



**UNIDROIT Foundation
BPER 4th Workshop
Project Group Meeting
9 September 2020**

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Report for the Fourth Meeting of the Best Practices in the Field of Electronic Registry Design and Operation Project

1. The fourth meeting of the Best Practices in the Field of Electronic Registry Design and Operation (BPER) Project was held on 9 September 2020 at the headquarters of UNIDROIT in Rome, Italy and via Zoom. The BPER project is run under the auspices of the Cape Town Convention Academic Project, in partnership with the UNIDROIT Foundation, Aviareto, and the Aviation Working Group.
2. The meeting was opened with a welcome address by *Mr Ignacio Tirado, Secretary-General of UNIDROIT*, *Mr Jeffrey Wool, President of the UNIDROIT Foundation and Secretary-General of the Aviation Working Group*, and *Ms Louise Gullifer of Cambridge University*, co-chaired the Workshop. The agenda for the meeting is at Annex 1 of this Report.
3. The fourth meeting built upon the outcomes of the third workshop held in April 2019 and moved towards finalising a best practice guide for collateral registries. The workshop assessed the recommendations provided, and contrasted them with existing industry practices, with an effort to test the best practices in a real-world registry. It also provided an opportunity to share international experiences in identifying common problems associated with the design and operation of electronic registries and further develop the project's framework for assessing best practice. A total of 48 electronic registry experts, economists, lawyers, and academics, from government agencies, leading international organisations, and universities, and individuals involved with electronic collateral registries registered to attend the workshop. The workshop also had several observers. A full list of participants is available in Annex 2 of this Report.

Summary of the project

4. Following the welcome session, *Ms Louise Gullifer* explained the background of the project, providing an overview of its history and its growth from addressing the liability of the International Registry, which, under the Cape Town Convention (CTC) was contingent on the definition of best practices for a registry, to the Project's current form as an academic project addressing the best practices of electronic collateral registries (ECRs) more generally. She noted the very wide range of experts involved, including lawyers, government agencies, academics, registry operators, international organisations, and the business sector.
5. *Mr Jeffrey Wool* elaborated on the context for the current meeting in relation to COVID-19. It was noted that although the Project was focused on ECRs, it was intended to have a more general purpose as a framework of best practices applicable to commercial registries. It was noted that hybrid transactional registries, in which transactions were recorded and through which they were made effective, had been enabled by recent technological developments, such as the ability to easily scan and digitise paper documents, and to record electronic signatures. These developments made it an open question as to

whether notice-based registries were the only viable solution today. It was noted that two ideas that had recently been drawn to attention, and that the meeting should address these – these related to the tensions between best practices of security and usability, and between the needs for transparency and privacy.

Summary of the presentation of the Paper

Mr Marek Dubovec and Simon Stanley, of NatLaw, presented on the BPER Paper

6. *Mr Dubovec* explained that the Paper was focused on ECRs but was also intended to be relevant to other types of registries, such as specialised registries for leasing or factoring transactions. CTC Article 28 presented three broad categories of risk that human actions, hardware, and software failures, as well as outsourcing, may impact, both during design and operation. The objective was to identify best practices in a technical context as well as legal standards, both international and domestic, particularly the CTC and its Aircraft Protocol, as well as the UNCITRAL model law and Registry Guide. In identifying best practices, the primary objective was to look at ways that the registrar may mitigate risk and liability in performing its core functions and to inform the registry design so that it was fit for its purpose – its three core functions (recording security interests, establishing their priority, and informing third parties of their existence by providing for searches of the registry).

7. CTC Article 28 identified three types of risks and liabilities for errors and omissions: First, those caused by human error. Second, technical errors arising from ordinary events, which created strict liability; and third, technical malfunctions caused by an event of an inevitable and irresistible nature, in which case implementation of best practices may reduce or eliminate the liability of the registrar.

Changes to the Paper

8. *Mr Stanley* summarised changes to the paper, both structural and substantive, made in response to input from the third workshop. Changes include shifting the Paper's focus to the Critical Performance Factors (CPFs) and reducing the references to earlier work on this project, other than to acknowledge those contributions. This resulted in shortening the introduction from 22 pages to 8 pages and expanding the CPF section from 19 pages to 30 pages. New to the introduction was an overview of the origin and concept of best practices as derived from production management systems. Sources of available international standards currently implemented in information systems were also introduced. The scope of the Paper had been expanded to be applicable to registries other than collateral registries but at the same time the emphasis had narrowed to focus on electronic registries rather than paper-based registries.

9. In addition to expanding the CPF section, the CPF explanations had been revised in response to a point made at the previous meeting that the CPF descriptions lacked a uniform structure. Each explanation now began with a concise definition, followed by a general explanation with examples in the context of electronic registries. The expansion of the CPF explanations also absorbed some of the material previously included in other sections of the paper, which was now included in explanations of the relevant CPFs. For instance, the discussion of business continuity management was now incorporated into the section on Continuity. Each CPF explanation contained a section referencing relevant technical standards, such as ISO 27000 and NIST standards, (with the exception of two CPFs that were purely of a legal nature) as well as a section citing relevant legal references, such as the CTC or the UNCITRAL Model Law on Secured Transactions. Finally, each CPF had a section on related aspects of the International Registry (IR) established under the Aircraft Protocol, such as citations to its regulations and procedures.

10. Proposals made at the third meeting for additional CPFs were assessed and found to be of a different nature than the existing CPFs. They generally related to more long-term goals, such as the need for a user-centric and user-friendly approach to design and ensuring

that the registry remained fit for purpose as technology developed and user needs and expectations changed over time. A new section "Beyond Core Functionality" was added to discuss these aspects of electronic registries.

Summary of the CPFs

11. *Mr Dubovec* summarised each of the 15 CPFs identified in the Paper and invited all participants to comment on the identified CPFs, such as whether they covered what they should cover as well as suggestions for additional CPFs. The paper presented the CPFs alphabetically, simply because it was impossible to present them in any logical order due to the extensive interrelations between them as well as some overlap.

12. *Access Control* limited access to registry rights and infrastructure, to appropriately authorised registrants and searchers as well as more broadly for registry staff and employees. Access Control also applied to both electronic and physical infrastructure, such as a technician replacing data storage hardware. Studies had shown that 50% of all data security breaches could be attributed to "trusted insiders." In the context of collateral registries, the registry did not perform any legal analysis in authorising access to the registry, but this may vary for other types of registries.

13. *Accessibility* referred to access to registry functionality and services. Accessibility may also refer to several types of access, such as offline access where internet access was not readily available, with subsequent batch uploads of collected data at a location where internet access was available. Cost of access was another component of accessibility, for example, collateral registry fees should not be prohibitive, as had occurred in some instances where fees were based on the value of the collateral, but rather should be low enough to enable accessibility.

