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Dynfarm: A Dynamic Site Extension

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Requests for computing resources from LHC experiments are constantly mounting, and so are their peak usage. Since dimensioning a site to handle the peak usage times is impractical due to constraints on resources that many publicly-owned computing centres have, opportunistic usage of resources from external, even commercial cloud providers is becoming more and more interesting, and is even the subject of upcoming initiative from the EU commission, named HelixNebula.

While extra resources are always a good thing, to fully take advantage of them they must be integrated in the site's own infrastructure and made available to users as if they were local resources.

At the CNAF INFN Tier-1 we have developed a framework, called dynfarm, capable of taking external resources and, placing minimal and easily satisfied requirements upon them, fully integrate them into a pre-existing infrastructure and treat them as if they were local, fully-owned resources.

In this article we for the first time will a give a full, complete description of the framework's architecture along with all of its capabilities, to describe exactly what is possible with it and what are its requirements.

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