

Case Study Title: From Vision to Value: The Arcadis Lean Compass

Company Overview | ARCADIS [arcadis.com](https://www.arcadis.com)

Arcadis (formerly DPS Group) is a global engineering and construction management consultancy delivering complex, high-technology projects across the semiconductor, life sciences, and advanced manufacturing sectors. Headquartered in Dublin, Ireland, the Semiconductor Business Unit manages capital projects exceeding €100 million for leading global clients. With more than 30,000 professionals in over 20 countries, Arcadis is driven by a clear purpose - to improve quality of life through sustainable design, innovation, and operational excellence.

This case study outlines how Arcadis DPS applied Hoshin Kanri and DMAIC frameworks to embed Lean Six Sigma, leadership excellence, and measurable client value within its semiconductor

operations. Over a five-year period (2020–2025), the initiative delivered €20 million in verified client savings, established a culture of continuous improvement, and positioned Arcadis as a benchmark for Lean excellence in the high-tech sector.

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Overview & Background to the Lean Initiative

Between 2020 and 2025, Arcadis (formerly DPS Group) executed a five-year strategic transformation guided by Hoshin Kanri (HK) principles to embed Lean Six Sigma thinking, leadership excellence, and measurable value creation across its semi-conductor operations. Externally, the semiconductor market demanded faster delivery, greater innovation, and measurable productivity gains. Internally, Arcadis recognised the need to scale its Construction Management capability, improve performance at €100 million project scale, and differentiate through operational excellence.

In 2020, the company defined its Global Lean Vision, “to be recognised by our clients as the leading AE firm in providing tangible value through the expert application of targeted Lean processes and principles”.

This vision became the compass for the first Hoshin Kanri cycle.

Through a structured Lean Continuous Professional Development (CPD) initiative, Arcadis trained over 90 Green Belts and multiple Black Belts in partnership with DCM Learning and the University of Limerick.

DMAIC served as the operational framework within the Hoshin Kanri strategy, ensuring data-driven improvement. Results surpassed expectations delivering over €20 million in verified client savings, enhanced schedule reliability, stronger safety performance, and measurable increases in engagement.

Having achieved its 2020–2025 vision, Arcadis is now entering the next Hoshin cycle, focusing on digital integration, sustainability, and knowledge management excellence.

Lean Initiative Undertaken – Lean Thinking, Tools, Techniques

Why Lean and Agile?

The semiconductor construction market is characterised by irregularity, complexity, and speed. Clients increasingly prioritise schedule reliability and innovation alongside safety and cost control. The “new normal” demands agility, collaboration, and the use of integrated delivery models.

Internally, Arcadis sought to strengthen its Construction Management capability, maintain consistent performance on €100 million-scale projects, and develop a unique selling proposition in Lean

delivery. Embedding Lean Six Sigma and encouraging continuous improvement were essential to achieve these ambitions.

Hoshin Kanri Framework

Hoshin Kanri, or “Policy Deployment” provides a structured mechanism to align long-term strategy with daily execution (Nicholas, 2014). Originating in Japan, HK has been applied globally from Hewlett-Packard to Toyota but remains underutilised in construction (Witcher & Butterworth, 2001).

The HK process began with pre-planning analysis (Watson, 1991). An internal capability audit using Microsoft Forms revealed only ten Lean-certified staff. This gap analysis shaped the CPD strategy, consistent with Kaufmann's (2020) assertion that sound strategy must be built on environmental understanding.

Hoshin Objectives Defined

- Develop robust internal Lean Six Sigma capability to enable data-driven decision-making and operational excellence.
- Encouraging a culture of continuous improvement that empowers teams to innovate and eliminate waste at every level.
- Deliver measurable client value through efficiency, quality, and reliability in project execution.
- Integrate sustainability and knowledge management into everyday practice to ensure long-term organisational learning and resilience.

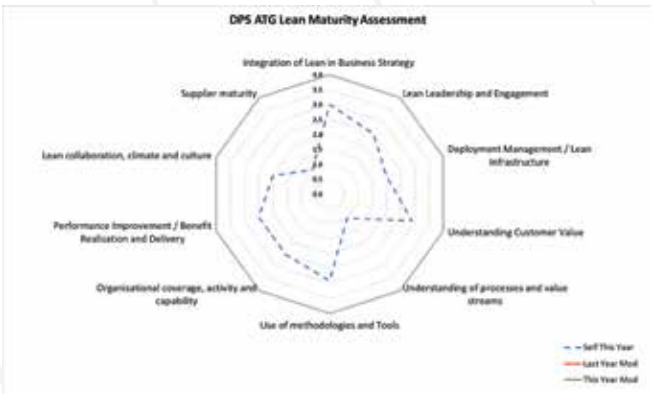


Figure 1: Helma Matrix – Assessment of Current State (DPS/ Arcadis, 2020)

Building Culture and Vision

Hoshin Kanri translated as “Compass Management” ensures every employee understands how their work supports the organisation’s direction (Nicholas, 2014). Arcadis embedded this philosophy through a blend of emotional intelligence (Goleman, 1998) and Lean leadership behaviours.

