

Better public procurement for IT in India

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Abstract

Information technology (IT) systems are now ubiquitous in government. The Government of India has tripled its spending in real terms on IT procurement over the last fifteen years. IT procurement is tricky because these systems need continuous maintenance and refinement, and traditional systems of procurement are unsuitable for solving the incomplete contract problem that follows IT procurement. We build on three case studies from India — Aadhaar, Passport Seva, and MCA-21 — to make the case for why we need new thinking on IT procurement. Our solutions hinge around the fact that the government needs to build robust internal technical expertise even when system development has been outsourced. We make the case for flexible contracting, early concept verification, and strategic investments in state HR capabilities to successfully navigate the marketplace for digital services.

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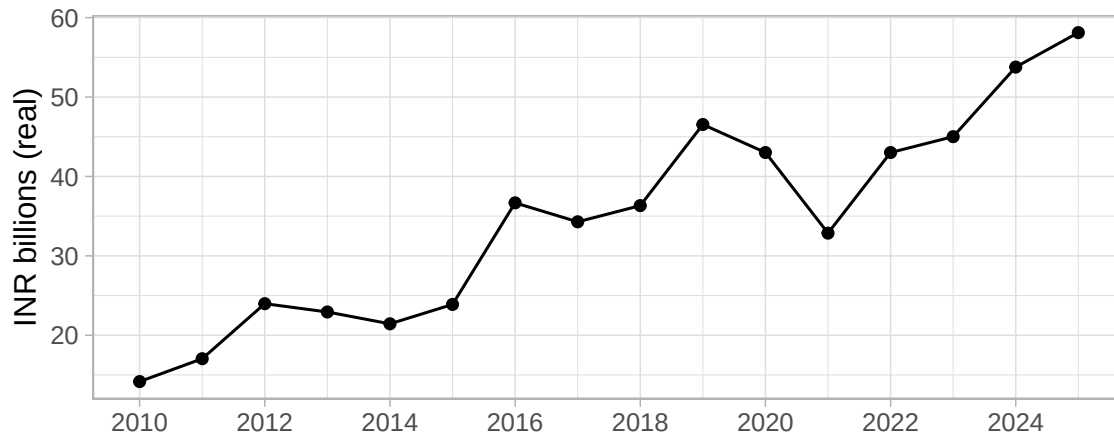
Keywords: information technology, procurement, contracting, project management.

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Figure 1 Public procurement for IT is likely to continue growing



Expenditures on MMPs adjusted for inflation. *Source:* Union Budget expenditure statements 2009–2025.

1 The problem

Information technologies (IT) are now ubiquitous in government. There is a common strand of thinking in India that the large-scale deployment of IT systems in government leads to positive effects on governance (for example, see Nilekani & Shah, 2016). Decision makers in the Indian government have tended to agree. A lot of money is being spent on large IT systems at the union, state, and local levels of government. While it is difficult to estimate the full magnitudes of spending, we are able to see expenditures on one element — “mission mode projects” (MMPs) that include the large IT systems like Passport Seva and the eCourts project. Figure 1 shows the history of this expenditure, and we see a rise of greater than $3\times$ in real terms over 16 years.

Some laws, such as the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 and sections 610-B to 610-E of the then Companies Act, 1956 require that certain legal functions only be done using IT systems. Yet, we see frequent examples of deficiencies and failures with these systems (ICSI, 2023a; Infosys Ltd., 2013; The Economic Times, 2026; The New Indian Express, 2026). Failures in IT services therefore affect not only convenience but also people’s ability to comply with the law.

At the same time, there is a wide gap between contracting volumes and contracting

Table 1 Different types of IT projects in government: examples from India

IT projects are “*greenfield*” i.e. new systems built from scratch, or systems that *digitise erstwhile paper-based processes*. They could also be *citizen-facing* or *government-facing*. Our paper focuses on citizen-facing projects.

	Digitisation of existing processes	Greenfield
Citizen	MCA-21, Passport Seva	Aadhaar, Cowin
Government	HR management (e.g. Manav Sampada)	Quantum computing link between Sanchar Bhavan and NIC

capabilities in the Indian state. The Indian state is beset with constraints when it comes to building capabilities to execute the foundational processes of procurement (Shah, 2021; Sharma & Thomas, 2021). There is a need for deep organisational transformation in order to make the procurement process more efficient. By “efficient”, we mean that the government should be able to obtain the given *quality* of product (e.g. see Kaur et al., 2022) within the given *time* (e.g. see Burman & Manivannan, 2022) and given *cost* (e.g. see Chitgupi et al., 2022; Mehta & Thomas, 2022; Sharma & Thomas, 2021).

Moreover, IT procurement is different from other problems in public procurement. In real world policy environments, there is a ceaseless flow of change, both at the level of laws and at the level of executive decisions. This makes government IT systems particularly turbulent in terms of a stream of changes of features. This problem imposes a challenge on contract design through which this flow of change requests is processed by private vendors without exorbitant monopolistic pricing. The contracting model must cope with the steady flow of these changes is a central challenge to complex government IT systems. In other words, IT systems are not just one-off jobs of building something that is akin to building bridges or even repeat jobs like purchasing medicines.

2 Research questions and methodology

At the outset, we note that there are various types of IT projects in government. Table 1 categorizes them into two broad categories.

Public procurement is done by contracting out a project by the government. In this paper, we ask, what factors drive the performance of IT procurement by the Indian

Table 2 A contract life-cycle approach for procurement performance

“Procurement” is about the entirety of the contracting life-cycle and not just tendering. Our approach towards contracting covers all of the following stages.

Stage	Description	Decisions to be made	Capabilities to be built
Stage I	Specification and design	• Clarity on vision, purpose, and objectives • Clarity on governance structure and contracting model • Cost and time estimates	• Expertise needed to pin down specifications
Stage II	Tendering and award	• Resolving issues with specs and scope because of which only a few bidders participate	• Expertise needed to draft tender documents • Expertise needed to evaluate bids
Stage III	Management		• Expertise needed to monitor performance and handle frequent change requests.
Stage IV	Closure and payment		• Closing and handing over the project to the government

government? We answer the question by analysing the performance of contracts and the underlying factors driving this for IT projects using a contract life-cycle approach (see Table 2).

We proceed in a bottom-up fashion. We first dive deep into three case studies, describing their evolution within a consistent analytical framework. We analyse the contracting life cycle of three IT projects: the Aadhaar numbers issued by the Unique Identification Authority of India (UIDAI), Passport Seva and Ministry of Corporate Affairs 21 (MCA-21) (see Table 3 for an overview of these IT projects). We use a range of sources to do so: we study tender and contract documents, reports, and performance reviews from publicly available sources such as the Parliament and the Comptroller and Auditor General of India (CAG), international research and case studies, as well as conversations with government officials and private sector contractors.

We analyse six features of each IT project:

Table 3 Our case studies

We provide an overview of the IT project and underlying contract documents used in the case studies here.

Project	Type of project	Details	Type of contract
Aadhaar	Greenfield	Build a new national identification system from scratch	Service agreements for all versions (HCL Infosystems, 2012).
Passport Seva	Digitisation of existing processes	Process re-engineering and digitisation of passport services	Build-own-operate-transfer (BOOT) for the first version (V1), service agreements after (Tata Consultancy Services Ltd., 2008).
MCA-21	Digitisation of existing processes	Process re-engineering and digitisation of company filings.	BOOT for V1, services agreements after (Tata Consultancy Services Ltd., 2013).

1. **Vision, purpose, and objectives:** Clear statements of vision, purpose and objectives help the government write the specifications and delegate all the other aspects of the project.
2. **Governance structure:** Clear delegation of financial and managerial powers reduces delays.
3. **Contracting:** The right contracting model, along with carefully written service-level agreements (SLAs) that clarify the scope of work, risks, and liabilities.
4. **Change requests:** Changes to the law/processes are common. The contract should incentivise timely and effective implementation of change requests.
5. **Closure and transition into the new version of the system:** Does the government run the IT system by itself after the first version is complete? Does it contract out the management of new versions as well?
6. **Cost and time estimates:** IT projects use public funds. Expenditures should be reasonably estimated with some flexibility. Time overruns are directly proportionate to cost overruns.

3 Case studies

3.1 Aadhaar

In 2009, the Government of India founded the UIDAI as an organisation attached to the erstwhile Planning Commission.¹ Its purpose is to provide each resident of India with a unique identification number, known as “Aadhaar”. This unique identification number “serves as a universal proof of identity allowing residents to establish their credentials anywhere in India” (UIDAI, 2010). Aadhaar numbers are assigned on the basis of the uniqueness of the resident’s fingerprint and iris related biometrics. Aadhaar is not only the most visible and extensive IT system to perform government-to-citizen (G2C) services in India, but it is also a case study of successful IT *procurement*.

