Development of research software at DLR
Role and status in practice

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DLR

Numbers
• More than 8000 employees
• ~20% of DLR employees involved in software development

Some Characteristics
• Variety of
  • Fields
  • Maturity
  • Software technologies
• Team sizes
• Backgrounds

We want FACTS
Survey about Research Software at DLR

• Overview of the current role and practice of research software development at DLR
• Identification of potential for improvement
In which Institute do you work?
Participation of all institutes and promoters ...
Please select your age
... and all ages
Do you write code as part of your job?
Do you write code as part of your job?

Yes: 20.8%
No: 79.2%

<table>
<thead>
<tr>
<th>Write code</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>612</td>
</tr>
<tr>
<td>No</td>
<td>161</td>
</tr>
</tbody>
</table>
Developer Overview

Data from participants who do NOT code during their work at DLR were NOT included in the further evaluation.
In which discipline is your highest academic qualification?
In an average month, how much time **do you** spend on...

**versus**

In an average month, how much time **would you like** to spend on...
… software development

Significant shift to RIGHT
... research

Significant shift to RIGHT
... management

Significant shift to LEFT
Significant shift to LEFT
How many years of software development experience do you have?
How many years of software development experience do you have?

Average is 9 years
Who uses the code that you write?
Clear tendency to ‘Mostly me’
What programming language do you use at work?
What programming language do you use at work?

- Python: 72.66%
- C++: 14.25%
- MATLAB: 11.61%
- C: 11.17%
- Other: 7.64%
- Java: 6.65%
- Fortran: 0.37%
- SQL: 2.62%
- JavaScript: 2.63%
- R: 2.63%
- Visual Basic: 1.11%
- Perl: 0.04%
- SQL: 0.06%
- PHP: 0.17%
- Visual Basic .NET: 0.17%
- Assembly language: 0.17%
- Min: 0.53%
- Max: 0.02%
- Lap: 0.22%
- Debug: 0.22%
- C#: 0.22%
- Objective Pascal: 0.11%
- Fortran: 0.09%
- SAS: 0.06%
Which version control tools do you use for software development?
112 participants NOT use version control
Documentation
Are you documenting your software?
Are you documenting your software?

- Yes: 87.7%
- No: 12.3%

<table>
<thead>
<tr>
<th>Software documentation</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td>537</td>
</tr>
<tr>
<td>No</td>
<td>75</td>
</tr>
</tbody>
</table>
What kind of documentation do you write?
Mainly code comments written as documentation.
Testing
Are you testing your software?
Are you testing your software?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>591</td>
<td>21</td>
</tr>
</tbody>
</table>
When do you test your software?
When do you test your software?

Test during development:
- Never: 0
- Sometimes: 100
- Regularly: 400

Test before give:
- Never: 200
- Sometimes: 100
- Regularly: 300

Test before publish:
- Never: 300
- Sometimes: 100
- Regularly: 400
How do you test your software?
How do you test your software?

- **Test manually**
  - Never
  - Sometimes
  - Regularly

- **Test semi-automated**
  - Never
  - Sometimes
  - Regularly

- **Test automated**
  - Never
  - Sometimes
  - Regularly
Do you care for making your software citable?
Do you care for making your software citable?

Yes: 414
No: 198

67.6% Yes
32.4% No
Did you ever reference or acknowledge software in a publication?
Did you ever reference or acknowledge software in a publication?

- Yes: 357
- No: 255
How do you reference software in a publication?
How do you reference software in a publication?

- Name
- Name+Link
- Name+DOI
- Other
- Name+Link+DOI
- Link
- DOI
- Other
- Link+DOI+Other

Distribution of methods used by participants:
- Name: 31.65%
- Name+Link: 22.39%
- Name+DOI: 11.71%
- Name+Link+DOI: 5.5%
- Other: 5.28%
- Link: 2.75%
- DOI: 2.52%
- Link+DOI: 1.39%
- DOI+Other: 1.16%
- Other: 0.46%
- Link+DOI+Other: 0.023%

Number of participants
Thanks for your Attention!