By opening a company’s innovation process and allowing purposeful collaboration with external partners, Open Innovation (OI) offers different advantages, such as the use of external expertise, shorter time-to-market and reduced failure rates. However, the success of OI is directly linked to the selection of the “right” partners, i.e. who operatively contributes to a project’s solution or ensures the strategic project’s success. Despite this relevance of OI-partner selection, methodical support is limited hitherto – it is either too abstract or too focused on single aspects. This paper presents a methodical approach to close this gap by combining identification and selection approaches from different fields, such as stakeholder analysis, lead-user identification and systems engineering. The methodology was evaluated in an industrial OI-project with an SME from plant manufacturing. To increase the methodology’s usability, we implemented and initially evaluated a software prototype within the OI-project.