

Measuring the IT carbon footprint for one of Italy's largest financial institutions, Intesa Sanpaolo

Client profile

Intesa Sanpaolo is an Italian international banking group with more than 3,300 branches serving 13.6 million customers. The bank has a strong commitment to sustainability, adhering to all of the primary United Nations sustainability initiatives for the financial sector. Intesa Sanpaolo has committed to achieving net-zero by 2050 supporting companies' transition plans, offering more sustainable investment products, promoting inclusion and reducing social inequalities.

Why NTT DATA

A client conversation about sustainability led to the development of a proof of concept that proved our unique capabilities and ability to provide such services. Using our knowledge of sustainability and emissions reporting, we helped our client measure the emissions across their IT department, focusing on software applications at the server level. This extended to an analysis of software embedded applications within hardware. Our team's expertise and solutions lay the foundations for Intesa Sanpaolo to identify opportunities for optimization across its IT landscape.



Our longstanding relationship with Intesa Sanpaolo and our familiarity with their IT systems were key to the success of this sustainable IT project. We're proud to have helped them advance on their path to net-zero emissions and to support their on-going commitment to sustainability.

Daniele Carlo Vinci, Sustainability & Green Tech Consultant, NTT DATA - Italy

Business need

- Measure energy consumption and carbon emissions of IT systems
- Quantify emissions generated across IT in total and by application
- Reduce the corporate IT carbon footprint
- Get ahead of international rules and requirements
- Identify opportunities for IT optimization and cost reductions

Solution

- Analyzed and improved the energy consumption of IT applications
- Calculated the environmental footprint of software from memory to storage
- Identified areas for improvement with targeted solutions
- Continuous monitoring of assets to improve performance
- Single-view dashboard providing data on carbon emissions
- Increased support for the implementation of IT strategy to optimize IT energy consumption and reduce emissions

Outcomes

- Enabled the bank to observe the efficiency of its software and hardware for continual improvement
- Identified potential savings of up to 30% through a reduction in carbon emissions
- Continuous monitoring for more than 100 applications
- Developed ISO standard for development of sustainable software
- Improved understanding of sustainability among the bank's internal IT team

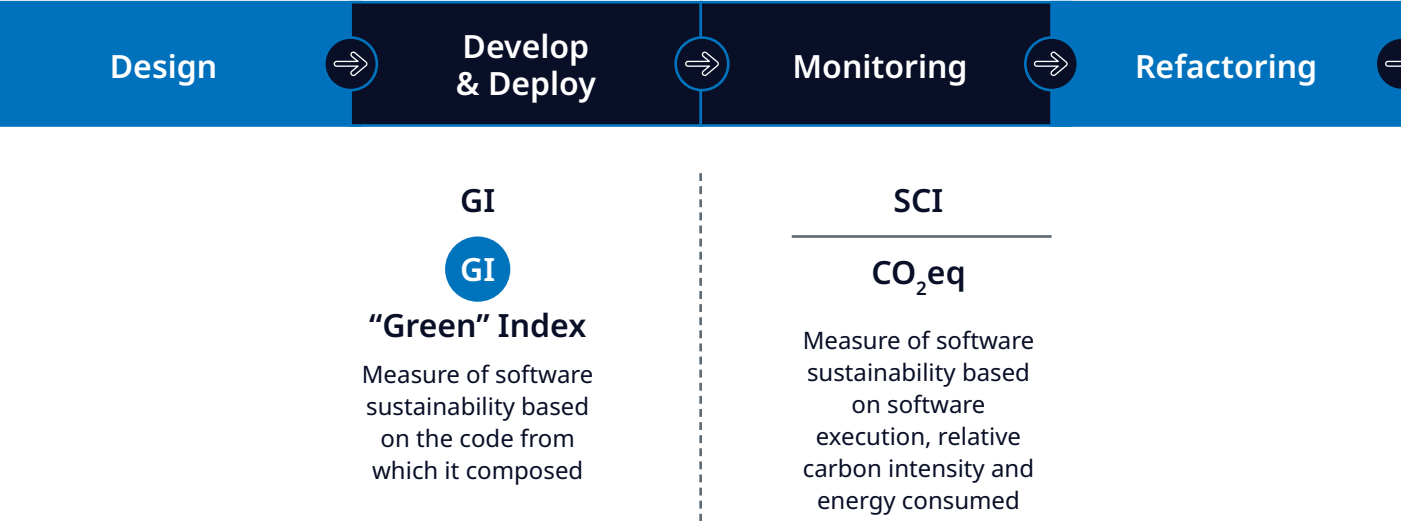
Business need

Reducing the carbon footprint of IT by monitoring emissions and creating efficiencies

Intesa Sanpaolo is one of the largest banking institutions in Italy, serving more than 13 million customers. To support its large customer base, the bank operates and manages a large IT environment comprising of servers, storage and software.

