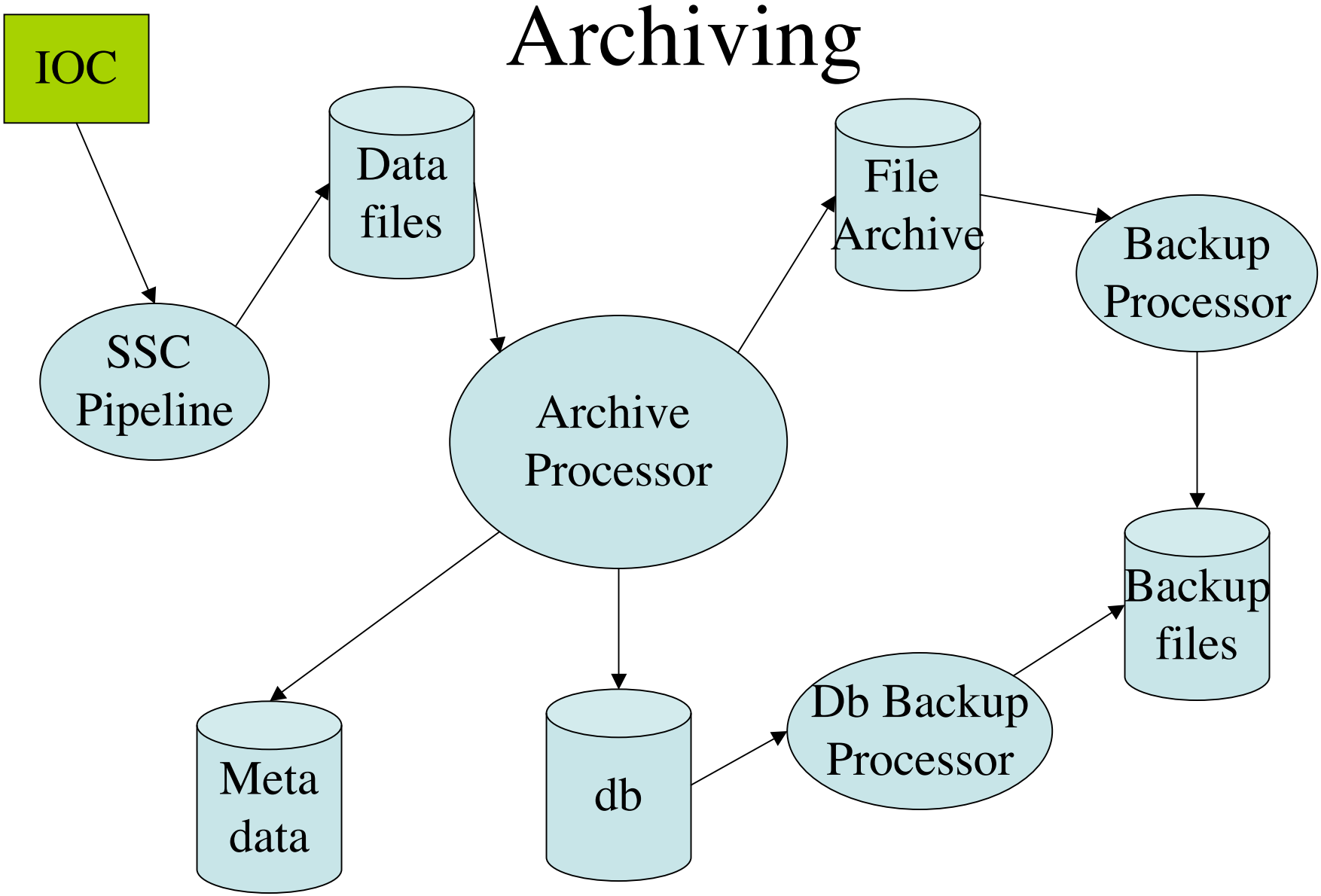
High Level SSC Archive/Access Design

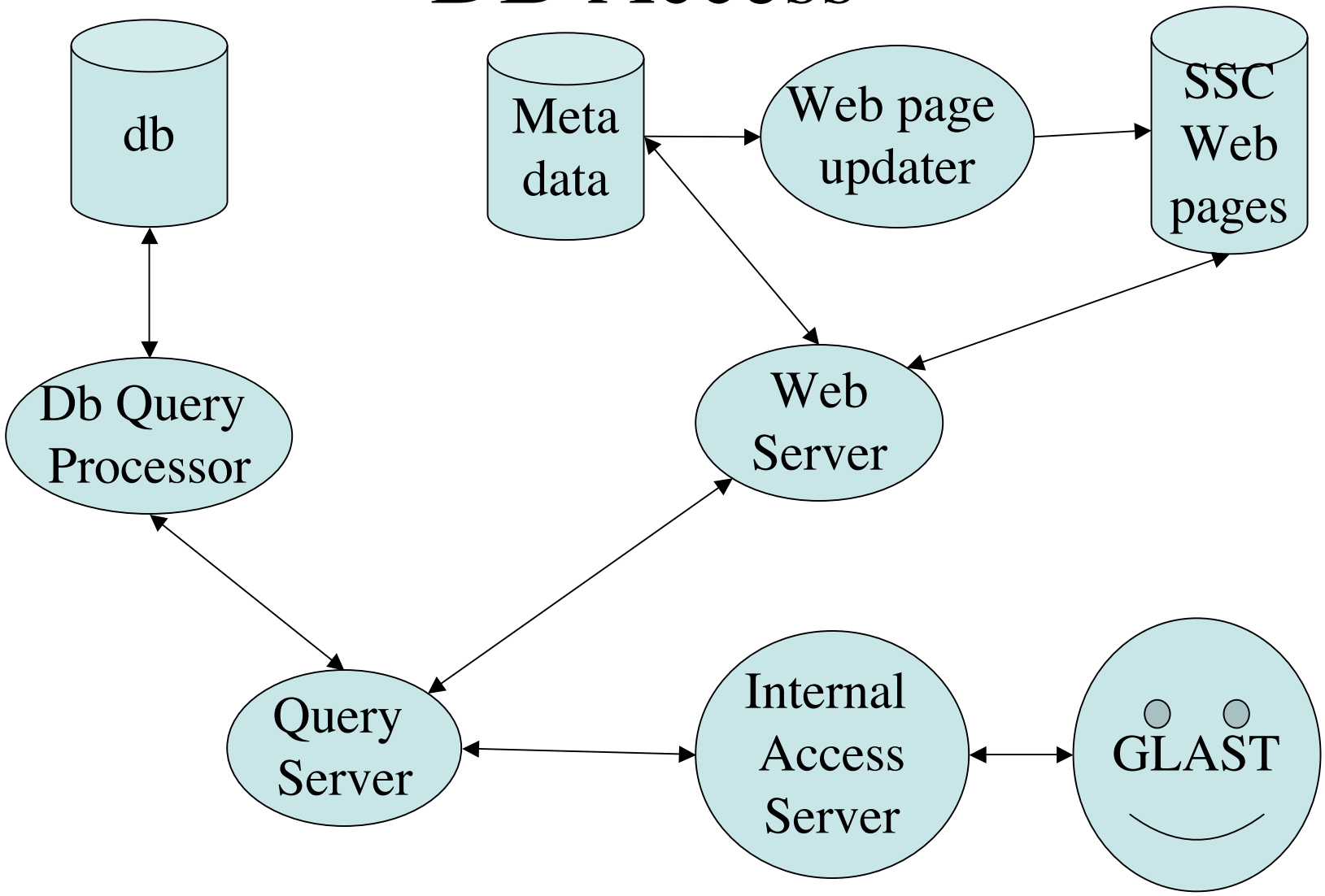
Someplace to start for WBS…

B.S.

