Results of Cross-GIT Surveying Initiative

Presented by the Cross-GIT Mapping Team

Itinerary

- Context for Initiative
- Interviews
- Surveying
- Results
- Next Steps

The project objective is to help the **Chesapeake Bay Program** better understand **cross-GIT mapping needs** of GITs.
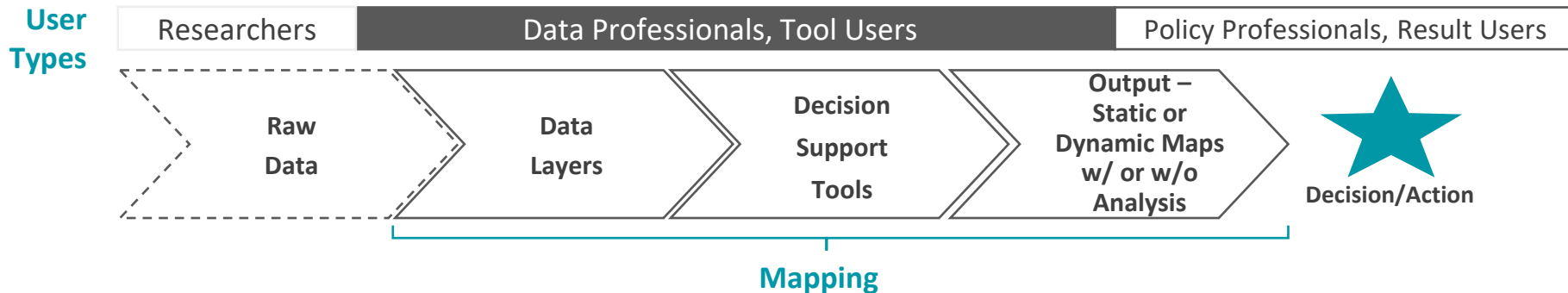
Background

Chesapeake Bay Program's(CBP) goals are managed by six goal implementation teams (GITs). CBP is interested in fostering better coordination across the different GITs and understand their current and future needs related to data and geographic information systems (GIS). CBP and the Conservation Innovation Center (CIC) had taken initial steps to map areas of potential partnerships and needs under the cooperative agreement between the two organizations.

Objective

For the current project, RTI Innovation Advisors was tasked with conducting **discovery-phase research to better understand needs of GITs and determine potential products and decision support systems (mapping products) that will be most beneficial to them.** This understanding will position CBP to continue integrating needs, data, and priorities across its GITs.
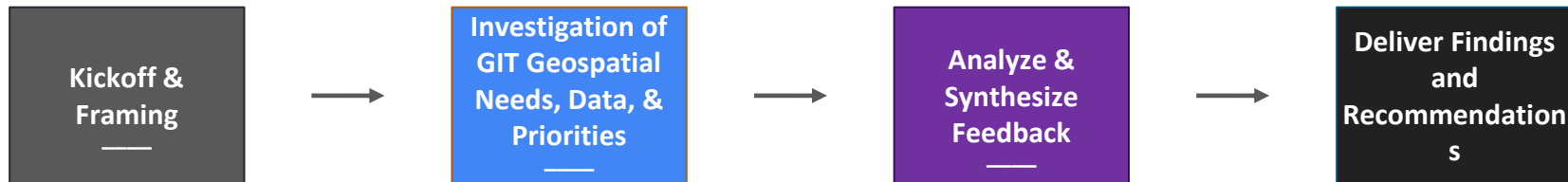
Mapping products may be defined as data layers, decision support tools, and map outputs.

One way to think about user needs related to mapping products is to consider the flow of data, transformation of data into information, and use of that information to inform decisions and/or show progress.

User Types

Researchers	Data Professionals, Tool Users	Policy Professionals, Result Users

Raw Data → Data Layers → Decision Support Tools → Output – Static or Dynamic Maps w/ or w/o Analysis → ★ **Decision/Action**

Mapping

*At a high level, CBP users leverage **mapping products** to:*
- *Identify geographic regions to deploy conservation actions*
- *Identify geographic regions to deploy restoration actions*
- *Monitor progress towards achieving outcomes*

Stakeholder interviews and an online survey were key to this project.

| Kickoff & Framing ———— | → | Investigation of GIT Geospatial Needs, Data, & Priorities ———— | → | Analyze & Synthesize Feedback ———— | → | Deliver Findings and Recommendations |

RTI reviewed existing customer discovery work provided by CIC/CBP (e.g., CIC's data catalog with a set of ongoing tools). Following this preparatory step, IA and CBP conducted a kick-off call to align on the existing data product/tools that were considered for this study, discuss CBP's understanding of how these tools are currently used, and gain understanding of key GIT stakeholders and their high-level needs. Based on this discussion, RTI formalized a user-research plan.

