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National space legislation : future perspectives for Malaysian Space Law

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National Space Legislation Future Perspectives for Malaysian Space Law

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de graad van Doctor aan de Universiteit Leiden,
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volgens besluit van het College voor Promoties
te verdedigen op dinsdag 21 oktober 2014
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Che Zuhaida Binti Saari

geboren te Kota Bharu, Kelantan (Malaysia) in 1971

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Prof. dr. N.J. Schrijver
Prof. dr. S.M. Williams (University of Buenos Aires, Argentina)

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To my parent and family,
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I dedicate this work.

Table of Contents

ACKNOWLEDGEMENT	V
LIST OF ABBREVIATIONS AND ACRONYMS	XVI
INTRODUCTION	1
 1 MALAYSIAN SPACE EXPERIENCES AND ACTIVITIES: PAST, PRESENT AND FUTURE	 8
1.1. Introduction	8
1.2. Policy and Laws	9
1.2.1. The Malaysian Space Policy and the Malaysian Outer Space Bill	10
1.2.2. The Malaysian Federal Constitution	12
1.2.3. The Malaysian Communications and Multimedia Act 1998 (Act 588)	30
1.2.4. The Malaysian Communications and Multimedia Commission Act 1998 (Act 589)	37
1.2.5. The Communications and Multimedia (Licensing) Regulations 2000	39
1.2.6. Other Applicable Laws	42
1.3. Technological Development and Research	44
1.3.1. Governmental Sector	44
(a) Sea to Space Division (S2S)	45
(b) Malaysian National Space Agency (ANGKASA)	46
(c) Astronautic Technology (M) Sdn. Bhd. (ATSB)	50
(d) Malaysian Remote Sensing Agency (MRSA)	56
(e) Malaysian Meteorological Department (MMD)	59
1.3.2. Non-Governmental Sector	62
(a) MEASAT Satellite System Sdn. Bhd.	62
(b) Malaysian Institute of Aero and Space Studies (IKAM) and Space Tourism Society Malaysia Chapter (STS-MC)	67
(c) Astro Holdings Sdn. Bhd.	75

1.3.3.	Higher Educational Institutions	78
(a)	Technology Education	79
(b)	Legal Education	86
1.4.	Applications and Activities	89
1.4.1.	Telecommunication and Broadcasting	89
1.4.2.	Remote Sensing	91
1.4.3.	Meteorology	100
1.4.4.	Navigation	103
1.4.5.	Satellite Manufacturing and Launching	107
1.4.6.	<i>Program Angkasawan Negara</i>	112
1.4.7.	Scientific Research	115
1.4.8.	Suborbital Space Plane	117
1.4.9.	Commercial Spaceport	120
1.5.	Concluding Remarks	124
2	MALAYSIA, INTERNATIONAL SPACE ACTIVITIES, AND LAWS	127
2.1.	Introduction	127
2.2.	World Space Activities	127
2.3.	International Space Law	134
2.3.1.	The Historical Background	134
2.3.2.	Meaning and Sources of International Space Law: An Overview	142
2.3.3.	Malaysia and the Five Outer Space Conventions	148
(a)	The Outer Space Treaty 1967	150
(b)	The Rescue Agreement 1968	153
(c)	The Liability Convention 1972	157
(d)	The Registration Convention 1975	159
(e)	The Moon Agreement 1979	162
2.3.4.	Malaysia and the Five Outer Space Principles	164
(a)	Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, 1963	164
(b)	Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, 1982	166

(c)	Principles Relating to Remote Sensing of the Earth from Outer Space, 1986	168
(d)	Principles Relevant to the Use of Nuclear Power Sources in Outer Space, 1992	171
(e)	Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, 1996	173
2.4.	Malaysia as a Member of International and Regional Organizations	175
2.4.1.	International Level	175
(a)	United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)	175
(b)	International Telecommunication Union (ITU)	177
(c)	International Telecommunications Satellite Organization (ITSO)	181
(d)	International Mobile Satellite Organization (IMSO)	183
2.4.2.	Regional Level	186
(a)	Asia Pacific Telecommunity (APT)	186
(b)	Asia-Pacific Regional Space Agency Forum (APRSAF)	188
(c)	Commonwealth Telecommunications Organization (CTO)	189
(d)	The Association of Southeast Asian Nations (ASEAN) Subcommittee on Space Technology and Applications (SCOSA)	191
2.5.	Concluding Remarks	192

