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Abstract: IT professionals are too often narrowly defined by their particular expertise, even by the specific technologies with which they work. This categorization presents problems for managers responsible for integrating a broad array of IT staff into a cohesive unit with common missions and goals. It can also create severe obstacles for the professional development of individuals within IT organizations. This paper identifies four characteristics of the IT professional that generalize across platforms and technical expertise: customer orientation, creativity, collaboration, and communication. Implications of these characteristics for organizing work, for staff evaluation, and for professional development are outlined. A case study examines the particular challenges of infusing digital technologies into traditional technology support services, such as those provided by AV professionals.
Introduction

In the last decade, technologies supporting all aspects of higher education have proliferated, the number of technology users on campus has vastly increased, and their expectations have soared. Campus computing organizations have scrambled to keep up, in a rapidly evolving, centrifugal process that has spun our organizations and our staff further and further afield -- physically, technically, and psychologically -- as we attempt to balance service and innovation, to support the newest technology without abandoning the oldest, and to add or develop the needed expertise among our staff. This outward, centrifugal motion has created collisions with other organizations on campus that also acquire and deliver information -- the libraries, the AV departments, the television stations, to name a few. These collisions have sometimes been painful and confusing, sometimes liberating and creative.

For us as IT managers, this centrifugal motion within our own organizations, as well as the resulting collisions with other groups, creates many challenges. In this paper we focus on the particular challenge of enhancing the development of our professional staff members in this fluid and rapidly changing context.

We begin with the observation that professional staff are too often narrowly defined by their particular expertise, or even more narrowly by the specific technologies with which they work: we can easily identify “the UNIX gurus” for instance, and it’s not hard to tell the AV technicians (the Old Media experts) from the New Media center staff, or the reference desk librarians from the computing center Help Desk professionals. They each have a unique vocabulary, a unique vantage point within the institution, and sometimes unique dress and work habits.

The specialized expertise of these diverse professionals seems necessary to provide first-rate customer service. But a narrow emphasis on specialized expertise as the primary characteristic of the IT professional can hobble the IT organization, making it difficult both for individuals to grow professionally and for the organization to respond quickly and with a clear sense of its mission as technologies evolve and customer needs increase and change. Furthermore, this emphasis on specialized expertise has led to subtle, technology-based class distinctions among IT professionals, with the result that as technologies merge, productive synergy between groups can be unnecessarily hard to generate. Where groups on collision course have been asked to cooperate or even merge, these distinctions have made collaboration difficult.

In an environment of endless technological change, continuing technical education for professional staff is important and necessary. But simply piling one training program on top of another does not constitute good professional development practice. Instead, IT managers need to counteract the centrifugal
tendency with a converging, centripetal strategy that centers goals for staff development and performance on characteristics that generalize across particular technologies and expertise. The fact that previously distinct technologies are rapidly merging provides impetus for developing such a strategy, as services must be redesigned and yesterday's special expertise becomes obsolete or has value in a new context.

The professional staff members within an IT organization today can range from the UNIX-savvy Webmaster to the slide projectionist, from the presentation graphics assistant to the interactive graphics programmer, from the expert in audio systems for classrooms to the expert in database design. The profile described below attempts to enumerate and illustrate the common characteristics of these diverse professionals. The goal in developing this common profile is to help both staff members and managers understand the "expertise" of IT professionals as a broad set of skills that encompass much more than technical know-how. From this understanding can come better strategies for developing professional staff members and assessing their performance. This profile also provides the basis for establishing a common set of professional goals that will help staff members understand how they can work productively as a unit, and even interact more effectively with IT professionals in other groups and units.

**Profile of an IT Professional**

The profile of the IT professional includes these four primary characteristics:

* Customer-orientation
* Creativity
* Collaboration
* Communication

We will look first at each aspect of this profile in more detail, and then we will look at the ways this profile illuminates a case study in team-building, including specific practices, problems, and progress.

**1. Customer orientation**

Putting customers first is not a new idea, nor one that uniquely characterizes the IT professional: it is a primary quality of any member of a service organization. Each member of the IT staff, whether or not he or she deals directly with campus customers, should be expected to put the needs of campus technology users first. To serve customers effectively, IT staff need to:

* know what their customers need to do their work;
* serve the institutional mission as it is interpreted and implemented by those customers;
* focus on providing services "just in time" for a community that is incredibly driven by the time constraints of the academic year;
* foster independent use of technologies by customers.
Strong customer orientation integrates both the IT staff member and the IT organization into the routine processes of the academic institution, and can be a source of great professional satisfaction. But providing consistent and thorough customer service is a great professional challenge in an environment constantly in flux.

