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Investigation into the management of website content in higher education institutions

Literature review

Social Issues Research Centre (SIRC)

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About Eduserv

Eduserv is a not-for profit IT services organisation with a charitable mission to realise the benefits of ICT for learners and researchers. We are dedicated to developing effective technology solutions that meet the needs of universities, colleges and public sector organisations.

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About SIRC

The Social Issues Research Centre is an independent, non-profit organisation founded to conduct research on social and lifestyle issues, monitor and assess global sociocultural trends and provide new insights on human behaviour and social relations.

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1) Background

The educational benefits of learning via the web have been studied at length, as have the more general implications of Information and Communication Technologies (ICT) for the future development of Higher Educational Institutions (HEIs) and the potential decentralisation of University resources. A cursory analysis of the existing literature, however, indicates that there is a paucity of sensitive data relating to the management of web content within HEIs and limited analyses of the issues faced by those employed full-time in the process of publishing organisational websites.¹ This is perhaps rooted in the fact that, as pointed out by Andrew Cox, “the original purpose and ideology of the web is self-publishing”.²

It is important to note that much of the existing literature surrounding Content Management Systems (CMSs), and the broader processes involved in putting universities online, are somewhat outdated. This is, in part, due to the rapidly evolving nature of the technologies in question. Many of the conceptual concerns which emerge throughout these studies, however, are of continuing relevance and value to future analysis. Cornford and Pollock (2002)³, for example, identify a conceptual gap within existing studies of Content Management Systems. The authors assert that frequently the actual processes involved in the content management of HEI websites are often overshadowed, on the one hand, by research which focuses on web technologies themselves - divorced from their context within specific institutions - and, on the other hand, a broader ideological concern with the future of HEIs themselves.

Within broad-based conceptual approaches technology is frequently portrayed as a threat to the survival of modern HEIs due to the increasing availability and sophistication of financially viable online courses and its potential to decentralise university resources. With this in mind, the university has been described as an “‘attenuated’ institution struggling to deal with an ‘age of super complexity’”.⁴ Pollock and Cornford (2002), however, approach such broad conceptual frameworks critically, arguing that HEIs and Information and Communications Technologies (ICTs) are often portrayed as ideal types, and the rhetoric used to describe the relationships between them can be highly emotive. They claim that, as such, these studies frequently lack empirical validity. Not only do they frequently focus on a future-oriented view of what the implications of ICTs will be for Higher Education Institutions, but this is viewed in general terms, rather than within the context of specific technologies used within particular

¹ Although see theoretical contributions by Kotamraju, 2002, 2004.

² Cox, A. 2007. The Power and Vulnerability of the ‘New Professional’: Web Management in UK Universities, *Program*, (41) 2 (p. 148).

³ Cornford, J. and Pollock, N., 2002. Putting the University Online: Information, Technology and Organisational Change. Open University Press, Buckingham.

⁴ Barbette 2000, cited in Cornford and Pollock, (2002:1)

institutions. In response to these observations, Pollock and Cornford (2002), highlight that the potential for new ICTs to be harnessed to restructure higher educational provisions in a positive way must not be underestimated. Associated with this is the “shift from administrative culture to a professionally supported academic self management”.⁵

The approach identified by Pollock and Cornford (2002) does not take technologies or, indeed, HEIs for granted as homogenous or unified entities. Rather, the effects of particular technologies are the focus of enquiry. In an investigation into the use of CMS, for example, Browning and Lowndes (2001) look critically at its application within HEIs.⁶ They state that “Out of date material, poor control over design and navigation, a lack of authority, control and the constriction of the Webmaster bottleneck will be familiar to many in the HE/FE sector”.⁷ Browning and Lowndes (2001) identify websites of the next generation - with significant automation and integration of the processes ensuring content management - as more likely to be successful and sustained than those requiring more manual maintenance. As such, they argue that CMSs are the way of the future. Significantly, the authors perceive that “In reality a CMS is a concept rather than a product”.⁸ Thus, due to the variation between Higher Educational Institutions in terms of their needs, “the task of implementing a CMS will inevitably contain a significant bespoke component”.⁹

Investing in a CMS involves a degree of risk. Browning and Lowndes (2001) emphasise the potential overlap between CMSs and other document management systems, knowledge systems, enterprise application integration systems, e-commerce systems and portals. They also argue that there are “significant (but not as yet generally recognised) overlaps with intranet groupware and virtual learning environments”. Furthermore, they state that the marketing of CMSs tends to involve overtly technical jargon and be “over-hyped”.¹⁰ These factors, perhaps, contribute to the resistance within some traditional Higher Education computing services to CMSs. Another important factor which may contribute to reluctance to invest in the concept is that control over the content is transferred from the technician to its owner.

