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# Maria Girone from CERN openlab to Keynote ISC 2018

March 12, 2018 by staff

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Today ISC 2018 announced that Maria Girone from CERN openlab will keynote the conference on Monday, June 25. Her talk will focus on the demands of capturing, storing, and processing the large volumes of data generated by the LHC experiments.

I will discuss some of the approaches we are considering to grapple with these enormous data requirements, including deploying resources through using commercial clouds, and employing



new techniques, such as alternative computing architectures, advanced data analytics, and deep learning," explains Girone. "Finally, I will present some medical applications resulting from the research at CERN."

The LHC is the world's most powerful particle accelerator and is one of the largest and complicated machines ever built. The LHC collides proton pairs 40 million times every in each of four interaction points, where four particle detectors are hosted. This extrer high rate of collisions makes it possible to identify rare phenomenon and is vital in hel physicists reach the requisite level of statistical certainty to declare new discoveries, st the Higgs boson in 2012. Extracting a signal from this huge background of collisions is the most significant challenges faced by the high-energy physics (HEP) community.

The HEP community has long been a driver in processing enormous scientific datasets managing the largest scale high-throughput computing centers. Together with many in





leaders in a range of technologie including processing, storage, an networking, HEP researchers hav developed one of the first scienti computing grids: a collaboration more than 170 computing center countries, spread across five continents. Today, the Worldwide Computing Grid regularly operat thousand processor cores and ne half of an exabyte of disk storage

Computing and storage demands will become even more pressing when CERN launches the next-generation "High-Luminosity" LHC in 2026. At that point, the total computing capacity required by the experiments is projected to be 50 to 100 times greater than today, with storage needs expected to be on the order of exabytes. Even assuming expected improvements on IT technologies, and given the realities of a constant budget, the current approach to data processing will



not be sustainable. This is why an intense R&D program is on-going to explore alternative approaches to the High Luminosity LHC big data problem.

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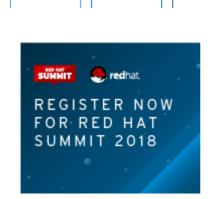
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One area of medicine that can utilize CERN's technologies and expertise is hadron therapy, a rapidly developing technique for tumor treatment. The next step in radiation therapy is the use of carbon and other ions. This type of therapy has some clear advantages over the use of protons in providing both local control of very aggressive tumors and lower toxicity, thus enhancing the quality of life during and after cancer treatment. In 2020 there will be around 100 centers around the world offering hadron therapy, and at least 30 will be located in Europe.

# ISC HIGH PERFORMANCE 2018

JUNE 24 – 28, 2018 FRANKFURT GERMANY Maria Girone, was awarded her Ph.D. in high-energy physics in 1994. In 2002, Girone journel of the IT Department as an applied scientist and CERN staff member. Two years later, should as section leader and service manager of the Oracle database services for the experiments. In 2012, Girone became the founding chair of the WLCG Operations Coordination team, responsible for the core operations and commissioning of new seen the WLCG. In 2014, she was appointed the Computing Coordinator for the CMS Experiment at CERN for two years. As coordinator, Girone was responsible for 70 common centers on five continents and more than 100 FTE of effort yearly to archive, simulate, process and serve petabytes of data. Later, Girone joined the management team of CE openlab, taking over the position of CTO as of January 2016.

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