



Event-Driven e-Governance for India: A Lifecycle-Based Digital Public Service Framework with Blockchain-Enabled Consent and Trust Architecture

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Abstract

The e-Governance system in India has significantly improved administrative access, financial inclusion and efficiency of service delivery through Digital India, DBT, Aadhaar-enabled identity platform, Jan-Dhan-Mobile system, Digilocker and various government service portals. Yet, at a practical level, most of the governance processes in the country still **operate in an** application-based and form-centric structure, where the citizen has to repeatedly apply for each service or benefit, submit documents and recertify eligibility. This system creates a gap between the actual conditions of civic life and the administrative decision-making, resulting in **unnecessary process frictions, delays, repeated verifications, benefits cuts, and trust** erosion — especially for migrant citizens, rural communities, the elderly, and social-security beneficiaries.

This paper presents a conceptual vision of an event-based and life-cycle oriented e-governance framework **as an alternative approach for India**. In this model, life events such as birth, transition to education, change of employment, migration/change of address, social security entitlement, senior-citizen status, and retirement are taken into account not just as record entry but **as policy-trigger events** — on the basis of which the relevant administrative processes can be automatically activated. At the same time, **consent-based data-governance** makes the use of citizen-data purpose-specific, time-limited, and auditable, while **the blockchain-enabled trust-layer** preserves public records in a more reliable, verifiable, and appropriate form of interinstitutional coordination.

The proposed framework signals a shift from application-based **efficiency-driven to an empowerment-driven, context-aware and human-centric administrative structure**. The study elucidates the relevance of this model through use-scenarios relevant to the Indian context, such as **internal migration and service continuity after change of address, portability of DBT and social-security benefits**, eligibility-adjustment related to change of employment status, and event-activated pension-initiation. Research indicates that such a framework can offer a meaningful transformation towards making India's digital governance **more responsive, reliable, and life-changing**.



Keywords: Event-Driven Governance; Lifecycle-Based Public Service Model; Consent-Based Data Governance; Blockchain-Enabled Trust Ledger; Digital Public Infrastructure; Citizen-Centric e-Governance

Introduction (Indian e-Governance Perspective and Research Motivation)

Despite India's extensive adoption of digital platforms for governance, the dominant administrative structure remains application-centric and document-driven. Citizens are required to repeatedly initiate service requests, submit proofs, and recertify eligibility even when changes in civic life occur naturally, such as migration, employment transition, or age-based entitlement.

This structural dependence on applications creates administrative friction, verification fatigue, service discontinuity, and exclusion risks—particularly for migrant workers, informal-sector citizens, rural households, and elderly beneficiaries. The gap between real-life civic events and administrative response highlights a critical limitation in the existing e-Governance paradigm.

This research is motivated by the need to explore governance models that respond proactively to life events rather than reactively to applications, thereby improving continuity, dignity, and trust in public service delivery.

India's e-Governance development journey is one of the world's most comprehensive public-digital transformations, where identity systems, direct benefit transfers, digital service portals, social security platforms and financial inclusion initiatives have made access to government services more accessible to the common citizen than ever before. However, despite this achievement, most of the administrative processes still operate in a structure where **the services are not automatically activated in accordance with the events of civic-life**, but the citizen has to initiate the process by submitting an application at every stage.

Living conditions such as a change of residence, change of employment status, age-based entitlement, change in family structure, or retirement directly affect a citizen's social rights and administrative obligations — yet in the current framework, these changes **are not seen as natural life events, but as "necessity of proof-of-evidence."** As a result, many citizens, especially migrant workers, rural households, disadvantaged communities and elderly beneficiaries, **face problems such as verification-fatigue, disadvantage**, intermediary-dependency and uncertainty, even when digital platforms are available.

To make this change an ethical and responsive form, the research presents **consent-based data governance** as the central premise, where citizens have the right to control, purpose-limit, and transparent audit-trail over the use of their data. The **blockchain-enabled trust-layer** ensures that critical records remain protected in the long term as reliable, verifiable, and dispute-proofed evidence. The study thus redefines administration as a structure that does not ask for evidence from the citizen, but **responds responsibly by understanding his or her living situation**.

