# Adoption of Internet2 in a Southwestern University: Human Resources Concerns

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*Human Resources are often times challenged by the integration of new technologies (Benson, Johnson, & Kichinke, 2002). Universities pose a unique challenge since they reluctantly adapt to changes (Torraco & Hoover, 2005; Watkins 2005). This is a dissertation study of the human resource concerns about adopting Internet2 in a Southwestern-RU/VH: Research University (very high research activity). The findings were contrasted with Torraco and Hoover (2005) conclusions of the monograph titled "Organizational Development and Changes in Universities".*

Keywords: Stages of Concern, Organizational Development, Change in Universities

Over the last decade, the Internet suffered from overexploitation. Its original planned traffic and number of users were surpassed. In addition, around 1995, the research agenda that ignited Internet's development came to a halt due to NSF's "defunding" as well as its commercialization. In order to cope with the problem, several initiatives were launched during the nineties --the Next Generation Internet, the NSF's vBNS (very high speed Backbone Network Service), and Internet2. Among all these initiatives, Internet2 has gained notoriety because it is a University-led effort.

"Internet2 is a not-for-profit advanced networking consortium comprising more than 200 U.S. universities in cooperation with 70 leading corporations, 45 government agencies, laboratories and other institutions of higher learning as well as over 50 international partner organizations" (University Consortium for Advanced Internet Development, 2006). In addition, what members do is "to leverage their high-performance network infrastructure and extensive worldwide partnerships in order to facilitate the development, deployment and use of revolutionary Internet technologies" (University Consortium for Advanced Internet Development, 2006).

Internet2 is an innovation demanding change in University settings since no other academic organization or initiative of this magnitude has precedent. The change intervention mechanism installed by the Internet2 headquarters has been the so called "Internet2 Day". Internet2 Day consists basically of a day-long event of presentations and demonstrations at University campuses. At the Southwestern University this study focuses, human resource development professionals have not taken part of the change process for Internet2.

Because of the importance of the Internet and Internet2 as well as the impact on Universities in America and the world and the lack of research in the perceptions after Internet2 adoption, the need of an exploratory study is apparent. The perceived concerns of the human resources constitute, in specific, an area to take in consideration since "the culture of continuous learning, although certainly the dominant culture, is not necessarily present among all members nor even all units" of a University (Watkins, 2005). The purpose of this study was to examine the human resource (faculty, administrators, and staff) concerns about adopting Internet2 in a Southwestern-RU/VH: Research University (very high research activity).

## Literature Review and Theoretical Framework

The seminal theories in which human resource development literature interprets changes in universities are three: Organization development, top management-driven change, and learning organizations. The first, organizational development, is explained as being led by participation of all constituencies with an emphasis in developing organizational capabilities. It has an emergent planning phase and all organizational members take responsibility. Top management-driven change, the second, is guided by top-down leadership, emphasizing economic value, structured and programmatic planning, and responsibility of management (Torraco, 2005). Finally, the third, learning organizations are defined as the organization that "has an enhanced capacity to learn and to change" (Watkins, 2005, p. 415). Learning organizations have ample participation of management, organization, and individuals with strong emphasis on inquiry and dialogue for the creation of learning opportunities. Organizational development and top management-driven change theories were used extensively in the August of 2005 issue of *Advances in Developing Human Resources* (AHRD publication) where seven University cases were presented.

Because of the implications for this study, Torraco and Hoover's (2005) summary and final conclusions are presented here.

1. A thorough needs assessment should be conducted at the beginning of the change process to provide guidance as the needs of the organization and its personnel. Using this information, the implementation plan and the overall goals of the plan can be adapted to the specific needs of the organization. This gives the process much more relevance and applicability to organizational members and further encourages their involvement in the change process.
2. Senior administration in higher education must be committed to the OD changes for the institution. If the change is of a lesser part of the organization, the hierarchy, at least two positions above the unit administrator, must be in agreement and fully support the OD changes that are desired.
3. Leadership before and during the change process is indispensable. In academe, a transformational approach to leadership seems essential, yet there appear to be times when the approach must be more transactional in setting standards or parameters for the developing process.
4. Many times when change is pursued in academe, there is a tension that develops between the administration and the faculty. The tension can be useful but also destructive if it is not dealt with carefully and constantly.
5. When change is brought to academe, everyone in the organization must be involved in the process in some way. Otherwise, there will be major dissension and probable failure.
6. When change is desired in an institution, it is important to design or adapt a process that fits the mission, culture, and environment of the institution rather than using a predetermined process that was used in another institution.
7. It is important to determine the individuals in the organization who are favorable to making changes and to use these persons in the teams and the process at the institution. Also of importance is to find informal leaders throughout the organization, --but most important, in the faculty--, who are favorable toward change and to ask these people to get actively involved in the process, as they assist in building support from their colleagues and friends in the organization.
8. Change processes and OD take a lot of energy and perseverance. Because of the many detractors to change, the people involved in the process need to be highly motivated and persistent. (p. 435)

These conclusions, as will be discussed later, were in alignment and serve as benchmark for the case of Internet2 at this University.

