

# Ag4Space and the law: initial considerations

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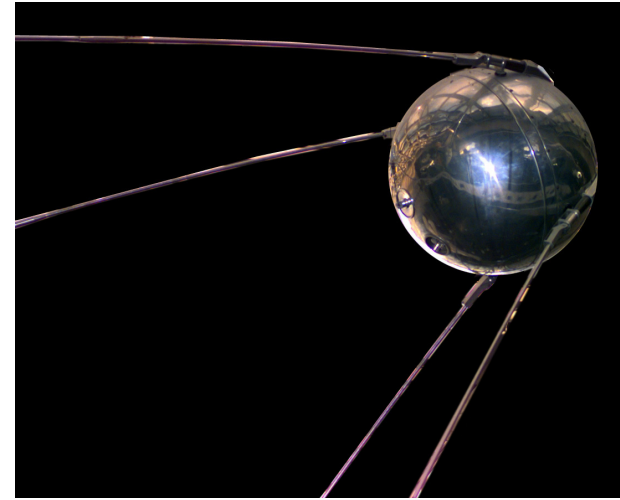
*This is not  
really  
different for  
outer space*

**Wherever You Go, the *Lawyer* Goes** Nebraska Law

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# The origins of space law

- ◆ 1957 Launch Sputnik-1
- Discussions in UN framework
- 1967 Outer Space Treaty
  - Ratified by 110 States, signed by 23 more
  - Including all major spacefaring nations
- Provides *the* legal framework for space activities



# Beyond the Outer Space Treaty

*Need to elaborate:*

- ◆ 1968 Rescue & Return Agreement
- ◆ 1972 Liability Convention
- ◆ 1975 Registration Convention

*All widely ratified*

- ◆ 1979 Moon Agreement

*Essentially a failure*

# Ag4Space and 'the law'

1. R&D activities in laboratories & other facilities (UNL or elsewhere)
2. Access to & use of scientific data on celestial bodies (Moon & Mars)
3. Launch of hardware into outer space
4. Use of radiofrequencies for R&D & in-space operations
5. Activities on celestial bodies

# 1. R&D activities (1)

## ◆ Intellectual property rights

### Background

- Open access
- ↔ Royalty license?



### Foreground

- Register in US
- International protection

# 1. R&D activities (2)

## ◆ Contracts for supplies

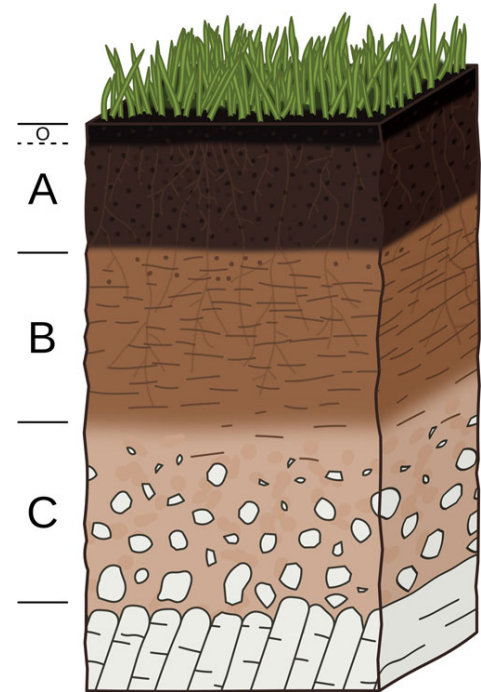
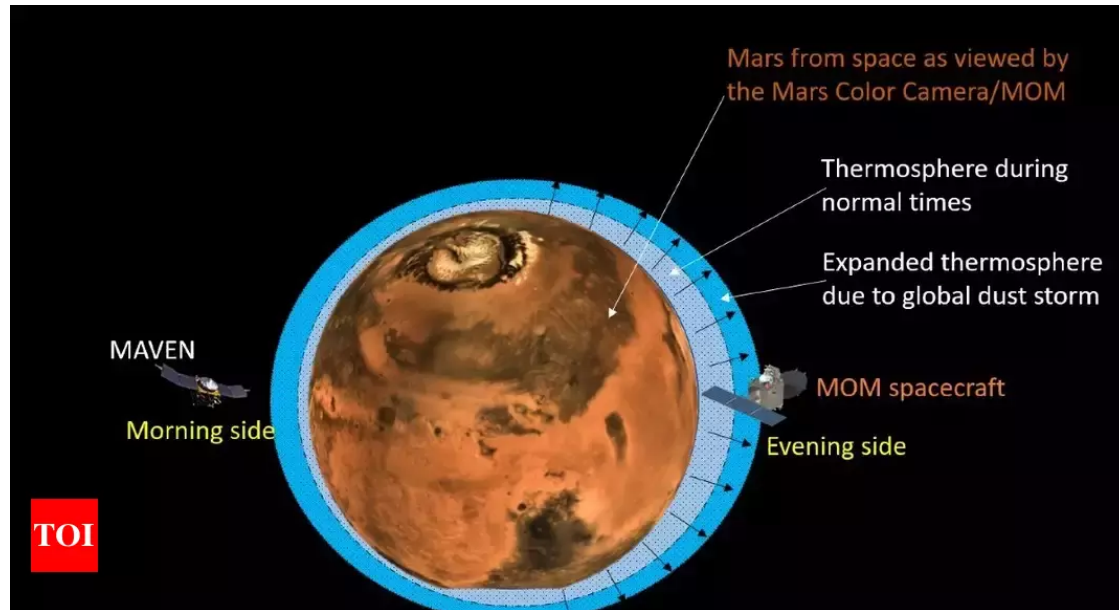