RTI developed primary research guides based on CBP's core objectives. RTI then scheduled and conducted interviews with 20 key stakeholders, identified by CIC. These stakeholders were representative of all six GITs. Primary research was guided by a set of key questions aimed at characterizing the needs, data, and priorities across all GITs. Insights gained from key-stakeholder interviews informed content/questions for the targeted online survey of GIT members. RTI conducted the online survey to obtain additional insights from these stakeholders.

Insights from interviews and surveys were analyzed and synthesized into a set of relevant insights. Using these insights, RTI worked with CIC to determine priority areas that surfaced through the research. Findings were packaged into a final PPT report deliverable that positions CIC to communicate next steps to help CBP continue on the path of integrating needs, data, and priorities across its GITs. RTI presented findings and conclusions to CIC during a final deliverable web meeting. **Other deliverables included a Stakeholder Interview Summary document and raw data files from the survey.**

Individual Interviews

Stakeholder interviews involved questions focused on four high-level topics.

Discussion Topics	Types of Questions Asked
1. "Top of mind" mapping products critical for achieving GIT outcomes & how they are used	• What **types of mapping products** (data layers, tools, and/or mapping outputs) do you and your team currently use to achieve goals/outcomes? • What **specific mapping products** are you using that are **most critical** for achieving outcomes? How are they used? • What **aspects** of these specific mapping products do **you like**?
2. Targeted users of mapping products	• Who are the **primary end users** for these specific mapping products (data layers, tools, and/or mapping outputs) that are critical for achieving goals/outcomes (at GIT or cross-GIT level)?

3. Challenges with existing mapping products & mapping-product needs	• What **pain points** do you experience with current mapping products?
	• What are the **biggest barriers for the current/future adoption and/or effective use** of these products? (If relevant, is it at the data-layer, tool, or mapping-output level?)
	• What **improvements/additions** to mapping products or how they are delivered would have the greatest impact on
	  • Your **team's success** in achieving goals/outcomes?
	  • **Cross-GIT success** in achieving goals/outcomes?

4. Additional perspectives on improving cross-GIT delivery/use of products	• Do current cross-GIT mapping products enable effective **cross-GIT decision making**? Why or why not? • What does the **perfect cross-GIT mapping product** look like?

RTI interviewed 20 key stakeholders, representing all GITs and STAR, identified by CIC.
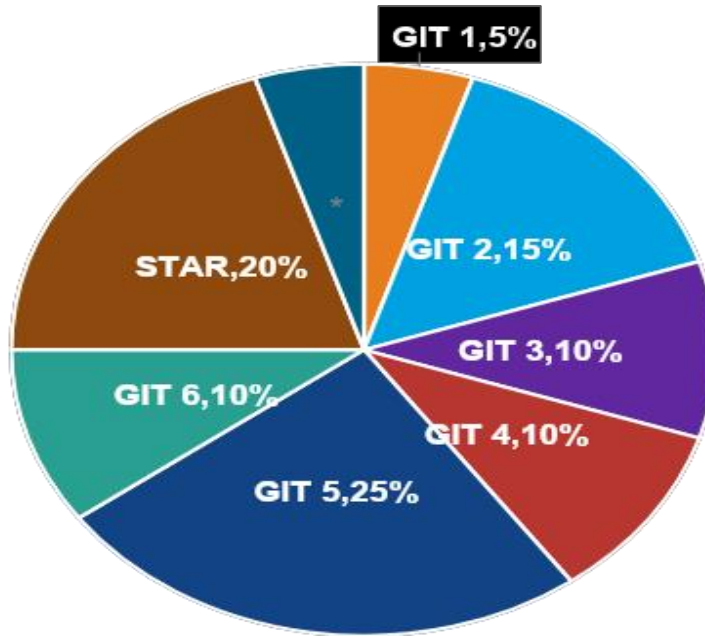
Percentage of Interviewees by GIT

Abbreviation Key

Abbreviation	Goal Implementation Team
GIT 1	Fisheries
GIT 2	Habitat
GIT 3	Water Quality
GIT 4	Healthy Watersheds
GIT 5	Stewardship
GIT 6	Leadership
STAR	Scientific, Technical Assessment and Reporting

*"Other" includes a member of academia who conducts cross-GIT activities.

