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Legal Aspects of Commercial Utilisation of the International Space Station – a German Perspective

L.J. Smith¹

1. Introduction

This contribution outlines the legal considerations involved in the commercial exploitation and utilisation of the International Space Station (ISS) from a German legal perspective. It serves to demonstrate the sources and content of those rules as they apply to ISS commercial operations in situations where German law is the governing law. The multi-party nature of the ISS leaves scope for the applicability of various national rules of law in specific situations where the Intergovernmental Agreement (IGA) so provides, whether or not the ISS operations are commercial. As a result, potential conflicts between applicable national rules are inevitable and possibly even anticipated.

Article VI of the Outer Space Treaty (OST) imposes a duty upon states to guarantee authorisation and supervision of space operations and activities at

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Frans von der Dunk and Marcel Brus (Eds.), The International Space Station. 153–179.
national level, in accordance with treaty law. Increased private participation in space activities has drawn attention to the fact that this duty applies not only to public activities in space but also to those of the private sector. Article VI, second sentence, OST thus requires space activities, irrespective of whether they are public or private, to be subjected to state authorisation and control. The interface between ultimate state responsibility for space operations and the growth of commercialisation of space activities remains an ongoing debate. Whether or not required by international law, convincing arguments exist in support of national space legislation as a means of imposing liability and ensuring compulsory insurance coverage for the private sector.

At the time of writing, there is no immediate national German space legislation prescribing specific rules applicable to outer space. Nor does legislation exist regulating the subject of ISS utilisation within its purely commercial context. Nevertheless, work and consultations towards national space legislation are still underway and Germany is no exception to this general trend in focusing on the needs and remit of national space legislation.

The contribution’s approach is twofold: firstly, it highlights the general industrial climate and support for ISS activities in Germany, whilst drawing attention to those areas of space activity where public interest and space policy (may well) emphasise the need for alteration to the current limited regulation; secondly an overview is given of national legal provisions, as they would apply to ISS space activity and commercialisation within Germany. Certain areas of law directly related to commercial rights and their exploitation have a particular European internal market character and, as a result of EU harmonisation, have been aligned between the EU Member States. This applies in particular to the sphere of intellectual property rights and data protection.

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3 The question of how the state ensures compliance with treaty imposed obligations is thereafter a matter for the individual state to decide, be it by law or administrative regulation, see Reifarth, supra note 2, 823.

4 Reifarth, supra note 2, 825.

5 Various international conferences have been held on the topic of national space legislation. The latest review can be found in M. Gerhard & K.U. Schrogl, Report of the Working Group on National Space Legislation (2001), 529, with reference to the situation in Germany.

6 Whether or not states are concerned about passing national space legislation is a question of the extent to which state responsibility and liability is to be passed down to the private commercial sector.


8 For a general coverage of the moves in harmonisation of intellectual property, see
The main tenor of the report focuses on the ISS’s potential for exploitation and use in the commercial context, when governed by German law.

2. German space policy and its commercial and political background

The year 1985 marked a decisive turning point in moves towards the ISS, when an ESA delegation under German leadership met with its American counterpart from NASA to discuss future European participation in the ISS.9 Already at that stage, a German contribution to the Space Station and the involvement of private industry were recognised as requiring both an institutional organisation and a legal framework. Any such framework would by its very nature have to go beyond an exclusively national approach.

Germany’s commitment to European cooperation in space is apparent from its financial commitment to ESA. Its contribution constitutes 70% of the total German national budget for space,10 amounting to approximately 1 billion Euro, the bulk of which comes from the Ministry of Education and Research (Bundesministerium für Bildung und Forschung, hereinafter BMBF). In addition, there are several public institutions, such as the Max-Planck Society, the Helmholtz Centres, the German Research Community (Deutsche Forschungsgemeinschaft, hereinafter DFG) and some university institutes which contribute to both space research and the budget. The German Aerospace Center (Deutsches Zentrum für Luft-und Raumfahrt, hereinafter, DLR) coordinates efforts at a federal level and implements the national space programme in accordance with the Delegation of Space Activities Act of 9th June 199811 (Raumfahrtübertragungsgesetz).

In the private sector, Germany’s space industry – EADS Space Transportation GmbH and EADS Astrium GmbH, OHB-Systems AG, Tesat-Spacecom GmbH & Co. KG, to name but a few – plays an equally important part in the national

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10 In comparison, French participation in ESA represents only 35% of its national budget for space. Civil expenditure figures for 1999 in France, Germany, Italy and the UK, rounded up and partly estimated; Germany excluded EUMETSAT, MPG and DFG, source: Jane’s Space Directory, CNES, ASI, BNSC in: German Space Program, Ministry of Education and Research, May 2001, 9.
spacescape’. This is partly due to Germany’s leadership in European activities in space and the ISS, in particular on account of its financial contribution.\textsuperscript{12} Germany “owns” 41\% of ESA’s share on the ISS, thereby having a particular interest in using the infrastructure on a commercial basis. The German Minister for Education and Research recently put it quite plainly: “Raumfahrt-\textit{politik ist auch Standort-\textit{politik}”\textsuperscript{13} (“Space policy enhances the economy”). Germany’s industry is expected to profit directly from the country’s investment in outer space. This may well be achieved through public-private partnerships or other models of public-private cooperation.\textsuperscript{14} Either way, the Ministry expects a “substantial increase in the commercial market for space goods and services and greater private-sector involvement both upstream and downstream”.\textsuperscript{15} The ISS is part of this potential market for space goods and services. The DLR therefore promotes its commercialisation, mainly by creating and developing a network of institutions as support infrastructure for the market.

3. Commercialisation of the ISS in Germany

3.1. General

In order to ensure that related investment is profitable, a substantial share of the utilisation rights of the ISS is designed to be ‘sold’ for private activities. To ‘purchase’ a place on-board, German companies can choose from three options: firstly, they can request a foreign Agency such as NASA for access to the ISS; secondly, they can solicit ESA for a place on-board or thirdly, they can approach the DLR, directly or through an official partner. This is best described as the ‘German option’.

The DLR, as the principal partner of the space industry, has been instructed with the ‘Promotion of the industrial use of the ISS’ (PIN).\textsuperscript{16} In general, the DLR

\textsuperscript{12} See Reifarth, supra note 9, id.

\textsuperscript{13} Speech held by the Minister for Education and Research, Edelgard Bulmahn, Berlin, 12.02.2004, available at http://www.bmbf.de/pub/mr-20040212.p0f, last visited 03.03.2005, 3.


\textsuperscript{15} German Space Program, supra note 10, 10.

