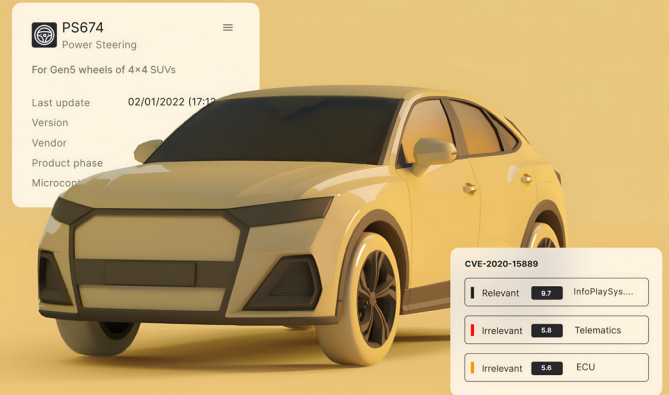


# How LG VS Uses Cybellum to Keep its Automotive Products Secure

AN IN DEPTH TECHNICAL CASE STUDY



## Background

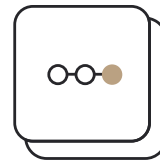
As a global manufacturer of vehicle electronic components with 7,000 employees and 1,500 developers, LG Vehicle component Solutions (LG VS) has made a strategic decision to become a leader in its overall approach to cybersecurity across its solutions. To realize this vision, the company has defined multiple goals to become a leader in:



Compliance of cybersecurity laws and regulations



The ability to maintain SBOMs for its products as well as manage vulnerabilities and incident response



Its overall approach to cybersecurity across its solutions

To build its cybersecurity efforts in line with automotive OEMs, the company consolidated its activities under a single Cybersecurity Development department. The department's mission, which included remaining aligned with OEM regulatory requirements, was set to manage the company's cybersecurity operations according to the CSMS (Cybersecurity Management System), as defined in the UNECE's WP.29 R155 and detailed in the ISO/SAE 21434 standard. This department takes care of various activities, such as:

- Cybersecurity technical operations - performing all core security activities required by regulation and for proper security of its products across their lifecycle, from design to post production:

SBOM generation and management

Vulnerability analysis and management

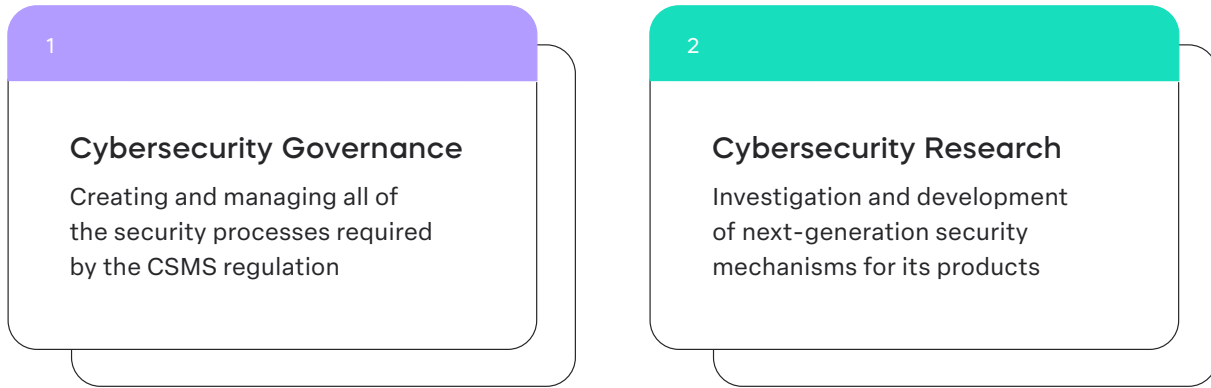
Incident response

Penetration testing

Security mitigations

OS hardening

This activity involves regular reporting to OEMs on the progress of securing the developed releases during their various lifecycle stages. They include:



## The challenge in **managing** product security at scale

LG VS was facing the following challenges:

- **Growing number of projects** - Tens of projects must be managed concurrently by the cyber security department at different stages of development and post production.
- **Projects becoming increasingly complex with regards to software** - Some with over 1,000 various components.
- **Cyber security is managed manually** - Tracking, analysis, reporting, no governance across products, no consolidated policies.
- OEMs have high expectations of **SBOM and vulnerability analysis accuracy**.
- OEMs require **constant, detailed reporting** of all activities, including all of the necessary evidence.
- **Quality of penetration testing findings was low**
- **Cyber security activities are very slow**, taking over:

**7**  
DAYS to complete SBOM validation for a single product version

**30**  
DAYS to complete a vulnerability analysis of a single product-version

**2**  
DAYS to prepare a vulnerability incident report

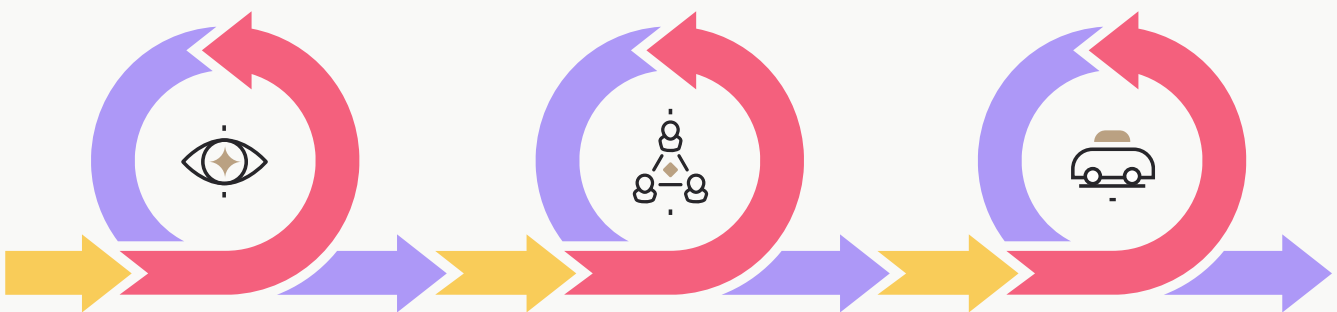
**2**  
DAYS to prepare an incident response monitoring report

