

MATRIX

Automated Guidelines for IODP Drill Site Characterization:

**Typical Data Requirements for the SSP and the PPSP Provided by a
Web-based Interface**

WORKING GROUP FINAL REPORT

February 19, 2004

Version 6.0

MATRIX WORKING GROUP MEMBERS:

David Caress (SSP)
Andre Droxler (SSP-cochair)
Nobuhisa Eguchi (ISAS)
Barry Katz (PPSP-cochair)
Kirk McIntosh (SSP)
David Naar (SSP-WG chair)
Yoshifumi Nogi (SSP)
Dan Quoidbach (ODP Data Bank)
Roger Searle (SSP)
Craig Shipp (PPSP)
Tetsuro Tsuru (SSP)
David Twichell (SSP)
Keisei Ueno (SSP)
Joel Watkins (PPSP)

INDEX:

MATRIX – “Automated web-based matrix of typically required site
characterization data for SSP and PPSP”

IODP – “Integrated Ocean Drilling Program”

SSP – “Site Survey Panel”

PPSP – “Pollution Prevention and Safety Panel”

Executive Summary:

Implementation of many highly ranked Ocean Drilling Program (ODP) legs were delayed, sometimes by years, while site characterization and safety and pollution data were obtained. Delays were usually due to a lack of a clear understanding of requirements by proponents and co-chiefs early enough to obtain timely funding for site surveys. The problem was especially acute in the case of PPSP (Pollution Prevention and Safety Panel) requirements, which were usually revealed only after proposals were ranked and sometimes scheduled.

In the IODP (Integrated Ocean Drilling Program), deeper drill sites in a wider range of water depths and more geologically complex, hydrocarbon-prone, and environmentally sensitive areas using riserless, riser, and mission-specific platforms will only increase complexity of site characterization data requirements for PPSP and SSP (Site Survey Panel).

To help prevent future delays, to help panel members with the increased complexity of the new program, and to reach out to new scientists unfamiliar with ocean drilling, a working group called MATRIX (Automated web-based matrix of typically required site characterization data for SSP and PPSP) was formed to formulate and design a web-based algorithm. This algorithm would provide typical site characterization data requirements for SSP and PPSP directly to the proponents after a proposal was submitted electronically to the ISAS website. The ODP Data Bank at Lamont-Doherty Earth Observatory (LDEO) and the ISAS office have already designed and tested a prototype of a *simplified, automated web page* following two MATRIX meetings in 2003. **This report summarizes that effort and requests additional funding for the LDEO ODP Data Bank to finalize and implement the web page in collaboration with the ISAS office.**

Once the web page is fully implemented (the prototype is presently offline and inaccessible), IODP scientists and panel members will have access to a web page providing SSP and PPSP site characterization data requirements. Furthermore, there would be “hotlinks” (URL sites) explaining why the data are needed, which panel they are needed for,

examples of the data types, data format descriptions, contacts of scientists or organizations that collect such data, contact information for submitting the data, etc. Updates to this web page would occur by the panels as data arrive and are reviewed. **Early access to this information can help avoid long and frustrating delays in obtaining the necessary data for the SSP and PPSP panels, the scheduling of drilling, and the resultant science.**

Motivation and Brief Description of Concept:

Several members of the interim Site Survey Panel (now SSP) and the interim Pollution Prevention and Safety Panel (now PPSP) thought it would be valuable to automate the paper version of the Site Survey Data Requirement Matrix developed over the years within the ODP program. For a given type of drill hole, the paper matrix defined the typical data types the SSP would review to determine if drill hole location and penetration are best suited to meet the stated scientific targets and objectives. The PPSP has its own document defining the typical data needed to determine that drilling will be safe and not harm the environment.

The primary reason for automating the matrix would be to simplify and integrate the process for both SSP and PPSP as well as notify the proponents of these data needs at the earliest possible stage of the proposal process. We also wanted to be better prepared for determining what types of site characterization data would be needed for new types of drilling environments within IODP such as, for example, shallow water sites that require riser drilling.

