



Operationally Relevant Metrics for Analyst Test Beds:

Evaluating How Analysts Make Use of their Tools to Inform Tool Development, Integration, and Adaptation

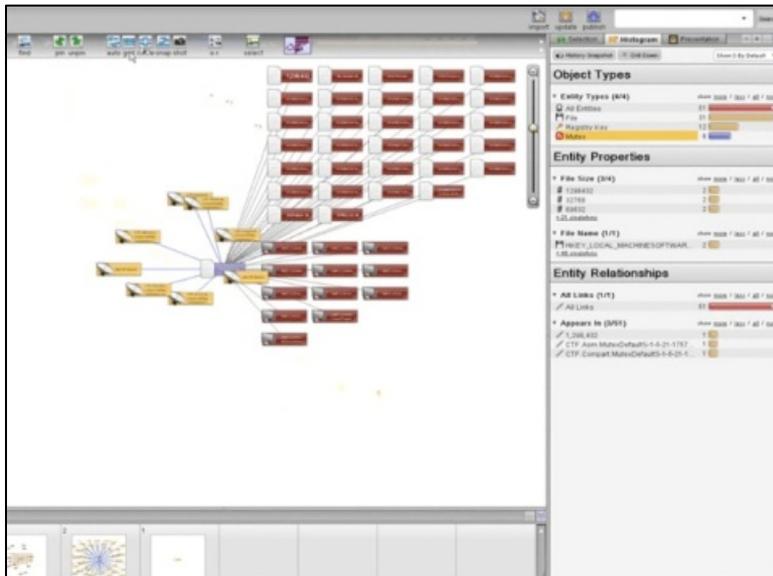
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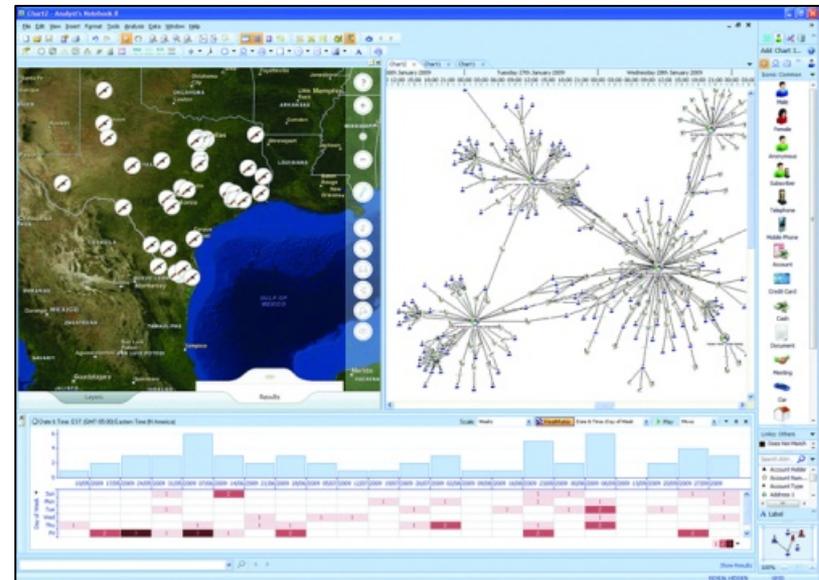
Monolithic Software Suites

Monolithic suites require training and embedded support to align capability with current needs.

Palantir



Analyst Notebook (i2)



