ITSM/ESM and ESM4ERP for the Manufacturing Industry

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Abstract

The manufacturing industry is undergoing rapid digital transformation, driven by the need for greater efficiency, reduced costs, and increased agility. Enterprise Service Management (ESM) and IT Service Management (ITSM) are two key technologies that can help manufacturers achieve these goals. This paper explores the use cases, benefits, and challenges of implementing ESM and ITSM in the manufacturing industry.

We see generic benefits aligned with the benefits provided in general by ITSM and ESM in all industries. They address need that may exist especially in the manufacturing industry. However most of the vendors stops at such value propositions, at best with messages and packages explicitly targeting the Manufacturing industry. Only none vendor, offers unique differentiated end-to-end solutions integrating ESM, ITSM, and ITOM, with Manufacturing Enterprise apps like ERP. This ESM4ERP approach is where the true value and differentiation exists when it comes to addressing the specific needs of the manufacturing industry.

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1. Introduction

The manufacturing industry is an important sector of many economies. Yet it is under heavy pressure to reduce costs while increasing efficiencies. It needs to move to automation, AI, standardized business processes, Automated workflows, Self-service etc. ITM/ESM are great tools to get started, with ITSM focused on IT aspects and ESM to the other Line of business (LOBs) use cases. Because of the move to digitization, also accelerating within manufacturing, ITSM can address a larger part of the enterprise assets. But manufacturing solutions are by definition going beyond IT assets and use cases. It is really ESM. The same holds for the associated offerings in terms of ITOM, IT operation management, considered a superset or subset of ITSM depending on the vendor, that also needs to extend beyond IT.

However, assets like OT, machines , sensors and other devices may differ from IT assets and how they are discovered, interacted with and managed. ITSM and ITOM need to extend beyond IT.

Manufacturing rely on enterprise applications, often tuned to the manufacturing industry to run their core business. Here we will speak generically of ERP. These manage for example inventory, production, HR, supply chain, suppliers, procurement, partners, customers, facilities, field technicians, assets (software and hardware) and financials. However they are typically available as backend system, not user friendly, with lots of training required to use them, no something aligned with a blue collar workforce, or administrator performing tasks on behalf. Providing simple, unified ways to make omnichannel self service requests that are seamlessly executed by ERP is really what is needed, with now the ERP use cases and features being at time generic and at time manufacturing specific. This is what we call ESM4ERP [65], and something currently offered only by one vendor, IFS, which also happens to have it ERP system, IFS Cloud [33], tailored towards industry verticals, including manufacturing [36].

One would expect that any ITSM or ESM tools consists of an omnichannel access tool (Web, mobile applications,

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Chatbot, Virtual agent, copilots, APIs, …) for end user to make requests from a catalog, track these request. These may include support requests, and access to knowledge. Agents can then help to ensure that the requests are suitably fulfilled, including in particular support requests. The tool implement ITIL (4) practices [32,34,35,53-56,58,59]. Nowadays, the tool should also be smart, i.e., using automation and AI wherever it makes sense[2] [57,65-72].

2. What is ESM?

Enterprise service management (ESM) applies the principles and capabilities of IT service management (ITSM) to various LOBs and business functions with the goal of improving performance, service, and outcomes [1]. It involves extending IT service management capabilities beyond technology services to address business-centric use cases, managing service demand and supply through a common platform, portal, and service catalog [2]. Leading analyst firm Forrester defines ESM as "extending IT service management capabilities beyond technology services to address […] platform that enables departments to deliver services to their users in a streamlined and cost-effective way [3]. In essence, ESM takes the processes and tools that have been successful in IT service management and applies them to other lines of the business (LOBs), such as human resources (HR), legal, facilities, marketing, and finance [2]. This can help to improve efficiency, standardize service delivery across the business, and reduce costs across the organization [1]. The concept of "shared services" is central to ESM, where IT can act as a trusted advisor in extending service management concepts and their management into various business functions [1].

One of the key insights about ESM is that it's about applying what works well in ITSM to the entire enterprise [4,66]. By leveraging the proven benefits of ITSM, organizations can streamline and optimize their service delivery processes across various departments and functions.

