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Opinion

Project Management Shall Use Artificial Intelligence (AI) Driven Algorithms When Addressing Project Costs and Risks

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Opinion

We are enhancing the use of AI algorithms from BINOM, https://binom.digital, which was founded by Dag H. Zeiner-Gundersen, holding a DSc in AI driven resolution algorithms and an experienced risk mitigatigator, and Vladimir Winner, an entrepreneur specializing on digitalization, AI functionality and human interaction.

Project management cost optimization processes

Dr. Dag H. Zeiner-Gundersen, also an international experienced project manager, states that successful project management processes should include using AI driven algorithms on project risk resolution and mitigation and for cost optimization. Most of the project management programs, project execution and planning systems, and programs for mitigating or resolving technological originated project risks, addresses the topics with simple and just ordinary systematising methods. These rely on managing the individual operator's and expert´s input and knowledge without additional assistance, although provide a reasonable overview. Thus, these programs are systemizing, organizing, and classifying activities, personnel, equipment, and facility costs, rather than assisting in the process of optimizing such costs as well as reducing risks. So, why and how to use such AI driven algorithms in optimizing project costs and reducing risks? AI driven algorithms shall be used in mitigating project challenges and resolve technological originated risks and associated operational, equipment and facility costs by establishing alternative solutions and contingency strategies. Thus, the availability of fast and accurate support in form of AI tools, are more effective than relying exclusively on the project coordinators and experts. The support from decision supporting AI driven algorithms will also allow better utilization of all categories of personnel and improve management´s process monitoring and allow for more accurately schedule project financial risk reserves.

AI driven algorithms, when architected effectively, will use available results from historic data and apply these methodically, statistically, and with strategies when analysing data and during extractions from internal and external sources. This also support the often-required need for crosslinking various sciences in deriving the best alternatives and pushing boundaries methodically in the progress of cost reductions.

Figure 1, below, visualize the typical experienced increase in element resolution costs, as function of project progress throughout the various development stages. This pertains to most project categories whether it is infrastructure development or the development of systems or product and services. Thus, much can be achieved by addressing such cost optimization and related risks early, with alternative paths and foresee cascade effects when executing individual project activities. Thereby avoiding accelerating costs and detrimental cascade effects.

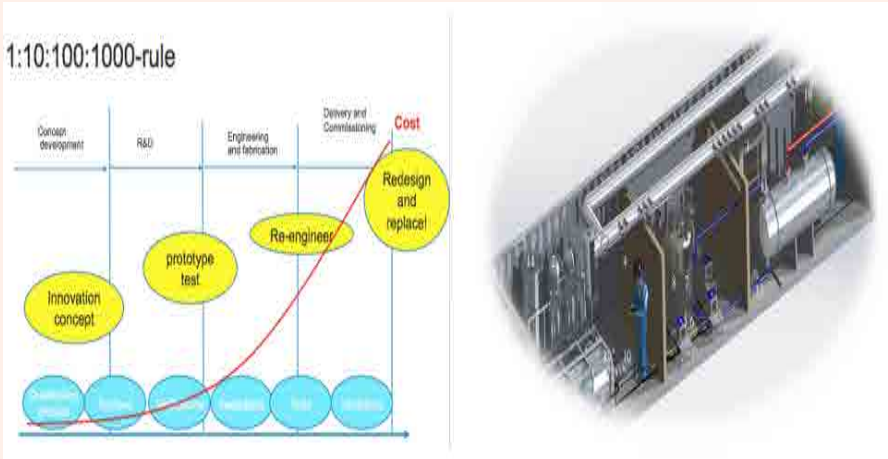

Figure 1: From left, typical, and representative example of resolution costs versus time through project stages. To the right, an artist impression of an illustrative and representative industrial technology project within the energy sector.