Application Suites

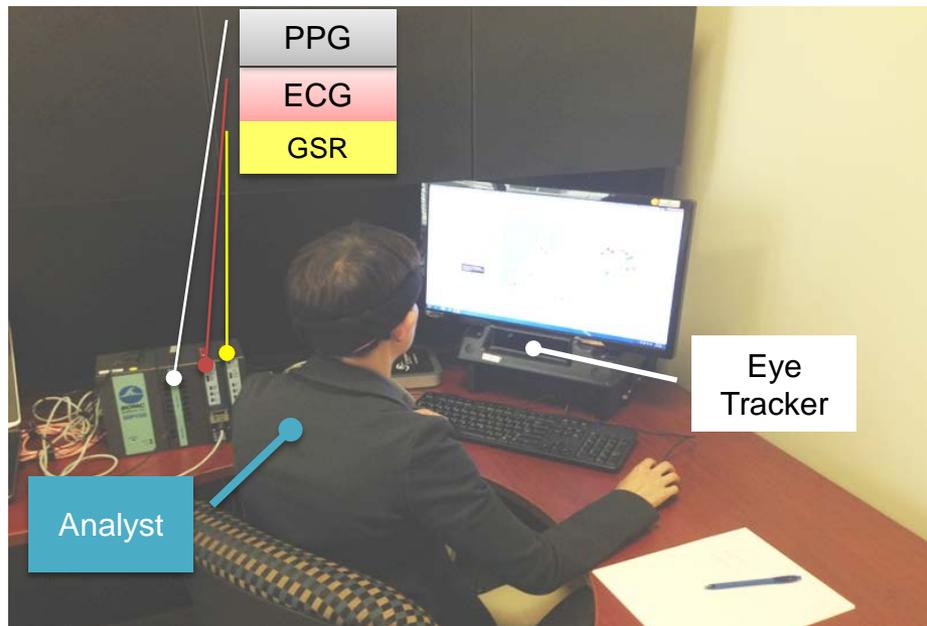
Application suites are more agile to emergent needs, but applications are agnostic to one another; not clear how to vertically integrate them for users.

The screenshot displays the GEOINT App Store interface. At the top, it is labeled 'UNCLASSIFIED' and features the 'GEOINT App Store' logo with a 'Sign In' link and a search bar. The main content area is divided into 'CATEGORIES' and 'TYPES' on the left, and a 'Latest Apps' section in the center. The 'Latest Apps' section lists nine applications with their respective icons, names, and star ratings.

App Name	Rating
Map Atlas	★★★★☆
Golden Hour	★★★★☆
NSSE Event Entry	★★★★☆
UFO Viewer	★★★★★
HSIP Compass (iOS)	★★★★☆
HSIP Compass (Android)	★★★★☆
GPX Download	★★★★☆
UFO (Android)	★★★★★
UFO	★★★★★

Traditional Human Signals

Canon is to collect interpretable data at a cost to ecological validity.



11. Exit this survey >>

92%

1. For each statement, reflect on how you felt during the PREVIOUS TASK and indicate how true each statement was of your experience, using the scale provided.

	1- Strongly Disagree	2- Disagree	3- Neutral	4- Agree	5- Strongly Agree
I lost track of time	<input type="radio"/>				
Things seemed to happen automatically	<input type="radio"/>				
Time seemed to kind of stand still or stop	<input type="radio"/>				
Interacting with the tool seemed automatic	<input type="radio"/>				
My thoughts seemed to move fast	<input type="radio"/>				
I lost track of where I was	<input type="radio"/>				
I interacted with the tool without thinking about how to do so	<input type="radio"/>				
I really got into the task	<input type="radio"/>				

<< Prev Next >>



Software is a Sensor

Software is the new ecology; we can collect data from it.

