

**FAKULTI SISTEM KOMPUTER & KEJURUTERAAN PERISIAN**

KNOWLEDGE BASED SOFTWARE ASSISTANT (KBSA) SPECIFIC LANGUAGE

**BCS2213 FORMAL METHODS**

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**Abstract**

Formal method is defined as mathematical modelling techniques for specification, development and verification of software and hardware systems. There are a wide variety of specific language ranging from widely used languages. It also can be subdivided by the type of language, include specific markup languages, specific modeling languages and specific programming languages.

This paper presents introduction on one of the formal method specific language, **Knowledge Based Software Assistant (KBSA)**. This formal method specific language was a research program find by the United States Air Force. It is a software specific language that apply concepts from artificial intelligence to the problem of designing and implementing computer software.

In this paper also aims to bring a brief understanding towards another formal methods languages in specific language that is Knowledge Based Software Assistant (KBSA). The improving of quality and productivity of software has proven that Knowledge Based Software Assistant (KBSA) is a benefit software to control weapon systems, other command and control systems.

**Introduction**

To explore deeper into formal methods specific language, I feel that Knowledge Based Software Assistant (KBSA) would help me understand the computer software of apply concepts from artificial intelligence to the problem of designing and implementing. There are two attractive features that make me choose Knowledge Based Software Assistant (KBSA) as my topic:

1. It was applying artificial intelligence technologies to solving expert problems such as the diagnosis of faults in aircraft.
2. Then, for the artifacts of software development the processes, the various definitions and transformations, would also be recorded in a way that they could be analyzed and also replayed later as needed.

Knowledge Based Software Assistant (KBSA), a research program funded by the United States Air Force language work best for software development the processes. These software development processes is tough because the various definitions and transformations, would also be recorded in a way that they could be analyzed and also replayed later as needed.