14. *Authentication* was important, particularly for Access Control, to reduce unauthorised access to the registry. However, Authentication requirements must be balanced so as not to compromise Accessibility. Authentication may occur at the outset, such as when the user initially accessed the system to submit a registration, but also subsequently, such as when a registrant sought to amend a registration.

15. *Availability* – generally it was expected for electronic services to be available on all days and times, subject to limited scheduled downtime for maintenance. Availability encompassed not only the Availability of the registry itself, but also of its staff, such as for help-desk services. Factors specific to each registry, such as whether it was a domestic or international registry may be pertinent to expected Availability, such as hours of help-desk service Availability.

16. *Confidentiality* ensured that that information stored in the registry was not made available or disclosed to unauthorised persons.

17. *Continuity* addressed disruptions and whether the registry was able to continue its service following a minor disruption or a disastrous event – ranging from a technical glitch to insolvency of the operator. Continuity addressed the processes that registries should have in place such as comprehensive disaster recovery processes and transitional and contingency plans.

18. *Disposition* addressed registry policies regarding disposal of records and had some overlap with the Retention CPF. In the context of collateral registries, Disposal encompassed the "add-only" policy of adding registration records to reflect any amendments rather than overwriting existing records. Disposition did not cover creation of new records but did include certain transfers of records, such as archiving.

19. *Integrity* was probably the most important CPF and was critical to registry users' confidence and trust in the system. Integrity relied on a number of other CPFs, especially Access Control and Authentication.

20. *Interoperability* referred to the ability of the registry to communicate and transfer data in an automated manner with other systems.

21. *Legal Authority and Compliance* referred to compliance of the registry with the applicable legal framework, including data protection and retention of records laws as well as commercial law. The regulations governing the registry should be flexible enough to allow the registrar to adapt the design of the registry to comply with changes in the requirements of the legal framework.

22. *Legal Authority of the Registrar* – even a fully automated electronic registry may occasionally require intervention by the registrar to correct errors. Under the CTC, as was the case with most registration systems, the registrar had the authority to correct certain errors that may be caused by a malfunction of the system or by a data entry error. Additionally, the registrar may be required to enter, amend, discharge, or expunge a registration in response to a judicial order. Actions required of the registrar varied according to the type of registry.

23. *Reliability* applied to both the software and hardware infrastructure of the registry as well as to the data itself and the registry personnel. Reliability was related to Availability, but the two CPFs were measured differently. Reliability referred to the frequency of failures whereas Availability was a measure of the percentage of time that a system was available over a given period.

24. *Retention* referred to both the ability to retain records for an extended period of time as well as retention policies. For instance, in the case of a collateral registry, policies relating to the retention (or removal) of amended, discharged, or expired registrations from the publicly searchable database.

25. *Timeliness* referred to the ability of the registry to react quickly to user requests, such as registration submissions and search requests. Ideally, a collateral registry should respond very swiftly in an automated manner to avoid delays that may affect perfection and priority of security interests, which may have a significant effect, for example, in insolvency.

26. *Validation* does not refer to verification of accuracy of the data submitted in a registration or of the registrant's authority to effectuate a registration, but rather in a more limited fashion, such as to verify that information had been entered in any mandatory fields.

Beyond Core Functionality

27. *Mr Stanley* summarised a new section of the Paper entitled "Beyond Core Functionality", which had been added in response to suggestions at the third meeting. These were best practices that were focused on maintaining the relevance of the registry as a form of economic infrastructure that served the changing needs of commerce rather than on the core functionality of the registry on which the above 15 CPFs were focused. These additional best practices should be part of an iterative process that began in the design phase of the registry and continued throughout its operation, actively seeking feedback from stakeholders and users to develop and refine the features and functions of the registry to better serve its users and ensure that it remained fit for purpose. These best practices went beyond the core functionality of the registry to focus on a user centred design (UCD) approach that addressed ease of use, user friendliness and overall user experience (UX). While these features may not be statutorily required, they were likely to promote use adoption and satisfaction and may reduce data entry errors.

28. A related iterative best practice was to have regular Independent audits and certification of the registry to evaluate the effectiveness of the CPFs and to refine, adapt, and develop the optimal strategy. Trustworthiness resulted from a combination of effective best practices as experienced and perceived by users as well as assurance that CPFs whose implementation might not be transparent to users were in fact effective. Independent audits and certification provided such assurance, created transparency, and engendered trust among registry users. It was noted that Independent Information and Communications Technology (ICT) security consultants audited the adequacy of security measures at the IR annually.

Risks to CPFs

29. Security of information systems was often described in terms of a triad of three CPFs identified in the Paper: Confidentiality, Integrity, and Availability. If any one of these was compromised, the system was regarded as being insecure. While the triad concept illustrated the importance of these three CPFs to overall system security, these three CPFs also relied on the other 12 CPFs. For example, Confidentiality required Access Control and Authentication to ensure that unauthorised access to confidential information was not permitted. The relationship among many of the CPFs was more than a mere overlap but rather their effectiveness relied on or enhanced other CPFs.

30. While the focus of the Paper was on security of data from technical malfunctions and electronic tampering, a security strategy must also address security against natural and human-caused disasters as well as physical access by unauthorised persons.

Relevant Standards

31. *Mr Dubovec* highlighted some of the primary sources of legal and technical best practices and standards on which the CPFs were based. Legal sources included international treaties, such as the CTC and its Aircraft Protocol; international (non-binding) standards, such as the UNCITRAL Model Law on Secured Transactions and the UNCITRAL Registry Guide; as well as domestic legislation such as the UCC, and the Canadian and Australian PPSA frameworks.

32. Technical sources included international standards bodies, such as the International Standards Organization (ISO) and its ISO27001 series of standards for IT systems; industry associations, such as the Storage Networking Industry Association (SNIA), and the Data Management Association (DAMA); government agencies, such as the National Institute of Standards and Technology (NIST) and its 800 series Special Publications (SP) for information systems security; as well as manufacturers' best practices – some of which were specific to their own products but others were applicable more generally.

Questions and Issues

33. *Some participants* noted that the choice of the term "Disposition" for that CPF was unclear.

34. *Mr Dubovec* explained that the term was used in an ISO technical standard to describe the processes and functions that this CPF entailed. Since the Paper was intended to assist in the technical design of a registry, it was considered important to use terms that would be consistent from a technical perspective. However, the point was well taken that it may be confusing in the context of commercial law, and therefore some additional clarification may be required.

35. *One participant* raised an related to Interoperability in the context of Distributed Ledger Technology (DLT) systems rather than a centralised system: in a decentralised system Interoperability could include coordination of data with other registries to confirm

the validity of information provided by the registry. *Another participant* seconded this suggestion as worthy of further research.

