Nihon Housing - Japan

Benefits of the low-code development platform after using it during 8 years

E-book

GeneXus™

Evolving mission critical systems as result of monthly releases of 10 to 20 functions every time – Benefits of the low-code development platform after using it during 8 years

How to respond to a large number of business requests requiring additional functions, where priorities change day to day in a short period.

Nihon Housing is a company founded in the business of management of condominiums, buildings and all related services for the maintenance of real property. More than 8 years ago, this company rebuilt its core system using a low-code development platform. Since then, during these 8 years, this core system continues evolving day by day, with repeated improvements and function additions. We asked the company about the benefits of using the low-code development platform.

Nihon Housing is a company founded in 1958 engaged has branch offices throughout all Japan and overseas. As of the end of March 2020, one of its main business of Condominium Management, reached the record of managing 9,750 buildings (459,551 apartment units), positioning the company among the most important property management service company in Japan.

In 2012, the company built its new core system **“Hou-Net”** with the purpose of integrating and enhancing the group of in-house systems that were used until then, for condominium management and sales management.

The development platform adopted for this project was the low-code development environment “GeneXus” of an Uruguayan company called GeneXus.

Since then, during these eight years, the company continuously enhanced usability, modified functions in line with the improvements in business flows, received system support in response of the changes introduced due to the frequent revision and amendments of laws and regulations, and handles version upgrades for OS and Web browsers. Such evolution continues even now.

For mission critical systems, eight years can be said to be quite a long period in the rapidly changing IT world. For example, those systems that were built by old infrastructure, platforms and development methods, are treated as “legacy systems” where a complete replacement is usually considered.

Mr. Hiroyuki Sano of Nihon Housing

«We are working for a long time on our Hou-Net system, which has both B2C (Business to Consumer) and B2B (Business to Business) functions, to keep operating properly, it is very important to adapt it to environment changes of Web browsers and OS. The surrounding environments are changing continuously and we have to maintain the features of our Hou-Net working properly. While there have been a series of such changes over the last eight years, one of the reasons we are managing to continue using and maintaining it without major issues is that we adopted GeneXus.»

Mr. Hiroyuki Sano. System Planning Manager of Nihon Housing.

Hou-Net continues evolving with repeated monthly releases of 10 to 20 functions (repair requests)

GeneXus, a low-code development platform, is characterized by the automatic generation of business logic source code in accordance with the implementation environment, database tables, user interface (screen), from the business specifications such as elements and procedures necessary for users to proceed with the operations.

One of the advantages is that the system can be developed in a short period of time. In addition, GeneXus has a number of useful functions that performs its own value during the maintenance and development phase.

For example, in August 2017, when the infrastructure was renewed for the Web browser version upgrade of Internet Explorer 8 to 11, which is the environment used by Hou-Net, we had to face with about 800 problems that occurred at that time. Then, it is said that the new features of GeneXus, which was upgraded during the infrastructure renewal, performed its power. For example, typically if you find a problem by user check, you shall fix it, and then you have to verify. You can use GeneXus to find out the places where has the same structure and fix them in the same way. Suppose there are 30 places with the same structure, then with only one user verification shall be enough. Such maintainability significantly reduces the cost of verification.

To fix such quantity of 800 problems, the company assigned three persons for 10 months. However, they managed to repair them in about half a year. The remaining 3 months were assigned for repairing the existing functions and adding small things. At present, Hou-Net releases 10 to 20 functions per month, including the small ones, and per year, more than 50 releases of repairs and new functions are completed. As for documentation, only the business flow and the required function document are delivered, and it is said that maintenance development is conducted following the agile method.

Mr. Sano adds: “To decide the specifications, we have coordination meetings with the users and talk about the priority of the implementation functions and main things are written on whiteboards etc. and for the detailed specifications, we advance adding functions while checking the prototype created with GeneXus. Currently, we are working in a “new normal” style (due to Covid restriction) with the end users, both parties looking at the screen through Web meetings to determine the specifications.”

Mockups and design documents are not so important when prototyping with GeneXus since the main thing is working on screens similar to the production environment. The developer can check the screen while showing it to the user, so it is easy and agile to add the functions in remote development, particularly during the Covid lifestyle. For high-priority needs, it is possible to make an early release when reaching up near 70% of the functions and from there step up to the complete form.

