

## **ECMWF press kit: Bologna to host ECMWF's new data centre**

ECMWF Statement of 22 June 2017

### **ECMWF's new data centre to be located in Bologna, Italy, by 2019**

ECMWF Member States, gathered in Reading for the 90th session of the Centre's Council, have approved the proposal by the Italian Government and the Emilia Romagna Region to host ECMWF's new data centre in Bologna.

The decision was taken on 22 June at the end of a two-day session of Council, the Centre's governing body, which includes representatives of all its Member States.

The Italian proposal to host the Centre's data centre had been evaluated as part of an international competition and was judged at the beginning of the year to best meet ECMWF's requirements. Member States then tasked Director-General Florence Rabier with entering into discussions with the Italian Government with a view to having a high-level agreement ready for this session of Council.

After discussions and votes, representatives of ECMWF's Member States were satisfied with the high-level agreement proposed by Italy and approved Bologna as the host city for ECMWF's new data centre. The building is to be delivered to ECMWF by 2019 and will host the Centre's new supercomputers, whilst the Centre's headquarters are to remain in the UK.

Dr Rabier commented:

*"I am delighted that our Council has decided to support the proposal by Italy to host ECMWF's new data centre. This new facility will allow us to upgrade our high-performance computing capability to the levels required to continue to advance weather science. The decision-making process has been long, thorough and at times difficult, and we have already incurred some delays which could have an impact on our computing capability within the next couple of years. We are extremely grateful to all our Member States, who have taken great care to ensure that ECMWF's best interests would prevail. Of course I want to especially thank the Italian authorities, who have worked tirelessly to ensure that their proposal meets all the required criteria. Having our headquarters in the UK and our data centre in Italy will be a new experience which will illustrate perfectly well the truly intergovernmental nature of ECMWF."*

The President of Council, Professor Miguel Miranda, added:

*"Weather forecasts in each of the Member States, and indeed far beyond, rely on ECMWF continuing to produce and deliver the best numerical prediction in the world. Today's decision will enable the Centre to start planning in earnest for the procurement of its next supercomputing system."*

*On behalf of our Council of Member States, I want to join the Director-General in expressing our gratitude to all Member States, who have participated actively in this process. The new Data Centre will be located in Italy, with significant support from the government and the Emilia Romagna region. There is still a lot to do to ensure that the premises will be fit for purpose in two years' time, and we cannot but be impressed by the enthusiasm and the ardour the Italian team has put into this project so far.*

*ECMWF is an example of European nations pooling their resources to achieve the best possible outcome. ECMWF was created 40 years ago and there are major challenges ahead in today's world marked by a changing climate."*

*"This result – said the Italian Minister of Environment Gian Luca Galletti – is a great success for Italy. The new data centre in Bologna will allow ECMWF to continue its important work in studying weather phenomena as a strategic element for sustainable economic progress and citizen security. Now Bologna is at the centre of the global environmental challenges. This will further enhance the skills, the ability to innovate, the attractive pole of environmental data which are the heritage of the city. This is the result - said Galletti - of impressive teamwork of many Italian institutions, such as the Ministries of Environment, Education, Defence, Foreign Affairs, Economy and Finance, the Emilia Romagna Region with President Stefano Bonaccini, the municipality of Bologna with Major Virginio Merola, and the Alma Mater University with rector Francesco Ubertini. I want to thank Director-General Rabier and President Miranda of ECMWF, together with all Member States: this is a responsibility that Bologna will surely honour."*

ECMWF's ten-year Strategy adopted in 2016 sets ambitious goals for Earth system modelling at high resolution. It specifies a target of a 5 km grid spacing for ensemble forecasts by 2025, down from 18 km today. An intermediate step will be the implementation of a 9 km ensemble in 2020–2021. These resolution upgrades will require a new high-performance computing facility with approximately ten times as much computational capacity as is currently available to ECMWF, some of which will come from more processors. The new facility in Bologna will give us the flexibility to accommodate the latest technologies in supercomputing.

Background information: ECMWF's new data centre in Bologna – updated 22 June 2017
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ECMWF received 7 bids from Member States offering to host its new data centre. The Italian proposal was considered the best from the point of view of the requirements and the overall interests of ECMWF.

On 1 March 2017, the Council authorised the Director-General to prepare a high-level agreement with the Italian Government on the new data centre, for approval by Council at its session in June.

On 22 June 2017, the Council authorised the Director-General to sign the agreements with the Italian Government and the Emilia Romagna Region for the location of the new data centre in Bologna. The intention is for Italy to complete construction of the data centre by Q2 2019.