3. What is ITSM?

3.1 ITSM

ITSM is how IT teams manage the end-to-end delivery of IT services to their customers and stakeholder internal or external [5]. This includes all the processes and activities to design, create, deliver, and support IT services [5]. ITSM is built on the idea that IT should be delivered as a service, coordinating and streamlining processes so all customers of IT can interact with and benefit from IT services [6]. For example, if a company needs to deliver a phone to a new employee on their first day, an ITSM process would ensure that the employee gets the correct phone [6], although some would argue that this is an ESM use case of employee onboarding. We see it as breaking

[2] Unfortunately, these days, this has too often evolved into AI for AI, especially now with GenAI. It shouldn't be the case. Some analysts seem to not understand that, and have rejected or down-rated vendors with superior solutions because not (yet) AI based. It is of course nonsense. In fact, the use case matter, not the fact that AUI is used. There are AI use cases better served with rules, at least in some circumstances, while awaiting for examples that enough history has been compiled to train a system on say who resolved past problems, or how problems have been remediated, in order to recommend who should address a new ticket, or how it should remediated [71].

down the siloes, and having EMS HR workflows triggering in this case ITSM workflows.

ITSM frameworks provide standardized practices and procedures, such as ITIL 4 [32,34,35,53-56,58,59], a worldwide standard of best practices [5]. Organizations can use these best practices to integrate IT into their overall business goals [7]. Some existing frameworks that can help guide an organization in modernizing and optimizing IT include COBIT, ISO 20000, and FitSM [8]. This is then also of value for other LOBs, as ESM.

3.2 ITOM

Depending on the vendor, ITOM is considered a superset or a subset of ITSM. For this purpose let us just consider that ITOM is an extra component that complements ITSM, and to support IT, cloud and Network Ops. It provide functions like auto discovery, monitoring/observability, e.g., metrics, logs, traces, patching, automation, lifecycle management, compliance for Software network and infrastructure [73,74]. When smarts it can be autonomous and AI driven [68,69,70,72].

4. Use Cases for ESM in Manufacturing

ESM can be applied to a wide range of business functions in the manufacturing industry. Some of the key use cases include:

- **Research and Development:** Streamlining the planning, execution, and monitoring of R&D projects using workflow automation can help improve resource utilization and project outcomes [9]. ESM can also be used for product lifecycle management, from concept to retirement, for more successful product launches and continual improvement [9]. However it is important to adhere to separation of concerns with respect, for example to DevOps dev toolchain [32,34,35].
- **Human Resources:** ESM can automate and streamline the employee onboarding process, from contract generation to provisioning IT resources and managing induction training [9]. It can also be used to manage employee benefits more efficiently, such as healthcare, pensions, and paid time off (PTO) [9]. ESM can provide omnichannel self-service interface to allow employees and manager to request in self-service information, benefits and lifecycle management of the employee lifecycle.
- **Employee Lifecycle Management:** ESM can be used to manage the entire employee lifecycle, including onboarding, offboarding, performance management, and employee development [10]. This can help to ensure smooth transitions and positive experiences for employees at all stages of their careers. It can be omni-channel for employees and managers, instead of the focus of making request to or driven by HR administrator as are usual HR applications. Such a solution is available as HR add-on to IFS assyst ESM [75] and IFS Cloud HCM [76], following again the ESM4ERP approach [65].
- **Procurement:** ESM can streamline the creation, approval, and fulfillment of purchase orders, helping to reduce administrative overhead and improve procurement efficiency [9]. For example, ESM can automate the process of generating purchase orders based on inventory levels, route them for approval, and track their status until the goods are received.

- **Finance:** ESM can automate routine financial tasks such as invoice processing and payment approvals, improving accuracy and efficiency. For instance, ESM can be used to automatically match invoices with purchase orders, route them for approval, and initiate payments.
- **Legal:** ESM can be used to manage contracts, track legal requests, and ensure compliance with regulations. This can include automating contract renewals, tracking legal documents, and managing legal approvals.
- **Facilities Management:** ESM can be used to manage work orders, track maintenance requests, and optimize the use of facilities. For example, ESM can be used to automate the process of generating work orders for maintenance requests, track their progress, and ensure that facilities are being used efficiently. Note the IFS ESM4ERP End-to-end Service management with IFS cloud SM / FSM – Field service management [38,39], to manage facilities with dispatched technicians. It is discussed after.
- **Marketing:** ESM can be used in marketing to save time and stay organized [11]. Marketing teams often receive requests from multiple departments for various tasks, such as mass emails, events, and communications. ESM can help manage these requests by providing a centralized platform for intake, project planning, and tracking.
- **Customer Service/Support:** ESM can be used to automate customer service request processing, from submission to resolution, to help improve service delivery and customer satisfaction [9]. It can also be used for collecting, analyzing, and acting on customer feedback more effectively to enable the continual improvement of products and services [9].
- **Employee Onboarding:** ESM can be used to streamline the complex process of onboarding new employees [12]. This might involve gathering employee data by HR, conducting background checks and contract negotiation by legal and HR, setting up IT accounts and providing necessary equipment by IT, and providing training and orientation by various departments. ESM can help coordinate these tasks across different departments, ensuring a smooth and efficient onboarding experience. Again note HR add-on ESM4ERP for HCM discussed earlier.

