

Report on JWST project to LRP mid-term review committee

1. Status in year 2000.

This project had been pursued under support from the CSA, as recommended by the JCSA, for some years prior to 2000. Early negotiations were led by Simon Lilly, which led to the opportunity for Canada to join NASA and ESA in an early stage in planning the project. The ASWG (Ad-hoc Science Working Group) included Simon, and later other Canadians who were involved in developing ideas for possible instruments (e.g. Crampton, Hickson). I served on an independent review committee (NESR) who also reviewed the project.

CSA supported the early efforts and indicated to NASA and ESA that we were credible partners at a minimum participation level of \$US50m. The participation in NGST (as it was then called) was listed as part of the LRP for Canada.

2-3. Developments to date (international and within Canada)

Simon and I served on a later Interim Science Working Group (ISWG) who finally defined the instrument complement list and priorities, and reviewed the first major descope from 8m to ~6.5m, and other changes in the overall mission. During this time, various possibilities were discussed for the exact form of the Canadian contribution. A Canadian advisory group was convened from the science community, to work with CSA and the ISWG. When Simon became HIA DG, he and I swapped roles as Project Scientist and ISWG member.

It was agreed that Canada would participate jointly in the NIRCAM instrument, via a NASA competition, and also provide the Fine Guidance System (FGS). As a result, four Canadians joined the winning NIRCAM team, and EMS Technologies and ComDev were appointed as Canadian contractors for NIRCAM. The Canadian hardware included the tunable filters and filter wheels for the

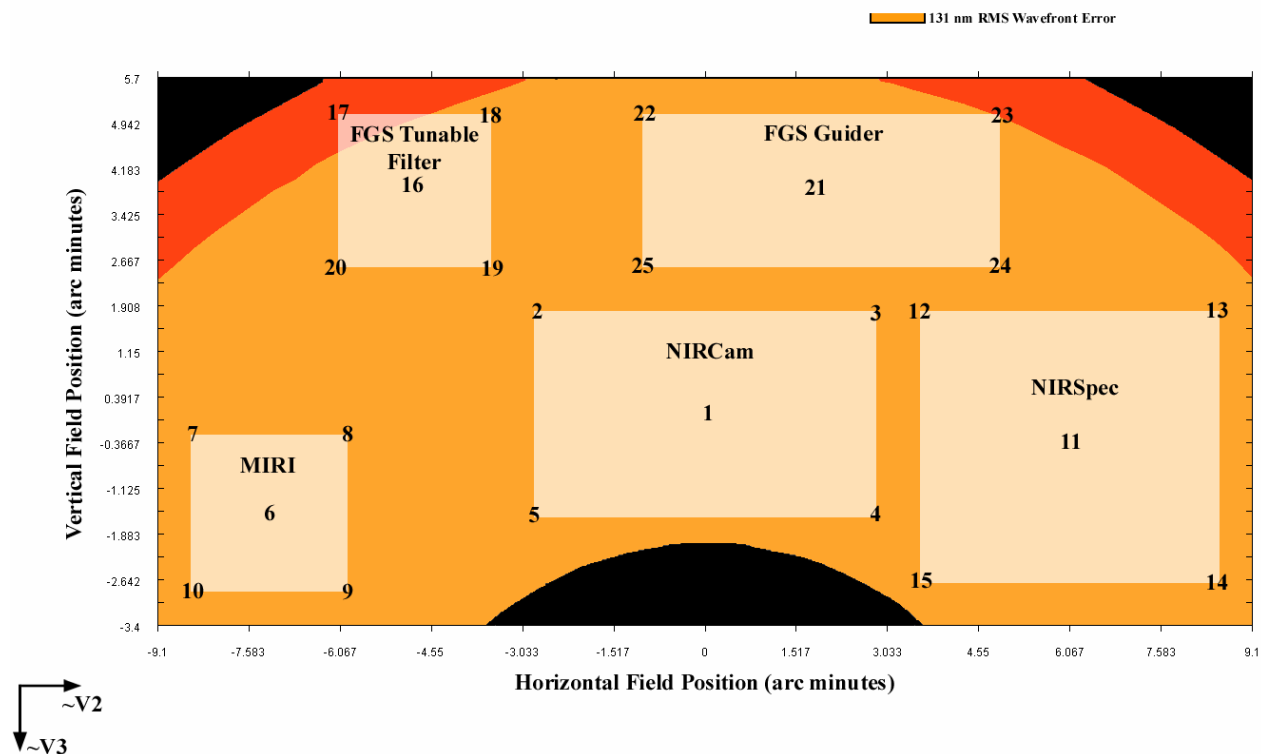
instrument. EMS also won the CSA competition for the FGS phase A contract.

