**Project Title: Compiling Development Methodology, and Outsourcing, and Taking Delivery Processes for Software Systems in Power Electric Industry of Iran**

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**Project Summary:**

Software engineering means using engineering principles to produce and deliver, a reliable, affordable, expandable and efficient software product. In other words, software engineering offers a systematic way to build a qualified software product. The software development process is a set of software engineering activities, designed and planned to manage the life cycle of a software product. The purpose of software development processes is to organize, standardize, and document a set of activities within a specific framework to improve the quality of software. The life cycle of a software can be divided into three main phases: planning (feasibility, definition, extraction and requirements analysis), implementation (design, implementation, testing, and documentation) and deployment (deployment, maintenance and support).

There are several methodologies for software development. Some of the steps in methodologies are project planning, user’s requirements extraction, analysis and design, implementation, testing, maintenance and evaluation that are common to all software development methodologies with differences in order and the way they are implemented. In general, the choice of a methodology depends on the organization's scope of work, software system, project time and budget, project manager experience and more. The methodology is a systematic way of assigning tasks and responsibilities to a software project team with the goal of developing high quality software to meet the needs of end users with a defined schedule and budget.

Considering the principle of localization of many electricity industry software including automation distribution and data management software on the Ministry of Energy, the proposed project seeks to develop a comprehensive and standard methodology for development of electrical industry software. Outsourcing, purchasing and delivery of software will also be discussed in this area.

**Project Results:**

The purpose of this project is to localize and select software development methodology for Power Distribution Software from three dimensions of existing software, organization and methodologies. To this end, in the first phase of the project, the focus has been on research on the characteristics of Power Distribution Software. The second phase of the project focuses on a variety of software production methodologies and models. The third phase is dedicated to introducing standards in this field. In the fourth step, a localized methodology for the production and development of Power Distribution Software based on a methodology’s library is proposed. In the fifth phase, by using the information obtained in the first to fourth stages, the software delivery process is formulated in Niroo Research Institute (NRI). The sixth phase, introduces a localized Methodology project for Power Distribution Software in four processes including outsourcing, purchasing, delivery and support. To this end, the following steps have been taken in formulating the methodology for each process as well as the software development process:

1. Review the process, its features, and its main activities

2. Assess organizational criteria according to the role of NRI (in each process the role of NRI is determined separately)

3. Identify components of first- to third-generation and agile methodologies from the library

4. Determining situations and requirements based on the information obtained and organizational criteria values ​​(In some processes, depending on the scope of the process, situations and requirements are different).

5. Developing a methodology for each process

**Project Documentation:**

Phase 1: "Identifying the Technical, Qualitative and Management Requirements of Power Distribution Software", Information and Communication Technology Research Group, NRI, 1397.

Phase 2: "Understanding First-to-Third Generations and Agile Methodologies", Information and Communication Technology Research Group, NRI, 1397.

Phase 3: "Understanding Software Engineering Life Cycle Standards", Information and Communication Technology Research Group, NRI, 1397.

Phase 4: "Developing a Software Development Methodology for the Power Distribution Software", Information and Communication Technology Research Group, NRI, 1398.

Phase 5: "Formulation of Software Delivery Process and Testing in NRI", Information and Communication Technology Research Group, NRI, 1397.

Phase 6: "Developing a Methodology in Outsourcing, Purchasing, Delivery and Software Support Processes for the Power Distribution Software ", Information and Communication Technology Research Group, NRI, 1398.