3	THE STUDY OF THE LEGAL FRAMEWORK OF SOME NATIONAL SPACE LEGISLATIONS	195
3.1.	Introduction	195
3.2.	United Kingdom	197
3.2.1.	An Overview	197
3.2.2.	Five Outer Space Conventions: The United Kingdom's Status	199
3.2.3.	National Space Legislation: The Outer Space Act 1986	201
(a)	Nature and Scope	202
(b)	Authorization: Licensing and Procedure	204

(c)	Registration Obligation	205
(d)	Constant Monitoring and Supervision	206
(e)	Liability and Indemnification	208
(f)	Safety, Peace and Security Measurement	209
(g)	Other Provisions	210
3.2.4.	Concluding Remarks	211
3.3.	Australia	212
3.3.1.	An Overview	212
3.3.2.	Five Outer Space Conventions: Australia's Status	215
3.3.3.	National Space Legislation: Space Activities Act 1998	217
(a)	Nature and Scope	218
(b)	Authorization: Licensing and Procedure	220
(c)	Registration Obligation	223
(d)	Constant Monitoring and Supervision	224
(e)	Liability and Indemnification	225
(f)	Safety, Peace and Security Measurement	227
(g)	Other Provisions	229
3.3.4.	Concluding Remarks	230
3.4.	United States of America	231
3.4.1.	An Overview	231
3.4.2.	Five Outer Space Conventions: The United States of America's Status	236
3.4.3.	The United States National Space Legislations and Regulations	239
(a)	Nature and Scope	240
(b)	Authorization: Licensing and Procedure	244
(c)	Registration Obligation	249
(d)	Constant Monitoring and Supervision	251
(e)	Liability and Indemnification	252
(f)	Safety, Peace and Security Measurement	255
(g)	Other Provisions	257
3.4.4.	Concluding Remarks	257

3.5.	India	259
3.5.1.	An Overview	259
3.5.2.	Space Bodies, Activities and Programmes	261
3.5.3.	Space-Related Policies, Laws and Regulations	266
3.5.4.	India and the Five Outer Space Conventions	269
3.5.5.	Legal Implications	271
3.5.6.	Concluding Remarks	274
3.6.	The Neighbouring Countries	275
3.6.1.	Thailand	276
3.6.2.	Singapore	282
3.6.3.	Brunei	287
3.6.4.	Legal Implications	290
3.7.	Concluding Remarks	292
4	THE PROPOSED LEGAL FRAMEWORK FOR MALAYSIAN SPACE LAW	298
4.1.	Introduction	298
4.2.	Reasons for Necessity	299
4.3.	Some Major Aspects of Drafting Malaysian Space Legislation	307
4.3.1.	The National Policy Compliance	308
4.3.2.	The National Interest	311
4.3.3.	The National Legal System Compliance	313
4.3.4.	Existing Domestic Law Coordination	314
4.3.5.	International Space Law Coordination	315
4.3.6.	Harmonization of Certain Legal Aspects	318
4.3.7.	Sustainability of Space Activities	319
4.4.	Shaping the Malaysian Space Law	321
4.4.1.	The Scope of Law	322
4.4.2.	Authorization Clauses	329
4.4.3.	Monitoring and Supervision Clauses	336
4.4.4.	Registration Clauses	343
4.4.5.	Liability and Indemnification Clauses	351
4.4.6.	Safety, Peace and Security Clauses	358

4.4.7.	Other Relevant Clauses	363
4.5.	Concluding Remarks	366
5	A FEASIBLE DRAFT ACT OF A MALAYSIAN OUTER SPACE LAW	368
5.1.	Introduction	368
5.2.	The Malaysian Outer Space Act	369
5.2.1.	A Feasible Draft of a Malaysian Outer Space Act	369
5.2.2.	The Legal Impacts on Malaysia	387
5.2.3.	The Legal Impacts on the ASEAN and World Space Activities	394
5.3.	Concluding Remarks	399
6	GENERAL CONCLUSIONS	400
	SUMMARY IN ENGLISH	407
	SAMENVATTING (SUMMARY IN DUTCH)	413
APPENDIX A	TABLE NO.3.1: SOME DIFFERENCES AND SIMILARITIES OF 7 SELECTED STATES	419
APPENDIX B	SELECTED BIBLIOGRAPHY	423
	CURRICULUM VITAE	472

