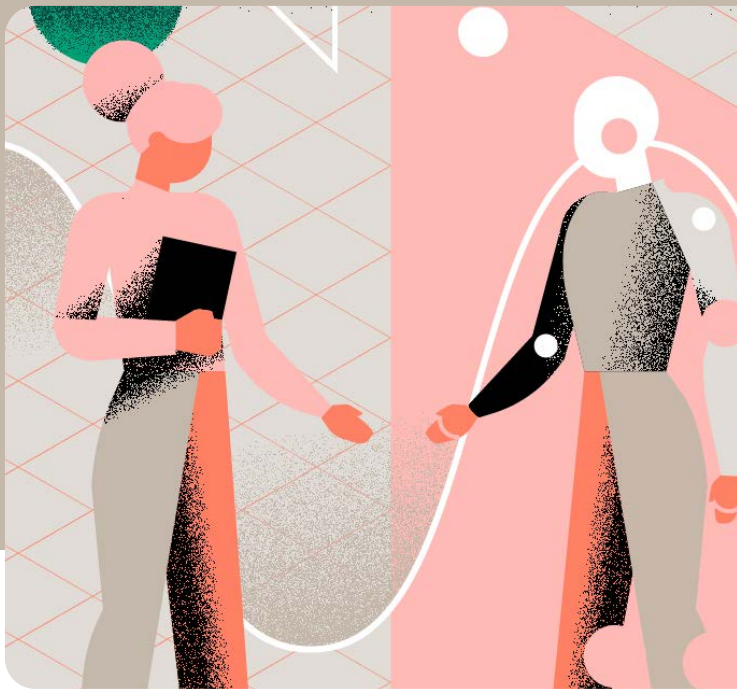
futurice



WHITE PAPER

Lean meets Data & Generative AI

Our experience harnessing Lean to unlock business value from new technology...

...and a meta-experiment on using GenAI to produce high-quality content

January 2025

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Using the old lessons of Lean, to capture the new opportunities of AI

So why do we talk about Lean? At Futurice, our journey with Lean thinking started back in 2008, when it was a cornerstone of our organizational strategy. At that time, we were experiencing rapid growth and Lean provided us with a crucial framework to scale effectively. It was one of the key lenses through which we viewed our organizational design, helping us to navigate and manage our expansion.

Approximately ten years ago, we integrated Lean thinking into our client work by developing the Lean Service Creation (LSC) concept, a systematic and customizable way for multidisciplinary teams to create new services. LSC is rooted in our experience working on thousands of software products. It stands on the shoulders of Lean Startup, Agile, and Design Thinking. Over the past decade, we have also shared our insights and experiences with hundreds of conferences, universities, and leadership teams, spreading the principles of Lean to a broader audience.

Today, we believe we are witnessing a sort of a renaissance of Lean thinking. We see this in our client projects, particularly from the perspective of process innovation. The rise of new technologies like generative AI has opened up unprecedented possibilities, necessitating a robust framework to rethink operating models and processes. Lean continues to be that guiding framework, helping us and our clients adapt, innovate, and challenge conventions in this dynamic landscape.

This white paper aims to explain how the new possibilities of AI and the old lessons of Lean can converge to drive innovation and efficiency. We also decided to experiment with the use of AI in the writing of this white paper itself. Instead of manual writing, we adopted a semi-automated approach with GenAI to create high-quality and efficient content. The goal was to learn how to gain efficiency from the LLMs' language generation capabilities while relying on our unique expertise for all the substance. So we leveraged our domain knowledge to outline the content and key points, with LLMs used to spar and extend our thinking. We then recorded and transcribed several expert discussions, and used LLMs to generate drafts for our authors to review and finalize. As this is an experiment, we included the prompts at the beginning of each section (`#text`) for your entertainment. More details about the experiment are at the end of the document!

Executive summary

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This paper explores the power of integrating Lean principles, data, and Generative AI (GenAI) to achieve significant business impact. Technology alone achieves nothing, and Lean provides us with a structured mechanism to ensure it's applied effectively to maximize value creation and minimize waste.

Lean principles, focused on maximizing customer value, speed, and minimizing waste, are crucial for efficient and effective operations. Lean fosters continuous improvement, empowers employees, and emphasizes eliminating inefficiencies such as overproduction and waiting times.

The latest GenAI models enable us to automate more complex tasks, improve decision-making, and extract insights from new data sources. From our work with clients, we've seen firsthand that the possibilities are vast. We can access organization-wide information in seconds. We can turn unstructured data into valuable insights for understanding customer needs and streamlining operations. We can automate compliance and control processes, reducing manual approvals and delays. We can enable mass customization, tailoring offerings to individual customers without additional costs.

Data is the fuel for AI and plays a critical role in Lean. With data insight, we can better understand customer needs and process problems to help us identify and eliminate waste.

So Lean provides the values & principles — the north star — of what a good process looks like: deliver what customers want, when customers want it, with minimum interruptions and waste. Data & GenAI now provide unprecedented means to progress toward that north star.

This white paper demonstrates that the combined power of Lean principles, data, and GenAI empowers organizations to streamline and radically redesign processes to achieve significant business results.

