

# Pairing People and Machines: Implementing the Future of Work at an Incumbent Manufacturing OEM

## Executive Summary

For an incumbent manufacturing OEM, the future of work is not a question of hybrid offices, canteens, or how to win over Gen Z. It is a question of survival. In Germany alone, 12.9 million economically active people - just under 30% of the workforce - will pass statutory retirement age by 2036.<sup>1</sup> In the United States, manufacturers may need 3.8 million new workers by 2033, and 1.9 million of those roles could stay unfilled.<sup>2</sup> The pattern repeats across Europe's industrial core. Switzerland faces a shortfall of about 460,000 workers by 2035,<sup>3</sup> people aged 65 and over now outnumber those under 20 in the Netherlands,<sup>4</sup> and more than half of UK manufacturers expect 6-20% of their workforce to retire within ten years.<sup>5</sup> When a senior service technician retires, the company loses decades of judgment about machines that were often designed before anyone thought of digitizing their blueprints.

AI Edutainment proposes an implementation approach built on three moves, ordered by urgency:

1. **Capture before you automate.** Use video-to-workflow tools to turn the way experts actually work into structured, editable work instructions - while the experts are still on the floor to correct them.
2. **Automate where the evidence is proven.** Today, there are applications and services for predictive maintenance, building company-specific language models, and automating workflow. We are not aware of any ready-to-deploy robots that learn complex tasks from a single video.
3. **Pair people, not just people and machines.** Fear of automation is mostly anticipatory, not experienced. The fastest cure is a trusted colleague. We pair employees who distrust AI with colleagues who have already *played around* with it - even if that experience is limited to a chatbot at the kitchen table.

The point is not to replace the veteran. The point is to make sure the veteran's knowledge outlives their last shift. We base this conviction on César Hidalgo's research on the knowledge economy. Know-how is embodied in people and in the networks they form, and a single person can hold only a limited amount of it, which Hidalgo calls a "personbyte."<sup>6</sup> Complex products therefore require networks of people whose know-how fits together.<sup>7</sup> In his latest book, Hidalgo argues that knowledge grows, travels, and decays according to identifiable laws.<sup>8</sup> When a company loses an expert, it does not lose a file. It loses a node in the network that makes its products possible.

## The Problem: Knowledge Is Leaving Through the Factory Gate

A while ago, I spent 21 months advising a European manufacturing "hidden champion" on the future of work. The average employee age was 45. The machinery was highly complex and sold worldwide, with major customers in China, Vietnam, Malaysia, and Mexico. There was no knowledge management system. Operational blueprints existed, but not in digital form. The "way to do things" was to train

apprentices and guarantee them employment - and fewer and fewer apprentices applied.

This company is not an exception. It is one example among thousands of mid-sized OEMs in Europe, the United States, and Japan.

### **Demographics Are Not a Forecast. They Are a Schedule.**

The largest baby boomer cohorts in Germany, born between 1957 and 1969, will leave the labor market within roughly fifteen years. The Federal Statistical Office calculated that even if every 15- to 24-year-old joined the workforce, they would total only 8.4 million people - against 12.9 million who are retiring.<sup>1</sup> In the U.S., the Manufacturing Institute and Deloitte estimate that up to 3.8 million new manufacturing workers will be needed by 2033, with 1.9 million positions at risk of remaining open.<sup>2</sup>

