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Open Source Software Adoption and Reuse in European Local Governments: A Multiple-Case Study

Open Source Observatory (OSOR)

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/01 **Overview**

AGENDA

01   Overview

02   Presentation of Case Studies

03   Presentation of Themes and Findings

04   Wrap-Up and Summary

Purpose and goals of the study

Problem context:

- Public Sector Organizations (PSOs) on the local level of government (e.g., regional and municipal levels) using common OSS solutions, and collaborating on their development and maintenance.

Main research goal:

- Explore and generate knowledge on how the collaborative development and maintenance can be structured and executed to enable the creation and reuse of sustainable OSS projects specifically in the context of local level PSOs.

Research approach

1. **Literature Review**

As part of the literature review we reviewed over 60 papers, analysed over 30 papers and already incorporated over 15 papers in the written document

1. **Mapping and Case Study Selection**

We have mapped over 1,000 projects, policies, institutions, and activities, with more data being added to the Excel all the time. This has resulted in a shortlist of case studies, which was used to select five case studies

1. **Interviews**

We have conducted over nineteen interviews with 21 people across the five case studies, with a few final ones in the process of being organised.

Archetypes Guiding Selection*

- International and well-adopted hosted by a foundation

- International and less adopted

- Local OSS solutions developed by non-public sector bodies and reused

- Local OSS solutions developed by public or quasi-public sector bodies and reused

- National inter-city collaborations around an OSS solution

- Local OSS solutions developed within a given city, not currently being reused elsewhere

- Regional adoption and customization of existing general project for local needs

* Case studies can meet more than one archetype.

/02   **Presentation of Case Studies**

CASE STUDY #1: CONSUL DEMOCRACY

Consul Democracy (Spain)

International mature city-centric democratic participation platform, coming out of Madrid, now hosted by international application-specific foundation in the Netherlands.

Scope

- Consul evolved quickly during the period 2015 to 2019 from a city-led initiative into an internationally adopted civic engagement tool

- While its use declined a little bit after 2019, since 2021 or 2022 it has seen another surge in usage and support, with further international collaborations emerging in places like Scotland, Germany, and beyond.

- Despite challenges in governance and funding, it continues to provide municipalities and organizations with essential tools for participatory democracy.

Lessons

- Financial sustainability of public sector open source platforms requires diverse funding alternatives.

- Effective governance structures become increasingly critical as open source communities expand internationally.

- Strong community engagement drives open source adoption and sustainability, even without formal governance or funding structures.

- Global open source solutions require technical adaptability through modular development, facilitating updates and customization while accommodating diverse municipal IT environments.

- The relationship between technical decisions and governance structures is deeply intertwined.

CASE STUDY #2: OS2BORGERPC / MEDBORGARPC

OS2borgerpc / Medborgar PC
(Denmark / Sweden)

A OSS operation system developed slightly differently in both Denmark and Sweden, but based on the same idea, with international collaboration happening.

Scope

- OS2borgerPC is in essence an packaged version of the OSS Operating System Ubuntu, enabling visitors to use public library PCs in a safe yet easy way though a custom and simplified interface.

- OS2borgerPC originates from a collaboration between Aarhus municipality and Magenta, an OSS-focused service supplier and vendor, and the project was later turned over to OS2, a municipal association in Denmark.

- The project has also recently been introduced in Sweden through Sambruk, a Swedish municipal association of about 150 municipalities, as MedborgarPC.

Lessons

- Municipalities responsible for governance and maintenance of OSS projects should strive towards upkeep of their coordination and focus

- Municipalities should further strive towards maintaining continuous checks and reviews of the concerned projects to guarantee adherence to requirements on OSS principles and avoid potential lock-in effects.

- Municipalities should be wary of market size and potential turnover in relation to the number of service suppliers where services are procured from.

- Municipalities should be vary of market size and potential turnover in relation to how services are bundled in procurements.

- Municipalities should consider generalizability and localization beyond local use cases early on to enable reuse, but typically require external funding.

CASE STUDY #3: GOLEMIO

Golemio (Czechia)

A data platform developed within Prague which there is some initial development to be shared with the Bohemia Region in Czechia.

