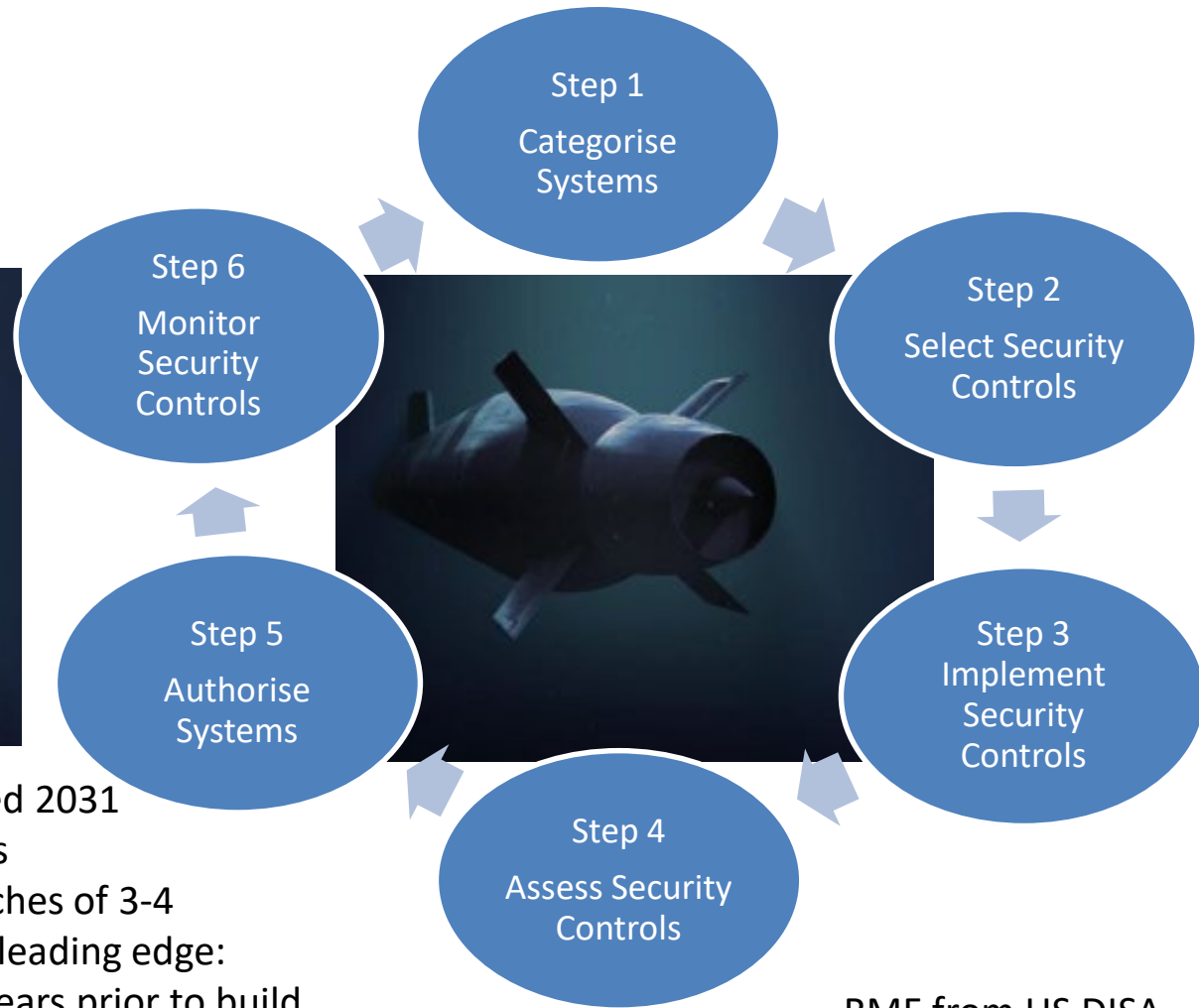




# The challenge

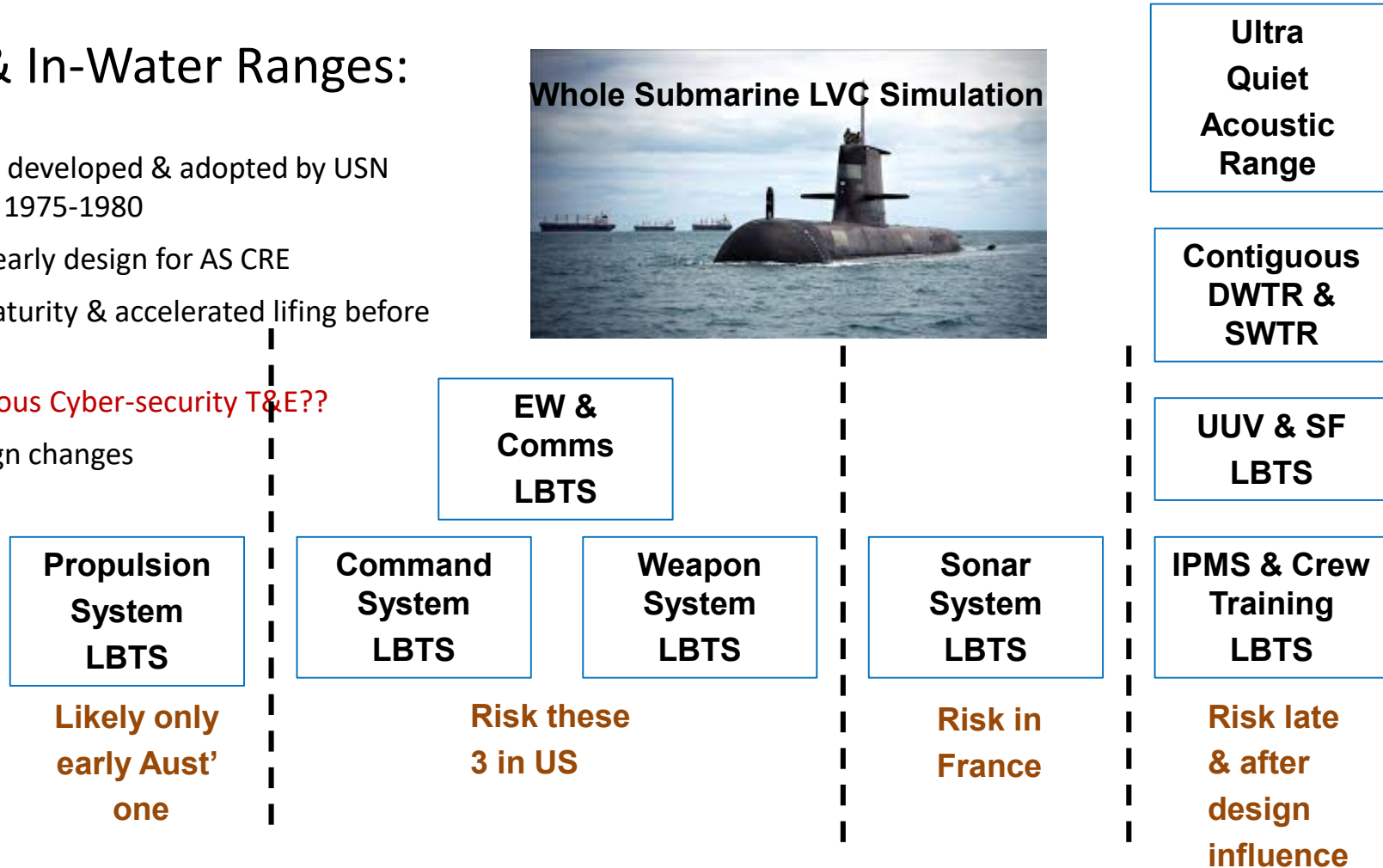


- FSM1 build start 2022, delivered 2031
- Subsequent FSMs every 2 years
- Submarines built in flights/batches of 3-4
- Difficult to maintain pace with leading edge:
- Dimensions & interface = 3-4 years prior to build
- Build = 5-7 years
- Technology age risk 8-11 years old for FSM1

RMF from US DISA  