The same arithmetic applies in the other economies where many industrial hidden champions are headquartered:

| <b>Country</b> | <b>Demographic signal</b>                                                                                                                                                             | <b>What it means for industry</b>                                                                                                                                                            |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Germany        | 12.9 million economically active people, just under 30% of the 2021 workforce, reach statutory retirement age by 2036. <sup>1</sup>                                                   | Even if every 15- to 24-year-old joined the labor market, they would total only 8.4 million people. <sup>1</sup>                                                                             |
| Netherlands    | Since early 2025, people aged 65 and over (3.76 million) outnumber those under 20 (3.72 million); the working-age share falls from 59% to 55% of the population by 2040. <sup>4</sup> | 16 of 24 technical occupational groups are already very tight; shortages of engineers, machine mechanics, and production managers in industry are expected to grow until 2030. <sup>9</sup>  |
| Switzerland    | About 297,000 employees retire between 2024 and 2035, while the economy needs some 163,000 additional workers to sustain recent prosperity. <sup>3</sup>                              | A shortfall of more than 460,000 workers within ten years. <sup>10</sup>                                                                                                                     |
| United Kingdom | Economic inactivity has risen since the pandemic, driven mainly by people aged 50 to 64. <sup>5</sup>                                                                                 | More than half of manufacturers expect 6–20% of their workforce to retire within ten years; 36% of manufacturing vacancies are hard to fill, against 24% across all industries. <sup>5</sup> |
| United States  | Up to 3.8 million new manufacturing workers will be needed by 2033. <sup>2</sup>                                                                                                      | Up to 1.9 million of those positions could remain unfilled. <sup>2</sup>                                                                                                                     |

No country in this table can close the gap through hiring alone. Every one of them has to keep the knowledge it already has.

Unlike most strategic risks, this one comes with a date attached to every name. HR already knows who will retire in which year. Most management teams have simply never mapped those dates against the clusters of expertise that keep the machines running. In the Global AI Literacy Study we talk about the concept of *wilful blindness*. In companies, it is alive and well. HR – like the Technology function - should be on the cutting edge of AI knowledge and deployment. After decades in executive management and on boards, I have never witnessed an HR function that runs itself as a business and truly prepares its organization for the future with smart machines.

### **Tacit Knowledge Cannot Be Downloaded**

The philosopher Michael Polanyi put it in one sentence: "*We can know more than we can tell.*"<sup>11</sup> A maintenance technician hears that a gearbox is about to fail before any sensor reports an anomaly. A commissioning engineer knows which customer in Malaysia will call about which setting. None of this is in the manual, because the person who knows it has never been asked to explain it - and often could not explain it in a way a management consultancy could put on a PowerPoint slide.

This is why the classic answer – “we will document everything before they leave”- fails. Written documentation captures what experts say they do. It rarely captures what they *actually* do, in which order, with which small corrections. That gap is precisely where video, AI, and the right human pairings can help.

### **Why Hiring Alone Will Not Solve It**

In our engagement, we asked three headhunters to pitch for new hires who combined deep domain expertise in this specific machinery with skills in knowledge transfer, automation, and AI. Such profiles exist, but they are rare and expensive, and they do not arrive with thirty years of company-specific memory. Hiring buys capacity but rarely solves for continuity. Continuity must be built from the inside, from the people who are still there.

### **What Automation Can Realistically Do in an Incumbent OEM Today**

An incumbent OEM cannot afford to “AI its way” out of every problem. MIT's Project NANDA found that 80–95% of enterprise generative AI pilots deliver no measurable return, and the primary cause is not model quality but organizational learning gaps.<sup>12</sup> The question is therefore not *which technology is most exciting*, but *which technology closes the specific gap a retirement opens*.

### **Robots and Cobots: Mature, but Not a Substitute for Judgment**

Industrial robots are a proven technology. The International Federation of Robotics counted 542,000 new installations worldwide in 2024 - more than double the figure of ten years earlier. Germany installed 26,982 units, about 32% of Europe's total.<sup>13</sup> The United States installed 34,164 units, 9% fewer than in 2023.<sup>14</sup> Robots and cobots take over repetitive, physically strenuous, and precision-critical tasks. They are the right answer when retirements hit assembly lines. They are the wrong answer when retirements hit troubleshooting, commissioning, and customer care, where the

scarce resource is judgment and the tacit knowledge (contributing not just to customer loyalty, but to building an IP of a company).

