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THE SCM FRAMEWORKS FIELD GUIDE · BROCHURE

The frameworks behind an AI supply chain.

A 28-PAGE GUIDE · CGAISCM · CERTIFIED GENERATIVE AI FOR SUPPLY CHAIN MANAGEMENT

Every framework expanded: all six pillar four-layer architectures, all seven adjacent topics, and the 2026 outlook. Plus the module-to-pillar mapping that shows exactly which CGAISCM module teaches which framework — the complete reference.

INSIDE THIS FIELD GUIDE

- 6 pillar 4-layer architecture diagrams (full detail)
- 7 adjacent framework topics with use cases
- 2026 outlook (the future of AI in supply chain)
- Module-to-pillar mapping (15 modules × 6 pillars)
- Sample CGAISCM certificate + verification badge

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How to use this field guide

This is the reference layer of the series — the mental models behind the tools, roles and pathways covered elsewhere.

It is organised around one idea: **six pillars** of an AI supply chain, each built on the same **four-layer architecture** — Data, AI, Decisions, Governance. Learn the four layers once and you can read all six pillars the same way. Around them sit **seven adjacent frameworks** (agentic AI, digital twins, RAG, responsible AI and more), a grounded **2026 outlook**, and a **module-to-pillar mapping** that ties all fifteen CGAISCM modules to the pillars they teach.

> **The fastest route.** Read the four-layer model (page 3), then skim the six pillar diagrams (pages 4–10). That alone gives you a complete map of how generative AI fits a supply chain.

A note on rigour: the 2026 outlook and adjacent frameworks cite public 2025–2026 research and recognised standards; sources are on the final page.

SECTION 1 · THE ARCHITECTURE

The 4-layer architecture

Every pillar in this guide is built from the same four layers. Read from the foundation up: data feeds models, models inform decisions, and governance wraps the whole thing in oversight and value.

LAYER 1 **Data & Signals**	The inputs: internal ERP / WMS / TMS records plus external signals (weather, news, trade, demand).
LAYER 2 **AI & Models**	The intelligence: the generative and machine-learning techniques applied to those signals.
LAYER 3 **Decisions & Actions**	The application: the specific decision the AI changes, and the actions an agent takes within guardrails.
LAYER 4 **Governance & Value**	The control plane: human oversight, metrics, auditability and the business outcome that justifies it.

Why one model for everything. Demand, logistics and risk look like different problems, but architecturally they are identical — signals in, intelligence applied, a decision changed, value governed. Learn the stack once and every pillar becomes legible.

SECTION 2 · THE 6 PILLARS

Pillar architectures, in full

1 Demand & Forecasting Intelligence

Sensing what the market will do before it does it.

LAYER 1 **Data & Signals**	Sales & POS history, promotions, pricing, weather, macro & social signals
LAYER 2 **AI & Models**	Demand sensing, probabilistic ML forecasts, GenAI scenario generation
LAYER 3 **Decisions & Actions**	Forecast overrides, S&OP inputs, automatic re-plan on a new signal
LAYER 4 **Governance & Value**	Forecast accuracy (MAPE/bias), human exception review, working-capital impact

2 Inventory & Network Optimization

Holding the right stock, in the right place, at the right cost.

LAYER 1 **Data & Signals**	Stock positions, lead times, service targets, BOMs, network & cost data
LAYER 2 **AI & Models**	Multi-echelon optimisation (MEIO), safety-stock policy, network-design solvers
LAYER 3 **Decisions & Actions**	Reorder points, stock rebalancing, network/flow changes, what-if redesign
LAYER 4 **Governance & Value**	Service level vs working capital, stock-out / overstock rates, cash freed

3 Logistics & Fulfilment Orchestration

Closing the gap between the plan and what actually moves.

LAYER 1 **Data & Signals**	Shipment & carrier data, real-time location, capacity, orders, customer SLAs
LAYER 2 **AI & Models**	Predictive ETAs, route & load optimisation, fulfilment & CX copilots
LAYER 3 **Decisions & Actions**	Dynamic routing, exception handling, auto-reroute, proactive customer updates
LAYER 4 **Governance & Value**	On-time-in-full, cost-to-serve, exception cycle time, customer satisfaction

4 Procurement & Supplier Intelligence

Sourcing smarter and managing suppliers as a strategic asset.

