

Datum: 07.04.2010

Bug - Squashing - Vortrag

HDF5 – Library

(HDF – Hierarchical Data Format)

Sven Mersmann

What is HDF5?

- platform independent library and file format
- open source and free of charge
- aims towards convenient moving of scientific data
- stores and accesses large objects efficiently
- many objects of different types in one container
- accessible via C - or Fortran - API

History of HDF5 - Library

- 1987 – founded at National Center of Supercomputing Application, University of Illinois
- 1990 – funded by National Science Foundation to improve documentation, user support, testing and overall quality
- 1992 – NASA choose HDF5 file format as standard for EOS project
- 1996 – collaboration with US - Department of Energy
- 2004 – some 600 organizations uses HDF5 – Library
- 2006 – HDF5 used by MATLAB as format to save data >2GB
- 2006 – Institutionalized as non – profit HDF – Group

HDF5 Library Structure

Key concepts

Attributes

Datasets

Error reports

Files

Groups

Identifiers

Links

Objects

Property lists

References

Dataspaces

Datatypes

Filters

...

Prefix

H5A

H5D

H5E

H5F

H5G

H5I

H5L

H5O

H5P

H5R

H5S

H5T

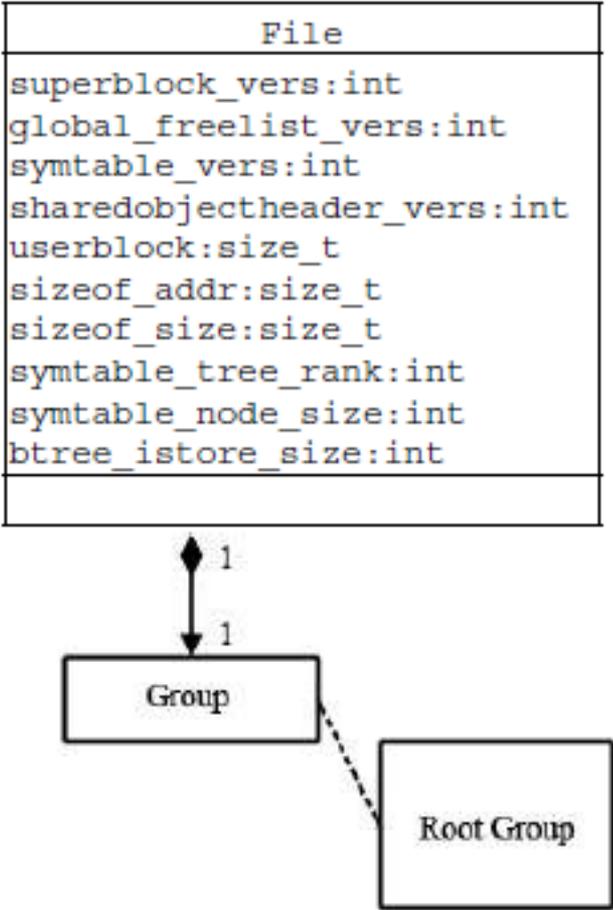
H5Z

...