Interview findings informed content/questions for a targeted online survey of GIT members.

Stakeholder interviews were compiled in a document for internal review by CBP.

Interview findings informed the survey design.

The survey provided a way to better quantify needs identified during interviews—**to help prioritize potential CBP actions.**

Surveying Initiatives

Survey questions were designed to understand user needs and how users rank potential solutions.

1. What is your level of **familiarity with the mapping tools and data** used by Chesapeake Bay Program GITs?
2. Mapping Tools: **How important** is each of the following for achieving GIT outcomes?
   - More guidance on **what** tools are available
   - More guidance on **where** to find tools
   - More guidance on **why** to use each tool
   - More guidance on **who** should use each tool
   - More guidance on **how** to use tools
   - Tools allowing for **cross-GIT** analysis
3. Mapping Data: **How important** is each of the following for achieving GIT outcomes?
   - **Higher resolution** data
   - **More timely** data
   - **New formats** of data (e.g., tabular, geospatial, text)
   - **New types** of data (e.g., aquatic, ecological, demographic, climate change, etc.)
4. **How readily available** are the following types of data for meeting GIT outcomes?
   - Climate Change
   - Biodiversity
   - Environmental Justice/Equity
   - Hydrology
   - Forestry
   - Geology

Survey questions were designed to understand user needs and how users rank potential solutions. (*cont.*)

5. Are there **other types of data** that are needed to meet GIT outcomes?

6. **How readily available** are the following **formats of data** for meeting GIT outcomes?
- Tabular
- Geospatial or geodatabases
- Text

7. Are there **other formats of data** that are needed to meet GIT outcomes?

8. Which of the following **potential solutions** would be most helpful for achieving GIT outcomes?
- Create a **central location for tools** where users can find details on each tool—e.g., what it is, why one might use it, who should use it, how to use it.
- Provide **training on how to use tools**.
- Provide **case studies on the successful use of tools** to achieve outcomes—to help communicate why a tool might be used.
- Provide **tools that allow for cross-GIT analysis**.
- Provide **new types of data**.
- Provide **improved data resolution**.
- Provide **more timely data**.
- Provide **new formats of data**.

9. Are there **other solutions** not listed above that we should consider?

10. What do you **envision your highest ranked solutions** looking like when specified for your work and needs?

215 survey invitations were sent, and 114 surveys were completed—a 53% response rate.

Complete Response 114

No response 90

Partial response 11
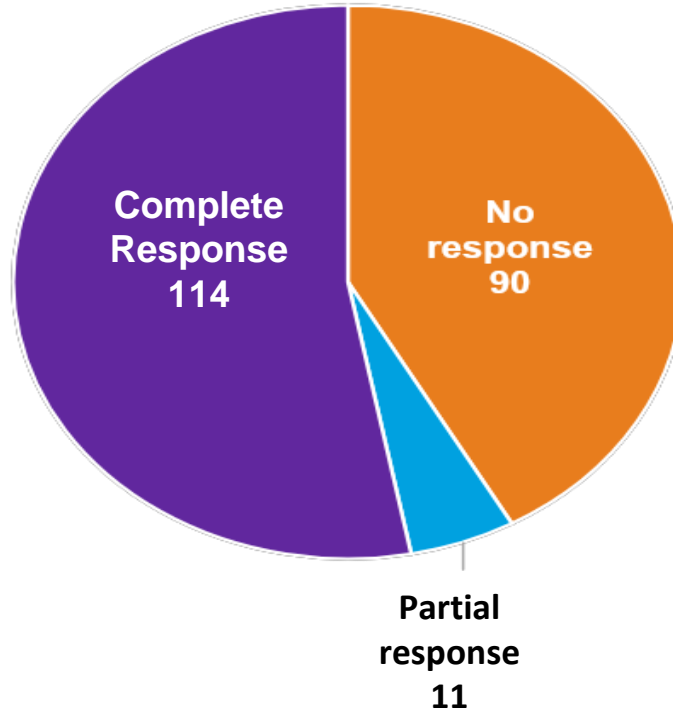
- Survey invitations were sent to 215 stakeholders.