Selection criteria leading to Council's decision:

### **1. Technical requirements**

- The solution provides a dedicated facility, which meets all of the spatial, power and cooling requirements of ECMWF.
- The site offers enough flexibility to meet future expansion requirements.
- The site offers a modern infrastructure that supports ECMWF's network and telecommunications requirements for the foreseeable future.
- The site utility supply allows for two fully rated electrical 10 MW circuits with ability to upgrade to 20 MW at a later date.
- The data centre cooling systems have been designed to minimise energy use through a mixture of ground water cooling and dry coolers.
- Renewable energy sources are provided in the form of photovoltaic systems.

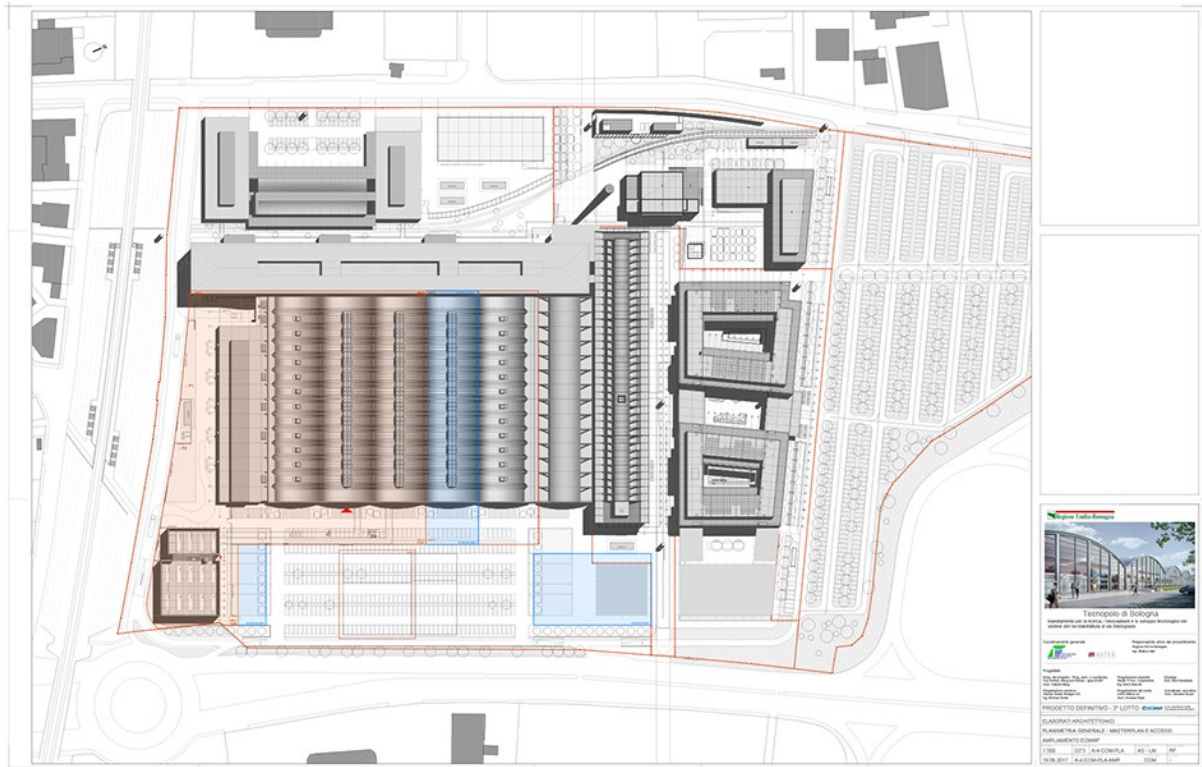
### **Location and design**

The new data centre will be built on the site of the new Tecnopolo di Bologna campus that is redeveloping the unused buildings and grounds of a former tobacco factory. The campus extends over 13 hectares and will consist of newly built and refurbished buildings for public and private research facilities.

The construction of a first phase is already under way in the northern area of the complex, to host offices and science labs.

The premises to be occupied by ECMWF is shaded in orange on the image below.

