Economics-driven Technical Debt Management

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1. Technical Debt is a metaphor that has been established in both academia and industry, mostly due to the financial flavor that it provides for technical problems. 2. Technical Debt occurs in many forms, and along all development phases. However, by considering both research activity and industrial relevance, code and architecture TD stand out as the most important ones. 3. Technical Debt Management, might be an unnecessary overhead for software systems, with a short projected lifetime, and for systems that are not intensively maintained. 4. It is important to introduce the concept of TD sustainability, which is the period of time in which the decision to undertake TD is beneficial 5. The assessment of TD sustainability cannot rely only on technical input; other factors, such as financial benefits from undertaking TD must be weighed. 6. Despite the interdisciplinary nature of TD, the relevant community was unable to grow in terms of both disciplines (software engineering and economics) equally. 7. The uncertainty involved in TD interest quantification (i.e., the probability that a change occurs, and how "large" this change will be) renders it an interesting research problem. 8. The quantification of TD interest must rely on both structural and historical data. The structural data provide a view of the ease of maintenance, whereas the historical data an educated guess on the aforementioned uncertainty. 9. The aforementioned calculation of the ease of maintenance must be a relative (compared to a system without TD) and not an absolute number. 10. One of the main criticisms on the TD metaphor is that an interest rate cannot be defined for TD. However, based on a Mantel analysis, artifacts with similar levels of TD Principal are having similar levels of TD. Therefore, (even indirectly) there is evidence on the existence of a relation between TD Principal and TD Interest.