

⁴ <http://cern.ch/cms>

⁵ Downloads by language: EN 1846, PL 1197, ES 1082, IT 905, DE 866, KO 617, FR 611, RU 547, CR 482, TR 453, CNsimp 443, IR 359, MexES 343, PT 308, CA 271, NL 266, CNtrad 266, Urdu 265, HU 190, FI 189, GR 156, Hindi 137, SR 134, GA 92.

⁶ <http://press.web.cern.ch/press/PressReleases/Releases2012/PR17.12E.html>

⁷ <http://cern.ch/ispy>

⁸ <https://cdsweb.cern.ch/search?f=keyword&p=%22Real%20Events%22&ln=en>

⁹ <http://frog.hepforge.org/>

¹⁰ <http://www.youtube.com/user/CMSExperimentTV>

¹¹ <https://avc-dashboard.web.cern.ch/node/3>

¹² <https://cms.web.cern.ch/news/communicating-new-cms-results-ichep-2012>

¹³ <https://cms.web.cern.ch/content/cms-social-networks>

¹⁴ cms-communications-translations@cern.ch for translations and
cms-press-contacts-ICHEP@cern.ch for CMS people dealing directly with the media.

¹⁵ <https://twiki.cern.ch/twiki/bin/viewauth/CMS/ICHEP-2012-Communications>

¹⁶ <https://cdsweb.cern.ch/record/1459462>

¹⁷ <https://cdsweb.cern.ch/collection/Press%20Office%20Photo%20Selection?ln=en>