Formal, Automated, Standardized, and Timely (FAST) Data Processing for Chesapeake (GIT) Indicators

Background Leading to Development of FAST_DUET_ESAR Data Processes

- **Presidential Executive Order 13508: I**n May, 2010: The Federal Leadership Committee as part of its Strategy for Protecting and Restoring the Chesapeake Bay Watershed identified strengthening science as one of it's four strategies. Under this strategy, the USEPA is responsible for "improving management of environmental information, by initiating the design and development of the CBP Data enterprise system to share data between partners".

- **Enterprise Architecture Review:** Independently, in May, 2010, Nancy Imler completed a three-report study that described the As Is, and a To Be, Enterprise Architecture for the CBP, and finally a transition plan toward the latter. Upon implementation, the resulting EA would be a more federally complaint architecture that reflects standardized business and scientific practices.

- **USEPA Regulatory Process:** In 2010, the CBP also begin undergoing the transition from a program which mainly operated under formalized but voluntary agreements, to a program which currently must meet USEPA regulatory requirements that include Total Maximum Daily Loads for nutrients and sediment in streams in the CB watershed.

- **Review of Data Maturity of Current (Non)tidal Monitoring Processes:** In 2011, Representatives of the Tidal Water Quality Monitoring Workgroups participated with Booze Allen Hamilton in a review of monitoring programs for Dissolved Oxygen (as a representative of monitoring for the three water-quality assessment criteria—Dissolved Oxygen, Clarity, and Chlorophyll-*a*).

The development of FAST and DUET Processes, and ESAR Standards are designed to directly address all of the above.

Flow schematic of Tidal and Shallow Water Quality Monitoring data life cycle and development of FAST and DUET Data Processing and Federal ESAR Standards

Collect and Categorize WQ and related meta-data from each data collector/provider

Check and Verify quality of WQ Data from each provider

Aggregate WQ from all providers for Indicator use

Develop Indicator data from aggregate WQ data

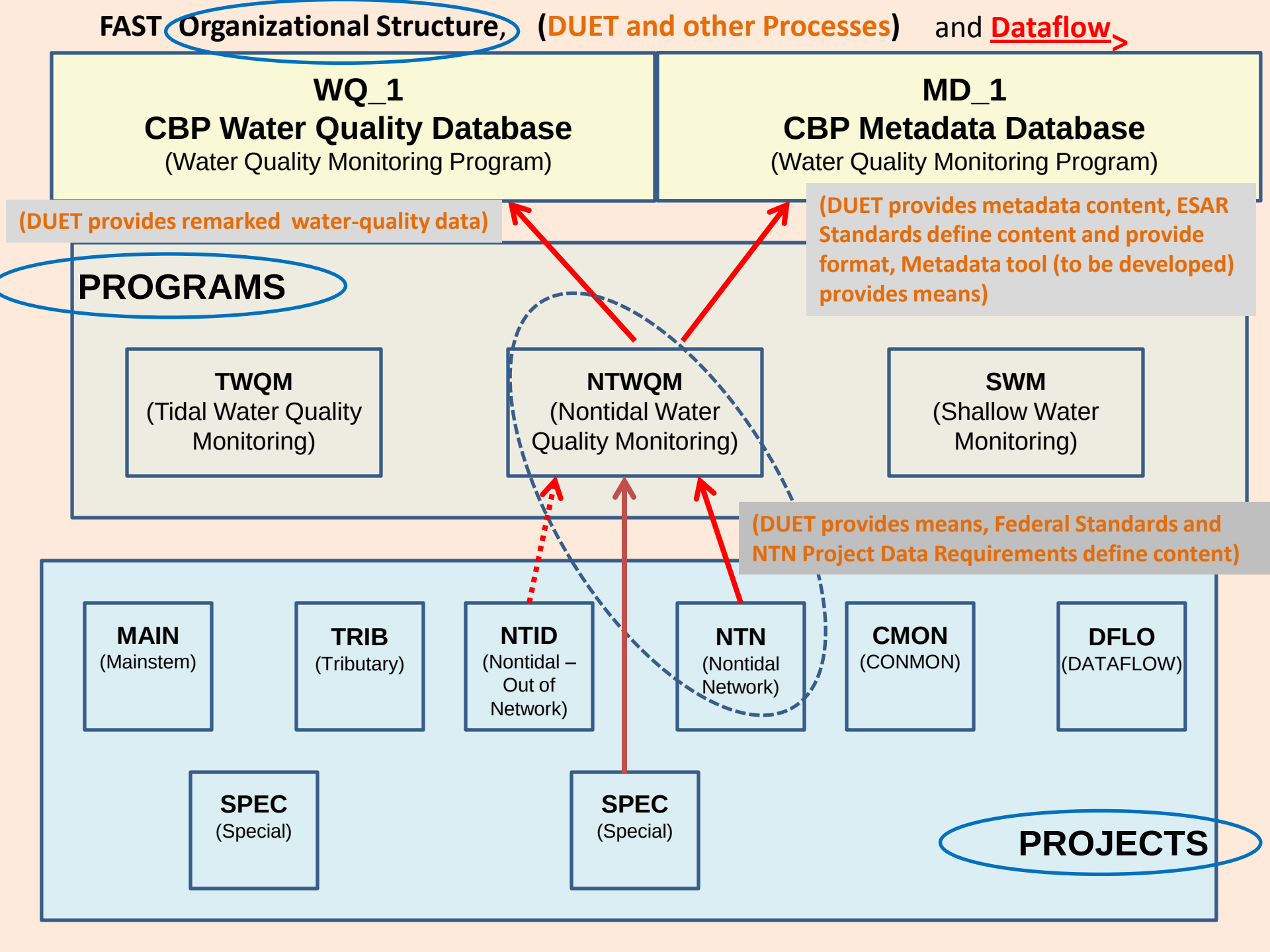
Publish/Report/Archive the Indicator data with enhanced metadata and Publish/Report/Archive the aggregate QW data with enhanced metadata