36. *Mr Dubovec* explained that the Paper described several types of Interoperability, some of which did not involve the transfer of data from another system into the registry, but rather provided an interface to other systems to enable users to access and verify information available in those systems, such as a companies registry or a national ID registry. The discussion of collateral registries was predicated by the idea that a collateral registry was by its very nature a centralised system implemented by a government agency. This was not the case for private registries where decentralised systems were more likely to be implemented. This would be a useful aspect for the Paper to address in the context of a broader project.

37. *A participant* suggested that portability of data might be relevant in the context of registries. *A second participant* voiced support for this proposal. Portability had been addressed by the EU to enable information validated in one country to be accepted without repeating the validation process in another country.

38. *Mr Dubovec* noted that this aspect had not been addressed in the Paper and encouraged participants to suggest relevant material for consideration.

39. *One participant* commended that the CPFs were very much on point for collateral registries and that the Paper's treatment of this topic was very robust. The CPFs were also mostly valid for other types of legal registries, such as IP registries. However, the function of some of these registries was also to create the proprietary right, such as to a trademark, and serve as a gatekeeper for claims of such rights. For these types of registries, the legal framework might require additional CPFs. Additional CPFs would also likely be necessary for registries built on a decentralised platform. For instance, to address the governance and protocol of a decentralised registry. Similarly, additional CPFs would be required for a tokenised registry.

40. *One participant* from the IT sector stated that the triad that practitioners often dealt with was Interoperability, Portability, and Security. The participant raised the question of the depth to which best practices should address hardware specification, software code, and data security, as well as due diligence with regard to upgrades and updates to these registry infrastructure elements to the extent that they may affect system integrity. Similarly, with regard to system maintenance including the possible involvement of third parties.

41. *One participant* added that decentralised government collateral registries were anticipated to become a reality in the near future and therefore decentralised registries should be included in the current scope of the project. A Usability CPF should also be included to encompass some level of intuitiveness or ease of use within the initial design, separately, or prior to any feedback loop from users. The Legal Authority and Compliance CPF as described in the Paper was satisfactory, but this topic was much more extensive than the aspects covered in the Paper. For instance, it encompassed sanctions, tax, and tax reporting, among others. With regard to portability, the ability for the registrar to be replaced should also be covered.

42. *Mr Dubovec* thanked the participants for their input and noted that he would reach out to the participants individually for more information. With regard to usability, one of the reasons this was not included as a CPF was that the approach was to identify aspects for which failure to follow best practices might implicate some liability for the registrar or risk of registry malfunction or loss of data. From this perspective, usability, in the sense of a pleasant user experience, was understood to be more of a desirable goal than a critical performance factor. Inclusion of usability as a CPF therefore was a question of the scope of the project, similar to the question of the depths and extent to which the CPFs should go. The question of the scope of the project (to be addressed at the end of this workshop) should

consider who the audience of the Paper would be and if the scope should be expanded, or a separate project initiated to address areas outside the current scope.

43. *One participant* clarified that usability may implicate liability because as systems become more complex, data entry errors become more likely, and the more data errors there were, the more likely it was that there will be liability.

*Panel of Experts 1: National and International Registrars
Rob Cowan, Gavin McCosker, Kathy Hillman-Weir*

44. *Mr Rob Cowan* chaired the first Panel of Experts.

45. Addressing the Access Control and Authentication CPFs, *Mr Gavin McCosker* emphasised that there were more vectors than cyber security that must be considered with regard to Access Control of registries. Two angles that must be addressed in addition to cyber security were i) physical access to where the data was held; and ii) personnel security (the trusted insider problem) – knowledge of employees' background was vital to understanding who was being given access to confidential information. In particular, the super-users that had administrative rights to access the data should undergo reasonable levels of scrutiny. Employee screening should be an ongoing requirement, for instance, an employee's financial burdens and stresses may change over time and might motivate illicit use of registry data. Overarching these vectors were the governance arrangements such as regarding ongoing updating of software, maintenance of physical access arrangements, employee screening, and revoking of access permissions for former employees.

46. Authentication measures were important for both users and employees. The level of Authentication required depended on the nature of the transaction performed. For instance, a less stringent level of Authentication for searchers of a collateral registry compared to secured creditors affecting a registration. Without Interoperability with, and Accessibility to, other registries, such as a national ID registry or a companies registry, Authentication could be an onerous process, for instance, involving manual intervention. The Australian PPSR required no intervention for a user to create an account, with only the user's name, phone number, and email address being required. Levels of abuse (vexatious registrations, fraud, etc.) had been insignificant.

47. *Mr McCosker* noted that the Paper mentioned that the registry may require a manual process to complete Authentication – whether this should be part of a best practice for electronic registries may be a topic for further discussion. Depending upon who the audience for the Paper was, mention of the possibility of a manual process may be appropriate. The benefits of Authentication were that it enabled tracing and contacting the secured party. There had been cases, both in Australia and with registrations in the IR, where the secured party was no longer traceable, and the grantor required removal of a registration.

48. Integrity was also interrelated with Access Control and Authentication. Integrity of the data was a core responsibility of the registrar as the keeper of records to ensure that the results of a search of a collateral registry could be relied upon as the basis for making economic decisions and assessing financial risks. The depths and lengths to which Integrity might be addressed in the Paper was a question of balance with the length and target of the Paper, which spelled out the importance and range of relevant activities quite well for a principles-based approach.

49. Usability could be considered significant enough to be a CPF. Data from the Australian bankruptcy system showed that exposure of trade credit to bankruptcy was equivalent to that of banks. The importance of trade credit to national economies had probably never been higher than in the COVID-19 recovery environment. Therefore, the importance of making collateral registries easy to use and navigate for irregular users in the trade-credit space, such as SMEs, was important.

50. Regarding, financial sustainability of the registry, the registry must cover its own costs including the future replacement of its infrastructure (hardware, software, etc.) to ensure its effective continued operation – but no more than what such costs required. Including a CPF related to this aspect might be particularly useful for audiences of this Paper establishing collateral registries in emerging and developing economies. A discussion of financial sustainability might appropriately fall under a broader (new) CPF on governance – i.e. corporate governance within the entity that hosted and operated the registry, but also regarding selection of that entity and where it was located.

51. Finally, there was discussion at the third meeting regarding potential surveys of jurisdictions to get a sense of their alignment with the CPFs. This may be challenging to do, but may be useful, especially for reaching an effective consensus to support future use of the Paper as a source of best practice.

52. *Ms Hillman-Weir* stated that the scope of the Paper was on point and that the CPFs would provide a framework to guide registrars of current and future registries. The CPFs may be more important for establishing a standard for accountability of registrars than for liability. They would also support the design and development of registries that could be accountable to users and those that relied on them. They would also help to instil trust and confidence in electronic registries.

53. Integrity was the most important CPF. It embodied, and was supported by, the greatest number of other CPFs. Integrity of the registry was the foundation of everything the registrar did as custodian of the registry.

