Accommodating Inter-generational Stakeholders in a Campus Portal

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Abstract

This paper reports the findings of research into the characteristics, types and methods of the development of campus portals. In the process of collecting and analysing the data collected for the research, it became apparent that the divergent views of different stakeholders could be related to the characteristics that are popularly associated with values of generations X and Y, and 'the baby boomers'. The paper identifies these characteristics and applies them to the findings of the case. The conclusion from this analysis indicates that attention to inter-generational issues may have considerable impact on the success of many information systems projects.

Keywords: *Campus portal, Enterprise portal, generational attributes, portal development*

Introduction

This paper reports findings from a study of the development and use of a 2nd generation Campus Portal, from the various perspectives of organisational management, system developers and student users. The concept of an Internet Portal is a relatively recent phenomenon. It is seen as collection of information and services of an enterprise or as a community accessible to members through a single secure and customisable Web site. An Enterprise Portal is a user-centric enterprise-wide web-based system that incorporates a sophisticated integration of all types of information content and services. As a core organisational information system, it is often an internally developed and designed to suit the particular needs of organisational stakeholders (employees, clients, customers). A campus portal is an instance of an Enterprise Portal in a tertiary educational institution.

The study began with a study of academic and practitioner literature to determine the published views of three aspects of portals:

- the characteristics of portals and what distinguishes them from company websites, intranets,
- the various classifications of portals and the stages of portal sophistication, and
- methodologies for portal development

This paper will begin with a summary and interpretation of this literature followed by the findings of a case study undertaken of a university campus web-based student information system that had the characteristics of a 2nd generation portal. A survey of students was undertaken to gather data on the use of the system, as well as the perceptions of the students of current and possible future system. Data was also collected in the form of interviews and

documents of other stakeholders. Campus portals from other universities were also investigated.

In the process of collecting and analysing this data it became apparent that there were issues emerging between the views of different stakeholders that could be related to the characteristics that are popularly associated with values of generations X and Y and "the baby boomers". It was therefore decided to review the literature in this area and apply it to the data. This review and its application are described and discussed in the remainder of the paper leading to a conclusion that inter-generational issues may have a much broader significance to information systems success than this single case.

Background

This section of the paper provides a summary of the answers to three questions generally deemed important in the study of enterprise portals:

- Do portals have a definitive set of characteristics and, if so, what are they?
- Are there different types or generations of portals and if so how have they matured?
- Should portal creation be guided by principles of web site design or by information systems development methods or both?

Portal Characteristics

In general an Enterprise Portal is a user-centric enterprise-wide information system that incorporates a sophisticated integration of all types of enterprise information and services, third-party applications and services, databases and data-warehouses, documents and other web content. Standards Australia's (2004) definition of an Enterprise Knowledge Portal is: "The web-based integration of application to provide a user with a single view of a selected subset of knowledge, which can be further tailored to user requirements. Portals focus on aggregating existing content, both structured and unstructured, and displaying it through personalised presentation layers." Enterprise Information Portals are "deployed for the benefit of an individual organisation. Audiences may be B2E (business-to-employee), such as employees accessing human resources policies, or external B2B/C, such as customers, suppliers and trading partners seeking information or transactions" (ibid).

Frequently, what a particular enterprise calls a 'portal' may not have all of these defining characteristics. Conversely, many enterprises have a system with many of these characteristics, yet they do not refer to it as a 'portal'. So the question often arises; "Is this particular artefact indeed a portal?" In this section of the paper we describe and attribute the principle terms used to define portals (see Table 1) and in the following section suggests how combinations of these may be aggregated to classify types or generations of enterprise portals.

Table 1 is not intended to be a complete list of all possible Portal characteristics. Indeed as this is an area of cutting edge technology and human behaviour it is undergoing such rapid change that any definitive list would be impossible. It was however the starting point for this study, which concerns a special form of Enterprise Portal, applicable to a tertiary learning institution and usually referred to as 'campus portal'. Campus portals were pioneered by UCLA in 1999, to be followed by similar systems at the University of Washington and the University of Buffalo (Moskowitz 2001).