As we struggled to refine the existing matrix, we realized that a revamping of the whole process might be in order, not only for ourselves, but also to help new scientists unfamiliar with site characterization data and/or ocean drilling. An automated system could (by web-links from a web page):

- Provide which data are needed.
- Provide why the data are needed.
- Provide examples of the data and the desired format.
- Provide a list of specialists who collect the data, and so forth

The new web-based automated process would be “user-friendly” and would reach out to new scientists less familiar with ocean drilling and site surveys. We considered the example of airline ticketing using an airline web page and decided that a similar IODP web page would simplify determining the data requirements for the SSP and PPSP panels. This would benefit both the drilling proponents and panel members. Furthermore, the submission of proposals to the ISAS web page would provide the majority of the digital information needed to determine which site characterization data would be needed for a given drill site. This approach would reduce redundant input from the proponents for purposes of determining site characterization data.

An email would be automatically sent to the proponents shortly after submitting their proposal. This email would provide a link to the web page that describes the typical site characterization requirements for the proposed drill sites. The proponents, the SSP, and the PPSP would share this web page to insure that everyone is on the “same page”. This web page could be modified to request additional data if necessary, and to indicate when data have been reviewed and accepted. The proponents would be notified by email each time a change was made to the web page. We envisioned this as an open modular system that would be routinely updated to keep up with new types of site characterization data, new types of drilling environments, and to adjust to feedback from the community.

As with any automated system, disclaimers would have to be made. For example, the information is designed to assist the proponents, but panels, especially the PPSP may ask for additional data after reviewing the initial site characterization data. If the web program is properly set up, these types of situations should be rare. The algorithm could be updated to deal with new concerns for site characterization that have not yet been considered.

Another bonus of automating this process early in the proposal submission process is that proponents can collect data for both SSP and PPSP simultaneously. This was not always the case in ODP. Improved communication between SSP and PPSP watchdogs and the proponents will also help facilitate further efficiency within the larger, more complicated IODP.

MANDATE AND TERMINOLOGY for SSP and PPSP:

SSP and PPSP consist of experts with a broad collective expertise. They are charged, respectively, with reviewing and assessing the adequacy of required site characterization data required to position drill holes in a manner likely to best achieve the scientific objectives (SSP) and to accomplish this in a safe and environmentally sound manner (PPSP).

Both SSP and PPSP are advisory bodies. SSP makes recommendations to the SPC (Scientific Planning Committee) regarding the completeness of the site characterization package whereas PPSP makes recommendations to the platform operators regarding safety and pollution prevention. A site survey package that is classified as “incomplete” does not necessarily prevent drilling. The SPC and an Operator can (and have) scheduled drilling to take place under such conditions, due to the high

priority of the science, and/or remoteness of the drilling leg, and/or desire to drill in an exploratory mode. Thus, the term **“required”** (when referring to site characterization data), applies only to the panels’ need to have the data in order to review, and not necessarily for drilling to commence.

Working Concept and Prototype:

The working concept is shown in a PowerPoint presentation (Appendix A: separate email attachment) resulting from the iSSP meeting in Bologna, Italy in February 2003. A follow-up meeting of the MATRIX working group was set up in Norway June 2003 during the iPPSP meeting. During this meeting (see minutes – Appendix B : separate email attachment), a logic flow for both panels was formulated, defining the required data types for each panel, including overlaps (Appendix C – separate email attachment). Following their own initiative, after the June meeting, both Dan Quoidbach, Manager of ODP Data Bank at LDEO and Nobu Eguchi at the ISAS office developed web-based tools over the summer in time for the July 2003 iSSP meeting in Palisades, NY, USA. A PowerPoint presentation of the web-based prototype developed by Dan Quoidbach and programmers at LDEO is shown in Appendix D (separate email attachment). Additional work by both groups continued until September 2003, at which point things were put on hold because it was not clear if MATRIX was to be implemented and who would do the remaining work and who would fund it.

To complete this effort, financial support is needed for Dan Quoidbach to complete the web program and to turn it over to the ISAS office for implementation, testing, further development, and upkeep. We suggest a few members of the MATRIX working group oversee the implementation process, especially members from SSP and PPSP to insure quality control by testing different scenarios for both panels. The details regarding how much financial support and actual work to be performed should be arranged directly with Dan Quoidbach and Nobu Eguchi. As Jamie Austin pointed out in February 2003, “MATRIX is one of the new developments in IODP that will demonstrate that things are not business as usual and that a real attempt is being made to reach new scientists and to improve coordination between the panels.”

Table of Appendices:

Appendix A. PowerPoint presentation of MATRIX concept as an email attachment.

Appendix B. Word document of minutes from iPPSP meeting including progress of MATRIX Working Group meeting.

