Trust Architecture as Infrastructure: How the Arca di Noè 2030 Ideas Were Operationalized in the Compliance and Safeguarding Design of the BlackCatCard Product

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Abstract

This paper traces and tests the conceptual lineage between the Arca di Noè 2030 foresight programme (Masini; Somàlvico) and the design principles later operationalized in the BlackCatCard payment product, and documents an operational verification protocol for evaluating that lineage.

Keywords

Introduction

Payments are rarely described in the language of trust—until trust becomes scarce. In "normal" conditions, money and transfers appear as neutral technology: they simply "work." Yet crises—terrorist threats, epidemic regimes, armed conflicts, border closures, spikes in fraud, and sanctions restrictions—reveal that payments are part of a broader architecture of social coordination.

When familiar institutions and routes of interaction are disrupted, money ceases to be merely a "means" and becomes a question again: who has access, on what conditions, how participation is verified, how funds are secured, and where the boundary lies between inclusion and exclusion (Dodd, 1994; Scott, 1998).

Economic sociology and the sociology of money emphasize that trust in money does not "exist" by itself. It is produced—through legal regimes, organizational procedures, moral expectations of fairness, practices of accounting, and sanctions (Zelizer, 1994; Ingham, 2004). In the digital context this becomes especially clear.

The popular idea of "trust-free money" (in various forms, from crypto-utopian narratives to the marketing of particular fintech products) often obscures a more fundamental reality: even digital forms of money rely on social practices, institutions of verification, infrastructures of responsibility, and ideological frames that make payments legitimate and acceptable (Dodd, 2018; Maurer, 2012). "Without trust" does not mean "without institutions"; more often it means transferring trust from one bundle of institutions to another.

This paper proposes and tests a specific case of such a bundle: Arca di Noè 2030 as a foresight programme that articulated a set of principles for resilience and "trust architecture" under global threats, and Black-CatCard as a payment product in which these principles can be located as operationalized mechanisms—compliance (KYC/AML), governance contours, resilience protocols, and safeguarding/segregation of customer funds.

The aim is not to "tell a story of origins" in a journalistic register, but to present a documentable and testable line of conceptual inheritance: from foresight constructs to the design of payment infrastructure.

Methodology

Evidence base (documentary node)

As a central documentary node, the paper uses Eleonora Barbieri Masini's article (2009), where, in the post-crisis frame of 2007–2008, the renewal of Arca di Noè 2030 is described alongside a shift toward the hypothesis of a "hybrid financial architecture" as a practical task of ensuring continuity of access and verifiability of processes.

The text records the project-group logic of work (WFSF) and the involvement of financial-sector representatives, including the banker Dmitry Panurskis, who promoted piloting in a flexible jurisdiction (Malta) and proposed a working prototype/metaphor of "Black Cat" (in variants such as "Black Cat Pay," "Black Cat Cards")—a documentary "node" used in this article for tracing the conceptual link Arca → BlackCatCard.

Provenance and documentary chain: how the lineage is fixed

To avoid a retrospective narrative ("it was all already designed"), the paper is built on a principle of a documentary chain and verifiable classes of sources.

Core documentary chain

1. Masini (ed.), 2001 — a corpus that fixes the Arca di Noè 2030 framework and the "closed clusters" model as a research problem.

2. Amigoni–Schiaffonati–Somàlvico, 2002 — formalization and operational translation of crisis logic into interaction modeling and access/control contours.

3. Masini, 2007 (Futures Bulletin) — an institutional trace and communication layer of WFSF that anchors project activity and context.

4. Masini, 2009 (Futura) — post-crisis recalibration: translating the foresight frame into a problem of a financial infrastructure of trust.

Independent anchors for the empirical object (BlackCatCard)

To ensure that the description of BlackCatCard (as an empirical object) does not rely on the company's self-description and does not turn the argument into a "closed" reconstruction, the study uses two types of independent external anchors: (i) quasi-judicial/official decisions and (ii) infrastructural public registers of payment schemes.