2. Creativity

The focus on customer orientation establishes the service component of the IT professional. Adding the second characteristic, creativity, affirms the simultaneous role of IT professionals as innovators, as leaders in the development and introduction of new technologies on campus. This element in the profile of the IT professional also needs to be articulated for every member of the staff, even those whose jobs seem most dedicated to delivery of quotidian services. This creativity, however, needs to be nurtured and exercised in the context of the institution’s mission and available resources. For the IT professional, creative activity includes the ability to:

* anticipate customer needs;
* master appropriate technical skills, and teach or share new abilities with colleagues;
* identify and pursue innovative projects that generalize across broad segments of the institution and that fit the institution’s mission;
* take a successful project and turn it into a service;
* extend a routine solution or a general purpose tool imaginatively to solve new problems in a cost or time effective way.

The exercise of creative talent is a powerful springboard for professional growth and infuses new energy into the IT organization. Innovative achievements inspire others, create new standards of excellence, and provide new options for customers. The challenge for managers is often how to nurture creativity in environments where resources are scarce and risks are seldom encouraged.

3. Collaboration

IT organizations and IT staff cannot operate successfully in isolation, and should not try to do so. We can no longer inhabit the silicon basements on campus, performing our wizardry darkly, even if benignly, on behalf of others. We must be out in the fray, perceived as valued partners of staff, of faculty, and even of students. Collaborations leverage those scarce resources. Collaborations also provide both insight that drives the establishment of new customer services and fresh ideas that spur further creativity and innovation. IT professionals need to build collaborative relationships in every forum. They should be encouraged to do so with all of the following groups:

* with customers;
* with colleagues within their own organization;
* with other campus groups and offices;
* with colleagues on other campuses and in professional organizations;
* with vendors and other external groups.

Good collaboration builds teams that provide the IT professional with new knowledge, new models, and new perspectives. Collaborations offer the opportunity for valuable critique, for unexpected innovation, for the chance to share expertise and develop new skills. Collaborative activities can also be excruciatingly time consuming. Unless carefully managed, the processes involved in collaboration can overwhelm the goal, and frustrate staff rather than reward their efforts.

4. Communication

IT organizations usually maintain and develop the major communications media on campus, and so it is ironic that IT organizations and their staff members often fail to communicate effectively with one another and with their customers. The ability to communicate is critical to the success of the IT professional as an individual and as a member of the IT team. Communication includes a commitment both to listening -- assimilating everything that comes in from customers, from collaborations, and to sharing -- querying, responding, and informing, in a timely and graceful manner. The IT professional must be able to:

* listen to the customers;
* absorb and interpret institutional and national "messages";
* understand that the knowledge of the IT professional is not arcane or privileged, but should be shared in language that customers and colleagues can understand;
* provide IT services that are visible, accessible, convenient, and well-documented;
* see communication as a mutual process of timely teaching and learning.

Effective communication provides an essential flow of information within the IT organization as well as between IT staff and customers. But effective communication is hard to achieve. It requires both unusual honesty and great empathy. And it also requires technically adept staff members to relinquish their traditional posture as the expert and assume a new role as guide, colleague, and coach.

A profile of the IT professional that focuses on these general characteristics rather than on a particular technical expertise is useful for:

* articulating individual job responsibilities;
* providing specific goals for the professional development of individual staff members;
* evaluating professional performance and professional growth;
* establishing goals and priorities for the IT organization, so that the goals for individual staff members are given a supportive context;
* defining milestones for the IT organization's progress;
* building organizational unity and improving staff morale with a sense of shared vision and shared practice;
* finally, telling an organization's story, and analyzing its progress, by looking at some of the ways these professional characteristics have infused the processes of planning and implementation.

For an example of such an analysis, we turn to a case study of transformation and professional development in the Educational Technologies division of the University of California at Los Angeles.

**A Case Study: Media/IT Professionals**

First some background: In 1993, media services at the Office of Instructional Development (OID) at UCLA was a collective term used to refer to the various technology-based service units. Each with its own manager, who temporarily reported to the Director, the units had at various times in their existence reported to different levels of management (including different organizations) in a variety of combinations. Following an external review, the recommendation was accepted to organize these functional areas into one “Educational Technologies” division within OID.

On paper, therefore, the following functional areas were quickly merged:

- Audio Visual Services
- Instructional Media Production
- Media Systems Design
- Media Systems Maintenance
- Language Lab, Media Lab, Media Library, Teleconferencing & Satellite Services
- Photography & Graphic Services

And, a few months later, a new Assistant Director was hired to create a cohesive set of services, to integrate digital technologies into the service spectrum, to improve the quality of service, and to bring the units into fiscal soundness. Within the first year, two of the units (Design & Maintenance) were merged under a single manager and a new unit, Information Technology Systems, was added to the division.

