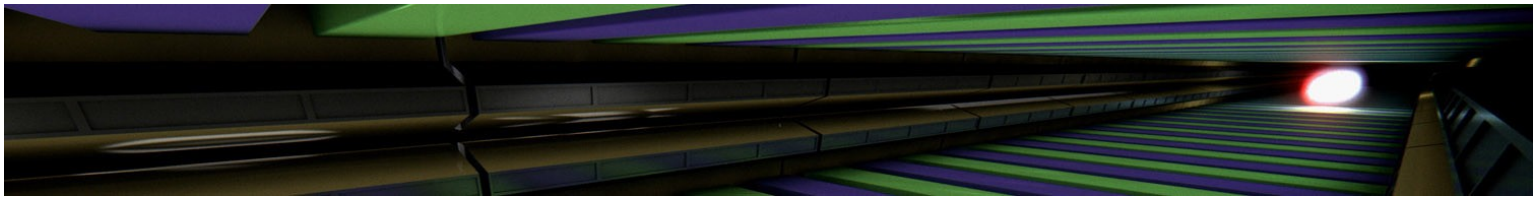
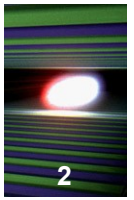


LLRF Hardware Installation at FLASH

Wojciech Wierba, Krzysztof Oliwa
MSK

European XFEL

The goals for installation in FLASH tunnel



There have been several reasons to install new LLRF System for ACC1, 3.9GHz, ACC2 & 3 in FLASH tunnel:

- To achieve better beam performance (shorter RF cables, more stable temperature, more precise electronics)
- To test LLRF System in ‚real' tunnel conditions like in XTL
- To test a new design of 16U racks suitable also for XFEL Injector
- To test a design of radiation shielding suitable also for XFEL Injector
- To find weak points in racks and shielding design and in installation process

The goals for installation in Cryo Extension

New LLRF Systems for ACC4 & 5 and ACC 6 & will be installed in 28U racks in Cryo Extension in the second stage.

We want to:

- Achieve better beam performance (air-conditioned racks with more stable temperature, more precise electronics)
- Test LLRF System in racks very similar XFEL design for XTL
- Test a prototype of 28U racks cabinet designed for XFEL tunnel
- Test the cabling procedure
- Find weak points in racks and shielding design and in installation process

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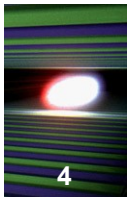
The goal – installation in Cryo Extension