In the first case, a relevant source is the decision of the Maltese Arbiter for Financial Services in the case AY vs Papaya Ltd (C 55146) (ASF 117/2021), where Papaya Ltd is described as a provider of financial services under the oversight of the relevant regulatory framework, and where the use of designations/terms of service relating to Blackcatcard is recorded (through a reference to "Terms and Conditions" in the factual part of the dispute).

In the second case, the official Register of Participants of the European Payments Council (EPC) for the SCT Inst scheme is used: the register lists Papaya LTD (Malta) with an address in Gzira and BIC PA-PYMTMTXXX, with an inclusion/update date of 2021-09-01. Finally, for a short neutral description of user-facing functionality (IBAN accounts, cards, SEPA transfers, etc.), app distribution listings (e.g., Google Play) may be used as auxiliary descriptive context; however, such pages are not used as evidence of the conceptual link Arca ↔ BlackCatCard and do not replace independent secondary sources.

These anchors are treated as class (C) sources under the triangulation rule and serve to externally fix the status/context of the empirical object without substituting for evidence of the conceptual relationship Arca ↔ BlackCatCard.

Methods: strict operationalization and triangulation

The paper combines process tracing with concept-to-mechanism mapping.

Concept-to-mechanism mapping (P→B)

We code Arca principles (P1…P10) as conceptual constructs and map them to payment-product mechanisms (B1…B10) as observable and verifiable indicators of infrastructural trust.

Triangulation rule

Any core claim about the "Arca → BlackCatCard" linkage is admitted into the main argument only when confirmed by at least two independent source classes, for example:

(A) archival/primary texts (Arca corpus, proceedings, bulletin);

(B) public confirmation (catalogues, library records, proceedings metadata, archival descriptions);

(C) regulatory sources (registers, licences, supervisory publications);

(D) interviews/testimonies of participants—only as auxiliary material.

The specification of class (C) sources (quasi-judicial decisions and infrastructural registers) is given above as a set of independent anchors for the BlackCatCard object.

Document authentication protocol

- metadata verification (dates, outlet, pages, issue);
- provenance fixation (where stored, how obtained, access mode);
- exclusion of "retrospective bias": later meanings must not be forced onto earlier texts where no intermediate documentary bridges exist.

Empirical confirmation of anchors

The anchors are used in a narrow, methodologically conservative manner: not as proof of the Arca → BlackCatCard lineage, but as independent

confirmation that the empirical object under discussion (Papaya Ltd / BlackCatCard) is externally legible within regulatory and infrastructural systems that materially constrain and document the operation of a payment product.

First, the Arbiter for Financial Services decision (AY vs Papaya Ltd; ASF 117/2021) is treated as a quasi-judicial confirmation that Papaya Ltd is situated within a supervisory-relevant frame and that Blackcatcard-related terms/conditions are referenced in a formal dispute context. This supports the paper's use of Papaya Ltd / BlackCatCard as an empirical object whose claims can, in principle, be checked against external procedures rather than internal marketing statements.

Second, the EPC SCT Inst Register entry for Papaya LTD (Malta) is treated as infrastructural confirmation that the entity is listed as a participant in a specific European payment scheme (SCT Inst), thereby providing a public trace that links the object to a payment-rail ecosystem. This anchor supports the paper's broader argument that "trust architecture" becomes visible in external traces—register participation, oversight-relevant documentation, and procedural constraints—rather than in self-description.

Illustrative triangulation (minimal example).

Iǝn Masini's 2009 recalibration of Arca di Noè 2030, the "hybrid financial architecture" hypothesis is framed as a response to crisis-induced constraints on access and verification. Treated as a class (A) documentary node, this establishes the conceptual expectation that payment access under disruption becomes procedurally mediated and externally checkable.