Appendix C. Word document (in landscape mode) from iPPSP meeting outlining the typical data requirements for both the SSP and PPSP for different types of drilling environments. This outline was used to produce the prototype web page shown in Appendix D.

Appendix D. PowerPoint presentation of web-based prototype developed by Dan Quoidbach and programmers at LDEO ODP Data Bank.

MATRIX (Site Survey and Safety Data *matrix* working group)

- ◆ Nobuhisa Eguchi
- ◆ Yoshihumi Nogi
- ◆ Tetsuro Tsuru
- ◆ David Caress
- ◆ Dan Quoidbach
- ◆ Joel Watkins
- ◆ Roger Searle
- ◆ Andre Droxler
- ◆ Craig Shipp
- ◆ David Naar (*chair*)

Task: Provide IODP a more **automated** and **integrated** way of informing proponents what data types are needed to characterize a drill hole in terms of science and safety.
(Meeting was held February 25, 2003, Bologna, Italy iSSP Mtg.)

CONSENSUS

1. Integrate iSSP & iPPSP site survey requirements
2. Identify data solely needed for iSSP, iPPSP, and for both
3. Identify data recommended for proposal versus needed for actual drilling
4. Design logic flow that takes information such as site location, depth, penetration of hole, sed/rock, and purpose of hole, that is submitted at the iSAS website when the proposal is submitted, & then...

CONSENSUS (Cont'd)

- ◆ Output the site characterization data that are needed for science and safety for each proposed drill site

Proponents submit proposal



WEB SOFTWARE

(Much like buying airline ticket on WEB)



Output: Data types needed for SITE CHARACTERIZATION for both the iSSP and iPPSP, distinguishing what is recommend for proposal vs. actual drilling

CONSENSUS (Cont'd)

Output:

HAZARD

HEAT

1. BATHY
2. SBS
3. 3.5
4. Samples
5. XTIE
6. ISOPACH

7. Mag
8. grav

Additional Data for iPPSP - can wait until the drill leg is recommended for scheduling...

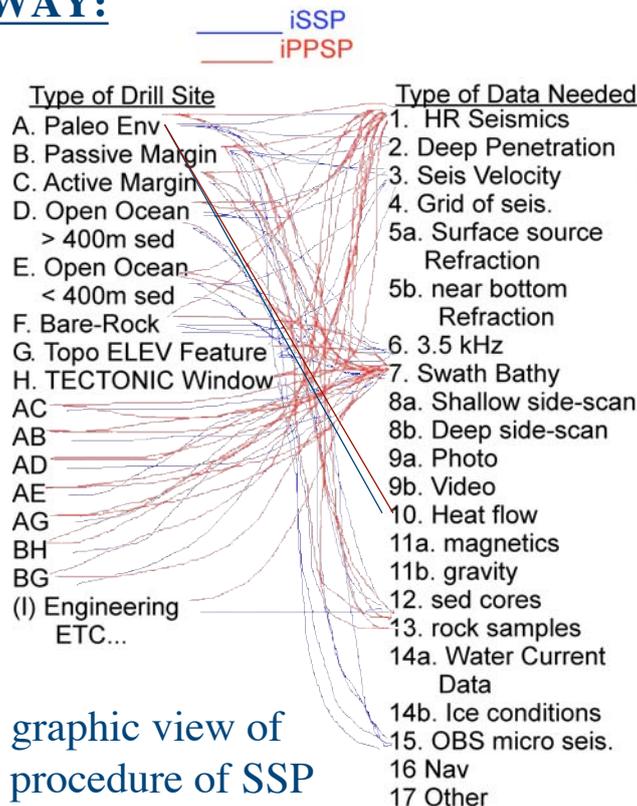
There will most likely be a Least Common Denominator for any drill hole

Additional Data needed by iSSP for a specific drill hole

CONSENSUS (Cont'd)

4. Proponents will know what is needed for both panels, which will prevent returning to sea to collect data that could have been collected during a first site survey cruise. It should increase efficiency and reduce confusion.
5. **CAVEAT:** Both iSSP and iPPSP can request additional data after reviewing submitted data.
6. **SUGGESTION:** Meet with iPPSP in June 2003 to organize a logic flow in order to propose a procedure to the iSSP in July 2003.

