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# Institutions as Living Systems

IDHUS Institute

IDHUS
Institute for the Development of Human Societies

# Index

# Introduction

When we imagine a public institution, we often picture something solid, permanent and largely unchanging. A parliament, a ministry, a court of justice or a municipality appears to possess an almost architectural quality. Buildings endure for generations, legal frameworks remain relatively stable and administrative procedures create the impression of continuity through time. This perception is understandable because one of the principal purposes of public institutions has always been to provide stability within societies that continually experience political, economic and cultural change. Citizens rightly expect institutions to offer reliability, consistency and continuity even when the world around them appears uncertain.

Yet beneath this appearance of permanence lies a far more dynamic reality. Every institution is constantly interacting with the society it serves. New legislation modifies administrative responsibilities. Scientific discoveries reshape public policy. Technological innovation transforms how services are delivered. Demographic changes alter citizens' needs, while economic developments influence governmental priorities. International events create new forms of cooperation, environmental challenges require fresh regulatory approaches and cultural evolution gradually changes public expectations about the role of government itself. Although the institution may appear externally stable, internally it is engaged in a continuous process of observation, interpretation, learning and adaptation that never truly comes to an end.

This distinction between appearance and reality becomes increasingly important as societies grow more complex. Traditional organisational models have often portrayed institutions as machines designed to perform predetermined functions with maximum efficiency. Like well-engineered mechanical systems, they were expected to operate according to established procedures, minimise uncertainty and produce predictable outcomes. Such models proved extraordinarily successful during periods when governance challenges evolved at relatively moderate speeds and administrative structures could adapt through occasional reforms. Contemporary societies, however, increasingly operate according to different principles. They behave less like mechanical systems and more like complex adaptive ecosystems in which countless interactions continuously reshape the environment itself.

Within such environments, institutions cannot simply execute predefined procedures indefinitely. Every decision they make changes the conditions under which future decisions will be taken. Every interaction with citizens generates new information. Every technological innovation creates new opportunities while simultaneously introducing new forms of uncertainty. Institutions therefore become participants within dynamic systems rather than detached observers standing outside them. Their effectiveness depends increasingly upon their ability to understand these evolving relationships and adapt accordingly without abandoning the constitutional principles that define their purpose.

The concept of living systems provides a powerful framework for understanding this transformation. Importantly, describing institutions as living systems does not imply that they are biologically alive or possess consciousness in the human sense. Rather, it recognises that they exhibit many of the behavioural characteristics associated with adaptive living systems studied in complexity science. They exchange information with their environment, preserve organisational identity while continuously changing their internal structures, learn through feedback, develop new capabilities and evolve over time in response to changing conditions. Their continuity depends not upon remaining static but upon maintaining a dynamic balance between stability and adaptation.

This perspective also helps explain why institutional change is often gradual rather than revolutionary. Living systems rarely transform themselves by abandoning their previous identity entirely. Instead, they evolve incrementally through countless small adaptations that accumulate over long periods. Public institutions follow a remarkably similar pattern. Legal frameworks are

refined rather than completely rewritten, administrative practices improve through experience, professional expertise expands continuously and organisational cultures evolve as new generations contribute fresh perspectives. Institutional evolution therefore resembles biological adaptation more closely than mechanical redesign. Change emerges from continuous interaction with the surrounding environment rather than from isolated moments of complete reconstruction.

Understanding institutions in this way also changes how we think about governance itself. Rather than asking whether institutions are sufficiently efficient or sufficiently stable, we begin asking whether they are sufficiently adaptive. Can they recognise emerging changes before crises fully develop? Can they integrate new knowledge without losing institutional continuity? Can they preserve democratic legitimacy while embracing technological innovation? Can they learn systematically from both success and failure? These questions shift attention from static organisational performance towards the ongoing capacity for institutional evolution.

Artificial intelligence further reinforces the importance of this perspective. AI expands the ability of institutions to observe complex environments, integrate distributed knowledge and identify patterns that would otherwise remain difficult to perceive. Yet these capabilities become valuable only within institutions already capable of learning from what they discover. Technology can accelerate adaptation, but it cannot create adaptability where the underlying institutional culture remains rigid. The true challenge therefore lies not simply in adopting new technologies but in cultivating institutions whose organisational behaviour increasingly resembles that of resilient living systems.

To understand why this represents such a significant shift in governance theory, we must first examine the historical metaphor that has shaped public administration for centuries. Much of modern institutional design has been influenced by the idea that organisations function like carefully engineered machines. Appreciating the strengths and limitations of this perspective allows us to understand why a new conception of institutions as living systems has become increasingly necessary.

# From Machines to Living Systems

The way we understand institutions is profoundly influenced by the metaphors we use to describe them. Throughout much of the modern era, public administration has been shaped by the image of the institution as a machine. This metaphor proved remarkably powerful because it reflected the extraordinary achievements of the Industrial Revolution and the scientific optimism that accompanied it. Machines represented precision, reliability, efficiency and predictability. They performed clearly defined functions through carefully engineered components working together according to established rules. It was therefore entirely natural that governments, courts, public administrations and large organisations should also be designed according to similar principles. Institutions were expected to operate as stable mechanisms capable of delivering consistent public outcomes regardless of the individuals occupying particular positions within them.