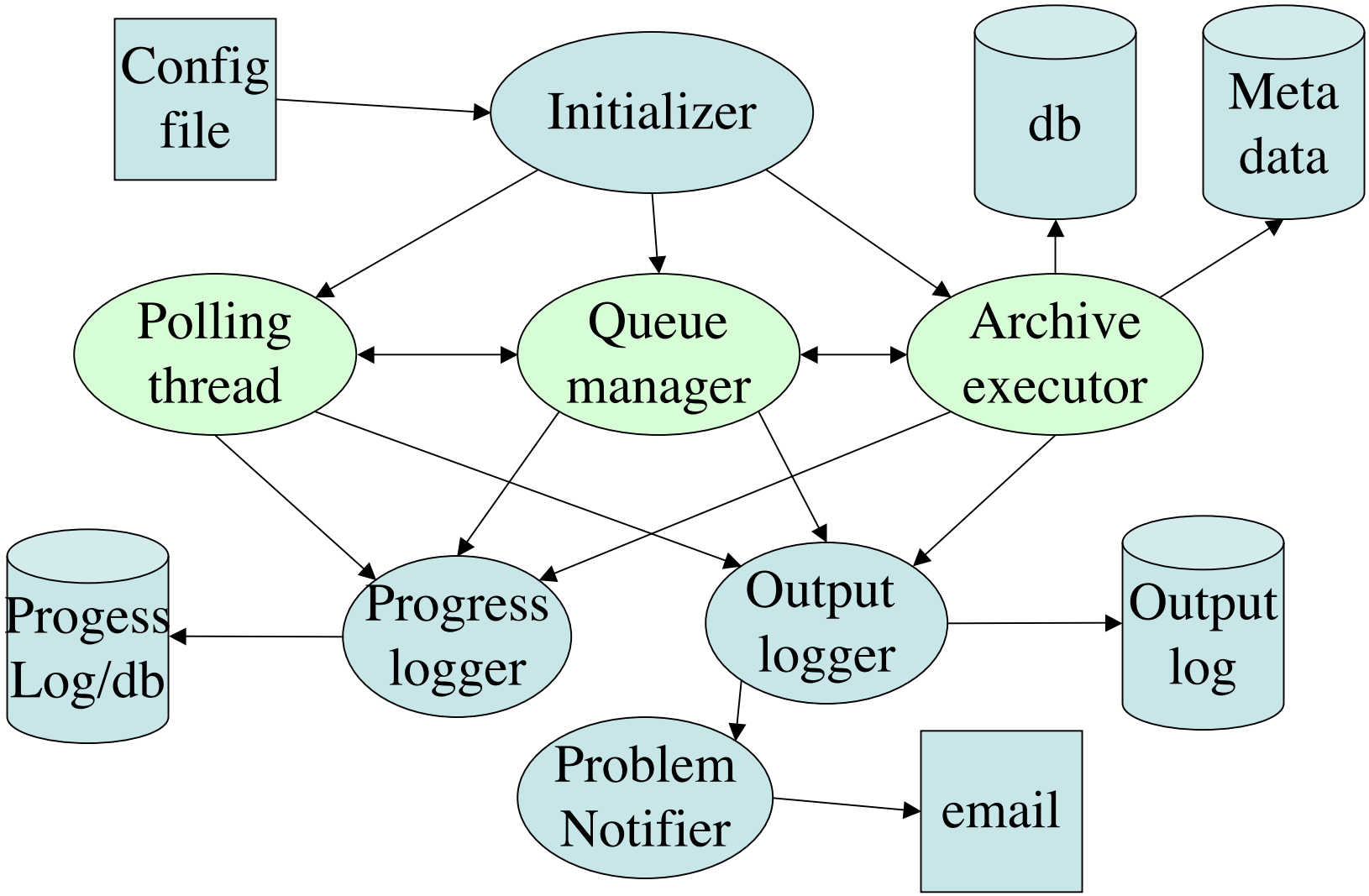
Archiving


IOC
SSC Pipeline
Data files
Archive Processor
File Archive
Backup Processor
Backup files
Meta data
db
Db Backup Processor

