

The Political Economy of Open-Source Software in the United Kingdom

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The debate about the impact of information and communication technology has tended to focus on either its economic or its political aspects. The growing centrality of this technology to life in the 21st century, however, raises important questions about social ownership and control that necessitate a broader and more holistic analysis. Central to this issue is the growing challenge posed by open-source software to the proprietary business model that has hitherto dominated the market. The author examines how these developments are being mediated in Britain through the intersection of government policy, private interests, and the institutional configuration of the state.

Keywords: *information and communication technology; proprietary business model; Microsoft; open-source software*

The centrality of information and communication technology (ICT) to the work and leisure activities of advanced industrial societies grows by the day. As it does so, the need for a critical examination of the ownership and control of this technology becomes ever more pressing. At the present time, the predominance of a proprietary business model, coupled with the global monopoly position of a single multinational corporation, Microsoft, imposes a restrictive dynamic on the market, limiting consumer choice, constraining user freedom, and fostering increased levels of vendor dependency. The proprietary model, however, is faced with a growing challenge from open-source software (OSS). On the basis of a radically different approach to production, distribution, and exchange, this provides a variety of benefits, ranging from reduced costs and improved security to enhanced choice, flexibility, and freedom, resulting in a form of ICT use that is not only more participatory and empowering but also offers greater levels of technological control, both socially and individually.

The specific mode of ICT use is strongly conditioned by national forms of political economy. In the case of Britain, this is driven by the interaction of several key variables: the pursuit of a marketized and avowedly arms length mode of statecraft by the New Labour government, its desire to use ICT as part of an agenda for modernization and national renewal, the interests of private actors (both commercial and domestic), and the multilayered institutional structure

of the British state itself. Whereas the latter of these factors have helped facilitate the greater use of OSS within the public and private sectors, the former has done little to alleviate a profound market imbalance in favor of the proprietary business model and the commodification of ICT. As a result, although the popularity of OSS continues to grow, its use in Britain remains behind the levels found in other countries.

Development and Dependency

Seven years into the 21st century, Britain seems readily equipped for life in the digital age. About half of all homes and more than three quarters of all businesses are furnished with high-speed broadband connections (Office for National Statistics, 2006a, 2006b), more than three quarters of the population consider the Internet to be “indispensable” to their everyday lives (Tickbox.net, 2006), and, with an average of 24 hours a week spent online, Britons now devote a quarter of all time spent with any media to the World Wide Web (Story & Pfanner, 2006). The use of e-mail has become so ubiquitous that it is scarcely worth mentioning; services such as voice-over-Internet protocol, Skype, and social networking are enjoying steady rises in popularity; the use of Wi-Fi has exploded over the past couple of years; and online entertainment is fast supplanting traditional leisure pursuits, with British Internet users ranking among the heaviest downloaders of music and television

content in the world (Office of Communications, 2006). E-commerce, too, is playing an increasingly vital role. The value of Internet sales in the United Kingdom is now well in excess of £100 billion a year, while the scale of online advertising as a proportion of total advertising expenditure in the United Kingdom is the highest anywhere in the world (Story & Pfanner, 2006).

Not surprisingly, the impact of ICT has attracted a great deal of scholarly attention. Analyses have tended to fall into one of two camps. The first of these has focused on the economic effects of ICT. The parameters of the debate have centered on the nature of the “knowledge-based” economy, the extent and novelty of economic change over the past couple of decades, and the degree to which free flows of information, greater price transparency, and increased connectivity have produced a spatial and temporal compression of the world market (see, e.g., Intellect, 2006; Kay, 2001; Liagouras, 2005; Litan & Rivlin, 2001). In contrast, the second stream of analyses deal with the political effects of ICT. Here, the debate has focused overwhelmingly on the extent to which technological change has produced a more empowered and informed citizenry and the degree to which this has affected political participation. Although most studies of this issue conducted in the United States have indicated that the ICT revolution has reinforced and reproduced conventional forms of social stratification and has not produced a more involved and participatory politics, studies conducted in Britain have indicated that the Internet may be raising participation levels, particularly among sections of the population that are typically inactive in conventional politics, such as the young and members of “lower” socioeconomic groups (Gibson, Lusoli, & Ward, 2005; also see Dahlgren, 2005; Margetts, 2006; Tolbert & McNeal, 2003; Ward, Gibson, & Lusoli, 2003; Weare, 2002).

