

## Appendix C. Methods Analysis

Note: Reference numbers correspond to citations in the main manuscript.

**Table A. Qualitative Methods Only**

| Ref           | First Author | Year | Ethnographic Observation | Structured Observation | Interviews | Surveys | Artifact Collection | Focus Group | Software Extraction | Other methods                                    |
|---------------|--------------|------|--------------------------|------------------------|------------|---------|---------------------|-------------|---------------------|--|
| <sup>29</sup> | Andersson    | 2003 | x                        |                        | x          |         | x                   | x           |                     |  |
| <sup>30</sup> | Balka        | 2007 | x                        |                        | x          |         |                     |             |                     | Tracking issues; Action research (general model) |
| <sup>31</sup> | Balka        | 2006 | x                        |                        |            |         |                     |             |                     | Participant observation                          |
| <sup>32</sup> | Bardram      | 1997 | x                        |                        | x          |         | x                   |             |                     |  |
| <sup>33</sup> | Barley       | 2001 | x                        |                        | x          |         | x                   |             |                     |  |
| <sup>34</sup> | Baxter       | 2005 | x                        |                        | x          |         |                     |             |                     | Critical decision method                         |
| <sup>35</sup> | Berg         | 1999 | x                        |                        | x          |         | x                   |             |                     |  |
| <sup>36</sup> | Bertelsen    | 2005 | x                        |                        | x          |         |                     |             |                     |  |
| <sup>37</sup> | Blomberg     | 1996 | x                        |                        |            |         |                     |             |                     | Case-based prototypes                            |
| <sup>38</sup> | Bodker       | 2006 | x                        |                        |            |         |                     |             |                     |  |
| <sup>39</sup> | Brixey       | 2007 |                          | x                      |            |         |                     |             |                     |  |
| <sup>40</sup> | Clarke       | 2003 | x                        |                        |            |         | x                   |             |                     |  |
| <sup>41</sup> | Dourish      | 1999 | x                        |                        | x          |         |                     |             |                     | Workshop   |
| <sup>42</sup> | D'Souza      | 2003 | x                        |                        | x          |         | x                   |             |                     | Analyzed physical work space                     |
| <sup>43</sup> | Dykes        | 2005 | x                        |                        |            |         |                     |             |                     |  |
| <sup>44</sup> | Faergemann   | 2005 | x                        |                        | x          |         | x                   |             |                     |  |
| <sup>45</sup> | Flanagan     | 2007 | x                        |                        | x          |         | x                   |             |                     |  |
| <sup>46</sup> | Fontanesi    | 2000 |                          | x                      |            |         |                     |             |                     |  |
| <sup>47</sup> | Fontanesi    | 2002 |                          | x                      |            |         | x                   |             |                     |  |
| <sup>48</sup> | Furniss      | 2006 | x                        |                        | x          |         |                     |             |                     | Literature review                                |