The UIDAI’s success with IT procurement can be traced to certain decisions that were taken at the inception of the project. These decisions fall into two broad categories: (i) decisions regarding the organisation structure and personnel, and (ii) decisions regarding contracting.

Decisions regarding organisation structure and management

The organisation that conducts the procurement should have a clear motivation and institutional preference to “buy” (Mashelkar et al., 2024). Sufficient state capabilities, at every level of the contracting life cycle, are built through careful institutional design. We go through some of these decisions made at the UIDAI when it comes to institutional design.

Firstly, the UIDAI was set up as a dedicated agency. Ordinarily, MMPs are headed by a civil servant at the level of joint or additional secretary (e.g. Passport Seva, MCA-21; see Ministry of Finance, Government of India, 2011). This responsibility usually rests alongside other responsibilities that govern day-to-day matters. However, the leadership team at the UIDAI would only be involved with UID implementation during their tenure.

Secondly, the UIDAI envisaged a unique role for the chairperson. The chairperson of the UIDAI carries the rank of a cabinet minister and is directly accountable to the Cabinet. All other UIDAI officers report to the chairperson. The chairperson need not be a civil servant — they may come from the private sector as well. The chairperson was an ex-officio member of the Cabinet Committee on Unique Identification,

¹In 2016, the UIDAI was given statutory powers under the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016.

a Cabinet committee specifically created for the purpose of fast-tracking decisions relating to the UIDAI.²

Thirdly, the UIDAI was able to bring on board the best talent within the government and the private sector using a unique combination of existing and new procedures (outlined in Table 4). Organisational leaders, as well as rank-and-file employees, need the right incentives to become performance-oriented and create value for the public (Andrews et al., 2017). These incentives work well when they are based on “mission-driven” factors such as personal and organisational motivation (Honig, 2022). The UIDAI took into consideration the civil servant’s relevant expertise in a given domain expertise while deputing them on to the project.

The UIDAI was one of the first Indian government agencies to establish formal mechanisms for external persons to be brought in at all levels of its hierarchy, through instruments such as the *UIDAI Sabbatical Guidelines, 2011*. The UIDAI created the posts of “sabbaticals”, “volunteers”, and “interns” to bring in people from the private sector. All sabbaticals, volunteers, and interns had to undergo an interview, sign a non-disclosure agreement, and abide by the rules prescribed for them.

As a consequence of these innovations, the UIDAI was able to incentivise its team members to feel a sense of *ownership* over the project and build a sense of camaraderie. The UIDAI, according to its founder-chairperson, was to be “run like a startup inside government”. As Ashok Pal Singh reflected about his role in the implementation of Aadhaar, *“in terms of perks, privileges and pay, this place has nothing more to offer than any job in government. In many respects, it is worse off. And yet, everyone is here because they want to be”* (Nilekani & Shah, 2016).

The decision to adopt open-source standards and practices was also useful in attracting, retaining, and encouraging talent. The UIDAI published its architecture manuals, code, APIs etc. which not only provided quick feedback from developers and others in the community, but also serve to function as a Digital Public Good (DPG). Such DPGs generate positive externalities for the next generation of IT services in government and beyond (Mazzucato et al., 2024).

When it came to project implementation, the UIDAI was able to adopt a combination of “make” and “buy” (see figure 2). While the UIDAI is a government agency, its volunteers and professionals on sabbatical came from the private sector. This enabled the Aadhaar teams, which had a mix of private sector professionals and officers from government, to design the core of the system, prescribe functional, software, and

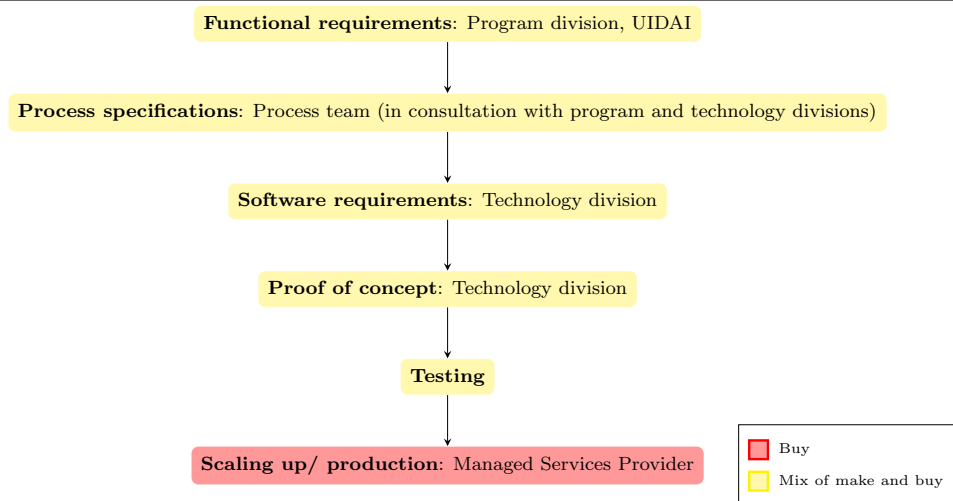
²This committee was dissolved in 2014.

Table 4 The Aadhaar project’s unique leadership structure and the rules that enabled them.

The UIDAI was able to successfully engage experts from the government as well as the private sector using a combination of existing and new rules.

Decision	Enabling rule
Officers from other departments were deputed to the UIDAI. They were chosen based on their skills and experience, which would be relevant to their role at the UIDAI.	Office memoranda issued by the Department of Personnel and Training (2009).
The UIDAI brought in professionals from the private sector. They were chosen from among various domains e.g. law, technology, management etc. New positions such as “chief architect”, “product manager”, “chief technology officer” etc. were created for them	Rule 177 and 191, General Financial Rules
Some professionals had taken a sabbatical from their private sector roles, and worked full-time at UIDAI, while receiving their salary from their private sector employer.	UIDAI Sabbatical Guidelines, 2011
Some professionals were volunteers.	UIDAI Volunteer Guidelines, 2011

Figure 2 “Make” and “buy” processes concerning the Aadhaar project.



process requirements, and put into place a working proof-of-concept (POC). Only after the satisfactory roll-out of the POC did the private sector contractors step in to scale up and deploy the system nationwide.

Decisions regarding contracting

Aadhaar, unlike other MMPs, unbundled the project i.e. they divided the project into nine separate components and contracted for each of them separately. Unbundled contracts allow for the specifications to be drafted in greater detail. They also yield better results in terms of quality. However, unbundling works well only when there is sufficient state capacity to closely monitor the performance of each contract (Wolfram et al., 2023). The individual components include: (i) managed service provider (MSP), (ii) data centre development agency, (iii) governance, risk, compliance and performance service provider, (iv) document management system, (v) contact centre, (vi) enrolment agencies, (vii) training and certification agencies, (viii) media and communication agency, and (ix) biometric service providers. Appendix 8 provides an overview of four of these contracts.

The bidding processes were competitive. 12 bidders responded to the Expression of Interest (EOI) for the MSP tender and 6 of them responded with finalized bids to the Request for Proposals (RFP).

Difficulties during contract management and closure

While the UIDAI’s institutional design was built with the “make” vs. “buy” combination in mind, it must be noted that the UIDAI faced difficulties in closing the contract, transitioning away from the first service provider, and contracting out to a new provider. The duration of the MSP contract, awarded to HCL Infosystems Ltd., was 7 years starting August 2012. However, in August 2019, the UIDAI, allegedly without consulting HCL, unilaterally extended the contract for a period of two years. HCL challenged this decision by invoking arbitration proceedings (CAG of India, 2022). The UIDAI contested HCL’s choice of arbitrator, leading the Delhi High Court to intervene and appoint two retired judges of the Supreme Court of India.³ HCL and UIDAI partially settled the dispute by agreeing that HCL will honour the terms of the original MSP contract for a further period up to April 2021. In October 2025, the arbitral tribunal awarded a sum of INR 1028.1 million along with interest of 10 percent per year to HCL Infosystems Ltd. and denied the UIDAI’s counter-claims (HCL Infosystems Ltd., 2025).

Summary

The UIDAI assigned Aadhaar numbers to 804 million people within the first 5 years. It did so within the given time — the Aadhaar team was constituted in June 2009 and

³*HCL Infosystems Ltd. vs. UIDAI*, order of the Delhi High Court dated 5 September 2019 in Arbitration Petition no. 533 of 2019.

Table 5 Aadhaar cost and time estimates

Sources: Cabinet Committee on Economic Affairs (2014), Cabinet Committee on Unique Identification Authority of India (2010, 2012), National Institute of Public Finance and Policy (2012), and Planning Commission of India (2012). All costs in INR billions.

