

DEVELOPMENT AND RESEARCH OF A MODEL AND SOFTWARE COMPONENT FOR RISK ASSESSMENT IN SOFTWARE ENGINEERING PROJECTS

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In the field of software development, risks remain one of the key factors influencing the quality, timeline, and budget of project implementation.

Given the growing complexity of IT products and the uncertainty of their development environments, there is a pressing need for tools that support risk assessment to enable well-informed managerial decision-making.

The object of this research is the process of risk assessment in software projects.

The subject of the research is the model and software component for calculating the level of risk.

The aim of the work is to create a locally deployable tool capable of computing risk based on given parameters and generating a report in a user-friendly format.

Within the scope of the research:

- key risk parameters were identified – the probability of occurrence (P) and potential impact (I);

- a risk assessment model was developed based on the classical formula: $R = P \times I$ [2];

- the architecture of a risk assessment tool was designed and implemented as an autonomous web application;

- the software component was developed using React.js (user interface), Node.js (request handling), PostgreSQL (risk storage), and PDFMake (report generation);

- a core set of features was implemented: data input, risk calculation, information storage, and structured PDF report generation [3].

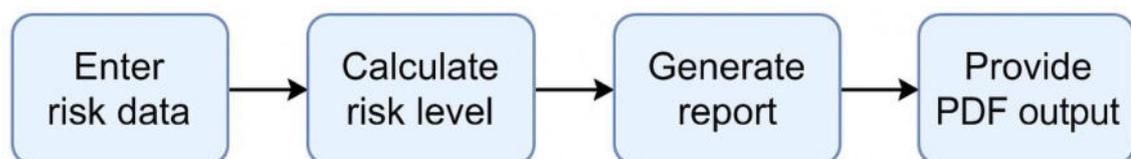


Fig. 1. – Risk assessment model in software development projects

The resulting application can be integrated into project management workflows of small teams or used as a standalone risk calculator.

Its simplicity and autonomy allow adaptation to various usage scenarios at the early stages of project planning [1].

References:

1. Wiegers, K. & Beatty, J. Software Requirements, 3rd ed., Microsoft Press, 2013.
2. Boehm, B. Software Risk Management. IEEE Computer Society Press, 1991.
3. Bishop, Christopher M. Pattern Recognition and Machine Learning. Springer, 2006.