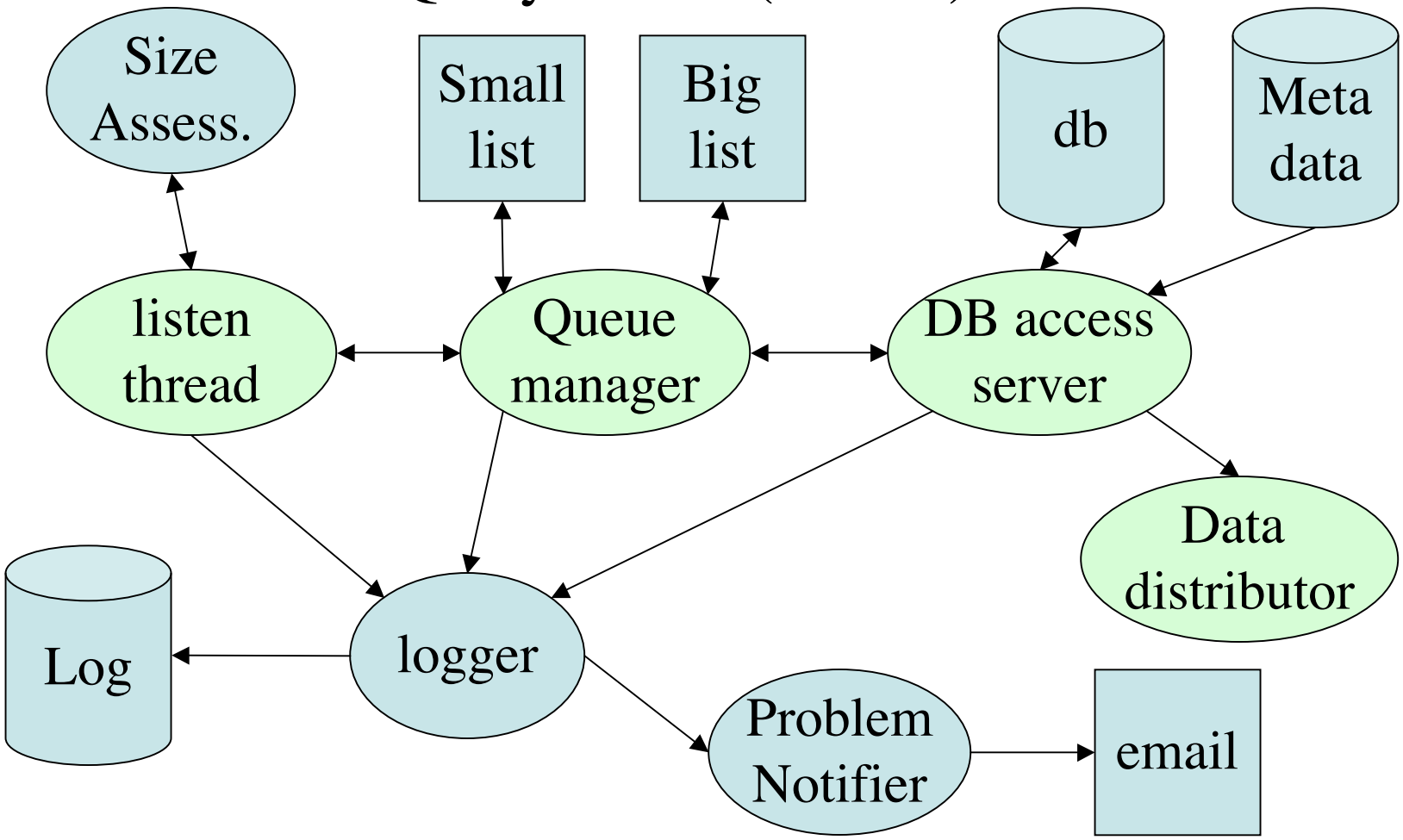
DB Access


db
Meta data
Web page updater
SSC Web pages
Db Query Processor
Web Server
Query Server
Internal Access Server
GLAST

Archive Processor



Query Server (Events)



Database Table

Database Name	Description	Database	Addt'l needs	Metadata
Event Summary	Summary data (direction, time, energies, etc.) from all LAT reconstructed events.	PostgresSQL	Spatial query functions	Latest date/time of update, event rates
Photon Summary	Summary data (direction, time, energies, etc.) from all LAT reconstructed photons.	Beowulf	Beowulf MPI, searching programs (C or perl)	Photon count rates, Skymaps timeslist
Level Zero	Packets time-ordered, stripped of overlaps, separated by type	BerkeleyDB (filenames)	data parsing program (C++)	As-flown timeline,
Exposure history	Exposure data for entire sky at TBD-second intervals.	PostgresSQL with HEALPIX index	HEALPix indexing code	Web page exposure maps
Event filter parameters	Parameters from photon identification processing	BerkeleyDB	Converter to Level 1 proc format	Web page description
Instrument calibration	Low level calibration data.	CALDB	CALDB interface program	Instrument Web page