Cost estimates			
Year	2009-2011	2011-2014	2014-2021
Budget estimate	20.2	58.48	96.66
Actuals	2.94	40.69	83.73
Time estimates			
Year	2009-2011	2011-2014	2014-2021
Deadline	March 2011	March 2014	March 2021
Target no. of UIDs to be issued	100 million	400 million	1 billion
Actual no. of UIDs issued	4.2 million ⁴	610.1 million	1.2904 billion

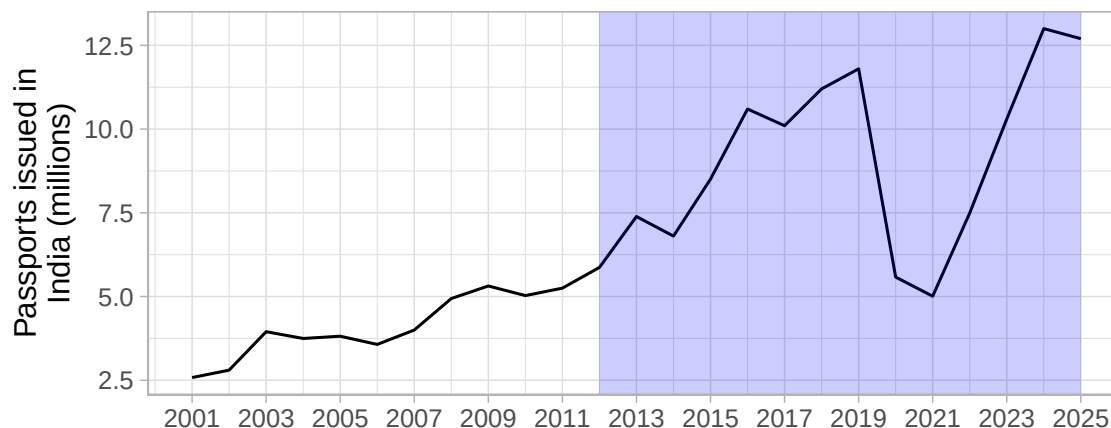
the first Aadhaar was issued within 14 months i.e. by September 2010. In three and a half years (March 2014), 610 million people had been enrolled. It also did so within the given cost — its expenditures exceeded the Standing Committee on Finance (2011) estimate by only 5.8%. After a competitive bidding process, contracting was done with time of the essence. The EOI for the MSP contract was issued in June 2010 and the vendor was selected in August 2012 i.e. 26 months later. Tables 5 show that the project had minimal cost and time overruns. While the project enjoyed these successes, it also faced difficulties in transitioning from first manager of the IT system to the next.

3.2 Passport Seva

Many more Indians now have a passport (see Figure 3). Passports now have an increasing array of technological features e.g. machine-readable barcodes, embedded radio frequency identification (RFID) chips, etc. Therefore, the government sought to modernise the IT system “to deliver all passport-related services to the citizens in a timely, transparent, more accessible, reliable manner in a comfortable environment through streamlined processes by a committed, trained and motivated workforce” (Cabinet Secretariat, Government of India, 2007). The government commissioned a study from the National Institute of Smart Governance (NISG) which subsequently provided a list of technical specifications.

The Passport Seva project is a more typical example of an MMP. Unlike the UIDAI, which was set up as its own agency, the Passport Seva project was governed by

Figure 3 The number of passports issued each year has increased over the years.



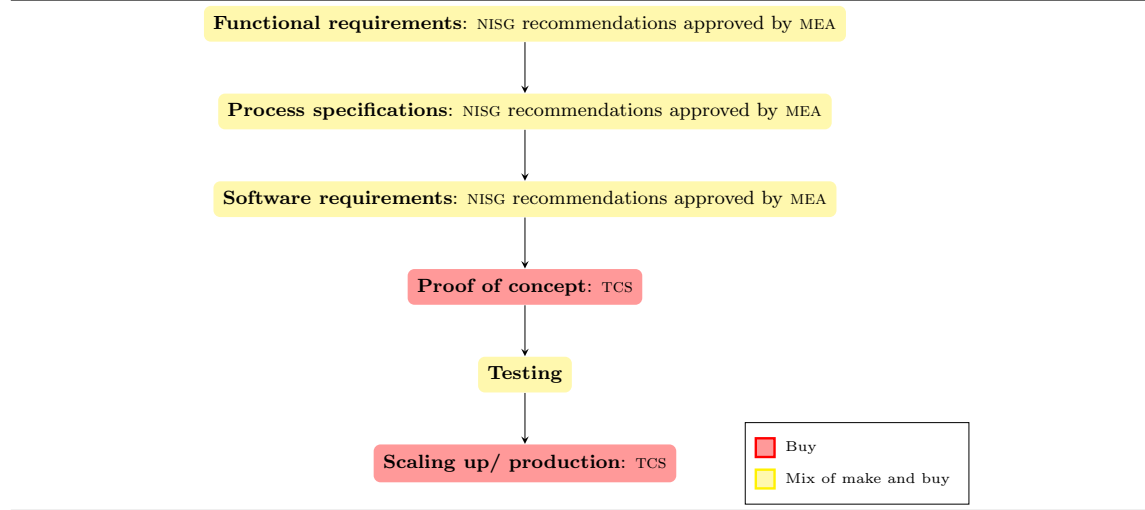
Source: Annual reports of the Ministry of External Affairs, Government of India (2001–2023). The shaded region represents the period during which the Passport Seva has been functioning.

officials in the Ministry of External Affairs (MEA). The MEA set up three units to monitor the project (Lok Sabha, 2014b):

1. *Empowered Committee*: This committee took “vision and policy level decisions” (CAG of India, 2016). It was headed by the Foreign Secretary. Under the terms of the Master Services Agreement (MSA) signed between the vendor and the government, they were required to meet once every six months to review the progress of the project.
2. *Program Management Committee* (PMC): They were responsible for performance management and change request-related issues. It was headed by Additional Secretary (Consular, Passports and Visas). Under the terms of the MSA they were required to meet once each month.
3. *Program Management Unit* (PMU): This unit was headed by the Joint Secretary (Passport Seva Project). Each Regional Passport Office (RPO) had a project team, headed by the regional passport officer, that reported on the progress of the project to the PMU.

The contracting process began in October 2007 when the RFP was made available. 6 bidders reportedly placed their bids (The Economic Times, 2008). In October 2008,

Figure 4 “Make” and “buy” processes at the Passport Seva project.



Tata Consultancy Services Ltd. (TCS) was awarded the contract (Tata Consultancy Services Ltd., 2008). The contract between the government and TCS was an MSA with fixed-price payments determined on the basis of SLAs. Appendix 9 presents the list of SLAs and their weightage that determined payment. The role of the government, the NISG and TCS is laid out in Figure 4. Under the terms of the MSA, TCS was to:

- set up Passport Seva Kendras (PSKs) across the country which would be staffed by employees deputed by both TCS and the Passports Division of the MEA.
- create a centralized IT system that links these PSKs to the regional passport offices, police stations (for verification) and the postal department (for delivery).

Once the contract was signed, TCS was expected to start the pilot programs in Bangalore and Chandigarh. However, due to “technical, operational and other infrastructural problems”, the implementation for the pilot programs got delayed (Lok Sabha, 2014b). Even after the pilots were completed and the systems were certified, there were delays in setting up all the PSKs. As a consequence, the nationwide rollout was delayed by more than two years. TCS was levied a penalty of INR 48 lakhs for the pre-pilot delays and a penalty of INR 34.2 lakhs during the roll-out phase (Lok Sabha, 2014b). An overview of cost and time overruns is provided in Table 6.

Once the project roll-out began at a national level, there were significant improve-

ments in the process that grants a citizen their passport. However, there were issues that cropped up during the contract management phase. The CAG criticised the MEA for various issues regarding the governance of the project exercised by these committees. These committees were “either not functioning or not involved in the function for which they were constituted”. As a result, they made “important changes/deviations from the service level agreements (SLAs) without adequate justification and approvals” CAG of India (2016). For example, the PMC did not conduct monthly meetings. As a consequence, 41 change requests were carried out without the approval of the PMC.

The biggest concern regarding change requests came in 2017–18 when the government sought to designate post offices as PSKs and postal staff as PSK staff. It was reported that TCS had disputed this change in the scope of the project (Business Standard, 2018; Rediff, 2018). However, it is not known if TCS challenged this decision in court or sought compensation.

The MEA’s contract with TCS was to operate for a period of ten years (2008–2018) with a clause where either party could extend the agreement for a further period of two years. The MEA invoked this clause in 2018 for extension up to 2020. As per the agreement, transition to a new provider has to be carried out within six months of the expiry of the contract. However, the contract for the next version of the project (V2) was signed only in January 2022.⁵

The Passport Seva project was, no doubt, a very successful project. The project did deliver on its requirements i.e. the citizen of India is now able to obtain a passport quickly, easily, and more transparently than the erstwhile system. This is evidenced by its “triple” International Organisation for Standardisation (ISO) Certification (9001, 27001 and 20000) (Ministry of External Affairs, Government of India, 2021). Contracting was done with time of the essence — the call for bids was issued in October 2007 and the contract was awarded in October 2008 i.e. 12 months later. However, the project also faced time overruns during the pilot phase which spilled over into the certification and rollout process. The government also faced questions regarding its governance of the project, especially when it came to change requests and changes of scope.

