

NOSI'S REFORM OF CAPE VERDEAN ELECTIONS



NAVIGATING LEGAL CHALLENGES IN DIGITAL GOVERNANCE INNOVATION

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What are the challenges, opportunities, and decision making tradeoffs that bureaucrats face when designing public sector innovations within resource-constrained governments? Over the winter 2022 and summer 2023, MIT GOV/LAB's Governance Innovation Initiative worked with six graduate student fellows and various public sector innovation labs, agencies, and other actors in the Global South to co-produce practitioner-friendly case studies that illuminate context-specific innovations. The first pilot case was researched by Mariama N'Diaye, as part of her Morningside Design Academy Fellowship with the MIT GOV/LAB, while the first cohort of summer research fellows were launched in collaboration with Priscilla King Gray Public Service Center (PKG) and MIT International Science and Technology Initiatives (MISTI).

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Executive Summary

How did NOSi, Cape Verde's most prominent ICT institution, digitally transform the nation's elections? What does its experience in electoral reforms reveal about navigating legal challenges in digital governance innovation in the Global South? Cape Verde, a country known for its stable democratic governance, relies on NOSi to oversee the digital aspects of its elections. During execution, NOSi often encounters legal barriers and has to negotiate the gap between rapid digital innovation and the lagging legal support for such innovation. Given how commonplace this friction with the regulatory framework is in public-sector innovation, the organization's navigation of this friction to effectively implement various reforms prompts closer investigation. NOSi's election administration work offers the opportunity to explore a range of legal challenges associated with transforming a core element of democratic governance. The following case study focuses on the digitization of the voter registration, voting, and counting processes to provide insights into the intricacies of implementing digital governance innovations in a challenging legal landscape. By considering the factors shaping NOSi's ability to navigate legal issues, the study reflects on the organization's evolving role in the nation's elections and the future of digital governance innovation in Cape Verde.

ICT in Cape Verde

Cape Verde has been using information and communications technology (ICT) in its electoral processes since the early 2000s. During these years, a Portuguese consultancy hired by the government administered the elections, including the implementation of a digital voter database. Questions surrounding the reliability of information on the electoral roll gave rise to civil unrest that threatened the credibility of the election results. Hélio Varela (2023), previously the technical coordinator for NOSi from 1998 to 2016 and currently the chief technical and information officer of a private telecommunications operator in Cape Verde, recalls that the consultants had to be escorted to the airport by armed forces due to this instability. In order to imbue trust in the elections, officials transferred the digital aspects of the election administration responsibilities to a homegrown Cape Verdean organization, Operational Nucleus for the Information Society (NOSi).

NOSi's origins date back to 1998, when a domestic information technology (IT) sector was nonexistent. The government had thus far relied on foreign consultants, primarily from Portugal, for the introduction of technology in various government functions, such as modernizing the tax system and election management. The lack of knowledge transfer, documentation, or capacity building at the local level reinforced the nation's dependence on these consultants. These experiences were ultimately disappointing and were widely deemed expensive and unsuccessful (Favaro, Melham, and Winter, 2008). The state's IT endeavors thus began with a need to overcome this predicament and build local capacity, leading to the establishment of NOSi.

After its inception, NOSi grew rapidly to adopt a leading role in the effort to transform the country's government through ICT. This has encompassed a wide-ranging incorporation of ICT into the public sector, including delivering public services, training public servants in the use of new tools and technologies, redefining services and their production processes, and reworking the interactions between the government and its citizens. Some of the organization's initiatives have included setting up a nationwide private telecommunications network (RTPE), facilitating the integration of various government services, designing and implementing a financial management system that offers real-time budget information, setting up a national identification database by consolidating information from multiple public registries into a unified system, and establishing and operating a data center on Cape Verdean territory. Moreover, by fostering domestic growth in the ICT domain, the organization has enabled the production of governance solutions tailored to the specific requirements of Cape Verde's public sector. Burkina Faso, Ghana, Mozambique, and Angola sent missions to learn from the state's e-governance experience (AfDB, 2012b). NOSi has built over 300 applications to date, including products for other African countries, specifically Portuguese-speaking nations like Angola, Equatorial Guinea, Guinea Bissau, Mozambique, and São Tomé and Príncipe. Several people interviewed for this case study brought up the national pride associated with the self-reliance engendered by NOSi.

NOSi's proven track record as an efficient driver of change within the government (Favaro, Melham, and Winter, 2008) and its experience working with various public sector organizations positioned it as the ideal entity to undertake the task of digitally transforming the country's elections. The organization has become progressively more involved in Cape Verdean elections every election cycle, with the regular introduction of ICT initiatives aimed at improving the credibility and efficiency of the electoral processes. NOSi digitized and streamlined civil identification and registration to create a centralized citizen database and improve the quality of information on

voter lists. It also intervened in various electoral processes to ease voters' access to election information and accelerate the communication of results. Other African countries are even interested in replicating NOSi's work on Cape Verde's election administration (Varela, 2023). Today, Cape Verde's electoral system is seen as effective by both international observers and the public, and it is recognized as key to the quality of democracy and governance demonstrated by the country. The pivotal role played by NOSi in election management is widely acknowledged (Favaro, Melham, and Winter, 2008; Madior Fall, 2012; AUEOM, 2021).



NOSi's remarkable growth and the favorable public perception of its products provoke considerations about the challenges of rapid digital governance innovation and the factors contributing to NOSi's performance. These questions are explored through the following case study of the organization's significant transformation of the nation's electoral system, with a focus on its navigation of legal barriers.