| <b>Ref</b> | <b>First Author</b> | <b>Year</b> | <b>Ethnographic Observation</b> | <b>Structured Observation</b> | <b>Interviews</b> | <b>Surveys</b> | <b>Artifact Collection</b> | <b>Focus Group</b> | <b>Software Extraction</b> | <b>Other methods</b>  |
|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|---|
| 49         | Goorman             | 2000        | x                               |                               | x                 |                |                            |                    |                            |   |
| 50         | Govindaraj          | 1997        | x                               |                               | x                 | x              | x                          |                    |                            |   |
| 51         | Graves              | 2006        |                                 |                               |                   |                |                            |                    |                            | Developed and revised flowcharts                            |
| 52         | Hallock             | 2006        |                                 |                               | x                 |                |                            |                    |                            |   |
| 53         | Hartswood           | 2003        | x                               |                               |                   |                |                            |                    |                            | Ethnomethodologically informed ethnographic fieldwork       |
| 54         | Hazlehurst          | 2004        | x                               |                               |                   |                |                            |                    |                            | Video   |
| 55         | Hill                | 1995        | x                               |                               | x                 |                |                            |                    |                            | Video   |
| 56         | Horsky              | 2005        |                                 |                               |                   |                |                            |                    |                            | Think aloud protocol; Video-taped interaction with a system |
| 57         | Hsiao               | 2006        |                                 |                               | x                 |                |                            | x                  |                            | Process tracing   |
| 58         | Hughes              | 1999        | x                               |                               |                   |                |                            |                    |                            |   |
| 59         | Jaspers             | 2002        |                                 |                               |                   |                |                            |                    |                            | Think aloud protocol; Video recording                       |
| 60         | Johnson             | 2006        |                                 |                               | x                 | x              |                            |                    |                            |   |
| 61         | Karasti             | 2001        | x                               |                               |                   |                |                            | x                  |                            | Video collage   |
| 62         | Kobayashi           | 2005        | x                               |                               | x                 |                |                            | x                  |                            | Modeling  |
| 63         | Landgren            | 2007        | x                               |                               | x                 |                |                            |                    |                            |   |
| 64         | Laxmisan            | 2007        | x                               |                               | x                 |                |                            |                    |                            | Grounded theory analysis                                    |
| 65         | Malhotra            | 2005        | x                               |                               | x                 |                |                            |                    |                            | Development of cognitive workflow model                     |
| 66         | Malhotra            | 2007        | x                               |                               | x                 |                |                            |                    |                            |   |
| 67         | Mark                | 2002        | x                               |                               | x                 | x              |                            | x                  |                            | Log of reported problems                                    |
| 68         | Martin              | 2007        | x                               |                               |                   |                | x                          |                    |                            |   |
| 69         | McCarthy            | 2004        | x                               |                               |                   |                | x                          |                    |                            | Audiotapes of calls   |
| 70         | Michel-Verkerke     | 2004        |                                 |                               | x                 |                | x                          |                    |                            | USE IT-tool   |
| 71         | Moss                | 2007        |                                 | x                             |                   |                |                            |                    |                            |   |
| 72         | Muller              | 2002        |                                 |                               | x                 |                |                            |                    |                            | CARD analysis   |

| <b>Ref</b> | <b>First Author</b> | <b>Year</b> | <b>Ethnographic Observation</b> | <b>Structured Observation</b> | <b>Interviews</b> | <b>Surveys</b> | <b>Artifact Collection</b> | <b>Focus Group</b> | <b>Software Extraction</b> | <b>Other methods</b>                        |
|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|---|
| 73         | Nemeth              | 2006        |                                 |                               |                   | x              |                            |                    |                            |   |
| 74         | Newman              | 2000        | x                               |                               | x                 |                | x                          |                    |                            |   |
| 75         | Osterlund           | 2007        | x                               |                               | x                 |                |                            |                    |                            |   |
| 76         | Papantoniou         | 2005        | x                               |                               |                   |                |                            |                    |                            | Cognitive Work Analysis                     |
| 77         | Pinelle             | 2003        | x                               |                               | x                 |                |                            |                    |                            |   |
| 78         | Pinelle             | 2005        | x                               |                               | x                 |                |                            |                    | x                          |   |
| 79         | Plowman             | 1995        | x                               |                               | x                 |                |                            |                    |                            |   |
| 80         | Reddy               | 2008        | x                               |                               | x                 |                |                            |                    |                            |   |
| 81         | Reddy               | 2002        | x                               |                               | x                 |                |                            |                    |                            |   |
| 82         | Sadler              | 2006        | x                               |                               |                   |                |                            |                    |                            | Photos                                      |
| 83         | Salvador            | 1997        |                                 |                               | x                 |                |                            |                    |                            | Photos                                      |
| 84         | Sharit              | 1998        |                                 |                               |                   |                |                            |                    |                            | Human Reliability Analysis                  |
| 85         | Spinuzzi            | 2001        | x                               |                               | x                 |                | x                          |                    |                            |   |
| 86         | Stubblefield        | 2000        |                                 |                               |                   |                |                            |                    |                            |   |
| 87         | Suchman             | 1995        | x                               | x                             | x                 |                | x                          | x                  |                            | Video                                       |
| 88         | Symon               | 1996        | x                               |                               | x                 |                |                            |                    |                            | Tracer study                                |
| 89         | Timpka              | 1996        | x                               |                               | x                 |                | x                          |                    |                            | Video taping; Stimulated recall             |
| 90         | Unertl              | 2006        | x                               |                               |                   |                |                            |                    |                            |   |
| 91         | Vargas Cortes       | 1996        |                                 |                               |                   |                |                            |                    |                            | Self-logging                                |
| 92         | Wakkary             | 2007        |                                 |                               | x                 |                |                            |                    |                            | Participant observation; Video walkthroughs |
| 93         | Wright              | 2000        |                                 |                               | x                 |                |                            |                    |                            | Scenario-generation exercise                |