### **Company-Specific Language Models: Spreading the Best Worker's Habits**

When I speak about “language” in this context, I do not mean foundational models like ChatGPT or Claude used out of the box. I mean customized assistants that learn from the company's own documents, service logs, unstructured customer care data, and digitized blueprints. In our engagement, we built a small language model with low-code effort to answer operational and maintenance questions.

The strongest evidence for this approach comes from outside manufacturing. Erik Brynjolfsson, Danielle Li, and Lindsey Raymond studied 5,179 customer support agents and found that an AI assistant raised productivity by 14% on average and by 34% for novice and low-skilled workers. Their explanation matters for every OEM facing retirements: the model *disseminates the tacit best practices of the most able workers* to newer colleagues.<sup>15</sup> That is knowledge transfer at scale.

### **Predictive Maintenance with a Generative Interface**

Machine data from IoT sensors becomes far more useful when a technician can ask questions of it in plain language. Siemens extended its Senseye Predictive Maintenance with a generative AI “Maintenance Copilot” and reports that first pilot use cases saved an average of 25% of reactive maintenance time.<sup>16</sup> Treat such figures as early, vendor-reported pilot results - but the direction is right. In our project, we lacked the budget to integrate machine data with the knowledge base at the required speed. Today, I would prioritize it. Needless to say, any IoT network deserves extra attention when it comes to cybersecurity. I will always remember a call from an industrial client who complained about a gigantic electricity bill: cybercriminals had penetrated an IoT network that was not isolated from the rest of IT and used it to mine bitcoin.

### **Workflow Automation: The Unglamorous Glue**

Much of the knowledge loss in a mid-sized OEM is not on the factory floor. It sits in quotations, service tickets, spare-part orders, and the email threads that connect them. Available tools include Confluence, Loom, Slack, Airtable, monday.com, and Zapier. In our project, AI helped connect applications and automate the handovers between them. The list is not exhaustive, and we are happy to learn about further applications and services. Our selection criteria were simple: integration with existing systems (the CTO's demand) and a user-friendly interface (the works council's demand). We believe in the necessity to benchmark such tools.

### **Robots That Learn from Video: Promising, Not Yet a Plan**

Research is moving fast toward robots that learn from video. NVIDIA's GR00T-Dreams blueprint, built on the DreamGen research, generates synthetic “dream” videos of a task, extracts action trajectories from them, and trains robot policies; NVIDIA reports developing a new model version in 36 hours instead of an estimated three months of manual data collection.<sup>17</sup> This is remarkable research. It is not yet

something an incumbent OEM should put in its five-year workforce plan. At AI Edutainment, we advise clients to capture expert video now for people - and to store it well, because the same footage may train machines (and people serving them) later.

| Technology                                    | Closes which gap                           | Maturity for a mid-sized OEM       | What it does not replace                   |
|-----------------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|
| Robots and cobots                             | Repetitive, strenuous, precision tasks     | Proven                             | Troubleshooting and judgment               |
| Company-specific language model               | Access to documented and service knowledge | Ready with low-code effort         | Knowledge that was never written down      |
| Predictive maintenance + generative interface | Early failure detection, guided repair     | Early deployments                  | The technician who validates the diagnosis |
| Workflow automation                           | Handovers between office systems           | Proven                             | Process redesign decisions                 |
| Video-to-workflow                             | Capture of tacit, hands-on procedures      | Commercially available, vendor-led | The expert who corrects the draft          |
| Robots learning from video                    | Future task transfer to machines           | Research stage                     | Almost everything, for now                 |

### Video to Workflow: Capturing What Experts Do, Not What They Say

Video is the most honest documentation format a factory has. It shows the hand that pauses, the tool picked up out of sequence, the glance at a gauge nobody mentioned. In our engagement, the company chose video recordings of processes combined with structured interviews at each workstation. At the time, turning that footage into usable instructions was manual and slow. In 2026, it no longer is. We must, of course, consider that the “archaeology” of a factory on video puts pressure on IT networks, from video processing to storage.