AUEOM observers from 12 countries monitoring NOSi's

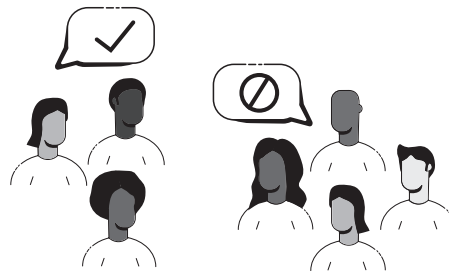
Historical Background

Cape Verde is an archipelago of 10 islands, mostly volcanic, in the Atlantic Ocean in West Africa. Due to the country's low rainfall and insufficient fertile soil, its agricultural sector cannot produce enough food to sustain its population, even in years with optimum rain, causing it to depend heavily on imported food (U.S. Department of State, 2001). Cape Verde has a market-based economy that is service-oriented, although it has limited internal capacity to generate growth or employment. There is little industrial activity, scarce human and natural resources (besides fish), and a weak private sector as a legacy of colonial and socialist rule (Favaro, Melham, and Winter, 2008). It has a long history of emigration induced by economic strife and frequent events like famines, pirate attacks, and volcanic eruptions that have led to a small resident population of around 490,000 (2021 census). The diaspora population is estimated to be double the domestic population (IOM, 2023). Remittances from the diaspora, primarily settled in Portugal, Brazil, and the United States, are an important source of income for the country. Tourism, which is 20 % of the GDP (AfDB, 2012b), is the nation's biggest and most dynamic sector. Attempts at economic diversification are increasingly focusing on fisheries, agribusiness, creative industries, ICT, and international transportation and logistics services, all of which face severe constraints with regard to scale, productivity, financing, human capital, quality, and commercialization (Resende-Santos, 2015). Cape Verde's structural vulnerabilities and limitations position it as heavily dependent on the international community, which is evidenced not only by the importance of emigrant remittances, but by the scale of development aid received per capita and increased foreign direct investments because of the thriving tourism industry (AfDB, 2012a).

The country is recognized and celebrated for its good governance (Meyns, 2002; Baker, 2006; Madior Fall, 2012; World Bank, 2023b). Indeed, as a resource-constrained, externally dependent micro-state, Cape Verde has marketed its good governance as a resource to attract outside investors, IMF loans, and improved US security ratings (Baker, 2009). It is considered a comparatively

successful case of development in the past four decades (AfDB, 2012a, 2012b). Since gaining independence, economic development and growth have been driven mainly by migration and remittances, overseas development assistance, large-scale public investments, and reasonably sound policies and management of public finances (Resende-Santos, 2015). The country's 2007 Special Partnership Agreement with the European Union is the only such agreement between the EU and an African nation and is based on good governance, security and stability, regional integration, the convergence of technical and standards policies, and the promotion of sustainable development (EEAS, 2021). In 2008, the United Nations decided to graduate Cape Verde from a Least Developed Country (LDC) to a Lower-Middle Income Country based on the nation's performance across various social and economic indicators. This resulted in reduced access to the non-debt financing sources available to LDCs and is a contributing factor to the rapid increase in public external debt (Resende-Santos, 2015).

Despite Cape Verde's long history of isolation, the country's e-governance efforts are considered exemplary. They were developed out of a resolve to use ICT to overcome the geography and link Cape Verdeans to the rest of the world (Varela, 2023). Today, as a way to diversify the economy, the Digital Cabo Verde Project attempts to establish Cape Verde as the digital hub of West Africa by capitalizing on its strategic location and ICT potential.



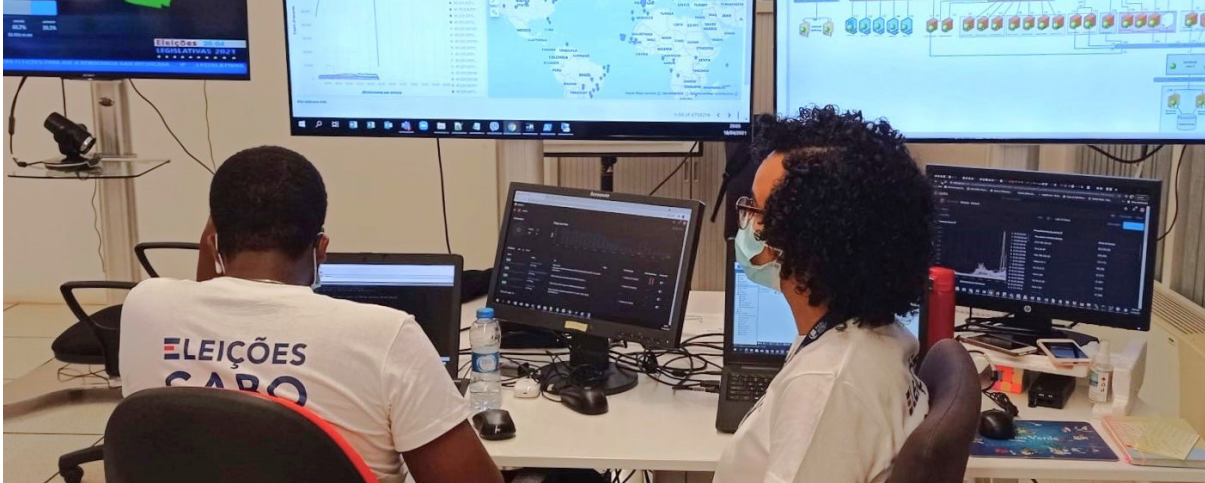
Elections in Cape Verde

Cape Verde operates as a multi-party, parliamentary democracy where constitutional powers are shared between the elected head of state, the president; the head of government, the prime minister; and the elected legislative assembly. The nation's record of conducting democratic and peaceful elections since the first legislative elections in 1991 is often portrayed as an exception in the African context (Meyns, 2002; Baker, 2006; AfDB, 2012a; Pereira, Nina, and Delgado, 2019). This was most recently asserted by the African Union Election Observation Mission (AUEOM) in 2021, where observers from 20 African countries evaluated the nation's seventh presidential election.

