

# Are commercial off the shelf technologies cost effective in harsh environment applications?

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**Are commercial off the shelf technologies cost effective in harsh environment applications?**

**Or: What is the total cost of ownership?**

# **What does a harsh environment component or system need to be?**

- Needs to work in its environment**
- Needs to be replaceable, normally over quite a long lifespan**
- Needs engineering support**

# **Working in its environment**

**It either does or it doesn't – no  
issue**

# Replacements

**Getting quite a problem –**

- **Some components completely stopped – Zarlink**
- **Quite a lot of product range consolidation**
- **Far East products tend to ‘evolve’**

# **Engineering support**

- Main contractors form specialist teams**
- Increase in specialists forming small companies**
- Far East engineering support limited**

## **Circuit boards**

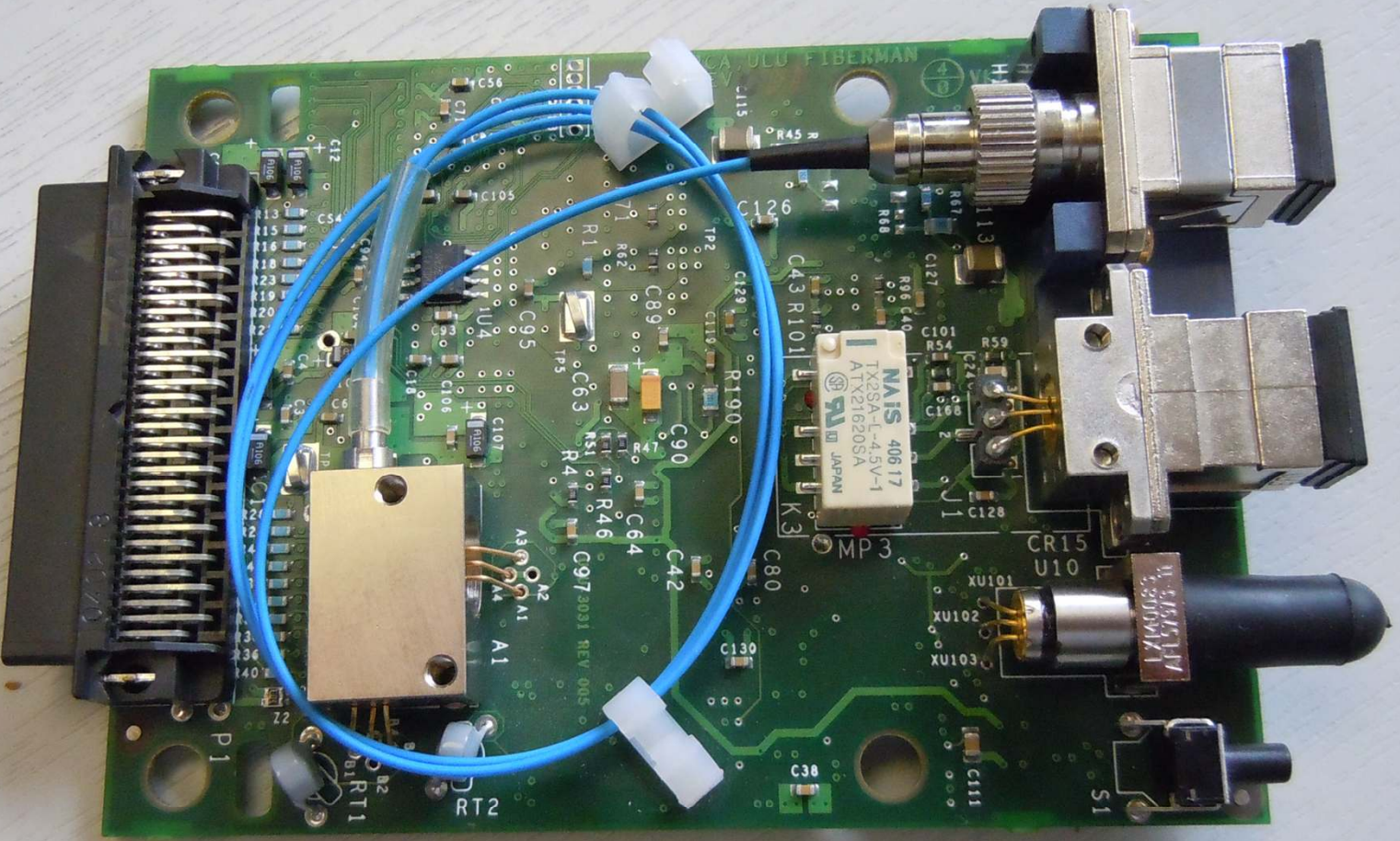
**Most systems have a custom PCB, which will have commercial electronic components. This is often produced (if not designed) by a sub contractor**

