Transferring Testing and Verification Technology to Industry

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The important thing for technologists to understand about transferring any kind of technology to industry is that it is a people problem, not a technical one. The transfer is successful only if people use the technology. For that to happen, someone must be persuaded that using the technology is in his or her best interest. This is a matter of someone persuading someone to take an action. It is a matter of persuasion, not of science or engineering.

To persuade a person to take action to adopt a new technology, one must appeal to some personal motivator. In industry, the primary motivator is money. Money is a matter of sales minus costs. A manager will adopt a new technology if s/he is persuaded that it will, in some way, increase sales or reduce costs. This provides two basic lines of approach to transferring testing and verification technology.

First, one can appeal to increasing sales. One can argue that testing and verification will provide a better software product. Therefore, one can try to persuade a manager that people will buy more products, and sales will increase.

Persuading a manager of this is difficult. Sales are effected by many things other than product quality. A wise manager will ask, "How much will my sales go up because of the better quality that results from using this new technology?" Only someone who really knows and understands the manager's market can provide an informed answer.

Second, one can appeal to decreasing costs. For software products, there are three basic costs,
1. cost of failure,
2. cost of development, and
3. cost of maintenance.

The most serious potential cost from the failure of a software product is the threat of a law suit for consequential damages. In the present software product market, consequential damages usually are not a serious threat because software licenses (attempt to) disallow them. If the software consumers ever start to rebel against this absurd situation, cost of failure will become a more effective leverage point for transfer of testing and verification technology.

Today, the main leverage points are cost of product development and maintenance. To transfer testing and verification technology, we need to be able to persuade software product managers that using new technology will reduce their development and maintenance costs. But, there's more.

The manager also must be persuaded that the cost of installing the technology will be overtaken rapidly by savings accrued. "Rapid" is the key word. A manager's performance usually is measured over a short time period. A manager will not want to wait too long for the savings of using a new technology to exceed the cost of installing it. One way to shorten this overtaking period is through education. If a manager's employees already know a new technology, they don't have to spend time on the job learning it.

This brings us to what I think is a key issue that we technologists can do something about. How well prepared are any of us to make any kind of argument that the use of testing and verification technology reduces costs? What costs do they reduce? How much? Where are the convincing demonstrations of cost reduction? Where is the factual cost information that distinguishes between useful technology and snake oil? Without convincing answers to these questions, transferring testing and verification technology into industry will remain slow and difficult. One of the best things we can do to accelerate that transfer is begin seeking answers to these cost questions.