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Response Paper 01

Brooks postualtes that a large portion of accidental difficulties have already been solved and that the remaining difficulty in software development is hard to ease, because of the intrinsic complexity software systems must exhibit to accurately mirror the real-world concepts they are representing. On both accounts I'm rather skeptical. For example, the accidental effort of gathering and combining reusable components has been vastly reduced by their availability on the Internet and through the introduction of automated dependency and build managment tools, such as maven. In fact one of the matters most deplored by both authors is the lack of reusable modules, with Gibbs proposing a commercial market for component-based software. I think this accidental problem is just one example which has seen vast improvements over the last decade. With regard to design and intrinsic complexity, I agree that bugs in the design are most significant and most damaging in the long run. However, I think that the way in which developers represent real-world concepts is a deciding factor in how error prone, maintainable, reusable and extensible the system is going to be. For example, functional languages such as Haskell combine several of the concepts described by both authors as possible partial solutions to the problem: Program verification is integrated, making any sort of manual, algebraic verification obsolete. The "clean room process" mentioned by gibbs is also represented in Haskell by the QuickCheck method, which tests functions using 100 or more arbitrary input values which always cover edge cases. As such I agree with the notion that the intrinsic complexity of a program cannot be reduced, while I think that the methods of representation can still see much improvement. Nonetheless, I am humbled by the idea that even with our advances in reducing both accidental and essential difficulties, the likelyhood for a software project to fail is still very high, with some statistics reporting up to two thirds of projects being binned even today, which could indicate that Brooks pessimism was justified after all.