While campus portals may have many specialised features, they are particularly distinguished by their main user-base: the students. Although students are a critical component of the social life of the institution they are not employees. Nor can they necessarily be considered the organisation's customers as they are frequently not the ones paying the bills. Like most professional organisations, an educational institution has two types of employees, in their case academics and administrative staff. Consequently, the set of stakeholders involved in a campus portal is quite diverse and their needs complex.

Table 1

A Summary of Characteristics normally associated with Portals and often used to define them

Term	Description	Attribution
Personalisation	Information and contents on the campus portal should reflect to user's roles, rights, interests, and specifications in the organisation.	(Eckerson 1999a, Eckerson 1999c), (White 1999),(Reynolds and Koulopoulos 1999), (Boettcher and Stauss 2000), (Dias 2001), (Ramos 2002) ,(Jafari 2003), (NEC 2004), (Wojtkowski and Major 2005)
Customisation	Each individual user should be able to select a preferred contents, personal look-and-feel interface, etc. The most classic example of customisation is the Yahoo web portal which can be found at http://my.yahoo.com	(Eckerson 1999a, 1999c), (White 1999),(Reynolds & Koulopoulos 1999), (Boettcher & Stauss 2000), (Collins 2001), (Dias 2001), (Ramos 2002) ,(Jafari 2003), (NEC 2004)
User Centric	The most traditional Web sites have been designed from the perspective of the provider. A portal should be designed to support the user activities and roles. However, it is unnecessary to be 100% user-based designed. Some information that a provider wants to inform users can also be released to the interface via push channels	(Reynolds and Koulopoulos 1999), (Boettcher and Stauss 2000), (Frazee, Frazee and Sharpe 2003)
Easy to Use	Users with minimal experience should easily use a portal with minimal training. Overloading information or access services on the screen is the critical matter for novice users or even experience users. The information, sometimes, is classified into groups. However, the only standard or familiar groups can be recognised by most users.	(Eckerson 1999a, Eckerson 1999c), (Dias 2001), (Kim, Chaudhury and Rao 2002), (Frazee, Frazee and Sharpe 2003, ICT_EMU 2003), (Frazee, Frazee and Sharpe 2003)
Categorisation	Because of the enormous volume of information available on the portal, documents should be organised and indexed into category and sub-categories. All information should be well organised into a set of channels.	(Plumtree 2002)
Single Point Authentication and Access	A portal should allow users to have only a single secure sign-on. Once users have signed on their personal contents and specification should be retrieved and the system should securely pass the user name and password to other pages through the portal without asking for access permission again. Content channels, information, and functionalities subscribed by, and related to, a user should be available right away on the first page of the site.	(Reynolds and Koulopoulos 1999), (Brosche 2002), (Hazra 2002), (ICT_EMU 2003), (Firestone 2003),(Jafari 2003), (Wojtkowski and Major 2005)
Powerful and Unified Search Engine	An internal search engine can be considered as a help desk for most users when they want to find any specific information, rather than having to explore the site themselves. It must access all data sources within the rights of signed-on users.	(Eckerson 1999a, Eckerson 1999c), (Dias 2001), (Plumtree 2002), (Wojtkowski and Major 2005)
Unified Presentation of Information	A portal should provide broad access to meet information resources and support most information formats currently available and may be in the future. However, the presentation of that information should look, feel and be accessible regardless of the origin.	(Eckerson 1999a, Eckerson 1999c), (Dias 2001), (Jafari 2003), (Smith 2004)
Communication and Collaboration Tools	Email, web board, and chat room are tools should be available to let people who have the same interests communicate and share knowledge. In addition, users should be able to publish their works to like minded groups.	(Eckerson 1999a, Eckerson 1999c), (White 2000), (Dias 2001), (Plumtree 2002), (Firestone 2003)
Security	Security is the issue of most concern among users who log into a portal. To protect privacy, the portal should provide some kind of security to make sure that only the right person can access the right account and information.	(Eckerson 1999a, Eckerson 1999c), (White 2000), (Dias 2001), (Plumtree 2002; 2003),

Portal Classifications

In order to position the case used for the study in the broader range of Enterprise Portals, consideration has been given to the way portals can be classified which may be by features, coverage, technology or other criteria. Some classifications are as now described.

Collins (2001) distinguishes between an externally focussed *Web Portal*, a *Corporate Portal* which is usually structured around roles that are found inside the organisation, and an expansion of the *Corporate Portal* to include customers, vendors and other roles outside the organisation, and which can be classified as an *Enterprise Portal* as shown in Figure 1.