This mechanical vision contributed enormously to the development of modern governance. Administrative procedures became more transparent, responsibilities were clearly defined, legal certainty strengthened public trust and professional bureaucracies replaced more arbitrary forms of government. Standardisation reduced inconsistency, while hierarchical structures enabled increasingly large states to coordinate complex administrative activities across extensive territories. Many of the institutions upon which contemporary democratic societies continue to depend owe their effectiveness to this organisational philosophy. The metaphor of the machine therefore deserves recognition not as an outdated mistake but as one of the most successful intellectual frameworks in the history of public administration.

Yet every metaphor highlights certain aspects of reality while obscuring others. The mechanical model excels at explaining stability, repetition and procedural consistency, but it struggles to explain learning, adaptation and continuous evolution. Machines perform the functions for which they were designed. They do not reinterpret their purpose, reorganise themselves in response to changing environments or develop fundamentally new capabilities through experience. When circumstances change significantly, machines generally require external redesign before they can perform differently. Contemporary institutions, however, increasingly display behaviour that cannot be adequately described through such static models. They modify policies, incorporate new knowledge, transform administrative practices, develop innovative forms of collaboration and gradually evolve alongside the societies they govern. These characteristics resemble the behaviour of adaptive systems far more closely than that of mechanical devices.

Complexity science offers a broader conceptual framework by replacing the metaphor of the machine with that of the living system. Unlike machines, living systems maintain their identity through continuous interaction with changing environments. They preserve internal coherence while constantly exchanging information, energy and resources with the world around them. Their stability does not arise from remaining unchanged but from their capacity to adapt without losing their essential organisation. Forest ecosystems, human immune systems and biological organisms all illustrate this principle. They survive not because they resist every external influence but because they continuously adjust their internal behaviour in response to changing conditions.

Public institutions increasingly exhibit many of these same characteristics. Consider how healthcare systems respond to emerging diseases, how educational institutions adapt to technological transformation or how governments revise regulatory frameworks in response to new scientific discoveries. None of these developments represents a complete replacement of the institution itself. Rather, they illustrate continuous adaptation within a stable constitutional identity. The institution remains recognisably the same while simultaneously becoming something different through learning and experience. This capacity to combine continuity with transformation represents one of the defining characteristics of living systems.

Perhaps the most significant difference between mechanical and living systems lies in the role of feedback. A machine typically operates according to predetermined instructions. If it functions correctly, it produces expected results. Living systems behave differently because every action they take generates information that influences future behaviour. Feedback becomes a continuous source of learning. Public institutions function in remarkably similar ways. Every policy generates social responses. Every administrative reform produces new operational experience. Every interaction with citizens reveals additional information about changing societal needs. Institutions capable of recognising and interpreting this feedback gradually refine their understanding of the environments they govern. Learning therefore becomes inseparable from everyday institutional activity rather than being reserved for occasional periods of reform.

This shift also transforms the meaning of organisational resilience. Within a mechanical framework, resilience is often associated with resistance to disruption. A robust machine continues functioning despite external disturbances because its components maintain their designed configuration. Living systems display a different kind of resilience. They survive precisely because they change. When environmental conditions evolve, adaptive systems reorganise themselves while preserving their fundamental identity. Public institutions increasingly require this latter form of resilience. In rapidly changing governance environments, organisations that remain completely unchanged risk becoming progressively less capable of fulfilling the purposes for which they were originally created. Their strength depends not upon resisting evolution but upon guiding it responsibly.

Artificial intelligence further highlights the limitations of purely mechanical models of governance. AI systems generate continuous streams of new information, identify emerging patterns and support increasingly sophisticated forms of situational awareness. Institutions designed solely around fixed procedures often struggle to incorporate this constantly evolving knowledge effectively. By contrast, institutions understood as living systems naturally integrate

 

new information into ongoing processes of learning and adaptation. Technology therefore becomes most valuable when it operates within organisations already capable of evolving continuously rather than merely executing predefined routines.

Importantly, describing institutions as living systems does not imply abandoning structure, legality or administrative discipline. Living organisms themselves possess highly organised internal architectures that enable adaptation without descending into disorder. Similarly, cognitive institutions require constitutional principles, professional standards, legal frameworks and organisational continuity precisely because these provide the stable foundations from which intelligent adaptation becomes possible. Evolution without stability leads to fragmentation, while stability without evolution leads to stagnation. Living institutions succeed because they maintain both simultaneously.

Seen from this perspective, the evolution from mechanical organisations towards living institutions does not reject the achievements of traditional public administration. Instead, it builds upon them by adding an essential new capability: the capacity to learn continuously from changing environments. Governance becomes less concerned with preserving static organisational arrangements and increasingly devoted to sustaining dynamic systems capable of remaining effective throughout ongoing societal transformation.

