

EDUCAUSE Center for Applied Research

Research Bulletin

Volume 2007, Issue 13

June 19, 2007

IT Collaboration: A Preview of Findings from the 2007 ECAR Study

Philip J. Goldstein, ECAR



What do Fred and Ginger, Rodgers and Hammerstein, and Abbott and Costello have in common? All are familiar names that describe some of the greatest collaborations in the history of the arts. Great collaborations are not found only in the creative arts.

Successful sports teams are often defined by the collaboration between coach and star player. Geopolitics are defined by famous collaborations such as the allied powers of World War II or the North Atlantic Treaty Organization (NATO). Even traditional business competitors form collaborations. The auto industry bands together to research and develop fuel-cell technology. The aerospace industry pursues joint ventures to develop next-generation aircraft for the military. Businesses and countries alike form collaborations to magnify their individual impact and further their collective self-interest.

A unique strength of higher education is its commitment to sharing ideas and promoting open access to knowledge. These broad institutional values have shaped higher education information technology (IT) as well. The history of IT in higher education has featured many high-profile collaborations. The development of the Internet and Internet2, as well as many enterprise software applications, all resulted from the combined efforts of institutions. More recently, the growing interest in open or community source applications has produced a new round of high-profile collaborations such as Sakai and Kuali.

IT collaborations are not limited to efforts to develop new software. Institutions work with one another on a broad range of projects and services including wide area networking, shared data centers, and disaster recovery. Some institutions collaborate by sharing staff. Others have even outsourced their entire IT operations to a fellow institution.

IT organizations face a confluence of challenges that suggest collaboration may become an even more prevalent strategy. Growing pressures on budgets, combined with ever-increasing demand and rapid technological change, are forcing all organizations to rethink what services they offer and how they offer them. Might collaboration be one way institutions cope?

Highlights of IT Collaboration Research

The growing interest and activity in IT collaboration drove the EDUCAUSE Center for Applied Research (ECAR) to undertake a large-scale study of IT collaborations in higher education. The research began in late 2006 and will culminate with the publication of a research study and case studies in summer 2007. This research bulletin provides a sneak preview of some of the preliminary results from the collaboration study. It includes an overview of how extensively institutions collaborate today, the drivers of collaboration, and the barriers that cause institutions to reject collaboration.

The full research study explores a broad set of questions about collaboration, including:

- How extensive are collaborations of different types and for different purposes?
- What drives institutions to collaborate?

- Are there aspects of institutional climate and culture or IT strategy that make some institutions more inclined to collaborate than others?
- Do institutions anticipate more widespread collaboration in the future? For what purposes?
- What are the barriers to more widespread collaboration?
- What makes collaborations succeed?
- What are successful strategies for vetting potential collaboration partners?
- What enables institutions to successfully manage collaborative ventures?

The research methods include a two-stage survey methodology. First, we surveyed a large sample of the EDUCAUSE membership to determine if universities and colleges were currently engaged in a significant IT collaboration. We followed this screening survey with two detailed follow-up surveys. One survey targeted institutions that were engaged in collaboration; the other was tailored to those institutions that indicated they had not been engaged in any form of significant IT collaboration in the past 24 months. The preliminary findings presented in this bulletin draw from all three of these survey instruments.

Definitions

The open nature of higher education supports sharing information within and among institutions. It would be surprising to find any institution so isolated that it does not in some way share experience, information, or even significant assets such as software code with colleagues at other institutions. In this broad sense, virtually all institutions are IT collaborators. In order to sharpen the focus of the study, we decided to focus on institutions' experiences with their most significant collaborations. To define a focus for the study we drew on the common definition of collaboration found in the literature.

The literature defines collaboration as “a mutually beneficial and well defined relationship entered into by two or more organizations to achieve results they are more likely to achieve together than alone” (Mattessich, Murray-Close, & Monsey, 2001, p. 4). Collaborations are typically relationships in which parties share some significant risk and give up some degree of individual control. In this sense, collaborations are different from the more routine forms of cooperation and coordination among IT organizations.

