Korea Land and Housing applies data insight to urban development challenges

KOREA LAND & HOUSING CORPORATION

Korea Land and Housing (LH) Corporation is a state-owned organization that supports urban development and services, including smart city expansion. To apply insights from the data it collects to solve challenges like traffic congestion and bus service times, LH created COMPAS. Built on Red Hat OpenShift running in a managed public cloud, the platform performs robust data analysis to help LH and local governments collaboratively address citizen needs. In its first two years of operation, more than ten local governments have used COMPAS, and Korea LH has achieved reductions in both infrastructure operating costs and management time.

Software

Red Hat® OpenShift®

Partner

Gabia

Jinju, Republic of Korea

Headquarters

Government

9,500 employees

Benefits

▸ Increased local government engagement with central platform for open data access

▸ Simplified platform management with standardized runtimes and easier updates

▸ Reduced infrastructure costs by adopting a managed public cloud environment

"With Red Hat OpenShift, we can scale COMPAS to provide more solutions to Korea's local governments, as well as the raw collected data. Solutions are stored on the platform for easy access and sharing with other municipalities experiencing similar problems. It's a very collaborative approach that helps us solve social challenges across the country more efficiently."

Hyung Gil Lee
Deputy Head, Korea Land and Housing Corporation (LH)

Applying data insights to citizen services

Operating under the Republic of Korea's Ministry of Land, Infrastructure, and Transport (MOLIT), Korea Land and Housing (LH) Corporation provides IT services and cloud technology to support housing, land, and city development, including smart city development and renewable energy.

In 2019, LH sought to create a new platform, COMPAS, to apply insights from the data it collects to its work, including an analysis of traffic, bus service timing, and the housing market. With a flexible, public cloud-based infrastructure, COMPAS would collect, analyze, and visualize government data. The results could then be shared with local governments for policy planning and LH's smart city platform developers to help improve citizen services.

"We needed to create a stable, standardized environment for development that could also meet strict government compliance and risk requirements," said Hyung Gil Lee, Deputy Head, Korea Land and Housing Corporation (LH).

Building a cloud-based, unified data analysis platform with Red Hat and Gabia technology

After evaluating potential open source solutions, LH decided to use Red Hat OpenShift as the foundation of COMPAS, running in a public cloud environment managed by implementation partner Gabia.

Red Hat OpenShift is an enterprise Kubernetes container platform that provides a consistent yet adaptable foundation for rapid application and service development. It supports a wide variety of languages, frameworks, and databases and includes comprehensive automation and security capabilities.

"We chose Red Hat OpenShift because we needed a solution that would standardize all of our development frameworks and tools, including open source community solutions like CentOS and Apache Tomcat," said Mr. Lee. "We also wanted to adopt a container-based architectural direction for faster package updates and easier deployment, and Red Hat provided the ideal platform for that vision."

Solving urban development challenges across Korea

Increased local government engagement

To create suggestions for local governments, COMPAS collects public sector and enterprise data, then refined it through high-quality analysis to product presentations and visual models. Ongoing updates continue to enhance the platform's capabilities, such as spatial big data analysis through the introduction of GPU servers. The collected data is also available to civic scientists through the platform for open collaboration on the country's urban development challenges. Previously, this data was kept separate and unavailable to other municipalities.

LH initially worked with two local governments to use COMPAS to improve fire risk analysis and prediction modeling for city bus routes. The success of these projects has led to ongoing expansion, with ten new models for local traffic volumes, child traffic accident risk areas, housing created for three new local governments. An additional set of models for smart bus stop locations and traffic accident risk areas were provided to ten local governments.

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Simplified platform management

With a stable development environment that operates on standardized runtimes, available 24x7, LH's developers can focus on building new applications and more easily maintain COMPAS in-house.

"When we wanted to upgrade COMPAS for continuous delivery, or solve issues like performance degradation or pay-as-you-go services, having a central solution really made the difference in how long those updates took," said Mr. Lee. "We have improved our integration with various data sources and institutions, because Red Hat OpenShift simplifies integration while still providing security and performance updates to our containers, applications, and services."

Reduced infrastructure costs with public cloud

By running its new container platform in a managed public cloud architecture, LH has optimized resource use. The flexible, pay-as-you-go nature of public cloud means the organization can adapt its cloud capacity to meet changing needs, without drastically increasing costs. The organization is also exploring potential future DevOps and data integration projects.

"When considering both time and cost, we realized it was more efficient to build a public cloud environment," said Mr. Lee. "We also faced uncertainty over the government's private cloud activation policy and our expected user base size, and running Red Hat OpenShift on a public cloud managed by Gabia means we were able to meet regulations and prepare for future growth."

Expanding analysis platform to new participants

The initial success of the COMPAS platform has prompted more local governments to request data insight from LH. The organization is also continuing to update the platform with new capabilities, including upgraded data-linking services and complex analytical design models. To help plan for future development, LH has engaged Red Hat Consulting for a Services Discovery Session and Services Design Workshops.

"By introducing Red Hat OpenShift, we have built a standardized platform for stable service delivery. Interest from cities, and the number of teams involved in the project, is rising every year," said Mr. Lee. "We are planning to continue to extend the platform to ensure all participants can access the high-quality data essential for big data analysis."

About the Korea Land and Housing Corporation (LH)

The Korea Land and Housing Corporation (LH) was established in 2009 by integrating the Korea Land Corporation and the Korea National Housing Corporation. It is a quasi-market-type public enterprise that operates under the Ministry of Land, Infrastructure and Transport that promotes the pioneering and expansion of smart cities in South Korea, along with projects such as urban development, recycling, public housing, and residential welfare. And as of 2021, it had 31 branches, with 9,500 working executives and employees. https://www.lh.or.kr/

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