Research Methodology and Conceptual Design Approach



This study adopts a **conceptual and exploratory research methodology**, aimed at developing a theoretical governance framework rather than empirical system implementation. The research is grounded in **policy analysis, literature review, and institutional design principles** relevant to digital governance and public administration.

The conceptual framework has been developed through a systematic review of international digital governance models, event-driven system architectures, consent-based data governance principles, and blockchain-enabled trust mechanisms as applied in public-sector contexts. Authoritative policy documents, governance reports, and academic literature from institutions such as the OECD, UN DESA, World Economic Forum, and regulatory frameworks like GDPR and NIST Privacy Framework have informed the design.

Based on this analysis, key civic life events were identified and mapped to governance-trigger mechanisms and administrative responses suitable to the Indian socio-administrative context. The proposed model is interpretive in nature and aims to provide a **policy-ready conceptual foundation** for future pilot studies, empirical validation, and institutional adoption.

Current Challenges of Indian e-Governance and the Need for Event-Based Model

While digital identity systems and online service portals have increased access, Indian e-Governance remains largely siloed, department-centric, and verification-intensive. Administrative databases operate independently, resulting in repeated submission of identical information and lack of contextual awareness across departments.

Current systems do not treat changes in civic life—such as migration, employment transitions, or age-based eligibility—as automatic governance signals. Instead, citizens are expected to manually certify these changes, leading to delays, service disruption, and dependency on intermediaries.

This gap between civic life dynamics and administrative responsiveness underlines the limitation of form-based governance and establishes the need for an alternative, event-aware governance structure. Although digital platforms, online service portals, and identity-based verification systems have been widely implemented in India, most administrative processes remain **department-centric, application-dependent, and document-verification based** in their infrastructure. The citizen has to apply for each service, certificate, benefit or scheme in person or digitally before different departments. In many cases, the same information and the same documents have to be submitted again and again, as departmental databases are not contextually linked. This may make the governance process look digital, but the experience still takes the form of **form-dependent administration** for the citizen.

This structure is particularly complex in situations where changes or transitions **to civilian life** occur — such as a change of employment, a relocation, a change in marriage or family structure, the emergence of social security entitlements, entry into senior-citizen status or retirement. With these incidents, there is a natural change in the jurisdiction, economic position and administrative responsibilities of the citizen, but in the present system, these changes are not automatically recognized. Instead, the citizen is expected to **"certify and update"** these changes by applying in person. Due to this system, many beneficiaries have to face problems like fragmentation of benefits, process delays, unnecessary verification visits and intermediary dependence.



This situation becomes even more challenging for migrant workers, unorganized sector workers, rural and marginalized communities. Their life-changes are often not recorded in formal documents in a timely manner, making it difficult to submit proof of eligibility status. As a result, many a time such citizens are deprived of **schemes**, social-security benefits or pension-rights despite being genuinely eligible. This is where the question arises: When living conditions change naturally, shouldn't the government **be** equally sensitive and responsive to life events?

Conceptual comparison between a traditional application-centric governance model — characterized by repeated form submission, manual verification and post-application eligibility checks — and an event-driven lifecycle governance model, where citizen life-events act as policy triggers enabling consent-based data access, trust-ledger verification and proactive service activation.

It is in this context that this research underscores the need for an event-based e-governance model. In this approach, life events are accepted as policy-activation signals, not merely requiring information updates. For example, a relocation is not just a change of address, but a change in benefits, jurisdiction, and social support mechanisms; Changes in employment status affect tax status, insurance coverage and social security obligations; Entry into senior-citizen status forms the basis for the expansion of age-based rights. If the governance system automatically recognizes these incidents and activates the related processes, the citizen-experience **can move beyond** application-dependent service flow **to context-friendly and rights-driven administration.**

The event-based model is thus not just a technological innovation, but a significant change in governance vision — where instead of expecting the citizen to continue to certify his or her own life-changes, the governance system assumes the responsibility of understanding and addressing those changes. It is this transformation that can propel Digital India **towards a more humane, equitable and trust-based governance structure.**



Figure-1: Traditional Application-Based Governance vs Event-Driven, Lifecycle-Based Governance (Conceptual Comparison)

Proposed Life-Cycle-Based and Event-Activated Governance Framework in the Indian Context

The proposed model envisages a governance framework that evolves in conjunction with the governance realities of India, diverse socio-groups, migration trends, **employment structures and the nature of welfare schemes**. In this framework, the various stages of civic life from birth to retirement are captured not merely as units of record, but **as life events of policy importance** — the services concerned, the adjustment of entitlements and administrative processes can be activated automatically as soon as they occur.

