Using my iPad/tablet as an EFB

As technology advances in any industry, regulations lag and misinformation evolves into urban myth. These urban myths can develop into normalisation of deviance issues, as individuals rely on the advice of others who haven't researched the rules or decide the rules don't apply to them.

This situation has occurred within aviation relating to pilots' understanding of the use of electronic devices or Electronic Flight Bags (EFB) in the cockpit for navigation. And why wouldn't it? The EFB can provide a wealth of information for pilots in flight and RAAus is not naïve enough to think pilots are only using devices for approved purposes.

There can be serious safety implications if pilots use these devices without an understanding of the limitations in the information displayed or their legal requirements. As Spiderman said, "With great power comes great responsibility". RAAus pilots operate in the same airspace as other pilots who operate with an understanding of the limitations of EFBs and their legal requirements, so as professionals why would RAAus pilots do anything else?

Many pilots believe they are just as effective or safe planning flights using unapproved aviation software and ignoring basic navigation requirements. There is an entire world of different apps or websites which appear to give the information pilots need and they can even provide this information in an easier to understand format than the official channels. However, it is important to understand that unapproved apps or websites do not necessarily comply with the accuracy and data integrity standards required of aviation data. Data integrity and accuracy refers to the displayed truthfulness of the data and includes factors such as the way the data is refreshed or sourced.

One good example of this issue is aviation weather. Weather information which is not validly sourced from Airservices or the Bureau of Meteorology (BOM) has no assurance of integrity or reliability. While there are an amazing number of weather apps that display the weather in graphical form, using pretty lines, arrows and pictures there is no guarantee the data behind this information is accurate or up to date for the day or even during the hour you want to use it.

Unapproved weather providers may not have an agreement with BOM to use aviation data, the company may be based overseas and not use aviation specific data accurate and relevant to Australia. There can be lag or delay built into the software which relates to how often the weather data is uploaded. These lags may be from 15 minutes to hours, which can be critical if a pilot approaches the edge of a storm, rain shower or other weather phenomenon. Therefore, it is critical that pilots use approved software, such as an EFB which is approved under CASR 175.295, to access

aeronautical information such as met, NOTAMS and maps, etc. In Australia, there are three approved EFB software providers; OzRunways, Jeppesen Flight Deck (FD) and AvPlan.

It is important though to understand the limitations of EFB software, as even the approved products have them. Although EFBs have revolutionised the way information is presented to pilots, many of the rules regarding the information has not changed. This includes the validity of met, NOTAMs and the status of airspace, among other things. A good example of this is relying on an EFB for information about activation of restricted airspace; although the software might be presenting an 'up to date' graphical representation of the NOTAM status of restricted airspace, such airspace can be 'activated' at very short notice. Such short notice activations will not be shown in an EFB which can, and has lead to airspace incursions. With respect to restricted airspace, it is still a requirement for a pilot in command to check the status of the airspace with the controlling authority prior to entry. The NOTAM, whether in text form or pictorially displayed as a map overlay on an EFB app, is not authoritative for the purpose of indicating the status of restricted airspace.

Plain text weather and NOTAM

RAAus often is approached by pilots who hold what seems a reasonable point of view that the current CASA requirements don't seem relevant or realistic for recreational use. All pilots could benefit from plain English versions of weather forecasts, clear waypoint or aerodrome identifiers and other simplifications. However, if RAAus pilots want to fly in the same airspace as Regular Passenger Transport (RPT), the fare paying public, charter flights, fire bombers or at aerodromes used by these pilots, we all must use the same rules and systems.

Imagine the anarchy that would result if drivers who driving for fun versus a job decided that red lights are not applicable to them, or speed limits only applied to drivers of trucks or taxis? What would happen on the roads if some drivers decided they would drive everywhere at 10 kilometres above the speed limit because they are better drivers than everyone else? Or 10 kilometres slower to make sure they are safe?

