

Facilitating Remote Science Teams

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Agenda

- The context for RST facilitation
- Roles and responsibilities
- Process
- Expertise required
- Lessons learned
- Research directions



The context for RST facilitation

- Supporting RST scientists distributed in multiple locations in
 - Analyzing incoming science data
 - Formulating recommendations to the hab crew re specific goals, objectives, and tasks
 - Improving RST/crew processes in general, and
 - Understanding and improving the role of collaboration software tools and strategies in particular
- Before, during, and after team meetings/telecons (SOWGs)



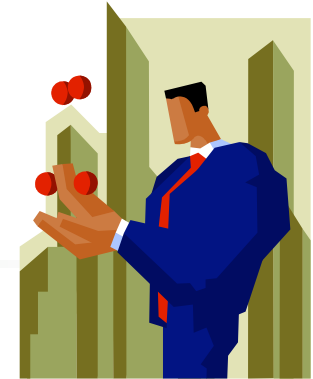
Roles and responsibilities



- RST members
 - Review materials beforehand
 - Prepare analyses
 - Participate in RST telecons
- RST lead
 - Chair the telecons
- Crew uplink lead
 - Create knowledge representations
 - Publish materials from crew sessions
- Crew members
 - Participate in crew sessions
 - Create knowledge representations (using Compendium)
- Meeting Replay team
 - Create web-based videos of crew sessions integrated with Compendium knowledge representations
- Science Organizer team
 - Integrate and maintain SO repository of science data



Roles and responsibilities



■ **RST facilitator**

- Gather, prepare, and publish materials before RST meetings
 - From Science Organizer, Meeting Replay, Crew Compendium exports, RST analyses, emails, and other resources
- Arrange telecon/web conferences
- Convene sessions
- Assist in locating and analyzing science data
- Capture discussion and decisions during the sessions
- Assist RST with software/tool issues
- Build and modify Compendium knowledge representation on the fly
- Retrieve materials from other tools and repositories and integrate them into the knowledge representation
- Create summary materials at the conclusion of each session
- Publish the materials to the web and other repositories

