Introduction

Until the late 1980s, statistical and mathematical software packages were supported only from time-sharing computer system managed by the academic computing support group at IU. Faculty and staff wishing software had few options. They could use the limited number of packages available on the main-frame machines, have their departments purchase the software, or purchase it on their own. Students had to purchase the software on their own or use the software provided by the University in the public computing clusters. The machines in the public clusters were limited both in terms of the number that were available at any given time as well as in the variety of software packages.

As the growth in use of desktop computers increased, so did the need for software. The limited number of packages available was not enough to satisfy the demands of a modern research university and the high cost for the needed software made it difficult for departments to provide it for research and instruction. A resolution to this predicament was critical for the continued academic excellence of the institution.

What we do

The Center for Statistical and Mathematical Computing (Stat/Math Center) is a joint initiative of the University Information Technology Services (UITS), and the Interdisciplinary Consortium for Statistical Applications (ICSA), part of the Office of Research and the University Graduate School (RUGS) at Indiana University (IU). The mission of the Stat/Math Center is to enable the Indiana University community to easily and effectively perform statistical analyses and advanced mathematical procedures for research, instructional, and administrative needs.

The Stat/Math Center is comprised of 4 full-time staff – a Director, a Statistical Consultant, a Math Consultant, and a Sales Coordinator. In addition, there are two half-time graduate assistants, and a part-time sales assistant.

- The Statistical and Math Consultants
The Statistical Consultant monitors the functionality of statistical software on the mainframe and research machines as well as the Student Technology Centers. The Statistical Consultant also deals with statistical questions requiring a more in-depth response, troubleshoots problems reported by users and system administrators. The Math Consultant has duties that are similar to those of the Statistical Consultant as well as monitoring several license managers for mathematical software.

- Sales Coordinator

The Sales Coordinator manages software sales and distribution throughout the IU system. Other duties include arranging for media delivery, provides assistance for stand-alone and network installations, doing remote or on-site installations, sending out annual renewal letters to those leasing software from the Center, and regularly visiting vendor sites for patches and upgrades.

- First point of contact – the front desk

The first point of contact for those emailing or calling the Stat/Math Center is the front desk, staffed by the graduate assistants. Their job is to answer basic questions regarding the use of statistical software. Occasionally appointments are made with them for more in-depth consulting to deal with questions of a more technical or detailed nature. They will also direct people to relevant web pages and forward calls to the person at Stat/Math best suited to deal with the questions.

(SLIDE 8)

In 1991 the Stat/Math Center was entrusted with the responsibility, with approval from University Information Technology Services (UITS), to investigate avenues through which statistical and mathematical software packages could be made more readily available and affordable for research and instruction. With a series of grant proposals, base funding, one time funding, cash advances, and negotiations with vendors, the Stat/Math Center was able to make volume purchases from vendors and distribute the software to various departments and users on a cost recovery basis.

(SLIDE 9) Some of these software packages include SAS, SPSS, Maple, Matlab, and Minitab. A software distribution coordinator was hired on an hourly basis initially, and then upgraded to a full-time position to manage the effort. This position was self-funded from the initial appointment itself through the cost recovery effort.

SAS – An Example of the Collaborative Distribution of Software

(SLIDE 10)

This means of getting software into the hands of those needing it has proven to be successful. For example, before the Stat/Math Center began its collaborative approach to software distribution, there were approximately 20 different departments leasing at least
five licenses of SAS for approximately $2,500.00/year at Indiana University. An equal number of individuals also had single user SAS licenses. By leasing 400 licenses of SAS, the Stat/Math Center was able to reduce the annual payment to approximately $10K overall, a substantial savings over the previous arrangement. The Stat/Math Center took the lead in negotiating with various departments and individuals to join the Center in leasing the software on a cost recovery basis. Most users adapted early and easily to the change; but some remained skeptical about the service including such items as whether or not updates to the software were included in the pricing, expiring licenses, and whether or not they would even be getting the software. Once these users realized their fears were unfounded, they dropped their personal licenses and began leasing SAS through the Stat/Math Center.

Today, Stat/Math Center is the only division at Indiana University to distribute SAS software to the University community. Lower costs, an efficient distribution system, and effective, reliable support resulted to an increase in the number of SAS users. (SLIDE 11) In 1998 there were approximately 490 SAS licenses distributed by the Stat/Math Center. Currently there are approximately 670 users. In 2001 the Stat/Math Center signed the Higher Education Premier Program (HEPP Silver Level) with unlimited use privilege. This is one example where University saves tens of thousands of dollars annually through a collaborative effort.

