AIPS++ DEVELOPMENT PLAN: Release v2.0

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NRAO

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Contents

1 Purpose

The purpose of this document is to define the development plan for AIPS++ release v2.0, currently scheduled for April, 2003.

2 Release priorities

The highest priority for the project in development cycle v2.0 is to continue the process of scientific integration. This includes:

1. Scientific completeness: Demonstrated end-to-end reduction capabilities for targeted instruments in all scientifically important observing and reduction modes.

2. Usability by the astronomical community: Quality of the user interface, applications presentation and user documentation.

3. Robustness, correctness and accuracy: Prove the correctness and robustness of existing capabilities and ensure comparable performance to other disk-based packages.

4. Continued deployment to an expanded user base: Continue to increase the scientific user base for AIPS++.

Maintaining a sound infrastructure in the project is important however, and infrastructure work has been scheduled for this cycle carefully; primarily in areas which are vital for the long-term vitality of the project, or which are in the critical path for application development.

3 Introduction

Development targets are listed in hierarchical form in a work breakdown structure, given below, which defines all targets in the v2.0 plan. The top-level targets are divided between scientific completeness, usability improvements, operations and management, in line with the release objectives listed above. The high-level targets are divided into sub-targets to achieve an average low-level target granularity of no longer than a few weeks. The list of consortium developers who appear in the plan at any level are listed below; note that individual developers may be available to the project for very different allocations of time, as enumerated in detail in the v2.0 plan below.

Abbr.	Developer	Affiliation
AL	Allan Leigh	ATNF
AS	Anuj Sarma	NCSA
AK	Athol Kemball	NRAO
BG	Bob Garwood	NRAO
DMC	Dave McConnell	ATNF
DG	Daniel Goscha	NCSA
DK	David King	NRAO
DM	Dave Mehringer	NCSA
DrS	Darrell Schiebel	NRAO
ES	Eric Sessoms	NRAO
GvD	Ger van Diepen	ASTRON
GM	George Moellenbrock	NRAO
JB	Jim Braatz	NRAO
JN	Jan Noordam	ASTRON
JM	Joe McMullin	NRAO
KG	Kumar Golap	NRAO
MM	Malte Marquarding	ATNF
MW	Mark Wieringa	ATNF
OS	Oleg Smirnov	ASTRON
PC	Paulo Cortes	NCSA
PT	Peter Teuben	BIMA
RN	Roger Noble	NRAL
RP	Ray Plante	NCSA
SB	Sanjay Bhatnagar	NRAO
SL	Selfa Lucero	NRAO
TC	Tim Cornwell	NRAO
WB	Wim Brouw	ATNF
WY	Wes Young	NRAO

4 Targets for v2.0

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NAME: Release v2.0 (April 2003)
ID:   2.0

DESCRIPTION: AIPS++ release v2.0

ASSIGNED: PM, 2002-07-01 to 2003-03-31
          39 weeks less 3.8 weeks vacation = 35 weeks
          Defects and user support at 30%.
          One week converted at 40 hours per week.

          Fraction   Development    User support/defects
          ----------------------------------------------
          100%       980 h           420 h
           75%       740 h           320 h
           50%       490 h           210 h
           30%       300 h           130 h
           20%       200 h            80 h
            5%        48 h            20 h

Available personnel:

          ASTRON:
                GvD,  20%,  288 h, Ger van Diepen
                 JN,   5%,   80 h, Jan Noordam
                 OS,   5%,   80 h, Oleg Smirnov

          ATNF:
                AL,    5%,   80 h, Allan Leigh
                DMC,   5%,   80 h, Dave McConnell
                MM,   75%, 1100 h, Malte Marquarding
                MW,   30%,  428 h, Mark Wieringa
                WB,   50%,  742 h, Wim Brouw

          BIMA/NCSA:
                AS,    5%,   12 h, Anuj Sarma
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            DG,   75%, 1030 h, Daniel Goscha
            DM,   50%,  712 h, Dave Mehringer
            PT,   30%,  400 h, Peter Teuben
            RP,   30%,  444 h, Ray Plante