54. The role and Legal Authority of the registrar was grounded in the legal framework of the registry. The registrar's primary role was the alignment of the technology with the legal and foundational underpinning of the registry.

55. The Timeliness CPF, as set out in the paper, was appropriate for notice registries. But, if the Paper were to apply to other types of registries, this CPF would need some modification. For instance, to account for the analysis, scrutiny, or discretion, that the registry would need to conduct for potentially granting a proprietary right. For these types of registries, Interoperability and connectivity with other registries could be particularly important to validate key pieces of data that give credibility and greater reliability to the information in the registry.

56. The skillset required for the role of the registrar had historically emphasised registry expertise, knowledge of the registry's objectives, principles, its supporting legal framework, and custodial responsibilities of the registrar. But, as electronic technology became more important, with less manual intervention, the role was evolving to be that of ensuring alignment of technology and its functionality with the law and principles of the registry. An important concept articulated in the paper was that the registrar could rely on technical standards to support the CPFs. This was especially relevant in light of research showing the emerging importance of registry security, Availability, resiliency, and disaster recovery in the field of electronic registries, which indicated that new accountabilities were evolving for registrars. These required new competencies in electronic technology for registrars carrying out their role as custodians of electronic registries, whether in the context of maintaining registry resiliency and Continuity or in exercising their authority and discretion under the legal framework.

57. Challenges that registrars may face from technology dependency were most likely to be manifested in three types of failures, i) technology failures; ii) technology design or functionality flaws; and iii) security breaches. Topics for discussion in the Paper concerning the CPFs could include how the registrar was permitted to handle these types of failures.

58. The Paper and the CPFs were focused on centralised registries. For instance, the Authority of the Registrar was premised on the registry being a centralised registry. A

decentralised registry would not necessarily have a registrar. A CPF on governance of such registries had been suggested and could be an important part of the Paper if its scope were expanded to include decentralised registries.

59. The ability of the registrar to intervene and reconcile a misalignment of the legislative or governance regime with the electronic registry functionality was critical to preserving the Integrity of the registry. The registrar's authority could be exercised through influence of, or recommendation to, legislators and lawmakers relative to extraordinary circumstances. This required a strong understanding of the law. The ability of the system to accommodate such changes in a transparent and traceable manner was essential.

60. *Mr Cowan* found the Paper to be very mature and comprehensive. One of the topics to consider for an additional CPF was Consent (electronic signatures). Electronic signatures had become more relevant in the context of COVID-19, which had stimulated or renewed interest in this topic. This was a reasonably complex field that required some simplification and would make a useful addition to the Paper.

61. Auditing and logging should be added to the Access Control CPF. Auditing and logging were critical components of Access Control.

62. Portability of the data, and the system, from one registrar to another was critical to the long-term Continuity of the registry. This was a key provision of the contract between Aviareto and the IR regulator. Portability could usefully be added as a CPF.

63. There was no apparent linkage that would confine a decentralised system to being private (rather than a government system). There was also no link between Interoperability and a system being decentralised. Interoperability between systems was likely to evolve over time.

64. As mentioned earlier, registries existed at the intersection of law and technology, making technology an essential part of a registrar's skillset.

65. With regard to Accessibility, the geographic diversity of users was an important aspect mentioned in the Paper. Laws of physics (electronic communications operate at the speed of light) dictated that response times for webpages accessed at great distance from the registry servers would be measurably slower than when accessed from locations closer to the registry servers. From a legal jurisdiction perspective, it was important for the data to be located in the jurisdiction of the court that had authority over the registry (e.g., Ireland for the IR). Copies of graphics used by the web pages could be stored on servers at different locations around the world to improve the speed at which web pages loaded and updated. Because registration data in collateral registries was never changed (under the add-only policy), it would be possible to similarly store copies of this data on geographically remote servers to improve access speeds.

66. The Paper mentioned Application Programming Interfaces (APIs) which were relevant to Accessibility. Expectation and demand for these types of interfaces were expected to increase as more legal firms adopted legaltech and fintech technology. Governance and liability issues were likely to arise in the context of APIs, especially for data consolidators.

67. Another item to be considered in the context of Accessibility was user disability. As a matter of general principles, people with disabilities should be able to access public registries equally (not merely nearly equally) to anyone else. For instance, a sightless person should be able to access the data in a collateral registry in a reliable manner.

68. The Paper noted that the Luxembourg Protocol allowed "reasonable profit". The only purpose of allowing a company to profit from the operation of a public registry may be the

hope that a for-profit company might be more efficient. This being the case, the allowed profit should not exceed the increased efficiency that the private company provides.

69. There were a variety of types of data Validation controls. The first, which was mentioned in the Paper, concerned the type of data entered. For instance, a telephone number must be numerical. Security validation includes, for example, not permitting database commands to be entered as part of the data, which was also mentioned in the Paper and was covered by Open Web Application Security Project (OWASP) standards. The IR also implemented business rules (as mentioned in the Paper) to address security validation. These were derived from the legislative framework underpinning the registry. For example, it was not possible to discharge a discharge or to discharge a registration that had been discharged. Signature validation prevented errors as well as malicious behaviour. For example, data was not stored until the submitted data had been sent to the registrant and returned (unmodified) with an electronic signature that had been verified. Other controls included a "time assurance system" that prevented a registration being stored with a time earlier than a prior registration.

70. Any technological feature of the IR must pass the "tell it to the judge" test – it must be able to be explained in a manner that would withstand legal scrutiny in a court of law.

71. Beyond functionality – the idea of soliciting input was crucial. The IR did this through its advisory board, and this process had prevented numerous mistakes. User centric design was crucial. Users frequently did not use an electronic system in the manner in which its designers expected. This made it essential to ask the users how they used the system and what features were lacking or could be improved. For example, the IR discovered that its users printed every data entry screen because the system did not provide an alternative means of fully documenting data entry. Other users had highly specialised tasks that they conduct repeatedly, such as creating user accounts for clients.

72. Features that were not statutorily required, may nonetheless be key to efficient use of the system. For example, the Closing Room was one of the IR's most popular and helpful features, greatly increasing the efficiency of sequential registrations, but the IR's legal framework did not require it. To maintain user satisfaction required going beyond basic functionality to address users' needs and expectations. Having a means of incentivising the registrar to continually implement such improvements was crucial (e.g., as a consideration for contract renewal).

73. The Paper mentioned that it was not enough for a registry to simply declare itself trustworthy. The IR accomplished this by independent certification of adherence to international standards and by independent surveys of users, but also by the actions the IR had taken to protect the interests of its users in line with the CTC.