When issued our Pilot Certificates we all agreed implicitly to operate in the same way, using EFBs only for the key purpose approved. If we operate with different expectations in the cockpit anarchy (and accidents, incidents and airspace incursions) will continue to occur. It is equally important to remember that when pilots are issued with Certificates or Licences, they were trained to use specific aviation sources for data when flight planning. These sources are standardised internationally from the organisation tasked to set standards and rules for flying, the International Civil Aviation

Organisation (ICAO). ICAO was formed in Chicago in 1944 to assist the coming boom in civil aviation after WWII. Currently there are 192 countries who have signed agreements with ICAO to conduct their civil aviation flying in the same way. Check the ICAO website for more information https://www.icao.int/Pages/default.aspx

ICAO are the only organisation who can initiate change related to aviation sourced and displayed data. Most of the 192 countries would have to agree to these changes and only once they were enacted in each countries legislation could they become legal. Not an impossible task and one RAAus will pursue through CASA on behalf of members, however until these changes are enacted, we have a community obligation to plan and use the same aviation sources for data, or we will never be viewed as responsible members of the aviation community.

RAAus is continuing to monitor the use of alternative apps and information for recreational purposes and is developing a plan for the regulator on members' behalf to see what changes may be accepted for recreational flights where other airspace users won't be involved. These flights would relate to local flights to and from private airstrips, or where no regular public transport (RPT) or charters operate. We will shortly be asking for member feedback on this subject and are always happy to discuss or receive emails.

To make sure we are all singing from the same hymn book and avoid inaccuracies that occur with word of mouth information here are specific legislative references and definitions related to EFBs.

Let's start with the authoritative basis upon which an EFB may be used. Unfortunately for us, there isn't one 'magic bullet' that states in black and white that EFB's are approved; it requires the interpretation and application of several sources. First is federal legislation called the Electronic Transactions Act 1999. In a basic sense, one of the things this act states is that a document is still a valid document if it is in a digital format. This act is what makes an EFB a legal means or presenting aeronautical information.

In terms of aviation specific rules, a good starting point is **CAAP 233-1(1)** which provides the definition of an Electronic Flight Bag (EFB) as a portable digital information system for flight deck members which allows storing, updating, delivering, displaying and or computing digital data to support flight operations or duties. Whilst this CAAP is primarily aimed at AOC holders, it provides useful information for all pilots and is a must read. Beware the requirements of CAAP 233 are advisory only for private operations.

Additionally, **CAR233 (1A)** clearly states the pilot must access aeronautical data and information applicable for the route proposed to be flown. This information may be published by Aeronautical

Information Publication (AIP) or a data service provider or the holder of an approval from CASA under CASR 175. Any aeronautical information which is sourced from other than a CASR 175 approved source cannot be used to fulfil the requirements of the CAR/CASR and Air Navigation Act.

CAR 239 provides flight planning requirements which include requirements for pilots to study all available information relevant to the planned flight. This is particularly important in the case of flights away from the vicinity of the aerodrome and must include current weather forecasts for the route and aerodromes to be used (including alternates). NOTAM information must be read to ensure the aerodromes are usable. Alternate fuel or alternate aerodromes must be carried or planned for in the case of forecast problems at aerodromes. Again, met and NOTAM information is a part of the Integrated AIP and must be supplied by a CASR 175 approved entity. There are a lot of unofficial sources of met and NOTAM information out there; none of these can be relied upon to satisfy CAR239.

As previously mentioned, when operating in Australia with an EFB pilots have three choices of approved providers; OzRunways, AvPlan and Jeppesen FD. All three of these providers have been approved by CASA under **CASR Part 175.295** which permits users to meet all requirements for documentation carriage in flight for private and commercial operations and for VFR and IFR. The standard required to be approved under CASR 175.295 and the three approved data service providers (DSP) are therefore a trustworthy source of information. However, there are several unapproved EFB apps on the market which do not hold CASA approval, so take care even if the apps use ‘official looking’ maps! Unapproved EFB apps are typically poorly designed, poorly maintained and can be downright dangerous to your flying. Pilots cannot legally rely on them in any event.