### What the Tools Now Do

Several vendors now convert video into structured work instructions:

- **Siemens** describes AI that extracts electronic work instructions from existing documents *and* from videos of experts at work, explicitly to preserve their implicit knowledge, with approval workflows for regulated environments.<sup>18</sup>
- **Azumuta** reports an AI agent that watches a video of an operation, splits it into steps, extracts the relevant frames, and drafts a work instruction for an engineer to review; the company claims a 90% reduction in authoring time.<sup>19</sup>
- **Canvas Envision** says that converting a training video into step-by-step instructions takes under ten minutes instead of several hours; Otis used a video of a seven-minute procedure so trainees can learn by watching and doing at the same time.<sup>20</sup>

These are vendor claims, and they should be tested on your own lines before they enter a business case. But the direction is unambiguous: the bottleneck has moved from *authoring* to *validating*. That shift changes who needs to be in the room.

AI drafts in minutes; experienced workers decide what reaches the floor, and every change from the floor returns to them.

### Five Rules for Video Capture in an Incumbent OEM

1. **Record the “why,” not only the “what.”** Pair every recording with a short structured interview. Ask the expert what they listen for, what they check twice, and what went wrong the last time. The machine can segment steps; it cannot guess intent.
2. **The expert corrects the draft – this is non-negotiable.** AI-generated instructions are drafts. They inherit every limitation of the models that produce them, including confidently wrong steps. A procedure is published only after the person who performs it has signed it off.
3. **Capture the senses that video misses.** Sound, vibration, temperature, smell. Add audio, annotations, and, where possible, machine data recorded at the same moment.
4. **Agree with the works council before the first camera is switched on.** In Germany, introducing technical equipment that can monitor employee behavior or performance is subject to co-determination, and the works council must be informed about planned work processes, including the use of AI.<sup>21</sup> Other jurisdictions differ in form, not in substance. In the Netherlands, the Works Councils Act requires the works council’s prior approval for arrangements that observe or check staff attendance, conduct, or performance.<sup>22</sup> In Switzerland, the ordinance to the Employment Act prohibits systems whose purpose is to monitor employees’ behavior; systems with a legitimate aim such as safety must be proportionate and announced in advance.<sup>23</sup> The UK has no statutory co-determination, but the Information Commissioner’s Office expects employers to monitor transparently, assess the impact on data protection, and consult workers or their representatives.<sup>24</sup> Purpose limitation (knowledge capture, not performance surveillance) must be written down, not promised verbally.
5. **Store footage as a strategic asset.** Tag it by machine, process, customer, and failure mode. Link it to blueprints, service manuals, and failure logs. Today it trains people. Tomorrow it may help train machines.

### From Recordings to a Living Memory

If I started the same project today, I would build a knowledge graph from day one - linking people, processes, documents, video, and tacit know-how - and connect it to machine data. A collection of videos is an archive. A graph that links a video of a bearing replacement to the failure log, the spare-part number, and the technician who knows the customer in Vietnam is a living (and retrievable) memory of the operation.

### Reducing the Fear of Automation

The first eight months of our transformation journey were not easy. The works council challenged every single step. It disrupted meetings in which the program manager discussed progress with line managers and IT. The disruption intensified whenever the team discovered an alternative way to run a process - because what began as knowledge transfer was turning into process redesign, and process redesign sounds like job cuts.

That reaction was rational. It deserves a serious answer, not a motivational poster.