It's important to note that ESM can enhance internal operations by unifying service management processes in a single platform [13,75]. This allows organizations to easily automate key efforts such as incident management, change management, and request fulfillment, reducing manual workload and promoting knowledge sharing between teams.

As we can see that the use cases above are not limited, or specific to the manufacturing industry. However coupled with industry vertical enterprise applications focused on these verticals, like IFS Cloud [33,36], they can be part of industry vertical and focused suites.

5. Use Cases for ITSM in Manufacturing

ITSM is essential for managing the increasingly complex IT infrastructure in modern manufacturing plants. Some key use cases include:

- **Incident Management:** Resolving IT incidents quickly and efficiently is critical to minimize downtime and maintain production schedules. ITSM tools can help automate incident management processes, track incidents, and ensure timely resolution [14].
- **Problem Management:** ITSM can be used to identify and address the root causes of IT problems, preventing recurring incidents and improving service quality [15].
- **Change Management:** Managing changes to IT systems in a controlled and efficient manner is crucial to minimize disruption to operations. ITSM processes can help plan, test, and implement changes with minimal risk [14].
- **Asset Management:** ITSM provides a comprehensive view of manufacturing assets, enabling proactive maintenance and effective allocation of resources[18]. It helps track asset performance, predict failures, and schedule maintenance, reducing unexpected breakdowns and extending equipment life [16].
- **Compliance Management:** Manufacturing often involves strict regulatory compliance. ITSM helps maintain

comprehensive records, manage audits, and ensure that all processes adhere to industry standards [16].

- **IT Operations Management/ITOM:** ITSM can help IT teams monitor automation and performance, prevent outages, and accelerate analysis and response times [17]. This is crucial for maintaining the stability and efficiency of IT operations, which are essential for manufacturing. Discovery and ITAM is also a key part: assets can be automatically discovered (or manually), and stored in CMDB for further asset management. Automatic discover applies to IT assets. Other cases are particular examples of ESM4ERP, with asset management like EAM (Enterprise asset management).
- **Empowering End Users:** ITSM can empower end users with a self-service portal, which can reduce costs, increase productivity, and share knowledge [14]. This emphasizes the user-centric approach of ITSM and its benefits for both employees and the organization.
- **Supporting Business Transformation:** ITSM can help ensure that IT services support major transformations, such as mergers, acquisitions, or shifts to new business models [18]. This highlights the strategic role of ITSM in supporting the overall business goals of a manufacturing company.
- **Data-Driven Decision Making:** ITSM in manufacturing offers deep insights into operations through data analytics [16]. Manufacturers can use this data to make informed decisions, identify areas for improvement, and predict market trends. This strategic use of data supports better resource management and business growth [16].

The increasing digitization of manufacturing has made ITSM more crucial than ever [19]. With the rise of Industry 4.0 and Industry 5.0, manufacturers are adopting smart equipment and software that are connected to the larger IT environment. ITSM provides a strong foundation for managing this complex IT infrastructure and ensuring that IT services support the needs of the business.

ITSM also enables a "truly digital workplace" in manufacturing [20,66]. By providing self-service capabilities, automating workflows, and integrating with collaboration tools, ITSM can maximize staff productivity and optimize the digital workplace experience.

Beyond this, the use cases above are not limited, or specific to the manufacturing industry. However coupled with industry vertical enterprise applications focused on these verticals, like IFS Cloud [33,36], they can be part of industry vertical and focused suites.

5. Advanced Case Management (ACM) or End to End Service Management for Manufacturing

ACM and E2E SM are examples oof ESM4ERP [65]. They combine ESM/ITSM and FSM ERP, as discussed below, and architecturally illustrated in the case of IFS.