Although both forms of debate are instructive, this focus on either the “economic” or the “political” pole necessarily poses certain difficulties. In particular, what is overlooked by the debate in its current form is an analysis of how the use of ICT is itself shaped by the relationship between the state and the market. A key issue here, given the centrality of ICT to 21st-century life, and especially given its position as a core component of the means not just of social (re)production but of virtually all forms of work and leisure activity, is the wider question about the social ownership and control of this technology. In this respect, debates about ICT as a means of empowerment, in both its

economic and political forms, raise an important though not frequently addressed paradox, namely, that at the same time as ICT is hailed as a means of liberation, facilitating choice, openness, and connectivity, so the very mass of a society that has become increasingly dependent on such technology has become increasingly alienated from it, embedded instead in an ever deeper web of dependency on proprietary vendors and products. The results have been a pernicious limiting of personal freedom and control and diminished social influence over a core aspect of everyday existence.

Proprietary and commodified dependencies are a core feature of the ICT industry, although they are particularly visceral in the market for computer software. For the vast majority of people, the key software applications that are used on a daily basis will be supplied by a proprietary vendor, in all likelihood Microsoft. As of this writing, in October 2007, Microsoft’s Internet Explorer continues to command more than 80% of the Web browser market, its Office suite and related file formats prevail as the de facto standards in this area, and its Windows operating system continues to run around 90% of the world’s PCs. At the center of this dominance lies a zealously commercial business model. The source code for Microsoft products (as with all proprietary products) remains a tightly guarded secret, and licensing conditions are restrictive, permitting customers to use, but not formally own, the software, while imposing limits on the number of devices on which it can be installed.

The proprietary model has not, however, gone unchallenged. One of the growing trends in recent years has been in the use of OSS, which is based on a radically different model of production, distribution, and exchange. Released under various forms of public license, OSS can usually be obtained free of charge or at a nominal cost, the source code is made readily available, and users are permitted to copy, alter, and freely (re)distribute the software on condition that they accord others the same rights.¹ Typically, OSS is also developed in a cooperative fashion by a network of (normally unpaid) volunteers, incorporating direct feedback from users as a vital part of the process, forming a commons-based, collaborative, and participatory venture. Notable examples of this include Mozilla’s Firefox Web browser, which currently holds around a 15% and rising share of the global browser market; OpenOffice.org, a free and comprehensive office suite with more than 100 million users, and Linux (or more precisely GNU/Linux, signifying the

Linux “kernel” accompanied by software released under the GNU General Public License²), a free and open-source operating system with an estimated global user base of more than 30 million and one that, according to the market research firm IDC, will have secured a 6% share of the general desktop market by the end of 2007, making it the world’s second most popular operating system behind Windows (Hamm, 2005).

The open-source model offers a range of notable benefits over its proprietary counterpart. The first and most obvious of these is the substantial price advantage. OSS, for the most part, is completely free to obtain and update, and although its use in the business environment can still incur costs in terms of training, as well as the procurement of commercial support and maintenance, the problems of vendor lock-in are obviated because users can simply switch to different suppliers while retaining interoperability with their existing data given the use of open (rather than closed proprietary) standards. The associated expense of periodic and enforced migrations to newer and often superfluous versions of software is also removed, while permissive licensing arrangements bring economies of scale in terms of the per unit cost of installation, a particular attraction for environments requiring large-scale deployment. The cost advantages of Linux in particular are further evident in its resource requirements in comparison with Windows, given its ability to run on, and hence extend the life of, older and lower specification machines, a contrast that is even more pronounced following the release of Windows Vista. This capability delivers environmental and social, as well as economic, benefits, reducing the need for hardware upgrades and helping bridge the “digital divide” and the social exclusion that results therefrom, by lowering the cost of access to ICT (see, e.g., Meng, 2003, as well as comments made about Vista by the Green Party in Donoghue, 2007).

