Leverage 4 Domains of AITSM to Evolve ITSM Tools and Practices

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Initiatives: Infrastructure, Operations and Cloud Management

I&O leaders captivated by AI, automation and agile trends hope that new technology will kick-start a flagging ITSM initiative. As IT budgets constrict in the postcoronavirus “new normal,” foundational domains of AITSM must be established before shopping for new tools.

Overview

Key Challenges

- I&O leaders that purchase artificial intelligence (AI) and automation technologies for IT service management (ITSM) achieve limited value because sufficient data and process maturity foundations have not been established.

- I&O leaders expect to leverage AI add-ons for cost optimization in ITSM, yet the cost of these investments often exceeds their associated benefits.

- ITSM tools demonstrate capability in the context domain of “AITSM,” but less commonly in the advice and action domains.

Recommendations

I&O leaders focused on infrastructure, operations and cloud management:

- Start your AITSM roadmap by aligning current and desired practices to the four domains of AITSM, starting with the foundational domain of AITSM context.

- Prevent overspending by optimizing ITSM processes before approaching tool providers to determine if their roadmaps support your AITSM needs.

Strategic Planning Assumption(s)

Through 2023, I&O leaders will overspend by $750 million on buying unused features of ITSM tools, up from $600 million in 2019.

Introduction
AITSM is not an acronym; rather, it is an initialism. It is a concept that refers to the application of context, advice, actions and interfaces of AI, automation and big data on ITSM tools and optimized practices to improve the overall effectiveness, efficiency and error reduction for I&O staff (see Figure 1).

**Figure 1. The Four Domains of AITSM**

![The Four Domains of AITSM](image)

As demands on I&O organizations grow, I&O leaders seek opportunities to automate proactive management of their environments. According to the 2019 Gartner I&O Management Survey, 94% of respondents responsible for strategic I&O efforts said they are either already investing in I&O automation or plan to start by 2021. The postcoronavirus “new normal” will be shaped by severe cost optimization that calls on I&O leaders to drive new efficiencies, while necessitating cuts to services. I&O leaders wanting to buy new tools or upgrade their ITSM tools to achieve AITSM grades/maturity/power may not realize they already have what they need, or that their ITSM practices are not sufficiently optimized to support the advanced capabilities of these purchases. Through 2023, I&O leaders will overspend by $750 million on buying unused features of ITSM tools, up from $600 million in 2019. Spending money on new tools is not essential to drive improvements and efficiency.

Leading ITSM tools and related products will support all four domains of AITSM, and successful I&O leaders in 2023 will have harnessed the benefits of these technical evolutions by first optimizing their ITSM practices. These I&O leaders understand that AITSM requires quality data from which to learn, predict and react.

This research describes the four domains of AITSM, including the subelements, use-case examples, benefits and risks of each.

**Analysis**
Align ITSM Practices to the Four Domains of AITSM

The four domains of AITSM are:

- **Context**: This refers to structured and unstructured data that can help both humans and “robots” better understand a situation and make informed decisions on how to respond.

- **Advice**: This includes analysis of the context and further information to provide recommendations that speed up the response of the human operating the process.

- **Action**: This domain refers to automation of part of the ITSM process in the ITSM tool or virtual support agent/chatbot. This includes updating the knowledge base so that context and assistance are subsequently improved.

- **Interface**: The outcomes of these domains will often enable automation, deployment, and rectification activities delivered by external tools, most typically from artificial intelligence for IT operations (AIOps) solutions (for IT operations management [ITOM] tasks such as event management, monitoring or orchestration), but sometimes by the ITSM tools themselves.

**AITSM: Context in Detail**

Context in AITSM refers to structured and unstructured data that can help both humans and “robots” better understand a situation and make informed decisions on how to respond (see Figure 2). This metadata is usually available in any ITSM tool and does not require advanced software. No AI capabilities are required.

![Image of AITSM Context in Detail](source: Gartner 724379_C)

The common subelements of context are:

- **Consumer role**: This refers to metadata about the business consumer such as name, contact details, job/role, location, skill set or expertise. Much of this is a core requirement for any
ticketing system to function. When combined with other metadata (from the other subelements listed subsequently), a support agent can infer information and wisdom to better handle the issue.

- **Business events.** This refers to what is happening on the business calendar. Examples include financial year end, company reorganization (such as mergers and restructuring) or new product launches.

- **Service asset configuration management (SACM).** This is commonly enabled by configuration management database (CMDB) tooling. It answers the questions, “What service or application is the call about?” “What else does the business consumer use that may affect the triage of an issue?” and “Who else might also be affected?”

