

ESARDA
European Safeguards Research and Development Association

35th ESARDA Annual Meeting
Congrescentrum Duf St. Jan
Bruges, Belgium

Information Management I
27-30 May 2013

New and Emergent Information Technologies for Safeguards

Karl Horak
Sandia National Laboratories
Albuquerque, NM

 Sandia National Laboratories

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Methods -- How to Stay Abreast of the Internet by Using the Internet

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@SandiaLab
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@IAEAISI

"I try to keep up with the pace of technological change, but then I have to take a nap..." 

Mathups and Blogs


Digital Natives


Many Representations

Data regarding the acquisition of knowledge, equipment, and material for non-peaceful nuclear purposes can have many representations.

Graphical Databases

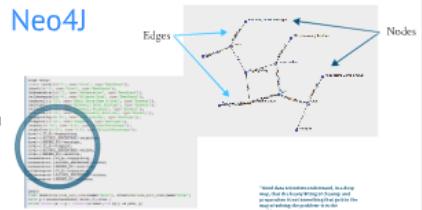
Visualization Methods

Crowdsourcing

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Manage connected data that forms a graph structure.

Neo4J



Conclusions



Crowdsourcing NPM (National Public Means)

Crowdvoting



Crowdfunding



Challenges



Wisdom of the crowd



Implicit crowdsourcing



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Gephi



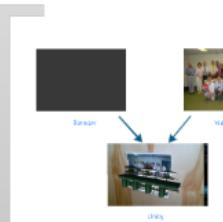
GeoSafeguards



Augmented Reality



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Methods --

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@Gottemoeller
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"I try to keep up with the pace of technological change, but then I have to take a nap...."

Joe Lewis, Chief Web Architect
Sandia National Labs, Livermore

Social media: #lazyweb



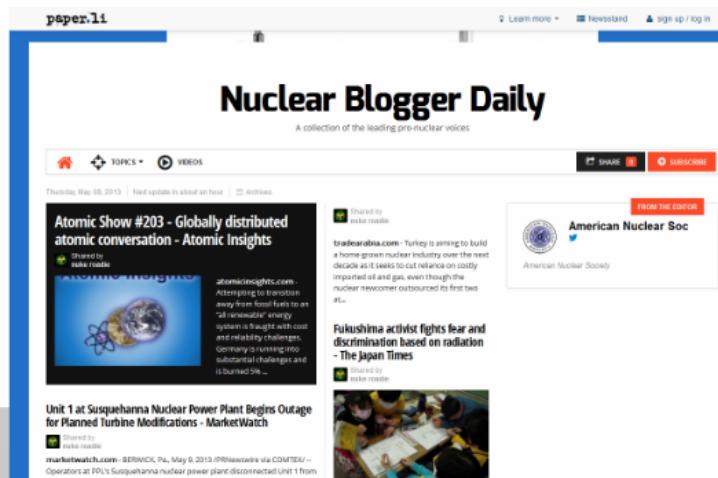
Schlepp @Schlepp 3 Apr
@chrisdiehl! What's your preferred graph database? #lazyweb
Expand

Chris Diehl @ChrisDiehl 3 Apr
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Mashups and Blogs



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MarketWatch.com - BERNICK, Pa., May 8, 2013 (PRWEB) via COMTEX - Operator of PA's Susquehanna nuclear power plant disconnected Unit 1 from the regional power grid early Thursday (9:05 a.m. the start of a sched...

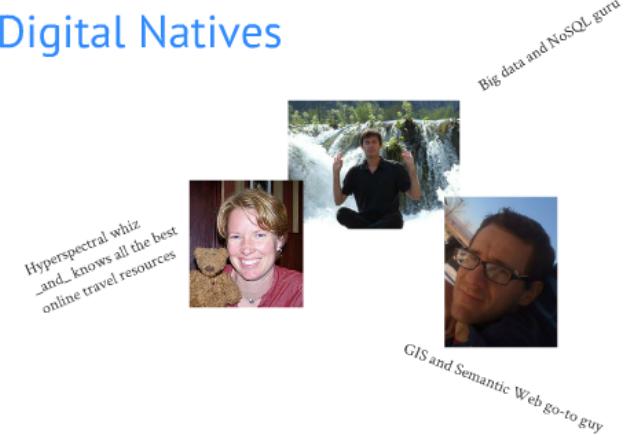
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Digital Natives



Big data and NoSQL guru

Hyperspectral whiz
and knows all the best
online travel resources

GIS and Semantic Web go-to guy

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marketwatch.com - BERWICK, Pa., May 9, 2013 /PRNewswire via COMTEX/ -- Operators at PPL's Susquehanna nuclear power plant disconnected Unit 1 from the regional power grid early Thursday (5/9) at the start of a sched...

