



IODP Third Party Tool and Laboratory Instrumentation Development, Procurement and Deployment Guidelines

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HISTORICAL

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Executive Summary

The IODP Tool Development, Procurement and Deployment Guidelines is the next step in the evolution of the process that governs the development and deployment of tools and equipment, such as laboratory instrumentation new to IODP, which includes tools previously designated as a “third-party tool”

A third party tool, which has been defined as a tool or instrument developed with funds or resources outside the realm of the Integrated Ocean Drilling Program (IODP), must adhere to the development and deployment guidelines established by the IODP Science Advisory Structure (SAS) prior to deployment on any IODP expedition. The IODP SAS, in conjunction with IODP-MI and the Implementing Organizations (IO), has created a policy to provide consistent oversight of third party development activity and to provide guidance to all proponents with technology or developments new to the IODP. This document expands upon the Third Party Tool policy by providing additional contextual and timing elements to assist proponents, Implementing Organizations, and the SAS in executing this policy.

[NOTE: Blue text in the body of this document represents text quoted directly from the Third Party Tool Policy].

Definition

A third party tool has been defined as a tool or instrument developed, purchased, or leased with funds or resources outside the realm of the Integrated Ocean Drilling Program (IODP).

Former Third Party Tool Policy Overview

The guidelines for third-party tool development and deployment have been formulated to reflect that the IOs are primarily responsible for assisting with and monitoring third-party tool developments and reporting status to the STP (Scientific Technology Panel), EDP (Engineering Development Panel), OTF (Operations Task Force), and IODP-MI. It is the responsibility of the scientist wishing to deploy a third-party tool to consult with the appropriate IO early in the development planning process and provide tool specifications and operational criteria. Where the tool is a laboratory instrument to be operated by the proponent, this process may simply require the proponent to define power, space, safety information, and a sampling and measurement plan. Off-the-shelf borehole tools will also require plans for integration with existing systems (e.g., drilling pipe, cable heads, data retrieval and storage). In the case of tool development for downhole or observatory deployment, the investigator must also identify development milestones in terms of both the level and the timing of technical achievements such that the tool will be ready when it is scheduled for operation.

For all categories of tools, the project planning phase must define explicitly the time and resources (funds and personnel) required for both the development (if applicable) and deployment phases. Development timelines and requirements as described below may be modified by agreement between the IO and the proponent subject to approval by IODP-MI. Such agreements will be reported to the STP, EDP, and OTF.

Tool Lifecycle

A number of steps/milestones are required to successfully move a tool from the proposal stage to final deployment, including:

Third Party Tool Idea: A third party tool may enter the program as a proposal or as completed tool.

Development: The tool is designed, constructed, bench and land tested.

Scheduling: If the development process is completed satisfactorily, then the tool may be considered for scheduling by the OTF.

Deployment: The tool is deployed.

Review: The results of the initial deployment are evaluated by SAS and the IODP-MI Operations Review Task Force.

Certification: If development, deployment and review are completed satisfactorily, an application can be made for tool certification to IODP-MI.

Review: Following all subsequent deployments, a tool operations report is provided to the IODP-MI Operations Review Task Force.

Details of these Third Party Tool implementation steps/milestones are provided below and shown graphically in Appendix A.

Implementation Pathways

This section outlines the implementation pathway for the three types of third party tools: Development Tools, Certified Tools, Off-the-Shelf Tools, and Laboratory Instrumentation. A graphical depiction of the process outlined below may be found in Appendix A.

Development tool:

A development tool includes: (1) a new technology that has been created, (2) modifications to existing technology that have been completed, (3) an existing prototype tool untested at sea, or (4) an existing prototype tool that has been used at sea, but has not been certified.