⁵ Cornford, J. and Pollock, N., (2002:4).

⁶ Browning, P. & Lowndes, M. 2001., *JISC TechWatch Report: Content Management Systems* (September)

⁷ Browning, P. & Lowndes, M. 2001., *JISC TechWatch Report: Content Management Systems* (September) (p.2).

⁸ Browning, P. & Lowndes, M. (2001:2).

⁹ Browning, P. & Lowndes, M. (2001:2).

¹⁰ Browning, P. & Lowndes, M. (2001:2).

Although the cost of investing in a CMS may be equal to purchasing a Student Record System (SRS), Browning and Lowndes (2001) argue that the possession of a CMS has the potential to set an institution apart. Perceptions that cost can be high may also undermine the uptake of CMSs. Browning and Lowndes (2001) claim, however, that although this can be the case in some instances, often no purchase or modest cost solutions are available. Furthermore, they argue that when the content of websites is well managed the organisation functions more cost-effectively and creates an environment for better decision making. They maintain that, in addition to enabling information to be re-used by integrating data from different sources (e.g. Student Record Systems, personnel systems and image banks), CMSs also allow information to be re-purposed efficiently, rendering the same information in PDF, plain text, etc. The authors discuss how CMSs enable the management of website content to be dispersed at the same time as preserving central control. As well as maintaining presentational consistency and enabling past editions of websites to be recreated, Browning and Lowndes (2001) argue that CMSs also promote good information management practices by recording the name of website maintainers, modification dates and expiry dates and incorporating key words that ensure indexing by search engines. This contributes to what Browning and Lowndes refer to as a 'write once, reuse anywhere' concept. Furthermore, through 'self-service authoring', special editing skills to maintain website content are not required. Browning and Lowndes argue that this is "a major step towards acceptance of the Web as a medium for communication by non-web specialists" within HEIs and beyond.¹¹

This assessment represents a clear attempt to critique CMSs within the particular context of Higher Education. Nonetheless, as maintained by Cornford and Pollock (2002), the divergence between approaches which look at the broader, ideological relationship between HEIs and technologies, and those that focus on the specifics of technology alone is clear. Studies which emphasise the micro-level specifics of technology sacrifice recognition of the broader processes involved with putting universities, as institutions, online and fail to take into account the specificity of their needs. Recognition of both the wider concerns surrounding the implementation of technologies and the specificity of context within which they are implemented underpins the ability to gain a comprehensive knowledge of CMSs and their broader implications. As such, bridging the 'gap' within the existing literature is an integral requirement of future studies concerned with website content management in HEIs.

2) Putting Universities Online

In their attempt to address the perceived shortcomings of existing literature on CMSs within HEIs, Cornford and Pollock (2002) seek to identify the specific processes involved in the development of an HEI's web presence and to assess the broader implications. Rather than adopting a perspective which focuses purely on the impacts and outcomes of web CMSs

¹¹ Browning, P. & Lowndes, M. (2001: 5).

themselves, they approach universities as integrated wholes - as management and administrative as well as educational institutions; analysing their relationships with ICTs in a manner that looks beyond a 'monolithic' focus on web technologies.¹² In recognition of the need to take the responses of HEIs to change into account, with regard to the perceived role of websites and the different job roles associated with web content management, Cornford and Pollock (2002) adopt an extensive ethnographic approach. Their four year project, 'Virtual Society?' which focuses on four institutions in North-East England, shows how neither universities nor ICTs are fixed entities. Rather, they shape one another. Through their 'actor-network' approach Cornford and Pollock (2002) demonstrate that the ways in which technologies are understood and implemented are dependent on context and the negotiations between highly varied actors and systems occurring within specific institutions.