5.1. Use cases

ACM and E2E SM is relevant to the manufacturing companies offering after sale support. It is also relevant when repairs of facilities, equipment or machine is performed by a central department which need to dispatch technicians when a problem is to be fixed.

IFS is the only company with an ITSM/ESM (IFS assyst) [75] and FSM (Field service management as IFS Cloud SM)

[33,36,38,39], for which it is the market leader, it is the only offering of this type.

When discussing IFS Assyst and FSM (Field Service Management), "Advanced Case Management" refers to the capability within the IFS Assyst platform to handle complex service requests with detailed tracking and workflows, while "End to End Service Management" encompasses the entire service lifecycle, from initial customer contact to resolution, including aspects managed by both IFS Assyst (for IT/LOB-related services) and FSM (for field service operations) - essentially managing the entire service delivery process within a single system [37-41].

5.1 Key points to understand the difference:

- **Advanced Case Management (within IFS Assyst):** [37,42,43]
    - Focuses on intricate service requests requiring detailed information, multiple steps, and potential escalation pathways [37,42,43].
    - Utilizes advanced features like custom fields, complex workflows, and detailed reporting to manage complex cases effectively [37,42,43].
    - Primarily used for IT-related service issues within an organization [37,40,43].
- **End to End Service Management (IFS Assyst + FSM):** [37-41]
    - Covers the whole service delivery journey, including initial customer contact, diagnosis, scheduling field technicians (using FSM), parts management, on-site work, and post-service follow-up, [37-41].
    - Integrates data between the front-end service request management (in Assyst) and the field service execution (in FSM) to ensure seamless transition and visibility throughout the process [37,39,40].
    - Enables organizations to manage both internal IT support and customer-facing field service operations within a single platform [37-41].
    - Enables organizations to manage both internal IT support and customer-facing field service operations within a single platform.

In summary, "Advanced Case Management" is a specific feature within IFS Assyst for managing complex service requests, while "End to End Service Management" refers to the complete service delivery process encompassing both office-based and field service aspects, utilizing both IFS Assyst and FSM functionalities [37,39-41].

5.2 ESM4ERP

Figure 1 illustrates the logical architecture of ESM4ERP [65], particularized to the case of the IFS assyst offering [75].

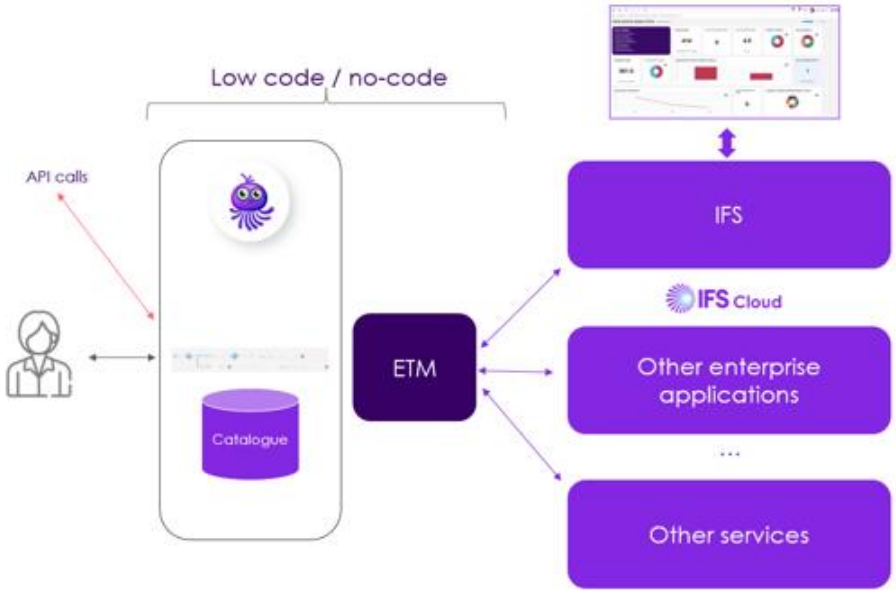

Figure 1. illustrates the architecture of ESM4ERP. The ITSM/ESM applications, e.g., IFS assyst, offer an omni-channel self-service to end user / agent and APIs) to access a catalog of services, and make requests. When requested a request triggers a workflow that may include internal steps (e.g., approvals) or orchestration of ERP applications, via an integration platform (EDA). In the present case, the ERP applications is IFS SM / FSM (and ERP).

