NASA / FAA eVTOL Crashworthiness Workshop Series: Virtual Meeting #4:
Current Research in eVTOL Crashworthiness from a Government and Academic Perspective

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Introduction – Fourth Workshop

• All content on NARI
  – https://nari.arc.nasa.gov/crashworthiness
  – First provided the historical perspective and overall regulatory considerations
  – Second considered certification requirements
  – Third reviewed the considerations for vehicle crashworthiness from the perspective of the Department of Defense

• Examines some of the current crashworthy research in eVTOL applications
Meeting Logistics

- Speakers and Moderators are on TEAMS meeting
- Participants will be using YouTube link available on website
- Participants can ask questions using ConferenceIO link available on website
- NASA or FAA will introduce each speaker and ask questions to that speaker at the end of their presentation
- Speakers will screen-share their presentation on the TEAMS meeting

Meeting website: https://nari.arc.nasa.gov/crashworthiness
<table>
<thead>
<tr>
<th>Speaker</th>
<th>Organization</th>
<th>Time (Eastern)</th>
<th>Presentation Title</th>
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<tbody>
<tr>
<td>Justin Littell / Joseph Pellettiere</td>
<td>NASA / FAA</td>
<td>12:00 – 12:15</td>
<td>Current Research in eVTOL Crashworthiness overview</td>
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<tr>
<td>Francisco Capristan</td>
<td>FAA</td>
<td>12:15 – 12:45</td>
<td>Current FAA AAM/UAM Research</td>
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<tr>
<td>Amanda Taylor</td>
<td>FAA Civil Aerospace Medical Institute (CAMI)</td>
<td>12:45 – 13:15</td>
<td>CAMI Rotorcraft Research</td>
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<td>Break</td>
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<td>13:45-14:00</td>
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<tr>
<td>Gerardo Olivares</td>
<td>National Institute for Aviation Research (NIAR)</td>
<td>14:00-14:30</td>
<td>Integrated Safety for EVTOL Crashworthiness : from Conceptual Design to Certification</td>
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<tr>
<td>Matthias Waimer</td>
<td>DLR, German Aerospace Center</td>
<td>14:30-15:00</td>
<td>Conceptual design phase study on eVTOL Crashworthiness</td>
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<tr>
<td>Luigi Di Palma</td>
<td>CIRA, Italian Aerospace Research Center</td>
<td>15:00-15:30</td>
<td>NextGen Civil Tiltrotor Crashworthiness Approaches</td>
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<td>Francesco Di Caprio</td>
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<td>Marika Belardo</td>
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The Need for Crashworthiness in eVTOL Vehicles: Why Now?

• Now is the time
  – Early in the vehicle development cycle
  – Will pay great dividends in the future

• Expect that accidents will happen
  – Protect the occupants to ensure continued growth and acceptance

• Current regulatory framework is based upon other designs
  – This may change in the future depending on performance
  – Attention to system level safety now, will prepare for the future
Additional Meetings

• Potential 5\textsuperscript{th} workshop in formulation. Summer 2021, OEM and supplier focused

• Onsite working group meeting tentatively at VFS Transformative Vertical Flight, January 2022
  • Main session
    – Summary of the previous workshops
    – Overview of the ongoing research identified
  • Breakout session
    – Discussion of research and gaps in eVTOL crashworthiness
    – eVTOL crashworthiness roadmap
    – Development of plan forward
Going Forward

• Creation of an eVTOL Crashworthiness working group
  – Will solicit input at VFS
  – Yearly working group meeting to review status of various research plans/projects that have been identified over the various organizations
    • Status against the roadmap
    • Various regulatory updates
    • Stakeholders with various funded projects can provide updates

• NASA TM/FAA report summarizing all workshop presentation material along with some opening and concluding remarks