The African Party for the Independence of Cape Verde (PAICV) held power in a one-party state from the time of Cape Verde's independence in 1975 until 1991, when the political power shifted to the Movement for Democracy (MpD). By the late 1990s, the country was a stable democracy with little conflict, and a peaceful transition of power continued, even when the PAICV won by 12 votes in 2001's presidential election (Meyns, 2002). The PAICV and the MpD are Cape Verde's two major political parties, receiving a majority of the vote share. The 2021 presidential election had seven contestants, showing the level of political polarization, yet the campaigns and elections were largely smooth and the results uncontested (AUEOM, 2021).

Cape Verde's track record of upholding democratic ideals through stable politics and peaceful elections has played a crucial role in attracting both investors and foreign funding. For a developing country that relies heavily on international funding, this linkage puts significant pressure on the government to facilitate democratic politics. The political class's recognition of Cape Verde's self-interest in promoting these ideals explains, to a large extent, their motivation for responding to these pressures across various domains of public administration (Baker, 2009), including elections.

Citizens residing abroad can also participate in elections and are divided into three electoral districts: Africa, the Americas, and Europe along with the rest of the world. The diasporas also have their representatives in parliament. They have been granted suffrage for presidential and legislative elections since the first elections of 1991. However, given the outsized diaspora, the constitution lays out a system of weighting votes to give more power to national residents than citizens abroad to decide presidential election outcomes, preserving national independence (Silva and Chantre, 2007). Some members of the diaspora contest that this system is unfair given the nation's dependence on the diaspora as an economic resource, which is only set to increase in the wake of the aforementioned financing and development issues. Historically, the diaspora's engagement with elections has been low due to both logistical and political reasons. Achieving a higher rate of registration and a higher turnout, among the diaspora as well as the national residents, are some of the main concerns for the Cape Verdean electoral management bodies (Silva and Chantre, 2007). NOSi's work holds great promise for increasing turnout and making elections more accessible to all citizens.



NOSi staff monitoring the 2021 legislative elections' counting process across the national islands and the diasporas.

NOSi's Digital Transformation of Elections

The primary stakeholders that NOSi works with for its election interventions are:

- / the National Electoral Commission (CNE),
- / the General Directorate for Support of the Electoral Process (DGAPE),
- / the Electoral Census Commissions (CREs), and
- / multiple other organizations, including the Ministry of Justice, police, and the entire civil identification ecosystem

The first three are the country's electoral management bodies. The CNE is the constitutionally mandated entity entrusted with broad administrative and regulatory authority for the oversight of voter registration and electoral processes, including monitoring, supervising, and auditing. Its members are elected by the National Assembly. In the execution of its electoral duties, the CNE receives support from DGAPE, which is responsible for the organization of elections and the planning and coordination of voter registration. It is part of the Ministry of Internal Administration and employs civil servants. Each electoral district has a CRE, composed of members elected by local councils, which works on revising and rectifying the electoral roll. The electoral code provides for the independence of the CNE and the CREs, both of which are authorized to employ any person or structure to ensure successful election management (Madior Fall, 2012).

As the technological arm of election administration, NOSi introduced reforms that were born out of the needs identified by the CNE and DGAPE to make elections more efficient, cost-effective, and credible through digital solutions (Varela, 2023). The universe of projects NOSi has designed and implemented over the years impacts all stages of election administration, including voter registration, voting, and counting.



Registration

The group of reforms that allowed the digitization of the voter registration process began in 2001 and increased in scope in 2008 due to civil unrest and protests contesting the veracity of the electoral lists, which had some reported evidence of duplicate records and registration of deceased individuals (Varela, 2023). To tackle this, NOSi built software to improve the quality of information by efficiently weeding out such records from voter lists. The software enables the controller to view the name of the election administrator who entered a particular record, thereby allowing the monitoring of potential fraud (Favaro, Melham, and Winter, 2008). NOSi worked with a Belgian technology company to employ biometric technology in elections for registration, deduplication, and voter verification (Lopes, 2023). The biometric voter registration process collects fingerprints, facial images, and signatures to help reduce duplicate records, impersonation, and multiple voting. Both of the above efforts depended on and augmented a centralized digital database of citizen records, which has been a longstanding project by NOSi.

The current citizen database, stored in the NOSi data center, is a culmination of multiple reforms pursued by NOSi toward the streamlining of record keeping on citizens' backgrounds. In 2001, the organization began the laborious process of digitizing notaries' identification registers from across all municipalities on the nine inhabited islands. In 2007, this digitization made it possible to issue online birth certificates to Cape Verdeans on the national territory and beyond through the portal *Porton di nos Ilhas* (gateway to our islands). This portal eventually led to the establishment of *Casa do Cidadão* (citizen house) as the front office for related services, including accessing the government budget, checking electoral rolls, registering companies and vehicles, paying taxes, and visiting the websites of most other government agencies and departments. In 2008, the aforementioned biometric technology was introduced to collect data on the voting population, both domestically and abroad. All these efforts came together in 2009 with the National System

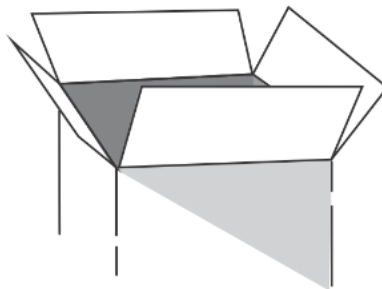
for Civil Identification and Authentication (SNIAC), a central system maintaining citizen identity and civil registry data to allow in-person identity verification and digital authentication. It forms the basis for the issuance of identification documents like the Electronic Passport (PEC) launched in 2016, the National Identification Card (CNI) launched in 2018, and the Residence Permit for Foreigners (TRE) launched in 2021 (NOSi, 2022).