\textsuperscript{16} Promotion of industrial use of the ISS. See PIN’s homepage http://www.raumstationsnutzung.de/index_ie.html.
prepares the ground for outer space activities and, above all, promotes the creation of sustainable industry utilisation of the ISS. It is possible to use the ISS for profit-oriented projects. These, however, do not follow the normal ‘Announcement of Opportunity’ (AO) procedure. Given the specific needs of industry, access to the ISS can be allocated on an individual company’s initiative and is decided on a case-by-case basis. For the time being, the DLR’s responsibilities concerning the application process are limited to scientific experiments. According to DLR procedure, “entrepreneurial offers”, as NASA designates initial proposals by companies, are to be directed to a network partner or directly to the DLR as a means of establishing initial contact. In a second step, the DLR scrutinises the feasibility of its cooperation with the company (e.g., whether there is a need for an astronaut or subsidies available). In a third step, the company requests permission from ESA. The latter can accept the company’s offer and integrate the project into the ISS’s scheduled programme, or refuse. The cooperation network between the DLR, research institutes and the industry is then coordinated by the PIN.

3.2. Cooperation networks and PIN

The following gives a short overview of the most important participants in the PIN network, namely MUSC, ISS Lab Ruhr, BEOS GmbH, and Kesberg, Büttfering and Partner.

The Microgravity User Center (MUSC), owned by the DLR, was founded in 1979 as a means of encouraging scientific research in space. The DLR enables scientists, as well as companies, to use the MUSC to simulate space experiments terrestrially, enabling evaluation of their potential before launch.

The ISS Lab Ruhr, a regional enterprise with the principal objective of supporting the local economy, is a joint venture between the DLR and Projekt Ruhr GmbH, itself a 100% subsidiary of the Land of North Rhine-Westphalia. ISS Lab Ruhr’s remit includes assistance to companies in the Ruhr area interested in undertaking experiments on board the ISS.

Bremen Engineering Operations Science GmbH (BEOS GmbH), on the other hand, is a joint undertaking of two companies and a university institute. It was founded in 1998 by DASA (now EADS Astrium GmbH), OHB-System AG and the Center of Applied Space Technology and Microgravity (ZARM) as an operation centre for the commercial use of the ISS. BEOS GmbH offers a complete environmental infrastructure for outer space activities with a network of

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17 Companies that would like to use the ISS platform for marketing oriented activities or advertisement will be directed to the ESA.
18 Network partners are thus cooperating enterprises, research institutes and agencies.
19 www.kbp-bonn.de.
industries and scientific institutes that plan, transport and prepare potential ISS experiments.

Kesberg, Büttfering und Partner is an agency which provides communication consultancy services and technology marketing for the German share of the ISS through the intermediary of the DLR.20

The PIN network is designed to promote commercial use of the ISS actively.21 Although some progress has been made in this field, a specific ISS legal framework has still to be agreed on. Drafts are presently being discussed at the DLR. These deal in particular with confidentiality, exclusivity, intellectual property rights and liability.22 Nevertheless, the rules of German civil, commercial and criminal law remain applicable to all three phases of operation, until such time as a lex specialis spatialis is introduced into national law.

4. Substantive German law

4.1. General

The starting point for an overview of the law relating to commercialisation of the ISS is the IGA itself. As a signatory state, Germany ratified the IGA on 11 September 1998.23 The legal nature of this agreement presupposes that commercial exploitation of the ISS takes place in conformity with international treaty rules, as foreseen by Article III OST.24 Article 25 German Constitution (Grundgesetz, GG) regulates not merely the binding force of international treaty law but specifically refers to it as a source of enforceable obligations, when transposed into national law.25 Nevertheless, these obligations exist as such by virtue of adherence

20 The INTOSPACE GmbH, which was dissolved in 2003 after 17 years, had been the first to promote the German share of the ISS. In the meantime, other companies such as the German-Space-Shop, have been created. The latter also offers to bring space tourists to the ISS. [Cf. http://www.german-space-shop.de/].
22 See supra, note 21.
23 BGBl. 1998 II, 2445.
24 In conjunction with Art. VI, OST.
25 Art. 3(2), EGBGB (Einführungs gesetz zum bürgerlichen Gesetzbuch) further specifies that, in cases of conflicts between applicable laws, internationally binding norms
to the treaties, even if their terms have not been transposed into national law.\textsuperscript{26} A national space law transposing and regulating international obligations continues to remain an ongoing topic of discussion and debate. A decade ago, similar discussions focused on the main issue of which particular state competencies were addressed in the context of Germany’s legislative remit for space.\textsuperscript{27} At that stage no final conclusion was reached beyond agreement that any legislative powers were clearly located at central federal level.\textsuperscript{28}

Commercial participation in the ISS implies exploitation within contractually agreed terms and is governed by the general regime of German public and private law rules.\textsuperscript{29} Public law procedures and regulations relating to space activities are contained in administrative and procedural regulations together with air traffic rules, which are applied by analogy.\textsuperscript{30} The DLR administers the rules applicable to scientific research in space, together with the Ministry of Education and Research and Ministry of Economics. The extent to which any of these rules comes into operation depends on various factors, including funding, public-private participation considerations\textsuperscript{31} and construction of the individual agreement itself. The public procurement rules in force ensure transparency from a competition law perspective.\textsuperscript{32}

Commercial exploitation in the context of the ISS thereafter falls under the scope of the general law of obligations (contract and tort law), flanked by provisions on industrial property. Details of ownership of, access to and use of industrial and immaterial property rights are primarily the subject of contractual specification, reflecting the general national funding conditions for commercial space contracts. Given that the EU has undertaken a considerable amount of work in harmonising provisions of industrial and intellectual property law,\textsuperscript{33} national rules in Europe on term, qualification and use of intellectual property rights have been steadily aligned since the early nineties. Germany has assumed the general classifications of intellectual property rights as contained in the

\begin{itemize}
  \item once transposed into national law, have priority. The supremacy of European law rules remains unaffected, Art. 3(2) last sentence.
  \item \textsuperscript{26} See Reifarth, supra note 2, 827.
  \item \textsuperscript{27} See Reifarth, supra note 2, 830.
  \item \textsuperscript{28} See Reifarth, supra note 2, 830.
  \item \textsuperscript{29} Germany’s participation in the ISS remains a state matter under Article VI OST, even where ESA has agreed to assume the obligations, particularly those arising out of ArticleVII(1) OST (BGBl. 1980 II, at 1169); cf. Reifarth, supra note 2, 827.
  \item \textsuperscript{30} See infra, para. 4.2.
  \item \textsuperscript{31} See infra, para. 4.7.1; further, see Von Kries, Schmidt-Tedd & Schrog, supra note 2, 105 ff.
  \item \textsuperscript{32} See Von Kries, Schmidt-Tedd & Schrog, supra note 2, 73 ff.
  \item \textsuperscript{33} See Art. 95, EC Treaty.
\end{itemize}
WIPO Convention. It is a signatory to the European Patent Convention and its national patent law reflects the Convention's provisions. Nevertheless, the relevance of ownership and conditions of access to intellectual property rights within the ISS commercial context remains a primary issue. Not only can intellectual property registrations be made for discoveries in space; Article 21 IGA links the activity to be protected to the territory of the partner state owning the particular element on which it occurred. Under Article 21 (2), any European partner state may deem the activity to have occurred on its territory, thus permitting intellectual property registration within the relevant European territory. In practice, there will be a clear link between ownership rights and territorial registration, in view of the interest in commercialisation and licensing of intellectual property rights. Effective ownership of intellectual property rights remains a corollary to motivating private industry's investment in space.