For a (development) tool to be considered for deployment (testing) on an IODP expedition and for eventual certification for standard usage, the following criteria must be met:

- 1) Identification of a proponent who is the point of contact for the use of the tool.
- 2) The proponent must formulate a development plan in consultation with the IO most likely to deploy the tool first. In cases where a tool is intended for use on multiple platforms, the appropriate IO will be the one responsible for the first deployment. The lead IO will coordinate with the other IOs and the IODP-MI as necessary.
- 3) The development plan should, where appropriate:

- indicate the usefulness of the proposed measurements and the financial and technical feasibility of the development.
 - include a brief description of the tool, schematic diagram(s), details of the operational procedure, and technical specifications (i.e., dimensions, weight, temperature and pressure ratings, cable-length restrictions, cable type, etc.)
 - identify a development timeline in terms of technical achievements and reporting requirements, including a specific deadline for a deployment decision by the IO
 - provide for initial testing on land, when possible, and request ship time if testing from the drillship is necessary (subject to OTF approval; see below)
 - satisfy safety considerations defined by the operator.
 - specify shipboard requirements including data processing necessary to make the information accessible aboard ship, special facilities (emphasizing where the tool is not compatible with existing hardware and software), and appropriate technical support
 - specify the data deliverables
 - define the tool or instrument performance expectations
 - provide for transportation of the tools for shipboard testing, in terms of both cost and time
 - contain a signed (pro forma) statement of agreement with these requirements
- 4) The IO will report the submission of development and deployment plans to the STP, the EDP, the OTF, and IODP-MI. The STP will determine the action on these submissions in accordance with the panel mandate and will provide advice to the IO regarding further tool development. Where engineering development is significant, the STP and EDP will designate individuals to coordinate panel input to the OTF, SPC, and IOs. The EDP may take the lead where engineering is the major focus of the development. The IODP-MI will work in concert with the SAS, the IO's and proponents to ensure that this third-party tools policy is fully utilized.
 - 5) Once the IO and SAS panel(s) endorse the development plan, a staff liaison will be appointed by the appropriate IO to monitor the tool's progress through the development plan. The IO's tool liaison will provide status reports on the tool's progress to the STP, EDP, OTF and IODP-MI.
 - 6) When the lead IO is satisfied that the development has progressed to a point where it is ready for a sea-trial, the lead IO will notify IODP-MI. IODP-MI will then bring the development to the attention of the OTF for a possible scheduling recommendation.
 - 7) With a positive OTF recommendation, an IODP development tool may be scheduled for testing during an upcoming expedition. Development tools must be deployed in test mode (i.e., the scientific success of an expedition must not be contingent upon the proper functioning of such a tool).
 - 8) It is incumbent upon the proponent to ensure that the appropriate IO is fully advised of the tool's status. If the development plan falls behind schedule and the PI is unlikely to have satisfied all of the above criteria prior to a planned deployment, the IO has the right to withdraw the tool from further consideration for an expedition after consulting with the IODP-MI. The shipboard test will be rescheduled after reconsideration by the OTF.

- 9) Following initial deployment, a tool operations report is provided to the SAS and included in the standard expedition operations report provided to the IODP-MI Operations Review Task Force.

Certified Tool:

A certified tool includes: (1) a new or modified existing technology that has been tested at sea (following the steps described in the previous section for Development Tools). For a tool to be considered an IODP certified tool, and thus suitable for routine scheduling on IODP expeditions, the following criteria must be met:

- 1) The tool must have satisfied all the requirements for an IODP development tool.
- 2) The tool must have been tested at sea during an IODP expedition(s) and performed satisfactorily in the opinion of the relevant (lead) IO and the Operations Review Task Force.
- 3) The PI must formulate a request for certification to IODP-MI in consultation with the appropriate IO.
- 4) The request for certification should:
 - be prepared in coordination with the operator's tool development liaison (or designate) to ensure adequate communication between the developer and the operator
 - indicate the cost of routine shipboard operations including data processing
 - outline the operational requirements for routine deployment and data processing
 - detail the availability of spare components
 - provide information on adequate maintenance facilities
 - include an operating and maintenance manual
 - satisfy safety considerations as defined by the operator(s)
 - confirm the long-term usefulness of the data
 - confirm accessibility of the data
 - provide source code with documentation where appropriate
 - define performance specifications (pressure, temperature, vibration, shock limits, etc.)
- 5) The lead IO submits the request for certification to IODP-MI. If the tool has potential cross platform usage IODP-MI will coordinate a multi-operator agreement. IODP-MI will then seek endorsement by the STP and/or the EDP.
- 6) Upon STP and/or the EDP endorsement of the certification request, IODP-MI will issue a certificate confirming the satisfactory conclusion of tests and compliance with all requirements to the proponent (with copies sent to the STP and EDP chairs).
- 7) Maintenance and operation of an IODP certified tool remains the charge of the third party. A certified tool can be scheduled for deployment during an upcoming IODP expedition and would be expected to contribute to the scientific success of the expedition.
- 8) Following all certified tool deployments, a tool operations report is included in the standard operations report provided to the IODP-MI Operations Review Task Force.