LAYER 1 **Data & Signals**	Spend, contracts, supplier performance, market & commodity data, ESG records
LAYER 2 **AI & Models**	Spend analytics, contract & document AI, autonomous sourcing, supplier scoring
LAYER 3 **Decisions & Actions**	Drafted RFPs, auto-negotiated routine categories, supplier selection & onboarding
LAYER 4 **Governance & Value**	Savings realised, supplier risk & ESG compliance, cycle-time reduction

5 Risk, Resilience & Visibility

Seeing the disruption early enough to act on it.

LAYER 1 **Data & Signals**	Multi-tier supplier map, news / social / weather feeds, sub-tier dependencies
LAYER 2 **AI & Models**	Disruption prediction, sub-tier mapping, scenario simulation, digital twins
LAYER 3 **Decisions & Actions**	Early-warning alerts, contingency plans, alternative sourcing, re-planning
LAYER 4 **Governance & Value**	Time-to-detect, time-to-recover, exposure reduced, continuity assured

6 Sustainability & Responsible Operations

Making the chain greener and the AI trustworthy.

LAYER 1 **Data & Signals**	Scope-3 & supplier emissions, energy, materials, compliance & audit data
LAYER 2 **AI & Models**	Emissions modelling, circular-economy optimisation, responsible-AI controls
LAYER 3 **Decisions & Actions**	Greener routing & sourcing, reporting, bias & privacy safeguards in every model
LAYER 4 **Governance & Value**	Scope-3 reduction, regulatory compliance, auditable & ethical AI decisions

THE SIX PILLARS ON ONE PAGE

The pillars, summarised

Pillar	What it does
1. Demand & Forecasting Intelligence	Sensing what the market will do before it does it.
2. Inventory & Network Optimization	Holding the right stock, in the right place, at the right cost.
3. Logistics & Fulfilment Orchestration	Closing the gap between the plan and what actually moves.
4. Procurement & Supplier Intelligence	Sourcing smarter and managing suppliers as a strategic asset.
5. Risk, Resilience & Visibility	Seeing the disruption early enough to act on it.
6. Sustainability & Responsible Operations	Making the chain greener and the AI trustworthy.

Read them as a system. Pillars 1–2 plan, 3–4 execute, 5 protects, and 6 governs the lot — all on the same four-layer architecture, all teachable in one curriculum.

SECTION 3 · 7 ADJACENT FRAMEWORKS

The frameworks around the pillars

Seven adjacent frameworks make the six pillars work in practice — the concepts you will meet in any serious AI supply-chain conversation. Each is paired with a concrete use case.

Agentic AI & Autonomous Orchestration

AI that does not just recommend but acts — sensing, deciding and executing within defined guardrails.

Use case · An agent detects a port delay, reroutes the shipment, and notifies the customer — before a planner logs in.

Digital Twins & Simulation

A live virtual model of the network used to stress-test decisions before they are made.

Use case · Simulate a tariff change or a labour disruption across the network and pick the least-cost response.

RAG & Enterprise Knowledge Grounding

Retrieval-Augmented Generation grounds a language model in your own contracts, SOPs and data.

Use case · Ask ‘what is our return policy for this carrier?’ and get an answer cited to your own documents.

Responsible AI & Governance

Frameworks (NIST AI RMF, the EU AI Act) for trustworthy, transparent and accountable AI.

Use case · Document model purpose, monitor for bias, and keep a human accountable for every consequential decision.

The trust pair. RAG grounds AI in your truth; responsible-AI governance keeps it accountable. Together they are what move a model from ‘impressive demo’ to ‘deployable in a regulated supply chain.’

Data Foundation (lakehouse / data mesh)

The substrate every framework depends on — unified, governed, accessible supply-chain data.

Use case · Land ERP, WMS and TMS data in one governed lakehouse so AI reasons over one version of the truth.

Human-in-the-Loop & Decision Intelligence

Autonomy that stays transparent, auditable and reversible, with humans defining intent and boundaries.