Given the lack of experience and limited development of established contractual practice in this sphere at the time of writing, the following comments should be understood within the embryonic background of commercial operations on the ISS. A specific lex mercatoria relating to commercial space operations – as opposed to launch services agreements – has yet to develop. The following should nevertheless still serve as an exposé of the general law for ISS-related matters falling within German jurisdiction.

37 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 137 ff.
Today, the German Aerospace Center (DLR),\(^{38}\) as successor to the German Space Agency (Deutsche Agentur für Raumfahrtangelegenheiten – DARA) which was first established by the Delegation of Space Activities Act in June 1990\(^{39}\) is the interface between regulatory operations and promotion of commercial space activities. The DLR succeeded DARA in 1998 as the result of revision of the 1990 law.\(^{40}\) The respective agencies were entrusted, inter alia, with the oversight and development of space activities in Germany.\(^{41}\) Creation of the Center meant that a central organisation, falling under the co-supervision of the federal ministries and having powers to participate in space research and development as a company by association (e.V.), subject to private law, became the key to central coordination and allocation of resources for space activities in Germany. This has had positive results in developing Germany’s contribution to exploitation and use of the ISS.\(^{42}\)

The DLR is responsible for the development of Germany’s space policy, representing its space interests, both at home and abroad.\(^{43}\) The year 2003 witnessed its thirty-fifth anniversary as a research and development institution and authority.\(^{44}\) In practice, the Ministries retain supervisory powers over the DLR and the Ministry for Education and Research (BMBF) participates in its activities within the established supervisory boards and committees.\(^{45}\) The DLR has its own budget, financial control being subject to final auditing by the Federal Court of Auditors.\(^{46}\)

Beyond the legislation establishing the DLR and its predecessor,\(^{47}\) there are no national provisions exclusively applicable to commercial exploitation of the ISS. Matters such as launching authorisation\(^{48}\) and indeed maintenance of a

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\(^{38}\) See www.dlr.de.

\(^{39}\) Raumfahrtaufgabenübertragungsgesetz (RAÜG) of June 21, 1990, BGBl. I, at 1014 ff.

\(^{40}\) See supra note 38, id.

\(^{41}\) § 1 (2) RAÜG 1998.

\(^{42}\) See information available under http://www.dlr.de/dlr/Organisation/Leitung.

\(^{43}\) § 1 (2) 1–3. RAÜG 1998.


\(^{45}\) § 1 (4) RAÜG 1998.

\(^{46}\) § 3 RAÜG 1998.

\(^{47}\) Supra note 40.

\(^{48}\) See Luftverkehrsgesetz (LuftVG) of March 27, 1999 (BGBl. I, at 550 ff.), last revised 11 January 2005 (BGBl. I, at 78 ff.) is used by analogy to implement the obligations under Art. II, Registration Convention.
national register of space objects as required by the Registration Convention⁴⁹ are governed by analogous reference to air traffic law rules. However, resort to such analogous legal rules may not remain a satisfactory regulatory solution in the long term.⁵⁰

In general, the interaction between the public and private sector in space determines the conditions, outcome and ownership of space projects’ results, ISS activities being no exception.⁵¹ It should be recalled that one of the major incentives in regulating space activities through national legislation is to promote the space industry.⁵² This need is reflected in the continued attention given to the possible structure of future national space legislation today.⁵³

4.3. Conflict of laws

The foremost issue within a multilateral project such as the ISS, not subject to uniform rules of law, is to determine which of the various participating nations’ substantive rules apply. This is particularly relevant in cases of dispute, whether over contractual or intellectual property rights, personal injury or crime. The IGA specifies that Partner states retain jurisdiction over the space objects they have registered⁵⁴ and over their own nationals.⁵⁵ Given the co-existence of various jurisdictions on the ISS, only international private law rules can determine which of the competing rules of law are to be applied in cases of conflict. German conflicts rules are contained in the Einführungsgesetz zum Bürgerlichen Gesetzbuch (EGBGB)⁵⁶ and constitute a codified set of conflict rules applicable to contractual and non-contractual obligations. Article 3 (1), first sentence EGBGB stipulates how reference to and application of foreign law is made, where the issue is connected to a foreign state. Such reference or remission to another country’s law is to be made to the exclusion of its own conflict rules.⁵⁷

Despite the foremost principle of freedom of choice of applicable law, notable restrictions prevent the choice of another state’s rules in case of national manda-

⁴⁹ See Reifarth, supra note 2, 827–31; § 64 LuftVG.
⁵⁰ See Reifarth, supra note 2, 830.
⁵¹ See infra, para. 4.7.
⁵³ The discussion on potential forms for national legislation continues, latterly within the context of Space Project 2001, the last meeting being held under the aegis of the DLR in June 2005, Cologne.
⁵⁴ Art. 5(1), IGA.
⁵⁵ Art. 5(2), IGA.
⁵⁶ Supra note 25.
⁵⁷ Generally referred to as single renvoi.
tory provisions. These rules prevent contracting out of compulsory national rules. Their relevance can be best seen in e.g. cases of employment contracts. In this respect, what appears a largely unrestricted freedom of choice of law remains subject to control and revision, particularly where choice of a foreign law would otherwise lead to circumvention of standards imposed by German law.

A significant area of international private law in this context is the law applicable in cases of damage arising through fault and negligence on or within the ISS. International treaty law remains the key factor in locating responsibility for damage with launching states. This is all the more so as the provisions of the Liability Convention (LC), with its absolute liability for damage on the surface of the earth or for damage elsewhere than on earth by reason of fault, are effectively limited in ISS activities to those cases of damage going beyond the scope of Article 16(3) of the IGA. The result of the foregoing is as follows: the Liability Convention applies only where ISS cooperation leads to external third party damage. Moreover, the provisions of Article V(1) and Article II of the LC on joint and several liability are not followed through in the IGA. In the absence of specific national liability rules or conditions imposed on launching activities, the question of liability remains both a sensitive and open issue.