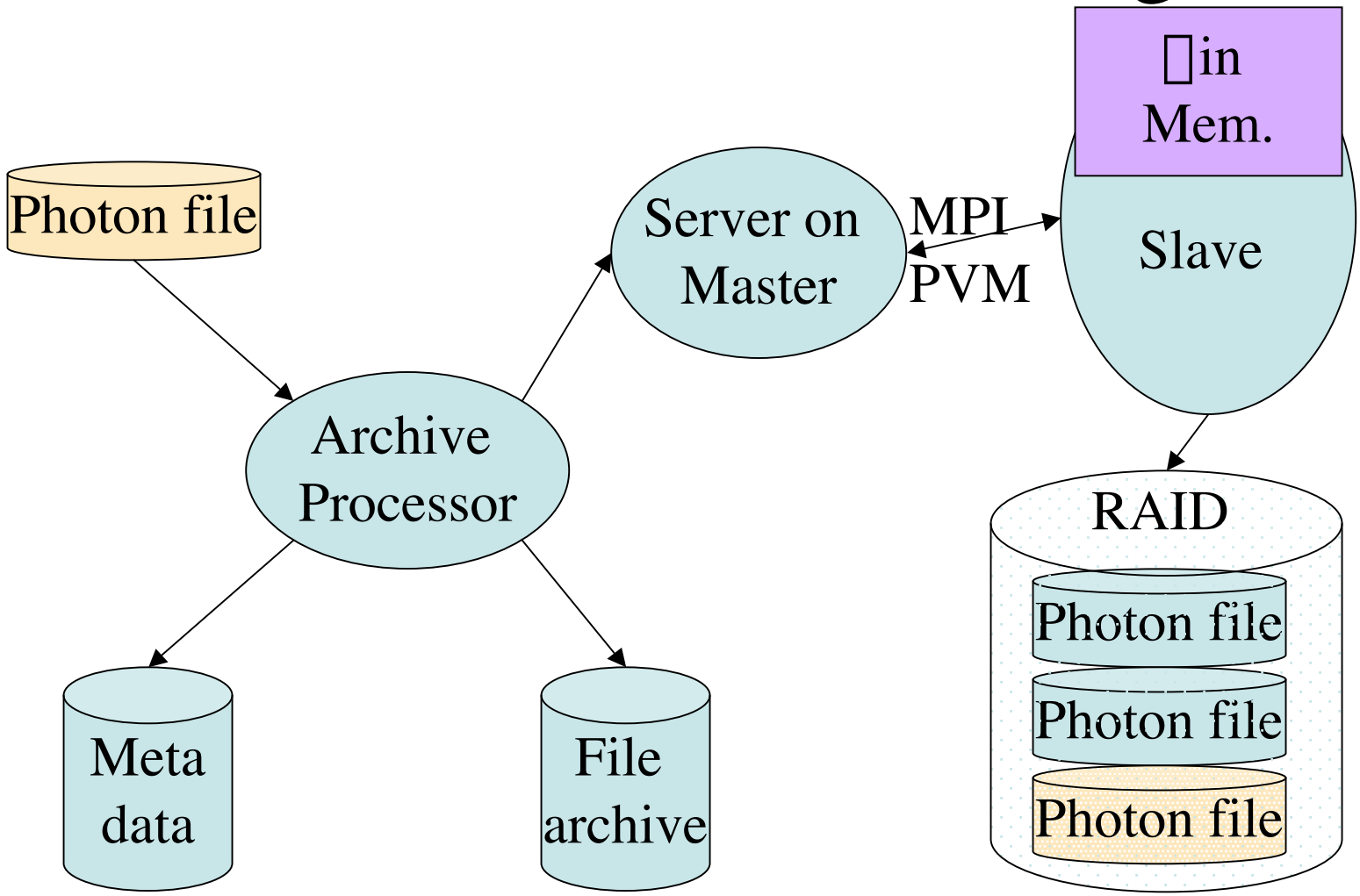
Database Table, pt. 2

Database Name	Description	Database	Addt'l needs	Metadata
Instrument Response Functions	Effective area, PSF, energy resolution.	CALDB	CALDB interface program	Algorithms for use by GIs
Standard photon sky map	Photons for TBD period displayed on a map projection	BerkeleyDB (filenames)	?	Web page skymaps
Source catalog & source spectra.	List and characterization of identified gamma-ray transient and steady sources	BerkeleyDB (filenames)	Source spectra plotter	Catalog web page
Burst Catalog	List and characterization of gamma-ray bursts; location, duration, intensity	BerkeleyDB	Mapper + compare tool?	Burst catalog web page
GRB skymap	Angular distribution of triggered GRBs	BerkeleyDB	Mapper + compare tool?	GRB skymap web page
GRB background	Count spectra in continuous coverage mode.	PostgresSQL	Plotter tool	GRB web pages
GRB data	Count spectra at high time and energy resolution for triggered events with 2000s of background before and after triggered period.	PostgresSQL	Plotter tool	GRB web pages

