

Onboard Personnel Multimedia Device (OPMD)





HMAS Ballarat personnel utilising the PWA system while deployed on Operation Manitou, Source: *'Deployed Ballarat crew able to video chat with home'*, Navy Daily

The Problem

It is possible that the recent rollout of the Royal Australian Navy's (RAN) Personal Wi-Fi-Access (PWA) system on a series of HMA Ships has introduced several security vulnerabilities for the assets and personnel onboard. Although it is likely that the team responsible for the rollout considered the risk before introducing the PWA and may have a contingency plan in place, any system that connects to the internet has inherent vulnerabilities which cannot be disappeared.

The system's capabilities, including its capacity to host up to 180 concurrent users, allows personnel to access social media, emails, stream music and videos and download files to their devices while at sea and on operation. In its current configuration, it is possible that the PWA introduces the risk of adversaries gaining access to the ship's live positioning data and, if sufficiently compromised, collecting intelligence on the activities of those who use the network, crippling the ship's operational security.

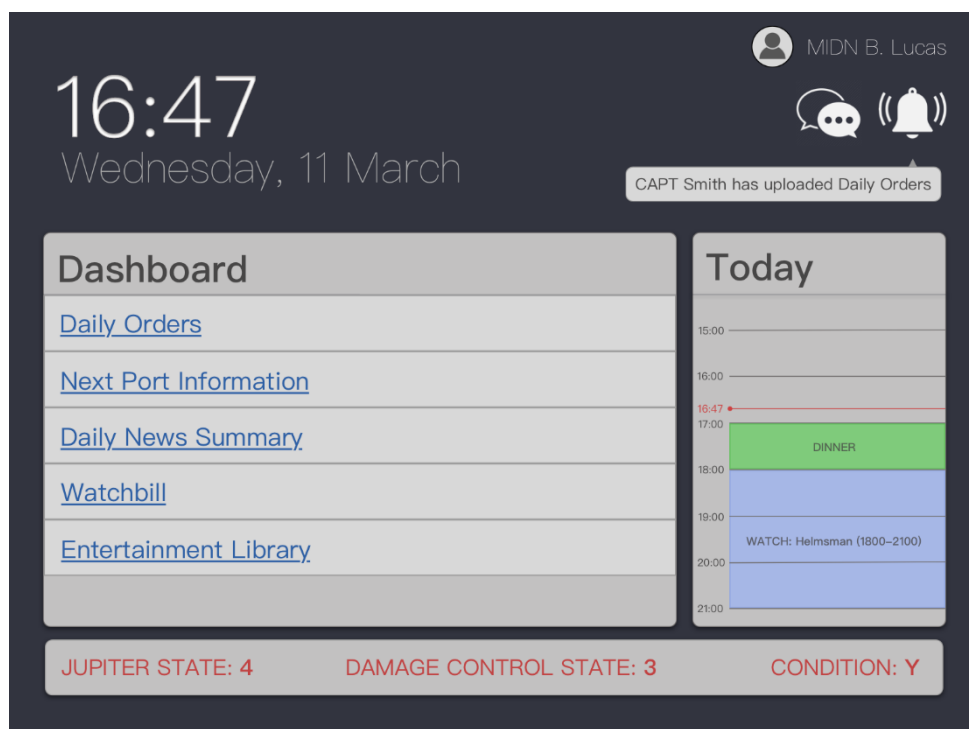
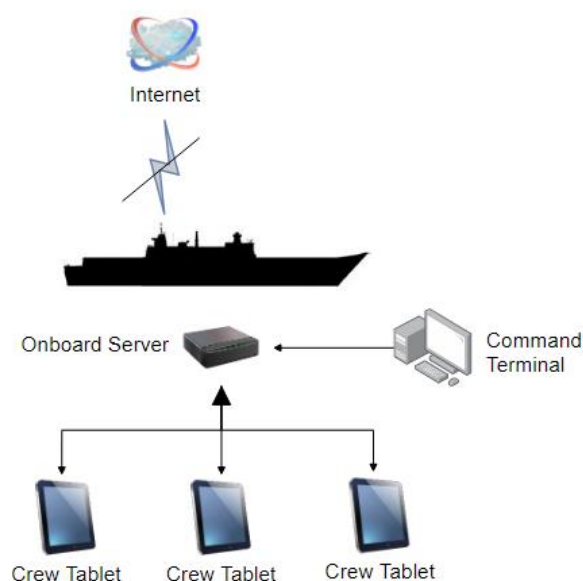
The Solution

The PWA cannot be removed entirely because a lack of personal connectivity poses a retention problem for the RAN. Therefore, I propose modifications be made to the PWA to enhance its resilience against cyber threats and ensure that it does not compromise the RAN's mission to fight and win at sea.

I propose the RAN trial an 'Onboard Personnel Multimedia Device' (OPMD), utilising the infrastructure currently in place with the PWA, which would present fewer vulnerabilities. Much like inflight entertainment systems used by commercial airlines, the OPMD would provide personnel with access to a list of internally stored movies, tv shows, music and books for entertainment.

