
What Every Developer Needs to Know About Testing

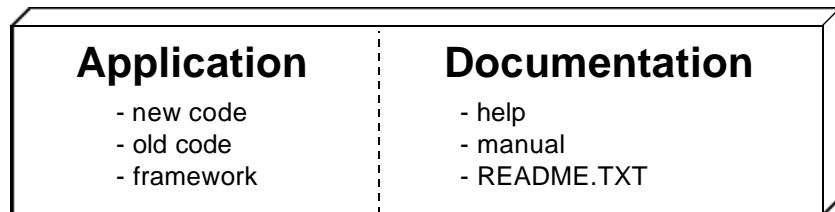
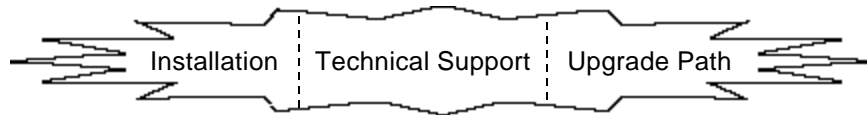
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What Every Developer Needs to Know

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

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What Every Developer Needs to Know

②

Quality is more than the lack of bugs.

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◆ **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.***

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QA is everything you do to minimize
the risk of failure and promote excellence

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

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Testing is hard to do.

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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.**

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***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.**