74. The only criticism of the Risk Management section of the Paper was that it was too narrow. It focused mainly on security risks, but risks faced by the registry were broader than that. They included operational risk, reputational risk, financial risk, and legal risk. The Institute of Internal Auditors had defined a set of three layers of protection which had worked well for the IR and would be useful to reference in the Paper.

75. *One participant* described the Paper as very written and stated that their registry would be following the Paper's recommendations with the exception that they also accepted paper registrations, which would be digitised with heavy reliance on artificial intelligence (AI). Modernisation of the registry would include APIs for Interoperability and placed a strong emphasis on being user friendly. The goal was for the updated registry to go-live on October 5, 2021. The participant offered to serve as a case study on implementation of the CPFs.

76. Thanking the Panel for their input, *Mr Dubovec* noted that the Panel's comments on standards of accountability was particularly well stated and should be highlighted in the Paper. Commenting on the difficulty of crafting a CPF for Authentication, he noted that

current practices varied widely, even among collateral registries, from no Authentication (e.g., US State UCC registries) to extensive manual Authentication (e.g., the IR).

77. Consent was another important aspect that deserved to be covered but was not generally a feature of collateral registries, with many only allowing the secured creditor to submit or cancel registrations. A Consent CPF would need to be carefully crafted to be broadly applicable.

78. *A participant* queried whether the IR took into account factors similar to the CPFs when it was established.

79. *Mr Cowan* explained that the legal text establishing the registry was used to create a software specification. Security standards current at the time were implemented. Many of the current concepts described in the Paper, such as the CIA triad, had been understood for a long time and were implemented. Many current standards were refinements of older ones that were in place when the registry was designed.

80. *Another participant* queried if there was a list of factors that should be addressed to ensure that registries were accessible by disabled persons and suggested that these be added to the discussion of Accessibility.

81. *Mr Cowan* observed that standards or legal requirements existed for accessibility of public services, such as websites. For instance, for people with an intellectual disability – which tied in with the discussion on Usability as a CPF. Usability was often about making a system obvious to use and easy to learn and understand – the public should be able to rely on what they saw displayed on the screen and understand it without the assistance of a lawyer.

82. *A participant* commented on usability as a CPF and the extent to which it was something beneficial to have which enhanced the commercial value and marketability of the registry or whether it addressed a potential source of liability. There were at least two possible connections between low levels of usability and potential liability of the registry. First, low usability may negatively impact other legally required CPFs such as (ease of) Accessibility. Second, low usability may contribute to errors by searchers and may be construed as a lack of diligence by the registry to facilitate an accurate registry search.

83. *Mr Cowan* noted that the results of annual surveys conducted by the IR indicated that its users always emphasise improved usability as a primary goal, despite continual improvements. User expectations were not static.

Panel of Experts 2: International, financial and development organisations
Marek Dubovec, Elaine MacEachern, Catherine Bridge Zoller, Chris Wohlert

84. *Mr Wool* and *Mr Dubovec* co-chaired the second panel of experts.

85. *Ms Elaine MacEachern* provided a global map illustrating IFC Secured Transactions and Asset Based Lending (ST/ABL) reform projects around the world which currently consisted of 40 projects in 46 countries designed to address SME access to finance in emerging market economies. Many of these projects focussed on developing credit infrastructure, such as collateral registries and their supporting legal framework and enforcement system. *Ms MacEachern* noted that the Paper could become an extremely useful tool in this space.

86. Commenting on the Paper, *Ms MacEachern* observed that the discussion of Access Control and Authentication could be expanded into a more granular treatment of what goes into automating these processes and whether some manual intervention was required. Some jurisdictions completely automated account creation, which in the US had led to a significant problem where fictitious accounts were created for purposes of making malicious

registrations. The challenge was how to enable the registrar to remove such registrations when the legal framework had been designed to restrict the registrar's power to affect their removal without a court order. In jurisdictions with inefficient court systems, the requirement of a court order to remove a malicious registration could seriously delay access to credit for the affected party. Furthermore, their credit report was negatively affected. This appeared to be a bigger problem in the US than in Canada or Australia, where it was insignificant.

87. Accessibility could be challenging in areas with prolonged power outages (e.g., unpredictable load shedding) or no internet access or intermittent access. In Canada the government requirement of equal access for all users, whether in rural areas, or those without access to a computer or the internet, was met by providing kiosks to accommodate walk-in and infrequent users. One challenge was financing the significant costs of these facilities, which were used for less than one percent of all transactions.

88. In one jurisdiction, a national-ID-based single sign-on was used to facilitate efficient access to multiple government registries. However, the electronic collateral registry utilised the user's national ID as the identifier of the secured creditor. This created a problem for a bank when a representative who had filed hundreds of security interests (in the representative's name) was no longer employed at the bank – whether the registrar had the authority to amend such registrations was unclear, as was who bore liability.

89. Beyond Core Functionality – this section of the Paper did not mention IT infrastructure libraries (ITIL). In Canada and some US States, many public registries and managed IT services used ITIL as the industry standard for managing those services. ITIL provided a framework for managing IT services after the system had been implemented. ITIL had been used in Canada for more than 15 years, especially for public registries. Multiple levels of ITIL certifications were offered, and some RFPs required it for persons implementing or upgrading electronic collateral registries.

90. The biggest issue relating to Integrity and building trust within the community was the quality of the data – the value of the registry was the data. The challenge was to train end users to enter accurate data. In particular, if errors in the data caused a record not to be found, the registry must be able to explain this to a judge.

91. Interoperability was important – in particular, with other registries (e.g., companies registry, motor vehicle registry, citizen ID registry, equipment/machinery registry) as well as with the tax authority and payment gateways. It would be useful for the Paper to discuss industry standards and governance models for managing Interoperability of systems and data sharing agreements, particularly when the collateral registry was not the owner of the other databases. The communications and governance protocols required to manage the exchange of data were crucial. For example, notifications regarding the timing of scheduled unavailability of databases accessed by the registry, such as for system maintenance. It would be helpful for the Paper to include descriptions, and perhaps templates, as a guide for the structure and content of service agreements and vendor management agreements.

92. Although to some extent, the Paper was an academic paper, it also had practical and pragmatic purposes, which required a careful and practical approach that considered the collateral registry as a tool to enable the law but also as a tool to facilitate access to finance and as a development tool as well.

93. *Ms Catherine Bridge Zoller* gave a brief overview of the EBRD and its work related to registry systems. She noted that she had led a two-year study, concluded in 2019, on enforcement of secured transactions interests. The study covered five countries (Albania, Croatia, Cyprus, Greece, and Ukraine) that historically had very high levels of non-performing loans, driven primarily by slow enforcement procedures and slow insolvency processes. Three main themes emerged from the study: i) Creation and Perfection by Registration; ii) Digitalisation and Technology; and iii) (Extra)Judicial Enforcement. Lack of

digitalisation impacted efficiency of registration, the judicial process and enforcement. Only Croatia and Cyprus had fully implemented digitalisation of registration of security interests. Many other external factors challenged implementations of digital registries and more broadly an efficient secure transactions regime. These included institutional capacity, and legislation. Croatia still had problems related to reliability of the immovables registry data and state expropriation of private land. In Greece, the fees to register a security interest in land were based on a (fairly high) percentage of the land value, which deterred parties from registering. Legislation in Ukraine required automatic expiry of a pledge over movables after five years, requiring the creditor to reregister its interest. In Croatia the secured interest priority was susceptible to the superpriority of debenture bonds.

