

The Next Wave of Urban AI

Building intelligent cities that can connect and scale

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MORE AI WILL NOT MAKE CITIES SMARTER

Capability without composability is capacity without leverage. The difference between automation and urban intelligence is coordination — for people.

THREE QUESTIONS FOR THE ROOM



Who is accountable when two municipal AI systems disagree?

Accountability moves to the seams once systems act, not answer.



Is your city's intelligence owned — or leased from a single vendor?

Non-portable models turn public capability into a subscription.



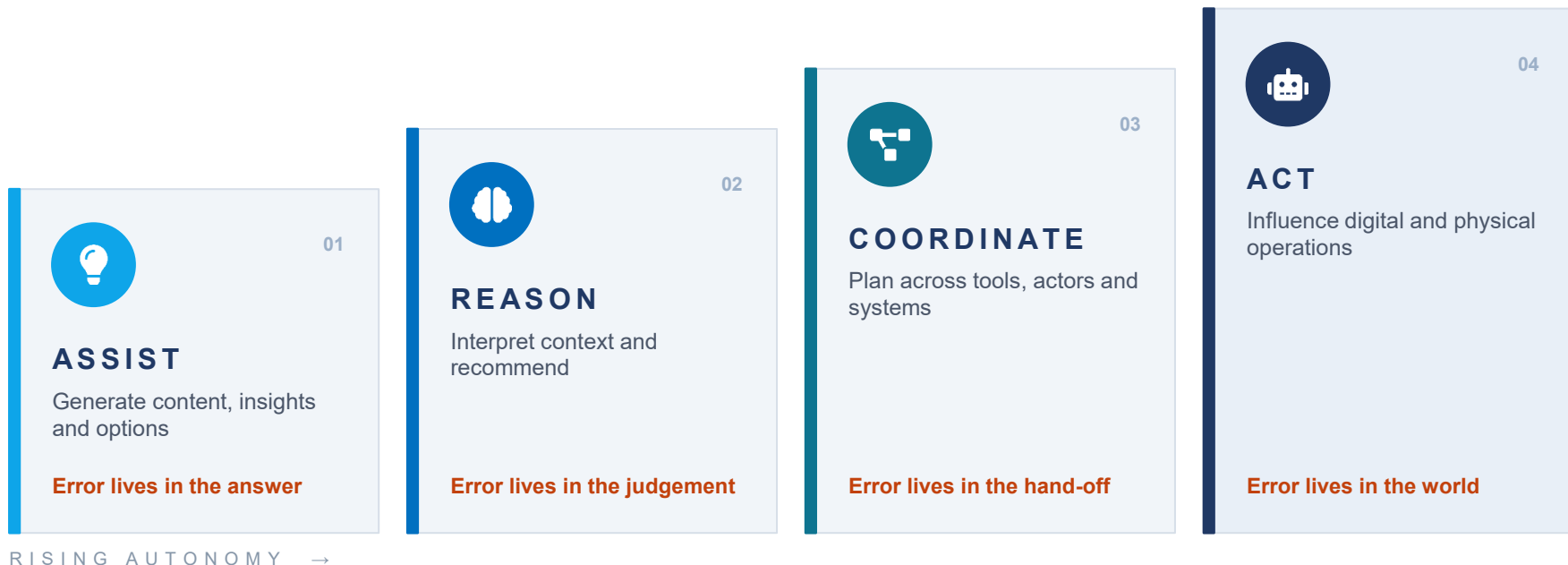
What is the unit of evaluation: a model, a service, or a city outcome?

Benchmarks that stop at the model reward the wrong thing.

More models is not more intelligence. Composable, accountable, portable intelligence is.