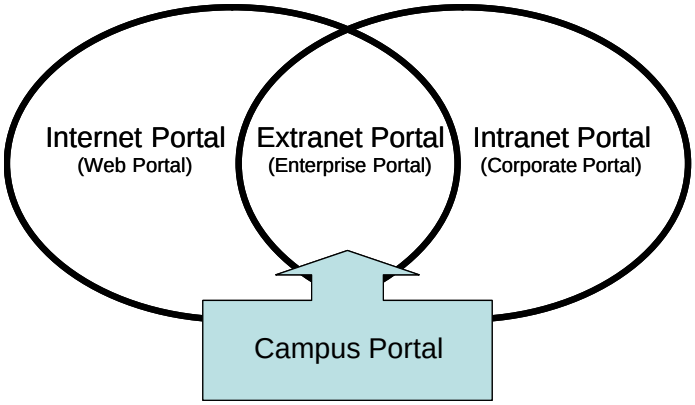


Figure 1 positioning campus portals on the portal spectrum

Kim, Chaudhury and Rao (2002) referring to the paper of Roberts-Witt (1999) claim that there are three types or portals:

- Data Portals. concerned with managing such structured data as corporate databases with a single point of access.
- Information Portals. In contrast to the Data Portals, this type of portal is concerned with managing such unstructured data as e-mail, text, and other documents by using indexing and cataloguing systems with search and retrieval functionality.
- Collaborative Portals. This type is focused on group interactive functionality as well as the integration of the enterprise by bridging intranet, extranet, private source data, and public information. The users are also allowed to access all collaborative functions such as classified topics, conferencing, team discussion, news channel, calendaring, and the abilities to personalise the interface.

Vendors of Portal software often distinguish their products by generations, not to be confused with our use of the term in this paper. SAP[1], for example, claims to be traversing three generations of portal developments. Their publicity says, “In successive stages, we are moving from a design conception of the portal as a corporate ‘card catalog’ to a ‘wide screen’ for viewing multiple information and application sources in a single window, and on to a richer understanding that the business portal must in fact provide interactive information, application, and process services to support professionals in the new e-business workforce.”

[1] http://www.sapinfo.net/)

Table 2 One view of Portal Generations

Generation	Descriptor	Features
First	Referential	• Generic Focus • Hierarchical Catalogue of Pages • Pull Flow • Decision Support
Second	Personalised	• Personalised Focus • Push and Pull Flow • Customised Distribution
Third	Interactive	• Application Focussed • Collaborative Flow
Fourth	Specialised	• Role Focussed • Corporate Applications • Integrated Work Flow

The paper of (Hawking and Stein 2003) describes several classifications of portals into generations such as that shown in Table 2 based on the work of (Eckerson 1999b), Although most other classification mention only three generations. This places the case in our research somewhere in the middle.

Most relevant to our study is the following list of features where by Gartner () classifies Generation Two portals as having:

- Personalization
- Content aggregation
- Search
- An application integration framework
- Support for application servers

Portal Development

With any organisational IT project there are decisions to be made on whether to buy an off-the-shelf product or develop an application from scratch and then whether to do this internally or outsource some or all of the development. With a portal project there is also a debate on whether it should be considered as web development requiring an authoring approach or rather as an application developing process, as with other organisational information systems (Ginige and Murugesan 2001).

As Vigden (Vidgen 2002, Vidgen et al. 2002) states “many of the approaches to Web development have focused on the user interface and in particular the look and feel of a Web site, but have failed to address the wider aspects of Web-based information systems”. Avison and Fitzgerald (2003) concur with the observation that traditional IS methodologies have struggled to accommodate web-specific aspects into their methods and work practices. (Vidgen 2002, Vidgen et al. 2002) goes on to say that “although web sites are characterised historically as graphically intense hypermedia systems, they have now evolved from cyber-brochures into database-driven information systems that must integrate with existing systems, such as back office applications”. Portals can thus be seen as organisation systems (albeit web-based) and therefore require a mix of Web site development techniques together with traditional IS development competencies in database and program design. Figure X show a schematic by the authors of how an establish information systems approach, Multiview, adapted for the web through WISDM, may direct Portal development.