This naturally raises an important question. If living systems preserve themselves through adaptation rather than resistance to change, then adaptation itself becomes one of their defining characteristics. Understanding why adaptation is not simply advantageous but essential for institutional survival is therefore the next step in our exploration.

# Adaptation as a Condition of Survival

Every living system exists within an environment that is constantly changing. Ecosystems evolve as climates shift, species adapt to new conditions and biological organisms continuously adjust to fluctuations in their surroundings. Survival depends not upon finding a permanent equilibrium in which change disappears, but upon maintaining the capacity to respond intelligently as new circumstances emerge. Stability, in this context, is not the absence of change but the ability to remain coherent while continuously adapting. This principle, long recognised within the natural sciences, increasingly provides one of the most illuminating ways of understanding how public institutions function in an age of accelerating complexity.

Historically, institutions could often rely upon comparatively stable environments. Legislative frameworks evolved gradually, technological innovation progressed at a pace compatible with periodic administrative reform and social expectations changed over generations rather than within a few years. Under such conditions, institutions achieved effectiveness largely by refining established procedures and preserving organisational continuity. Adaptation certainly occurred, but it frequently unfolded through deliberate cycles of reform separated by extended periods of relative stability. Contemporary governance increasingly operates under very different conditions. Scientific knowledge expands continuously, digital technologies transform entire sectors within remarkably short timescales, global events rapidly influence domestic policy and societal expectations evolve through constant interaction across interconnected communication networks. Adaptation has therefore ceased to be an occasional institutional activity. It has become a permanent operational necessity.

This transformation fundamentally changes the relationship between institutions and change itself. Earlier administrative philosophies often treated change as an interruption to be managed before stability could be restored. Today, change increasingly represents the normal condition within which governance takes place. Institutions no longer adapt in order to return to

an earlier equilibrium because that equilibrium may no longer exist. Instead, they adapt in order to preserve their constitutional purpose while navigating environments that continue evolving indefinitely. Their identity becomes rooted less in fixed procedures than in enduring principles capable of guiding continuous organisational development.

Adaptation should not be confused with constant improvisation or perpetual institutional restructuring. Living systems rarely survive through random change. Their evolution follows coherent internal principles that preserve overall identity even as individual components evolve. Public institutions operate according to a similar logic. Constitutional values, democratic legitimacy, legal certainty and public accountability remain stable reference points around which adaptation occurs. Administrative methods, technological capabilities, organisational practices and policy instruments may change substantially, yet these deeper constitutional foundations provide continuity throughout the process. Institutions therefore evolve without abandoning the principles that justify their existence.

Learning lies at the heart of this adaptive capacity. Institutions cannot respond intelligently to changing environments unless they are capable of recognising what has changed in the first place. Observation, reflection and organisational memory therefore become essential mechanisms of institutional survival. Every interaction with society generates feedback that contributes to a richer understanding of evolving conditions. Successful policies reveal effective approaches, while unsuccessful initiatives expose assumptions requiring revision. Living institutions treat both outcomes as valuable sources of knowledge because adaptation depends upon continuous learning rather than occasional correction. Their effectiveness grows over time not because they avoid mistakes entirely, but because they become progressively better at learning from experience.

Artificial intelligence significantly strengthens this adaptive process by expanding institutional awareness of changing environments. AI-supported systems assist governments in detecting emerging trends, integrating diverse sources of evidence and identifying subtle relationships across increasingly complex governance ecosystems. These capabilities enable institutions to recognise shifts in their surroundings earlier than would otherwise be possible, providing greater opportunities for thoughtful adaptation before challenges develop into crises. Yet technology itself does not guarantee adaptability. Institutions must still possess the organisational culture, leadership and cognitive flexibility necessary to translate new understanding into meaningful action. Artificial intelligence accelerates adaptation only where institutions are already prepared to embrace learning as a defining characteristic of governance.

Adaptation also reshapes the concept of institutional success. Traditional performance measures frequently emphasised procedural efficiency, administrative consistency and the achievement of predetermined objectives. These remain valuable, but adaptive institutions increasingly recognise an additional criterion: their capacity to remain effective as the environment itself evolves. Success therefore becomes dynamic rather than static. Institutions demonstrate resilience not because they preserve identical methods indefinitely, but because they preserve their public mission through continuously improving methods suited to changing circumstances. Their greatest achievement lies not in resisting transformation but in guiding it responsibly.

Perhaps the most important implication of this perspective is that adaptation becomes inseparable from long-term institutional legitimacy. Citizens place their trust in public institutions because they expect them to remain capable of addressing the challenges of each successive generation. Institutions that fail to evolve gradually lose their capacity to fulfil this expectation, regardless of how effectively they may have served previous historical contexts. By contrast, institutions that learn continuously reinforce public confidence because they demonstrate an enduring commitment to remaining relevant within changing societies. Adaptation therefore protects institutional legitimacy rather than threatening it.

Seen in this light, adaptation is far more than an organisational strategy. It is the condition through which living institutions sustain their identity across time. They survive because they evolve, and they evolve because they learn continuously from the environments within which they

 

operate. Their resilience arises not from resisting change but from transforming change into an ongoing source of institutional development.

