

The Ledger of Things: Using a Blockchain Ledger to Track Open Source Components Across the Supply Chain

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**WHEN IT MATTERS,
IT RUNS ON WIND RIVER.**

Projects



HYPERLEDGER



Agenda

- **Problem:** Describe the open source supply chain challenge
- **Solution:** Present an open blockchain ledger solution
- **Q & A**



Part I: The Challenge



License Compliance



Tesla Inches Toward GPL Compliance in Low Gear

Security Vulnerabilities



Jeep Hacked: Taking Over a Moving Car by Remote Control

Safety Certification



Tesla Model X in Autopilot - Driver Killed in Crash

License Compliance



Artifacts

- List of Open Source
- Required Source Code
- Required Notices
- SPDX data

Security Vulnerabilities



Artifacts

- List of Open Source
- CVEs

Safety Certification



Artifacts

- List of Open Source
- Certification Evidence



License Compliance



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Safety Certification



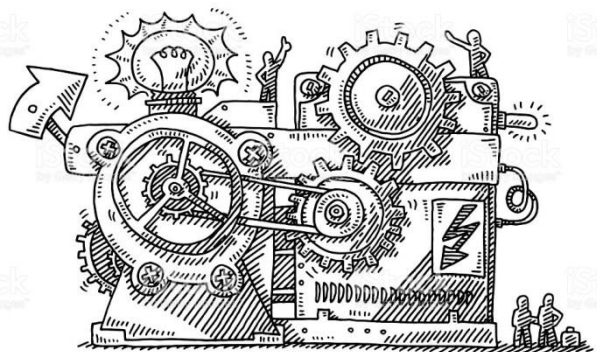
Artifacts

- List of Open Source
- Certification Evidence





[Compliance Program]



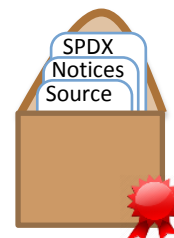
- Open Source BOM
- async 0.6.2
 - beecrypt 4.2.1
 - busybox 1.22.3
 - core-utils 8.24
 - openssl 1.0.2d
 - zlib 1.2.8



