

Automated System Operation using AI

Recommending responses to failures and leveraging tacit knowledge are key

There are high hopes for increasing the efficiency of system operation using artificial intelligence (AI). However, AI will not take over all operations from the start. In order to develop AI wisely and lead to improvement in operations on the ground, a top priority should be given to discern operations where AI utilization will be highly effective and prepare an environment in which tacit knowledge can be shared and leveraged.

Rising hopes for AI use in system operation

Recently, the field of system operation faces the aging of experienced engineers and difficulty assigning young successors, and is thus experiencing a severe shortage of human resources. In order to maintain the quality of IT services and create value to contribute to business in this environment, it will be essential to standardize operation processes and increase the efficiency of operations.

Automation using tools is progressing in system monitoring and operation, but it is difficult to automate decision-making on initial responses to error messages and other tasks requiring knowledge and experience. Thus, there is great focus on leveraging AI in an effort to bring about a revolution in the field of system operation, which now relies on the experience of individual operators.

Challenges in system operation

- Amid severe shortage of human resources, standardization of operation processes and increased efficiency of operations are urgent tasks.
- Even if system monitoring and operations can be automated, decision-making cannot.

Tacit knowledge of skilled experts now makes up most of critical knowledge

Presently, even if businesses want to leverage AI, most do not know where to start or what AI can do for them.

AI does not provide great answers on its own; it gets smarter through repeated learning. This learning requires a sufficient quantity of suitable data. A challenge faced on the ground in system operation is that such data has not been accumulated and shared in a systematic manner.

For instance, there is likely a manual for response procedure as to whom to contact by what procedure when a certain error message is displayed. However, in many cases, know-how on dividing information to comprehend a failure event and procedure for confirming the situation exists only in the minds of experienced engineers.

As long as the most critical knowledge for system operation remains a black box of information possessed only by such individuals, we cannot determine which tasks can be automated, and what results can be achieved thereby, let alone achieve AI learning.

Why it is difficult to resolve these challenges

- Critical knowledge is held only by a few experts.
- Even if we want to leverage AI, we don't know where to start.

Starting point is to discern areas for improvement and arrange operational processes into clear procedural steps

Our first task is to organize existing operational processes into clear flows. We have some manuals on paper, but it must be noted that these are dated and no longer fit with reality, and in some cases experienced engineers modify the interpretation thereof as appropriate when carrying them out. It is crucial to divide up processes as minutely as possible and redefine flows in a manner that is accurate and aligns with reality.

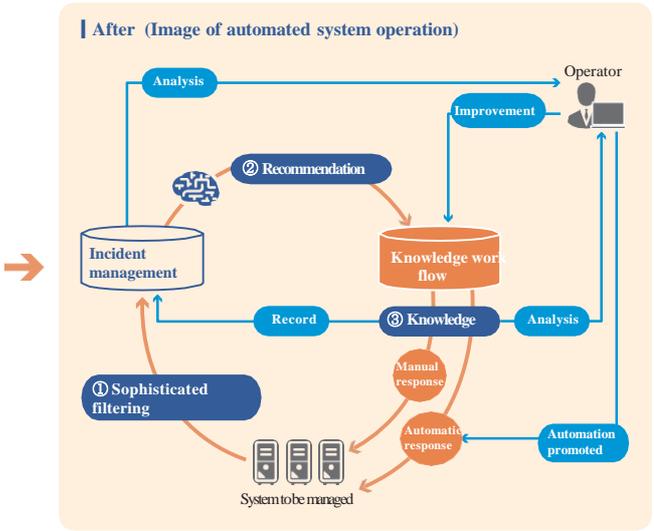
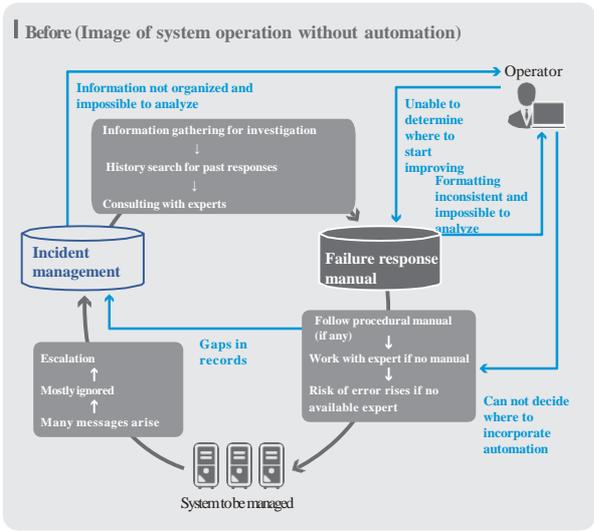
The next step is to look into automating where we can while taking risk into account. For instance, risk is low when mere confirmation is to be performed, but high in automation of processes requiring decision-making, like command input. Further, it is wise to prioritize automation of processes that presently require a heavy workload, i.e., those where improvement will lead to significant benefits, and verify the quantifiable benefits.

Next, where AI can truly shine is in responding to incidents requiring human decision-making, which cannot be addressed through automation, and other operations where there is no strict decision-making criteria. If AI learns “patterns” of what procedures humans performed in the past to resolve various messages and events issued by a system, it can score potentially useful procedures on the basis of the rate of correspondence to an event and recommend these to a human operator. This will allow even less-experienced human operators to respond using the knowledge of experts.

We should advance projects efficiently by utilizing tools to the greatest extent possible in our efforts. The autonomous operation management tool Senju/ASM can provide total support, from broad-scale operation process management to autonomous operation utilizing AI.

Keys for resolution

- Response to incidents requiring human decision is where AI can shine.
- Visualize the knowledge of experienced experts and connect it to broad-scale automation of operations



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