Article 16(3.c) of the IGA requires Partner states to impose a general full cross waiver of liability (CWL) on all contracting parties involved in the ISS activities. The definition of activities to which the CWL extends is given in Article 16(2) of the IGA. In the absence of national legislation providing alternative mechanisms for allocating and apportioning issues of liability for space activities, the potential for liability falling on private commercial enterprises in the ISS context remains a daunting and real impediment to its commercial exploitation. The conjecture that there is no duty for the state to bear costs of damage to private parties does little to remove economic and legal considerations. This point is taken up further below in the discussion of tort law.

In short, although treaty law imposes liability on states, the latter can retract from primary treaty-based responsibility, through imposition of the general

58 Art. 27(3), EGBGB.
59 Art. 30(1), EGBGB.
61 As defined in Art. I(a), Registration Convention.
63 Art. III, Liability Convention.
64 Art. 16(2), IGA, governs claims from state and its related entities.
65 Under § 276 III BGB, contracts excluding liability for gross negligence in advance are invalid.
66 See Reifarth, supra note 2, 825.
CWL towards all parties involved in the contractual chain, as required by the IGA. Only by dint of legislation can the state effectively regulate liability for damage caused by the private sector within its jurisdiction.67

Currently, only if a launching state of an external object causes damage to the ISS or to individuals on board can there be fault liability under Article III of the LC that is not caught by the exclusion provisions of the IGA.68 Liability for other damage to individuals is covered by Article 16(3.d, 1–5) of the IGA, and is a matter of regulation between the individual and the state in question.

Moving from conflict rules in contract to obligations in tort and with the foregoing cross waiver provision in mind, the general conflict rules applicable to tort law in Germany reflect the classic 'place of damage' rule, the lex loci delicti, contained in Article 40 EGBGB and, in particular, Article 40(1), first sentence EGBGB. Under this rule, the law applicable in the event of damage is that where the damage took place. Given the effect of the IGA provisions69 whereby each Partner state retains jurisdiction on its registered elements70 in combination with the rules on where the damage occurred, German law can become applicable to ISS activities under Article 40 EGBGB. The fact that damage occurs in space is no exception to the foregoing: the conflict rules cover situations where the place where damage arises and that where damage was inflicted differ. These are not necessarily co-existent.71 Where the action leading to an infringement took place elsewhere than the location of damage, there may be a choice of applicable laws, this choice generally belonging to the victim.72

The European Union has moved one step further towards harmonising the law applicable to torts in its draft proposal for a regulation on the law applicable to non-contractual obligations.73 This regulation will unify national rules on conflicts in the sphere of non-contractual obligations within the European Union. The current discrepancy in applicability of EU law between ESA states and EU Member States remains unaffected, so that traditional conflicts rules will continue to prevail in cases where there are competing rules of applicable law.

67 The question remains to what extent the liability provisions of the LuftVG, together with their upper limits, apply to space objects, even if only by default.
68 Such damage is then unlimited, infra, para. 4.6.
69 In conjunction with Art. II, Registration Convention.
70 ESA undertakes registration for all European Partner states, thus making ESA Partner states' laws applicable simultaneously at any one time.
71 This situation is best understood by reference to cross-border environmental damage cases.
72 See Art. 40(1), 2nd sentence, EGBGB.
4.4. The law of contract

Substantive rules of contract law are regulated in the German Civil Code (Bürgerliches Gesetzbuch, BGB), with its division between the law of general and specific obligations. The general rules apply to all obligations, whether contractual or non-contractual, the special rules pertain to particular contractual and tort obligations. As a result, there is no specific German contract law provision applying to complex commercial operations, as may occur within the commercial context of the ISS. The civil law rules, in keeping with theories of independent party autonomy, entitle parties either to follow the regime provided by law or to draft their own operative contractual provisions, thereby establishing their own consensual framework. Despite the dominance of technical aspects in space contracts, the main body of the contract should still regulate parties’ rights and duties, leaving technical and revisionary aspects to schedules or annexes.

German law categorises contracts according to their type or function (typische Verträge); contracts such as those relating to commercial use of the ISS fall within the generic group of complex contracts (komplexe Verträge), mixed (gemischte Verträge) or atypical contracts (atypische Verträge). Such contracts contain a combination of elements governed by the general codified rules of contract. The traditional civil law categories of contract for work (Werkvertrag - manufacture or construction of a specific piece of work) and contract for services (Dienst- or Dienstleistungsvertrag) remain categories of typical contracts commonly found in practice. The rules on Werkvertrag make use of the law of sales rules in measuring performance. The contract for services governs independent provision of services, with greater emphasis on the time factor during which the service is to be provided. In practice, difficulties arise in drawing a clear line between both categories. The most important criteria remains that payment under the contract of work (Werkvertrag) does not fall due until the work is performed and

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74 Bürgerliches Gesetzbuch of 18 August 1896 (RGBl., at 195) as revised by the Gesetz zur Modernisierung des Schuldrechts from 26 November 2001 (BGBl I, at 31318).
75 Specific rules in a commercial context are to be found in the Commercial Code (Handelsgesetzbuch (HGB) of May 10, 1897 (RGBl 1897, at 219 ff.), last revised December 15, 2004 (BGBl. I, at 3408 ff.). Generally, they impose a higher standard of commercial acumen in contractual dealings for business and trading companies (Kaufmann).
76 Such complex contracts are devised by mixed analogy or reference to the legal institutes known in the Code itself. One example would be a complex of purchase (Kauf) and hire (Miete) in relation to a leasing contract, in the absence of its specific regulation in the Code.
77 § 631–650 BGB, commonly found in building contracts, requiring "successful" completion before payment falls due.
78 § 611–630 BGB.
79 § 651 BGB.
accepted.80 There are further intermediate categories of typical contracts fore-
seen by the Civil Code, the Geschäftsbereitstellungvertrag, (business management
contract)81 and the Werklieferungsvertrag (supply contract).82 Of these, the latter
seems more likely in the ISS context, in which projects involve development in
orbit and delivery on return.