AI HAS CROSSED FROM ANSWERING TO ACTING

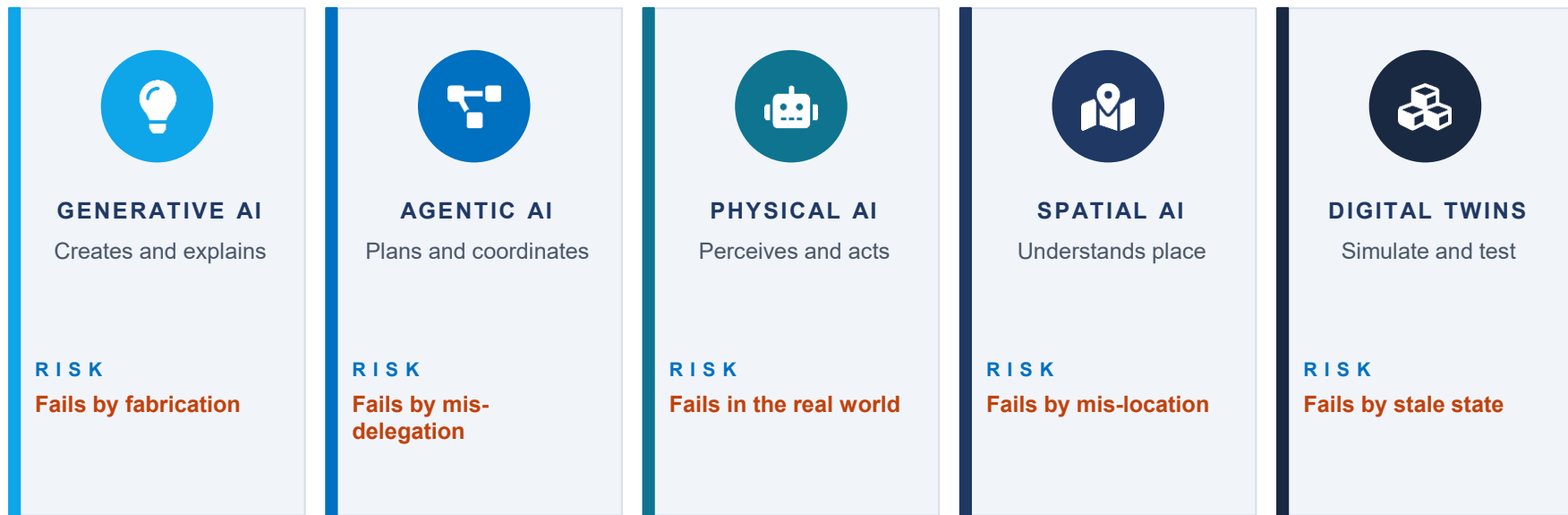
Four levels of autonomy — and four places where failure relocates. The design burden shifts from accuracy to observability and control.



As autonomy rises, failure moves from the answer to the action — and the cost of a wrong hand-off rises with it.

FIVE FORCES ARE CONVERGING ON THE URBAN FABRIC

Generative · Agentic · Physical · Spatial AI · Digital twins — each arriving with its own vocabulary, its own vendor and its own failure mode.



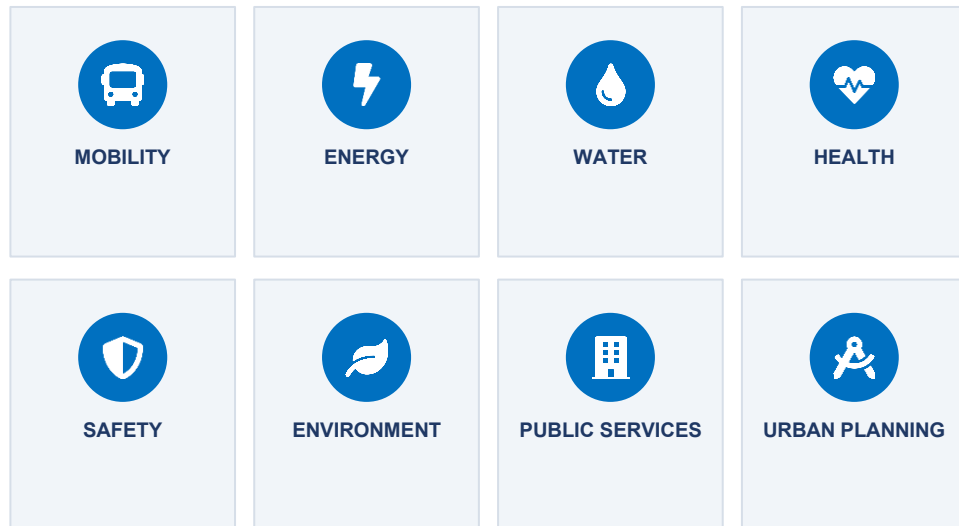
In a city these are not five independent risks but a coupled chain: a stale twin feeds a confident agent that instructs a physical system.