Off-the-Shelf Tool:

Off-the-shelf or leased tools play a vital role in successful IODP operations and they typically include (1) a technology new to IODP that has been utilized routinely in other markets, or (2) leased or purchased tools/instruments from recognized providers.

In order to deploy an off-the-shelf tool during an IODP expedition, the following steps must be taken:

- 1) Ensure that no other similar technology exists within known IODP tools. Formal or informal discussions should be held with IO's prior to selecting off-the-shelf technology. If needed, the OTF could be consulted.
- 2) Procure detailed specifications including performance requirements of the desired tool or instrument and ensure that it is suitable to meeting the objectives of a specific IODP expedition.
- 3) A lead IO will be assigned to work with the proponent to develop a deployment plan. The deployment plan should demonstrate adherence to policy and procedure outlined in the QA/QC Task Force Report adhere to policies and procedures outlined in the QA/QC Task Force Report (<http://www.iodp.org/qaqc-taskforce/>). The assigned lead IO is determined by the platform on which the technology will first be deployed.
- 4) The SAS must be informed by the proponent/Lead IO of the potential use of the technology. A positive recommendation by SAS allows the tools or instruments to be considered for scheduling by the OTF. IODP-MI should be briefed on potential tool usage by the lead IO well in advance of the SAS meeting to ensure appropriate time is allocated for discussion of the tool.
- 5) The results of the initial deployment are evaluated by SAS and the IODP-MI Operations Review Task Force. Following all subsequent tool deployments, a tool operations report is included in the standard operations report provided to the IODP-MI Operations Review Task Force.

Laboratory Instrumentation:

Often it is necessary for a scientist to bring aboard his or her own laboratory equipment in order to meet a specific expedition objective or simply to make the most of the unique opportunity and collect additional exciting and important ancillary data. The third party tool category of Laboratory Instrumentation includes (1) an instrument new to IODP that has been utilized routinely in other markets, or (2) leased or purchased instrumentation from recognized providers.

In order for a third-party laboratory instrument to be included as part of an IODP expedition, the following steps must be taken:

- 1) Contact the appropriate IO to ensure that the specific instrument is not already a part of the IODP platform's laboratory.
- 2) Procure detailed specifications including performance requirements of the desired instrument and ensure that it is suitable to meeting the objectives of a specific IODP expedition.

3) A lead IO will be assigned to work with the proponent to develop an instrument deployment plan which will identify the most appropriate laboratory space for the instrument, access power requirements, address data dissemination plans, adhere to policies and procedures outlined in the QA/QC Task Force Report (<http://www.iodp.org/qaqc-taskforce/>) , and any other logistical considerations that may apply. The assigned lead IO is determined by the platform on which the technology will first be deployed.

