

Bringing Full Stack to Small Sats

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This presentation contains no US Export Controlled (ITAR) information.



Here's What We'll Be Covering

- What are we building?
- Why build something new?
- How are we building it?
- Why should you care?

What Are We Building?



Why Build Something New?

- Few full stack solutions
- Some vendor specific solutions
- Even fewer generic solutions
- Any full stack generic solutions?

Why Open Source?

- Small Sats and Open Source - A perfect match
- Too much independent reinvention
- “Given enough eyeballs, all bugs are shallow”
- Sharing enables innovation

Current Open Source

- CFE
- COSMOS
- UpSat/SatNOGS
- Many fragmented projects

How Are We Building It?

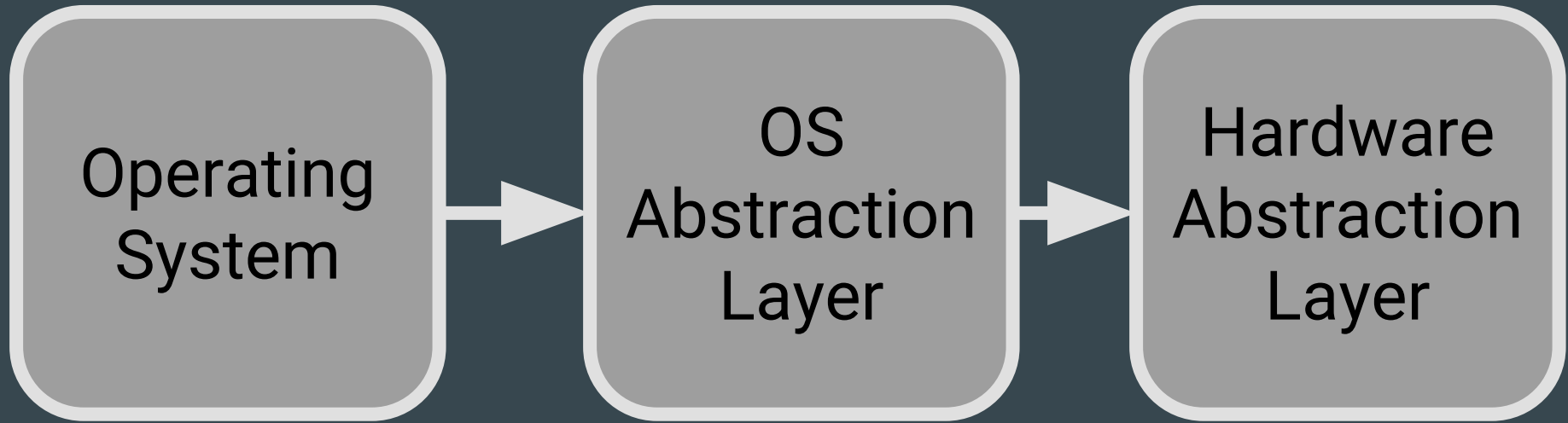
Application

Middleware

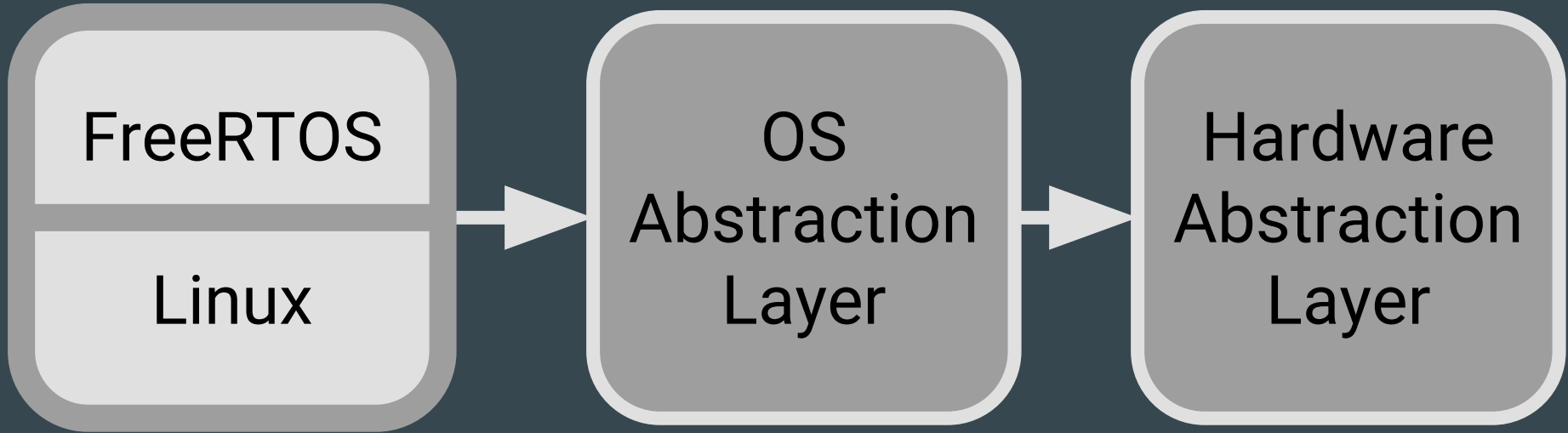
Portability
Layer

KubOS High Level Architecture

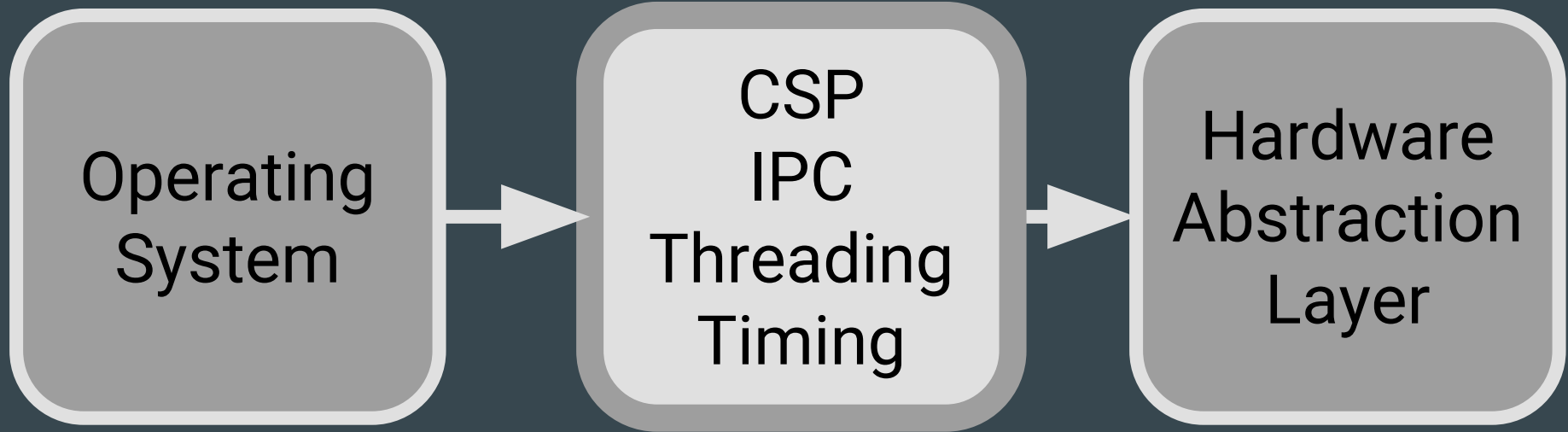
Portability



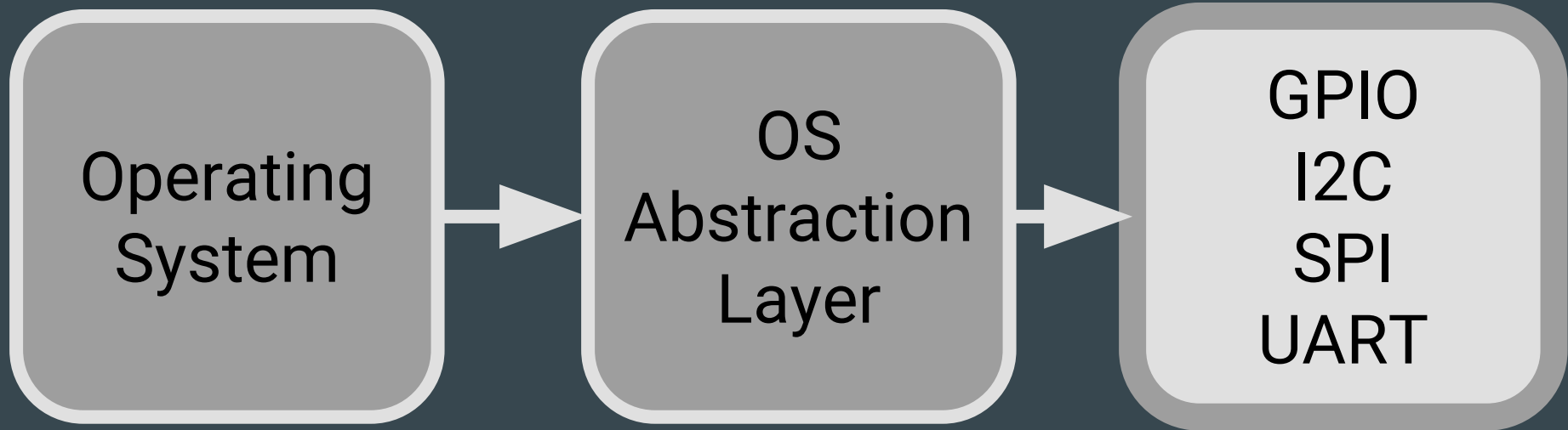
