

# Financial Systems

## 1 Use of CMOS Annealing for Portfolio Optimization

Hitachi has been working with Sompo Japan Insurance Inc. on a collaborative creation project aimed at reinsurance portfolio optimization. Whereas the computation time constraints of existing technology have restricted such applications to geographically limited partial optimization, more comprehensive optimization covering a wider geographical region has the potential to deliver significant benefits.

A demonstration project has been underway since January 2019 aimed at overcoming these constraints through the use of Hitachi's proprietary technology for solving large optimization problems at high speed by means of complementary metal-oxide semiconductor (CMOS) annealing.

The customer's choice of Hitachi as a collaborative creation partner was prompted by the technological superiority of its solution at handling large problems compared to that of similar technologies from other companies (specifically, its ability to work with a world-leading number of spins\*) and its approach of having its engineers study the customer's business practices. The demonstration project demonstrated the technology's potential for

use in decision-making by the customer, achieving a more than 100-fold performance improvement over their conventional method. This means that computations can be completed in less than a week that would have taken around three years using existing technology.

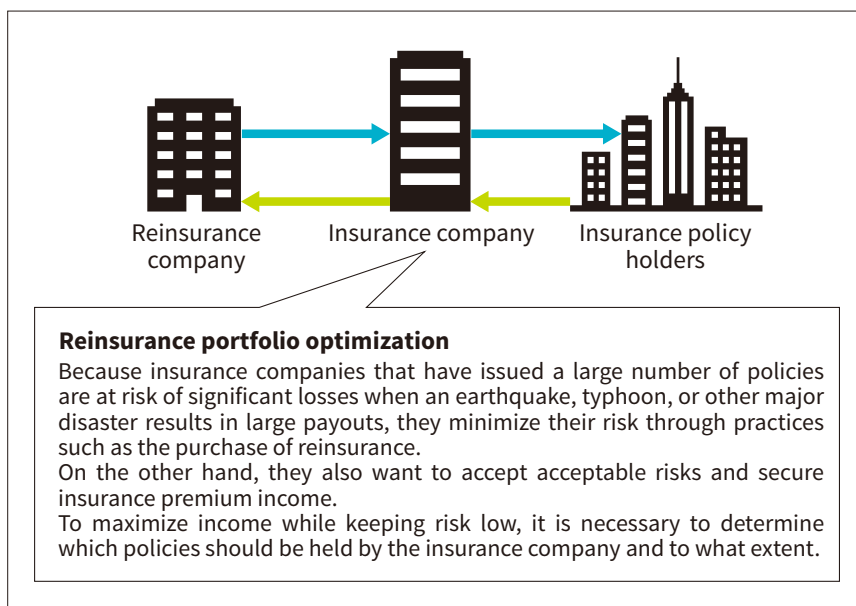
The project also provided preparation time for the two companies, with the work set to continue based on plans for installation during FY2021. Hitachi also launched a workshift optimization service in October 2019 that utilizes the same technology.

\* As of October 2020, based on research by Hitachi, Ltd.

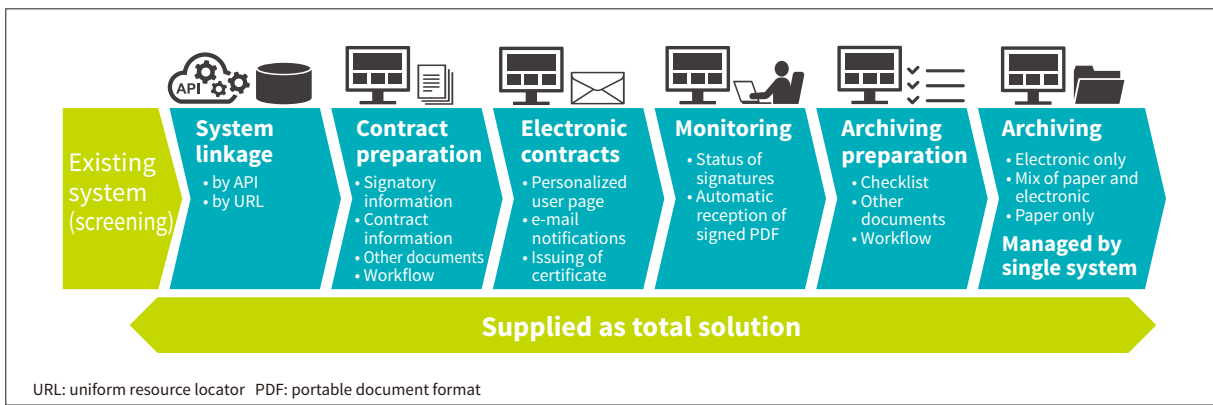
## 2 Electronic Contracts for Loan Processing and Expanded Web Channel Suited to the New Normal

An electronic contract solution for financial institutions that went on sale in December 2020 provides an end-to-end web-based service for automating the procedures undertaken by financial institutions and their customers when setting up contracts such as loans that require identification equivalent to stamping with a personal seal. This extends from the preliminary steps of preparing contract documents and issuing digital certificates to finalization of the contract and the subsequent handling of loan documents.