We sharpened our focus further by requiring that collaborations involve the development or provision of an essential IT resource. In other words, the collaborators must have something significant at stake. They must be engaged in a collaboration that involves a service or resource whose failure would adversely impact a broad group of campus constituents or a particularly important constituent group. Finally, we decided that our study would look at many forms of collaborative activity. We included in our definition of collaboration four types of multi-institutional relationships:

- Partnerships to develop a shared IT resource (“develop shared resource”)
- Partnerships to provide a shared IT resource (“provide shared resource”)
- A single institution providing an essential IT resource to one or more other institutions (“sole provider”)
- A single institution that elects to become the recipient of an essential IT resource from one or more institutions (“recipient”)

These four collaboration types and the requirement that the activity focus on an essential IT resource defined the scope of our study and were the basis for our screening survey, which separated the collaborators from the non-collaborators.

The IT Collaboration Landscape

The screening survey was sent to 1,630 member institutions of EDUCAUSE, and 586 responded. We asked respondents if at any time in the past 24 months their institution had been engaged in one of the four forms of IT collaboration described above. Nearly 70 percent of respondents indicated that their institutions were involved in at least one of the four forms of collaboration. As Table 1 illustrates, many respondents are involved in multiple collaborations. In fact, 16 percent of respondents reported that they were engaged in all four kinds of collaboration: developer of a shared IT resource, provider of a shared IT resource, sole provider of IT resources, and recipient of IT resources.

Table 1. Extent of Collaborative Activity (N = 581¹)

Activity	Frequency	Percentage
No collaboration	183	31.5
Limited collaboration (one form)	108	18.6
Multiple collaboration (two forms)	101	17.4
Extensive collaboration (three forms)	95	16.4
Total collaboration (four forms)	94	16.2
Total	581	100.0

Among the screening survey respondents, public institutions were more likely to be engaged in IT collaboration than were private institutions. Overall, 314 public institutions and 252 private institutions responded to the screening survey (the institutional control for 15 respondents was not available). Among respondents from public institutions, more than 80 percent are involved in at least one form of IT collaboration. In contrast, only 50 percent of the private-institution respondents report being involved in even one form of collaboration. The split between public and private institutions is very evident among the most extensive collaborators. Among the respondents who reported engagement in all four forms of collaboration, 69 were public institutions, and only 24 were private.² The difference between public and private institutions held true through our second-round surveys of non-collaborators and collaborators as well.

The greater level of engagement in collaboration among public institution respondents has several possible explanations. Public institutions tend to operate as part of multi-campus systems. These systems of higher education provide ready access to collaboration partners with similar missions, culture, and governance. Public institutions have also faced greater budgetary pressures than their colleagues at private institutions. As such, they may be more willing to experiment with alternative methods of IT service delivery. Finally, the common governance of public systems may create mandates for collaboration not encountered at separately governed private institutions.

The Non-Collaborators

The non-collaborators received a follow-up survey that explored in detail the factors that have led them not to pursue significant collaborative activity. We explored how respondents' institutional culture, IT strategy, and historical experience with collaboration influence their perceptions of the value of collaboration. We asked about barriers to successful collaboration and the potential benefits of collaboration. Finally, we explored respondents' expectations for future collaborative activity within their institution and the higher education community. We sought to understand if the non-collaborators represent skeptics who do not believe that collaborations yield significant benefit, or if they are future collaborators watching and learning from the experiences of early adopters.

Overall, 113 institutions responded to the follow-up survey for non-collaborators. More than 70 percent of respondents were from private institutions. The majority of respondents were from either bachelors (39.8 percent) or masters (28.6 percent) institutions. The composition of respondents by Carnegie type³ and control is summarized in Table 2.

Table 2. Non-Collaborator Survey Respondents, by Carnegie and Control (N = 97)

Carnegie Class		Private	Public	Total
DR	Count	9	7	16
	Percentage within Carnegie	56.3	43.8	100.0
	Percentage within control	12.9	25.9	16.5
MA	Count	22	6	28
	Percentage within Carnegie	78.6	21.4	100.0
	Percentage within control	31.4	22.2	28.9
BA	Count	37	2	39
	Percentage within Carnegie	94.9	5.1	100.0
	Percentage within control	52.9	7.4	40.2
AA	Count	2	12	14
	Percentage within Carnegie	14.3	85.7	100.0
	Percentage within control	2.9	44.4	14.4
Total	Count	70	27	97
	Percentage within Carnegie	72.2	27.8	100.0
	Percentage within control	100.0	100.0	100.0

The concentration of private bachelor's and master's institutions among the non-collaboration respondents frames a number of interesting questions. Do these respondents represent well-resourced, self-sufficient small colleges that reject collaboration as unnecessary, or are they relatively under-resourced and isolated organizations that might benefit from collaboration but are unable to access partners? ECAR's detailed analysis will delve further into both of these questions.