Educational change theories, on the other hand, provide one theoretical framework of relevance when analyzing concerns in the adoption of an innovation, the Concerns-Based Adoption Model (CBAM). The CBAM theoretical model was developed originally by the Research and Development Center for Teacher Education at the University of Texas-Austin (Hall, Wallace, & Dossett,1973). *Concern* is defined as "the composite representation of feelings, preoccupation, thought, and consideration given to a particular issue or task" (Hall & Hord, 2006, p. 138). CBAM was conceived specifically for school settings so it is described by terminology such as teachers and principals. Despite this fact, the model has been widely used in other settings. Because of the value of adopters' concerns in the implementation of change, the model was pertinent for the case of Internet2 because it informed on those aspects relevant for individuals in member organizations (universities). It served as a basis in the development of interviews and observations in this study. The model is composed of seven elements. The elements are shown in Table 1.

**Research Questions, Methodology and Research Design with Limitations**

The research questions of this study are as follows:

1. What were the concerns regarding the use of Internet2 at a Southwestern University?
2. How might the University further enhance professional development and interventions for diffusion?

The research questions appointed this study to be of exploratory and understanding nature. Creswell (2002) and Swanson and Holton (1997) recommend the qualitative research method as the most appropriate for the case of the exploration and understanding of a central phenomenon. Thus, this study used the qualitative method of inquiry. Case study was chosen as the strategy for research, so a description of the elements for this strategy will be addressed.

Table 1. *Stages of Concern (Source: Hall and Hord, 2006)*

| Area | Stage | Description |
|---|---|---|
| Impact | Refocusing | The focus is on the exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation. |
| | Collaboration | The focus is on coordination and cooperation with others regarding use of the innovation. |
| | Consequence | Attention focuses on impact of the innovation on clients in his or her immediate sphere of influence. The focus is on relevance of the innovation for clients, evaluation of outcome including performance and competencies, and changes needed to increase client outcomes. |
| Task | Management | Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost. |
| Self | Personal | Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision-making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected. |
| | Informational | A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner, such as general characteristics, effects, and requirements for use. |
| Unrelated | Awareness | Little concern about or involvement with the innovation is indicated |

*Sources of Data*

Since this particular organization possesses physical offices, employs staff, holds meetings, and keeps records of their activities (printed and online), all sources of information for case studies were included. Convenience sampling, homogeneous sampling, and snowball sampling were chosen as the sampling types. The University activities (and thus its structure) were conceptually categorized in teaching, research and support-services.

*Teaching group sample*. For the part corresponding to the teaching activities at the University, the initial representative group (point of entry or gatekeeper) was the College of Education Technology Council. In addition, during the data collection and as part of the emergent design and the snowball technique, seven participants were identified and interviewed as related to the teaching group sample.

*Research group sample*. The part corresponding to the research activities at the University was initially chosen to be represented (point of entry or gatekeeper) by the Council of Principal Investigators, which hold meetings once a month. During the data collection, however, six participants were also identified and interviewed as part of the research group sample.

*Support-services group sample*. The part corresponding to the support activities at the University was chosen to be represented (point of entry or gatekeeper) by a group of individuals in the Telecommunications and Computing and Information Services. This was the most numerous group with 14 participants representing it. This can be understood because for many, Internet2's activities constituted part of their job duties.

*Overall Sample*. According to the Internet2's official Website, around 30 different University personnel have attended the Internet2 members meetings during the last two years. In addition, from the University's Website, a couple of Internet2 days have taken place between 2003 and 2004 in the University. Therefore, there were records of Internet2 activities and potential participants (printed and online) at the University and Internet2 sites. That way, it was also possible to perform the convenience sampling, identifying additional support members, faculty, and staff directly related to Internet2.

