Software and sociology in UK astronomy

Why don't people use Starlink software? **Kevin A Pimbblet** outlines the problem and some possible solutions.

Abstract

I discuss the remit of Starlink's software strategy groups and an item on the agenda of one group's meeting on 26 January 2001: "Why don't people use Starlink software?" The answer was thought to be primarily a sociological effect: most people supervising UK astronomy PhD students learnt their trade when Starlink had a less than perfect reputation. I report on recommendations made to counter this effect.

In the UK the Starlink Project (www.starlink.rl.ac.uk) has provided interactive data processing facilities for astronomers for over 18 years. Starlink has provided both hardware and software on behalf of PPARC, its primary purpose being "to maximize the return on PPARC's expenditure on astronomical computing". In 1999 Starlink's budget stood at around £2.5m per annum. Out of this sum about £600 000 is earmarked for the provision of software. These provisions include the development, distribution and documentation of the software. The Starlink software collection has been written both by members of the Starlink Project and imported from outside the project for the use of the UK astronomical community. Many utilities and packages exist, mostly focusing on data reduction, but there are also some (limited) theoretical tools.

Software strategy groups

A mainstay of Starlink's software development is the existence of Software Strategy Groups (SSGs). There are six such SSGs whose remits cover different aspects of astronomical research: spectroscopy; image processing (I have been a member of the image processing SSG since 1999); information services and databases; radio, mm, and sub-mm astronomy; theory and infrastructure; and X-ray astronomy. The SSGs were set up after the 1991/1992 review of Starlink to provide feedback, reassess software priorities and identify future objectives. Membership of the SSGs is composed of both Starlink's programmers and expert users drawn from across a broad spectrum of personal experience and opinion. The SSGs are asked annually to advise on strategies to "satisfy (and continue to satisfy) the needs identified by users in the [Starlink Users] questionnaire ... They will also be asked to identify in more detail those software projects that should be carried out over the next year in order to implement the strategy," (star-www.rl.ac.uk/star/docs/sgp44.htx/node3.html).

Sociological issues

Third on the agenda of the image processing SSG meeting for 26 January 2001 was the loaded question, "Why don't people use Starlink software?". This question came as a surprise for a few members of the SSG as many of them use Starlink's software on a daily basis.

Starlink, however, is not the only source of software for astronomers. The major competition for users is the Image Reduction and Analysis Facility (IRAF). IRAF is a publicly available "general purpose software system for the reduction and analysis of scientific data" (star-www.rl.ac.uk/iraf/web/faq/FAQsec01.html). IRAF is written and supported by the IRAF programming group at the National Optical Astronomy Observatories (NOAO) in Tucson, Arizona. IRAF covers many of the same areas as Starlink, for instance general-purpose image-reduction software). One might expect that there would be substantial competition for users between the two, but this is not the case and UK astronomers have tended to migrate towards using IRAF rather than Starlink software.

Contributory factors to this may be that in many observatories (e.g. the Isaac Newton Group) IRAF has historically been much more readily available than Starlink and UK astronomers have used IRAF to be more compatible with their American collaborators. So why do many UK astronomers use IRAF when much of the equivalent Starlink software is arguably better, more stable and more reliable?

In answering this question the SSG pointed out that this was not always the case – during the 1980s Starlink software had a less than perfect reputation. But why in 2001 is there still such a trend for astronomers to prefer IRAF to Starlink? The SSG speculated that the major reason was a sociological one. Postgraduates beginning their PhD theses will be introduced to the tools of their trade primarily by their supervisors. Their supervisors, on the whole, learnt their trade during, or lived through, the time when Starlink had a less than perfect reputation. Their supervisors' prejudices and perspectives naturally influence their students: they are likely to recommend IRAF in preference to Starlink software to their charges. Thus Starlink software has become less used over time, potentially creating a further problem: a lack of local expert users. Even if new postgraduates chose to use Starlink software, they would probably have little or no personal guidance available to them, whereas if they were to chose IRAF, many people in their department would potentially be able to assist.

Discussion

To remedy this situation, the image processing SSG recommended several changes. Firstly, to give the software a higher visibility, the Starlink newsletter should be reintroduced to publicize new software developments. Other ideas included the implementation of a method for disseminating what software is available on-line; the introduction of a "man" page; and an education scheme to help novice and infrequent users reach rapid decisions about what Starlink software could be helpful.

Although these recommendations are a start, it will probably take some time to wash away the memories of the imperfect reputation that Starlink had in the 1980s and counter the present prejudice against it. In the immediate future many new software products will be released. Of particular note is the Interactive Data Language (IDL) whose recent rise has shown that quality, new software will always have a place within the astronomical community and Starlink must redouble its efforts to compete. ●

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