By combining empathy with structured coaching, leaders created psychological safety, a prerequisite for innovation and high performance on complex, time-sensitive projects.

Leaders adopted coaching and mentoring aligned with the Improvement Kata (Liker, 2022), empowering teams to experiment, reflect, and learn. This people-centred approach promoted



Figure 2: The Seven-Step Hoshin Kanri Strategy

psychological safety, strengthened retention, and developed problem-solving capability across geographies.

Arcadis integrated the Balanced Scorecard (Kaplan & Norton, 1992) within its Hoshin system, linking Lean KPIs to four dimensions: customer; process, financial, and learning. This alignment ensured clear visibility from boardroom to project site.

Cross-Functional Strategy and Alignment

Arcadis applied Akao’s original HK framework to ensure five critical alignments:

Alignment Type	Purpose and Application
Strategic Alignment	Every project linked directly to client value metrics and strategic goals.
Horizontal Alignment	Weekly cross-functional “catchball” sessions resolved scope and sequencing conflicts between trades.
Vertical Alignment	Objectives cascaded through Hoshin matrices and A3 storyboards to site level.
Process Alignment	Gemba walks, value-stream mapping, and standard work cycles embedded CI into daily routines.
Employee Development	Lean Champions mentored peers, building ownership and continuous cross-team learning.

Transparent, two-way communication-built trust and accountability, forming the foundation for sustaining transformation (English, 2012).

Integration with DMAIC and PDCA

While Hoshin Kanri defined strategic direction, DMAIC delivered execution discipline. Each Green Belt candidate selected a project aligned to business priorities and followed the Define-Measure-Analyse-Improve-Control process.

A3 PDCA (Plan-Do-Check-Act) reporting standardised the improvement process across teams, ensuring clarity and accountability. The PDCA cycle promoted reflective learning and scientific problem-solving in line with Liker’s Improvement Kata, strengthening the organisation’s continuous improvement culture.



Figure 3: Arcadis Standardised A3 Template

Balanced Scorecard and Monitoring

Performance measurement used Power BI dashboards integrated with the Balanced Scorecard, tracking:

- Training and certification progress.

- ROI of Lean projects.
- Cost and schedule variance before/after intervention.
- Client feedback and satisfaction.

Quarterly catch-all reviews-maintained alignment between strategic intent and operational outcomes.

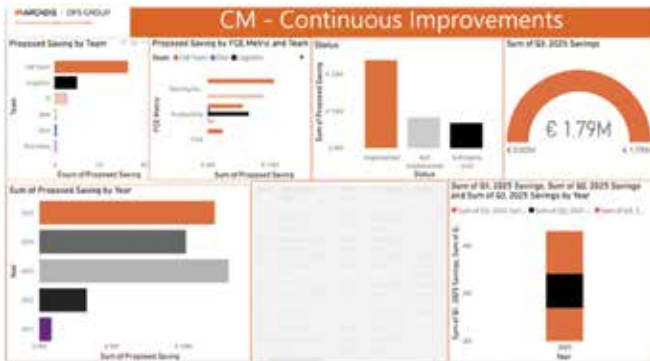


Figure 4: Continuous Improvement (CI) Savings Dashboard (Client)

Development and Implementation Timeline

Year	Phase	Key Developments and Outcomes
2020	Vision Setting	Global Lean Vision defined; capability audit completed.
2021	Foundation	Lean Champions Committee formed; internal White/Yellow Belt training launched; partnership with DCM for Green Belt delivery.
2022	Acceleration	Community of Practice (CoP) established; PDCA reviews introduced; A3 tracking implemented.
2023	Integration	Lean KPIs embedded into Balanced Scorecard; Improvement Kata routines adopted; clients co-sponsor Green Belt projects.
2024/2025	Sustainability	Knowledge Hub launched using APQC framework; onboarding updated to include Lean Belt training.