In late 2002, NASA awarded the prime telescope contract to TRW (who then became Northrup Grumman Space Technologies: NGST), and renamed the telescope after 1960s NASA administrator James Webb (JWST). It was soon apparent that NASA were over budget in this contract, and an extensive project replan was done in early 2003. The bottom line of that exercise was that NIRCAM was descoped and made NASA-only, but the Tunable Filter function was given to CSA to incorporate in the FGS. This remains the final agreement, and we have developed a design that will perform both guiding and TF science. The phase A contracts were amended to reflect this, and the Canadian advisory group was replaced by an FGS science team (Abraham, Sawicki, Doyon, Hutchings, and others to be recruited as we enter phase B). We still retain 4 members on the NIRCAM science team (Crampton, Martin, Johnstone, Doyon), and work closely with the NIRCAM team. The CSA management team have grown as we wind up phase A, and the previous manager has retired. The CSA team includes all the above plus engineers from HIA. The HIA effort to date has included optical design, performance modelling, detector testing, some document preparation, and systems engineering (most notably Murowinski, Morbey, Hardy). I serve on the final Science Working Group as Canadian project scientist and as FGS team PI.

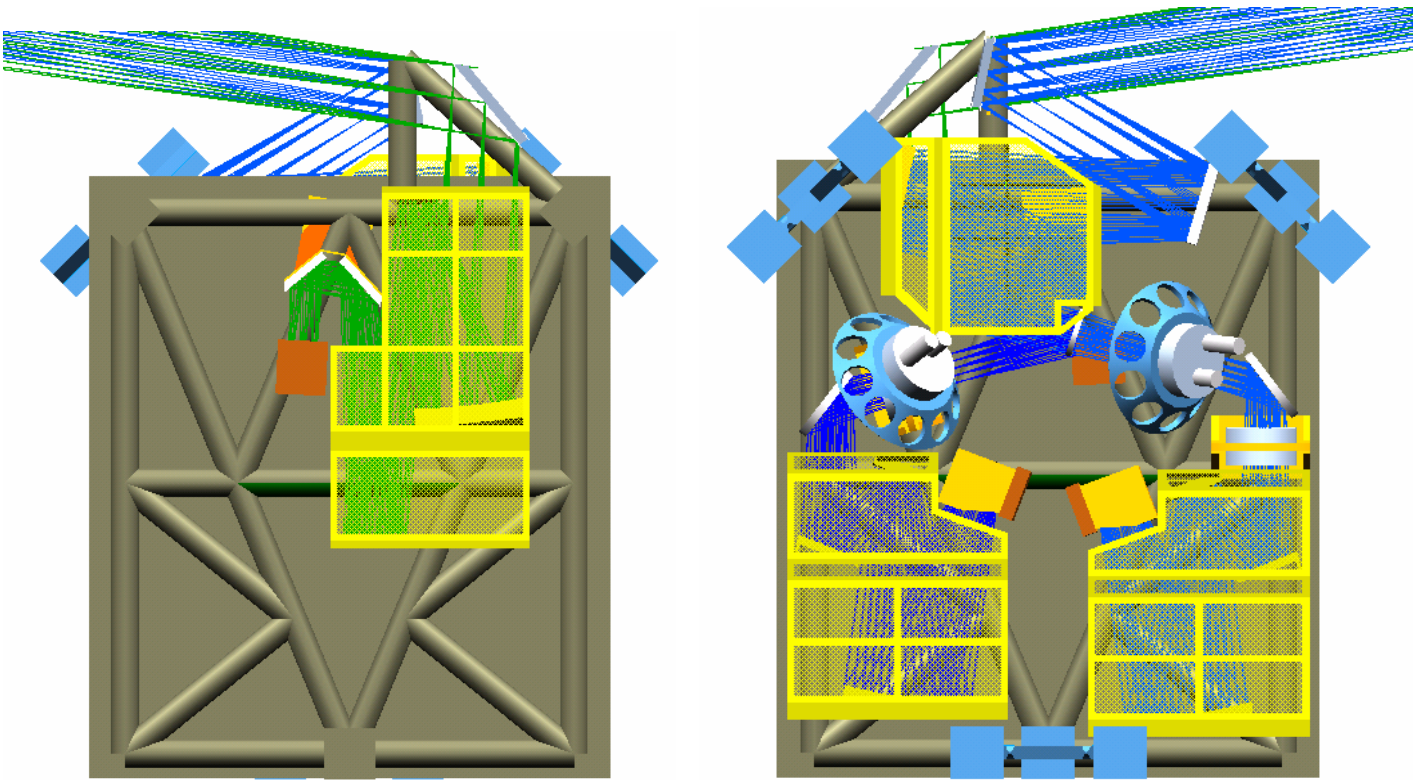
The CSA team participates in numerous working groups and project reviews (about one per working day!), and has close contacts with counterparts in the partner agencies, contractors, STScI, and other instrument teams. We have a draft MOU for our partnership that includes guaranteed observing time as both NIRCAM and FGS teams, and also assures us of 5% of all open observing time on JWST. The launch data is Aug 2011, and mission lifetime is 5 years minimum, with a goal of 10 years. The final instrument complement includes NIRSPEC and a mid-IR instrument, MIRI, as well as FGS-TF and NIRCAM. The telescope promises to deliver major new capability which cannot be realised by any other telescope, ground or space-based.

