

Energy Agency Gains From Open-Source Collaboration Project

France's Atomic Energy Commission chose an open-source application to improve its team-working and content management. Our case study offers lessons for those struggling to justify investment in similar projects.

Core Topic

Knowledge & Content Mgmt., Collaboration
& E-Learning: Content, Media and
Publishing

Key Issue

Which vendors will provide critical support
in content, media or document
management?

Several open-source Web content management and collaboration products exist, but none are as mature or popular as, for example, Linux or Apache (see "Is Open-Source Content Management a Viable Option?" and "Hype Cycle for Open-Source Technologies, 2003"). But, despite their niche status, open-source products may be an apt solution for some organizations and some classes of problems. This case study shows how to identify the right ingredients for an appropriate choice and a successful deployment.

Problem: The French Atomic Energy Commission (CEA) is a large R&D and innovation organization with activities in nuclear energy, defense, IT, communications and healthcare. It has an annual budget of about 2.7 billion euros and 15,000 staff in nine research centers.

Communication and collaboration within and across different R&D groups or other individuals was ad hoc and largely person-to-person. There was not enough opportunity for teams to share information or documents easily, to track their progress through a specific project, or to create a permanent record of the design decisions that led to a particular solution. Demand for these services came directly from project managers and frustrated users, who found it difficult to deal with daily communication and documentation needs. Although not quantified, there was anecdotal evidence that the introduction of content management and collaboration support would remove delays and inefficiencies, and improve quality and visibility.

Objective: CEA's main objective was to support the collaborative activities of project team members. This was to be achieved through generic, information-sharing services like document authoring and sharing, version tracking, approval workflows, mailing list management, discussion forums, issue tracking, and

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task allocation and tracking. These would be provided as shared services, available on request.

Approach: CEA evaluated several products including Documentum iTeam, Open Text Livelink, Hummingbird, Hyperwave, PTC ProjectLink, MS SharePoint, and One2team Pro. Other open-source products were considered including PHP-based ones such as Midgard and Typo3, and Java-based products like OpenCms and Red Hat's CMS. It piloted five of these, mainly on the basis of cost and usability. Fitness for purpose and value for money principles guided the selection process. Technological adequacy, quality, usability, standards support, third-party support, and compatibility with existing applications and infrastructure were evaluated, as well as overall pricing and licensing issues.

CEA based its case for selecting the open-source Zope CPS platform on:

Fitness for purpose

Zope is primarily a Python-based Web application server (Python is an open-source programming language). As well as the core application server, there are many separate content management, portal, collaboration, e-commerce, and other modules that are usually developed and maintained separately. Zope, and in particular CPS the open-source collaboration module were developed by French company Nuxeo (www.nuxeo.fr). Zope with CPS passed CEA's fitness for purpose tests and scored highly in all but one of the technical selection criteria. But there were concerns over current and future compatibility with the infrastructure and skills base.

CEA has a general commitment to the Java platform for application development and runtime environments. Interoperability between other Java-based solutions and Zope is possible, but the Zope platform is based on a different programming language, development tools and runtime environment. So, inevitably, there would be fewer opportunities to reuse skills and tools within CEA, which might lead to higher costs for training, development and support.

Cofax, OpenCms and Red Hat's CCM were three other Java-based, open-source systems shortlisted, but they were inappropriate. This was mainly because of the amount of work required to adapt them for CEA's needs.

Commercial support

Other proprietary vendors like Intraspect, Hyperwave and Opentext sell similar products (see "Magic Quadrant: Team Collaboration Support"). A problem with many of these vendors is the high volatility associated with this market. And some of the smaller vendors are often not well represented in some geographies.

Zope is supported in France by Nuxeo, which also developed CEA's chosen open-source collaboration module. Many other, usually small, organizations such as Ingeniweb (www.ingeniweb.com) and Smile (www.smile.fr) also support Zope, as well as some major services providers like Cap Gemini Ernst & Young.

Real options: Shifting costs from capital to operational budgets

Upfront, per-user license fees and uncertainty in quantifying return on investment are often enough to stop an IT investment. With an open-source software solution, it may be possible to change the size and composition of the initial investment by exchanging software licenses with development costs.

This shift from a capital investment to an ongoing operational investment was critical in overcoming the usual difficulties in financing cross-departmental or cross-divisional IT infrastructure projects — which was the case with CEA. The ideal approach is to start with a recognition of the business impact of an IT investment, which can then be used to determine the appropriate level, as well as the funding source. This is often difficult to do, but avoiding it altogether can lead to IT investments "in search of a problem."

CEA is pursuing a practical compromise where this initial deployment aims to proactively satisfy some user needs. At the same time, it aims to conduct a large-scale pilot for assessing the business value of any content management and collaboration infrastructure that can be used as input in future investment decisions. Subsequent development, as well as costs beyond those for the basic infrastructure, will be covered by departments or business units that request specific services.

Another result of this shift is that it may be easier to stop an open-source project that is failing to achieve its goals as the lower initial cost will be less of an embarrassment to the project champion. Traditional projects with high initial capital investment often create a "black hole" around them that keeps absorbing extra and, often unplanned, incremental investment in desperate

attempts to save a project from failure. The higher the investment, the harder it is to pull out. The open-source option tends to spread the cost over the lifetime of the project, which, in principle, makes it easier to stop an unsuccessful deployment. In this case, the investment profile changed from an upfront capital investment into an ongoing developmental and operational one.