OLD WAY:



Schematic graphic view of old matrix procedure of SSP

Input

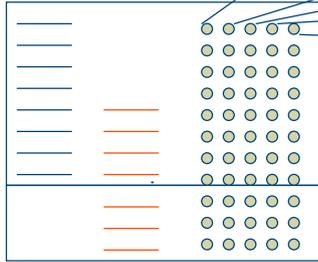
ISAS WEBSITE

NEW WAY:

Input obtained from proposal submission web forms and then run through computer program to determine iSSP and iPPSP data requirements

Web Link Buttons for each data type

DATA REQUIREMENTS
For each drill hole :



Data type examples

Why is this data type needed?

Data bank information

Format specs

List of potential collaborators

(other links can be added)

For iSSP to image drill target

For iSSP AND iPPSP, i.e., redundant data types

For iPPSP if selected for drilling

iSSP iPPSP Web Link Buttons

Site Survey Requirements for each hole are then sent to proponents electronically (EACH line represents a data type needed)

Appendix B: iPPSP Meeting #3 – Minutes

June 16 – 17, 2003

Sola Strand Hotel

Stavanger, Norway

iPPSP members present: Bob Bruce, Neil DeSilva, Martin Hovland, Hans Juvkam-Wold, Barry Katz (Chair), Susumu Kato, Jean Mascle, Toshifumi Matsuoka, Nobuo Morita, Craig Shipp, Dieter Strack, Manabu Tanahashi, and Joel Watkins

iPPSP members absent: Juanjo Danobeitia and Tim Francis

Guests: Jan Backman (MSP-533), Jack Baldauf (TAMU), Serge Berné (Promess), Colin Brett (BGS), George Claypool (Leg 204), Mike Coffin (UORI, University of Tokyo), Andre Droxler (iSSP), Nobu Eguchi (iSAS), John King (Lake Bosumtwi), Hajimu Kinoshita (iPC), Yngve Kristoffersen (MSP-533), Ted Moore, (iPC), Kate Moran (MSP-533), Dennis Nielson (DOSECC), Yoshifumi Nogi (iSSP), Terje Olsen (Smedvig Offshore), Dan Quoidbach (LEDO SSDB), Alister Skinner (BGS), Uko Suzuki (CDEX), Shinichi Takagawa (JAMSTEC), Masaoki Yamao (GODI)

The meeting was called to order by the chair on June 16, 2003 at 08:30.

Martin Hovland, acting as host, explained the safety procedures and meeting logistics.

Self introductions were performed by panel members and guests.

Minutes of the second meeting were approved, noting that the revisions suggested by panel members after the draft minutes were circulated had been incorporated.

The proposed agenda was reviewed.

Report on ODP Drilling Activities

<<< TEXT CUT to jump to MATRIX part of meeting >>>

Review of the Data Bank and MATRIX Working Groups

Andre Droxler presented a review of the progress made by the two working groups which impact both iPPSP and iSSP. iSSP was recommending greater involvement including an annual review of the data bank, and assist in defining

the role of the data bank. There was also a suggestion that a report template should be defined. The MATRIX working group was attempting to provide a more integrated and automated approach to determine what data will be needed during the development of a drilling program for both scientific and safety purposes. The purposes of the MATRIX working group were simplification, the merging of the data requirements, and to provide a foundation for the planning of a database/data bank. The recommendations from the MATRIX working group are attached.

The discussion following the presentation indicated that there was a need to clarify between recommendations and requirements. A timeline will also be required as to when the data will be needed in the review process as well as a statement as to who is responsible for the collection of a given dataset (operator vs. proponent).

Panel members are asked to review the data requirements and provide any suggested revisions prior to the July meeting of the iSSP. Jack Baldauf, Alister Skinner, and Uko Suzuki were also asked and agreed to provide input from an operator's perspective.

e-Review Process

The e-review process was discussed. It was agreed that panel members will be given two weeks to review the drilling proposal and return their votes and comments to the panel chair. As with all proposals the databank will handle the distribution of the safety package. The operator should be included in the proposal distribution. If there are concerns expressed by any of the panel members or the operator a full review will occur at the next meeting. If any panel member feels that a full review is required or that a site needs to be disapproved an explanation will be required so that the proponent can take the necessary actions to satisfy the panel member's needs, if possible.