For Cornford and Pollock (2002) the management of website content and the processes involved in putting HEIs online by no means demonstrates a linear relationship between the technologies available and the expertise of those implementing them. They conceptualise the innovatory processes within HEIs as the result of 'seamless webs'¹³ between social and technological factors, arguing that "ICTs, like other goods and services, come into a particular community with powerful suggested meanings, or 'scripts' attached, constructed by their developers and marketers. Yet study after study has found that these supposedly dominant meanings fail, to a greater or lesser extent, to be translated into practice. Rather, they are contested, resisted, deflected or complemented by other meanings which are actively constructed by their intended audience and others".¹⁴ MacLaughlin (1999) develops this idea further when addressing non-expert approaches to technology, arguing that the processes involved are often simply seen by them as occurrences within a 'black box'.

3) Systematic Research of CMSs in the Context of HEIs

Cornford and Pollock's (2002) attempt to uncover the processes involved in putting universities online is complemented by other studies which focus, more specifically, on the issues surrounding website content management within the context of Higher Education. The survey and interviews undertaken by Armstrong et al. (2001) provide an important starting point from which key changes within website management in HEIs can be identified.¹⁵ In addition to discussing the roles of web managers specifically, with regard to their work loads, job specifications, and backgrounds, he investigates these in reference to the growing

¹² Cornford, J. & Pollock, N.(2002: 14).

¹³ Hughs (1986) cited in Cornford, J & Pollock, N., (2002:17).

¹⁴ Cornford, J. & Pollock, N., (2002:12).

¹⁵ Armstrong, C. et al. 2001. 'HEINUS: Higher Education Institutions Network Usage Study', available at [www.dil.aber.ac.uk/dils.research.heinus/HEINUS](http://www.dil.aber.ac.uk/dils.research.heinus/HEINUS.pdf). pdf (accessed 12/03/2009).

importance and scale of the web; its increasing marketing role; the convergence of library and computing systems; and the widespread adoption of website management tools and CMSs.¹⁶

Armstrong et al.'s research is extended by Andrew Cox (2007) through insights drawn from 15 semi-structured interviews of individuals in the UK university sector conducted in 2004.¹⁷ These qualitative insights are explored further in a survey of website content management across HEIs in the UK by Cox and Emmott (2007). As the most significant contributions to the understanding of the processes surrounding website content management in HEIs, in addition to the technologies involved themselves, the implications and limitations of this research will now be considered in depth.

4) Job Specifications of Web Managers

In his qualitative exploration of website content management in HEIs, Andrew Cox (2007) explores the diverse character of the university web manager role. The interviews he conducted were analysed with particular emphasis on the “factual, attitudinal and discursive interpretative repertoires in use”.¹⁸ Interviewees were identified through web searches, their visibility on an online annual practitioner conference series, and the Heist awards for web sites for tertiary sector marketing (www.heist.co.uk/awards/?a=a). By approaching web management at the individual, micro-level Cox (2007) attempts to identify patterns within web content management in HEIs which result from individual choice. These are impacted to a great extent by the “diverse backgrounds of those in web management, their occupational trajectories, responsibilities, job roles and status”.¹⁹ Furthermore, they are highly relevant to the internal politics of different HEIs and the perceived roles of their websites, which are often reflected in whether web teams are located in marketing or IT. This divide, Cox asserts is highly significant, impacting the different discourses drawn upon by individuals when rationalising their roles within the workplace.²⁰ The findings from the interviews with those involved in web management of HEIs, are augmented by Cox and Emmott's (2007) survey findings, which suggest that new technologies, in particular, CMS and portals, have had the effect of drawing the role of web managers further into the management of relations with web authors in increasingly decentralised departments, as well as with senior management, the consumers of websites and key stakeholders.

¹⁶Armstrong, C. et al. 2001.

