

GERMANY ENACTS LEGISLATION ON THE DISTRIBUTION OF REMOTE SENSING SATELLITE DATA

Dr. Michael Gerhard

*Assistant to the Member of the Executive Board, Space Agency
German Aerospace Center (DLR)
D-53227 Bonn, michael.gerhard@dlr.de*

Dr. Bernhard Schmidt-Tedd

*Head, Legal and Business Support, Space Agency
German Aerospace Center (DLR)
D-53227 Bonn, bernhard.schmidt-tedd@dlr.de*

ABSTRACT

On June 15th, 2007 the German remote sensing satellite TerraSAR-X was launched into orbit. Data generated by this satellite will be of high spatial resolution. The possibility is given that the distribution of these data endangers Germany's national security or foreign policy interests. Therefore, the German parliament enacts legislation with the aim to safeguard those interests.

This paper introduces the Act in its main features and points out some correlation to the UN Treaties and Principles on Outer Space.

I. BACKGROUND

With the launching of TerraSAR-X into orbit, Germany has become one of few the

Copyright © 2007 by Michael Gerhard and Dr. Bernhard Schmidt-Tedd. Published by IISL/the American Institute of Aeronautics and Astronautics, Inc., with permission.

States which have on the one hand the ability to generate data of high spatial resolution and on the other hand the intention for a broad distribution of such data for commercial and scientific purposes.

1. Launch of TerraSAR-X

TerraSAR-X as a high resolution radar satellite operated by the German Aerospace Center DLR was launched from Baikonur on June 15th, 2007. The already scheduled launch was delayed by almost a year due to a launch failure of the contracted rocket type just a few weeks before.

Depending on its operating mode, the sensor of TerraSAR-X is able to generate data up to one meter spatial resolution. According to a public private partnership agreement with Astrium GmbH, the DLR is entitled to distribute TerraSAR-X data only for scientific use. Astrium GmbH is exclusively entitled to the commercial distribution. It has especially established its subsidiary Infoterra GmbH (Ltd.) for that purpose. More technical backgrounds

on TerraSAR-X and on the public private partnership as well as on further German remote sensing satellite systems to which the Act might apply, were given by the authors elsewhere.¹

2. Security concerns with regard to remote sensing satellite data

The technical expertise in remote sensing sensors and satellite design has increased dramatically in the last years.² In consequence satellite remote sensing data and data products improved more and more. At the same time, information management systems further evolved. Thus, data and data products today make available geographical information much more substantive than just visual images.³

Some of these information might be detrimental to national security or foreign policy interests of States. Therefore, States made such data for a long time subject to a security scheme. Only few high resolution data were distributed beyond defence agencies.

Nowadays the divide between the accessibility of some data for civilian use and the restriction for some high resolution data for defence purposes vanishes.⁴ A secrecy scheme is disadvantageous to a commercialisation of remote sensing. All the more, as it is not mainly the data alone which endangers national security and foreign policy interests; it is rather the information about a certain area in combination with the person who obtains these information and the timeliness the information are distributed. E.g. nothing within Google Earth is detrimental to national security interests, even though the data base is accessible for everybody and some (air borne) data are of very high

resolution: the information in this database have been gathered months and years ago.

As it is neither possible nor desired to apply secrecy scheme to high resolution satellite data, States have to prepare other (legal) instruments in order to efficiently safeguard their security interests without establishing obstacles for the commercial and scientific distribution of such data.⁵

3. International legal status

Only two States have legislated the operation of remote sensing satellite systems and the distribution of data generated by those systems: US⁶ and Canada⁷. Information on these legislation as well as their differences to the German concept were given by the authors elsewhere.⁸

In April 2007 the French Ministry for Education and Research published a draft legislation on space operations.⁹ This draft also cursory deals in its articles 23 to 25 with the distribution of remote sensing data.¹⁰

The lack of regulation elsewhere might be attributed to either the lack of technical ability to operate advanced remote sensing satellite systems or to the fact that high resolution data are used only for governmental or reconnaissance purposes.

Further some bilateral agreements exist (e.g. Government of India and Space Imaging¹¹) as well as some national policy declarations¹².