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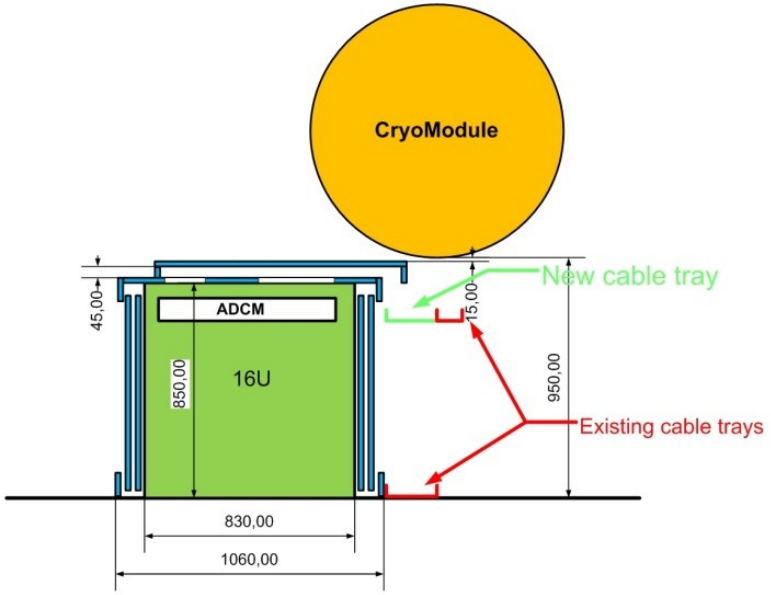
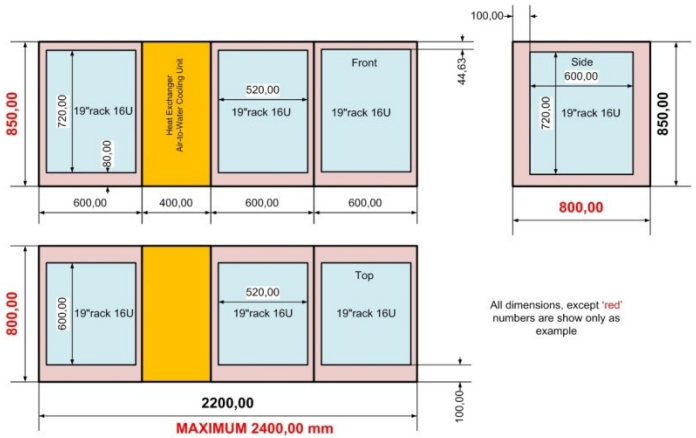
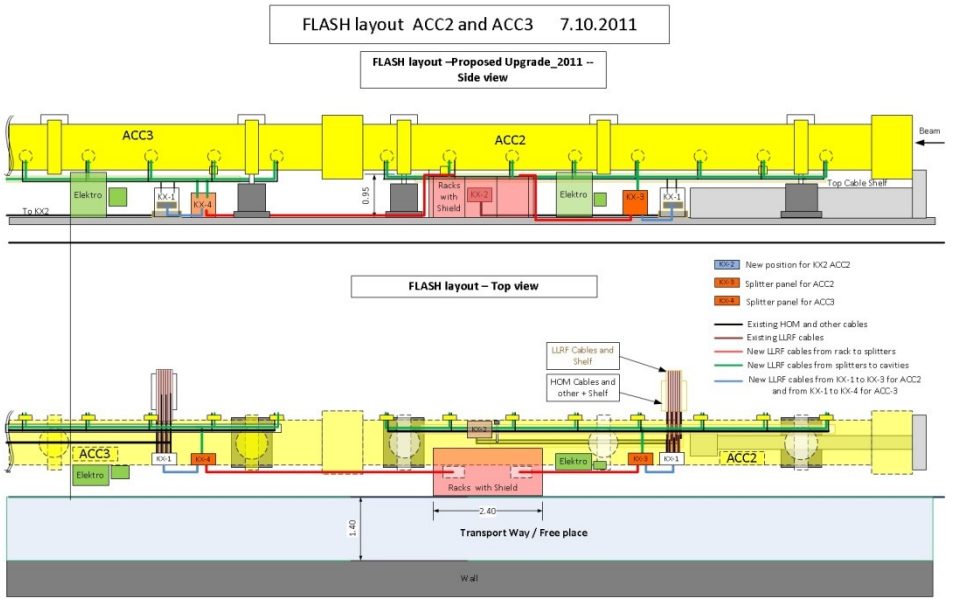
Space for racks cabinets available in FLASH tunnel