The service is provided as a total solution encompassing not only an electronic signature function for using digital certificates in place of certificates of seal-impression, but also the various administrative procedures associated with the setting up of contracts. As such, it optimizes the administrative processes needed when adopting electronic contracts, smoothing the transition to use of electronic contracts by



1 Reinsurance portfolio



**2** Overview of electronic contract solution for financial institutions

eliminating any additional administrative workload due to extra steps that this requires.

The solution also supports subsequent contract administration through the centralized management of contracts that include a mix of electronic and paper documents.

Linkage with legacy systems and certification agencies (a third-party service) is also facilitated by the provision of an application programming interface (API) for this purpose.

In the future, Hitachi intends to further build on its services for paperless, non-contact transactions designed to meet the needs of the new normal by means of a portal site service that augments the new web channels to customers opened up by electronic contracts.

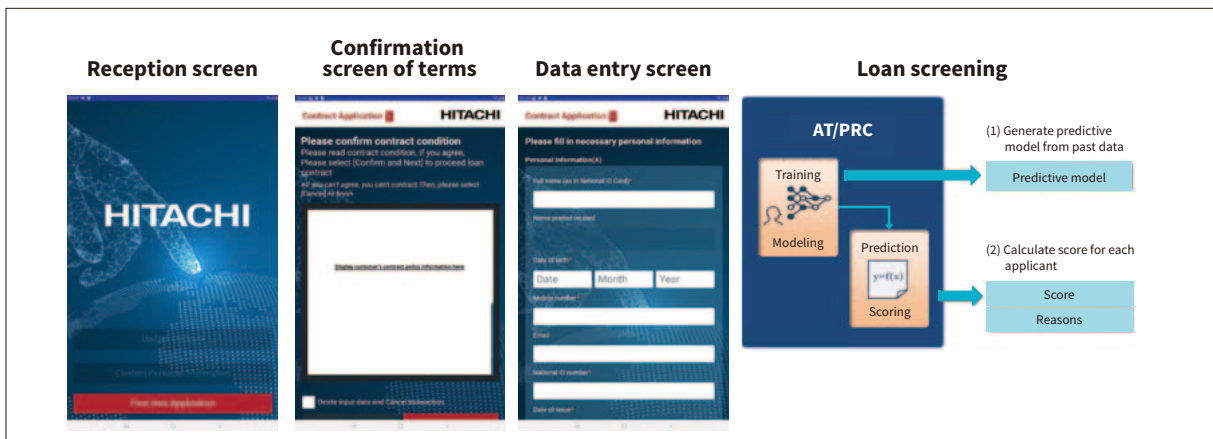
with VietCredit Finance Joint Stock Company, a local financial institution, on a solution that utilizes Hitachi know-how to provide a seamless workflow covering the steps from the processing of incoming loan applications to their screening by artificial intelligence (AI).

Specifically, the solution is intended to improve the efficiency of financial institution operations and increase the number of loans they process by integrating Hitachi AI Technology/Prediction of Rare Cases (AT/PRC) with the processing of incoming loan applications. This is done using a communication tool that directly links applicants to the operations center by means of a tablet computer. Pilot tests conducted for both the processing of incoming applications and AI screening received positive feedback.

Plans for the future involve expanding the scope of accurate loan processing and AI screening. In the case of incoming application processing, this includes the provision of additional functions on top of this seamless linking of work steps, such as an electronic know your customer (eKYC) function for online identity verification. Similarly, the intention for AI screening is to expand the range of available options to include things like generating credit scores for sole proprietors as well as individuals.

**3** Seamless Integration of AI-based Loan Screening with Processing of Applications by Tablet

Vietnam in recent years has seen a high level of loan applications, with a rapid expansion in the size of the market. Accordingly, Hitachi has been working in partnership



**3** Image of loan application screens and AI scoring