



The HDF Group



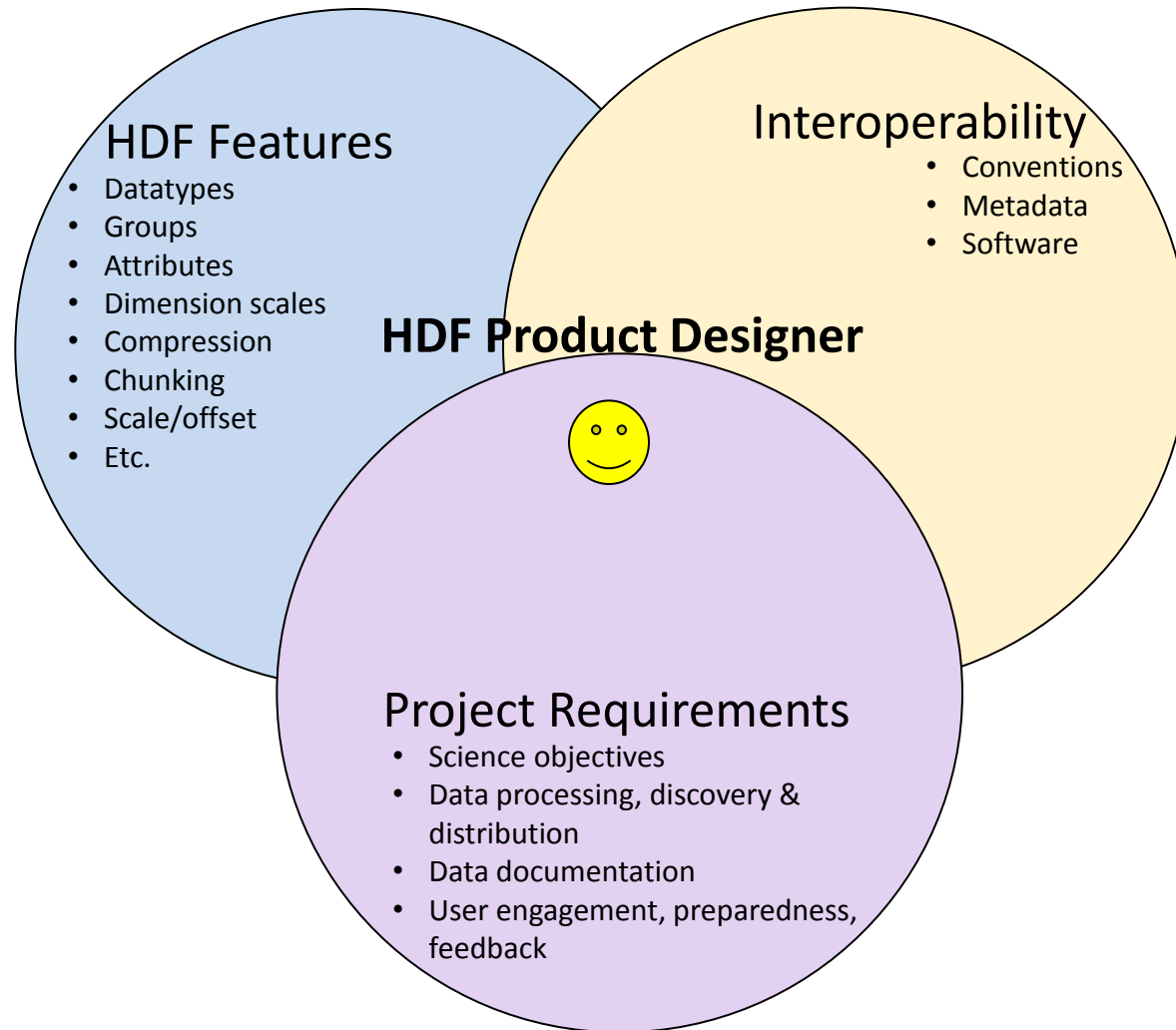
# HDF Product Designer:

A tool for building HDF5 containers with  
granule metadata

Lindsay Powers

Aleksandar Jelenak, Joe Lee, Ted Habermann

The HDF Group





# Key Goals

- Facilitate creation of interoperable and standards-compliant data products in HDF5 as early as possible in the project development process
- Support multiple computing platforms without requiring the full software stack of development tools and libraries
- Easy and intuitive editing (create, update, move, copy, delete) of HDF5 objects
- Collaborative approach to product design (project, team, organization)
- Incorporation of best practices and standards from targeted data user communities
- Integration of compliance and interoperability tests into the design workflow
- Design import from existing files
- Design export as HDF5 files, HDF5/JSON, or as source code in several programming languages



# Features

- Projects
- Designs
- CRUD operations on HDF5 objects
- Conventions support
- Validation services
- Collaborative workflow