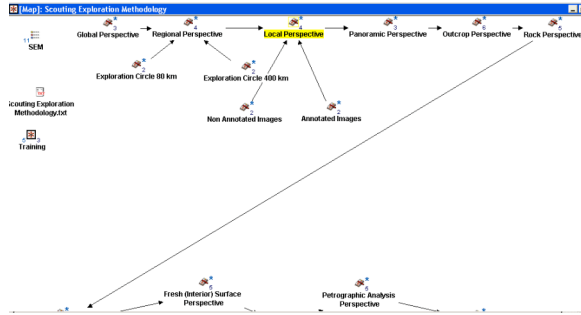


RST facilitation process

- Gathering and preparing materials beforehand

The following examples are all from the May 6 2004 RST session

Methodology maps

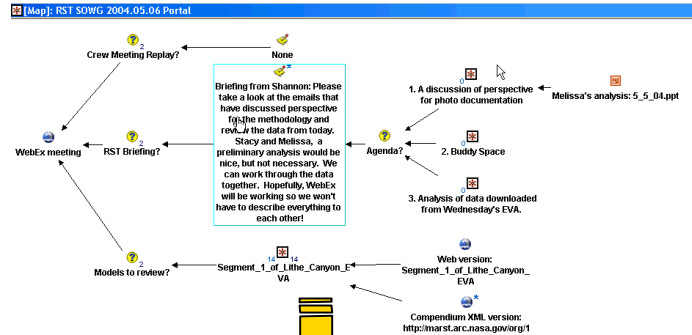


Science Organizer item

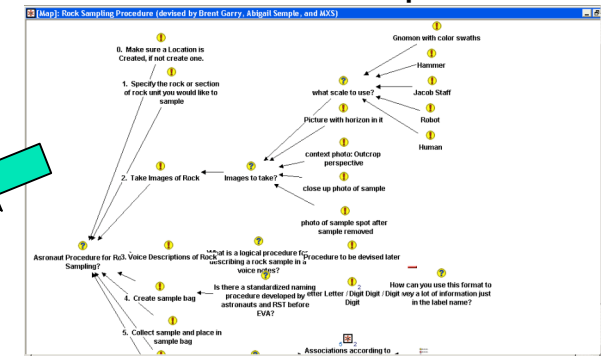
Emails

Web resources

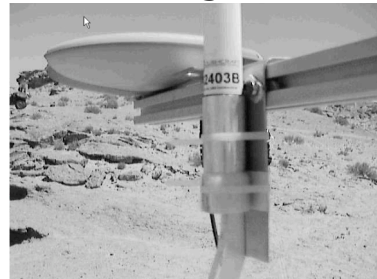
Create Portal map



Hab crew maps



Images



Publish to web

Convene Webex session

RST Analyses



RST facilitation process

- Capture discussion and decisions during the sessions

11m31s

 [Map]: 1. A discussion of perspective for photo documentation



**Shannon started to compile
the emails on this, but
incomplete**

11m58s

 [Map]: 1. A discussion of perspective for photo documentation





**Shannon started to compile
the emails on this, but
incomplete**





**Old 'Local' is now 'Small Sale
Map'**


12m14s

 [Map]: 1. A discussion of perspective for photo documentation


**Shannon started to compile
the emails on this, but
incomplete**


**Old 'Local' is now 'Small Scale
Map'**


We both use Outcrop



 [Map]: 1. A discussion of perspective for photo documentation



**Shannon started to compile
the emails on this, but
incomplete**



**Old 'Local' is now 'Small Scale
Map'**



Pan



We both use Outcrop

12m40s

 [Map]: 1. A discussion of perspective for photo documentation



Shannon started to compile
the emails on this, but
incomplete



Old 'Local' is now 'Small Scale
Map'



