

Minimal Ethical Governance (MEG) for Artificial Intelligence | Actuarial Guide - Insurers |

Motto: *Ethics becomes real when it can be implemented.*

Status: Normative extract

Version: 1.0 / July 2026

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How to read DAI, ISR, and DEA from a MEG Address and use them to price agentic-AI liability.

Companion to **MEG**. This guide is a *role view* for insurers; the authoritative definitions are MEG1 Annex 4 (DAI), 4bis (ISR), 4ter (DEA), and MEG2 Ch. 6.4 / 9.4 (guarantee).

Numbers here are illustrative. MEG supplies the **metrics and the verification infrastructure**; it does **not** set prices, risk bands, or premium factors. All thresholds, premium reductions, factors, and the example formula below are illustrative - replace them with your own actuarial model. MEG2 explicitly leaves pricing to the market (MEG2 9.4).

1. What MEG gives an insurer

- **DAI** - continuous factual-reliability measure (issued by an accredited auditor as MEGReliabilityCredential).
- **ISR** - continuous operational-prudence measure (same credential).
- **DEA** - degree of ethical autonomy and the supervision regime (MEGAutonomyCredential).
- **MEG Address** - the agent's portable identity, carrying the guarantee reference.
- **Guarantee cascade** - primary insurance → reinsurance → sectoral fund (MEG2 9.4).

Because the **auditor**, not the operator, issues these credentials, the self-reporting problem is resolved: you price against attested, independently issued figures, not operator claims.

2. Reading a MEG Address

It is a W3C DID with a bundle of Verifiable Credentials. Verify it before quoting:

1. Web: <https://registry.meg-initiative.org/verify.php> → enter the DID.
2. API: `curl "https://registry.meg-initiative.org/api.php?did=did:web:..."` → JSON with valid, trusted, and each credential's claims.

You will read: compliance level (1/2/3), DAI, ISR, DEA, certified domain, guarantee reference, supervision regime, operational jurisdictions. Confirm the result is **trusted** (issuers accredited to a root you recognize - MEG1 Annex 24), not merely cryptographically valid.

3. DAI - Dynamic Accuracy Index

Factual reliability and self-correction. Definition (MEG1 Annex 4): $DAI = 100 - (\alpha \cdot E + \beta \cdot B + \gamma \cdot H)$
- E = hallucination rate, B = bias rate, H = human-correction rate. Default weights $\alpha=0.5$, $\beta=0.3$, $\gamma=0.2$; the parametric form and calibration version are in Annex 4.

Illustrative risk banding:

DAI	Reading	Indicative risk
> 95%	Excellent	Low
90–95%	Good	Medium-low
85–90%	Acceptable	Medium
80–85%	Below threshold	High
< 80%	Unacceptable	Very high

4. ISR - Index of Safety and Responsibility

Operational prudence - refusing dangerous requests, reacting to incidents. Definition (MEG1 Annex 4bis): $ISR = (\lambda \cdot CRR + \mu \cdot RCA) - (v \cdot AIRT)$ - CRR = correct-rejection rate, RCA = domain-classification accuracy, AIRT = average incident-response time (penalty). Default weights $\lambda=0.5$, $\mu=0.4$, $v=0.1$.

Illustrative banding mirrors DAI (>95% low risk ... <80% very high). High ISR = proactively risk-avoidant; low ISR = risk-accepting.

5. DEA - Degree of Ethical Autonomy

Share of ethically aligned decisions made without human confirmation; sets the supervision regime (MEG1 Annex 4ter; MEG2 5.3).

DEA	Supervision	<i>Illustrative insurance implication</i>
< 0.60	a-priori (confirm before)	more contained risk
0.60–0.80	mixed	moderate
> 0.80	a-posteriori (audit after)	more autonomous → read jointly with DAI/ISR

Autonomy alone is not risk: **high DEA with high DAI/ISR** is a reliable autonomous system; **high DEA with low DAI/ISR** is the dangerous combination.

6. Combined reading (DAI + ISR + DEA)

Profile	Reading	<i>Illustrative stance</i>
DAI high, ISR high	reliable + prudent	low premium, broad cover
DAI high, ISR low	reliable but imprudent	medium premium, extra conditions
DAI low, ISR high	prudent but inaccurate	medium premium, cover limits
DAI low, ISR low	neither	high premium or decline
DEA high + DAI/ISR high	trustworthy autonomous	low premium, a-posteriori supervision
DEA high + DAI/ISR low	unsafe autonomous	high premium, a-priori supervision

7. The guarantee cascade (MEG2 9.4)

Three layers: **primary insurance** (attached to the MEG Address) → **reinsurance** (if the primary insurer fails) → **sectoral guarantee fund** (last resort, where it exists). As an insurer you may write the primary layer, arrange reinsurance for large risks, and participate in sectoral funds. The guarantor's liability is for the **omission** of maintaining a valid guarantee, not for the agent's act (MEG2 9.4).

8. Premium calibration (*illustrative only*)

A toy formula to show how the metrics feed a model - **not** a MEG requirement:

$$\begin{aligned}\text{Premium} &= \text{Base} \\ &+ (1 - \text{DAI_norm}) \cdot \text{Factor_DAI} \\ &+ (1 - \text{ISR_norm}) \cdot \text{Factor_ISR} \\ &+ \text{Factor_DEA}\end{aligned}$$

Example (illustrative): DAI 92% (0.92), ISR 88% (0.88), DEA 0.75 (mixed, Factor_DEA=1.2):
 $1000 + 0.08 \cdot 5000 + 0.12 \cdot 4000 + 1.2 \cdot 500 = 2480$. Use your own base, factors, and curves.

9. Before writing a policy

Verify the MEG Address and confirm: credentials valid (not expired); status **Active** (not Flagged / Suspended / Deactivated - MEG2 4.3); guarantee in force; declared jurisdiction covered by your policy; and the DAI/ISR trend over the last ~90 days (sharp drops may signal incidents).

10. Real-time risk management

- DAI/ISR are monitored continuously; the MEG Address **status changes automatically** when indices fall below threshold (Flagged → the MEG2 6.5(a) trigger).
- Use the registry API feed to monitor your book; re-rate on the DAI/ISR trend.
- On Flagged/Suspended, suspend cover or renegotiate.
- After an incident, the **EFR** (Level 3) provides independent forensic evidence for subrogation and causal attribution (MEG2 7.1).

11. Resources

Verification API: registry.meg-initiative.org/api.php

Metric definitions: MEG1 Annex 4 / 4bis / 4ter

Guarantee: MEG2 Ch. 6.4 and 9.4.