



Course material

Course:

## Understanding the digital supply chain and its stakes for humanitarian actors

Video:

### 1.3.1 Case Studies - intro of Cases

Concepts (extracted from automatically generated subtitles):

**Software supply chain. Software landscape. Key difference. Example of a mobile phone. Supply chains. Software updates. Big advantage. Hardware complexity. Case studies. Bit of a software monoculture. Software complexity. Individual components. Software companies. Key advantage. Hardware.**



[to video sequence search](#)

(within Understanding the digital supply chain and its stakes for humanitarian actors.)



[to video](#)

Center for Digital Education. More educational support material here:

<https://www.epfl.ch/education/educational-initiatives/cede/educational-technologies-gallery/boocs-en/>

# THE HARDWARE AND SOFTWARE SUPPLY CHAINS



## Introduction to Case Studies

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notes

summary

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# Hardware vs. Software



Now that we have looked at the hardware and software supply chain, let's take a look at some case studies. Let's start with an example of a mobile phone.

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# Hardware vs. Software



If you open a phone, there are many components inside it, like the logic board, the memory chip, the radio frequency board. Each of these main components of a finished phone consists of several parts, procured from different vendors.

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# Hardware vs. Software



Sometimes the vendor also depends on when and where you bought the phone. For example, you and your friend might have the exact same phone,

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but the vendor of the memory chip might be completely different.

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# Hardware vs. Software



Matthias, does the software landscape also look similar? It's a very interesting point. Software is very versatile, very complex, but there's also a bit of a software monoculture there.

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# Hardware vs. Software



The complexity evolves and changes between different parts. If you look at individual components, the operating system itself consists of hundreds of modules with thousands of libraries in user space,

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# Hardware vs. Software



along with the countless applications users can instal on top of it. Software complexity even outpaces hardware complexity.

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For example, browsing a website involves around 100 million lines of code. If you would print the source code on A4 paper, it would form a stack of around 400 metres. The key difference between hardware and software

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is that software is volatile.

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# Hardware vs. Software



The big advantage is that it can be updated. The big disadvantage is that it will contain bugs. That actually brings up an interesting point.

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# Hardware vs. Software



That's another aspect of hardware is that it's mostly unchangeable. You can replace a screen or a battery if it's damaged, but largely, most of the parts stay the same. To change or upgrade something,

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# Hardware vs. Software



it essentially means you need to go and buy a new phone. This is a blessing and a curse. If there's a hardware issue on the phone, you're essentially stuck with the security issue, or you need to spend more money to get a new phone. That's why I like software.

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## summary

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# Hardware vs. Software



It can be easily updated. This is very, very true. Software updates also introduce new challenges, though. They can make the whole process a bit more complicated and harder.

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# Hardware vs. Software



Until the mid 2000s, before the internet was broadly available, you may remember, that software was shipped on physical media. This required software companies to be mostly bug-free.

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# Hardware vs. Software



Today, software can be patched and updated automatically because we can just download another update over the internet. The key advantage is that bugs can be fixed after software is deployed.

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# Hardware vs. Software



The key disadvantage is that software may be shipped without rigorous testing as companies can rely on later updates, and that the automatic update process

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may be compromised in itself as a new attack factor. Actually, that makes me wonder if these two supply chains have different stakeholders and challenges.

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# Hardware vs. Software



Do the threats and mitigations also will differ drastically.

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# Hardware vs. Software



There are commonalities and differences. Commonalities between software and the hardware supply chain are that security must be carefully considered and integrated at each of the individual steps.

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There are a surprising amount of parallels, and the two sides could clearly learn from each other and profit from much tighter integrations throughout the chain. Actually, why don't we take a look at a few case studies for both hardware and software supply chain first, and then maybe let's come back and exchange notes. That sounds great.

3m 13s