The benefits of OSS are also apparent in terms of its stability and security. The absence of commercial pressures in the product-release cycle, coupled with direct inputs from an actively involved user base, can allow for the more comprehensive testing of software than releases that are driven by a timetable based on the need to sustain profit margins. The open nature of the source code, too, allows developers to draw on best-practice elements from an accumulated store of community knowledge, saving them from having to “reinvent the wheel” when embarking on new projects. The transparency of the code, the openness to public review and scrutiny, and the role of user participation also facilitates a rapid fixing of any security vulnerabilities and

creates a harsher environment for malicious code to prosper, belying the claims of proprietary vendors that the closed-code model of “security through obscurity” is inherently safer, an assertion, of course, that is not easy to reconcile with the sheer volume of viruses, worms, Trojans, and the like, freely available for Windows (“Linux,” 2004; Petreley, 2004).

Yet studies of OSS have also been limited. Generally restricted to technical discussions in the pages of specialist outlets or treated academically as an economic issue (see, e.g., Dalle, David, Ghosh, & Steinmueller, 2004; Dedrick & West, 2003; Lerner & Tirole, 2004), analyses of the broader political economy of open-source use, as with the case of ICT more broadly, have been few and far between. In the case of the United Kingdom, they have been nonexistent.

Trials and Tribulations

Government policy on the use of ICT in Britain is characterized by a contrary mix of conflicting pressures. On one hand, New Labour’s desire to use ICT as a central tool of modernization and renewal, coupled with the multilayered nature of the British state, has created pressures and opportunities for advancing the use of OSS in both public and private spheres. On the other hand, the government’s proclivity for an arms-length political and economic strategy, predicated on the pursuit of neoliberal free markets and limited state regulation, militates against any direct state measures to even out the imbalance in the ICT marketplace toward proprietary goods. The overall result has been to produce a policy halfway house, whereby the government has reluctantly followed, rather than actively led, the growing trend toward OSS.

For New Labour, securing a leading position in the knowledge-based economy has been presented as a prerequisite for ensuring Britain’s future prosperity in an increasingly interdependent, competitive, and globalized world. To this end, in 1999, Tony Blair announced the launch of a formal strategy for e-government, including the appointment of an “e-envoy” and a minister for e-commerce, the stated aims of which were to put all government departments online by 2008 and to promote the economic benefits of ICT to the private sector (*Modernising Government*, 1999). The following year, the government created the Office of Government Commerce (OGC) to devise and oversee ICT procurement strategies and policies. The flagship of the e-government drive, however, the Government Gateway Web portal designed to facilitate connectivity between state and citizens, soon ran

into difficulties when the original contractor, Compaq, pulled out for undisclosed reasons. Anxious to avoid an embarrassing failure, the Cabinet Office turned to Microsoft, which duly established a portal that users of non-Microsoft products were unable to access. Nevertheless, the far from implicit message was that the company enjoyed the endorsement of the New Labour establishment, an impression not exactly dispelled by the e-Envoy himself, Andrew Pinder, who appeared at a Microsoft promotional event to effuse that the company had delivered “a world-class enterprise solution” (Richardson, 2001).

