

GÉANT's dark fibre testbeds – exploring options

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Update on the new GÉANT DF footprint-

EC funding for Open Calls for testbed work

(Approx €300 of total €2m research networking funds)

DF testbed is being made available for research work

Need to determine route options, structural analysis and
the Way Forward....

Open Calls intended to...



- *provide a mechanism to identify researchers and projects (other than NREN partners) interested in using the GÉANT testbed*
- *make research funding available to these projects*
- *strengthen GÉANT's relationship with industry through collaborative research*
- *enhance academic input into the GÉANT research (JRAs)*



Dark fibre available for testbeds

5 KEY ROUTES...

DF available for research



Route

Frankfurt- Geneva

Milan-Vienna

Brussels-Amsterdam

Amsterdam-Frankfurt

Paris-London



DF available for research



Route	Provider
Frankfurt- Geneva	Colt
Milan-Vienna	Interoute
Brussels-Amsterdam	Level 3
Amsterdam-Frankfurt	Level 3
Paris-London	Level 3



DF available for research



Route	Provider	Circuit surplus	Notice period for termination
Frankfurt- Geneva	Colt	16/11/2012	6 months
Milan-Vienna	Interoute	05/02/2013	6 months
Brussels-Amsterdam	Level 3	28/02/2013	6 months
Amsterdam-Frankfurt	Level 3	15/02/2013	6 months
Paris-London	Level 3	24/04/2013	6 months



DF available for research



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Amsterdam-Frankfurt	Level 3	15/02/2013	6 months
Paris-London	Level 3	24/04/2013	6 months

(Circa €2.5 – 5k per month each)



London-Paris DF characteristics



	L5	A-end	B-end	GPS coordinates A-end	Length [km]	Type of fibre	Manufacturer and brand	Number of fusion splices	Number of mechanical connectors	Attenuation [dB]	CLLI code A-end	Postal address A-end
Level 3												
	LL-5a	Paris - Interxion, DANTE equip	Paris GWY	n/a	23	G.652	Corning	23	2	15.47	n/a PARSFRAW	InterXion Paris, PAR1, 45 avenue Victor Hugo - Batiment 260, 93534 Aubervilliers Cedex
	Span 1	Paris GWY	Beauvais	N48.888 E2.215	87	G.655	Corning LEAF	16	2	24.80		Le Capitole, 55 Av. Des Champs Pierreux, 92000
	Span 2	Beauvais	Albert	N49.44 E2.10	96	G.655	Corning LEAF	18	2	25.88	BEVSFRAA	AV PIERRE BEREGOVOY, Beauvais
	Span 3	Albert	Bois Bernard	N50.01 E2.67	54	G.655	Corning LEAF	10	2	15.58	ALBRFRAA	PARC D'ACTIVITES HENRY POTEZ, Albert 80300
	Span 4	Bois Bernard	Lille	N50.27 E2.85	69	G.655	Corning LEAF	13	2	19.17	ARRSFRAA	ZAC Artoipole, Bois Bernard - Arras
	Span 5	Lille	Gravelines	N50.625 E2.8952	83	G.655	Corning LEAF	16	2	22.86	BSGRFRAA	RUE CALMETTE, Bois Grenier(Lille)
	Span 6	Gravelines	Folkestone	N50.98 E2.12	94	G.655	Corning LEAF	22	2	25.76	GRVLFRAA	SITE INDUSTRIEL DE LEURETTE, Gravelines
	Span 7	Folkestone	Paddock Wood	N51.09 E1.41	75	G.655	Corning LEAF	14	2	20.86	FKSTENAB	Stanley Road, Folkstone
	Span 8	Paddock Wood	London 2 GWY	N51.19 E0.34	88	G.655	Corning LEAF	16	2	25.00	PDWDENAA	TRANSFESA ROAD, Paddock Wood
	LL6aa	London 2 GWY	London 1 GWY	N51.513 E0.0725	4	G.655	Corning LEAF			4.38	LONDENEH	Moreland House, 260-266 Goswell Road, EC1 London
	LL-5b	London 1 GWY	London, Telecity DANTE equip	N51.287 E0.1009	11	G.652	Corning	10	3	9.45	LONDEN02	Camperdown House, 6 Braham Street, London E1 8EE
		London - Telecity		n/a							n/a	Telecity 2, 8-9 Harbour Exchange Square, London E14 9GB

Route	Length (km)	Long-haul fibre type	Metro fibre type	Total loss	Number of amplifier sites
London-Paris	673km	G.655	10km of G.652	170dB	9
Frankfurt-Geneva	749km	G.655	32.7km of G.652	165dB	8
Amsterdam-Frankfurt	665km	G.655	37km of G.652	157dB	8
Amsterdam-Brussels	290km	G.655	14km of G.652	70dB	3
Milan-Finkenstein-Vienna	643km+ 462km	G.655	13km+29km of G.652	157dB+ 98dB	9+6
Geneva-Madrid	2044km	G.655	48km of G.652	453dB	25



Glass in the ground....