A recent amendment, anchored in the most recent version of the German
Civil Code,83 allows a general and automatic right of damages for breach of con-
tract and for defective goods,84 irrespective of whether a warranty or guarantee
has been made. Prior to the revised version of the Civil Code, contractual rem-
edies in sales law had been linked to price reduction and termination, warranties
playing a central role in whether there was a legal right to damages.85 Where
a guarantee is offered by a seller, the duty on the guarantor is correspondingly
increased and liability in damages imposed on the latter.86

The question remains whether, given the general influence of US contract
practice and style on space ventures,87 commercial exploitation contracts gov-
erned by German law will not in fact follow the style purported by that tradition.
Certain performance related clauses such as the ‘best efforts’ principle are already
common measures of operative control and performance in launch and launch
service contracts.88

One remaining aspect worthy of attention is the measure of contractual dam-
ages for failure or non-performance. The technique of apportioning and assess-
ing liability in advance through so-called ‘penalty clauses’89 is common, but may
give rise to judicial control to the extent that there are unreasonable punitive
elements.90

Where contracts are awarded by public bodies, contract rules developed for
the specific requirements of building and construction and formulated as stand-

80 § 646 BGB.
81 § 675 ff. BGB.
82 § 651 BGB.
83 See supra note 74.
84 § 37(4), § 280 (1) BGB.
85 Until 2002, the law had restricted damages for defects in performance to cases where
there was a specific warranty. Defective performance now founds a claim to damages,
irrespective of the existences of a warranty.
86 § 276 BGB.
87 As is currently the case in relation to launching and launch service contracts, cf. Von
Kries, Schmidt-Tedd & Schrogl, supra note 2, 138 ff.
88 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 137.
89 Schadenspauschalierungsklauseln.
90 When contained in standard form contracts, these are subject to specific control
under the provisions of §§ 306–8 BGB. Such clauses are particularly open to judicial
scrutiny if used in consumer contracts.
ard terms (Verdingungsordnung für Bauleistungen)\(^9\) have become the general basis chosen for such agreements. These take on various forms, depending on the subject matter of the contract. There are standard rules for delivery and services (Verdingungsordnungen für Leistungen)\(^9\) and for independent services (Verdingungsordnungen für freiberufliche Leistungen).\(^9\) The latest edition of these rules applicable to public contracts is to be found in the recently revised standard rules (Verdingungsordnung über die Vergabe öffentlicher Aufträge).\(^9\) Construction contracts are made subject to their provisions and, where applicable, they operate as an alternative parameter to the general rules of contract law mentioned above, supplementing the provisions of § 631 BGB on the Civil Code’s contract for service. Whether or not they apply to ISS commercial contracts will depend on the specific subject matter of the contract (i.e. whether a construction or service contract).\(^9\)

As indicated, intellectual and industrial property rights will assume a central role within ISS commercial contracts. German law has a specific statute applicable to inventions made during the scope of employment which is discussed below. It is assumed that, on the ISS, patent law considerations will be most relevant, but the general considerations of ownership and use apply equally to other property rights such as copyright and require to be specifically addressed.\(^9\)

### 4.5. Employee inventions and discoveries

Typical commercial contracts will allow for ownership and access to inventions and results of project experiments, be these subject to patent protection\(^9\) or any subsidiary form thereof.\(^9\) The German Employee Inventions Law (Arbeitnehmerfindungsgesetz, ArbnErfG) is a remarkable piece of legislation. Originally

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\(^9\) Verdingungsordnungen für Leistungen (VOL) of September 17, 2002, (BAnz. 2002 Nr. 216a, at 13).

\(^9\) Verdingungsordnungen für freiberufliche Leistungen (VOF), 26th August 26, 2002 (Bekanntmachung, BAnz. Nr.203a of October 30, 2002).

\(^9\) Verdingungsordnung über die Vergabe öffentlicher Aufträge (VgV) of February 11, 2003, BGBl. I, at 168.

\(^9\) Infra, at 23; cf. Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 76.

\(^9\) §§ 1, 7, 11 UrhG.

\(^9\) See Patentrecht, Note 35, supra note 35.

\(^9\) See Sortenschutzgesetz: supra note 35.
passed in 1957, and last revised in 2002,\textsuperscript{99} it represents a unique balance between commercial and social market theories of employee participation in commercial discoveries to which they have largely contributed. The law upholds a balance between the rights and duties of both employer and employee, whereby the inventor principle under patent law provides the basis for creating a form of shareholder employee value in the invention itself. The provisions of the law (\textit{ArbnErfG}) apply only to employees and not to independent workers or indeed retired employees.

Under § 6 \textit{Patentgesetz} (Patent Law),\textsuperscript{100} the place of discovery of the invention is irrelevant, so long as the discovery is thereafter registered within Germany.\textsuperscript{101} The invention belongs to its inventor,\textsuperscript{102} the latter is obliged to notify each invention made during his employment to his employer.\textsuperscript{103} Insofar as the invention took place during the course of employment, the employer has a basic right to indicate whether or not the invention will be exploited. Should the employer have no interest in taking up the invention, the employee is thereafter free to exploit it independently.

The Employee Inventions Law is of direct relevance to experiments, discoveries and inventions within the commercial context of the ISS. Article 21(2) of the IGA foresees that, in relation to intellectual property law, activities on ESA registered elements can be deemed activities within any of the European partner states territories.\textsuperscript{104} This means that German – or indeed any other European—intellectual property and employee invention and discovery legislation may be applicable at any one time in cases of collaboration and joint effort. This highlights the need for clarification in contractual terms of rights ownership and use.

The statute makes a distinction between discoveries within the scope of work and “independent discoveries”.\textsuperscript{105} Only those inventions beyond the scope of contractual duties fall within the category of free inventions: these need only be intimated to the employer and do not fall within his patent exploitation monopoly, giving him a right to exclusive remuneration.\textsuperscript{106} There is a presumption of

\textsuperscript{99} There have been no substantive alterations to the content of the law since 1957, rather those other provisions to which it refers have been regularly updated.
\textsuperscript{100} See supra note 35.
\textsuperscript{101} Under the principle of territoriality, intellectual property rights devolve protection in those states where registered.
\textsuperscript{102} § 6 Patentgesetz.
\textsuperscript{103} The principles of Labour Law determine the exact status of employer and employee.
\textsuperscript{104} Cf. ESA, which has registered the Columbus module on behalf of the ESA Member States.
\textsuperscript{105} § 4(1) ArbnErfG.
\textsuperscript{106} § 18 ArbnErfG.
employer-owned inventions made within the scope of work. The employer carries the burden of proof in cases of conflict.

The law effectively provides for an appropriate return or fee to the employee inventor, who, despite his employee status, can participate in the financial reward. The Federal Ministry of Labour and Social Order has established a series of recommendations, on the basis of which the appropriate return is calculated. This remuneration is in keeping with established case law and, in particular, with leading judgments in 1997 of the Federal Supreme Court. A ‘full return’ based on an analogy to licensing is dependent on the final grant of patent. Where the company has not assumed full – as opposed to partial – rights to the invention, any fee due to the employee will take into account whether he himself has registered the right.