1 Introduction

#Explain why it is difficult to get business benefits from technology unless there is an impact mechanism such as Lean

The problem: Getting business results from technology is difficult

Deriving real business results from technology without an impact mechanism like Lean is challenging because technology alone does not inherently improve processes or deliver value. Lean provides a structured approach to understanding processes and what good looks like: providing value to clients, driving speed/flow efficiency, and identifying and eliminating waste. This helps to ensure the technology is applied to enhance efficiency and effectiveness.

Without Lean or a similar framework, organizations may struggle to align technological capabilities with business objectives. Technology can become an isolated tool rather than an integrated part of the value delivery process. Lean principles guide the application of technology to ensure it supports the overall goal of maximizing customer value and minimizing waste.

Moreover, Lean emphasizes continuous improvement and respect for people, fostering a culture where technology empowers employees and enhances their roles. This cultural alignment is crucial for realizing the full potential of technological investments, as it ensures that technology is used to solve real business problems and improve processes in a meaningful way.

In summary, an impact mechanism like Lean is essential for translating technological capabilities into tangible business benefits, as it provides a framework for their effective application and integration into the organization's operations.

Lean is not the only impact mechanism, but we have found it to be very practical and powerful to turn technological capabilities into business results.

Lean thinking 101

#Provide a concise overview of Lean principles and their importance in modern operations

Lean principles are centered around maximizing value for the customer as fast as possible via minimizing waste, thereby creating more efficient and effective processes. The core tenets of Lean include delivering value as defined by the customer, respecting employees, enhancing speed and cost efficiency by reducing waste, and ensuring quality by building it into the process rather than inspecting it at the end. Driving all of this is a commitment to continuous improvement by everyone on every level.

Even though it originated from manufacturing, the same principles are relevant in modern operations and knowledge work. Lean is crucial as it fosters a culture of continuous improvement and respect for people. It challenges individuals to enhance their work autonomously, promoting a proactive approach to problem-solving. Organizations can identify and eliminate waste by understanding and mapping value streams (instead of siloed processes), thus improving flow and reducing errors. This results in faster delivery of products and services that meet customer needs precisely, enhancing overall satisfaction and competitiveness.

Lean's emphasis on reducing handovers and delays aligns with the need for agility in today's fast-paced business environment. By integrating Lean with technologies like AI and data analytics, organizations can further streamline operations, ensuring that they remain responsive to market demands and capable of delivering high-quality outcomes efficiently.

LEAN IN A NUTSHELL

Deliver exactly

what the customer wants

when the customer wants

from start to finish without interruptions

with **minimum waste**

while **respecting people**

Introduction to Generative AI capabilities

#Provide a concise overview of Generative AI and its importance in modern operations

Generative AI can transform various business processes by automating complex tasks and enhancing decision-making. It can read and write documents, turn unstructured data into structured data, and extract valuable insights from all sorts of messy data sources. This capability allows organizations to see what was previously invisible, such as aligning organizational knowledge with strategic implementation.

Generative AI can also reason, which enables us to automate, e.g., compliance and control processes, reducing the need for manual approvals and ensuring that proposals and actions are legally compliant. For customer service, it enables employees to handle broader roles by providing instant access to information, thus reducing handovers and improving process efficiency.

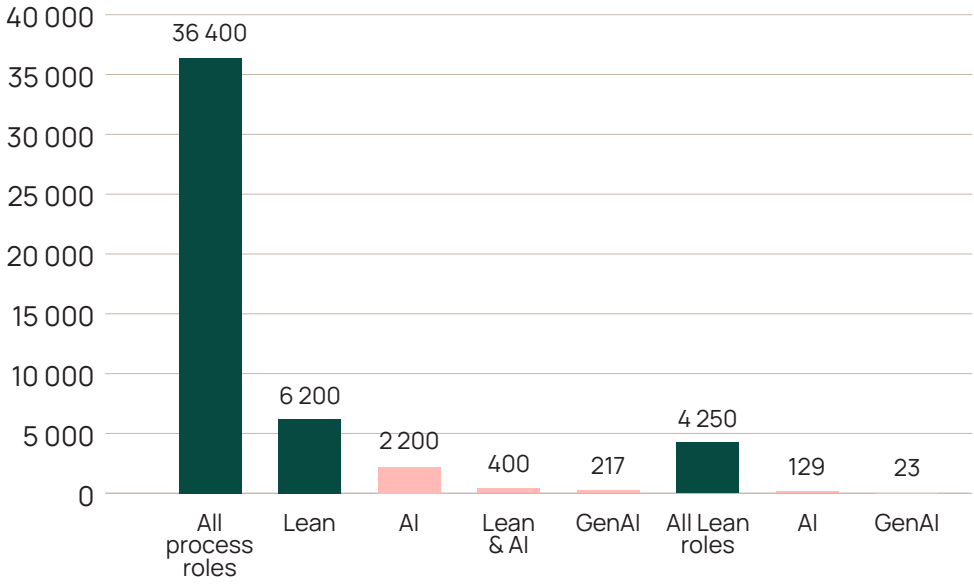
Furthermore, Generative AI supports mass customization by tailoring messaging, value propositions, and offerings to individual customer needs without incurring additional costs. By combining internal and external customer data with AI analysis capabilities, we can gain new visibility into our customers to enable proactive value delivery, allowing organizations to anticipate customer needs and provide solutions to emerging problems before they materialize.

