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INTERNATIONAL LEGAL CONSIDERATIONS WHEN TRANSITIONING TELEMETRY,
TRACKING, AND COMMAND (TT&C) CONTROLS TO RECEIVE ON-ORBIT SERVICING**Abstract**

The international space legal regime is governed by four primary treaties, beginning with the Outer Space Treaty (OST) of 1967. Elegant and enduring documents, they nonetheless face a recurring criticism in the new space age – they do not anticipate commercial space missions. With the rise of commercial space missions, it is important to consider the interplay of private law practices and international space law, analyzing where private interactions may alter or antagonize the principles and regimes established by the international space law treaties.

Academics have analyzed how transfers of spacecraft ownership on orbit may challenge the international space legal regime. However, with the rise of on-orbit servicing conducted between private companies, a more nuanced question must be asked – how will transfers of control on orbit, but not ownership, challenge the international legal regime?

This paper will open with the following anticipated real-world scenario: a servicing spacecraft of Country A docks with a spacecraft of Country B. The servicing spacecraft of Country A provides station-keeping and inclination control for the spacecraft of Country B, taking over telemetry, tracking, and command (TTC) control responsibilities, while Country B's spacecraft continues payload operations as normal. In essence, Country A's spacecraft is now in control of Country B's spacecraft, able to point or alter the position of the vehicle joint stack through the servicing spacecraft. What legal difficulties, responsibilities, or liabilities flow from such a scenario?

As a first point of analysis, this paper will review the definition of “control” as used in the OST to determine whether a transfer of TTC may constitute a transfer of “control.” The paper will then explore implications of such transfers of “control” under both the Liability Convention and the Registration Convention. Additionally, this paper will examine TTC responsibility under the ITU treaty regime, and any obligations that may be affected by transfers of “control.” Finally, as a point of comparison, the paper will also examine whether transfers of TTC capabilities may be seen as transfers of “control” under national space legislations, such as in the U.S. and France. In total, this paper will guide both governmental and commercial actors in analyzing and understanding their international obligations, and unanswered questions, under the international space law regime when authorizing international on-orbit servicing missions.