List of Abbreviations and Acronyms

ABC	All Asia Broadcast Centre
ACMA	Australian Communications and Media Authority
ADCS	Spacecraft Attitude Determination & Control Subsystem
AEGRS	ASEAN Experts Group on Remote Sensing
AIT	Assembly, Integration and Test
ANGKASA	Malaysian National Space Agency
APEC	Asia-Pacific Economic Cooperation
APRSAF	Asia-Pacific Regional Space Agency Forum
APT	Asia Pacific Telecommunity
ARABSAT	Arab Corporation for Space Communication
ASEAN	Association of Southeast Asian Nations
ASPC	Asia Pacific Space Centre Pty Ltd
ASRI	Australian Space Research Institute
AST	Office of Commercial Space Transportation United States
ASTRO	Astro All Asia Network Plc.
ATSB	Astronautic Technology (M) Sdn. Bhd.
BAKSA	<i>Bahagian Kajian Sains Angkasa</i>
BIS	Department for Business, Innovation and Skills United Kingdom
BNSC	British National Space Centre
CEDEX	Cosmic-Ray Energy Deposition Experiment
CLP	Current Legal Problems
COMSTAC	Commercial Space Transportation Advisory Committee
COST	Committee on Science and Technology
CRCSS	Cooperative Research Centre for Satellite Systems
CRISP	Centre for Remote Imaging, Sensing, and Processing of Singapore
CSA	Canadian Space Agency
CTO	Commonwealth Telecommunications Organization
DAE	Department of Atomic Energy India
DAS	Disaster Alert System
DBS	Direct Broadcasting by Satellite
DGPS	Differential Global Positioning System

DID	Department of Irrigation and Drainage
DLR	<i>Deutsches Zentrum für Luft- und Raumfahrt</i>
DMT	Digital Multimedia Terminal
DOC	Department of Commerce United States
DOD	Department of Defense United States
DOF	Department of Fisheries Malaysia
DOS	Department of State United States
DOT	Department of Transportation United States
DSO	Defence Science Organization of Singapore
DTH	Direct-To-Home
EADS	European Aeronautic Defence and Space Company
ECER	East Coast Economic Region
e-CFR	Electronic Code of Federal Regulations
ECSL	European Centre for Space Law
ELDO	European Launcher Development Organization
ESA	European Space Agency
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
FAA	Federal Aviation Administration United States
FCC	Federal Communications Commission United States
FDPM	Forestry Department of Peninsular Malaysia
FLAS	Fixed-line Alert System
GBAS	Ground-Based Augmentation System
GIS	Geography Information System
GISTDA	Geo-Informatics and Space Technology Development Agency Thailand
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
GSLV	Geosynchronous Satellite Launch Vehicle
HSC	Hughes Space and Communications Company
IAA	International Academy of Astronautics
IAASS	International Association for the Advancement of Space Safety
IAF	International Astronautical Federation
IASL	Institute of Air and Space Law
ICAO	International Civil Aviation Organization

ICJ	International Court of Justice
ICLQ	International and Comparative Law Quarterly
IDA	Infocomm Development Authority of Singapore
IGDP	Integrated Geospatial Database and Planning
IIASL	International Institute of Air and Space Law
IISL	International Institute of Space Law
IIUM	International Islamic University of Malaysia
IKAM	Malaysian Institute of Aero and Space Studies
ILA	International Law Association
ILQ	International Law Quarterly
IMCO	Inter-Governmental Maritime Consultative Organization
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
INCOSPAR	Indian National Committee for Space Research
INMARSAT	International Maritime Satellite Organization
INSAT	Indian National Satellites system
INTELSAT	International Telecommunications Satellite Organization
IRPS	Image Receiving and Processing Systems
IRS	Indian Remote Sensing satellites
ISAC	ISRO Satellite Centre India
ISRO	Indian Space Research Organization
ISS	International Space Station
ITSO	International Telecommunications Satellite Organization
ITU	International Telecommunication Union
JAXA	Japan Aerospace Exploration Agency
JBIS	Journal of British Interplanetary Society
JILT	Journal of Information, Law and Technology
JMCL	Journal of Malaysian and Comparative Law
JUPEM	Department of Surveying and Mapping Malaysia
KLIA	Kuala Lumpur International Airport
LKIM	Fisheries Development Authority of Malaysia
LRIT	Long Range Identification and Tracking of Ships
LSO	Launch Safety Officer
MAC	Medium-sized Aperture Camera

