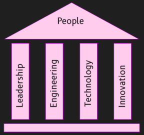
centre, left and right

beyond the stereotype

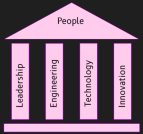
Daniel Maslowski

IAOTAI



Agenda

- Breaking Traditions
- Focus on Protocols
- Rust and WebAssembly


People

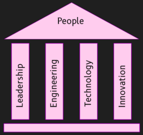
Leadership

Engineering

Technology

Innovation

Breaking Traditions



Magic Trick

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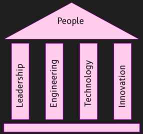
Let me step on everyone’s toes without touching them.



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Tada!

Computers

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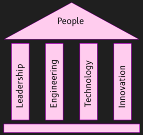

Computers

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focus on bureaucracy

- forms, files, folders
- business processes
- administration

WE BARELY USE COMPUTERS.
RED TAPE, PAPERWORK, AND BUREAUCRACY SHOULD BE VANISHING, WITH INFORMATION APPEARING WHERE WE NEED IT, FAST AND SECURE.
INSTEAD, WE'RE EMAILING SCANS OF FORMS.
IT'S LIKE HIRING PETER JACKSON TO ANSWER PHONES AT YOUR STUDIO.
OR PUTTING TIGER WOODS ON YOUR OLYMPIC SWIM TEAM.
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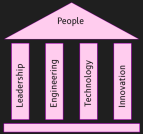
https://imgs.xkcd.com/ibm/ibm_hc_3.png



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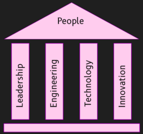
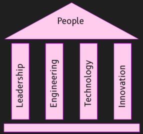
Applications

- military
- communication
- entertainment
- gadgets
- ecommerce

- data processing
- …SaaSaaS
- citizen services
- medicine
- surveillance



On Research



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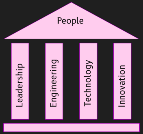

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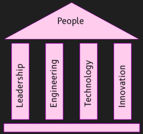

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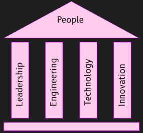

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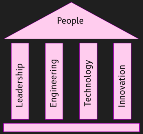

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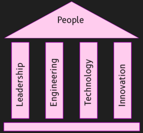

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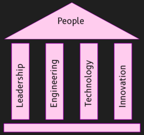