The factors that have led these institutions not to pursue any forms of significant collaboration may provide some initial insights into these questions. Non-collaborators appear to be confident in their own capabilities and uncertain that engaging in collaboration would yield a fundamentally better result. Respondents report that pursuing collaboration at this time would not be aligned with their overall institutional objectives for technology. Many also indicate that they lack the funding to invest in collaboration, and especially to develop an IT solution. Table 3 identifies the factors that respondents said were among the top three reasons they are not currently engaged in a collaboration to provide an IT resource, develop an IT resource, or receive essential IT resources from another institution.⁴

Table 3. Top Three Reasons for Non-Collaboration, by Type of Collaboration

Factor/Type of Collaboration	Percentage Selected		
	Provide	Develop	Receive
Confident in own capabilities	37.2	18.6	46.9
Insufficient benefits	33.6	34.5	24.8
Lack of alignment with institutional priorities	31	31	23
Difficulty structuring agreements	30.1	17.7	15
Lack of suitable partners	28.3	25.7	27.4
Lack of funding	20.4	37.2	13.3
Lack of expertise managing collaborations	20.4	16.8	12.4
Lack of institutional leadership support	19.5	17.7	15
Competitive considerations	15.9	4.4	11.5
Too much risk	10.6	20.4	28.3
Other	10.6	14.2	11.5
Failed prior attempt	9.7	2.7	3.5
Technology issues	8.8	15	15.9

The most frequently selected reason respondents chose to explain their lack of engagement in collaborations to provide or receive an IT resource is their confidence in their own IT capabilities. Among the next highest reasons are a lack of suitable institutions to partner with and a belief that the benefits are insufficient. Respondents also frequently cited the perception that collaborations are too risky. These responses seem to suggest that the non-collaborators are not convinced that collaboration will get

them a better result. Their responses suggest a fair degree of confidence in their own capabilities and a belief that the complexity of collaborations could distract them from more important institutional priorities.

This apparent uncertainty or ambivalence toward collaboration is further revealed in respondents' more detailed perceptions of the benefits of collaborations. We asked the extent to which respondents agree or disagree that collaborations reduce IT costs, enhance IT capability, and speed technology adoption. Table 4 summarizes respondents' assessment of all three questions and compares the distribution of responses to how collaborators viewed the same three questions.

Table 4. Collaborators' and Non-Collaborators' Assessments of Collaboration Benefits

Response	Speeds Technology Adoption		Increases Quality of IT Services		Reduces IT Costs	
	Non-Collaborators	Collaborators	Non-Collaborators	Collaborators	Non-Collaborators	Collaborators
Strongly Disagree or Disagree	45.6	26.6	8.9	5.1	14.2	8.9
Neutral	29.5	37	54.9	35.3	44.2	32.7
Strongly Agree or Agree	21.4	35.7	29.2	59.6	36.3	58.3

As Table 4 illustrates, large numbers of non-collaborator respondents were neutral as to whether collaboration can increase the quality of IT services or reduce IT costs. For comparison purposes, significantly fewer respondents from the collaborator group of respondents were neutral on these two questions. Among non-collaborator respondents, relatively few hold a negative view of the benefits of collaboration. Approximately 9 percent of non-collaborators disagreed or strongly disagreed that collaboration improves the quality of IT services, and 14 percent disagreed or strongly disagreed that collaboration reduces IT costs. It appears that there are many non-collaborators who are yet to be convinced of the benefit of collaborations.