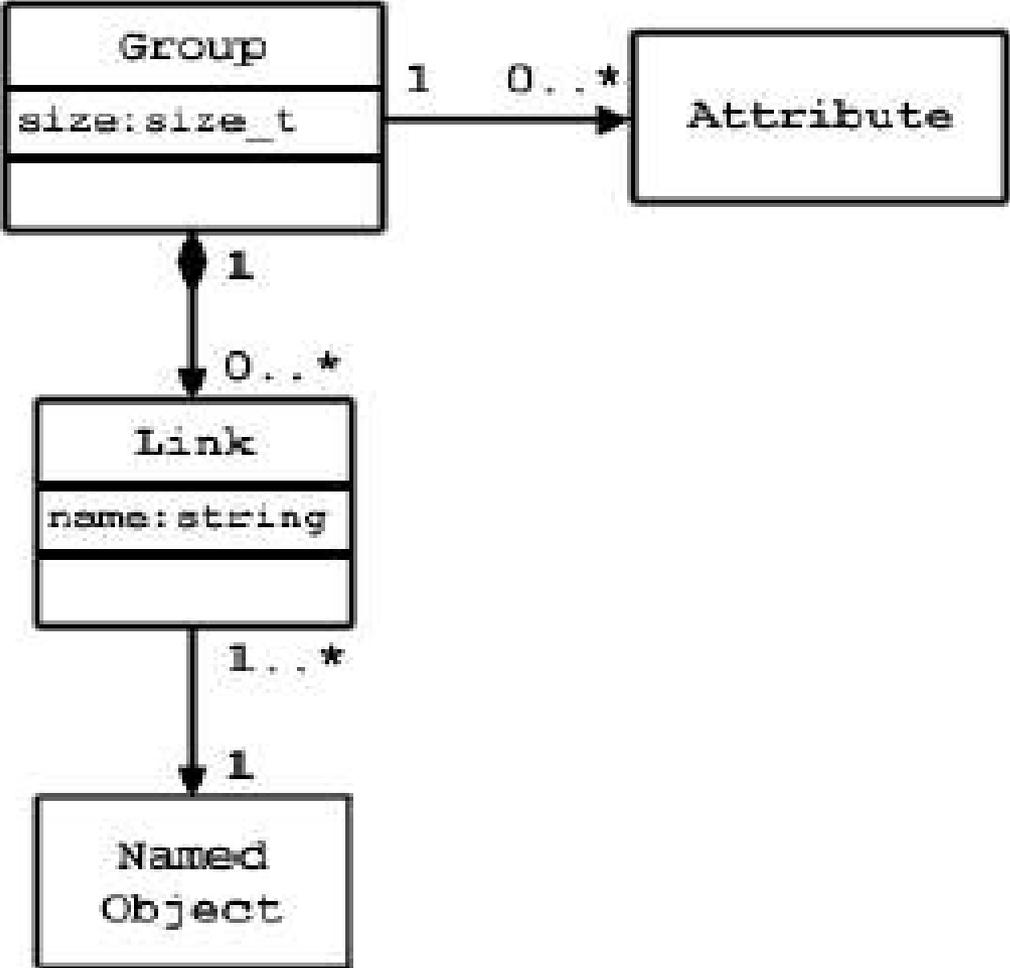
- H5Dopen()
- H5Dclose()
-H5Dget_type()
...

- H5Topen()
- H5Tclose()
-H5Tset_fields()
...