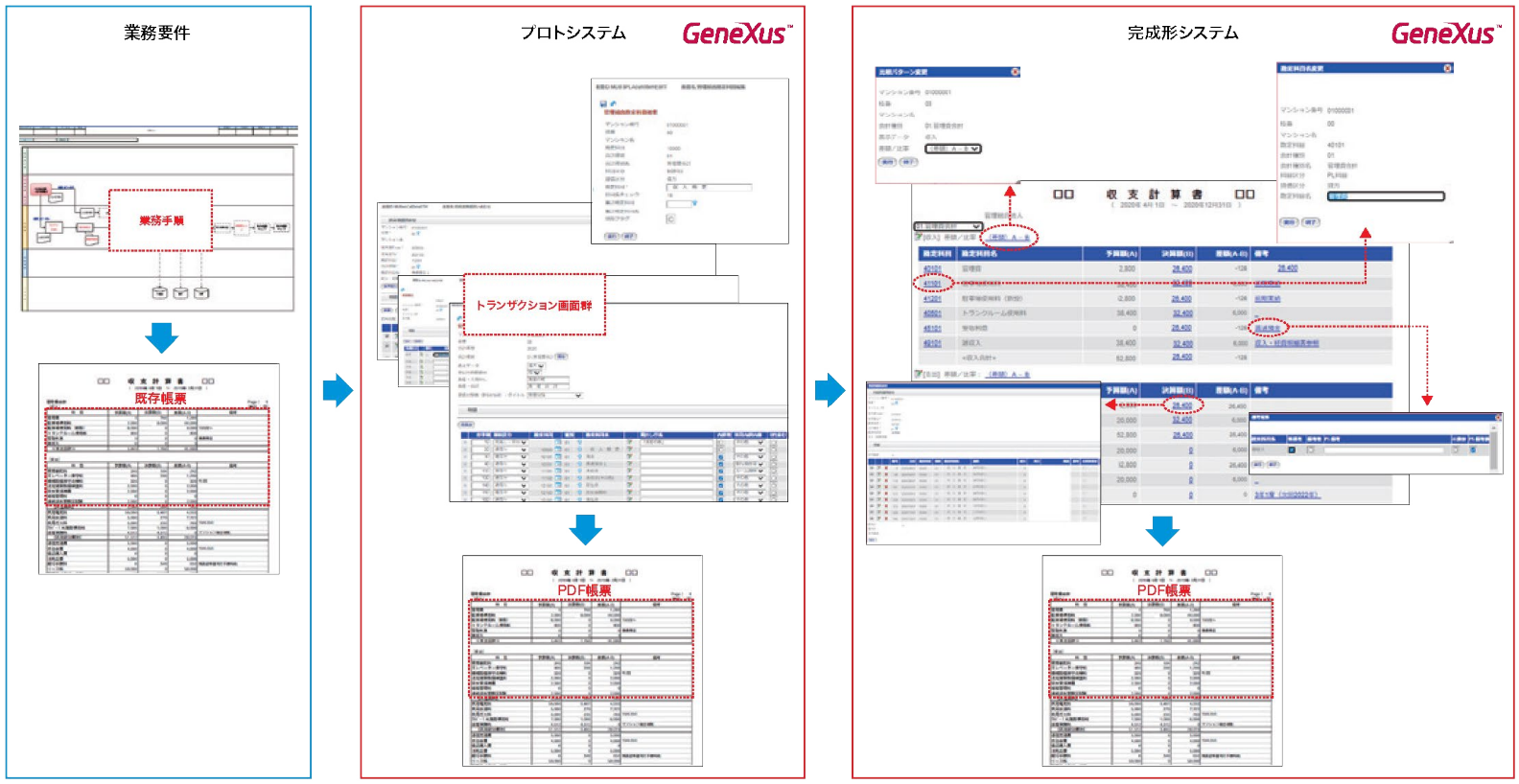

Diagram: Prototypes are mainly screens that actually move.

On the other hand, as low-code development platform, GeneXus functions are especially effective when priorities of users change one after another in addition to requiring large number of business logics. This is because GeneXus also supports database generation and reorganization, and even if rules are added without considering the execution order, GeneXus can make inferences and generate the application in correct way considering the order of execution.

