

Sovereignty by Latency



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The Bank for International Settlements — the central bank of central banks— is building a unified ledger for the global financial system¹. BIS General Manager Agustín Carstens has described the architecture extensively in speeches and Innovation Hub reports, and one of its core features is conditional execution: payments and contracts that automatically trigger when certain conditions are met².

This perhaps sounds like efficiency, but conditional execution at the wholesale layer creates a major problem that the official documentation treats as out of scope: the end of reversibility.



First, two examples to illustrate the fundamental mechanism:

- A regional hospital's funding disbursement is made conditional on real-time compliance attestations from an approved auditing feed — standard practice in performance-based contracting³. The payment triggers, releasing funds to the

hospital, which pays suppliers, who pay workers, who pay rents — all within seconds.

Three months later, a court finds the attestation requirement exceeded the agency's statutory authority. The original transaction was invalid, but its financial progeny — the hospital's solvency, the supplier's payroll, the rents paid — have already hardened into irreversible facts.

- A carbon border adjustment charges an importer based on embedded emissions data. The payment clears, triggering a cascade: customs release, warehouse fees, distribution contracts, retail payments, consumer purchases — each conditional on the last.

A tribunal later determines the emissions calculation methodology was flawed and the charge unlawful, but the goods have sold, the supply chain has been paid, and thousands of downstream transactions exist only because the original levy cleared. The tribunal can rule correctly while remaining powerless to reverse what the cascade has propagated.



Conditional Economics

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Carbon Border Adjustment Mechanism

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How Conditional Execution Works

The wholesale layer of banking is where the large transactions happen⁴ — central banks settling with each other, commercial banks clearing payments between institutions, major financial actors moving billions daily. This is the infrastructure underneath retail banking, and when it changes, everything built on top changes too.

The key innovation is that conditional transactions can be chained. A payment executes only when certain conditions are met⁵, and its completion becomes a condition for the next transaction, whose completion becomes a condition for others. Finance becomes programmable⁶ — sequences of if-then logic executing automatically without human intervention. The industry calls these 'smart contracts'⁷,

though they are automated rather than intelligent, executing blindly based on coded conditions without context, equity, or even the spirit of the law.

The chaining creates irreversibility. When Transaction A executes, it triggers Transaction B (conditional on A), which triggers C, D, and E (conditional on B), which trigger F through K — each layer spawning the next, dependencies multiplying exponentially. Within hours, the dependency tree has exploded into millions of interconnected state changes, all existing only because A occurred.

When a court, three months later, rules that Transaction A was invalid, reversing it means reversing every transaction that branched from it. The downstream structure was built on a foundation the court now says never legitimately existed, but that structure has already propagated across the entire system, and unwinding it is virtually impossible.



The Financialisation of Compliance

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Joint study explores feasibility of central bank operations using tokenisation and smart contracts



Press release | 14 May 2025

The Architecture as Designed

The BIS Innovation Hub [8](#) papers describe this explicitly: programmable payments [9](#), smart contracts [10](#), atomic settlement [11](#), conditional logic [12](#) executing at machine

speed across the wholesale layer.

Appendix 1: Rosalind API endpoints and functionalities

Category	Sub-categories	API endpoints	Description
Accounts	Account management	Open	Creates a new parent account on central bank ledger. Types could be personal and business.
		OpenSubAccount	Creates a new sub-account to a specific parent account on central bank ledger. Types could be personal and business.
	Disable	Disable	Enables the account holder to disable a parent or sub-account on central bank ledger. Once disabled, no activities will be allowed on this account.
		Enable	Enables a previously disabled parent or sub-account on central bank ledger.
	Freeze	Freeze	Allows the account holder to freeze a parent or sub-account on central bank ledger. Depositing into this account is allowed, but withdrawing or making payments are not allowed.
		Close	Closes an account.
	Alias	Alias	Creates an alias on an account.
		DeleteAlias	Deletes (logically) an alias on an account.
		LookupAlias	Returns details of an alias on an account.
		Balances	Returns the total balances of an account.
Payments	Push payments	Push	Returns the total and available (not locked) balances of an account.
	Request to pay	RequestToPay	Transfers CBDCs from one account to another.
Fund and defund	Request to pay	RequestToPay	Requests other accounts to pay.
	Authenticate	Authenticate	Enables the recipient's PSP to include an authentication packet with the RequestToPay so that the payer's PSP can automatically approve the request (i.e. for POC).
	Defund	Defund	Adds CBDCs to an account.
			Draws down CBDCs from an account.