      JBO:
            RN,    5%,   80 h, Roger Noble

      NRAO:
             AK, 100%, 1560 h, Athol Kemball
             BG,  75%, 1080 h, Bob Garwood
             DK, 100%, 1430 h, David King
            DrS, 100%, 1360 h, Darrell Schiebel
             ES, 100%, 1410 h, Eric Sessoms
             GM,  75%, 1090 h, George Moellenbrock
             JB,  75%, 1120 h, Jim Braatz
             JM,  85%, 1220 h, Joe McMullin
             KG,  75%, 1040 h, Kumar Golap
             SB,  75%, 1070 h, Sanjay Bhatnagar
             SL,   5%,  140 h, Selfa Lucero
             TC,  25%,  320 h, Tim Cornwell
             WY, 100%, 1400 h, Wes Young

=============================================================================
1 Scientific completeness "5,340 hrs"
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-----------------------------------------------------------------------------
1.1 General data handling "1,130 hrs"
-----------------------------------------------------------------------------
1.1.1 Implement MS calibration sets 120 hrs
Athol Kemball 20 hrs
Eric Sessoms 100 hrs
1.1.2 MS averaging tool 160 hrs
1.1.2.1 MS averaging: design framework and review 40 hrs
Athol Kemball 30 hrs
Eric Sessoms 10 hrs
1.1.2.2 MS averaging: general time averaging 120 hrs
Eric Sessoms 120 hrs
1.1.3 Improved MS concatenation  220 hrs
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1.1.3.1 msconcat: support variable-shaped and fixed-shape TSM 80 hrs
Daniel Goscha 80 hrs
1.1.3.2 msconcat: support variable-shaped spectral windows 120 hrs
Daniel Goscha 120 hrs
1.1.3.3 msconcat: accept frequency and position tolerance as input
20 hrs
Kumar Golap 20 hrs
1.1.4 MS GAIN sub-table  110 hrs
1.1.4.1 Define MS GAIN sub-table format 30 hrs
George Moellenbrock 30 hrs
1.1.4.2 Process MS GAIN change proposal 40 hrs
Athol Kemball 40 hrs
1.1.4.3 MSGain access classes 40 hrs
Mark Wieringa 40 hrs
1.1.5 Improved multi-MS support in MS access classes 80 hrs
Athol Kemball 80 hrs
1.1.6 Heterogeneous spectral window support 240 hrs
1.1.6.1 Variable-shaped spw. support in ms2archive 120 hrs
Daniel Goscha 120 hrs
1.1.6.2 Variable-shaped spw. support in archive2ms 120 hrs
Daniel Goscha 120 hrs
1.1.7 Generic SDFITS improvements 80 hrs
1.1.7.1 Resolve SDFITS conventions with CLASS 80 hrs
Bob Garwood 80 hrs
1.1.8 History propagation 120 hrs
1.1.8.1 History propagation: design proposal 120 hrs
Daniel Goscha 120 hrs
-----------------------------------------------------------------------------
1.2 General flagging 460 hrs
-----------------------------------------------------------------------------
1.2.1 Flag transfer from one MS to another 40 hrs
George Moellenbrock 40 hrs
1.2.2 Flag undo capability using FLAG_CATEGORY 120 hrs
George Moellenbrock 120 hrs
1.2.3 Flag polarization templates 40 hrs ...
George Moellenbrock 40 hrs
1.2.4 Flag scope expansion in msplot in ant & polzn 120 hrs
Eric Sessoms 120 hrs
1.2.5 Flagging from data averages in time and frequency 140 hrs
1.2.5.1 msplot channel 0 80 hrs
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Eric Sessoms 80 hrs
1.2.5.2 flagger channel averaging selection 60 hrs
George Moellenbrock 60 hrs