- Responses were collected between April 21 and April 30, 2021.

- 125 responses were collected in total.

Survey respondents represented all GITs and STAR.

Which of the following Chesapeake Bay Program Goal Implementation Team(s) (GITs) are you associated with?

Percentage of Interviewees by GIT

Abbreviation Key

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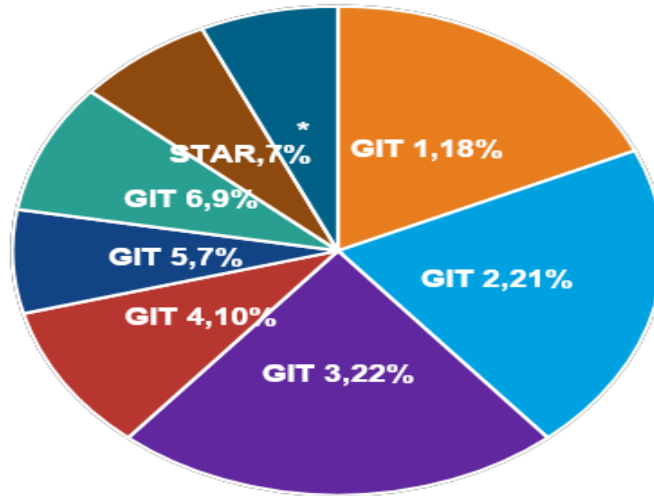
The largest groups of respondents were state/fed gov; most respondents were infrequent users of tools/data.

What type of organization do you represent?

- Other* 7%
- Academia 8%
- Not for profit 16%
- Local government 4%
- State government 36%
- Federal government 29%

What is your level of familiarity with the mapping tools and data used by Chesapeake Bay Program GITs?**

- Not Applicable 12%
- Expert User 6%
- Frequent User 15%
- Infrequent User 67%
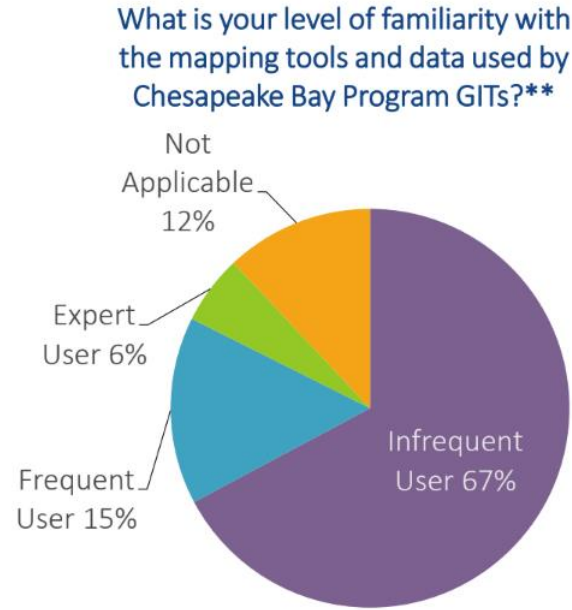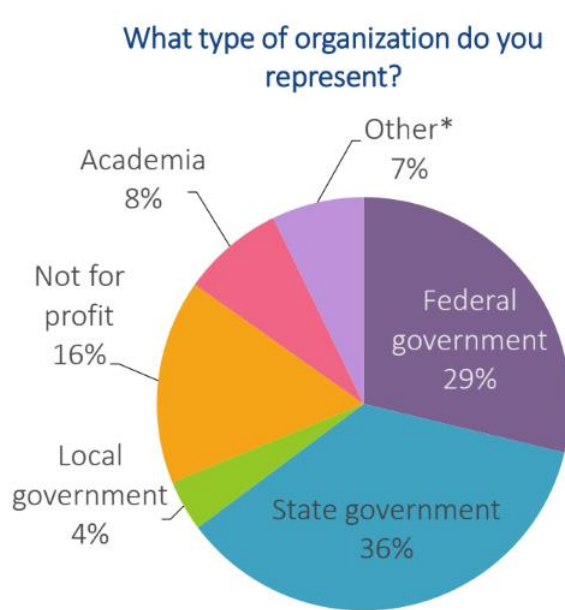
Stakeholder interviews revealed **high-level user-need themes**, which formed the basis for survey.

