5D Task Analysis Visualization Tool, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

The creation of a five-dimensional task analysis visualization (5D-TAV) software tool for Task Analysis and Workload Planning using multi-dimensional visualization will have significant positive impacts on the optimization of human-centered design at NASA. Recent research identified a 40% improvement in task analysis accuracy and efficiency using 3D visualization. Employing enterprise data integration and management innovation, configuration management, and loosely-coupled reusable libraries provides a single 5D model accentuating critical path, risk to task completion, staff selection, complexity, and conflicts. Such a software tool promises increased awareness for project management, operations personnel, and designers, improving efficiency and decision making, and reducing risk. These improvements will lead directly to improved system design and utilization of crew, as well as optimization of human and system allocations. The 5D-TAV tool's proposed integrated architecture incorporating available commercial tools provides the views, filters, rotations, and controls necessary for successful task analysis visualization and data management to increase mission success.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: The Five-Dimensional Task Analysis Visualization (5D-TAV) will prove n initial capability for use on NASA projects, it can be applied to any complex system development effort that incorporates complex human operations or system design, in a collaborative engineering environment, with a focus on complex task and mission tread analysis. Additional applications include: - Development of training solutions for high stress environments - Remote / Autonomous control of equipment and systems - Emergency preparedness and emergency response - Integrated workforce planning and program management - Optimization of

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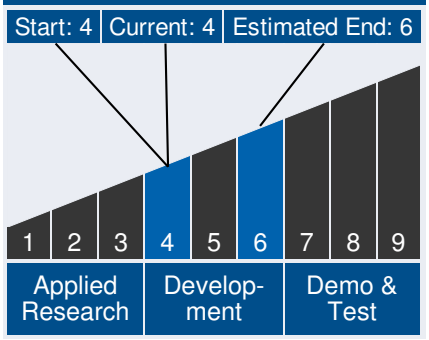
Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

Continued on following page.

field service and sustainment support across enterprises - Code development performance metrics

To the commercial space industry:

Potential Non-NASA Commercial Applications: Existing CPC projects with Army and Navy can all take advantage of the 5D-TAV capabilities for workforce planning,supply chain management, and condition-based maintenance (CBM) optimization. There are additional opportunities with the Army and Navy to develop service-wide applications to support complex system planning, management and support requirements. Applications include but are not limited to: - Development of training solutions and measure effectiveness - Remote / Autonomous control of equipment and systems - Emergency emergency response planning and training - Integrated workforce planning and program management - Optimization of field service and sustainment support across enterprises - Code development performance metrics For many of our existing government customers, marketing of this tool is a logical extension to work we are now performing. Acceptance by key stakeholders such as PEO-GCS, CERDEC and CECOM will provide us with the opportunity to broaden its usage across those organizations. The tool will also become an available component of our commercial Business Management System (BMS) portal software sold to the Army. We have successfully marketed components of the BMS to other government and commercial customers. CPC is moving into the business of providing software as a service (SAAS) and the 5D-TAV is a strong addition to our developing software product line.

Management Team *(cont.)*

Principal Investigator:
- Jonathan Dorny

Technology Areas

Primary Technology Area:
Human Health, Life Support, and Habitation Systems (TA 6)
└ Human Health and Performance (TA 6.3)
  └ Human Factors (TA 6.3.4)

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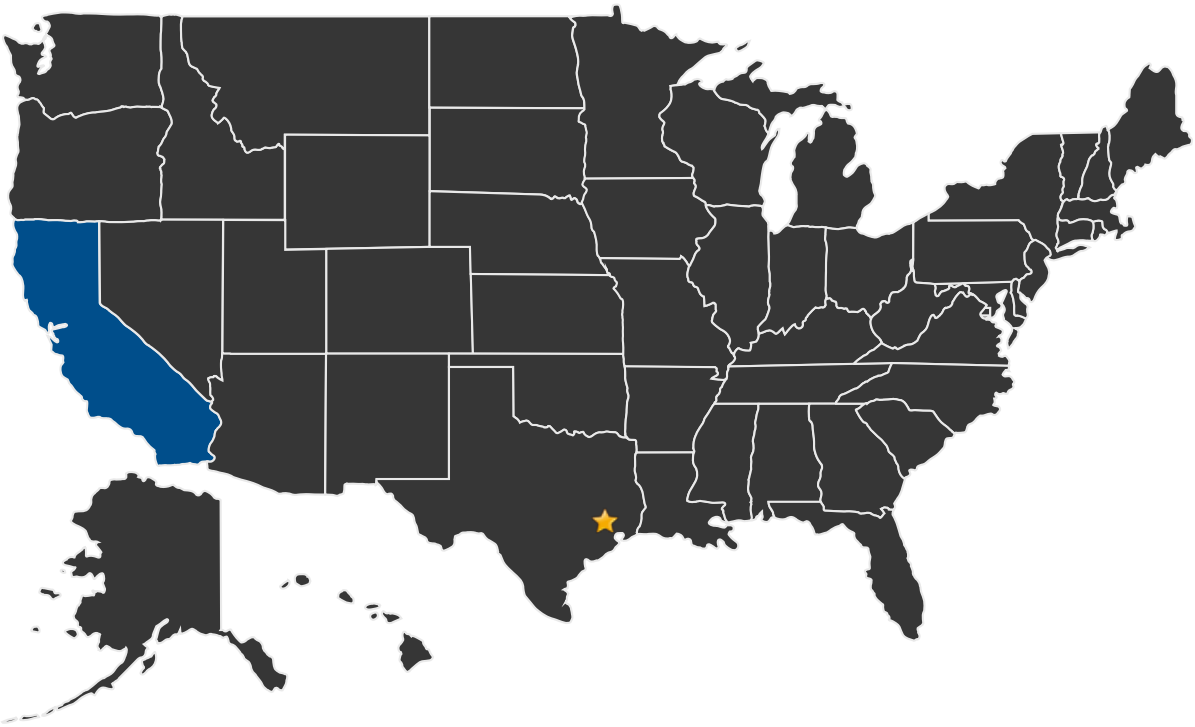
U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Johnson Space Center

Other Organizations Performing Work:

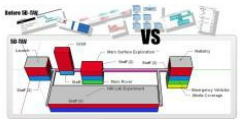
- Control Point Corporation (Goleta, CA)

PROJECT LIBRARY

Presentations

- Briefing Chart
  - (http://techport.nasa.gov:80/file/23112)

IMAGE GALLERY



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DETAILS FOR TECHNOLOGY 1

Technology Title

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Potential Applications

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