GeneXus is also capable of analyzing the effects of function additions. There is no need to introduce a separate tool for impact analysis. For example, when adding an item in one place, in general you have to analyze the impact and estimate the man-hours before making such change, and then start considering it. In the case of GeneXus, you can just add the items and build, check the existing functions in the list if they are affected by the addition, and then analyze the impact to see if the existing functions work as usual.

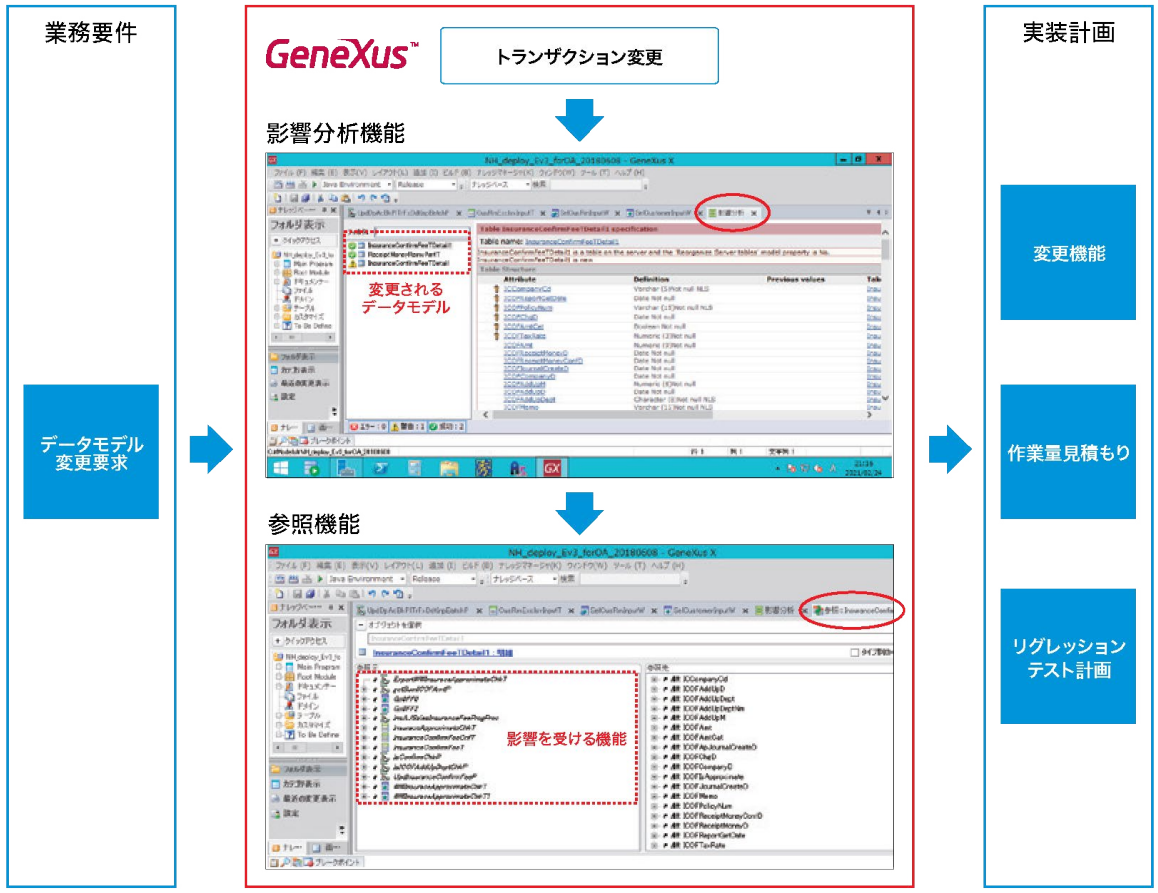

Diagram: Examples of Impact Analysis

This is the reason how system degradation is prevented and high quality can be maintained. There is no possibility for coding bugs to enter, and even if the executor is changed, the project shall advance without problems. For example, a GeneXus project started in April 2020, and due to Covid-19 restriction, the assigned members were unable to receive face-to-face instructions. In spite of that, they learned by themselves and in June of the same year they succeeded in developing remotely. Therefore, the advantage is, that it is easy to learn and use, reduces the cost of selecting human resources and training. GeneXus is an attractive tool for user companies that promote in-house system production.