The Collaborators

The follow-up survey sent to collaborators explored in greater detail the factors that have led them to collaboration. As in the non-collaborators survey, we sought to understand how differences in institutional climate, culture, and IT strategy impact the decision to collaborate. We examined how collaborators choose their partners. For example, we looked at the impact of formal versus informal vetting of collaborative opportunities and partners. We also asked respondents to pick their most significant collaboration and answer a series of detailed questions about how they formed and managed these collaborations. This analysis is also helping us understand how goal alignment, governance, decision making, and communication contribute to the success of

collaborations. Our analysis is still very much a work in progress, and our complete findings will be fleshed out in the full research study. Below is a summary of some high-level observations about who the collaborators are and the factors that tend to drive their collaborative activity.

The collaboration survey was completed by 157 respondents. As anticipated, the majority of respondents (74 percent) were from public institutions, and 54 percent of the respondents were from institutions that are part of a multi-institutional system of higher education. As compared with the non-collaborators, a greater proportion of the collaborator respondents (36 percent) were from doctoral institutions. Table 5 provides a profile of survey respondents by Carnegie classification and institutional control.

Table 5. Collaboration Survey Respondents by Carnegie Class and Control

Control		Carnegie Class				Total
		DR	MA	BA	AA	
Private	Count	8	6	18	0	32
	Percentage within control	25.0	18.8	56.3	0.0	100.0
	Percentage within Carnegie	17.0	17.6	66.7	0.0	24.8
Public	Count	39	28	9	21	97
	Percentage within control	40.2	28.9	9.3	21.6	100.0
	Percentage within Carnegie	83.0	82.4	33.3	100.0	75.2
Total	Count	47	34	27	21	129
	Percentage within control	36.4	26.4	20.9	16.3	100.0
	Percentage within Carnegie	100.0	100.0	100.0	100.0	100.0

Respondents engaged in all four major forms of collaboration included within the study. The greatest numbers of respondents (71.3 percent) are engaged in a partnership with other institutions to provide essential IT resources. A similar number (66.9 percent) engage in collaborations to receive an essential IT resource from another institution or a consortium of institutions. Smaller numbers of respondents are solo providers of essential IT resources to another institution (43.9 percent) or engage in partnerships to develop an IT resource (40.1 percent).

For each type of collaboration, we asked respondents to indicate the technology areas or services that the collaboration was focused on, the factors that drove their decision to collaborate, and the barriers they had to overcome to form the collaboration. A summary of this analysis is provided in Table 6.

Table 6. Summary Characteristics of Collaborations, by Collaboration Type

	Develop Shared IT Resource	Provide Shared IT Resource	Sole Provider of IT Resource	Recipient of IT Resource
Percentage that Participate	40%	71%	44%	67%
Areas of Collaboration	Enterprise systems	Enterprise systems	Enterprise systems	Enterprise systems
	Network	Network	Network	Network
	Learning management system	Learning management system	Learning management system	Learning management system
			ID management	
			Data center	
Drivers	Reduce cost	Reduce cost	Reduce cost	Reduce cost
	Enhance service	Enhance service	Enhance service	Enhance service
			Institutional commitment to collaboration	Access better technology
Barriers that Were Overcome	Start-up funding	Start-up funding	Achieve a common vision	Achieve a common vision
	Uncertain benefits	Achieve a common vision	Start-up funding	Uncertain benefits
	Achieve a common vision		Uncertain benefits	Start-up funding

As we looked deeper at each type of collaboration, we noticed some similarities and differences. Learning management systems, enterprise information systems, and networks were among the most frequent areas of collaborations among institutions engaged in consortiums to provide IT resources, partnerships to develop IT resources, and institutions that were recipients of IT services from other campuses. Data center operations and identity management were also cited as areas of collaboration for those institutions that provide an IT service to another campus. These technology foci seem intuitive. Regional and high-performance networking lend themselves to collaboration. Likewise, many public systems engage in collaborative implementations of enterprise systems or learning management systems. It is no surprise, then, to see these technology areas featured prominently. The large numbers of public university systems among the respondents could also account for the significant focus on one campus providing data center operations to another. Admittedly, we do not completely understand what aspects of identity management are being offered by one campus to another. It is possible that these respondents were describing partnerships to provide federated identity management, or there might be some other aspects that become apparent through additional qualitative research.

