Improve SAGE
by Enhancing its Conformity to Expectation

Thomas Risse
Institute of Informatics & Automation, IIA
Faculty EEE & CS, Hochschule Bremen
risse@hs-bremen.de

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Agenda

Thomas Risse
IIA, Hochschule Bremen

Introduction

We all are convinced of SAGE [5] and its benefits [1], [3], [2] but *'better is the enemy of good'*!

- My concern here are phenomena in SAGE which can be seen as 'SAGE does not conform to expectation'.
- Any phenomenon of 'not conforming to expectation' decreases productivity drastically!
- Experience teaches that debugging is easier than improving conformity to expectation!

Conformity to expectation vitally contributes to usability. [4]

Object oriented development should increase conformity to expectation.

Assumably, no specific software development process can guarantee conformity to expectation of the end product.

Thomas Risse
IIA, Hochschule Bremen

How to Test Conformity to Expectation?

There is no method to test SAGEs conformity to expectation!

- It is (for me) not possible to run through all 7870 pages of the SAGE reference manual 5.2 in order to find out what does and what does not conform to *my* expectation.
- Hence, test on conformity to expectation is based on more or less random personal experiences.
- One had to formalize expectation . . .
  But, whether some feature conforms to expectation or not, in a strict sense, is not operationalizable and therefore not measurable.

The following examples are collected at random, s.a.

`www.weblearn.hs-bremen.de/risse/papers/SourceTalkTage2012`

And, all browser inconsistencies are excluded!

(Areas of) Prototypic Examples

web interface
- line breaks before comments make a difference
- new worksheet shows sometimes old worksheets

methods not implemented
- iterable vs not iterable
- `object.<TAB>` not implemented

polynomials cp problem coefficient vs coefficients

`sprintf` cp problem format as in springs1D

import e.g. numpy, scipy `array` vs `matrix`

`desolve` solve an ode and verify the solution

other cp problem Bessel, cp problem simplify

help system ?, ??, `search_doc`

debugging, security readability, access to worksheets of others by PYTHON functions `import os`

Conclusion

First, distinguish bugs, e.g. Bessel, or insufficient performance of e.g. simplify roots of cubic equation [6], from nonconformity to expectation.

Nonconformity to expectation

- lies in the eye of the beholder!
- reduces productivity when using SAGE!
- reduces acceptance of SAGE!
- is rather difficult to get rid of!
  - low priority compared to that of bugs
  - add new features or improve conformity to expectation?
  - intricate process of mediation between users and developers

After all, there only can be appeals, cp SAGE Support Group

`groups.google.com/forum/?fromgroups#!forum/sage-support`

References

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[3] Thomas Risse: promote SAGE für Forschung und Lehre; Source Talk Tage 2011, Uni Göttingen 30.8.-1.9.2011 www.weblearn.hs-bremen.de/risse/papers/SourceTalkTage2011

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