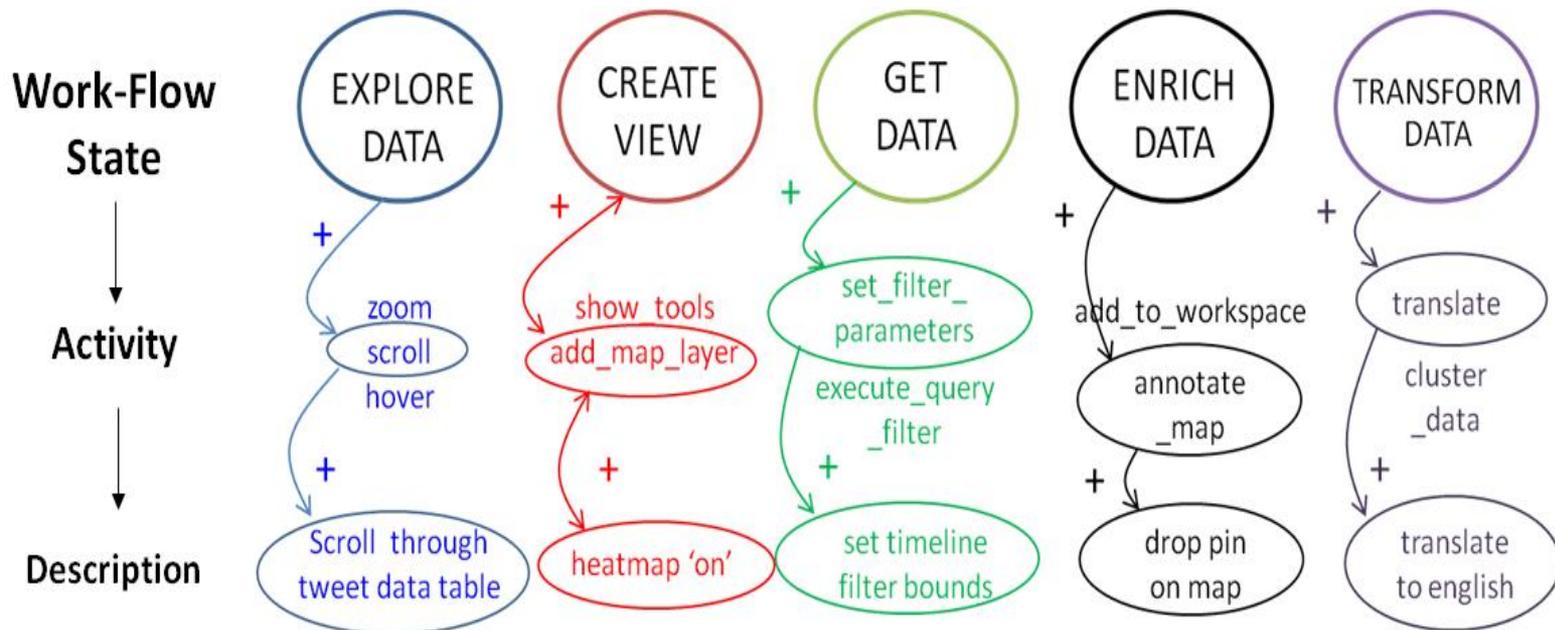
Time-stamped, labeled activity logs give sequential user & system activity.

```
4101_path_A.log - Notepad
File Edit Format View Help
time|cabrilloID|choiceID|cabrilloText|choiceText
05/11/2011 11:23:05.962 PM|171|156|Hey sir, Chief said you wanted to see me?|Hey, can you just give me a second, here?
05/11/2011 11:23:13.540 PM|156|158|No problem, sir.|GM2, you're a San Diego guy, right?
05/11/2011 11:23:18.118 PM|158|160|Yeah, I am.|So you a Padres fan?
05/11/2011 11:23:26.118 PM|160|162|Actually, I'm a dodgers fan.|Ah. so you're an optimist.
05/11/2011 11:23:36.009 PM|162|3|Yeah, I know.|okay, so chief told me you pushed GM3 Thomas.
05/11/2011 11:23:43.134 PM|3|7|Sir, I don't know why it's me who's in here.|okay then, talk to me.
05/11/2011 11:23:57.915 PM|7|13|Everyone's getting on my case, but I didn't start this shit. Thomas did.|I understand you think Thor
05/11/2011 11:24:14.243 PM|13|16|Damn straight I pushed him. Sir, that guy was talking shit about my wife. You know, if you knew th
05/11/2011 11:24:44.822 PM|16|27|Roger that, sir. So I just got done going over duties, you know, at my work center. And all of sud
05/11/2011 11:24:57.243 PM|27|123|Yeah, I know.|well, chief and I will work with you to make sure this doesn't happen again. okay?
05/11/2011 11:25:08.447 PM|123|55|Yes, sir.|okay, so what do you think is a fair reprimand for you in this situation?
05/11/2011 11:25:28.650 PM|55|68|I don't know, sir. I mean, you're probably thinking about a counseling sheet, but you could let me
```

```
{
  "type" : "USERACTION",
  "parms" : {
    "desc" : "National Average added to Chart",
    "activity" : "summerizeData",
    "wf_state" : "4",
    "wf_version" : "1.0"
  },
  "timestamp" : "2014-01-23T16:13:52.503Z",
  "client" : "172.16.3.43",
  "component" : {
    "name" : "KitwareHospitalCosts",
    "version" : "0.1"
  },
  "sessionID" : "52e13fadf361151349000002",
  "impLanguage" : "JavaScript",
  "apiVersion" : "0.2.0"
}
```

Making Software a Sensor

Software Instrumentation is a process for logging user- and software-initiated functions (activities), and labeling them.



