Digital Engineering
Competency Framework

Systems Engineering Research Center Team
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The Power of Digitalization

Exploiting the digital power of computation, visualization and communication to take better, faster actions
Goal 5: Transform the culture and workforce to adopt and support digital engineering across the lifecycle

Focus Areas
1. Improve the digital engineering knowledge base
2. Lead and support digital engineering transformation efforts
3. Build and prepare the workforce

Challenges

<table>
<thead>
<tr>
<th>Topic</th>
<th>Short Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workforce Skills Training</td>
<td>Limited incentives workforce skills, insufficient training capacity and resources to meet the demand</td>
</tr>
<tr>
<td>Policy, Guidance, &amp; Standards</td>
<td>Limited policies, guidance, and standards to comprehensively address digital engineering activities</td>
</tr>
<tr>
<td>Metrics</td>
<td>Lack of a common set of metrics that serve as leading indicators of adoption and effectiveness</td>
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</tbody>
</table>
Digital Engineering Competency Framework

• Funded by the Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E))

• Supports DoD workforce development for digital transformation (DoD Digital Engineering Strategy: Goal 5)

• Identifies knowledge, skills, abilities, and behaviors (KSABs) specifically required to support engineering activities in a digital environment
  —Current version includes non-engineering KSABs broadly relevant to working in a digital environment

• Includes proficiency levels for the required level of skill from awareness to expertise
To enable easier understanding of the DECF, the competencies have been organized into categories.
## Competency Category Descriptions

<table>
<thead>
<tr>
<th>Groups</th>
<th>Description</th>
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</thead>
</table>
# KSABs by Competency Category & Proficiency Level

<table>
<thead>
<tr>
<th>Competency Category</th>
<th>Aware</th>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
<th>Expert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Literacy</td>
<td>8</td>
<td>20</td>
<td>21</td>
<td>75</td>
<td>60</td>
<td>184</td>
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<tr>
<td>Software Literacy</td>
<td>7</td>
<td>21</td>
<td>24</td>
<td>56</td>
<td>23</td>
<td>131</td>
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<tr>
<td>Modeling</td>
<td>23</td>
<td>42</td>
<td>54</td>
<td>62</td>
<td>25</td>
<td>206</td>
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<tr>
<td>Data Engineering</td>
<td>1</td>
<td>11</td>
<td>5</td>
<td>18</td>
<td>14</td>
<td>49</td>
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<tr>
<td>Decision Making</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>14</td>
<td>16</td>
<td>36</td>
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<tr>
<td>Engineering Methods</td>
<td>2</td>
<td>4</td>
<td>16</td>
<td>45</td>
<td>45</td>
<td>113</td>
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<td>719</td>
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</tbody>
</table>
1. Please submit your feedback no later than 12 June

2. The team will meet to adjudicate changes on at least a weekly basis

3. WRT Team adjudication choices are final (until the next round of review)

4. Reviewers need to be aware that they will be doing simultaneous, concurrent commenting or editing at times – please include your name so that we can follow up if necessary
Instructions to Reviewers

• All review materials can be accessed at: https://sercuarc.org/DECF-review/
  — The DECF Team will accept feedback via the OpenMBEE Model, PDF Markup, or Excel comments

• Comments can be made on any level of the DECF (competency groups, competencies, KSABs)

• For specific instructions for OpenMBEE model, please see next slide

• For PDF review, comments may be submitted using PDF markup or the accompanying Excel file
  — Email review comments to Kara Pepe at kpepe@stevens.edu
OpenMBEE Model Review

• Access View Editor at:
  https://ime.sercuarc.org/alfresco/mmsapp/mms.html

• Log in using guest credentials:
  — Username: DE.SME
  — Password: WRT-1006

• Links to instructional videos:
  — www.markblackburn.com/MBSE/DECF_WRT-006_lesson_1_basic_edits_and_comments.mp4
  — www.markblackburn.com/MBSE/DECF_WRT-006_lesson_2_sync_edits_to_model.mp4
WRT-1006 Team

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SME Review Panel: Troy Peterson and Sanford Friedenthal