Yet no institution adapts in isolation. Every organisation exists within broader social, political, economic and technological environments that continuously influence its evolution while simultaneously being influenced by its own decisions. To understand living institutions fully, we must therefore examine the dynamic relationships connecting institutions with the wider ecosystems of which they form part.

# Institutions and Their Environment

No living system exists independently of its surroundings. Every organism, ecosystem and adaptive network develops through continuous interaction with the environment in which it operates. Forests respond to changing climates, rivers reshape landscapes while simultaneously being shaped by them, and biological species evolve through constant exchanges with the ecosystems that sustain their existence. The identity of a living system cannot therefore be understood by examining the system alone. It emerges through the dynamic relationship between the system and its environment, where continuous interaction generates both stability and change. Public institutions follow precisely the same principle. They do not govern society from outside it; they evolve as integral components of the social, political, economic and technological environments to which they belong.

This observation represents a significant departure from many traditional conceptions of governance. Institutions have often been portrayed as external authorities responsible for regulating society through legislation, public policy and administrative action. While they undoubtedly exercise these functions, they are simultaneously influenced by the very societies they seek to govern. Citizens' expectations evolve, scientific discoveries reshape public understanding, technological innovations transform administrative possibilities and international developments redefine domestic priorities. Every institutional decision contributes to these processes, while every societal transformation generates new conditions requiring institutional adaptation. Governance therefore becomes a continuous dialogue between institutions and their environments rather than a one-directional exercise of authority.

This reciprocal relationship explains why institutions cannot remain permanently effective by relying solely upon internal organisational excellence. An institution may possess highly qualified professionals, sophisticated administrative procedures and advanced technological capabilities, yet still struggle if it loses awareness of the changing realities surrounding it. Organisational effectiveness increasingly depends upon environmental awareness. Living institutions continuously observe the societies they serve, interpreting subtle shifts in social behaviour, economic structures, political expectations and technological development before these changes become fully visible through conventional administrative indicators. Their intelligence depends not only upon what they know internally but also upon how effectively they remain connected to the external environments from which new knowledge continuously emerges.

The contemporary world intensifies this challenge because institutional environments have become increasingly interconnected. Public institutions no longer operate solely within national administrative contexts. Economic decisions made in one region may influence employment opportunities elsewhere within days. Scientific discoveries published by researchers on another continent rapidly reshape healthcare practices or industrial innovation. Climate events occurring thousands of kilometres away may affect domestic food security, migration patterns or energy policy. Digital communication continuously exposes citizens to new ideas, expectations and cultural influences originating across the globe. Institutional environments therefore expand

beyond traditional geographical boundaries, requiring governments to develop cognitive capacities capable of understanding interactions occurring simultaneously across multiple scales.

One of the defining characteristics of living institutions is their ability to recognise that these environmental changes rarely occur independently. Economic transformation influences education, technological innovation reshapes labour markets, environmental pressures affect public health and demographic evolution modifies housing, transportation and welfare systems simultaneously. Institutions capable of perceiving these relationships gradually develop richer models of the environments they govern. Rather than responding separately to isolated events, they begin interpreting society as a continuously evolving system of interconnected processes whose behaviour emerges through interaction rather than through independent causal chains.

This broader awareness also transforms public engagement. Citizens are no longer viewed simply as recipients of public services or subjects of administrative regulation. They become active participants within the institutional environment itself. Every interaction between citizens and public organisations generates valuable information concerning changing social needs, emerging expectations and the practical consequences of governance decisions. Listening therefore becomes as important as directing. Living institutions understand that meaningful adaptation depends upon maintaining continuous dialogue with the communities they serve rather than assuming that institutional expertise alone provides sufficient understanding of societal reality.

Artificial intelligence substantially strengthens this environmental awareness by enabling institutions to observe increasingly complex governance landscapes. AI-supported systems integrate scientific literature, administrative data, economic indicators, environmental observations and public feedback into more comprehensive representations of evolving conditions. Rather than relying exclusively upon periodic reports or isolated statistical analyses, institutions gain access to continuously updated cognitive environments capable of revealing emerging relationships long before they become immediately apparent through conventional methods. Technology therefore expands institutional perception, allowing living institutions to maintain richer forms of situational awareness within rapidly changing societies.

Nevertheless, environmental awareness remains fundamentally an interpretative activity rather than merely an analytical one. Artificial intelligence may identify changing patterns with remarkable precision, yet institutions must still determine which developments possess genuine public significance and how democratic governance should respond. Environmental observation therefore depends upon human judgement as much as computational capability. Institutions must distinguish temporary fluctuations from long-term structural transformations, recognise competing social priorities and evaluate emerging developments within constitutional and ethical frameworks that no technological system can define independently.

Perhaps the most profound implication of this perspective is that institutions gradually cease viewing change as something imposed upon them from outside. Instead, they recognise themselves as participants within continuously evolving environments whose future they help shape through every decision they make. Governance becomes an ongoing process of mutual adaptation in which institutions influence society while simultaneously learning from the consequences of that influence. The relationship between institution and environment becomes circular rather than linear, creating continuous opportunities for learning, refinement and responsible evolution.

