



# Crew Health and Performance Integrated Data Architecture Project Update

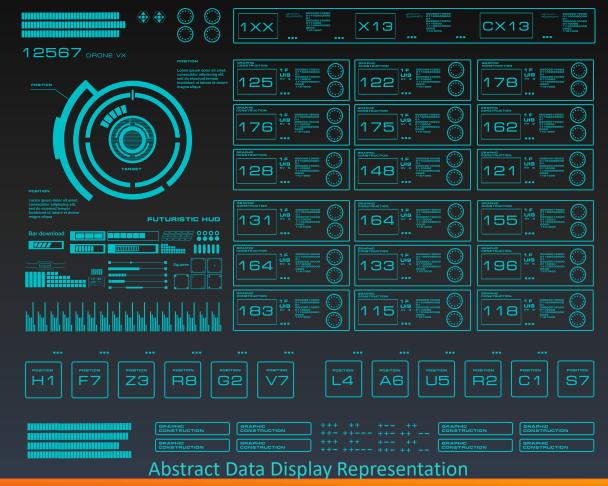
2024 Human Research Program Investigators' Workshop

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- Event Data
- Time Series Data
- Analysis Results
- Reports
- Descriptive and Predictive Analytics
- Photo, Video, and Audio Files
- Consumables / Stock
- Environmental
- Proprietary Sensor Data Packages
- ... many other categories of data ...











# Deriving Exploration Mission CHP Data Needs

Challenge

Derive future mission CHP data needs from existing knowledge to devise an exploration data architecture

SME Interviews – Multiple Roles

**Supporting Documentation** 

**Crew Comments Database** 

**Gather Information** 



**Generate Task Lists** 



**Develop Scenarios** 



Modeling & Analysis



**Knowledge Base** 



Task Analysis

**Workflow Analysis** 

Combinations of workflows, tasks, systems, relevant data generated or consumed

Modeling Data Generation and Usage

**Modeling Data Environment** 

**Modeling Exploration CHP Systems** 

Extract CHP Data and Data Architecture Needs









**Crew Operations** 

Literature Reviews

**Timelines** 

Feedback loop to engage SME

community and extract details





Exploration Mission	<ul> <li>New Mission Profiles</li> <li>Longer Comms Delay</li> <li>Further from Earth</li> <li>Difficult Resupply</li> <li>Harder to Evacuate</li> </ul>
Integrated Mission Operations System	Supports <b>Exploration Mission</b> by enabling Independent Operations
CHP Domains	Provide IMOS capabilities through updated workflows & tools
CHP Domain Support Tools, Workflows, and Technologies	Uses Mission Data to provide capabilities that <b>CHP domains</b> need to support layers above
Computation, Data, and Data Products	The Raw and Processed Data the <b>Support Tools</b> need to function
CHP IDA	A <i>Platform</i> to provide and meet the needs of these <b>Data Products</b>













## CHP-IDA's Role in Exploration Missions

#### **CHP-IDA Purpose and Role**

- To provide a platform for CHP application developers to gain access to the data they need to meet their domains' specific mission needs.
- To provide for the common needs of CHP mission data, as part of the larger space mission architecture, both in-flight and on the ground.

**Data Correlation** 

Data Privacy

**Data Processing** 

**Data Protection** 

**Data Security** 

**System Interfacing** 

Data Storage

Synchronization

**Data Connectivity** 

Resource Management

Platform Apps

**User Interfacing** 

Mission Ops
Systems Integration

Com

Common App Data Interfaces Data Store Integration

Search and Location

Technology Integration Extensible Interfaces

**Audit Trail** 

Alerts and Notifications

Performant Processing

Planned CHP-IDA Mission Data Architecture Capabilities







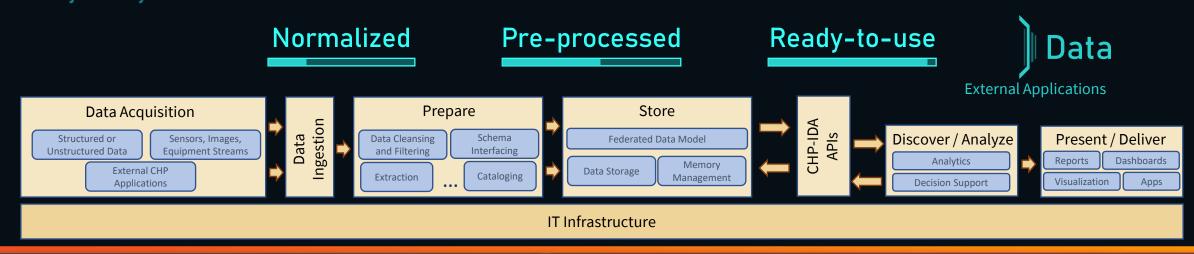




#### CHP-IDA Data Pipeline

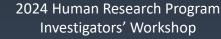


But not just any data....





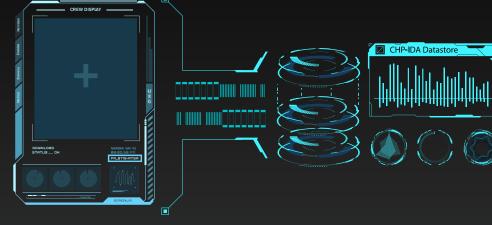








- CHP-IDA Path-to-Flight Project
- Low initial cost to evaluate the concepts
- Discover and prove out concepts on the ground
- Establish a foundation for a flight mission using CHP-IDA
- Provide IDA technology to the CHP community



Data Displays and Interfaces

Data Storage and Processing

#### Outline of the Approach

Building upon existing work

Devise Data
Architecture Crew
Scenarios and
Procedures

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on Crew
Performance on
the **Ground** 



Validate Findings in Exploration-Analog Env.



Develop CHP-IDA Requirements



Transition
CHP-IDA to a flight
project to build













### Next Steps

FY24 — CHP-IDA Release 1.2

CHP-IDA Test Bed Build
Core CHP-IDA Architecture and Design
Core CHP-IDA Build Out

Core CHP-IDA Build Out Initial API Definitions &

Implementations

JSC Facility Setup

Test Bed IT Infrastructure

CHP-IDA Flight and Ground Environments

FY25 — CHP-IDA Release 1.3

CHP-IDA Data Architecture Features Design and Build

Tech Demo Data App Integrations

CHP-IDA Test Bed Phase 2 – Mission Environments















#### CHP-IDA wants your help!

- Scenarios
- Use Cases
- Data Uses
- Alpha and Beta Testers
- API Usability Feedback
- Integrations

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