Unsurprisingly, given the “arms-length” nature of New Labour’s governing strategy, measures to curb Microsoft’s monopoly position have been woefully inadequate. The existence of a monopoly is in itself not illegal under U.K. competition law, and potential cases of actual market abuse have been ignored. Complaints to the Department of Trade and Industry, perhaps the most strident of which came in 2001 from the Infrastructure Forum (the trade body for information technology [IT] managers), who protested that Microsoft’s pricing policy for Windows XP was an abuse of its market dominance, have fallen on deaf ears (Evers, 2001). More recent protests about the pricing arrangements for Windows Vista (notably more expensive in the United Kingdom than in the United States), which included a public petition on the Number 10 Downing Street Web site, have also come to naught. Moreover, the Office of Fair Trading, whose stated role is “to promote the interests of consumers . . . through preventing anti-competitive behaviour and promoting competition in circumstances where it is not yet effective” (Office of Telecommunications & Office of Fair Trading, 2000), have also proved to be ineffectual, mounting no investigation into Microsoft’s monopoly position or its effects on the ICT marketplace. In a perfect illustration of the lack of governmental concern about the software behemoth, in 2005, Bill Gates, the head of a company that had by now been convicted of monopoly practices in the United States and was currently being investigated by the European Commission for similar behavior in the European Union, was awarded an honorary knighthood for his “outstanding contribution to enterprise” (“Outrage at Gates’ Knighthood,” 2005).

Indeed, the strongest regulatory pressures on this issue have emanated from Europe, where hopes for a weakening of Microsoft’s monopoly have rested on the legal action brought by the European Commission,

which in September 2007 ruled that the company had abused its dominant market position by failing to provide its competitors with technical specifications required to establish interoperability with its software (Kawamoto, 2007). The actions of the European Union have similarly been one of the main drivers for the promotion of OSS in the U.K. public sector. In December 1999, the European Commission launched an e-Europe initiative designed to promote the benefits of ICT throughout the European Union. Importantly, the initiative also required the development of a common interoperability framework to support European e-government and sought to promote the use of OSS as a means to this end (European Commission, 2000). Prompted in part by a desire to be seen embracing the cutting edge of modernity and in part by its desire to remain in step with the rest of Europe, New Labour’s response was initially enthusiastic, establishing the Government Interoperability Framework, with open standards designed to facilitate the provision of e-services and joined-up government and bringing forward its target date for putting all government services online from 2008 to 2005 (Performance and Innovation Unit, 2000). In October the following year, a government-commissioned study lent further support to OSS, reporting that there was as yet “no sign” that it offered “a viable alternative to Microsoft Windows” on the desktop but arguing that this position should be reviewed by the end of 2002, given its potential to deliver “significant benefits.” The growing trend toward the use of OSS, the study’s authors observed, was “the start of a fundamental change in the software infrastructure marketplace” and was “not a hype bubble that will burst” (Peeling & Satchell, 2001).

Two months later, the Office of the e-Envoy issued a consultation paper that drew heavily on this report, announcing that the government would consider the use of OSS alongside proprietary products in IT procurements, that all future IT developments would only use products for interoperability that supported open standards, and that the government would “seek to avoid lock-in to proprietary IT products and services.” Although the working assumption was not toward the use of OSS by default, with decisions to be made on value-for-money and case-by-case bases, advocates of open source were nonetheless hopeful. It was now necessary, the government maintained, “to have a wider, more embracing policy on the use of OSS” (Office of the e-Envoy, 2001). In July 2002, these aims were reiterated in the government’s first

formal version of its open-source policy (Office of Government Commerce, 2002).

Yet practical movements in this direction remained lacking until October 2003, when the OGC announced that a series of nine “proof-of-concept” trials of OSS would take place from the end of the year. The participants in the trials were the Office of the Deputy Prime Minister and the Office of the e-Envoy (the latter of which became the e-Government Unit in April 2004); the Department for Work and Pensions; the Department for Culture, Media and Sport; Orkney Council; Newham Borough Council; Powys County Council; Central Scotland Police; and the Office of Water Services (Lettice, 2003). In December, the OGC also announced that the National Health Service (NHS), the largest employer in Europe, was also considering the adoption of a Linux-based system following a dispute with Microsoft over rising licensing costs (Islam, 2003).

