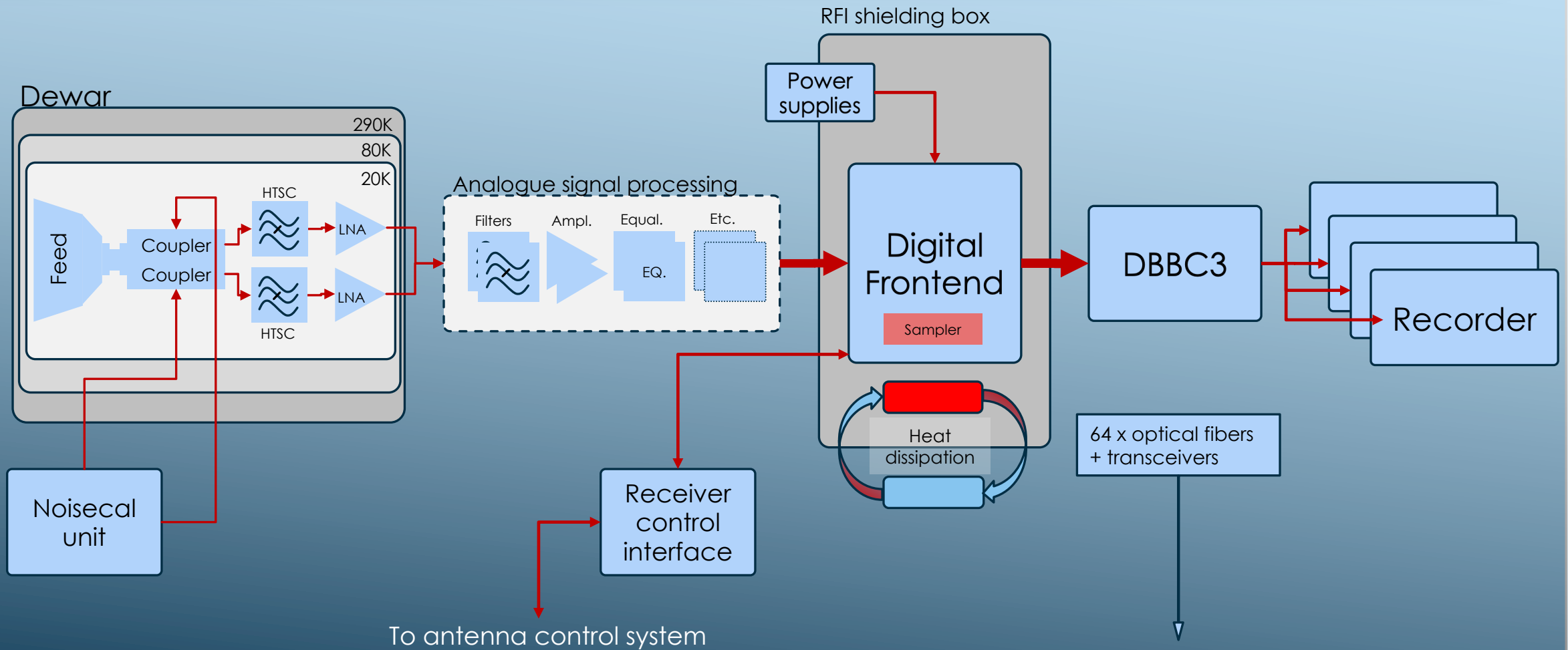


# BRAND BUDGET ESTIMATE

Building your own BRAND receiving system



# BRAND OVERVIEW



# STANDARD /CUSTOM COMPONENTS



## ▶ Telescope-specific components

- ▶ Feed: depends on optics (primary/secondary focus, F/D)
- ▶ HTSCs (High temperature superconducting filters): depends on local RFI situation
- ▶ Receiver frame
- ▶ Dewar
- ▶ Optical fibers, transceivers (frontend -> backend)

## ▶ Standard components

- ▶ LNA & Hybrids
- ▶ Noise-cal unit
- ▶ Analogue signal processing unit
- ▶ Couplers
- ▶ RFI shielding box & heat dissipation unit & power supplies
- ▶ Sampler
- ▶ Digital frontend: **but requires sampler purchase now**
- ▶ DBBC3
- ▶ Recording: e.g. Mark6 recorders, flexbuff

# BRAND BUDGET ESTIMATE – PART 1



Custom components:

	Hardware costs [€]	FTEs	Comments
Feed	6300	0.1-0.2	Could be based on Onsala design for Effelsberg but would need modification
HTSCs filters (variable number)	5000 / high-pass filter 10000/ notch filter	?	Number of required HTSC filters depends on local RFI situation (Effelsberg: 4 filters, 2x notch, 2x HP)
Dewar (1)	40000	0.2	Based on Effelsberg system
Receiver frame (1)	8500	0.1	Based on Effelsberg system
Optical fibres (64) & transceivers (128) FE -> BE	variable	variable	type and lengths depends on local situation
Telescope control	variable	variable	Effort depends on telescope control system

# BRAND BUDGET ESTIMATE – PART2



Standard components:

	Hardware costs [€]	FTEs	Comments
Balanced LNAs (2)	25000		Custom development by YebeS
Hybrid for pol. conversion (1)	1000		Custom development by YebeS
Noise-cal unit (1)	3000		Based on Effelsberg system
Analogue signal processing	50000		Based on Effelsberg system
Couplers (2)	1000	0	COTS
RFI shielding box & heat dissipation	>20000	0	Waiting for RFI & heat measurements with the FE prototype board. Various challenges: RFI, heat, large number of fiber connections
Power supplies for DF	6000 - 10000	0	Power consumption by FPGAs yet to be determined
Sampler (1)	7000	0	
Digital frontend (1)	≈ 100000	0	
DBBC3 (1)	70000	0	BRAND only DBBC3 (DBBC-8H); no GCoMo, no ADB3L
Recorders (4)	60000	0	Assuming 4xMark6 for 64 Gbps

# TOTAL COST



Cost estimate based on Effelsberg system

	Hardware costs [€]	FTEs	Comments
Custom components	85000	0.5-1	
Standard components	347000	TBD	
<b>SUM</b>	<b>432000</b>	<b>TBD</b>	Including backend and recorders

For comparison: Triple-band Korean receiver: €700000(w/o backend & recorders)