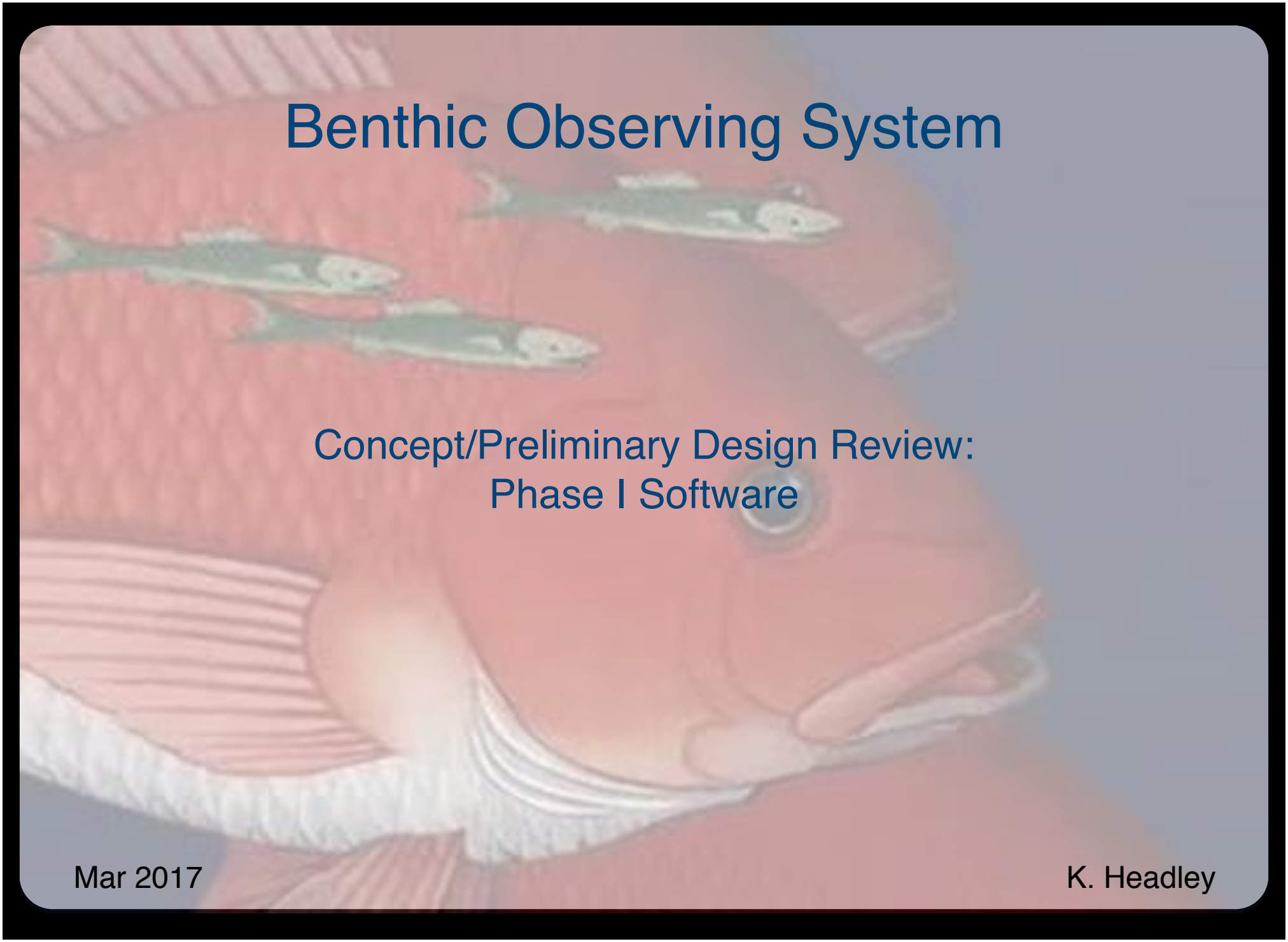


Benthic Observing System

Concept/Preliminary Design Review:
Phase I Software

Mar 2017

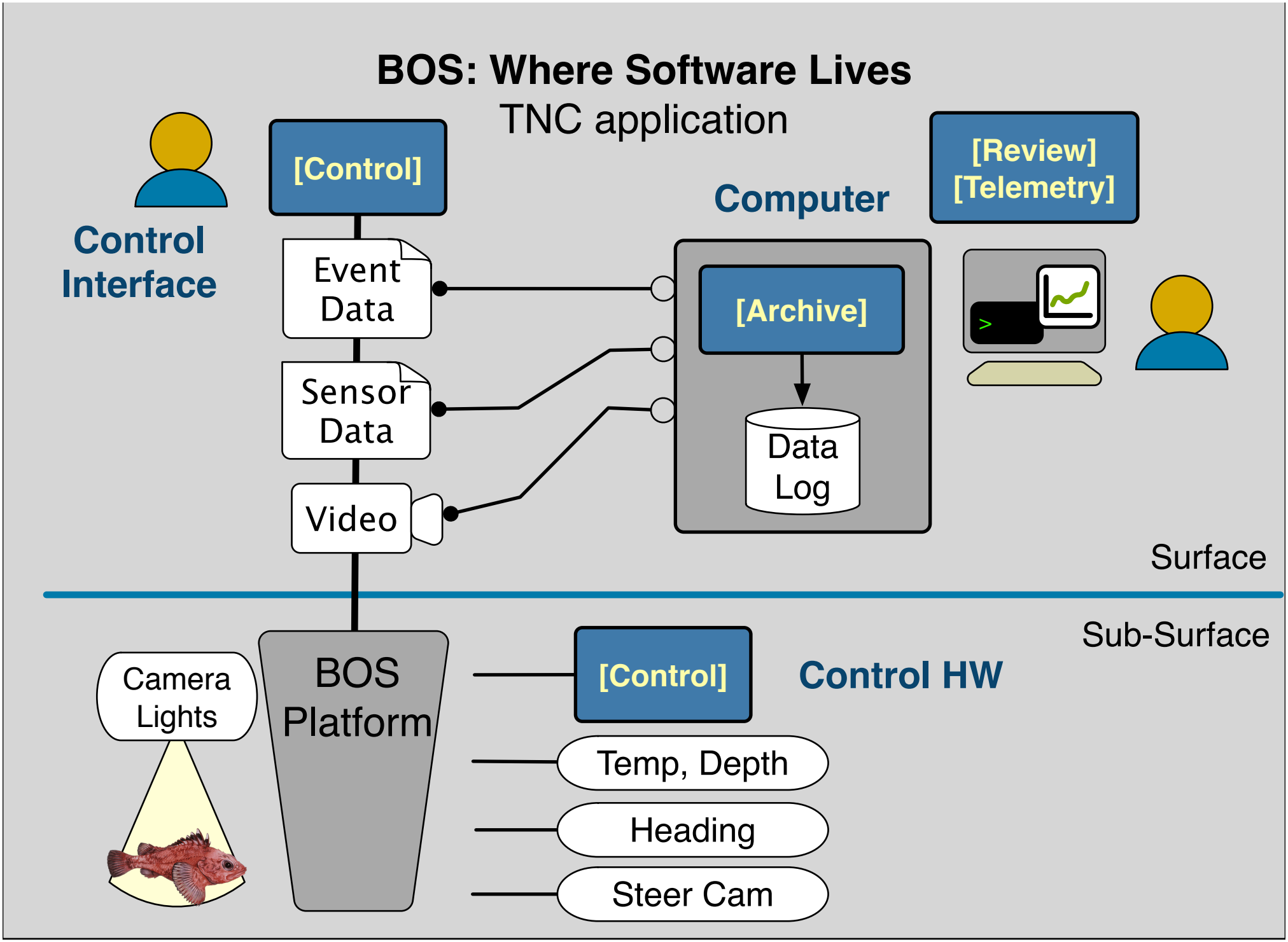
K. Headley

Content Outline

- Where the software lives
- CART : Functions, requirements, options
- At the corner of software and hardware
- Implementation approaches
- Selection and recommendations

BOS: Where Software Lives

TNC application



CART: Required Software Features

Control

- Power control
- Start/stop recording

Archive

- Record timestamped data

- Contextual sensors:
  - Temperature, depth
  - Heading, [pitch, roll?]