Voting

Elections in Cape Verde are conducted by manual ballot. While the electoral code (ACE, 2023) allows for pilot experiments in electronic voting in one or more electoral districts, following consultation with the legally constituted political parties, comprehensive electronic voting reform has been awaiting resolution for 12 years.

NOSi does not have a direct role in the process of casting votes. However, its contributions help enhance the voting experience by facilitating the efficient mapping of voters to polling stations and providing reliable voting information online. It also sends reminders and additional information to citizens to register (during the respective registration periods for the national residents and the diaspora) and vote (a day before elections).

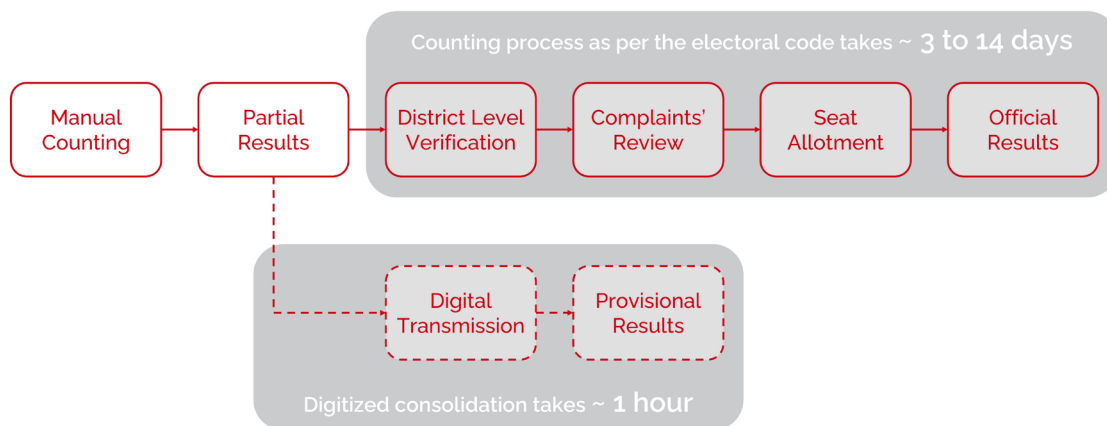


Counting

Back in 1999, conclusive results of the presidential and legislative elections were available three days after voting concluded. In 2011, provisional results were accessible to the public within three hours (AfDB, 2012a). In the last elections, the duration was further reduced to just over an hour. This is a celebrated outcome of NOSi's involvement in the counting process since 2008, when DGAPE sought NOSi's assistance in digitizing this step. The accelerated data processing and dissemination along with improved visibility of the counting process helped increase the credibility of elections. Mayra Silva (2024), the organization's executive administrator, notes that Cape Verde is one of the few countries globally recognized for presenting election results and declaring the winner within 24 hours. NOSi achieved this by making space for the release of provisional results while the official count is still underway.

The official counting process is prescribed in the electoral code (ACE, 2023). After voting closes, polling officials verify and examine the ballot papers before manually tallying the votes. The polling station board then prepares the partial result sheets, which are scrutinized by the party/candidate representatives present during the count and subsequently displayed publicly. Partial results from all the polling stations are consolidated and verified at the district level, where discrepancies and disagreements in these results are addressed before the final tally and allotment of seats. In diaspora voting, a similar preliminary counting process is undertaken by the respective consular service(s), and the partial results and other electoral material are sent to the CNE headquarters in Cape Verde, where the final results are determined.

NOSi intervenes in the above process at the stage of transmission and consolidation of the partial results. Once the polling officials at a station agree on the vote count, the partial results, despite missing further steps of verification, are immediately transferred to online, television, and mobile platforms. Officials at every station are supposed to capture the partial result sheets using optical scanners and transmit the counts by entering them into tablets. Although NOSi trains polling officers on how to use the devices before every election cycle, gaps in digital literacy pose difficulties during these steps. NOSi tackled this issue by introducing an intermediary at each polling station to assist with the transmission. After digitization, the data is used to provide real-time updates of the counting process at every level of aggregation leading up to the provisional results. Meanwhile, the original electoral material goes through the official steps, and the final results are published by the CNE within 14 days.



Process of counting and consolidating results after polls close and ballot boxes and papers are verified.
Source: Author

Reforms under consideration

Digital reforms that are currently under deliberation include electronic voting, biometric identification of voters at polling stations, and automatic voter registration. The implementation of these measures requires amendments to the electoral code which can only be passed with a two-thirds majority of parliament. Electronic voting has been on the agenda for over 12 years, but the lack of political consensus has led to a prolonged stalemate on the issue. The most recent version of the electoral law was adopted in 2007 and later amended in 2010 (Madior Fall, 2012).

According to Varela (2023), who is part of the group developing the legal infrastructure to support this next stage of the evolution of Cape Verde's electoral system, automatic voter registration would entail a complete integration of the electoral process with SNIAC. This would make the

electoral census and the CREs obsolete by creating a permanent voter register that automatically updates when a citizen turns 18. Ana Marta (2024), the director of the IT Service Management team (NOSiTSM) that oversees elections work, explains that the reduced barriers to election participation aim to improve the accuracy and efficiency of the electoral registry, decrease voter abstention, and ease the diaspora's registration experience by eliminating the need to visit the distant CREs at the country consulates, embassies, or diplomatic missions before elections. However, since this method would register large numbers of people, including those unlikely to register or vote in the first place, there are concerns that it will show a decrease in the voter turnout rate, which is usually calculated against the number of registered voters, rather than the number of eligible voters. This has prompted a search for ways to ascertain that an increase in registration would not skew the turnout metrics.