The open-source option may be the only one for projects where the outcome is very uncertain. In many respects, this approach follows closely the best practice guidelines of the "real options" investment theory; where an organization is allowed to benefit from an IT investment, while controlling the risks from failure. This is achieved by making small initial investments (taking an option) that may either be followed up with larger investments (exercising the options) if the initial investment proves worthwhile, or is abandoned without significant loss.

But caution must be exercised — even where an open-source deployment needs no significant customization and has lower initial costs than a comparable proprietary product.

One possibility is that momentum may be created behind a project that has unclear business goals, but gets the go-ahead because of a low initial cost barrier and because the approval procedures for operational expenditure are far more relaxed than those for capital expenditure. Worse, an open-source project that fails to meet its objectives may continue to mushroom because ongoing development and support costs are not accounted for explicitly.

Users should recognize that this shift from capital to operational costs allows more options to be kept open, but they must also guard against ill-thought-out deployments and hidden costs.

Familiarity with open-source software

There was already familiarity with other open-source products like Linux, Apache, Java and PHP platforms within different research units and scientific libraries. But this was the first time that corporate infrastructure was based on open-source technology.

Results: CEA's IT department can provide basic collaboration services that are available on demand for CEA needs. From July 2003, these services were made available to about 1,000 users accessing the system through 30 different collaboration "spaces." One of the most positive aspects of the deployment is that new spaces can be set up within days and with minimal incremental costs.

This contrasts sharply with the way in which different groups were setting up various intranets and Web sites that, apart from quality issues, were proving expensive and difficult to maintain. The CPS infrastructure has introduced extra collaboration capabilities, while also allowing other publishing-focused intranets to be consolidated.

Initial estimates show sizable savings with this approach. About 100,000 euros (approximately \$116,000) was invested to adapt the software to CEA's needs. There was an extra 80,000 euros for two full-time (or four part-time) administration and support people, and for extra hardware and training. Software costs of about 100 euros per user are expected to drop substantially as users increase.

CEA rightly recognizes that, although it may be costly to develop the solution on an open-source platform, significant return can be expected if that solution can be deployed to many users. The potential of several thousand users, plus additional external users, would provide considerable scope for spreading any initial development costs. Open-source deployment "sweetspots" arise most naturally in situations where deployment can be repeated; either in terms of servers like Web or file server clusters, or, as in this case, across many users.

In contrast to the software costs of 100 euros per user for this initial deployment, software licensing costs for the proprietary software solutions that CEA piloted ranged from 300 to 1,000 euros per user. This excluded implementation costs and database licenses. Estimates were based on deployment to 1,000 users, without taking into account volume discounts. CEA expects ongoing costs to be confined mainly to the salaries of administrators and perhaps occasional fees to Nuxeo for incidental support or incremental enhancements.

CEA has made an appropriate choice — given its requirements. But the question of whether this choice will remain an appropriate one in the longer term remains unanswered. It is unclear whether the open-source community around Zope and CPS will continue to develop the product in a way that will help CEA provide for future requirements. The formation of a user group with other large and visible institutions that are evaluating this platform will be an important indication of wider marketplace adoption, and an opportunity to influence future development.

One remaining problem is the discontinuity between CEA's general commitment to Java and the niche status of Zope. By itself, it may just be reason enough for a future rethink. CEA must also remain vigilant about rising indirect costs. The need to extend the product in different ways may result in extra costs for

application development. Also, support and maintenance costs may rise to provide for additional quality assurance testing and debugging, which would normally be carried out by a product vendor.

CEA rightly expects that proprietary collaboration products will need to be introduced to provide a richer and more relevant collaboration experience for specific groups such as collaborative engineering product design. But it may not be possible to justify the deployment of such a platform for all users.

Critical Success Factors/Lessons Learned:

- Open-source software products may provide a low-cost basis for a content management and collaboration solution.
- The shift from an upfront capital to an ongoing operational investment leaves more options open. But adopters of open-source solutions must resist pressure to initiate or continue investments in open-source platforms that have lost (or have never had) a good business case.
- Open-source investments are more naturally aligned with "real options" investment strategies.
- Open-source deployment is more suitable for projects where the outcome is very uncertain.
- Indirect investments in ongoing, open-source projects must be fully accounted for.
- Successful open-source solutions are more likely to be found in "repeatable" deployments, which make it easier to justify initial and ongoing costs — in this case across a large user population.

Bottom Line: The French Atomic Energy Commission's evaluation methodology ensured that its open-source team collaboration choice was adequate for its basic requirements. Tactically, CEA has already made substantial savings. The many potential users have made it easier to justify a modest initial investment for adapting an open-source product to suit their needs. They have also made it easier to share some responsibility for ongoing support and maintenance with a small local vendor. Strategically, users like CEA must remain vigilant about continuing to meet their requirements in this way. They must account for all indirect costs and be prepared to freeze or abandon their choice if their assumptions about needs and costs change.