5.3 Advantages

Advantages for the ESM4ERP ACM and E2E SM include: a unified portal for support, knowledge and request. The ability to request support in self-service mode and omni channel, and get immediate visibility of the status. The ability to automate the request, including possibly with AI or automation to automate approval, triage and decision to dispatch a field technician.

In general, this pleases the end user, employees or customers, agents and technicians and renders support, request management and knowledge access much more efficient. It is a first, or additional step towards digital transformation, whatever that means.

6. Benefits and Challenges of ESM and ITSM in Manufacturing

6.1 Benefits:

- **Improved Efficiency and Productivity:** ESM and ITSM streamline processes, automate tasks, and optimize resource allocation, leading to increased efficiency and productivity [24].
- **Enhanced Customer Experience and Satisfaction:** ESM and ITSM ensure consistent and high-quality service delivery, leading to improved customer satisfaction [24].
- **Increased Collaboration and Communication:** ESM breaks down silos between departments, fostering collaboration and improving communication [24].
- **Better Resource Utilization and Cost Optimization:** ESM and ITSM optimize resource allocation and eliminate redundancies, leading to cost savings [24].
- **Improved Compliance:** ITSM helps manufacturers maintain compliance with industry standards and regulations [16].

While ESM and ITSM offer numerous benefits, it's important to acknowledge the challenges that organizations may face during implementation.

6.2 Challenges:

- **Achieving Alignment Across Departments:** Integrating service management practices across different departments can be complex and require a cultural shift [26].
- **Change Management:** Implementing ESM and ITSM often involves significant changes to existing processes, requiring effective change management strategies [26].
- **Resistance to Change:** Employees may resist the changes brought about by ESM and ITSM implementation [27].
- **Security and Compliance:** Ensuring the security of IT systems and maintaining compliance with regulations are ongoing challenges [25].

It's important to note that ESM can support overall change initiatives and a desire to overhaul and improve existing processes [28].

7. ESM and ITSM Use Cases Explicitly Focused on the Manufacturing Industry

Enterprise Service Management (ESM) and IT Service Management (ITSM) offer numerous use cases for the manufacturing industry, helping to streamline operations, improve efficiency, and drive digital transformation.

Here are some key applications:

7.1 Operational Technology Management

Manufacturing companies can leverage ESM platforms to manage their operational technology (OT) environment effectively, including parts, machines, sensors and other devices that may not qualify as IT assets:

- **Asset Visibility and Monitoring / Management:** ESM tools can automatically discover and identify OT assets, map dependencies, and provide contextual insights for better management [48]. This may also cover sensors etc. Protocols and methodology differs from just ITOM (for IT) discovery, monitoring, observability, patching/automation à la ITOM (for IT). It is really about ITOM Beyond IT.
- **Vulnerability Response:** These platforms monitor systems to discover asset vulnerabilities and quickly notify responsible parties [48].
- **Service Management:** Built-in machine learning and contextual help enable rapid incident response and recovery through intelligent change management [48].
- **Predictive maintenance, prevention and auto remediations:** These include extension of predictive maintenance, root cause analysis, problem prediction, automation, remediation (recommendations and autonomous execution) beyond IT / ITOM and ITSM. [32,34,35,57,65-70,72-74]

These use cases can extend beyond Manufacturing. Think for example Medical device, automotive or Oil and Gas parts and assets etc.

7.2 Production and Supply Chain Optimization

ESM and ITSM solutions help manufacturers address supply chain challenges:

- **Process Orchestration:** Centralized platforms automate mission-critical processes across the supply chain [48].
- **Real-time Visibility:** ESM tools provide insights into various stages of the supply management process, from planning to shipment [48].
- **Risk Mitigation:** Advanced intelligence helps detect and address anomalies, preventing service disruptions [48]. It can also predict the risk and consequences of (scheduled) changes, and mitigate them.
- **Optimized scheduling**: Combined with manufacturing tools like IFS cloud, and AI, changes, and change, or maintenance windows can be optimized based on staff availability and production schedules.

7.3 IT Service Delivery and Support

Manufacturing organizations can improve their IT operations using ITSM best practices:

- **Incident Management:** Streamline the process of addressing and resolving IT issues [47].
- **Asset Management:** Effectively track and manage IT assets throughout their lifecycle [47].
- **Service Continuity:** Ensure critical IT services remain available to support manufacturing operations [47].