For each CBP Monitoring Program that supports the development of key Bay Indicators under the GITs,

*(1) Develop a formal, automated, standardized, and timely **(FAST**) process to transfer relevant WQ and metadata from each CBP Partner (Data Collector) to the CBP Data Manager*

*(1) Develop an appropriate automated data upload and evaluation tool **(DUET)** to (a) expedite the transfer of the relevant WQ and metadata, (b) conduct a standardized review of the transferred data, and (c) create additional related metadata; and*

*(1) Transform the remarked WQ and meta data to meet selected environmental, sampling, and analyses results **(ESAR)** standards, to improve the maturity of the data life cycle process, to meet federal auditory and enterprise architecture requirements, and to improve the discoverability and use of the WQ data.*


FAST Organizational Structure, (DUET and other Processes) and Dataflow
WQ_1
CBP Water Quality Database
(Water Quality Monitoring Program)
MD_1
CBP Metadata Database
(Water Quality Monitoring Program)
(DUET provides remarked water-quality data)
(DUET provides metadata content, ESAR Standards define content and provide format, Metadata tool (to be developed) provides means)
PROGRAMS
TWQM
(Tidal Water Quality Monitoring)
NTWQM
(Nontidal Water Quality Monitoring)
SWM
(Shallow Water Monitoring)
(DUET provides means, Federal Standards and NTN Project Data Requirements define content)
MAIN
(Mainstem)
TRIB
(Tributary)
NTID
(Nontidal – Out of Network)
NTN
(Nontidal Network)
CMON
(CONMON)
DFLO
(DATAFLOW)
SPEC
(Special)
SPEC
(Special)
PROJECTS

DRAFT Timelines to Develop Formal, Automated, Standardized, and Timely (FAST) Data Processing for Chesapeake Bay TIDAL WATER-Quality Monitoring Programs and Projects

Time Frame	Activity
Early June	Kick-Off Workgroup Meeting (Webinar)
	Define scope of effort--Projects to include from among Tidal WQMP and SWM Programs
	Review informational requirements for Data Collectors/Data Providers for DUET Development and ESAR Standards
Mid-July	Complete data requirements for DUET Development
	Complete selected data requirements for ESAR standards
	Begin working with DUET program developers
August	Complete data requirements for ESAR Standards
October	Beta test DUET with recent relevant data set
December	Complete DUET and ESAR Standard Development
	Complete metadata database
January	Train Data Collectors-Data Providers on use of DUET for Tidal data uploads