MACRES	Malaysian Centre for Remote Sensing
MADA	MUDA Agricultural Development Authority
MARDI	Malaysian Agricultural Research and Development Institute
MASTIC	Malaysian Science and Technology Information Centre
MBNS	MEASAT Broadcast Network Systems Sdn Bhd
MCA	Malayan Chinese Association
MCI	Ministry of Communications and Information of Singapore
MEASAT	Malaysia East Asia Satellite
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MGRS	MACRES Ground Receiving Station
MIC	Malayan Indian Congress
MICA	Ministry of Information, Communications and the Arts Singapore
MICT	Ministry of Information and Communication Technology Thailand
MIMOS Berhad	Malaysian Institute of Microelectronic Systems
MMD	Malaysian Meteorological Department
MMU	Malaysia Multimedia University
MOC	Mission Operation Centre
MOST	Ministry of Science and Technology Thailand
MOSTE	Ministry of Science, Technology, and Environment Malaysia
MOSTI	Ministry of Science, Technology, and Innovation Malaysia
MPL	Maximum Probable Loss
M-R2D2	Malaysian Research for Rocket Plane Design & Development
MRSA	Malaysian Remote Sensing Agency
MSC	Mission Control System
MSC	Multimedia Super Corridor
MTBC	MEASAT Teleport and Broadcast Centre
MUT	Mahanakorn University of Technology Thailand
MyRTKnet	Malaysia Real-Time Kinematic Network System
NAREM	National Resources and Environmental Management
NASA	National Aeronautics and Space Administration
NEA	National Environment Agency of Singapore
NEKMAT	National Fishermen Association
NEqO	Near Equatorial Orbit
NRCT	Thailand National Research Council

NTU	Nanyang Technological University Singapore
Ofcom	Office of Communications
OFR	Office of the Federal Registrar
Oftel	Office of Telecommunications
PBN	Performance Based Navigation
PKNS	Selangor State Development Corporation
PSLV	Polar Satellite Launch Vehicle
RGDIP	<i>Revue Général De Droit International Public</i>
RKA	Russian Federal Space Agency
RMAF	Royal Malaysian Air Force
RTM	Radio Television Malaysia
S2S	Sea to Space Division
SAC	Space Application Centre India
SBAS	Space Based Augmentation System
SCOSA	Subcommittee on Space Technology and Applications
SDC	Boeing Satellite Development Center
SDSC	Satish Dhawan Space Centre India
SFC	Space Future Consulting
SIM	Satellite Image Map
SISPELSAT	<i>Sistem Pelayaran Satelit</i>
SLASO	Space Licensing and Safety Office
SOAs	Satellite Operating Agencies
SpaceX	Space Exploration Technologies Corporation
SPL	Swiss Propulsion Laboratory
SSTA	Singapore Space and Technology Association
SSTL	Surrey Satellite Technology Ltd.
STARs	Standard Terminal Arrival Routes
STC	Saudi Telecommunications Company
STS	Space Transportation System
STS-MC	Space Tourism Society Malaysia Chapter
SWANS	Suborbital Water-Aero N'Spaceplane
TelBru	Telekom Brunei Berhad
TERLS	Thumba Equatorial Rocket Launching Station India
THEOS	Thailand Earth Observation Satellite

TRSC	Thailand Remote Sensing Centre
UiTM	MARA University of Technology
UKM	National University of Malaysia
UM	University of Malaya
UMNO	United Malay National Organization
UN ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UNGA	United Nations General Assembly
UniMAP	Universiti Malaysia Perlis
UNIMAS	Universiti Malaysia Sarawak
UPM	University of Putra Malaysia
USAKA	U.S. Army Kwajalein Atoll
USC	United States Code
USM	University of Science Malaysia
UTeM	University of Technical Malaysia
UTM	University of Technology Malaysia
UUM	Universiti Utara Malaysia
VSSC	Vikram Sarabhai Space Centre India
VTOL	Vertical Take-off and Landing
WMO	World Meteorological Organization
ZLR	<i>Zeitschrift für Luftrecht</i>
ZLW	<i>Zeitschrift für Luft- und Weltraumrecht</i>