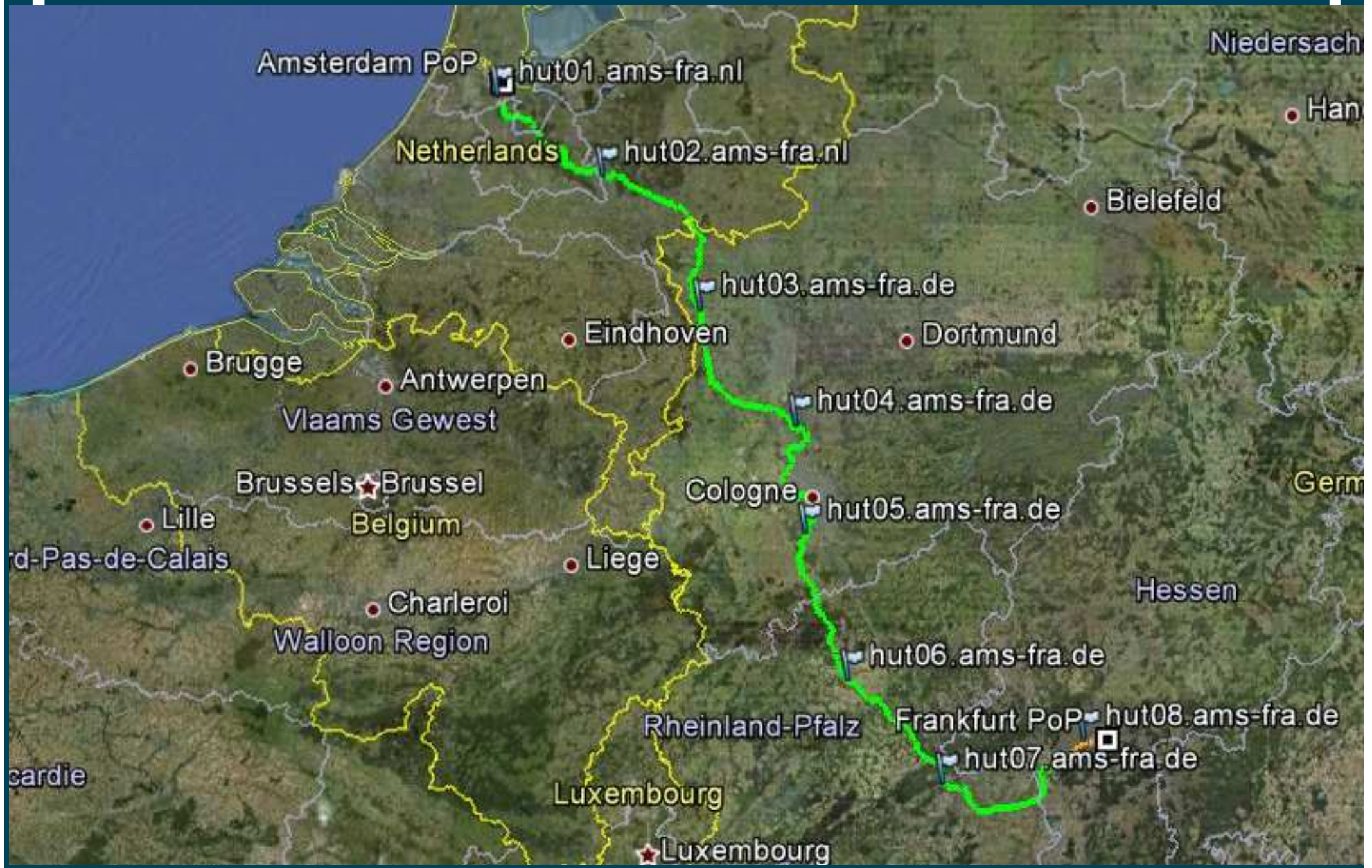
London - Paris



Frankfurt - Geneva



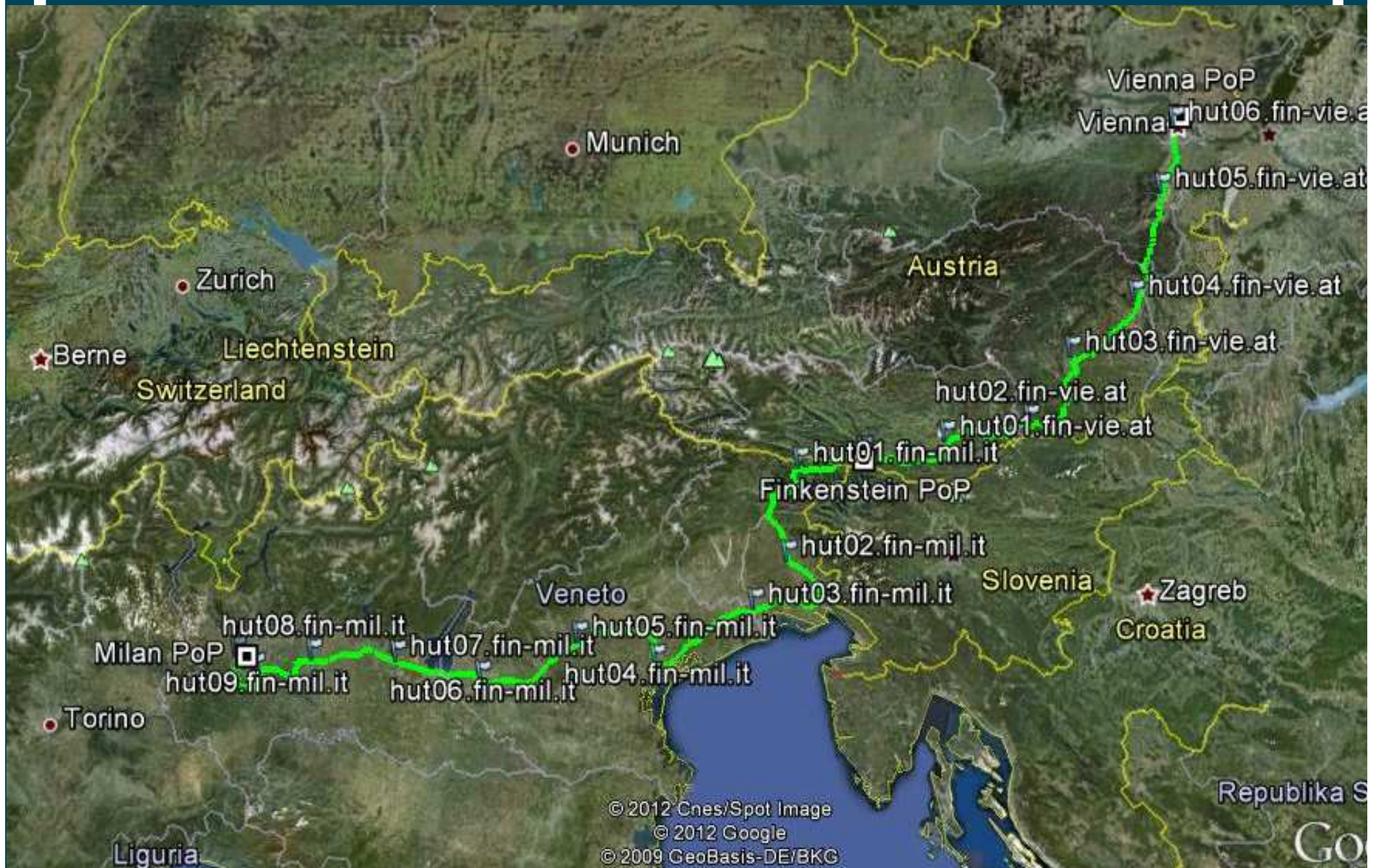
Amsterdam - Frankfurt



Amsterdam - Brussels



Milan - Vienna





GÉANT DF footprint 2006-2012

Dark fibre leases include the following equipment in each hut available for researchers:

- ✓ A half height 21 inch ETSI a rack with 300mm x 600mm footprint (full height in some locations)
- ✓ 2 x 10A 48VDC feed to each rack. (2x 16A feeds in some locations)
- ✓ The rack is equipped with an Alcatel amplifier shelf of 11 RU height
- ✓ Researchers should have fairly free access to all of this equipment as needed (depending on site)
- ✓ In most cases the power costs are included in the dark fibre lease costs.
- ✓ There is no out-of-band management to the huts, if this is needed it should be provided in-band by the equipment installed by the researchers.

- **Long haul transmission at 400Gbps/ 1Tbps transmission pilot.**
- **Time and frequency transfer over optical fibre.**
- **Comparative investigation of FEC schemes on real fibre systems.**
- **Multi-vendor photonic environment.** *(This topic is designed to support research into novel methods for interoperation of photonic equipment from different vendors. This may include so-called 'alien-waves' and related areas.)*
- **Dark fibre wildcard.** *(This topic is intended to give respondents a free hand to come up with innovative research topics related to the testbed.)*

Open Calls will open in Spring, hopefully quick turnaround...

GÉANT DF footprint changes pose tech & comm challenges

If extra rack footprints and power are required in:
Amsterdam, Frankfurt, Geneva, Paris –
this will incur considerable extra cost

NEAT-FT project = core exemplar of project
type to be supported

(... But likely not to be the only respondee)

Close working relationship should be
mutually beneficial...

However...



DF testbed = finite resource
Number of respondees currently unknown!



Over to you....



Prepare for a call!

Consider...

C Band versus L Band / treatment of 'ends' /
etc...

... Let's keep talking...



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