Kewaunee nuclear plant shuts down

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tradearabia.com - Turkey is aiming to build a home-grown nuclear industry over the next decade as it seeks to cut reliance on costly imported oil and gas, even though the nuclear newcomer outsourced its first two at...

Fukushima activist fights fear and discrimination based on radiation - The Japan Times

Shared by nuke roadie

japantimes.co.jp - Sachiko Banba aches for children in Fukushima Prefecture, who worry whether they can lead a normal life. "Three frequently asked questions from children are whether they are OK to live in Fukushima...

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Graphical Databases

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Manage connected data that forms a graph structure.

Neo4J

Unstructured
properties

```
Graph Setup:  
create (orval{id:'1', name:'Orval', type:'BeerBrand'}),  
(duvel{id:'2', name:'Duvel', type:'BeerBrand'}),  
(heksemiebier{id:'3', name:'Heksemiebier', type:'BeerBrand'}),  
(wilderengoud{id:'4', name:'Wilderen Goud', type:'BeerBrand'}),  
(andorval{id:'10', name:'Abdij Notre-Dame d Orval', type:'Brewery'}),  
(moortgat{id:'11', name:'Brouwerij Duvel Moortgat', type:'Brewery'}),  
(wilderen{id:'12', name:'Brouwerij Wilderen', type:'Brewery'}),  
(achilles{id:'13', name:'Microbrouwerij Achilles', type:'Brewery'}),  
(hoegegisting{id:'20', name:'Hoge gisting', type:'Beertype'}),  
(trappist{id:'21', name:'Trappist', type:'Beertype'}),  
(sixtwo{id:'30', name:'6.2', type:'AlcoholPercentage'}),  
(eightfive{id:'31', name:'8.5', type:'AlcoholPercentage'}),  
duvel-[:IS_A]->hoegegisting,  
duvel-[:ALCOHOL_PERCENTAGE]->eightfive,  
duvel-[:BREWED_BY]->moortgat,  
orval-[:IS_A]->trappist,  
orval-[:ALCOHOL_PERCENTAGE]->sixtwo,  
orval-[:BREWED_BY]->andorval,  
heksemiebier-[:IS_A]->hoegegisting,  
heksemiebier-[:ALCOHOL_PERCENTAGE]->sixtwo,  
heksemiebier-[:BREWED_BY]->achilles,  
wilderengoud-[:IS_A]->hoegegisting,  
wilderengoud-[:ALCOHOL_PERCENTAGE]->sixtwo,  
wilderengoud-[:BREWED_BY]->wilderen  
  
Query:  
START duvel=node:node_auto_index(name='Duvel'), orval=node:node_auto_index(name='Orval')  
MATCH p = AllshortestPaths( duvel-[*]-orval )  
RETURN EXTRACT(x in p : COALESCE(x.name?, TYPE(x))) as path, p;
```



"Good data scientists understand, in a deep way, that the heavy lifting of cleanup and preparation is not something that gets in the way of solving the problem--it is the problem!"