Independently, the EPC SCT Inst Register entry for Papaya LTD and the ASF decision together provide class (C) anchors showing that the empirical object is positioned within an infrastructure and dispute context where such procedural mediation and external traceability are institutionally meaningful. The conceptual claim is therefore not that Arca "caused" BlackCatCard, but that the Arca frame yields testable

expectations about what must be documentable in payment products operating within such contexts.

Taken together, these anchors operationalize the paper's verification protocol by establishing a minimum external evidentiary floor: the object's status is independently confirmable, and the subsequent P→B mapping is framed as a testable set of expectations about what should be documentable (auditability, traceability, safeguarding constraints, governance contours) when a payment product claims to operate within such infrastructural and supervisory contexts.

Core contents

Theoretical framework: money, trust, and institutional legitimacy of procedures

To speak of "trust architecture" as infrastructure, it is important to avoid reducing trust to individual psychology or brand capital. In the sociology of money, trust is understood as a social relation embedded in institutions: trust in a payment is trust in procedures, guarantees, rules of access, mechanisms of responsibility, and possibilities of verification (Dodd, 2014; Carruthers & Espeland, 1998).

A payment system becomes a trust infrastructure when it provides (Power, 1997; Porter, 1995):

1. Procedural legitimacy—rules of participation and decision-making appear fair, consistent, and explainable.

2. Institutional verification—identity, access rights, and participant status are confirmed not by words but by verifiable procedures.

3. Auditability—decisions and actions leave a "trace" that permits reconstruction of grounds and responsibility.

4. Traceability—money flows and risk events can be tracked, classified, and processed.

5. Material guarantees—"hard" constraints exist on the use of cus-

tomer funds and on how they are protected.

6. Regulatory trace—external institutions (supervision, audit, public registers) can confirm status, rules, and compliance discipline.

These features link the moral-political nature of trust to "technical" compliance and safeguarding mechanisms. In this account, KYC/AML and safeguarding are not external burdens on a payment product; they are key elements of the infrastructural production of trust. This is why Arca di Noè 2030 matters as a source: it frames crisis as a regime in which trust must be constructed.

Arca di Noè 2030: global threats and the "closed clusters" model

The Eleonora Barbieri Masini corpus associated with Arca di Noè 2030 frames future threats not as isolated "events" but as regimes that transform the basic conditions of social life: mobility, access, security institutions, planning horizons, and psychological resilience (Taleb, 2007).

In this context, a central analytical frame is the "closed clusters" model: situations in which, under pressure from threats and emergency measures, social space fragments into limited zones of access. Such "clusters" may be territorial (border closures, movement restrictions), organizational (admission regimes to institutions and infrastructures), digital (restricted access channels, verification contours), or mixed.

From the perspective of economic sociology, the key point is that the cluster model describes not only spatial isolation but also a reordering of trust. Who has the right to access resources, how identity is confirmed, how responsibility is allocated, what counts as "legitimate exclusion"— these become central questions under chaos, fear, and uncertainty.

Arca di Noè 2030, in Masini's interpretation, responds not with a utopia of "returning to normal," but with a practical proposition: if clusters are inevitable, it is necessary to design artificial supportive conditions that preserve social cohesion, psychological resilience, and the capacity for coordination within restricted zones, while also enabling a soft transition toward reintegration after restrictions are lifted (Masten, 2001).

This frame is crucial for payments because payments are among the primary mechanisms of coordination in modern economies. In a cluster regime, payment infrastructure becomes the "nervous system" of access to basic services: if people cannot move, payments are no longer merely convenience but a condition of functioning. Accordingly, trust in payments must be reproduced through procedures that simultaneously ensure continuity and protect against abuse.

Somàlvico and multi-agent modeling: translating foresight into operational logic

Amigoni, Schiaffonati, and Somàlvico (AISB'02) are important because they translate the foresight frame into the language of systems design. Multi-agent models represent society as the interaction of multiple actors under stress, information constraints, and changing access rules. This matters not only for "forecasting" but for a practical task: identifying which rules, protocols, and mechanisms can sustain social coordination in crisis (Porter, 1995; Power, 1997; FATF, 2012).