## Improving product security throughout the **lifecycle**

LG VS has implemented Cybellum's Product Security Platform as its centralized solution for cybersecurity operations throughout the lifecycle. They are using the platform as a centralized repository of the project's cybersecurity information, and CSMS Working Products are exported from the system to be shared with OEMs as part of the R155 VTA (Vehicle Type Approval) process.

For governance, the LG Development Cybersecurity management team is regularly using the Cybellum dashboards to review the status of product security risks across the projects, and drill-down into specific projects as needed.

### LG VS use cases



#### Concept & Design

- Potential software component usage is evaluated for security risks using virtual SBOMs (SBOM editing of an empty Cyber Digital Twins™).
- The research team is reviewing potential architectures for complex products using the unique System of Systems capability.
- Complex infotainment systems are represented in a hierarchy of system, product, and components.
- Potential risk is evaluated using the built-in capabilities.

#### Development

- SBOM is automatically created as part of CI/CD pipelines in each project.
- Vulnerabilities are identified and automatically triaged based on firmware context and configurations as part of CI/CD pipelines.
- Project software revisions are evaluated across milestone releases using Cybellum's multi-version Cyber Digital Twins™ and assessments, tracking software component version changes and automatically tracking the impact of these changes on vulnerabilities.
- LG's team is using the platform to produce detailed project assessment reports to OEMs.
- LG's own security best practices policy and OEM security requirements are automatically validated using Cybellum policies technology.

#### Post-production

- New vulnerabilities are continuously monitored in each project.
- New vulnerabilities are analyzed using the platform and incident reports are created for OEMs using the platform.
- Monitoring progress reports are automatically prepared for OEMs.

## Using Cybellum's services to **bolster** product security

In addition to the platform, LG VS is also using Cybellum Services to complement its own cyber security team.



SBOM & Vulnerability Analysis - Cybellum Services team provides detailed analysis of product SBOMs. In addition, it assists the LG VS team with vulnerability analysis - mainly in identifying relevant vulnerabilities and potential mitigations.



Incident Response - Cybellum Services team is assigned to perform vulnerability monitoring for tens of legacy projects. The team performs ongoing analysis of new vulnerabilities and creates detailed analysis reports for LG VS, leveraging the capabilities of the Cybellum Platform.



Penetration Testing - Cybellum Research performs comprehensive product penetration testing for LG VS complex products.

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**Implementing Cybellum's services and their Product Security Platform into our product security efforts has helped our teams to produce a comprehensive CSMS in compliance with the United Nations Economic Commission for Europe's (UNECE) regulation No. 155 (UN R155)” said Sungho Hwang, Cybersecurity Analyst Team Leader at LG Vehicle component Solution company (VS company).**

**“This has also helped LG to become the world's first automotive component supplier to receive certification from TÜV Rheinland Korea, for meeting global standards for cybersecurity.”**

## LG VS' achievements

Since implementing the Cybellum's Product Security Platform as its centralized solution for cyber security operations throughout the life cycle, LG VS is achieving the following benefits:

- ✓ The VTA process is now more streamlined, since the technical reports - product configuration, vulnerability analysis, vulnerability monitoring and incident response are all automated using the Cybellum Platform.
- ✓ Product cybersecurity information is always available across the company's diverse projects.
- ✓ SBOMs are now always available as they are automatically created.
- ✓ It is now 7x times faster to create SBOMs.
- ✓ More than 50% of vulnerabilities are automatically triaged as irrelevant, saving days of work.

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**Cybellum's Product Security Platform was designed to assist teams to identify vulnerabilities at every stage of the development lifecycle, from concept and design, to development, and then in post production,” said Cybellum CSO Woojoong Kang. “We are very proud to see the integral part that Cybellum has played in working with LG VS to achieve its goals and in keeping with LG's commitment to providing its customers and partners with the highest level of product, system safety, and security.”**

## Cybellum solution properties

### Products

- Cybellum's Product Security Platform - implemented in LG VS' internal cloud
- VMware HCI instance running Ubuntu 20.04 and the Cybellum Platform v2.x
- Instance specs: 32 CPU Core, 256 GB RAM

### Services

- SBOM Services
- Vulnerability Analysis
- Vulnerability Monitoring
- Incident Response
- Penetration Testing

### Environment

- Codebeamer - Product requirements
- Jira Server - Ticketing
- Jenkins - Automated build environment

## *About us*

### **Cybellum is where teams do product security.**

Leading manufacturers such as Jaguar Land Rover, Supermicro, Arthrex, and Faurecia use Cybellum's Product Security Platform to execute and manage the main aspects of their cybersecurity operations across teams, product lines, and business units. From SBOM to Vulnerability Management, Compliance Validation, and Incident Response, teams ensure their connected products are fundamentally secure and compliant – and stay that way.

To learn more visit [www.cybellum.com](http://www.cybellum.com)