1.3 General synthesis calibration 780 hrs

1.3.1 General uv-calibration 600 hrs
1.3.1.1 Scan-based calibration 80 hrs
George Moellenbrock 80 hrs
1.3.1.2 Interpolation 120 hrs
Athol Kemball 120 hrs
1.3.1.3 GJones incremental calibration 80 hrs
Athol Kemball 80 hrs
1.3.1.5 MJones integration 40 hrs ...
George Moellenbrock 40 hrs
1.3.1.6 Opacity solver 80 hrs
George Moellenbrock 80 hrs
1.3.1.7 Multi-MS input to calibrater 60 hrs
Kumar Golap 60 hrs
1.3.1.8 calibrater robustness improvements 60 hrs
1.3.1.8.1 Automatic rejection of solutions below SNR limit 40 hrs
George Moellenbrock 40 hrs
1.3.1.8.2 Rejection of intervals with insufficient data 20 hrs
George Moellenbrock 20 hrs
1.3.1.9 A priori geometry corrections 80 hrs
Wim Brouw 80 hrs
1.3.3 Image-plane calibration 80 hrs
1.3.3.1 Non-axisymmetric beam correction 80 hrs
Kumar Golap 80 hrs
1.3.4 Calibration table utilities 100 hrs
1.3.4.1 Design framework and review 40 hrs
Athol Kemball 40 hrs
1.3.4.2 Average calibration solutions 60 hrs
George Moellenbrock 60 hrs

1.4 General synthesis imaging 340 hrs

1.4.1 uv-plane continuum subtraction 60 hrs
George Moellenbrock 60 hrs
1.4.2 Multi-MS input to imager 80 hrs

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Kumar Golap 80 hrs
1.4.3 Spectral-line velocity imaging across spw 120 hrs
Kumar Golap 120 hrs
1.4.4 FTMachine for mosaicing 80 hrs
Tim Cornwell 80 hrs
-----------------------------------------------------------------------------
1.5 Single-dish calibration 540 hrs
-----------------------------------------------------------------------------
1.5.1 Phase I solver for single-dish 80 hrs
Athol Kemball 80 hrs
1.5.2 Phase II solvers for single-dish 240 hrs
1.5.2.1 Total power calibration 60 hrs
Joe McMullin 60 hrs
1.5.2.2 Sig-ref calibration 60 hrs
Joe McMullin 60 hrs
1.5.2.3 Frequency-switched calibration 60 hrs
Jim Braatz 60 hrs
1.5.2.4 Migrate Glish data access utilities 60 hrs
Joe McMullin 60 hrs
1.5.3 Beam-switched calibration refinements 60 hrs
Joe McMullin 20 hrs
Jim Braatz 40 hrs
1.5.4 Total-power OTF mapping 40 hrs
Joe McMullin 40 hrs
1.5.5 Multi-IF Glish calibration 40 hrs
Joe McMullin 40 hrs
1.5.6 Multi-beam calibration 40 hrs
Joe McMullin 40 hrs
1.5.7 Enhance aver task for improved weighting schemes 40 hrs
Bob Garwood 40 hrs
-----------------------------------------------------------------------------
1.6 Single-dish/interferometer combination 240 hrs
-----------------------------------------------------------------------------
1.6.1 Joint single-dish/interferometer calibration scaling 80 hrs
Tim Cornwell 80 hrs
1.6.2 Full joint single-dish/interferometer deconvolution 80 hrs
Tim Cornwell 80 hrs
1.6.3 Joint single-dish/interferometer simulation 80 hrs
Tim Cornwell 80 hrs
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1.7 Single-dish imaging 240 hrs
-----------------------------------------------------------------------------
1.7.1 Beam-switched imaging 120 hrs
Joe McMullin 120 hrs
1.7.2 Multi-beam imaging 120 hrs
Sanjay Bhatnagar 120 hrs
-----------------------------------------------------------------------------
1.8 Image analysis and coordinates 260 hrs
-----------------------------------------------------------------------------
1.8.2 Package image-plane continuum subtraction 20 hrs
George Moellenbrock 20 hrs
1.8.3 Rotation curve velocity fitter 160 hrs
Peter Teuben 160 hrs
1.8.4 Support IAU precession and nutation 80 hrs
Wim Brouw 80 hrs
-----------------------------------------------------------------------------
1.9 ATCA scientific completeness 120 hrs
-----------------------------------------------------------------------------
1.9.1 atcafiller: flag if birdie=T 20 hrs ...
Mark Wieringa 20 hrs
1.9.2 atcafiller: support DOPPLER sub-table 20 hrs
Mark Wieringa 20 hrs
1.9.3 ATCA test scripts 80 hrs ...
Mark Wieringa 80 hrs
-----------------------------------------------------------------------------
1.10 BIMA scientific completeness 430 hrs
-----------------------------------------------------------------------------
1.10.1 Planet-based flux-density calibration 150 hrs
1.10.1.1 Time-dependent source model in mirfiller and imager.setjy() support
150 hrs
Daniel Goscha 150 hrs
1.10.2 Variable line-length corrections 180 hrs
1.10.2.1 BIMA-specific sub-table definition  80 hrs
Dave Mehringer 80 hrs
1.10.2.2 Convert to cal table to apply 100 hrs
Dave Mehringer 100 hrs
1.10.3 MS averaging: BIMA Stokes averaging 100 hrs
Dave Mehringer 100 hrs
-----------------------------------------------------------------------------
1.11 GBT scientific completeness 760 hrs
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-----------------------------------------------------------------------------
1.11.1 GBT filler  520 hrs
1.11.1.1 gbtmsfiller: implement Van Vleck correction 80 hrs
Bob Garwood 80 hrs
1.11.1.2 gbtmsfiller: support DOPPLER table 40 hrs
Bob Garwood 40 hrs
1.11.1.3 gbtmsfiller: on-line capability enabled 80 hrs
Bob Garwood 80 hrs
1.11.1.4 gbtmsfiller: support WEIGHT_SPECTRUM column 40 hrs
Bob Garwood 40 hrs
1.11.1.5 gbtmsfiller: support beam-switched data  80 hrs
Bob Garwood 80 hrs
1.11.1.6 gbtmsfiller: support multi-beam data 80 hrs
Bob Garwood 80 hrs
1.11.1.8 gbtmsfiller: test holography mode 40 hrs
Jim Braatz 40 hrs
1.11.1.9 gbtmsfiller: fill receiver information in GAIN sub-table
40 hrs
Bob Garwood 40 hrs
1.11.1.10 Single-dish GBT MS audit 40 hrs
Athol Kemball 40 hrs
1.11.2 IARDS 240 hrs
1.11.2.1 IARDS-dish unification 80 hrs
Joe McMullin 40 hrs
Jim Braatz 40 hrs
1.11.2.2 IARDS: append to one MS 40 hrs
Jim Braatz 40 hrs
1.11.2.4 IARDS: display one spectrum per spectral window 40 hrs
Jim Braatz 40 hrs
1.11.2.5 IARDS: all auxilliary calibration displays enabled 80 hrs
Jim Braatz 80 hrs
1.13 EVLA planning review 40 hrs
Athol Kemball 40 hrs