- **Known errors.** This includes known issues relating to the other subelements (role, events or infrastructure configuration items) that are potentially relevant. This data is likely to come from a knowledge base and problem management practices.

- **Relationship to other incidents and changes.** Extending the other subelements of context, this captures the known current and recent issues and changes relating to the services affected or the business units using them. Examples include:
  - Are we getting recent reports of similar issues, so could this be part of a major incident?
  - Have we heard of this issue before, and do we have an open problem investigation related to it?
  - Has this service or business unit had any changes recently that could be causing these reported issues?

All of the above data will be in the ITSM tool because humans have entered it into the system, or have configured discovery tools to catalog the service assets (such as infrastructure, software and endpoints). Monitoring dashboards from other ITOM tools that report performance or capacity provide additional context. At this level of AITSM, it is the humans — not the ITSM tool — that are making the necessary cognitive connections. The tool merely displays the data that already exists. At best, simple searches on keywords or categories may automatically display this additional data on the screen (often to the right side or bottom of the window).

**Context Benefits and Uses**

The context domain is a necessary and foundational aspect of AITSM, despite the comparatively simple technology used. The more advanced stages cannot function without data (context) to work with. As long as the data exists and the humans that are using it have sufficient expertise, then key ITSM capabilities can be performed. No specialist AI technology is required. These principles have been considered as best practice for many years.
Risks

This metadata is not automatically generated. Context in AITSM relies on the data being added to the ITSM tool and associated information systems or databases. The data is passive and requires well-trained and knowledgeable human agents to read and interpret it for any value to be derived. If humans do not look at the information, or do not understand it, then it cannot be leveraged.

AITSM: Advice in Detail

Advice in AITSM refers to analysis of data and metadata (context) to generate recommendations that accelerate human response in ITSM capabilities (see Figure 3).

Figure 3. AITSM Advice in Detail

The main elements of advice are:

- **Impact assessment.** For example, the consumer role is “member of the accounting department,” the business event is “financial year end” and the service used is the financial reporting system. The urgency is high because year-end reports cannot be late, and impact is high because there are regulatory penalties for failure to produce accurate year-end statements on time. The ITSM tool detects that these three conditions are true and advises the human service desk agent of the recommended priority. Technical approaches vary, but typically the ticket is updated with the suggested priority accompanied by color coding or percentages to indicate prediction accuracy strength.

- **Feasibility assessment.** Predictive analytics determines how likely a change is to succeed based on aspects such as the asset in question, risk profile and the previous performance of the team carrying out the change.

- **Natural language processing (NLP).** The tool processes and interprets free-text data to recognize and extract metadata. This capability enables ITSM tools to read a human conversation and identify elements such as people’s names, names of systems and services.
used, the problem statement, possible solutions, and which solution worked. This works even when a statement is phrased in several different styles. NLP enables tools to recognize that “I forgot my email password” is the same as “I don’t remember my login to get into Outlook.”

- **Translation.** I&O leaders operating support capabilities in multinational organizations look to language translation technology solutions so that they can serve business consumers in multiple countries when support staff that are fluent in a particular language are not available. The accuracy of automated translation services has only recently been considered reliable enough for technical support and remains uncommon in many enterprises.

- **Automated form completion.** The ITSM tool fills out a form (such as incident or request) based on natural language text and associated context. The input can be emails, live chat conversations or free-text boxes from an online form on a portal. Some ITSM tools enable service desk agents to make notes during a conversation with a business consumer requesting support, interpret them and then complete the rest of the form. This allows for a natural flowing conversation and diagnosis rather than a formal process like a questionnaire. This permits service desk agents to listen to business consumers rather than interrupt them or force them to repeat information as they work down the form field by field.

**Advice Benefits and Uses**

There are two overarching benefits provided by this domain of AITSM: speed and accuracy. AITSM advice helps human agents find answers and make cognitive connections faster, and “prefills” forms with this information. AITSM advice aids accuracy by highlighting information relevant to a situation that human agents might miss either because they are not aware of the related data or because they do not have time to find the related data. Tertiary benefits include reduction in staffing costs for multilanguage support when the machine-led translation is sufficient for requirements.