⁵It is not clear from the public record whether the MEA and TCS agreed to extend the terms of the contract from June 2020 to January 2022.

Table 6 Passport Seva cost and time estimates

Sources: Lok Sabha (2014a), Lok Sabha (2014b), CAG of India (2016).

Cost estimates			
	Expected cost	Actual cost	Overrun
Version 1	NA	NA	NA
Version 2	NA	NA	NA
Time estimates			
Process	Expected completion	Actual completion	Delay
Signing of agreement		October 2008	
Starting the pilot PSK, Bangalore	October 2009	March 2010	5 months
Starting the pilot PSK, Chandigarh	October 2009	August 2010	10 months
Government-appointed auditor to certify the PSKs	January 2010	January 2011	12 months
Nationwide rollout	April 2010	June 2012	26 months
Term of contract	June 2018	January 2022	41 months

3.3 MCA-21

The bargain of limited liability involves state protection for equity investors against debt repayment obligations, in return for a set of constraints placed upon the company. One important element of that is rules about disclosure: the privilege of being a limited liability company goes with an obligation to release certain information into the public domain. The implementation of this information submission and release is, of course, best done using an IT system. A famous example in this regard is the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system run by the United States’ Securities and Exchanges Commission (SEC) starting in 1993 (Securities and Exchanges Commission, 2006).

In India, a committee headed by P.L. Sanjeeva Reddy recommended that the Department of Company Affairs (DCA, as it was known then) call for detailed information from companies and make them transparently available on their web site for accessing by interested parties “similar to the EDGAR in the United States” (Department of Company Affairs, Government of India, 2000). Subsequently, a committee headed by Naresh Chandra observed that the solution, with capacity problems at the DCA, “seems to lie in outsourcing (including random scrutiny and pre-certification), con-

tractual appointments, computerisation, a continuous increase in staff strength on a normative basis, better transportation and communication facilities, and a regular honing of skills through training” (Department of Company Affairs, Government of India, 2003).

As a consequence, in October 2003, the DCA put out an EOI for an IT system that serves to transform the DCA into a “modern, dynamic and customer-centric” organisation (Ministry of Finance, Government of India, 2003). Unit Trust of India Investor Services Ltd. (UTIISL), a public sector undertaking, was engaged to draft the RFP, design the specifications and provide inputs during the tendering process. The RFP called for the system to (Department of Company Affairs, 2004):

“... design and develop systems and physical offices to provide a list of six core services ... The service provider will design and develop all systems architectures, procure all necessary hardware and software for system integration, set up digital signature/ public key infrastructure (PKI) delivery mechanisms, set up fixed front and back offices (including temporary offices needed during peak periods), migrate all legacy data and digitize all legacy paper documents, conduct real-time maintenance support, upgrades and enhancements, provide user training at all levels, promote e-filing as the preferred mode of transactions and provide all other services provided for in the agreement and the SLAs.”

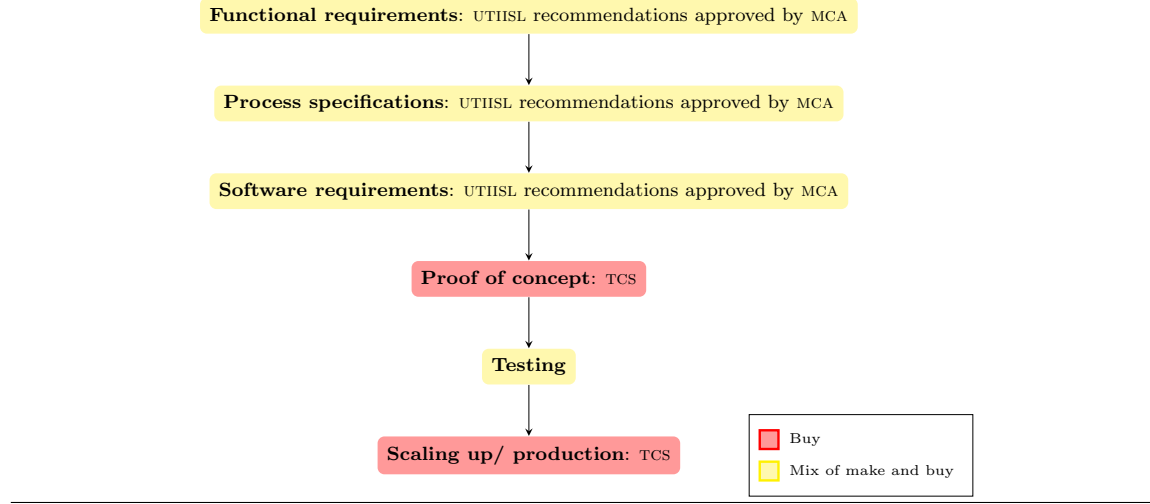
In May 2004, the DCA was elevated to the status of a ministry i.e. the Ministry of Company Affairs MCA. The MCA-21 system would be governed by the MCA-21 division, headed by a Joint Secretary, at the MCA.

In March 2005, TCS was selected to build and operate MCA-21. TCS and the government entered into a BOOT agreement with fixed prices determined by SLAs. Appendix 9 presents the list of SLAs and their weightage that determined payment. The role of the government, UTIISL and TCS is laid out in Figure 5. Under the terms of this agreement, TCS had to:

- Design, development, and operation of the MCA-21 system.
- Procurement and installation of all necessary hardware, software, IT infrastructure and system integration.
- Rollout of the system after conducting pilots in Coimbatore and Delhi.

The project began with minimal delay and overruns. Details on cost and time overruns are presented in Table 7.

Figure 5 “Make” and “buy” processes at MCA-21.



Among the three case studies we chose for this paper, the MCA-21 contracts have the clearest and most detailed descriptions of how change requests would be remunerated. Payment for change requests were done on the basis of extra man-hours that is required for the change. In the first version of the MCA-21 system (“V1”, 2005–2013), any change request which is valued at more than 15% of the existing contract will be subject to a separate bid process and separate contract (Ministry of Company Affairs, Government of India, 2005). In the second version (“V2”, 2013–2023, awarded to Infosys Ltd.), change requests must not exceed, in total, 3% of the value of the contract (Ministry of Corporate Affairs, Government of India, 2012).

However, despite having such clear expressions of the terms and conditions in the contract, there were difficulties in managing the MCA-21 project in all three of its iterations. When the contract period for V1 was drawing to a close, there were failures in implementing closure and handover procedures as prescribed by the contract. As a consequence, the MCA-21 portal did not function for nearly two months during the transition from V1 to V2 (Business Standard, 2013; Infosys Ltd., 2013).

V1 of the system was written in Java. Infosys converted the V1 architecture into V2 using the SAP platform with the intention of transitioning from the old Companies Act to the new version that was enacted in 2013. However, the updation could be completed only by 2016. The MCA-21 portal started functioning only four days prior to the annual filing date. The system faced glitches and, as a consequence, many companies were unable to make their statutory filings within the due date.

Table 7 MCA-21 cost and time estimates

Sources: Ministry of Corporate Affairs, Government of India (2012) and Press Information Bureau of India (2012)

Cost estimates			
	Expected cost	Actual cost	Overrun
Version 1	341.21	NA	NA
Version 2	NA	223.75	NA
Version 3	NA	NA	NA
Time estimates			
Process	Expected completion	Actual completion	Delay
Agreement executed	March 2005		
Pilots in Coimbatore and Delhi	December 2005	January 2006	1 month
Nationwide launch	March 2006	September 2006	6 months
Contract completion	March 2011	January 2013	22 months

As a consequence, the MCA had to grant extensions (Ministry of Corporate Affairs, Government of India, 2016). Moreover, in its audit of MCA-21 V2, the CAG of India (2021) noted that the system suffered from “inadequate input controls and validation checks in the MCA21 system that compromised the correctness and reliability of data fed in the system” which resulted not only in inefficiencies and inconvenience to users, but also directly contravened the provisions of Companies Act.

When it came to the latest version i.e. V3 (2023 onwards, services contract awarded to L&T Infotech Ltd.), there were 45 documented instances of incorrectness in the MCA-21 forms that were noted during the transition from V2 to V3. As a consequence, companies could not make filings that were in full compliance with the law. Six months after the transition was completed, 31 out of 45 issues remained unresolved (ICSI, 2023a, 2023b).

The MCA-21 project faced numerous delays — the IT system went live for nationwide use by citizens with a delay of six months. The project also dealt with frictions while implementing change requests. Company law is inherently dynamic in nature. Frequent amendments and process changes necessitate frequent change requests and changes of scope. All versions of the project have faced problems while implementing change requests. All versions of the project also faced problems while closing and

transitioning out of the given version of the system.