- Organizational and collaborative space
- One or more users
- Zero or more designs
- Every user must belong to at least one project
- All members of a project has access to its designs
- User project roles:
  - Manager (not implemented yet)
  - Designer
  - Value Editor (not implemented yet)
  - Viewer



- Represents content to be stored in one HDF5 file
- Not actual HDF5 file
- Versioned
  - Simple timeline of checkpoints (saved versions)
  - Each version must have unique label
  - Only the current working version (label: *HEAD*) can be edited
- Many import source types
- Many export types including source code



# CRUD Operations

- Create, read, update, delete, copy, move
- Available on designs and HDF5 objects
- Editable properties:
  - Datatype
  - Rank, shape, max/unlimited dimension sizes
  - Storage (compact, contiguous, chunked)
  - Fill value
  - Compression
  - Attribute value



# Conventions

- Currently Supported:
  - NetCDF User Guide Attribute Conventions (NUG)
  - Attribute Convention for Data Discovery (ACDD)
  - Climate and Forecast convention (CF)
  - HDF-EOS (partial)
- Implemented as CLIPS expert system rules





## Validation Services

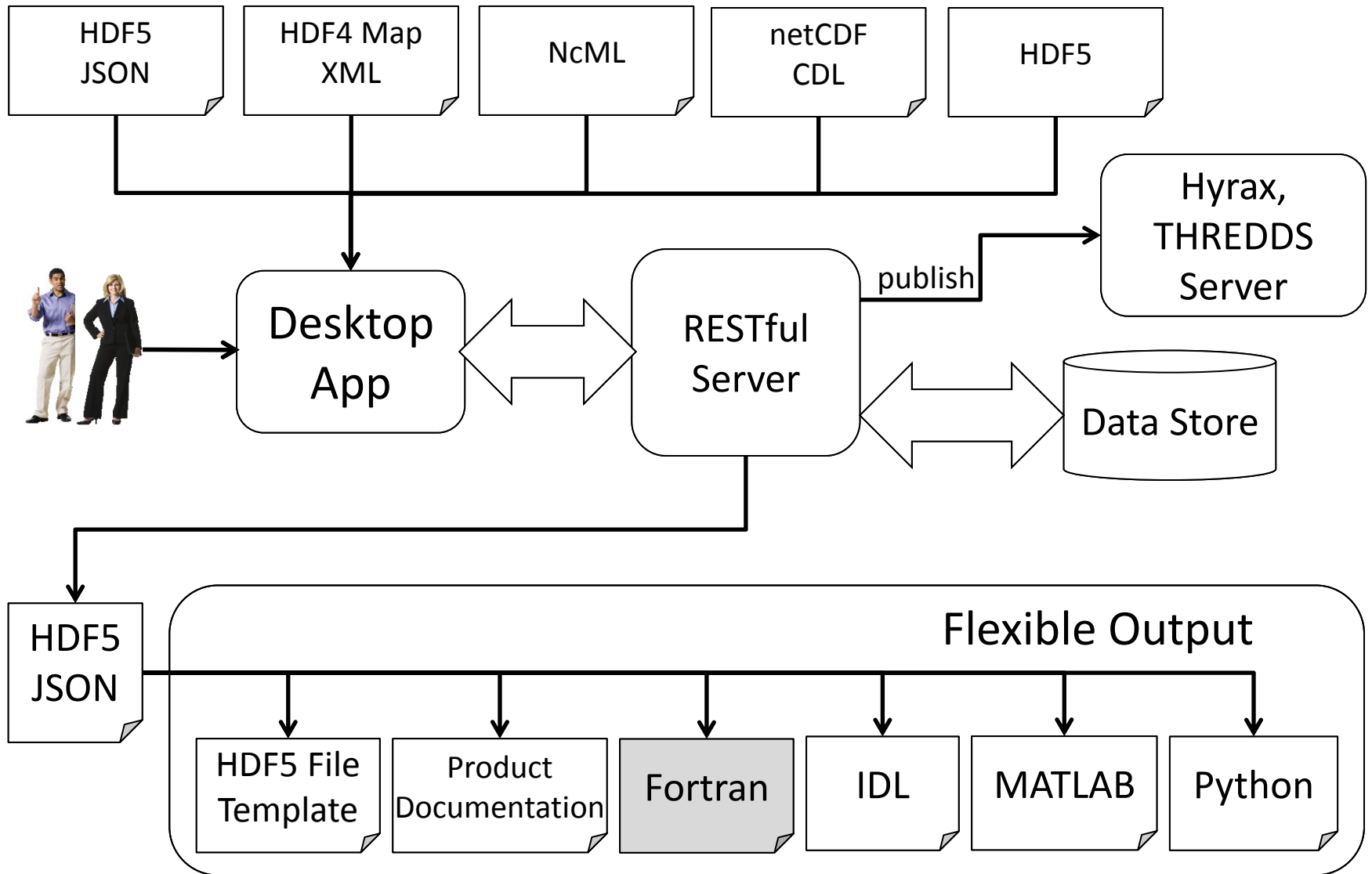
- A set of online services for interoperability testing
- The level of support for conventions varies between different software tools so it is important to verify using actual file
- Input is HDF5 template file
- Output is typically displayed in a web browser



