The Reconstruction of Narrative in e-Discovery Investigations

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Legal E-discovery

A process in which electronic data is sought, located, secured and searched with the intent of using it as evidence in civil or criminal proceedings, or as part of an inspection ordered by a court or sanctioned by government.

Conrad, JG (2007) E-discovery revisited: a broader perspective for IR Researchers', DESI Workshop on Supporting Search and Sensemaking for Electronically Stored Information in Discovery Proceedings. http://www.umiacs.umd.edu/*oard/desi-ws/papers/conrad.pdf.

1. From knowing nothing to knowing enough

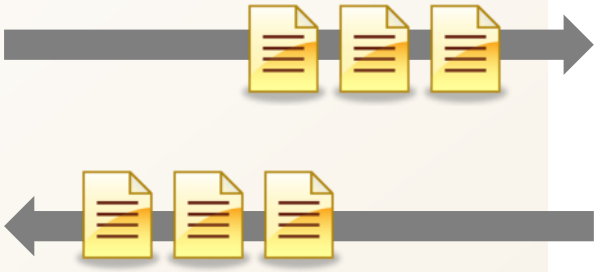
2. The importance of narrative

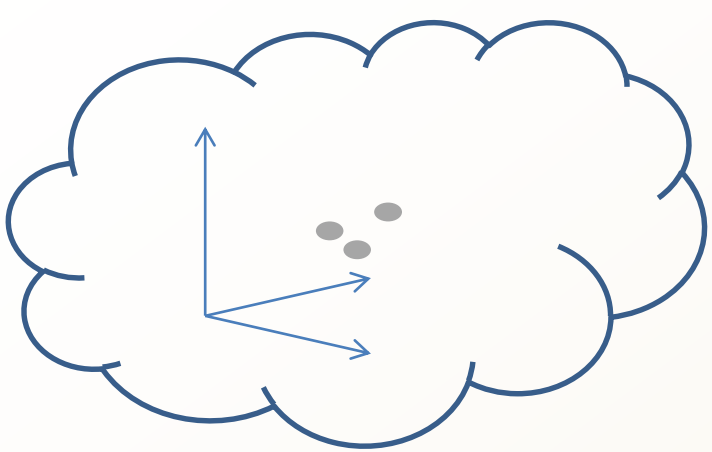
Information Inflation

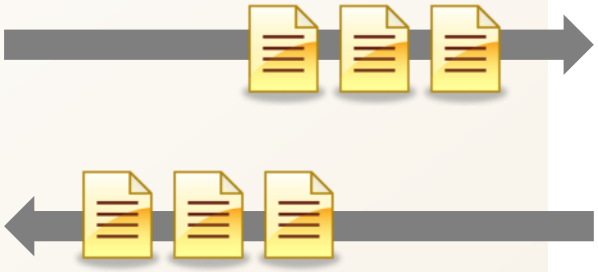
- **Lawyers search, review, sort and re-represent data**
- **A *high-recall* problem - "provide any and all"**
- **A serious challenge to identify a complete evidentiary record within reasonable constraints of time and cost.**

  [Paul and Baron, 2007]