4 Insights

Across our case studies, we identify two major issues with IT projects in the Indian government:

1. The Indian government lacks the capability to take on the IT project after the vendor has completed the contract.
2. The government is unable to communicate, handle, and account for change requests in IT projects efficiently.

As a consequence, we observed that even the best IT projects suffer from some level of time and cost overruns.

IT projects carry some level of inherent risk and they require some level of adaptive contracting. At the same time, government projects are conducted using public funds and there are rules against profligate spending. Therefore, IT contracts should be designed in such a way that they confine to the strictures of the rules on public spending, while at the same time they are flexible enough to allow the project managers to adapt to change requests, technological improvements, and other developments.⁶

Therefore, we propose the following factors that provide the most level of insight into the success of a government IT project. In other words, when these factors are accounted for, they could mitigate the chances of IT project failures.

Restricting the mandate of the project to a single goal/ outcome : Given the complexities of governance under conditions of low state capabilities, the state is often incentivized to assign multiple goals to a single project or organization (Biber, 2009). However, multiple goals could conflict with each other and could create uncertainties both within the government and with the contractor. To avoid this, it is best to restrict the project to a single outcome-based set of goals. The UIDAI was successful in granting a unique Aadhaar number to each applicant because this was the only goal that was assigned to the organization when it was set up.

⁶IT projects have to be prepared for extraordinary circumstances, not only in terms of extra availability of funding, but also in terms of skilled professionals who can ensure continued operation even when the system becomes overloaded (e.g. the IT system for California’s unemployment insurance program, see Pahlka, 2023).

Sufficiently empowering the project leadership team : The skill of the project leadership, as well as the authority they command, has significant effects on the critical success factors of an e-governance project across its life cycle (Melin & Axelsson, 2009). The project team should have all the clearances and abilities to perform their functions. The UIDAI was able to do this by granting administrative powers to the leadership team.

Team composition : As mentioned earlier, the composition of the team must be done well to ensure superlative scores on critical success factors of the project. While we do not make specific suggestions on technical expertise, we do believe the scale of the government necessitates that the team be interdisciplinary. A team built on the basis of expertise gathered from a diverse variety of fields, projects, and backgrounds — ranging from solution architects to ethicists to legal experts — are able to troubleshoot problems more efficiently (Pahlka, 2023). The Aadhaar project was successful in constituting such a team.

A prominent problem when technology is implemented for better governance outcomes is the trap of “solutionism” (Morozov, 2013; Pritchett & Woolcock, 2004). Solutionism reduces “complex social phenomena like politics, public health, education, and law enforcement” as “neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized — if only the right algorithms are in place”. Our view is that a team of experts drawn from a variety of backgrounds would temper solutionist thinking and ensure long-term solutions.

Space for deliberation : It is generally inefficient to mandate a top-down approach (the so-called “waterfall” approach) for constructing new IT systems (Balter, 2011). Instead, IT systems have to be built on a horizontal, “agile” basis that can accommodate changes and new technologies without disruptions. Agile development is only possible when hierarchies within the project team are kept as horizontal as possible. This mitigates information asymmetries that would have otherwise hindered monitoring efforts and individual incentives. The Aadhaar project team had planned for these systems to be developed on a live basis. Project officials, not external consultants, wrote user requirements in plain English and communicated them to stakeholders effectively. The “agile” thinking for software development is now also reflected in the thinking of the Government of India — the Ministry of Electronics and IT released guidelines in 2019 on how to incorporate agile design thinking into the development of new government IT services (Satyanarayana & Saha, 2019).

Evidence based decision making : Decisions relating to procurement must be made following the scientific process of discovery, evidence, and analysis. User surveys, technical inspections, focus group discussions, etc. are some of the formal methods that have been deployed in projects in India and abroad. All three case studies

conducted pilot studies before large-scale deployment. In many countries, these pre-procurement exercises are even mandated by the law. For example, Chapter 10 of the United States Federal Acquisition Regulation requires that the procuring agency conduct market research by doing interviews, reading scientific and trade literature, etc.

Minimal dependence on consultants : Many authors e.g., Mazzucato and Collington (2023) have pointed out that over-reliance on consultants erodes state capacity, introduces repeat-player incentives, and generates sub-optimal welfare outcomes. To be clear, we do not agree with the view that consultants are to be excluded from the stages of the project. Rather, the government should take ownership of the project and use the services of consultants and experts for specific outcomes within the project framework. Consultants and project managers would also play an important role in roll-out and scaling up the pilot. Therefore, the entirety of the core project management exercise should rest with the government. Outsourcing this function to a contractor dilutes responsibilities, blinds key project teams, increases dependence, and, on expiry of the contract, disrupts continuity, plunging the project into uncertainty. The UIDAI, with its in-house competency, was able to avert debilitating dependency and disruption. There is a case for staffing the PMU of IT Projects with NIC personnel on deputation, with stable tenures, adopting the norms and practices of the central staffing scheme, without any dual reporting to the NIC.

Onboarding stakeholders : As mentioned earlier, engagement with stakeholders provides a firm feedback loop for complaints and other issues to be fixed in real time. It also adds depth in design and user outcomes for the project. The Aadhaar experience is that the process begins at the drawing board stage, while framing user requirements, and a continuous dialogue follows thereafter. User agencies seldom provide solutions; they primarily raise problems. The project team must have the depth of knowledge and core competence to convince stakeholders, including finding solutions to the issues they raise.

Planned transition : Transition management is as important as project management, if not more. In public administration, if the transition from one phase of a project to another, or from private to public ownership, etc. are done badly, there are tangible and measurable political and welfare consequences (Avelino, 2009). With the exception of the Passport Seva project (because the same company continued to service the next iteration) all the case studies we have covered had faced significant transition issues.

Open system : Government IT systems are built using taxpayer money. There is a higher duty of fairness and value realization from government IT systems than their counterparts in the private sector. Therefore, the government's IT system should

be available in the open source domain. This is long-established practice in many countries (Simon, 2005). Currently, none of the three projects have published their source code in an open platform. There are significant positive spillovers when government IT systems are digital public goods i.e., open-source code on published websites which speak open APIs.

Ownership of the project : Highly specialized IT projects are susceptible to opportunistic hold-ups and sunk costs. This is a well-known problem in Indian government contracting (Acharya et al., 2025; Manivannan et al., 2024; Mehta & Uday, 2022). Bidders in India therefore tend to price these costs ex-ante i.e., by overstating the bid. This in turn incentivizes the government to use state power to pay only the marginal production cost to the bidder. As a solution, the literature suggests that the government “owns” the system/ asset (among others, see Globberman & Vining, 1996). Government ownership makes the scope of the work clear to the bidder, introduces an additional sense of responsibility that reduces delays, expenditures, and the possibility of conflict with the bidder. This is another feature that differentiates Aadhaar from other government IT projects in India. Ownership does not entirely mean legal ownership here — all three cases in our paper are concerning projects where the Government of India fully owns the intellectual property and all other assets associated with the system. “Ownership” here is used in the context of control and access. The government should have its own independent construction, testing, monitoring, and management of the project.

Choosing the right type of contract for the given problem : Contracts are differentiated on the basis of financial risks, operational risks, and ownership. In India, Rule 225(vii) of the GFR notes that “cost plus contracts are to be generally avoided”. The Procurement Manuals note that, in general, five forms of contracts could be used for procurement (Department of Expenditure, 2022a, 2022b): (i) lump-sum or firm fixed-price, (ii) time-based (retainership), (iii) percentage (success fee), (iv) engineering, procurement and construction (EPC) contracts, and (v) public-private partnership (PPP) contracts (these include BOT and BOOT contracts). In our view, the government should procure a working POC, after which it can scale up the project. It would be useful if the GFRs provided clarifications on adopting flexible contracting structures when it comes to IT and other complex projects.

When all these factors are done well, the government should ideally have the institutional capability to take over after contract closure if it is needed.

5 Looking forward

When it comes to public procurement for IT, the “make” vs. “buy” decision is complicated by the fact that “buy” also requires significant levels of expertise within the government. To be able to do this well, the state needs high levels of capabilities to procure something as complex as a modern, large scale IT system.

The cases of public procurement of large IT systems that we have studied indicate that all IT projects can be thought of as being implemented in the following three phases: *Phase 1* being the development of a system that demonstrates the proof of concept (PoC) ending in the delivery of a pilot implementation; *Phase 2* where the pilot is scaled up to the state or national level; and *Phase 3* where the project then moves into running an operational system. Where

$$\underbrace{\text{PoC} + \text{Pilot}}_{\text{Phase 1}} \longrightarrow \underbrace{\text{Scale}}_{\text{Phase 2}} \longrightarrow \underbrace{\text{Own}}_{\text{Phase 3}}$$

We observe that successful implementations of public IT systems procurement ideally are a mix of “make” and “buy” rather than just “buy”. Specifically, in such success stories, *Phase 1* is done through “make” – where the government itself builds the PoC and delivers a pilot implementation. Once the PoC is established, the IT system is like a well-defined product. With this in place, scaling up of the system over a state or the entire country can be optimally done through “buy”, where private vendors can be contracted to deliver on a clearly defined output. Given the knowledge that is developed in-house during *Phase 1*, the delivery of the output in *Phase 2* can be readily managed as contracted projects. Such inhouse knowledge will also be important in managing any litigation that may arise during the course of *Phase 2*. The same in-house knowledge will then become the basis on which the government can take delivery of the final scaled-up system, and operate it in *Phase 3*. This phase will also involve managing and “buy”-ing or contracting for changes to the existing IT system, as the system evolves.