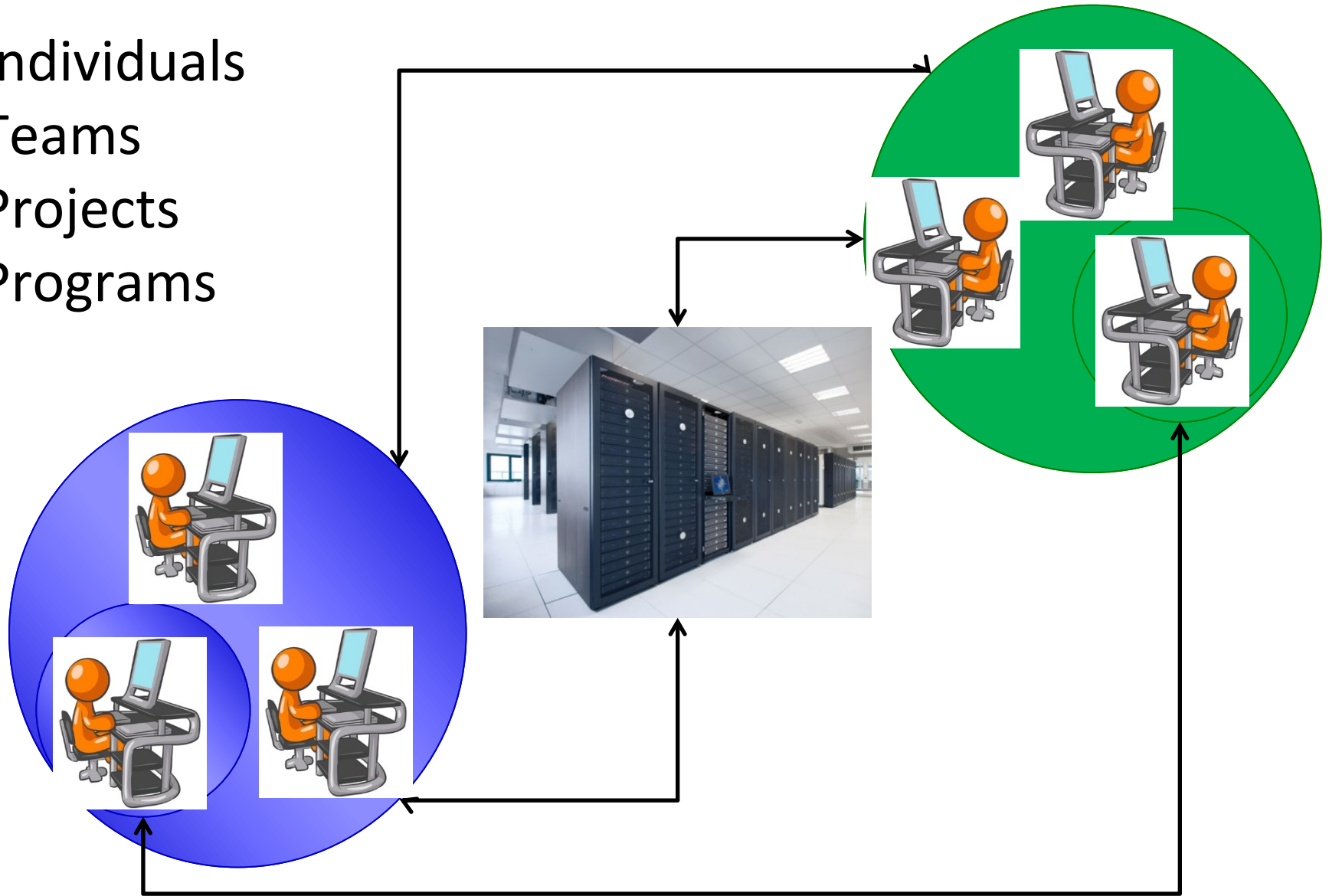
- Currently available:
  - netCDF CDL
  - Get as netCDF3 file
  - CF (NCO's *ncdismember*)
  - ACDD (THREDDS UDDC service)
  - ISO metadata (THREDDS ISO service)
  - OPeNDAP Data Access Form
  - THREDDS Dataset Access Page



# System Architecture



Individuals  
Teams  
Projects  
Programs





Thank you!

Questions?

Contact: [ajelenak@hdfgroup.org](mailto:ajelenak@hdfgroup.org)

This work was supported under the NASA Earth Observing System Data and Information Systems (EOSDIS) Evolution and Development (EED-2) Program under prime contract number NNG15HZ39C. Any opinions, findings, or conclusions expressed in this material are those of the author and do not necessarily reflect the views of NASA.