

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 road to his house, though through 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†



But, keep your eye on the ball

*Rick Rashid, Chief Research Officer, Microsoft

†Galen Hunt, Researcher

Tech Transfer Isn't About Technology But About People*



Windows | Dev Center - Hardware

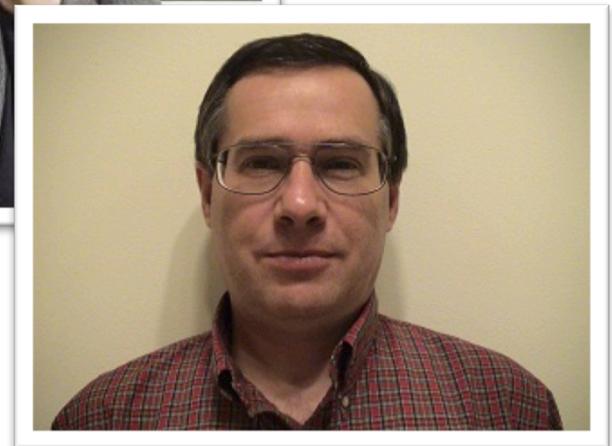
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Dev Center - Hardware > Learn > Drivers > Driver Development Tools > About Driver Verification and Testing Tools > About Static Driver Verifier

About Static Driver Verifier

Static Driver Verifier (SDV) is a thorough, compile-time, static verification tool designed for kernel-mode drivers. SDV finds serious errors that are unlikely to be encountered even in thorough testing. SDV systematically analyzes the source code of Windows drivers that are written in the C language. SDV uses a set of interface rules and a model of the operating system to determine whether the driver interacts properly with the Windows operating system.



Right Place, Right Time



Windows 95



Device Drivers

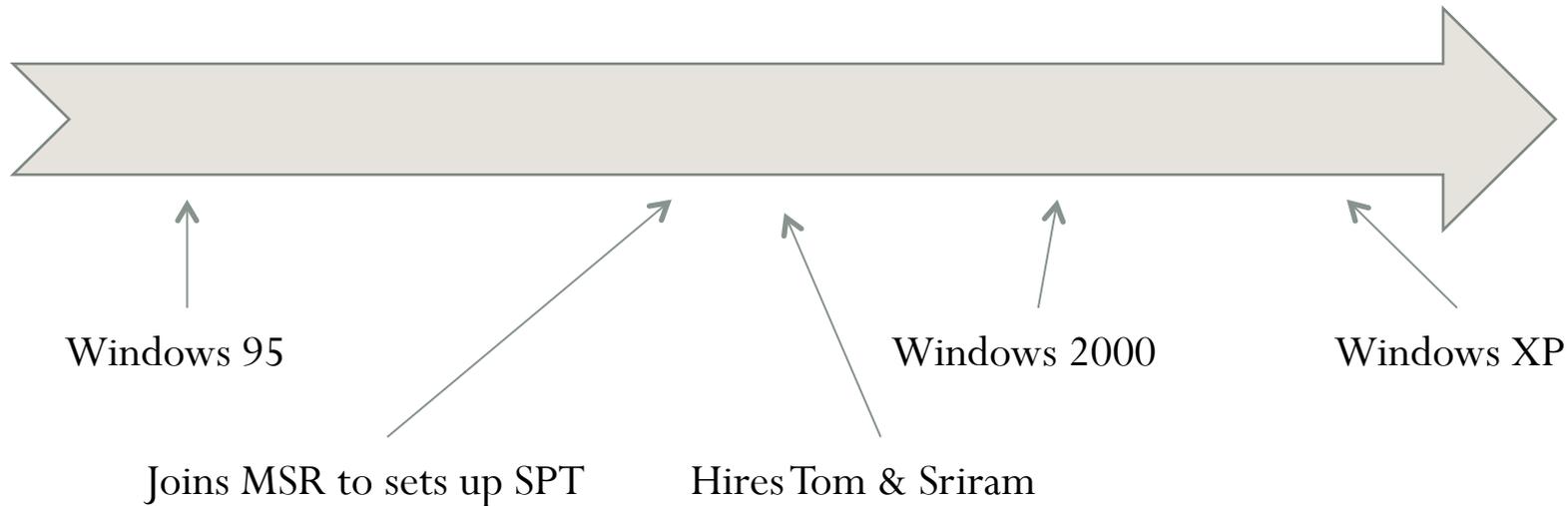
Windows 2000

Windows XP

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



Luck Favors the Prepared



This is GREAT!



Ah Device Drivers!

There are lots of them.

They are small.

We can analyze them.

And they are a big problem.