Mainstream or not?

Is the blend of these two paradigms a well-worn path, or are we pioneers on the verge of a major opportunity? To uncover the truth, we turned to the most reliable data source: job listings. Based on our experience, job listings data can be used as an effective proxy for what organizations are really investing in — i.e., if they are investing in a particular topic, recruitment will typically follow. The data enables us to assess how widespread the adoption of the Lean x (Gen)AI approach currently is. Results reveal that we are still quite far from mainstream adoption. When analyzing all open job positions related to process development in 2023-24, only 6% of roles mentioned "AI," and less than 1% had "GenAI" or similar phrases. Around 1% of open positions mentioned both "Lean" and "AI". For traditional Lean practitioner roles, 3% of positions mentioned "AI" and less than 1 % included "GenAI" or similar phrases.

Headline / Role	Contains	2023-2024	
Process owner / process developer roles			
Process owner / process developer	All process roles	36 400	100.00%
Process owner / process developer	Lean	6 200	17.03%
Process owner / process developer	AI	2 200	6.04%
Process owner / process developer	Lean & AI	400	1.10%
Process owner / process developer	GenAI	217	0.60%

Lean roles			
Lean	All lean roles	4 250	100.00%
Lean	AI	129	3.04%
Lean	GenAI	23	0.54%



2 The business impact mechanism: Symbiosis of Lean, (Gen)AI, and Data

#Why do we need the symbiosis between Lean, data & Generative AI

Lean provides the north star - “why“ and “what” should be targeted. Data & GenAI provide new opportunities to implement lean goals, principles & practices - “how” to get there.

Generative AI can augment roles by enabling employees to handle broader responsibilities, reducing the need for handovers, which are known to hinder process efficiency and speed. For instance, in customer service roles, AI can empower employees to manage both claims and sales tasks, and we can embed compliance and control processes within their workflow. This integration minimizes the need for separate legal approvals by using AI to ensure proposals are legally compliant.

Data plays a crucial role in this mechanism by providing customer insights that, combined with AI, enables mass customization without additional costs. By understanding customer needs through data, organizations can tailor value propositions and offerings to individual customers, enhancing customer satisfaction and loyalty. This proactive approach to delivering value ensures that customers receive what they need at the right time, aligning with Lean’s emphasis on efficiently delivering maximum value.

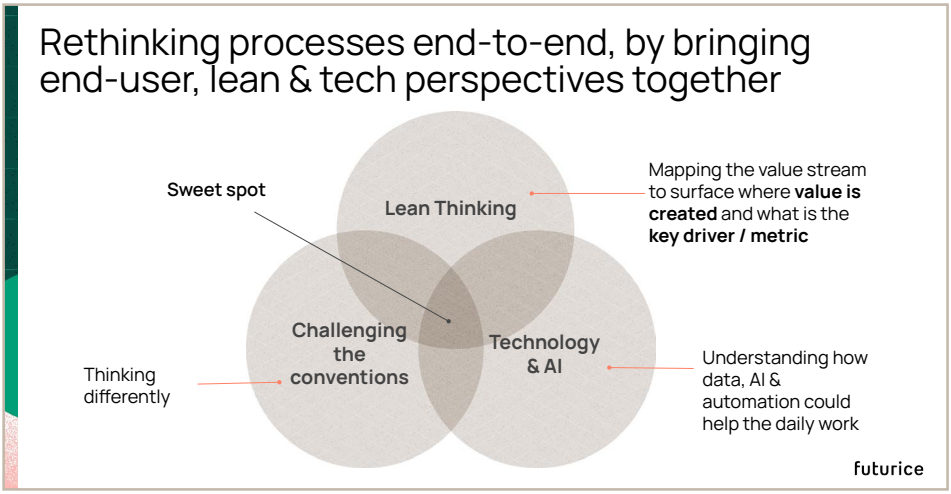
Data also plays a crucial role in providing insight into the current processes. Now, we can analyze messier data sources with AI; we can use alternative data sources, like chat discussions, calendar events, and meeting transcripts and documents, to see the reality of the current state and track progress as we seek to improve it.

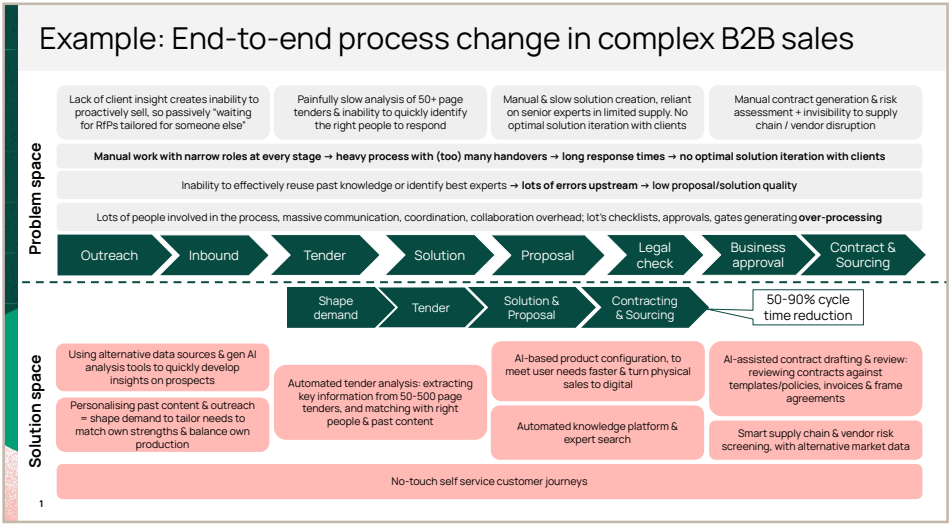
The symbiosis of Generative AI, Data, and Lean creates a robust framework for achieving significant business impact by optimizing processes, enhancing customer experiences, and enabling more agile and informed decision-making.