The key stages in this life-cycle based approach are envisaged as follows: Birth → education transition → employment entry / employment transition. Migration → Change Procedure for Change of Address → Social Security Entitlement → Retirement and Pension → Senior-Citizen Stage. With each of these steps comes a natural change in the citizen's jurisdiction, social membership, economic status, financial obligations and security provisions. The proposed



framework **captures these changes as** event-trigger signals, so that the administrative response can be automated in line with the life situation and not just on application receipts.

Table 1: Life-cycle event — Governance trigger and administrative response mapping

Life Events	Government-triggered signals	Proposed Administrative Response
Birth Registration	Identity creation, health and social security linking	Automatic activation of vaccination, child health benefits, and pre-school registration
School/Higher Education Transition	Student status change signals	Automatic adjustment of scholarship/educational assistance processes
Employment Entry/Change	Tax/insurance/social security readjustment signals	Automatic updating of social security contributions and benefit entitlements
Migration/Address Change	Service sector change and benefit portability signals	Automatic activation of continuity of rations and local services
Social Security Eligibility	Entitlement status change signals	Adjustment of welfare benefits and assistance schemes
Senior Citizen Status	Age-based facility/protection signals	Automatic extension of senior citizen benefits
Retirement	Pension activation signals	Automatic activation of pension verification and payment initiation

For example, birth registration can become a natural entry point for the next steps — immunization schedules, child health benefits, **early education registration** — rather than just a certificate creation process. Similarly, school transition or admission to higher education can provide automatic clues to scholarship eligibility, academic aid schemes and social support provisions. Entry or change of employment can activate adjustment of tax liability, insurance coverage, social-security contributions, and benefit entitlements, while **entry into senior-citizen status** can become an automatic signal for the expansion of age-based rights and protection measures.

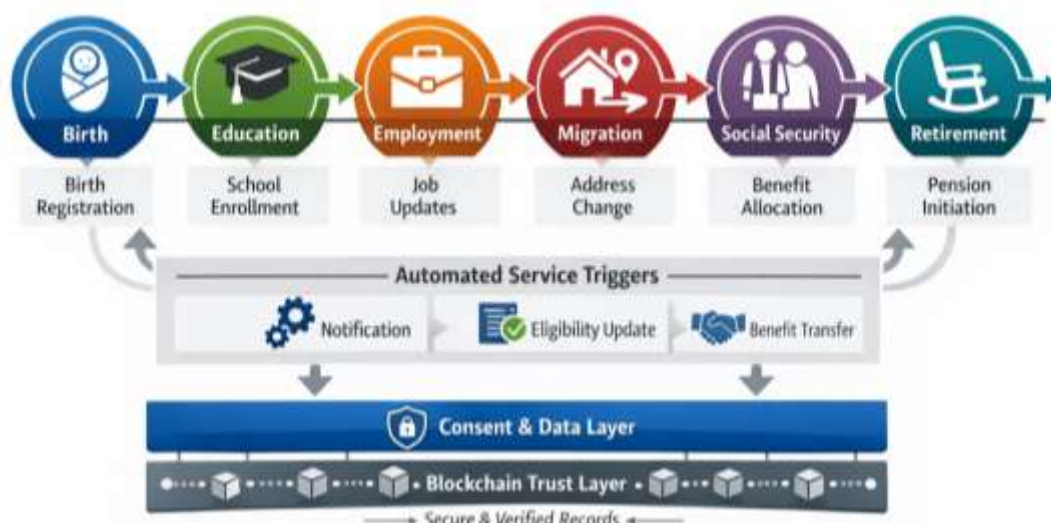


Figure-2: Illustrates the Event-Driven, Life-Cycle Based Digital Governance Flow — Conceptual Model

In this figure, key citizen life-events — such as *birth registration, education transition, employment or job-change, migration / address change, social-security eligibility, entry into senior-citizen stage, and retirement / pension activation* — function as **policy-trigger events** rather than administrative form-submission processes.