**Risks**

AITSM advice is dependent on AITSM context. Cognitive connections cannot be made without data to work with, and immature ITSM environments cannot produce the benefits that these features can offer. I&O leaders looking to AITSM to cut operating and staffing costs must still invest in the foundational aspects of ITSM, such as AITSM context, but also process and practice optimization. Simply put, even tools with the most advanced analytical and cognitive capabilities in AI, machine learning and NLP cannot optimize ITSM processes for you. They can only leverage well-organized practices that are already in place. Algorithmic predictions can be fallible. The human agents receiving the advice must own the decision and outcomes. This means they still require training and experience, and must decide when to accept or ignore the suggestions that are automatically generated.

**AITSM: Action in Detail**

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Action in AITSM automates the outcomes generated by context and advice and includes updating data sources so that those two foundational dimensions are subsequently improved (see Figure 4). This is effectively where the software takes over and the human agent is merely supervising the practice.

**Figure 4. AITSM Action in Detail**

### AITSM Action in Detail

**Action**
- Smart responses supporting chatbots and virtual support agents
- Generate and update a crowdsourced knowledge base
- Automated assignment based on topic, location and availability
- Automated escalation

Key elements of AITSM action include:

- **Smart responses.** Conversational platform and chatbot functions in virtual support agents leverage the AITSM action capabilities to provide dynamic support to business consumers. NLP is used to understand natural phrases and respond with language appropriate to the context of the engagement. The help and guidance is provided by the advice domain. This differs from low-level chatbots that merely act as a text interface to a knowledge base search and can only regurgitate prewritten knowledge articles. There is less reliance on static scripts.

- **Automatic knowledge management.** This is the generation and update of a crowdsourced knowledge base. Solutions, either tagged accordingly or identified using NLP (which recognizes problems, possible solutions and the winning solution), are used to create new knowledge articles. They are ingested by business consumers, support staff and the other action capabilities of AITSM to feed a positive loop of automated knowledge management. The earlier domains of AITSM can read from an existing knowledge base but cannot create or update it. The lack of a good quality knowledge base hampers all AI and chatbot facilitated tools. That makes this element of AITSM a promising capability.

- **Automated assignment.** IT service desks generally assign tickets and tasks related to incidents based on either CMDB alignment (e.g., problems with application X always go to the application X team), by following a prepared script or based on the experience and intuition of the IT service desk analyst. This aspect of AITSM combines the information from scripted processes and the CMDB (where available) with contextual data sources to automatically select the most
When I&O leaders talk about AI or automation in ITSM, they typically think of the technical functions of AITSM automation as a separate capability rather than something built upon the foundations of context and advice. I&O leaders that first optimize practices and underlying I&O maturity are prepared to take full advantage of the latest developments. Successful implementation of AITSM action components of ITSM can handle a significant proportion of business consumer issues and requests. IT support responses become faster. Self-service becomes more effective. Work that adds no value (waste) is avoided, thereby freeing up time and resources for activities that are more productive. A shift of work to automation can also enable staffing cost savings where the budget demands it. Some of the most interesting aspects of AITSM action feed back into the system by creating and updating knowledge. This drives improvements to the context, enhances advice and allows for further automated actions.

### Automated escalation

Sometimes, incidents and requests need to be brought to the attention of senior staff. This is most commonly triggered when the business consumer or customer demands an escalation. Hard-coded, time-triggered escalations derived from service-level targets are also commonly found features in ITSM tools. AITSM expands on this by leveraging the data in AITSM context and the relationships in AITSM advice to detect and predict breaches in service defined by SLA and operational-level agreement (OLA) targets or that a major incident is occurring. The tool will then update the priority of the ticket and automatically notify the relevant managers. This also covers cases where specific teams or business stakeholders need to be informed, such as security teams when an unauthorized intrusion is suspected.

### Action Benefits and Uses

When I&O leaders talk about AI or automation in ITSM, they typically think of the technical functions of AITSM automation as a separate capability rather than something built upon the foundations of context and advice. I&O leaders that first optimize practices and underlying I&O maturity are prepared to take full advantage of the latest developments. Successful implementation of AITSM action components of ITSM can handle a significant proportion of business consumer issues and requests. IT support responses become faster. Self-service becomes more effective. Work that adds no value (waste) is avoided, thereby freeing up time and resources for activities that are more productive. A shift of work to automation can also enable staffing cost savings where the budget demands it. Some of the most interesting aspects of AITSM action feed back into the system by creating and updating knowledge. This drives improvements to the context, enhances advice and allows for further automated actions.