3 Lean Practices x GenAI

Lean Principles x GenAI

Lean principles — respecting people, continuous improvement, and speed — provide a strategic lens to view technology adoption. By guiding the work through Lean principles, organizations can harness technology to support the overarching goal of delivering maximum customer value while minimizing waste. This requires the willingness to question traditional ways of working and explore innovative solutions!





Countermeasures to Lean waste with GenAI & data

The concept of waste is one of the key topics of Lean thinking. Simply put, waste is any action, expense, or effort during the process that doesn't create value for the customer. Traditionally, Lean literature has identified seven categories of waste, but the Lean Primer describ es 10 different types of Lean waste:

Non-Value-Adding Action	Example or Comment
1. Overproduction of solutions or features, or of elements ahead of the next step; duplication	• features or services the customer doesn't really want • large engineering documents, more detailed designs than can be quickly implemented • duplication of data
2. Waiting, delay	• …for clarification, documents, approval, components, other groups to finish something
3. Handoff, conveyance, moving	• giving a specification from an analyst to an engineer • giving a component to another group for testing
4. Extra processing (includes extra processes), relearning, reinvention	• forced conformance to centralized process checklists of 'quality' tasks • recreating something made
5. Partially done work, work in progress (WIP) or design in progress (DIP)	• designs documented but not built • things built but not integrated or tested
6. Task switching, motion between tasks; interrupt-based multitasking	• interruption • multitasking on 3 projects • partial allocation of a person to many projects
7. Defects, testing and correction after creation of the product	• testing and correction at-the-end to find and remove defects is not a value action; it may be a temporarily necessary waste
8. Under-realizing people's potential and varied skill, insight, ideas, suggestions	• people only working to single-speciality job title, or …? • do people have the chance to change what they see is wasteful?
9. Knowledge and information scatter or loss	• information spread across many separate documents • communication barriers such as walls between people, or people in multiple locations
10. Wishful thinking (for example, that plans, estimates, and specifications are 'correct')	• "The estimate cannot increase; the effort estimate is what we want it to be, not what it is now proposed." • "We're behind schedule, but we'll make it up later."

Reference: https://www.leanprimer.com/downloads/lean_primer.pdf - Oct 6th, 2024

Let's look at how GenAI and data give us new ways to avoid each type of waste.

1. Avoid overproduction

#Explain how to avoid overproduction with GenAI & data

Overproduction often manifests as creating solutions or features not immediately needed or desired by the customer, leading to unnecessary resource expenditure. By leveraging GenAI and data, organizations can gain valuable customer insights from various touchpoints, such as customer service interactions, sales systems, CRM systems, and external sources like social media and reviews. This comprehensive understanding of customer needs allows for a more precise alignment of production efforts with actual demand, thereby reducing the risk of overproduction.

Furthermore, GenAI can assist in minimizing data duplication by harmonizing data input across different systems, ensuring consistency and reducing redundant efforts. By capturing and analyzing customer insights and streamlining data processes, organizations can focus on producing only what is necessary, thus avoiding the pitfalls of overproduction.

2. Counter waiting & delays

#Explain how to counter waiting and delays with GenAI & data

Waiting and delays often result from bottlenecks such as waiting for approvals or the completion of tasks by other groups. One of the primary mechanisms to counter these inefficiencies with GenAI and data is providing instant access to organizational information. Organizations can eliminate the need to seek clarifications or approvals manually if the required information is readily accessible with AI. They can also enable individuals to act more autonomously by giving them clarity on strategies, objectives, plans, progress & past learnings.

GenAI enables the augmentation of roles, allowing individuals to complete a broader set of tasks without relying on multiple narrow specialists. This reduces the dependency on specific individuals for task completion, thereby minimizing waiting times. For instance, technology can be used to automate compliance checks, ensuring proposals align with company policies without manual intervention. This automation can cover a significant percentage of cases, further reducing delays.

Additionally, GenAI can dynamically guide processes by suggesting the next best actions, eliminating unnecessary steps, and streamlining workflows. By harnessing these capabilities, organizations can effectively manage queues and reduce waiting times, leading to more efficient operations.

3. Reduce handovers

#Explain how handovers can be reduced with generative AI & data

Handovers are often seen as a significant source of inefficiency in organizational processes. With data and GenAI, we can enable:

1. Broader roles: With AI augmentation, employees can handle a wider range of tasks. For example, customer service representatives can take on sales responsibilities in addition to handling claims. This expansion of roles reduces the

need for handovers between specialized departments.