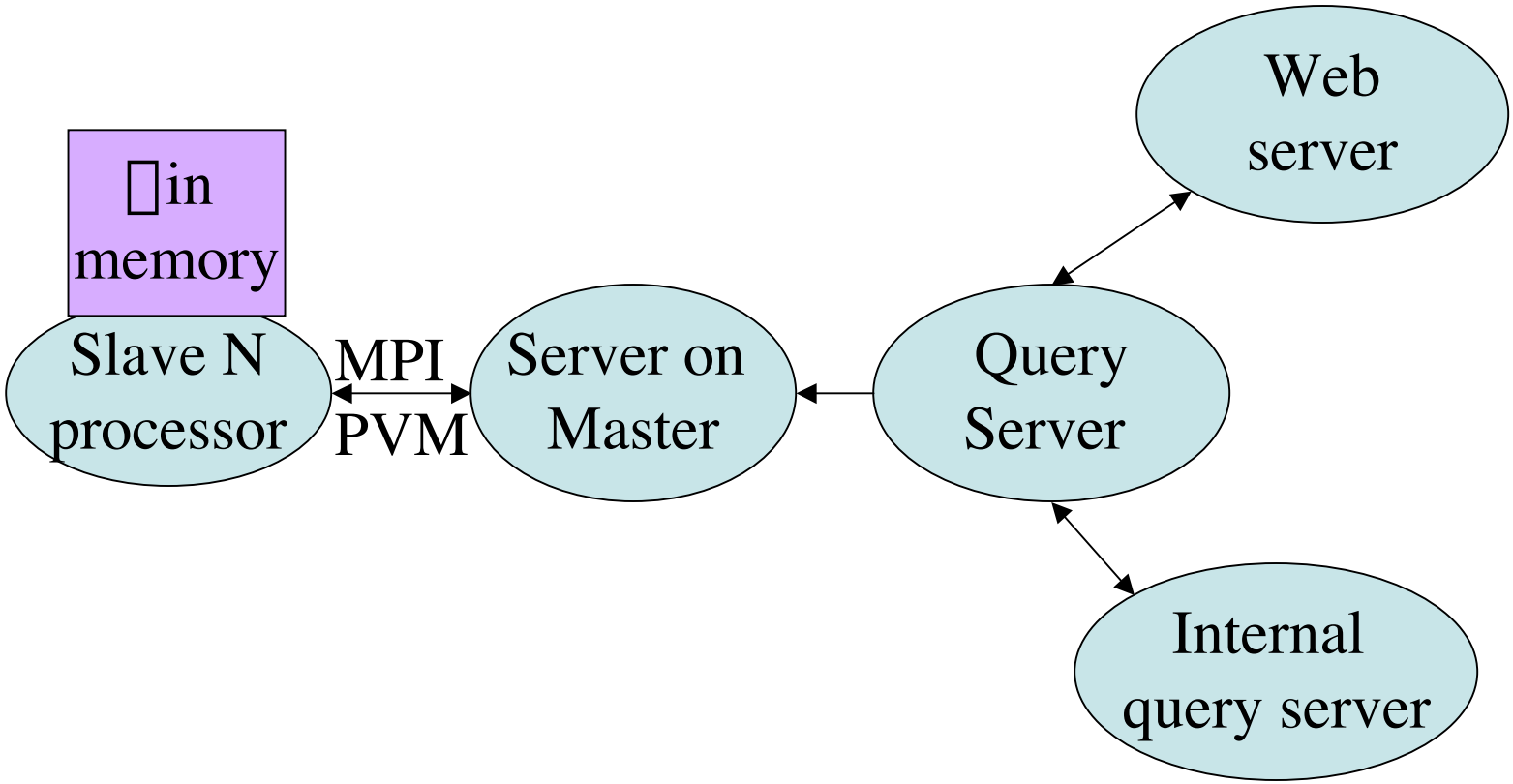
Database Table, pt. 3

Database Name	Description	Database	Addt'l needs	Metadata
As-flown timelines	Command history for Spacecaft, GBM, and LAT	PostgresSQL	Web query interface	GI information web page
TOO notification	Parameters associated with a TOO acquisition	BerkeleyDB	Web query interface	TOO web page
Proposed Observations	Information about accepted proposals for GLAST observations, (PI, address, requested time, constraints, time scheduled, time actually done, etc.)	PostgresSQL	Web query interface	GI observation web pages
Event filter parameters	Parameters from photon identification processing	BerkeleyDB	Converter to Level 1 proc format	Web page description