=============================================================================
2 Usability (level 1) "6,702 hrs"
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-----------------------------------------------------------------------------
2.1 Performance  "1,988 hrs"
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2.1.1 Benchmarks 372 hrs
2.1.1.1 Imaging benchmarks 132 hrs
2.1.1.1.1 Complete initial suite of imaging benchmarks 80 hrs
Sanjay Bhatnagar 80 hrs
2.1.1.1.2 Add equivalent AIPS scripts to benchmark.help 40 hrs
Sanjay Bhatnagar 40 hrs
2.1.1.1.3 Add equivalent MIRIAD scripts to benchmark.help 12 hrs
Anuj Sarma 12 hrs
2.1.1.2 Calibration benchmarks 80 hrs
2.1.1.2.1 "G,D and BJones calibration benchmarks" 80 hrs
Sanjay Bhatnagar 80 hrs
2.1.1.3 Single-dish benchmarks 160 hrs
2.1.1.3.1 Add sd filler benchmark to benchmark.g 80 hrs
Eric Sessoms 80 hrs
2.1.1.3.2 Add sd calibration benchmark to benchmark.g 80 hrs
Eric Sessoms 80 hrs
2.1.2 I/O optimization 404 hrs
2.1.2.1 Add data compression to UVFITS filler 20 hrs
Athol Kemball 20 hrs
2.1.2.2 Table system optimizations 124 hrs
2.1.2.2.1 Copy optimization in TSMCube 24 hrs
Ger van Diepen 24 hrs
2.1.2.2.2 Local endian Table support 60 hrs
Ger van Diepen 60 hrs
2.1.2.2.4 "Specialized compression for complex, real-only columns"
40 hrs
Ger van Diepen 40 hrs
2.1.2.3 PABLO I/O profiling 80 hrs
Paulo Cortes 80 hrs
2.1.2.4 Add I/O benchmarks to benchmark.g 80 hrs
Athol Kemball 10 hrs
Sanjay Bhatnagar 70 hrs
2.1.2.5 Parallel I/O implementation in AIPS++ 100 hrs
Ger van Diepen 20 hrs
Sanjay Bhatnagar 80 hrs
2.1.3 Memory access optimization 318 hrs
2.1.3.1 OS/AppInfo memory access functions 80 hrs
Darrell Schiebel 80 hrs
2.1.3.2 Replace system.resources.memory by 0-1 factor 78 hrs