Mapping Tool Need Themes

- More guidance on **what** tools are available

- More guidance on **where** to find tools

- More guidance on **why** to use each tool

- More guidance on **who** should use each tool

- More guidance on **how** to use tools

- Tools allowing for **cross-GIT analysis**

Mapping Data Need Themes

- **Higher resolution** data

- **More timely** data

- **New formats** of data (e.g., tabular, geospatial, text)

- **New types** of data (e.g., aquatic, ecological, demographic, climate change, etc.)

Results

"**Central location for tools**" was the highest ranked solution, and "**new types of data**" ranked highest for data.

Potential Solutions Presented in Survey	Overall Rank	Score*	Total Respondents
Create a **central location for tools** where users can find details on each tool—e.g., what it is, why one might use it, who should use it, how to use it.	1	409	103
Provide **training on how to use tools**.	2	237	80
Provide **case studies on the successful use of tools** to achieve outcomes—to help communicate why a tool might be used.	3	223	78
Provide **tools that allow for cross-GIT analysis**.	4	204	72
Provide **new types of data** (e.g., aquatic, ecological, demographic, climate change, etc.).	5	177	60
Provide **improved data resolution**.	6	172	59
Provide **more timely data**.	7	133	56
Provide **new formats of data**—e.g., tabular, shapefiles, text.	8	50	27

Top four potential solutions are tool-specific.

Data-specific solutions ranked lower than tool-specific.

← Top rated overall and tool-specific solution—rated significantly higher than any other solution

← Top rated data-specific solution

*The "score" is a weighted sum of all responses. A respondent putting a "potential solution" in first place gives the item 5 points, second place is 4 points, third place is 3 points, fourth place is 2 points, and fifth place is 1 point. Solutions that are not selected receive 0 points.

Interviewees and survey respondents provided ideas on desired features/format a "**central location for tools**."

For the "central location for tools" solution, survey respondents envision a web-based format hosted on CBP web site.

Desired Features of a Central Location for Tools

✔ Tools organized by outcomes or decisions

✔ Advanced search capabilities

✔ Case studies for how to apply and use the tools*

✔ Case studies of cross-GIT successes

✔ Training documentation*

✔ Partner tools included with CBP tools

✔ Feedback capabilities

Examples of Systems that Could be Used as a Model

• Chesapeake Bay Data Dashboard

• ChesapeakeProgress

• U.S. Climate Resilience Toolkit

• USDA Ecosystem Service Assessment Portal

*Note that these features would also address a common user need "how to use tools."

For "**new types of data**," environmental justice/equity data was identified as a key need.

How readily available are the following types of data for meeting GIT outcomes?

	Little to no data is available; data gaps exist		Some data is available		More than enough data is available; data rich		**Total**
	Count	Row %	Count	Row %	Count	Row %	Count
Climate Change	9	10%	70	80%	8	9%	87
Biodiversity	10	14%	54	75%	8	11%	72
Environmental Justice and Equity	21	30%	43	61%	6	9%	70
Hydrology	2	3%	45	58%	31	40%	78
Forestry	1	1%	50	71%	19	27%	70
Geology	1	2%	33	60%	21	38%	55

30% of respondents indicated **little to no environmental justice and equity** data is available.*

Hydrology and **Geology** data are most data-rich categories, according to respondents.

Most respondents indicated that **some** of each type of data was available.

*Percentages exclude respondents that listed a data category as "Unknown/Not Applicable to My Work."

A variety of **other data types** were cited as needs by respondents. **Socio-economic data** was cited by many.

Are there other types of data that are needed to meet GIT outcomes?*

Data Types		
Aquatic	Historic/current communities of people of color	Social science data
Assimilative capacity remaining in local waterbodies		Social/human health
Behavioral information - what people do in their communities/homes	Housing starts	Socio-economic data
BMP Implementation	Land use--current, historic, projected	Spawning areas
Building permits	Mussel distribution--species and abundance	State harvest and effort data
Chesapeake Gateway sites	NEPA--active projects being reviewed	Stressors (specifically, emerging contaminants)
Citizen science--use of	NRCS contracts	
Conservation status	Outdoor environmental education locations	Tidal and non tidal wetlands--differentiation between two
Development	Oyster habitat	
Ecosystem impact of plastics	Population change	Tidal data
Family farms and subset of Black run/owned	Public accessibility	Tie-into Volunteers.gov
Fish habitat	Restoration approaches and improvements in WQ--connections	Toxic contaminants research and Land use--connections
Fisheries and stormwater--connections		
Fisheries data--biological abundance/distributions	Road crossing passage barrier data	Water quality
Flooding	SAV	Watershed demographics (community scale)
Funding	Scenic resources	Wetlands
Habitat/SAV	Sediment data	Wetlands (extent, marsh type, marsh migration potential)
HBCUIs	Shoreline condition	
Historic resources	Social data--what Bay populations care about, their priorities, etc.	WQ best practices, climate resiliency, and carbon sequestration--connections

* Examples of socio-economic data types are listed in bold.