DGAPE is working with the University of Cape Verde and NOSi to develop electronic voting and launch it for 2026's legislative and presidential elections (Caldero, 2022). The upcoming modernization of elections is set to proceed alongside a broader proposal to amend the electoral code to reformulate the current legal framework around elections — including registration, updating the electoral database, and issuing documentation to voters — as per the constitutional requirements. Once this new electoral code is in place, innovation of the electoral process is set to proceed by gaining the confidence of the political parties and citizens.

Legal Challenges in NOSi's Elections Work

Legal challenges are a common part of governance reform processes, especially those involving digital innovation. The reforms pursued by NOSi have often focused on crucial government services involving multiple stakeholders and the accompanying legal complexities. Its elections work demonstrates a variety of challenges where the existing legal framework ranges from restrictive to ambiguous to sparse. NOSi's navigation of these challenges in implementing the digital citizen database, provisional results, and data privacy protections sheds light on the relationship between technological and legal aspects of innovation.

Restrictions in establishing a digital citizen database

Every step in the process of implementing a digital citizen database led to the disruption of the existing civil identification ecosystem (Lopes, 2023; Varela, 2023). The modernization efforts challenged existing legal frameworks and encountered significant resistance from institutions whose authority they threatened. The notaries opposed the digitization of record-keeping and the diversion of their primary duties to online platforms. Similarly, the police fought against yielding control over passport issuance.

Civil servants within the General Directorate of Records, Notary, and Identification (DGRNI) expressed concern that the legal integrity of the system would be compromised by NOSi-led technological change (Favaro, Melham, and Winter, 2008). They believed that digital reform should follow the creation of a strong legal structure. To accommodate the rapid pace of innovation, NOSi pushed for the reverse strategy of pursuing legal compliance at the end of the reform process. NOSi engineered the services and procedures first, sought approval from government partners, and then proceeded to work with legal consultants to develop a suitable legal framework (Lopes, 2023). This “change the law” (Varela, 2023) attitude exemplifies NOSi's technology-first approach toward governance innovation.

Ambiguity around provisional results

In its 2021 assessment, the AUEOM notes that it “acknowledges the technical and operational aptitudes of the CNE and DGAPE which contributed to the conduct of a transparent and credible vote. However, the electronic transmission of the provisional results was managed by NOSi, without the proper and clear definition of the responsibility of the CNE.” The management being questioned is potentially in reference to two issues. Firstly, the method of transmitting the partial results to digital platforms deviates from the prescribed procedure in the electoral code. There are no explicit legal provisions for the technology used and the intermediaries assisting with this technology. Secondly, the accelerated results communicated by NOSi are provisional and are missing a crucial step of scrutiny and ratification, which occurs at the district level.

Although the provisional and official results have never differed significantly enough to change the outcome, even in close races, it is unclear how potential discrepancies would be dealt with. In case the provisional results are contested, the CNE would likely be held liable. In fact, since the CNE has the final word on how elections are conducted, it is unlikely that NOSi could have employed methods that the CNE is entirely oblivious to. Moreover, the CNE’s election audits comprise a review of NOSi’s systems, including the digitized counting process, which it developed in partnership with DGAPE. According to NOSi’s officials, the AUEOM’s remark can be attributed to tensions between the CNE and DGAPE. Notwithstanding, this disagreement surrounding provisional results highlights the insufficient legal description of the role of each body involved in election management, leading to uncertainties around the nature and level of accountability of these bodies. As a technical partner hired by DGAPE, NOSi defers the interpretation of this ambiguous legality to its government partners. Evidently, NOSi occupies a unique position where its involvement in elections has been deep enough to effect transformative changes but not deep enough to warrant explicit legal provisions.

Sparse legislation on data privacy

Questions surrounding data privacy and security that have persisted for most of NOSi’s history were reinvigorated after the launch of NOSi’s data center in 2015. The extent of centralization of the services and applications, combined with their total integration with the data infrastructure, aggravates the dangers of a potential breach. In 2020, a cyberattack targeted the RTPE — the government communications network that provides state officials access to the internet, email, management applications, and more — resulting in the temporary suspension of certain public services (Sebastião, 2021). To reduce the exposed vulnerabilities in the infrastructure, NOSi proceeded to invest heavily in cybersecurity measures.

One of the earliest outcries on data protection issues was during the 2001 election when voter registers were publicly available online. The DGRNI and the general public expressed concern over the transparency of NOSi’s data (Favaro, Melham and Winter, 2008). Sparse regulatory guidelines on data privacy allowed NOSi to adopt a permissive stance on this issue until attention to the legalities arose after the introduction of online registers, forcing NOSi to update its services to comply with the law. Indeed, in 2001, Cape Verde made history as the first African nation to implement a comprehensive framework for protecting personal data (Traça, 2021). The law was based on European precedents, reflecting the nation’s legal system, which predominantly derives from that of Portugal.

Legal and technological safeguards related to data privacy and security have been undergoing continuous improvements ever since this early friction. Silva (2024) describes NOSi's efforts to mitigate these concerns through updates to data access management and the adoption of scalable security systems and practices. She hints at the application of emerging technologies like artificial intelligence and blockchain for enhancing cybersecurity in the nation's elections. The new electoral code also aims to legalize certain functionalities and standards that can lead to improvements in this area.