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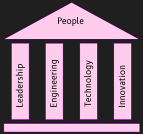
```



CLI / POSIX

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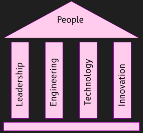
`wget` vs `curl`

- “do one thing and do it well”?
- write to stdout vs current dir
- `-o` vs `-O` to specify output file



[2] https://pubs.opengroup.org/onlinepubs/009695399/basedefs/xbd_chap12.html#tag_12_02

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Does `wget` take a URL from stdin or write data to stdout?

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Focus on Protocols

Internet^WNetwork of Things

People

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Internet^WNetwork of Things

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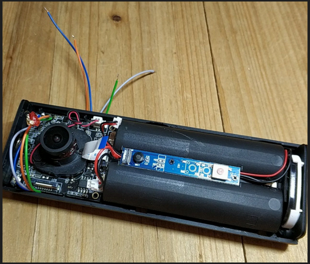
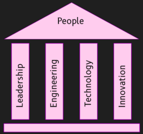
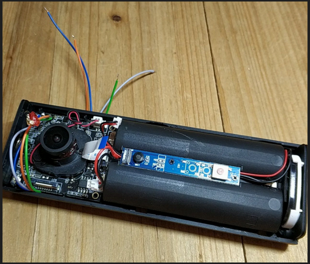
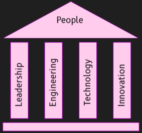




Internet^WNetwork of Things





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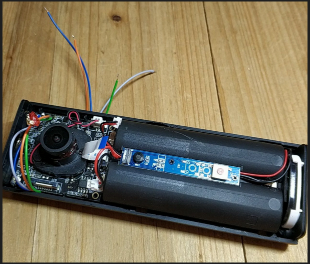

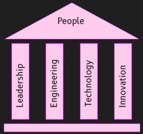

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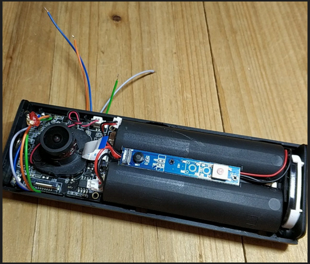
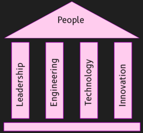


NoT
Network
of Things



`centre` and `cpu`

centre and cpu

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from Harvey OS
serves DHCP+TFTP+HTTP
https://github.com/harvey-os/go
`cmd/centre`

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https://chemnitzer.linux-tage.de/2022/en/programm/beitrag/226/
Drivers From Outer Space - Fast, Simple Driver Development

The Web

The Web

The thing that started as a platform for documents…

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The thing that started as a platform for documents…

… has turned into a platform for applications.

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… has turned into a platform for applications.

Let’s embrace it and push it further down!

WebGAP (Web General Application Protocol)

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NOTE: There is no implementation yet. This is a concept.

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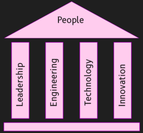
- WebSerial lets you use a serial port from the web browser
- define (app specific) protocols
- can also be used in a simpler environment



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Have you heard of “Wasmlet”s?
https://twitter.com/wasm3_engine/status/1465294919422119936

WebALE (Web Application Launch Environment)

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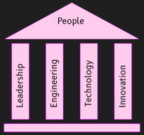
You know the app launcher from your phone.



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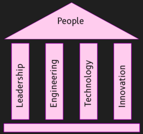

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How about drawing the launcher, just like `drawterm`?

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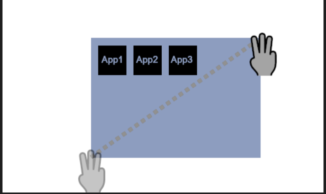
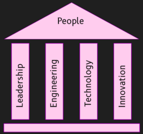
Touch friendly variant: draw a diagonal with 3 fingers.



Add an intermediate step for establishing a connection to and dropping your initial app onto a remote gadget.



Platform System Interface

The *Platform System Interface* project (PSI) is a collection of design ideas, specifications, tools and other resources all around hardware platforms, firmware, bootloaders, OS interfacing and user experience.

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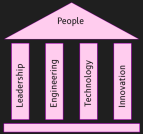
Talk: Platform System Interface - Design and Evaluation of Computing as a Whole

in-depth discussion of design paradigms and complexity in computing
https://metaspora.org/platform-system-interface-computing-as-whole.pdf



DEMO

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Leadership

Engineering

Technology

Innovation

Rust and WebAssembly

What if…

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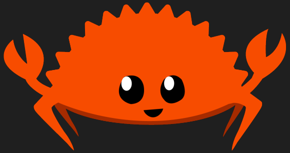
… we compile Rust…



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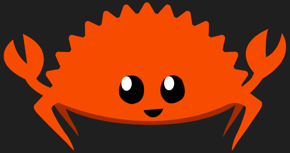

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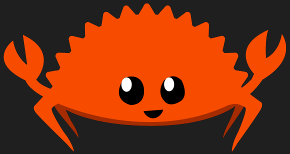

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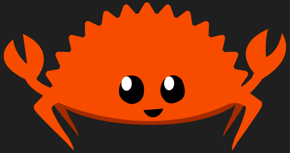

… to Wasm…

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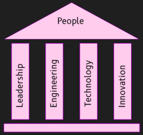
Magic happens - we can use native code on web platforms!



Howto

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Getting started

https://lannonbr.com/blog/2020-01-07-rust-wasmpack/
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TL;DR

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The glue

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More glue

```
cargo add gloo-utils
```

The Rust side

The Rust side

```rust
extern crate wasm_bindgen;
use gloo_utils::format::JsValueSerdeExt;
use serde::{Deserialize, Serialize};
use wasm_bindgen::prelude::*;

/// ...

#[derive(Serialize, Deserialize)]
struct Foo {
    bar: u32,
    baz: String,
}

#[wasm_bindgen]
pub fn some_fun(data: JsValue) -> JsValue {
    /// ...
    let foo = Foo::new { bar: 42, baz: "Rust Wasm" };
    JsValue::from_serde(&foo).unwrap()
}
```

The JavaScript side

```
import { some_fun } from "./rs/pkg";

/* ... */
    const res = some_fun({ woopWoop: 1337 });
    console.info(res);
/* ... */
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https://rustwasm.github.io/wasm-bindgen/reference/js-promises-and-rust-futures.html

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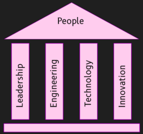

Thanks! :)

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Maslowski

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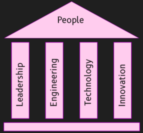
https://github.com/platform-system-interface

https://metaspora.org/centre-left-right.pdf


People
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