Understanding this reciprocal relationship prepares us for an even broader perspective. Institutions do not exist only within environments composed of citizens, technologies and economies. They also exist within larger institutional ecosystems where governments, universities, businesses, international organisations and civil society continuously influence one another's evolution.

 

# Institutional Ecology and Co-Evolution

Just as living organisms exist within ecosystems rather than in isolation, public institutions form part of broader institutional ecologies composed of countless organisations whose activities are continuously interconnected. Governments cooperate with universities, regulatory agencies interact with private industry, municipalities coordinate with national administrations, international organisations influence domestic policymaking and civil society contributes perspectives that shape public priorities. None of these institutions evolves independently. Each develops through continuous interaction with the others, creating complex governance ecosystems in which adaptation occurs collectively rather than individually.

The concept of **institutional ecology** invites us to move beyond viewing organisations as separate administrative entities. Instead, it encourages us to understand them as components of larger adaptive systems whose overall behaviour emerges through the quality of their relationships. In ecological systems, no species survives entirely on its own. Every organism depends upon interactions involving competition, cooperation, resource exchange and mutual adaptation. Institutional ecosystems function according to remarkably similar principles. Public organisations exchange information, coordinate policies, share expertise, respond to common challenges and collectively generate governance capacities that none could achieve independently. The effectiveness of the whole depends not simply upon the excellence of individual institutions but upon the health of the relationships connecting them.

This ecological perspective becomes particularly valuable when examining contemporary governance challenges. Climate adaptation cannot be managed by environmental agencies alone. It requires collaboration among energy regulators, transport authorities, urban planners, agricultural institutions, scientific organisations, financial systems and international governance frameworks. Artificial intelligence governance similarly depends upon interactions among legislators, universities, technology companies, judicial systems, educational institutions and public administrations. These examples illustrate that governance increasingly emerges from institutional ecosystems rather than isolated organisations. The unit of analysis gradually shifts from the individual institution towards the broader ecology within which institutions continuously cooperate and evolve.

Co-evolution represents the dynamic process through which these institutional ecosystems develop over time. In biological evolution, species continually adapt not only to environmental conditions but also to the changing behaviour of other species inhabiting the same ecosystem. Similarly, institutions adapt in response to the evolution of neighbouring institutions. Advances in scientific research influence regulatory policy. Judicial decisions reshape administrative practice. Technological innovation alters educational priorities. International agreements modify domestic governance structures. Each institutional change generates new conditions requiring further adaptation throughout the broader governance ecosystem. Evolution therefore becomes reciprocal rather than independent.

This continuous process of co-evolution explains why institutional reform rarely produces isolated consequences. A significant change introduced within one organisation often influences numerous others in ways that were neither entirely predictable nor confined to the original area of reform. New public health legislation may reshape educational programmes, labour regulations, technological innovation and international cooperation simultaneously. Administrative digitalisation affects citizen expectations, legal procedures, organisational cultures and professional competencies across the wider governance landscape. Living institutions recognise these interactions and increasingly evaluate reforms according to their systemic consequences rather than solely their immediate organisational objectives.

Institutional ecology also strengthens resilience. Ecosystems characterised by rich diversity generally demonstrate greater adaptive capacity than those dominated by uniformity because different organisms contribute complementary capabilities that support the stability of the whole. Governance ecosystems display comparable characteristics. Societies benefit from universities generating new knowledge, courts safeguarding constitutional principles, independent media encouraging public scrutiny, civil society strengthening participation and public administrations ensuring continuity of government. Each institution performs a distinct function while simultaneously contributing to the cognitive resilience of the broader institutional ecosystem. Diversity therefore becomes a source of strength rather than inefficiency.

Artificial intelligence enhances these ecological relationships by facilitating richer forms of institutional coordination. Shared knowledge platforms, interoperable data environments, collaborative modelling systems and AI-assisted decision support enable institutions to cooperate more effectively across organisational boundaries. Information that previously remained fragmented within isolated administrative structures increasingly becomes accessible throughout broader governance ecosystems, allowing institutions to develop more coherent collective understandings of shared challenges. AI therefore contributes not merely to individual institutional intelligence but to the cognitive capacity of the ecosystem as a whole.

Yet technology alone cannot create healthy institutional ecologies. Cooperation depends fundamentally upon trust, shared constitutional values, professional respect and the willingness of organisations to learn from one another rather than competing for exclusive authority. Co-evolution requires openness to mutual adaptation. Institutions capable of recognising that their own effectiveness increasingly depends upon the health of the wider governance ecosystem become more willing to invest in collaborative relationships that strengthen collective resilience over the long term.

Seen from this perspective, institutional ecology represents one of the most important consequences of understanding institutions as living systems. Living institutions do not simply adapt to their environments individually. They evolve together through continuous interaction, creating governance ecosystems whose intelligence, resilience and adaptive capacity exceed those of any single organisation considered in isolation. Their future depends as much upon the quality of their relationships as upon the quality of their internal structures.