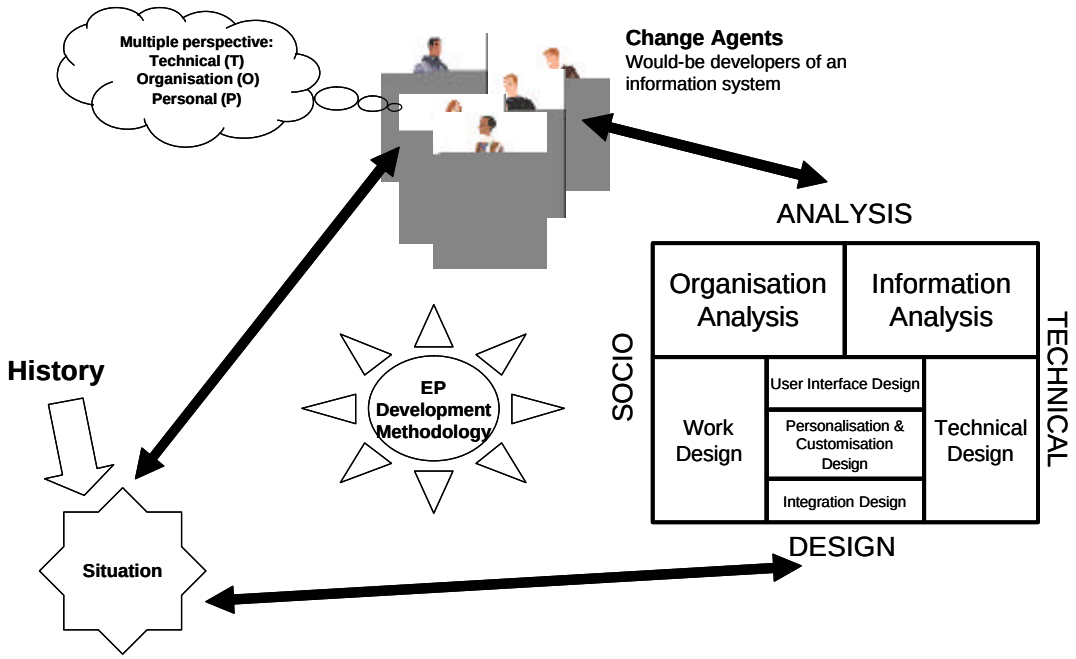


Figure 2 Adapted from Multiview Methodology (Avison and Wood-Harper 1990, Avison et al. 1998, Avison and Fitzgerald 2003) and WISDM (Vidgen 2002, Vidgen et al. 2002)

From our observations we would support a broad-based approach using in-house technical development as portal type systems are very context dependent. There are suites of tools that can assist this process as were used in the case under study. To the surprise of many, the number of success portal project is not large. One specific aim of our study was to assess the merit of different development approaches and thereby develop a well-grounded methodology specific to portal development. By looking at the Intranet development model and Web-based Information Systems Development Model (WISDM), we believe the models need to be enhanced, utilised, and redesigned to be appropriate to the portal characteristics.

Although EP technology can be considered as an extension of the Internet and Intranet (Web-based information systems within an organisation), the development methodology and research in the area of the portal should relatively be classified into its own division because there are numbers of different issues and unique characteristics that need to be discussed.

The Case Study

As mentioned previously, the primary aim of the research project was to develop and propose a framework for EP Development and, in order to pursue this aim, a case study approach was chosen. By identifying and reflecting on problems on an existing site the researcher can obtain a greater understanding of user activities and the requirements of users in order to develop the next generation of the portal.

With reference to the discussion above, the site can be considered as a second-generation campus portal for EP development. A variety of methods mainly surveys and interviews, were used to collect primary data from various stakeholders: students, teachers, management, portal developers. Secondary data was collected from both academic and practitioner literature sources, as well as a detailed inspection of the characteristics of existing campus portals accessed through the web. In this paper, we present a brief overview of the study results to allow space for the particular analysis that is pertinent to the focus on inter-generational concerns.