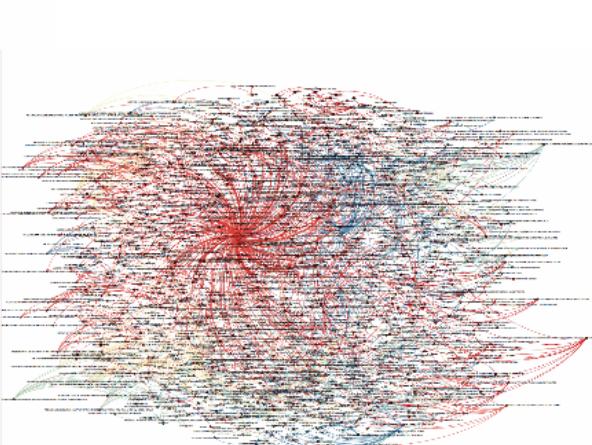
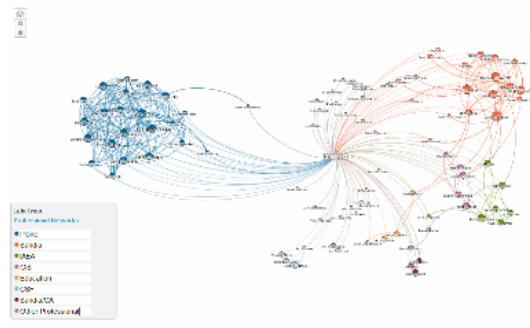
Dj Patil - Founding member of the LinkedIn data science team

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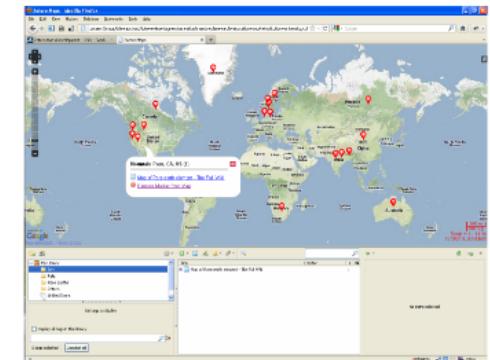
