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ON THE SIGNIFICANT BENEFITS OF OPEN SOURCE AS OBSERVED IN OTHER INDUSTRIES THAT THE SPACE SECTOR DOES NOT BENEFIT OF – YET – AND WHY

Abstract

Open Source software is defined as a subset of Free and Open Source Software (FOSS). The source code of software is shared so that it can be reviewed, altered and redistributed by any interested party. It is typically distributed under one of a set of commonly accepted, standardized permissive licenses. Open Source software does explicitly not contradict for-profit use: Commercial funding and use is driving the development of many Open Source projects. In past decades, the collaborative nature of Open Source has revolutionized many industries and created unprecedented levels of wealth and innovation. Businesses are intentionally, for their own gain, "open-sourcing" not only software but portions of their intellectual property. Practical experience and studies equally show that it enables improved quality and an overall boost in business. It reduces redundant developments and allows smaller entities to tackle bigger projects than they could otherwise. Ultimately, it allows for sustainable development of technologies. Although there is a space-related Open Source ecosystem, the space industry has yet not followed suit from a business point of view. Open Source is primarily understood as tool for outreach and a "money saver". Space projects have certainly already benefited from the use of Open Source software as "consumers", but usually not as significant contributors. While there have been repeated attempts to publicly fund efforts towards Open Source projects, those can only be summarized as inconsequent. Another important factor is the regulatory environment, predominantly export control. It remains uncertain and is widely considered "unsafe", despite numerous efforts even by major organizations and government entities attempting to provide clarifications and guidelines. In reality, the "smallest common denominator", i.e. the rules perceived as the most strict, are typically both misinterpreted and assumed to apply out of caution: US regulations, EAR and ITAR. A change of mental attitude and clarified, modernized international regulations would benefit the space sector drastically. Based on practical experience in other industries, a shift from a proprietary ecosystem to Open Source usually requires around two years, both in terms of migration and offsetting cost. The presented work is based on almost two decades of experience in the space sector, nearly one decade of which as a full-time self-employed scientist, developer, consultant and trainer in a broad spectrum of industries including but certainly not limited to the space sector. Despite ample experience with American companies and government entities, the presented point of view is inherently European.