



Open Source
vs.
Open Standards

EQUINITI
TOPLEVEL

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The difference & why you should care

This paper is aimed at giving public sector management teams an overview of one of the hot topics in the digital world; whether to build our new digital services using bespoke Open Source software or open standards-based Commercial Off-The-Shelf (COTS) software platforms. For those of you who are not IT or digital gurus, we will try to address a few fundamental issues along the way:

- Open Source and open standards; what is the difference and where does COTS fit in?
- Why are these terms important in the context of the public sector?
- Our thoughts on the strengths and weaknesses of both approaches depending on your type of organisation and the resources you have to hand.
- The best of both worlds – our views on utilising the best elements of these approaches.

What do the terms actually mean?



OPEN SOURCE

Open Source software is computer software whose source code is freely available for modification or enhancement by anyone. The source code is the part of software that programmers and developers can manipulate to change how a piece of software – a program or application – works. Programmers who have access to a computer program’s source code can change that program by adding features to it or fixing parts that don’t deliver what they, or their, organisation require. The point of Open Source software is that anyone should be able to modify the source code to suit his or her needs and that no one should prevent others from doing the same.

Open Source software licences:

- Are free and come with third party patents or other intellectual property.
- Allow public sector organisations (and others) to make modifications to source code and incorporate those changes into their own projects.
- Some Open Source licences mandate that anyone who uses the code must share the new program under an Open Source licence.

Open Source software offers organisations the opportunity to write and support their own bespoke software, and freely share it with other organisations without having to pay a third party licence.



OPEN STANDARDS

Open standards are IT and digital industry-recognised principles concerned with how to develop and agree standards and specifications for developers and vendors, to ensure that interoperability exists between any software or hardware product, and that the systems are compatible with each other. Open standards are:

- Available free of charge and do not come with third party patents or other intellectual property constraints.
- Vendor neutral – their content and implementation do not favour one vendor over another.
- Defined, documented and approved by a formal global industry council. The group remains in charge of changes and no single entity controls the standards.

Open standards means organisations can avoid the risk of being locked into proprietary vendor or bespoke software, giving peace of mind around the flexibility of future systems developments with other standards-based systems. These can be bespoke Open Source or vendor products.



WHERE DOES COTS FIT IN?

Commercial Off-The-Shelf (COTS) describes software or hardware products that are ready-made and commonly available. For example, Microsoft Office, Sage Accounts and SAP are COTS software solutions. COTS products are designed to be implemented easily, saving the high cost and effort of bespoke development. Key points about COTS software solutions include:

- Software is normally described as “proprietary” or “closed source” software because its source code is the property of its original author or vendor.
- Software normally comes with a chargeable licence and organisations do not, as a rule, have the right to modify or share it with third parties free of charge.
- COTS products should be built on open software standards.
- Less customer development effort and (as long as they support open standards) simpler integration with existing enterprise backend systems, e.g. through built-in APIs.
- Vendors (should) have long-term development plans and pre-built support infrastructures in place.



Why are these technology approaches important in the public sector?

The answer is that they are all approaches that the public sector has used to address issues that have arisen over the last 20 years. Here are three of the key reasons.

Proprietary problems

In the 1990s and 2000s, government departments focused on creating their own large bespoke proprietary software. This approach brought a number of issues:

- Systems often struggled keep up with the speed of technology developments and changes in customer and citizen behaviour (i.e. the explosion of the internet, software and devices).
- Common technology standards weren't used, causing problems in getting different departments' systems to communicate with one- another.
- They were inflexible and resulted in (unforeseen) huge costs around ongoing development and maintenance, often leading to reluctance to embark on improvements over time.

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Anti Open Source development viewpoint: “Linux is a cancer that attaches itself in an intellectual property sense to everything it touches.”

STEVE BALLMER, (EX) MICROSOFT CEO 2001

Vendor lock-ins

Historically off the shelf software, developed by organisations such as Microsoft, was a vendor-led approach to lock public sector organisations into costly solutions that didn't interoperate with other systems (forcing them down a one vendor approach), enforced upgrades at the vendor's discretion, provided limited ability to customise systems and only offered mandatory support packages through approved suppliers. The effect was high costs and lock-in to long-term contracts where the cost of change was often high. (To be fair to vendors and large systems integrators the way government contracts were written often forced gold plating of solutions, which also drove up costs.) Much of the concern around COTS solutions and vendors come from this pre 2010 period.