Category	Sub-categories	API endpoints	Description
Programmability	Set locks	RequestLocks	Sends requests to lock funds in an account with one of the three types of lock specified below.
		TwoParty	Locks an amount of CBDC in an account. Decision to unlock and release the funds is given to the recipient's PSP. This lock contains an expiry date to ensure that funds will not be locked indefinitely.
		ThreeParty	Locks an amount of CBDC in an account. Decision to unlock and release the lock is given to a third-party PSP with an appropriate permission. This lock contains an expiry date to ensure that funds will not be locked indefinitely.
		HTLC	Locks an amount of CBDC in an account using HTLC.
Cancel locks	CancelLock	CancelLock	Removes the lock previously placed on an account.
		DrawDownLock	Removes the TwoParty or ThreeParty lock previously placed on an account and draws down the funds either in full or in part.
Locks information	DrawDownHTLC	DrawDownHTLC	Removes the HTLC lock previously placed on an account and draws down the funds either in full or in part.
		LockInfoByCID	Returns information on a single active lock.
		LockInfoByPSP	Returns information on one or more active locks placed on all accounts with a specific PSP.
Participants	Key	LockInfoAccount	Returns information on one or more active locks placed on an account.
		Key	Returns the public key of a specific PSP. The key is used to send secure data between PSPs.
ESPs	Connectivity	Notification	Pulls notifications via the API. Webhooks with the same standards are also provided.
		ConnectAccount	Connects an account to a third-party application or a merchant.
Offline	Download and upload	DisconnectAccount	Disconnects an account from a third-party application or a merchant. This can be called by either the account holder or the connected party.
		Download	Draws down CBDCs from an account holder's online wallet and adds the CBDCs to the account holder's offline wallet.
		Upload	Draws down CBDCs from an account holder's offline wallet and adds the CBDCs to the account holder's online wallet.

The efficiency gains are real — settlement risk drops, counterparty exposure shrinks, and liquidity moves faster. But risk transfers — it does not disappear. When a cascade based on an invalid transaction cannot be unwound, losses are socialised onto institutions, insurance funds, or taxpayers, while ledger integrity is preserved. Risk reduction becomes risk redistribution: away from system operators and onto the public.

The papers do not meaningfully address what happens when someone contests a transaction after the conditional cascade has fired, because by design that scenario is not supposed to occur. And if it's contested a month down the line, that single transaction could easily lead to millions of transactions executed which were based on a faulty assumption and now have to be reversed. And that is — in practical reality — virtually impossible.

Project Rosalind
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The Historical Lineage

Conditional finance is not new, but its low latency, retail granularity, automation and irreversibility are.

It began with Robert McNamara. At the Pentagon from 1961 to 1968, he implemented PPBS ¹³ — the Planning, Programming, and Budgeting System — tying resource allocation to measurable objectives. When he moved to the World Bank in 1968 ¹⁴, he applied the same logic globally: third world nations received conditional aid, with disbursements

contingent on structural adjustment targets¹⁵. The IMF conditionality¹⁶ regime of the 1980s and 1990s extended this further, with loans contingent on policy reforms evaluated quarterly.

This later developed into Result-Based Management¹⁷ utilising Key Performance Indicators¹⁸ tied to the SDG Indicator framework¹⁹. Same structural logic, but now far more versatile²⁰.

Today, development aid can be made conditional upon recipients achieving specific SDG targets, with indicators²¹ existing to quantify progress in each one. Funding can be granted upon the condition of, say, improved health and environmental outcomes; the data points are already in place to verify compliance.



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For more information on how to effectively use and implement KPIs, see the [Targets and Indicators Step](#) of the UNCTAD SFT framework.

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KPI	Dimensions of sustainability			Transport mode				Scope				
	Economic	Environmental	Social	Road	Rail	Waterway	Air	Vehicle/ Vessel fleets	Freight corridors	City level	Country/ Region level	Company level
Access to Electricity (% of the population)	✓	✓	-	✓	✓	✓	✓	-	-	✓	✓	✓

PPBS was programmable finance before computers could execute it. Humans evaluated compliance, made disbursement decisions, and could be negotiated with. The conditionality had slack — political, interpretive, and temporal. A government could miss targets, renegotiate terms, and buy time.

But Carstens's unified ledger removes the slack. The logic remains identical — resources conditional on compliance — but execution is automated and reversibility is gone in practice. Conditions are evaluated by code rather than committees,

compliance is binary rather than negotiable, and execution is instantaneous rather than quarterly. What McNamara built required an army of ‘whizkid’ systems analysts²² and years of evaluation cycles; what the BIS is building executes the same control logic at machine speed, with no window for renegotiation.

The wholesale layer sets conditions for commercial banks, which set conditions for businesses, which set conditions for individuals. When conditional execution is hierarchical and instantaneous, the entire economy becomes programmable from the top down, and the slack that once allowed for politics, judgment, and correction vanishes.