Under this model, relevant public-service workflows **auto-activate through consent-based data governance**, while verification evidence and process-traceability are preserved through a **blockchain-enabled trust ledger**, thereby supporting continuity of benefits, interoperability, and citizen-centric administrative responsiveness.

The model does not consider migration or change of address as a mere process of address-updating, but as an integrated governance phenomenon involving benefit-portability, service-regionalism, **local administrative coordination, and social-assistance** continuity. Thus, the diverse conditions of civic life become **not a data-process for the administration, but a policy signal related to people's rights and welfare-responsibility**.

The purpose of this framework is not to free the citizen from the burden of the process, but to make the governance system sensitive and accountable to such a level that it develops into a **structure that communicates** with the citizen's life. Such a structure not only makes service delivery more coherent and sustainable, but also adds dignity, trust and meaningful human depth **to the state-citizen relationship**.

Conceptual Framework for Consent-Based Data Governance and Blockchain-Enabled Trust-Layer



The proposed framework is structured around a life-cycle-based governance architecture where predefined civic life events function as policy-trigger signals. The model consists of three core layers:

- (i) an event-detection and service-trigger layer,
- (ii) a consent-based data governance layer, and
- (iii) a blockchain-enabled trust and verification layer.

Upon detection of a life event such as birth registration, migration, employment transition, or retirement, the system automatically activates relevant administrative workflows, subject to citizen consent and purpose limitation. Verification records and consent transactions are preserved through a blockchain trust ledger to ensure transparency, auditability, and inter-departmental interoperability.

A conceptual flow diagram showing major citizen life-cycle stages connected through arrows, representing an event-driven governance model where each life-event triggers automatic and consent-based public-service activation, supported by a blockchain trust ledger.