Use case · Agents execute routine reorders automatically but escalate any decision above a set value to a person.

Change Management & AI Adoption

The people side: closing the gap between piloting AI and running it at scale.

Use case · Pair every tool rollout with role-based training and a Super User, so adoption sticks past the pilot.

The seven adjacent frameworks at a glance

Adjacent framework	Use case
Agentic AI & Autonomous Orchestration	An agent detects a port delay, reroutes the shipment, and notifies the customer — before a planner logs in.
Digital Twins & Simulation	Simulate a tariff change or a labour disruption across the network and pick the least-cost response.
RAG & Enterprise Knowledge Grounding	Ask ‘what is our return policy for this carrier?’ and get an answer cited to your own documents.
Responsible AI & Governance	Document model purpose, monitor for bias, and keep a human accountable for every consequential decision.
Data Foundation (lakehouse / data mesh)	Land ERP, WMS and TMS data in one governed lakehouse so AI reasons over one version of the truth.
Human-in-the-Loop & Decision Intelligence	Agents execute routine reorders automatically but escalate any decision above a set value to a person.
Change Management & AI Adoption	Pair every tool rollout with role-based training and a Super User, so adoption sticks past the pilot.

SECTION 4 · THE 2026 OUTLOOK

The future of AI in supply chain

Where is all this heading? The 2026 consensus across analysts and platform vendors is strikingly consistent — and it reshapes how the six pillars will be built.

17% → 29%
agentic AI's share of total AI value, 2025 to 2028 (BCG)

15%
of daily logistics decisions made autonomously by AI agents by 2028 (Gartner)

60%
of supply-chain disruptions resolved without human intervention by 2031 (Gartner)

~5.6%
of firms use AI broadly today — the rest are the opportunity (SDC Exec, 2026)

From generative to agentic. 2025 was about content and recommendations; 2026 is about agents embedded in core processes that identify risks, propose workarounds, and trigger corrective actions within trusted guardrails (SAP).

From siloed planning to predictive orchestration. AI control towers integrate procurement, manufacturing and logistics on one real-time data foundation, ingesting external signals to anticipate disruptions rather than react to them (SCMR).

Digital twins go operational. Beyond experimentation, digital supply-chain twins simulate tariffs, labour disruptions and weather to choose the least-cost response before the event.

FROM RECOMMENDING TO ACTING

Autonomy, within guardrails

The defining shift of 2026 is autonomy — agents that act, not just advise. But every credible forecast attaches the same condition.

Agents act across the pillars. Autonomous agents now re-route shipments, re-allocate inventory, and engage alternative suppliers the moment a disruption signal appears — querying ERP, WMS and TMS and triggering action without waiting for a human.

But always reversibly. Autonomy succeeds only when decisions stay transparent, auditable and reversible, with a human defining intent and the boundaries. That is the Governance layer doing its job.

> The throughline of every 2026 forecast is the same: autonomy succeeds only when decisions stay transparent, auditable and reversible, with a human defining intent and boundaries. The frameworks in this guide are built around exactly that principle.

WHAT IT MEANS FOR YOU

The gap is the opportunity

The adoption gap is the opportunity. Over half of firms are researching or piloting AI, but only about one in eighteen use it broadly, and fewer than one in four have a formal strategy. Being early is still an advantage.

The retirement cliff raises the stakes. As deep expertise retires, AI is increasingly used to capture and scale institutional knowledge — which makes people who can direct it more valuable, not less.

The most transformative use case. Analysts point to autonomous end-to-end replenishment as the highest-impact target — the closest thing to a self-driving supply chain in 2026.

The strategic read. The technology is arriving faster than the talent and the strategy to use it. The scarce, valuable capability in 2026 is not the model — it is the person who can design the architecture, set the guardrails, and own the outcome.

SECTION 5 · MODULE-TO-PILLAR MAPPING

Which module teaches which pillar

The CGAISCM curriculum is the engine behind every framework in this guide. The matrix on the next page maps all fifteen modules against the six pillars, so you can see exactly where each module lands.