Errors do not add across the chain. They multiply — which is why convergence, not each technology, is the object of study.

A CITY IS NOT ONE USE CASE. IT IS A SYSTEM OF SYSTEMS.

Each domain runs, is governed and evolves independently — and the whole does things no part was designed to do.

EIGHT COUPLED DOMAINS



WHAT MAKES IT A SYSTEM OF SYSTEMS

Operational independence

Each domain runs even if the others stop.

Managerial independence

Each is owned, funded and governed separately.

Emergent behaviour

The whole does things no part was designed to do.

Evolutionary development

Never finished; components change at different speeds.

Maier (1998), characteristics of systems of systems

Emergence is not a feature you procure. It is a property you inherit — whether or not you designed for it.

THE NEXT LEAP IS NOT MORE INTELLIGENCE. IT IS COORDINATION.

Six stages, five hand-offs. Every hand-off crosses a domain, an organisation or the digital–physical boundary — and each is where meaning, context and responsibility are lost.



• a hand-off — where meaning, context and responsibility are most often lost



Shared meaning

Same word, same referent, same unit — across domains and vendors.



Clear interfaces

Explicit contracts for data, control and escalation at every seam.



Appropriate control

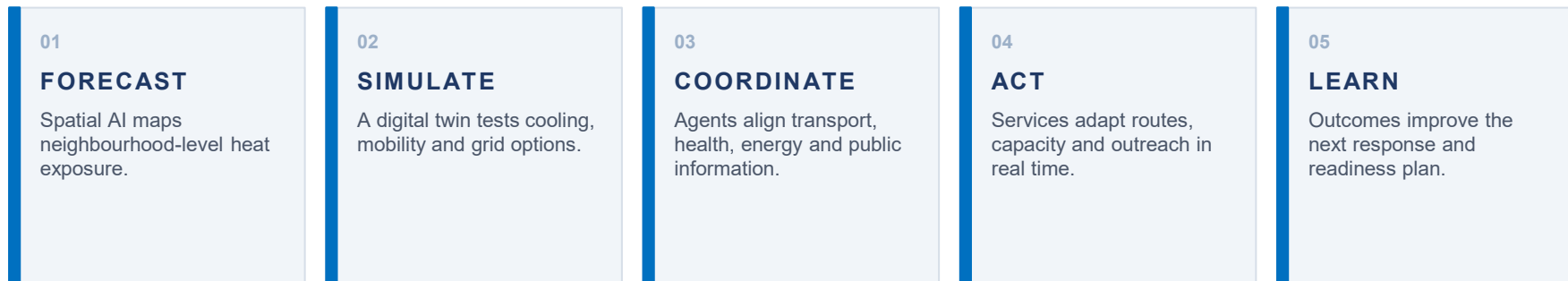
Human authority placed where consequence, not convenience, demands it.

Urban AI is being built at level one or two of interoperability while being marketed at level five.

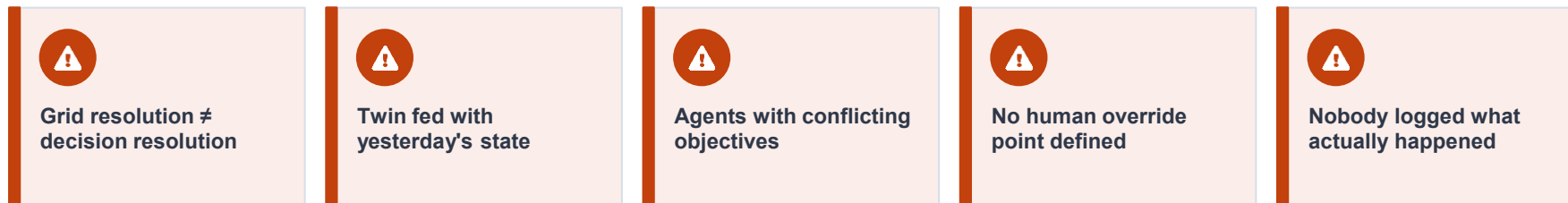
ONE HEATWAVE. MANY SYSTEMS. FIVE WAYS TO FAIL.

