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**Space data and information transfer systems - Spacecraft
information system software architecture**

空间数据与信息传输系统 航天器信息系统软件体系结构

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Foreword

This document complies with the provisions of GB/T 1:1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting: Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents: This document is proposed and coordinated by the National Aerospace Technology and Application Standardization Technical Committee (SAC/TC425): This document was drafted by: Beijing Space Vehicle Overall Design Department, Tsinghua University, China Aerospace Standardization Institute, Beijing University of Aeronautics and Astronautics Xiamen Panchi Science and Technology Research Institute Co., Ltd., Tongfang Co., Ltd: The main drafters of this document: He Xiongwen, Zhan Panpan, Xu Mingwei, Gu Ming, Yan Dong, Cheng Bowen, Qi Zheng, Yang Lijun, Zhu Jianbing, Yang Qian, Liu Jun, Yan Xianwen, Yuan Cangzhou, Jia Yufen, Zhou Yuxia, Xu Jieli, Zhang Hongjun, Dong Zhenhui, Li Jiajin, Chen Chaoji, Liu Yan: Spatial data and information transmission system Spacecraft information system software architecture

1 Scope

China's national standard for the software architecture of spacecraft information systems. Spacecraft software has become the dominant source of both capability and risk in a mission: the vehicle's autonomy, its fault management, its instrument control and its data handling are software, and the well-known failures of the last decades have been software failures rather than mechanical ones. An architecture standard addresses that at the level where it can be addressed - by fixing how the software is structured, how its components communicate, how the flight-critical parts are separated from the rest, and how the system behaves when a component fails. The separation is the crucial provision: an architecture in which a payload application can affect the attitude control is one where an experiment can

lose the spacecraft, and that has happened.

This document specifies the spacecraft information system software architecture, interfaces and operating system layer, middleware layer, application layer in the software architecture: Use the composition of management: This document applies to the software system design, software architecture and software component design of the spacecraft information system:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 42041 Aerospace terminology space data and information transmission

3 Terms and definitions

The terms and definitions defined in GB/T 42041 and the following apply to this document: 3:1 softwarecomponent Encapsulate functional interfaces, program code, data, etc: into a basic software unit that can be configured independently and separated from the external environment:

4 Abbreviations

The following abbreviations apply to this document: AN:Analogue BP: BundleProtocol DS: Digital Serial (DigitalSerial) IO: Input/Output IP: Internet Protocol (InternetProtocol) ML: Memory Load (MemoryLoad)