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Visualization Methods

Gephi



GeoSafeguards

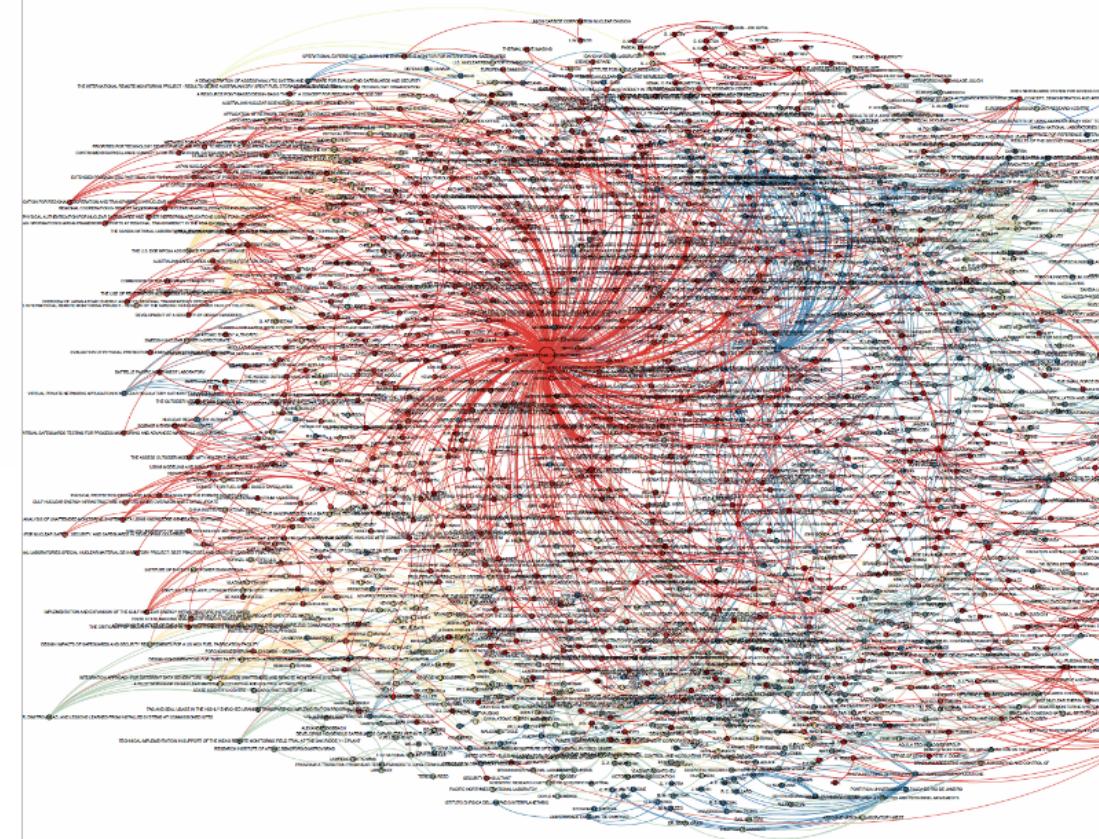
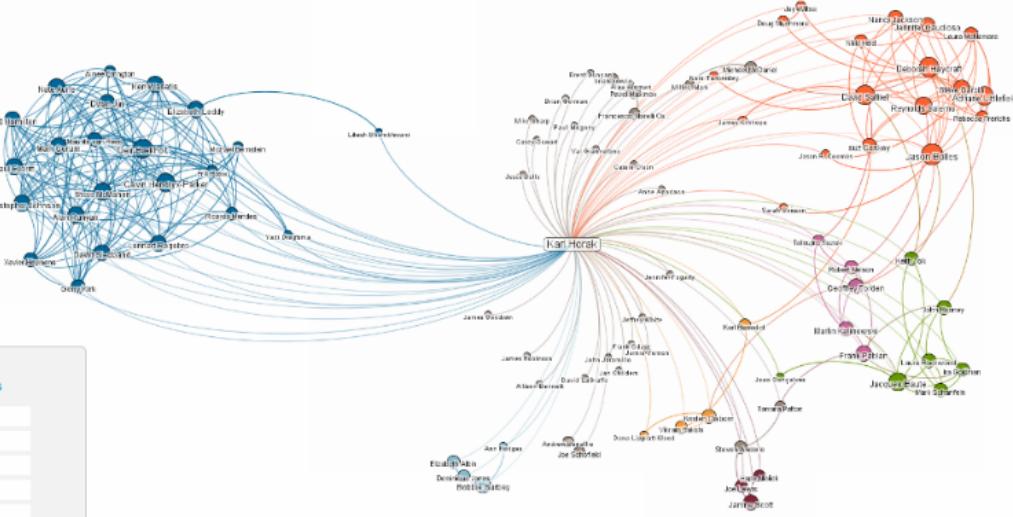


