

Knowledge Autonomy in Society

Applying ArtiProof to the knowledge behind essential societal functions

ArtiProof · KopKen | Whitepaper 1.0

What does a society still need to understand?

A society may have access to advanced technology and vast amounts of information while retaining limited ability to judge the systems on which it relies. It may own infrastructure without knowing how to repair an unusual failure, receive an answer without being able to challenge its basis, or depend on expertise that it no longer knows how to develop.

Questions about strategic technology, production and supply dependencies already receive serious attention. This paper proposes an additional question: what knowledge must remain accessible, understandable and recoverable for a society to make informed choices about its essential functions?

How much knowledge loss can a society absorb before essential functions suffer, and what can it still restore? ArtiProof may help examine these questions beyond individual organisations. This paper explores that application through a practical quick scan and comparisons of clearly defined functions. It proposes a use of a developing framework, not a validated measure of national autonomy.

Autonomy depends on the function

We use knowledge autonomy to describe the capacity to make informed decisions about critical knowledge, assess external contributions and retain viable options when an important dependency changes. This capacity depends on the function, dependency and time horizon being examined. It does not require a country to know or produce everything itself.

Ownership, access, understanding and control can diverge. Domestic ownership does not guarantee that public institutions or practitioners can inspect a system. Foreign cooperation can provide reliable access, independent expertise and alternatives. For some functions, a shared regional capability may be the sensible scope. The question is who can understand and act within that scope. Dependence on a domestic monopoly or one local expert can matter as much as a cross-border dependency.

Consider a hypothetical chip-production facility. A region might own the plant while depending on external specialists to diagnose unusual failures. Another region might import chips while retaining design expertise and the ability to assess alternatives. These situations cannot be ranked merely by counting factories or identifying where their owners are registered.

The same reasoning applies to public administration, payments, healthcare and energy. What matters is which knowledge-dependent decisions can still be understood and acted on, by whom, under what conditions.

Applying the existing ArtiProof lens

ArtiProof distinguishes Source Knowledge, Craft Knowledge and Generated Knowledge: the sources used as a basis, practical professional judgement, and outputs produced or transformed by technological systems. These describe roles in a particular use, not separate stores of knowledge. Its five existing properties remain Integrity, Provenance, Authority, Understandability and Resilience. [1]

What changes is the scope of the assessment. Knowledge can be distributed across universities, firms, public bodies, professional communities, civil society and external partners. The assessment examines what they can do together and which dependencies they share.

A society has no single equivalent of a company manager. Expertise, legal authority, operational responsibility and democratic legitimacy must therefore remain distinguishable. Identifying who can substantiate a knowledge claim does not give that person the right to settle public values or political choices.

Nor does this application require every citizen to understand every technical system. Relevant expertise must be available through arrangements that allow scrutiny, challenge, continuity and correction. Who can access those arrangements matters: national capability on paper may coexist with inaccessible services or excluded communities.

One function before a national portrait

Start with an essential function rather than an attempt to inventory all knowledge in a country. For example, choose the ability to investigate an unusual failure in a payment service, explain and contest an automated public decision, or restore an essential operational process.

Define the territory or community, the function, the people affected and the main dependencies. State the expected service level and the time allowed for recovery. Then identify the people, organisations and systems needed to perform, understand, challenge and restore that function.

Follow dependencies beyond the initial boundary when necessary. Several local providers may rely on the same external model, dataset or specialist team. Counting them as independent alternatives would overstate resilience.

The companion paper, *Who Will Know How Tomorrow? A Sector Perspective*, examines how a sector renews expertise, starting with junior learning pathways. This societal paper asks a wider question: how is essential knowledge distributed and governed across domains, institutions and borders?

A societal quick scan

Use the following prompts with people who hold or rely on the relevant knowledge. Include operational experts and affected users alongside institutional representatives. The scan is a structured starting conversation; a firm assurance judgement requires further evidence and review.

For every response, record who answered, the evidence available, the boundary of the claim and what remains uncertain. A blank evidence field is a request for investigation, not an automatic finding of incapacity.

1. What essential function must remain understandable and recoverable?

Define the service, decision, people affected and acceptable interruption.

2. Where are its sources, practical expertise and generated outputs?

Identify the people, institutions and systems involved, including any sources or services they share.

3. Who can check the knowledge independently of its provider?

Check whether a qualified reviewer can inspect the relevant sources, question a conclusion and request correction.

4. Who can act on a finding or change an arrangement?

Identify who understands the issue, who can authorise change, what contracts permit and who is accountable to the public.

5. What remains possible when a key expert, source or system becomes unavailable?

Describe the disruption and examine alternatives, recovery time and cost, and evidence that recovery is feasible.

6. How is the required capability renewed and made accessible?

Examine training and succession, and whether the people affected can obtain help or request independent review.