This naturally leads to the next stage of our exploration. If institutions increasingly behave as living adaptive systems embedded within complex ecologies, then artificial intelligence becomes more than a technological tool. It begins to function as part of the cognitive infrastructure through which living institutions observe, learn and evolve.

# Artificial Intelligence Inside Living Institutions

The emergence of artificial intelligence represents one of the most significant transformations ever experienced by public institutions, not simply because it introduces powerful new technologies, but because it fundamentally expands the ways in which institutions can observe, understand and adapt to their environments. Throughout history, institutions have always depended upon information to perform their functions. Records, statistics, reports, professional expertise and accumulated organisational knowledge have formed the foundations of administrative decision-making for centuries. Artificial intelligence does not replace these foundations. Instead, it dramatically increases the institution's capacity to integrate, interpret and

continuously learn from the growing volume and complexity of information flowing through modern governance systems.

Understanding AI within the framework of living systems immediately changes the nature of the conversation. Rather than asking whether artificial intelligence will replace public servants or automate government, a more meaningful question emerges: how can AI strengthen the adaptive capacity of institutions while preserving human judgement, democratic legitimacy and constitutional responsibility? This distinction is essential because living institutions do not exist to maximise computational efficiency alone. Their purpose is to serve society through intelligent adaptation that remains accountable to citizens and guided by public values. Artificial intelligence therefore becomes valuable not because it thinks instead of institutions, but because it enables institutions to think more coherently as integrated cognitive systems.

One of AI's greatest contributions lies in expanding institutional awareness. Living institutions depend upon their ability to perceive subtle changes within their environments before these changes develop into major governance challenges. Traditionally, this awareness has relied upon expert analysis, statistical reporting, consultations and administrative experience. These mechanisms remain indispensable, yet they increasingly struggle to cope with the scale and speed of contemporary information flows. Scientific publications appear by the thousands every day, economic indicators fluctuate continuously, environmental monitoring generates vast streams of observational data and digital communication reflects rapidly changing public expectations. Artificial intelligence assists institutions by identifying meaningful patterns within these immense bodies of information, allowing governance systems to recognise emerging developments with a depth and speed previously unimaginable.

This expanded perception naturally strengthens institutional learning. Learning within living systems depends upon the continuous transformation of experience into improved future behaviour. Artificial intelligence accelerates this process by helping institutions connect experiences that might otherwise remain isolated across different departments, policy areas or administrative levels. A lesson identified within healthcare may prove relevant to education, environmental regulation may reveal insights applicable to infrastructure planning and local innovations may inform national governance strategies. AI facilitates these connections, weaving distributed knowledge into increasingly coherent institutional memory. Rather than allowing valuable experience to remain fragmented, living institutions become progressively more capable of transforming individual observations into collective understanding.

Artificial intelligence also enhances the capacity for anticipation, one of the defining characteristics of adaptive governance. Living systems do not merely react to events after they occur. They constantly interpret signals that indicate possible future developments, enabling timely adaptation before external pressures become overwhelming. Public institutions equipped with advanced analytical capabilities can increasingly explore alternative scenarios, evaluate potential consequences of policy choices and identify emerging risks while there is still sufficient opportunity to respond thoughtfully. Such anticipatory capacity does not eliminate uncertainty, nor does it predict the future with absolute certainty. Instead, it enables institutions to prepare more intelligently for multiple possible futures, reducing vulnerability while strengthening long-term resilience.

Yet the integration of artificial intelligence also makes visible the limits of technology itself. AI can detect correlations, generate sophisticated analyses and process information at extraordinary speed, but it cannot independently determine what societies ought to value, which constitutional principles deserve protection or how competing public interests should be balanced. These questions belong to the human dimensions of governance. Democratic legitimacy, ethical reasoning, political accountability and public deliberation remain irreducibly social processes rooted in human communities rather than computational systems. Living institutions therefore integrate artificial intelligence into governance not as an autonomous decision-maker but as an increasingly powerful participant within broader human processes of institutional cognition.

 

This relationship reinforces one of the central ideas developed throughout the IDHUS research programme: the future of governance is neither exclusively human nor exclusively artificial. It is fundamentally hybrid. Institutions become more intelligent through the productive interaction between human judgement and computational cognition. Public professionals contribute contextual understanding, ethical reasoning, creativity and democratic accountability, while artificial intelligence contributes computational capacity, large-scale pattern recognition and continuous knowledge integration. Together they create forms of institutional intelligence that neither humans nor machines could develop independently. The living institution emerges as a cognitive partnership rather than a technological replacement.

Importantly, this hybrid model also changes how institutional innovation is understood. Innovation no longer consists merely of introducing new digital tools or automating existing administrative procedures. Instead, it involves redesigning institutional learning itself. AI becomes embedded within the daily cognitive processes through which institutions observe their environments, exchange knowledge, preserve organisational memory and evaluate the consequences of their actions. Technological development and institutional evolution therefore become inseparable. As institutions become more adaptive, they simultaneously discover new ways of employing artificial intelligence, while advances in AI further strengthen institutional adaptability. The relationship becomes recursive, with each form of development reinforcing the other.