Considering the large population of students, a survey method was deemed appropriate. An instrument was developed to collect demographic data, patterns of use of the current university student system, which we categorised as a 2nd generation portal, and some indication of what they thought were the deficiencies of the current system. The questionnaire was distributed among 115 domestic and international students randomly selected to ensure a balance of gender, education background, current level of study, nationality, and computer and Internet literacy. Of the 102 valid returns there were: 50% males and 50% females. Among the male participants, there were 51% domestic and 49% international students while there were 56.9% domestic female students and 43.1% international female students. All international students were full-time students, whereas 7.3% of domestic students were part-time students.

Most students were in their late teens and early twenties as shown in Table 3, which depicts the numbers and age distribution by current enrolment. There is no significant age difference by gender perspective, however it is noticeable that 83.6% of domestic students were in the range 18 and 22, while 78.7% of international students were above 23 years of age.

Table 3

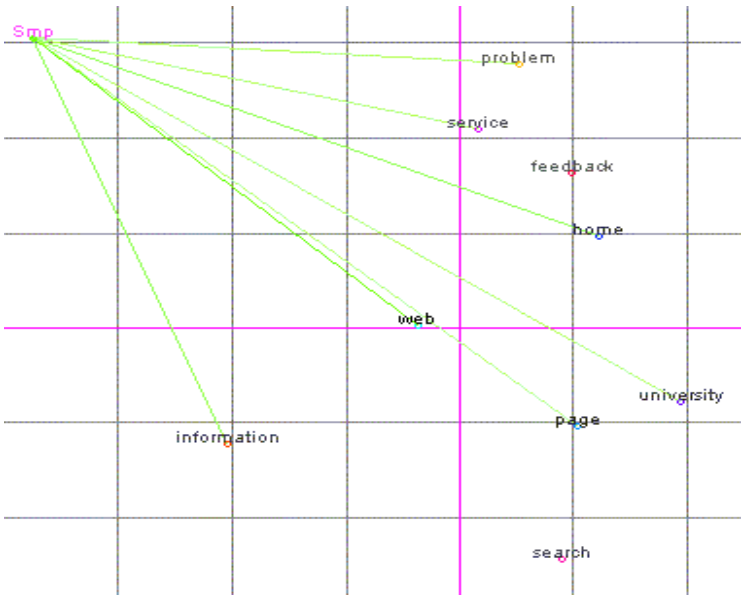
		Current Educational Level			Total
		Undergraduate N = 64	***Postgraduate - Coursework*** N = 26	***Postgraduate – Research N= 12***	
	18 to 22	82.8%	7.7%	8.3%	54.9%
	23 to 27	12.5%	57.7%	25.0%	25.5%
	28 to 32	4.7%	23.1%	33.3%	12.7%
	32 and above	.0%	11.5%	33.3%	6.9%

There was remarkably little difference between student responses to the survey items across the various demographic groups with a notable exception of activities as illustrated in Table 4

Table 4

Activities involving the use of Search Engines for different levels of students (UG/PG/Res)								
		Do no Use	***Up to 10 Minutes***	***11 to 30 Minutes***	***31 to 45 Minutes***	***46 Minutes to 1 Hour***	***More than 1 hour***	***Total***
Undergraduate	*%*	6.3%	**34.4%**	**31.3%**	17.2%	7.8%	3.1%	100.0%
Postgraduate - Coursework	*%*	3.8%	**26.9%**	**26.9%**	**23.1%**	3.8%	15.4%	100.0%
Postgraduate - Research	*%*	8.3%	8.3%	8.3%	**16.7%**	**16.7%**	**41.7%**	100.0%

Teachers were more difficult to involve in large numbers, so a survey method was rejected in favour of semi-structured interviews with a small representative sample. The transcripts of these were analysed by a content analysis package. An interesting result of this is shown in the concept map of Figure 3. IT staff and managers involved in the system decision-making were even more difficult to access, and so interviews were done with only one representative from each.



Relative strengths of the relationships between the Concept of SMP (the staff interface to the Portal) and other concepts:

Concept	Relative Count
web	36.3%
home	18.1%
information	18.1%
page	9%
area	9%
university	9%
problem	9%
service	9%

Figure 3 A Concept map created from the transcripts of interviews with teaching staff.

In the Concept Map of Figure 3, SMP is the academic teaching staff interface to the student management system already mention. It is interesting that these staff see it strongly related to the concepts of 'web', 'home' (as in access from) and 'information' but very weakly related to 'service' and not at all to 'search', although there is an advanced facility to search for students within the system of which few staff are evidently aware. Over the whole teaching staff population there is considerable variability in computer and information literacy, and hence their use of the system.