The rise of the developer

A third (positive) element was a growing realisation that with the emergence of new development tools, clearer standards and the rise of global developer communities, individual developers believed that they could take ownership of solution development and do a better job.



What has been the response to these issues?

In response to this, The Government Digital Service (GDS), part of The Cabinet Office, recommends an approach that focuses on open solutions that:

1. Maximise developer productivity.
2. Minimise total cost of ownership.
3. Avoid solution lock-in.
4. Make it easy for the public sector to share the software that it creates.

To achieve this, GDS is directing public sector organisations to use open standards with the aim of:

- Improving adaptability and the ability for the public sector to provide services based on users' needs.
- Putting in place a level playing field for Open Source and COTS software, giving organisations the ability to move between different technologies without the risk of lock-in.
- Making it easier to share appropriate data across and beyond government boundaries and making things simpler and encouraging re-use. This in turn, improves efficiency and ensures the cost of government's digital services are sustainable.
- Encouraging the development of in-house digital skills.
- Sharing of developed code and making it open and reusable for other organisations.

Therefore, organisations should be looking at Open Source or digital COTS solutions based on open standards architecture that reduce project costs, avoid digital lock in, increase in-house skills and where code can be shared across the public sector!



Let's take a look at how Open Source & COTS compare

Here are our views on the strengths and weaknesses of both approaches

OPEN SOURCE BESPOKE



The arguments for:

- No vendor licence costs and forced upgrades.
- Access to huge communities of developers and software packages created by developers globally.
- Customisability – the ability to change it to suit their needs. As the code is open, it can be modified to add the functionality you want.
- No lock-in to vendor solutions – you are in control of developing the solution and can do what you want with the software you create.
- Support – access to a world of support through the online communities surrounding each piece of software.
- Linux, for instance, has an online community with excellent documentation, forums, mailing lists, wikis, newsgroups and live support chat.
- Security – “Linus’ Law,” (Linus Torvalds, the creator of Linux). “Given enough eyeballs, all bugs are shallow.” This means that the more people who can see and test a set of code within Open Source software, the more likely flaws will be caught and fixed quickly.
- Support for open standards means interoperability with third party systems.

...and against:

- You will need to have the right development and project management skills in-house.
- Communities myth – the idea that there are thousands of developers waiting to contribute to your project for free is seductive but the reality is very small pools of expertise for many Open Source tools in the UK.
- Difficulty in sourcing staff – there is a proliferation of Open Source tools and it is often difficult to source staff compared to sourcing .NET skills, for example.
- Open Source is a business tool for vendors - many suppliers use free licences as a platform to sell services (and whole-life support is often 80% of total costs).
- Reliance on third party developers can increase costs and you can end up swapping vendor lock-in for third party developers who know the software.
- Unforeseen challenges – bespoke development can lead to longer development cycles.
- Uncontrolled budgets – lack of visibility of project costs causing budgetary planning challenges.
- Security – new bespoke code has not been battle-tested in the market and hackers have access to the code.

COTS



The arguments for:

- Off the shelf software means faster and more reliable project delivery.
- Less reliance on (and lock-in to) third-party developers and simpler support by existing internal teams.
- Support for open standards means interoperability with third-party systems and better data sharing.
- Reducing technology risk. Vendor development programmes provide a surer roadmap for development and technical support.
- Reduces requirement for internal coding skills, support costs and overheads.
- Provides better vision of upfront and lifecycle costs.
- Security – Solutions are battle-hardened in the market and code is not open for hackers to exploit.
- Less solution testing = reduced costs and faster project delivery.
- Platforms often have existing pre-built modules allowing for simple service expansion.

...and against:

- Licensing costs and support contracts.
- Lock-in to the vision and product strategy of the vendor.
- Less customisability and ability to alter code.
- Sharing across the public sector is limited to other licensees.