The chain every vendor deck shows — and the breakpoints every operator recognises. Illustrative scenario.

THE INTENDED CHAIN



WHERE IT BREAKS



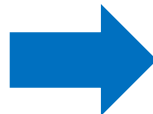
The value appears across the chain — not inside a single model. So does the failure.

URBAN AI CAN MOVE CITIES FROM REACTIVE TO ANTICIPATORY

The genuine prize: act on a heat risk, a flood or an outbreak before it becomes a headline — without removing the humans who answer for it.

REACTIVE

- ✗ Detect after disruption
- ✗ Optimise one service at a time
- ✗ Report what happened



ANTICIPATORY

- ✓ Anticipate emerging risk
- ✓ Coordinate across systems
- ✓ Adapt — with human oversight

Not on the list: autonomy for its own sake.

"Fully autonomous operations" usually means nobody has decided who is answerable.

Anticipation without accountability is prediction without permission. The goal is earlier, better and more answerable action.

UNCOORDINATED INTELLIGENCE MULTIPLIES FRAGILITY

Tight coupling plus interactive complexity is the classic recipe for normal accidents (Perrow). Four fragmentation vectors, each observable in deployments today.



Semantic fragmentation

01

Systems use the same words to mean different things — and act on them.



Opaque hand-offs

02

Decisions cross platforms with no traceable owner, log or override.



Vendor dependence

03

Capabilities cannot be moved, composed, audited or replaced.



Uneven safeguards

04

Trust, accessibility and sustainability vary by service and supplier.

At city scale, fragmentation is an operational risk, not an inconvenience.

URBAN AI MUST PASS THREE TESTS — STATED AS FALSIFIABLE QUESTIONS

A test that cannot fail is marketing. Each test has an operational version an auditor, a CIO or a council member can apply.



01

COHERENT

Can systems share meaning, data and context across domains?

THE TEST

Swap one domain's data source. Does the rest still make sense?



02

ACCOUNTABLE

Can people understand control, oversight and responsibility?

THE TEST

Name the person who can stop it — and how long they have.



03

SCALABLE

Can solutions be reused, compared and sustained beyond one pilot?

THE TEST

Deploy it in a second city without the first vendor.

If one test fails, innovation remains a pilot. If two fail, it becomes a liability.

INTEROPERABILITY IS A PUBLIC-VALUE STRATEGY, NOT AN IT PREFERENCE

Four value cards that translate directly into budget lines — and one question for the balance sheet.



REUSE

Build once, apply across services and places.



CHOICE

Combine and replace components without rebuilding the city.



CONTINUITY

Preserve public capability across vendors and technology cycles.



SCALE

Turn promising pilots into shared, durable infrastructure.

**Is your city's
intelligence owned — or
leased?**

If a capability cannot be exported,
compared or replaced, the city holds a
subscription, not an asset.

Standards create a market of trustworthy, composable urban intelligence — and public capability that outlives any supplier.

THE OUTCOME

Invisible technology.

Visible public value.

Safer journeys. More accessible services. Stronger resilience.
Better everyday decisions — with nobody needing to know
which model made them.

Invisible to the resident. Fully legible to the institution.



Intelligence needs a common foundation

Not to slow innovation — to make it work together, survive its suppliers and answer to the public.

SG20 WORKS WHERE TECHNOLOGIES BECOME CITY SYSTEMS

SG20 develops Recommendations, guidelines, technical reports, methodologies and best practices for IoT, digital twins and smart sustainable cities and communities.



TECHNOLOGIES

IoT · digital twins · edge · AI/ML · data · orchestration · sensing

COVERAGE

Well served



CITY SERVICES

Mobility · health · energy · public services · urban and rural transformation

COVERAGE

Growing



SYSTEM QUALITIES

Requirements · infrastructure · interoperability · security · accessibility · sustainability