In this sense, artificial intelligence should be understood as an extension of the living institution rather than as an external technological addition. Just as language, writing, libraries and digital communication progressively expanded humanity's collective cognitive capacities throughout history, AI now extends the ability of institutions to perceive, remember, coordinate and learn. Its significance lies not in replacing the institutional organism but in enriching the cognitive processes through which that organism continues to evolve.

If living institutions continuously learn, adapt and strengthen their cognitive capacities through both human collaboration and artificial intelligence, an important question naturally follows.

# Why Living Institutions Govern Better

The ultimate purpose of understanding institutions as living systems is not simply to develop a more sophisticated theoretical description of governance. The value of any conceptual framework ultimately depends upon whether it helps explain how public institutions can better serve society. If living institutions continuously learn, adapt and evolve, then these characteristics should produce tangible improvements in the quality of governance itself. Increasingly, evidence from public administration, systems thinking and organisational research suggests precisely this conclusion. Institutions capable of behaving as adaptive living systems consistently demonstrate greater resilience, responsiveness and long-term effectiveness than those organised around rigid and static administrative models.

One reason for this superiority lies in the ability of living institutions to respond constructively to uncertainty. Traditional governance models often assume that the principal challenge facing public administration is the implementation of known solutions through efficient procedures. While this assumption remains valid for many routine administrative activities, contemporary governance increasingly confronts problems whose nature evolves while institutions are attempting to address them. Climate adaptation, artificial intelligence regulation, cybersecurity, demographic transformation and global public health all illustrate situations in which neither the problems nor their solutions remain fixed over time. Living institutions are better equipped to operate under such conditions because they treat uncertainty as a source of learning

rather than merely as an obstacle to administrative control. Their capacity for continuous adaptation enables them to refine both their understanding of the problem and their responses as new information becomes available.

A second advantage emerges through the preservation of institutional memory. Living systems do not repeatedly begin from the same point because they accumulate experience across time. Public institutions capable of systematically capturing lessons from previous decisions gradually build reservoirs of knowledge that strengthen future governance. Policies become more informed because they draw upon decades of organisational learning rather than isolated administrative episodes. Mistakes become valuable educational resources rather than forgotten failures, while successful innovations can be refined, replicated and adapted to new contexts. Institutional memory therefore transforms experience into an enduring public asset that benefits successive generations rather than disappearing with changes in political leadership or administrative personnel.

Living institutions also govern more effectively because they integrate diverse forms of knowledge. Contemporary public challenges rarely belong to a single discipline or administrative sector. Effective responses require contributions from economists, engineers, healthcare professionals, environmental scientists, legal experts, educators, technologists and many others whose expertise intersects within increasingly complex policy environments. Institutions organised as living systems naturally encourage these interactions because they recognise that intelligence emerges through coordinated relationships rather than isolated expertise. Governance therefore becomes progressively more holistic, enabling decisions that account for the interconnected nature of modern societal challenges instead of addressing individual issues in isolation.

Artificial intelligence further amplifies these advantages by enhancing the institution's capacity to synthesise distributed knowledge while maintaining continuous situational awareness. AI assists public organisations in identifying emerging patterns, evaluating alternative policy scenarios and integrating information originating from multiple domains into coherent representations of evolving governance environments. This computational support allows institutions to devote greater attention to strategic judgement, ethical deliberation and long-term societal objectives rather than becoming overwhelmed by the sheer volume of available information. Governance becomes simultaneously more informed and more reflective because computational intelligence supports rather than replaces human institutional reasoning.

Perhaps most importantly, living institutions strengthen public trust through their demonstrated capacity to remain relevant over time. Citizens do not expect governments to possess perfect knowledge or infallible solutions. They do, however, expect public institutions to learn from experience, acknowledge changing realities and improve continuously in response to new challenges. Institutions that visibly adapt while remaining faithful to constitutional principles reinforce confidence because they demonstrate both competence and responsibility. Their legitimacy grows not through claims of perfection but through sustained evidence of institutional learning and accountable evolution.

This perspective also transforms the meaning of reform. Traditional reform programmes often focus upon restructuring organisations, redesigning procedures or introducing new technologies as though institutional improvement consisted primarily of replacing existing components. Living institutions suggest a different philosophy. Genuine improvement emerges through strengthening the institution's own capacity for continuous self-development. Rather than relying upon periodic cycles of large-scale reform followed by long periods of organisational stability, adaptive institutions embed learning directly into their everyday operations. Evolution becomes continuous rather than episodic. Governance improves not because institutions occasionally reinvent themselves, but because they never cease learning.

Within the broader framework of the IDHUS Institute, this understanding represents a decisive shift in governance theory. Public institutions are no longer viewed merely as administrative structures responsible for implementing policy. They become evolving cognitive

 

systems whose long-term effectiveness depends upon their capacity to observe, interpret, remember, learn and adapt within increasingly complex societal environments. Artificial intelligence strengthens these processes, but the deeper transformation remains institutional rather than technological. The central challenge is not building smarter machines. It is cultivating wiser institutions.