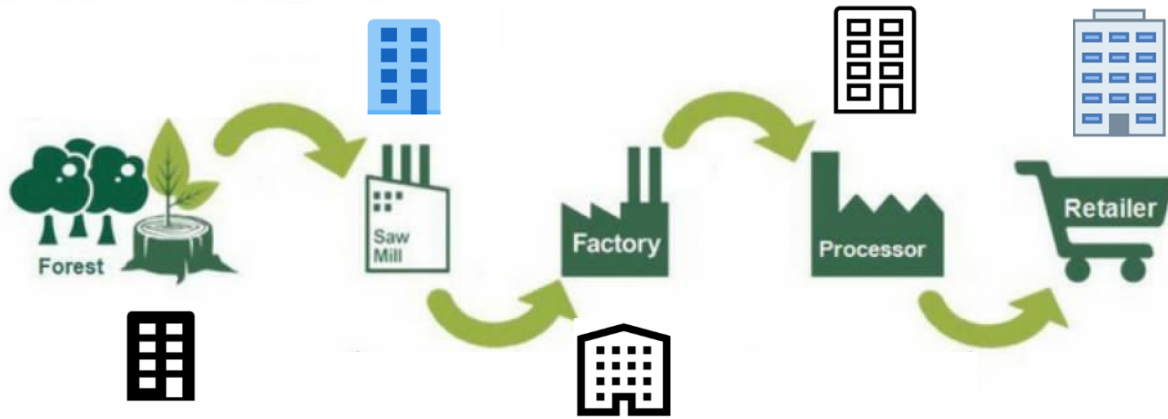
Software Part



+



Chain of Custody

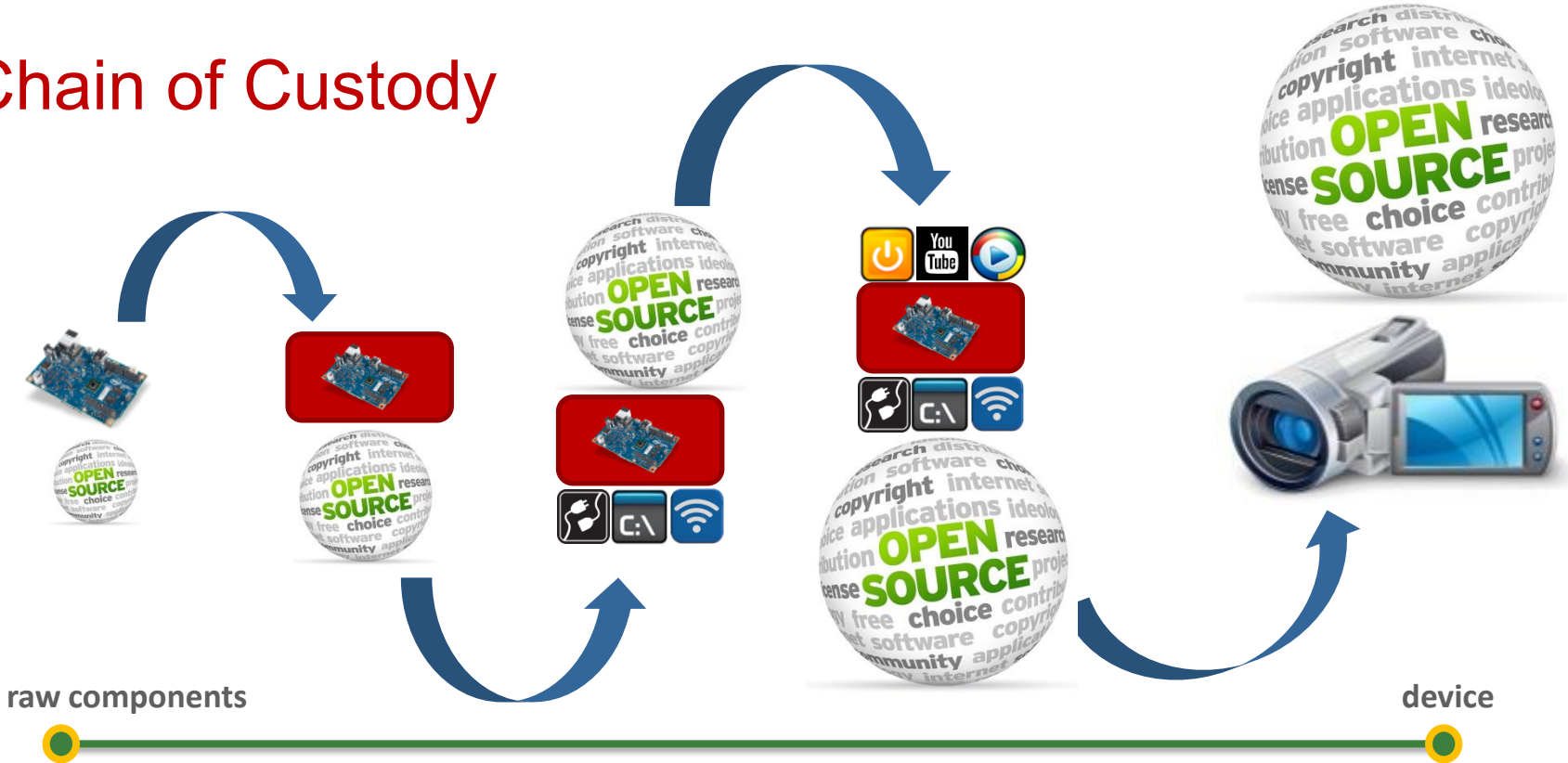


first stage

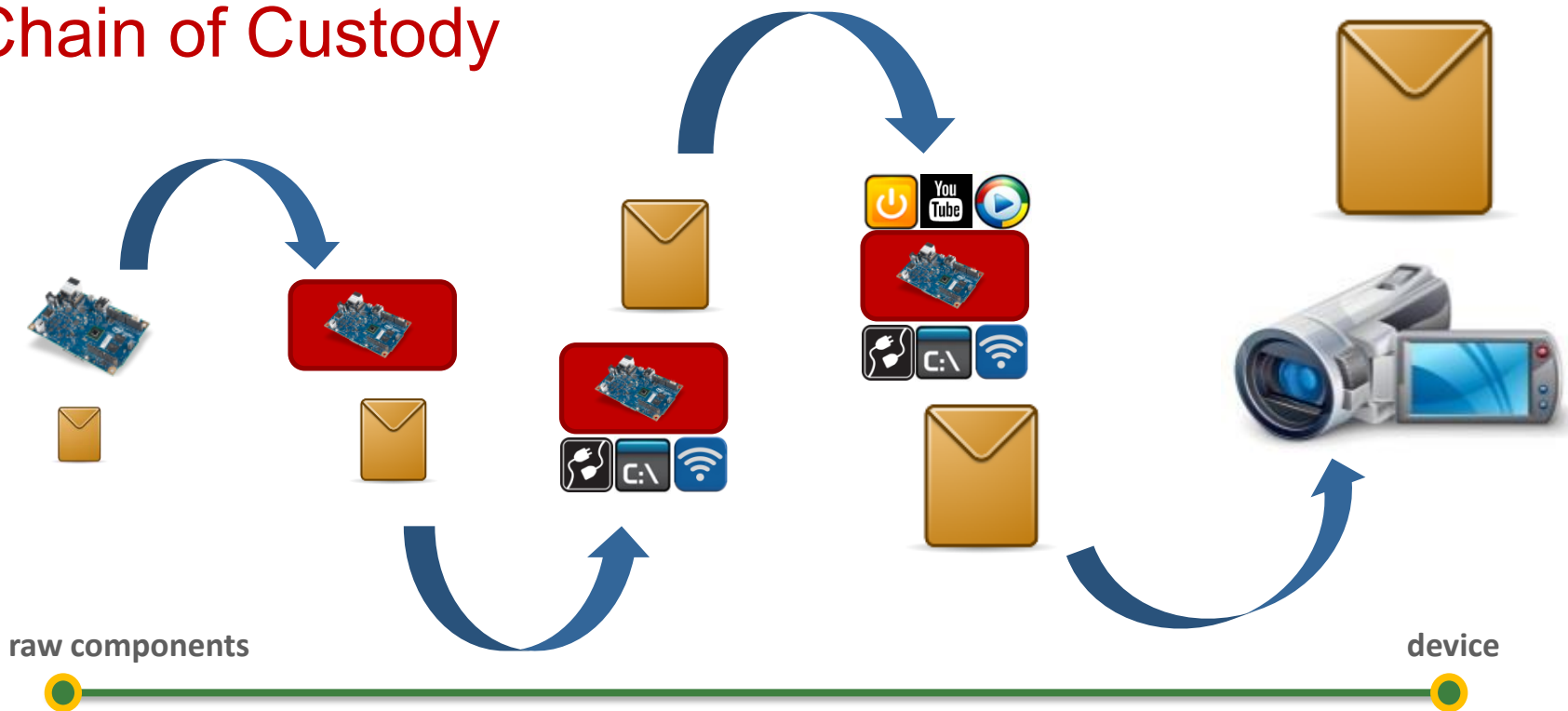
end customer

chain of custody - the unbroken path a product takes from the **first stage** in the supply chain to the **end customer** including - raw materials, their conversion, production and along distribution lines

