Retrospective and Strategic Evaluation Report on the LiMux Open-Source Migration Project

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1 Decision-Making Retrospective

1.1 Motivations Behind Munich's Switch to Linux

Munich's decision to move to Linux was mainly motivated by the desire to gain more control over its technology. The city wanted to avoid being tied to a single software provider and reduce the risk of being forced into costly upgrades, like the one that followed the end-of-life of Windows NT 4.0 [[1]]. By using open standards such as the Open Document Format (ODF), Munich also made sure its data would remain accessible in the long term, without depending on any specific software company [[2]].

Political reasons also played a role. The SPD-led administration saw this shift as a way to keep public spending within the region. Supporting local IT companies through open-source projects, such as the development of the WollMux tool, was part of a broader effort to strengthen the local economy [[3]].

Although saving money was not the main goal, using Linux on existing hardware and avoiding licensing fees did promise long-term financial benefits [[4]]. Security and transparency were other key motivations. Open-source software made it possible to audit the code and apply custom policies, giving the city more control over its digital infrastructure [[4]].

1.2 Expected Benefits and Actual Outcomes

The LiMux project brought several clear benefits. One of the most important was cost savings. By avoiding Microsoft's upgrade cycle, particularly the move to Windows 7 and Office, city officials estimated that the project would be financially advantageous. By 2012, reports showed that Munich had saved over €10 million, with the total cost of implementing LiMux kept under €23 million. In comparison, a full upgrade to proprietary software was expected to cost around €34 million [[5]].

Another major success was the city's move toward vendor independence. By 2013, about 15,000 of Munich's 18,000 desktops were running LiMux. This allowed the IT department to work on its own terms, without being tied to Microsoft's product updates or license costs [[2]].

The transition also served as a chance to simplify and modernize the city's IT systems. Before LiMux, there were more than 50 different Windows setups in use, which made maintenance and support more difficult. Switching to one standardized Linux system reduced this complexity, helped the IT team manage updates more easily, and led to about a one-third drop in help-desk requests [[4]].

Besides technical improvements, the project had a positive effect on the local IT industry. Small and medium-sized businesses in the area were given contracts to help with the setup and to develop custom tools. This led to the creation of a strong local open-source community, and tools like WollMux became widely used to support administrative workflows [[3]].

Security and system reliability also improved. During the LiMux period, there were no serious security incidents, and the use of open-source code matched well with the city's goals for data protection and transparency [[2]].

Overall, the project showed that open-source software can work well in public administration when it is introduced with the right planning and support. However, despite these successes, not all users were satisfied. Some had trouble with software compatibility and needed time to adjust to the new system, which later became part of the political debate (see Section 1.4).

1.3 Challenges and Obstacles

1.3.1 Technical Compatibility Issues

Munich experienced several technical difficulties during its transition to open-source software. One of the biggest problems was the lack of Linux-compatible versions for about half of its 800 key applications. Because of this, many departments had to use virtual machines or dual-boot setups, and some continued to rely on Windows systems to get their work done [[6]].

Another issue was related to office software. Even after switching from OpenOffice to LibreOffice in 2012, perfect compatibility with Microsoft Office formats was never fully reached. This caused problems with document formatting and disrupted regular workflows [[2]].

Hardware support was also a concern. Early on, Linux lacked drivers for some specialized devices such as printers, scanners, and ID-card readers. This meant the city either had to replace the equipment or deal with more complicated setups.

Finally, integrating Linux desktops with Microsoft Exchange proved challenging. Although Thunderbird was used to connect to the Exchange servers, the city still chose to use Microsoft's enterprise tools in the end. This showed that some open-source alternatives still lacked the features needed at the enterprise level [[6]].

1.3.2 Organizational Project Management

Beyond technical concerns, there were also organizational problems. According to a study by Accenture in 2016, the city's IT structure was fragmented. This led to delays in software updates and inconsistent support across departments. These issues were sometimes blamed on Linux itself, even though they were mainly caused by how the IT system was organized [[8]].

Training was also uneven. While some users adapted well, others struggled with the new tools. High staff turnover made this even harder, as new employees often didn't receive proper training.

For more than ten years, both Linux and Windows systems were used side by side. This increased the workload for IT support teams and made it unclear who was responsible for solving problems.