Price & conditions of delivery & use

- US supplier:  
US contract law
- Foreign supplier:  
*It depends...*

## 2. Access to & use of scientific data

- ◆ On composition lunar & Martian sites
- ◆ On atmospheric conditions Mars



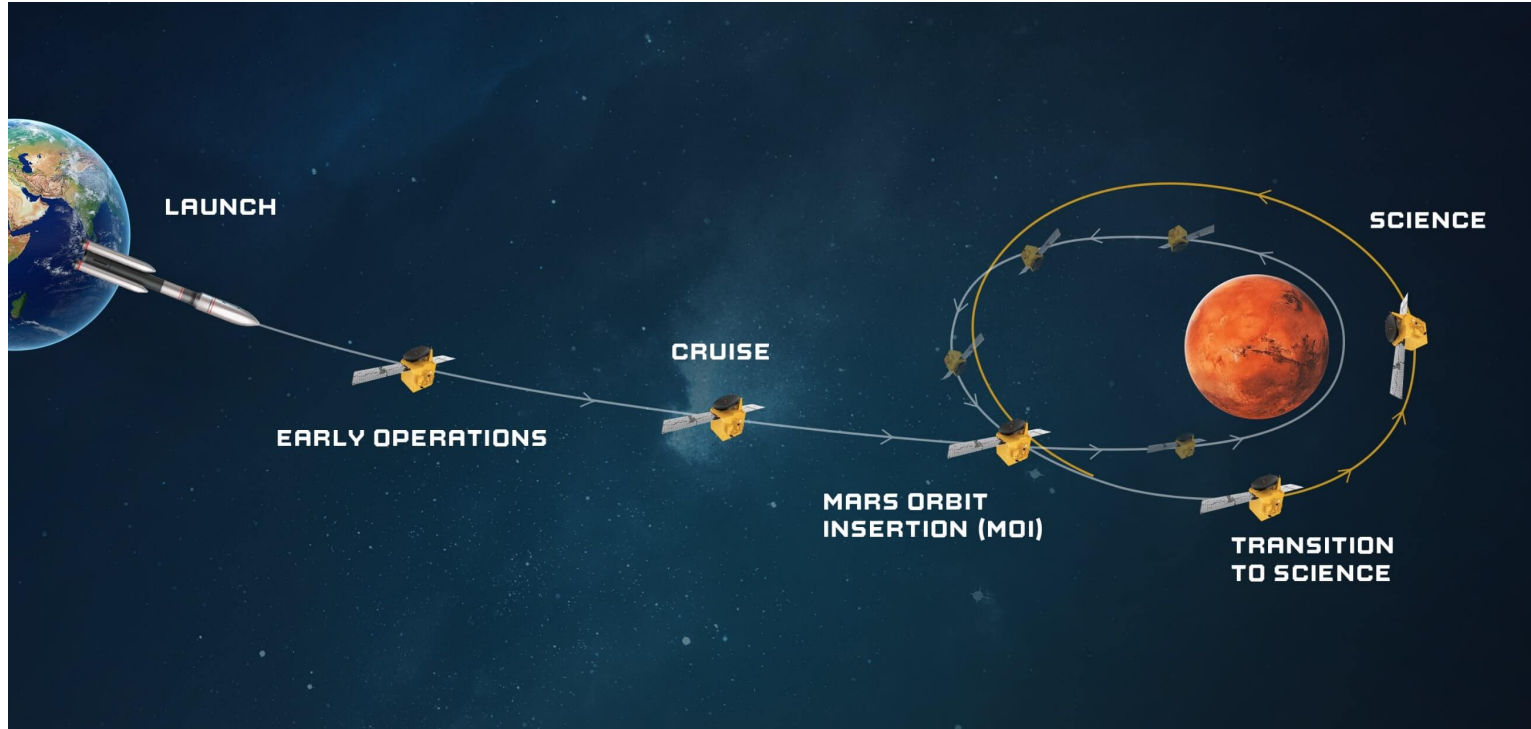


## 2. Access to & use of scientific data

### ◆ Outer Space Treaty, Article XI:

*States* conducting activities in outer space, including **the Moon and other celestial bodies**, agree to inform the Secretary-General of the United Nations as well as **the public and the international scientific community, to the greatest extent feasible and practicable**, of the nature, conduct, locations and **results of such activities**. On receiving the said information, the