	# People	# travels	# Year	Cost each	TOTAL
Mission to ASTRON <1WK	3	5	3	2.000 €	30.000 €
Mission to ASTRON >1WK	2	2	3	3.000 €	12.000 €
Mission in Italy	3	5	3	500 €	7.500 €
					30.000 €
Production of the prototype (it includes production of the board, components, assemblying, mechanics)	Cost each	# iteraction			
	5.000 €	3			15.000 €
Instrumentation for lab (purchasing+rent)					65.000 €
PARTIAL					110.000 €
Overhead (shipping,new PC/SW/managing)	10%				11.000 €
GRAN TOTAL					121.000 €

1.7FTE

RCU2 example (2020)

+10% Contigency

INAF item	Budgeted	Realised
Personnel (hrs)	2,992 →1.8FTE	6,168[1] →4FTE
Direct Other Costs (€)	132,000	40,356[1]

We saved money for direct costs (not trips forth and back due to pandemic emergency) but largely compensated by our extra efforts in terms of human resources.

Good approximation for Dual Band system (DBS) is:
Direct costs 100K€
Human resources 4FTE (in 3Years)
(1Principal+1Senior+2Base)

The *people rates* are

Category of person	Unit	Rate
Junior	€ / day	286.36
Base	€ / day	404.55
Senior	€ / day	527.27
Principal	€ / day	690.91

1FTE=1617hrs per year
1617h/7.2=225days per year
225x(690.91+527.27+2x404.55)=456138

TOTAL =550K€

ONLY PROTOTYPE (TRL6) ready for DFM

Last outcomes from Dwingeloo meeting

Welcome and introduction	Wim van Cappellen	• Meeting goal: Share information on the state of the dual-beam concept such that INAF can decide whether they are interested to work on a dual-beam HBA beamformer.
		• Current status
		  ◦ There is the 'old' summator, there is interest in a new dual-beam solution: HBA Beamformer.
		  ◦ Goal of DANTE Phase 1 was to deliver a front end that is can also be used in a future dual-beam concept.
		  ◦ Dual-beam concept at the system level still needs to be detailed (operational concept, science, implementation in existing & new stations, etc).
		• Next steps:
		  ◦ ASTRON presented at the DANTE Consortium that there is a need to make a systems study. This should be done before continuation detailed design.
		  ◦ The LOFAR ERIC is in the lead of the DANTE Consortium. One of the things that will be needed is an update of the HBA Summator: the HBA Beamformer. In case parts are designed by other ERIC partners, from ASTRONs perspective it is best to transfer the responsibility of that product for all product phases (development, support, etc).
		  ◦ The system integrator is ASTRON and sets requirements in collaboration, oversees reviewing and could perform integrated testing.
		• The LOFAR ERIC should decide on the model to be used.
		  ◦ A suggestion is to use the SKA model, where the production is done by industry (reducing risks for institutes such as ASTRON and INAF): design authority, partner, prime industry (production).
		  ▪ ERIC tasked ASTRON to be the "design authority" and ASTRON should provide the requirement specification.
		  ▪ There is a budget available from the DANTE Phase 1 project, the LOFAR ERIC should decide what to do with it.
		• There was a discussion on timelines and funding
		  ◦ Decisions on starting next phases are expected at the consortium meeting in to be scheduled in September - November 2025 in Bologna.
		  ▪ So start of development optimistic: spring 2026.
		  ◦ Funding challenges: a cost estimate (to be estimated by the interested partners in the development and support of the dual-beam station) is needed for the total costs, such that the consortium can ask for that funding.
		  ◦ Investigation on architectural decisions need to be done first to define requirements and specifications, and funding.
		• Countries that have purchased subracks for a future dual-beam upgrade are:
		  ◦ Existing stations: Poland (2x), Sweden (1x)
		  ◦ New stations: Italy, Bulgaria.
		• The LOFAR ERIC has decided to jointly purchase extra dual-beam subracks for UK (1x), DE (1x), IE (1x) and NL (2x).