Instrumentation Made Easy

The screenshot shows the XDATA Dashboard interface. At the top left, the 'XDATA Dashboard' title is visible. Below it, a navigation bar contains 'QUERY' and 'FILTERING' buttons. A red box highlights the 'FILTERING' button, with a white arrow pointing to it and the number '3'. Below the navigation bar, there are two informational panels: 'HAVE A TIMESTAMP SOMEWHERE?' and 'ABOUT FILTERS'. The main area features a 'HISTOGRAM' chart with a red box around it and the number '2'. The histogram shows a distribution of counts over time, with a legend for 'window_blur', 'hover_start', 'window_focus', and 'window_closed'. A red box also highlights the 'ACTIVITIES' table below the histogram, with the number '1'. The 'ACTIVITIES' table lists terms and their counts. To the right of the histogram is a 'DOCUMENT TYPES' table. At the bottom, there is a 'DOCUMENTS' section with a table of fields and their values.

3

2

1

Term	Count	Action
my	18	🔍 🗑️
1420660468260	8	🔍 🗑️
1420662510419	4	🔍 🗑️
1420662440095	4	🔍 🗑️
1420662434193	2	🔍 🗑️

Term	Count	Action
logs	26	🔍 🗑️
USERFRACTION	18	🔍 🗑️
dashboard	2	🔍 🗑️
temp	1	🔍 🗑️
Missing field	0	🔍 🗑️
Other values	0	

Term	Count	Action
window_blur	7	
hover_start	5	
Window_focus	4	
window_closed	2	

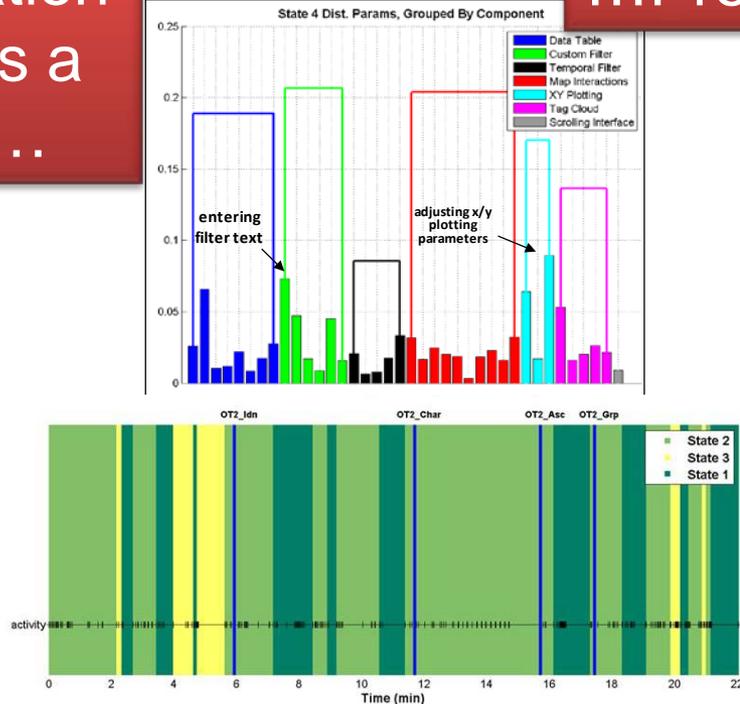
type	timestamp	params.activity	params.desc	params.wf_state

<http://draperlaboratory.github.io/user-ale/>

Usage in Analytic Software

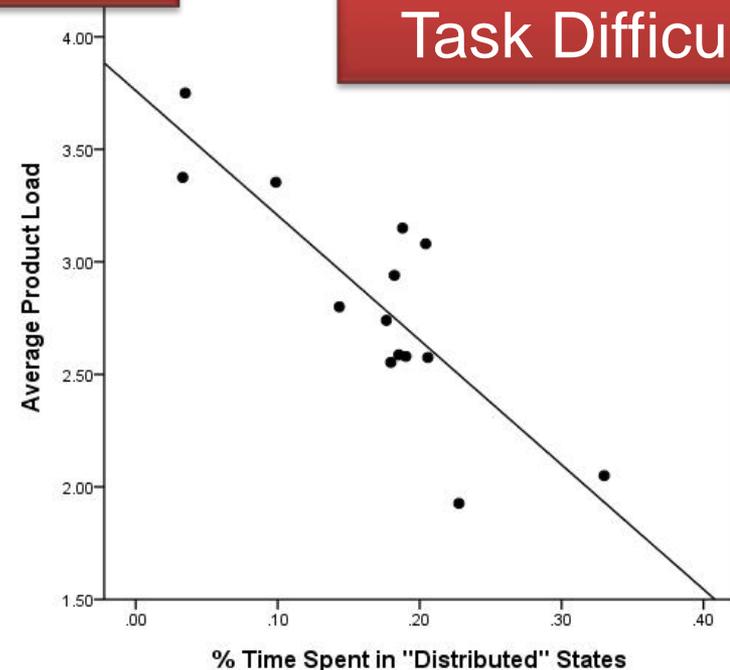
Ensemble modeling demonstrates how users integrate activities across a tool.