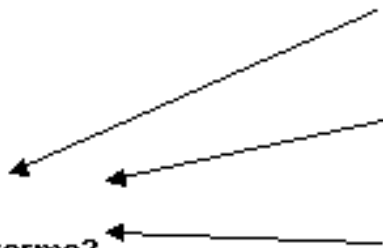
Pan



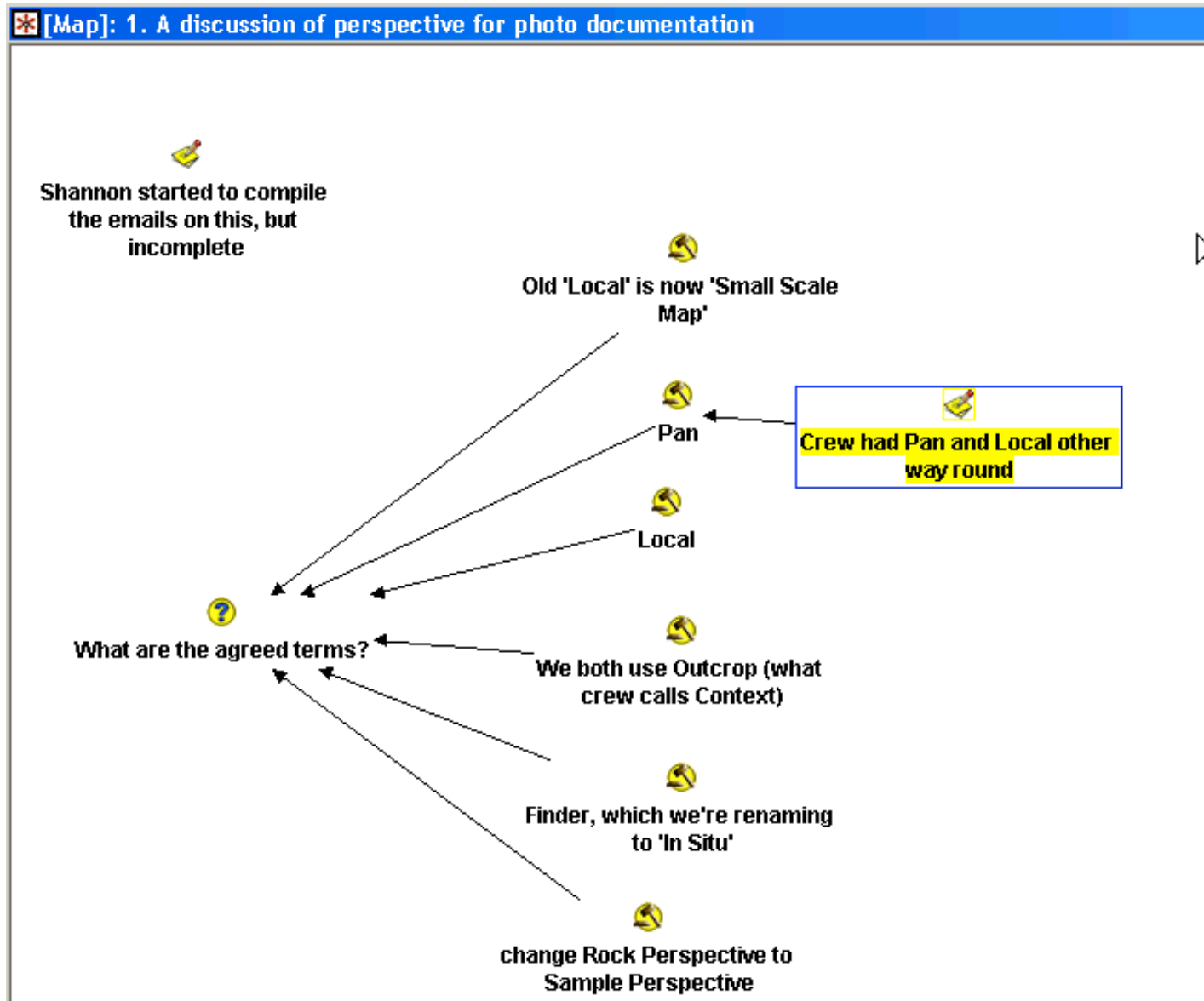
We both use Outcrop



What are the agreed terms?



15m02s



26m23s

[Map]: 1. A discussion of perspective for photo documentation

Shannon started to compile the emails on this, but incomplete

Old 'Local' is now 'Small Scale Map'

Pan ← Cre

Local ?? ← (Stacy

What are the agreed terms?

We both use Outcrop (what crew calls Context)

Finder, which we're renaming to 'In Situ'

change Rock Perspective to Sample Perspective

Finder, which we're renaming to 'In Situ'

Contents | Properties | Views | Tags

Finder, which we're renaming to 'In Situ'

Detail: Page 1 of 1 Last Modified: 6 May, 2004 12:25 PM

Entered: 6 May 2004 At: 12 19

We're not all completely happy with this name, but it has to put both Outcrop and Sample in perspective. We have to be able to find a Sample in the Outcrop photo.

Alternatives?

Sample Source: |

Protolith: (not so multi-disciplinary -- but biologists could learn to use it). In Situ is a more biology term, and also Geology.

OK Close

36m22s

File Edit Map Format Tools Favorites Workspaces Window Help

< Select Tag > 100% 1:1

[Map]: 1. A discussion of perspective for photo documentation

< Select Tag >
EVAhypothesis
MISSIONhypothesis
RSTannotation
RSTself-query
RSTsummary
RSTsummary-key

Shannon started to compile the emails on this, but incomplete

Old 'Local' is now 'Small Scale Map'

Pan ← Crew had Pan and Local other way round

Local (ensure you annotate direction of photo)

What are the agreed terms?

We both use Outcrop (what crew calls Context)

Finder, which we're renaming to 'In Situ'

change Rock Perspective to Sample Perspective

RST would value the Crew's feedback on the revised methodology - any clarification needed?