(SLIDE 12)
Today the IU community can lease or buy over 30 different statistical/mathematical software packages through the Stat/Math Center on a cost recovery basis. (SLIDE 13) The majority of these packages are general purpose packages frequently used by a wide cross-section of the Indiana University user base. Other packages are however, more specialized in their functions and have a limited user base. Through the efforts of the Stat/Math Center scholars using these packages can do so for fees far below what they could obtain through a direct purchase from the vendor. The advantage of Stat/Math Center managing the software distribution effort is that our staff members can also provide software technical support to the users. (SLIDE 14)

(SLIDE 15)
By no means are all software packages carried by the Stat/Math Center. Occasionally requests come in for software that are not carried. Faculty or staff will contact the Stat/Math Center with a request for a specific piece of software. At times, all they will have is the name of the package. Information about the number of users, the platform, whether it will be a stand-alone or network install, modules, maintenance, and documentation are received from the requestor. We will then seek out and locate the vendor and negotiate the terms of lease or sale. We then contact the original requestor and relay the information to them. From there it is a matter of ordering, receiving, and installing the software.
Another example of the collaborate approach to software distribution that results in significant savings is the arrangement made between Indiana University and SPSS. In 1999, the Stat/Math Center submitted a proposal to UITS to provide a general purpose statistical software package free of charge to the IU community. After a series of negotiations with vendors and with University administration, funding was approved to sign an Enterprise License Agreement (ELA) for the unlimited distribution of SPSS software (Base, Advanced Models, Regression Models, and Tables) within the Indiana University system. The proposal was implemented in early 2000, whereby faculty, staff, and students can purchase a SPSS media for $5.00 (media duplication cost) from the Stat/Math Center or campus bookstores on the various IU campuses. Over 600 CDs distributed at Indiana University Bloomington alone on Jan 14, 2000. By the second anniversary of the agreement (Jan. 2002) approximately $3.2 million worth of the software had been distributed. This arrangement has resulted in an increasing number of faculty members using the software as part of their curriculum as well as permitting students access software at a very reasonable rate.

Advantages of centralized distribution

Several advantages are inherent in a centralized distribution model. These include but are not limited to:

- **Ease of license maintenance & acquisition with a single source for licensing needs.**
  Faculty and staff will contact the Stat/Math Center for information about obtaining and licensing software. Inquiries are made regarding particular pieces of software, whether or not we have it, pricing, platform availability, and documentation. Often answers can be given immediately as well as more in-depth and detailed information regarding particular software packages.

- **Assistance with using** the software provided via on-line guides, over the phone, email, &/or personal appointments.

  The staff and graduate assistants at the Stat/Math Center are all familiar with statistical and mathematical packages. Using the various software programs over a period of time allows a good deal of institutional knowledge to be built up that can then be made available to the users. Questions ranging from “How do I get my data into SPSS?” & “How can I update my license?” to more complex research design questions regarding the most appropriate statistical technique to use in a given situation are all regularly answered by the staff at Stat/Math.

- **Assistance provided with installation** on stand-alone workstations or network installations.
A centralized location can amass & disseminate information on patches, fixes, bugs, and workarounds rather than each individual or department having to work out the solutions on their own. While most installations proceed without difficulties, the occasional oddity pops up. More often than not, these special cases have appeared previously and little time is wasted in finding and applying the proper fix.

- A single-source for software can also reduce the overall costs to end-users, departments, and the University through volume purchasing and educational discounts offered by many software vendors.

From the perspective of University administrators as well as departmental advisors, software purchases may constitute a significant and recurring portion of research budgets. Buying or leasing several software packages over the course of just a few years can easily run into the thousands of dollars.

Volume purchases through a centralized source can realize significant savings in the first year. For example, where a department was leasing five licenses of a software package for $2500.00 per year, through the collaborative software model set up by the Stat/Math Center, 20 licenses of the software could be leased for the same $2500.00 or the same five licenses could be made available for just a fraction of the previous cost freeing up substantial funds for other pressing needs.

The advantages cost-savings and efficient, reliable support afforded through a centralized software distribution model have attracted many departments. Hearing of the benefits, approximately 95 departments on all of the regional campuses now have their statistical and mathematical software needs met through the offices of the Stat/Math Center.