But hopes that the trials would deliver a successful outcome in favor of OSS were dealt a substantial blow in January 2004, when Newham Borough Council announced that it was withdrawing from the trials, having struck a new deal with Microsoft. The decision was controversial, to say the least. Although the initial assessment conducted for Newham by the IT consultancy firm Netproject had concluded that OSS was a viable option, a second consultancy firm, Capgemini (hired by Microsoft to provide a second opinion), recommended that the council adopt a Windows-based solution, a conclusion that the council subsequently accepted. Suggestions by the president of Netproject, Eddie Bleasdale, that Newham had merely used their original report to gain leverage over Microsoft and that the council’s flirtation with Linux had been used “to beat [them] over the head to get the prices down” (Kuchinskas, 2004) were further fueled by the refusal of both parties to comment on the terms of their deal and by comments from Newham’s head of IT himself, Richard Steel, who admitted that any observer would have to be “insane” to think that the council’s interest in Linux had not convinced Microsoft to lower its prices (McCue, 2004; Wearden, 2004).

Viable and Credible

Despite these setbacks, the overall results of the trials, though mixed, proved to be generally positive. In October 2004, a report from the OGC (the last formal statement on the government’s OSS policy to date) summed up the experience by concluding that key obstacles to the use of free and open-source software

on the desktop remained. Among these, a lack of complex functionality in business applications, a prevailing ignorance of OSS throughout the public sector, and fears about a lack of professional support were highlighted as among the most prominent. Nevertheless, the report also drew attention to the various advantages of OSS, emphasizing the “significant” financial savings, the security benefits, and the avoidance of proprietary lock-in, and concluded that in general, OSS was now “a viable and credible alternative to proprietary software” for the public sector (Office of Government Commerce, 2004).

These findings, however, failed to provide a platform for any large-scale deployment. Indeed, the following month, hopes were dented further by an announcement that the NHS, like Newham Borough Council, had opted to stick with Microsoft. Despite this setback, a series of important developments followed. In April 2005, the government announced the establishment of the publicly funded Open Source Academy, bringing together a range of local authorities and IT organizations with the remit of promoting the public sector use of OSS (“UK Government,” 2005), a move that has since been followed by the launch, in February 2007, of the National Open Centre, a policy think tank to promote open source strategies (Kirk, 2007). Accompanying this, in November 2005, the government unveiled its latest e-strategy, designed to facilitate the delivery of local authority services through digital means, to promote citizen-centric government, and to improve social access to ICT (Cabinet Office, 2005). The government’s target for the online delivery of e-services was also broadly achieved, although this was largely in form rather than content. Although almost all government departments, agencies, and local governments were providing Web sites by the end of 2005, the majority functioned as simple providers of information rather than interactive services. Fewer than a quarter (22%) of Internet users opted to take advantage of such sites to obtain information (although this rose to a respectable 51% for businesses), and fewer than 5% (38% of businesses) used them as channels for submitting information to official bodies (European Commission, 2005). The comparative performance of the e-government project also left something to be desired, as the United Kingdom now fell to tenth in the international e-government league table, two places lower than in 2003 and four places down on its position prior to this (“UK Government,” 2005).

With central government reluctant to actively press the adoption of OSS, further movement in this direction came, once again, from government agencies beyond the center. This time, the key driver proved to be the subnational (rather than the supranational) layer of the British state. Capitalizing, like Newham Borough Council, on the relative degree of autonomy afforded to local authorities in IT projects, the most notable instance of this was a decision by Birmingham City Council to embark on a 12-month trial of OSS from the summer of 2005. As with the previous trials, however, this too proved to be fraught with difficulties, and by November, the project seemed to be on the verge of collapse (Thurston, 2006a). An assessment report prepared for the council noted that the trial had encountered incompatibility issues with existing software and that it had overshot its original time scale because of the range and complexity of the possible open-source configurations. The report also highlighted the fact that the trial had been far more costly than expected (an original grant of just under £500,000, falling short by around £60,000) and calculated that an upgrade to Windows XP would have saved around £130,000 (iMPOWER, 2006).

