

Case for a **Large Construction Company**

Automation of Support Tickets Processing in ServiceNow_

95% automation of processing the financial, IT, and equipment rental requests

Industry: Construction **Location: Sweden** **Employees: 30,000+**

Cooperation period: 2021 – until present

About the Client

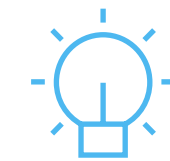
An international construction and project development company headquartered in Sweden. It operates in Europe, the Nordics, and the USA, covering such segments as building and civil construction, and residential and commercial property development.

Executive Summary



Goals

To fully automate the processing of support tickets in ServiceNow.



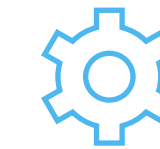
Solution

Developed and deployed ML models to accelerate ticket classification and assignment.



Benefits

100% automation of processing the financial, IT, and equipment rental requests.



Services delivered

- [AI/ML](#)
- [Intelligent Automation](#)
- [Custom Software Development](#)

Business Challenge

The Swedish construction company addressed Infopulse (a part of TietoEvry) to help it automate and speed up the processing of multiple support tickets in their ServiceNow system. At that moment, all the financial, IT, and equipment rental requests were manually classified and assigned to responsible people to resolve them.

The number of tickets could mount to 2,000 per month since the company has numerous departments and involved personnel. The variety of requests, their multiple classes, and

contextual differences also complicated their processing. The client's Help Desk team spent most of its business hours handling such requests, resulting in a longer mean time for ticket resolution.

Solution & Business Value

Infopulse developed and implemented a **hyperautomation solution** for the client to optimize the manual processing of tickets in ServiceNow. Namely, we deployed a series of Machine Learning (ML) models to fully automate the classification and assignment of financial, IT-related, and equipment rental requests. This resulted in a **6X reduction of effort** the HelpDesk team had spent earlier for their processing and faster overall ticket resolution.

Applying its extensive [AI expertise](#) and working closely with the client's subject matter experts, Infopulse initially achieved **82% ticket classification accuracy**. However, by establishing automated re-training ML models, the system reached **96% ticket classification accuracy in a year**. This ensured little-to-no human intervention and optimized the Help Desk team's workflow, redirecting their effort and time to more high-value tasks.

Here are some improvements the construction company received from implementing this ML-powered solution:

- **90%** reduction of administrative effort and ticket dispatching
- **15%** reduction of MTTR (Mean Time Taken to Resolve) for ServiceNow tickets
- **35%** increment of FCR (First Call Resolution) rate
- **20%** reduction in ticket bouncing
- Higher data quality
- Faster ticket resolution

Case Study in Detail





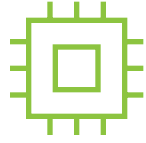


When the client first reached Infopulse as part of Tietoevry, their main goal was to reduce the Help Desk workload, automate routine support tasks, and improve the overall ticket resolution time. The Help Desk team spent all its effort and time, manually sorting out incoming ServiceNow tickets by 60 classes and dispatching them to an accountable employee. The faster the process of classification and dispatching goes, the faster the request is resolved, and the more optimized business operations are.

Infopulse suggested applying machine learning for ServiceNow ticket classification, which would result in **96% ticket classification accuracy** due to further automated re-training of the machine learning model.

After the developed ML model for financial requests showed its high accuracy and efficiency in production, Infopulse proceeded to automate IT and equipment rental requests. However, because of contextual differences, the other two ML models were also custom-built from scratch, using other approaches to their development and training.



What Infopulse did to serve the solution:

 <p>Analyzed historical data of ServiceNow tickets and studied their context leveraging the domain expertise of the client's subject matter experts.</p>	 <p>Created and trained ML models for automated ticket classification using ensemble learning model, logistic regression techniques, and such technologies as Google BERT and LightGBM.</p>	 <p>Provided a rule-based classification of ServiceNow support tickets for over 60 classes within 3 categories.</p>
 <p>Automated dispatching of ServiceNow support tickets to specific assignment groups.</p>	 <p>Automated daily training of the ML models with new data.</p>	 <p>Developed a simple web user interface using Azure services for the Help Desk to review and correct the classification results if manual intervention was needed.</p>
 <p>Integrated ServiceNow API to enable reading and updating of tickets by the Help Desk via a single web dashboard.</p>		