94. The Paper was an important and relevant project with application beyond registries, such as for electronic auction platforms. These were a new trend, and, especially in emerging markets, these platforms were challenged by issues of corruption and lack of transparency. Many aspects of the paper would be applicable, such as the need for redundancy, and security. Financial stability and governance were critical to ensuring investor trust and confidence, particularly in emerging economies.

95. *Mr Chris Wohler*'s shared experiences from his role at the APEC Financial Infrastructure Development Network where he focused on SME access to finance in Asia Pacific region, particularly secured transactions, movable asset collateral registries. He considered the Paper to be very thorough and comprehensive. Regarding Accessibility, fee structure was an important element to highlight. Transactional cost was critically important for SME access to finance. Fees that might be considered nominal for registering an interest in an aircraft would be prohibitive for an SME.

96. When considering the requirement of consent of the parties as an element of registration, it was important to bear in mind that this required Accessibility which socio-economic factors could make challenging, for example in rural areas and for lower income communities.

97. Authentication of users via other platforms may be feasible with regard to domestic platforms but access to international platforms could be problematic due to blocking of access and lack of required applications. Issues of data privacy also came into play, such as with regard to the use of national IDs. Some States had limitations on cross border dissemination of national IDs (e.g., Korea).

98. The section of the Paper on operational risks relative to technology could be expanded, such as the need for operational risk controls especially where the registry was unable to comply with all of the components of the CPF standards. Defining self-assessment activities to accommodate lack of technical capability could be important.

99. More broadly, trust and Integrity were particularly important in developing economies. Audit controls and audit trails would be important to tie into the CPFs. It was important to address issues such as fictitious and fraudulent registrations and collusion between, for example, a database analyst and a bad actor to change information in the registry to the benefit of the bad actor.

100. Interoperability to Ultimate Beneficial Owner (UBO) and Know Your Customer (KYC) registries to verify debtor names at the time of registration was important, but equally could be considered for purposes of periodically updating debtor data, such as debtor names, rather than making this the responsibility of the secured creditor.

101. With regard to international registries where filings were based on debtor names, language issues were also important to consider.

102. A parenthetical regarding Timeliness (see page 37 of the Paper) noted that any registry staff intervention was precluded. This was an important point that could be

expanded and given more context, such as relative to notice based collateral registries in contrast to land registries where focus was on document validation that was necessary before a registration could be accepted. A reinforcement of the concept of notice filing versus the concept of filing and approval would be helpful in emerging economies where previous experience may be only with the later concept.

Incorporating best practices into tender processes

UNIDROIT Secretariat

103. *Mr Hamza Hameed* explained the importance of electronic registries in relation to the CTC and its Protocols. The Preparatory Commission established for the MAC Protocol would be selecting an entity to serve as the Registrar for an international registry for MAC equipment. The Secretariat posed two questions to the participants regarding how the CPFs might best be incorporated into this process: i) how CPFs from the Paper should be inserted into the RFP to invite registrars, i.e., should the CPFs expressly be part of the proposals, either as part of the specifications or as an annex? ii) Were there any accepted or harmonised rules regarding considering any best practices followed by an entity being considered for the position of registrar?

104. *One participant* commented that it would be extremely helpful to incorporate the CPFs as a minimum requirement that must be part of any proposal, including an explanation of how they would be met.

105. *Another participant* agreed, saying that there was great value in having each CPF addressed separately in the outline of any proposal, with further detail provided in the body of the proposal. This would be helpful when comparing proposals.

106. *Mr Wool* agreed that having treatment of the CPFs to compare when evaluating proposals would be extremely helpful. The CPFs crystallised what Aviareto had learned during the course of developing and updating the IR.

E-Registries Created by Private Agreement

Mr Jeffrey Wool

107. *Mr Wool* introduced a discussion around e-registries created by private agreement. He noted that beyond transaction registries, the rate of increase of registries, or quasi-registries, being established by contract or private agreement was growing exponentially. These had hybrid features of traditional concepts captured by the CPFs and legal concepts and were more complex in many ways. He referred to the Global Aircraft Trading System (GATS)¹ which was a very sophisticated system for effecting sales of aircraft subject to leases and included an e-registry to record the effects of those transactions. The system took three years to develop. The following discussion was based on that experience.

108. In private systems established by contract, such as GATS, records were not "official" in the traditional sense of being sanctioned by government and having statutorily prescribed consequences. However, they often sought, or purported, to set out property interests and to effect transactions. Thus, they sought, or purported, to be more holistic than notice-based registries, even to the extent of establishing actual property rules themselves to effect the transaction, and they sought to determine liability rules within the system, by contract. However, beyond the contractual privity and *in personam* rights among the contracting parties, the legal effect was subject to the applicable law. Even the contractual aspects were subject to the overriding contractual framework.

109. Generally, the contractual aspects worked well, but the property rights aspects could be challenging especially for arrangements such as GATS that had aspects subject to private international law or choice-of-law rules. Many of these platforms were DLT based. Third

¹ See <https://e-gats.aero/>

parties were not bound, unless bound under their national law (e.g., due to having actual or constructive knowledge). In most instances these systems were subject to other laws that also governed public registries, such as information privacy laws.

110. Critically, many of these systems, including GATS, were hybrid systems in the sense that they both purported to regulate or even effect transactions and record the related documents or give notice of such effects. However, although parties may commit to not transacting outside the systems, nothing prevented a party from so doing, although such action may break a contractual obligation and incur damages. Furthermore, such *in personam* systems could not bind third parties, such as a purchaser or secured party that was not party to the system.

111. The use of standard forms and documentation as well as best practices on elements such as digital signatures could make the systems more robust and efficient to use from the perspective of legal predictability.

112. In these systems there were one or more parties that created the system and the same parties or another party that performed a quasi-registrar function as a service provider. One model was to have the parties themselves create the system through a single omnibus contract by which all parties were in privity with each other, but this raised a host of other issues. For example, a party may not want to be in privity with certain parties, such as sanctioned parties (which in some cases would violate criminal law). Alternatively, each party had bilateral contracts with a trusted intermediary.

