Summary
This document is a summary of a paper comparing the International registries under the Aircraft protocol with that under the proposed MAC protocol. The comparative paper is due to be published in the Cape Town Academic Journal shortly. The author felt that the recommendations it contains might be of assistance to those attending the MAC Diplomatic Conference in Pretoria (November 2019). The full paper can be made available upon request.

Abstract
In this not-so-new world of e-commerce, lawyers and engineers must work together to properly design online systems, to ensure these systems are effective, legally and practically. Poor technical design can undermine the acceptance of the system, no matter how well thought out the underlying legal regime. An interesting example is the set of registries pursuant to the Cape Town Convention. These specialist collateral registries are global with significant legal and commercial effect. However, that effect could be nullified with poor design. The registry operating under the Cape Town Convention’s Aircraft Protocol since 2006 has recorded over 1 million registrations. In designing its sister registry which will operate under the proposed protocol on mining, agricultural and construction equipment, engineers and lawyers must resist the temptation to simply copy and paste. Respecting the success of the Aircraft Protocol registry is fine, but blindly aping its approach would lead to failure for its sister registry.

Introduction – Design as an enabler of success
The International Registry pursuant to the Aircraft Protocol (‘AIR’), came into operation in March 2006. Since then, it has recorded over 1 million registrations and provided over 1.2 million search results. Back in 2012, Professor Jane Winn stated, in relation to the AIR:

   The International Registry may be the most successful global electronic commerce system ever built in terms of the speed with which it was implemented, its adoption rate, and the dearth of controversy surrounding its operation. The real ‘driver’ of its success is demand for a more efficient aircraft financing regime, while its design is an ‘enabler’ of the realization of that goal.¹

A corollary of Winn’s point is that inappropriate design could lead to the failure of a registry system. Winn also states: ‘A great deal of the success of the International Registry is due to characteristics of the international market for aircraft as well as its legal and technical design.’² Therefore, the question of design as an enabler of success is considered carefully in this article.

Although this article focuses mainly on the technical design of the International Registry established under the MAC Protocol (the ‘MACIR’), the legal design, which is expected to be concluded at the Diplomatic Conference in 2019, must be coordinated with its technical design. In the view of the author, and based on his experience, the welcome afforded to technical experts during the MAC Protocol development process at a meeting in Rome in December 2017 shows that the participants are already committed to this design coordination, although they may not use this term.

There are many lessons that subsequent similar registries can learn from the design and operation of the AIR, especially those under the Convention and its protocols. Careful thought should be given to

² ibid 43.
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the differences between the protocols, markets for the relevant equipment and general operational requirements to identify how the future MACIR should be designed and operated.

The approach taken in the full paper was to compare the AIR and MACIR, looking at differences in the registry-related legal provisions of the Convention and relevant protocols, equipment identification criteria, Supervisory Authorities, market dynamics, operational and security requirements of likely clients, and a value chain analysis of each. Once the comparison was completed, we briefly examined the Legal Entity Identifier ('LEI') system, a global platform with some similarities to the proposed MACIR. We also reviewed the six success factors identified by Winn as they might relate to the MACIR. Following analysis in the paper, a list of recommendations is suggested along with concluding remarks.

Recommendations for consideration

The list of recommendations below is derived from a comparative paper which is due to be published in the Cape Town Academic Journal shortly. While the article did not set out to make any legal recommendations, given the tight interplay between the technical and legal design, several legal recommendations are first set out. Then, the technical design recommendations are proposed, including some areas which would benefit from further research.

A good design is an enabler of success. The key design points for the MACIR are:

A. Legal design recommendations

1) Article XIV(1) of the draft MAC Protocol should be redrafted to allow for the replacement of a Supervisory Authority. A replacement provision would provide flexibility to deal with potential future institutional changes at the SA.

2) Article XVI of the draft MAC Protocol should define what the connecting factor is for a registration to fall within the designated entry point rules of a contracting state. This will bring clarity to an area which, due to the three types of equipment, may be more complex than for the Aircraft Protocol.

3) Article XVIII(4) of the draft MAC Protocol should be redrafted to ensure that a decentralised or federated system design is not excluded from the options available to the Registrar. In this case, a technology neutral drafting style would ensure options that become available in the future are not unintentionally excluded.

4) The MAC Protocol should allow the SA to establish standards for the operation of a designated entry point. These standards should be set out in the MACIR regulations and should take account of the sensitivities of states while at the same time trying to ensure a consistent level of operation at each designated entry point, where possible.

5) The MAC Protocol should provide for enhanced mechanisms to deal with and discourage improper unilateral registrations. There are several options, including greater involvement of the Registrar or a sharper set of rules allowing a court to order a discharge and punish the registrant in the case of unilateral registrations or, potentially, guidance in the regulations to allow a pragmatic position to be taken where clearly improper registrations are ignored. Alternatively, not permitting unilateral registrations or, if permitted, requiring an independent

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3 The MACIR is not yet established and, therefore, analysis is of the proposed MACIR as it would operate under the draft MAC Protocol.

4 See section IV below.

5 See Winn (n 4).
third party to also consent to the registration may reduce abuse. All options should be considered.

6) The MAC Protocol should consider whether any useful articles can be included to ensure the asymmetric power relationship between the parties is not abused and that the less powerful are protected, for instance through reference to consumer protection laws.

B. Technical design recommendations:
1) Selection of the SA and its resourcing will be critical. A comprehensive governance/supervision system, similar to that within which the LEI operates, is essential.

2) Information security should be appropriate to the risks of the MACIR and is different, in some respects, to the AIR. As a result, the security stance should be derived de novo based on a threat assessment specific to the MACIR.

3) The cost of access and use of the MACIR should be lower compared to the AIR.

4) The MACIR should place a greater emphasis on simplicity of use through careful workflow and screen design including a different approach to vetting of users in order to be approved for an account, registrations and consent. First, one could consider relying on LEIs for creditors and debtors being vetted by creditors. Second, the registration process could permit all data entry and payment to be performed by the creditor. Third, consent to registration could range from full digital signature by both parties to only requiring the consent of the creditor (and not the debtor), or some intermediary option.

5) The MACIR should allow a simple mechanism to correct basic errors in registrations.

6) A wide range of payment options will be essential with low transaction costs.

7) A significant investment in multiple languages will be necessary, although having a fully multilingual system seems infeasible. A simple design (if implemented) may reduce this need.

8) A federated design should be considered. Given the more diverse range of users and their local needs (local language etc) on the MACIR when compared to the AIR, a centralised system may not be ideal, and a federated system may help to solve local issues locally. This approach has been taken by the LEI system, which has been a success.

9) Adequate research should be done on technology selection, ranging from a mature technology like PKI to new two factor authentication technologies to provide adequate security and non-repudiation.

10) Industry engagement, on as wide a basis as possible, will enhance the chances of success and ensure there are no collective action problems. Intermediaries should be supported on the MACIR with adequate training and resources.

11) Equipment identification will be more complex in the context of the MACIR, which will have an impact on making registrations and searching. Although photos could be used to aid repossession, they would not be useful for notification purposes. The MAC Protocol should allow flexibility for the Registrar in this matter. Research should be done into the optimum search algorithm and search data to ensure that no user is ever misled by the MACIR. Consideration should be given to using harmonised codes and manufacturer names as supplementary information for registration and searching.