

SOFTWARE PROCESS FOR INTEGRATED PATTERN ORIENTED ANALYSIS  
AND DESIGN (POAD) AND COMPONENT ORIENTED PROGRAMMING (COP)  
ON EMBEDDED REAL-TIME SYSTEMS

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I declare that this project report entitled “*Software Process for Integrated Pattern Oriented Analysis and Design (POAD and Component Oriented Programming (COP) On Embedded Real-Time Systems*” is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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## **ABSTRACT**

Embedded Real-Time (ERT) systems are becoming increasingly necessary, especially in automotive industries. The complexity to manage the system is growing, where some of ERT applications need high dependability requirements. Component Based Software Engineering (CBSE) appeared to be an attractive approach in the domain of ERT system. CBSE could bring advantages to ERT system such as rapid development time, the ability to reuse existing component and ability to compose sophisticated software. Based on these perspectives, this project aims to enable and support the development of ERT systems based on Pattern-Oriented called Pattern-Oriented analysis and Design (POAD) and Component-based called PErvasive COmponent Systems (PECOS), by identifying and defining the process of integrated POAD and PECOS Meta model. The advantages of defining the process are to support development of CASE for ERT and to promote software re-use.

## ABSTRAK

Kepentingan sistem masa nyata semakin meningkat terutamanya dalam industri automatif. Selaras dengan peningkatan itu, pengurusan sistem juga bertambah kompleks, di mana terdapat sesetengah sistem memerlukan kebolehanharapan keperluan yang tinggi. Kejuruteraan perisian berasaskan komponen merupakan satu pendekatan yang lebih menyerlah dalam domain masa nyata. Kewujudannya telah banyak membawa kebaikan kepada sistem masa nyata seperti pengulangan masa pembangunan, kebolehan penggunaan semula komponen dan kebolehan pengabungan perisian yang kompleks. Berdasarksn perspektif tersebut, projek ini bermatlamat untuk membolehkan pembangunan sistem masa nyata berasaskan corak yang dipanggil Pattern-Oriented Analisis and Design (POAD) dan berasaskan komponen yang dipanggil PErvasive COmponent Systems (PECOS), dengan mengenalpasti dan mendefinasikan proses gabungan meta model POAD dan PECOS. Terdapat beberapa kebaikan yang dapat diperolehi dengan mendefinasikan process iaitu dapat menyokong pembangunan peralatan CASE untuk sistem masa nyata dan memperkenalkan penggunaan semula perisian.

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