D3: Sacred software cows: software development is high-tech

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Feb 1996

I'd like to talk this month about the notion that software development is high-tech. First of all, how do we judge whether an industry is high-tech ? The principle method is to see to what extent an industry has identified opportunities for automation by doing it the hard way first until they are sufficiently well understood, and then improved them by selective and progressive automation. In other words, a high-tech industry operates by measurement, thereby automating things which can be beneficially automated and, at least temporarily, ignoring the rest. This is known as Statistical Process Control, (SPC) and is the centre-piece of the modern engineering revolution in consumer goods such as cars.

So, does this apply to the software industry ? Although a visit to any software tools exhibition will impress by quantity, how much of this tooling is of value ? Well, a recurring theme in these articles is that as we currently don't measure much of use, its hard to find out. I recently visited a tools conference in Ireland and had the opportunity to attend a 45 minute hands-on session with VizBaz. Sure enough, I twiddled and fiddled and had a presumably object-oriented client-server utterly out-of-sight application at the end of it. However, I understood neither it, nor how I made it, and certainly not how to test it, but it was an application. There was oodles of automation here but no thought of design, testing or interaction, I simply plunged straight in along with 20 other budding VizBazzers.

To estimate the level of measurement driven automation in the software industry, whenever I give presentations, I ask questions such as: "Do you use well-defined language subsets ?", "Do you measure test coverage objectively and have coverage targets ?", "Do you use any kind of formal (or even informal) specification ?", "Do you have any practical limits for software complexity ?", "Do you have formal project planning and tracking ?". All of these issues are known to be related to high-reliability systems through measurement, (and therefore to low life-cycle cost systems for the reasons I stated last month). In European audiences, no category gets more than a 10% positive response usually, although it is slowly improving. In Japan on my recent visit, perhaps surprisingly it was considerably worse, with for example, only 1 person out of 500 using test coverage measurement.

So are we high-tech ? The answer is a categorical NO, and yet none of the above issues are particularly difficult to apply, we understand them and we also understand how to automate them. Unless you are so big you can release almost anything to a captive audience, success in the next 10-20 years will be intimately related to the use of such techniques.

December's Mac errors. A good month ! - 37 hours use; 7 defects of which 3 led to a reboot. Do you believe small well-structured components produce the most reliable systems ? Tune in next month for a big surprise !