What Every Developer Needs to Know About Testing

James Bach
james@satisfice.com

What Every Developer Needs to Know

1

The product is more than software.
The product is more than software.

Application
- new code
- old code
- framework

Documentation
- help
- manual
- README.TXT

Computer O/S Add-ins

What Every Developer Needs to Know

Quality is more than the lack of bugs.
Quality is more than the lack of bugs.

- **Functionality**
  - Suitability
  - Correctness
  - Interoperability
  - Compatibility
  - Compliance
  - Security
  - Installability

  Does it solve the problem when it works?

Note: Most of these are from ISO-9126.

---

Quality is more than the lack of bugs.

- **Usability**
  - Understandability
  - Learnability
  - Operability
  - Performance

  Is it practical to use?
Quality is more than the lack of bugs.

- **Reliability**
  - Maturity
  - Fault-tolerance
  - Integrity
  - Recoverability
  - Safety
  - Does it keep working?

- **Efficiency**
  - Storage
  - Processing
  - Does it make effective use of system resources?

Quality is more than the lack of bugs.

- **Maintainability**
  - Analyzability
  - Changeability
  - Stability
  - Testability
  - Is it economical to build and maintain?

- **Portability**
  - Adaptability
  - Localizability
  - Reusability
What Every Developer Needs to Know

3

Quality assurance is more than testing.

- Risk Management
- Customer Involvement
- Skillful Developers
- Process Definition and Improvement
- Inspection and Testing
- Experience-based Improvement

QA is everything you do to minimize the risk of failure and promote excellence.
What Every Developer Needs to Know

4

Testing is hard to do.

You must anticipate your user's...

◊ Data
◊ Skills
◊ Actions
◊ Expectations
◊ Environment
Testing is hard to do.

...to examine a product that is...

◊ *Invisible*
◊ *Volatile*
◊ *Sensitive*
◊ *Complex*
◊ *Unfamiliar*

Testing is hard to do.

...using a process that is often...

◊ *Endless*
◊ *Ambiguous*
◊ *Negative*
◊ *Boring*
◊ *Laborious*
Testing is hard to do.

...to find problems that are...

Unthinkable!

Think of the permutations:

- Functions vs. input data vs. states
- Product vs. platforms
- System vs. external factors
- Everything vs. expectations
- Testing vs. versions of product
Automation is not the solution:

- Humans are able to detect more problems, more accurately.
- Useful test automation is a major software project.
- Support tools are expensive and flaky.
- Test automation lags behind innovation.

What Every Developer Needs to Know

5

You can make testing easier to do.
You can make testing easier to do.

- Document the design.
- Use internal error checking.
- Test units before integrating them.
- Tell the tester what’s new or flaky.
- Test the build yourself, first.
- Evolve product in functional layers.
- Build-in testability.

What Every Developer Needs To Know

1. The product is more than software.
2. Quality is more than the lack of bugs.
3. QA is more than testing.
4. Testing is hard to do.
5. You can make testing easier to do.