To facilitate external communication, personnel can queue messages for release. When command sees fit, the ship can choose to send and receive queued messages, minimising the risk of compromising positioning data.

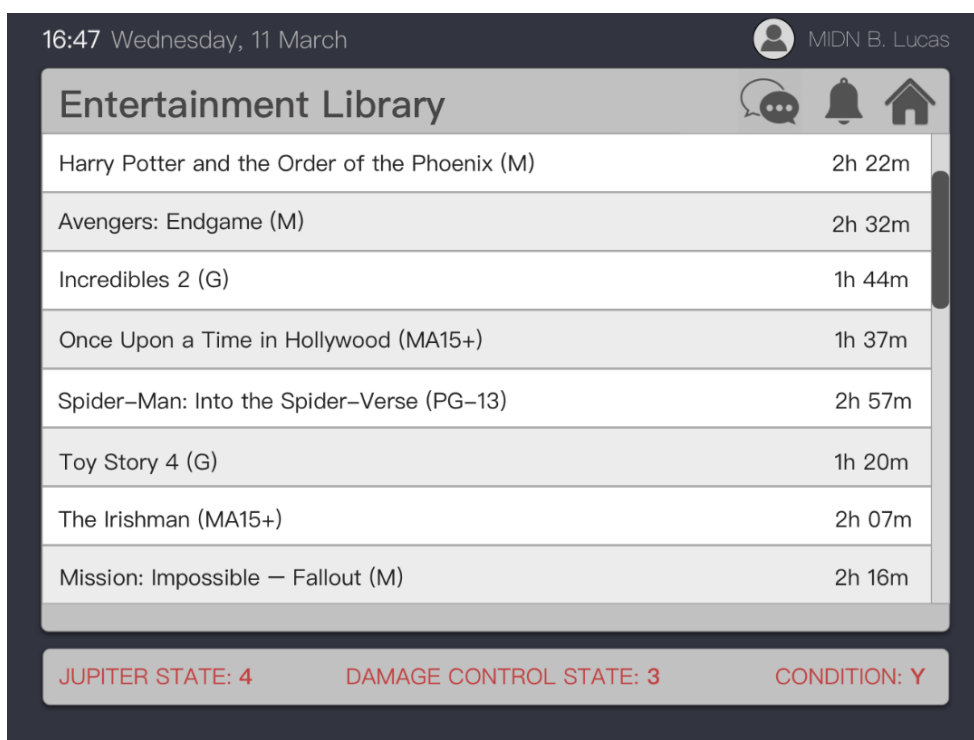
Proposed OPMD system architecture



OPMD 'home' screen

Onboard Entertainment

Data files of recent movies and TV shows can be uploaded via data transfer prior to the ship's departure. News summaries can also be downloaded from ABC News at sea whenever upload/download links are established.



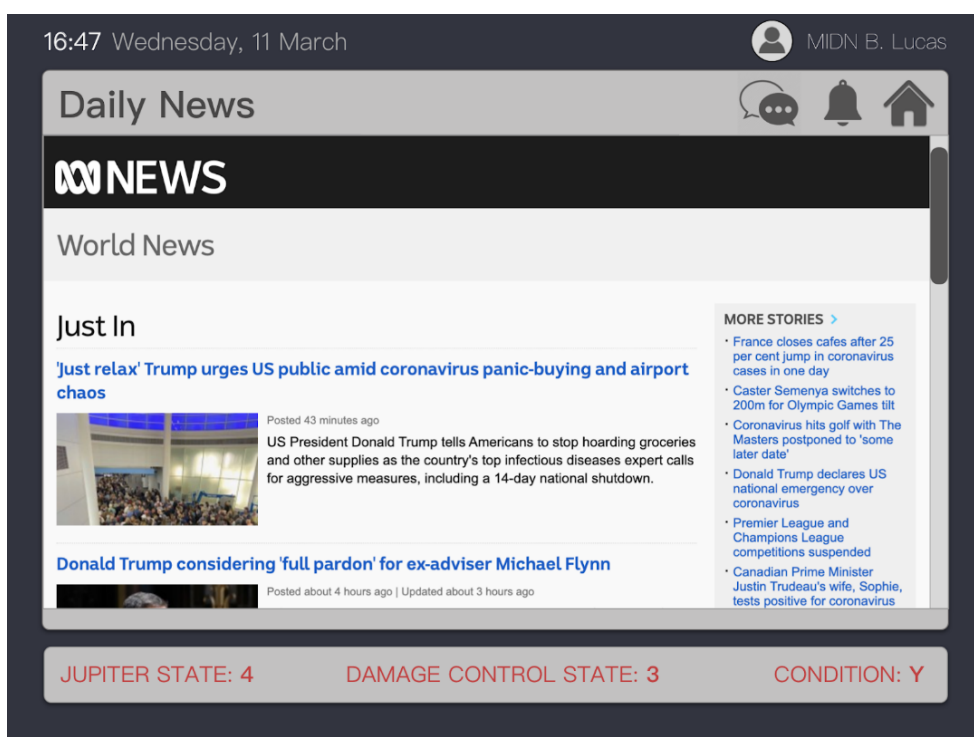
16:47 Wednesday, 11 March MIDN B. Lucas

Entertainment Library

Harry Potter and the Order of the Phoenix (M)	2h 22m
Avengers: Endgame (M)	2h 32m
Incredibles 2 (G)	1h 44m
Once Upon a Time in Hollywood (MA15+)	1h 37m
Spider-Man: Into the Spider-Verse (PG-13)	2h 57m
Toy Story 4 (G)	1h 20m
The Irishman (MA15+)	2h 07m
Mission: Impossible – Fallout (M)	2h 16m