**Table B. Quantitative Methods Only**

| <b>Ref</b> | <b>First Author</b> | <b>Year</b> | <b>Ethnographic Observation</b> | <b>Structured Observation</b> | <b>Interviews</b> | <b>Surveys</b> | <b>Artifact Collection</b> | <b>Focus Group</b> | <b>Software Extraction</b> | <b>Other methods</b>  |
|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|---|
| 94         | Abeta               | 1999        |                                 |                               |                   |                |                            | x                  |                            | Manual user grouping of events compared to software extracted version |
| 95         | Andriole            | 2002        |                                 |                               | x                 |                |                            |                    |                            | Timing studies  |
| 96         | Burke               | 2000        |                                 | x                             |                   |                |                            |                    |                            |   |
| 97         | Guerrero            | 1996        |                                 |                               |                   |                |                            |                    |                            | Self reported work sampling   |
| 98         | Gurses              | 2007        |                                 |                               |                   | x              |                            |                    |                            |   |
| 99         | Heaton              | 2000        |                                 |                               |                   |                |                            |                    |                            | Time study; Simulation modeling                                       |
| 100        | Kalinski            | 2008        |                                 |                               |                   |                |                            | x                  |                            |   |
| 101        | Kelly               | 1997        |                                 | x                             |                   |                |                            |                    |                            | Provided a forum for discussion                                       |
| 102        | Lin                 | 1996        |                                 | x                             |                   |                |                            |                    |                            | Fixed interval work sampling; Computer simulation                     |
| 103        | Merrill             | 2007        |                                 |                               |                   | x              |                            |                    |                            | Network analysis  |
| 104        | Miller              | 2003        |                                 |                               |                   |                |                            |                    |                            | Six Sigma Teams; Modeling of processes; Simulation                    |
| 105        | Reiner              | 2002        |                                 |                               |                   | x              |                            |                    |                            | Technology profile analysis   |
| 106        | Reyes               | 2004        |                                 |                               |                   | x              |                            |                    |                            | Discourse analysis  |

**Table C. Mixed Methods**

| <b>Ref</b> | <b>First Author</b> | <b>Year</b> | <b>Ethnographic Observation</b> | <b>Structured Observation</b> | <b>Interviews</b> | <b>Surveys</b> | <b>Artifact Collection</b> | <b>Focus Group</b> | <b>Software Extraction</b> | <b>Other methods</b>                                       |
|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|--|
| 107        | Agbulos             | 2003        |                                 | x                             |                   |                |                            |                    |                            |  |
| 108        | Alexopoulos         | 2001        |                                 | x                             |                   |                |                            |                    |                            | Simulation   |
| 109        | Berg                | 1999        | x                               |                               | x                 | x              | x                          |                    |                            |  |
| 110        | Borycki             | 2006        |                                 |                               |                   |                |                            |                    |                            | Simulation; Interaction with a simulation                  |
| 111        | Campbell            | 2007        |                                 |                               |                   |                |                            | x                  |                            | Expert panel   |
| 112        | Capuano             | 2004        |                                 | x                             |                   |                |                            | x                  |                            |  |
| 113        | Carayon             | 2006        |                                 | x                             | x                 | x              | x                          |                    |                            |  |
| 114        | Casper              | 2005        | x                               | x                             | x                 |                |                            | x                  |                            | Modified macroergonomic work system analysis               |
| 115        | Cortizas            | 1996        |                                 |                               |                   |                | x                          |                    |                            | Developed process flowcharts; Analyzed physical work space |
| 116        | Earl                | 1995        |                                 |                               | x                 |                | x                          |                    |                            | Case studies   |
| 117        | Grote               | 2000        |                                 | x                             |                   |                |                            |                    |                            |  |
| 118        | Hengst              | 2004        | x                               | x                             | x                 | x              |                            |                    | x                          |  |
| 119        | Kumar               | 2004        |                                 |                               |                   |                |                            |                    |                            | Team meetings; Process flowcharting                        |
| 120        | Lederman            | 2002        |                                 |                               | x                 | x              |                            |                    |                            | Simulation   |
| 121        | LeRouge             | 2007        | x                               |                               | x                 | x              |                            |                    |                            | Video  |
| 122        | MacKay              | 1999        | x                               |                               |                   |                |                            |                    |                            | Video  |
| 123        | Mbambo              | 2003        |                                 | x                             |                   | x              |                            |                    |                            |  |
| 124        | Mira                | 2001        |                                 |                               |                   |                |                            |                    |                            | Flow charting; Case studies                                |
| 125        | Mueller             | 1999        | x                               |                               | x                 | x              | x                          |                    |                            |  |
| 126        | Muller              | 1999        |                                 |                               | x                 |                |                            | x                  |                            | Modified CARD; Video analysis; Audio analysis              |
| 127        | Nuutinen            | 2005        | x                               |                               | x                 |                | x                          |                    |                            | Videotaped observation                                     |
| 128        | Olsson              | 2005        | x                               | x                             | x                 | x              |                            |                    |                            | Video; Diaries; Participatory analysis                     |

