

HANGAR 18 DELIVERS WITH



**HANGAR 18**

Hangar 18 is a DAF-endorsed Software Factory based out of AFRL and AFIT, whose mission is to bring Agile and DevSecOps to the Digital Transformation and Digital Engineering communities at WPAFB. Hangar 18 accomplishes this by developing tools and tool pipelines, assisting and guiding technical programs, and engaging in workforce development with formal and informal education and training. Hangar 18 delivers software and data solutions to the warfighter across a broad spectrum of domains, leveraging a diverse portfolio of technologies spanning prototypes to enterprise-grade systems.

## WHAT IT IS

A Micro-knowledge and experience sharing learning platform inspired by Netflix/YouTube and serious games research providing additional capability not resident in other formal education and training offerings or learning platforms. It's bottom-up content generation empowers all units to share best practices within DoD guardrails.

## TECHNOLOGY

Utilizing Agile development practices, Avolve leverages Kubernetes, NoSQL database technology, Layered Architecture, Advanced JavaScript Framework, JSON, Object Storage, Malware Scanning and DevSecOps Pipeline hosted on Platform One.

## RESULTS

Hosted on Platform One's IL-4 CUI-certified and CAC protected platform supporting 7k+ users, 3k+ content items, and 12 community hubs. Upcoming feature roll outs include an image content repository in support of 2nd AF and bulk upload for speedier creation of individual playlists and learning paths.



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**Hyper  
thought™**



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## WHAT IT IS

HyperThought® is an AF-owned, production grade Data Management platform for the research community in AFRL. It is an ultimately flexible data lake that allows for the curation and sharing of virtually any size, shape, and complexity of data that the lab can produce.

## TECHNOLOGY

HyperThought® leverages open source projects including Django, Postgres, Apache, nGinx, Python, and many others. HyperThought® utilizes best in class software called MarkLogic, an enterprise NoSQL database technology. HyperThought® contains a robust API that allows for seamless connectivity to lab equipment, analysis tools, and other data systems.

## RESULTS

By leveraging the best open source and commercial technologies, HyperThought® delivers a leading Data Management platform to enable meaningful discovery to a community of thousands of users, spanning hundreds of terabytes of rich data.



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**CARBN**



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## WHAT IT IS

CARBN Lab Integration is a cross-directorate lab integration pathfinder to establish network connectivity and data integration for high priority laboratory environments, using a technical approach based on the RX lab integration effort. We provide a secure approach to exporting data from isolated lab environments to an instance of HyperThought which is accessible from DREN.

## TECHNOLOGY

The effort uses the SPIKE toolset loaded within the isolated lab to facilitate data collation and one-way transfer through a Portal computer to HyperThought. SPIKE allows labs to attach metadata to selected information to make it searchable and accessible.

## RESULTS

This project makes valuable data more accessible across the DoD to those who need it. Data can be automatically collated and transferred to HyperThought and readily accessible to users and customers seamlessly.



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**DELVE**



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## WHAT IT IS

DELVE is a digital data marketplace that provides one-stop shopping to AFRL users for information spanning virtually any domain. DELVE functions as a hub-and-spoke system, providing the ability to search and access data in many systems using a common interface. DELVE is a community resource that allows users to describe and share their data in whatever manner they see fit.

## TECHNOLOGY

DELVE is a true data fabric that leverages existing state-of-the-art technologies under the hood, including the AF-owned HyperThought® Data Lake and Mobi Data Modeler, Anzo Smart Data Lake, Keycloak, and the Apigee API gateway, with an interface built in REACT.js. DELVE lives on AFRL cloud infrastructure, which enables ease of access and enhanced security for existing AFRL users.

## RESULTS

Most researchers aren't versed in data management, so the data end up on a hard drive in their desk. From keywords to dissemination controls, DELVE provides a rich set of easy-to-use tools for data owners to make their data discoverable to thousands of AFRL users. The data fabric approach allows DELVE to integrate with virtually any data system or dataset, saving millions of dollars over a centralized solution.



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## HANGAR 18 DELIVERS WITH



# IBR

INTEGRALLY BLADED ROTOR  
DIGITAL ENGINEERING



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## WHAT IT IS

Tinker AFB is utilizing novel techniques for the inspection and repair of Integrally Bladed Rotors (IBRs). Hangar 18 is working to make IBR-related data available to AFRL stakeholders for modeling, simulation, and other Digital Engineering activities. This starts with securely connecting multiple data sources spanning complex networks, and ultimately enables analytics using advanced data modeling technologies.

## TECHNOLOGY

Hangar 18 is exploring the use of novel technologies to extract additional value from the data, including large language models (LLMs) and SysML version 2.0. At its core, every analytics tool leveraged by this project is powered by the flexible NoSQL backend and robust RESTful API of Hangar 18's flagship data management product: HyperThought®.

## RESULTS

By making this data accessible to AFRL in a Findable, Accessible, Interoperable, and Reusable (FAIR) format, Hangar 18 can help reduce lead times for collaboration and feedback while increasing the quality and veracity of the data. This will ultimately position the Air Force to improve maintenance outcomes and anticipate problems before they actually occur.



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