The root issue, as we have seen, is that departments and organisations in the Indian state that procure IT have low levels of capabilities. In order to address this, capabilities to *make* and *own* i.e., to manage the project without external inputs whenever necessary, should be built in right from the time that the IT project is approved. These capabilities include:

- **Domain:** This covers the knowledge in the field of government systems for specific services e.g. passports, company law, identity management etc.

- **Contracting:** This covers expertise in the fields of procurement, contracting, and law.
- **IT:** This covers expertise in IT-facing fields like systems architecture, database, front-end development etc.
- **Financing:** Financial planning and budget allocation should be done with both caution and flexibility.

Along with these capabilities, the text of the rules must make explicit the procedures to identify and contract experts from the government and the private sector. These have to be done by making suitable amendments to the General Financial Rules, the Procurement Manuals on goods, services and works, and the relevant rules on personnel framed by the Ministry of Personnel and Training from time to time.

References

- Acharya, V., Parlatore, C., & Sundaresan, S. (2025). Financing infrastructure in the shadow of expropriation. *The Review of Financial Studies*, 38(5), 1368–1418. <https://ideas.repec.org/a/oup/rfinst/v38y2025i5p1368-1418..html>
- Andrews, M., Pritchett, L., & Woolcock, M. (2017). *Building state capability: Evidence, analysis, action*. Oxford University Press.
- Avelino, F. (2009). Empowerment and the challenge of applying transition management to ongoing projects. *Policy Sciences*, 42(4), 369–390. <https://doi.org/10.1007/s11077-009-9102-6>
- Balter, B. J. (2011). Toward more agile government: the case for rebooting federal IT procurement. *Public Contract Law Journal*, 41(1), 149–172.
- Biber, E. (2009). Too many things to do: How to deal with the dysfunctions of multiple-goal agencies. *Harvard Environmental Law Review*, 33. <https://escholarship.org/content/qt0fw243kz/qt0fw243kz.pdf>
- Burman, A., & Manivannan, P. (2022). Delays in government contracting: A tale of two metros. *The Leap Blog*. Retrieved May 31, 2024, from <https://blog.theleapjournal.org/2022/12/delays-in-government-contracting-tale.html>
- Business Standard. (2013, February 21). MCA ropes in TCS to help Infosys manage portal. https://www.business-standard.com/article/technology/mca-ropes-in-tcs-to-help-infosys-manage-portal-113022000068_1.html
- Business Standard. (2018, June 21). *TCS upset over govt’s decision to use postal staff at passport centres*. Retrieved October 24, 2023, from https://www.business-standard.com/article/companies/tcs-upset-over-govt-s-decision-to-use-postal-staff-at-passport-centres-118062001178_1.html
- Cabinet Committee on Economic Affairs. (2014, September 10). Approval of Phase-V of Unique Identification project. Retrieved May 1, 2024, from <https://archive.pib.gov.in/archive2/PrintRelease.aspx>
- Cabinet Committee on Unique Identification Authority of India. (2010, July 22). Funding of Phase II of the Unique Identification Authority of India (UIDAI) Scheme approved. Retrieved May 1, 2024, from <https://archive.pib.gov.in/archive2/PrintRelease.aspx>
- Cabinet Committee on Unique Identification Authority of India. (2012, January 27). Approval for funding Phase-III of the UIDAI. Retrieved May 1, 2024, from <https://archive.pib.gov.in/archive2/PrintRelease.aspx>
- Cabinet Secretariat, Government of India. (2007, September 6). *Comprehensive reform of the passport issuance system — Passport Seva project*. Retrieved October 19, 2023, from <https://archive.pib.gov.in/newsite/PrintRelease.aspx?relid=30998>
- CAG of India. (2016, April 29). *Union Civil Performance Audit* (7). <https://cag.gov.in/en/audit-report/details/21358>
- CAG of India. (2021, December 21). *Compliance Audit Observations* (16). https://cag.gov.in/uploads/download_audit_report/2021/Report%5C%20No.%5C%2016%5C%20of%5C%202021_E&SM_English_PDF%5C%20A-061c1b9cbe2d147.22751655.pdf
- CAG of India. (2022, April 6). *Functioning of Unique Identification Authority of India*. Retrieved July 25, 2023, from <https://cag.gov.in/en/audit-report/download/116042>
- Chitgupi, A., Thomas, S., & Gorski, A. (2022, November 5). *Learning by doing and public procurement in India*. Retrieved September 4, 2023, from <https://blog.theleapjournal.org/2022/11/learning-by-doing-and-public.html>

- Department of Company Affairs. (2004, February 25). *Request For Proposal: DCA-21*. https://www.mca.gov.in/Ministry/pdf/MCA21_V1_%5C%20RFP.pdf
- Department of Company Affairs, Government of India. (2000, May 15). *Report on corporate excellence on a sustained basis to sharpen India's global competitive edge and to further develop corporate culture in the country*. Retrieved October 24, 2023, from <http://dca.nic.in/corp-exc.htm> archived at <https://web.archive.org/web/20050212164424/http://dca.nic.in/corp-exc.htm#order>.
- Department of Company Affairs, Government of India. (2003, March 15). *Report of the committee on regulation of private companies and parternership*. Retrieved October 28, 2023, from <https://dea.gov.in/sites/default/files/chandra.pdf>
- Department of Expenditure. (2022a, July 1). *Manual for procurement of consultancy and other services*. Government of India. Retrieved July 25, 2023, from <https://doe.gov.in/sites/default/files/Manual%5C%20for%5C%20Procurement%5C%20of%5C%20Consultancy%5C%20%5C%26%5C%20Other%5C%20Services.0.pdf>
- Department of Expenditure. (2022b, July 1). *Manual for procurement of works*. Government of India. Retrieved July 25, 2023, from <https://doe.gov.in/sites/default/files/Manual%5C%20for%5C%20Procurement%5C%20of%5C%20Works.0.pdf>
- Department of Personnel and Training, Government of India. (2009, October 9). *Panel of names for filling up posts in UIDAI*. Retrieved January 24, 2024, from [https://documents.doptcirculars.nic.in/D2/D02csd/21-8-2009-CS.I\(D\)%5C%209-10-2009.pdf](https://documents.doptcirculars.nic.in/D2/D02csd/21-8-2009-CS.I(D)%5C%209-10-2009.pdf)
- Globerman, S., & Vining, A. R. (1996). A framework for evaluating the government contracting-out decision with an application to information technology. *Public Administration Review*, 56(6), 577–586. <https://www.jstor.org/stable/977256>
- HCL Infosystems. (2012, August 10). *UIDAI inks contract with HCL Infosystems*. <https://www.hclinfosystems.in/uidai-inks-contract-hcl-infosystems/>
- HCL Infosystems Ltd. (2025, October 6). *Intimation under Regulation 30 and Schedule III of the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015*. Retrieved September 8, 2026, from <https://hclinfosystems.in/wp-content/uploads/2025/10/Regulation-30-Final-Arbitration-Award-filed-by-Company-against-UIDAI-compressed.pdf>
- Honig, D. (2022). Managing for motivation as public performance improvement strategy in education and far beyond. <https://doi.org/10.35489/BSG-RISE-Misc-2022/04>
- ICSI. (2023a, February 10). *Functioning of MCA-21 V3 portal*. https://www.icsi.edu/media/webmodules/Functioning_MCA-21V3_10022023.pdf
- ICSI. (2023b, August 23). *Pending issues of stakeholders on MCA-21 V3 portal*. <https://www.icsi.edu/media/webmodules/PendingIssuesStakeholdersMcaV3.pdf>
- Infosys Ltd. (2013, February 22). *Statement: Infosys Clarifies Speculation on MCA21*. <http://www.infosys.com/newsroom/press-releases/Pages/infosys-clarifies-speculation-MCA21.aspx>
- Kaur, H., Shah, A., & Srivastava, S. (2022, December). *Process improvement for government drug procurement in India* (Working Papers No. 18). XKDR Forum. <https://ideas.repec.org/p/anf/wpaper/18.html>
- Lok Sabha. (2013, April 29). *Standing Committee on External Affairs: 20th report on Ministry of External Affairs Detailed Demand for Grants*. Retrieved October 19, 2023, from https://loksabhadocs.nic.in/lsscommittee/External%5C%20Affairs/15_External_Affairs_20.pdf