II. LEGISLATIVE PROCESS

The German government established a policy how to safeguard national security and foreign policy interests in the

distribution of high resolution satellite data in 2004/05. Based hereon, the Federal Ministry of Education and Research presented a first draft legislation in mid 2005. During the consultation of the other ministries the German government was reorganised. In that context, the lead management for this legislation was shifted to the Ministry of Economics and Technology, which introduced a final draft in the cabinet of ministers in January 2007. The Government concluded on that legislation on January 24th, 2007.

The German *Bundesrat* commented on that legislation on March 9th, 2007.¹³ The first hearing in German *Bundestag* took place on March 29th, 2007;¹⁴ a public hearing was held on September 10th.¹⁵ The second and the final third hearing took place on September 20th.¹⁶ After the execution and promulgation by the Federal President the Act on safeguarding security interests in distribution of high resolution satellite data will enter into force on December 1st, 2007.

III. CONTENTS OF THE ACT

As far as possible the German legislator aims at a free distribution of high resolution satellite data – without disregarding its national security and foreign policy interests.

Therefore the control was firstly restricted to the distribution of satellite remote sensing data by the operator of the satellite system or by a distributor. Distributor in terms of the Act is only the operator of the system or a person, who has a right of use that derives directly from this very operator. Any further distribution (by the customers of the operator or distributor) should not be restricted. Secondly, the

German legislator avoided to set up a shutter control, as such data might be of interest for national security or reconnaissance authorities. In return it had to be assured that no unauthorised person gains access to the satellite systems or the data, prior to the examination, whether its distribution might affect national security or foreign policy aspects. In this context it is also necessary to licence the operator of the remote sensing satellite system as well as the data distributor.

Furthermore, the legislator aimed at minimizing administrative burdens for the operator and distributor. The concept of a public private partnership and the high intention of supporting commercialisation of satellite data distribution will lead to a enormous amount of transactions per week. A claim for an authoritative clearance of all of them would have inflicted more disadvantages to the geo-industry than brought advantages to the national security. For this reason the concept of a sensitivity check was set up.

This approach is mainly influenced by the Ministry of Economics and Technology that drafted the act. Nevertheless the Ministry of Defence, the Ministry of Foreign Affairs and the Ministry of the Interior were involved.

1. Sphere of Application

The Act only applies to remote sensing satellite systems. Neither air borne remote sensing data nor navigation signals are dealt with.

The sphere of application is also restricted to “advanced” remote sensing systems. These are systems which have the potential to generate data, which might be detrimental to the national security or

foreign policy interests. The criteria therefore are given in the Act (§ 2 (2), e.g. spatial resolution, spectral coverage, number of spectral channels etc.) while the precise limits of these criteria are given in a decree.

The Act does not apply to advanced remote sensing satellite systems which are operated by a governmental authority for military or reconnaissance purposes.

The personal sphere of application is restricted to German nationals and firms as well as to remote sensing satellites for which the operational control lies within the German territory resp. to foreign distributors acting from German territory.

As mentioned above, the Act does not apply to any distribution of remote sensing data (or data products) by customers of the operator or distributor, i.e. any value adder for geo information data, downstream business or map providers (e.g. Google Earth).

2. Distribution of remote sensing data

Main feature of the Act is a two-tiered procedure of checking any transaction with regard to its relevance for the national security and foreign policy interests.

The first tier is a sensitivity check administrated by the distributor himself. Based on given criteria by the Ministries, the distributor has to check, whether or not a transaction might endanger national security and foreign policy interests. The criteria are the technical parameter of the data, the sensed territory, the time of generation of the data, the time of delivery and the person to be delivered. The precise details of these criteria are given in a decree. In case this check does not show any sensitivity of the transaction, the

distributor is free to process the transaction without any official procedure.

Not until the check does show sensitivity the distributor has to decide whether he will decline the transaction or apply for a licence by the Federal Office of Economics and Export Control. Just here an administrative procedure starts. The Office will check the transaction whether it might indeed endanger national security or foreign policy interests.

3. Licence to operate advanced remote sensing satellite systems

The operator of an advanced remote sensing satellite system has to be licensed by the Federal Office of Economics and Export Control. Therefore, the operator has to be reliable; he has to ensure, that the satellite system cannot be commanded by unauthorised persons and that data cannot be accessed by unauthorised persons. Furthermore, he has to ensure that no unauthorised person has admission to the rooms relevant to operate the satellite system and to the storage and handling of the data as well as no unauthorised person has access to relevant facilities therein. Persons having such access have to be cleared.