Augmented Reality

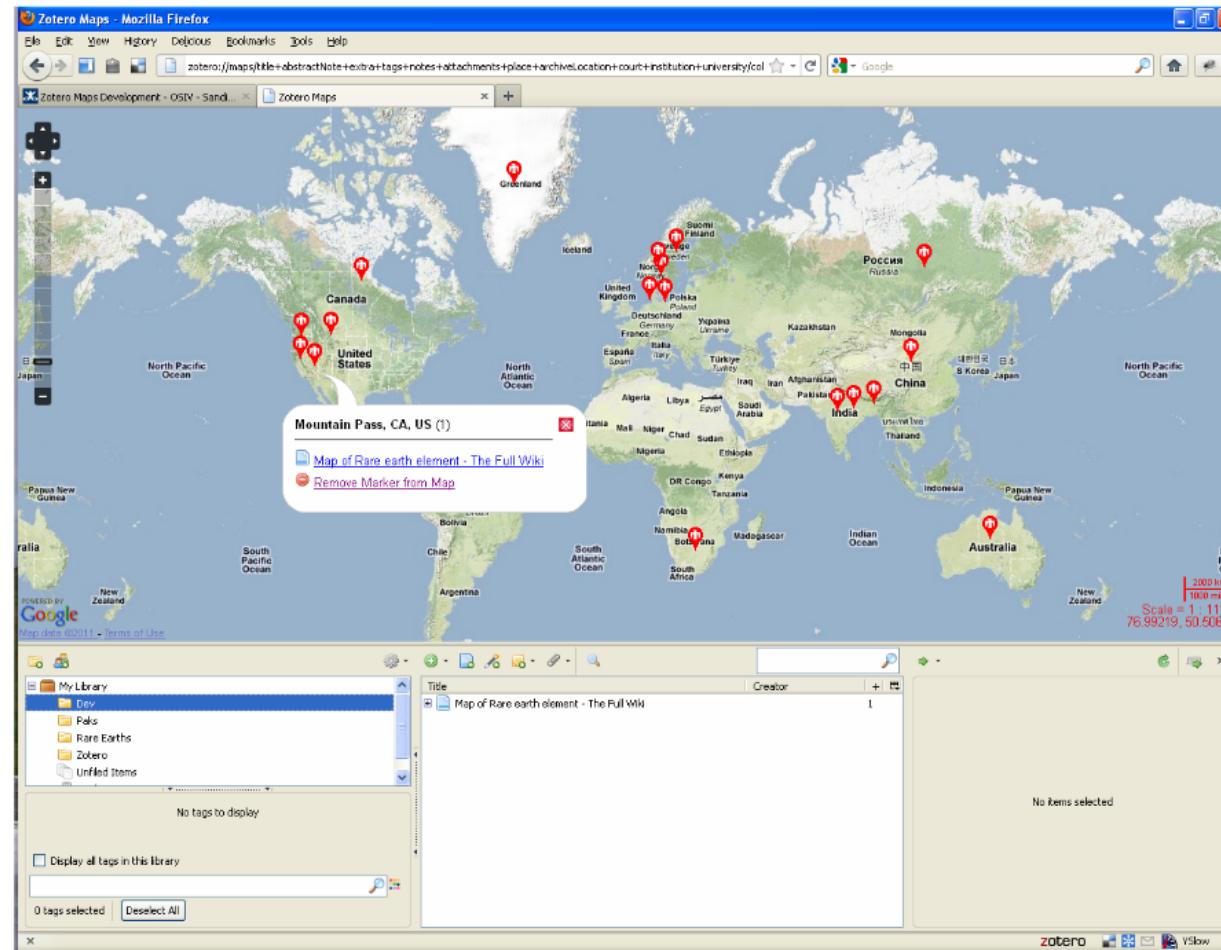
Word Clouds and Word Trees



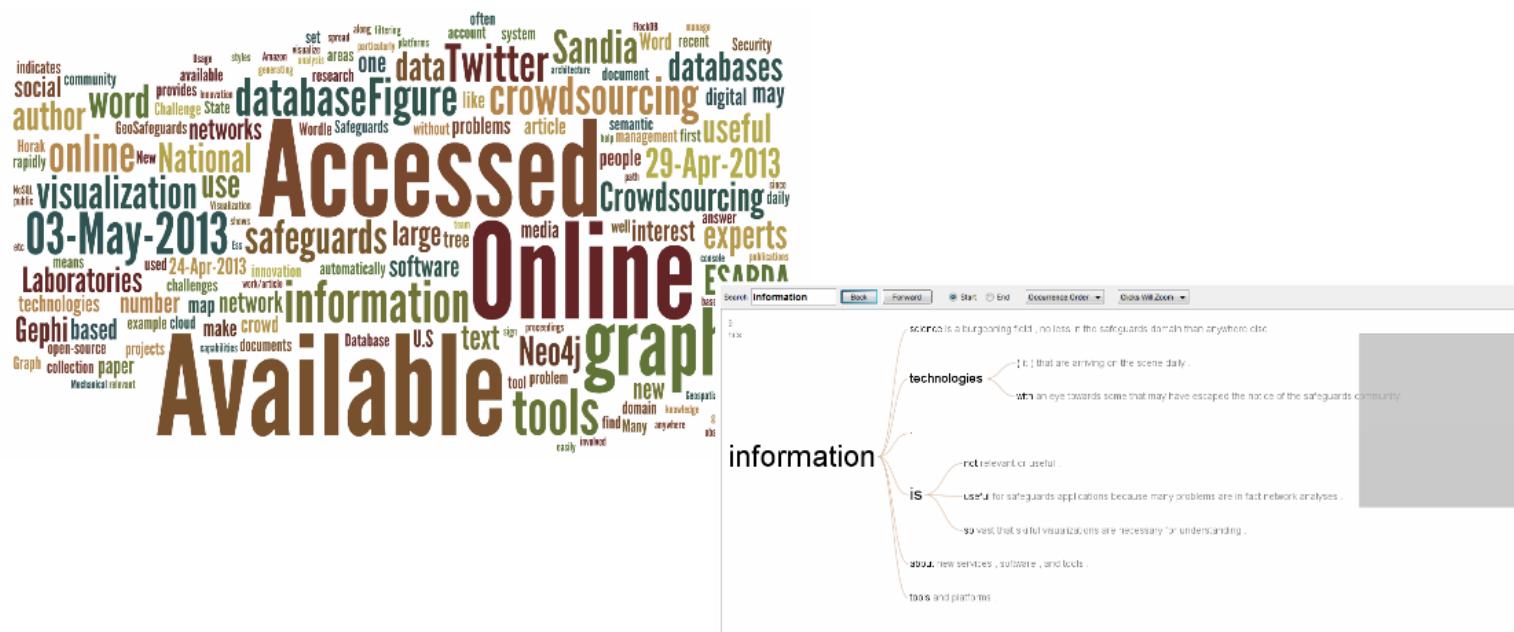
Gephi



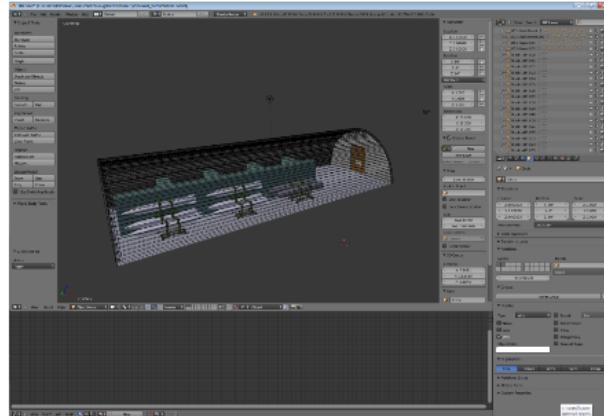
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Word Clouds and Word Trees