In addition to significant savings, having a centralized software source outside the customary purchasing department may have another benefit. A centralized source is able to focus specifically on statistical and mathematical software, thereby becoming familiar with the software’s functionality, capabilities, weaknesses and strengths, but also dealing with the vendor’s sales and technical support people. Being closely involved with the various packages means the centralized source can work with the software vendors to better tailor the licensing to meet the particular needs of the users.

**Advantages of cost sharing.**

(SLIDE 18)
As we mentioned in the last point, significant savings can be realized through a centralized source.

- Lower overall cost to the university as well as savings to individuals, departments, and schools.
- Per unit cost reduced resulting in significant overall savings.
- Purchasing Dept. load reduced as # of requests decrease
• Greater variety of software packages can be made available for an overall lower cost.

(SLIDE 19)

* Savings estimates are based on conversations with the vendors’ sale reps. Pricing was based on single user licenses as close or identical to those leased by I.U. Based on 25 user license for SAS and SPSS.

Challenges.

(SLIDE 20)

• Managing a large number of applications in the Student Technology Centers (STCs).

Well over 200 applications are now available in the STCs. Getting all the programs to operate in the same environment presents a formidable challenge to the system managers. The Stat/Math Center works closely with the system administrators to ensure that the latest releases for software are available as well as any patches that may affect the smooth running of the software.

• Overcoming balkanization & the desire for independence within departments, schools, and colleges.

The desire for independence between departments is understandable. Commitments are made to provide faculty and researchers with the tools necessary to complete their goals. These commitments may entail software purchases or leases that can annually run into several thousands of dollars. The recruitment and retention of a support staff capable of maintaining the software further increases the cost.

One of the challenges faced by those developing a centralized source for software distribution is overcoming the doubts and uncertainty among potential clients. These doubts are not limited to costs alone. Expertise, reliability, and consistency of service are also major concerns that need to be addressed. This can be done only over time and with a good record of achievement. Customer satisfaction surveys are one such method of measuring achievement. Word of mouth from one department to another or from one individual to another regarding the level and quality of service is also an invaluable means of getting the word out to potential clients and departments.

• Funding- departments balk at joining.

In addition to the above concerns raised by departments, funding is also a major concern. We have been able to allay those concerns by offering departments the same software they were leasing for a much lower annual fee. In all cases, software has been installed on servers and made available to an entire department for less than they had been paying.
• Meeting the needs of users of specialized software.

Users cannot all be placed within the same category of software needs. As disciplines differ in their approach to research and instruction, so do the tools required to meet those needs. The majority of statistical and mathematical software needs at Indiana University in so far as instruction is concerned can be met with SAS, SPSS, and Maple. There are however, a significant number of researchers and departments whose needs fall outside this small group of packages. For these people, obtaining the software and obtaining it at a reasonable cost can be two important factors.

The Stat/Math Center has accommodated itself to the needs of these users. Some software packages come with a base module and additional add-on modules are made available. The Stat/Math Center has, with several packages, been able to provide not only the base module but several of the more popular add-on modules for a price that departments were originally paying for just the base module. Licensing agreements have been reached with the vendors of several packages including AMOS (a structural equation and confirmatory factor analysis package, Sigma Plot (a graphing package), RATs (a time series package), HLM (a linear modeling package) and the AutoDesk group of design tools are but a few of the packages licensed by the Stat/Math Center to meet the more specialized needs of the Indiana University community.

• One example of the efforts made by the Stat/Math Center to make software use efficient is that of the Sales Coordinator. From 1996-97 to the present, the number of walk-in and remote installations has increased from 660 to over 1800 contacts per year. (SLIDE 21)

• Concern over reliability & consistency of support from Stat/Math Chart satisfaction ratings (SLIDE 22)

Each year UITS conducts a survey of its users including faculty, staff, graduate and undergraduate students. These surveys are used to gauge our users’ satisfaction with the wide range of services provided by UITS. The Stat/Math Center’s satisfaction rating has consistently registered above 80% with most years garnering a 90%+ rating among faculty, staff, and students.

Conclusion

Meeting the software needs of researchers, instructors, and students is no easy task. Costs associated with software acquisition are a major impediment for many institutions seeking to meet these ever increasing needs. But these needs can be met in a cost-effective way by charging a single agent with the procurement, distribution, and support of software packages. Significant savings is an end goal that can be met with an efficient, reliable, and consistent support service.
Acknowledgement

References