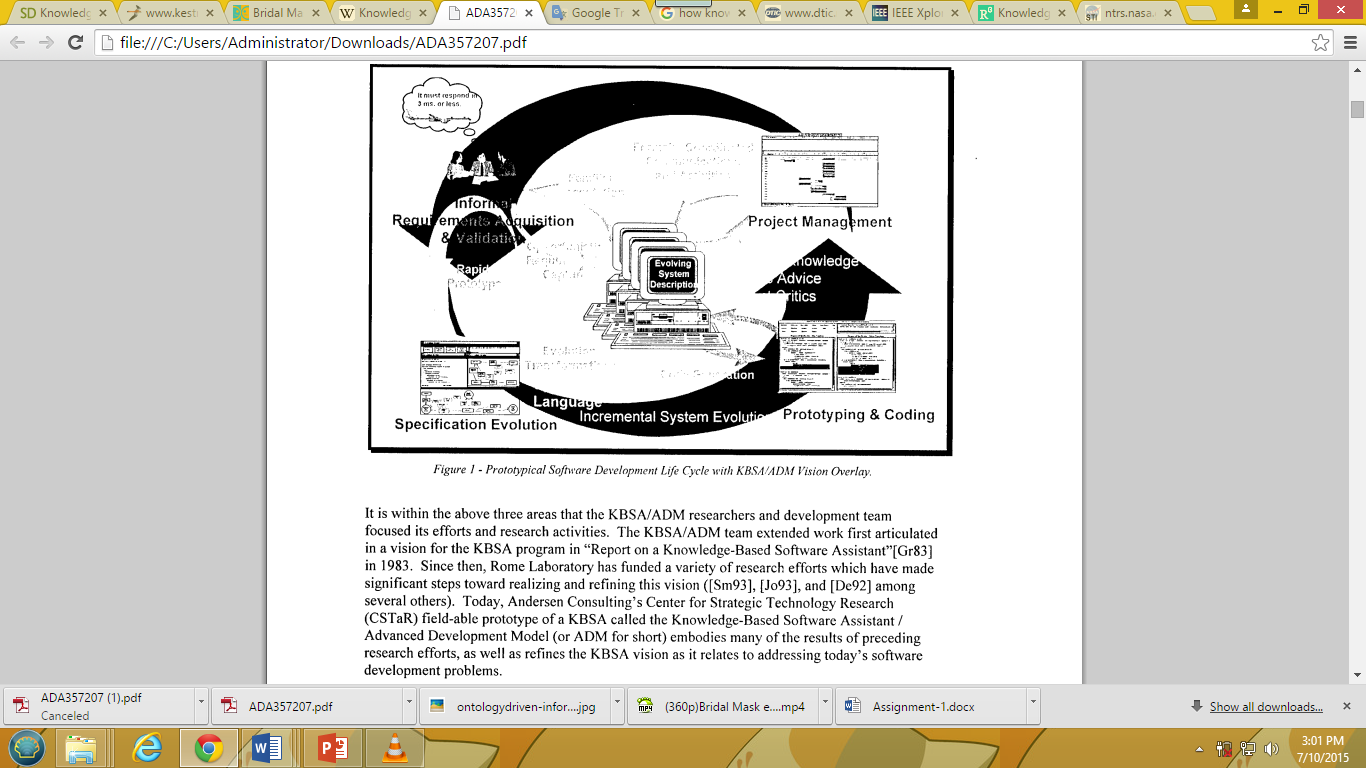
**Literature View/ Background**

The literature view or background of Knowledge Based Software Assistant (KBSA) is United States Air Force realized that they have received benefits from applying artificial intelligence to solving expert problems such as the diagnosis of faults in aircraft in early 1980. That why the air force assign a group of researchers from the formal methods communities to develop a report on how such technologies might be used to help in the more general problem of software development. The report described each step in the design and refinement of the system would be recorded as part of an integrated. In addition, the various definitions and transformations would also be recorded in a way that they could be analyzed and replayed as needed.

Therefore, the idea was that each step would be a transformation that took into account various non-functional requirements for the implemented system. Then, the air force decided to find further research on this vision. The Kestrel Institute focused primarily on the provably correct transformation of logical models to efficient code but ISI focused primarily on the front end of the process on defining specifications that could map to logical formalisms. In these later stages a pure KBSA shifted to more general questions of how to use knowledge-based technology to supplement and add existing and future computer-aided software engineering (CASE) tools. So, there was good interaction between the KBSA community and the object-oriented and software engineering communities. The program changed its name to Knowledge-Based Software Engineering (KBSE). The name change because no longer to create a totally new all-encompassing tool that would cover the complete software life cycle but to gradually work knowledge-based technology into existing tools.

**How it is Works?**

The Knowledge Based Software Assistant (KBSA) work with captures the history of system evolution. It provides a corporate memory on how part interact, what assumptions were made and why, the rationale behind the choices made, how requirements are satisfied and explanation of the development process. Actually the Knowledge Based Software Assistant (KBSA) accomplishes this through a collection of integrated dedicated facets. Their areas of expertise are: project management, requirements, specifications, implementation, performance, testing and documentation.