Augmented Reality



Blender

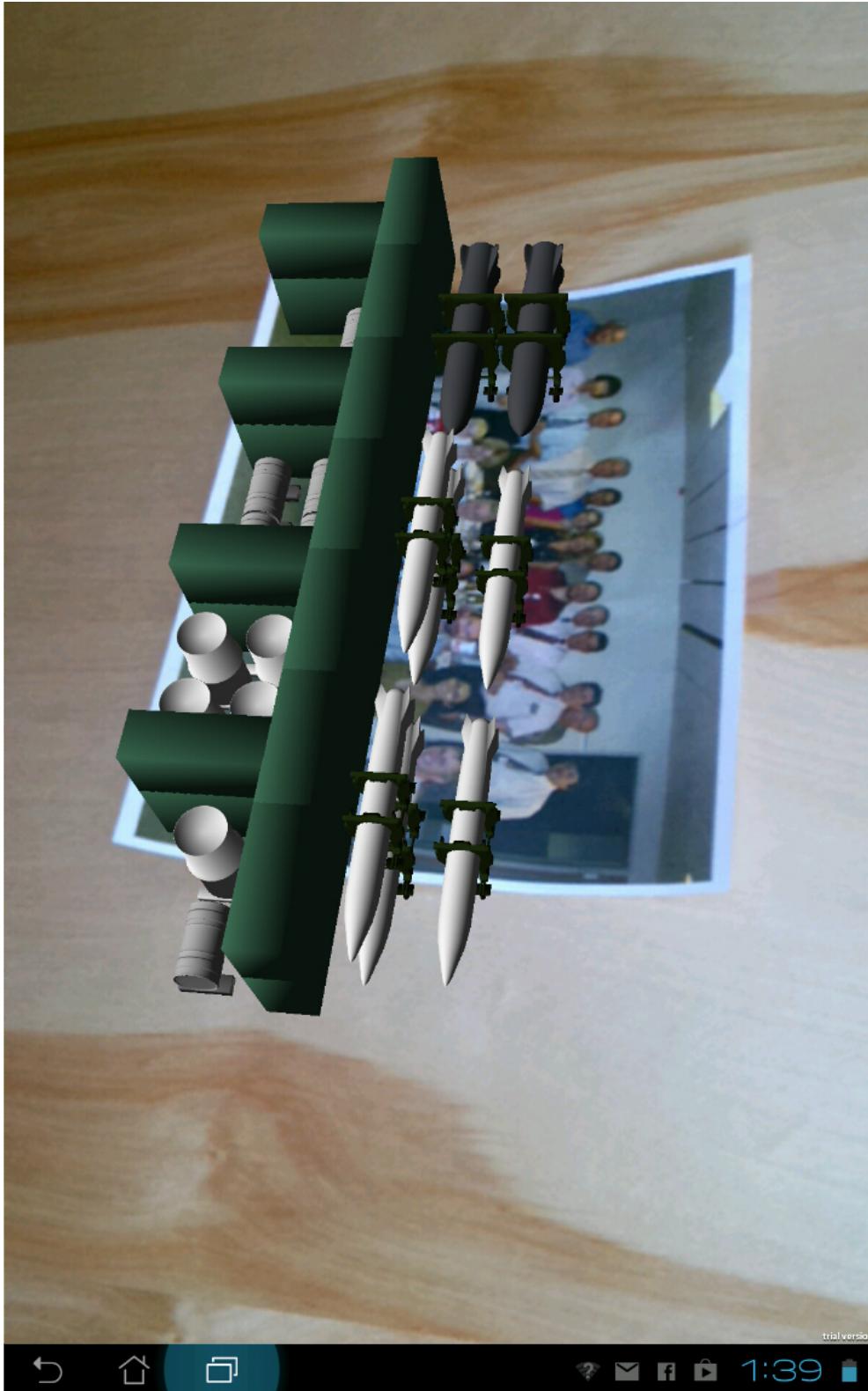


Vuforia



Unity

Unity



Crowdsourcing

NPM (National Public Means)

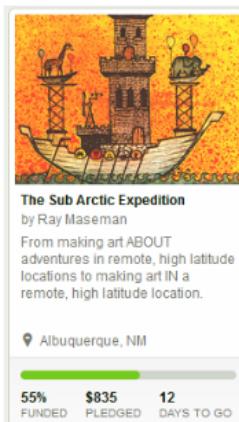
Crowdvoting

International Atomic Energy Agency (IAEA) shared a link.
IAEA April 30, 2013

A workplace without enough women is missing out on 50% of the finest minds on the planet. So to encourage more young women to pursue careers in the sciences later in life and become interested in the work of the Agency, the IAEA hosted Take Your Daughter to Work Day on 25 April 2013. Read all about it here...



Crowdfunding



Challenges



Wisdom of the crowd



Implicit crowdsourcing

Digitizing Books One Word at a Time



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Good Advice

www.iaea.org

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Like · Comment · Share

16

 Sonya Kumar, Sushmita Hossain, Reynaldo Capili and 67 others like this.



Christabel Sanjukta Best of luck to the Daughters of the USA and Europe!

 1 · April 30 at 10:50am



Daiva Vitkute <http://caseyresearchaffiliateuk.blogspot.com/>

May 1 at 1:39am



Crowdfunding



The Sub Arctic Expedition

by Ray Maseman

From making art ABOUT
adventures in remote, high latitude
locations to making art IN a
remote, high latitude location.