The vast majority of the teaching staff has never had direct experience of the student interface to the system. Similarly there were noticeable divisions between other groups of stakeholders, in particular the IT staff who had little contact or awareness of the system users, staff and students or even of the management viewpoint. From a holistic approach to the case study there was a challenge to interpret and make sense of these apparent gaps between categories of stakeholders. We therefore sought a framework to structure the concerns and requirements of different stakeholders and explain the disjunctions between them. One contributing factor may be misconceptions aligned with clashes of generational aspirations, attributes and values. A general understanding of these generational characteristics will now be presented before applying them to the case in hand.

Generational Characteristics

According to Smola and Sutton (2002) a generation is "an identifiable group that shares birth years, age location and significant life events at critical developmental stages." A generational cohort consists of 3 lots of 5-7 years usually called the first wave, the core and the last wave. A generation shares common historical and social life experiences thereby developing a personality that influence the feelings of its members towards authority and organisations, what they desire from work, and how they plan to satisfy those desires. .

Allen (2004) suggests that the current working population consists of four distinct generations, described below, each with its own set of values, view of authority, work and communications styles, and expectations of leadership and work environments. Most of the research in this area has been done in the USA, much of it for practical marketing purposes, but there are parallels in other countries, particularly Australia where our study was

conducted. Jorgensen (2003) has conducted a study producing similar categorisations in the Australian Defence Forces.

The generational differences are distinct from those purely due to age, maturity, experience and corresponding technical competence. They impact on workforce management and employee relations and may be characterised as follows:

Veterans/Traditionalists - born before about 1946**.** This generation has experienced scarcity and hardship so they tend to be disciplined and respectful of law and order, preferring consistency and stability. Allen (2004) notes that they are used to a top-down style of management that disseminates information rather slowly on a "need-to-know" basis. Members of this generation get satisfaction from knowing that a job is well done. They often stay with the one company for their entire career. Interestingly, Allen (ibid) believes that their wisdom and experience is more valued by Generation Y.

Baby Boomers - various described as born 1940-1946 or 1960-1964. This largest of generation came of age in the optimistic 60s and 70s, believe in growth, change and expansion thus expecting the best from life. They grew up in nuclear families where typically only one parent worked. They have lived through theVietnam war, peace marches, sexual and information revolutions. Smola and Sutton (2002) note that now these would be revolutionaries have turned to material wealth and the traditional values of parents with humanistic and moralistic values, as they have assumed positions of power in companies. Allen (2004) describes this large cohort as the last generation to force change on society. They grew up in relative prosperity and safety, before terrorism, pollution, child abductions and pessimism were part of the vocabulary. They pursue promotion by working long hours and demonstrating loyalty and a degree of ruthless competitiveness because of their numbers. They prefer to be viewed and treated as equals, a quality that resonates with Australian ideals

Generation Xers were born early 1960 to 1975-1982. This smaller generation, because of lower birth rates, grew up with financial, family and societal insecurity experiencing rapid change, diversity and lack of solid traditions. They knew homes where both parents worked or were in single parent households. They are technically competent and are comfortable with globalisation, diversity, change, multi-tasking and competition, According to Smola and Sutton (2002) this led to a sense of individuality over collectivism. Xers are cynical and untrusting having seen their parents laid off through the technical revolution. From a work perspective this meant that they have a well-honed practical approach to problem solving using the team to support the individual. They crave higher salaries, flexible work arrangements and expect immediate, specific and constructive feedback on their performance. Allen (2004) describes Xers as children of workaholic parents who grew up to be self reliant, individualistic and determined to maintain a work/life balance. They are mistrustful of corporations and are not loyal to any one corporation. Embracing change, particularly with respect to technology, they were the stars of the dotcom companies and the Silicon Valley start ups. They have lived on the edge and are outcome focussed.