COVERAGE

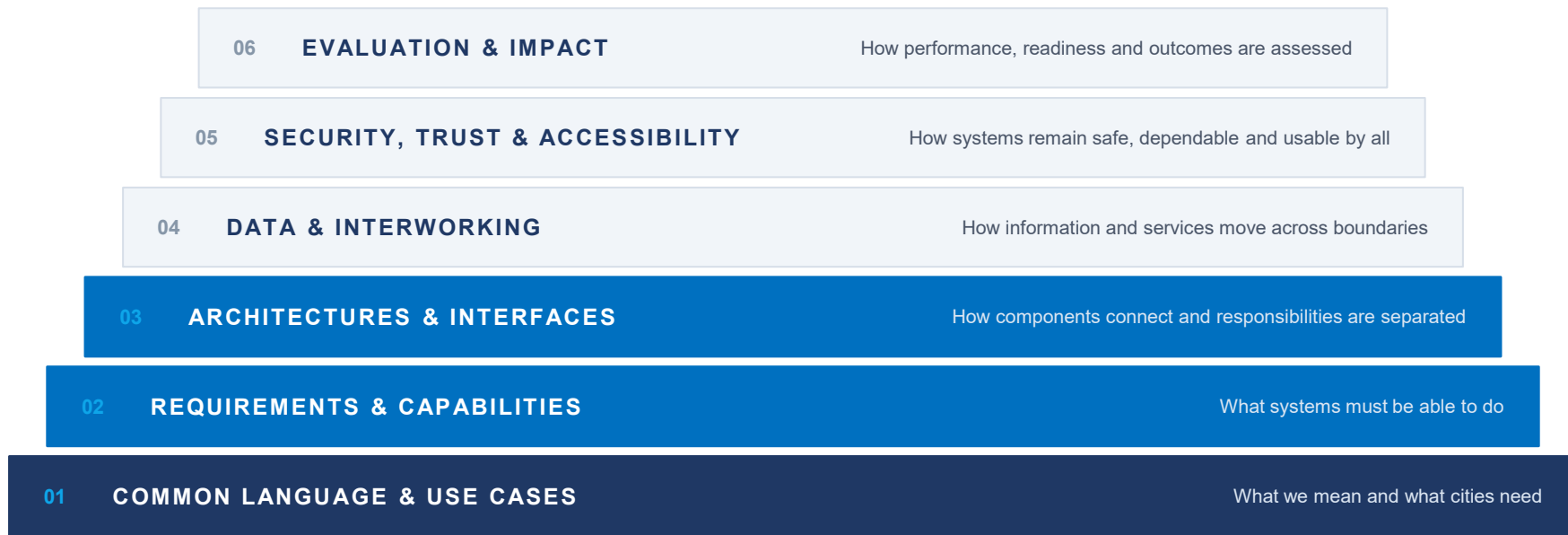
The gap

The third column — properties of the whole — is where AI-enabled cities are currently weakest.

Technologies and services are well served. System qualities are where the standards gap sits.

SG20 TURNS COMPLEXITY INTO IMPLEMENTABLE BUILDING BLOCKS

Vocabulary and use cases at the base; evaluation at the top. Much current activity starts at layer six while layer one is still contested.



Meaning first; metrics last. An evaluation layer built before the language layer rewards whatever is easiest to count.

STANDARDS DO NOT FREEZE INNOVATION. THEY STABILIZE ITS INTERFACES.

Let the volatile layer be volatile, make the interface layer boring, and keep the public-value layer non-negotiable.

INNOVATION CAN CHANGE

Models · vendors · algorithms · devices

INTERFACES MUST ENDURE

Meaning · data · APIs · control · evaluation

PUBLIC VALUE MUST CONTINUE

Access · resilience · choice · accountability

Collingridge dilemma: control is easiest when consequences are least known — and hardest once they are. Interfaces are the one thing we can still fix early. Do not standardise the model; standardize the seams.

A stable foundation lets the frontier keep moving — and lets a city change its mind about a supplier.

THE APPETITE FOR COORDINATED ACTION IS UNMISTAKABLE

Governments and industry want to work on this in a multilateral setting. The risk is momentum without coherence.

397

participants

SG20 meeting · May 2026

248

contributions

SG20 meeting · May 2026

58

new work items

SG20 meeting · May 2026

40+

members

co-supported creation of FG-AI4SSC



Momentum is not the constraint. The task is to convert it into coherence — a shared vocabulary, a common architecture, standards-ready outputs, and a platform that brings city stakeholders, AI practitioners and the wider AI community to the same table. That is why SG20 created the Focus Group.

Convert momentum into coherence — and coherence into standards-ready outcomes.