## **Now the fibreoptics!**

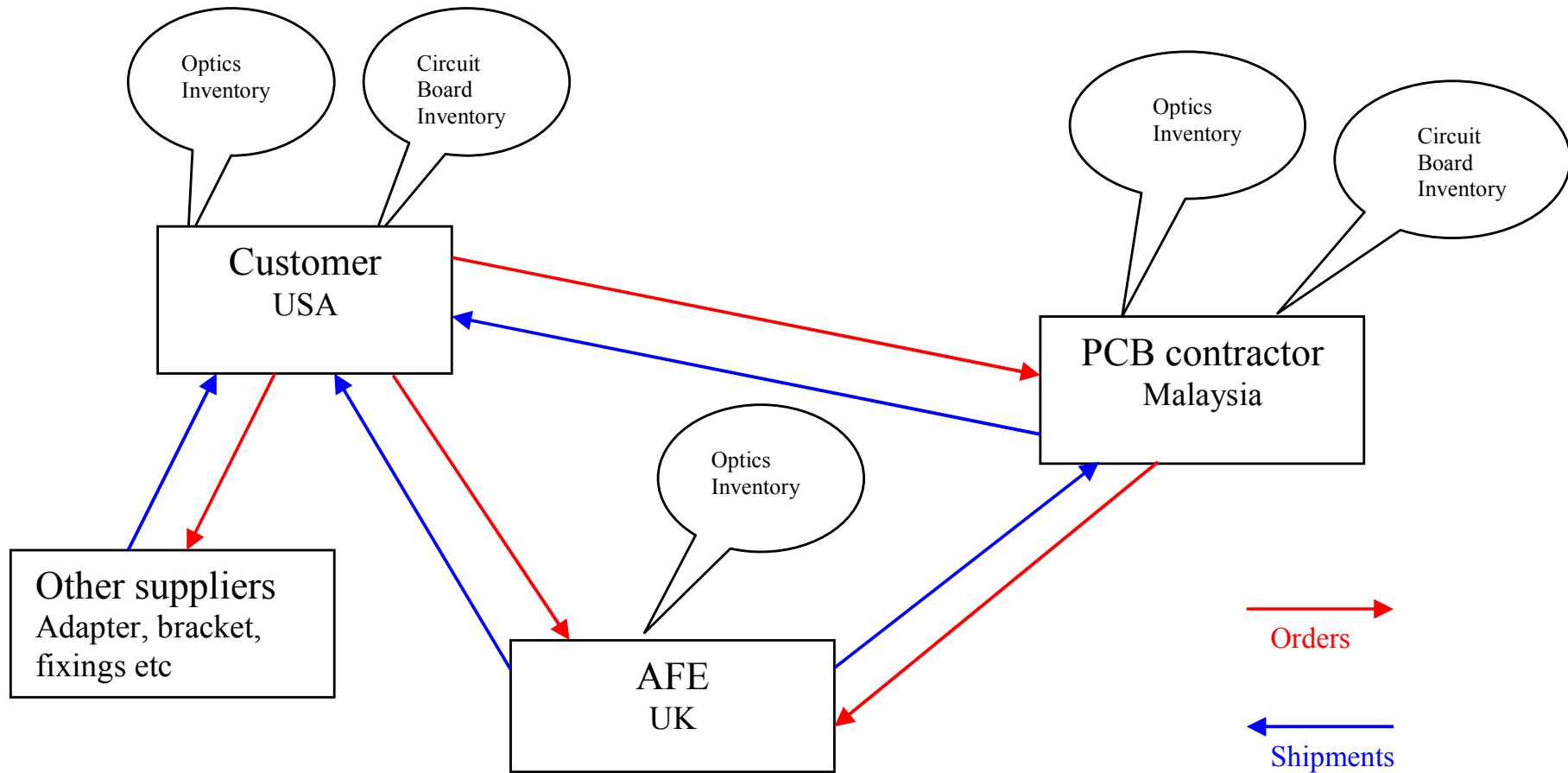
**The fibreoptics gets different treatment –**