Appendix C - MATRIX Working Group Final Report – Typical data requirements for SSP and PPSP (additional data may be required after review of submitted data on a case by case basis)

Index:

Green = SSP requires the data to review for science

Blue = PPSP requires the data to review for safety

Black = both panels require the data type to review

	Information/data (common data)	Special requirements	When needed
Basic needs	Lat/Long Water depth Depth of penetration Tectonic/depositional setting Nearby wells	<i>Man-made hazards</i> <i>HC shows</i> <i>Environmental restrictions</i>	
Surface	3.5KHz	<u>Video/photography</u>	<u>“Hard” irregular rock outcrop</u>
		<u>Side-scan</u>	<u>Suspect gas seep, Bottom founded</u>
		<u>Swath bathymetry</u>	<u>Active margin, bare rock, tectonic window, All riser</u>
		<u>Surface samples</u>	<u>Paleo (sed), bare rock and tectonic window (rock), re-entry sites</u> <u>Surface slope >10°</u>

(Surface continued)			Bottom-founded rig (MSP) Anchored-suspected hard bottom (MSP)
Sub-surface	Lithologic projection Structural configuration (Seismic types are defined next page)	Shallow drilling hazard assessment	TO REVIEW
		Heat flow	Suspected HC provinces, suspected high heat flow
		High resolution magnetic (hazard)	Bottom-founded rigs, anchored rigs (pipeline?)
		Velocity profile (time-depth control)	All riser, only passive & active margin >200m non-riser, Case by case
		Gravity/Magnetic	All riser(influenced by basement), non-riser tectonic window
Other		Currents	
		Ice	
		Weather window	
		Tidal	
		Pore pressure	Riser, suspected over-pressure
		Fracture gradient	
		Pressure prediction	
		Maturity	Potential HC provinces >2km sediment
		Well program	Riser, over-pressure w/o riser
		Waste disposal	Returns to sea floor EEZ drilling as required
	Abandonment	Riser	
	Environmental survey	EEZ drilling as required	

Seismic: (soft rock: sediment) based on penetration depth

less than 100m	2D SC high resolution (including Boomer) or 3.5kHz if it images the objective or 3.5kHz/low resolution if images the objective Crossing SC lines over drill site
101 – 1000m	2D grid MCS (passive and active margins), For areas away from margins (open ocean): crossing SCS lines for penetration <400m; MCS grid for penetration >400 m.
more than 1001m	2D grid MCS with Line Spacing to be determined or 3D MCS survey (also to be determined on a case by case basis), 3D (<i>horizontal riser</i>)

Seismic: (hard rock: basement) none required at the present time

MATRIX Prototype Website

Proof of Concept

Daniel Quoidbach, Manager, ODP Data Bank, LDEO
Artem Fishman, Programmer, ODP Data Bank, LDEO

The MATRIX Concept

Proponents submit proposal online



WEB SOFTWARE



(Much like
buying airline
ticket on WEB)

Output: Data types needed for SITE CHARACTERIZATION for both the iSSP and iPPSP, distinguishing what is recommend for proposal vs. actual drilling

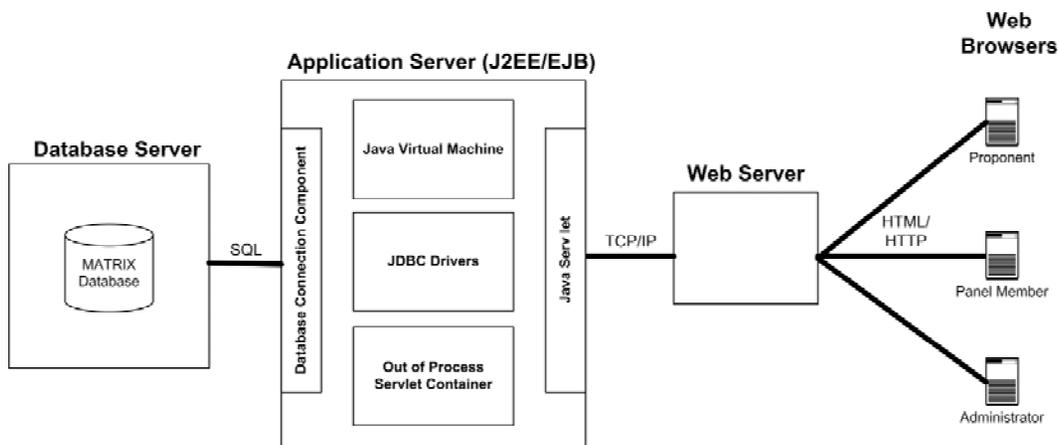
Prototype Project Goals

- Provide a demonstration of the MATRIX concept of requirements generation.
- Explore data structure needed for managing proposals, sites, site requirements and survey data.
- Gain experience with dynamic, database-driven website development using Open Source tools.