Why a Focus Group — and why now?

Because AI is moving faster than the integration foundations cities need — and waiting for the market to converge is a strategy for lock-in.

THE GAP IS NO LONGER MODEL CAPABILITY. IT IS CITY-SCALE INTEGRATION.

Three conditions must hold simultaneously to justify pre-standardisation — and all three do.



01

AI IS EMBEDDED

AI is entering services, infrastructure, operations and digital–physical environments — often without a city-level view.



02

CITIES ARE INTERCONNECTED

Urban decisions cross domains, organisations, data spaces and levels of criticality.



03

STANDARDS ARE FRAGMENTED

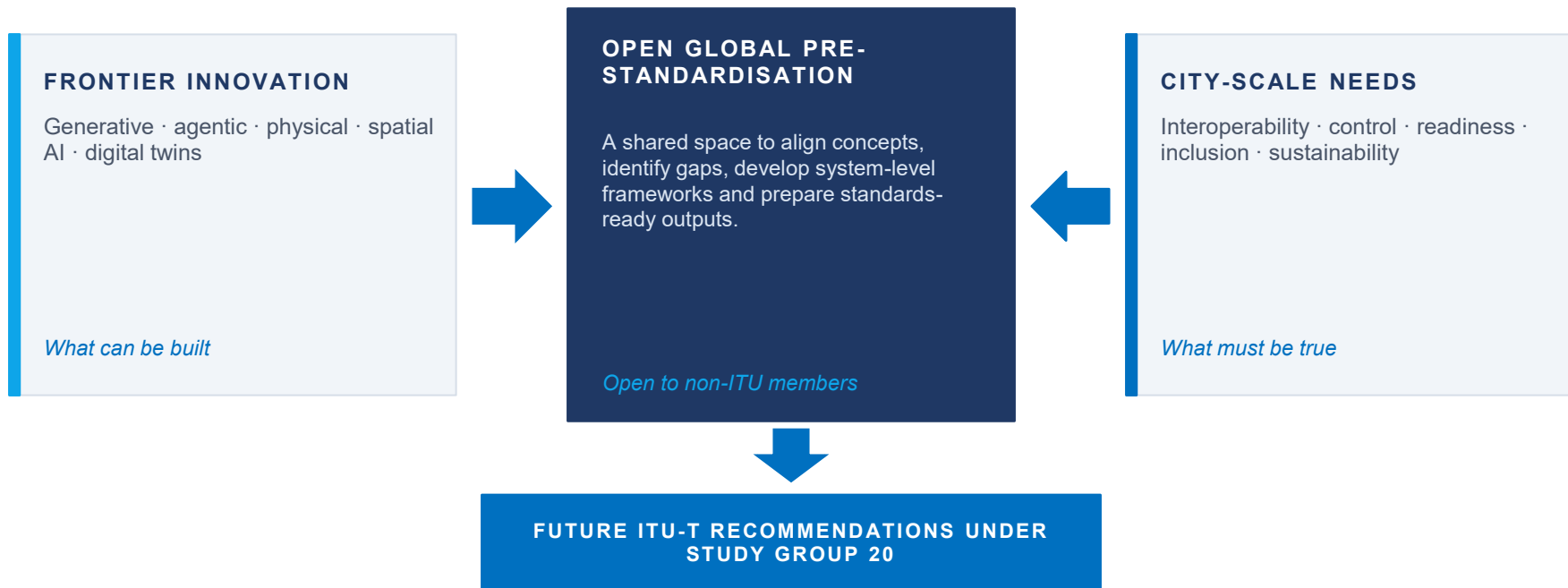
Existing work addresses individual technologies or sectors — not the city as one socio-technical system.

The missing layer is a common system view of AI-enabled cities — one that vendors cannot supply and single-technology standards cannot see.

The window is now: architectures are being decided in procurement documents this year, not in standards bodies next year.

FG-AI4SSC IS THE MISSING INTEGRATION LAYER

A translation function: what the frontier can build, what a city must be able to guarantee — and the constraints that connect them.



Between what can be built and what must be true — translating the second into constraints on the first.

ONE AGENDA CONNECTS THE PIECES CITIES CANNOT SOLVE ALONE

Six tracks presented as six questions — so the agenda stays a system agenda instead of six parallel projects.



