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A NEW TECHNOLOGY READINESS ASSESSMENT METHOD BASED ON CHARACTERISTICS OF TECHNOLOGY MATURE PROGRESS

Abstract

As the applications of new technologies in spacecrafts are gradually increasing, more and more technical risks are coming. Technology readiness assessment as an effective way to control risks and make development process of spacecrafts become standardized is playing a good role. The paper mainly introduces a new technology readiness assessment method based on characteristics of technology mature progress. Firstly, based on the thorough analysis of technology mature progress and traditional technology readiness Levels (TRL) definition and connotation, the paper puts forward three basic characteristics of technology mature progress which are technology state, integration state and validation environment. The meaning of the three characteristics and the actual requirements of TRL1-9 for three characteristics are defined in detail. Then, aiming at the different properties of mature process for two kinds of technologies which are equipment technology and non-equipment technology, the paper separately analyzes the three characteristics of technology mature progress for the two kind technologies. On this basis, the paper puts forward the technology readiness assessment method based on characteristics of technology mature progress, including the main idea, introduction of the method and how to use this technology readiness assessment method. Finally, the paper uses a real spacecraft critical technology readiness assessment example to validate the effectiveness of this technology readiness assessment method. Comparing with the traditional technology readiness assessment method based on TRL checklist, this method is easier in understanding and operation. So it can play a greater role in the technology readiness assessment of future human space flights to reduce risks and guarantee successful flights.