2. Automated compliance checks: Instead of passing proposals to legal departments for compliance checks, AI can evaluate whether documents align with company policies. This automation can handle a large percentage of cases, reducing the need for manual handovers for legal teams.

3. Knowledge augmentation: AI provides instant access to organizational knowledge, allowing employees to find information or solutions without consulting colleagues or other departments. This reduces the need for handovers to subject matter experts.

4. Cross-functional information transfer: AI can automatically pass relevant information between different process stages. For instance, data collected during sales can be transferred to engineering or configuration departments without manual handovers.

5. Self-service capabilities: Business or process-oriented employees can implement technical changes themselves using low-code or no-code tools augmented by AI. This eliminates the need for handovers between business and technical teams.

6. Proactive problem-solving: AI can analyze ongoing work, compare it to past cases, and suggest solutions or relevant information. This reduces the need to hand over problems to other team members or departments.

7. Digital twins: In some cases, critical knowledge can be implemented as a digital twin. For example, a sales engineer's expertise can be simulated, allowing many cases to be handled without the direct involvement of the expert.

8. Automated data entry validation: AI can validate data entry at the beginning of a process, reducing errors that typically require handovers for correction later in the process.

9. Dynamic process guidance: Instead of static process steps that may require handovers, AI can provide next-best-action recommendations, guiding employees through tasks more efficiently.

10. Holistic information access: By providing comprehensive, coherent information upfront, AI reduces the likelihood of errors in upstream processes that typically require handovers for correction.

These AI-driven approaches allow organizations to streamline their processes, reduce the number of handovers, and improve efficiency and speed in their operations.

4. Extra processing

#Explain how extra processing can be reduced with generative AI & data

Integrating GenAI and data by directly embedding compliance and control processes into the workflow will significantly reduce extra processing. For instance, in sales, where legal approval for proposals is typically required, GenAI can be utilized to assess the legal compliance of a proposal. This automation eliminates the need for manual checks and approvals, streamlining the process and reducing unnecessary steps.

Moreover, GenAI can perform instant data entry validations, ensuring that information is accurate and complete to start with. This proactive approach prevents errors from propagating through the process, reducing the

need for manual corrections later. By validating data at the beginning, the process becomes more efficient, minimizing the likelihood of errors.

Additionally, AI can automate complex tasks such as Configure, Price, and Quote (CPQ) processes, further reducing the need for manual intervention and extra processing.

By leveraging AI to handle these tasks, organizations can ensure that processes are compliant with various policies and strategies while also minimizing the time and effort required to complete them.

5. Completing work at once and avoiding WIP/DIP

#Explain how (Gen)AI enables completing work at once and thus avoiding work-in-progress and design-in-progress

GenAI helps to enable the completion of work in a single, streamlined process, thereby reducing work-in-progress and design-in-progress scenarios. By leveraging AI-driven insights and recommendations, organizations can dynamically guide individuals through the most efficient steps, eliminating unnecessary actions and ensuring that tasks are completed in one go.

For example, AI can provide real-time access to organizational knowledge and past solutions, allowing individuals to quickly identify and implement the best course of action without pausing for additional research or approvals. This immediate access to information and solutions reduces the need for iterative design processes and minimizes the accumulation of work-in-progress.

AI can also simulate the outcomes of decisions and validate data at the start of a process, ensuring that the right information is used from the beginning. This proactive approach prevents errors and rework, allowing tasks to be completed accurately and efficiently in a single pass. By embedding these capabilities into workflows, GenAI helps organizations achieve a more seamless and continuous flow of work, reducing delays and bottlenecks associated with work-in-progress and design-in-progress.

Overall, one of the biggest reasons WIP is high in organizations is partially allocated teams trying to do too much and not owning the resources they need. AI Agents that can proactively build alignment between teams and take on work to increase the capacity of bottleneck resources are one emerging solution to this problem.

#Explain how the process for managing WIP or DIP changes with data & GenAI

When managing work in progress (WIP) or design in progress (DIP) with data and GenAI, we can make traditionally invisible and unmeasured inventories visible and measurable. This is similar to how, in physical production, understanding and seeing the inventory is a crucial way of reducing it. When we can see and measure the WIP or DIP, we can start implementing tools to ensure that we don't introduce new work into the system before the old work is completed.

6. From multitasking to focus

#Explain how (Gen)AI enables avoiding multitasking, interruptions and partial allocations to projects

In the context of avoiding multitasking, interruptions, and partial allocations to projects, GenAI plays a role by enabling broader roles

and augmenting knowledge. By leveraging AI, organizations can allocate a smaller number of fully dedicated individuals to projects, thereby reducing the need for multitasking and partial allocations. AI augmentation allows individuals to handle more specialized tasks without the need for narrow specialization, effectively broadening their roles. This means that critical talent bottlenecks are not spread thin across multiple projects, reducing delays and interruptions. Additionally, AI can simulate and capture organizational knowledge, providing instant access to information and reducing the need for constant interruptions to seek expertise. This approach not only streamlines project management but also enhances productivity by minimizing the inefficiencies associated with multitasking and partial allocations.