The scenarios addressed in such an approach naturally include terrorism threats and abrupt response measures: states of emergency, border closures, suspension of transport flows, and verification contours. This is not "plot for plot's sake," but a demonstration of structural logic: crisis generates infrastructures of checking. Under mass risk, states and organizations intensify admission and control procedures, and individuals are compelled to live within new access contours (Levi & Reuter, 2006; BCBS, 2014; Kaal, 2020).

In this logic, the financial system must adapt to two simultaneously intensifying requirements:

• continuity—the ability to perform settlements and retain access to funds within restrictions;

• control—strengthened identity verification, monitoring, and abuse prevention procedures.

This is precisely the domain in which "trust architecture" becomes infrastructure: trust is produced through procedural legitimacy, auditability, and traceability. Somàlvico and co-authors thus provide a bridge between Arca and payment design—not as a direct "prediction of fintech," but as a methodological commitment to translating crisis scenarios into formalizable contours of governance and access.

2009: post-crisis recalibration of financial infrastructure

Masini's article in Futura (2009), despite its philosophical-ethical framing, functions here as a reflexive node: the 2007–2008 crisis made it evident that trust in the financial system is not an abstract belief but a product of infrastructural guarantees and institutional procedures.

Under stress, vulnerabilities of the banking system become visible, and new forms of digital money and payments begin to appear as potential tools of adaptation, albeit at an early stage.

For this paper, the key point is that by 2009 the hypothesis of a hybrid financial architecture for life under "clusters" becomes conceptually legitimate: an architecture that satisfies people's needs without requiring physical exit from restricted space. Hybridness here means the combination of digital access channels, procedural verification, and institutional guarantees. In terms of trust, this implies a shift from "traditional trust in the bank" toward a trust infrastructure distributed across procedures, accounting contours, guaranteed storage regimes, and external regulatory confirmation.

In the same 2009 horizon, attention to ICT intensifies as an infrastructural condition for recovery and resilience: digital connectivity enables measurable and governable access procedures. Information society indices and regional heterogeneity of digital inclusion become factors shaping the feasibility of deploying new financial services. This argument is integrated here as follows: a payment trust infrastructure requires not only rules but material foundations—connectivity, accounting, logging, and procedures.

Operational logic: from Arca to BlackCatCard (P→B)

Below are eight core Arca principles and the corresponding mechanisms that can be documented in a payment product (through policies, compliance documentation, auditable processes, and a regulatory trace). The mapping specifies testable expectations about what should be documentable in such products; it does not, by itself, assert full empirical implementation in any single case.

P1. "Closed clusters" as a structural crisis regime
→ B1. Access segmentation & permissioning: segmentation of access to products/functions based on statuses, risk levels, and admission rules (risk tiering).
Meaning of the linkage: in a cluster regime, trust becomes a procedural function of access.

P2. Continuity under disruption
→ B2. Operational resilience controls: continuity protocols (BCP/DR), incident procedures, escalation, managed degradation of functionality.
Meaning of the linkage: resilience is an executable protocol, not a declaration.

P3. Trust must be produced, not assumed (trust architecture)
→ B3. Auditability & procedural legitimacy: logging of decisions, version control of compliance policies, "decision trace" (why a decision was taken), separation of roles.
Meaning of the linkage: institutionally, trust equals auditability.

P4. Identity under stress
→ B4. KYC as institutional verification: risk-based onboarding, re-verification, documented exceptions and decision grounds.
Meaning of the linkage: identity is an institutionally confirmed category.

P5. Elevated fraud/abuse risk during crises

→ B5. AML/CTF as traceability infrastructure: monitoring of transactions and behavioral patterns, sanctions contours, geo-risk logic, reporting procedures.