The managers, most of whom had worked for the organization for more than 10 years (two for more than 20 years) were senior professionals in their area of media and service delivery. Although there were some unit interdependencies and opportunities for collaboration on a project basis, there had been no recent attempts nor programmatic design to exploit overlaps for either professional growth or service improvement and expansion. The managers viewed themselves first as media professionals with distinct areas of expertise (for example, a producer/director) and secondly as a manager. The professional development, therefore, had to include both the expansion from media to instructional technologies and from operational supervision to managerial
functions, such as program, service, and fiscal planning. Similarly, for members of these units, along with learning new technologies and how to integrate and deploy them, came the new imperative to think broadly across unit boundaries so that intersection of services was seamless for the client.

Adding information technologies brought a new set of customers and a new set of expectations which had either been non-existent in the traditional media services, or were only present in a very small percentage of the customer base -- primarily those for whom the media was also central to their academic expertise. We have grouped these changes in customer expectation around four topics which we then use to illustrate the IT profile with the IT practice:

* **Pervasive access**: once aware of even some of the potential uses of IT, the customer quickly expects to find equally predictable accessibility in multiple, if not all, locations in which they need to perform their work. For example, whereas a faculty member may have been quite satisfied with (or at least willing to accept) having a film or video projector in only specialized locations, they rapidly came to expect predictable accessibility to hardware, software, and information in their offices, in classrooms, in labs, in dorms, in residences, etc. This expectation has also extended back to the traditional media equipment, such as overhead and slide projectors, which customers also now expect to find in every teaching location.

* **Independent use**: faculty, staff, and students were quite satisfied with (or at least willing to accept) the process of working through the media professional, whether to create, adapt or use media in traditional formats. In contrast, after only a modest amount of experience with IT, customers expect to be able to create their own materials, to function independently of an “expert”, indeed, to become experts in their own right.

* **Frequent change**: faculty, staff, and students were quite satisfied with (or at least willing to accept) changes in the medium and projection equipment or film, video, slides; changes were incremental, occurred after many years and often had little or no impact on their own possessions, finances, or ability to incorporate content into teaching and learning. In contrast, changes in digital technologies impact faculty, staff, and students daily - whether potentially or in fact.

* **Extensive choice**: faculty, staff, and students were quite satisfied with (or at least willing to accept) the choices media professionals made for them or recommended to them. The variety of choices were fewer, their differences clearer, and the implications were fairly predictable. In contrast, the mix and match choices of IT (euphemistically captured in the “plug and play” phrase) seem infinite, the meaningful differences usually unknown, and the ramifications unpredictable, given the expectations for pervasive access, independent use, and frequent change. Right choices are less obvious -- maybe impossible, except for the briefest of time periods.

**The Profile in Practice**
The first step we took was to lay the groundwork for the division by writing a vision statement on which we could build a common set of goals for service and services. This vision statement focused on the client and the instructional mission of the larger organization; it made no mention of units.

**Customer Orientation:**

We have found that the customer orientation has had to increase, building on what was present and expected as media professionals, to include the ability to:

* serve a new customer base for whom media is IT while helping customers somewhat “stuck” in old forms of media to broaden their horizons;
* respond effectively to immediate service requests within the technological and programmatic context of the customer;
* maintain incredibly rapid and flexible adaptation of services while integrating a broader range of technology options;
* achieve professional growth and satisfaction through creating information and opportunities which enable the customer to work and learn independently.

Some things never change, they just increase. Both with media and with IT, engaging customers in the development process is the key to doing the right thing in the right way. For example, we started with the goal of helping faculty use IT in the classroom. Working with faculty “pilots”, local support staff and various central services, we are now connecting classrooms to the backbone, providing laptops via audio-visual services, supporting the creation and adaptation of materials, and developing production-level digital imaging services.

**Creativity:**

Overall, we have learned that adapting existing media services and developing new IT services happens more rapidly, must integrate a broader range of physical and technological options, and most certainly will end up incorporating several unexpected service outcomes. The fact that these media service units and professionals had a long established focus on supporting innovation in teaching made it possible to move more rapidly to develop long and short-term goals and begin implementing projects across unit boundaries.