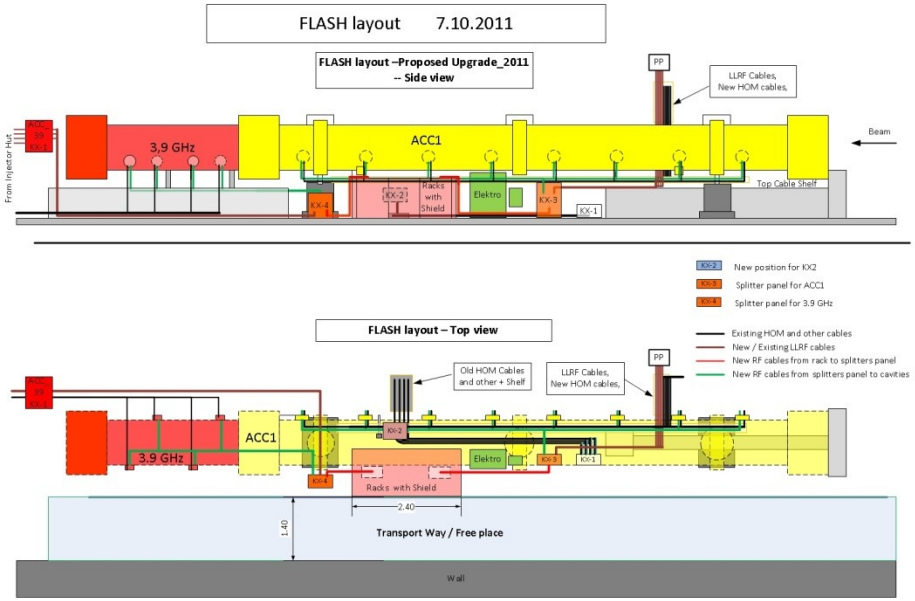


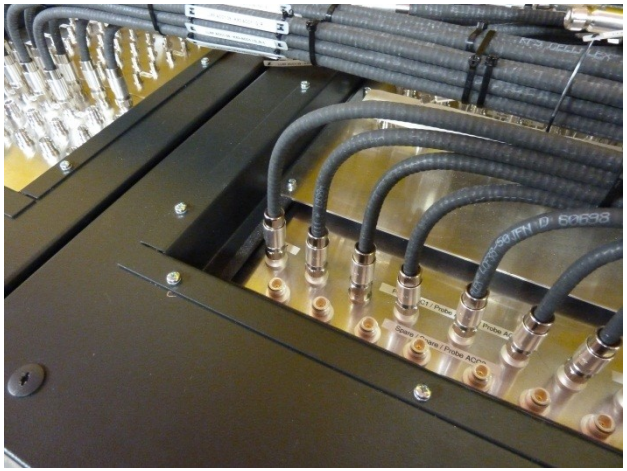


In FLASH tunnel there is a space for racks but limited in height to 950 mm. Assuming ~100 mm for radiation shielding and necessary space for cables, the rack height should not exceed 850 mm => 16U useful space.