- Control events:
  - Camera/lights power
  - Start/stop recording

Review

- Data workflows, post-op

Telemetry

- Sensor data
- Video

Optional Features

- Configuration
  - Sample rates, e.g.
- Computation
  - Parse data in real time
  - Generate new derived data streams
  - e.g. turns count

Constraints : Design Goals

- Minimize software development for first iteration
- Architect for future expansion
  - TBD contextual sensors
  - Real time, distributed/mobile displays
  - Control interface
  - Configuration
- Keep it Simple:
  - minimal codebase and development environment
- Minimize complexity in the system

At the Corner of HW & SW

To cover functional requirements, a ***platform*** is needed

HW and SW selection decisions are closely coupled

Hardware choices involve software considerations:

NRE	Lifecycle
HW/SW Cost	Power
Firmware	Sampling Performance
Compilers, Tools	O&M, Tech Transfer
Integration	

Implementation Approaches

Platform Technologies

Hardware | Software

PC
PLC
COTS Relay
Stream Logger
General Logger
COTS
Embedded

Wedge
LabView
Vendor Utils

OASIS
MMC
BOS new HW

OASIS
Flux
SIAM
BOS new SW

Terminal Log
Internal Log

A lot of pieces exist to build a platform

COTS, Custom

HW, Software

What comibinations make sense?

What to build, buy?

How to choose?

Candidate Selection

- **CART Coverage**
- **Cost**
- **Schedule**
- **Performance**
- **Risk**
- **Tech Transfer**
- **Roadmap**