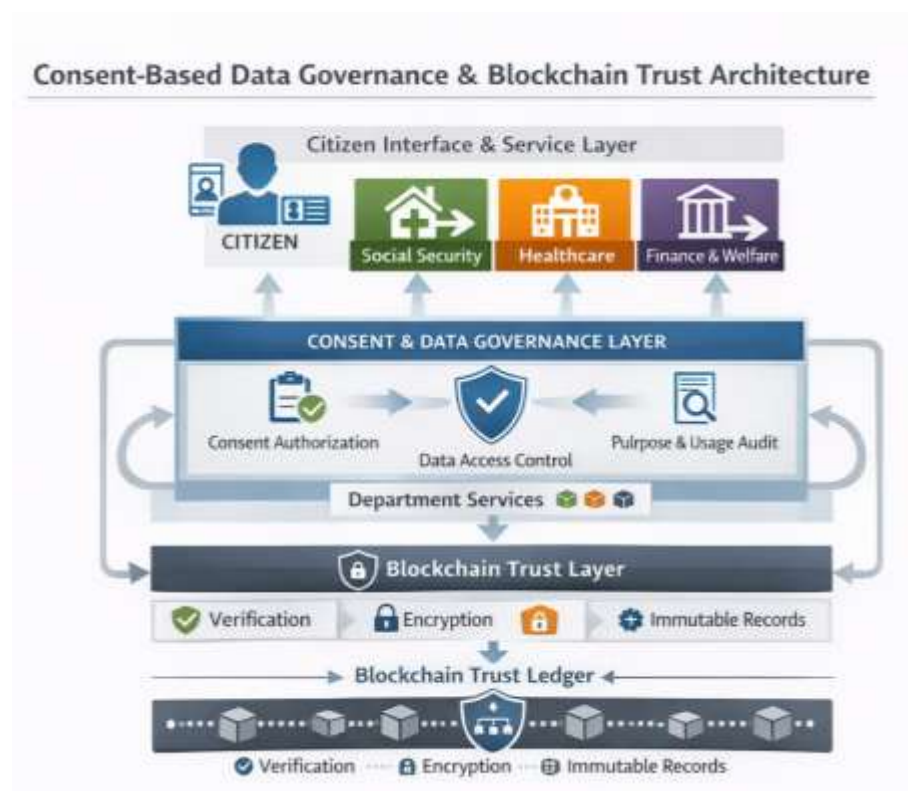


Figure-3: Layered Conceptual Architecture of an Event-Driven Digital Governance Platform

The central premise of the proposed event-based and life-cycle oriented e-governance model is that the use of citizen-relevant data should be within an **ethical and rights-secure social contract**, not just an administrative facility. Thus, data governance is envisaged not just as a matter of technical



interoperability or database integration, but as a public accountability framework based on **consensus, purpose-limitation and usage-responsibility**. The basic principle is that citizen-data is not a matter of governance ownership, but a sensitive structure of civil rights and social trust, which should be used only to the extent necessary for a specific public function or service process.

Consent-based data-governance in this model is based on three key dimensions — first, **purpose-specific consent**, under which any data-access or verification process clearly defines the purpose for which the data is being used and what is its limit; Second, **time-limited consent**, in which the data-use is not indefinite but only valid for as long as is required by the relevant administrative process; and third, **audit-traceable consent**, in which every access, verification, or usage record is protected in a transparent and citizen-reviewable form. The citizen is thus established as an active participant in the use of his data, not just a data-provider.

In terms of data reliability and long-term record security, the proposed framework adopts a **blockchain-enabled trust-layer** as a verification structure. Here, blockchain is not used as a full-fledged data-storage platform, but as an **evidence-ledger** where irrevocable evidence of important administrative events, **verification entries, and consent** transactions is secured. This reduces the need for duplicate, disputes, document-tampering, and re-verification, as each process has a **reliable, shared, and verifiable evidence-trail**.

This trust-layer provides an interoperable validation structure without creating unnecessary data-copying between departments. For example, instead of repeatedly certifying an entry relating to a benefit, change of residence, employment status or pension-activation, the institutions concerned can make a decision based **on the evidence of the same shared trust ledger**. This not only reduces administrative costs and time expenditure but also reinforces the trust-based behaviour **of the governance system towards the citizen**.

The important point here is that this framework does not create a technology-oriented control structure, but configures the technology in such a way that it **strengthens the principles of human rights, privacy, consent and ethical governance**. In this vision, consent-based data-governance and blockchain-enabled trust-layers combine to create a structure where the use of citizen-data becomes not just a tool in the administrative process, but an **institutional foundation of trust and accountability**.

Table 2: Migration / Address Change — Service Continuity and Benefit Portability Matrix

Migration/Movement Status	Affected Services/Benefits	Proposed event-based response
Intra-district transfer	Rationing, Local Certificates, Address-based Services	Automatic activation of service area adjustments and benefit continuity



Inter-district migration	DBT and Social Security Benefits	Improved portability with reduced re-verification requirements
Inter-state migration	Labor/Welfare/Residence-based Registrations	Interstate service continuity and shared verification framework
Temporary/Seasonal migration	Eligibility Status and Benefit Continuity Risks	Acceptance of temporary address status and adjustment indicators
Rural to urban migration	Health/Housing/Workplace Services	Automatic linking to new service categories and risk mitigation

Major Use-Cases related to Indian Governance

The proposed event-based and life-cycle oriented governance framework is not just a conceptual model, but it also touches upon practical areas of Indian administrative realities where the conditions of civic life directly affect continuity, entitlement and administrative responsibility. These use-scenarios illustrate how an event-driven governance approach can provide a more sensitive, coordinated and humane look to existing application-dependent processes.

