

## **Challenges of Contracting Open Source Hardware**

Journée de l'innovation 2021: Les communs innovatifs -  
modèle d'affaires du XXIème siècle?

Dr. Daniel Ronzani, 18.11.2021


## Client Request

«Our technology is based on a publicly available basic concept from MIT. In a first implementation step **we have** provided the know-how, consisting of

- **manufacturing drawings** (pdf-format),
- **software** (MIT Open Source license) as well as
- an **assembly drawing**

to a foreign company free of charge.

!?

 **Now** this know-how package shall be made available as **open source** information to the whole public.»

## **Roadmap**

1 Minute Legal Refresh

Different Components

Practical and Legal Challenges

Solution Attempt

Summary

## **Roadmap**

### **1 Minute Legal Refresh**

Different Components

Practical and Legal Challenges

Solution Attempt

Summary

**1 Minute  
Legal Refresh**

[Placeholder **TM**]

[Placeholder **Book**]

**Non-Disclosure Agreement  
(NDA)**

between

**[Name Party 1]**

[Street], [ZIP & Place], [Country]

hereinafter referred to as „[Acronym 1]“

and

**[Name Party 2]**

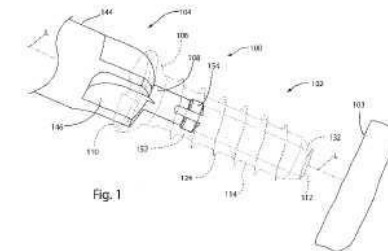
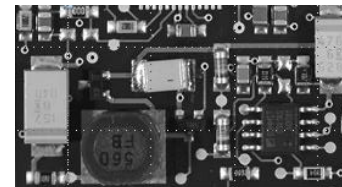
[Street], [ZIP & Place], [Country]

hereinafter referred to as „[Acronym 2]“

Individually also referred to as „Party“ or jointly referred to as „Parties“

1

[Placeholder **Design**]



## Roadmap

1 Minute Legal Refresh

### **Different Components**

Practical and Legal Challenges

Solution Attempt

Summary

## Components:

## Bill of Material

Name	Source	Amount	Price	Notes
<b>Standard parts</b>				
Shaft, D12, L=70		2	1	
Circlip, D12, 8613		4	0.1	
Gear small m=1.5		1	26	
Gear large m=1.5		2	35.5	
ball-bearing, D12		4	3.5	
Shaft, D10, L=59		2	0.95	
Clamping ring, D1	<a href="https://www.f...">https://www.f...</a>	6	4.73	
Spacer, M6, L=55	<a href="https://www.f...">https://www.f...</a>	4	0.416	
Slotted screw M2		2	0.05	
Hex nut M2, 8609		2	0.07	
Slotted screw, M4	<a href="https://www.f...">https://www.f...</a>	12	0.06	
Slotted screw, M4	<a href="https://www.f...">https://www.f...</a>	4	0.37	
Slotted screw, M4	<a href="https://www.f...">https://www.f...</a>	4	0.07	
Slotted screw, M6	<a href="https://www.f...">https://www.f...</a>	6	0.1	
Slotted screw, M5	<a href="https://www.f...">https://www.f...</a>	4	0.07	
Slotted screw, M5	<a href="https://www.f...">https://www.f...</a>	10	0.11	
Slotted screw, M5	<a href="https://www.f...">https://www.f...</a>	8	0.07	
Washer, M5, 861	<a href="https://www.f...">https://www.f...</a>	8	0.03	
Grub screw, M8, l	<a href="https://www.f...">https://www.f...</a>	1	0.64	
Grub screw, M5, l	<a href="https://www.f...">https://www.f...</a>	2	0.5	
Heavy duty pin, D		1	0.48	
Grub screw, M6, l		2	5.85	
Nut M6, 860962.0		2	0.1	
<b>Custom parts</b>				
Holder front		4	10	
Holder back		2	1	
Back wall		2	2	
Front wall		1	6	
		1	6	
		2	6	

→ Know-How (possibly ©)

## Components:

### Design /Assembly Notes

#### DESIGN NOTES

These are design notes concerning the assembly of the [REDACTED] prototype.

- The [REDACTED] optional; it adds support to the [REDACTED] that is mounted as a [REDACTED] but the current 4xM4 screws mounted into the [REDACTED] directly can be sufficient; alternatively, one could use a threaded [REDACTED]

- We did not use a [REDACTED] for cost reasons. According to our calculations, the set screws are sufficient.