Scope

- Golemio is a smart city data platform developed and maintained by Operator ICT, a company fully owned by the City of Prague.

- The platform integrates, manages, and analyzes data from various urban systems, with a particular focus on transportation.

- While open sourced under an MIT license, Golemio is heavily customized for Prague's specific needs and context.

Lessons

- Public sector agile development – which is vital for development of open source software – requires significant cultural change and education of stakeholders.

- Open sourcing can help with developer recruitment and code quality, even if external contributions are limited.

- Building trust with city stakeholders takes time but is essential for sustainable operation of open source software solutions.

- Cross-departmental collaboration and continuous stakeholder engagement are crucial for success for horizontal, intra-municipal collaboration on open source projects.

- Successful open source solutions that get reused start with solving specific local problems rather than attempting to create a universal solution.

CASE STUDY #4: PARLAMETER

Parlameter (Slovenia)

A cross-border case potentially with limited development but broad support, local community and parliament use case.

Scope

- Parlameter initially started as a volunteer-driven initiative focused on monitoring the Slovenian parliament.

- With venture funding, the project transitioned to full-time work under the non-profit organization Danes je nov dan.

- The platform provides detailed analytics on parliamentary activities, such as how members vote, their meetings, and overall performance.

- Over time, the platform expanded to include the parliaments of Bosnia and Herzegovina and Croatia; efforts to move into Poland and Ukraine were undertaken but stalled.

Lessons

- Without proper capacity-building, beneficiaries of a vendor's services can become passive users rather than active contributors.

- Adapting a solution for local-level use often requires close collaboration with local partners, and in low-capacity contexts civil society organisations can serve as important bridge-builders.

- Municipalities often lack the capacity to facilitate large-scale initiatives like co-procurement or joint implementation of digital tools.

- Cultural resistance and other political challenges such as local political disputes complicate adoption.

CASE STUDY #5: DIGITRANSIT

[Digitransit](#) (Finland)

Finnish journey planner developed in collaboration between a coalition of local municipalities and larger national actors, with international collaboration happening.

Scope

- Digitransit is a journey planner, but also provides info screen services to the several cities and public transport authorities for public transportation and other related services

- Digitransit was developed from scratch in 2013 by HSL, the regional public transport authority in Helsinki region, and is co-owned by 9/14 local municipalities.

- Digitransit is used by public transport operators mainly in Finland on municipal, regional and national levels, by the Estonian nation public transport authorities, and among a number of German and US cities.

Lessons

- It is important for cross-border open source communities to be responsive and helpful to new and existing users and contributors.

- Developing documentation and onboarding processes that lowers barriers for newcomers, particularly municipalities, is vital for supported adoption.

- Existing partners to municipalities are more inclined of offering extant solutions, either their own or their partners.

- Standards enable broader adoption and reuse of solutions in other contexts, or migration to a different platform.

- Scalability and localization are important to make project scalable and localizable

- In the local and regional context, true co-development means working upstream across communities and projects.

/03　　　　　　　　**Collaboration Archetypes**

Local government-based archetypes

- **External capabilities**

  / Pooling of resources through international foundations, national local gov associations, or through trusted external suppliers.

- **Internal capabilities**

  / Building capabilities internally, requires substantial and long-term investments.

- **Quasi-internal capabilities**

  / Cooperation with quasi-public organisations, such as joint stock companies or entities owned or subsidised by local governments.

Community-based archetypes

- **International foundations**

  / Play a crucial role in the international growth of open source projects by providing sustainable governance and collaborative development.

- **National provider-oriented associations**

  / Crucial for local governments interested in reusing existing open source solutions rather than developing new ones.

- **National development-oriented associations**

  / Enables development of new open source solutions by local governments pooling resources and capabilities to address common needs.

Supplier-based archetypes

- **Civil society service suppliers**

  / Supports local governments with limited resources and capabilities, offering non-profit development services driven by public interest.

- **Local government-owned service suppliers**

  / Enable local governments to develop open source solutions tailored to their needs, either through internal departments or co-owned entities.

- **Private service suppliers**

  / Traditional source of technical capabilities for PSOs and play a crucial role in open source projects, but requires careful tendering and collaboration.