The operator has to report adequately to the Office, to grant access to officials of the Office at any time and to document commands and encryption procedures.

The Federal Office of Economics and Export Control may – in case of contravene to the licence, the Act or the Decrees – take appropriate actions to safeguard national security and foreign policy interests.

4. Allowance to act as data distributor

The distributor of data of an advanced remote sensing satellite system needs an allowance by the Federal Office of Economics and Export Control. The requirements of that allowance are similar to the licence of the operator of an advanced remote sensing satellite system.

5. Other regulations

With regard to the protection of high-ranking interests of the government, the Act will reserve a right of prior tasking for governmental purposes as well as a right of prior distribution of data to the government. Anyhow, these governmental rights will be restricted to rare cases of national crisis.

IV. CORRELATION BETWEEN THE ACT AND PUBLIC INTERNATIONAL LAW

The Act has to be seen in the context of public international law, especially the UN Treaties and Principles on Outer Space.

1. UN Outer Space Treaties

The UN Outer Space Treaties apply to the Act as far as it deals with an activity in outer space: i.e. the operation of the remote sensing satellite. Thus, the operation has to follow the principles given by the UN Outer Space Treaty 1967 in its Artt. I – V, VIII (3), IX – XII. Also, Artt. VI – VIII of that Treaty as well as the UN Liability Convention 1972 applies with regard to responsibility, liability and jurisdiction and control. The satellite has to be registered according to the UN Registration Convention 1975.

Some aspects shall be highlighted in the following.

a) Jurisdiction and Control

According to Art. VIII (1) UN Outer Space Treaty 1967 jurisdiction and control over an object launched into outer space retains with the State on whose registry this object is carried. According to Artt. II (1), (2) and I (c) UN Registration Convention 1975 this State of Registry is one of the launching States of that very space object.

A remote sensing satellite system typically consists of a space segment (usually one or more satellites¹⁷) and a ground segment. Space object is the space segment only, i.e. the satellite.

Taking TerraSAR-X as an example, there are three launching States. The satellite was launched from the Russian Cosmodrom in Baikonur, Kazakhstan. Thus, Kazakhstan and Russia are launching States. The satellite was launched based on a launch service contract between the German Astrium GmbH and the Russian ISC Kosmotras. Astrium launched the satellite as agreed within a public private partnership agreement with the German Aerospace Center. That is why Germany and Russia procured the launching. Germany is a launching State as well.

From these three launching States, Germany registered TerraSAR-X at the spacecraft registry of the German Federal Office of Civil Aviation (Luftfahrt-Bundesamt). In accordance to that, Germany is the State of registry and retains jurisdiction and control – while all three launching States (Germany, Kazakhstan and Russia) might be liable in case of a damage caused by TerraSAR-X.

The fact that Germany retains jurisdiction over the space segment of that remote sensing satellite system provides the basis for those regulations of the Act, which set requirements on the satellite configuration (no unauthorised command, no unauthorised access to data downlinks etc.).¹⁸

b) Responsibility

According to Art. VI (1) UN Outer Space Treaty 1967, the appropriate State shall bear international responsibility for national activities in outer space. The operation of a remote sensing satellite in outer space is such an activity.

Taking – once more – TerraSAR-X as an example, Germany is the State responsible for that activity. A State is appropriate according to Art. VI (1) UN Outer Space Treaty 1967, if it is able to exercise jurisdiction. This jurisdiction (over the activity) is not linked to the jurisdiction over the space object as discussed above (i.e. the State of registry).¹⁹ A State has jurisdiction according to the general concept of jurisdiction in public international law.²⁰ In accordance to this it is the State whose nationals (natural or legal person) undertake such activities or from whose territory an activity is undertaken. TerraSAR-X is operated from German territory by the German Aerospace Center. For this reason Germany is the appropriate State and therefore internationally responsible for TerraSAR-X.

Its international responsibility was one major reason for Germany to enact a legislation dealing with distribution of data generated by such activity.

c. Authorisation and Supervision

The Act does not implement Art. VI (2) UN Outer Space Treaty 1967. According to this article, the appropriate State (i.e. Germany in case of TerraSAR-X) has to authorise and continuously supervise the activity in outer space. In implementing Art. VI (2) UN Outer Space Treaty 1967 States may legislate on so-called *national space legislation*.²¹

National space legislation contain a legal mechanism to authorise an activity for assuring that (a) national activities are carried out in conformity with the provisions set forth in the UN Outer Space Treaty 1967 and (b) no space object used by undertaking the activity causes damages (for which the State might become internationally liable as a launching State).²² The Act does neither of both. As far as it sets forth requirements for the satellite, these are requirements specific to remote sensing – and not in general to the operation and control of the satellite (bus).