Various additional provisions of this law could be significant within the ISS context. In cases where commercial secrecy prescribes caution in relation to patent registration, the employer is relieved from his duty to register the property right. In situations where there is no clear method of calculating the value of the invention – and particularly in the experimental sphere of tests on materials – an estimated amount can be made on the basis of the ministry’s recommendations. Of particular importance is the prohibition against advance waivers of participation rights in employment contracts at the outset of the contract of employment. Such terms can only be agreed after intimation of an invention by the employee or notification by the employer to the employee that the invention is not going to be worked. § 23 (1) ArbEG imposes employee participation in invention rights to a general reasonableness test in cases of imbalance in the contractual relationship.

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107 § 4(3) ArbnErfG.
108 Bundesminister für Wirtschaft und Arbeit.
110 § 12(3) S. 2 ArbnErfG.
111 § 17 ArbnErfG.
112 Various Ministry directives have been developed as a means of calculating values see Directive no. 13.
113 § 22 ArbnErfG.
114 The provisions of this act apply equally to civil service and soldiers, §§ 40–42 ArbnErfG, and in that respect, can include those engaged on ISS under contract of employment within their ambit.
As previously indicated, the application of German tort law in relation to ISS activities is in practice predominantly determined by Articles 16 and 17 of the IGA. Under Article 16, the CWL applies to all protected space activities, as defined in Article 16(c) and (f)(1–2) of the IGA, whether arising out of contract or tort. As a result, Article 16 of the IGA provides that damage lies where it falls in cases of personal injury or death to individuals, damage to property and in situations of financial or consequential loss. Only in situations where Partner states and their related entities are involved, or where claims are made by natural persons for damage or death, is the CWL inapplicable. This exemption extends to damage caused by wilful misconduct and includes damage leading to intellectual property claims. In the case of tort claims, since there is no internationally applicable tort regime, German tort law would then apply.

The result in practice is as follows: all agreements relating to commercial exploitation of the ISS are required to include the cross-waiver liability clause and, moreover, are responsible for continuation of this "holding harmless clause" as against further subcontractors. This again applies to both contract and tort claims.

Two points should be mentioned at this stage: the tort liability regime in Germany is covered by the general rules of the Civil Code: the main categories of torts are outlined in § 823(1) – fault liability; § 823(2) – breach of statutory duty; and § 839 – breach of duty in public office. German civil law – unlike French – is characterised by the coexistence of contractual and delictual claims. Furthermore, the rules on state or governmental liability, as foreseen in the Civil Code, were originally designed to cover situations of individual civil servants' liability, but not the specific character of liability for administrative or tortuous wrongdoing of the state or any of its departments in exercise of authority in office. Given the potential scenarios of public and private liability in tort within the ISS commercial spectrum, resort to other rules is required to found liability claims, at least of public law nature. This dichotomy between public and private law tort actions remains. The existing law of governmental liability has

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115 See supra para. 4.3.
116 The spirit of the IGA was to encourage a fair balance of risks by allocating risk to individual partner states and thus avoiding cross-suit between them.
117 Art. 16(d)(1–5), IGA.
120 Sachs, Grundgesetz Kommentar, 3rd. Ed. (2003), Art. 34 No. 2 at 1155 (Bonk).
needed to bridge the gap between its origins in individual wrongful acts of civil servants and demands for reliable and guaranteed exercise of state functions, be they administrative, judicial or executive. Criticisms of the law’s structural weaknesses and defects led to an attempt to introduce a state liability statute in 1981, regulating objective liability for unlawful official acts – and indeed strict liability for failure of technical facilities. This was, however, subsequently declared unconstitutional by the Federal Constitutional Court in 1982. Insofar as any form of public liability is to be established, § 278 BGB can be used by analogy where organisational fault of a public body is proved. Nevertheless the situation remains unsatisfactory, insofar as claims for private enterprise liability cannot be established under the general norm of § 823(1). At this level, the general principles contained in Article 34 first sentence GG (Basic law) are recognised as founding a directly enforceable norm of state liability in the context of public law. In the absence of specific liability regimes, legal wrongdoing by the state remains subject to judicial interpretation and development of this rule of law by the highest courts.

In the context of the ISS operations, a variety of interesting state and public/private liability scenarios might arise. Firstly, Article 34 contains a general principle of liability from which derogations can, however, be made. Derogations – i.e. excluding or limiting liability – must have a statutory basis and conform to principles of proportionality. In this context, it could perhaps be argued that the CWL is a legitimate derogation from state liability. In addition, foreign nationality is no longer a bar to any claims under Article 34 against the state. However, the exact liability relationship between participating entities and states will depend on relevant ESA regulations governing the operations: if there is no waiver of liability, then the question of state liability will be determined on the basis of Article 34 GG (Basic Law), if national law is applicable. It should be recalled that the norm covers wrongful acts made by institutions: this does not cover any private law activities that remain to be determined on the basis of the civil law. The distinction is made on the basis of whether the duty in question is public or private in scope. In essence, the exact relationships and functions

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122 §278 BGB confirms that a principal is liable for actions of his agents or representatives.
125 Supra note 120, Art. 34 GG, No. 100.
126 Supra note 120, Art. 34 GG, No. 102.
of entities cooperating on board the ISS requires careful analysis to establish any overview of liability.\footnote{Supra note 120, Art. 34 GG, No. 57.}

Finally, leaving the IGA aside, German law prohibits contracting out of gross negligence in advance and § 276 III BGB limits any attempt to exclude liability for wilful negligence.

4.7. Public procurement rules and competition law

4.7.1. General

The financial risks for space-related commercial contracts are apparent: commercial exploitation on the ISS are in general only take feasible within the scope of a subsidised project, or, alternatively, must be the object of a state-financed interest in the project. The public sector is entitled to endow subsidies within the form and procedure of German Competition Law. Public procurement contracts are governed by the Law against Restraints on Competition (\textit{Gesetz gegen Wettbewerbsbeschränkungen}, GWB),\footnote{Gesetz gegen Wettbewerbsbeschränkungen (GWB) of August 26, 1998 (BGBl I 1998, at 2521 ff.), as amended 9th Dec. 2004.} which, from §§ 97 ff., prescribes the basic principles of equal treatment for all potential contractual partners. In principle, the most economically favourable tender will be awarded the contract.\footnote{§ 79 (5) GWB; Bunte, \textit{Kartellrecht} (2002).}

There are two different types of contract within the general context of space: firstly, the \textit{Auftrag} or order placed by the ministry or institution; secondly, public funding or grant (subsidy) towards the commercial project (\textit{Zuwendung} or \textit{Subvention}). Public orders presume the existence of a public interest in the contract;\footnote{See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 74.} in the case of subsidies, the private contractual partner is recipient of the subsidy.\footnote{See note 125, \textit{id}.} In practice there are often difficulties in distinguishing between these two forms, despite the existence of stringent federal financial rules and controls in the case of orders (\textit{Aufträge}).\footnote{See note 125, \textit{id}.} One major difference relates to determining ownership of project results: in the case of an order or \textit{Auftrag}, the instructing ministry is owner of the results and in the case of subsidies, a financial platform to encourage experimental activity in favour of a third party has been created by the public hand, leaving ownership of project results untouched. Where a project is eligible for subsidies – as is conceivable within the ISS\footnote{See http://www.raumstationsnutzung.de/finanzierung/hilfen.html.} – the rules applicable to public subsidies are relevant. In this context the Ministry for Education and

