

## EXPreS SA2: Network provision for a global e-VLBI array

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Using high-speed communication networks, we wish to create a distributed, astronomical instrument of a continental and inter-continental scale — a Very Long Baseline Interferometer (VLBI) operating in real time, and connecting together some of the largest and most sensitive radio telescopes on the planet. The overall objective of EXPreS, is to create a production-level ‘electronic’ VLBI (e-VLBI) service, in which the radio telescopes are reliably connected to the central super-computer at JIVE in the Netherlands, via a high-speed optical fibre communication network, including the pan-European research network, GÉANT. The Specific Action (SA2) deals with the provision of the needed equipment and infrastructure (fibre optics connection) to allow the VLBI data from the participating telescopes to reach the correlator using GÉANT. We describe here the status of these last-mile connections. For more detailed information see:  
<http://www.jive.nl/dokuwiki/doku.php?id=expres:sa2>

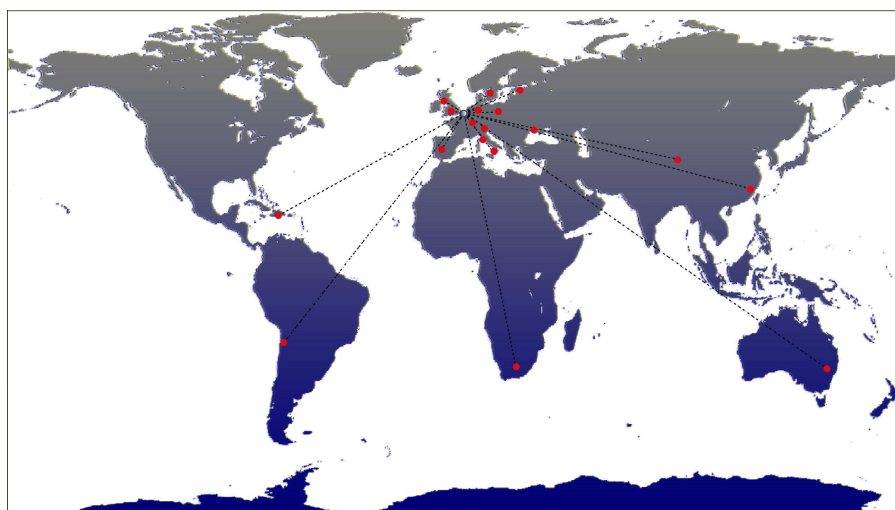
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## 1. Status of the last-mile (local loop) construction

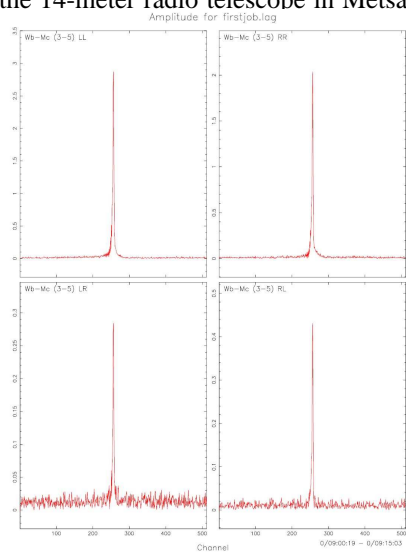
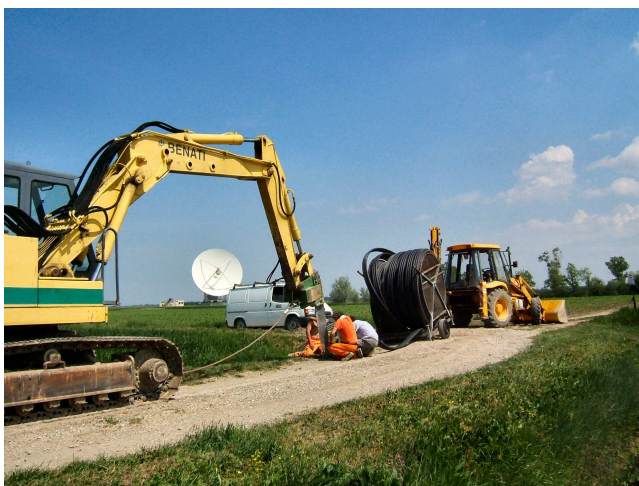
Telescope	Current BW	Expected BW	Year	Notes
JIVE correlator	4 x 1 Gbps	16 x 1 Gbps		connected
WSRT (14x25m)	1 Gbps			connected
Onsala (20+25m)	1 Gbps	10 Gbps	2007	connected
Jodrell Bank (76m)	1 Gbps	10 Gbps		connected
Cambridge (32m)	1 Gbps			connected
Toruń (32m)	1 Gbps			connected
Metsähovi (14m)	1 Gbps	10 Gbps	2007	connected
OAN-Yebes/CNIG-IGN (40m)	0.1 Mbps	2,5 Gbps	2007	
Effelsberg (100m)	2 Mbps	1 Gbps	2007	
Medicina (32m)	1 Gbps			connected
Noto (32m)			unknown	
Sardinia (64m)		2,5 / 10 Gbps	2009	
Shanghai (25m)	100 Mbps	1 Gbps	2007	
Urumqi (25m)		1 Gbps	2007	
Miyun (50m)		1 Gbps	2007	
Yunnan (10m)		1 Gbps	2007	
VIRAC (32m)		1 Gbps	in progress	
Hartebeesthoek (26m)		1 Gbps	unknown	
Tigo (6m)	1 - 7 Mbps	64 Mbps		
Arecibo (305m)	< 32 Mbps	1 Gbps	2007	
AARNET			unknown	
ATNF (Parkes, Mopra, ATCA)	1 Gbps (local)	2 Gbps (to JIVE)		



**Figure 1:** Map of the telescopes participating in EXPreS



**Figure 2:** Last-mile fibre works (left) and equipment (right) at the 14-meter radio telescope in Metsähovi (Finland).



**Figure 3:** Left: Last-mile fibre works at the 32-meter radio telescope in Medicina (Italy). Right: First real-time interference fringes (Mc-Wb).



**Figure 4:** Last-mile fibre works at Westerbork (left), Jodrell Bank (center), and future line to Effelsberg (right).

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