From answers to a comparable profile

The output is a knowledge profile for the selected function. Use the three knowledge types and five properties to organise what is known, missing or uncertain, with references to the supporting evidence. Identify the most consequential dependency, the next action, who is responsible and when to review the conclusion.

Comparison is a major potential benefit. Two regions can examine the same function using matched questions and scenarios, discovering differences that a technology-adoption ranking would miss. Comparisons can also track a single region before and after a major change.

Compare the same function under the same service expectations, disruption scenario and recovery horizon. Agree which period the evidence covers and how it will be assessed. Separate reported capability from observed performance, and show missing evidence and uncertainty. Findings from participating institutions should remain limited to those institutions unless wider evidence supports a broader conclusion.

Candidate indicators include the share of selected critical decisions for which qualified independent review is demonstrably available, the time needed to restore a defined function, and the availability of viable alternatives. State which decisions are counted and under what conditions recovery or substitution is expected. These indicators need practical testing before they can support reliable comparisons.

Keep the findings as a profile rather than an average score. Clear records of where knowledge came from cannot compensate for having no one able to interpret an essential exception. Shared questions can support useful comparisons while the evidence is still too limited for a ranking.

An illustrative comparison of two regions

Imagine two fictional regions using automated systems to decide eligibility for a public service. Compare their ability to review unusual decisions and continue the service during a disruption. Region A uses foreign technology, but trained reviewers can inspect the evidence, challenge an output and refer a correction to an accountable decision maker. Staff have practised a limited

fallback procedure. In Region B, a locally owned system handles routine cases well, but only one contractor can explain unusual decisions.

Under the same service and recovery requirements, Region A may have stronger evidence of autonomy for these functions. Region B has a concentrated knowledge dependency despite domestic ownership. Neither finding establishes overall national superiority.

Useful next steps could include securing access to decision evidence, training additional reviewers or testing an alternative recovery route. For knowledge autonomy, replacing a foreign supplier with a domestic one would help only if it improved the relevant capability. The scan should also recognise gains from external cooperation.

How this complements existing approaches

Work on technological sovereignty and open strategic autonomy already examines dependencies in innovation and production. Kroll's Joint Research Centre report develops an index for open strategic autonomy; the associated Fraunhofer project uses patent, trade and production data. [2, 3] ArtiProof could complement such work by examining who can understand, challenge and restore a selected function.

The Global Knowledge Index of UNDP and the Mohammed bin Rashid Al Maktoum Knowledge Foundation compares knowledge performance across countries. [4] Its country-level view offers context for a closer examination of particular functions.

NIST describes how C.O.R.E. adapts the Baldrige framework for communities. [5] This offers a precedent for applying an organisational framework more widely, while recognising that responsibility is shared across institutions.

Research on absorptive capacity offers another useful connection: existing knowledge helps organisations recognise, absorb and use external knowledge. [6] A societal application must also examine the institutions and relationships through which that capability is shared. The practical question is whether these combined perspectives improve decisions.

A practical first application

Choose one essential function in one territory and bring together the relevant experts, organisations and people affected. Start with existing records: operating guidance, training records, dependency maps, review arrangements and recovery exercises. Run the scan and distinguish what the group believes from what the evidence demonstrates.

Choose one important uncertainty for a practical check, such as explaining an unfamiliar case, handing over a task or rehearsing recovery from a defined disruption. For functions that depend on AI, the K-point research question asks what capability remains or can be recovered when AI is withdrawn, at what cost and delay. Examine this for the selected function without assuming a single threshold for a whole society.

Record the effort, the additional insight and the resulting decision. A later comparison with a second territory should use the same function, service requirements, disruption scenario and evidence expectations, while explaining relevant contextual differences. These trials can show whether the approach adds value to existing assessments.

The ambition is practical awareness with consequences. A society should be able to ask where the knowledge behind its essential functions resides, who can question it, and whether it can preserve meaningful options as technology and institutions change.

Selected sources and scope

[1] ArtiProof, Keeping Organisational Knowledge Dependable in the Age of AI, Public Whitepaper 1.1 EN; and the corresponding Dutch edition. Method background: [Open source](#)

[2] Kroll, H. (2023). Assessing Open Strategic Autonomy. European Commission Joint Research Centre, JRC136359. [Open source](#)

[3] Fraunhofer ISI, Operationalisation of Open Strategic Autonomy in the context of industrial innovation. [Open source](#)

[4] UNDP and MBRF, Global Knowledge Index 2025. [Open source](#)

[5] NIST, C.O.R.E. Communities of Resilience and Excellence. [Open source](#)

[6] Cohen, W. M. and Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative Science Quarterly, 35(1), 128–152. [Open source](#)

The examples are hypothetical. The proposed societal application has not been independently validated and does not establish a country ranking or national benchmark. The companion paper Who Will Know How Tomorrow? A Sector Perspective examines knowledge renewal within a sector.