*Number*. Lincoln and Guba (1985) recommend a continuation of the sample until the information reaches a point of saturation. This means that whenever redundancy in the information is encountered, or in other words, when no new information is provided, the collecting data process should stop. Thus, the final number of participants was 17. Placement of participants in their respective group(s) is shown in Table 2. As can be noticed, participants can perform more than one role or, in other words, they can be associated with more than one field of the University's activities.

Table 2. *Information of Gatekeepers and Participants at the Southeastern University*

| Teaching | Research | Support |
|---|---|---|
| *Gatekeepers:* College of Education and Human Development-Technology Council as well as the TAMU's Office of Graduate Studies | *Gatekeeper:* Council of Principal Investigators | *Gatekeepers:* Telecommunications and Computing and Information Services |
| Snowball:<br>Participant 7: Training Specialist<br>Participant 8: Director (College of Education and Human Development)<br>Participant 9: Professor And Head of Department (College of Engineering)<br>Participant 11: Associate Professor (College of Education and Human Development)<br>Participant 12: Associate Professor (College of Education and Human Development)<br>Participant 13: Associate Director<br>Participant 14: Assistant Dean<br>Participant 15: Professor, Executive Associate Dean & Director (College of Architecture) | Snowball:<br>Participant 2: Group Manager<br>Participant 3: Associate Research Specialist<br>Participant 6: Applications Development Administrator<br>Participant 9: Professor And Head of Department (College of Engineering)<br>Participant 13: Associate Director<br>Participant 15: Professor, Executive Associate Dean & Director (College of Architecture) | Snowball:<br>Participant 1: Associate Director<br>Participant 2: Group Manager<br>Participant 3: Associate Research Specialist<br>Participant 4: Chief Officer<br>Participant 5: Assistant Director<br>Participant 6: Applications Development Administrator<br>Participant 7: Training Specialist<br>Participant 8: Director<br>Participant 10: Vice President<br>Participant 13: Associate Director<br>Participant 14: Assistant Dean<br>Participant 16: Senior Administrator<br>Participant 17: Chief Engineer |

*Interviews.* The design of the interviews was selected considering the exploratory nature of the study and the convenience sampling technique. Thus one-on-one, unstructured interviews were the type of interviews to pursue. Based on the CBAM model, an interview protocol was developed and used during the interviews. Some of the most important interview protocol questions are as follows: How do you feel about Internet2? Any problems or concerns you have about it? How does Internet2 affect you? How does Internet2 affect others you are involved with? How does it affect TAMU? What are your reactions and attitudes toward Internet2? Would you like any information about Internet2? If you could improve the way Internet2 is used in Texas A&M, what would you recommend?

*Observations*. In combination with the interviews, observations were selected as another source of data because a good degree of rapport has been established and in-site visits were possible.

*Archival information.* The final source of information of this study was documents and archives. Archival information from Internet2 days, meeting proceedings and minutes, strategic plans, and agendas were also of use.

*Data Analysis Strategy*

Analytic induction was the research strategy. Lincoln and Guba (1985) describe this technique as the "scanning the data for categories of phenomena and for relationships among such categories, developing working typologies…" (p. 335). Typologies pertinent to organizational development and concerns caught special attention.

*Established Trustworthiness*

The audit trail, peer-debriefing, and member checks were the mechanisms installed to guarantee trustworthiness.

*Limitations*

The study is limited to those faculty and staff members of a southwestern University. Generalizations with other institutions should be avoided, although some transferability aspects may apply (Lincoln & Guba, 1985). The study is also limited to a higher education institution in the United States of America. Foreign higher educations institutions may differ in perceived consequences and concerns.

*Data Collection*

"Qualitative research is considered to be an emerging design. An emerging process indicates that the intent or purpose of a study and the questions asked by the researcher may change during the process of inquiry based on feedback or responses from the participants" (Creswell, 2002, p. 147). As part of the first steps of the data collection, one monthly session of the Council of Principal Investigators of the University (Council of PIs) was attended. During such meeting, the agenda did not address matters connected to telecommunications services or Internet2. In addition, an exhaustive revision of the FY 2006 meeting minutes available on the Council of PIs website was performed, finding no Internet or Internet2 allusions at all. Such lack of mentions, at the early stage of the study, provided also an early prediction of some of the future findings for the adoption of Internet2 at the University as will be discussed later.

During the spring of 2006, two meetings of the newly formed Technology's Council for the College of Education and Human Development were attended. The main task of this council was said to be the provision of technology's direction for the College. The first meeting was an organizational session resulting in the formation of subcommittees. During the second meeting, a set of needs and concerns were brought to the table and only Internet2

was mentioned once as part of a group of new technologies that have not been used (or not consciously) in the College.