& Nejib et al. (2017)

# LBTS & In-Water Ranges:

- Concept developed & adopted by USN through 1975-1980
- De-risk early design for AS CRE
- Parts maturity & accelerated lifing before build
- **Continuous Cyber-security T&E??**
- Sovereign changes



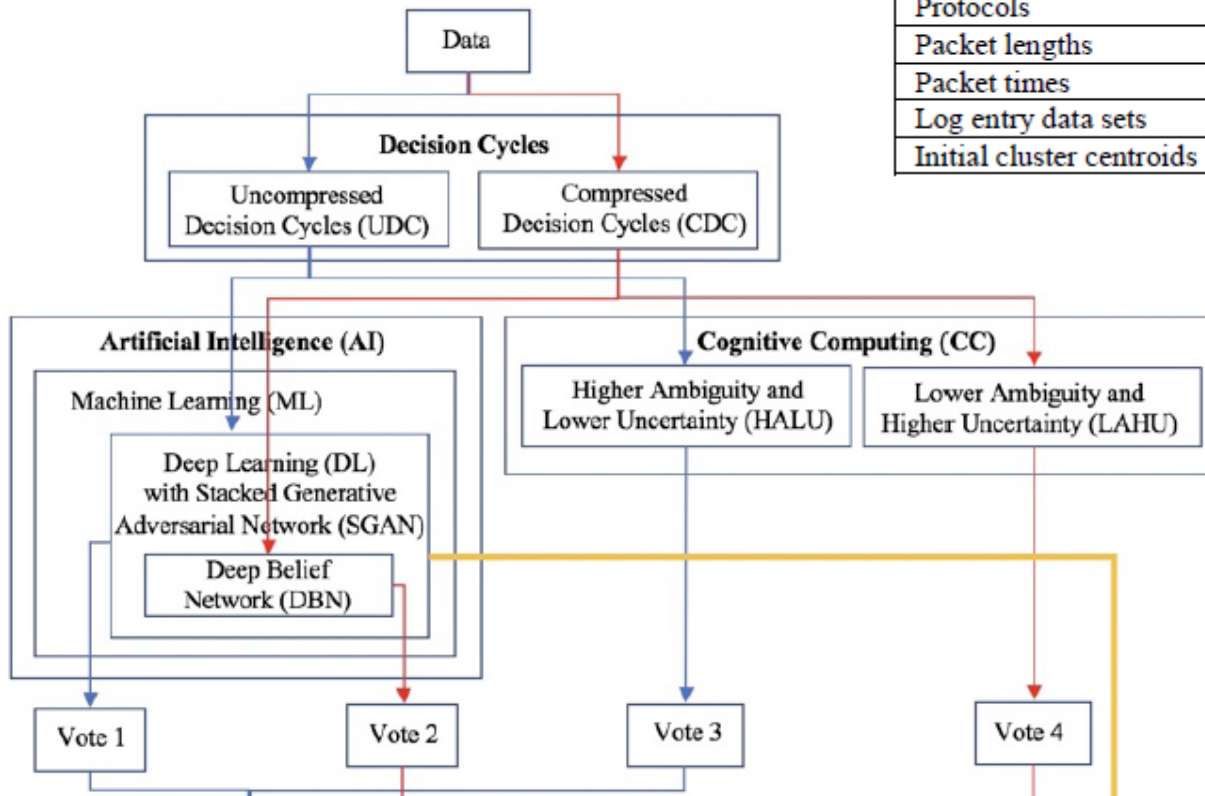
- In US DoD would connect with JMETC for LVC & JIOR for cyber-security, but no federated SIL/HWIL T&E network yet in Aust DoD