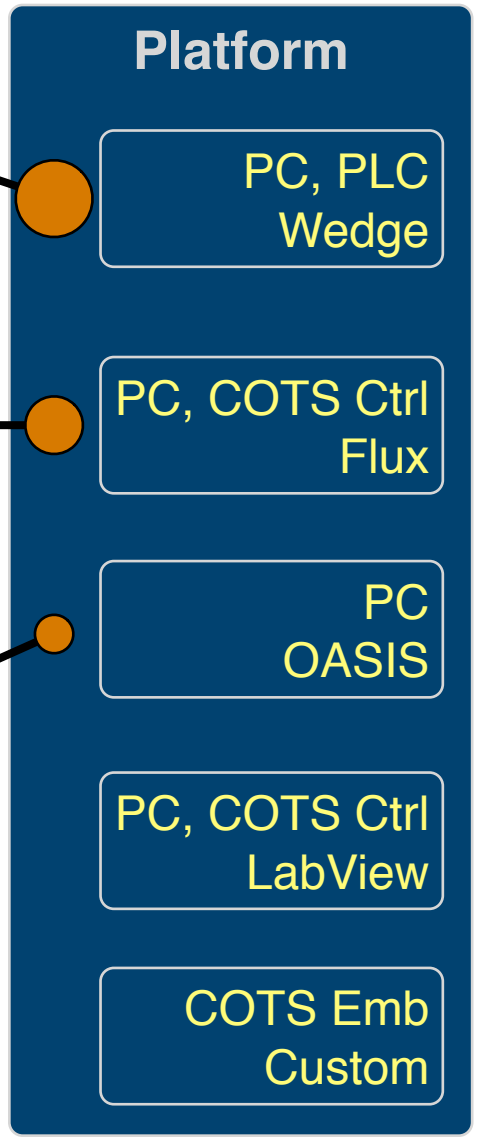
Comparison of Selected Platforms

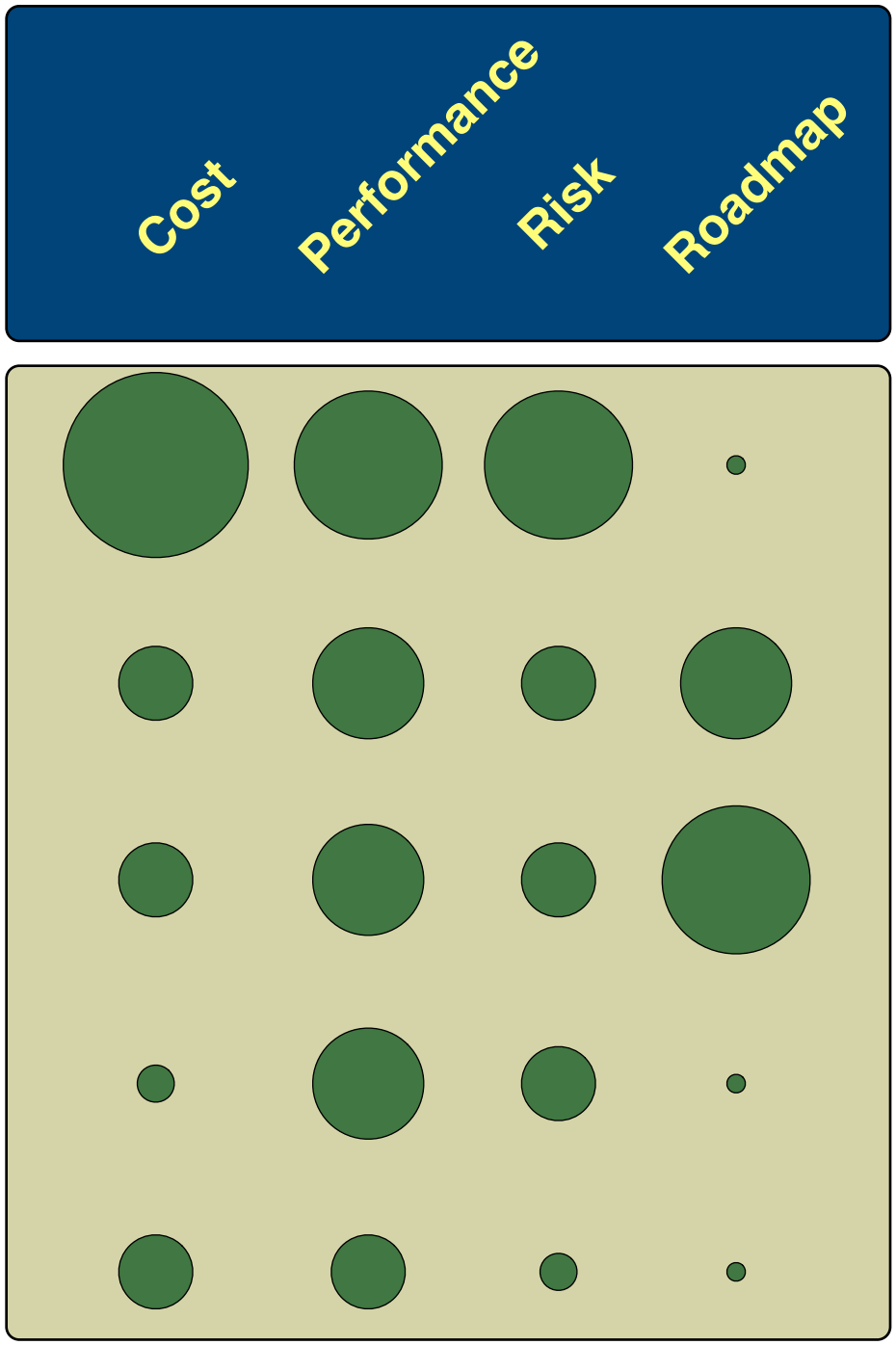
[bigger : better]

