



DVA1 Dish Concept Costs and Schedule

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SKA Dishes Concept Design Review
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Programmatically: What is DVA-1?



- DVP is a program to develop a candidate dish for SKA
- DVA-1 is a first level prototype
- DVA-1 goal is to prove a design can meet SKA1 and SKA2 performance at competitive production cost.

SKA 1 and SKA 2 Dish Production Costs



Cost Estimate for 15m Offset Composite Reflector Antenna

Matt Fleming 2011-06-29 8:34

	600 units Details USD	600 units Summary USD	3000 units Summary USD
11 Pedestal	56		
12 Turning head.	52		
13 Azimuth bearing	65		
14 Elevation bearings	00		
15 Azimuth drive. (no motors)	16	111,448	102,532
16 Elevation drive. (no motors)	00		
17 Electrical enclosures conduit.	00		
18 Cable wrap systems.	00		
19 On site assembly.	59		
21 Primary reflector surface.	80		
22 Secondary surface.	50		
23 Primary support structure.	80	90,708	83,451
24 Secondary support & feed platform.	00		
25 On Site assembly.	98		

SKA 1 and SKA 2 Dish Production Costs

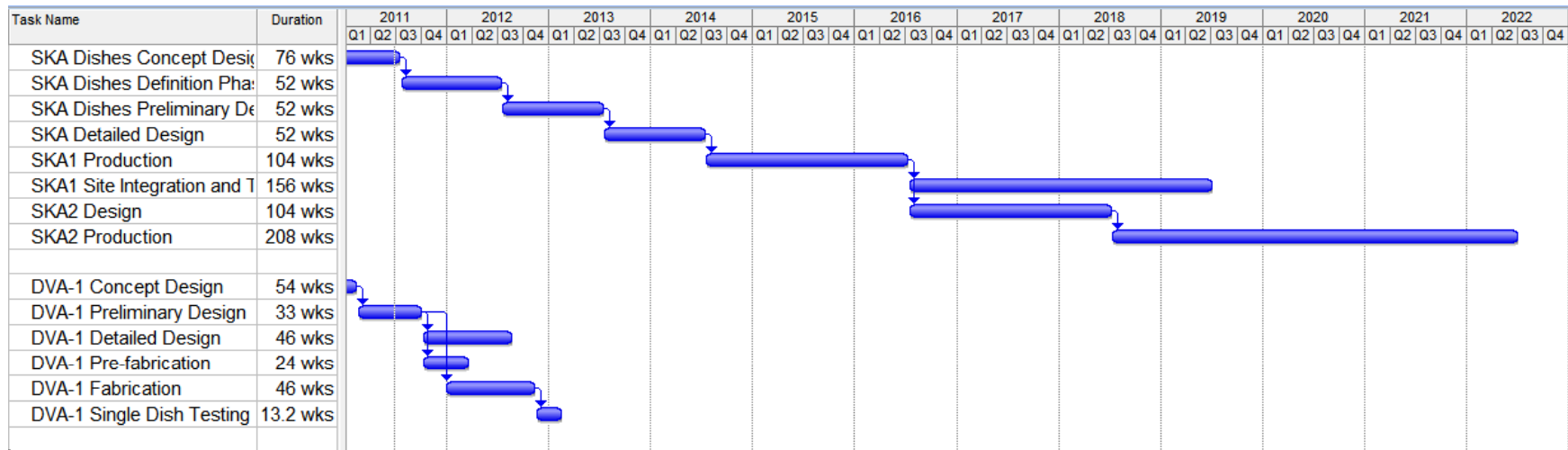


Cost Estimate for 15m Offset Composite Reflector Antenna

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	600 units Details USD	600 units Summary USD	3000 units Summary USD
31 Encoders, limits & mountings.	20,000		
32 Motors & amplifiers.	10,000		
33 Antenna control system.	10,000	25,409	23,376
34 Power & com cabling.	10,000		
35 On site assembly.	5,000		
41 Feed indexer at secondary.	10,000		
42 PAF positioner at primary.	10,000		
43 Shroud & Radome.	10,000	34,459	31,702
44 On site assembly.	5,000		
Feeds. (not included)			
Foundation. (not included)			
Total: USD	262,024	262,024	241,062
Total: EURO	assumes 0.70	183,417	168,743

DVA-1 and SKA Schedule



DVA-1 Major Milestones



DVA-1 Milestone	Date	Key Outcome
Concept Design Complete	Feb 2011	Initial schedule and cost within 20%, major risk identified
Preliminary Design Complete	Sept 2011	Major technical risk retired
Detailed Design Complete	Aug 2012	Design fully specified
Pre-fabrication Complete	Mar 2012	Infrastructure for fabrication in place
Fabrication Complete	Nov 2012	DVA-1 operational
Single Dish Testing Complete	Feb 2013	DVA-1 performance measured

DVA-1 Preliminary and Detailed Design



- Preliminary Design (current phase)
 - Risks being addressed
 - Costs within 15% and schedule within 25%
 - Technical risk will be retired
- Detailed Design
 - Designs, fabrication and test plans well characterized.
 - Risks impacting costs, schedule, and performance low.

DVA-1 Fabrication



- Pre-fabrication Phase
 - Site preparation for fabrication
 - Procurement of long lead time items (LLTIs)
 - Design reviews gate early procurement of LLTIs
- Fabrication Phase
 - Mount and reflector fabricated in parallel
 - Reflector fab. near-site.
 - Mount fab. off-site.
 - For SKA scale fab. see SKA memo 116 (Woods et al)

DVA-1 Single Dish Testing Phase



- Goal: to verify the DVA performance over its operating range using single dish based tests.
 - Surface conformity test, static and over wind, temperature, solar load and gravity (using metrology and holography)
 - Surface efficiency test
 - Focusing test
 - Pointing and beam patterns test
 - Antenna temperature test