Perspective

Great Research Solves a Problem – But a Solution is Not a Product



Lots of Clever Ideas

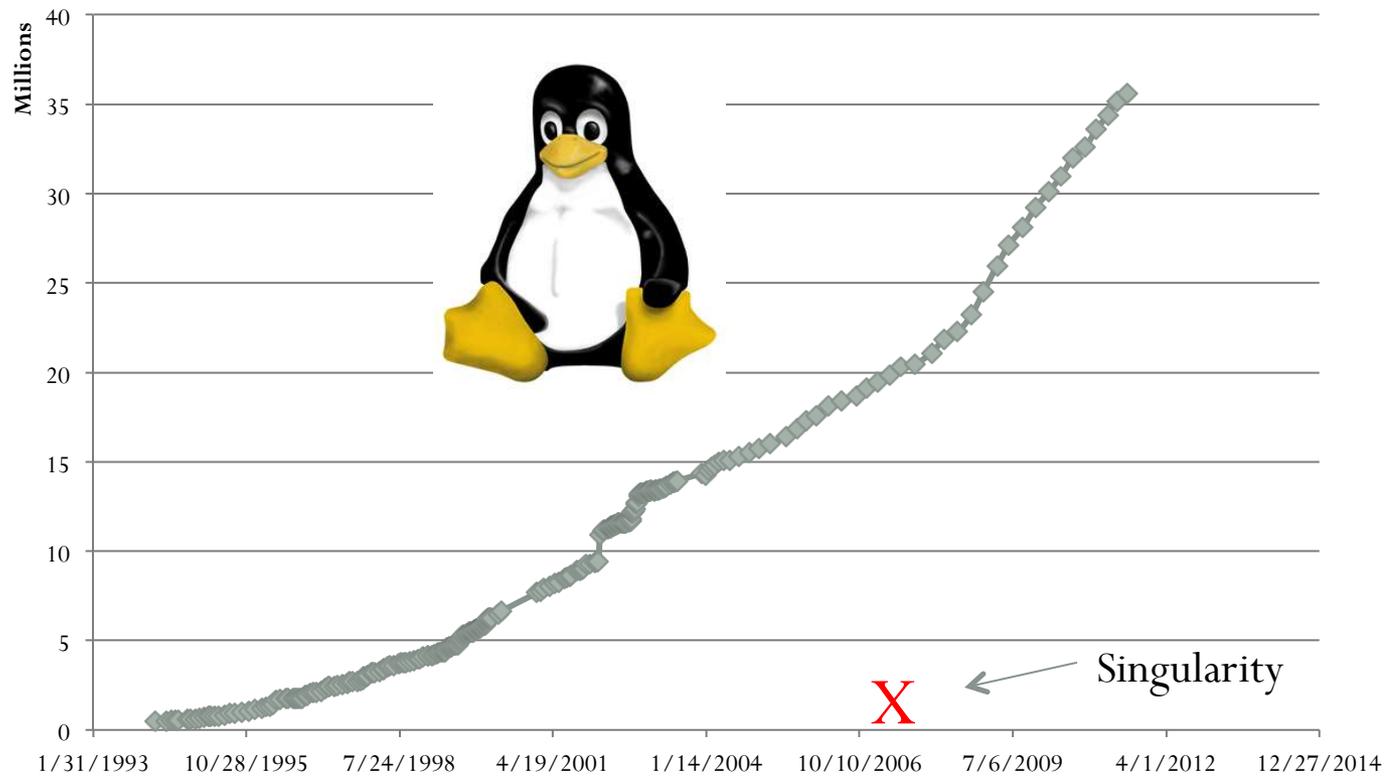


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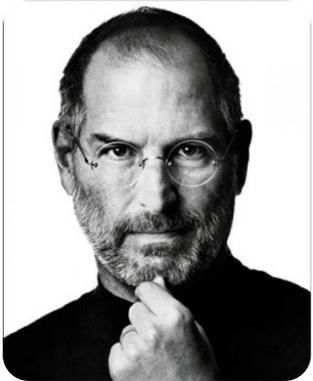
Everyone Has Ideas – Execution is Hard Work