Respondents report a similar set of drivers for collaboration across collaboration types. Among those factors most frequently mentioned were the need to reduce IT costs and enhance IT services. Clearly, the respondents to the collaboration survey view multi-institutional collaboration as a hopeful strategy to cope with the combined challenge of

scarce resources and rising expectations. For those who receive IT services, access to better technology was also a prime factor in their decision to collaborate. Finally, those respondents who provide IT services appear to be driven in part by a broader commitment of their institution to engage in collaborations. This may be further evidence of the impact of multi-campus systems with internal agreements and emphases on system-wide IT projects.

Interestingly, respondents also report that they had to overcome a comparable set of barriers to form their collaborations. Their foremost challenge was to forge a common set of objectives for the collaboration among the participants. As we delve deeper into the research, this single factor appears to be one of the most challenging and important aspects of successful collaborations. Secondly, respondents reported being challenged to find the start-up funding for their collaborative ventures. This is not surprising. ECAR's past research of IT funding revealed that most IT budgets are consumed by fixed costs to maintain existing technology (Goldstein, 2004). Very few resources are available to fund innovation and experimentation. One can only imagine the challenges collaborators face to secure the resources to fund a new collaboration that crosses many institutional boundaries. Finally, respondents reported the need to overcome uncertainty over the benefits of collaboration. This seems to suggest that our respondents are among the early adopters of collaboration. They likely have had few role models to help convince themselves and their institutions that the collaboration is worth pursuing. Yet something about these institutions caused them to persevere and form collaborative ventures. An examination of these characteristics is a prime subject of our ongoing analysis.

What It Means to Higher Education

It is too soon in our analysis to draw any firm conclusions. In fact, our analysis to this point has framed several additional interesting questions. These include:

- Is collaboration scalable in higher education? The survey results suggest that much collaboration occurs among trusted and known parties. Is this sufficient for broader-scale adoption of collaborations as a principle strategy for providing IT services? Or do institutions need to adopt additional practices to enable successful collaborations among less familiar partners?
- How important is due diligence? Respondents place varying degrees of scrutiny on the decision to collaborate. Do those that perform more extensive reviews achieve better results?
- How do the motivations of the collaborators impact success? Among survey respondents, almost equal numbers participate in voluntary collaborations as participate in mandated collaborations. Does this difference in motivation of the collaborators impact how the collaboration is managed? Does it impact success?
- How does the distribution of authority impact the workings of the collaboration? Among respondents, nearly half report being engaged in collaborations in which

authority and risk are shared among all participants. The rest are collaborations in which power, control, and risk are concentrated in a handful of leading institutions. How does this concentration of power impact the steps taken to manage the collaboration? Is one model more likely to succeed than the other?

Finally, the results of the non-collaborators survey suggest ambivalence or uncertainty regarding the utility of collaborations. On the other hand, those engaged in collaborations believe that collaborations are successful strategies for reducing IT costs and improving IT services. If collaboration is to become a more widespread management strategy, it seems that the evidence of success must be shared by those who do collaborate with those who do not. Chief information officers of institutions that are not favorably inclined to experiment with new approaches to managing services will need to be convinced that collaborations can be successful.

Key Questions to Ask

- How do the partners involved in the collaboration arrive at a shared vision for the objectives and conduct of the collaboration?
- How are the roles and responsibilities of each member of the collaboration defined? How can the role of each institution be best aligned with its capabilities?
- What factors determine whether sufficient resources can be obtained to fund the launch of the collaboration?
- What methods will be used to forecast the potential benefits of the collaboration?
- How have the collaboration partners defined how decisions will be made?
- Which methods of communication will be used to keep the collaboration partners informed?

Where to Learn More

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Endnotes

1. For five responding institutions, responses were unavailable for the questions in Table 1.
2. One institution that reported total collaboration cannot be classified as public or private.
3. Tables 2 and 5 use the four major Carnegie types to classify respondents. Several respondents do not fit into these categories—some are Canadian and others are categorized as “other.” Given the small number of respondents in these two categories, the four major Carnegie types are used for analytical purposes throughout this bulletin and the main research study.
4. In the follow-up survey for non-collaborators, the collaboration types “provide a shared IT resource” and “provide an IT resource independently to other institutions” were combined into a single question.

About the Author

Philip J. Goldstein (pgoldstein@educause.edu) is a Fellow with the EDUCAUSE Center for Applied Research.

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