01

LANGUAGE & USE CASES

Shared terminology and cross-domain value

What do we mean?



02

REQUIREMENTS & ARCHITECTURE

System capabilities, reference models and controls

What must the whole be able to do?



03

INTEROPERABILITY & COORDINATION

Interfaces, MIMs and operational mechanisms

How do parts hand over safely?



04

DATA, LIFECYCLE & ASSESSMENT

Quality, sharing, monitoring and comparability

How do we know it works?



05

PEOPLE, INCLUSION & READINESS

Accessibility, human–AI collaboration and adoption

Who is it for, and who is left out?



06

SPATIAL CONVERGENCE & SUSTAINABILITY

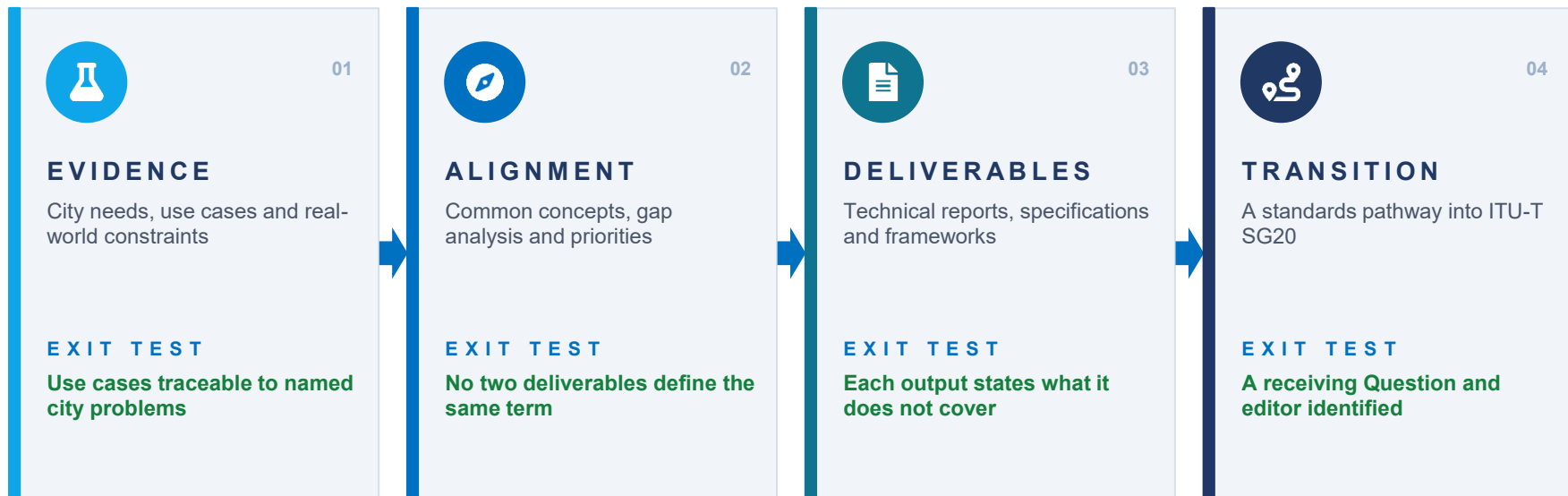
Digital–physical integration and city-scale footprint

What does it cost the place?

Six tracks, one system. Any track pursued alone reproduces the fragmentation it set out to fix.

FROM INSIGHT TO STANDARDS-READY OUTPUTS — CHECKPOINTS, NOT HOPE

Four stages, each with an explicit exit test. Pre-standardisation fails quietly when stages blur into one another.



Open participation brings cities, governments, regulators, operators, industry, academia, SDOs and UN partners into the same design process.

A Focus Group is judged by what it hands over, not by what it discusses.



1st Meeting of the Focus Group on AI for Smart Sustainable Cities and Communities (FG-AI4SSC)

10 – 11 September 2026
Tampere, Finland





THE INVITATION

Let us build intelligence cities can trust, connect and scale.

- Bring your city's hardest integration problem.
- Bring your technical insight — and your disagreement.
- Bring your ambition for the public good.

FG-AI4SSC · AN OPEN GLOBAL PLATFORM