¹⁷ Cox, A. 2007

¹⁸ Cox, A. (2007: 148)

¹⁹ Cox, A. (2007:148)

²⁰ Cox A. (2007: 151)

5) Web Managers: “Marginal But Powerful ‘New Professionals’”²¹

Andrew Cox cites the Dearing report (1997), which was commissioned by the government in order to explore the funding, expansion and maintenance of academic standards. The report identifies an emerging group of ‘new professionals’ likely to make an impact on UK HEIs, stating that these individuals are within the employment sectors of IT support and web management. This is highly relevant to Cox’s (2007) argument, in which he asserts that the web provides opportunities for the development of new technical skill sets and expertise but, simultaneously, exposes web managers to vulnerability within the context of HEIs. This is because their job specifications are irrevocably linked to the perceived role of institutional websites by senior management and broader institutional changes. Although innovation can lead to promotion and greater funding opportunities, Cox (2007) emphasises that the value attributed to individual skills varies within the contexts of rapid change; of increasing concern with user demand; and of the finite resources allocated to web management.

Furthermore, as Cox (2002) recognises, the vulnerability of those working in web management is linked to issues raised in Zabusky’s (1997) analysis of the way in which the “non-organisational, expertise-based view of status [held by IT support specialists] contrasts with organisational hierarchies and ascribed position and job title” associated with HEIs more generally.²² The lack of integration sometimes found between IT support and other members of HEIs, Zabusky (1997) maintains, is reflected in the physical location of IT offices, frequently in marginal areas of the university; and instances where members of IT support eat apart from other employees.

The potential marginalisation of those involved in website management is also identified by Armstrong et al. who state that website managers frequently report feeling “a degree of professional isolation within their own organisations”.²³ This is, perhaps, because their role is unusual – breaking down the boundaries between different professions and demanding a wide skill set including editor, design, technical specialisation, support, research, development, training, and marketing.²⁴ This results, as stated by Linford (1999), in a job role that “quickly becomes a balancing act of deciding which skills to develop, and choosing a

²¹ Cox, A (2002: 148)

²² Zabusky, S.E., 1997. Computers, Clients and Expertise: Negotiating Technical Identities In a Nontechnical World. In Barley, S.R and Orr, J. (Eds), *Between Craft and Science*, IRL Press, London.

²³ Cited in Cox, A. (2007:150).

²⁴ Cox, A. (2007:149).

direction in which to branch, while workload increases daily with user expectations and rapid technological growth.”²⁵

These insights have implications for how individuals in website management are currently supported by HEIs and how this could be done in the future. Furthermore, Cox's (2007) interview findings indicate that the way web managers negotiate internal politics and assert the legitimacy of their skills and job role by associating themselves with different professional discourses is largely a product of individual choice. The variety of these legitimising discourses is, perhaps, itself, a product of the diversity of background and experience possessed by individuals in website management.

6) Variations within Website Content Management

Cox and Emmott's (2007) research demonstrates that the job specifications of website managers, and the web teams within which they are embedded, are highly varied across different HEIs in the UK. Cox (2007) argues that the “diversity in individual experience found among web managers arises from the variety of universities as institutions but also the changeability of the potential of the web itself, which opens up multiple development paths”.²⁶ These paths include informational publishing, marketing, e-learning, and reengineering of business processes. Variations in practice also stem from the allocation of limited resources as well as the decisions made by individuals within website management, as previously discussed.

Not only do web teams vary in size, but the existence of standard job roles and titles cannot be assumed. Even in large web teams, the role of coordinating ‘web manager’ does not always exist. Cox (2007) argues that the job specifications of web managers differ among HEIs, and the formal job roles given to members of web teams do not always correspond with self-described responsibilities. Furthermore, the difference between the skill sets and job specifications belonging to individuals employed in web management is consistent with the variety of backgrounds possessed by members of the field. Cox (2007) argues that although Netskills is beginning to develop accredited courses the diverse backgrounds of web teams reflect the current low organisation of web management and ICT more generally as a profession.

7) Management Strategy

A key aspect influencing website content management identified by Cox (2007) is the “seemingly irresolvable dilemma” of whether the web should be ‘located’ in IT or marketing. This leads to significant internal disagreement about the ways in which websites should be

²⁵ Cited in Cox, A (2007: 149).