A general legislation on the operation and control of satellites in Germany²³ has so far not entered into force. In case of its adoption it will apply in addition to the Act presented here.

2. UN GA Remote Sensing Principles

The UN Principles relating to Remote Sensing of the Earth from Outer Space 1986 are a resolution of the General Assembly, but not a public international treaty.

The Principles give right to generate and disseminate remote sensing data without the prior consent of the sensed State, Principle IV.²⁴

A correlation exists between the German Act and Principles XII with regard to the

right of the sensed State to seek data from its own territory.²⁵ According to Principle XII the sensed State shall have access to primary and processed data concerning the territory under its jurisdiction as soon as they are produced. This right of access exists on a non-discriminatory basis and on reasonable cost terms only.

Principle XII is an extension of the distribution of remote sensing data (distribution to ... – and also to the sensed State). In contrast, the German Act restricts the distribution of some sort of data, i.e. high resolution data (distribution to ... – but not ...). Therefore it is not evident to call for an additional right of access for the sensed State within such legislation.

Nevertheless, a State might underline its declaration of intent (given in the UN General Assembly) by engaging any distributor under its jurisdiction also to give access to the data to the sensed State (under the restrictions given by Principle XII). But no State will do so if the data might affect national security interests. Therefore, States typically commit the distributor to give access for the sensed State, but only subject to national security interests²⁶ - a restriction which follows generally accepted rules of international law in analogy to export control.

The German Act does not give such reference explicitly; nevertheless Principle XII can be considered within the sensitivity check as well as within the licence procedure under the criteria of “person to be delivered”. The Ministry can fill in this criterion in such a way, that Principle XII might be considered subject to national security and foreign policy interests – as it is the objective of the legislation.

The Act does not aim at protecting State interests in the distribution of information about the territory of the State (or other States), as it is intended by the UN Principles relating to Remote Sensing of the Earth from Outer Space 1986. Rather it intends to safeguard national security and foreign policy interests of the State, which has jurisdiction over the satellite system and might be held responsible for the distribution of data.

V. CONCLUSIONS

Germany is the third country legislating on the distribution of high resolution remote sensing satellite data. The need for such legislation is based on the high informational contents of such data which might endanger national security and foreign policy interests.

The Act is characterised by a two-tiered procedure to check whether or not such data might endanger the interests mentioned above. The main aim of this procedure is to find a balance between the national security and foreign policy interests as well as the interests of the data distributors / geo-data industry in a lean administrative procedure.

By legislating on the distribution of data, the Act also deals with some requirements for satellites. These requirements do not constitute an authorisation and supervision mechanism as required by Art. VI (2) UN Outer Space Treaty 1967.

The UN GA Resolution on Principles relating to Remote Sensing of the Earth from Outer Space 1986 can be considered either by the Federal office of Economics and Export Control in granting the licence to distribute high resolution remote sensing data or by the ministerial Decree.