\footnote{127 Supra note 120, Art. 34 GG, No. 57.\footnote{Gesetz gegen Wettbewerbsbeschränkungen (GWB) of August 26, 1998 (BGBl I 1998, at 2521 ff.), as amended 9th Dec. 2004.} \footnote{§ 79 (5) GWB; Bunte, \textit{Kartellrecht} (2002).} \footnote{See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 74.} \footnote{See note 125, \textit{id}.} \footnote{See note 125, \textit{id}.} \footnote{See http://www.raumstationsnutzung.de/finanzierung/hilfen.html.}
Legal Aspects of Commercial Utilisation of the ISS

Research (BMBF) endows the recipient with an exclusive right to the project results, given its interest in encouraging commercial exploitation of space. In relation to public contracts for space activities (Aufträge), this Ministry has, over the years, developed contracts that reflect accepted standard practice.

These contracts are governed by a combination of national and European procurement rules, dependent partly on the contract volume, partly on differing contracting procedures, again dependent on whether the contract is subject to open or closed tender. The details are complex and beyond any more than brief reference within this paper. Their specifications are linked to federal budgetary rules, the tender procedure reflecting volume and public participation. The Administrative Law on Procedure (Verwaltungsverfahrensgesetz-VVG) and the budgetary law (Bundesaushaltsordnung—BHO) contain the procedural rules (Verwaltungsverfahren VV) specific to this sector. Subsidies themselves are defined in § 23 BHO. The principal basis of all these rules is to ensure control of legitimate discretion in the decision-making process.

Specific public law rules apply to pricing of public contracts, as regulated by the Ministry for Economics and Labour. Reference is made again to the standardised contract terms used in such contracts, the Verdingungsordnungen (VOL/VOB/VOF) and their counterparts for price and budgetary matters. The interconnection between public contracts and the specific control rules are to be found in the GWB.

4.7.2. German law of subsidies (Zuwendungsrecht)

As mentioned before, the law regulating subsidies is applicable in cases of commercial exploitation of the ISS (Zuwendungsrecht). This specific administrative area of subsidies is governed by the provisions of § 23 Budgetary Law (BHO), facilitating the grant of subsidies to institutions or projects not otherwise immediately falling within the remit of the federal or state activities and administration. In short, eligibility is defined rather by exclusion from access to other public

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134 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 106. It will be a condition of contract that the results be used and exploited.
135 These can be viewed under www.bmbf.de; see Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 75.
137 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 77.
138 See supra, para. 4.4.
139 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 76.
140 § 79 (6), § 127 GWB, together with Verordnung über die Vergabe öffentlicher Aufträge, supra note 97; see Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 77.
141 See www.raumstationsnutzung.de/zugang rahmen/recht.html.
funds. This area is tightly governed by administrative law, in terms of which the grant is a ‘beneficial administrative act’ (begünstigender Verwaltungsakt) made within the complete discretion of the public hand. Under German public law, the discretionary remit is broad: there need not even be a statute on which the grant is based. The right to make such a grant includes the corresponding right to withhold it, or indeed make it subject to conditions.142 The grant is made on condition of proof of correct application and use of the subsidy,143 and is subject to control by the responsible agency.

4.8. EC Regulation on research and development aid

All subsidies granted by states are, in principle, state aids in terms of Articles 87 and 88 of the EC Treaty and as a result subject to European state aid rules.144 This situation entails not only notification of the grant by the relevant Ministry (in the case of commercial ISS projects, the BMBF) to the EU Commission, but also its approval. New notification procedural rules have been introduced at Community level145 and apply to all forms of aid, making notification compulsory, irrespective of whether they fall under the de minimis rules or not. Whether or not a grant (Zuwendung) falls within a category of funding permitted or prohibited at EU level depends on a variety of factors, in particular whether or not the project falls within the category of aid that is encouraged and/or exempted by the European rules as per Article 87(3) of the EC Treaty. Such considerations apply in particular to research and development aid. Each case is to be considered on its own merits.

A recent 2004 Regulation declares research and development funding as compatible with the common market in relation to small and medium enterprises (SME’s).146 Given the individual approval character of the system and its many

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142 See Reifarth, supra note 2, 828.
144 See Von Kries, Schmidt-Tedd & Schrogl, supra note 2, 80. Given the importance of excluding abuse of dominant position, leading to anti-competitive effects on the research market, the rules themselves provide for differing appreciation in types of research and development undertaken: whether or not an activity is designed to broaden scientific and technical knowledge and is or is not linked to commercial objectives is one of the major factors considered.
exceptions that extend to cross-border cooperation projects (such as the ISS), the immediate conformity of grants under German law with the European rules cannot be definitively measured. In so far as enterprises eligible for national subsidies can successfully demonstrate the incentive for R&D on the ISS, there is likely to be a reasonable presumption in favour of their compatibility with the scope and object of Articles 87 and 88 of the EC Treaty.

5. APPLICATION AND SCOPE OF GERMAN CRIMINAL LAW TO CRIMES ON THE ISS

The link between the rules of German criminal law to crimes within the context of ISS operations is the IGA itself. Criminal jurisdiction over crew members or visitors is operated and managed by reference to their nationality.\textsuperscript{147} The choice of nationality as the connecting factor was an attempt to limit the cases of potential conflict otherwise likely to occur where, by coincidence, a crew member happened to be within an element registered by another country at the moment of the crime.\textsuperscript{148} Each Partner state may, in terms of the IGA, supply crew\textsuperscript{149} so that at any particular time, there may be a mixture of different nationals on board. As a result, the provisions of German criminal law apply in the case where a German national either commits or is a victim of a crime.

The IGA refers to the application of national law according to the active personality principle. Under this principle, perpetrators of crime can be prosecuted under the law of their own state. This principle is balanced by operation of the passive personality principle contained in Article 22(2) of the IGA. This requires consultations between the Party state whose national perpetrated the crime to take place with that Party state whose national has been harmed. The latter state must either agree to renounce jurisdiction over the criminal and be prepared to release the criminal to the other state\textsuperscript{150} or alternatively, confirm that it is prosecuting itself.\textsuperscript{151}

\textsuperscript{147} Art. 22(1), IGA. The alternative would have been to allow each Partner state to apply its criminal law according to the principle of territoriality within the elements it had registered under the Registration Convention.