²⁶ Cox, A (2007: 161)

managed. In his study, Cox (2007) found that individuals in IT prioritised the provision of a stable infrastructure that enables people to publish within acceptable use and produce guidelines to ensure accessibility and navigational structure; whereas marketing departments tended to attribute primacy to the written content of websites.²⁷ Cox (2007) found that, sometimes, this divergence of views led to the division of the website into the management of a front facing web (primarily for recruitment) and an inward focused intranet.²⁸ The survey conducted by Cox and Emmott (2007), however, confirmed that it is more usual within the Higher Education sector to have web teams that cater to both internal and external audiences, despite the fact that some were embedded in IT departments and others in external relations.²⁹

The lack of uniformity between the different backgrounds and job roles of web managers working in HEIs corresponds with the absence, in many cases, of clear management strategy. Cox (2007) states that, within HEIs, seniority is often linked to the ability to lay claim to, apply for, and receive funds. However, the supervisory aspect of managerial roles and extent to which managers take on technical roles vary. Team members may not be fully dedicated to web work and managerial responsibilities may not extend to direct control over departmental web authors. As such, the extent to which web managers project manage cannot be generalised.³⁰

Ambiguity in terms of the required skill sets and job specifications of those working in web management corresponds with Nalini Kotamraju's (2002) observations about web design which can, perhaps, be applied to website content management more generally. Kotamraju states that "From the moment of its emergence in the mid-1990s, web design skill immediately engaged in the process of reinvention".³¹ The very ability of those involved in web design to 're-skill', it is argued, lies in the ambiguous definitions given to skill sets and the fact that the roots of new competencies lie in pre-existing ones. A consequence of this state of affairs is that there is little standardisation within web design, or specific requirements in terms of background or credentials among those belonging to the website management more generally.

²⁷ Cox, A (2007:155).

²⁸ Cox, A. (2007:155).

²⁹ Cox, A & Emmot, S., 2007. A Survey of UK University Web Management: Staffing Systems and Issues, *Campus-Wide Information Systems*, (24), www.emeraldinsight.com/1065-0741.htm

³⁰ Cox, A. (2007:159).

³¹ Kotamraju, N., 2002. Keeping Up: Web Design Skill and the Reinvented Worker, *Information, Communication and Society*, (5) 1. (p. 15).

8) Challenges to Effective Website Content Management

A significant challenge faced by web managers and others running university websites is, as identified by Cox, “influencing or controlling departmental web authors”.³² The large quantities of work produced by HEIs and increasing ability to edit departmental websites without specialised skills enabled by CMSs in many cases results in the decentralisation of control over website content management. This can be highly problematic, in terms of consistency of navigation and user-experience and compliance with legal requirements with regard to copyright and authorship. As indicated by Cox and Emmott’s (2007) survey, the most significant areas of concern raised by web managers within HEIs, in addition to lack of resourcing, were “maintaining consistency with devolved content creation and currency of content”.³³ While some web managers play more of an ambassadorial role, building relationships with the various departments, others negotiate the balance between centralisation and devolved control over websites more aggressively; for example, by limiting training of departmental staff to more simple processes so that the central website team is required to maintain more complex procedures.

9) Career Development

Although the web offers more opportunities for career progression than a skill in one particular computer system, Cox (2007) notes that, in interviews, individuals involved in website management frequently identified a lack of provision for career development within HEIs. A potential factor contributing to this is, perhaps, related to the tendency for HEI departments to view members of web teams in a ‘trouble shooting’ capacity rather than as the implementers of a specific information and communication strategy. Furthermore, Cox (2007) suggests that the perceived lack of career opportunities could be a problem associated with Higher Education in general, due to its division into different specialisms; or it could be associated with specialists themselves, and the difficulty of constructing appropriate career ladders for them. Cox (2007) argues that women, specifically, are disadvantaged within the framework of web management. He suggests that the relationship between women and employment in IT can, perhaps, be accounted for by the fact that females are often more attracted to marketing or library work which, although perceived to be less powerful, is thought to be more accessible and lacks the reputation of being ‘cool’ and emotionless.