Intesa Sanpaolo has a strong sustainability ethos and has committed to achieving carbon neutrality across its investment portfolio, asset management and insurance by 2050.

The bank wanted to align the goals of their IT function with the overall business strategy and identify opportunities to contribute toward achieving the corporation’s environmental, social and governance (ESG) targets. This required a much deeper understanding of the impact different IT systems had on the environment. This would allow them to develop measures to improve efficiency and reduce energy consumption while still delivering reliable business operations.



Source: Measuring Energy Consumption of Software - Use Case | GSF (greensoftware.foundation)

Solution

Emissions tracking tool that measures levels of carbon emitted by IT applications

NTT DATA was tasked with supporting Intesa Sanpaolo in developing a proprietary monitoring tool that could track and monitor IT energy use and its carbon footprint. Given the complexity of the existing IT landscape, it was important that our team of experts could work in partnership with the banks’ IT developers. They had the necessary skills and knowledge to navigate the system while helping to ensure the emissions calculations we made were in line with the bank’s specifications.

We started by focusing on creating a tool that could monitor the energy consumption and carbon emissions of its IT systems. We wanted to identify the most carbon-intensive applications so we could prioritize the applications requiring immediate optimization. Working in collaboration with the Green Software Foundation (GSF) we were able to create a measure of software carbon intensity according to the GSF specification. We wanted to be ISO-compliant by design, so we developed the first ever ISO standard in sustainable software, which is now being used by the GSF.

The tool we created offers two primary performance measures:

- CO₂eq – a measure of greenhouse gasses emitted as a carbon dioxide equivalent to capture the total carbon footprint
- Software Carbon Intensity (SCI) for emission rates – measures the amount of carbon emissions produced by unit so that we can monitor the efficiency of the software and identify areas for improvement

Once created, we rolled out the tool across the entire IT infrastructure. We used the tool to track the CO₂ emissions produced by calculating the total amount of energy consumed by the server and multiplying that by the amount of CO₂ emitted to produce the energy. Since the energy consumption of a server can be further broken down, NTT DATA implemented a tool that measured CO₂ levels based on resource use.

Using all the available insights, we shared the data in real time through a dashboard called the “carbon calculator”. This shows the emissions data according to time of day and users can apply filters to further refine the data to focus on specific services, offices, applications and environments. By showing real-time values of carbon emissions in kilograms, users can easily track and monitor emissions by resource use. This allows for targeted optimization.

Our final objective was to introduce sustainability into the software development phase. During the project we introduced the Green Index. This provides a method for measuring the sustainability of computer code, helping to ensure software products are environmentally friendly and efficient. The Green Index indicator is used at Intesa Sanpaolo to measure how sustainable internal developers (as well as partners and suppliers) are in writing code. The score is based on a static coding analysis performed using SonarQube. The rules used to calculate the Green Index are derived from standards set by the Automated Source Code Performance Efficiency Measure (ASCPem™) provided by the Consortium for Information and Software Quality (CISQ).

Outcomes

Reducing the IT carbon footprint

With their new tool, Intesa Sanpaolo can now accurately measure and monitor the energy consumption and carbon emissions of its IT systems. This helps them to reduce overall emissions, achieve its environmental targets and contribute to achieving net-zero emissions. The project has helped to demonstrate the strength of the bank's commitment to sustainability and responsible IT practices. This, in turn, has improved customer loyalty, stakeholder engagement and created an overall positive perception of the brand.

As a further benefit, the carbon calculator continues to monitor the efficiency of the bank's software and hardware, enabling continuous improvements. This ensures maximum efficiency gains and optimal performance of its IT systems. A benefit of these efficiencies has been a reduction in costs through reduced energy consumption for electricity and cooling.

The collaboration between our two teams has helped to advance the process of setting standards for software sustainability. We have been able to identify and adopt best practices and are sharing these practices with others in the industry.

As a further recognition of our success, our solution won the NTT DATA Sustainability Award in 2024.