AI driven algorithms used for addressing project costs

There are a number of project management systems, execution and planning systems, certified procedures, float diagrams and smart tools associated with project and risk management. Although, effective programs solving or presenting mitigating suggestions and alternatives to optimize costs or reducing risks are missing. Nor are there effectively structured experience data bases beyond the individual experts or managers judgments. Although limitations to alterations and optimizations of a project might be present, most projects will usually have reasonable opportunities for some changes or experiencing events causing a need for such changes. As long as; quality, function, safety, cost and schedule are not considerable impacted, such changes are admissible. Presently such project cost or risk reduction activities are pretty much left to the project management and experts and their general judgements. AI driven algorithms, however, such as from BINOM, utilizing historic data, effective program architecture, valuable statistics, and analytical evaluation processes are highly effective. This will also allow, current results and future forecasted cascade effects and associated cost elements, to be analyzed. This will ensure that the management have an effective tool through the project execution process that is delivered by such AI driven algorithms. Further, to support and to effectively examen current activities and cost elements as a regular scheduled action for an ongoing optimization. Such project activities, solutions and related cost elements with risks includes addressing; 1) Detail technological challenges and problem/dilemmas, present or forecasted 2) Operational executional dilemma & complexity, 3) Solution on technical aspects related to safety dilemma and complexity in operation, 4) technological and scientifically environmental effects, dilemma and problems,5) Organizational technical/operational challenges/ dilemmas, 6) Technological financial impact challenges and need for contingency allocations 7) Technological solution´s on reputational/communicative dilemmas.

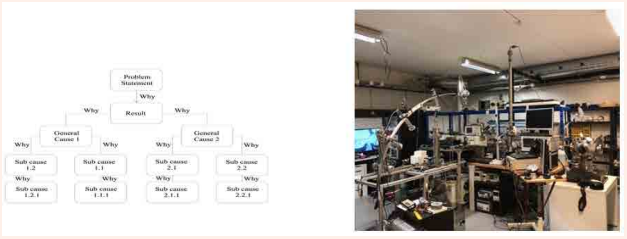

Figure 2: From left, showing sub cause division of activity/cost/risk elements. To the right, a picture showing sub system cause and effect testing, integration, and verification testing of the author´s Hydrogen renewable energy project.

A typical example on subdivision of project activity challenges and risk areas are shown in Figure 2. Typically the highest project cost driving elements should as a minimum be subdivided into sub causes and tested through the AI algorithm for cost effective alternative solutions during a project execution. A simple HMI/ dashboard must be used when presenting the results from the AI driven algorithms. Too high complexity for the end-user will result in tools not used, ie not a cost effective investment. In such HMI(Human Machine Interface) simplicity in use and with effective menus allowing simple drag and drop into parallel run management or risk programs should be used. This can be illustrated by the use of a very simple AI driven algorithm such as the BINOM basic algorithm; www.innovationsolver.com, (Figure 3).

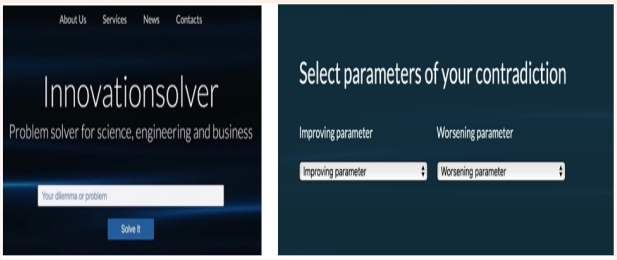

Figure 3: A simple algorithm from BINOM that illustrates the process of finding alternative cost optimizing principles, solutions and risk mitigation, that shall be applied to detailed project activities and high risks/cost drivers.

Considerations

In monitoring the results from using AI BINOM algorithms we return to the beginning of our conversation about the objectives. It is not enough to collect data, analyze and recommend solutions and associated details. To improve project execution and reduce cost, we also need to effectively assess the specific category of issues in the project with associated coincidence and cascade effects. The task is therefore not only to provide recommendations and solutions and effectively present these by simple HMI, but also to ensure we reflect on how the data will be implemented and used in the project execution or risk management programs. Companies and organizations innovating and optimizing methods of project management should therefore ensure that processes, programs, and executional results are effective. We would therefore argue that it is a must, in effective cost optimization and risk reduction , to focus more on AI automated processes.