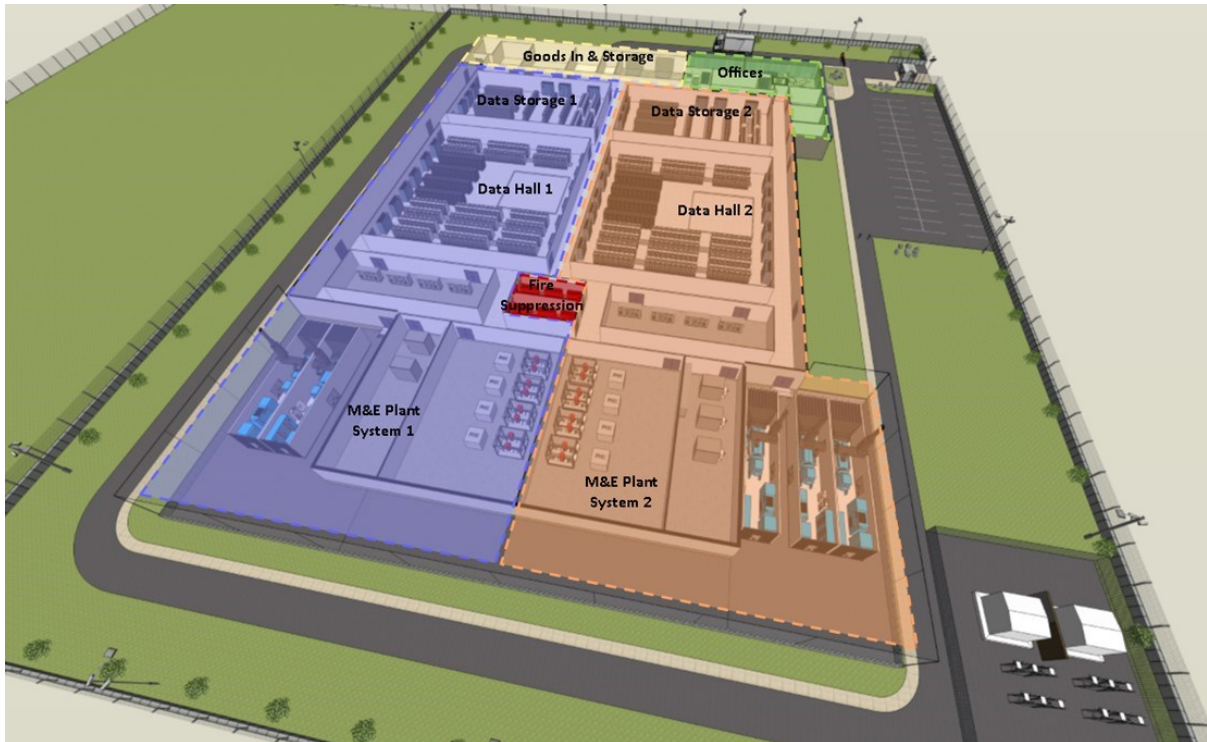
Options for future expansion space are included in the agreement with the Italian Government and can be met within the overall structure. An initial proposal for expansion space is shaded in blue in the image below.



*Tecnopolo di Bologna. Image: gmp von Gerkan, Marg & Partner*

The Italian proposal was evaluated as having the technical merit to meet the ECMWF requirements as defined in the original brief.

The image below shows the data centre layout that was given as an example of ECMWF's requirements as set out in the Reference Concept Design Document.