Secretary-General of the United Nations should be prepared to **disseminate it immediately and effectively**.

# 3. Launch to celestial bodies



# 3. Launch to celestial bodies

## ◆ Outer Space Treaty, Articles VI & VII:

### 1. Needs **authorization from the United States**:

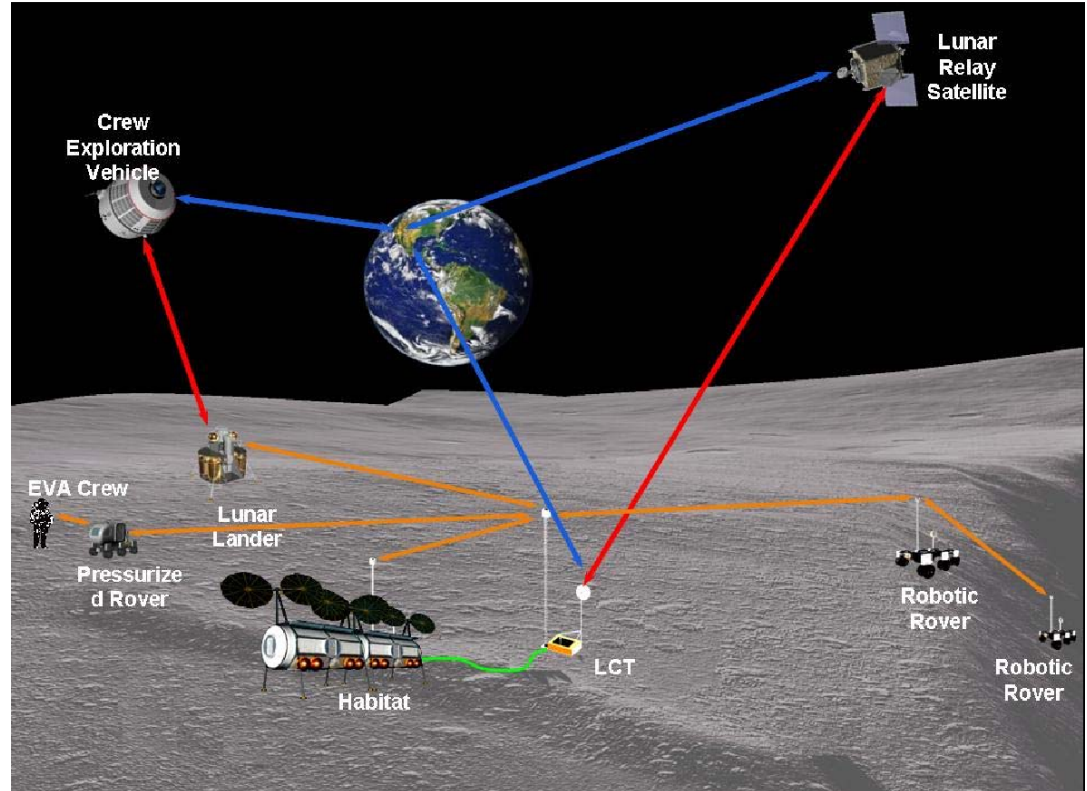
- Under 1984 Commercial Space Launch Act (with payload review)
- Possibly under 1976 Arms Export Control Act/1979 Export Administration Act
- Possibly under other states' national space laws on launch activities

### 2. Will include **liability-related derogation** provisions:

- United States (or other states) might be liable for third-party damage
- Liability for damage to government facilities may be imposed

