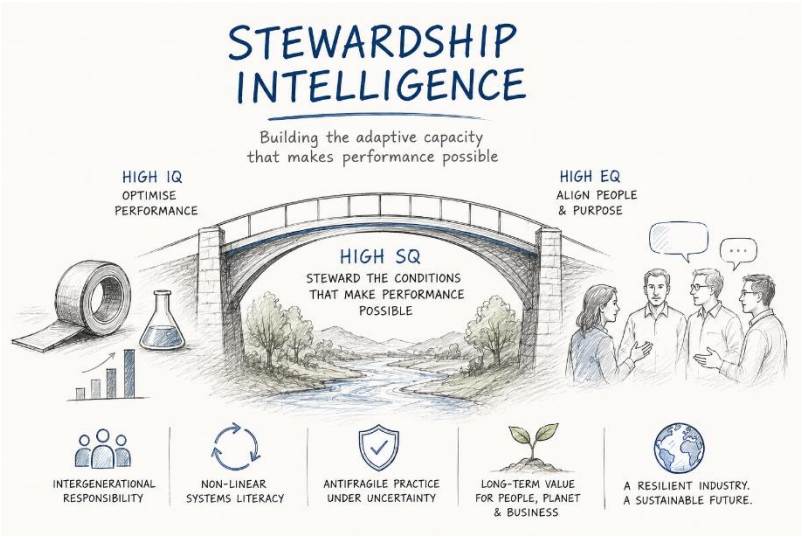
Stewardship Intelligence:
Why our industry needs more than optimisation

As the adhesive and adhesive tape industry navigates supply-chain disruption, regulatory change and rising sustainability expectations, technical excellence alone is no longer enough. Dr. Evert Smit, Afera President, argues that companies must develop a new capability—Stewardship Intelligence—to build the resilience and adaptive capacity needed for long-term success.

In our sector we are proud of our technical intelligence. We solve bonding challenges under extreme conditions. We calculate peel, shear and tack across temperature ranges, predict ageing under UV and humidity, balance cohesion against adhesion, manage compatibility between adherends that should not, in any reasonable world, want to stay together. We engineer pressure-sensitive systems that hold for decades and reactive chemistries that cure on demand. We optimise coating processes, formulations and converting lines until waste is minimal and margins acceptable.



But if we look honestly at the world around our laboratories and production halls — volatile raw material markets, geopolitical shocks rerouting supply chains overnight, tightening regulation on substances we have used for decades, ecological stress on the forests and oilfields that feed our value chains, customers demanding circularity from products engineered for permanence — one uncomfortable question emerges:

Are we optimising for performance, or are we stewarding the conditions that make performance possible?

I believe our industry now needs a capability that goes beyond IQ and beyond EQ. I call it Stewardship Intelligence (SQ). SQ is the capacity to increase future adaptive capacity — ecological, social and institutional — under deep uncertainty. In practical terms: Do our decisions today leave the system with more ability to adapt tomorrow, or less?

This is not abstract philosophy. It is industrial survival logic. Anyone who has watched a single-source raw material disappear from one quarter to the next, or seen a long-trusted monomer enter the REACH candidate list, knows what brittleness feels like in real time.

When we remove every buffer in the name of efficiency, we may improve short-term KPIs, but we reduce resilience — exactly as a bondline with no compliance layer transmits every stress directly into the substrate. When we centralise everything for control, we may gain speed, but we create single points of failure: one site, one supplier, one approver, one server. When we externalise ecological or social costs, we may improve margins, but we weaken the substrate on which our own business ultimately depends. And in adhesives, no engineer ignores the substrate.

High IQ designs efficient systems. High EQ aligns teams behind ambitious targets. But neither automatically protects us from building elegant fragility — the kind of bond that performs perfectly in qualification and fails on the first thermal cycle nobody specified.

SQ rests on three pillars

First, intergenerational responsibility. We are responsible not only to current stakeholders but to what we pass on. The skill base in our coating halls, the institutional memory of why a formulation was changed in 2003, the trust we have built with regulators, the relationships with raw material partners that survived three downturns — these are long-lived assets. They behave like cured polymer networks: slow to build, almost impossible to reconstruct once depolymerised. A generation of experienced formulators retired without succession is the technical equivalent of breaking every crosslink and hoping the network reforms by itself.

Second, non-linear systems literacy. Complex systems do not behave proportionally. Cost pressure triggers staff reductions, which increase error rates in production, which require additional control layers, which increase complexity and cost again. Each step rational in isolation, collectively generating fragility. We know this in chemistry: a small shift in monomer ratio can move a system from rubbery to glassy in a way no linear extrapolation predicts. Tg is a tipping point, not a slider. Organisations have tipping points too. Stewardship requires mapping feedback loops before intervening, not after.

Third, antifragile practice under uncertainty. Hyper-optimised systems perform beautifully in stable conditions. Under stress, they crack — and in our products, we know exactly how this looks. A monolithic adhesive layer optimised for one loading condition fails catastrophically when the loading shifts. A composite system with multiple load paths, deliberate compliance, and engineered failure modes absorbs the shock and often performs better than the conditions for which it was designed. Designing for modularity, redundancy and diversity may look less efficient on paper. It creates systems that absorb shocks and even improve because of them.

We understand these principles technically. In bonding, redundancy increases reliability. Multiple load paths reduce failure risk. Stress redistributes along invisible lines. A well-designed adhesive joint is, in essence, an antifragile system. Yet in organisational design, supply chain architecture and strategic planning, we routinely ignore the same logic we would never ignore in a structural bond.

Stewardship in practice

SQ is also frequently misused. When "stewardship" is equated with maximising shareholder value, the concept is inverted. Shareholder value depends on healthy ecological and institutional systems — on functioning forests for our pine derivatives, on stable regulatory regimes, on a workforce that knows the difference between cohesive and adhesive failure without having to look it up. If in the pursuit of returns we degrade those systems, we are not stewarding. We are liquidating.

A simple stewardship scan can be applied in any major decision — a site closure, a portfolio rationalisation, a sourcing shift, a strategic acquisition:

- What long-lived assets does this decision affect: knowledge, relationships, ecological substrate, regulatory trust?
- Under what shock does this design fail first?
- What redundancy did we remove to optimise?
- Who carries the long-term downside risk?

If these questions are absent from the decision room, fragility is almost certainly increasing. The dashboard will not show it for several quarters. Then it will show all at once.

For an industry now facing material transitions toward bio-based and recyclable chemistries, regulatory change on PFAS and other long-trusted substances, customer demands for debondable and circular adhesive systems, and rising societal expectations on the full lifecycle of what we put on the market — SQ is not optional. It is a competitive necessity. Companies that preserve and build adaptive capacity will endure transitions that destroy their less-prepared competitors. Those that optimise away their buffers may not. I dare to say, should not.

In the end, the question is straightforward, and it is one our own discipline should recognise immediately:

Are we merely optimising the present joint — or are we stewarding the future bond?

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To read the article in the original German in *DICHT!*, access its Q2 edition, page 40, here.