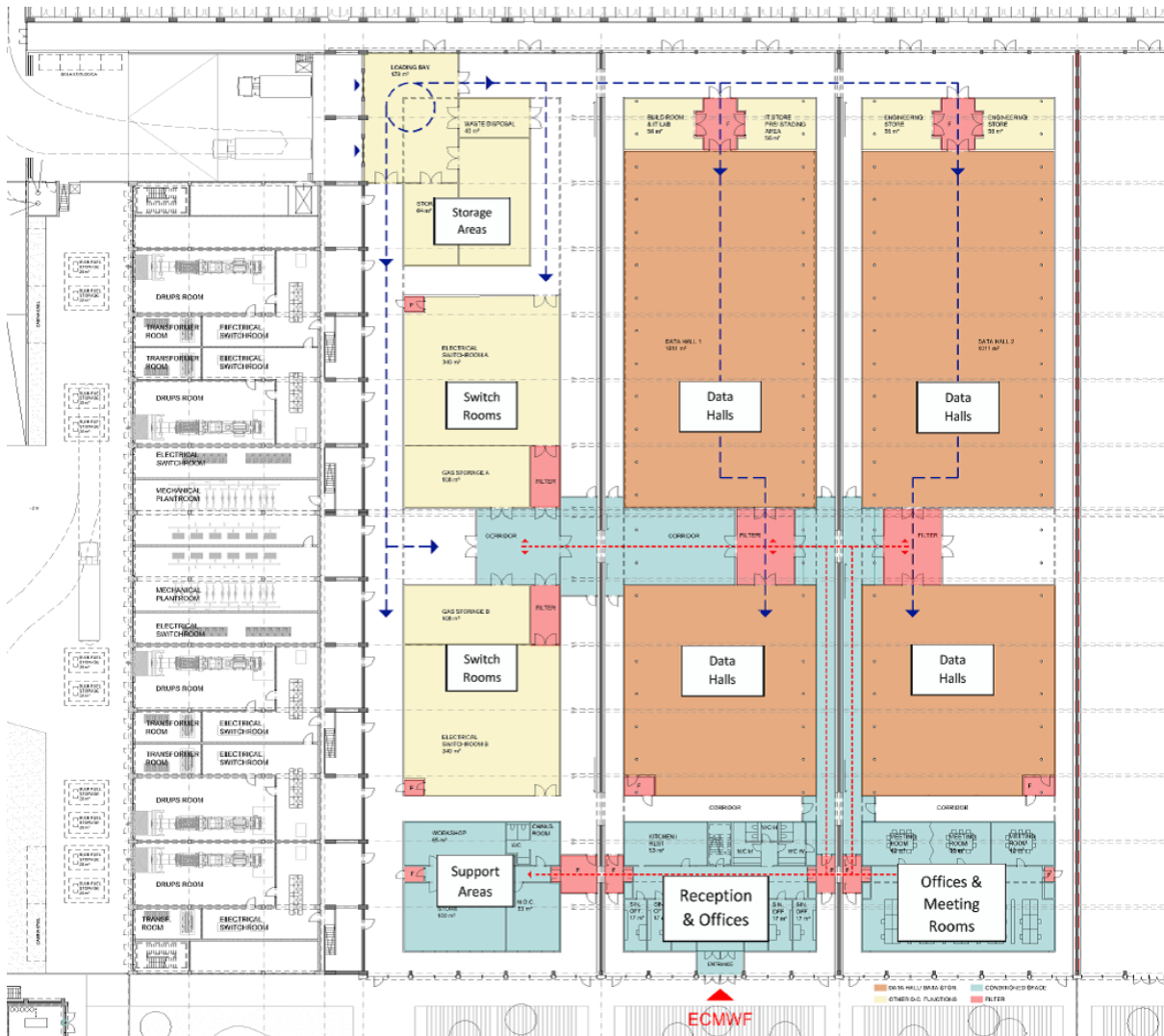
*ECMWF concept requirements.*

The data centre halls will be located inside the existing vaulted structures (Botti), following the "box in box" principle allowing data halls to be built and secured using a concrete construction within the existing structural envelope. These boxes will be formed of an independent structure.

The offices and service areas will be housed in the Botti. Three of the existing five Botti are to be occupied by ECMWF, with the electrical power systems located in the pavilion situated to the left of the Botti on the plan below. The existing pavilion and a newly constructed building will provide space for the electrical and mechanical plant.

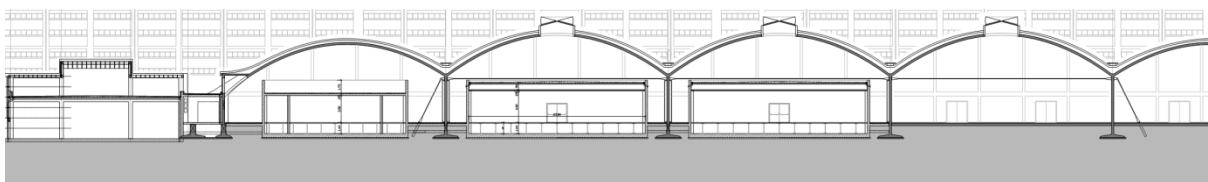
The offices are to be constructed as an independent structure within the Botti, located at the front elevation that will incorporate a glass facade to provide natural light, in particular to permanently occupied spaces.





*Architectural overview – Internal layout. Image: gmp von Gerkan, Marg & Partner*

The building will be refurbished and supplemented to create a new facility with a 60-year life span.



*Section across the pavilion and four Botti. Image: gmp von Gerkan, Marg & Partner*

## **2. Capability to deliver**

The Emilia Romagna Region will provide the land, the existing building, the design and full delivery of the data centre as part of the regeneration and refurbishment of the site. The data centre will be constructed to meet the technical standards requested.

The design team appointed by the Region will continue to work with the ECMWF project team to finalise the design by the end of July 2017, ready to be signed off for procurement by the Region.

The intention is for Italy to complete construction of the data centre by Q2 2019.

## **3. Operational model**

Once the facility has been constructed, the Emilia-Romagna Region will hand over the operation of the facility to ECMWF. ECMWF will control the technical infrastructure as well as the management and operation of the IT infrastructure and high-performance computer (HPC).

The Region will maintain the site and general services that would be shared with other users of the development (cleaning, site security etc.).

## **4. Ownership model**

The Emilia-Romagna Region will retain ownership of the premises and of any other land, buildings and infrastructure in the area of the Tecnopolo di Bologna, and will provide them to ECMWF free of charge during the contract period.