113. The role of the private registry service provider, the registry host, the registry owner, and the trusted intermediary that provides digital signature certificates each played important roles, with each having associated liabilities and fiduciary duties, which in a public registry model were managed or performed by the registrar. This was the present situation and would become increasingly important in the future and present. As a complex example of these systems, GATS represented the most challenging extension of the best practices framework.

114. A *participant* discussed a very different model of a private registry in which licensed registrars managed a distributed database in which multiple copies of the data were maintained to be identical to each other.² These private registrars would compete in terms of the cost and services they provided to input data into the registry.

115. A *Participant* asked for confirmation that in the event of a conflict between data in a private registry and data in a public registry, the later would prevail.

116. *Mr Wool* confirmed that data in a public registry would prevail.

117. A *participant* observed that the described private registries operated exactly as other business-to-business platforms, such as electronic marketplaces. Interestingly for the BPER project, this illustrated that a registry could be a platform and secondly there could be a level of vertical integration between the registry and other platforms, such as transactional platforms, trading platforms, and secondary markets. This concept of the platform as a whole, incorporating registry functions and other related trading functions should be included in the scope of our project.

118. *Mr Wool* agreed with this view. There is an intimate link between the transactional aspect and what was recorded in the registry.

Design and Development of a Cultural Property Registry
Michelle Lee

² See generally, Charles Mooney, *Fintech and Secured Transactions Systems of the Future*, 81 L. & Contemporary Problems 1 (2018).

119. *Ms Michelle Lee* presented her research paper on the concept of establishing an international voluntary electronic registry for cultural property. Her paper borrowed from the ideas in the BPER Paper and reviewed the basic design of a cultural property registry, its feasibility, and some of the benefits and challenges likely to arise.

120. Electronic registries would greatly assist in preventing the illegal export of items of cultural importance, which had been used to fund organised crime, corruption, and terrorism. In 2017, the global art market was valued at US\$63 billion with billions of dollars in illegal trade not accounted for. High-end art was known to play a significant role in international money laundering due to lack of regulation and transparency.

121. The 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property represented one of the first real efforts to provide international awareness of illicit trafficking in cultural property. It provided for restitution and addressed the need for international cooperation, but was lacking in several respects.

122. The 1995 UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects was created to fill some of those gaps. It focused on recovery and established uniform rules and conditions for restitution and recovery claims on illegally exported cultural items that countries might have. Further transparency and accountability was needed in the art market.

123. UNESCO and Interpol databases existed to store information on cultural property that countries had declared missing or stolen. However, it was suggested that it would be far more efficient to have a single web-accessible and searchable database of high value cultural property, containing, at a minimum, basic information on ownership and transaction history.

124. It was suggested that the United States, an art-acquiring nation, varied on its treatment of art, based on a number of factors. These include the diplomatic relationship between the US and the cultural property's country of origin. It was noted that there was a clear lack of uniformity in the process of acquiring cultural property due to the lack of a predictable way to evaluate title or provenance.

125. There were six basic traits of a cultural property registry: i) a centralised database; ii) containing information on transactions and parties to those transactions; iii) requiring registration of its users; iv) ideally web-based for accessibility; v) notice-based, ideally becoming document-based; and vi) charging fees for user registrations and database searches.

126. A registry would also be helpful to art-rich countries that possessed a lot of valuable cultural property but were also frequently the victims of looting and theft. Many of these were developing countries that lacked resources to locate and request return of their property. Time limits for such requests, imposed by some legal instruments, added to the need for assistance in this process. The role of a registry would be instrumental in facilitating information on location of such property. Ideally, increased transparency would also reduce litigation by providing increased security to those involved in legitimate transactions as well as provide for productive negotiations for nations seeking alternatives to litigation to ensure that their heritage was preserved.

127. All of the 15 CPFs identified in the Paper were applicable and were helpful to keep in mind for the design of a cultural property registry. The following CPFs were particularly important: Accessibility for all users, taking into account barriers to internet access and other cultural obstacles that may present themselves. Confidentiality and Authentication of users, including with regard to the location of properties, considering their high value. Interoperability to ensure compatibility for data-sharing with other existing registries, ideally

including law-enforcement databases. Retention of data is key to storing transaction history. Finally, appropriate Legal Authority and Compliance of the registry were essential, since a failure to adequately utilise and maintain the database would compromise its effectiveness.

128. The main challenges of such a registry was a potential lack of resources and support stemming from lower levels of political priority assigned to this issue. This would be a significant hurdle to overcome due to the amount of resources required to maintain the database. However, there was significant interest in this area in certain countries to increase transparency in their art market and cultural property transactions, as well as to prevent crime and theft. Approximately 65 countries had already created, and utilised, some form of national register or database of their cultural properties of significant cultural value.

129. *A participant* stated that, for this type of registry, an additional CPF would be required to record the characteristics of the actual artworks. This was not a requirement for collateral notice-based registries.

130. *Ms Lee* fully agreed that additional documentation, not identified in the CPFs, would be required.

131. *Another participant* questioned whether the system being centralised or de-centralised was necessarily relevant.

132. *Ms Lee* explained that what was important was that the registry maintained a uniform version of its data without discrepancies between versions of information regarding the cultural properties recorded in it.

133. *A participant* noted that the paper (Feasibility Study on a Voluntary Electronic Registry for Cultural Property) stated the need for the legal framework to effectively address matters such as commercial law, data, labour, and insolvency, and would need to be established under an instrument similar to the CTC. The approach suggested in the paper was to establish the registry under an international treaty. This was good but would probably require a long time to accomplish due to the complex and highly political nature of the issues involved. The participant posed two questions. One for *Ms Lee*: i) whether the registry could be reconceptualised as a private registry – and what would be the advantages and disadvantages? One of the advantages being that it could be accomplished far quicker and perhaps as a starting point for a registry established under an international treaty. The participant's second question was for the Secretariat: Could such a private registry be created by UNIDROIT and linked to the 1995 UNIDROIT Convention, and had this been considered, or might it be considered?

134. *Ms Lee* answered that she had not considered a private registry but would explore that approach as it did seem much more feasible based on the discussions during the meeting.

135. *Mr Tirado* noted that a project on Private Art Collections was presently part of the Institute's Work Programme and such an idea could be explored therewith.

136. *A participant* highlighted the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict. In connection with the establishment of voluntary registries as mentioned in the paper, the participant noted that the Hague Convention also envisaged the preparation of inventories of cultural properties of both movable and immovable objects of cultural heritage. It was worth exploring the establishment of a registry in this connection because there is often much more political will in connection with events of armed conflict. Additionally, many other organisations were involved that could be useful to connect with, such as the International Federation of Red Cross and Red Crescent Societies (IFRC). Making the connection to international humanitarian law would also leverage countries' obligations under the 1954 Hague Convention.

Next Steps

137. *Mr Wool* opened the session to discuss the next steps for the BPER project. It was noted that some aspects of the Paper needed to be explored further. For example, but not limited to, Access Control; Validation; Decentralisation; Usability; and the question of Legal Compliance.