Version management is possible with the product called “GeneXus Server”. If a problem occurs as result of a change made in a process, it is possible to identify which version is causing the impact

looking at the repair history, thence additions or changes to the process can be proposed. For example, even if there is a change in the release target just before the release, it is possible to flexibly change the release module.

Using GeneXus which has such functions, Hou-Net has strengthened its functions significantly, improving the service content to customers and enhancing work efficiency during the last eight years.

There are three clear examples for the activities of Nihon Housing: One of the improvements consists in the implementation of "e-approval service" for Condominium Management Agents that are in charge of the apartment units management, to approve the electronic bank deposits and withdrawals from the bank accounts instead of exchanging documents in physical paper with stamps or signature by hand. In addition, GeneXus was also used for the system to streamline the accounting operations by collecting the bank deposit and withdrawal data from bank accounts through network and converting into printable forms, reducing time and saving efforts of manual bookkeeping, copying and control tasks. What is more, GeneXus was used to develop a system for issuing electronic invoices for payment among partner companies, eliminating the need of sending paper invoices and visual confirmation.

Mr. Yoshikane Mori of Nihon Housing explains: In the past, the employees in charge checked the invoice papers reading one by one with the transaction records sent from other companies. The number of account statements to check is near 40,000, which required time and high labor costs every month. With the purpose of improving such situation, we have simplified the approval process for payment, the approved cases were batch processed at midnight, and we built a mechanism in GeneXus to automatically send the payment notices to each company. Depending on the process, it may take a long time to complete the whole operation, but now, it is possible to complete the monthly settlement within 5 business days from the closing date.

Mr. Yoshikane Mori of Nihon Housing

How GeneXus rescued the Hou-Net development project in difficulties

Now Hou-Net continues evolving under the agile method, but before introducing GeneXus, the system development was planned under the so-called waterfall model. And eight years ago, when the new core system was about to be released, many problems remained unsolved.

Mr. Sano remembers: “Our Hou-Net was conceived to be an integration core system for the whole company at wide scale, but the development work was very difficult from the very beginning. One of the reasons was that the business operations we are dealing, branch out to a wide variety of tasks and our model was not appropriate.” Since the main business is condominium management, the company assigns a wide variety of managing tasks to the administration committee of each condominium and then, they need to process all data on the system. Moreover, the way the old system has changed was another problem for integration.

Mr. Katsuhiko Ota, Chief Manager of System Planning Department of Nihon Housing says: “In the past, we have promoted company-wide systemization by deploying the condominium management system created at the head office introducing such system to each of the branches in horizontal manner. Then, each branch and small offices were adding functions according to their own requirements. What occurred was that individualization has advanced to the extent that when a staff was transferred from one office to the other, did not know how to use it when the destination changed.”

Mr. Katsuhiko Ota of Nihon Housing

Initially, Hou-Net system was planned to be developed under the typical waterfall model. After spending about 10 months organizing complicated work contents and defining requirements and checking the contents, they concluded that the time and cost to execute all the functions greatly exceeded the original plan.

Mr. Sano comments: “When I was very worried how to advance with the project, a development partner introduced us GeneXus”.

Nihon Housing decided to change the development method of Hou-Net from the originally planned waterfall to the agile method in line with the introduction of GeneXus development. Based on the requirements previously stated, a prototype working with GeneXus was created, and developments advanced by repeated reviews and corrections in a short period. GeneXus contributed significantly not only for maintenance development but also for the new developments.

Mr. Sano continues remembering: “After all this process, by the end of March 2012, about 16 months after the design was initiated, we were able to safely release Hou-Net to the production environment.”