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Logical System Design



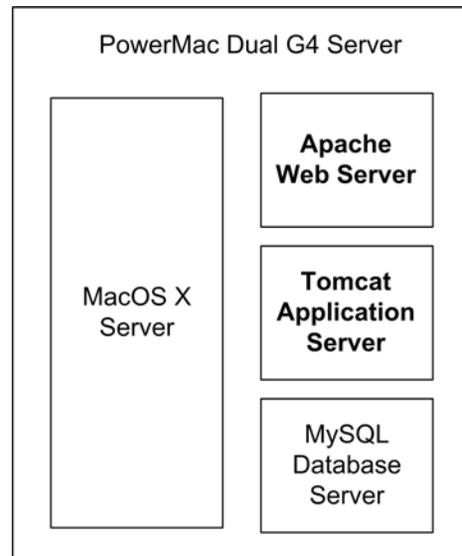
Model View Controller (MVC) architecture separates data storage from data display and encapsulates programming logic within the application server components. This simplifies code maintenance and reuse.

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Physical system Design

- Using open source web, application and database server software.
- Site is hosted on MacOS X Server, but code can be easily ported to Linux/Unix.

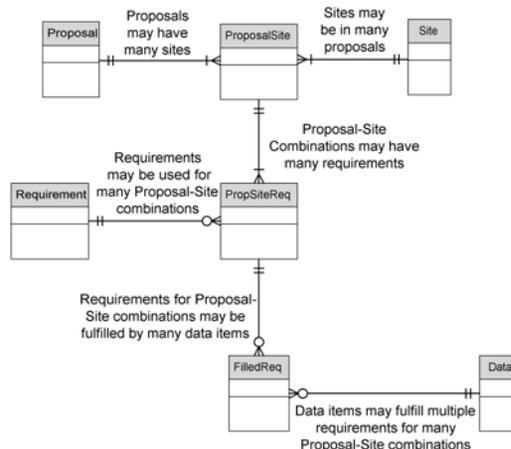


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Matrix Database

- The core of the system is a relational database that enforces business rules independent of code.
- This provides a robust means of storing proposal and requirement data for subsequent reuse.
- Security is enhanced as users interact with the database only through intermediate software, never directly.

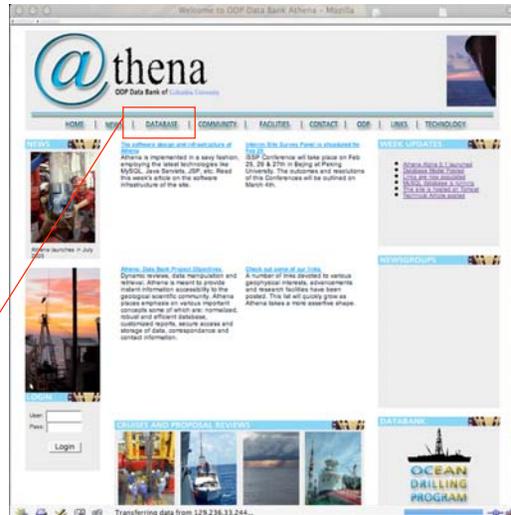


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Website Home Page

- <http://129.236.33.244:9006>
(note: disconnected now)
- Mock-up of a Portal Style interface to the system.
- User interface should be customizable through selectable components.
- MATRIX pages are accessed through the “Database” link.



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Proposal Submission



- Proponent Selects “Proposal & Site Submission” to add a proposal
- Panel members and Administrators select “Proposal Administrative Pages” to work with existing proposal and requirement data.

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New Proposal: Contact Selection

CONTACT INFORMATION

You are about to start the Proposal and Site submission process. Before continuing any further, we must verify that we have your contact information. The following list contains personal and organization contact information at Data Bank's disposal. Please select your party and click on the continue button. If you cannot find your name or organization in this list, please click [here](#) to add your contact information to our database (after completing the form that will appear in a separate window please refresh this page so that the contact list is repopulated with your contact information).

Proponent, Joe - Fictitious University

Next

- Select or Add a contact to associate with the new proposal.
- In a fully functional system, username and passwords would provide ID verification and security.