Linux LoC

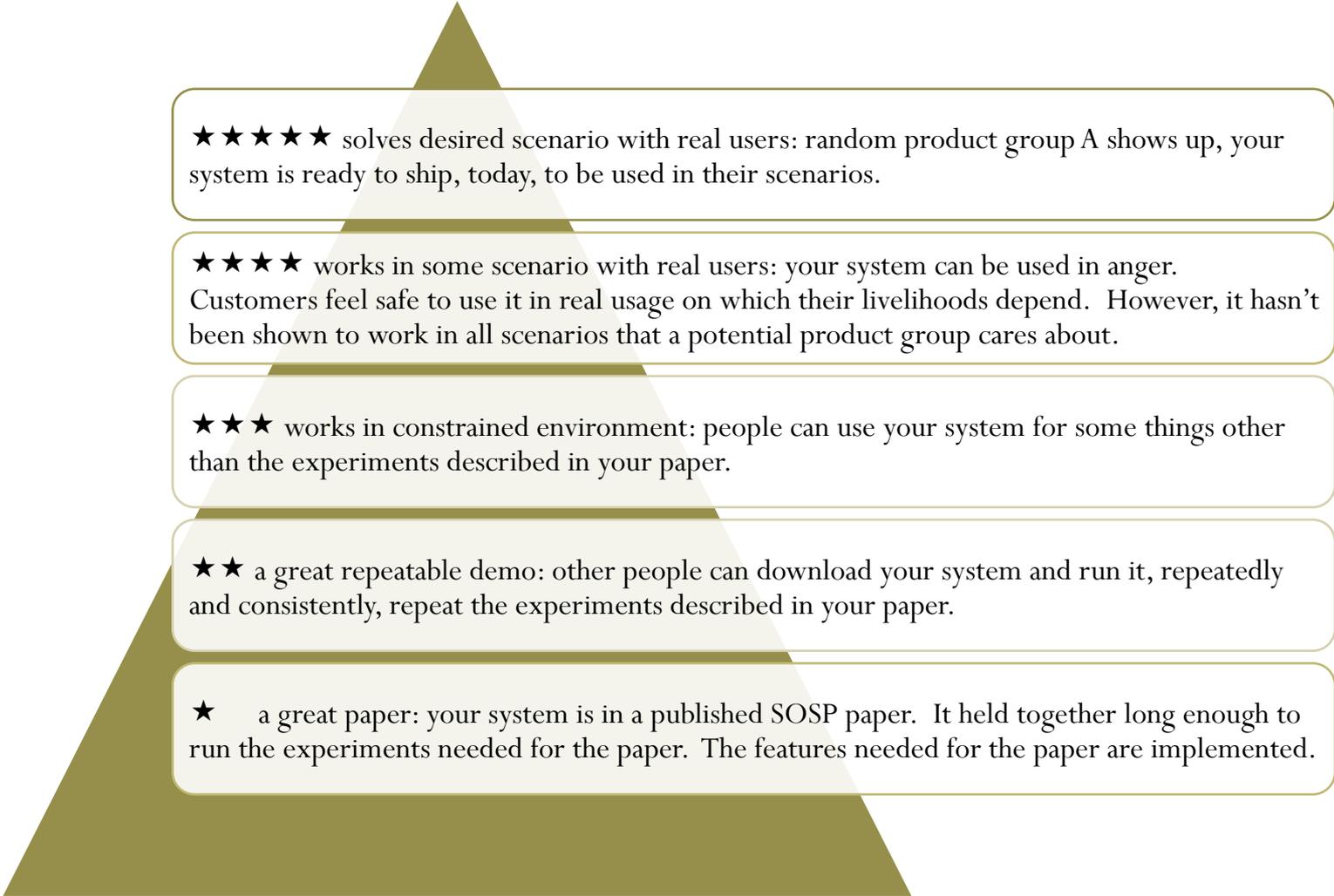


Mundane Matters

“We made the buttons on the screen look so good you’ll want to lick them.”



Bond Scale



★★★★★ 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

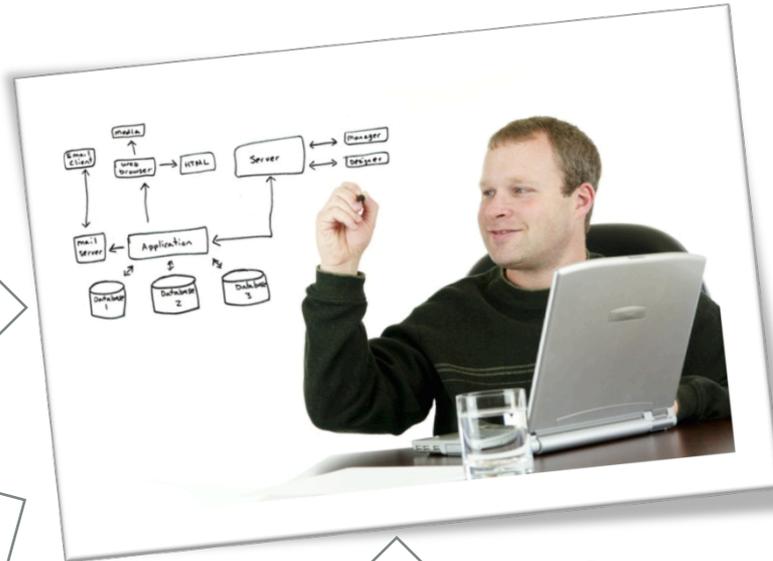
Performance

Security

Email overload

New technologies

Meetings



Bugs

Triage

What You Sound Like to a Developer

Researcher	Developer
“I have a new tool	“Oh no, not another one
that will save you time,	And how many hours will it take to find it doesn't work?
improve your code quality,	What do you know about code quality?
make you more productive,	You leaving my office would improve my productivity
avoid security bugs,	You're smarter than hackers?

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