- ¹ *Michael Gerhard / Bernhard Schmidt-Tedd*, Regulatory Framework for the distribution of remote sensing satellite data: Germanys draft legislation on safeguarding security interests, IAC-05-E.6.1.05, pages 1 et seq.
- ² Some examples are given by *Ram Jakhu*, International law governing the acquisition and dissemination of satellite imagery, in: *Journal of Space Law* 2003, page 65 (71 et seq.).
- ³ *Mukund Rao / Sridhara Murthi*, Keeping up with remote sensing and GI advances – policy and legal perspectives, in: *Space Policy* 2006, page 262 et seq. describe that fact as “global transparency”.
- ⁴ *Mukund Rao / Sridhara Murthi*, *ibid.*, page 262 (263).
- ⁵ *Jörg Herrmann*, 5 Fragen - 5 Antworten; Satellitendatensicherheitsgesetz, in: *GeoBIT* 3/2007, Seite 6.
- ⁶ An overview is given by *Joanne Irene Gabrynowicz*, The perils of LANDSAT from grassroots to globalization: a comprehensive review of US remote sensing law with a few thoughts for the future, in: *Chicago Journal of International Law* 2005, pages 45 et seq.
- ⁷ The Canadian Legislation is dealt with by *M. Lucy Stojak*, Regulatory Framework for Commercial Remote Sensing Satellite Systems: The Canadian story, IAC-04-IISL.1.02 and *Bruce Mann*, Drafting legislation to regulate commercial remote sensing satellites: a how-to guide from Canada, IAC-06-E6.3.12.
- ⁸ *Michael Gerhard / Bernhard Schmidt-Tedd*, cf. note 1, pages 6 et seq.
- ⁹ Projet de loi relatif aux opérations spatiales, Texte n° 297 (2006-2007), déposé au Sénat le 25 avril 2007 (<http://www.senat.fr/leg/pjl06-297.html>).
- ¹⁰ Cf. also *Conseil d'État*, Pour une politique juridique des activités spatiales, Paris 2006, pages 121 et seq. and annexe 5.
- ¹¹ As cited by *Ram Jakhu*, cf. note 2, page 83.
- ¹² E.g. Remote Sensing Data Policy of the *Indian National Remote Sensing Agency*, cf. <http://www.nrса.gov.in/policy.html>.
- ¹³ Drucksache des Bundesrates, BR-Drs. 65/07 (http://www.bundesrat.de/cln_051/nn_6906/sid_62D02B1EDE32DFCE065EE87F03262C38/SharedDocs/Beratungsvorgaenge/2007/0001-0100/65-07.html?__nnn=true).
- ¹⁴ Drucksache des Bundestages, BT-Drs. 16/4763 (<http://dip.bundestag.de/btd/16/047/1604763.pdf>).
- ¹⁵ Ausschussdrucksachen 16(9)770, 16(9)763, 16(9)767, 16(9)768, 16(9)769 and 16(9)771 (http://www.bundestag.de/ausschuesse/a09/anhoeerungen/8_Anhoerung/index.html).
- ¹⁶ Drucksache des Bundestages, BT-Drs. 16/6438 (http://www.bundestag.de/bic/a_prot/2007/ap16115.html).
- ¹⁷ Sensors may also be installed on space stations, rockets, ballons etc. The German Act deals with all of them as

long as they are operating in outer space.

¹⁸ Abstractly cf. *Ram Jakhu*, cf. note 2, pages 79, 85.

¹⁹ *Horst Bittlinger*, Private Space Activities, in: IISL Proceedings of the 30th Colloquium on the law of outer space 1987, page 191 (193); *Armel Kerrest*, Remarks on the responsibility and liability, in: IISL Proceedings of the 40th Colloquium on the law of outer space 1997, page 134 (139); *Peter Nesgos*, International and domestic law applicable to commercial launch vehicle transportation, in: ISL Proceedings of the 27th Colloquium on the law of outer space 1984, page 98 (100).

²⁰ For an overview on the discussion cf. *Michael Gerhard*, Nationale Weltraumgesetzgebung, Köln 2002, Seiten 50 – 56.

²¹ Authorisation and supervision can be assured also by other means, e.g. contracts, as part of other authorisations etc.

²² For more information on this subject cf. *Frans G. von der Dunk*, Private Enterprise and Public Interest in the European ‘Spacescape’, Leiden 1998; *Michael Gerhard*, Nationale Weltraumgesetzgebung, Köln 2002. *Michael Gerhard / Kai Uwe Schrogl*, Report of the Working Group on “National Space Legislation”, in: Project 2001 – Legal Framework for the Commercial Use of Outer Space, edited by K.H. Boeckstiegel, Köln 2002, pages 529 – 608.

²³ Cf. *Karl-Friedrich Nagel*, Current plans for National Space Laws – Germany, in:

Project 2001 – Legal Framework for the Commercial Use of Outer Space, edited by K.H. Boeckstiegel, Köln 2002, pages 565 - 570.

²⁴ *Ram Jakhu*, cf. note 2, pages 73 et seq.

²⁵ *Ram Jakhu*, *ibid.*, pages 85 et seq.

²⁶ For the U.S. cf. Section 960.12 of the NOAA Regulations on the Licensing of Private Land Remote-Sensing Space Systems (July 31, 2000). Also discussed by *Ram Jakhu*, cf. note 2, pages 88 et seq.; for Canada cf. Section 8 (4)(c) of Bill C-25, Act governing the operation of remote sensing space systems.