

军用系统分析

基于面向对象思想的SoS体系结构设计方法

倪枫,王明哲,郭法滨,宋阿妮

华中科技大学控制科学与工程系, 湖北 武汉 430074

摘要:

针对一类由众多组件系统集成而成的系统之系统(system of systems, SoS)以美国国防部体系结构框架(DoDAF)为标准,提出了一种基于面向对象思想的SoS体系结构DoDAF作战视图产品五阶段迭代设计方法。利用UML静态和动态建模机制的特点,采用自顶向下、自底向上相结合的方式实现SoS体系结构作战视图产品的面向对象描述。以一个战术导弹防御(tactical missile defense, TMD)系统为例,详细说明SoS体系结构DoDAF作战视图产品的面向对象设计过程,并总结了该方法的两大优越特性:横向通用性与纵向可复用性,以及由此给SoS体系结构带来的“柔性”优势。这是传统设计方法所不能实现的。

关键词: 面向对象设计方法 DoDAF作战视图 SoS体系结构

Design of SoS architecture based on object-oriented idea

NI Feng,WANG Ming-zhe,GUO Fa-bin,SONG A-ai

Design of SoS architecture based on object-oriented idea

Abstract:

Aiming at a type of integrated system combined with numerous component systems, which known as a system of systems (SoS), and the specification of department of defense architecture framework (DoDAF), a five-stage iterative designing approach of operational view (OV) products for SoS architecture is developed, which takes the object-oriented idea as its basis. Making full use of the static and dynamic characteristics of UML modeling mechanism, the top-down and bottom-up design methods are used in combination to achieve the object oriented description of SoS architecture which is compliant with DoDAF. The object-oriented approach combined with the DoDAF specification makes the design of SoS architecture be superior in two aspects: horizontal cross-universality and vertical reusability, which makes the architecture flexible and is not achievable by traditional methods. A brief example of tactical missile defense (TMD) system is given to illustrate the object-oriented design process for the DoDAF OV products of SoS architecture.

Keywords: object-oriented design approach DoDAF operational view SoS architecture

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2010.11.25

基金项目:

通讯作者:

作者简介:

作者Email:

参考文献:

本刊中的类似文章

Copyright by 系统工程与电子技术

扩展功能

本文信息

▶ Supporting info

▶ PDF(OKB)

▶ [HTML全文]

▶ 参考文献[PDF]

▶ 参考文献

服务与反馈

▶ 把本文推荐给朋友

▶ 加入我的书架

▶ 加入引用管理器

▶ 引用本文

▶ Email Alert

▶ 文章反馈

▶ 浏览反馈信息

本文关键词相关文章

▶ 面向对象设计方法

▶ DoDAF作战视图

▶ SoS体系结构

本文作者相关文章

PubMed