How to get a low price on your next software development project and why you should avoid it

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Abstract: Software providers are well known for over-optimistic forecasts of how much the development of software systems will cost. We claim that the software clients, to a far greater degree than is commonly believed, are responsible for the providers' over-optimism. Our claim is based on empirical studies of how client controlled factors impact the level of optimism in providers' software development cost forecasts. The studies suggest that forecasting over-optimism is related to clients who communicate unrealistic price expectations or present attractive future opportunities related to winning the bidding round systematically. The studies also suggest that there are commonly used formats of software project bidding processes that strongly increase the risk of selecting providers with prices based on over-optimistic cost forecasts. We find, for example, that bidding processes with negotiation tend to increase the level of over-optimism when the negotiation involves asking for price updates on a reduced version of the initial software requirements. Evidence suggests that the clients may not benefit from a low price based on an over-optimistic cost forecast. One reason for this, applying concepts from the principal-agency theory, is the high level of information asymmetry in most software development project. As an illustration, the clients' poor ability to specify and monitor software quality attributes, such as the maintainability of the software, makes it possible for the providers to deliver software with poorer than expected quality. We observe that social factors that otherwise may be sufficient to avoid opportunistic behaviour by the clients, e.g., the software developers' self-imposed code of ethics, are less important in situations with over-optimistic effort estimates, e.g., in situations where the provider tries to avoid financial losses. Based on the above findings we outline elements of how the bidding processes should be designed to reduce the probability of receiving bids based on over-optimistic forecasts.