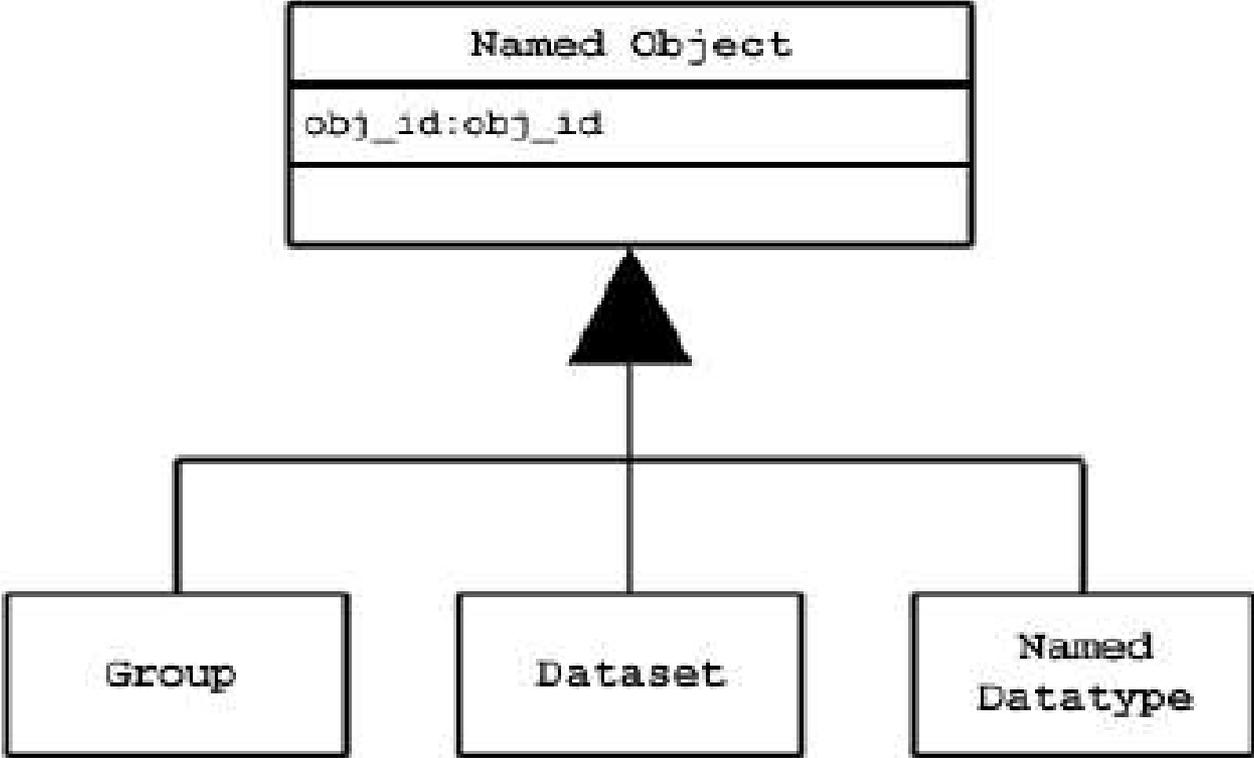
HDF5 - File



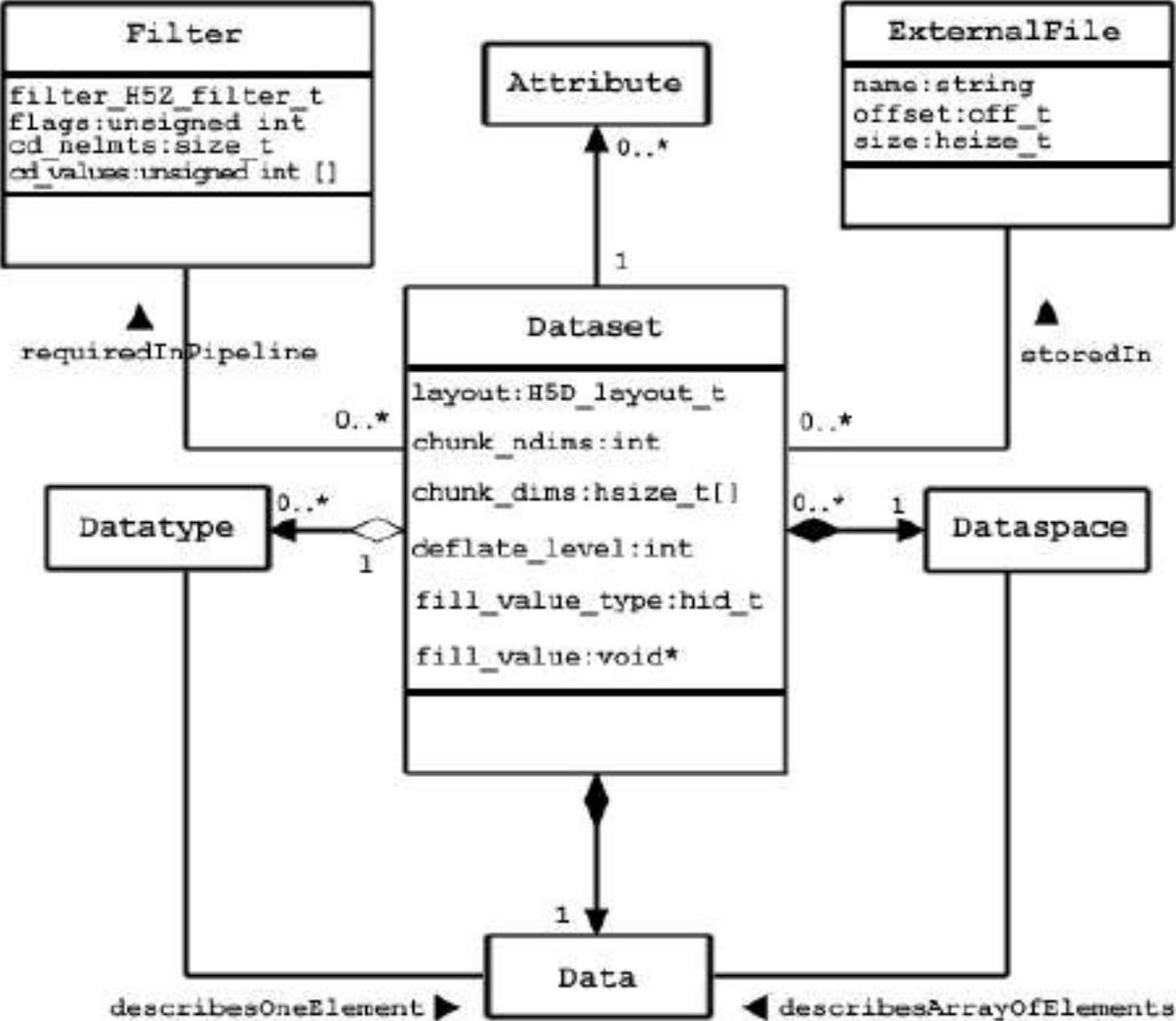
HDF5 - Group



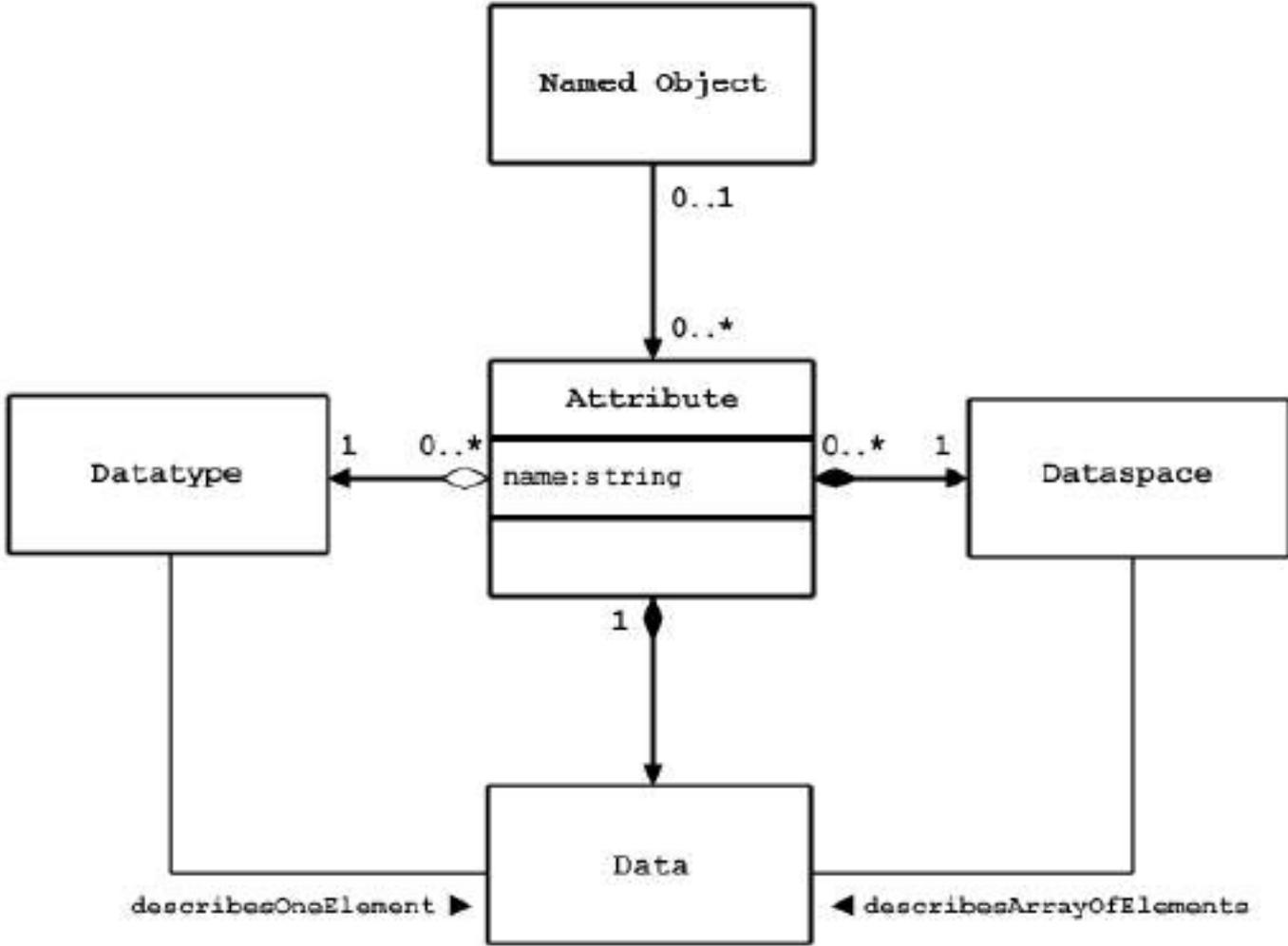
HDF5 - Named Objects



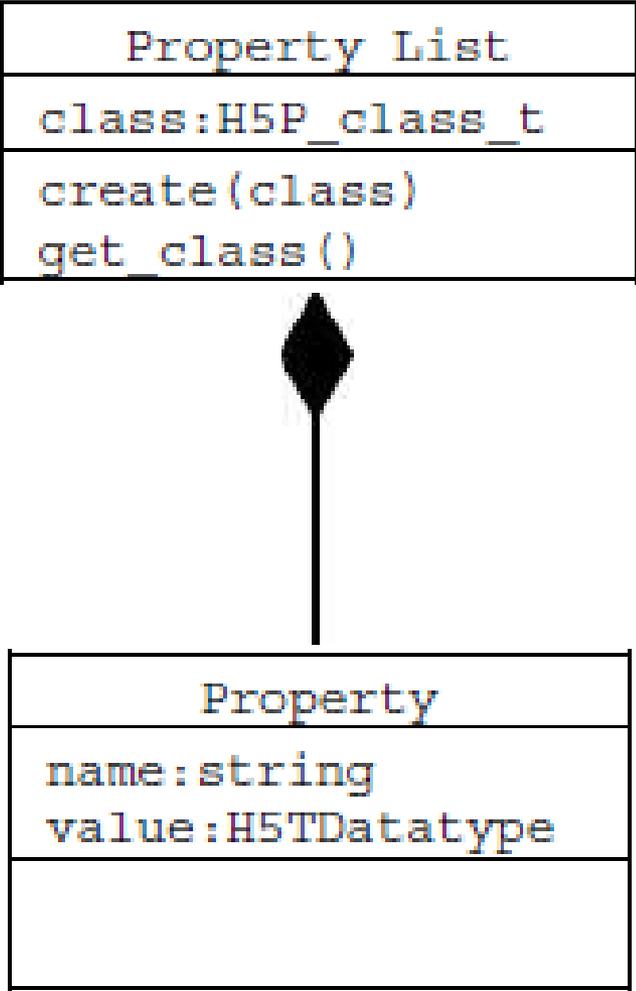
HDF5 - DataSet



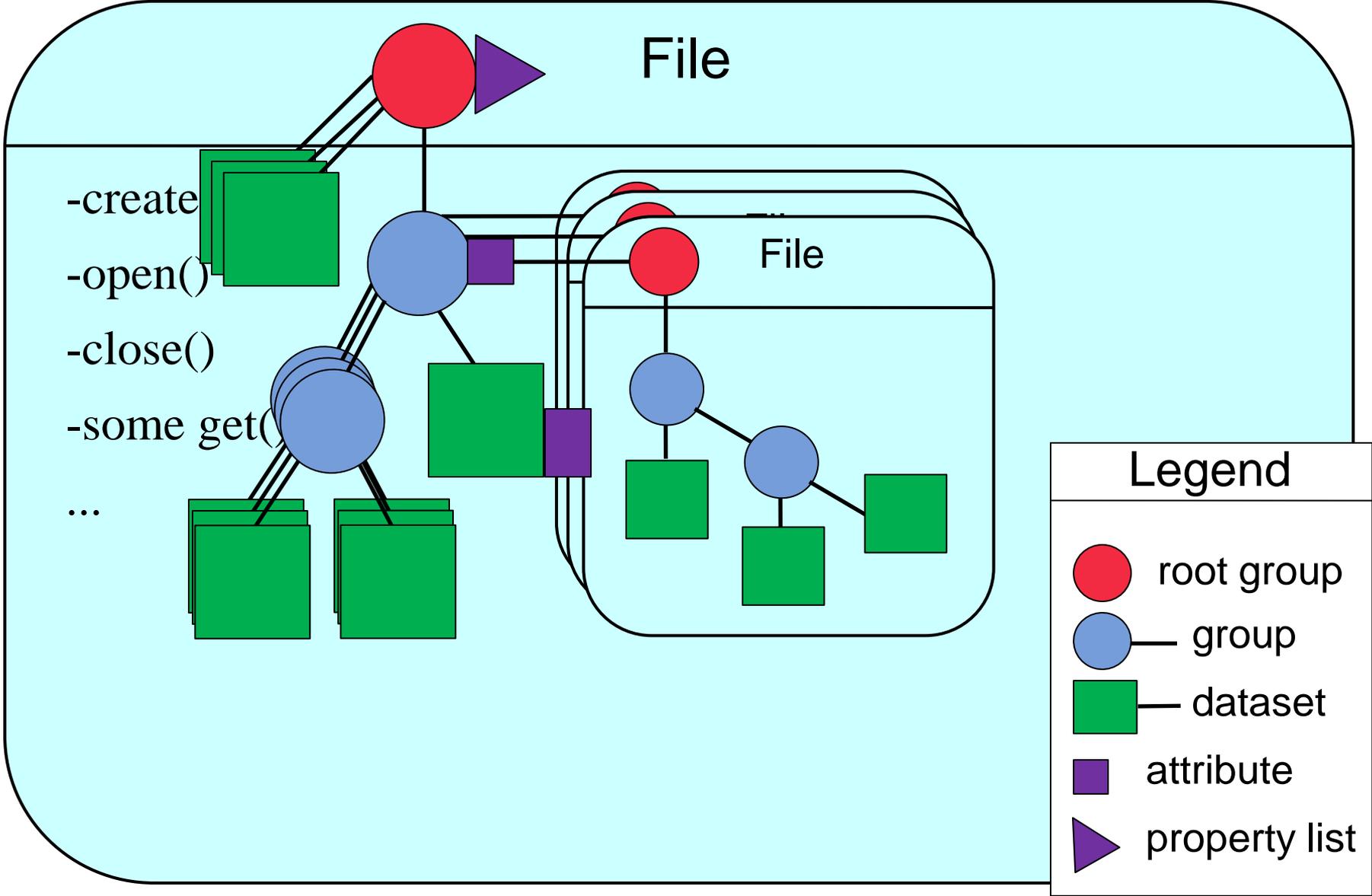
HDF5 - Attribute



HDF5 – Property List



HDF5 Abstract Data Model



Legend	
	root group
	group
	dataset
	attribute
	property list

Utilities and Features

- Command line utility
- Data conversion utility
- Java tools for working with HDF5 -Files
- File viewer *HDFView* provided by HDF5 Group
- File compression with ZLIB- or SZIP- Library
- Parallel HDF5 to provide parallel file access

Integration and Implementation in MITK

- Download / Copy HDF5 – Library with ZLIB- and SZIP – Library
- Activate HDF5 - Module in CMAKE
- Configure include and lib paths for all libraries
- Configure / Generate your build!
- HDF5 - Module consists of mitk::HDF5API (Open/Close and Read functions) and mitk::HDF5Reader

Reference

- Homepage: www.hdfgroup.org/
- Documentation: www.hdfgroup.org/documentation/
- User Guide: www.hdfgroup.org/HDF5/doc/PSandPDF/HDF5_UG_r184.pdf