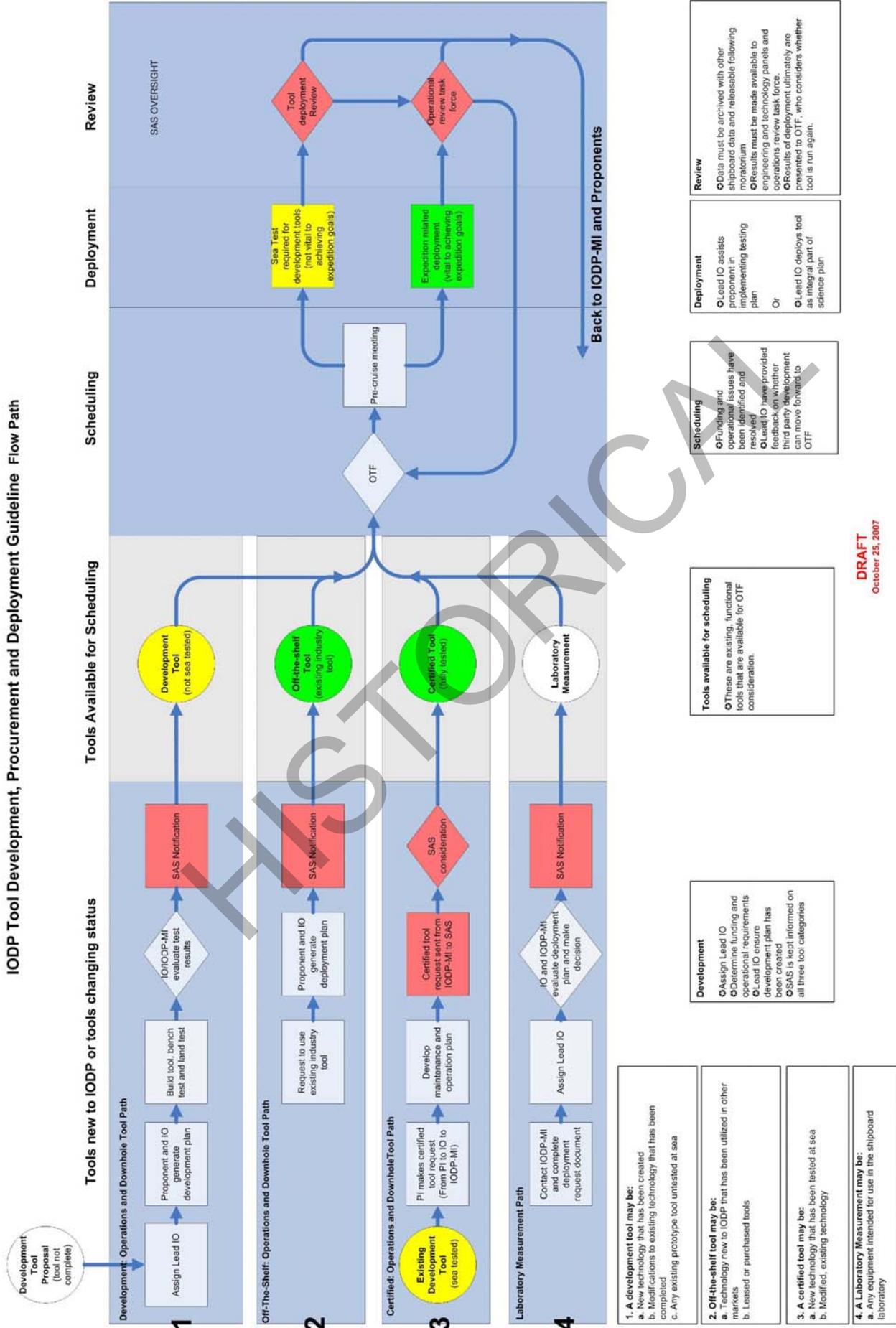
4) The SAS must be informed by the proponent/Lead IO of the potential use of the instrument. A positive recommendation by SAS allows the instruments to be considered for scheduling by the OTF. IODP-MI should be briefed on potential instrument usage by the lead IO well in advance of the SAS meeting to ensure appropriate time is allocated for discussion of the instrument.

5) The results of the initial instrument use are evaluated by SAS and the IODP-MI Operations Review Task Force. Following the expedition, an instrument performance report should be included in the standard operations report provided to the IODP-MI Operations Review Task Force.

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Appendix A

IODP Tool Development, Procurement and Deployment Guideline Flow Path



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