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TRANSFER OF SPACE TECHNOLOGY FOR SPIN-OFF APPLICATION IN DEVELOPING COUNTRIES: PAST EXAMPLES AND FUTURE POTENTIAL

Abstract

Technologies developed to further space activity – including hardware, software, program management techniques and technical processes – are often re-appropriated for societal use outside of the space arena. These spin-off technologies apply the creativity and problem-solving expertise of the space community to address wider societal issues. Traditional space agencies, such as NASA and ESA, have specific offices to encourage the use of space technology in spin-off applications. Many examples of spin-offs occur when a company licenses technology from a space agency and builds a business model around the space innovation. Other organizations, such as universities, non-profits and government agencies can also be agents for spin-off projects. Some spin-offs innovations from the space arena are applied to meet societal needs in developing countries. For example, many NASA innovations are being used to address issues including disaster response, telemedicine and water quality. Organizations within developing countries are also concerned with applying expertise and innovations from the space community to local needs. This paper gives examples of such organizations in several countries from Africa and Asia. The report is based on field work in countries that are newly involved with national space activity. The discussion provides two perspectives. It first highlights current work by local and foreign organizations to apply space spin-offs to national development needs. Secondly, the paper explores potential areas for future application of space spin-offs in developing countries. The paper concludes by issuing a call for more deliberate work to apply the benefits of space technology spin-offs to development challenges. Many challenges must be overcome to effectively adapt innovations from space to support development, but the benefits are potentially life-saving. Progress in this area requires consideration of concepts such as technology transfer, international collaboration, systems thinking and appropriate technology.