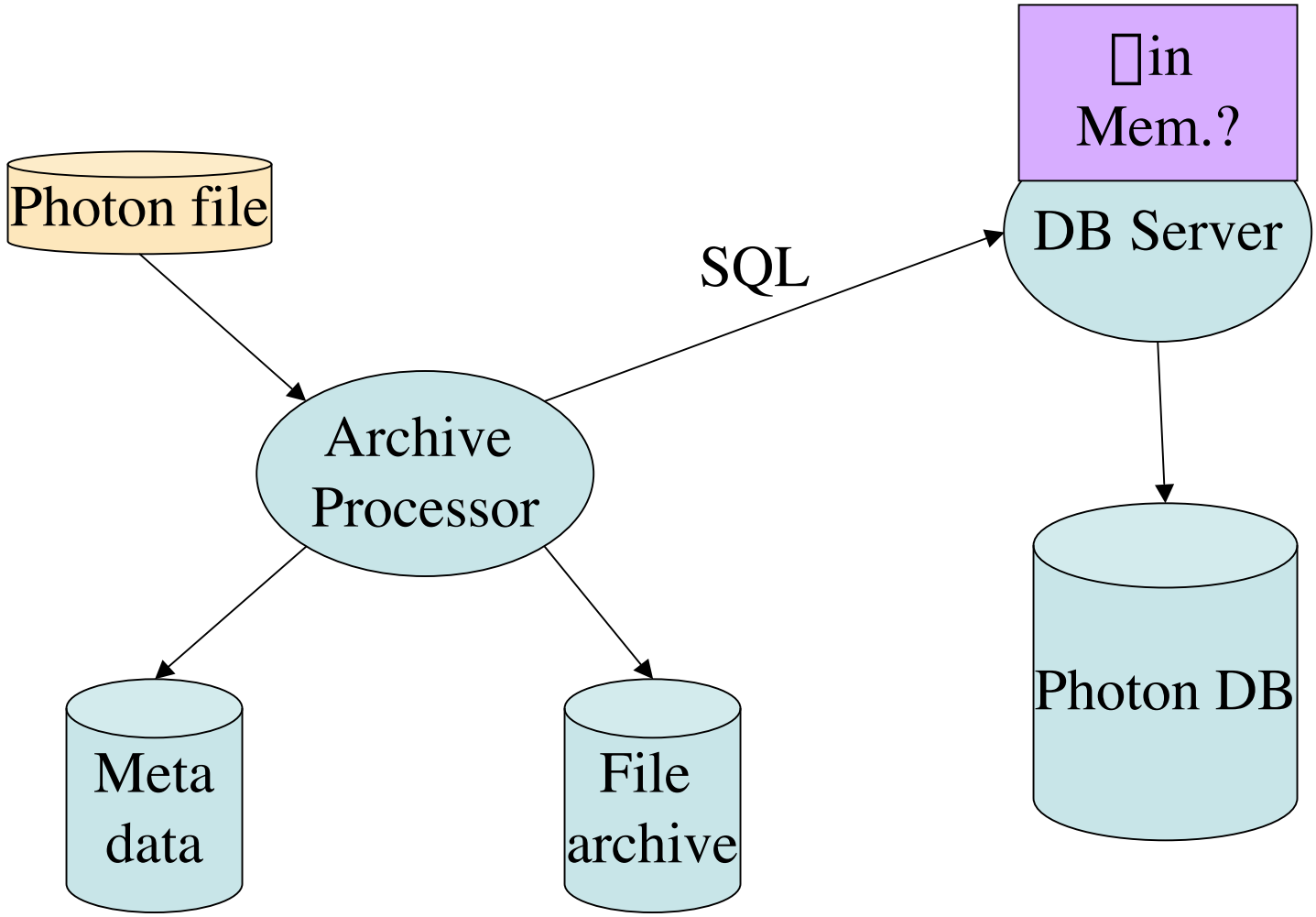
Beowulf Photon DB Ingest



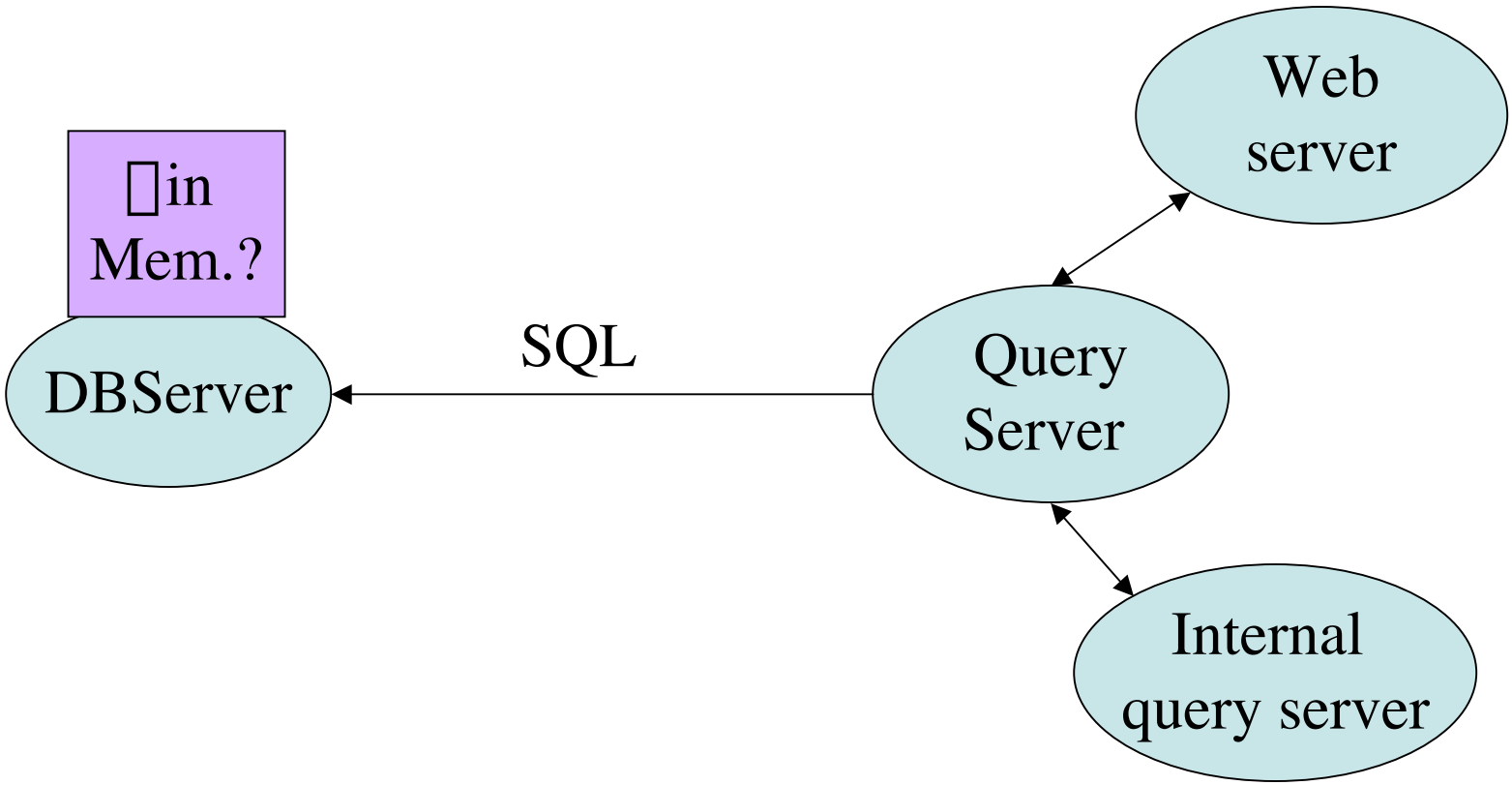
Beowulf Photon DB queries



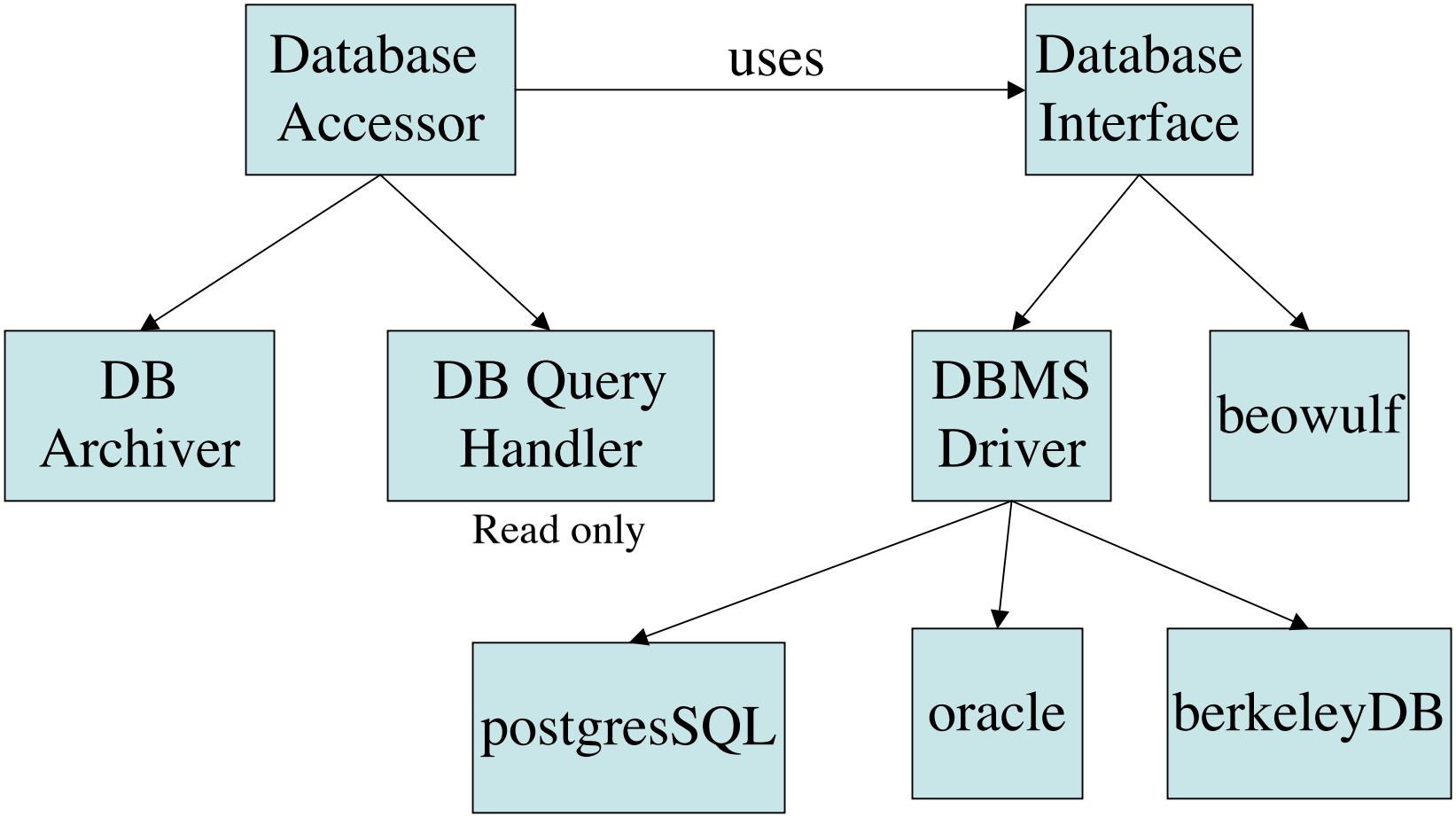
DBMS Photon DB Ingest



DBMS Photon DB queries



DB Access “class diagram”



Perl vs. Java - which is “better”

- Java is sexier, more likely to attract good programmers.
- SLAC may be planning to use Java in tools - why not make everything Java
- Can make analysis tools that run Java on user’s computer via Browser Java interface
- Perl is easier to learn
- Java gurus tend to be expensive
- Perl is used extensively in HEASARC - no question it will be maintainable by their staff.

Perl vs. Java: tools

TOOL FUNCTION	PERL	JAVA	COMMENTS
Database Driver	DBI module	JDBC package	Both good
Parallel Computing (beowulf)	Parallel::MPI module	JMPI package	Both can be flaky due partly to data typing problems
FITS file interface	CFITSIO.pm	Jfits, other attempts	
Graphics - GUIs and Web graphics	Perl/Tk	Swing, AWT	Better graphics development in Java
Programming for novice science types	Relatively easy	More difficult, but worth the effort?	
Object Orientedness	Can be made OO if needed	Java is inescapably OO	