Generation Y/Millenials: Born from the early 1980s into a wired world (now turning wireless) they expect to be connected 24/7. They are more affluent, more technology savvy, better educated and more ethnically diverse than all previous generations. They grew up with computers, the internet CDs/DVDs, cellular phones and digital cameras. In contrast to Xers they are socially active having seen the distress of downsizing and being bombarded with real-time catastrophes by the global media (Smola & Sutton 2002). Allen (2004) observes that they are thirsting for skills and intellectual challenges, and want a) work that makes a difference to the world, b) to work with committed co-workers who share their values and c) flexible work packages that meet their personal goals. With them, family will come first, with equality in the home, as they show an interest in child- and aged-care as well as volunteer work. There are not enough of them to fill the void left by retiring vets and boomers.

Grollman (2000) notes that they are not as label conscious as Xs, being sceptical of news, programming, content and commercials from the mainstream media.

Generational Analysis

In this section of the paper, the stakeholders in the case study are aligned with generational characteristics in order to examine whether this may help to explain the disjunctions between them. The implications of this for portal development will then be discussed.

The most influential stakeholders in the case study are the senior managers. They make the ultimate decisions regarding the Portal project, allocating resources and setting the strategic direction. In the institution of the study, they all belong to the veteran or first wave of the baby-boomer generations and exhibit a combination of the characteristics of these generations. They have established a top-down style of management that disseminates information only as they believe necessary and assume others (subordinates) will respect their decisions going along with whatever they propose. They believe that rewards come from working long hours, value loyalty and get satisfaction from knowing that a job is well done.

As their formative years preceded the IT era the managers' understanding of IT development comes from decades of failed IT projects as well as their experience of the amazing improvements that have come through automation of business processes. They are somewhat conservative and risk averse when faced with the task of approving projects such as the campus portal although in this case they perceived a greater risk of not using the latest in web-based systems for what they saw as their front-line customer (ie student) management system. They will take advice from someone they trust on IT projects who may be quite junior although they may not be confident that they can make an informed decision from a variety of viewpoints. However, once they decided on a way forward they anticipated that other stakeholders would support it, which is often not the case. Many other stakeholders do not feel they were consulted or their needs adequately considered.

The IT developers responsible for developing the portal are all Generation X; a generation that is self reliant, independent and individualistic which means that they are generally not aware of, or greatly interested in, things they consider peripheral (like usability, alignment with management objectives etc). They have a practical approach to problem solving and being outcome focussed will inevitably create something that works but are not perfectionists. Though not instinctive with ICT as Generation Y, Generation Xers are fascinated and capable with ICT. They enjoy change and taking risks so will eagerly try new approaches even if they are not tried and true making management rather nervous of their ability to produce a reliable, quality product.

The campus portal end-users, the students, are mostly Generation Y who have grown up with communications technology and take for granted that they can communicate 24/7 with the world. They seem somewhat resigned to the fact that their teachers are far less computer and information literate than they are having been taught by baby-boomers through most of their schooling. They are comfortable with gender and cultural diversity, which explains why so few differences were found among the demographic groups in the case survey. As described above they are sceptical of information through formal media, are group oriented and thirst for skills and challenges. They can cope with the shortcomings of the current version of the portal but would like, and be able to use effectively, a much more sophisticated portal. It seems that, in the main, no-one from the other groups of stakeholders, teaching staff, IT developers or university managers, appreciate this.

Conclusions

There are several researchers (eg Hill 2004) who stress that accommodating generational differences in organisational processes can result in significant improvements. This can be done by inviting multiple perspectives in decision-making, being aware of different

generational values in performance appraisals and framing solutions to problem behaviour in appropriate generationally relevant terms. It makes sense to align the roles of generational stakeholders with generational attributes alleviating much frustration, discord and disfunctionality. There is a lack of awareness by each generation that there are differences between their values and aspirations than those of other generations.

Generational issues are particularly relevant to IT issues as the breakdowns between organisational stakeholders in the case study are probably typical of many organisations. There is surely a need to get a broad approach, when dealing with an enterprise-wide, user-centred systems, that takes into account inter-generational differences in work motives and values. It is evident that many managers need to be educated in the results of generational research.

Specific recommendations for Portal development are:

- Get Generation X and Y into decision-making teams so that management gets a better appreciation of their expertise when it comes to the development and use of IT.
- Xers need to be told of management requirements and user needs – they won't think these are important on their own
- Yers as users and consumers will cope with the shortcomings of baby-boomers managers and teachers and Gen X developers but be keen to self-manage, find new uses for the tools they are given and be active in finding their own tools

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