4. CSA is fully funding the JWST participation and expect to spend the full \$US50m or its equivalent. This contribution includes hardware provision, integration, test and flight. CSA is also funding two operations scientists for the project, who will work at STScI and support the Canadian instrumentation and also Canadian scientific participation in the project. CSA are also funding a historian for the JWST project. CSA can provide the budget details if required by the committee, but state they are committed to supporting the project fully. This is the largest space astronomy project of CSA, by a large factor. To take advantage of this project, in the next few years, we anticipate enlarging the science teams and looking for NSERC funding to support scientific planning and exploitation of JWST. At this point no serious problems are foreseen with our participation in the project.

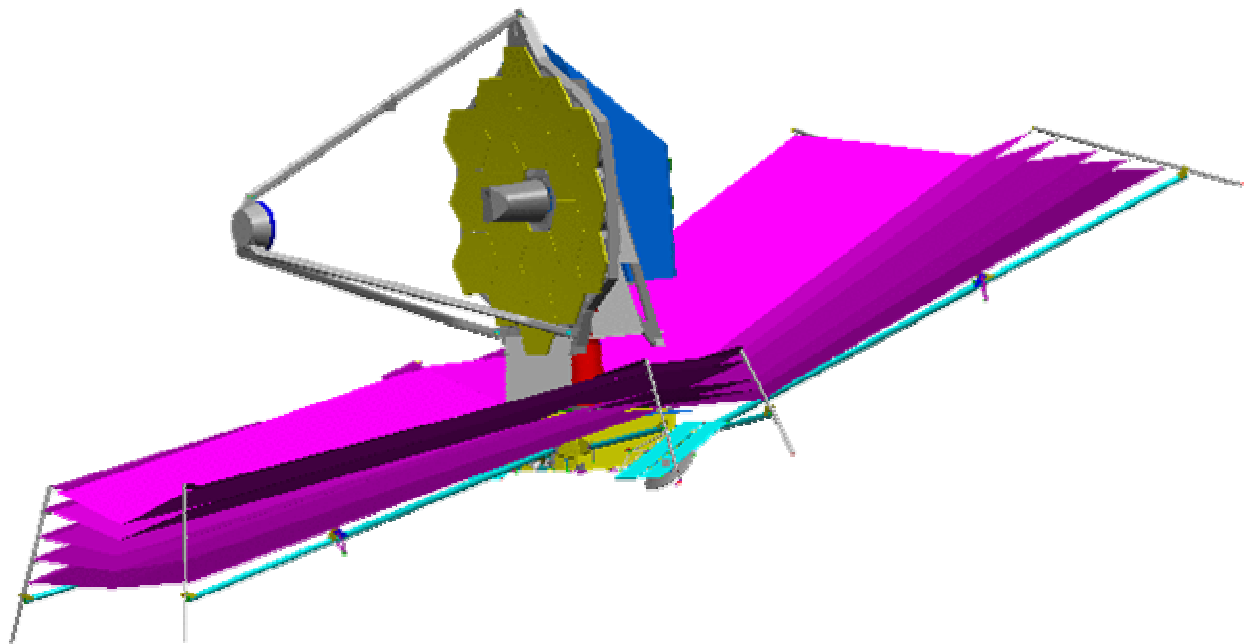
John Hutchings April 2004



Focal plane of JWST, showing location of all instruments.



The two sides of the FGS instrument, showing guider and TF channels



JWST in full