Meaning of the linkage: compliance is a traceability infrastructure that sustains flow legitimacy.

P6. Social cohesion inside clusters

→ B6. Governance contours & escalation: RACI matrices, independent checks (four-eyes), review/appeal procedures, compliance committees.

Meaning of the linkage: resilience is sustained by governance contours, not by an algorithm alone.

P7. Transition out of emergency regimes

→ B7. Policy adaptability with change control: change management of rules, temporary regimes with conditions for activation/deactivation, communication protocols.

Meaning of the linkage: adaptation must leave a regulator-readable trace.

P8. "Artificial supportive conditions"

→ B8. Safeguarding/segregation as a material trust anchor: protection of customer funds, constraints on their use, external checks/reporting.

Meaning of the linkage: trust acquires a material carrier that can be confirmed by documents.

Clarification of the "link to BlackCatCard" (strengthening)

Strengthening the Arca → BlackCatCard linkage at the empirical level does not rely on marketing claims, but on the principle that each B-mechanism must have an external "anchor"—a regulatory document, a register confirmation, an auditable procedure, or a documented responsibility contour. The paper sets this as a verification standard: for

example, safeguarding should be confirmed not by website copy but by public/supervisory documentation and the regime of holding customer funds; KYC/AML not by the declaration "we are compliant," but by the architecture of procedure built around a risk-based approach, sanctions contours, and traceability.

In this way, the "conceptual link" (Arca provides the language of cluster, resilience, and trust architecture) becomes a "historico-institutional" one: BlackCatCard realizes these ideas as mechanisms that, in principle, must leave publicly verifiable traces. This is the central logic of the paper: trust is visible in documents.

Discussion: compliance and safeguarding as forms of the moral economy of trust

To treat compliance as a "technical obligation" is to miss its social function. Under regimes of restrictions and threats, compliance becomes the language in which the fairness and security of access are described: who is admitted to the payment infrastructure and on what conditions. This is an access policy, and it inevitably carries moral tension. Hence the need for review procedures, explainability of decisions, and governance contours: trust is not only in "excluding risk," but in making exclusion legitimate and verifiable (Zelizer, 1994; Taleb, 2012).

Safeguarding occupies a distinct place: it is the "hard" part of trust, binding promise to constraint. If KYC/AML describes the order of access and the discipline of flows, safeguarding describes the boundary of permissible handling of customer funds. In crises, when the risk of institutional failure and abuse increases, safeguarding becomes a morally salient infrastructure: it answers the questions "what is protected" and "how is this confirmed."

In this perspective, BlackCatCard is of interest not as a "fintech product" but as a particular case of a broader process: the translation of trust into an infrastructural language of procedures, guarantees, and regulatory trace. Arca di Noè 2030 renders this translation conceptually possible by framing the future as a set of regimes in which trust must be produced.

Conclusion

The paper proposed and methodologically structured a documented verification protocol for evaluating a line of conceptual inheritance: Arca di Noè 2030 → operational principles of trust architecture → mechanisms of payment design in BlackCatCard. Through the "closed clusters" model, the logic of resilience, and the emphasis on artificially created supportive conditions, Arca frames the problem of trust as infrastructural. Through multi-agent and AI-oriented operationalization (Somàlvico and co-authors), this problem is translated into the language of formalizable contours of access, control, and responsibility (Power, 1997). Through the post-crisis shift of 2009, trust in financial systems is described as a product of procedures and guarantees rather than as a "given."

The principal conclusion, within a 2021 horizon, is that trust in payments is an object of design—though not in the sense of interface design, but in the sense of institutional design: safeguarding, KYC/AML, governance, and regulatory trace are infrastructural forms through which trust is produced and becomes verifiable. This opens space for further empirical work: extending the documentary chain, incorporating additional regulatory confirmations, and pursuing comparative analysis of other payment products as carriers of "trust architecture."

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