the night assistant at La Silla, but it has been done remotely as well. This took 30 seconds longer and gave the same answer.

The most serious argument used by astronomers is that their object is very faint and that it is difficult to position it at the slit. If the object is not visible on the video screen, it is necessary to take acquisition images and to move the telescope such that the selected object falls in the slit. Sometimes two such exposures are needed. The additional overhead becomes larger if the science exposures are relatively short and there are many targets: if too many acquisition images need to be taken, the observer should go to La Silla.

Finally, multi-object spectroscopy is a special case: first the positioning of the telescope may be rather delicate (although here it helps that it is possible to take a direct image through the slit), but more important is the effort it takes to prepare the mask. This is generally done in the afternoon, but the software needed for this is so far only available at the telescope, and help by a technician with access to EMMI may be needed. We do not at the moment accept MOS runs for remote control.

9. Eavesdropping

So far we have not discussed *eavesdropping*. The system at the NTT allows for this as well (in fact it should be possible to implement this option for all telescopes on La Silla). If the true observer is at the telescope, and all the eavesdropper does is to help in analysing the data, there is little that can go wrong and the gain could be significant. We find that few observers have the time and energy to do a thorough analysis of their data while observing (which is a good reason why so many remote observers come in pairs). In view of this, surprisingly little use has been made of this facility at ESO, possibly because of a lack of awareness. It is also possible that the eavesdropper is the real observer, who instructs the person at the telescope what to do. In that case all of the above on remote observing applies, with the disadvantage that there is another delay when the eavesdropper communicates back to the person at the telescope, but with the advantage that he doesn't have to bother trying to find out how to operate the instrument. At ESO we have no experience with this.

10. Future

What is the future of remote observing? There is clearly a demand from the user community, seeing that a third of the optical NTT proposals request this mode. Part of this may be due to the fact that it is easier to come with more than one person in this mode. The recent experience has shown that, for many programmes, remote control is competitive with local observing, being as efficient in telescope usage while giving a saving of the astronomer's time. At the same time, there is a large group of people who prefer to travel to La Silla. We will for the time being continue to offer remote observing as a service to the community, but not force it upon people. (This last statement is true for the NTT: for the CAT we do prescribe it as the normal mode.) We will try to improve the system to alleviate the doubts as expressed above.

A major upgrade of the NTT control system is being undertaken as part of the NTT Upgrade Project. The aim of this activity is on the one hand to verify the concept and software to be used for the VLT, on the other hand to provide an identical interface on the NTT for higher level operational tools, procedures and methods to be used on VLT. Using the NTT as a testbed for VLT for all these aspects is considered essential in order to operate VLT in an efficient way. It is expected that the VLT technology and software architecture will give essential performance advantages also for remote observing. Faster computers, more efficient communication protocols, on-the-fly data compression and fast data forwarding will reduce the data-transfer rate. The limiting factor of a CCD display will become the read-out time, independent of where the display unit is located.

11. Conclusions

We have shown that the observing efficiency does not degrade when using *active remote observing* for the ESO NTT as compared to classical observing. This allows more flexibility in scheduling, shorter observing programmes, long-term monitoring programmes, and savings of astronomer's time.

However, *active remote observing* is nothing else than moving classical observing to another site. It does not address the "first night syndrome". To increase the scientific efficiency, service observing may be a more important observing mode than remote observing. The move to service observing may or may not make *active remote observing* obsolete. Assuming the service observer will be at the telescope, we would expect increased demands for *eavesdropping* capabilities. The requirements for this to be successful are a sufficiently fast link and adequate communication facilities, i.e. not much different from those of *active remote observing*. The main role of *active remote observing* may be found in the new generation of large telescopes, where the observing runs may be very short, and for astronomers in places where travel money is difficult to get.

12. Acknowledgement

Manfred Ziebell, with support from Joar Brynnel, has been responsible for the very successful installation and operation of the new satellite link. We thank Miguel Albrecht for providing the observing efficiency data. The successful operation of NTT remote observing would not have been possible without dedicated support from the whole operation crew, both at La Silla and in Garching.

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Library and Information Services in Astronomy II (LISA-II)

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Library and Information Services in Astronomy II (LISA-II), an IAU Technical Workshop, was held at the European Southern Observatory (ESO), Garching near Munich, Germany from May 10-12, 1995. LISA-I had been held in Washington D.C. in 1988. The aims of LISA-II were twofold: (1) to provide the opportunity for librarians of astronomical observatories

and institutes to meet to discuss common problems, and ways of stimulating greater co-operation between libraries and their services; and (2) to raise discussion about the interface areas between astronomical libraries and the wide range of on-line and other astronomical computer-based services which are becoming ever more widespread.

Various groups of people, and disciplines, were involved in LISA-II. These included, of course, those who run astronomical libraries. The astronomical library is seeing many changes. On-line and other digital information is on the increase. Wide-area telecommunication networks are commonly used for accessing and ordering new material, cross-checking references, and so on. And catalogues of library holdings are becoming automated, through DBMS-based and accompanying scanning systems.

Information science work was strongly represented. This includes information retrieval, increasingly computer network-based; indexing and searching; and the handling of information and data in very diverse forms.

Astronomers, not only those who participated, are acutely concerned with the presentation and dissemination of data and information, and ultimately knowledge.

An important part of the meeting was devoted to current evolution in electronic publishing. Representatives from many of the major publishing houses and establishments took part.

A secular trend which is quite apparent is the convergence of concerns, and often indeed of priorities, in these fields. It is always exciting to witness significant changes in the way we do things. There are attendant difficulties lurking also, especially for those who face major problems in regard to resources.

This meeting was truly international. 121 LISA-II participants from 26 countries learned about projects, research and efforts taking place all over the world.

The local organisers wish to thank colleagues at ESO for help in lots of ways, which led to a very productive meeting. The help of the many sponsors of LISA-II is gratefully acknowledged. The “Friends of LISA-II” committee (Brenda Corbin, U.S. Naval Observatory; Marlene Cummins, University of Toronto; and Ellen Bouton, NRAO) worked tirelessly to facilitate participation on a wide basis.

Photograph by H.-H. Heyer

The proceedings of LISA-II will be published as a special issue of the journal Vistas in Astronomy. The volume contains a selection of papers as well as abstracts of poster contributions. Full texts of posters can be found in the LISA-II area on the World-Wide Web at URL http://www.eso.org/lisa-ii.html; some other “goodies” are also available on the Web, like the complete programme and the group photograph taken during the conference.

LISA-II once again has shown how important meetings of this kind are, especially to librarians, who have not always had a possibility to meet their colleagues personally in the past. The results will be manifold, be they additional information about techniques and tools in information services, closer working relationships, or higher motivation in general. We are looking forward to LISA-III which hopefully will take place in the near future.

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