2.1.3.2.1 Change proposal for system.resources.memfact 18 hrs
Athol Kemball 18 hrs
2.1.3.2.2 system.resources.memory: aipsrc changes 60 hrs
Darrell Schiebel 60 hrs
2.1.3.3 Identify adaptive memory use areas/heuristics 80 hrs
Sanjay Bhatnagar 80 hrs
2.1.3.4 Implement adaptive memory use 80 hrs
Sanjay Bhatnagar 80 hrs
2.1.4 General optimization 200 hrs
2.1.4.1 Intel C++ compiler port 120 hrs
Wes Young 120 hrs
2.1.4.2 Use UHFFT and FFTW 80 hrs
Sanjay Bhatnagar 80 hrs
2.1.5 Imaging optimization 80 hrs
2.1.5.1 Frequency-independent gridding 40 hrs
Kumar Golap 40 hrs
2.1.5.2 imager.setjy() optimization 40 hrs
Sanjay Bhatnagar 40 hrs
2.1.6 Parallelization and HPC 274 hrs
2.1.6.1 Complete pimager integration 50 hrs
Athol Kemball 30 hrs
Kumar Golap 20 hrs
2.1.6.2 Parallelized mosaicing 40 hrs
Kumar Golap 40 hrs
2.1.6.3 Key science processing IA64: M33 80 hrs
Paulo Cortes 80 hrs
2.1.6.4 Key science processing IA64: galactic center 80 hrs
Paulo Cortes 80 hrs
2.1.6.5 Make large file support (> 2 GB) the default 24 hrs
Ger van Diepen 24 hrs
2.1.7 VLA-specific optimizations 20 hrs
2.1.7.1 Optional data compression in vlafiller 20 hrs
Athol Kemball 20 hrs
2.1.9 ATCA-specific optimizations 140 hrs
2.1.9.1 Imaging optimization for large-pointing mosaics 120 hrs
Mark Wieringa 120 hrs
2.1.9.2 atcafiller: support optional data compression 20 hrs
Mark Wieringa 20 hrs
2.1.10 BIMA-specific optimizations 100 hrs
2.1.10.1 Optimization of large spectral-line mosaics 100 hrs

Dave Mehringer 100 hrs
2.1.11 GBT-specific optimizations 80 hrs
2.1.11.1 Optimize the single-dish benchmarks 80 hrs
Eric Sessoms 80 hrs

2.2 User interface 760 hrs

2.2.1 GUI 440 hrs
2.2.1.1 GUI speed improvement 440 hrs
2.2.1.1.1 Complete dynamic module loading in Glish 120 hrs
Darrell Schiebel 120 hrs
2.2.1.1.2 Larger-scale widgets 160 hrs
2.2.1.1.2.1 Combobox mega-widget 40 hrs
Darrell Schiebel 40 hrs
2.2.1.1.2.2 autogui panel widget 120 hrs
Darrell Schiebel 120 hrs
2.2.1.1.3 TAB widgets 80 hrs
Darrell Schiebel 80 hrs
2.2.1.1.4 Technical evaluation for Glish planning 80 hrs
Darrell Schiebel 80 hrs
2.2.2 Command-line 320 hrs
2.2.2.1 Glish ssh authentication 160 hrs
Darrell Schiebel 160 hrs
2.2.2.2 Uninitialized values set to <fail>; CLI flag 80 hrs
Darrell Schiebel 80 hrs
2.2.2.3 Reference counting defects 80 hrs
Darrell Schiebel 80 hrs