# Establishing Cyber Provenance

Component	Supplier or Potential Suppliers
Intel Microprocessor	 US-owned factory in the Philippines, Costa Rica, Malaysia, or China ( <i>Intel</i> )
Memory	 South Korea ( <i>Samsung</i> ), Taiwan ( <i>Nanya</i> ), Germany ( <i>Infineon</i> ), or Japan ( <i>Elpida</i> )
Graphics Card	 China ( <i>Foxconn</i> ), or Taiwanese-owned factory in China ( <i>MSI</i> )
Cooling fan	 Taiwan ( <i>CCI and Auras</i> )
Motherboard	 Taiwan ( <i>Compal and Wistron</i> ), Taiwanese-owned factory in China ( <i>Quanta</i> ), or South Korean-owned factory in China ( <i>Samsung</i> )
Keyboard	 Japanese company in China ( <i>Alps</i> ), or Taiwanese-owned factory in China ( <i>Sunrex and Darfon</i> )
LCD	 South Korea ( <i>Samsung, LG.Philips LCD</i> ), Japan ( <i>Toshiba or Sharp</i> ), or Taiwan ( <i>Chi Mei Optoelectronics, Hannstar Display, or AU Optronics</i> )
Wireless Card	 Taiwan ( <i>Askey or Gemtek</i> ), American-owned factory in China ( <i>Agere</i> ) or Malaysia ( <i>Arrow</i> ), or Taiwanese-owned factory in China ( <i>USI</i> )
Modem	 China ( <i>Foxconn</i> ), or Taiwanese company in China ( <i>Asustek or Liteon</i> )
Battery	 American-owned factory in Malaysia ( <i>Motorola</i> ), Japanese company in Mexico, Malaysia, or China ( <i>Sanyo</i> ), or South Korean or Taiwanese factory ( <i>SDI and Simplo</i> )
Hard Disk Drive	 American-owned factory in Singapore ( <i>Seagate</i> ), Japanese-owned company in Thailand ( <i>Hitachi or Fujitsu</i> ), or Japanese-owned company in the Philippines ( <i>Toshiba</i> )
CD/DVD	 South Korean company with factories in Indonesia and Philippines ( <i>Samsung</i> ), Japanese-owned factory in China or Malaysia ( <i>NEC</i> ), Japanese-owned factory in Indonesia, China, or Malaysia ( <i>Teac</i> ), or Japanese-owned factory in China ( <i>Sony</i> )
Notebook Carrying Bag	 Irish company in China ( <i>Tenba</i> ), or American company in China ( <i>Targus, Samsonite, and Pacific Design</i> )
Power Adapter	 Thailand ( <i>Delta</i> ), or Taiwanese-, South Korean-, or American-owned factory in China ( <i>Liteon, Samsung, and Mobility</i> )
Power Cord	 British company with factories in China, Malaysia, and India ( <i>Voalex</i> )
Removable Memory Stick	 Israel ( <i>M-System</i> ), or American company with factory in Malaysia ( <i>Smart Modular</i> )

# Leveraging Cyber Sidecars

Cyber-Monitoring →



Candidate Independent Variables	Candidate Dependent Variables	Candidate Control Variables
Number of clusters	Cluster sets	Network size
Packet traffic data set	Packet time clusters	Network structure
Source IP addresses	IP clusters	Feature weightings
Target IP addresses	Traffic composition statistics	Feature vector
Protocols	Host associations	Data set size
Packet lengths		
Packet times		
Log entry data sets		
Initial cluster centroids		

AI - Hybridizing Human intuition/judgement with cognitive computing

Segregate, Protect (ITAR), Cross-level through-life = SECURE SIDECAR



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