The image of the living institution therefore provides far more than a useful metaphor. It offers a practical framework for understanding how governance can remain resilient in a world characterised by permanent change. Institutions capable of functioning as living systems preserve continuity without becoming rigid, embrace innovation without sacrificing legitimacy and learn continuously without abandoning the constitutional principles that define their public purpose.

This brings us naturally to our central reflection of the article. If the future belongs to institutions capable of evolving while preserving their identity, then the future of governance itself belongs to living institutions

 

## Conclusion

# The Future Belongs to Living Institutions

Throughout this article, we have gradually moved away from one of the oldest assumptions in public administration: the idea that institutions are fundamentally static organisations whose principal task is to preserve stability through fixed structures and established procedures. That perspective undoubtedly played an essential role in the construction of modern states, providing the administrative continuity and legal certainty upon which democratic societies continue to depend. Yet the accelerating complexity of the twenty-first century increasingly reveals that stability alone is no longer sufficient. Institutions must now remain stable while simultaneously becoming capable of continuous adaptation. This apparent paradox lies at the heart of the concept of the living institution.

Viewing institutions as living systems fundamentally changes how we understand governance. Institutions are no longer perceived simply as organisations that execute predefined responsibilities but as dynamic cognitive systems that continuously observe their environments, learn from experience, integrate new knowledge and evolve alongside the societies they serve. Their effectiveness depends less upon preserving unchanged organisational forms than upon maintaining the capacity to respond intelligently to changing circumstances without compromising the constitutional values that define their public purpose. Continuity and transformation therefore cease to be opposing objectives. Instead, they become complementary dimensions of institutional maturity.

One of the most important lessons emerging from this perspective is that adaptation should never be mistaken for instability. Living systems survive precisely because they preserve their identity while continuously renewing themselves. A mature forest remains recognisably the same ecosystem across centuries despite the countless individual changes occurring within it. Similarly, successful public institutions preserve democratic legitimacy, legal continuity and constitutional responsibility even as their organisational practices, technological capabilities and governance methods evolve. Their identity resides not in static procedures but in enduring principles capable of guiding responsible transformation across generations.

This understanding also offers a more realistic response to the challenges confronting contemporary governance. Modern societies are characterised by accelerating technological innovation, increasingly interconnected economies, global environmental pressures, demographic change and rapidly evolving public expectations. These developments do not represent temporary disruptions after which stability will naturally return. They constitute the normal operating environment of twenty-first-century institutions. Governance therefore requires systems capable of learning continuously because the conditions they seek to govern continue changing continuously. Living institutions do not merely react to complexity; they gradually develop the cognitive capacities required to flourish within it.

Artificial intelligence occupies a particularly significant place within this evolution. As we have seen, AI strengthens many of the processes through which living institutions function. It expands institutional awareness, enhances organisational memory, supports knowledge integration and improves anticipatory governance. Yet the article has consistently emphasised that the true transformation remains institutional rather than technological. Artificial intelligence can amplify adaptation, but it cannot replace the human judgement, democratic legitimacy, ethical responsibility and constitutional accountability upon which public governance ultimately depends. The future therefore belongs not to autonomous technological systems but to hybrid institutions in which human intelligence and computational intelligence operate together within coherent frameworks of public responsibility.

Perhaps the deepest implication of the living systems perspective is that it changes how institutional success itself is defined. For much of administrative history, effectiveness has often been associated with efficiency, procedural consistency and organisational stability. These qualities remain indispensable, but they no longer tell the whole story. Increasingly, successful institutions are distinguished by their ability to continue learning throughout their existence. Their strength lies not simply in delivering today's public services effectively but in ensuring that they remain capable of serving future generations whose needs, expectations and circumstances may differ profoundly from those of the present. Institutional excellence therefore becomes inseparable from institutional evolution.

Within the broader intellectual framework developed by the IDHUS Institute, this understanding represents another step towards a more comprehensive theory of institutional cognition. Earlier articles explored how institutions learn, how collective intelligence emerges and how complexity transforms governance. This article extends those ideas by demonstrating that learning, cognition and adaptation are not isolated institutional functions but defining characteristics of living governance systems. Institutions think because they learn collectively, they remain effective because they adapt continuously and they endure because they evolve without abandoning the constitutional foundations upon which their legitimacy rests. Living systems therefore provide the natural organisational environment within which institutional cognition becomes possible.

Ultimately, the future of governance will not be determined by the size of public administrations, the sophistication of their technologies or even the intelligence of individual leaders alone. It will depend upon **our ability to cultivate institutions capable of continuous learning, responsible adaptation and long-term cognitive evolution**. Such institutions will not seek to eliminate uncertainty, for uncertainty is an inevitable feature of living societies. Instead, they will develop the resilience, wisdom and collective intelligence necessary to navigate uncertainty with confidence, preserving democratic values while continuously improving their capacity to serve the public good.

The institutions that will shape the decades ahead are therefore unlikely to be those that resist change most successfully. **They will be those that have learned how to evolve without losing themselves, how to innovate without abandoning their principles and how to remain permanently alive within a world that never stops changing.**

 