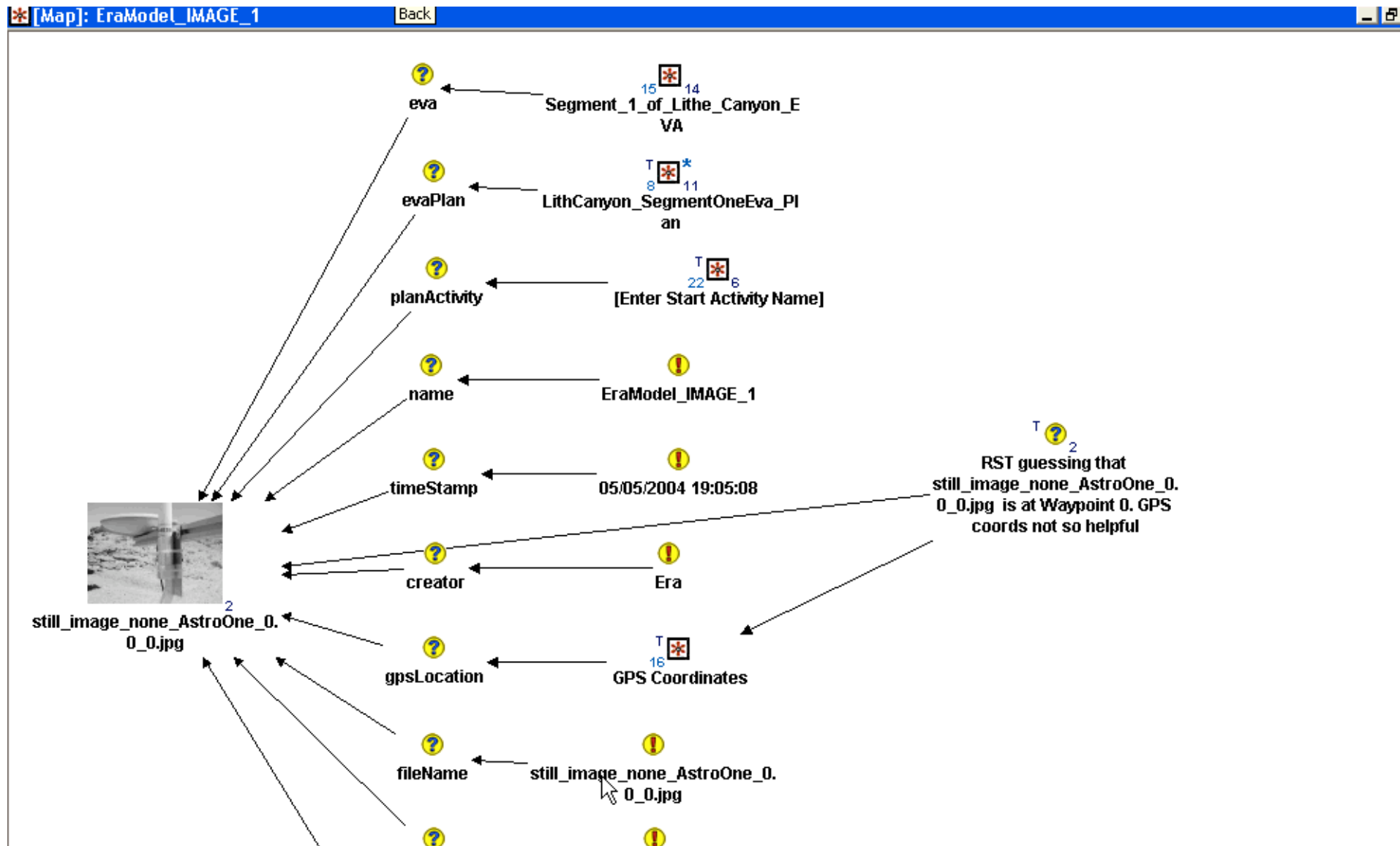
The image shows a screenshot of a software application window. At the top is a menu bar with 'File', 'Edit', 'Map', 'Format', 'Tools', 'Favorites', 'Workspaces', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons for file operations and navigation. The main window title is '[Map]: 1. A discussion of perspective for photo documentation'. A dropdown menu is open, showing a list of tags: '< Select Tag >', 'EVAhypothesis', 'MISSIONhypothesis', 'RSTannotation', 'RSTself-query', 'RSTsummary', and 'RSTsummary-key'. The 'RSTsummary-key' tag is selected. The main content area contains a diagram with several text annotations and arrows pointing to a central question mark icon. The annotations include: 'Shannon started to compile the emails on this, but incomplete', 'Old 'Local' is now 'Small Scale Map'', 'Pan ← Crew had Pan and Local other way round', 'Local (ensure you annotate direction of photo)', 'What are the agreed terms?', 'We both use Outcrop (what crew calls Context)', 'Finder, which we're renaming to 'In Situ'', and 'change Rock Perspective to Sample Perspective'. There is also a yellow highlighted text box on the right that says 'RST would value the Crew's feedback on the revised methodology - any clarification needed?' with a warning icon above it.