On the other hand, it was also noted that such a decision would have locked the council “into a particular development path, largely determined by Microsoft,” and that a future upgrade to Vista necessitated by the cessation of support for XP would have added up to an extra £150,000 to the cost of continuing to use Windows (iMPOWER, 2006). The view of the council, too, was that the project had been far from unsuccessful, with its head of IT, Glyn Evans, bullishly explaining that the council planned to “significantly increase” its use of OSS and that this would bring long-term savings once the initial costs had been recouped (Broersma, 2006). In March 2007, the council announced that it was now “rolling out a revised model” of open source technologies across a range of community projects (Thurston, 2007a).

Although the case of the Birmingham City Council offers the largest single illustration of an OSS trial to date, the U.K. public sector contains numerous other examples of smaller scale adoptions. In December 2005, for instance, the NHS made an unusual addition to its deal with Microsoft by announcing a £22 million contract with Novell for the use of OSS in its server and security operations, resulting in estimated savings of £75 million (McCue, 2005); in February 2006, Bristol City Council embarked on a high-profile switch to StarOffice, a commercial version of OpenOffice.org,

saving an estimated 60% (£660,000) on its software license costs (Bacon, 2006); and 3 months later, a survey of local authorities by the Society of IT Management showed that three fifths were now expecting to increase their use of free and open-source software, compared with just 1% who intended a reduction (Mathieson, 2005). More recently still, the OSS campaign has also attracted the attention of a resurgent Conservative party, with the shadow chancellor, George Osborne (2007), announcing in March 2007 that the Conservatives would support its greater use in government, claiming that this could cut Whitehall’s IT bill by £600 million a year.

BECTA Basics

One key area of the public sector in which the use of OSS has attracted growing attention, and one that is central to New Labour’s stated plans for national renewal, is the education system. At the level of higher and further education, the use of free and open-source software is relatively buoyant. According to data from the most recent survey by OSS Watch, hosted at the University of Oxford, more than two thirds (69%) of British universities report using OSS on their server systems, and more than three quarters (77%) have indicated that they would consider its adoption in their IT procurement strategies. The use of OSS on the desktop was also notable, with OpenOffice.org being used on 23% of desktops, the Firefox Web browser on 68%, and Linux securing a share of 17%, although this remains some way behind the shares for the Apple Mac and Windows (OSS Watch, 2006).

At the educational layer below this, however, the situation is markedly different. ICT procurement here is headed by the British Educational Communications and Technology Agency (BECTA), which provides an advisory framework for schools and colleges that has been strongly criticized for its inherent bias toward closed and proprietary software. In November 2006, a group of 19 members of Parliament headed by the Liberal Democrat John Pugh slammed the framework for being “outdated” and for “effectively denying schools the option” of using OSS (Thurston, 2006b). On this matter, BECTA also stands accused of ignoring its own research, namely, a May 2005 report indicating that the use of OSS could produce total cost savings of 44% per PC for primary schools, and 24% for secondary schools, compared with standard commercial software configurations (British Educational Communications and Technology Agency, 2005).

Yet the benefits of using OSS in the education sector are more than just financial. The collaborative and participatory approach of the open-source philosophy is well suited to a more cooperative and community-based approach to teaching and learning and for opening the route to a greater diversity of skills and modes of inquiry than those acquired through the rote use of generic proprietary products (Lynch, 2006b). The dangers of this have been well highlighted by the president of the British Computer Society, Professor Nigel Shadbolt, who warned that a lack of sufficient IT skills risks the United Kingdom's losing "its pre-eminent position as a knowledge-based economy," with "consequences across our entire economic base" (P. Ghosh, 2006). Or, as John Pugh put it, "I fear that children in our schools can do PowerPoint slides and use Word, and all the other things that children in other countries can do. But they won't have the understanding of the fundamentals of computing" (Bennett, 2007).