Our view

The truth is that both options have their merits. The decision as to which option to use depends on your budget, how important skills development is, what internal resources you already have and what deadlines you have to meet. Here are our views on scenarios and which option to look at:

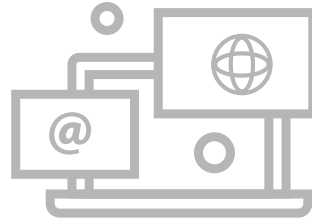
1. **Larger budgets, strong resource base, unique requirements** – for organisations with large (or access to pan- government) internal developer communities, strong project management and deeper budgets, an Open Source development approach makes sense especially where your requirement is non-standard.
2. **Tighter budgets, limited resources** – organisations with tight budgets and limited access to developers and limited project management experience of software development cycles should probably steer towards a COTS approach, which will often reduce technology risk and reliance on third party developers and provide simpler maintenance options.
3. **Opex** – If your future development and support budget are tighter, again, COTS could be the way to go.

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Projects can explode, resulting in involvement from an army of developers, content designers, UI designers, business analysts, QA testers, user researchers, which ends up creating a massive technical team”

JANE ROBERTS, STRATEGY DIRECTOR TOPLEVEL

The best of both worlds – a next generation approach



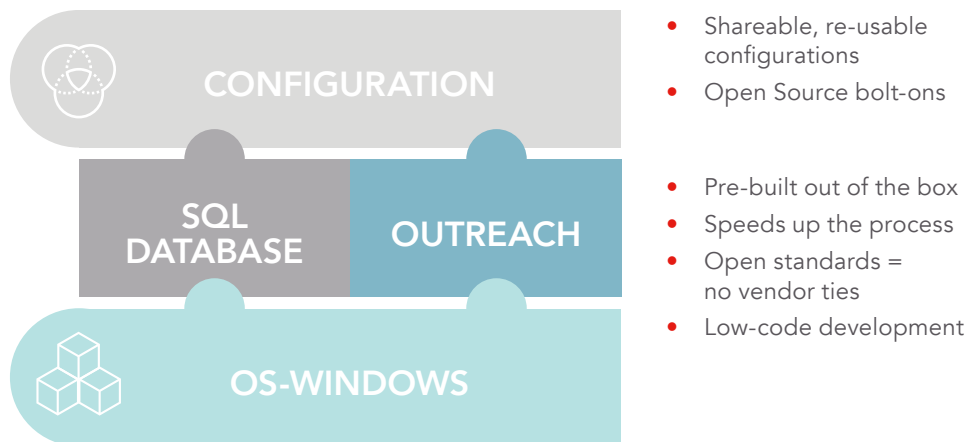
The option Toplevel champions is to create a hybrid that combines the best elements of COTS and Open Source into a single next generation offering. This solution is called Low-code.

What is Low-code?

Low-code is a hybrid software approach that provides an out of the box application development platform that enables rapid creation, collaborative development, quick setup and deployment of applications with a minimum of hand coding in a COTS environment, but also includes the flexibility to alter coding and develop Open Source extensions.

If we use our Outreach Low-code solution as an example this what a Low-code solution looks like.

In our example the platform is composed of three key elements: **Microsoft** as the operating layer, **SQL** as the database working closely with **Outreach** as the application layer. The solution itself is quickly and flexibly configured on top of these building blocks:





Conclusion

Open Source and COTS are both great options for digital projects as long as they are open standards-based and provide modular flexibility. They both have their strengths depending on your organisation's access to resourcing, project management experience and both short and long-term budgets. Open Source bespoke development is not a panacea for all ills and COTS is not demonic.

We recommend you take a look at next generation Low-code solutions. They are gaining traction across the market – Toplevel alone has delivered over 50 major deployments. Additionally analysts such as Forrester have given favourable reviews. They provide much of the flexibility and investment protection of Open Source and you also get the reduced development effort associated with COTS. Win, Win.

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Software platforms that enable rapid application delivery with a minimum of hand-coding, and quick setup and deployment, for systems of engagement.”

FORRESTER RESEARCH



About Equiniti Toplevel

Toplevel provides end-to-end digital and case management solutions that allow Public Sector organisations and individual case-workers to interact more easily with other departments and the citizens they serve.

We improve customer experience and help staff to do their jobs quicker and better by replacing paper, telephone and face-to-face services with more efficient digital alternatives

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