Tech Transfer of Software Tools

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HCSS
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Better Mouse Trap Fallacy

If a man has good corn or wood, or boards, or pigs, to sell, or can make better chairs or knives, crucibles or church organs, than anybody else, you will find a broad hard-beaten road to his house, though it be in the woods.

—Ralph Waldo Emerson
Observations Over 15 Years at MSR

1. Platitudes
2. Perspective
3. Customer
4. People
5. Tools
Tech Transfer is a Full Contact Sport*

If you aren’t bloody, you aren’t playing hard enough†

*Rick Rashid, Chief Research Officer, Microsoft

†Galen Hunt, Researcher
Tech Transfer Isn’t About Technology But About People*
Right Place, Right Time

Windows 95
Windows 2000
Windows XP

How am I supposed to make drivers more reliable???

Device Drivers
Luck Favors the Prepared

Windows 95
Joins MSR to set up SPT

Windows 2000
Hires Tom & Sriram

Windows XP

Ah Device Drivers!
There are lots of them.
They are small.
We can analyze them.
And they are a big problem.

This is GREAT!
Perspective
Great Research Solves a Problem – But a Solution is Not a Product
Lots of Clever Ideas

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The ACM Digital library contains over two million pages of text, with full-text articles from ACM publications dating back to the 1950’s, plus third-party content with selected archives, representing all of ACM’s journals, newsletters, and
Everyone Has Ideas – Execution is Hard Work
Mundane Matters

“We made the buttons on the screen look so good you’ll want to lick them.”
**★★★★★ solves desired scenario with real users: random product group A shows up, your system is ready to ship, today, to be used in their scenarios.**

**★★★★ works in some scenario with real users: your system can be used in anger. Customers feel safe to use it in real usage on which their livelihoods depend. However, it hasn’t been shown to work in all scenarios that a potential product group cares about.**

**★★★ works in constrained environment: people can use your system for some things other than the experiments described in your paper.**

**★★ a great repeatable demo: other people can download your system and run it, repeatedly and consistently, repeat the experiments described in your paper.**

**★ a great paper: your system is in a published SOSP paper. It held together long enough to run the experiments needed for the paper. The features needed for the paper are implemented.**
Customer
Put Yourself in Developer’s Shoes

- System complexity
- Deadlines
- Performance
- Security
- Email overload
- Bugs
- Triage
- New technologies
- Meetings
<table>
<thead>
<tr>
<th>Researcher</th>
<th>Developer</th>
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<tbody>
<tr>
<td>“I have a new tool that will save you time,”</td>
<td>“Oh no, not another one And how many hours will it take to find it doesn’t work?”</td>
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<tr>
<td>improve your code quality,</td>
<td>What do you know about code quality?</td>
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<tr>
<td>make you more productive,</td>
<td>You leaving my office would improve my productivity</td>
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<tr>
<td>avoid security bugs,</td>
<td>You’re smarter than hackers?</td>
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Which Is More Convincing?

(A)

(B)
First Sale is the Hardest One
People
Politics is Real: NIH Happens
Persistence
Right Incentives
Software Tools
Software Tools Are a Difficult Business
And, They Aren’t Going to Solve the Problem
Conclusion

- Tech transfer does not just happen; it requires effort
- Understand what you have to offer
- Understand the needs and requirements of customers
- Build personal trust and engagement
- Dive in; it is not a spectator sport

- Good luck! It a lot of fun and very satisfying when it works