A range of DSTs were cited by stakeholders as top-of-mind for achieving GIT outcomes.*

Tool Name	GIT 1	GIT 2	GIT 3	GIT 4	GIT 5	GIT 6	STAR	Cross-GIT	Unspecified	Relevant Outcomes Cited by Stakeholders
Habitat Suitability Model	●									Forage Fish Outcome
Fish Habitat Assessment	●									Fish Habitat Outcome
Virginia's Wetland Condition Assessment Tool (WetCAT)		●								Wetlands Outcome
Fish Passage Prioritization Tool		●								Fish Passage Outcome
Black Duck Decision tool		●								Black Duck Outcome
Forest to Faucet Tool			●							Forestry Workgroup Outcome
Data Dashboard+			●							Water Quality Outcomes
Chesapeake Assessment Scenario Tool (CAST)			●							Water Quality Outcomes
Healthy Watershed Assessment and Story Map Tool+				●						Healthy Watersheds Outcome
Vital Lands Mapper				●						Protected Lands Outcome
LandScope Chesapeake					●					Land Conservation Outcomes. Public Access Outcomes
Chesapeake Conservation Atlas+					●					Land Conservation Outcomes, Public Access Outcomes
Stroud - Education Work Group Tools					●					Student Outcome
Stroud - CBW Public School Stream BMP Evaluation Tool					●					Student Outcome
EJ Screen Chesapeake+		●			●	●				Diversity Outcome, Habitat Outcomes
Cross-GIT Mapping Tool+								●		Unspecified
Climate Monitoring and Assessment								●		Climate Resiliency Outcomes
EnviroAtlas	●		●					●		Climate Resiliency Outcomes

Note that other DSTs were also referenced and/or discussed during conversations, including FACET, Fish Prioritization Tool, ITREE, and the NOAA Climate Resilience Toolkit;

+ *Mapping product listed in Bay GIS Catalog (Summer 2020)*

Challenges for use of *both* **data layers and DSTs** include awareness, access, and training/staffing.

1. Knowing **what** data/tools are available and **where** to find them.

2. Understanding **when/why** to use specific data/tools

3. Finding time and staff to address cross-GIT questions.

Translating the output of DSTs into a decision requires additional effort on the part of CPB Staff.

Data/Layers → DST → Output → **Decision**

"There is lot of "leg work" to be done translating the science to the decision makers."
—Fisheries Interviewee

"No decision support tool will tell you where and what to do, there is a lot of manipulation of the data and tool required to inform decisions."
—Cross-GIT Interviewee

"My work is focused on helping local partners make more informed decisions besides water quality – but I have a hard time understanding how the data and tools will help with the prioritization of decisions."
—Habitat Interviewee

"The tools themselves don't do the translation—we are creating tools for an external audience and the tools don't provide the translation. The way the data is packaged is not useful for the people who are making the decisions. The tools are built in a format/ package or level of completeness that is not of use to the people who need it."
—Cross-GIT Interviewee

A call for outcome-specific tools, derivative tools, and cross-GIT optimized tools was heard.

Single Outcome Tools
Custom tools specific to each outcome

Derivative Tools
Tools that derive co-benefits from inter-related actions across outcomes

CBP-Wide Tool
A single place to optimize decision making across all 31 outcomes

"We need a tool for every objective – they are disparate and demand specificity. But we also need derivative tools that pulls aspect for each tool to address interrelated actions."
—Cross-GIT Interviewee

"Because CAST is used so widely – and is understood by partners and planners – in the long term, it might house more information about ecosystem services and co-benefits, but whether CAST is where this cross-GIT emphasize will occur is to-be-determined."
—Habitat Interviewee