138. It was additionally noted that upon addressing these issues, the Paper should be published, subject to approval from the UNIDROIT Governing Council. One option could be to publish the Paper, or some version of it, as an UNIDROIT publication to provide a concrete starting point. That publication could contemplate further publications as the project developed.

139. With regard to the scope of the Project, it was noted that without limitation, the framework, and what was needed as far as additional CPFs or a different applicational assessment of the CPFs in other areas, within the zone of commercial registries, should be carefully explored. For example, title registries, and IP registries, where the registry was involved in the creation of the recorded right; other types of transactional registries including those that flowed from the earlier discussion of private registries; company registries; and perhaps cultural property registries.

140. Agreeing with *Mr Wool*, *Ms Gullifer* stated that the next step of the project was probably to address a different type of registry and asked participants to consider the pros and cons of moving to a different type of registry.

141. *Mr Wool* noted that the participants assembled for this meeting were primarily secured transactions focused and as such, although it was worthwhile for the participants to consider which area to address next, it would also be useful for participants to discuss the issue with colleagues from other areas.

142. A participant asked whether the IR could have been conceptualised as a private registry when initially designed. *Mr Wool* explained that this would not have been possible since it was i) created by a treaty (not a private entity or entities) and ii) established against a backdrop of well-established registries all over the world.

143. *Ms Gullifer* noted that it would be particularly useful to hear from participants (during or subsequent to the meeting) who had experience as registrars of other types of registries (other than collateral registries) regarding other types of registries that the project might consider.

144. *A participant* responded, who had previously been a registrar of land, probates and wills, and had also reformed business, companies, and motor vehicle registries. These were all public registries on a shared platform, delivered through a public-private partnership model, and all were backed by a legislative reform agenda that drove the technology agenda. Fundamentally, the content of the Paper could be applied to, and would be very applicable to, any of those public registry systems. It was noted that the content of the Paper, in its final published form, could be valuable to those developing economies moving from paper-based and manual labour-intensive systems to electronic registries. The body of knowledge contained in the Paper could serve as a guide to the governance structure, industry standards, and skillsets required to implement the move to electronic systems. Registrars require a core competency in IT and in the law and the intersection of those two competencies. This overlapping of core competencies was lacking in developing economies and the Paper could be a tool to help educate those taking on the role of registrar. It would therefore be hugely valuable to continue this work and an important contribution to those trying to build institutional capacity in the field as this could become the primary guide for them to turn to.

145. *A Participant* with a background in land title registries (rights granting registries) agreed with the previous participant that the fundamental principles of the CPFs were directly applicable to those types of rights granting registries, many of which also had notice aspects. The Participant encouraged expanding the scope of the project, noting that although there may be some additional CPFs that could be identified, the work that had been done would serve those other types of registries very well.

146. *Mr Tirado* closed the meeting, thanking the participants and expressing hope that the next meeting could be held in person.

ANNEX 1 – Agenda

**4th Workshop on Best Practices in the
Field of Electronic Registry Design and Operation
Draft Agenda**

Wednesday 9 September 2020

UNIDROIT (Via Panisperna 28, Rome) and Via Zoom

12:00 - 13:00	Delegate registration and lunch/tea/coffee Opportunity for virtual participants to check connection
13:00 - 13:15	Opening Remarks and Introduction to the Project
13:15 - 14:15	Presentation of Collateral Registries Paper
14:15 - 15:15	Panel of Experts 1: National and International Registrars
15:15 - 15:30	Coffee Break
15:30 - 16:30	Panel of Experts 2: International, financial and development organisations
16:30 - 17:00	Registry design – incorporating best practices into tender processes
17:00 - 17:15	E-Registries Created by Private Agreement
17:15 - 17:30	Design and Development of a Cultural Property Registry
17:30 - 17:55	Next Steps
17:55 - 18:00	Closing Remarks

An initiative under the auspices of the Town Convention Academic Project

Project Leads:



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ANNEX 2**List of registered participants**

1. Andre Smit (Government of the Republic of South Africa)
2. Andrea Tosato (University of Nottingham; University of Pennsylvania)
3. Anna Veneziano (UNIDROIT)
4. Arthur Haizlip (USA Federal Aviation Administration)
5. Beau Bruhwiler (USA Federal Aviation Administration)
6. Benjamin von Bodungen (German Graduate School of Management and Law)
7. Bruce Whitaker (University of Melbourne)
8. Cathal Kelly (Department of Finance, Government of Ireland)
9. Catherine Bridge Zoller (European Bank for Reconstruction and Development)
10. Charles W. Mooney, Jr. (University of Pennsylvania Law School)
11. Chris Wohlert (Wells Fargo)
12. Dan da Silva (Boeing)
13. Dennis Okyere (Bsystems)
14. Elaine MacEachern (International Finance Corporation (IFC))
15. Fergal Hourigan (Piercom)
16. Frank Murray (Piercom)
17. Gary Walsh (Information Services Corporation (ISC))
18. Gavin Mccosker (Australian Financial Security Authority)
19. Hamza Hameed (UNIDROIT)
20. Henry Gabriel (UNIDROIT Governing Council)
21. Ignacio Tirado (UNIDROIT)
22. Jeffrey Klang (USA Federal Aviation Administration)
23. Jeffrey Wool (UNIDROIT Foundation)
24. John Kimbler (Paradigm Applications, LLC)
25. Karin Kizer (U.S. Department of State)
26. Kathryn Sabo (Department of Justice of Canada)
27. Kathy Hillman-Weir (Information Services Corporation (ISC))
28. Laura Pierallini (Pierallini Law Firm)
29. Louis E. Emery (PEL Aviation Services)
30. Louise Gullifer (University of Cambridge)
31. Marco Nicoli (UNIDROIT Foundation)
32. Marek Dubovec (NatLaw)
33. Matt Bisson (2-Reg Aircraft Registry)
34. Megumi Hara (Gakshuin University)
35. Michelle Lee (Georgetown Student)
36. Murat Sultanov (IFC)
37. Nina Barker (USA Federal Aviation Administration)
38. Ole Boeger (Hanseatic Court of Appeal Bremen)
39. Pat Sweeney (U.S. Department of Commerce)
40. Philine Wehling (UNIDROIT)
41. Rob Cowan (Aviareto)
42. Robert Trojan (NatLaw)
43. Sanaz Javadi Farahzadi (UNIDROIT Scholar)
44. Sean McElroy (SITA)
45. Sidhant Sharma (Guernsey Aircraft Registry)
46. Simon Stanley (NatLaw)
47. Teresa Rodriguez de las Heras Ballell (Universidad Carlos III de Madrid)
48. William Brydie-Watson (UNIDROIT)