NOSi's at times liberal approach to legal issues is demonstrated above. Occasionally, its innovation processes have tested the limits of legal compliance and pursued possible legal rectifications after the fact. This iterative method of dealing with legal issues is more supportive of the pace of change that NOSi strives for. It also forces the legal system to stay apace.

Factors Enabling Effective Navigation of Legal Challenges

How has NOSi been able to work through the above legal challenges in order to implement its electoral reforms? What factors contributed to the successful administration of multiple election cycles despite legal complexities?

NOSi did not always succeed in overcoming legal barriers to its innovations. Frequently, depending on the scale and complexity of the challenge, it had to await necessary regulations before implementing its products or services. For instance, in the case of the Digital Mobile Key, the software was ready to launch for two years before the legislative decree clearing its use was released (Brito, 2023). In the case of electronic voting, a reform NOSi has advocated for for over a decade, the required electoral code updates are still pending, stalling the innovation process. However, in cases where NOSi has effectively navigated legal challenges, understanding the factors contributing to its ability to do so provides insights into the nuances of innovating in contexts with slow-to-respond legal regimes. Some possible factors include consistent political backing, its organizational structure and mode of operation, and the widely recognized successful implementation of its products and services.

Political support

NOSi's history of bipartisan political support from the main parties in the country eased potential tensions and laid the foundation for the organization's decades-long engagement with elections. Given that the strongest claims for fair election administration generally come from the contesting political parties, this support goes a long way in negoti-

Discussion Questions:

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What factors contributed to the successful administration of multiple election cycles despite legal complexities?



ating legal issues. The extent of the support enjoyed by NOSi is rooted in its very conception and early years of development.

In 1998, Ulisses Correia e Silva, then the minister of finance and currently the prime minister, pushed to tackle the ministry's slow, costly, and incomplete information systems through a local technology-based project. The State Financial Administration Reform (RAFE) unit, NOSi's predecessor, was established to consolidate dispersed data related to budgets, tax collection, debt management, and the Treasury into one system that would be accessible in real-time. It was an autonomous unit under the finance ministry with centralized operations aimed at concentrating the limited pool of technical skills in Cape Verde (Favaro, Melham, and Winter, 2008). This not only laid the foundation for a domestic IT sector, but also circumvented the legal and technical constraints associated with hiring foreign organizations to work on sensitive government projects.

RAFE was staffed by three engineers, including Varela, from the private sector with no experience working with the government. The initial efforts were carried out with the help of political support, mainly from Correia, until RAFE gained trust within the government and among the bureaucrats. The original scope of increasing efficiency, integration, and transparency within public finance was gradually expanded to providing ICT services to other government departments for their management, integration, transparency, access, and public communication needs, although there was no overarching plan. Despite the apprehension surrounding RAFE's future when the opposition party took power after the 2000 election, the new government continued to let it operate as a special organization under the government. In fact, given the additional services RAFE was providing to other ministries beyond its original mandate, it was "promoted" (Favaro, Melham, and Winter, 2008) from the finance ministry to the prime minister's office in 2003. The then prime minister and now president, José Maria Neves, granted NOSi decision-making authority and the power to execute ICT systems throughout the government. RAFE thus evolved from a project and became NOSi as part of a moderate structural transformation recommended by a newly formed committee reviewing its functions and organization. This committee was headed by Jorge Lopes, the minister of infrastructure and transport at the time, who then became NOSi's political coordinator and stayed as its general manager until 2016.

The support NOSi enjoyed from the two consecutive opposing regimes was crucial in establishing NOSi as a powerful driver of change. This granted significant political leverage in working out methods of legal compliance that did not compromise the pace of innovation in many technology-based reforms of the state apparatus. The joint leadership of Varela and Lopes for over 13 years not only allowed long-term planning and stability due to the embeddedness of the bureaucracy, but also seems to have reduced the perception of political biases within NOSi, since they were appointed by opposing political parties.

Organizational structure and approach to governance reform

Technological innovation before legal and structural accommodations is a typical characteristic of NOSi's modus operandi (Favaro, Melham, and Winter, 2008), particularly before 2014. The entrepreneurial ethic of proving success through results is a fundamental part of its problem-solving approach. In some cases, its interventions challenged the existing systems and legal mechanisms enough to lead to broad changes in legislation. NOSi's elections work is therefore a demonstration of path dependency rather than an exception within the array of reforms it undertook. This approach to governance reform, characterized by a willingness to allow technological

developments to take charge, is fundamentally linked to its fairly informal organizational structure and can be seen taking shape during its early days, as described above.

Unlike typical public sector IT departments, NOSi is not housed within any specific government ministry or agency. It grew organically and was hence organized around projects, resulting in a relatively flat structure with few mid-level managers. Its unique structure and culture, dominated by people who would describe themselves as technicians rather than bureaucrats, have been compared to that of a Silicon Valley startup (Favaro, Melham, and Winter, 2008; Cruz, 2023). Varela and Lopes, the organization's long-standing leaders, also have backgrounds in engineering before their forays into public administration.

As the technological arm of the inter-ministerial committee led by the prime minister, NOSi answers directly to the prime minister's cabinet (Lopes, 2023). The decision-making power it wields, combined with its position outside any specific government department, earned it the status of a "super-agency" (Favaro, Melham, and Winter, 2008). Unlike the multiple government stakeholders involved in election administration, NOSi holds a unique outsider position as an independent public firm. This has made it an effective mediator between various government bodies. Lopes (2023) notes that a majority of NOSi's work is indeed communications and is dependent on the relationships it has built with government bodies over decades. Additionally, its position and structure also afford it some distance from direct responsibility to citizens and from political interference in its workings. The convergence of these circumstances allows significant flexibility in how NOSi can respond to legal issues.