JUPITER STATE: 4 DAMAGE CONTROL STATE: 3 CONDITION: Y

OPMD entertainment library selection (above) and daily news update (below)



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Daily News

ABC NEWS

World News

Just In

'Just relax' Trump urges US public amid coronavirus panic-buying and airport chaos

Posted 43 minutes ago
 US President Donald Trump tells Americans to stop hoarding groceries and other supplies as the country's top infectious diseases expert calls for aggressive measures, including a 14-day national shutdown.

Donald Trump considering 'full pardon' for ex-adviser Michael Flynn

Posted about 4 hours ago | Updated about 3 hours ago

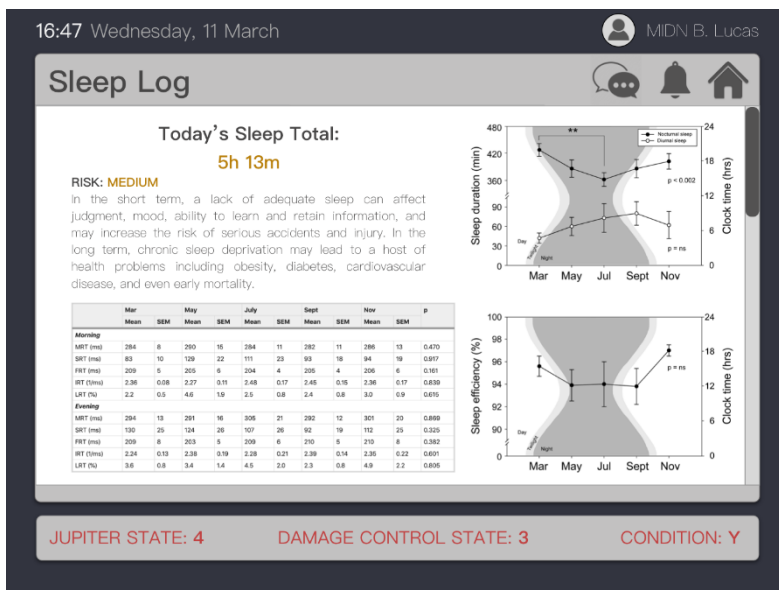
MORE STORIES >

- France closes cafes after 25 per cent jump in coronavirus cases in one day
- Caster Semenya switches to 200m for Olympic Games tilt
- Coronavirus hits golf with The Masters postponed to 'some later date'
- Donald Trump declares US national emergency over coronavirus
- Premier League and Champions League competitions suspended
- Canadian Prime Minister Justin Trudeau's wife, Sophie, tests positive for coronavirus

JUPITER STATE: 4 DAMAGE CONTROL STATE: 3 CONDITION: Y

Personnel Analytics and Welfare Monitoring

The OPMD has scope to include features such as a sleep calculator which would allow personnel to voluntarily log and track their sleep, helping combat fatigue and providing command with an accurate picture of the health of ship's company. In addition, fitness trackers, including workout suggestions and progression logs, can be implemented to improve its accuracy.



Concept proposal of an integrated sleep tracker

Possible Additional Features

1. Inter-bunk text chat facilitating text communication across the ship
2. Scheduling system allowing personnel to book medical appointments and mess timings
3. Electronic dissemination of daily orders

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Next Port Information

Singapore
Posted By: LEUT JONES (N2)
Force Protection State: **GREEN**
[Force Protection Watchbill](#)

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RESTRICTED AREAS
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JUPITER STATE: 4 DAMAGE CONTROL STATE: 3 CONDITION: Y

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Ship Map

HMAS Adelaide (III)

JUPITER STATE: 4 DAMAGE CONTROL STATE: 3 CONDITION: Y

Proposed Implementation

The OPMD could be implemented in two possible configurations;

1. A retractable screen mounted overhead in bunks utilising wired connections to a central computing system.



This configuration could utilise pre-existing technologies such as Thales' 'Avant In-flight Entertainment System' used by most commercial airlines.

Avant In-flight Entertainment System

- Android operating system.
- 1080p Full High Definition (FHD) video capacitive multi-touch screens ranging from 10" to 32"



2. A portable version utilising a connection to the existing PWA infrastructure, however instead of broadcasting Wi-Fi the system would broadcast an intranet connection only enabling users to access internally stored information.

DT311 Portable Tablet

- Integrated hardware-software encryption capabilities.
- Rear and front cameras offer software privacy control, while a mechanical privacy shutter can be applied to the rear camera.