- Lok Sabha. (2014a, February 20). *Action taken on the Standing Committee on External Affairs: Passport Seva: Targets and Achievements*. Retrieved October 19, 2023, from https://eparlib.nic.in/bitstream/123456789/65280/1/16_External_Affairs_2.pdf
- Lok Sabha. (2014b, February 20). *Standing Committee on External Affairs: Passport Seva: Targets and Achievements*. Retrieved October 19, 2023, from https://eparlib.nic.in/bitstream/123456789/64098/1/15_External_Affairs_25.pdf
- Lok Sabha. (2015, April 28). *Standing Committee on External Affairs: 6th report on Ministry of External Affairs Detailed Demand for Grants*. Retrieved October 19, 2023, from https://loksabhadocs.nic.in/lsscommittee_External%20Affairs_16_External_Affairs_6.pdf
- Lok Sabha. (2022, March 23). *Standing Committee on External Affairs: 12th report on Ministry of External Affairs Detailed Demand for Grants*. Retrieved October 19, 2023, from https://loksabhadocs.nic.in/lsscommittee/External%5C%20Affairs/17_External_Affairs_12.pdf
- Manivannan, P., Mehta, C., & Thomas, S. (2024). Improving supply chain management of medicines for public healthcare in India. (36). <https://www.xkdr.org/paper/improving-supply-chain-management-of-medicines-for-public-healthcare-in-india>
- Mashelkar, R. A., Shah, A., & Thomas, S. (2024, March). *Rethinking innovation policy in India: Amplifying spillovers through contracting-out* (Working Papers No. 32). XKDR Forum. <https://ideas.repec.org/p/anf/wpaper/32.html>
- Mathews, H. V. (2016). Flaws in the UIDAI Process. *Economic and Political Weekly*, 51(9), 74–78. <http://www.jstor.org/stable/44004450>
- Mazzucato, M., & Collington, R. (2023). *The Big Con: How the Consulting Industry Weakens our Businesses, Infantilizes our Governments and Warps our Economies*.
- Mazzucato, M., Eaves, D., & Vasconcellos, B. (2024). Digital public infrastructure and public value: what is public about DPI? <https://www.ucl.ac.uk/bartlett/public-purpose/wp2024-05>
- Mehta, C., & Thomas, S. (2022). Identifying roadblocks in highway contracting: lessons from NHAI litigation. *The LEAP Blog*.
- Mehta, C., & Uday, D. (2022). How competitive is bidding in infrastructure public procurement? a study of road and water projects in five indian states. *The Leap Blog*.
- Melin, U., & Axelsson, K. (2009). Managing e-service development — comparing two e-government case studies. *Transforming Government: People, Process and Policy*, 3(3), 248–270. <https://doi.org/10.1108/17506160910979351>
- Ministry of Company Affairs, Government of India. (2005, March 1). *MCA-21 e-Governance Master Services Agreement*. Retrieved August 8, 2024, from https://www.mca.gov.in/Ministry/pdf/MCA21_V1_Agreement.pdf
- Ministry of Corporate Affairs, Government of India. (2012, October 31). *Service Provider Agreement for MCA-21 V2*. Retrieved June 30, 2024, from <https://www.mca.gov.in/Ministry/pdf/MCA21V2Agreement.pdf>
- Ministry of Corporate Affairs, Government of India. (2016, April 12). *Relaxation of additional fees and extension of last date for filing various e-forms under Companies Act*. https://www.mca.gov.in/Ministry/pdf/General_circular_13042016.pdf
- Ministry of External Affairs, Government of India. (2021, March 17). Question no. 3629: Paperless passport service. Retrieved June 30, 2024, from <https://www.mea.gov.in/lok-sabha.htm?dtl/33647/QUESTION+NO3629+PAPERLESS+PASSPORT+SERVICE>
- Ministry of Finance, Government of India. (2003, October 1). *Invitation for expression of interest (EOI) for DCA-21 — an innovative e-governance initiative*. Retrieved October 24, 2023,

- from http://www.dca.nic.in/eoi_advt.pdf archived at https://web.archive.org/web/20060511234526/http://www.dca.nic.in/eoi_advt.pdf.
- Ministry of Finance, Government of India. (2011, January 31). *Report of the technology advisory group for unique projects*. Retrieved August 14, 2023, from https://www.finmin.nic.in/sites/default/files/TAGUP_Report.pdf
- Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. PublicAffairs.
- National Institute of Public Finance and Policy. (2012, November 9). *A cost-benefit analysis of Aadhaar*. Retrieved July 25, 2023, from https://macrofinance.nipfp.org.in/FILES/uid_cba_paper.pdf
- Nilekani, N., & Shah, V. (2016, February 4). *Rebooting India: Realizing a billion aspirations*. Penguin.
- Pahlka, J. (2023). *Recoding America: why government is failing in the Digital Age and how we can do better*. Metropolitan Books.
- Planning Commission of India. (2012, January 27). Aadhaar enrolments beyond 20 crore. Retrieved May 1, 2024, from <https://archive.pib.gov.in/archive2/PrintRelease.aspx>
- Prakash, P. (2016). Glaring errors in UIDAI's rebuttal. 51 (36). <https://www.epw.in/journal/2016/36/documents/glaring-errors-uidais-rebuttal.html>
- Press Information Bureau of India. (2012, August 9). *E-services*. Retrieved May 20, 2024, from <https://pib.gov.in/newsite/PrintRelease.aspx?relid=85862>
- Pritchett, L., & Woolcock, M. (2004). Solutions when the solution is the problem: Arraying the disarray in development. *World Development*, 32(2), 191–212. <https://www.sciencedirect.com/science/article/pii/S0305750X03002201>
- Rediff. (2018, June 21). *Why TCS is upset with the MEA*. Retrieved October 24, 2023, from <https://www.rediff.com/money/report/tech-why-tcs-is-upset-with-the-mea/20180621.htm>
- Satyanarayana, J., & Saha, P. (2019, October 21). *Agile indea: Vision, velocity*. Ministry of Electronics; IT, Government of India. Retrieved September 20, 2023, from <https://egovstandards.gov.in/sites/default/files/2021-09/Agile%5C%20IndEA%5C%20Framework%5C%20V%5C%201.0.pdf>
- Securities and Exchanges Commission. (2006, October 3). *Electronic filing and the EDGAR system: a regulatory overview*. Retrieved August 8, 2024, from <https://www.sec.gov/info/edgar/regoverview.htm>
- Shah, A. (2021, January 25). The bottleneck of government contracting. <https://www.mayin.org/ajayshah/MEDIA/2021/gcontracting.html>
- Sharma, A., & Thomas, S. (2021, November). *The footprint of union government procurement in India* (Working Papers No. 10). XKDR Forum. <https://ideas.repec.org/p/anf/wpaper/10.html>
- Simon, K. D. (2005). The value of open standards and open-source software in government environments. *IBM Systems Journal*, 44(2), 227–238. <https://www.proquest.com/scholarly-journals/value-open-standards-source-software-government/docview/222420968/se-2>
- Standing Committee on Finance. (2011). *The National Identification Authority Of India Bill, 2010, 42nd Report*. Government of India. Retrieved July 31, 2023, from https://uidai.gov.in/images/report_of_the_departmental_standing_committee_on_finance_on_the_bill_13012017.pdf
- Tata Consultancy Services Ltd. (2008, October 13). *Government of India awards passport automation project to Tata Consultancy Services*. Retrieved October 19, 2023, from <https://>

- [//www.tcs.com/who-we-are/newsroom/press-release/goi-awards-passport-automation-to-tcs](https://www.tcs.com/who-we-are/newsroom/press-release/goi-awards-passport-automation-to-tcs)
- Tata Consultancy Services Ltd. (2013, January 16). Message from TCS to Stakeholders. Retrieved June 30, 2024, from https://www.mca.gov.in/Ministry/pdf/Message_from_TCS_to_Stakeholders.pdf
- The Economic Times. (2008, October 14). *TCS signs Rs 1K-cr deal to implement passport project*. Retrieved October 19, 2023, from <https://economictimes.indiatimes.com/tech/ites/tcs-signs-rs-1k-cr-deal-to-implement-passport-project/articleshow/3591791.cms>
- The Economic Times. (2026, April 20). Extend GSTR-3B return filing deadline: Demand by advocates and CAs as the portal is not working properly. https://economictimes.indiatimes.com/wealth/tax/extend-gstr-3b-return-filing-deadline-demand-by-advocates-and-cas-as-the-portal-is-not-working-properly/articleshow/130389795.cms?from=mdr&utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
- The New Indian Express. (2026, August 12). Hundreds stranded as server outage hits passport services across Andhra. <https://www.newindianexpress.com/states/andhra-pradesh/2026/Aug/12/hundreds-stranded-as-server-outage-hits-passport-services-across-andhra>
- UIDAI. (2010, April 1). *UIDAI Strategy Overview*. Retrieved July 26, 2023, from https://prsindia.org/files/bills_acts/bills_parliament/2010/UIDAI_STRATEGY_OVERVIEW.pdf
- Unique Identification Authority of India. (2016a). Erring on Aadhaar. *Economic and Political Weekly*, 51(11), 84–87. <http://www.jstor.org/stable/44004107>
- Unique Identification Authority of India. (2016b). Overlooking the UIDAI Process. 51(36).
- Wolfram, C., Miguel, E., Hsu, E., & Berkouwer, S. B. (2023). Donor contracting conditions and public procurement: causal evidence from Kenyan electrification. (30948). <https://doi.org/10.3386/w30948>

Appendices

Table 8 An overview of four contracts entered into by the UIDAI.