Unsurprisingly, BECTA has "strongly rejected" criticism of its approach, insisting that schools and colleges are "not mandated" to purchase from within its procurement framework, and that they actively support "the principles of OSS" (Lynch, 2006a). But as Mark Taylor, president of the Open Source Consortium, stated, the situation on the ground was more complex. Although institutions were "technically free to choose," he complained, "it would take a very brave school to go outside the Becta framework because there is a lot of pressure to go with it" (Aslett, 2006b). Concerns have also been raised about BECTA's close relationship with Microsoft, with the two organizations in January 2007 signing a 12-month extension to an already existing 3-year "memorandum of understanding" that reduced the cost of Microsoft's educational licenses by 20%, cutting them to 37% of the standard price. Yet signs are also noticeable that perhaps this is a relationship with which BECTA may not be entirely comfortable. Also in January, BECTA issued a report warning schools against the purchase of Windows Vista for the first 12 months of its release, stating that the financial, technical, and organizational issues involved made this a "high risk strategy" (Beer, 2007). In October, BECTA took the more sensational step of reporting Microsoft to the Office of Fair Trading, claiming, among other things, that it had failed to resolve "fundamental concerns" about academic licensing, namely, that schools were required to have licenses for each individual PC, regardless of whether they were actually running Microsoft products ("Schools Warned Off Microsoft

Deal," 2007). Whether such actions will amount to any substantial change in the use of OSS in the educational sector, however, remains to be seen. Indeed, the difficulties faced by schools and colleges in adopting open source are well illustrated by the pro-proprietary views of the Association of School and College Leaders itself. Neatly inverting the predominance of proprietary software into a circular justification for its continued use, the president of the association, Malcolm Trobe, explained that this is to be preferred, because "nearly every household has a PC with Microsoft Office installed, and many students have grown up using it" (Vassou, 2006).

A Private Affair

Although the potential benefits of using OSS in the public sector are substantial, the advantages for Britain's private sector are arguably even greater. Given the increasing pressures of competing within a globalized world economy, the need to pay ever closer attention to costs, coupled with the productivity advantages offered by ICT, the potential gains to be made from OSS in terms of cost and flexibility are considerable. As with its deployment in the public sector, however, private-sector adoption of open source also faces high barriers. Fears about a lack of specialist applications and compatibility with existing systems; the scale of reorientation and retraining needed to surmount the familiarity with, and the sunk costs invested in, existing proprietary setups; and a perceived lack of commercial support in key areas all feature highly in the list of corporate concerns (Dedrick & West, 2003).

On the other hand, Microsoft does not appear to command huge support among British businesses. According to a poll of chief information officers conducted toward the end of 2006, fewer than a fifth (19%) had plans in place to adopt Windows Vista during the first 12 months of its release, more than two fifths (43%) were planning to wait as long as necessary for all the bugs to be ironed out, and almost a quarter (24%) claimed that they were not planning to upgrade until 2009, "if at all." A total of 15% claimed that they would never upgrade to Vista at all (Lomas, 2006). In addition, evidence suggests that firms are also now starting to regard Linux as a serious alternative to Windows, tempted by the potential cost savings, improved security, and avoidance of vendor lock-in. Although comprehensive and up-to-date statistics on the use of OSS in the private sector remain elusive

given the absence of published corporate policies on the issue, a 2003 survey of 100 U.K. senior managers in charge of software procurement found that a quarter were considering using Linux for mission-critical applications and that 22% were considering it for desktop use (Broersma, 2003). Another survey of small and medium-sized businesses in the United Kingdom conducted at around the same time found that 26% of firms were already using Linux, that 15% were planning to do so in the future, that 26% were undecided on the issue, and that more than half (55%) considered it to be sufficiently robust for mission-critical work ("Linux Share," 2003). Given the lack of any credible reason to believe that this situation may have since been reversed—and, indeed, given the continual improvements in OSS combined with the high cost of Vista and the impending withdrawal of support for XP, it is perhaps more than likely that the opposite will have been the case—it seems safe to assume that the use of OSS among U.K. businesses remains at least as widespread as it was several years ago. Evidence supporting this view is provided by research conducted in 2005 by Atos Consulting and the National Computing Centre, which found that almost three quarters (73%) of U.K. firms were expecting open source to develop within their organizations' IT strategies over the next 5 years (Aslett, 2006a).