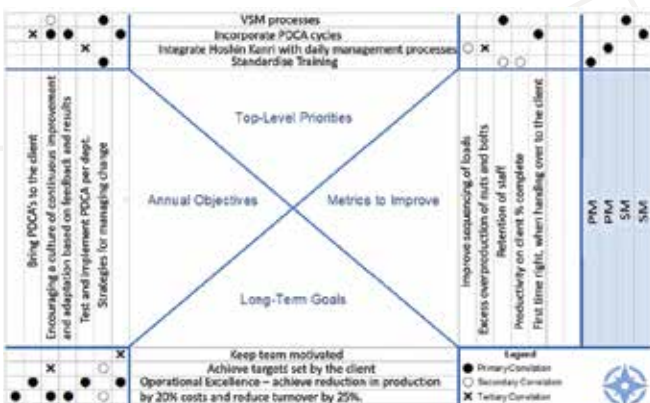


Figure 5: Hoshin Kanri X Matrix – Arcadis DPS 2020–2025 Roadmap

The FAIR Model and PDCA Integration

Arcadis operationalised Hoshin Kanri through the FAIR model (Pavličková et al., 2022):

FAIR Phase	PDCA Alignment	Action
Focus (Act)	Plan / Act	Identify breakthrough objectives focused on client value, supply-chain optimisation, and workforce capability.
Alignment (Plan)	Plan	Deploy objectives through Hoshin matrices and A3 storyboards; use cross-functional catchball to gain alignment and ownership.
Integration (Do)	Do	Embed Lean targets in daily operations; conduct regular Gemba PDCA cycles to test and refine process improvements.
Review (Check)	Check / Act	Evaluate outcomes via KPI dashboards, Balanced Scorecard metrics, and client feedback; adjust priorities annually.

This approach institutionalised agility, enabling adaptation to dynamic semiconductor project demands.

Leadership, Change, and Knowledge Management

Transitioning to Lean leadership required active change management and a deliberate approach to addressing cultural resistance. Early in the transformation, some teams viewed Lean as an additional administrative layer rather than an enabler of performance.

Leadership tackled this by creating safe spaces for dialogue, linking Lean outcomes directly to client value, and recognising early adopters. Managers were trained in coaching Kata techniques (Liker, 2022), encouraging ownership and collaboration. The principle that “problems are treasures” encouraged proactive problem identification through daily Gemba walks.

To sustain learning, Arcadis implemented After Action Reviews (AAR) after major projects (Garvin et al., 2008). Lessons were stored in the Knowledge Management (KM) Hub, built on SharePoint and structured via APQC's Process Classification Framework.

This centralised repository allows cross-project reuse of successful countermeasures, reducing waste and knowledge loss. Senior leadership formally endorsed the Community of Practice (CoP) and KM Hub, allocating time and recognition for participation.



Figure 6: Knowledge Management Hub (SharePoint Interface)

Training and Capability Development

The CPD initiative combined formal training with mentorship:

- **Green Belt:** Five modular workshops held on Fridays, followed by six weeks dedicated to completing a DMAIC project for practical implementation.
- **Black Belt:** Accredited two-year MSc University of Limerick programme outside working hours, incorporating two black belt DMAIC projects - Lean and Six Sigma.
- **Leadership:** Coaching, Change management, and Kata

facilitation training.

Clients recognised long-term benefits and co-sponsored Lean projects, reinforcing collaboration.



Figure 7: Dashboard – CPD and Green Belt Participation Tracking Innovation and Best Practice Integration

Key innovations included:

- Integrated A3 Process for standardised communication between clients and site teams.
- Improvement Kata Coaching to embed scientific PDCA thinking.
- Community of Practice (CoP) as a peer-learning forum.
- Balanced Scorecard Dashboards linking Lean outcomes to client KPIs.
- Sustainability Integration targeting resource efficiency and

waste minimisation.