Successes in election administration

NOSi's efficient implementation of reforms that are in conflict with the regulatory environment cannot always be explained using a linear process where legal compliance is resolved prior to the launch of the innovation. At times, as in the case of data privacy and security related to voter lists, it adopted a liberal stance that was influential in quick execution (Favaro, Melham, and Winter, 2008). One way to understand the considerable latitude NOSi seems to have in assuming such a liberal approach is by examining the relatively low pressure for legal compliance placed on the organization.

The above-discussed factors, i.e., political support and organizational structure, explain the muted concerns around NOSi's lapses in legal compliance to some extent. The explanation most commonly cited by interviewees for the tolerance for NOSi's liberal attitude is the successful performance of its products and services. The organization's record of delivering functional products together with its strong service provider culture help create client ownership of these products. The reputation it has built in delivering the visible outputs and desired results for complex projects like the state's financial reform is also an important reason for the depth of NOSi's involvement in the digital transformation of Cape Verdean elections.

The measurable outcomes NOSi achieved in election administration translates to the trust, and hence latitude, that it enjoys in working out legal issues. Some of these outcomes include the consistent validation of the provisional results by the CNE's official results, the prompt endorsement of provisional results by contesting political parties/candidates, reduced incidences of issues relating to registration, reduced anxiety around vote manipulation, and a suspected positive effect on voter registration and turnout because of the increased communication and accessibil-

ity of information. Legally, parties/candidates are the only ones who can dispute election results and appeal for a recount, so their trust in the process helps alleviate legal concerns.

Shifting Attitudes Towards Innovation and Legal Challenges

Over its 25-year history, NOSi has undergone radical changes in its structure and operations. Beginning as a project in 1998 (RAFE), then transformed into an institution in 2003 (NOSi), and most recently restructured as a state-owned enterprise in 2014 (NOSi-EPE), the organization's evolution from a three-person initiative to a 230-employee operation (World Bank, 2022) is accompanied by changing attitudes towards technological and legal innovation. Most of the election interventions and legal issues discussed so far are rooted in NOSi's pre-2014 era. NOSi's approach to innovation and navigating legal challenges has since shifted significantly. Furthermore, the impending privatization of NOSi is likely to bring about additional changes and fundamentally transform its role in election administration.

Before 2014

Despite being at the center of Cape Verde's ICT space, NOSi remained a fairly informal organization for much of its history, both in terms of its structure and operations (Favaro, Melham, and Winter, 2008). Until 2012, it did not even have a human resources department (Cruz, 2023). Until 2014, as an independent entity outside any ministry, most of its staff was employed on yearly renewable contracts, and funding for its operations was sourced from grants from multi-lateral and bilateral agencies (Favaro, Melham, and Winter, 2008). The flexibility afforded by this informality was crucial to maintaining the fast pace of innovation.

NOSi's reforms during this period were technology-oriented, and legal concerns were addressed after the fact with the help of consultants. The discussed examples show how the conflict between technological and legal innovation was being negotiated frequently, with advances on one side forcing the other side to catch up. This state of imbalance and generative friction stimulated progress on both sides and helped mobilize consensus for the necessary changes. This period proved most productive for NOSi's innovations, both in terms of the speed of reform as well as the scale of reform.

Since 2014

In 2014, NOSi was transformed into a state-owned enterprise (SOE), NOSi-EPE, with 100 % of the shares owned by the state. Besides adding some formality to the organization, this allowed NOSi to restructure in a way that provided more efficiency to both its national and growing international operations. The company was structured in a matrix organizational model with intersecting functional groups and project areas to preserve some flexibility (NOSi, 2022). This transformation led NOSi to shed some of its startup-like qualities and align more with the traits of a government body. The consequent shift in NOSi's approach towards legal challenges is apparent in the introduction of a working group on corporate compliance; harmony with existing legal frameworks started to receive more attention.

The prioritization of regulatory and procedural concerns is further mandated by the Ministry of State Modernization and Public Administration (MMEAP), which was established in 2021. Strategizing and overseeing digital governance reforms is one of the ministry's core functions. NOSi is

now required to defer to the ministry on matters of law and policy, although the practical dynamics of their relationship are still evolving. With legal matters taking precedence, technological development came to be dictated largely by legal feasibility, as in the case of traditional bureaucracies, thus leading to a much slower pace of innovation (Brito, 2023; Silva, 2024). The institution of more checks and balances in the innovation process is a recognition of the vital role of law in protecting public welfare and promoting accountability and suggests an attempt at balancing technological advancement with legal integrity.

Anticipating privatization

The resolution to privatize NOSi was formally made public in 2017 (World Bank, 2019), although privatization was a frequently considered strategy for restructuring NOSi throughout its history. The government did not meet the goal of completing this transformation by 2020, and there is still no concrete plan for privatization. It remains unclear whether the infrastructure will be privatized or the software. Depending on how privatization is carried out, NOSi's ability to leverage its position to overcome legal barriers could be severely hampered.

Notwithstanding privatization, one way to spur innovation in the current environment is by allowing opportunities to test and pilot digital interventions as the regulatory landscape evolves. Varela (2023) suggests the application of a regulatory sandbox that supports NOSi's rapid pace of innovation while reducing uncertainty and increasing compliance with laws. Such a broadening of the legal framework will also allow for digital experimentation and reduce the barriers to innovation, especially for smaller and newer firms. Moreover, a sandbox environment that provides a level playing field for all participants can foster competition in Cape Verde's ICT space (see the following section) by reducing NOSi's comparative advantage in terms of the legal leeway it appears to enjoy.