# 4. Use radio frequencies

- ◆ For connecting with human & robotic operations on celestial bodies – in two directions



## 4. Use radio frequencies

◆ Via Outer Space Treaty, Article III:

**International law** applies to outer space & space activities...

→ ITU regime on international frequency coordination

→ In 1959 declared to apply also to space activities

◆ 42 different ‘radiocommunication services’ recognized & defined, about half of which are space services

# Two/three step ITU process (1)

1. **Allocation** of frequency *bands* to specific *types* of services with international ramifications
  - ITU Member States determine at World Radio Conferences (WRCs) every four years which frequency bands are allocated to which types of services, resulting in amendments to the Radio Regulations
  - Usable radio frequency spectrum 8.3 kHz – 3,000 GHz
  - Frequency bands indicated by bookending frequencies

# Two/three step ITU process (2)

2. *Allotment* of specific *frequencies* to States for specific *services* with international ramifications

- In between WRCs, States can request allotment of frequencies for a specific service
  - In compliance with allocation Radio Regulations!
- Coordination process ensures that no interference would arise with services already operated/requested

→ → Master International Frequency Register

# Two/three step ITU process (3)

- ◆ In case of private operator/IGO seeking use of the frequencies:
  3. *Assignment* by States of the allotted *frequencies* to private operator/IGO for their specific *services*
    - Master International Frequency Register
- ◆ For US: FCC has to arrange allotment & assignment



# 5. Activities on celestial bodies

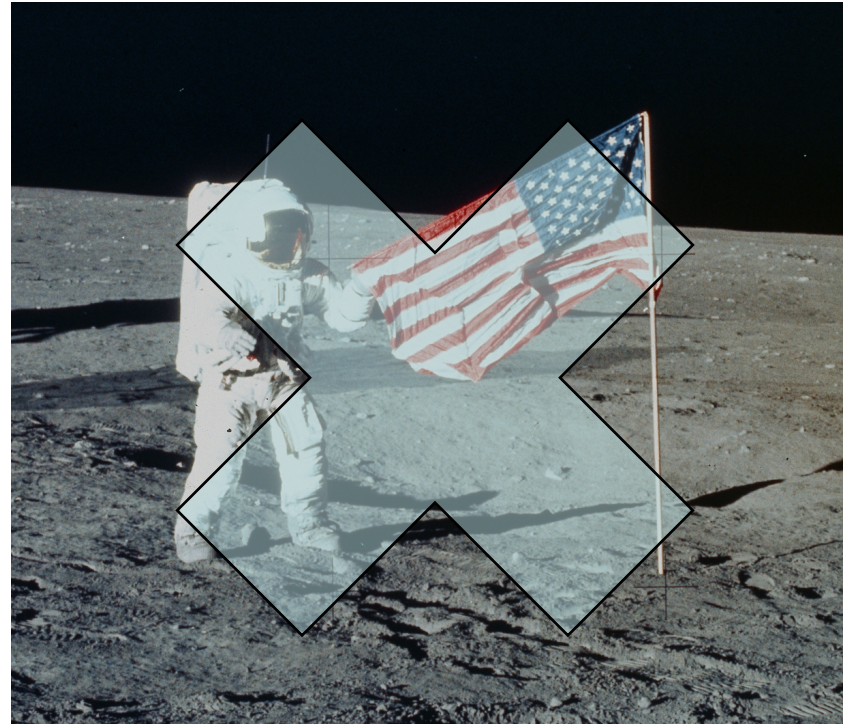
- ◆ Actually planting & growing foodstuff



# 5. Activities on celestial bodies

## ◆ Outer Space Treaty, Article II:

*Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*



# 5. Activities on celestial bodies

## ◆ Outer Space Treaty, Article XII:

Right of **visit** to all stations, installations, equipment & space vehicles on celestial bodies **for other States' representatives** on **basis of reciprocity** subject to **safety-related procedures**



# 5. Activities on celestial bodies

- ◆ 2015 US Commercial Space Launch Competitiveness Act
  - Natural resources celestial bodies can be owned → exploited
  - Compliance with Outer Space Treaty, including need to authorize & supervise pursuant to Article VI
  - No final decision yet on competent agency & procedures for authorization

# Concluding remarks

1. No specific concerns – standard issues
2. Inventorize needs scientific data & sources for those
- 3. Start analysis launch options early**
- 4. Start analysis frequency options early**
- 5. Follow discussions on evolution legal regime on establishments on celestial bodies closely**