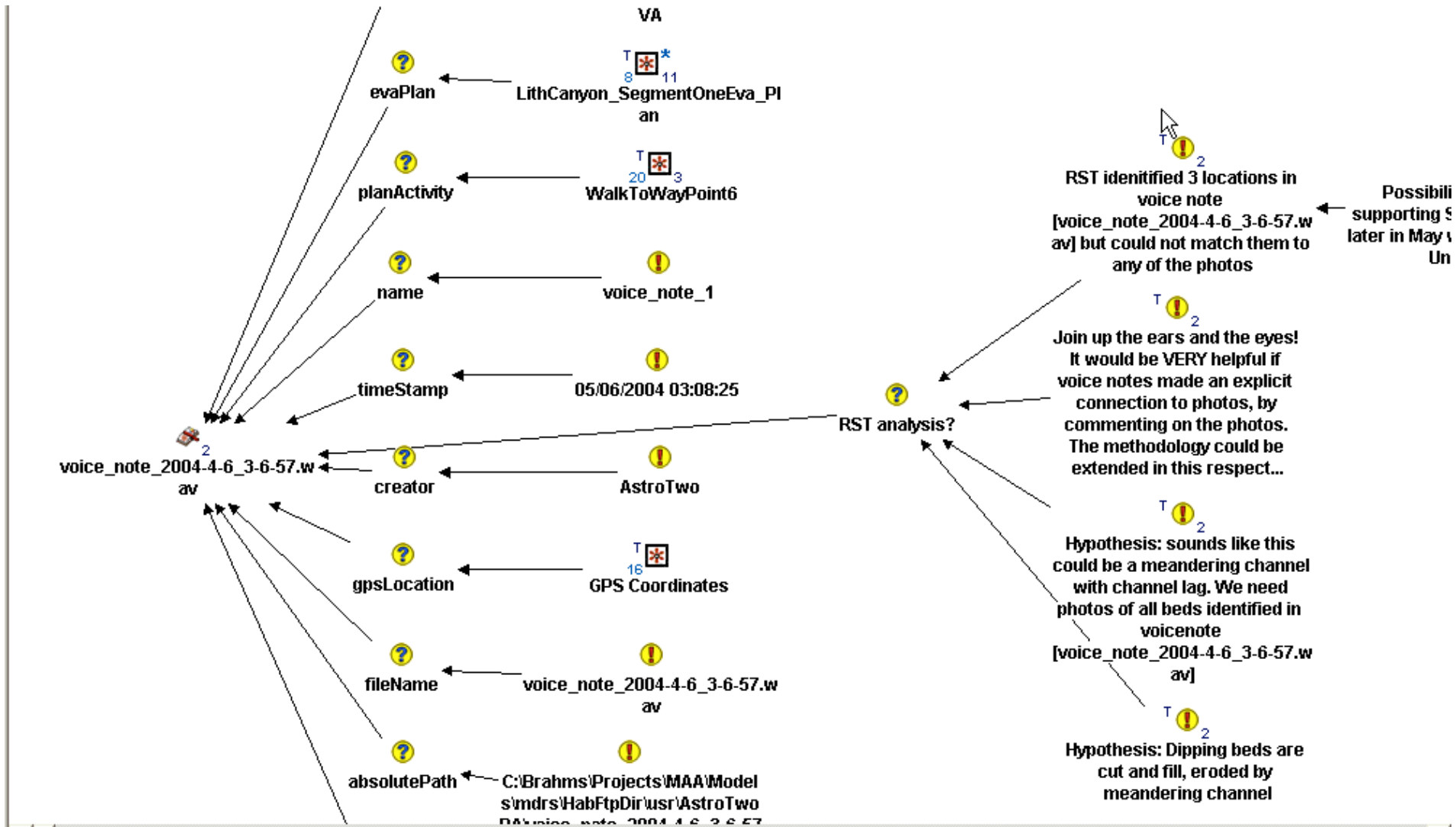
RST facilitation process

- Assist in locating and analyzing science data

121m04s



121m27s



125m36s

The screenshot displays a meeting software interface. At the top, a Windows-style taskbar contains various application icons. The main workspace is divided into two sections. On the left, a shared workspace contains five questions, each preceded by a yellow question mark icon with a '2' next to it. The questions are: "Where is Lith Canyon?", "Today's EVA Map?", "Where should Boudreaux take Panoramas?", "Where should Boudreaux take Pictures?", and "Plan?". To the right of these questions are two images: "lithcanyonaerial.jpg" and "lithseg1wproute.jpg". A yellow box labeled "annotatedlithcanyonaerial.ppt" has arrows pointing to both images. On the right side of the workspace, a video feed shows several people sitting around a table in a meeting room. At the bottom of the interface, there is a control panel. The left side of the panel includes a title bar with "Title: Lith Canyon EVA Segment 1 Planning Meeting - 3rd May 2004", a date "Date: Tue May 4 00:37:00 2004", and a list of participants: "Participants: Maarten, Brent, Abigail, John,". The right side of the panel features a "Current Speaker:" field, a "Nodes:" field, and a "Video Playing" section with a "Pa" button. Below the video playing section is a "GroupSync" section with "Offline" (selected) and "Online" radio buttons, a "Mode" section with "Master" and "Slave" radio buttons, and a "Receiving" section with "Yes" and "No" radio buttons. At the bottom left of the control panel, there is an "Agenda" section with a timeline and a "Sharing" dropdown menu.

Where is Lith Canyon?

lithcanyonaerial.jpg

annotatedlithcanyonaerial.ppt

Today's EVA Map?

lithseg1wproute.jpg

Where should Boudreaux take Panoramas?

Where should Boudreaux take Pictures?

Plan?