Two major changes occurred during the data collection. The first was the modification to the interview protocol, taking place after the first interview. Participant 1, the first interviewee, repeatedly requested further explanation of the questions and the responses did not provide the information expected for the purpose of analysis. It was decided to base questions more on examples from the literature and the resulting interview protocol proved to elicit better responses for the rest of the participants.

On the other hand, when using the first part of the interview guide, participants' roles resulted to be different than expected, especially for the case of some service-related personnel who ended up being more research oriented. Another important case to take notice of is participant 12 (P12), a faculty member who was not aware of any Internet2 relationship with his work. Although the emphasis on participants' selection was given to those who were aware of Internet2, this participant who was expected to know more about Internet2, posed very important questions that are relevant to the findings of this study. His participation was decided to be kept and used.

With these modifications in the understanding of roles, it was developed a more accurate definition for each role: Support-Services role was defined as one with the responsibility to provide, install and maintain Internet2 infrastructure and applications. The teaching role was defined as one who consciously uses Internet2 as a teaching tool. The research role was defined as one responsible for the creation or implementation of new Internet2 technologies or the use of Internet2 as a research tool.

**Results and Findings**

*Analysis of Interviews*

As stated before, analytic induction (Lincoln & Guba, 1985) was the analysis strategy. With the transcriptions of the interviews, 20 were the general categories found. A new category was claimed when at least two units of data (from different participants) expose a relationship forming a pattern. Table 3 provides the definition of the general categories and the participants who made reference to them. They are presented in the chronological order they were found so the themes they consolidated are not grouped sequentially. The Internet2 Concerns will be described in detail in the following paragraphs.

*Internet2' concerns.* Political concerns (category 15) and Concerns for the future of Internet2 (category 17) were the most mentioned. Because of the importance of input from Participants 3 and 6 about politics, they are reproduced here: "Even the Internet2 engineering staff are involved in a lot of the political level discussions and decisions, and I believe that has some effect in some of the outcomes" (P3). "Politics and Internet2 at the mantra level are very hard. A number of key people have left because of the politics" (P6).

Concerns for the Future of Internet2 are also of great importance since they represent the preoccupations of the most knowledgeable people at the University. These preoccupations ranged from possible provision of Internet2 facilities by the commercial sector to a lack of a clear future.

Category 12, regarding concerns about more complexity in my job were expressed by participant 2 and 9. They can be understood as the researchers' lack of excuses for attending meetings since videoconference is widely available and also researchers' lack of excuses for being on top of the advances since they have the best communication network available connecting them to the world.

Concerns about free usage from Participants 1 and 7 are expressed because they see students downloading music and videos. Participant 1 wonders, "Aren't we kind of undermining the goal?"

Finally, concerns for accessibility or the "have nots" shared by participants 8, 11, and 15 are better expressed (for category 20) in their own words as follows: "As much as I regret it, I feel I belong to an elite and I feel that is a problem. I think Internet2 contributes to the digital divide. Not everybody has access, and those who don't get frustrated" (P15).

*Analysis of concerns.* Stages of Concerns, served as a reference model based on perceptions of the adopters. Interviewees were directly asked about their concerns, feelings, reactions, attitudes, and the effects of Internet2 in their lives and the lives of people they worked with. Categories 12, 15, 17, 19, and 20 emerged from the direct responses provided. They formed the previously discussed theme --Internet2' Concerns.