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Contact Verification

MANAGE PROPOSALS

This page will allow you to manage your proposals. If have not created a proposal yet, click on the "add proposal" button to do so. Once created, a proposal will appear below as a folder. You can add and remove sites as well change site and proposal information.

Your name : Proponent Joe
Your organization : Fictitious University

add proposal

- This page currently only allows accepting the contact selection.
- Pressing the “Add Proposal” button performs the record insert into the database table.

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Proposal Entry

- Contact information is Displayed
- A new proposal may be created
- Full website would request all data on iSAS Office proposal cover sheets.

CONTACT INFORMATION

A proposal stays dormant in our system until we verify that we have all the required information. Before your proposal appears before Site Survey Panel you may be contacted by Data Bank with questions about your proposals and site proposals. Please verify once more that your contact information below is correct and updated:

First Name : Joe
Middle Name :
Last Name : Proponent
Organization : Fictitious University
Department : Department of Fake Research
Title : Dr
Work Address :
Work City :
Work State :
Work Zip :
Work Country :
Home Address :
Home City :
Home State :
Home Zip :
Home Country :
Work Phone :
Home Phone :
Fax Phone :
E-Mail 1 :
E-Mail 2 :
Mobile Phone :
Comments :

If you wish to change your contact information you may do so by clicking on the update button. After updating your contact information you must once again start from [Proposal Entry](#) screen.

PROPOSAL INFORMATION

In order for the system to successfully create a new proposal, you must provide us with the following proposal information.

Proposal Name :

Proposal Abstract :

Proposal PDF URL :

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Proposal Confirmation

PROPOSAL CREATION

Your information was verified and a proposal number has been generated. Please click the "confirm" button to finalize the creation of your proposal.

Primary Contact : Joe Proponent, Fictitious University
Database Generated Proposal Number : 640-Pre
Date of Proposal Creation : 2003-09-09
Proposal Name : Drilling the Really Big Plateau
Proposal Abstract : We are going to drill a really big plateau.
Proposal PDF URL : bigplateau.pdf

PROPOSAL CREATION

Your proposal has been finalized in our system with proposal number **640-Pre**. You may now proceed to add sites to your proposal by clicking on the 'add sites' button.

- Screenshot on left shows a confirmation page which would allow correction of data in full version.
- Second screen verifies the insertion of the proposal record in the database table.

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Proposal List

MANAGE PROPOSALS

This page will allow you to manage your proposals. If have not created a proposal yet, click on the "add proposal" button to do so. Once created, a proposal will appear below as a folder. You can add and remove sites as well change site and proposal information.

Your name : Proponent Joe
Your organization : Fictitious University

add proposal

640-Pre [edit proposal](#) [add site](#)

- This is a summary of all active proposals for a given contact record.
- At this point there is only a single proposal that contains no sites.
- Click the “Add Site” link to enter site information.

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Adding a Site to a Proposal

- Information requested is as shown on the iSAS Office proposal cover sheet.
- Currently all fields are string variables. In full version total penetration should be calculated from numeric fields.
- Next Screen confirms site entry into database table.

SITE INFORMATION

Site Name : BPlat-1A
Latitude : 80.0
Longitude : -90.0
Water Depth : 3000
Sediment Penetration : 500
Basement Penetration : 100
Total Penetration : 600
Site Objective : Obtain complete sediment section and sample basement.

add site

CONTACT INFORMATION

Your site was successfully added to our database. Please click on the "next" button to proceed to the Requirements Matrix.

next

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MATRIX Requirement Page 1

- Displays basic site information.
- Asks a single question regarding margin type which is used to select questions to be displayed on next page.

Please answer the following questions about your site. Your answers will allow a list of data requirements for this site to be generated based upon current SSP and PPSP guidelines. Please note that this listing will show only the minimum data needed to satisfy both the scientific and safety requirements for this site. This list may be modified following SSP and PPSP review, and additional data types may be required.

Proposal number: 640-Pre
Site name: BPlat-1A
Latitude: 80.0
Longitude: -50.0
Water Depth: 3000
Sediment penetration: 500
Bsmnt penetration: 100
Site name: BPlat-1A
Total penetration: 600
Site objective: Obtain complete sediment section and sample basement.

Please select site margin:

- Active
 Passive
 Other

[Continue](#)

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MATRIX Requirements Page 2

Specify target:

Tectonic Window
 Paleoenvironmental Site

Is this a "Hard" Irregular Outcrop?