## **Fear Is Mostly Anticipated, Not Experienced**

The data on worker sentiment is sobering:

- 52% of U.S. workers are worried about the future impact of AI in the workplace; only 36% feel hopeful, and 33% feel overwhelmed.<sup>25</sup>
- Across 47 countries, only 46% of people are willing to trust AI systems.<sup>26</sup>
- Trust in AI is lowest in exactly the markets where many incumbent OEMs are headquartered: 39% in Germany, 36% in the UK, and 32% in the U.S.<sup>27</sup>
- The University of Melbourne and KPMG find a similar pattern across Europe: only 32% of Germans, 33% of the Dutch, 42% of Britons, and 46% of the Swiss are willing to trust AI.<sup>28</sup>
- Only 38% of U.S. manufacturing employees use AI even a few times a year, against 76% in technology roles.<sup>29</sup>

But one finding changes the nature of the problem. In Edelman's 2025 research, only 18% of people who reject AI reported a bad experience with it. Their distrust is largely *anticipatory*. And the same research concludes that hands-on experience is the fastest route to trust.<sup>27</sup> People are not afraid of what AI did to them. They are afraid of what they imagine it will do.

Anticipatory fear does not respond to slide decks. It responds to experience - ideally guided by someone the person already trusts.

## **Leaders Set the Ceiling**

BCG's *AI at Work 2025* survey found that only 51% of frontline employees are regular AI users, and that this figure has stalled. Only 25% of frontline workers say their leaders provide enough guidance.<sup>30</sup> Where leadership support is strong, the share of frontline employees who feel positive about generative AI rises from 15% to 55%. Employees who received more than five hours of training - especially in person and with coaching - were significantly more likely to become regular users.<sup>31</sup>

In our engagement, we were lucky with the program owner. Linda (I use a different name) was 35, part of the owning family, had managed the business in Asia, and understood that culture eats strategy for breakfast. She invested enormous time in talking to employees. She used the intranet to highlight people who generated the best ideas and used the new tools most often. And she took the works council's objections as information, not obstruction.

## **Let People Change the Machine's Answer**

Behavioral research offers a practical lever. People tend to abandon an algorithm after seeing it make a mistake, even when it outperforms humans overall—a phenomenon called *algorithm aversion*.<sup>32</sup> Yet when people are allowed to modify an algorithm's output, even slightly, they become far more willing to use it, more tolerant of its errors, and more satisfied with the process.<sup>33</sup>

For a factory, the implication is simple: never deploy an AI-generated instruction or diagnosis that the experienced worker cannot correct. The veteran's edit is not a failure of automation. It is the moment trust is formed, including the moment new knowledge enters the system.

## Five Commitments That Reduce Fear

1. **Say what will not be automated.** Name the tasks that remain human, and explain why.
2. **Tie knowledge capture to recognition, not redundancy.** Make the expert the author of record of every instruction they validate.
3. **Write the purpose down with the works council.** Knowledge capture, not surveillance. Treat co-determination as a design partner.
4. **Teach literacy, not only tool tricks.** Since 2 February 2025, the EU AI Act requires providers and deployers of AI systems to ensure a sufficient level of AI literacy among staff who use them; enforcement begins on 2 August 2026.<sup>34</sup> Use the obligation as an opportunity: explain what AI can and cannot do, including why it produces confident errors.<sup>35</sup> In our experience, AI literacy training is often left to HR, where purchasing decisions are made by people who have never studied AI or implemented a single AI project. In this context, training becomes a compliance circus instead of a true opportunity to put the organization on an AI and automation journey.
5. **Pair skeptics with tinkerers.** This is the most effective measure we know, and it deserves its own section.

## The Pairing Model: Skeptics and Tinkerers

Most change programs sort employees by role, age, or hierarchy. We propose sorting them along two different dimensions: **domain expertise** (how much of the operation a person carries in their head) and **hands-on AI exposure** (whether a person has ever actually played with an AI tool). The pairing that matters most is across the diagonal: the veteran who distrusts machines, paired with the colleague who has already tinkered.

The veteran brings the knowledge, the tinkerer brings the habit of testing the machine; veterans who gain confidence become bridges who coach the next pairs.

## Chatbot Experience Counts

A “tinkerer” is not an AI engineer. It is anyone who has used an AI tool voluntarily, iterated with it, and seen it fail. That includes the apprentice who asked ChatGPT to explain a hydraulic schematic, the sales assistant who drafts emails with a chatbot, and the 58-year-old maintenance technician who uses an AI app to plan his vegetable garden.