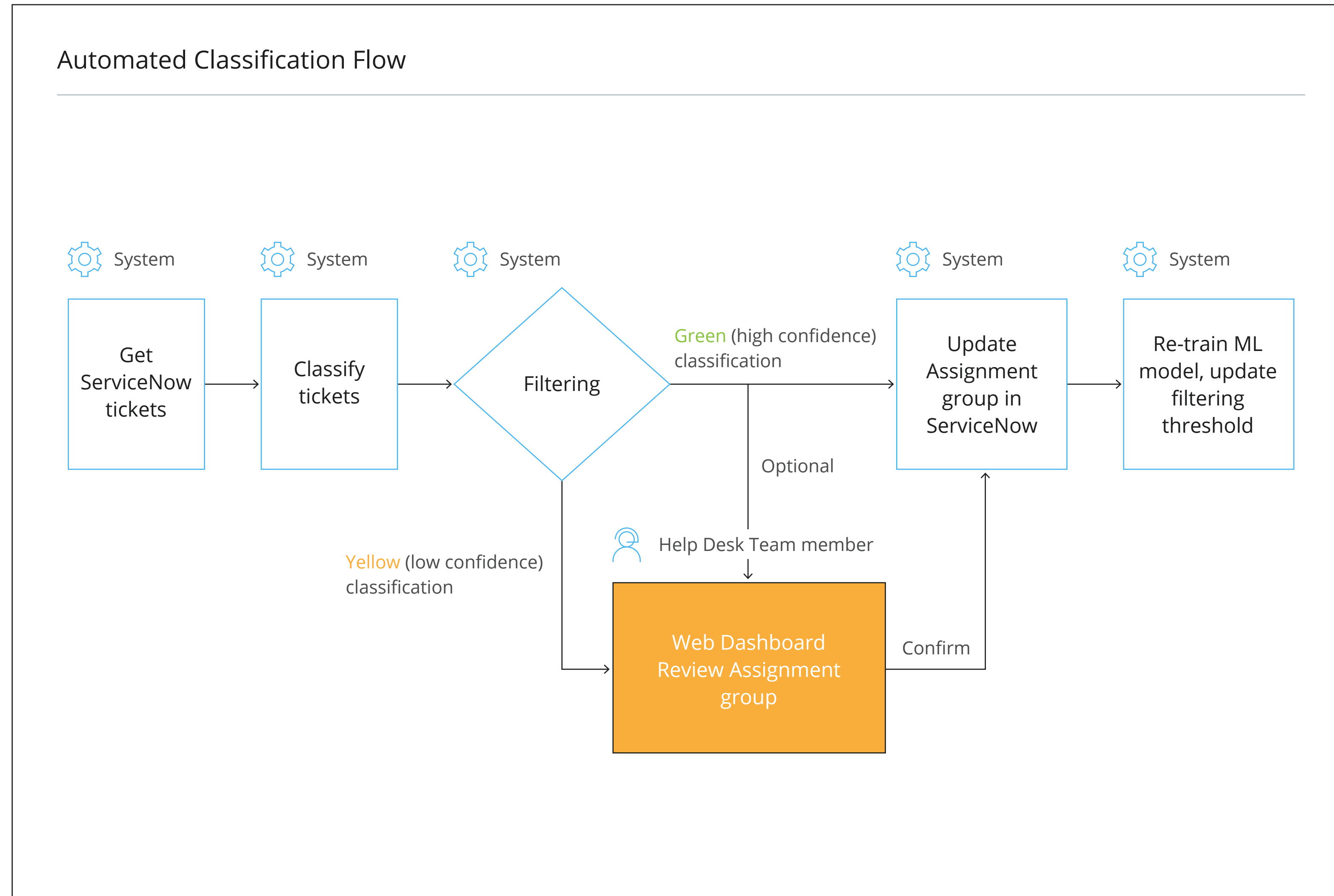
Azure integration

Since the client already had the subscription for Azure Cloud Services, Infopulse, as Azure Expert MSP, cost-effectively integrated Azure capabilities:

- When training a model, we used Azure VMs
- Azure MS SQL as a database for tickets training
- Storage Account for storing the files of the ML model
- Azure Function for prediction scheduling
- Azure Application Insights for monitoring the deployed ML model in production
- Azure Front-end and Back-end App Service for building a web user interface
- Azure Active Directory for user authentication.



How the classification ML model works:



1. The solution gets new tickets (where the Assignment group is empty) from ServiceNow on schedule every minute.
2. Next, it classifies the received tickets using the ML model and defines the Assignment group candidate for each ticket.
3. Filters out tickets with high confidence of classification from tickets with low confidence of classification.
4. Updates the Assignment group in ServiceNow for classified tickets with high confidence.
5. The Help Desk team is able to review tickets with low confidence in real-time on the AI Helpdesk web user interface.
6. All classified tickets are available in Web UI with filtering by date and confidence score (confident/not confident).

Technologies & Tools



ServiceNow



Python3



PyTorch



Google BERT



LightGBM



Logistic regression



Kubernetes



Docker

Azure Cloud Services:



Azure Function



Storage Account



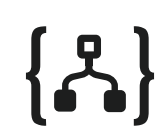
Container registry



App Insights, Key Vault



Bastion



Logic App



SQL Server



GPU VMs