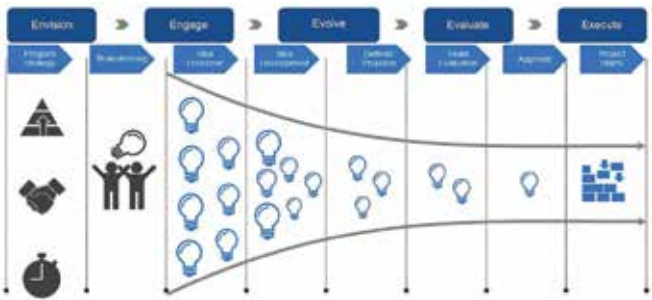


Figure 8: Arcadis Innovation Funnel

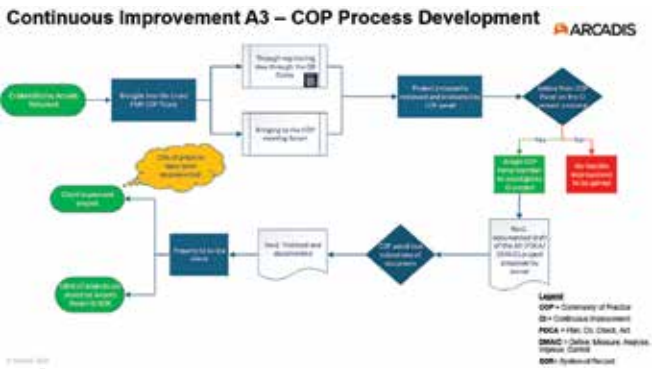


Figure 9: Community of Practice Project Process Flow

Lean Initiative Improvements & Impact

Staff Empowerment

The success of the Arcadis DPS Lean transformation was driven by the strategic alignment between executive vision and structured capability development.

Senior leadership acted as direction setters, clearly communicating the Hoshin Kanri goals and ensuring Lean was embedded as a long-term strategic priority. Their visible sponsorship provided the authority, resources, and consistency needed to sustain progress through changing market conditions.

A crucial success enabler was the establishment of a structured Lean capability pipeline, designed to cultivate expertise and internal ownership over a three-year period.

- **Year 1:** Staff were introduced to Lean fundamentals through White, Yellow, and Green Belt training, applying DMAIC and PDCA principles to live projects.
- **Year 2:** Green Belts were mentored by Black Belts, acting as internal coaches to deepen analytical skills and manage higher-complexity Kaizen initiatives.
- **Year 3:** Selected Black Belts advanced to Master Black Belt certification through the University of Limerick, achieving accreditation while supporting the design and delivery of subsequent training cohorts.

This continuous development loop, with Black Belts training Green Belts and progressing themselves to Master Black Belt standard created a self-sustaining cycle of learning and improvement. It also ensured consistent quality, shared methodology, and measurable client outcomes across all projects.

By combining executive leadership, a formalised training pathway, and hands-on mentoring, Arcadis DPS built a scalable Lean improvement framework. The model not only improved operational performance but also created a culture where learning, problem-solving, and innovation became part of everyday work.

This blend of top-down vision and bottom-up capability was instrumental in overcoming resistance, accelerating adoption, and sustaining continuous improvement at every level of the organisation.

Cultural and Strategic Impact

Culturally, Arcadis DPS has transitioned from reactive problem-solving to proactive, data-driven improvement. The A3 PDCA methodology and Improvement Kata coaching are now embedded as standard frameworks for communication, decision-making, and performance dialogue across all projects, establishing a common Lean language.

- The programme has delivered more than €20 million in verified client savings, improved schedule reliability, and enhanced safety performance across multiple semiconductor projects.
- The APQC-aligned Knowledge Management Hub transformed local project insights into enterprise-wide knowledge assets, while embedding Lean KPIs within the Balanced Scorecard ensured complete alignment between operations, strategy, and client value.
- Collectively, these achievements have produced both measurable business gains and deep cultural maturity, positioning Arcadis DPS as a benchmark for sustained, people-centred continuous improvement in the semiconductor sector.

Summary and Lessons Learned

The Arcadis DPS Lean transformation demonstrates how structured strategic deployment through Hoshin Kanri (HK) and DMAIC can create lasting competitive advantage in complex project environments. Over five years, Lean has evolved from a standalone initiative to an organisational mindset - rooted in data-driven problem solving, knowledge sharing, and continuous learning.

Key Lessons Learned:

- **Leadership Commitment:** Visible executive sponsorship was essential in sustaining momentum and overcoming resistance to change. Leadership provided the vision, resources, and recognition that kept teams engaged.
- **Structured Capability Development:** The three-year Lean pathway from Green Belt to Master Black Belt, created a self-sustaining improvement ecosystem, ensuring consistent quality and continuous upskilling.
- **Knowledge and Collaboration:** Institutionalising learning through the APQC-aligned Knowledge Hub transformed individual project gains into organisation-wide best practice.
- **Transparency and Engagement:** Regular Hoshin "catchball" sessions and A3 PDCA reviews fostered open communication, accountability, and trust between leadership and field teams.
- **Culture and Sustainability:** Combining Lean with emotional intelligence and sustainability objectives strengthened team cohesion, innovation, and long-term

client value.

Arcadis DPS now enters its next Hoshin cycle (2025-2030) focused on digital integration, sustainability, and global collaboration. By embedding Lean as its core operating framework, the organisation has positioned itself as a leader in continuous improvement and operational excellence across the semiconductor industry and beyond.

This transformation demonstrates that when strategy, culture, and capability evolve together, Lean becomes not a project - **but a way of doing business.**



Figure 10: Divisional Directional Focus 2025-2030