Table 3. *Audit Trail of General Categories of Analysis*

| Category | Definition | Participant referring to the category |
|---|---|---|
| Category 1: Transparency of Internet2. | Internet2 is and should be transparent to the end user. | P1, P2, P4, P5, P6, P7, P8, P10, P11, P13, P14, P17. |
| Category 2: Not clear what Internet2 is | People don't understand what Internet2 is. | P1, P2, P3, P4, P5, P6, P7, P12. |
| Category 3: Influence and Advancement | Internet2 advancements and technologies permeate inside and outside the realm of Internet2. | P1, P2, P3, P6, P7, P9, P10, P17. |
| Category 4: Need of engagement | Internet2 must engage more people. | P1, P3, P4, P5, P6, P7, P8, P10, P11, P12, P13, P14, P15, P16, P17. |
| Category 5: National Lambda Rail (NLR) Discussion | National Lambda Rail should (or not) merge with Internet2. | P1, P3, P4, P5, P6, P8, P9, P10, P17. |
| Category 6: Need of Communication | The word and promotion of Internet2 should be better addressed. | P1, P2, P3, P4, P5, P6, P7, P8, P10, P11, P12, P13, P14, P15, P17. |
| Category 7: Better service-production | Internet2 (infrastructure or advancements) is used for production purposes. | P1, P2, P3, P5, P6, P7, P8, P9, P10, P11, P13, P17. |
| Category 8: Videoconference as a teaching tool. | Internet2 is used for videoconference as a teaching tool. | P2, P3, P4, P5, P7, P8, P10, P15. |
| Category 9: Research Use of Internet2. | Internet2 is used as a research tool. | P2, P3, P4, P5, P6, P8, P9, P10, P17. |
| Category 10: Quality of Service (QoS) Discussion. | Quality of Service is not implemented or limited implemented (inside the university) not for technology reasons but for political reasons. | P2, P3, P5, P10. |
| Category 11: Collaboration. | Internet2 has enable unprecedented collaboration among universities and institutions. | P2, P3, P5, P6, P8, P9, P10, P11, P13, P14, P15, P16, P17. |
| Category 12: More complexity in my job. | Internet2 has made more complex my job. | P2, P9. |
| Category 13: Guiding manufacturers and service providers. | Internet2 is influencing manufacturers and service providers in the design and implementation of technologies. | P2, P3, P6, P8, P10, P13, P17. |
| Category 14: No need of more information. | I don't need more information about Internet2. | P2, P3, P4, P5, P6, P7, P8, P9, P10, P13, P14, P17. |
| Category 15: Political Concerns. | I dislike the level of politics and bureaucracy in Internet2. | P1, P3, P6, P10, P12. |
| Category 16: Lack of Researchers. | There is a need of research and researchers in Internet2. | P3, P4, P5, P6, P10, P17. |
| Category 17: Concerns for the Future of Internet2 | We have Internet2 now but what's next? We don't have a clear direction. | P4, P9, P10, P13, P17. |
| Category 18: International Impact of Internet2. | Internet2 has impact and potential for collaboration at international scale. | P4, P6, P7, P8, P10. |
| Category 19: Concerns about free usage. | I have concerns about the way Internet2 is used. | P1, P7. |
| Category 20: Concerns of accessibility. | I have concerns for the have and have nots (digital divide) of Internet2 | P8, P11, P15. |

In an indirect way, Categories 1, 2, 4, 5, 6, 10, 11, 16, and 18 (which were not explicitly identified as concerns), represented another set that made most of Hall & Hord's model operational. The model, however, did not characterize the stage of a large University group, the group that have not heard of Internet2 and had not been targeted in any informational campaign but because they unconsciously make use of Internet2 can still be considered adopters. In addition, part of this group, as stated by many interviewees, is of relevance for Intenet2 diffusion purposes since it represents the initial reason for Internet2 creation. The subgroup we are referring to is the researchers group. Internet2's diffusion thus, challenges the CBAM model and calls for its modification in accordance to these specificities. The modified model can be understood in the way portrayed in Table 4.

**Conclusions and Recommendations**

What were the concerns regarding the use of Internet2 at a Southwestern University? In addition to the explicit concerns explained in the findings sections, other concerns were in a lot of ways hidden in the narratives of

participants. Fortunately, via the recommendations part of the interview, even the most elusive or optimistic of interviewees provided rich information about his/her inner most "feelings, preoccupations, thoughts, and considerations" (Hall & Hord, 1987, p. 58).

Table 4. *Internet2's Modified Stages of Concern*

| Area | Stage | Category of analysis | Expressions of Concern |
|---|---|---|---|
| Impact | Refocusing | Categories 5, 10, 15, and 17. | "I don't see communication about Internet2 on a positive light. I just see it as an organization, and just kind of a bureaucracy… I'm not even sure whom it benefits" (P1). |
| | Collaboration | Categories 11 and 18 | "I see a lot of potential in the international emphasis" (P4). |
| | Consequence | Category 20 | " My concern is in the have and have nots. People stay out because they can't afford it since colleges and K-12 schools are penny pinchers" (P8). |
| Task | Management | Categories 4, 16, and 19 | "We do a lot of technology integration because researchers don't look outside their own discipline. We look at different disciplines and do that. If we cannot find the solution, then we create the solution. We do the engineering, the research, and the development"(P6).<br>"Need to replicate collaboration in the university's micro-cosmos" (P16). |
| Self | Personal | Category 12 | "It's a more complex on our network architecture, it has created some complications sometimes, and we have to keep an eye on it" (P2). |
| | Informational | Category 6 | "We need to introduce more of the other IT professionals to the additional services that are possible on Internet2" (P13) |
| Unrelated | Awareness | Category 2 | "I don't see anything that I directly recognize with Internet2. What I use is Internet" (P12). |
| | Unawareness | Category 1 | "Obviously, there are research entities who use the Internet2 capabilities…In some cases, they might not be aware they are using Internet2…"(P7). |