Chain of Custody



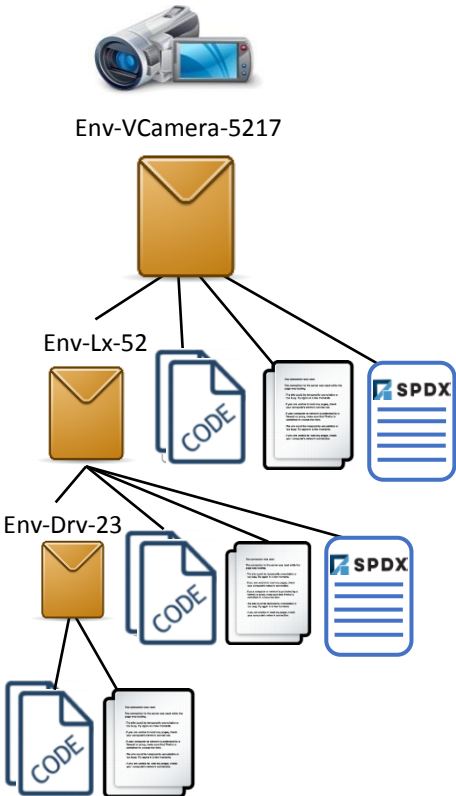
Chain of Custody



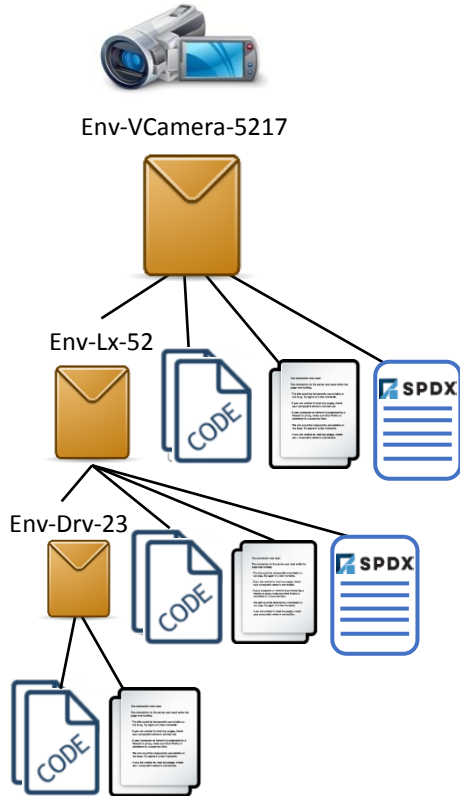
The Challenge



The Challenge



The Challenge



Mfg/Distributors



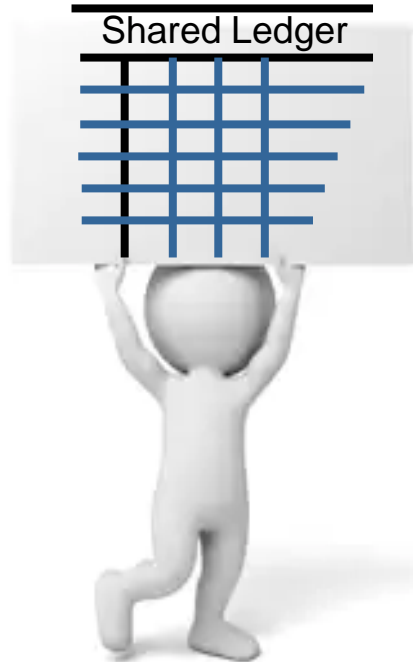
End Users

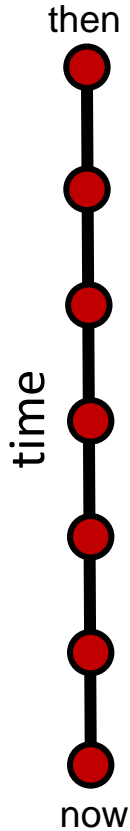


***i) Accountability** - How can we trust each supplier has prepared the correct artifacts?*

***ii) Access** - How can we facilitate the collection and delivery of all artifacts?*

Part II: Solution





my  bitcoin

credit	debt	balance
\$100		\$100
	\$25	\$75
	\$5	\$70
	\$10	\$60
\$120		\$180
\$20		\$200
	\$45	\$155
	\$15	\$140
\$40		\$180
	\$10	\$170
\$140		\$310
		\$310

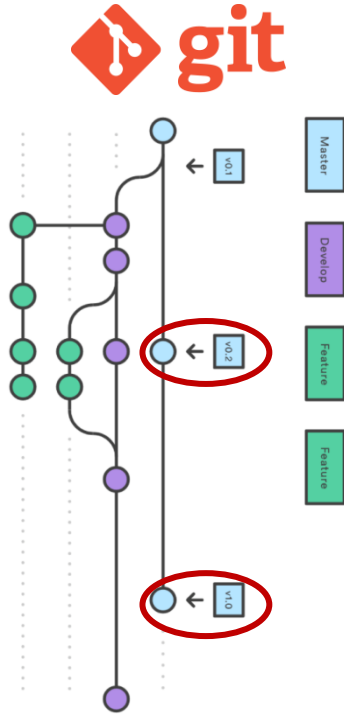
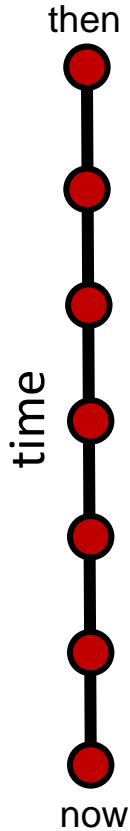
12/31