10) Limitations of Research

A potential difficulty encountered within studies of website content management is, as identified by Cornford and Pollock (2002), the question of how to make visible and create a

³² Cox, A. (2007:160).

³³ Cox, A and Emmott, S. (2007: 308).

sense of scale to determine the changes occurring within HEIs, given the size and complexity of the sector.³⁴ Furthermore, although previous research into website content management in HEIs provides important insight into a more detailed view of the field, caution must be exercised when generalising the results obtained. Cox and Emmott's (2007) survey provides useful insights into the technologies used and job specifications of web managers across HEIs in the UK. Although there was a "reasonable" response to the survey, with 104 sets of usable data from 87 out of a total of 164 HEIs, the authors themselves warn that their findings should be treated with "some caution".³⁵ Cox and Emmott (2007) identify a bias within their findings towards larger HEIs. They acknowledge that while around 70% of the 19 Russell group universities gave one or more responses, less than 50% of the 30 "new, post 1992 universities" did so.³⁶ They also report inconsistency in terms of regional representation, as while four out of the nine main Welsh HEIs responded, only eight out of 19 Scottish ones did so.

In addition, it is important to note that Cox and Emmott's (2007) survey was "aimed at those who have primary responsibility for their institutional web presence".³⁷ As such, it lacks the perspective of those involved in different roles within web teams, as well as the attitudes of web users towards HEI websites more generally. Some surveys were also filled out by the same HEI multiple times. Although this is rooted in the fact that responsibility for website content management is often shared between marketing and IT departments, as stated by Cox and Emmott (2007), variation between respondents in terms of their status and more general lack of comparability, "create[s] issues with the reliability of the research".³⁸ This is exacerbated by the fact that the terminology included within the survey, for example, in reference to job titles and 'web teams' is not settled. Furthermore, the failure to compare data cross-culturally is also acknowledged by the authors. 'Expert' views of website content management in HEIs in Italy, France and Germany, for example, could help to clarify whether issues encountered within the survey are representative of the field as a whole.

11) Future Areas of Enquiry

Despite limitations in terms of the extent to which findings can be generalised and their now slightly out-dated nature, Cox's (2007) qualitative research and Cox and Emmott's (2007) survey provide a useful starting point from which important issues surrounding the management of website content can be identified. A useful way in which these studies could

³⁴ Cornford, J. & Pollock, N., (2002:15).

³⁵ Cox, A. & Emmott, S. (2007: 311).

³⁶ Cox, A. & Emmott, S. (2007:311).

³⁷ Cox, A. & Emmott, S. (2007:311).

³⁸ Cox, A. & Emmott, S. (2007: 308).

be developed would be to extend the interview and survey processes to include people responsible for websites of individual departments, and library web managers. A future-oriented perspective, identifying potential avenues of career development and staff training more generally could also be taken into account. An important area for future concern directly related to issues raised in the study also includes the question of how to negotiate the tension between the standardisation of website content management and the continued uniqueness of HEIs – as previously identified by Cornford and Pollock (2002).

It is important to note that, beyond the research under discussion here, other valuable sources of insight including the series of conferences which form part of the Institutional Web Management Workshops (IWMW) organised by UKOLN “have been remarkably effective in mobilising practitioners across the sector to debate issues of practice in HE web management”. As such, they are important means of gaining information about issues current within the field. Furthermore, blog contributions made, for example, by UKOLN's Brian Kelly³⁹ are a useful way of gaining insight into both the technical and more theoretical concerns current in the field of website content management by HEIs.

12) Identifying the Perceived Roles of Websites

An issue of prime importance to the future of website management within HEIs is the role of websites as perceived both by management and by users. As highlighted in Cox and Emmott's (2007) survey, student recruitment, institutional reputation and the accessibility of information to stakeholders are “key drivers” of most of the HEIs that responded to their study.⁴⁰ The models chosen to provide the most effective, secure, reliable ICT services and solutions which meet regulatory requirements, however, often vary according to issues of branding, and whether institutions place emphasis on research or marketing. Alison Wildish attempted to reconcile the perceived needs of more ‘traditional’ universities which are often research-led, and modern HEIs which tend to emphasise marketing and student recruitment as the prime function of their websites.⁴¹ She advocates the need to accentuate the communicative, user-led aspect of websites, regardless of these differences in approach. Wildish argues that the implementation of improved communication strategies at the level of management; refined approaches to IT support; development and marketing; the improved design of websites and the presentation of a coherent online identity are key to end-user satisfaction.