Integration
Across a
Tool...



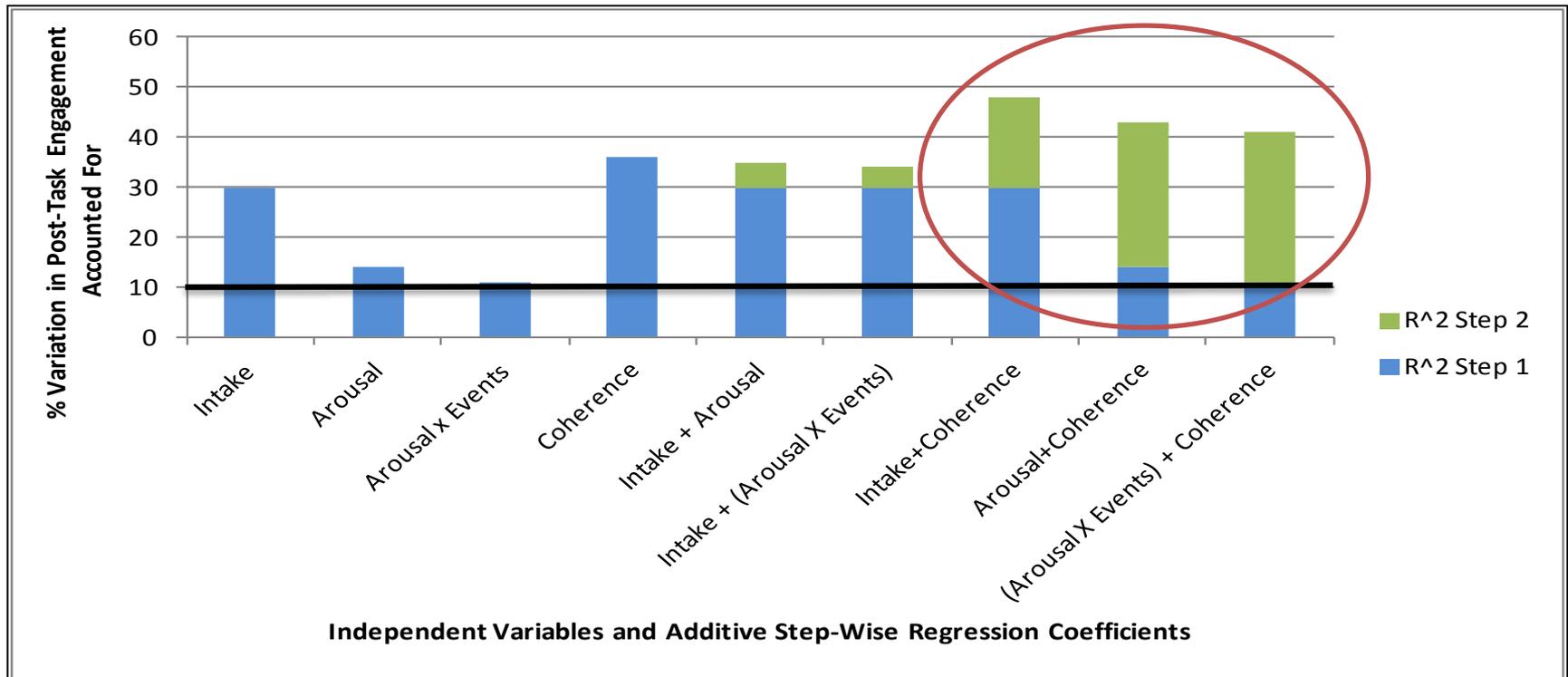
...Predicts ...

Tool-Related
Task Difficulty.



Coherence in HCI

Software logs adds context for understanding user engagement and experience.



Acknowledgements

DARPA Open Catalog:

<http://www.darpa.mil/opencatalog/index.html>

Draper Open Source Products:

<http://draperlaboratory.github.io/>

Participate in the DARPA XDATA Online
Experiment!

Contact: jpoore@draper.com; (617) 258-4023

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