Another challenge was the procurement process. Managing multiple open-source vendors turned out to be more complex than dealing with a single provider like Microsoft. This made it harder to maintain clear and simple contracts.

1.3.3 Political Dynamics

The political environment also played an important role in the project's difficulties. Over time, changes in city leadership shifted the view of the open-source strategy. What had once been supported as an innovative political choice lost momentum when strong leadership and clear support disappeared. Without continuous backing from the top, the project became more vulnerable to criticism and was eventually seen as a partisan issue.

1.4 Reasons for the 2017 Reversal

In November 2017, the Munich city council decided to return to Windows 10 by 2020. There were several reasons behind this move.

First, many users expressed dissatisfaction with the system. Although the evidence was mostly anecdotal, people often complained about system slowdowns, compatibility issues, and missing features in LiMux and OpenOffice. These frustrations led to the perception that the system was inefficient [[6]].

Second, many key software tools used in public administration, such as those for taxation, registration, and SAP, did not have Linux versions. The workarounds used to keep them running became increasingly hard to maintain and were not seen as reliable in the long term [[6]].

Political factors also influenced the decision. Mayor Reiter's administration ordered a report from Accenture, a company partnered with Microsoft. Although the report pointed out organizational weaknesses, it still recommended switching back to Windows [[8]].

Finally, public opinion was shaped more by negative personal experiences than by objective data. Even though there were clear cost and performance benefits to the open-source setup, many of these were overlooked in favor of simpler political narratives [[6]].

Although the move back to Windows was estimated to cost around €86 million, it was justified by leaders as a way to align with mainstream technology platforms [[3]].

2 Strategic Evaluation for Maastricht

2.1 Recommendation on Adopting Open-Source Software

Maastricht should consider adopting open-source software to improve digital independence, reduce costs, and encourage innovation in the local IT sector. For this to succeed, it is important to have clear goals and continuous support from political leaders.

2.2 Addressing Usability, Interoperability and Long-Term Support

To make the use of open-source tools effective, the city needs to focus on user experience. This starts with understanding the needs of users, providing them with familiar environments, and offering ongoing training. It also helps to appoint super-users in each department who can offer support to others.

Another important point is ensuring that different systems can work well together. Maastricht should make open standards such as ODF and PDF/A a requirement, and include strong file conversion tools to keep compatibility with Microsoft Office. In addition, it would be helpful to encourage public-sector software developers to support Linux.

Long-term success also depends on good support systems. Setting up an Open Source Program Office (OSPO) can help manage software providers, handle security updates, and involve the local open-source community. The city can also work with a few trusted local vendors, making sure their responsibilities are clearly defined through service agreements.

2.3 Hybrid Migration Models

When switching to open-source solutions, a hybrid approach can help keep things running smoothly while allowing for new changes. One way to start is by testing open-source software in services that carry low risk, such as public kiosks and libraries. At the same time, Windows-based programs that are still needed can be run in virtual machines hosted on Linux systems, which avoids the need for full Windows installations.

Gradually moving to open-source tools also makes the change easier. For example, the city could begin by replacing office programs first and then move on to other parts of the operating system. Testing new solutions in specific departments, such as IT or urban planning, before introducing them across the whole city can help avoid problems and build confidence.

2.4 Influence of Political and Organizational Factors

Political support plays a key role in the success of this strategy. It is important to gain agreement across political parties and include open-source goals in government plans. A steering committee that includes members from different departments and has the support of top decision-makers can provide strong leadership.

Inside the organization, desktop and application support should be managed by a central IT team that has clear performance targets. Using agile methods can also help solve problems faster, especially when security updates are needed.

Finally, being open with the public builds trust. Maastricht should share reports about costs and benefits, as well as clear plans for the migration. Working together with universities and local open-source groups can also support development and make sure the solutions stay reliable over time.

3 Conclusion

Munich's LiMux saga demonstrates that while open source can deliver vendor independence, cost savings, and local innovation, success depends on meticulous planning, robust change management, and unwavering political support. Maastricht can leverage these lessons by adopting a phased, hybrid migration model underpinned by strong governance (OSPO), clear interoperability standards, and comprehensive training. Embedding "Public Money, Public Code" in policy and securing cross-party commitment will safeguard Maastricht's initiative against future reversals, aligning digital sovereignty with sustainable public-sector innovation.

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