Innovation Reports

COSI
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Co-operating with open source requires an open mind

Drawing on the resources of open-source communities to complement in-house software development is a useful way to cut costs and save time, while also achieving higher quality. The COSI project conducted a series of case studies to show how European companies can benefit by abandoning prejudices and taking up this approach. Successful application of this approach should enable Europe to overcome US dominance in global markets.

For most products, only a small proportion of the embedded software represents a real differentiating element. The remainder is commodity ware, which does not justify heavy investment in proprietary software development. Typical software products begin at the leading edge of technology, but progressively revert to commodity-like status, often performing functions shared by different hardware platforms.

Truly differentiating components remain important, but often account for less than 10% of a total software package. Efficient development focuses in-house effort and resources on these, while acquiring commodity elements through lower cost routes – such as by distributed working or purchasing commercial off-the-shelf (COTS) offerings.

OFFERING NEW OPTIONS

Open-source software (OSS) provides new options to solve the problem. COSI examined the approaches, business models, architectures, processes and priorities appropriate to control and manage ownership in such scenarios. The project studied commoditisation and its implications for competitiveness with both large and small company partners from the European software-intensive sector, complemented by research institutes.

Because much software is no longer product-specific, various trends towards networked collaboration are emerging: through subcontracting and integration; in coalitions – for example, around open platforms; and, to a lesser extent, by direct co-operation with OSS communities.

CASE STUDIES SHOW THE WAY

A series of case studies carried out by the various COSI partners together or individually illustrated lessons learned from entering into open sharing arrangements. For example:

- COSI partners Philips Medical Systems and Agfa Healthcare, as early protagonists of the Digital Imaging and Communications in Medicine (DICOM) standard for hardware-independent sharing of diagnostic images used in virtually all hospitals worldwide, developed an interoperability validation toolkit known as DVTk. This is used for testing, validating and diagnosing communications protocols and scenarios in medical environments. Launched as freeware, DVTk initially provided its authors with a commercial advantage. But, as more competitors adopted the standard, it became increasingly commoditised. The originators therefore released the source code as OSS, and motivated the participation

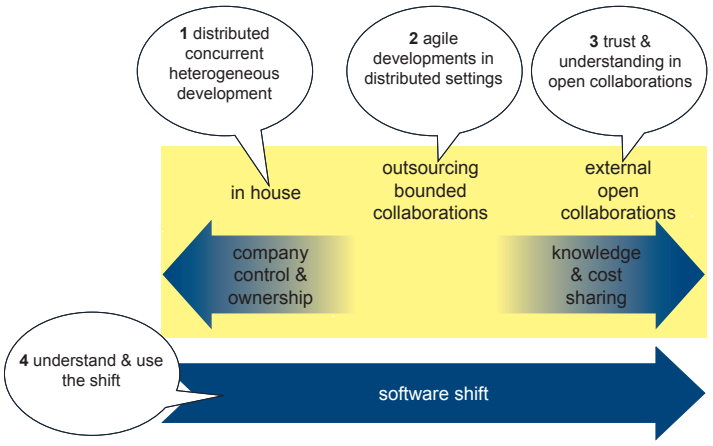

Figure 1 – Efficient and effective development

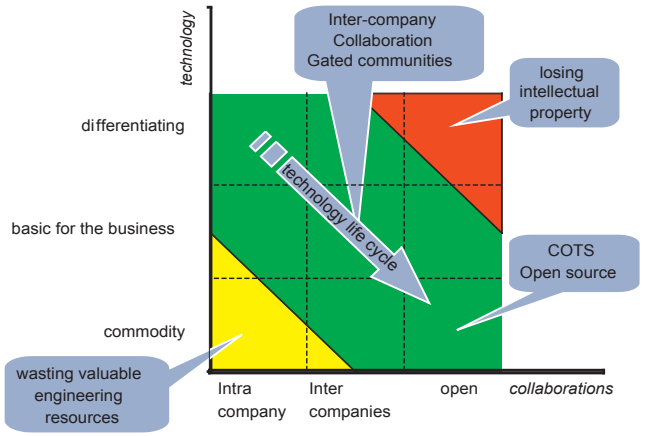

Figure 2 – The four COSI goals in heterogeneous collaborations

of third parties by hosting community events. Development has since continued, sustaining product viability and extending functionality into new areas.

- Nokia Siemens Networks (NSN) uses Linux and open source, both previously considered disruptive technologies by the telecommunications industry, in the development of mobile and fixed networks. In 2002, Nokia joined forces with other major players to define carrier-grade Linux (CGL) as an open-architecture alternative to proprietary platforms in the Internet Protocol (IP) environment. NSN created its performance Network Database Benchmark tool that was first distributed to database vendors under non-disclosure agreements and later made open source. When this proved successful, NSN produced an application-specific OSS macro benchmark – the Control-Plane (C-plane) Benchmark – for monitoring communications to establish connections and ensure correct payload routing and logging.

People in many companies continue to resist the idea of such openness, fearing that it will lead to the loss of proprietary know-how and competitive edge. In reality, the valuable intellectual property does not usually lie in the software itself, but rather in the minds of the people that make it.

Norwegian COSI partner Keymind Computing, for example, produces software for surveillance applications. This is available for others to use, but Keymind itself has invested in acquiring in-depth expertise that makes it the preferred installer. So the company continues to gain benefit in the marketplace.

TOE IN THE WATER

For those not yet ready to take the plunge, 'inner-source' development offers an intermediate step towards full integration of OSS. Further COSI case studies presented different inner-source models, in which internal teams co-operated using open-source processes and tools within a restricted ecosystem.

This approach breaks down traditional barriers whereby people in different departments of a company often had only partial access to the information about a particular development project. With inner source, they can see, and contribute to the whole picture. This implies distributed ownership and control of code, but exploits existing organisational mechanisms for road mapping, prioritisation and conflict resolution. It engenders much greater engagement and trust, which has a positive impact on the quality of the end result.

Mutual trust is certainly vital when sharing with external partners, whether or not competition is involved. Big companies need to determine where to draw the boundaries to open source, and establish the level of investment to be committed.

BROAD VIEW NEEDED

While most potential collaborators focus on technical infrastructure, key social aspects must also be addressed, such as attracting contributors and obtaining the right contributions. Co-operation provides access to a pool of developers with talents that might not otherwise be available. Furthermore, it offers a safeguard against third-party vendor lock-in that can occur with COTS, and opens the door to use of other related software.

For new or smaller enterprises, involvement enables them to be part of large, complex development projects and helps them build new business opportunities. Academic institutions can contribute more knowledge content and innovation – vital to Europe's global competitiveness.

OPPORTUNITY FOR EUROPE

So far, the take-up of these ideas has been limited, but the trend is likely to accelerate within a few years. It is only a small step from inner source and collaboration with other trusted companies to a full exchange with the open-source communities.

No single business – or even open-source initiative – can effectively develop OSS alone. Both must therefore learn how to manage the emerging forms of collaboration. As new patterns evolve, commercial enterprises must explore the available options and find solutions suited to their own particular business models.

The volume of OSS will certainly grow; it is in industry's economic interest to incorporate its benefits into their products. Europe currently leads the way in this type of collaboration. Maintaining and strengthening our position is one way to help combat the dominance of North American competitors in the global marketplace.