"We recognize that there might not be one tool to fit all needs, but maybe the dashboard represents a possible solution that can be organized by themes based on management decisions."
—Cross-GIT Interviewee

"I'm visualizing a single place where one can show how things work together, where you can put all the imaging trends and data in one place to optimize decision making for the greater good across all goals."
– Cross-GIT Interviewee

Respondents were representative of all GITs, with high response from Fisheries, Habitat, and WQ.*


Which of the following Chesapeake Bay Program Goal Implementation Team(s) (GITs) are you associated with?
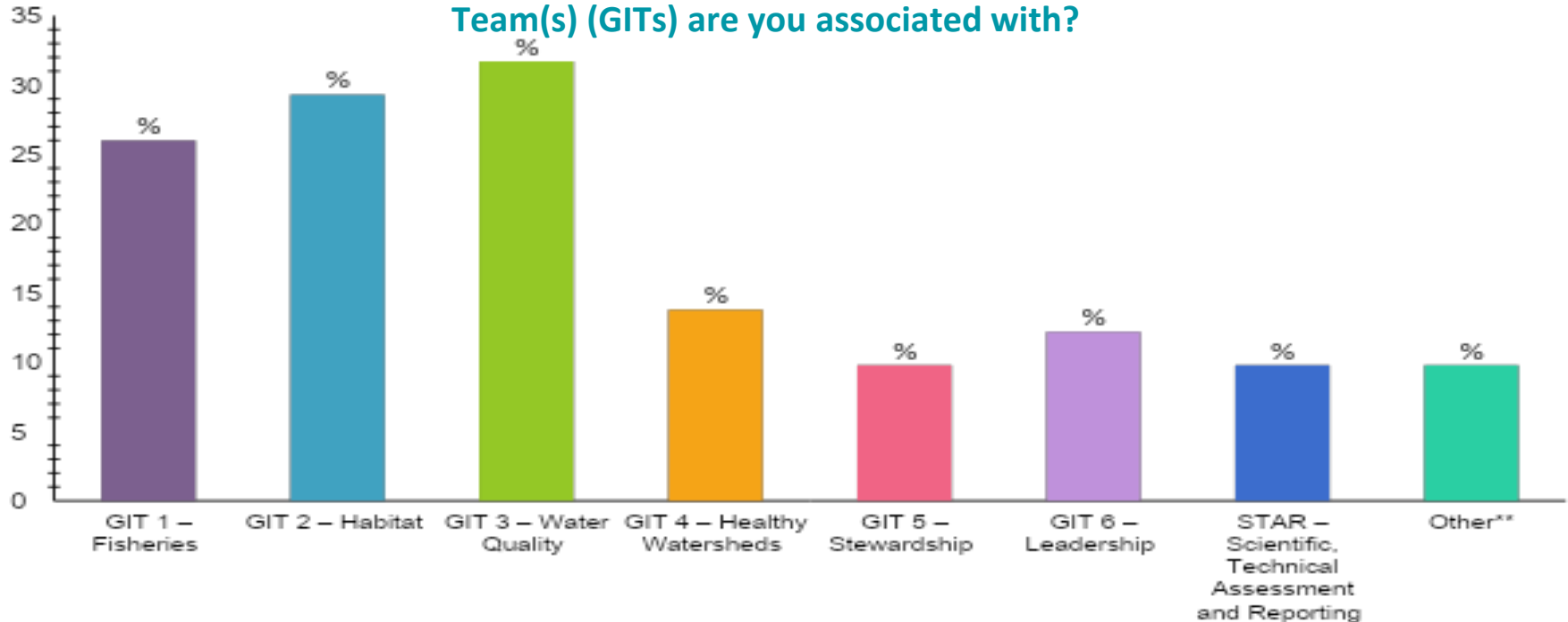
*See raw-data summary document for information on Work Group affiliations of respondents. **"Other" includes Communications Workgroup, Climate Resiliency Workgroup, Cross Program Coordination, Management Board, Plastic Pollution Action Team, and Scientific and Technical Advisory Committee.

69%+ of respondents rated **tool needs** as "important" or "critical" for all categories except for "who should use."