³⁹ See Brian Kelly's Blog, www.ukoln.ac.uk/web-focus/

⁴⁰ Cox, A. & Emmott, S. (2007:308).

⁴¹ Wildish, A. 2008, Look Who's Talking Now... <http://www.ukoln.ac.uk/web-focus/events/workshops/webmaster-2008/talks/wildj>, accessed 23/04/2009

The need to emphasise user-experience within website management is given further credence by Jesse James Garrett. Garrett, in the 10th Annual IA summit's closing plenary (2009), outlines the issues which he perceives to be critical to the future of website design and content management. He asserts that Information Architects and Information Designers no longer exist. Rather, "There are, and only ever have been, User Experience Designers [UxDs]".⁴² Garrett emphasises the centrality of user-experience and need to engage with this over and above the presentation of information. The extent to which HEIs are receptive to these recommendations; whether they attribute importance to user-led experience; and attempt to monitor this aspect of their website is an importance area of future research.

13) User-Experience

Nonetheless, the tension between strategies focusing on the informational content of websites and their communicative potential as key recruitment resources reveals an important divergence of approaches to website management within HEIs. Although this cannot be uncritically generalised to apply to all HEIs, it is associated with the shift from an emphasis on the technological aspect of website content management to user-experience which has occurred within theoretical approaches to website content management more generally. This has been addressed within a series of conferences organised by Brian Kelly of the UKOLN at annual Institutional Web Management Workshops (IWMW).⁴³

14) Future Technologies and Structural Trends

Consideration of the leadership models directing academic web teams, the motivations underpinning them, and the ways in which they are likely to change over the next 10-15 years are of integral importance to comprehensive analysis of website content management within the context of HEIs. Related to this is the choice of CMS used by HEIs and the rationale behind the choice of a particular provider or solution. Are HEIs facilitating their aims of allowing non-technical users to edit websites and are there identifiable trends underpinning the selection of technologies used across HEIs? These concerns, again, underscore the importance of adopting a broad approach to web content management, beyond the immediacy of the actual technologies implemented by HEIs themselves, due to the need to take into account the internal politics, aims and management strategies specific to different HEIs. Indeed, this is indicated by the shift in emphasis from the more technical aspects of CMSs to the perceived importance of the specificity of context and over-all user-experience, as indicated in the debate concerning the suitability of Open Source or commercial software.

⁴² Parks, J. 2009, IA Summit 09 –Plenary; Jesse James Garrett Slams One Door and Opens Many More, *Boxes and Arrows: The Design Behind the Design*, April Issue, accessed <http://www.boxesandarrows.com/view/ia-summit-09-plenary>, (22/04/09)

⁴³ [www..ukoln.ac.uk/web-focus/events/workshops/](http://www.ukoln.ac.uk/web-focus/events/workshops/).

15) Open Source versus Commercial Software

The following examination of Open Source and proprietary software is framed by a debate cited in the *Bulletin of the American Society for Information Science and Technology* in reference to repository systems. Although repository systems are not typically regarded as part of mainstream web content management within HEIs currently, the issues raised reflect important issues surrounding Open Source and proprietary software more generally. As will be discussed, Michael Day and Alexander Ball (2009) advocate the benefits of Open Source software, citing recent statistics from the *OpenDOAR* Directory of Open Access Repositories which show that, by the end of January, 2009, 47% of the repositories listed use one of the two leading Open Source repository packages; and the majority of existing institutional repositories are built using Open Source software.⁴⁴ This is perhaps because, as stated by Paul Jones (2009), promoter of Open Source software, “Some of the reasons for the dedication of your institutional repository to the use of Open Source software, open standards and open formats are...inseparable”.⁴⁵ He states that Application Programming Interfaces (APIs) offered in commercial software offer only temporary opportunity for interoperability with other system; claiming that the notion that proprietary systems are more responsive to the needs of clients and have greater potential for innovation is a myth.