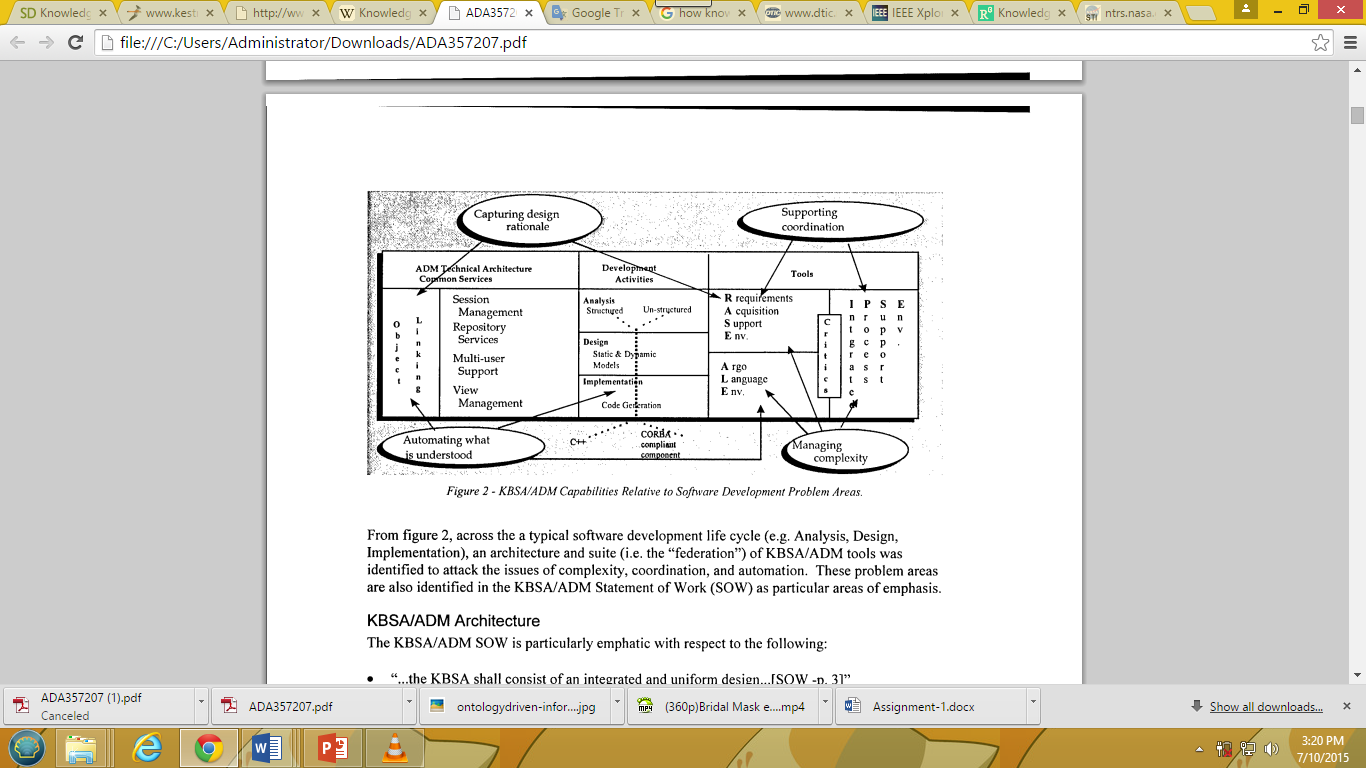


It is show three areas that the Knowledge Based System Assistant (KBSA) researchers and development team focused its efforts and research activities. Since the team extended work first articulated in a vision for the KBSA program Rome Laboratory has funded a variety of research efforts which have made significant steps. Today, Andersen Consulting's Center for Strategic Technology Research (CSTaR) field-able prototype of a KBSA called the Knowledge-Based Software Assistant / Advanced Development Model (or ADM for short) embodies many of the results of preceding research efforts, as it relates to addressing today's software development problems.

**Why it is Needed?**

Knowledge Based Software Assistant (KBSA) was needed because air force hoped to be able to generate the software to control weapons systems and other command and control systems using this method. Then, they realized that improving the quality and productivity of the software could have significant benefits for the military.

**Sample/Implementation**



From this figure, across the typical software development life cycle for example Analysis, Design and Implementation are an architecture federation of Knowledge Based Software Assistant (KBSA) tools was identified to attack the issues of complexity, coordination and automation. These problem also identified in the Knowledge Based Software Assistant (KBSA) Statement of Work (SOW).

**Conclusion**

This subject formal method is essential to all software and hardware as it is proven on a mathematical modeling techniques. In summary, these paper discussed Knowledge Based Software Assistant (KBSA), a research program funded by the United States Air Force as a apply concepts from artificial intelligence to the problem of designing and implementing computer software. The capabilities of Knowledge Based Software Assistant (KBSA) to solving expert problems such as the diagnosis of faults in aircraft is a big achievement for a specific language. Each step in the design and refinement of the system would be recorded as part of an integrated repository. In sum, there is no need of worries for other software when there is Knowledge Based Software Assistant (KBSA) software.

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