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INFUSING 'LEAN' INTO LEANSATS

Abstract

With the increasing capability of small satellites (also referred to as LeanSats) at relatively cheap costs, a number of space organisations and private companies, such as Oneweb and SpaceX, have indicated their intention to use large constellations of small satellites in Low-Earth Orbit (LEO), to meet the unreached in developing countries. This is being made possible, due to the standardisation of small satellites. Standardisation in turn, has opened up an opportunity for the mass development and customisation of small satellites. Notably, the current methods of developing small satellites cannot meet the estimated demand of small satellites, hence there is a need for innovative solutions. This paper explores the introduction of 'lean manufacturing' and 'six sigma' concepts into the development and production of small satellites. These two concepts of industrial production aim at removing all forms of waste (including time, inventory, motion, waiting, over production, over processing, defects, and skills) throughout the life-cycle of a small satellite. This innovation will not only meet the estimated demand for satellites, it will also ensure that the space environment is not clogged further with space debris.