### Risks

ITSM tools and complementary software and services offering AITSM action capabilities do not typically carry out the action themselves. They often require third-party products to carry out the activity. The ITSM tool might identify the trigger and action to be carried out, but will direct other tools to act via an interface (see the AITSM: Interface in Detail section). AITSM action capabilities are uncommon in the tools and products currently available on the market. While some vendors are early adopters and some of the aspects of this are possible, we have yet to speak with enough organizations who have implemented such tools for this more advanced use case to be confident that they work yet. I&O leaders wishing to benefit from the more ambitious aspects of AITSM must accept the costs of working with unproven technology, as well as the necessary maturity requirements. In this domain, more than the others, well-established processes and practices are
vital. These tools can only action defined activities and cannot take care of the planning and development. Attempting to implement action components, such as a virtual support agent, without well-defined processes will force you to manually script these systems during implementation, resulting in delays and unforeseen expenses. Such tools cannot adequately learn from inconsistent processes to generate workflows for reuse.

**AITSM: Interface in Detail**

Interface in AITSM identifies and defines tasks to automate, but not all of these tasks are carried out by an ITSM tool (see Figure 5). In many cases external tools that fulfill the activities are called upon.

**Figure 5. AITSM Interface in Detail**

Common interfaces with AITSM include:

- **Fulfillment within the ITSM tool.** Some actions are simple enough to handle within the ITSM tool itself. This will depend on the power and complexity of the product. More expensive tools are more likely to include these capabilities, but the majority link to external tools (from both the same vendor and third-party software). Actions likely to be carried out internally include smart responses in virtual support agents, updating the knowledge base or SACM (CMDB), ticket assignment and automated escalation.

- **Delivery automation via AIOps-enabled tools in other ITOM minisuites.** Information monitoring from physical, virtual and cloud infrastructure components are supplied by tools in the performance management ITOM minisuite. Direct control over the same components uses tools in the delivery automation ITOM minisuite. Your ITSM tool will rely on out-of-the-box connectors or interfaces leveraging a shared API standard to interface with these minisuites. Recent products in those categories provide AI- and algorithmic-driven infrastructure management tools on an AIOps platform (see Market Guide AIOps Platforms for detailed information on these tools).
Password/access management. A large volume of service desk contacts involve access requests and access issues, such as password resets and account expiry. ITSM tools record this work but the action takes place in other systems. This can be within the administrative tools directly (such as Active Directory) or using access management (AM) tools or identity governance and administration (IGA) tools (see Critical Capabilities for Access Management and Critical Capabilities for Identity Governance and Administration for more information).

Automated endpoint configuration and software deployment. Service requests requiring a change to configuration on business consumer assets are usually tracked in an ITSM tool, but the deployment is either carried out manually or — more recently — by unified endpoint management (UEM) tools. UEM tools comprise mobile device management (MDM) and modern management of traditional endpoints (PCs and Mac) plus integration with client management tools (CMTs) and processes (see Critical Capabilities for Unified Endpoint Management Tools for further details).

Interface Benefits and Uses

This domain of AITSM is more about practicality than advantage. ITSM tools cannot complete all of the fulfillment tasks and so other products are needed. The key factors are how well that interface works and if there is an advantage to keeping fulfillment in a separate toolset.

Gartner’s model of the ITSM tools market categorizes ITSM tools by both ITSM capabilities and ITOM integration. ITOM minisuite integration possibilities cover a range from no integration to API compatibility to platform-native capabilities, as shown in Figure 6 taken from the ITSM tool buyers guide, 6 Smart Steps for ITSM Tool Selection Success.

Figure 6. I&O Maturity Guides ITSM and ITOM Requirements for ITSM Tool Selection
Most ITSM tools — particularly those aimed at the midmarket — focus on APIs for the majority of their integration options; but ready-made, prefabricated plug-ins from integrated marketplaces are preferred.

ITOM vendors that sell advanced ITSM tools are able to provide some of these delivery automation technologies in additional products or sometimes within the ITSM tool itself. These tend to be higher-priced options, but I&O leaders may select these because they believe the support will be more integrated and they will avoid extra configuration costs in the longer term. This simplicity is not guaranteed. We have seen many cases over the years of support issues within a single platform. I&O leaders should choose external automation products when the separate tools offer better capabilities that they need and that are proven to be compatible with the ITSM tool they own. The Critical Capabilities for ITSM Tools includes an evaluation of the ITOM minisuite interface capabilities of several ITSM tools, as well their inherent AITSM capabilities.