When using an EFB, keep in mind that documents you require for a flight must be stored locally on the EFB device – or ‘downloaded’ fully. For a document such as a map or ERSA, using a live downloading service does not meet this requirement, because you cannot guarantee you will always have internet coverage throughout the flight. Just like you do with your aeroplane prior to flight, an EFB must be ‘pre-flighted’ to ensure it has the necessary configuration and data stored on it. If the pilot hasn’t downloaded all the necessary information for the proposed flight prior to take off and then cannot establish an internet connection, aviation critical information is just not there – such issues can be alleviated by simply having a disciplined and methodical approach to conducting a pre-flight check of your EFB.

In terms of updated information, one significant safety advantage of the three CASR 175 approved EFBs is that all three apps are incapable of displaying out of date met, NOTAM, maps and charts; indeed, this is a requirement for a Data Service Provider to gain certification for an EFB application. This is a significant advantage for pilots, as the risk of inadvertently taking out of date information flying is all but eliminated when using an approved EFB.

Planning and Use for Navigation

OzRunways and AvPlan EFB apps both feature flight planning systems. Despite the convenience of having the ability to automate calculations in the planning process, a pilot still must plan the flight diligently; a failure to carry out thorough planning can have serious safety implications. These are regularly seen by RAAus when following up reports from pilots becoming lost, entering cloud and committing incursions into controlled airspace, restricted airspace or running out of fuel. Automated flight planning is not infallible; it is a case of 'rubbish in, rubbish out' with software planning systems. They are simply a dumb calculator which has no way of knowing if you have entered your fuel flows correctly, or set your unit correctly. Make sure you take extreme care when setting up your EFB planning system, and always do mental dead reckoning to back up the calculations made by the EFB. It also helps to have another experienced pilot review your aircraft profiles to look for any potential errors. These simple steps will ensure any data entry errors are detected before a safety issue can arise.

But what does this all really mean? Can a pilot program an EFB, use the weather, NOTAMS and maps provided by that software and go fly?

In a word, yes, BUT – while It is perfectly legal to use an approved EFB app to access aeronautical information required under CAR 233 (1A), there are still some things the EFB cannot do for you. One example is using the GPS derived position information for primary navigation. Put another way, you cannot use the GPS position from an EFB to 'fix' yourself. An EFB GPS derived position can only be used to assist with your approved method of navigation; for RAAus aircraft, that is visual navigation. In practice, this means the pilot must still perform visual fixes at the required intervals. The EFB GPS position can be used to supplement your visual navigation only, just as a panel mounted or handheld 'VFR GPS' can be. iPad GPS information is very accurate, but remember: it is not certified and should be taken with a grain of salt. Failures can and do happen, albeit very rarely.

Remember, the EFB is not a pilots' panacea; it does not replace good airmanship, captaincy and a diligent approach to flying safely. We all need to think about what implications might exist when we rely solely on software for our planning and execution and don't have the "big picture" needed to

safely navigate an aeroplane. If your EFB has become a crutch for your piloting, it is probably worth revising how you operate with it and you should seek the assistance of an instructor to assist with this. EFB's are the norm in aviation now (Airservices sells only 2000 copies of paper maps every cycle, with the remaining 22,000 pilots using EFBs). Just because these systems are becoming normalised, doesn't mean the challenges to operating with them have been overcome or are even fully understood by the industry. A lot of pilots have never been taught by an instructor how to safely operate with an EFB, and there are a fair number of instructors who don't themselves know how to use them at all! If you are one of those instructors, it is probably time to get your head back in the books and learn how to use the new technology so your students will be adequately prepared for a future with EFBs. This would also be a good topic to discuss with pilots during a BFR.

As an innovative organisation, RAAus is taking the lead with encouraging our pilots and instructors to safely embrace EFB technology. So use your iPad or other electronic device in the cockpit but do it the right way; make sure it is giving you everything you not only legally need as a pilot, but what you need to remain safe. The determining factor remains, as always, the pilot in command.

References: CAAP 233-1(1), CAR 233, ICAO member state information