This is governance by clearance: the constitutional question shifts from ‘should we do X?’ (a political question requiring debate) to ‘does entity Y meet criteria Z?’ (a technical question enabling automated denial). If you lack the right attestation, the transaction does not clear.

The implementation need not arrive as visible coercion. It turns into business-facing compliance requirements first, then pricing mechanisms that make non-compliance expensive, then conditional incentives that reward alignment, and finally default conditionality once alternative infrastructure has been retired. By the time restrictions become visible to ordinary users, the systems that might have provided alternatives have already atrophied.

The architecture does not technically prohibit alternatives — it merely withdraws support until alternatives become impractical or expensive.



A Conditional Existence

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Why Legal Systems Cannot Address This

Traditional legal systems assume time — time to investigate, deliberate, rule, and enforce. This works when transactions are discrete events that can be individually

reversed, and fails when every transaction is conditionally linked to dozens of others, each of which has triggered dozens more.

There is precedent: ‘finality’ in existing payment systems like CHAPS ²³ or Fedwire, where settled payments ²⁴ cannot be reversed even if fraudulent ²⁵, to prevent systemic collapse ²⁶. But old finality was a legal and operational rule applied to discrete payments — a policy choice that could be debated and modified. New finality is mathematical certainty baked into infrastructure, applying to an exponentially growing web of conditional states that lock in simultaneously.

In other words, reversal was already impossible at the wholesale level, but the same mechanics will now extend down to individual retail transactions — only you won’t be considered of systemic importance.

The screenshot shows the EUR-Lex website interface. At the top, there is a navigation bar with the European Union logo and the text 'European Union'. Below this, the 'EUR-Lex' logo is displayed, along with the tagline 'Access to European Union law'. A search bar is visible with the text 'QUICK SEARCH' and a search icon. To the right of the search bar, there are links for 'Help', 'Print', and 'Share'. Below the search bar, there is a 'MENU' button and a 'Search tips' link. The main content area displays the document 'Document 31998L0026' and its title: 'Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems'. The document is dated 'OJ L 166, 11.6.1998, pp. 45–50 (ES, DA, DE, EL, EN, FR, IT, NL, PT, FI, SV)'. It is noted that 'This document has been published in a special edition(s) (CS, ET, LV, LT, HU, MT, PL, SK, SL, BG, RO, HR)'. A green dot indicates 'In force: This act has been changed. Current consolidated version: 08/04/2024'. The ELI link is provided as 'http://data.europa.eu/eli/dir/1998/26/oj'. At the bottom right, there are links for 'Expand all' and 'Collapse all'.

The Latency Gap

Traditional sovereignty meant having the final say — the king, the parliament, the court could reverse decisions, override actions, and restore previous states. Political theorists have long understood that the sovereign is whoever can declare the exception to the normal legal order ²⁷, suspending ordinary rules in extraordinary circumstances.

When a system generates irreversible states faster than any legal body can convene to review them, sovereignty shifts from the entity that declares the exception to the entity that designed the conditions for its automatic production. The exception is no longer declared but manufactured continuously by the architecture itself.

This does not overthrow the legal order — it inverts it. Law becomes spectral commentary on actions already solidified in a realm it cannot reach. The court still sits, the judges still rule, and the legal system still functions, but in a temporal zone the financial architecture has already evacuated, issuing judgments about states that hardened into permanence before the gavel fell.

In proposed designs, governance and administrative authority over the unified ledger sit with central banks [28](#) and approved operators, who can design circuit breakers and emergency halts. Political and legal minds will demand these controls, believing sovereignty can be preserved by the ability to halt. But a halt freezes the system in an invalid state without reversing what has already propagated. The power to induce cardiac arrest is not the power to perform surgery, and by the time a committee convenes to debate whether to pull the brake, the explosion is already complete — the ‘emergency’ is a fait accompli observed in retrospect.

The architecture makes external correction either impossible or apocalyptic. Sovereignty belongs to whoever built the system such that the circuit breaker cannot undo what conditional execution has already done.

And this entire apparatus is overseen by an entity that operates beyond the reach of the law: the Bank for International Settlements is contractually exempt from Swiss jurisdiction [29](#).



'It's the central banks, stupid'

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The Bank for International Settlements

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Anticipatory Authoritarianism

Democratic anticipatory governance rests on four pillars: foresight to identify risks before they materialise, public engagement to contest design choices before they lock in, adaptive management to enable course correction, and circuit breakers to halt

malfunctioning systems. The framework assumes governance can see, deliberate, and steer the systems it governs.

This architecture does not abandon anticipatory governance; it captures and inverts it. Foresight requires a buffer between identifying a risk and acting on it, but the combinatorial explosion eliminates that buffer, reducing foresight to retrospective clairvoyance that sees the catastrophe clearly only after it is immutable.