This and the associated CMDB may then be extended to cover OT assets, sensors and other domains specific assets.

Full ITIL support allows advanced ways to manage these processes including with efficient SLAs [32,34,35,53-56,58,59].

7.4 Workflow Automation

ESM platforms enable manufacturers to automate various processes:

- **Employee Onboarding:** Automate the entire onboarding process, reducing manual errors and improving efficiency [46].
- **Password Resets:** Enable self-service password resets, reducing IT workload and improving employee productivity [a42].
- **Approval Processes:** Streamline approval workflows for purchasing requests and other business processes [46].

Low code no code process designer and platform, as in IFS assyst [75], then allow design and management of these processes, including by non-IT or developer people, and visibility of their execution status.

7.5 Equipment Management

ITSM practices can be extended to manage manufacturing equipment:

- **Lifecycle Management:** Treat manufacturing equipment as IT assets, managing their entire lifecycle [47].
- **Preventative Maintenance:** Use asset management data to drive preventative maintenance practices, reducing downtime [47].
- **Performance Monitoring:** For network-connected equipment, implement availability and performance monitoring similar to IT assets [47].
- **Dependency tracking / Service Maps**
- **Autonomous management:** AIOps beyond IT [32,34,35,57,65-70,72-74]

This includes extending ITOM and CMDB as discussed earlier to OT, sensors, machines, parts and other domain specific assets. It may also track parts delivered to customers.

7.6 Compliance and Training

ESM tools help manufacturers meet regulatory requirements:

- **Compliance Tracking:** Ensure employees meet proper compliance and training requirements through status tracking within the platform [51].
- **Standardized Processes:** Implement standardized workflows to ensure adherence to regulatory standards [45].

Manufacturing social network / connected worker tools like IFS Poka [77] can also be used with ITSM/ESM as a tool to have experienced employee self-generate knowledge for manufacturing, and possibly enable “community help and incident resolutions” by other employees.

7.7 Cross-departmental Collaboration

An ESM platform breaks down silos and improve collaboration:

- **Unified Service Portal:** Provide a single access point for all employee inquiries and information needs across departments [44].
- **Knowledge Sharing:** Create a centralized knowledge base to promote information sharing and reduce redundant queries [46].

By implementing these ESM and ITSM use cases, manufacturing companies can significantly improve their operational efficiency, reduce costs, and enhance their ability to adapt to changing market demands [44-46].

8. ITSM ESM & Enterprise asset Management

Combining ITSM/ESM/ITOM (ITAM, SAM) like IFS assyst [75] with Enterprise Asset Management like IFS Cloud EAM [78,79] enables:

- Consistency of the asset repositories: EAM, financials in ERP and CMDB are populated by the same information, instead of often disparate, duplicated or incorrect information.
- Automatic discover for assets that are discoverable. This is a game changer for asset management, as well as supply chain and inventory management. Assets can now be automatically discovered (when they software, scannable or discoverable), even if discover processes and protocols may have to evolve form ITOM discovery for IT.
- ESM/ITSM/ITOM and its ITAM/ITIL practices extended to all assets: one can now associate SLAs to assets, differentiate support and maintenance based on these SLAs etc. We have seen use cases, where some machines require immediate fix, while other can be prioritized for later maintenance. That information may automatically be derived from ERP.
- EAM planning of the assets for say depreciation, financial consideration, investment decisions (see IFS Copperleaf [80]).
- Unified portal, support and knowledge repository for and about the assets. This is consistent with also ACM and E2E SM discussed earlier. It is in act a property of ESM4ERP [65].

Today IFS is the only company with a portfolio combining these capabilities, with applications and expertise focused on manufacturing.

9. Conclusions

ESM and ITSM are valuable tools for manufacturers looking to improve efficiency, reduce costs, and increase agility in today's rapidly changing environment. By implementing these technologies and adapting them to their specific needs, manufacturers can streamline operations, enhance customer satisfaction, and gain a competitive edge. While challenges exist in implementing ESM and ITSM, the potential benefits make them worthwhile investments for manufacturing companies of all sizes.