How to read it. A solid dot (●) marks a module's **primary** pillar; an open dot (○) marks a **supporting** or cross-cutting role. Foundational modules (1, 2, 12–14) support every pillar; the function modules each own one.

The one to notice. Module 15, Agentic AI, is primary across *all six* pillars — because autonomy is the Decisions-and-Actions layer for every one of them, and the direction the whole field is heading.

15 MODULES × 6 PILLARS

The module-to-pillar matrix

#	Module	P1 Demand	P2 Inventory	P3 Logistics	P4 Procure	P5 Risk	P6 Sustain
01	Intro to GenAI & SCM	○	○	○	○	○	○
02	GenAI Techniques & Models	○	○	○	○	○	○
03	Demand Forecasting & Planning	●	○	·	·	○	·
04	Inventory Optimization	·	●	○	·	·	·
05	Logistics & Route Optimization	·	·	●	·	·	·
06	Supplier Management	·	·	·	●	○	·
07	Production Planning & QC	·	●	○	·	·	·
08	Risk Management & Scenario	○	○	·	○	●	·
09	Customer Service & Experience	○	·	●	·	·	·
10	Sustainability & Circular	·	○	○	○	·	●
11	Ethics, Privacy & Compliance	○	○	○	○	○	●
12	Technology Stack & Integration	○	○	○	○	○	○
13	Capstone Projects	○	○	○	○	○	○
14	1-on-1 & Live Sessions	○	○	○	○	○	○
15	Beyond Generation: Agentic AI	●	●	●	●	●	●

● primary pillar · ○ supporting / cross-cutting. Pillars: P1 Demand, P2 Inventory, P3 Logistics, P4 Procurement, P5 Risk, P6 Sustainability.

WHAT THE MATRIX TELLS YOU

The cross-cutting modules

The matrix reveals the shape of the curriculum. Two kinds of module appear.

Function modules (3–10). Each owns one pillar: forecasting builds Demand, inventory builds Optimization, logistics builds Fulfilment, and so on. These are where you go deep.

Cross-cutting modules (1, 2, 11, 12, 13, 14, 15). These support every pillar. Foundations and techniques (1–2) and integration, capstone and live sessions (12–14) run through all six; ethics (11) governs them; and agentic AI (15) is the action layer for all.

The implication for learning. You do not finish a pillar by taking one module. You take its function module for depth, plus the cross-cutting modules that give it data, governance and autonomy. The capstone is where they combine.

SECTION 6 · THE WHOLE PICTURE

A reference architecture

Stack the pillars, the layers and the adjacent frameworks and a single reference architecture for an AI supply chain emerges — four tiers from foundation to control.

Foundation. A governed data layer (lakehouse) unifying ERP, WMS and TMS with external signals.

Intelligence. GenAI copilots + ML models + a digital twin, grounded in that data via RAG.

Orchestration. Agentic workflows that act across the six pillars within human-set guardrails.

Control. Responsible-AI governance, metrics and human-in-the-loop oversight over the whole stack.

Build bottom-up. Every failed AI programme skipped a tier. Get the data foundation and the governance right, and the intelligence and orchestration above them compound. Skip them, and they collapse.

SECTION 7 · THE PROOF

Your sample certificate

The credential that proves you can design and run these frameworks, not just describe them. On passing the exam you receive the globally recognised CGAISCM certificate — verifiable, valid for five years.

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CERTIFICATE OF ACHIEVEMENT

Your Name Here

has successfully earned the designation of

Certified Generative AI for Supply Chain Management (CGAISCM)

Valid for 5 years · Globally recognised · Verifiable online

Authorised Signatory
Global Skill Development Council

Credential ID · CGAISCM-XXXXXX
Issued on completion

SHAREABLE & VERIFIABLE

The digital verification badge

With the certificate comes a **verifiable digital badge**. Anyone can confirm it is real in one click — useful when you are the person trusted to architect a team's AI supply chain.

It travels across LinkedIn, your résumé and email signatures, linking back to a verification record tied to your credential ID.

How verification works

1. Earn & issue. Passing the exam issues your badge against a unique credential ID.

2. Share. Add it to your profile or signature; the badge carries metadata about what you proved and when.

3. Verify. Employers click through to confirm authenticity and the 5-year validity window — no guesswork, no forgeable PDFs.

