**Appendix A—Additional Data for Research Questions**

**RQ1: Detailed presentation of connected artifacts (and the respective phases they belong to)**

The tables below present further information about the top-5 most frequently traced software artifact types. Specifically, there is one table for each artifact, which shows the count of studies in which this artifact has been linked with other types of artifacts (as well as the development phases these artifacts belong to). We note that the tables present only pairs that have been found in at least 5 studies.

<table>
<thead>
<tr>
<th>Artifact 1</th>
<th>Artifact 2</th>
<th>Phases</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>Source Code</td>
<td>R</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Classes</td>
<td>I</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Test Cases</td>
<td>T</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Methods</td>
<td>I</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Design Models</td>
<td>D</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Requirements</td>
<td>R</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 1. Count of studies connecting Requirements to other artifacts**

<table>
<thead>
<tr>
<th>Artifact 1</th>
<th>Artifact 2</th>
<th>Phases</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Source Code</td>
<td>Requirements</td>
<td>R</td>
<td>21</td>
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<td>Test Cases</td>
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<tr>
<td></td>
<td>Features</td>
<td>R</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Design Models</td>
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<td>4</td>
</tr>
<tr>
<td></td>
<td>UML Diagrams</td>
<td>D</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 2. Count of studies connecting Source Code (in general) to other artifacts**

<table>
<thead>
<tr>
<th>Artifact 1</th>
<th>Artifact 2</th>
<th>Phases</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes</td>
<td>Use Cases</td>
<td>R</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Requirements</td>
<td>R</td>
<td>14</td>
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<tr>
<td></td>
<td>Test Cases</td>
<td>T</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Interaction Diagrams</td>
<td>D</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Features</td>
<td>R</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 3. Count of studies connecting Classes to other artifacts**

<table>
<thead>
<tr>
<th>Artifact 1</th>
<th>Artifact 2</th>
<th>Phases</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>UML Diagrams</td>
<td>Source code</td>
<td>I</td>
<td>4</td>
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<td></td>
<td>Requirements</td>
<td>R</td>
<td>2</td>
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</table>
**Table 4.** Count of studies connecting UML diagrams to other artifacts

<table>
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<th>Phases</th>
<th>Count</th>
</tr>
</thead>
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<td>Classes</td>
<td>I</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Interaction Diagrams</td>
<td>D</td>
<td>6</td>
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<tr>
<td></td>
<td>Test Cases</td>
<td>T</td>
<td>6</td>
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<td>Source code</td>
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<td>Features</td>
<td>R</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Methods</td>
<td>I</td>
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</tbody>
</table>

**Table 5.** Count of studies connecting Use Cases to other artifacts

*RQ4: View on the development phases and the exact artifacts being examined by using different research methods*

Table 16 below shows the top-5 (when applicable) pairs of development phases studied by using each empirical research method.

<table>
<thead>
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<th>Development Phases</th>
<th>Count</th>
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<tr>
<td></td>
<td>R-R</td>
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<tr>
<td></td>
<td>R-D</td>
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<tr>
<td></td>
<td>I-T</td>
<td>23</td>
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<tr>
<td></td>
<td>D-I</td>
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<tr>
<td></td>
<td>D-I</td>
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</tr>
<tr>
<td></td>
<td>R-D</td>
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<tr>
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<td>D-D</td>
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<td></td>
<td>I-I</td>
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<td>Proof of Concept</td>
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<td>8</td>
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<tr>
<td></td>
<td>D-I</td>
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<tr>
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<td>R-D</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>I-T</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 6. Pairs of development phases studied using the different research methods

Table 17 shows the most frequently traced pairs of software artifacts and how they are distributed based on the empirical research method used when studied.

Table 7. Research methods used for studying the most frequently traced pairs of software artifacts
Appendix B–Primary Studies


Comprehension (ICPC), 148-157.