To stay ahead in the competitive manufacturing landscape, it is crucial for manufacturers to explore and adopt ESM and ITSM solutions. By taking a proactive approach to service management, manufacturers can optimize their operations, improve employee productivity, and enhance customer satisfaction. Some recommended steps for manufacturers include:

- **Assess current service management practices:** Identify areas for improvement and potential use cases for ESM and ITSM.
- **Evaluate different vendor solutions:** Choose a solution that aligns with the specific needs and requirements of the organization.
- **Develop a clear implementation plan:** Define roles, responsibilities, and timelines for the implementation process.
- **Provide adequate training and support:** Ensure that employees understand the benefits of ESM and ITSM and are equipped to use the new tools and processes effectively.

By embracing ESM and ITSM, manufacturers can unlock new levels of efficiency, agility, and customer-centricity, positioning themselves for success in the era of digital transformation.

However the paragraphs above in this section are run of the mill considerations for vanilla ESM and ITSM tailored, or marketed as tailored, to the manufacturing industry. As we have discussed, the true support of a vertical industry like manufacturing comes from ESM4ERP that combines ITIL tool, Smartness, Omni-channel self-service with manufacturing enterprise applications like ERP, FSM, EAM, CRM and other specialized applications for the industry. Today, most ITSM/ESM vendors do not provide such solutions.

Appendix A: Case Studies

Several case studies demonstrate the successful implementation of ESM and ITSM in the manufacturing industry:

- **Acme Manufacturing:** This case study highlights how Acme Manufacturing used ESM to improve efficiency, reduce downtime, and bolster interdepartmental communication[23]. By implementing a self-service portal, they empowered production line operators to contribute to the maintenance process, fostering a culture of collaboration and responsibility [21].
- **Swedish Manufacturing Company:** Infopulse helped this company establish a scalable self-service portal as part of the ServiceNow ITSM system [22]. This optimized asset management, user management, license management, procurement, and key supply chain management workflows, resulting in faster issue resolution, real-time visibility, better flexibility, and efficiency [22].
- **Textile Tech Transformation:** This case study explores how a mid-size textile manufacturer in Southeast Asia implemented the ITIL framework to address strategic challenges due to increasing operational inefficiencies [22].

Again these use cases are vanilla use of ITSM / EMS tools. They should be complemented by solutions as in section 5 and 8, and in general ESM4ERP.

Appendix B: Vendors Offering ESM and ITSM Solutions for Manufacturing

Several vendors offer ESM and ITSM solutions specifically tailored for the manufacturing industry. However, note that with the exception of IFS, they essentially focus on run of the mill ITSM and ESM, at best marketed to manufacturing. IFS being the only vendor with a full ITSM/ESM/ITOM and ERP portfolio, and a focus, among others, on the manufacturing industry, that provides ESM4ERP for the Manufacturing industry.

Some of the leading vendors include:

Vendor	Description	Key Features/Benefits
ServiceNow	A leading provider of cloud-based ITSM and ESM solutions [29].	Real-time asset and service catalog management, workflow automation, AI-powered insights.
Atlassian	Offers Jira Service Management, a popular ITSM and ESM tool [29].	Customizable workflows, integration with other Atlassian tools, strong collaboration features.
BMC Software	Provides BMC Helix ITSM, an enterprise-grade ITSM tool that can support ESM initiatives [30].	AI/ML capabilities, automation, multi-cloud support.
Freshworks	Offers Freshservice, a cloud-based service desk software with ESM capabilities [30].	User-friendly interface, ITIL alignment, automation features.
Ivanti	Provides Ivanti Neurons for ITSM, an AI-powered ITSM solution [29].	Hyperautomation, self-healing capabilities, predictive analytics.
IFS	Offers IFS ESM [37,42,75], a comprehensive ESM solution for various industries, including	Only vendor with ITSM/ESM/ITOM (IFS assyst) [75], and ERP (IFS Cloud)[33],

Vendor	Description	Key Features/Benefits
	manufacturing [31,60-64].	and only vendor with specialized out of the box offerings for the Manufacturing Industry [36]: Integrated ESM with ERP [33,65], (F)SM [38,39], and EAM solutions [78-80], and HCM [76], with manufacturing industry-specific functionalities. Only ESM4ERP vendor [65].
Infraon	Provides Infraon ITSM, specifically designed for the manufacturing industry [16].	Asset management, compliance management, data analytics.
Atomicwork	Offers an AI-powered ESM platform with features for manufacturing [20].	Conversational support, workflow automation, integration with collaboration tools.
HaloITSM	Provides HaloITSM, a simple and powerful ITSM solution for manufacturing companies [14].	ITIL alignment, knowledge base, audit trails, predictive analytics.

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