	Purpose	Awarded to	Date of EOI	Date of RFP	Date of signing	Type of contract
(i)	Managed service provider (MSP)	HCL Ltd.	June 2010	24 January 2011	7 August 2012	Service agreement based on SLAs
(ii)	Data centre development agency	Wipro Ltd.	16 September 2011	April 2012	6 December 2012	Service agreement based on SLAs
(iii)	Governance service provider	PWC Ltd.	NA	3 November 2014	6 October 2015	Service agreement based on SLAs
(iv)	Document management system	HP India	NA	15 January 2011	7 June 2011	Service agreement based on SLAs

Table 9: Comparing the SLAs for the Passport Seva (2008) and MCA-21 (2005) contracts.

SLA	Passport Seva (baseline)		MCA-21 (baseline)	
	Metric	Weightage out of 100	Metric	Weightage out of 100
Total waiting period at the office	NA	NA	<15 minutes	8
Average time for service	NA	NA	<7 minutes	6
Waiting + service during peak hours with online appointment	<25 minutes	4	NA	NA
Waiting + service during Non peak hours with online appointment	<18 minutes	3	NA	NA
Waiting + service during Peak hours, walk-in customer	<45 minutes	8	NA	NA
Waiting + service during Non peak hours, walk-in customer	<30 minutes	7	NA	NA
Availability of all physical services	99.99%	5	NA	NA
Availability of all internet services	99.99%	5	99.99%	8
Average portal page loading	5 seconds	4	7 seconds	5
Turnaround time for e-filing request-response cycle	NA	NA	10 seconds	8
Turnaround time for viewing document	NA	NA	10 seconds	5
Rate of filing of annual reports on the portal	NA	NA	20% for year 1, 50% for year 2, 75% for year 3	5
Total charges filed	NA	NA	20% for year 1, 50% for year 2, 75% for year 3	3
New companies registered online	NA	NA	30% for year 1, 60% for year 2, 90% for year 3	2
Average response time for work-flow interaction on DCA client/ PSP client	3 seconds	7	<5 seconds	5
Average response time for retrieval of document for DCA client on local server	NA	NA	<7 seconds	7
Average response time for retrieval of document for DCA client/ PSP client on remote/ central server	4 seconds	8	<10 seconds	8

Maximum concurrent connections on website	NA	NA	<10000 in peak months, <3000 in others	8
Server throughput	NA	NA	<250 tps	7
Resumption (both online and offline) in case of major disruption	NA	NA	<12 hours	5
Availability of hardware infrastructure (desktops, printers etc.)	99.90%	5	99.99%	5
Availability of other servers/ infrastructure/ “ERR”	99.90%	5	99.99%	5
Availability of security solutions	99.90%	2	NA	NA
Turnaround time for upload of document	<45 seconds	4	NA	NA
Answering of call by call center within three rings	99.99%	2	NA	NA
Resolution of service by call center	2 minutes	2	NA	NA
“Error free” passport	100.00%	5	NA	NA
Courtesy to citizens	90.00%	3	NA	NA
Guidance and help to citizens	90.00%	3	NA	NA
Exception-handling capability	100.00%	2	NA	NA
Professionalism, knowledge and communication skills	100.00%	2	NA	NA
Cleanliness at PSK	100.00%	3	NA	NA
Use of air conditioner	99.00%	2	NA	NA
Use of uniforms by security personnel	100.00%	1	NA	NA
Comfort, convenience and overall experience	90.00%	4	NA	NA
Change request turnaround time	<15 days	1	NA	NA
Timeliness of change request implementation	100.00%	1	NA	NA
Employee satisfaction with the service provider	80.00%	2	NA	NA

A playbook for future projects

In this section, we study how the government *should have* carried out contemporary procurement exercises.

Union government — Passport Seva 2.0

We study the transition between versions 1 and 2 of the Passport Seva project. The project was intended to introduce larger scale of passport issuance combined with newer technologies like RFID chip-embedded passports (Lok Sabha [2013](#), [2015](#), [2022](#)). We do so by casting a “playbook” that compares the method of procurement versus the methods that could be followed based on the changes we suggest.

Based on ICAO’s Document 9303, that requires all member states to adopt RFID-chips and other technical features embedded into their passports, the National Institute for Smart Governance recommended the adoption of ICAO-compliant “e-Passports” in January 2007. V1 of Passport Seva was supposed to be launched with these ICAO-compliant passports, but this did not materialize.

Our suggestions	What was carried out	What could have been done instead?
Design and specifications		
Separate governance structure for the project — assemble inter-disciplinary teams of civil servants, experts from the technical sciences, law, process/systems management, etc.	The Ministry of External Affairs decided to continue the same governance model i.e., to assign the project implementation to the Passport Division, headed by the Joint Secretary (PSP) who is a career civil servant who usually belongs to the Indian Foreign Service. The day-to-day operations in the project are managed by officers who are deputed from organisations like the NIC. The Ministry of External Affairs did not have an Aadhaar-style interdisciplinary team that developed an in-house prototype.	It would have been prudent to let the Ministry of External Affairs create a team, housed within the ministry, to create, test, and scale the prototype.
Design a proof of concept (PoC) in-house		
The prototype/ proof of concept should be built in-house by the team that has been assembled inside the undertaking organisation/ ministry.	In June 2008, a pilot project was launched for ICAO-compliant biometric chips for diplomatic and official passports. The chips were developed by NIC and Indian Security Printers Ltd. (ISP) which is a public sector enterprise.	The prototypes were not made in-house. They were made by government organisations. This was still better than outsourcing since diplomatic/ official passports have carried RFID chips since 2008.
Expertise needed to pin down specifications		
The in-house team should have high levels of technical expertise to frame specifications for the proof of concept/ prototype	The ICAO has already defined technical specifications in Document 9303, along with other ISO/ ITC standards.	It was clear that no new product had to be designed as such. It was only a question of implementing existing technical specifications.
Expertise to set specifications, evaluate bids, etc.		

The in-house team, in addition to having technical experts, should also have experts in the law, contracting, etc.	While the pilots were conducted successfully, the Ministry of External Affairs floated a global two-stage tender in March 2009 for e-Passport issuance and production. A French and a Malaysian company were shortlisted. However, the other bidders complained (reasons unclear) and a fresh process was constituted in February 2010. While 9 companies applications, only one bidder, Gemalto of France, met the technical criteria. However they were later disqualified on the grounds that they provided a similar chip to Pakistan.	A clearer sense of what the Indian market can supply, security clearances, etc. could have been inquired into and made known at the earliest stages.
Changes in scope		
During the bidding process, and even after, political and technical considerations may require changes in scope. These changes should ideally result in a new contract/ product.	Subsequently, in November 2013, an inter-ministerial task force was set up to restart the tendering process. In July 2014, a third global tender was floated, but MEITY wrote to the MEA to “give preference to domestically manufactured electronic products”. In February 2016, Security Printing and Minting Corporation of India (SPMCIL), a PSU, undertook to manufacture the inlays domestically. For unknown reasons, the outsourced service provider was not selected.	These issues could have been avoided by a spirited technical defence of how these concerns are either harmless or could have been easily addressed. A dedicated team would have been able to mount an effective argument. For example, when the UIDAI’s cryptographic keys were criticized for their lack of security, etc. in the Economic and Political Weekly, the UIDAI prepared detailed academic rebuttals to these claims (Mathews, 2016; Prakash, 2016; Unique Identification Authority of India, 2016a, 2016b).
Monitoring performance		
Once the team has successfully contracted out the scale-up, the team can observe and correct for performance delays, cost overruns, etc.	In August 2018, the EOI was released and bidders were shortlisted by November 2018. The RFP was published in June 2020, as the contract period of Passport Seva V1 was about to end (a two year extension was granted). In January 2022, TCS was chosen for V2 of Passport Seva.	A culmination of the problems mentioned earlier — low-capacity governance mechanisms, integration of large project components into the hands of one or a group of service providers, etc. led to delays and cost overruns mentioned in the earlier sections. TCS built the prototype, conducted pilots, and pursued scale-up one after the other, without the participation of other private firms.