Yes
 No

Is there a suspected Gas Seep?

Yes
 No

Bare Rock?

Yes
 No

Is this a Re-entry site?

Yes
 No

Is surface slope greater than 10 degrees?

Yes
 No

Suspected Hydrocarbon Province?

Yes
 No

Suspected High Heat Flow?

Yes
 No

Is penetration greater than 200 ft? (Note: in the near future the system will automatically calculate the answer to this question)

Yes
 No

Suspected Over-pressured formation?

Yes
 No

Is there a greater than 2 km sediment?

Yes
 No

Select penetration range: (Note: in the near future the system will automatically calculate the answer to this question)

less than 100m
 101m - 400m
 401m - 1000m
 greater than 1000m

[Continue](#)

- Entry of remaining requirement selection criteria.

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Site Requirement Listing

- After answering MATRIX questions a site summary is provided, along with a requirements list.
- In a full version this could be done in batch mode for a set of sites or site-by-site.
- The “Manage Sites” button returns to the proposal/site summary for a given contact.
- Requirements are captured in the database and can be modified at a later time in panel reviews.

-

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Proposal Summary with Sites

- Once the site has been proposed, it appears in the listing for its proposal.
- Additional proposals and sites can be added and will be summarized for each contact record.

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Requirements Management

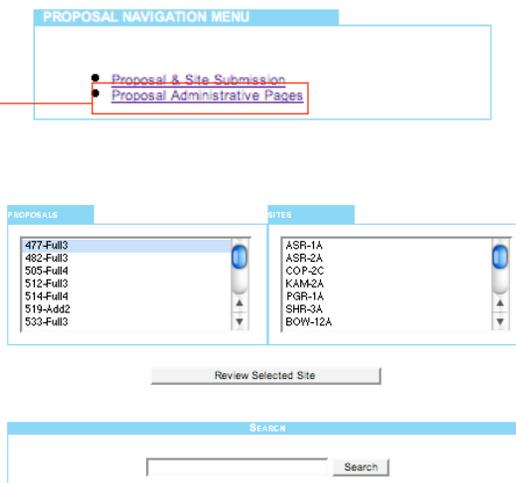
- Requirements generated by the MATRIX system are preliminary and will probably be modified by an SSP or PPSP watchdog during review.
- The requirements are captured in the database for reuse and modification.
- A set of administrative pages are available to add or delete requirements for a site.

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Administrative Pages

- Clicking “Proposal Administrative Pages” on the navigation menu allows selection of a site for editing.
- Selection of a proposal in the first box gives the appropriate site list in the second box.



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Requirement Modification

- Requirements may be added by selecting them from the drop-down menu and pressing the “Add Requirement” button.
- A note explaining the added requirement can be entered in the text box.
- Requirements may be removed by marking one or more check boxes and pressing the “Remove Checked Requirements” button.
- At this time, no explanation can be entered for deleted requirements. This should be implemented.

The screenshot shows a web application interface. The top section is titled "PROPOSAL & SITE INFORMATION" and contains a form with the following fields: Proposal number: 640-Pre, Site name: BPlat-1A, Latitude: 80.0, Longitude: -50.0, Water Depth: 3000, Sediment Penetration: 500, Benthic Penetration: 100, Total Penetration: 800, and Site Objective: Obtain complete sediment section and sample basement. Below this form are three buttons: "Back to Listing", "Update Site Information", and "Guided Requirements Matrix". The bottom section is titled "SITE REQUIREMENTS" and contains a list of requirements with checkboxes: "Lat/Long of site", "Water depth at site", "Proposed depth of penetration", "Tectonic/Depositional Setting", "Swath bathymetry", "Surface samples", "Geotechnical properties data", "Lithologic projection", "High resolution magnetic (hazard)", and "MCS (Crossing Lines)". A "Remove Checked Requirements" button is at the bottom of this list. To the right of the list is a form with a dropdown menu labeled "Lat/Long of site", a "comments:" text box, and an "Add Requirement" button. Red lines connect the text in the list to the corresponding checkboxes in the form.

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Conclusions

- It is feasible to automatically provide proponents with customized data requirements as they propose sites.
- These requirements can be captured and stored for reuse in proposal and site reviews.
- Data regarding proposals, sites, survey requirements, survey data and contacts can be managed as a system rather than as islands of information.
- Open source software and modest hardware can be used to implement a usable system.

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