

# ORIENT

**Summary:** ORIENT is a collaborative Sino-European project connecting the research and education networks of China and Europe. Jointly funded from China and Europe, the project connects the pan-European GÉANT2 network with the Chinese networks, CERNET and CSTNET.

ORIENT is a product of collaboration between six European NRENs, CERNET and DANTE, the operator of GÉANT2. The project, which started officially on 1st March 2006, procured and operates an advanced high-capacity network link between the two world regions, meeting the needs of many demanding research collaborations.

ORIENT, coordinated by DANTE in Europe and CERNET in China, works in the context of complementary initiatives, such as TEIN2 which provides an Asia-Pacific regional network and which also links to Europe ([www.tein2.net](http://www.tein2.net)). It is intended that the significant synergies between the two projects can be exploited, bringing bandwidth and reliability benefits to the users of both ORIENT and TEIN2.

CERNET supports the implementation of a direct connection between the GÉANT2 network and the Chinese research networks with bandwidth of 622 Mbps-2.5 Gbps over the comparatively short trans-Siberian route. In doing so, it provides 50% of the cost of the link. The remainder of funding is met by the European NRENs (25%) and the European Commission (25%).

**Objectives:** Research and education rely heavily on the availability of a leading-edge network infra-structure in support of their IT requirements. In Europe, national investment by the NRENs is complemented, on a pan-European and global scale, by connectivity provided by GÉANT2, the network supported under the European Commission's 6th Framework Programme.

As research co-operation becomes increasingly global, it is vital that global connectivity is provided to support collaboration between researchers in different world regions and that such an infrastructure is made available to the individual research users. This is increasingly true for joint Sino-European initiatives. China is the world's most populous nation and has recently experienced rapid growth both economically and in the research and education sector. The coordinators are aware of research projects in the fields of Radio Astronomy, Meteorology, Sustainable Development and Grid Computing with requirements for high-speed connectivity between the research networks of China and Europe. In Europe the link is complemented by the provision of point-to-point services as part of GÉANT2. In addition, in order to guarantee and demonstrate network performance, measurement devices are increasingly being deployed to create a network performance monitoring infrastructure.

The main objective of the project is to provide appropriate connectivity between research and education sites in Europe and their counterparts in China. Additional objectives aim to ensure the extension of the enhanced services and service support infrastructure of GÉANT2, to services over ORIENT. Dissemination activities aim to raise awareness of the project amongst the academic community, fostering ties and creating 'people networks' across the two world regions.

## ORIENT

**Project acronym:** Orient

**Contract n°:** RI-026686

**Project type:**

Specific Support Action

**Start date:** 1/03/2006

**Duration:** 36 months

**Total budget:** 4 150 000 €

**Funding from the EC:** 1 037 500 €

**Total effort in person-month:** 33, 5

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**Project participants:**

Contractors

DANTE UK

CERNET CN

GARR IT

DFN DE

RENATER FR

UKERNA UK

GRNET GR

CESNET CZ

**Collaboration with other**

**EC funded projects:**

GÉANT/GN2

TEIN2

EUChinaGrid

EXPreS



The role of DANTE, the co-ordinating partner will be in the overall management of the project and in the procurement activity. It will also take the lead role in activities relating to dissemination and user support, although clearly, to work effectively these functions must be embraced by all partners. CERNET will jointly take responsibility for implementation and operation of the circuit. All partners in the project contribute to engineering and user support of their network customers and dissemination activities within their own regions of network coverage, such as NREN conferences. All partners also contribute by presenting at international events and joint distribution of dissemination materials.

**User Community:** Projects which aim to use the ORIENT circuit include EXPReS, a radio astronomy project, whose aim is to expand the scope of e-VLBI (electronic Very Long Baseline Interferometry) throughout Europe and beyond. ORIENT helps to connect the EXPReS project partner, the Shanghai Astronomical Observatory (<http://center.shao.ac.cn/home.htm>), to its European counterparts.

Another project with a special interest in a connection between European and Chinese research networks is EUChinaGrid, a grid computing project, joining computational resources in China and Europe and facilitating data transfer and processing between the two regions. To find out more about EUChinaGrid see: <http://www.euchinagrid.org/>

ORIENT also hopes to serve researchers in the field of Cosmic Ray Observation. The ARGO-YJB project is keen to see an operational connection to its site at YangBajing in Tibet, China. Benedetto D'Ettorre Piazzoli, spokesman for ARGO-YJB, expressed his support for the initiative: 'such a connection between China and Europe is of high value, not only from the point of view of the ARGO-YJB experiment, but more generally to provide an adequate support to the Europe-China GRID projects.' <http://argo.na.infn.it/>

One of the project's objectives is to identify existing Chinese-European collaborative projects and to encourage their usage of the infrastructure provided by ORIENT. It is also hoped that the existence of this infrastructure encourages new collaborations, otherwise impractical or even impossible without a dedicated research network link.