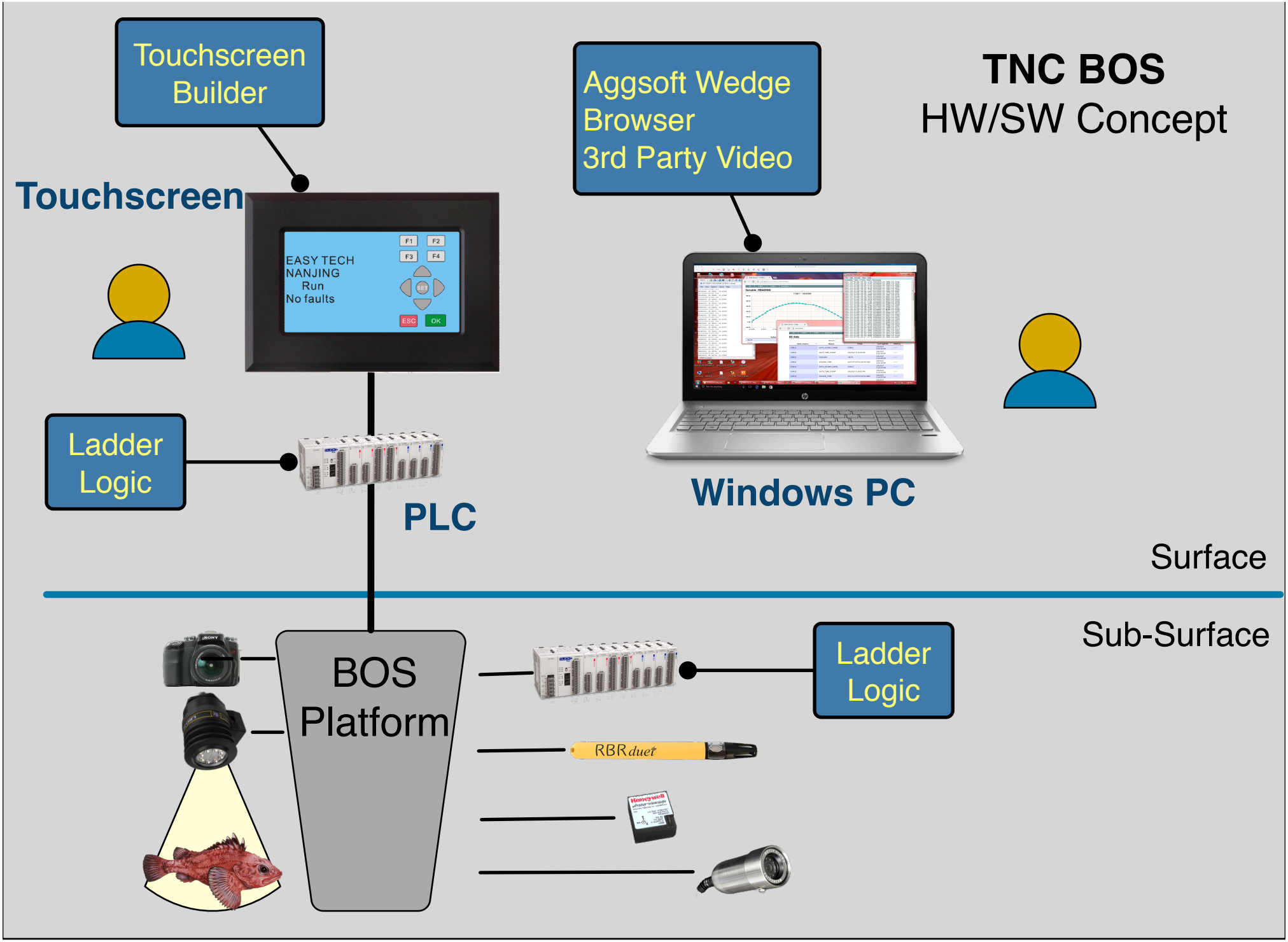
- Low Cost
- Easy to use
- Best Option for TNC
- Not good fit for untethered design

- Distributed or autonomous use
- Moderate power

- Reliable, low power
- Moderate integration effort required
- Potential candidate for untethered design