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|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|--|
| 129        | Pai                 | 2003        |                                 |                               |                   |                |                            |                    |                            | Work redesign                                    |
| 130        | Pinelle             | 2002        |                                 | x                             | x                 |                |                            |                    |                            |  |
| 131        | Poltrock            | 2003        | x                               |                               | x                 |                |                            |                    |                            | Recorded meetings                                |
| 132        | Pott                | 2005        |                                 |                               |                   | x              |                            |                    |                            | Developed surveys                                |
| 133        | Sawyer              | 2006        | x                               |                               | x                 |                | x                          | x                  | x                          | Diaries of work behavior                         |
| 134        | Sierhuis            | 2002        | x                               |                               |                   |                |                            | x                  |                            | Agent based simulation                           |
| 135        | Sonnenwald          | 2000        | x                               |                               | x                 |                | x                          |                    |                            | Simulated battle exercises                       |
| 136        | Spinuzzi            | 2002        | x                               |                               | x                 |                | x                          |                    |                            |  |
| 137        | Tucker              | 2006        | x                               |                               | x                 | x              |                            |                    |                            |  |
| 138        | Urden               | 1997        |                                 | x                             |                   |                |                            |                    |                            | Work sampling                                    |
| 139        | Uys                 | 2002        | x                               |                               | x                 |                |                            |                    |                            | Site visits; Analysis of site monthly statistics |
| 140        | Waterson            | 2002        |                                 |                               |                   | x              |                            |                    |                            | Workshop; Task analysis (single end user)        |
| 141        | Wong                | 2003        |                                 |                               |                   |                |                            |                    |                            | Observation (unclear how); Simulation            |

**Table D. Unclear Methods**

| <b>Ref</b> | <b>First Author</b> | <b>Year</b> | <b>Ethnographic Observation</b> | <b>Structured Observation</b> | <b>Interviews</b> | <b>Surveys</b> | <b>Artifact Collection</b> | <b>Focus Group</b> | <b>Software Extraction</b> | <b>Other methods</b>            |
|------------|---------------------|-------------|---------------------------------|-------------------------------|-------------------|----------------|----------------------------|--------------------|----------------------------|---------------------------------|
| 142        | Bardram             | 1997        |                                 |                               |                   |                |                            |                    |                            |                                 |
| 143        | Berg                | 2003        |                                 |                               |                   |                |                            |                    |                            | N/A                             |
| 144        | Bowers              | 1995        | x                               |                               |                   |                |                            |                    |                            |                                 |
| 145        | Carayon             | 2004        |                                 |                               |                   |                |                            |                    |                            | Case study; Root cause analysis |
| 146        | Endress             | 2006        |                                 | x                             |                   |                |                            |                    |                            | Critical Path Method (CPM)      |
| 147        | Mira                | 1999        |                                 |                               |                   |                |                            |                    |                            | Case study                      |
| 148        | Mirel               | 2003        |                                 |                               |                   |                |                            |                    |                            |                                 |
| 149        | Randall             | 1995        |                                 |                               |                   |                |                            |                    |                            |                                 |
| 150        | Wisner              | 1995        | x                               |                               |                   |                |                            |                    |                            |                                 |

**Table E. Methods Not Applicable**