\textsuperscript{148} See Von Kries, Schmidt-Tedd & Schrogl, \textit{supra} note 2, 211.

\textsuperscript{149} Art. 11(1), IGA.

\textsuperscript{150} The term extradition is not used. The consultation and option to hand over the suspect constitutes an effective equivalent to extradition, cf. Art. 22(3), IGA.

\textsuperscript{151} See Von Kries, Schmidt-Tedd & Schrogl, \textit{supra} note 2, 231.
National space laws have already been implemented in several countries, such as the United States, the United Kingdom or Sweden and first attempts have been made to generate a German counterpart. After an initial drawback in 1986, when the Ministry for Education and Research indicated that such a law was not necessary to fulfill international obligations at that point in time, the DLR itself began to elaborate a draft for a potential German space legislation. This draft limited itself to obligations resulting from general international space law. The first part contains provisions guaranteeing the enforcement of the OST and Registration Convention, the second part with liability. The draft is no more than a working paper and discussions on a possible national legal framework still continue.

Attention was first drawn to commercialisation of outer space with the publication of Stephan Hobe’s study in 1992 on the need for a legal framework. At that point, commercial utilisation of the ISS could have been described as embryonic, little being said about legal aspects. Growth of commercial interest in utilisation of the ISS underlies the imminent need for international agreement on regulation of ISS-related commercial interests.

Current agreement at international level, such as the Intergovernmental Agreement (IGA) and the Memoranda of Understanding (MOU’s) primarily promote institutional research rather than commercial use of the ISS. Achieving legal certainty over proprietary rights and conflicts of laws through the medium of national or European space legislation remains an essential means of encouraging commercial utilisation of the ISS. This is all the more so, as the current conflict of laws on the ISS leaves various potentially applicable laws and jurisdictions side-by-side. Although conceivable, an ISS-only multi-state agreement regulating conflict of laws and complementing the IGA and MOU’s would merely create yet another tier of legal rules designed to help private investors.

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156 One example would be the Hydro Aluminium Deutschland GmbH, see http://www.raumstationsnutzung.de/news/nlr/2003/nlr_2–03/pdf/nlr2003–2_s10–11.pdf.
157 See Farand, supra note 21, 392.
indirectly to assess their risk. There has been some support for this approach in the past.\(^{158}\) Its downside would be the continued existence of a discrepancy in new regimes of unified laws applicable as between ESA and EU (non-ESA) Member States.

Although the European Union in terms of Article 95 of the EC Treaty has gone a long way in harmonising areas of national rules when an overriding internal market need to align private law (in particular) has been shown, divergences still remain in national implementing statutes on such issues as product liability.\(^{159}\) This applies in particular to the application of the development risk defence, as foreseen under Article 15(1.b) of Directive 85/374/EEC. Under this provision, a Member State may declare the Directive inapplicable to damage and liability situations, where the state of the art would not have enabled the defect to be discovered at the relevant time.\(^{160}\) Damage resulting from product defects in space may well, in view of their technological advancement, constitute a potential case in point. Such divergences in national private law will become more evident and pose a greater challenge with increasing growth of industry interest in the commercial utilisation of the ISS.\(^{161}\) Until a final solution is achieved, many questions linked to product liability and conflicts could be handled through ‘creative use of contracts’\(^{162}\) under the supervision of ESA.

The second issue that requires regulation within a legal framework, as a means of ensuring and retaining industrial interest in the ISS is that of intellectual property rights. Different trade secret laws are still applicable on board the ESA module. The possibility of forum shopping leads to further uncertainty. From a German perspective, Article 21(2) of the IGA states that any invention occurring


\(^{160}\) This provision was implemented by §1(2), No. 5, German Product Liability Law (Produkthaftungsgesetz, ProdHaftG), of 15 December 1989, BGBl. I S. 2198, as amended by the Second Law on Provisions relating to law of damages, BGBl. I S. 2674, 2797.


within the ESA module on board the ISS is subject to German law. This remains the case for each of the ESA Member States. Any one set of national legal rules, whether German or another, is competing with national laws of other ESA Member States.

The role of unified conflict rules remains vital to the discussion, and some attention to the various alternative means of solving the problem of legal conflicts is merited. Leaving aside the once-ventured introduction of an ESA-specific Conflict of Law Regulation, existing unified or uniform legal frameworks can be relied on even now. In relation to achieving a common European approach to the conflict of laws, the Proposal for a Draft Regulation on the law applicable to non-contractual obligations (Rome II) will, once in force, ease the current co-existence of competing rules of applicable law.

In relation to intellectual property law, Europe has already achieved a unique degree of harmonisation and unification. In situations where national legal rules stipulate the same grounds and extent of protection, there will be equal footing between the states where registration of the property rights could take place. This in turn will reduce any competition between the legal orders that currently exists. Patents are only one of the many areas pertaining to intellectual property rights, where competing applicable national laws and forum co-exist. A high degree of common ground has already been achieved in national patent law with the European (Munich) Patent Convention (EPC). The current Proposal for a Community Patent Regulation is designed to introduce a directly applicable EU patent protection scheme. The level of uniformity achieved in the EU demonstrates advantages of moving from national to supra-national law-making solutions, particularly in a pan-European context. In the medium-term, only a European framework going beyond an exclusively German approach to space legislation can resolve diffuse legal parameters on board the ESA module of the ISS.

7. Conclusion

The main legal challenge for the ISS is the juxtaposition of jurisdictions, launching states and registration states. The result is an extremely complex set of rules

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163 See supra note 153.
164 See supra note 73.
165 Although some adaptations, such as the exclusion of Article 60(1), EPC should still be considered: "[T]he law of the State in which the employee is mainly employed; or if the State is not determinable, the State in which the employer has his place of business to which the employee is attached".
that industry, in assessing its risks of commercialisation, has every reason to consider with caution.

A German national law would help ease reservations among potential users of the ISS, particularly commercial interests within the jurisdiction. However, in the long term, only a European legal framework has the potential to achieve a lasting uniform solution. This could take place within the ongoing moves to formulate a European space policy in the framework of the current European Space Council. Such future framework should cover issues such as liability and intellectual property rights. Full harmonisation involving twenty five (and perhaps more) states, each with its own legal culture and legal system will otherwise remain difficult to achieve. An enforceable law is essential in order to establish confidence in the potential of the ISS for the private partner. Any European outer space solution should be devised by what is the most appropriate institution. The European Union is just this.

Space legislation at European level does not remove the onus on states to have national space legislation; the regulatory aims of national space legislation and regulation of commercialisation of outer space are not mutually exclusive. The current debate relates to inclusion of private interest regulation on the ISS and as such, deserves a common framework for European commercial interests.

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