Title: Lith Canyon EVA Segment 1 Planning Meeting - 3rd May 2004
Date: Tue May 4 00:37:00 2004
Participants: [Maarten](#), [Brent](#), [Abigail](#), [John](#),

Current Speaker:
Nodes:

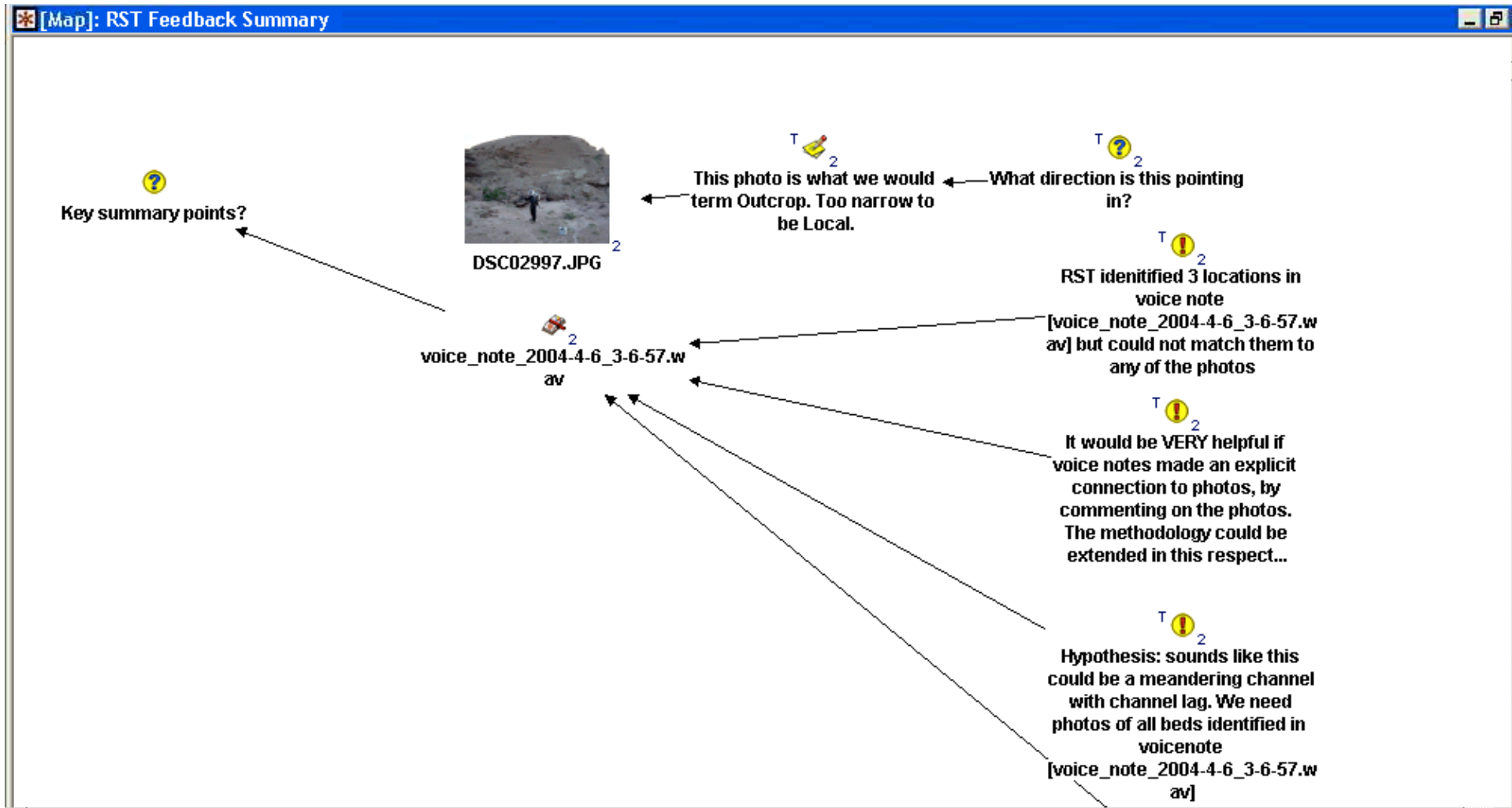
Video Playing Pa
GroupSync Offline Online
Mode Master Slave
Receiving Yes No

Agenda
Compendium
Abigail
Brent
John
Maarten
Sharing



RST facilitation process

- Create summary materials at the conclusion of each session



102m30s

The screenshot shows a software interface with three overlapping windows:

- Choose a file to import:** A file selection dialog showing a folder named "MDRS Crew 29 April 2004". It contains three files: "RST-misc-discussion-2004.04.28.jpg", "RST-SummaryFeedback.jpg", and "RST-SummaryFeedback-Template.xml". The "File name" field contains "RST-SummaryFeedback-Template.xml".
- Import XML...:** A dialog box with the following options:
 - Set author as Maarten Sierhuis and all dates as today?
 - Include original Author and Date in detail?
 - Preserve transclusions?
 - Overwrite existing Nodes with imported data?
 - Preserve Imported Node IDs?Buttons for "Import XML..." and "Cancel" are at the bottom.
- Main Content Area:** A large window with a toolbar at the top. It contains several annotations with arrows pointing to specific elements:
 - "Key summary points?" points to a question mark icon.
 - "voice_note_2004-4-6_3-6-57.w" points to a text label.
 - "This photo is what we would term Outcrop. Too narrow to be Local." points to a photo icon.
 - "What direction is this pointing in?" points to a question mark icon.
 - "RST identified 3 locations in voice note [voice_note_2004-4-6_3-6-57.w av] but could not match them to any of the photos" points to a question mark icon.
 - "It would be VERY helpful if voice notes made an explicit connection to photos, by commenting on the photos. The methodology could be extended in this respect..." points to a question mark icon.
 - "Hypothesis: sounds like this could be a meandering channel with channel lag. We need photos of all beds identified in voicenote [voice_note_2004-4-6_3-6-57.w av]" points to a question mark icon.