2.3 Visualization "2,150 hrs"

2.3.1 viewer "1,150 hrs"
2.3.1.1 Profile viewer performance 40 hrs
Malte Marquarding 40 hrs
2.3.1.2 Optimize viewer performance 40 hrs
Malte Marquarding 40 hrs
2.3.1.3 Blinking of conformant images 80 hrs
Malte Marquarding 80 hrs
2.3.1.4 WC annotation capabilities 80 hrs
Alan Leigh 80 hrs
2.3.1.5 Improve viewer scripting possibilities 20 hrs

Malte Marquarding 20 hrs
2.3.1.6 viewer infrastructure 890 hrs
2.3.1.6.1 Image re-gridder optimization 160 hrs
Wim Brouw 160 hrs
2.3.1.6.2 Coordinates creator class 130 hrs
Wim Brouw 130 hrs
2.3.1.6.3 Glish support for new DD 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.4 Zoom out in world coordinates 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.5 WCHolder integration 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.6 animator integration 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.7 PanelDisplay integration 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.8 WorldAxis DD's 40 hrs
Malte Marquarding 40 hrs
2.3.1.6.9 PassiveDD and DrawingDD integration 40 hrs
Malte Marquarding 40 hrs
2.3.1.6.10 Lattice*DD migration to CachingDD 80 hrs
Malte Marquarding 80 hrs
2.3.1.6.11 Volume rendering client (Swinburne collaboration) 40 hrs
Malte Marquarding 40 hrs
2.3.3 uv-visualization "1,000 hrs"
2.3.3.1 Complete MSAsRaster 250 hrs
David King 250 hrs
2.3.3.2 Interactive editing 250 hrs
David King 250 hrs
2.3.3.3 Complete MSAsXY 250 hrs
David King 250 hrs
2.3.3.4 Deploy uvDD in viewer & msplot 250 hrs
David King 250 hrs

2.4 Documentation 248 hrs

2.4.1 Module quick reference guides 168 hrs
2.4.1.1 Define common format and style guide 48 hrs
Athol Kemball 8 hrs
Selfa Lucero 40 hrs

2.4.1.3 Dish module: quick reference guide 40 hrs
Jim Braatz 40 hrs
2.4.1.4 Imager module: quick reference guide 40 hrs
George Moellenbrock 40 hrs
2.4.1.5 Calibrater module: quick reference guide 40 hrs
George Moellenbrock 40 hrs
2.4.3 Re-edit of Getting Started 80 hrs
Ray Plante 80 hrs

2.5 General robustness 320 hrs

2.5.1 Recommendation on locking policies 40 hrs
Ger van Diepen 40 hrs
2.5.2 AIPS++ cache management utilities 40 hrs
Darrell Schiebel 40 hrs
2.5.3 Complete analytic errors in simulator 80 hrs
Ray Plante 80 hrs
2.5.4 Return variables and component models from fluxscale() 20 hrs
Athol Kemball 20 hrs
2.5.5 Replace imagertest() with imagerpositiontest() 80 hrs
Kumar Golap 80 hrs
2.5.6 Explore NSF file-locking problem 20 hrs
Wes Young 20 hrs
2.5.9 Code review and unit tests 40 hrs
2.5.9.1 Complete FITS*Util review 40 hrs
Eric Sessoms 40 hrs

2.6 General synthesis usability improvements 280 hrs

2.6.1 Unify MS selection 120 hrs
2.6.1.1 Complete uv-selection mechanism in MSSelection 40 hrs
Athol Kemball 40 hrs
2.6.1.2 Unify selection interfaces across all tools 80 hrs
Athol Kemball 80 hrs
2.6.2 map.selfcal() function 80 hrs
Athol Kemball 80 hrs
2.6.4 Improve Glish Fitting interface 40 hrs
Wim Brouw 40 hrs
2.6.5 Add uvw-machine access to measures.g 40 hrs