- The two additional 'distance stabilisers' ensure the torque from the [REDACTED] to increase the system stiffness

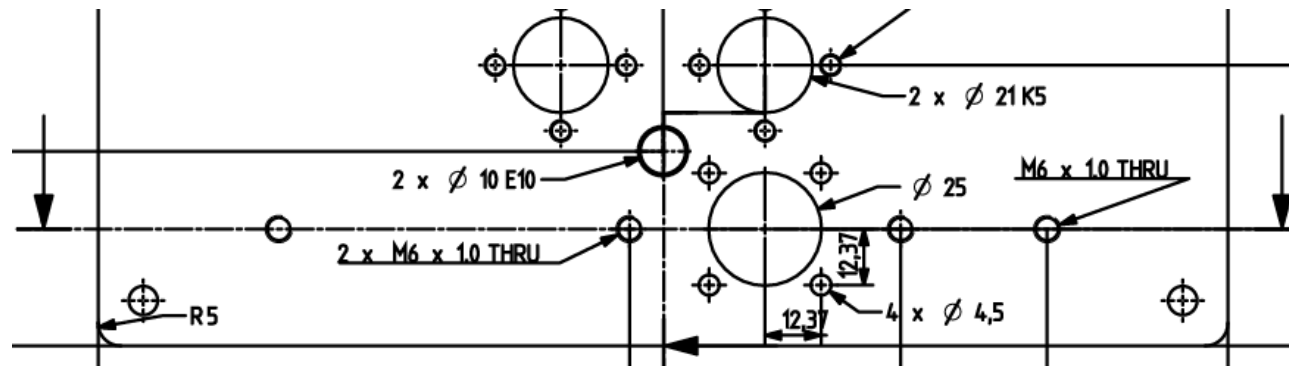
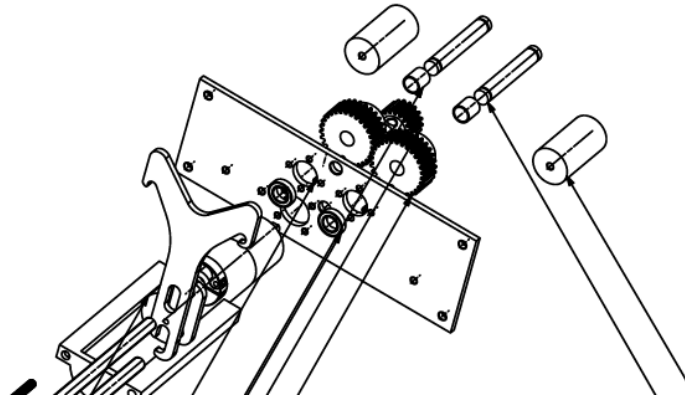
- The eight screws used on the Front Wall to secure the [REDACTED] bearings are used as a cheap alternative to [REDACTED] Wall in order to completely fix the [REDACTED]

→ © + Know-How



**Components:**

**Mechanical /  
Assembly  
Drawings**



→ © + Know-How

## Components:

### Electronic Description

## Electronics

The electronics consists of the following components:

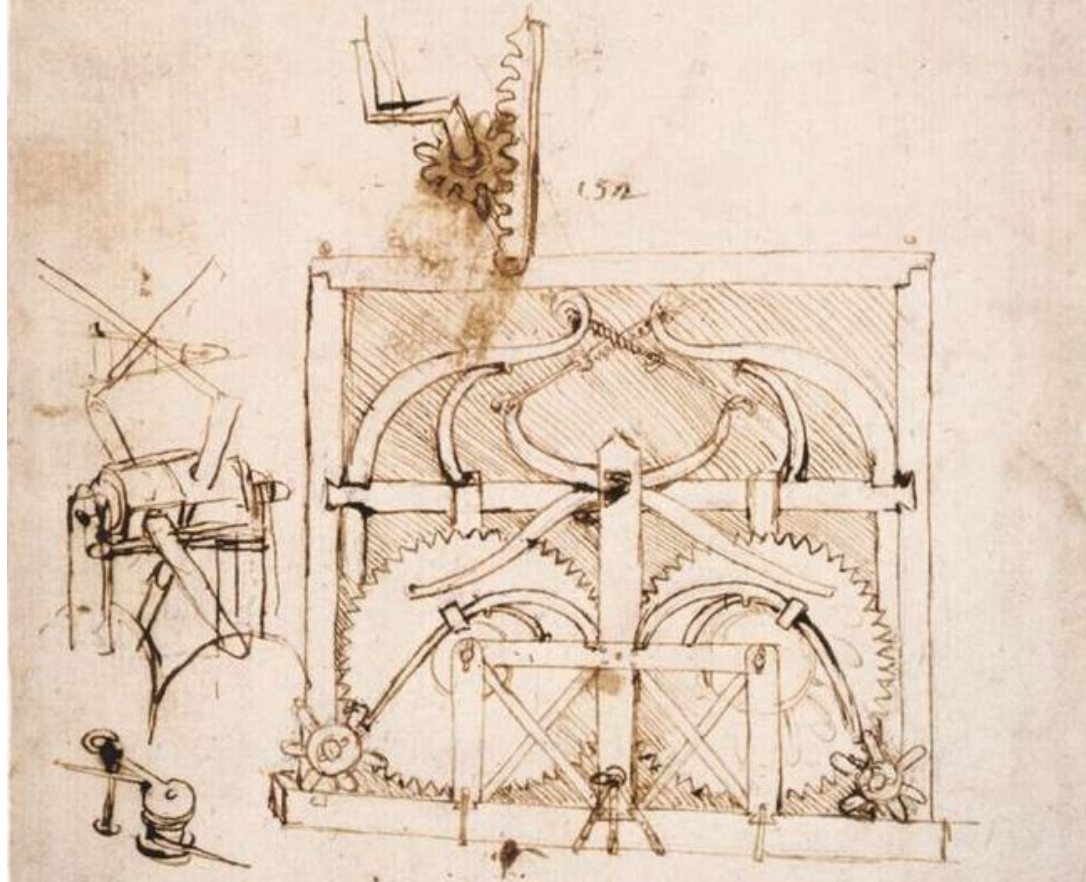
1. Microcontroller: [REDACTED] where the main control software is deployed
2. Motor Driver: [REDACTED]
3. Power stage: consist of an inrush current limiter, a voltage monitor, and a 5V voltage converter
4. Sensors: composed of a [REDACTED]
5. Interface: consists of two control buttons, an acoustic alarm, various LEDs for alarms, and [REDACTED] display

In the following, we will describe more in detail the electrical and electronics architecture.

→ © + Know-How

**Components:**

**Photo of End  
Product**

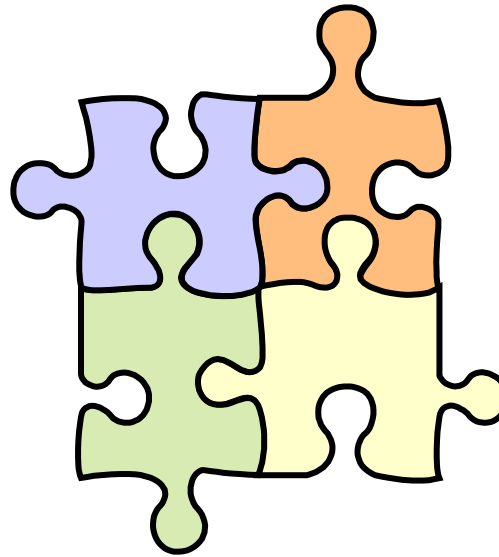


Substitute «photo» (perpetuum mobile, Leonardo da Vinci, ~ 1478)