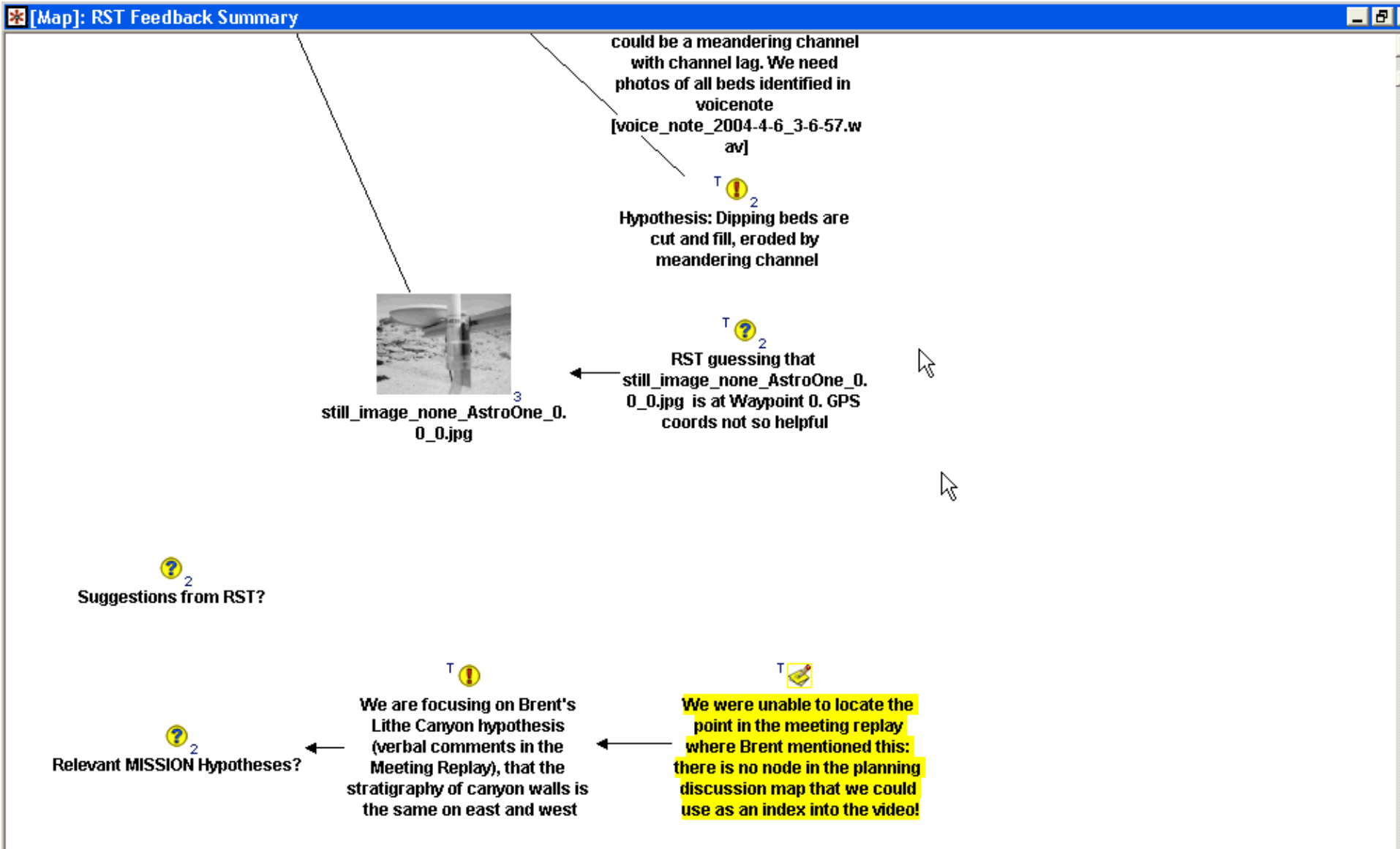
102m32s

[Map]: RST Feedback Summary

The interface displays the following elements:

- Key feedback from RST?** (3 question marks)
- DSC02997.JPG** (2 question marks) - A photo of a rocky outcrop with a person standing next to it.
- Key summary points?** (2 question marks)
- Suggestions from RST?** (2 question marks)
- Relevant MISSION Hypotheses?** (2 question marks)
- voice_note_2004-4-6_3-6-57...av** (2 question marks)
- This photo is what we would term Outcrop. Too narrow to be Local.** (2 question marks)
- XML** dialog box: Import completed: 75% (with a progress bar) and a Cancel button.

128m59s





Expertise required

- To perform RST Facilitator role:
 - Listening and interpreting
 - Intervening in 'normal' conversation flow
 - Getting validation for captured material

} Conventional facilitation skills

 - Building hypertext representations on the fly
 - Interrelating data and objects
 - Adding metadata
 - Software-specific skills

} Knowledge media facilitation skills



Lessons learned

- Effective approach with high potential
- Software tools and methods worked well; gaps and improvements identified
- Key issues:
 - Make it as fast and easy to gather and review materials in advance as possible
 - Publish on the web; don't require individuals to install software, import data, and/or use tools unless necessary or desired
 - Improve interrelationship of science data and RST/crew discussion and annotations (voice notes, images, geographic locations, URLs, etc.)
 - Create 'virtual repository' so each tool can reference common elements (Science Organizer, Brahms, Meeting Replay, Compendium, etc.)



Research directions

- Human performance and software support
- Better understanding of what skills are actually used by expert practitioners, in order to identify
 - Needed skills
 - Training methods
 - Improved software support



Research: “On the fly” practice skills

- Close analysis of sessions shows that facilitators don't just transcribe conversation and follow preset procedures, but improvise and make constant small decisions on what level of engagement to employ with participants
- Modes of engagement
 - Direct
 - Semi-direct
 - Indirect
 - Detached
- In each of these, there can be a variety of 'move' types
 - Individual
 - Compound
 - Mini-projects

	A	B	C	D	E	F	G	H	I	
1	Time	Participant statement	Practitioner action	Practitioner statement / move	Compendium move	Response / Engagem ent mode	Compo d Move	Project	MI	Notes
216	27:23-27:25		S moves "Regional Perspective" slightly to the right, then hovers over the other two nodes just below it briefly, then moves off		Node Move	Delinked				
217	27:40-27:45		S moves up to hover over the Views rollover for "Local Perspective", then does the same for "Regional Perspective"		Hover over Views Indicator	Delinked				Seems to be looking for the SEM map to show it to help inform the current discussion -- showing a background/reference picture (without explicitly calling attention to it)
218	27:52		S goes back to hover over Views rollover for "Local Perspective"		Hover over Views Indicator	Delinked				Looking for transclusions
219	27:56		S click on the Views rollover icon to open the Views window for "Local Perspective"		Opening Views	Delinked				
220	27:57-28:05	"Um so that's it, I'm at my location where I'm going to study, y'know, I've driven my ATB and here's where I'm going to be."								
221	28:00		S double-clicks the "Scouting Exploration Methodology" entry and that map opens in the background		Navigate Via Transclusion	Delinked				
222	28:03		S closes the Views window							Getting it out of the way.
223	28:05		S shifts the view to the left so that the highlighted "Local Perspective" is in the center of the visible frame		Display Move-Making Display Amenable	Delinked				Showing the transcluded node from the previous view. An example of "prospective showing" -- getting something in place to show the participants because he thinks it might be useful. This is one of at least two kinds of prospective showing -- 1) getting reference material (as in this case), 2) positioning/making a setup for new material or discussion to be added.