LLRF racks cabinets for ACC1, 3.9GHz and ACC2 & 3 in FLASH tunnel







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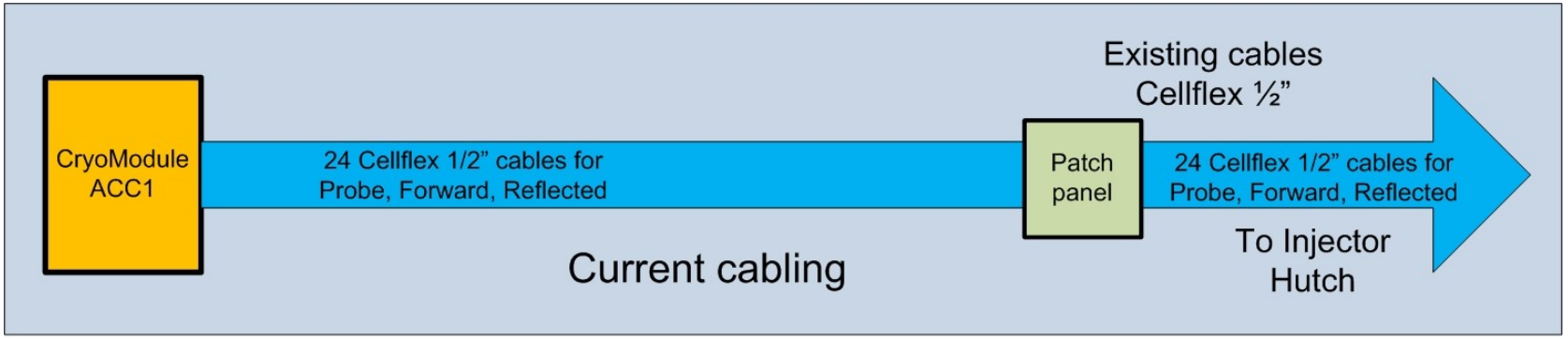
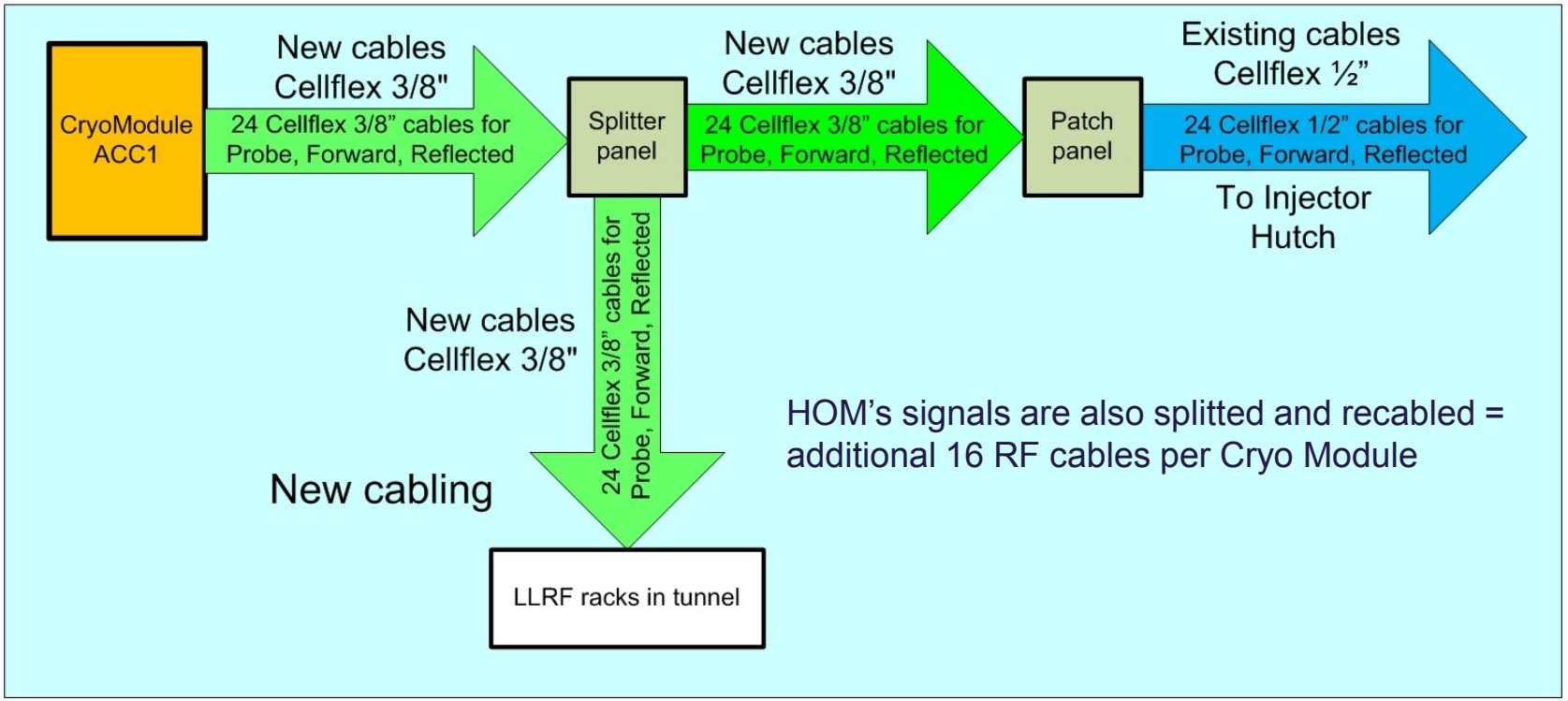
The biggest part of work in tunnel - cabling