Such people are already inside your company, often invisibly. Microsoft and LinkedIn found that 75% of knowledge workers use AI at work, and 78% of those users bring their own tools without waiting for the employer.<sup>36</sup> Only 39% had received any AI training from their company.<sup>36</sup> These hidden tinkerers have learned something no training course teaches well: what it feels like when the machine is confidently wrong.

That experience is valuable. Anthropic's *AI Fluency Index* found that users who iterate with AI are 5.6 times more likely to question its reasoning and 4 times more likely to identify missing context than those who do not.<sup>37</sup> Tinkerers have learned to iterate. Veterans have learned to question. Neither alone is AI literacy. Together, they come close.

### Why the Pair Works

- **The tinkerer drives the tool; the veteran judges the output.** The skeptic never has to feel incompetent in front of a screen, and the AI's mistakes become visible to the person best equipped to spot them.
- **Trust transfers through people.** Distrust is largely anticipatory.<sup>27</sup> A colleague from the same shift is a far more credible guide than a vendor or a consultant.
- **The veteran can always correct the machine.** This is the algorithm-aversion remedy in practice: modification rights create ownership.<sup>33</sup>
- **Knowledge flows in both directions.** The tinkerer learns the machine on the floor. The veteran learns the machine on the screen. Each pair produces validated instructions as a by-product of learning.
- **It respects the veteran's status.** In the pair, the expert remains the authority on the process. The AI is a junior assistant that both of them supervise.

### How to Set Up Pairs

1. **Find tinkerers by survey, not by title or age.** Ask a short, anonymous-optional question: *Have you used an AI tool in the past three months, for anything at all? What did it get wrong?* Do not assume young means fluent or old means resistant.
2. **Map veterans against the retirement schedule.** Start with the experts whose knowledge clusters retire first and have no backup.
3. **Give each pair one real, bounded task.** Capture and validate one procedure on video; build one troubleshooting guide with the company language model; test one assistant against ten historical service tickets.
4. **Credit both names.** Every published instruction lists the expert as author and the tinkerer as co-author.
5. **Protect time.** Two to four hours a week per pair, booked as working time, not "extra commitment."
6. **Rotate after each task.** Tinkerers move to new veterans; veterans who have become confident turn into "bridges" who coach the next skeptics.
7. **Let the works council observe.** Invite its members to join a pair. Seeing the work is more persuasive than reading about it.

In our engagement, something unexpected happened. Factory teams began proposing improvements *while consulting the new tools*, not only while working at the

machines. The knowledge transfer program turned into an operating process redesign—from the bottom up. That is the strongest argument for pairing: it does not only preserve knowledge. It produces new knowledge.

## Implementation Roadmap

Translating the future of work into value is a marathon, not a sprint. Based on our 21-month engagement, we recommend four phases, each closed by an explicit gate. The durations are indicative for a mid-sized OEM with one to three production sites.

Capture is the phase that cannot wait: every month of delay is a month in which another expert may retire unrecorded.

## Governance Before Technology

Three structural decisions made the difference in our project:

- **A program manager reporting directly to the executive leadership team**, with frequent written updates to the board. Her mandate: digitize knowledge, standardize knowledge-transfer workshops, design incentives with HR, and hire new automation, AI, and education talent.
- **An Advisory Board** with three profiles: an enterprise education expert, an experienced CIO who knows ERP, CRM, and IoT for remote monitoring, and an automation consultant who actually studied and deployed AI (including an understanding of video-to-workflow tools and of AI agent harnesses). Our client budgeted EUR 60,000 per year for time and travel.
- **Memos instead of slides.** We asked management to stop using PowerPoint and communicate through human-written memos and AI-generated summaries. It was a cultural shock for management. The employees, it turned out, had always hated PowerPoint.