SECTION 8 · FROM FRAMEWORK TO CAPABILITY

How CGAISCM teaches these

A framework you can draw is not a framework you can run. CGAISCM is built to close that gap.

You build each layer, not just learn it. Hands-on challenges on 30+ live tools (ChatGPT, Claude, Google AI Studio) take you through Data, AI, Decisions and Governance on real problems.

You apply the pillars in a capstone. The capstone has you take one pillar end-to-end — the portable proof that you can architect, not just describe.

You are coached through it. Daily live GSDC Studio sessions and 1-on-1 SME connects mean you are never decoding a framework alone.

The result. You leave able to look at any supply-chain problem and place it — the right pillar, the weak layer, the missing governance — and then build the fix.

SECTION 9 · YOUR MOVE

Applying the frameworks in 90 days

Frameworks earn their keep when applied. Here is a pragmatic ninety-day plan to take one pillar from diagram to working capability.

Phase	What to do
Days 1–30 · Pick a pillar	Choose the one pillar with the clearest pain and the cleanest data — usually Demand or Visibility. Map its 4-layer architecture as-is.
Days 31–60 · Build a layer	Strengthen the weakest layer (often Data & Signals or Governance) and pilot one AI model in the Intelligence layer on real work.
Days 61–90 · Add an action	Introduce one guarded autonomous action in the Decisions layer, with human-in-the-loop oversight, and measure the value it creates.

SECTION 10 · ANTI-PATTERNS

Four ways framework programmes fail

AI on a weak data layer. The single most common failure. Great models on poor, fragmented data underperform — fix Layer 1 first.

Skipping the governance layer. Autonomy without auditability and human oversight is a liability, not a capability. Layer 4 is not optional.

Buying tools, not building architecture. A pile of best-in-class tools is not a framework. Map every purchase to a pillar and a layer.

Automating before you understand. Hand a decision to an agent only once a human can already make it well and explain why. Agentic comes last, not first.

The pattern behind them all. Treating the exciting layer (AI, agents) as the whole thing. The boring layers — data and governance — are what decide whether the exciting ones work.

SECTION 11 · REFERENCE

Glossary & quick reference

The framework terms used across this guide and the wider CGAISCM series.

Pillar — One of the six core capability domains of an AI supply chain.

4-layer architecture — Data → AI → Decisions → Governance — the same stack applied to every pillar.

Agentic AI — AI that takes multi-step actions toward a goal within guardrails, not just single answers.

Digital twin — A live virtual model of the network used to simulate decisions before making them.

RAG — Retrieval-Augmented Generation — grounding a language model in your own data and documents.

Predictive orchestration — Integrating planning, logistics and procurement on one data foundation to anticipate, not react.

Human-in-the-loop — Keeping a person accountable for, and able to reverse, an AI-made decision.

NIST AI RMF / EU AI Act — Leading frameworks for governing trustworthy, accountable AI.

ONE LAST WORD & THE RECEIPTS

Frameworks make the field legible

You now have the complete reference: six pillars on one four-layer architecture, seven adjacent frameworks, a grounded 2026 outlook, and the map from every CGAISCM module to the pillars it teaches. Frameworks make the field legible — the certification makes you able to build it.

Sources & methodology

BCG; Gartner (2025–26). Agentic AI value share (17%→29%); autonomous-decision and disruption-resolution projections.

SAP; SCMR; Dataiku; ICRON (2026). Shift to agentic AI and predictive orchestration; digital twins; human-in-the-loop principles.

Supply & Demand Chain Executive; Inbound Logistics (2026). Adoption rates; autonomous replenishment as the top use case.

NIST AI Risk Management Framework; EU AI Act. Responsible-AI governance frameworks referenced in Pillar 6 and the adjacent topics.

GSDC CGAISCM program pages. Module structure used in the module-to-pillar mapping.

Outlook figures and framework references reflect publicly described 2025–2026 research and recognised standards, and describe market direction rather than guarantees. The six-pillar, four-layer model is GSDC's framework for navigating generative AI in supply chain.