7. Avoid defects & build quality in

#Explain how to avoid defects and how quality can be built in with generative AI & data

One of the primary sources of defects is the presence of incorrect information upstream, which can propagate through the entire value stream, leading to errors that require manual correction at later stages. GenAI helps to address this by providing instant access to accurate information at the beginning of the process. This ensures the process starts with the correct data, reducing the likelihood of errors downstream.

GenAI can also facilitate the validation of data entry at the initial stages, preventing the introduction of incorrect or incomplete information into the system. This proactive approach to data validation helps maintain the integrity of the process and minimizes the need for corrections later on.

Furthermore, GenAI can simulate the impact of decisions made at each step of the process, allowing individuals to understand how their actions affect downstream processes or the final product. This capability enables better decision-making and ensures that quality is built into the process from the start.

By leveraging data and AI, organizations can also transfer information seamlessly between different stages of the process, ensuring that all stakeholders have access to the information required to make informed decisions. This organizational connectivity helps align upstream and downstream requirements, further contributing to reducing defects and enhancing quality.

8. Tap into people's knowledge to scale individual ideas

#Explain how data & (Gen)AI provide instant access to organizational knowledge and how it enables scale individual breakthroughs across the organization

Data and GenAI provide instant access to organizational knowledge by capturing and organizing information and retrieving and summarising what each individual needs to know. This capability allows individuals within an organization to access relevant knowledge without the need to interrupt specialists or rely on a limited pool of nearby experts. By automatically capturing and indexing organizational knowledge, AI systems can offer immediate insights and solutions to problems that have been encountered and solved before, thus streamlining processes and reducing the need for repetitive problem-solving efforts.

Providing the existing documented knowledge is not always adequate — sometimes, "knowing who knows" is more important. In this case,

we can build automated knowledge profiles of people based on their digital footprint data, which allows everybody in the organization to know who to talk to about a specific topic.

Furthermore, the ability to scale individual breakthroughs across the organization is facilitated by AI's capacity to simulate and validate processes. When a local improvement or innovation is identified, AI tools can simulate its application in different contexts, ensuring that it is applicable and beneficial on a broader scale. This accelerates the dissemination of successful strategies and ensures that improvements are consistently applied across various departments and locations, leading to a more cohesive and efficient organizational operation.

9. Empower organizations to harness their knowledge

#Explain how to (Gen)AI & data enables organizations to tap into their knowledge

GenAI and data enable organizations to tap into their knowledge in several effective ways:

1. Automated knowledge capture: AI can automatically capture and index organizational knowledge from various sources such as documents, CRM, collaboration tools, ticketing systems, project/product management systems, and internal communications. This process is more comprehensive and efficient than traditional manual methods.

2. Enhanced knowledge access: AI-powered systems can provide instant access to relevant organizational information. Instead of relying on asking colleagues or searching through multiple systems, employees can quickly retrieve the needed information from AI knowledge assistants, reducing delays and improving efficiency.

3. Proactive knowledge sharing: AI can analyze ongoing work and automatically suggest relevant information or solutions from past projects. This proactive approach ensures employees benefit from existing organizational knowledge without explicitly searching for it.

4. Identification of knowledge holders: By analyzing the digital footprint of employees, AI can identify individuals with specific expertise or experience. This capability helps connect the right people to solve problems or contribute to projects more effectively.

5. Dynamic knowledge utilization: AI can assist in more effectively allocating tasks and resources based on the identified skills and knowledge within the organization. This approach ensures better utilization of human capital and reduces the risk of overlooking valuable internal expertise.

6. Cross-functional knowledge transfer: AI can facilitate the transfer of information between different departments or stages of a process. For example, data collected during the sales process can be automatically passed on to engineering or other relevant departments, ensuring continuity and reducing information silos.

7. Broader role enablement: By augmenting employee knowledge with AI, organizations can enable staff to take on broader roles. This reduces the need for narrow specializations and frequent handovers, which are often sources of inefficiency in lean processes.

8. Continuous learning and improvement: AI systems can continuously learn from new data and interactions, ensuring that the organizational knowledge base remains up-to-date and relevant.

By leveraging these AI and data-driven approaches, organizations can more effectively tap into their collective knowledge, leading to improved decision-making, increased efficiency, and better utilization of internal expertise.

10. From wishful thinking to organizational brutal honesty

#Explain how (Gen)AI & data provides second opinions

We can leverage AI and data to provide valuable second opinions to combat wishful thinking. We can use AI to generate data visualizations, highlight similar historical cases, and offer alternative perspectives. By enriching the conversation with these AI-driven insights, we aim to foster a more grounded and realistic decision-making process.