Risks
There are two broad risks to mitigate: supportability of the interface and choosing automation even when it offers no improvement to the end result. Each additional software tool must be maintained and managed as each tool is updated or occasionally replaced. Ensure that vendors test for compatibility with your other software before approving updates. Retain API interface expertise either within your own organization or via a service contract to be able to deal with any changes that may be required.

It is assumed that automation is always faster or less expensive, but we see I&O leaders opting for automation solutions without first confirming that the outcome will be both. Optimization of processes to make them lean and agile can offer advantages without spending money on new tools. This will also set a good foundation for AITSM possibilities when technology becomes necessary to achieve further advantage.

Optimize ITSM Processes Before Buying New Tools

Eighty-nine percent of I&O organizations have not reached a state of I&O maturity advanced enough to fully utilize all the add-ons and extensions that they are purchasing or subscribing to. Even though many organizations do get value from some add-ons (such as discovery for CMDB), Gartner estimates that more than half of additional features purchased by basic and intermediate maturity organizations fail to be fully deployed. By tracking these factors alongside rising annual revenue from the ITSM tools part of the experience management market, Gartner has identified that this waste translates to an overspend in 2019 of $600 million rising to $750 million in 2023.  

I&O leaders focused on infrastructure, operations and cloud management that wish to leverage AITSM to enhance their ITSM tools and practices must take the following actions:

- Plan an AITSM roadmap by mapping current and desired practices against the four domains of AITSM starting with AITSM context. Do not ignore or attempt to skip over the foundational domains. Ensure that support staff close incidents with accurate diagnosis and resolution details rather than just typing “fixed.” This rich detail is fundamental context to enable AITSM advice and AITSM action.

- Begin to optimize ITSM practices for AITSM by identifying pockets of work that are standardized and repeatable enough to be eliminated or automated. Humans can carry out high-value cases to an extended degree (such as turning an error message diagnosis into a training opportunity). This leveraging will be made possible without increasing staff numbers because the low-value interactions are dealt with by automated processes, or — even better — never need to be managed (see 3 Simple Ways IT Service Desks Should Handle Incidents and Requests).

- Refer to the Critical Capabilities for ITSM Tools to review how popular ITSM tools currently suit AITSM capabilities. These AITSM advice and action capabilities are evolving. Speak with your ITSM tool provider to determine if its roadmap supports your forthcoming AITSM needs, and look to add on products if necessary. Prepare to invest in skills or partners with API skills to successfully interface these tools and minisuites together to leverage best-in-class capabilities.
Evidence

¹ The 2019 Gartner I&O Management Survey was conducted by online global omnibus 23 October 2019 through 7 November 2019 with 110 IT Leader Research Circle Members — a Gartner-managed panel.

Sixty-four I&O leaders qualified for and completed the I&O Management section intended to explore I&O leaders’ investment, expected value, and drivers of managing infrastructure, operations and cloud systems.

This section was designed for people managing a team within I&O and/or responsible for the strategic efforts of I&O. Respondents were primarily split between the U.S. and Western Europe.

The survey was developed collaboratively by Gartner analysts focused on I&O and Gartner's Primary Research team.

Note: The results of this study are representative of the respondent base and not necessarily the market as a whole.

² Gartner has tracked ITSM tool pricing from leading and popular ITSM tool vendors, including the percentage charged for add-ons in addition to the base ITSM tool, since 2017. The data used for this analysis was acquired from 18 leading ITSM tool vendors, including all of the providers that participated in the Critical Capabilities for IT Service Management Tools and Magic Quadrant for IT Service Management Tools.

Note: This analysis is based on ITSM tools and features only and does not cover any investment in tools and products outside of ITSM and ITOM (such as so-called enterprise service management aspects like HR, facilities and application platforms). Additional overspend on those areas is likely and probably extensive.

Recommended by the Author

2019 Strategic Roadmap for IT Service Management

When Will Al Virtual Support Agents Replace Your IT Service Desk?

6 Smart Steps for ITSM Tool Selection Success

Toolkit: Categorize IT Service Desk Interactions to Eliminate, Automate or Leverage

Use AIOps for a Data-Driven Approach to Improve Insights From IT Operations Monitoring Tools

Avoid the Unexpected Consequences of IT Change Management With AIOps and CMDB

IAM Leaders’ Guide to Identity Governance and Administration

Recommended For You

Market Guide for Integrated HR Service Management Solutions
Summary Translation: Broaden Application Performance Monitoring to Support Digital Business Transformation

Summary Translation + Localization: Top 10 Application Predictions Through 2025

Value Driver Scenario Workshops (ON Semiconductor)

Amplifier Risks (GraySpring*)

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