Portability - Operating System



Portability - OS Abstraction



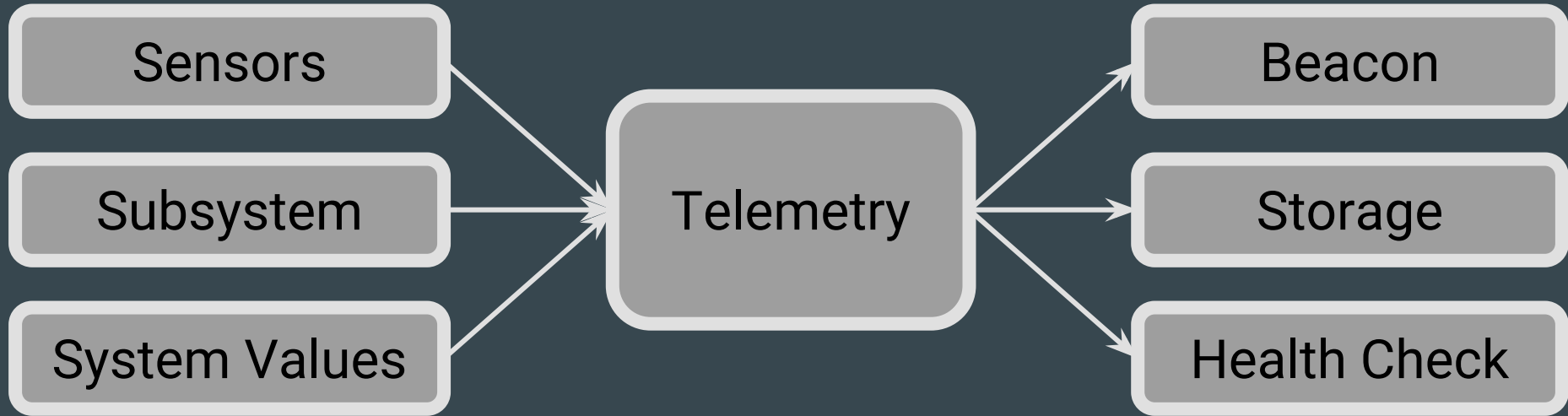
Portability - Hardware Abstraction



Portability - Supported Hardware

- STM32F407 Discovery Board
- MSP430F5529 LaunchPad
- NanoAvionics SatBus 3C1
- ISIS iOBC

Simplifying Middleware



Development Environment

- SDK-in-a-box VM
- Yotta
- Toolchains
- Flashing
- Debugging

Why Should You Care?

- Simplicity
- Reusability
- Transparency
- Collaboration

Questions?

Visit us at <http://www.kubos.co/>