Summary: Countering Lean waste with (Gen)AI & data

	Waste category	Data (Gen)AI enabled counter measures
1	Overproduction	Analyzing client needs & demand
2	Waiting / Delay	Instant access to organisational knowledge; broader roles; compliance & acceptances embedded into technology
3	Handoff, conveyance, moving	Broader roles; knowledge and task codification/automation
4	Extra processing & processes	Dynamic next best action; tech embedding of checklists and controls
5	Partially done work, WIP	Broader roles; digital lean cells
6	Task switching, motion between tasks; interrupt-based multitasking	Broader roles; knowledge and task codification/automation
7	Defects, testing, and correction after the creation of the product	Automated validation of even complex data; easier information access.
8	Under-realizing people's potential and varied skills, insight, ideas, suggestions	"Who knows about topic x" - via digital footprint data & GenAI; scaling & simulating individual frontline breakthroughs across the organization.
9	Knowledge and information scatter or loss	Automated information consolidation and access
10	Wishful thinking	Second opinions by AI highlighting the wishful thinking

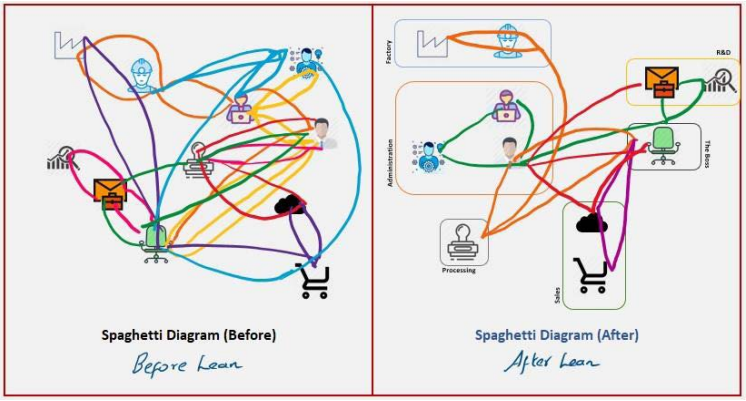
Digital Lean Cell

#Explain the background for the need of lean cells and the possibilities of building digital Lean cells with data & (Gen)AI

In the realm of manufacturing, lean cells have been a staple for decades, designed to enhance flow efficiency by consolidating all necessary machines, information, and parts into a compact physical space. This setup allows for the completion of a full value stream or specific tasks within a single area, thereby reducing waiting times, handovers, and scattered information. The concept of lean cells is not only about improving efficiency but also about boosting employee motivation by streamlining processes and minimizing unnecessary movements.

The advent of data and GenAI presents the opportunity to translate this physical concept into a digital format, creating what can be termed digital lean cells. In a digital lean cell, the entire organizational knowledge is made accessible to individuals at the front line, enabling them to perform their tasks with the full support of the organization's collective expertise. This eliminates the need for separate compliance or political checks, as technology can automatically verify compliance, thus integrating these checks into the workflow seamlessly.

Digital lean cells facilitate the validation and simulation of tasks at each step, allowing individuals to understand the impact of their actions on downstream processes or the end client. By leveraging data and AI, information can be efficiently transferred upstream and downstream, reducing the need for redundant work and ensuring that the most relevant and up-to-date information informs each step in the process. This approach not only enhances process efficiency but also ensures that the organization can respond swiftly and accurately to customer needs, thereby maximizing value delivery.



Reference: https://www.benchmarksixsigma.com/forum/topic/35572-spaghetti-diagram/?do=findComment&comment=48195 - October 6th, 2024

Standardization & modularization

#Explain how we need modularisation & standardisation in order to automate

When automating complex knowledge work, two significant challenges arise. Firstly, defining "good" is subjective and varies between individuals, making it difficult to establish a clear automation goal. For example, what constitutes a "good" sales proposal can differ greatly between salespersons. Secondly, knowledge work tasks are often complex and require customization. Automating the entire output at a high level often yields subpar results, especially when personalization is needed. For instance, treating customers individually requires flexibility that high-level automation may lack.

The solution lies in modularization and standardization. Standardization involves defining what "good" looks like and creating a benchmark for automation. Modularity involves breaking down complex tasks into smaller, manageable modules. Each module can then be automated, and these automated modules can be combined to construct the final output, such as a proposal or document. This approach allows for both automation and customization.

4 Get going with Value Stream Mapping

#Explain how to start a Lean journey with value stream mapping

Based on our experience, value stream mapping is a great way to start a Lean journey. A Lean journey with value stream mapping starts by focusing on a specific client problem and identifying where value is created throughout the entire process, not just within existing organizational silos. This involves bringing together all teams and functions in the value stream to map the process collaboratively.

The goal is to create understanding and avoid suboptimization by looking at the whole value stream, from when the customer need emerges to the point it is fulfilled. The key is to pinpoint areas where value for the customer is added and, more importantly, where waste occurs. This collaborative mapping exercise also serves to connect people. They can build a shared understanding of the process and what creates value. And they can establish a common language for discussing improvement opportunities.

For example, if the client problem is long lead times for fulfilling orders, the value stream mapping exercise would involve mapping every step from order placement to delivery, including order processing, inventory management, packaging, and shipping. This means we'd have representatives from all these functions aligning on how the process now happens and then working together to identify bottlenecks and areas of waste rather than optimizing individual departments or processes in isolation.