The first scenario **relates to internal migration and service** continuity after change of address. In the present system, migration becomes a complex process of reconciliation of many services, benefits and administrative jurisdictions, not just geographical transfers for the citizen. With the change of address, many processes such as ration, social security, local certificate, residence sanction, workplace-related registration, etc., have to be resumed independently. In the proposed event-based model, migration **is treated as an** integrated life event, with benefits—portability, service continuity, and local administrative coordination activated as soon as it occurs. Thus, freeing the citizen from repetitive verification or intermediary-dependency, the governance system itself assumes the responsibility of continuity of service.

The second scenario relates to **Direct Benefit Transfers (DBT) and the portability of social-security benefits**. In many cases, the benefit eligibility status changes due to change in employment status, change of residence or family structure, but due to failure to record or verify this change in time, the citizen either faces benefit denial or has to undergo unnecessary re-eligibility certification. In the event-activated model, such entitlement-related changes themselves **are recorded as** policy-trigger signals, allowing benefit-continuity or adjustments to be administratively edited without delay.

The third scenario relates to **employment transition and readjustment of social security obligations**. In the present system, with the transition between formal and informal sector, job change or change of working status, the citizen has to update many processes related to taxation, insurance, social-security contributions and benefits and entitlements themselves. In the proposed framework, the change in employment status **has been considered as a** major life event, as soon as it occurs,



the signals for adjustment of the associated administrative responsibilities can be activated automatically.

The fourth scenario **is related to senior-citizen status and pension-activation**. In the present structure, a citizen has to apply for pension or age-based entitlements even after attaining the specified age limit, which is a natural life-change, which can be automatically identified by the government. In the event-based model, the senior citizen status **has been adopted as a rights-activated life event**, where pension related processes can be activated automatically at the initial stage with the change of entitlement.

Table 3: Senior Citizen Status — Pension and Entitlement Activation Preparation

Change/Status	Policy indicators	Proposed event-triggered process:
Attainment of senior citizen age limit	Age-based entitlement activation	Automatic eligibility review for senior citizen benefits
Pre-retirement stage	Employment status change indicators	Pre-preparation of pension record verification
Retirement event	Entitlement activation triggers	Activation of pension process and payment initiation
Dispute/Difference of opinion	Record verification requirement	Blockchain trust-ledger based credential verification

These use-scenarios make it clear that an event-driven and life-cycle oriented governance approach can transform governance towards **a more accountable, coordinated, transparent and human-respecting** structure by freeing the citizen from process-dependency.

Ethical, Policy and Institutional Implications in the Indian Context

The proposed event-based and life-cycle oriented e-Governance model is not only a matter of technological improvement, but also has wider implications at the level of governance, citizen-state relationship, data-ethics and institutional responsibility. The most important dimension in the Indian context is that citizen-data and administrative decision-making should be understood not just as a management facility, but **as a sensitive area of justice, dignity, rights and trust**. This vision prompts the regime to rethink the point of why the need to repeatedly ask for proof from the citizen arises when living conditions change — and whether this situation is really compatible with civic-dignity and social-justice?

In this context, consent-based data-governance offers an important ethical underpinning for the Indian administrative structure. If the use of citizen-data is within an objective-limited, time-controlled and transparent audit-trace, then the data becomes the basis of the trust-structure **rather**



than just a verification tool. This makes it a responsibility for the government to ensure that the use of data is not above the citizen's interest, but within the bounds of civil rights. This approach becomes especially important in the context where the beneficiaries of social-welfare schemes come from relatively vulnerable and disadvantaged groups, for whom any imbalanced form of data-use can lead to **exclusion-risk or unintentional harm**.

At the policy level, this model indicates the need to restructure administrative processes towards **event-trigger based proactive governance**. This means that laws, rules and procedures should not be limited to application-acceptance, verification-document and departmental file-flow, but should develop a coordinated decision-making flow in accordance with life events. Such a structure requires strengthening institutional arrangements such as inter-departmental cooperation, shared accountability, and integrated service-design. In this process, the governance has to move not only towards technological integration but **also towards the transformation of the process-culture**.

From an institutional point of view, this change brings the administration closer to citizen-centric sensitivity. When life events become policy signals, administrative decisions are not merely a file process, but they establish a direct connection **with the real conditions of civic life**. This creates a sense of responsibility in the system where the citizen is not seen as an individual striving for profit, but as a **member of the society with rights**. The event-activated model thus not only simplifies service flow but also reinforces trust, **engagement and dignity-based communication in state-citizen relations**.