But such optimistic findings cannot disguise the unavoidable fact that the public- and private-sector use of OSS in the United Kingdom continues to lag considerably behind its use in other countries. According to the largest and most comprehensive study of this issue, conducted by the Maastricht Economic Research Institute on Innovation and Technology (R. A. Ghosh, 2006), fewer than a third (32%) of all local government users in the United Kingdom are currently working with OSS, a level well below the European average of 69.4%. The use of OSS by U.K. businesses also falls far short of European levels, with four fifths of business services in the European Union using OSS and 73% of retail and wholesale ventures and 72% of manufacturing firms doing so (also see iMPower, 2006). As Mike Banahan, chief technology officer for OpenForum Europe, put it, in comparison with its continental counterparts, Britain is most definitely a "third-world country" in its use of OSS (Broersma, 2003).

It is likely that this trend is also reflected in the domestic use of free and open-source software. Although this too is intrinsically difficult to assess, given its freely available and redistributable nature, evidence nonetheless indicates that, as with its use in the public and private sectors, the scale of domestic

use in Britain lags behind that of many other countries. The U.K. market share for the Firefox Web browser, one of the most (if not the most) popular open-source applications, for instance, amounts to just a third of the global average, at around 5%, which, given that Firefox comes installed as the default Web browser in virtually all Linux desktop distributions, would indicate that the overall share of the domestic market taken by OSS is relatively small.

A key reason for this, in addition to the usual barriers concerning the sheer dominance and familiarity of Windows and applications such as Microsoft Office, is, once again, the unwillingness of the government to take appropriate steps to reduce the near hegemonic dominance wielded by Microsoft. A particularly noteworthy point here is the fact that consumers in the United Kingdom are almost always forced to purchase Windows, regardless of their desire to do so, whenever they buy a PC. Citing the costs of providing a choice in this area, most of the top PC manufacturers in the United Kingdom (such as Acer, Hewlett-Packard, Toshiba, and Lenovo) do not provide the option to purchase PCs preinstalled with alternative operating systems or without operating systems altogether (Thurston, 2007b). Add to this the fact that the vast majority of consumers are, in any event, unaware that a choice in this area even exists, and the reality that most organizations providing OSS lack the means to devote substantial amounts of revenue on advertising a product that is essentially free, and it is not hard to see how this profound market imbalance continues to prevail.

Conclusion

The growing centrality of ICT to life in the 21st century makes questions about the social ownership and control of this technology increasingly salient. In this respect, the growing use of free and open-source software poses a direct challenge to the dominant proprietary business model, offering a more participatory and empowering mode of ICT use. The pattern of OSS deployment in Britain has been determined by the interaction of several factors: the arms-length statecraft of the New Labour government, combined with its desire to use OSS as a tool of modernization and renewal; the private interests of both commercial and domestic actors; and the multilayered institutional structure of the British state. This framework has produced contrary pressures that have both facilitated and inhibited the use of OSS. Overall, although pressures from Europe and the subnational layer of

the state have opened up avenues for expansion, a lack of information and the unwillingness of central government to take firm measures to even out market bias toward proprietary vendors has meant that this growth has remained more limited than in other countries. Despite the increasing international popularity of OSS, and despite the wide range of benefits that it provides, the lack of government activism remains a key obstacle to overcome.

Notes

1. Disagreements persist over whether this approach is best defined as “free” and/or “open-source” software, although this debate is not elaborated on here.

2. GNU (a recursive acronym meaning “GNU’s Not Unix”) is a project of the Free Software Foundation to develop and maintain a completely free and open-source operating system.

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