Value Stream Mapping: find the real problems worth solving, and identify where Data & AI can help

Discover root causes by mapping the value stream from the customer or end-user perspective

We map all the steps of your process, including the phone calls and corridor chats that are invisible in the systems. We pinpoint where value is created, where problems occur, and why. **The problems you see are often created upstream - and that's where we need to direct our development effort.**

Identify low hanging fruits where tech isn't needed, before jumping to AI

For each improvement opportunity, we need to understand what's already being done and identify the right tool for the job. Rushing in with an AI solution might meet resistance. And we can often find simpler ways to improve - like agreeing new ways of working or finding workarounds . **We don't AI-ify everything - but hone in on the areas where it really changes the game.**

Connect people, get them talking & build the momentum for change

Data & AI change nothing alone, we need to also change behaviours and the process. That starts with collective sensemaking of how people, process, tech and data intertwine. When people get visibility into other people's tasks and goals, we can build more empathy and understanding across the value stream. **High energy, co-creative workshops create belief and lay the groundwork for change.**

Manual VSM versus automated process mining

#Explain the benefits of manual value stream mapping over e.g. process mining

Although we love digital footprint data and think that process mining can be a good tool. We've learned that manual VSM has many advantages over automated process mining, particularly in complex processes with messy data footprints and a scattered system landscape.

Firstly, it prioritizes human interaction and understanding. Involving people in the mapping process fosters a deeper understanding of their roles within the bigger picture and the current state of the process. This engagement promotes buy-in and facilitates the crafting of solutions that are more likely to be accepted and implemented effectively.

Secondly, manual mapping is more adaptable to situations where digital data is incomplete or unavailable. In messy realities and processes, many activities might occur outside of digital systems, making it difficult for process mining tools to capture a complete picture. Manual mapping allows the inclusion of these offline activities, such as phone calls, Excel backlogs, or looking for information from knowledge articles or secondary systems. So, it provides a more holistic view of the value stream.

Finally, manually visualizing the work can be more focused and efficient in identifying areas for improvement. While process mining tools can highlight deviations from the norm, they may not always pinpoint the root causes of problems or identify the most impactful areas for improvement. Manual mapping, guided by process & technology experts, can be more effective in targeting specific problem areas and developing focused solutions.

Reference: Futurice - blurred VSM from actual client workshop

5 Conclusion

#Please also make a final conclusion paragraph out of the original text

The integration of Lean principles, data, and GenAI offers a powerful approach for organizations to achieve significant business results. Lean provides the north star of values, principles, and what a good process looks like. It provides a structured framework for ensuring that technology is applied effectively. Data and GenAI offer new opportunities to leverage organizational knowledge and automate complex tasks to streamline operations and deliver maximum value.

The synergy between Lean, GenAI & data forms the safest investment organizations can make: flow efficiency - as it improves customer satisfaction, employee engagement/morale, and financial performance.

SIDEBAR

A meta experiment in crafting high quality, GenAI aided content in a sea of mediocrity

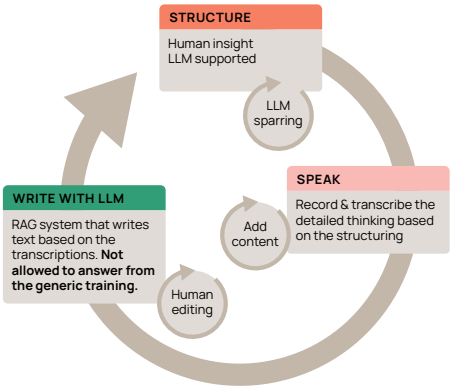
Creating content with GenAI is one of the first use cases that people think of. But it's also a difficult one. GenAI will 'raise the floor' of content quality. Everyone can now come up with logical talking points and put them together into at least passable language. But, when aspiring to be thought leaders in our domain, we're more interested in "raising the ceiling." How GenAI can help with this is less obvious.

In the worst case, GenAI will lead to a proliferation of hyper-efficient but generic content that drowns out the remaining thinking of real value. If people over-utilize LLMs, we might see a reduction in novel ideas and thinking. There's already evidence that LLMs are being heavily used in academic research, which is a tad concerning.

So, with this white paper, we decided to experiment with an approach to create high-quality and efficient content with the help of GenAI. It's a hybrid approach, where we gain efficiency from the LLMs' language generation capabilities while still relying on our unique expertise for all of the substance.

It worked like this:

1. Based on our own (human) domain knowledge, we formulate the content focus, structure & key talking points - sparring with LLMs to inspire our thinking.



2. We record and transcribe meetings where our experts deep dive into the content. This is an easy way to get hours of relevant content with little to no preparation needed from our busy experts.

3. We use a RAG-based approach where LLMs generate drafts based explicitly on the recorded content, plus any supplementary content the experts want to add. While the LLM may not be great at coming up with novel ideas itself, it's rather good at finding and structuring them from our messy call transcripts. With this, we guarantee that the contents are born out of our organizational knowledge and not the 'average of the internet' knowledge or hallucinations. We also develop prompts and provide examples to capture our specific "Nordic" tone of voice - so what's produced sounds like us.

4. With drafts from multiple LLMs, human experts then review what's produced and finalize, with LLMs sparring ideas on the precise language used. This doesn't take the experts a lot of time, as they have good content options to choose from. But the final product must come from them, as the transcripts are quite noisy, and LLMs are far from perfect in capturing what's most important.

In all, this whole white paper took around 20 hours to produce. That's at least 50% faster than a purely human approach. And there's still scope to ~half the time with more refinement of the method!

As for the quality, read, comment, and be the judge yourself.

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We are happy to discuss more about this topic or get your feedback.
Contact us!

futurice