Jones (2009) argues that the strength of Open Source software lies in its capacity for competition and cooperation. He argues that the capacity for a large number of Linux products to borrow from one another and be reincorporated within specialised versions of the operating system make Linux “one of the most innovative software systems in the world”.⁴⁶ Jones (2009) cites Stephen Weber’s conviction that Open Source software is driven by a market tied to choice, customer satisfaction and participation, as opposed to customer ‘lock-in’. He states that “Open Source particularly in the area of institutional repositories is a lovely and competitive – yet cooperative – area of development and will continue to be innovative and responsive”.⁴⁷

Jones’s (2009) argument, however, is challenged by Ball and Day (2009) who state that although the Open Source philosophy has been “a major inspiration for the collaborative models that underpin many recent Internet developments as well as for the concept of open science,” the implication that this renders Open Source technologies the best option should

⁴⁴ Jones, M., Day, M. and Ball, A. 2009, Institutional Repositories Should Be Built on Open Source Software, *Bulletin of the American Society for Information Science and Technology*, 35 (4).

⁴⁵ Jones, M., Day, M. and Ball, A. (2009: 22)

⁴⁶ Jones, M., Day, M. and Ball, A. (2009: 24)

⁴⁷ Jones, M., Day, M. and Ball, A (2009: 24).

not be uncritically accepted by HEIs. They emphasise that software from Open Sources require a large degree of commitment as, “Even where institutions have motives other than long-term stewardship for setting up repositories, it remains the case that the technical aspects of systems will need to evolve through time to take account of changes in institutional policies and requirements and to take advantage of the functionality offered by the latest software platforms and tools”.⁴⁸

Ball and Day (2009) emphasise that the choice of software also needs to be closely aligned with institutional requirements. They maintain that the applicability of technology centres on the consistent uses of standards and APIs which “are far more important than the exact software development model in use”.⁴⁹ As such, they recommend that institutions ask themselves whether they can integrate other tools within the software in question, interoperate it with other existing systems, and access content within the system easily.

Ball and Day (2009) acknowledge that Open Source software is likely to play an integral role in the development of individual institutional systems and their linkage with complex national and international research e-infrastructures. Nonetheless, they argue that it is not the only viable option. They state that, due to the developer-driven nature of Open Source software it can be difficult to reconcile the specific institutional requirements with the actual capabilities of the software. As such, they emphasise the importance of prioritising the ends - which, with regard to repositories they perceive to be “the stewardship of well managed collections of institutional content” - over the means.⁵⁰

This debate reveals not only the importance of investigating the specific requirements of individual HEIs within the context of web content management, but also the emergent trends and key areas of concern that are related to the establishment and maintenance of systems and procedures more generally in the future. Related to this is the need to address the willingness of HEIs to keep pace with new and emerging technologies. This includes responses to popular technology such as iPhones and BlackBerrys, and the issues involved in making HEI sites compatible with these new devices. Integrally linked to the comprehensive appraisal of HEIs’ willingness to look to the future are the extent and the manner in which they collaborate successfully and share their skills and resources - both internally and beyond their boundaries.

16) Conclusion

This view to the future reveals the need for a thorough analysis of networking within the context of HEIs; and the ways in which this is achieved and maintained through the

⁴⁸ Jones, M., Day, M. and Ball, A (2009: 22).

⁴⁹ Jones, M., Day, M. and Ball, A (2009: 24).

⁵⁰ Jones, M., Day, M. and Ball, A (2009: 24).

implementation of communication platforms and the allocation of resources. As discussed, the strategies and, in many cases, reactive responses employed by HEI web teams with regard to emergent technologies are integrally linked to this. These insights compound the need, as identified during the assessment of extant literature within the field, to generate both representative and up-to-date data regarding the specific requirements, priorities and aspirations both explicitly stated by web managers and implied within management strategies of HEIs across the UK. It is only with a comprehensive approach inclusive of the wider context, challenges and expectations surrounding website content management at both technical and policy levels that key trends and motivations surrounding the current implementation of CMSs and their future selection can be understood.

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