A PROPOSAL FOR THE SOFTWARE DESIGN OF CONTROL SYSTEMS BASED ON THE PERSONAL SOFTWARE PROCESS

FERNANDO VALLES-BARAJAS[1] AND WALTER SCHAUFELBERGER[2]

[1]Department of Information Technology
Faculty of Engineering
Universidad Regiomontana
15 de Mayo 567 Pte., C.P. 64000 Colonia Centro, Monterrey, Nuevo León, México
fernando.valles@acm.org; fernando.valles@ieee.org

[2]Prof. Em. ETH
Zurich Automatic Control Laboratory
Physikstrasse 3, ETL K10, 8092, Zurich, Switzerland
ws@control.ee.ethz.ch

ABSTRACT. *This paper presents a novel approach for specifying the software design of control systems. The design is based on design templates included in the Personal Software Process (PSP), a process that helps software developers make high quality products. This design is used to document software for control systems and to establish better communication between control engineers and software engineers. The paper presents an example that demonstrates the applicability of the PSP design templates in designing software for control systems.*
Keywords: Control systems, Software design, Personal software process

1. **Introduction.** Software engineering is a discipline within engineering that studies all of the necessary steps for building high quality software. These steps are: communication, planning, modeling, implementation and deployment [13]. In the communication phase, customer requirements are obtained, and during the planning phase, an estimate is made of the necessary resources for building the software with these requirements. In the modeling phase, a model of the requirements is made; this model is a link between the requirements and implementation. This model can be made by using a formal, textual or graphical notation.

There are several processes that help software developers implement each of the phases for building software. In particular, PSP[1] was made to assist a software developer in making high quality software and in making this software in an estimated period of time [6]. This software process provides four templates for software design. By using these templates, software developers obtain an unambiguous, complete and clear design of a system.

Control engineering is a discipline within engineering that studies the theory of modeling and controlling complex systems. Adaptive control is an area within control engineering that deals with dynamic systems with unknown time-invariant parameters [4]. To control a process with this technique, a model of this process along with its environment is made by performing an input-output experiment and this model is then used to control this process [2].

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