## What to Measure

| Metric                      | How to measure                                                     | Why it matters                                               |
|-----------------------------|--------------------------------------------------------------------|--------------------------------------------------------------|
| Expertise coverage          | Share of critical procedures with a validated, current instruction | Shows how much knowledge would survive a retirement tomorrow |
| Single points of failure    | Number of procedures only one person can perform                   | The real risk register of the retirement wave                |
| Time to competence          | Weeks until a new hire performs a procedure unsupervised           | Tests whether captured knowledge actually transfers          |
| Validation rate             | Share of AI-drafted instructions approved after expert edits       | Shows draft quality and expert engagement                    |
| Active pairs                | Number of skeptic–tinkerer pairs completing a task per quarter     | Leading indicator of cultural adoption                       |
| Regular AI use on the floor | Share of frontline staff using tools weekly                        | Compare against the 51% frontline benchmark <sup>30</sup>    |

|                           |                                           |                                               |
|---------------------------|-------------------------------------------|-----------------------------------------------|
| Reactive maintenance time | Hours spent on unplanned repairs          | Captures the value of connecting machine data |
| Bottom-up improvements    | Process ideas submitted via the new tools | Signals that transfer has become redesign     |

## Where This Approach Sits Relative to Typical Programs

| Dimension         | Typical "future of work" program         | This approach                                                         |
|-------------------|------------------------------------------|-----------------------------------------------------------------------|
| Starting point    | Employer branding, benefits, hybrid work | Retirement schedule mapped to expertise clusters                      |
| Role of AI        | Productivity tool rolled out to everyone | Knowledge-transfer instrument, deployed where gaps open first         |
| Documentation     | Written manuals, compiled once           | Video plus interview, validated by experts, linked in a living memory |
| Change management | Communication campaigns and e-learning   | Skeptic-tinkerer pairs with protected time                            |
| Works council     | Stakeholder to be informed               | Design partner with written purpose limitation                        |
| Training          | Prompting and tool tips                  | AI literacy, including what AI can and cannot do                      |
| Success metric    | Number of licenses and logins            | Expertise coverage and time to competence                             |

## Conclusion

The company I advised is not done. It is considering incentives to extend the retirement age, recruiting new hires at 50, and transferring talent from abroad. But it has translated “the future of work” from a fuzzy slogan into concrete value in a very specific context.

If I did it again, I would start the knowledge graph earlier, integrate machine data sooner, and invest more time in rethinking the HR function itself - giving it a strategic edge rather than an administrative one. Furthermore, I would have carried out more workshops with the company’s board. Automation, for example, is a powerful alternative to outsourcing production for cost reasons. Gary Pisano and Willy Shih showed that when companies move production abroad, they erode the “industrial commons:” the shared know-how, suppliers, and skills from which future innovation grows.<sup>38</sup> The evidence also runs the other way. Each additional robot per 1,000 manufacturing workers is associated with about 3.5% more reshoring activity, although the gains accrue mainly to high-skilled workers,<sup>39</sup> and rising robot adoption in the United States has reduced export production in Mexico.<sup>40</sup> On-site production keeps tacit knowledge inside the organization and generates data that can be turned into insights, and from there into future products and services. In Hidalgo’s terms, automation keeps the personbytes at home.<sup>6</sup>

If I started again today, I would add one more step. Now that a methodology for assessing AI literacy exists, I would run an AI literacy survey at every client and compare the results with the general database of our Global AI Literacy Study. The

survey shows what employees understand and know about AI, where their misconceptions sit, and what they would like to learn. These insights should shape the AI literacy training, rather than a generic catalogue bought off the shelf.

The lesson that would not change is this: automation in an incumbent OEM succeeds or fails on trust, and trust is not transferred by software. It is transferred by people. Capture your experts' knowledge while they are still there to correct it. Automate where evidence is solid. And pair the colleague who fears the machine with the one who has already played with it. Where there is a clear understanding of a problem, a solution will follow.

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