Mapping Tools: How important is each of the following for achieving GIT outcomes?
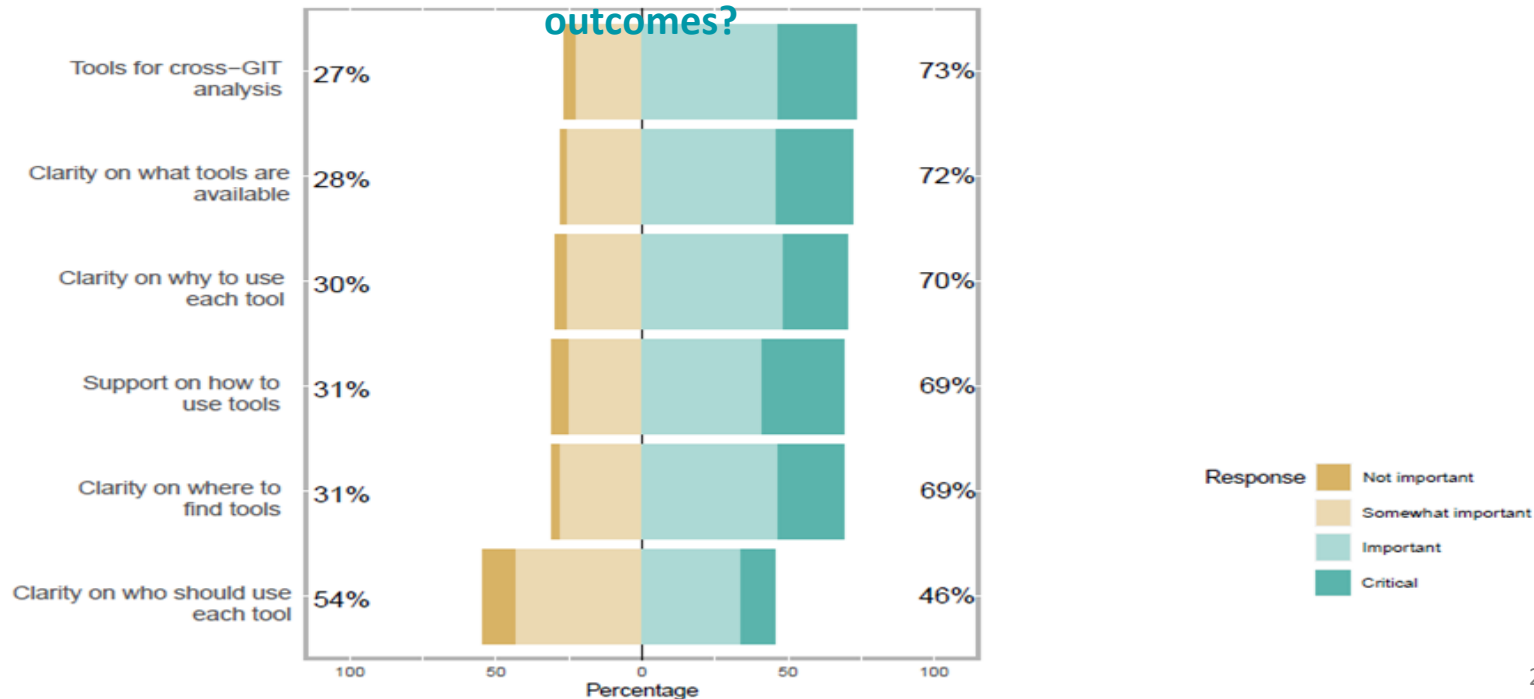
>26% of respondents rated "**cross-GIT**," "**what tools**," and "**how to use**" needs as critical.

Mapping Tools: How important is each of the following for achieving GIT

	Not important		Somewhat important		Important		Critical		Total
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Tools allowing for **cross-GIT** analysis	4	3.5%	26	23.0%	53	46.9%	30	26.5%	113
More guidance on **what** tools are available	2	1.7%	30	26.1%	53	46.1%	30	26.1%	115
More guidance on **why** to use each tool	4	3.5%	30	26.3%	55	48.2%	25	21.9%	114
More guidance on **how** to use tools	6	5.3%	29	25.4%	47	41.2%	32	28.1%	114
More guidance on **where** to find tools	3	2.7%	32	28.3%	53	46.9%	25	22.1%	113
More guidance on **who** should use each tool	12	10.7%	49	43.8%	38	33.9%	13	11.6%	112

Moving Ahead

Next Steps for This Work

- Identifying key users and insights vs general overall trends
- Clarify stated needs that serve cross-GIT goals
- Confirm that the insights from this initiative represent GITs and their workgroups
- Translate these insights into actionable tasks

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