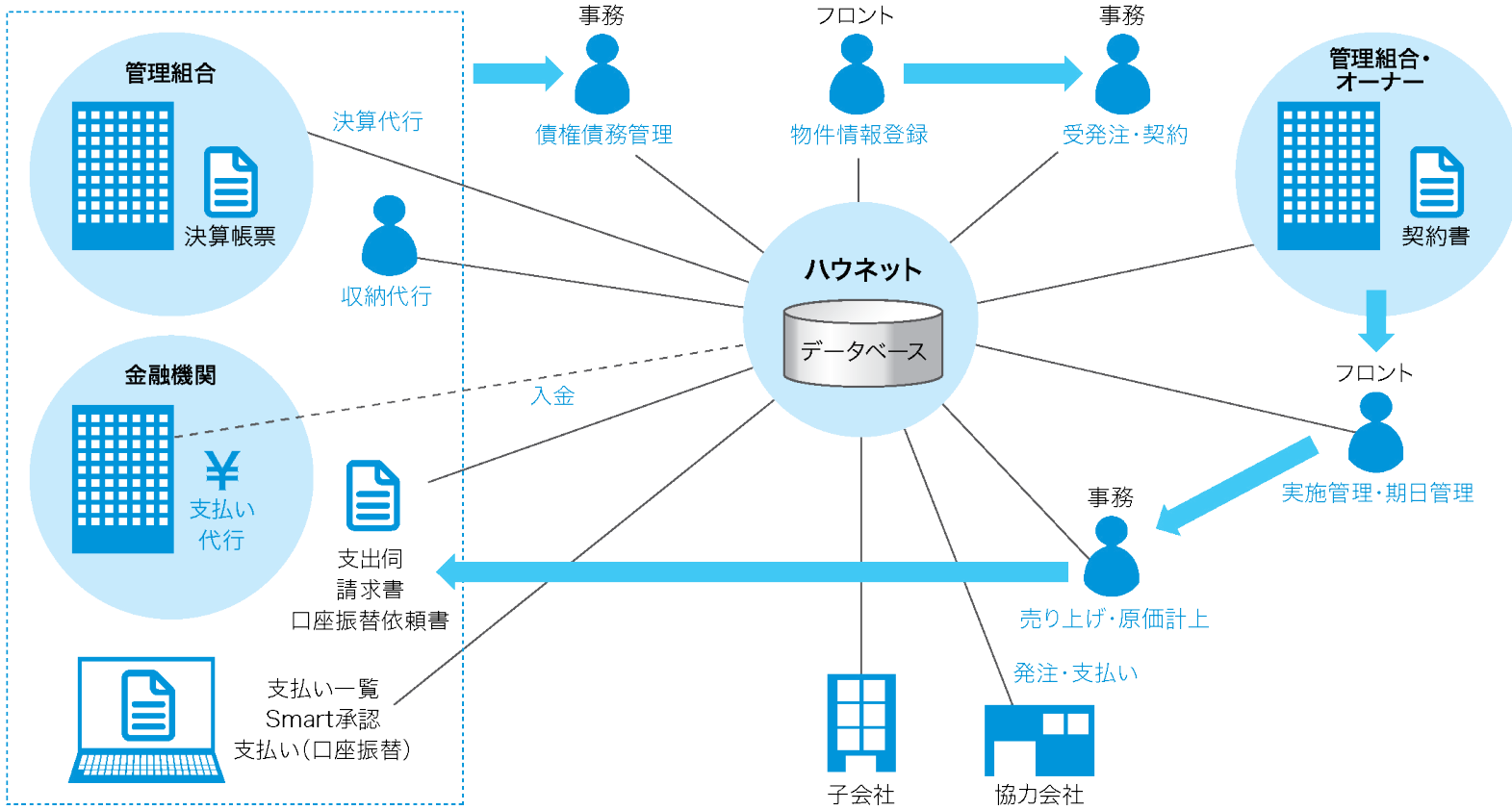

Diagram: System overview of Hou-Net

Not only enhancing what we have now, but looking forward to applying in new areas

Hou-Net today, since it was released eight years ago, is continuously improving and enhancing as an indispensable system for the whole company's business operation. The role and importance of Hou-Net shall continue increasing in the future.

Nihon Housing expects that Hou-Net continues evolving using GeneXus which is the development platform, and also is eager to receive comprehensive support from the IT side in view of the future business improvements and realization of new working styles.

Mr. Sano concludes: "We have the mission to accelerate business efficiency and support the new working styles through the introduction of new technologies as in the case of using mobile device support for business systems and Artificial Intelligence. While working on the construction and operation of our Hou-Net system, we have realized the advantages of GeneXus, such as its speed of development and ease of improvement."

> "I think there are many areas where GeneXus can demonstrate its power not only on the evolution of existing things, but also in new areas that will come from now on."

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