Ledger Attributes

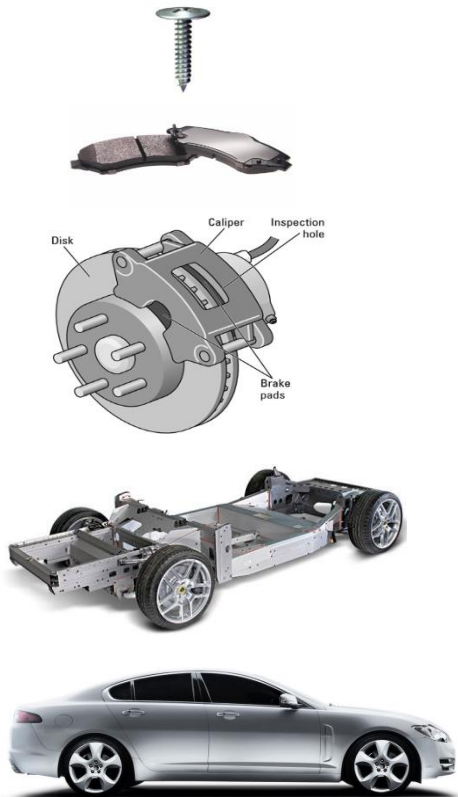
- Things
- Transactions
- Time
- Truth

= Trust



- Things
 - Transactions
 - Time
 - Truth
-
- = Trust**

PARTS



Source file

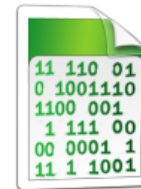
library

Application

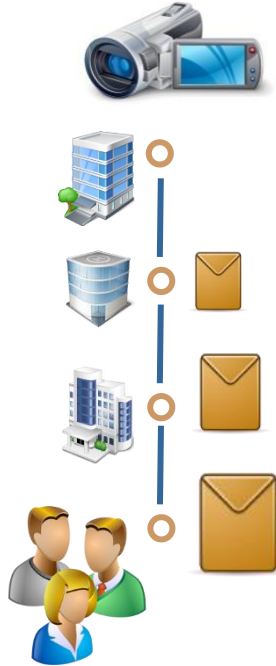
Container

Linux Runtime

software part



then
time
now

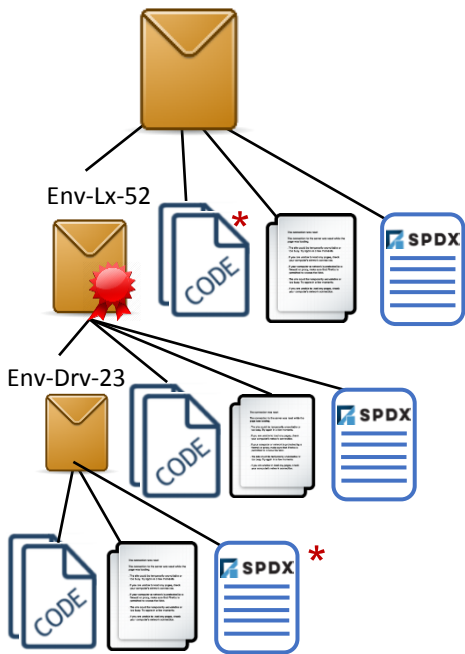





























- Things
 - Transactions
 - Time
 - Truth
-
- = Trust

Secure Shared Ledger



Env-VCamera-5217



Part/Env ID	Supplier	Action	Artifacts
 Env-Drv-23	Intel-ID	create	   
 Env-Lx-52	WR-ID	create	     
 Env-VCam-5217	AvTec-ID	create	     
 Env-Drv-23	WR-ID	add	  
 Env-VCam-5217	AvTec-ID	update	  

Summary

- SParts – Free and Open Ledger - track open source components and their meta data of IoT devices
- Code is available under the Apache-2.0
<https://github.com/hyperledger-labs/SParts>
- Enabling across Supply Chain Open Source management
 - License compliance – which artifacts are OpenChain conforming
 - Security vulnerabilities
 - Safety certification
- Useful internally tracking open source artifacts across business units
- **Accountability**: establish trust among supply chain participants
- **Access**: query for current set of compliance artifacts

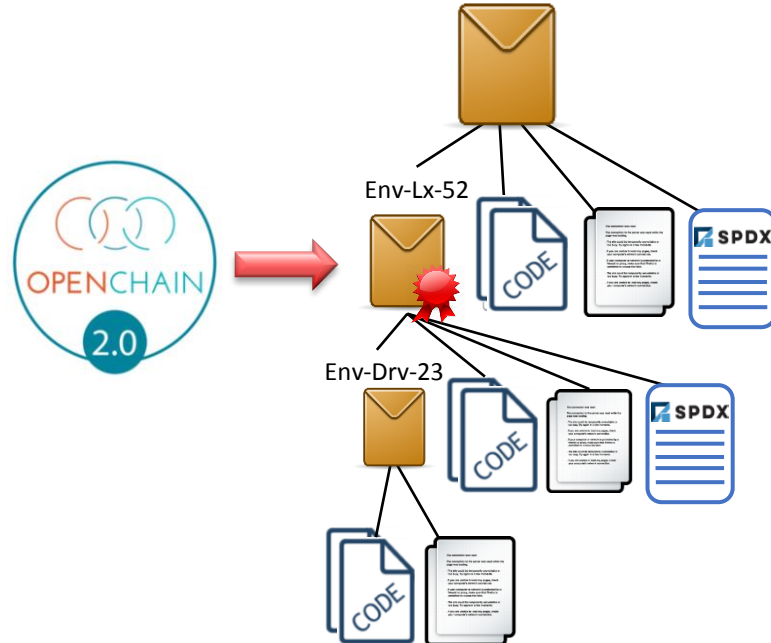
Video Camera Model 5217



Video Camera Model 5217



Env-VCamera-5217



Contact



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