→ © + Know-How

## **Components:**

### **Design**



→ **Design rights with external third party**

## Components:

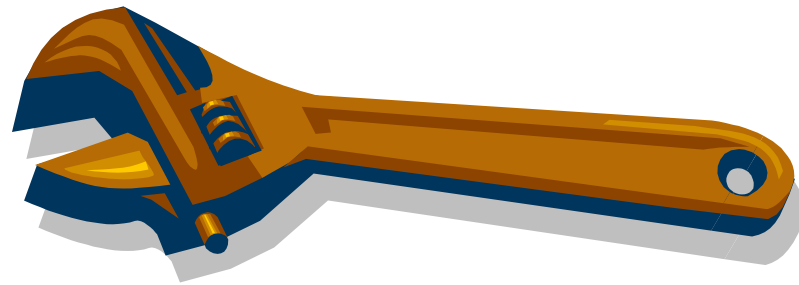
## Software

```
<!DOCTYPE html>
<html style="font-size: 10px;font-family: Roboto, Arial, sans-serif;" system-icons="" typography="" typography-spacing="" standardized-themed-scrollbar="" lang="en" event scroll>
  <script id="__gaoptoutextension" type="text/javascript"></script>
  <head></head>
  <body dir="ltr" standardized-themed-scrollbar="" event>
    <div id="watch7-content" class="watch-main-col" itemscope="" itemid="" itemtype="http://schema.org/VideoObject"></div>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <div id="player" class="skeleton flexy" hidden=""></div>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script class="js-httpswwwyoutubebecomsdesktop73bd4aaajsbinspfvflsetspfjs" src="https://www.youtube.com/s/desktop/73bd4aaa/jsbin/spf.vflset/spf.js" nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script class="js-httpswwwyoutubebecomsdesktop73bd4aaajsbinnetworkvflsetnetworkjs" src="https://www.youtube.com/s/desktop/73bd4aaa/jsbin/network.vflset/network.js" nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <iframe name="passive_signin" src="https://accounts.google.com/ServiceLogin?service=youtube&uil_%3Den%26next%3D%252Fsignin_passive%26feature%3Dpassive&hl=en" style="display: none"></iframe>
    <ytd-app scrollbar-rework="" standardized-themed-scrollbar="" scrollbar-color=""></ytd-app>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script id="base-js" class="js-httpswwwyoutubebecomsdesktop73bd4aaajsbinsdesktop_polymer_re_e_propsvflsetdesktop_polymer_remove_unused_prototype_propsjs" src="https://www.youtube.com/s/desktop/73bd4aaa/jsbin/desktop_pol_roops.vflset/desktop_polymer_remove_unused_prototype_props.js" nonce="P9se3HMNaZprLwIneOwaww"></script>
    <svg style="position: absolute; height: 0; width: 0;" aria-hidden="true"></svg>
    <iron-iconset-svg name="backstage" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="hashtag-landing-page" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="live-chat-badges" size="16" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="miniplayer" size="24" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="offline-no-content" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="promo-full-height" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="rotten-tomatoes" size="13" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="settings" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="shorts" size="32" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="spinners" size="22" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-icons" rtl-mirroring="" size="24" use-global-rtl-attribute="" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-logos" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons" rtl-mirroring="" size="24" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons12" rtl-mirroring="" size="12" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons13" rtl-mirroring="" size="13" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons15" rtl-mirroring="" size="15" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons16" rtl-mirroring="" size="16" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons18" rtl-mirroring="" size="18" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="yt-sys-icons20" rtl-mirroring="" size="20" style="display: none;"></iron-iconset-svg>
    <iron-iconset-svg name="ytcp-icons" size="24" style="display: none;"></iron-iconset-svg>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
    <script nonce="P9se3HMNaZprLwIneOwaww"></script>
```

→ © + Know-How

## Components:

## Hardware Output



→ ?