**look to get the cost out of the components – COTS,**

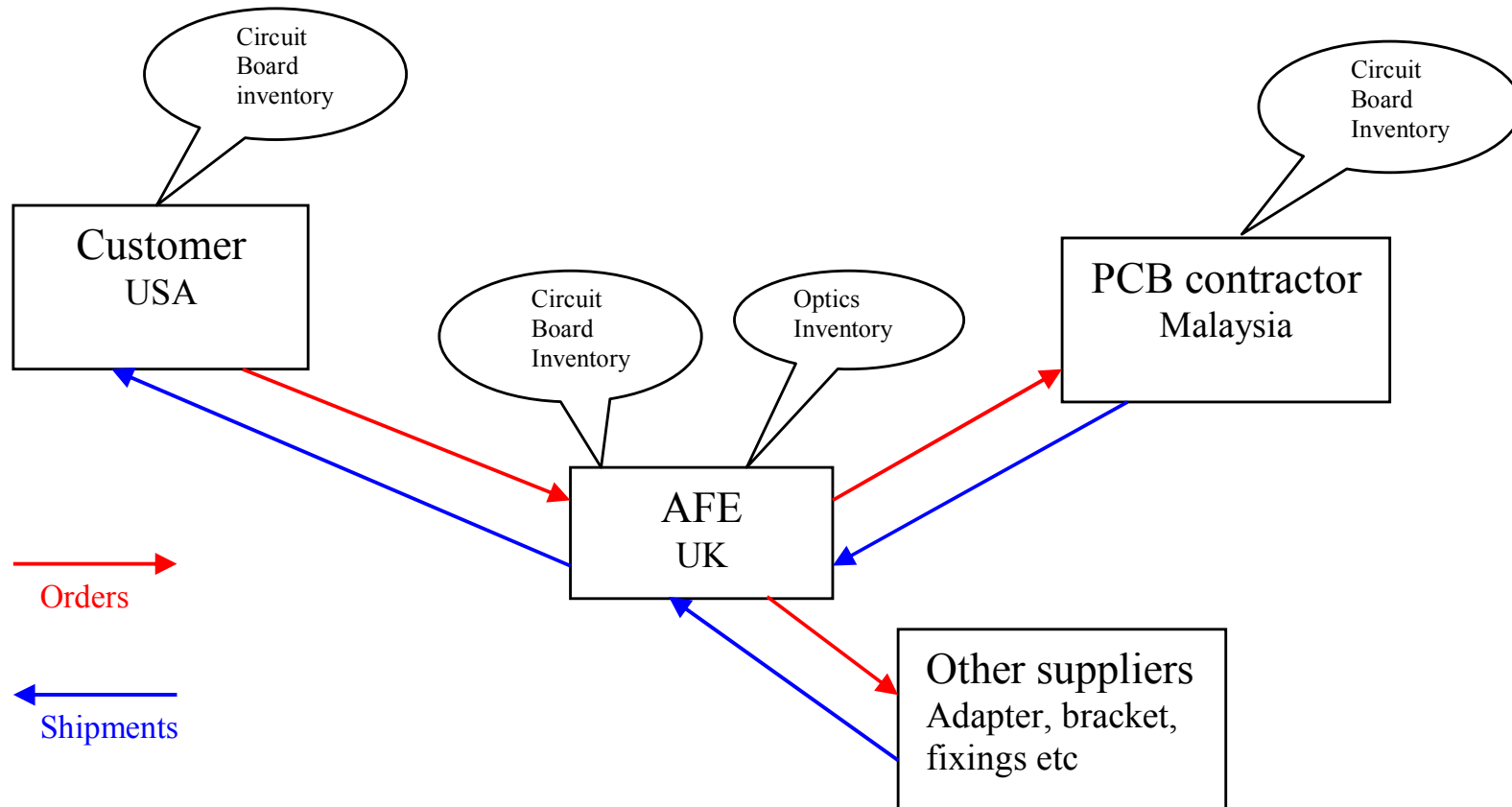
**but spend big resource (usually in house) dealing with the build, the testing and the engineering support**



# Before:



# After:





CWDM Module  
P/N: CWDM-2-D-1611/1661-900-1-1-  
100x80x10-FC/APCx2  
S/N: 3112000436

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**Custom design fibre tray**

**Commercial components  
purchased on back of other  
volume buying**

**Design input to system – optimise  
performance and price**

**Custom design components to  
compliment optimisation**



- **Lowest cost PCB <\$100**
- **Typical rack assemblies \$2,000 to \$10,000**
- **Highest cost full system assembly >\$100,000**

- **Cost efficiency comes from the overall product – the total cost of ownership, not just the cheapest component**
- **The specialists have a lot to offer – the most cost effective route may not be so obvious**
- **COTS has its place in harsh environments, but it's got to be used in context**

## **Looking to the future**

- Fibre optics assembly will move more to the specialist assemblers, who have the equipment, skills and volume**