/03 Recommendations

Recommendations

- **1)** Explicitly define policy goals first hand, and second consider open source as a tool (of many) that can be used for achieving their policy goals.

- **2)** Self-assess and explicitly map out barriers and challenges, perceived and experienced, that in any way inhibits the adoption, development and collaboration on open source solutions.

- **3)** Inventory what capabilities are needed, both to address identified challenges, and to achieve the goals defined, and define how these can be acquired either internally or externally.

Recommendations

- **4)** Design their solutions with interoperability and reuse in mind from day one

- **5)** Dedicate central funds that can support development and maintenance activities required to promote and enable local governments to create interoperable solutions with the potential for cross-border reuse

- **6)** Strive towards adopting an agile and open culture and practice in their procurement and development of new software solutions, and identify potential conveners of such activities (e.g., stewards or suppliers)

Recommendations

- **7)** Actively consider how they can support both the development and maintenance of key open source projects, e.g., through procurement of service suppliers, and direct sponsorships.

- **8)** Pay attention to conditions necessary for service suppliers to maintain sustainable business models, to ensure a sustainable maintenance of the open source solutions in turn

- **9)** Consider what role existing associations can play in supporting open source adoption, development and collaboration, or if new organisational structures are required to steward concerned and any future open source solutions

Recommendations

- **10)** Early on, consider who is to steward the open source solutions long term, in order to scale adoption, and create a sustainable funding of its continued development and maintenance