## Roadmap

1 Minute Legal Refresh

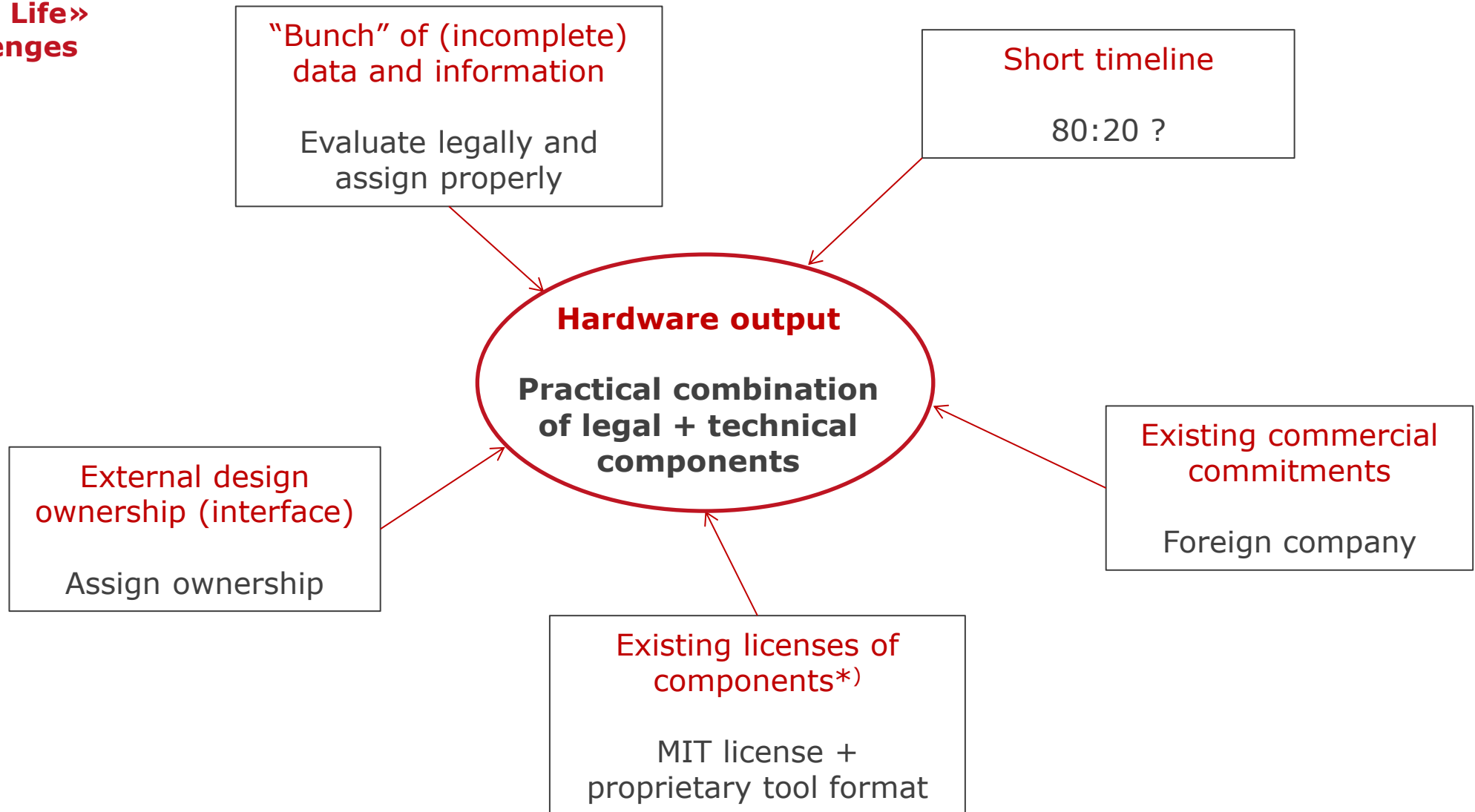
Different Components

### **Practical and Legal Challenges**

Solution Attempt

Summary

**«Real Life»  
Challenges**



\*) But no patents.



## Roadmap

1 Minute Legal Refresh

Different Components

Practical and Legal Challenges

**Solution Attempt**

Summary

## Solution:

### Divide Licenses

1) Terms of Use: Access to and use of the website as well as the information and data relating to descriptions, instructions, design specifications, images, videos, and/or software code ((«**Design Specs**»)). To the extent permitted by mandatory law, inclusion of «**as is**» disclaimer, i.e. exclusions of liability, warranty, etc.

2) IP ownership: Website and Design Specs are **owned by ABC**, its licensors and/or other providers. **No transfer or assignment** of right, title or interest in or to the website and/or Design Specs.

3) Different licenses:








- Design Specs, *excluding* software and hardware: licensed under **creative commons CC BY** (Attribution 4.0 International).
- Design Specs which are **software**: licensed under **MIT license**.
- Design Specs which are **hardware**: licensed under **CERN-OHL-P**.

The individual Design Specs each indicate the applicable license(s).

**Solution:**

**Licensing Instruction**

Insert the licenses/logo in columns 2-4 as follows **into** the documents published under open source:

Document	CC license	MIT license	CERN OHL-P
Mechanical Bill of Material	Design Specs: 		
Mechanical Assembly Drawings (No. 1, 2, 3, n)	Design Specs: 		Tangible, physical outcome: <a href="#">CERN-OHL-P - v2</a>
Mechanical Descriptions / Readme (No. 1, 2, 3, n)	Design Specs: 		
Electronic Bill of Material	Design Specs: 		
Electronics Descriptions / Readme (No. 1, 2, 3, n)	Design Specs: 		
Photo End Product (No. 1, 2, 3, n)	Design Specs: 		Tangible, physical outcome: <a href="#">CERN-OHL-P - v2</a>
Design Interface (separately assigned design) (No. 1, 2, 3, n)	Design Specs: 		Tangible, physical outcome: <a href="#">CERN-OHL-P - v2</a>
Software (as licensed originally)		<a href="#">MIT license</a>	
Software (own developments)		<a href="#">MIT license</a>	

## **Roadmap**

1 Minute Legal Refresh

Different Components

Practical and Legal Challenges

Solution Attempt

**Summary**

## Summary

### Practical Application

→ Ensure applicability of OS license for each component

### Components

→ Select, allocate + evaluate

### Pre-existing rights + obligations

→ «Iron out»

### Legal Terms

→ Prepare terms for use with appropriate open source licenses.

rsa.law