Engagement requires something to be contested before it is final, but if post-hoc contestation is structurally meaningless, public input becomes aesthetic commentary on design choices made years prior. Adaptive management requires the capacity to reverse, adjust, or redirect, but this system is architected against adaptation, its only 'adaptation' being pre-programmed branches that execute static logic at high speed.



Anticipatory Governance

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In 1904, the philosopher Hermann Cohen considered what law would look like if you stripped out sentiment, context, and judgment — just pure logical form executing according to its own internal rules. The architecture being built is Cohen's vision made real, except hollow: automated execution that follows the letter of its programming with no capacity for the spirit, the exception, or the correction that makes law just rather than merely mechanical.



Ethics of Pure Will

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The result is a system that anticipates through its conditional logic, governs through automatic execution, and pre-empts external governance by operating faster than deliberation while making its outputs irreversible. All possible future states narrow to pathways permitted by the original code, and 'public engagement' happened once, in the technical committees that decided the ontological rules — what counts as a valid transaction, condition, and finality. After those decisions were made, the window for politics closed.

This is where proposals like the UN Emergency Platform integrate. The Platform provides the trigger and legitimation layer — the authority to declare 'blackbox' modelled

'complex global shocks' that cascade across domains— which central banks and system operators can adopt as reference conditions for the unified ledger's execution logic. Political authority declares, the ledger executes, and combinatorial explosion forecloses reversal.



The UN Emergency Platform

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The Black Box

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The emergency declaration also provides legal cover: once a 'complex global shock' is declared, emergency laws suspend normal contestation rights — the very rights that might otherwise challenge the conditional cascades as they propagate. The legal lock buys time while the technical lock hardens, and by the time emergency powers are lifted (*if they ever are*), the combinatorial explosion has already crystallised into permanent state.

The window for democratic input exists only in the design phase— a brief moment of politics before technological sovereignty activates and governance shifts from steering to interpreting, from deciding to managing consequences. The system still anticipates, still governs, still manages— but for its operators rather than its subjects.



The Road to Algorithmic Authoritarianism

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The Political Questions

The BIS papers discuss efficiency, interoperability, programmability, and tokenisation. They treat as out of scope what happens to legal contestability when conditional execution creates combinatorial explosions that cannot be unwound, who holds sovereignty over a system that creates irreversible facts faster than any institution can review them, or what 'rule of law' means when law structurally cannot reverse what the system has done.

These are political questions, and they determine who holds power in the emerging financial architecture. The BIS and central banks are technocratic institutions optimising for efficiency, stability, and control, and the pursuit of perfect efficiency in a complex system inherently creates power structures immune to traditional oversight. No one needs to intend this outcome; the design choices produce it as systemic inevitability.

As the cybernetician Stafford Beer observed, the purpose of a system is what it does—not what it claims to do, not what it was designed to do, but what it actually does. By that measure, this system's purpose is to replace the rule of law with the rule of algorithms preempting the future.



The Purpose of a System Is What It Does

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Structural Sovereignty

An institution operating a system where execution is instant, where transactions trigger conditional cascades, where cascades create combinatorial dependencies, where dependencies make rollback computationally impossible, and where legal review arrives only after dependencies have hardened—that institution is structurally sovereign, regardless of what any law formally states.

Formal authority over an irreversible system is the authority to write opinions about things that cannot be changed.

Consider what this means at the wholesale layer through an example:

A major international bank is flagged by an automated sanctions-screening system built into the settlement infrastructure. The flag is wrong—a data error, an overzealous algorithm, a flawed designation—but the system doesn't wait for verification. It cancels the transaction. Within minutes, it's all but irreversible.

Within hours, other banks stop settling transactions with the flagged bank, as their clients can't access their money. Other institutions that depend on the flagged bank start having their own transactions delayed or blocked. The financial network

reorganises around this new 'fact' — credit lines are cut, emergency loans are called in, clients flee to competitors.

Six months later, a court rules the original flag was unlawful. The designation should never have happened.

But by then, the bank has collapsed — its clients are gone. Other institutions have restructured their entire operations around its absence. The financial system has already absorbed the shock and moved on — billions of transactions have occurred that assumed the flag was valid.

The court can declare the flag was wrong. Actually undoing the damage would require reversing six months of global financial activity, reconstructing relationships that no longer exist, and forcing everyone to pretend the collapse never happened. That 'fix' would itself crash the system.

So the choice becomes: accept that an unlawful action destroyed a major bank and disrupted the global economy, or trigger a new crisis trying to undo the old one.

This is sovereignty by latency.



Black Tuesday

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