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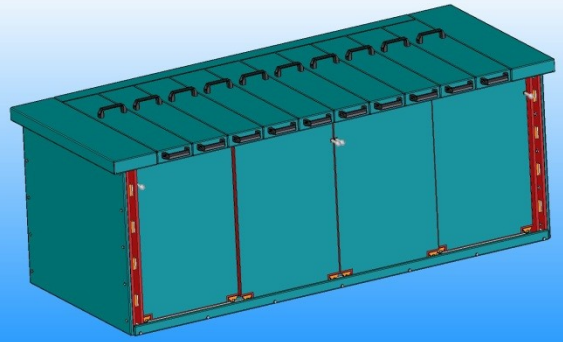
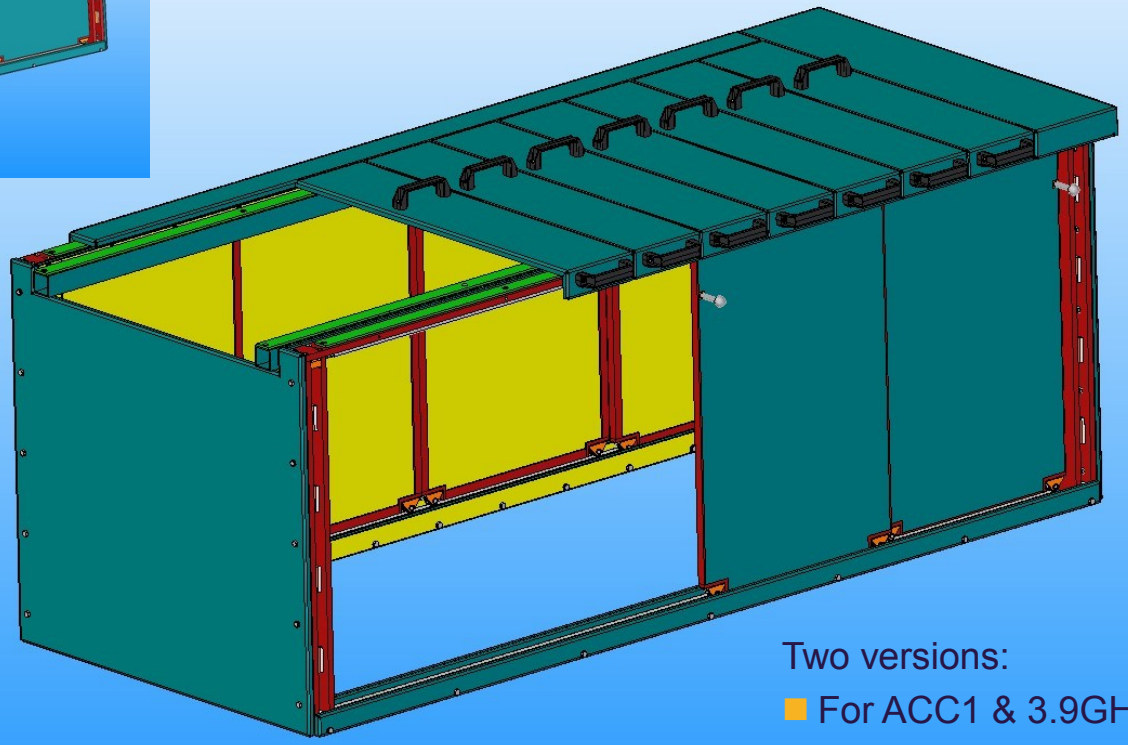
Radiation shielding



- Mechanical design ready
- Order sent to Roehr-Stolberg
- Delivery time ~16 weeks => end of May 2012



Two versions:

- For ACC1 & 3.9GHz – with doors
- For ACC 2 & 3 – without doors

This design is also suitable for XFEL Injector racks shielding

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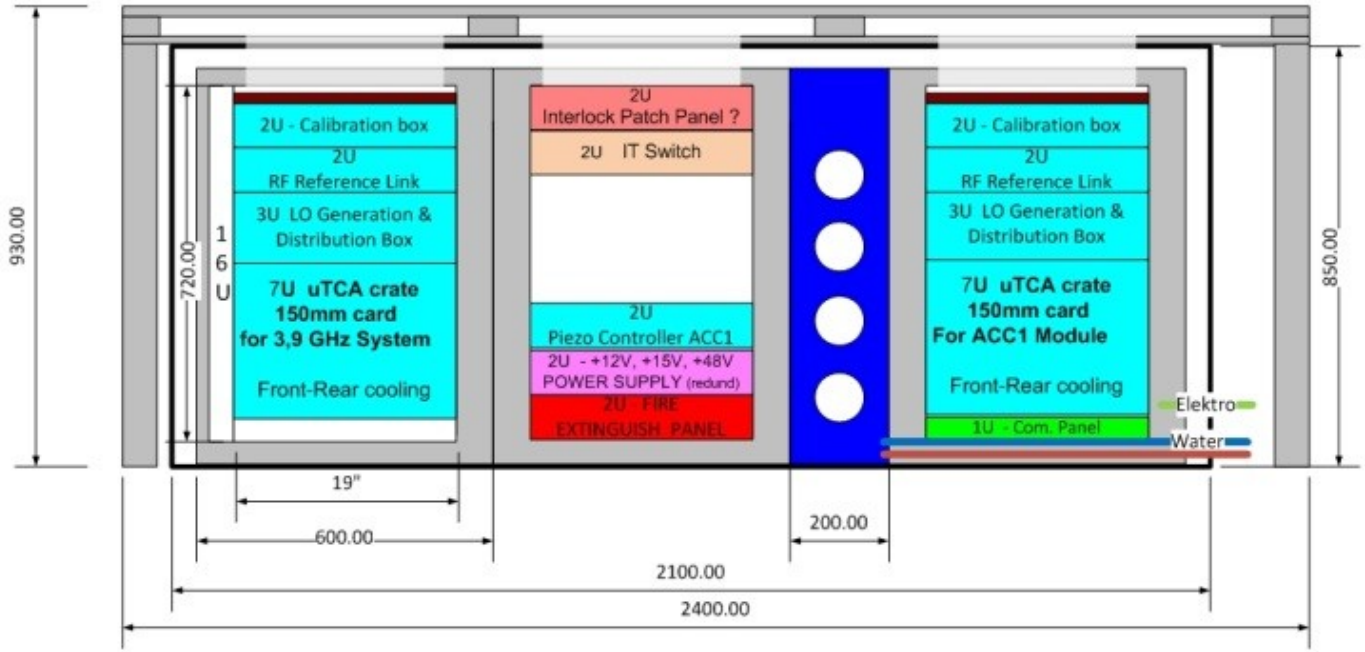
Racks occupation

FLASH - Racks for ACC1 and 3,9 GHz SYSTEM -
uTCA DESIGN, 16_U RACKS

24/05/2011



- RF Cables Patch Panel
(on Top in calibration Box)

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Installation in FLASH tunnel

Where we are?

- Racks installed in FLASH tunnel (without cooling unit).
- Splitter panels with splitters installed.
- The most of cabling work done – many thanks to Mr. Liebing and firma Wille.

What to do?

- Cooling unit will come end of February 2012 – cooling water connection prepared, can be installed during maintenance day.
- Inner racks cabling – design ready and discussed with ELSPEC, cables trees can be delivered in April 2012.
- AC Power connection missing – can be done during maintenance day.
- Ethernet Gigalink connection missing – can be done during maintenance day.
- PP frame on top of the racks has been redesigned and sent to Schroff – waiting for offer.
- LLRF System components for FLASH will be available in May 2012.

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Installation in Cryo Extension

Where we are?

- Space for racks reserved.
- Cabinet of 3 racks with 28U height (XFEL like) with cooling unit present at DESY, but needs some small changes – changes design and 3D drawings sent to Schroff – waiting for offer.
- Patch panels designed and ordered in DESY Central Workshop.
- Splitter panels designed and ordered in DESY Central Workshop.
- Cabling in Cryo Extension designed, list of cables near to be ready.

What to do?

- Transport of racks cabinet (disassembled) to Cryo Ext. – can be done any time.
- Splitters should be ordered.
- The space for splitter panels for ACC4&5 should be discussed carefully – there is very limited space.
- Cooling water connection should be discussed and ordered – can be done any time.
- RF cabling should be ordered – partially can be done any time but connections to the splitters needs a short brake (reflected signals) in accelerator operation i.e. maintenance day.
- Inner racks cabling – design ready and discussed with ELSPEC, cables trees can be delivered in April 2012.
- AC Power connection should be discussed and ordered – can be done any time
- Ethernet Gigalink connection should be discussed and ordered – can be done any time.
- LLRF System components for FLASH will be available in May 2012.