



A Case Study in Open-Source Digital Identity & Public Service Innovation

The image shows a hand holding a Portuguese Citizen Card (Cartão de Cidadão) in front of a form. The card displays the name Paula Andreia da Conceição Ávila, date of birth 10/08/1981, and a photo. The form in the background has fields for address, postal code, and locality, with some fields filled in like '12', '1', 'A', 'TABULEIRO SUPERIOR', and 'PORTO'.



Challenge

In 2011, Caixa Mágica Software faced the challenge of creating an open-source, robust and advanced middleware for the Portuguese ID Card. Driven by the need to enhance the digital functionalities of the card and strengthen security in online transactions. The objective was to establish a versatile solution that provided secure authentication, qualified digital signatures and efficient integration with digital services. Simplifying the interaction between citizens and government organizations.

This project continues to be developed by CMS in collaboration with the National Printing House (INCM), Agency for Administrative Modernization (AMA) and the Institute of Registries and Notaries (IRN).

Timeline of Key Milestones:

2011: Start of the Open Source project development

2017: First stable middleware version released to the public

2018: Integration with Mobile Digital Key (CMD)

2019: Integration of the Professional Attributes Certification System (SCAP)

2022: Online address service

2024: CitizenCard 2.0

Solution & Functionalities

Caixa Mágica chose to use the Qt Framework and the C/C++ programming language, combined with open-source technologies such as OpenSSL and Poppler.

This choice allowed the creation of a highly modular and adaptable middleware, meeting the technical and functional requirements established by the Agency for Administrative Modernization (AMA), the Institute of Registries and Notaries (IRN) and the National Printing House (INCM).

The development follows agile methodologies, with regular updates.

The solution is comprehensively documented in repositories on GitHub, ensuring transparency and accessibility to all interested parties. Furthermore, the choice of the EUPL – European Union Public Licence 1.2 reinforced the commitment to open source.

In terms of functionalities, we can highlight:



Digital Certificate Management

It keeps the digital certificates on the card current for authentication and digital signatures.



Data Access & Security

It keeps the digital certificates on the card current for authentication and digital signatures.

Functionalities

Digital Signature & Authentication:

It facilitates using the card to electronically sign documents, contracts, and transactions, and enables secure authentication for online government and commercial services.

Integration & Mobile Key Integration:

The middleware allows the Citizen Card to connect with diverse applications, including tax, healthcare, and banking services.

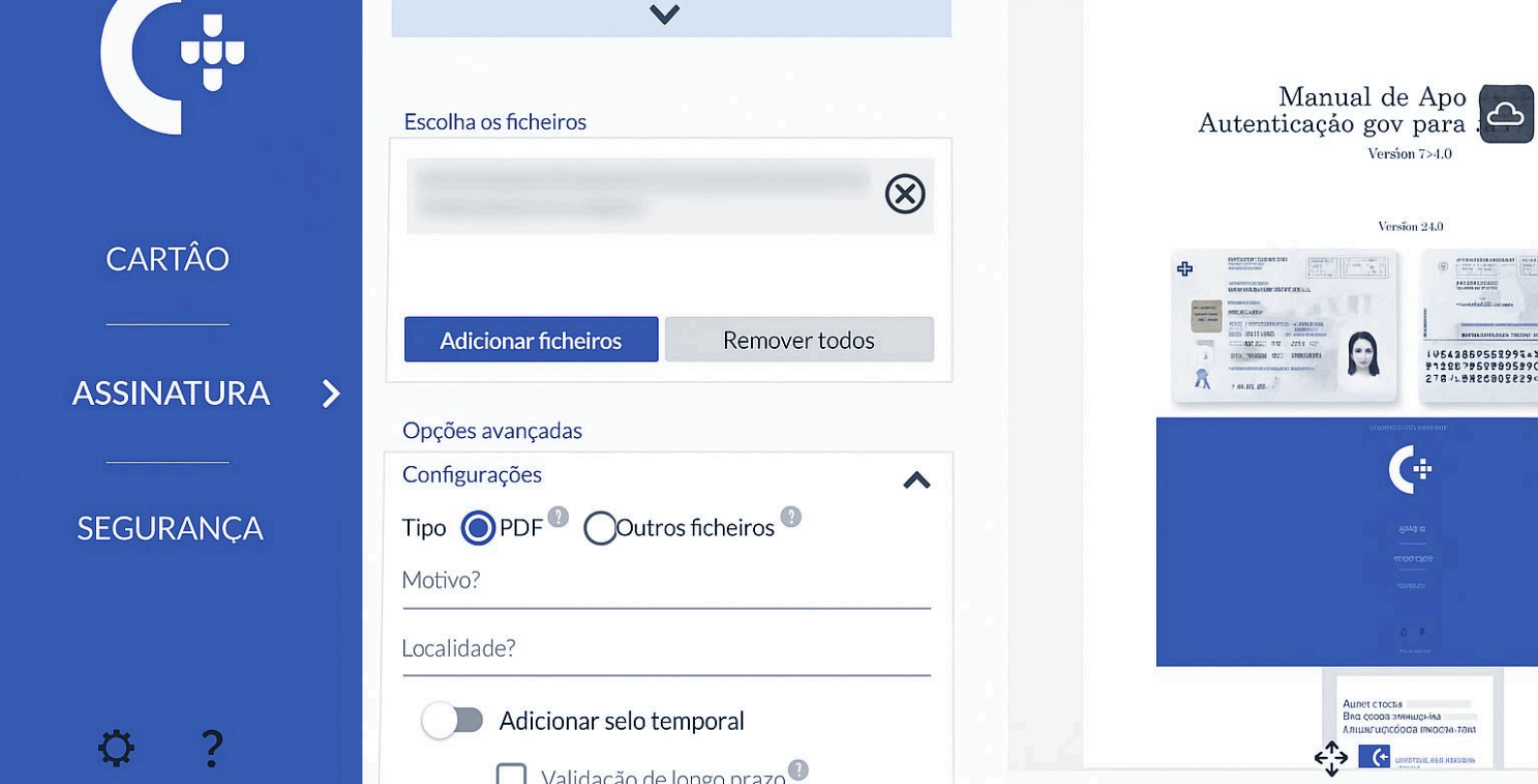
Mobile Digital Key (CMD):

The middleware supports signing via the Mobile Digital Key (CMD)—a certified national tool that links a mobile number to an ID (Citizen Card, passport, etc.) for unified, secure login and digital signing across numerous portals.

Professional Use:

Professional Attributes (SCAP): The System of Certification of Professional Attributes (SCAP) uses the Citizen Card or CMD to allow citizens to digitally sign documents in their professional capacity for public and private entities.





Impact

The Caixa Mágica Citizen Card Middleware is a critical component of Portugal's digital infrastructure, impacting nearly all citizen and business interactions with the government, directly or indirectly. Its open-source nature and the support from Caixa Mágica, the community, and government funding ensure its long-term viability as a pillar of digital transformation.

Key Outcomes and Impact

Widespread Adoption: The Middleware is used by all citizens and businesses interacting digitally with the government, enhancing security and efficiency in transactions.

Standard for Official Signatures: It is the exclusive standard for signing official government documents and tenders, guaranteeing reliable authentication.

Growing Private Use: Citizens are increasingly adopting its digital signature capability for personal transactions as a secure substitute for handwritten signatures.

Regulatory Integration: Successful integration with bodies like the Commercial Registry Authority enables administrators and qualified professionals to sign official documents in their professional capacity.

The Middleware represents a successful case study in public-private collaboration and the effective use of open source, delivering an innovative solution that meets technological needs while promoting transparency and having a continuous, positive impact on society.