Taken as a whole, the ethical, policy and institutional implications of this model in the Indian context point in the direction that the e-governance of the future will not be just a digital, orderly administration, but can evolve into a system that is meaningfully integrated with civic-life, **social-justice and human dignity**.

Governance Impact, Civic Experience and Potential Improvement Outcomes

The real value of the proposed event-based and life-cycle oriented e-Governance model lies in the fact that it does not limit governance structures to just digital efficiency but transforms them **towards citizen-experience, social-justice and transparent** accountability. When the governance system begins to recognize life events as policy signals, the flow of service becomes a **natural and continuous experience** of entitlement for the citizen rather than a burden on the application process. This not only reduces process delays, duplications and intermediaries, but also develops in the citizen the experience that the governance system responds in a timely manner by understanding his life circumstances.

From a civic point of view, this change is particularly important for the groups that are most affected by administrative processes due to conditions such as migration, informal employment, social deprivation or old age. The event-activated model makes **benefit-continuity, service-portability, and entitlement-adjustment** more seamless for these communities, reducing the risks of exclusion-risk and benefit dispersion. At the same time, consent-based data-governance positions the citizen as



not just a beneficiary, but a conscious participant with authority over his data-use, which transforms the relationship with the governance system **into an active trust-dialogue**.

From an administrative point of view, this model makes decision-making **more coordinated, evidence-based and dispute-resistant**. Through a blockchain-enabled trust-layer, verification proofs are available in a permanent and shared form, reducing issues such as reverification, document disputes, and record incompatibility. This not only reduces administrative costs and time expenditure, but also strengthens transparency and administrative legitimacy **of policy decisions**. At the long-term, this model can evolve governance processes into a way where efficiency is defined as a just and human respect-based outcome, not just a technological achievement.

In a broader sense, it can be said that an event-based e-governance vision has the potential to take India's digital governance landscape **beyond a service-providing state to a responsive, context-conscious and rights-driven public order**. At the heart of this transformation is the citizen who emerges as not just the beneficiary but also the **co-creator of policy** experience — this is the most important administrative and social impact of this model.

Key Insights and Policy Implications

As a conceptual study, the findings presented in this section are interpretive in nature and derived from theoretical synthesis and policy analysis rather than empirical measurement. The event-based and life-cycle oriented e-governance model presented in this paper provides a conceptual direction to India's digital governance landscape, where administrative processes move beyond a governance structure based on application dependency and document verification to **a context-cognizable, rights-activated, and human-centric** form. The study shows that life events such as births, education transitions, migration, employment transitions, social security entitlements, senior-citizen status, and retirement are not mere record entries, but policy signals. On the basis of which the related services and administrative procedures can be activated automatically. Thus, the system of governance evolves from being a structure that demands proof from the citizen over and over again, but as a sensitive public system **that understands and responds** responsibly to the circumstances of civic life.

Consent-based data-governance and blockchain-enabled trust-layers provide an ethical, transparent, and evidence-backed basis for this model. Through these, data-use becomes not just a technological optimization, but **an institutional structure of trust and accountability**, where evidence of every verification, decision, and process is preserved in line with the citizen-right. This framework shows that technology makes sense only when it is used to make governance more humane, equitable and dignity-based.

From the point of view of future research, the model presents several potential study avenues such as the comparative utility of the event-based model in different state administrative structures, its impact on service continuity for migrants and unorganised sector citizens, its practical implications in pension and social security arrangements, and the legal and institutional questions arising from the



implementation of consent-based data governance. In addition, further detailed research can also be done on pilot-level implementation, citizen-experience assessment and incorporation of this model into the policy-making process.

Overall, it can be said that this study presents a vision in India's e-Governance discourse, where digital transformation is not just aimed at enhancing administrative efficiency, but also creating a governance system that is more coherent with civic-life, **social-justice and human dignity**. This is the real ideological and social relevance of this model.

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