- **11)** Actively involve (from the start) relevant service suppliers in the technical governance and coordination of the planning, development, maintenance, and day-to-day operations of the open source solution
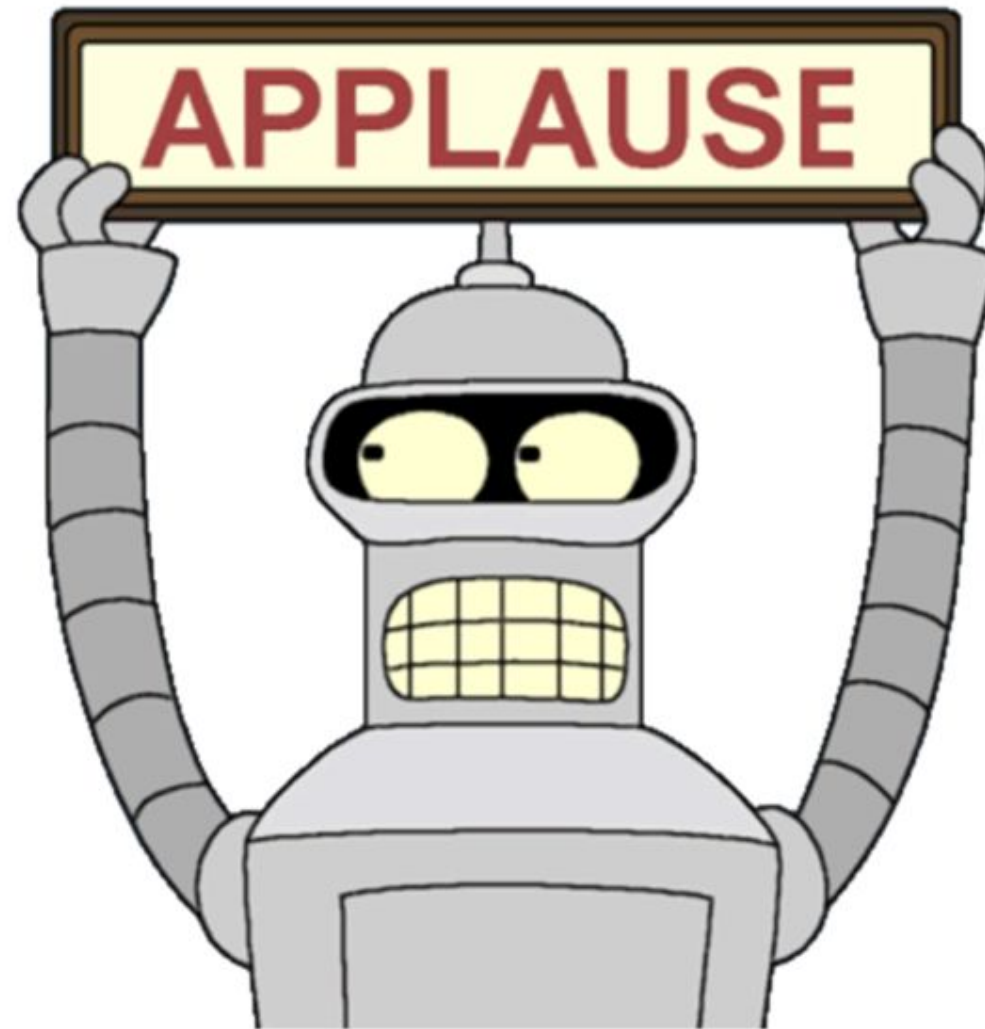
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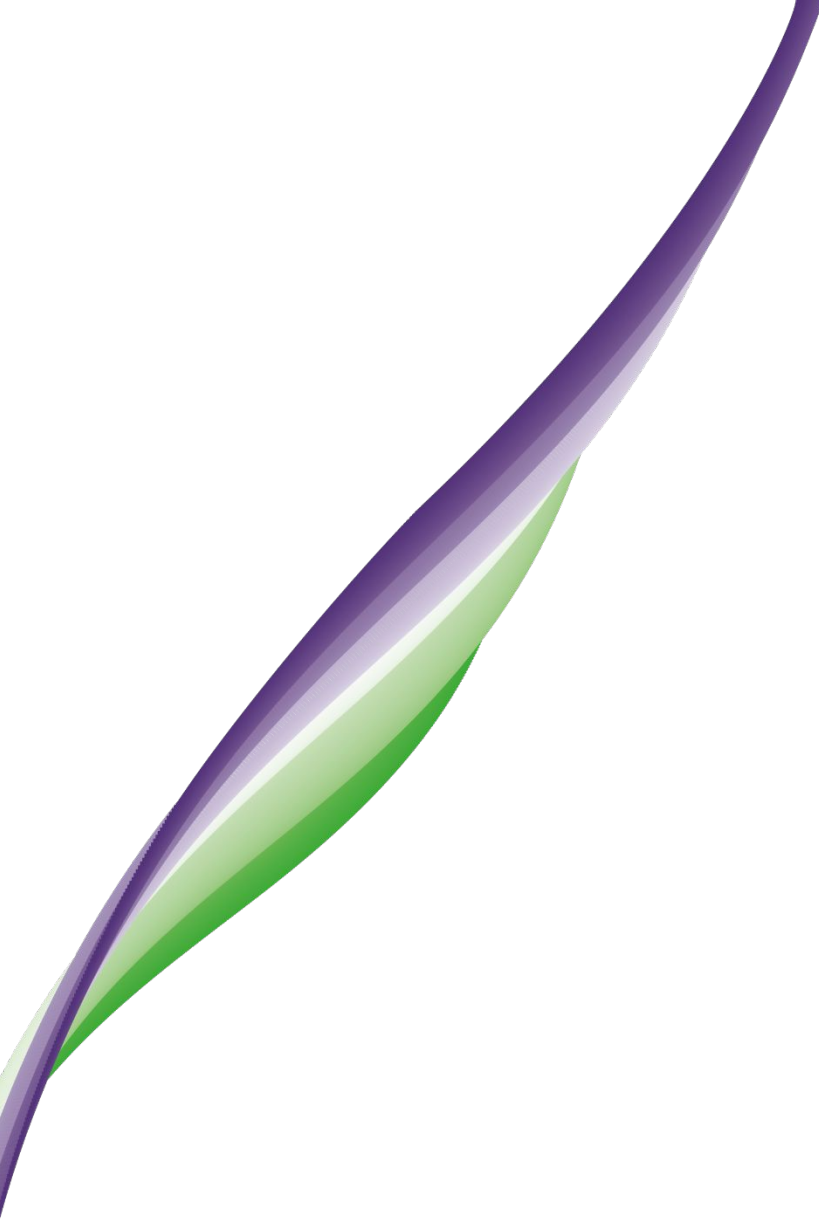
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