Practice has shown us that our media/IT professionals must continually pursue:

* understanding major technology changes and how the campus is intending to or should integrate them; for example, our media systems design unit is currently testing options for delivering interactive video to the classrooms over ATM;
* mastering new technical skills, while “letting go” of the need to be THE expert and developing a readiness to share the role of trainer/consultant with both other IT professionals and customers with expertise;
* adapting or building on the ideas and work of others (including those of the customer) to create new access, new opportunities, new solutions.

An example of how a trend in one area can be applied to another is evident in our experience with fostering independent use. We found that the faculty’s expectations to use computing independently may have enabled audio-visual services to help faculty learn to use almost all projection equipment independently. Not only has this resulted in an enormous savings in operational costs, it has also enabled an increased number of faculty to use media and technology in teaching.

**Collaboration:**

Organizationally, we elected NOT to create a “new media” unit while leaving the traditional media services unchanged. Instead, we infused changes horizontally across all units. For example, instructional media production also now provides consultation and fee-based services for the production of interactive multimedia. We also created an internal technology systems group to help us define technology standards, develop a technology infrastructure, support staff use of systems and networks, and plan pilot projects with the units.

When IT pervades services, we have found that there is almost never a time when, as media/IT professionals, we don’t need to:

* talk with departments to understand what their technology and services plans are, where the hot spots are, and what plans are under discussion;
* connect with technology vendors and consortia to ensure that we know the big picture at least as soon as our customers do and invite them to become part of our innovations;
* work with peers and customers at other institutions to develop solutions (for their customers or our own) which enable collaboration among customers and sharing of resources.

An excellent example of such qualities in practice has been evident in the development of a center for faculty to experiment with digital technologies. It was created in consultation with faculty, departmental support staff, vendors, and other higher education institutions. In the operations, we find ourselves working with (on our campus as well as on other campuses) faculty, librarians, technology and media vendors, and publishers (to name but a few) while pulling in expertise and resources from across our own units, the campus and remote institutions.

**Communication:**

The new media/IT professional recognizes that they are part of a community of supporters, sometimes the expert, often the learner, ideally a peer - with information to share and understanding to gain. Given the imperatives of customer orientation, creativity and collaboration, we have found that
information now is critical to the operation of a broader set of services, impacting an unknown number of customers, over a wider geographic area.

We have learned that the IT professional must be able to:

* share expertise or their services will flounder, their colleagues may fail, and their customers will surely go it alone or look elsewhere;
* provide chunks of accessible (both technologically and contextually) information which can be integrated on the fly to solve an immediate problem;
* meet the “just in time” approach of customers to look for answers when they need them and not when the expert is ready to publish them.

We have learned that the best way to grow expertise as an IT professional is to give away what you know so that others can use it and work effectively without you. The benefits are as important for the professional, who can move on to something new, as for the information consumer who is able to work more readily at their own pace.

**Conclusion**

We are now well launched into the third phase of expanding what were pilot projects to production services in every facet of our operations and services. For example: digital imaging services in Photography, a faculty new media center in Instructional Media Production, desktop videoconference in distance learning services, multimedia delivery systems in the media lab and multimedia resources in the library. We are currently designing interactive video capabilities for classrooms, a multimedia development lab for students, a multimedia teaching lab to replace the aging language lab and a much expanded digital innovation center for faculty. Not one of these projects and services would have been accomplished without the collaboration and newly developed expertise of staff in multiple units, both within OID and on the campus.

Some measures of progress and success are already visible:

* fiscal soundness of the units as a result of streamlined services (including the phasing out or redefining of several), new services with revenue streams, and increased productivity;
* customer view of services has continued to improve on OID’s previous fine reputation as a result of responding to outcomes of focused service evaluations and continual dialogues with faculty at every possible opportunity;
* involvement (as both initiators and collaborators) in key projects at both departmental and campus-wide levels with a broad range of customers and professional peers;
* support of key opinion and decision makers who have come to rely on the quality of the expertise and service;
* involvement of vendors as a result of increased visibility from services which are valued by individual customers and by the institution.
The rewards for the media/IT professionals are tightly connected to these milestones of progress and success:

* breadth and depth of expertise is increasing significantly;
* opportunities to be closely involved with new technology assessment and service integration;
* reputation and respect for quality service and professional expertise;
* opinions are solicited and collaboration is requested.

Phase three is, for better or worse, the phase which never ends. As experienced media/IT professionals, we will continue to improve our abilities to:

* understand the mission of the institution and the continual changes in progress to fulfill that mission
* listen to customers as they experiment with technology in teaching
* collaborate with a broader than ever group of peers and customers to provide an environment full of customized solutions
* contribute high-value information
* innovate, innovate, innovate.