LINEO
Solutions
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R-Car Proactive Partner Solution

LINEOWarp!!

Lineo Solutions, Inc.

RENESAS
R-Car Consortium

Solution Summary

LINEOWarp!! is an ultra-fast boot solution for in-vehicle devices equipped with Linux/Android .
- Linux/Android takes too long to start up
- Want to start operation immediately after turning on the power.
- Want to reduce power consumption during standby
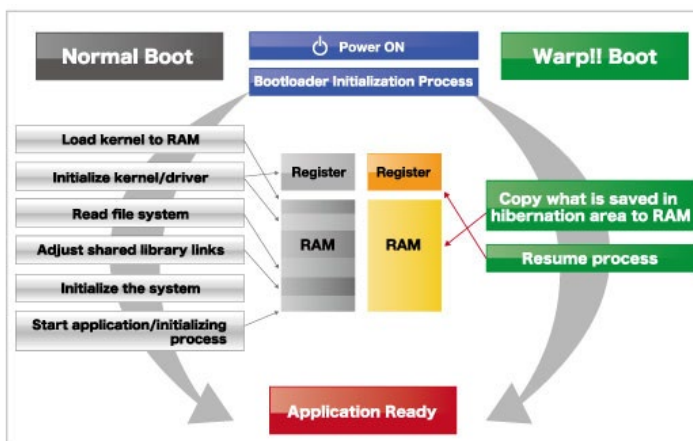Solve various problems in the development of Linux/Android devices.
Contact us: https://www.lineo.co.jp/contact/

Features/Benefits

LINEOWarp!! uses the Hibernation technology, so it starts up quickly!
- Saves the memory image of the running application in the snapshot area secured on physical storage.
- Fast startup is achieved by restoring snapshot images saved at power-on to memory all at once.
- By reducing the size of snapshot images using unique compression technology, Linux/Android systems can start up quickly.

Diagrams/Graphics

LINEOWarp!! 6.0
R-Car H3e Ver.3.0.2
Cortex-A57 2.0GHz / Cortex-A53 1.2GHz

Renesas Salvator-XS H3e SiP Rev. 1.1

Normal Start	With Warp!!
25.20 sec	6.45 sec*1
Installed RAM	Reserve Size
8GB	157.7MB*2

U-Boot 2020.01 / kernel 5.4.72 / Android 11

Booting device: eMMC HS400
*1 Including bootloader startup time 2.02 seconds
*2 Compressed size of 1.08GB

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Target Markets and Applications

Consumer /OA equipment
Set-top boxes, Printers/Multifunction devices
Projector, Router

Industrial equipment
Construction machinery, Agricultural equipment
Financial terminals, Digital signage

In-vehicle products
Car navigation, Car multimedia
Drive recorder

Medical /measuring equipment
Electrocardiogram, ultrasound diagnostic dev
Medical imaging equipment, measuring inst

https://www.lineo.co.jp/english/warp/

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Company Profile

Lineo Solutions, Inc. provides the total solutions necessary for installing Linux in embedded devices, from development environments and software that enhances the value of products to professional services. Even small devices are equipped with operating systems, connect to networks, and perform various types of communication. Lineo strives to develop products with the hope that these devices will become "better," "easier to use," and "faster."
Since our founding in 1984, our company has been headquartered in Shiojiri City, Nagano Prefecture, Japan, and have earned high praise from many customers as an expert in embedded software development.