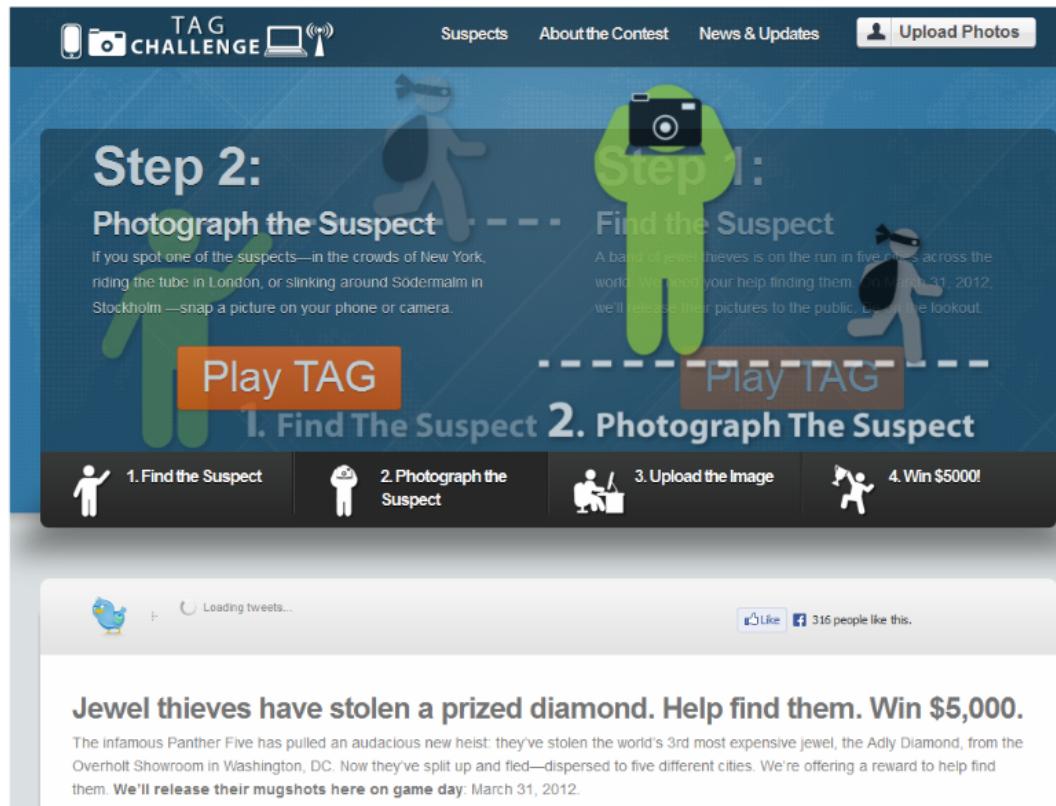
Albuquerque, NM

55%
FUNDLED

\$835
PLEDGED

12
DAYS TO GO

Challenges



The screenshot shows the homepage of the TAG Challenge website. At the top, there is a navigation bar with icons for a smartphone, camera, and laptop, followed by the text "TAG CHALLENGE". To the right of the navigation bar are links for "Suspects", "About the Contest", "News & Updates", and a "Upload Photos" button with a user icon.

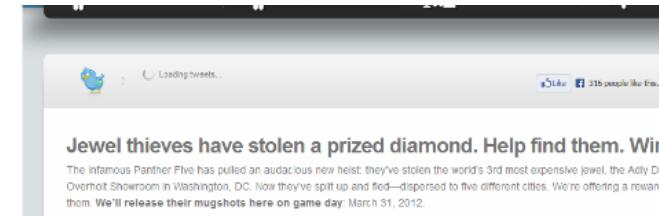
The main content area features two large sections: "Step 2: Photograph the Suspect" on the left and "Step 1: Find the Suspect" on the right. Both sections include a description of the task, a "Play TAG" button, and a numbered list of steps: 1. Find The Suspect and 2. Photograph The Suspect. Below these, there are four numbered steps: 1. Find the Suspect, 2. Photograph the Suspect, 3. Upload the Image, and 4. Win \$5000! Each step is accompanied by a small icon.

At the bottom of the page, there is a section titled "Jewel thieves have stolen a prized diamond. Help find them. Win \$5,000." It includes a description of the heist, a "Loading tweets..." message, and social sharing buttons for Twitter and Facebook. The Facebook button shows "316 people like this."

Wisdom of the crowd



Implicit crowdsourcing



Solve Puzzles for Science

Implicit crowdsourcing

Digitizing Books One Word at a Time

seekoZA

23.7



Submit

Conclusions

Tools

Power ↑
Change ↑
Cognitive burden ↑
Risk ↑

Data

Volume ↑
Number of formats ↑
Complexity ↑

Impact

- Connect with experts
- Use their filters
- Balance risks against benefits

Data

Volume 

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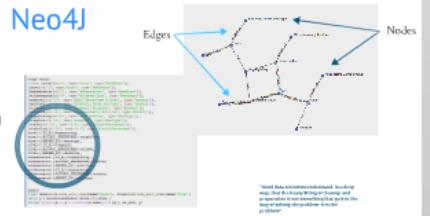
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