Statement of Principles
University Committee on Academic Computing and Communications
February 2017

UCACC is chartered to advise the UC Administration and to advise and represent the Senate on all matters involving the acquisition, usage, deployment, and support of computing and communications technology that affect the university's academic mission (paraphrase of Bylaw 155). This document provides a list of fundamental principles that will guide UCACC in its work. These do not constitute formal policies, practices, or priorities. The rich diversity of technologies and applications, current and future, may require balancing specific to given situations. Rather, we intend this document to provide touchstone principles and a framework for analyzing academic computing and communication issues as they arise .

Computing and communication systems increasingly pervade the working lives of faculty. These include not only the systems that affect the research and teaching missions directly (supercomputer clusters, statistical software, learning management systems, online education support, …) but also systems whose primary use is administrative (student information systems, travel reservation systems, financial accounting systems, CV management systems, …). These systems affect faculty and their work far more than their manual or earlier electronic predecessors.

Many of these research, teaching, and administrative systems are seriously flawed in terms of performance, functionality, cost, or usability. These flaws can impede the effective delivery of instruction and the conduct of research – and have hidden costs by consuming more faculty time than necessary, diverting attention from more mission-critical activities. We do not lay blame on the organizations or individuals who designed and deployed these systems. Alternatives may be few and constraints on time and money are great. We assert that over time, UC can serve its mission and communities better by focusing on the principles laid out in this document.

Every information technology system at UC, whether locally developed or extramurally licensed or purchased, should be:

— *Flexible and customizable*. The adoption of a new system should not restrict the ways in which faculty conduct their research and their courses when compared to what was possible with predecessor or manual systems. At least, any such changes should be explicit policy decisions, not unexamined or unintentional by-products of the new system's design process. IT systems can be highly flexible and customizable, but often the development process stops after one plain-vanilla lowest-common-denominator workflow is implemented. Academic freedom demands flexibility and customizability as key values.

— *Based on user-centered design principles*. These are established principles to improve user experience; they are based on the involvement of representative users throughout the development process. User participation must go beyond mere

perusal by committee members; it requires that a representative set of real users (faculty, staff, students) perform real tasks on the candidate system to determine whether those tasks can be performed effectively and efficiently.

— *Interoperable within an "information ecosystem"* (e.g., multiple journals in the same field from different publishers, or learning management systems with student information systems and bookstore systems) and compliant with relevant standards for interoperability

— *Protective of the privacy of their data subjects.* Appropriate access and governance practices should be in place.

— *Conformant to best practices for preserving information security.*

— *Correct, accurate, and reliable*. Transparent means of assessing these qualities should be available.

— *Designed and developed according to the best principles of software engineering.*

— *Accessible to users*. Individuals with varying degrees of vision, hearing, cognitive ability, mobility, or dexterity should have a fair opportunity to benefit from these systems.

— *Supportive of the university's goals of inclusiveness and diversity.*

On the overall functionality of IT systems, we find that:

— Faculty and staff time is valuable; systems that waste it have large hidden costs.

— Many IT systems at UC have serious flaws in functionality or usability.

— Many people (including some software developers and IT managers) are not familiar with the practice of user-centered system design.

Implementing these principles may be more expensive than ignoring them, at least in the short run and in the development stage when costs are apparent. Ignoring them may lead to penalties, lawsuits, reputational damage, wasted time, and diminished quality of research and teaching. The acquisition costs (development, licensing, purchase) of a system, particularly one used campus- or system-wide, are typically much lower than the value of the system's users' time over the years the system is in use.

In particular, systems may be acquired or developed by one unit but used, perhaps widely, in other units once deployed. The ongoing costs to the eventual users may not be apparent at the acquisition or development stage, but the best way to minimize those costs is for representative users to participate in user-centered testing and evaluation before the design or acquisition of a system is final. The unit that pays for the acquisition or development should not have the sole voice in the system's characteristics.

Information technology touches nearly every activity at the university. IT systems can enable excellent work; they can also inhibit it. The principles in this document set a standard for IT systems that will support the University's mission.