As an interesting exercise of interpretation, Categories 5 and 10 can be catalogued among concerns, because participants were not happy when referring to them:

- Category 5- National LambdaRail Discussion (9 participants)
- Category 10- Quality of Service Discussion (4 participants)

The conclusions drawn are in the sense that the aborted merger between National LambdaRail (Category 5) as well as the discontinuance of the Quality of Service network policy (Category 10) should be revisited by the UCAID consortium in order to keep up with the spirit and motivation of its constituency.

A more challenging exercise of interpretation is in relation to Categories 4, 6, and 16. The recommendations part of the interview, which was the place where most of the comments of these categories were gathered. The following list will help to maintain in perspective the interpretations and conclusions:

- Category 4. Need for engagement (15 participants)
- Category 6. Need for communication (15 participants)
- Category 16. Lack of researchers (6 participants)

One can conclude that although participants failed to recognize all these needs as "their concerns," the truth is that they feel moved by the lack of researchers involved, the corresponding lack of Internet2 research performed in the University, and the ignorance of Internet2 on campus. The lack of researchers involved and the corresponding lack of Internet2 research performed in the University should be considered an opportunity that is getting lost and the ignorance of Internet2 on campus shall be address with the possible implementation of recommendations proposed by the participants.

The recommendations provided by the participants are grouped in three categories; Internet2 must engage more people (Category 4), the word and promotion of Internet2 should be better addressed (Category 6), and there is a need for research and researchers in Internet2 that should be attended (Category 16). These identified suggestions can qualify as the OD needs assessment Torraco and Hoover (2005) referred to when implementing change in their "Changes in Universities" monograph. Such needs assessment should serve as the foundation for the rest of interventions.

How might the University further enhance professional development and interventions for diffusion? Top administrators at the University can be considered engaged in Internet2, yet based on the sample of this study, unit administrators (specially of those units that are not related to technology) cannot be considered engaged and some not even informed. In accordance to Torraco and Hoover (2005) at least two positions above the unit administrator must be in agreement and fully support of the changes. On the other hand, we consider that the leadership role of faculty has been neglected and underestimated at the University with respect to Internet2. According to Torraco and Hoover (2005), many times there is a tension between the administration and the faculty when attempting to

implement change. My recommendation would be to install a system of incentives in order make Internet2 more attractive to faculty members, that is, to develop a policy for "supporting faculty when managing technological change" (Bates, 2000, p. 95).

Through the sample of participants, it was perceptible the presence of support-services personnel who also played a research role. Since they are not either faculty or top administrators, they can be catalogued as informal leaders. Informal leaders could "assist in building support from their colleagues and friends in the organization" (Torraco & Hoover, 2005, p. 435). More of these informal leaders should be recruited and rewarded.

**How this Research Contributes to New Knowledge in HRD**

Organizational development, as being led by participation of all constituencies with an emphasis in developing organizational capabilities, is the theory better suited for change in universities. Through the Torraco & Hoover's monograph, organizational development informed this study in advance about the results to expect and the intervention mechanisms to implement.

In response, this study informed about the practices taking place in real-world situations. Findings and conclusions regarding concerns of intended adopters of change served as the foundation in the organizational development at this University. In this case, theory of Organizational Development was enhanced through the CBAM model. By means of transferability in qualitative inquiry, this might also be the case for other institutions and other innovations (not only Internet2).

As stated before, Human Resource Development Professionals did not take part in the adoption of Internet2 at this University and this should pose a challenge for the profession. To what extent are we engaged in change in universities and more specifically, adoption of state-of-the art technologies? How can we engage our profession in change in universities and adoption of technologies? These should be the questions this study poses and responses should be sought by the continuation of this study on more institutions. This would be the recommendation for research.

Universities pose a double challenge since they reluctantly adapt to changes. By means of understanding and addressing properly the faculty, administrators and staff concerns regarding an innovation of the size and characteristics of Internet2, universities benefit greatly and the field of human resource development increases its knowledge and pertinence.

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