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Wim Brouw 40 hrs
---------------------------------------------------------------------------
2.7 General image analysis usability improvements 80 hrs
---------------------------------------------------------------------------
2.7.1 imageprofilefitter: support abscissa ranges 80 hrs
Jim Braatz 80 hrs
---------------------------------------------------------------------------
2.8 BIMA-specific usability improvements 436 hrs
---------------------------------------------------------------------------
2.8.2 gainpolyfitter enhancements 40 hrs
Ray Plante 40 hrs
2.8.3 pgplotmanager for pipeline use 36 hrs
Ray Plante 36 hrs
2.8.4 Support masking in MiriadImage 240 hrs
Peter Teuben 240 hrs
2.8.5 Migrate BIMA cookbook to Getting Results 120 hrs
Dave Mehringer 120 hrs
---------------------------------------------------------------------------
2.9 GBT-specific usability improvements 440 hrs
---------------------------------------------------------------------------
2.9.1 Scan and project selection utility 80 hrs
Bob Garwood 80 hrs
2.9.2 dish assay functions 120 hrs
Bob Garwood 120 hrs
2.9.3 GBT observers documentation maintenance 80 hrs
Jim Braatz 80 hrs
2.9.4 Unify unijr and dish 160 hrs
Joe McMullin 80 hrs
Jim Braatz 80 hrs

===========================================================================
3 Usability (level 2) 320 hrs
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---------------------------------------------------------------------------
3.1 Guided reduction tools 320 hrs
---------------------------------------------------------------------------
3.1.1 Custom GUI framework 40 hrs
Athol Kemball 40 hrs
3.1.2 gbtmap / gbtwizard 280 hrs
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Eric Sessoms 280 hrs

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4 Operations "6,580 hrs"
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4.1 Systems 880 hrs

4.1.1 Build administration 320 hrs
Wes Young 320 hrs
4.1.2 Complete gcc 3.* migration 160 hrs
Wes Young 160 hrs
4.1.3 Linux PurifyPlus evaluation 80 hrs
Wes Young 80 hrs
4.1.4 Binary stable distribution 40 hrs
Wes Young 40 hrs
4.1.5 Systems administrators guide 40 hrs
Wes Young 40 hrs
4.1.6 Release preparation v2.0 120 hrs
Joe McMullin 40 hrs
Wes Young 80 hrs
4.1.7 v1.7 patches 120 hrs
Joe McMullin 40 hrs
Wes Young 80 hrs

4.2 User outreach 280 hrs

4.2.1 Interactive AIPS++ user workshop 160 hrs
Joe McMullin 120 hrs
Wes Young 40 hrs
4.2.2 v2.0 newsletters 120 hrs
Joe McMullin 20 hrs
Selfa Lucero 100 hrs
4.3 Defect correction and user support "5,420 hrs"
Ger van Diepen 80 hrs
Oleg Smirnov 80 hrs
Mark Wieringa 128 hrs
Malte Marquarding 320 hrs
Wim Brouw 212 hrs

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Dave Mehringer 212 hrs
Ray Plante 128 hrs
Daniel Goscha 320 hrs
Athol Kemball 160 hrs
Joe McMullin 320 hrs
Darrell Schiebel 420 hrs
Bob Garwood 320 hrs
Jim Braatz 500 hrs
Eric Sessoms 420 hrs
David King 420 hrs
George Moellenbrock 320 hrs
Wes Young 420 hrs
Sanjay Bhatnagar 320 hrs
Kumar Golap 320 hrs

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5 ALMA development 360 hrs
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5.1 ALMA re-use analysis test 360 hrs
5.1.1 Complete iramcalibrater.g integration 360 hrs
Athol Kemball 180 hrs
Kumar Golap 180 hrs

============================================================================
6 Management 640 hrs
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6.1 General project management 240 hrs
Athol Kemball 240 hrs
6.2 NRAO site management 120 hrs
Joe McMullin 120 hrs
6.3 ATNF site management 80 hrs
Dave McConnell 80 hrs
6.4 BIMA site management 80 hrs
Ray Plante 80 hrs
6.5 ASTRON site management 80 hrs
Jan Noordam 80 hrs
6.6 NRAL site management 40 hrs
Roger Noble 40 hrs
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