Future of NOSi's Elections Work

When discussing NOSi, several interviewed employees who have been there since before 2014 communicate a longing for what the organization was like before it was restructured as a company and before the leadership changed. They mention a change in management style, increased bureaucratic considerations, decreasing influence of the new projects on fundamental governance issues, and a significant shift in the organizational culture as reasons for their apprehensions regarding NOSi's future. Adilson Rodrigues (2023), who has been with NOSi for over 16 years and is the current director of information and compliance, suggests that the organization's work in elections is one of the few projects that is reminiscent of its past and is a crucial team-building exercise. Elections work cuts across the many teams and includes all working groups within the organization, though it sits mainly under NOSiTSM. Election seasons demand sustained efforts from NOSi up until the announcement of the official results. Guevara Cruz (2023), who worked at NOSi for over 13 years before transitioning to the role of project manager for the Digital Cape Verde initiative, compares the scene at NOSi on election night to that of NASA during a rocket launch. Officials from DGAPE monitor the elections from NOSi's offices. Employees stay up all night to ensure the integrity of the ICT systems and facilitate smooth processing by fielding calls from various polling stations and troubleshooting on the go.



NOSi staff facilitating the 2021 legislative elections. Source: NOSi

The privatization initiative instilled uncertainty around NOSi's future and the future of the many sensitive governance solutions developed by NOSi, including its election interventions. Furthermore, it ignores the immense pride in the homegrown institution and its accomplishments.

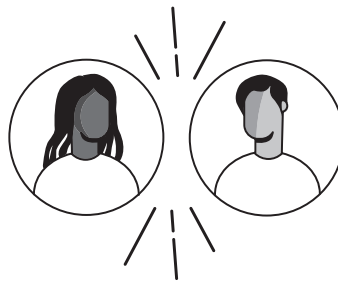
Today, NOSi controls most government technology — a consequence of the centralized nature of the industry in Cape Verde, NOSi's focus on integration over interoperability, the politicians' vision to maintain sovereignty over government services, and the presence of few legacy systems that NOSi did not build. The World Bank, leadership at Tech Park (the new premises for promoting Cape Verde as an ICT hub), and other proponents of privatization view it as a much-needed measure to displace NOSi's monopoly in the nation's ICT space and make way for a private sector. It is also meant to make NOSi more competitive in the market and decrease the cost of its services. The previous leadership and current long-standing employees hold a contrasting opinion that privatization would be a mistake and could seriously hamper the sovereignty of both the digital governance solutions, especially those critical to democracy like election administration, and the nation's ICT space (Brito, 2023; Lopes, 2023; Rodrigues, 2023; Varela, 2023). They contend that this measure is more likely to increase the presence of international private consultancies in the country than build a local private sector.

The privatization of government-run agencies has been an ongoing process since Cape Verde's liberalization efforts of the 1990s (AfDB, 2012a). These efforts aimed to reduce the significant state domination in the production of goods and services, which resulted from a small market size and limited capacity. One of the reasons given by a World Bank consultant (2023) justifying privatization of NOSi is financial unsustainability. Varela (2023) responds by pointing out that NOSi had successfully delivered all of its services and products for much cheaper costs than the World Bank is now willing to pay international consultancies through the Digital Cape Verde program. He further shares how an international private consultancy contracted by the Ministry of Justice to build a digital product has failed to deliver it even after six years.

Acknowledging that Cape Verde's digital ambitions are inextricably linked to NOSi's future can help inform this dialogue. A popular midway solution is to increase NOSi's teaching and capacity-building scope while incubating the private firms within the organization. This was one of the intended models for NOSi's evolution from informality to formality — to disaggregate its functions

into several firms and gradually outsource the services to these spin-offs (Favaro, Melham, and Winter, 2008; Lopes, 2023; Varela, 2023). This would essentially lay the groundwork for the much-needed private sector in Cape Verde's ICT industry.

Despite the lack of progress on the privatization front, signs of NOSi's impending future are evident in the financial plan for the Digital Cabo Verde Project. The project will receive up to 20 million USD in funding from the World Bank to improve the nation's digital competitiveness and the provision of digital public services (World Bank, 2023a). As for NOSi's role in this project, the opinion of various interviewees at NOSi is that the organization is being crowded out of participating in the endeavor in any real way. Its budgetary allocations confine it to the task of capacity building. Furthermore, efforts to introduce electronic voting are sidelining NOSi from participating in the tender for electronic ballots.



Conclusion

Cape Verde's record of smooth elections as a young democracy is a crucial aspect of the nation's strategic advantage in negotiating international grants for its development agenda. NOSi's work in improving election efficiency and credibility goes a long way in endorsing this image of good governance. Furthermore, by building local capacity in the technical aspects of election administration, NOSi has helped Cape Verde maintain sovereignty over its elections and citizen data. From a consideration of the factors that have enabled NOSi to innovate despite legal challenges, it is evident that the organization's achievements are fundamentally linked to its position within the country's ICT ecosystem. NOSi's evolving role has compromised this position to some extent, but it suggests the crucial balancing of the pace of technological progress with legal integrity in governance reform.

A closer look at NOSi's approach to digital governance reform and the factors contributing to this approach offers valuable learnings for public sector agencies from similar contexts. NOSi's navigation of the challenging regulatory environment surrounding its elections work raises important questions about the relationship between technological and legal aspects of innovation. Should a legal framework for digital innovation precede technology implementation, or can it follow implementation? Is the inherent friction between technological innovation and the existing legal framework a challenge or an opportunity? NOSi's election reform experience contradicts conventional assumptions, first by showing how the direction of the relationship between innovation and law can be altered from sequential to iterative, and second by showing how friction can be generative.

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