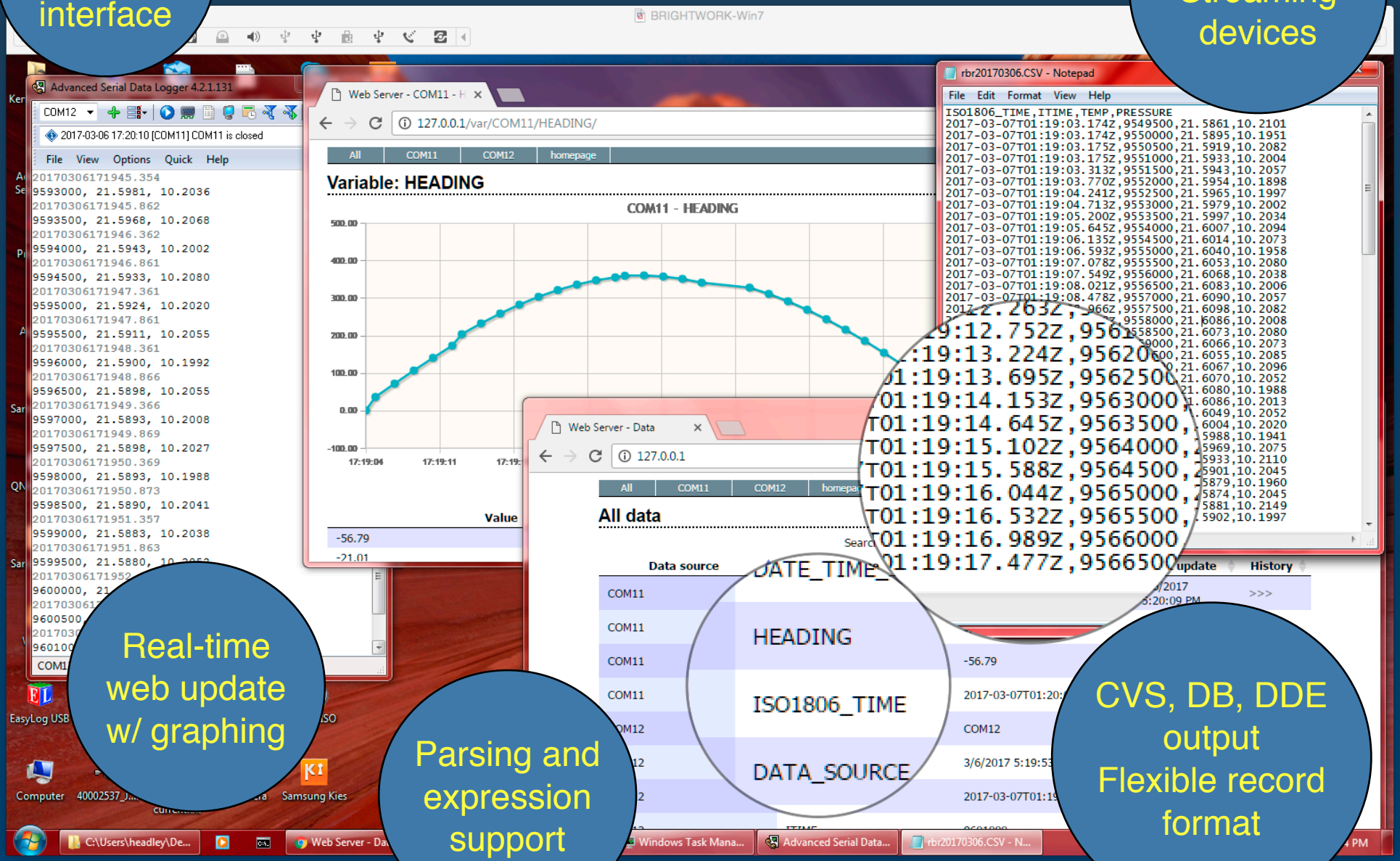



Touchscreen Builder
Aggsoft Wedge
Browser
3rd Party Video
TNC BOS
HW/SW Concept
Touchscreen
EASY TECH
NANJING
Run
No faults
Ladder Logic
PLC
Windows PC
Surface
Sub-Surface
BOS Platform
Ladder Logic
RBRduet

Screenshot: Aggsoft Wedge Evaluation

Intuitive user interface

Polled, Streaming devices



Real-time web update w/ graphing

Parsing and expression support

CVS, DB, DDE output
Flexible record format


Discussion