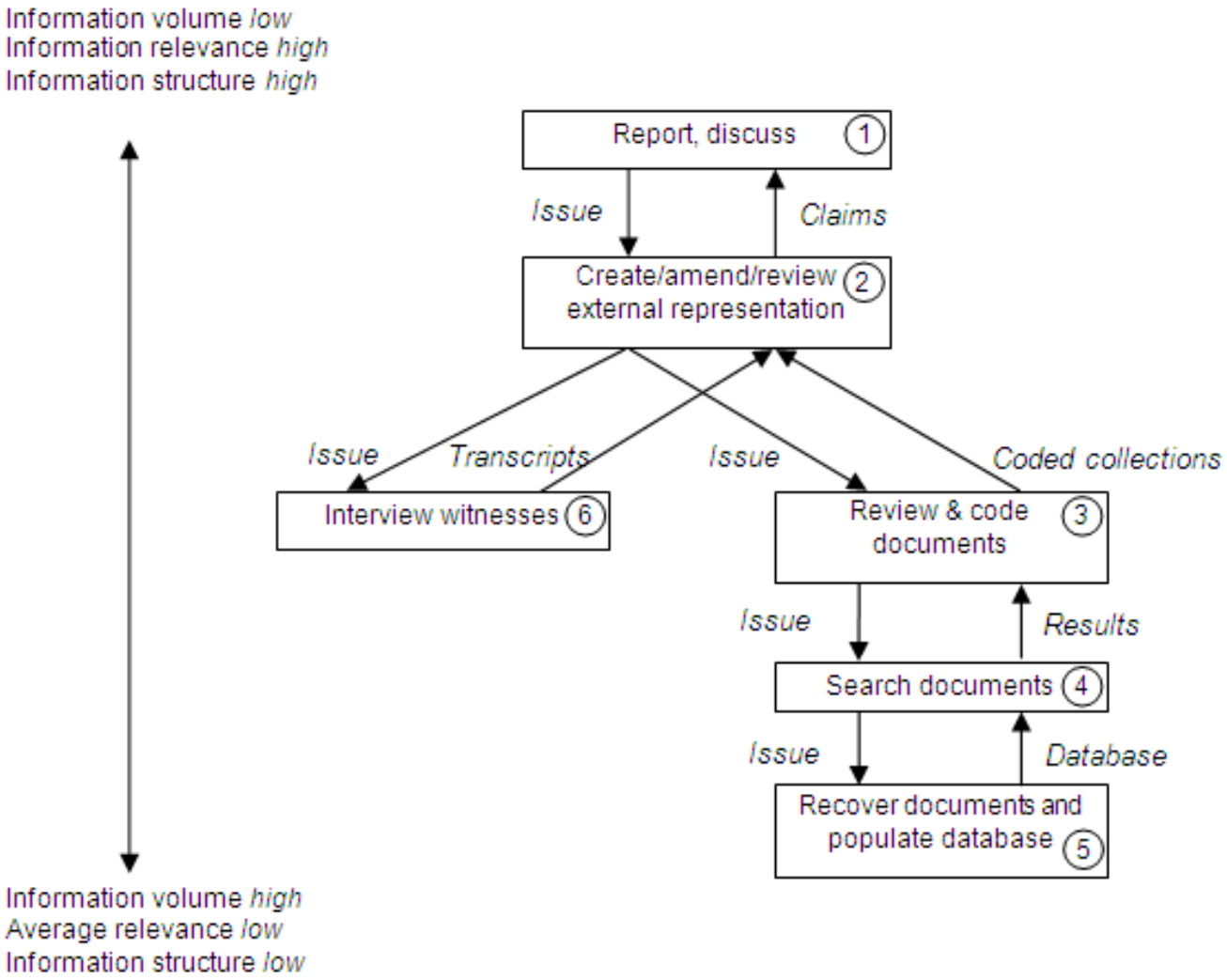
Predictive coding







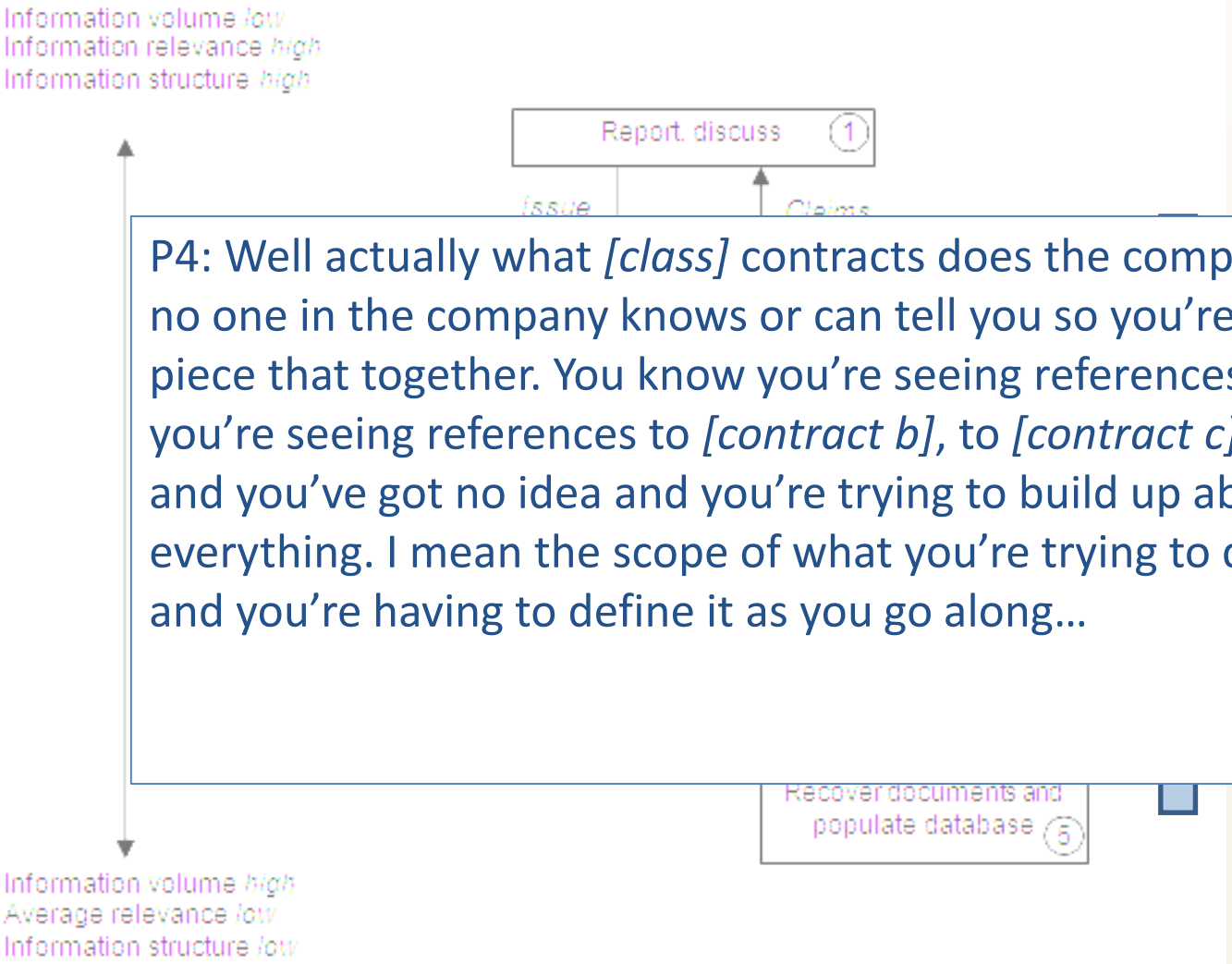
Workflow model



Boxes are processes.

Each performs a transformation.

Arrows are flow of information.



P4: Well actually what *[class]* contracts does the company have? And no one in the company knows or can tell you so you're then trying to piece that together. You know you're seeing references to *[contract a]*, you're seeing references to *[contract b]*, to *[contract c]*, to *[contract d]* and you've got no idea and you're trying to build up absolutely everything. I mean the scope of what you're trying to do is immense and you're having to define it as you go along…

Pennington and Hastie (1991)

	Defence		
Prosecution	Story order	Witness order	Means
Story order	59%	72%	69%
Witness order	31%	63%	47%
Means	45%	70%	

Percentage of Subjects Choosing a Verdict of Guilty of Murder by Prosecution and Defence Order Conditions

Pennington, N. & Hastie, R., 1991. Cognitive Theory of Juror Decision Making: The Story Model, A. *Cardozo Law Review*, 13, p.519.

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Some Recommendations

- Threads of the Yarn - Differentiate in sub-plots and episodes.
- Represent and rehearse the play.
- No reviewer left behind.

3. A study into the influence of external representations

The brief given to participants

The Syrian government, Russia and the US, have reached an agreement on preparations for the Syrian government to step down. The government and some rebels have been accused of causing the civil war in Syria. Syria has been at war since the uprising in March 2011.

Your task as a journalist is to gather the information, in preparation for writing a news story that sums up the key events that have occurred in Syria and led to the conflict.

An example document

Syria conflict: 'Chemical attacks kill hundreds'

21 August 2013

Chemical weapons attacks have killed hundreds on the outskirts of Damascus, Syrian opposition activists say. Rockets with toxic agents were launched at the suburbs of the Ghouta region early on Wednesday as part of a major bombardment on rebel forces, they say. The Syrian army says the accusations have been fabricated to cover up rebel losses. The main opposition alliance said that more than 1,000 people were killed by the attacks.

The United Nations Security Council said it was necessary to clarify what happened in the alleged attack, but stopped short of demanding an investigation by a UN team currently in Damascus, following an emergency meeting on Wednesday evening.

"There is a strong concern among council members about the allegations and a general sense that there must be clarity on what happened and the situation must be followed closely," Argentina's UN Ambassador Maria Cristina Perceval told reporters after a closed-door meeting.

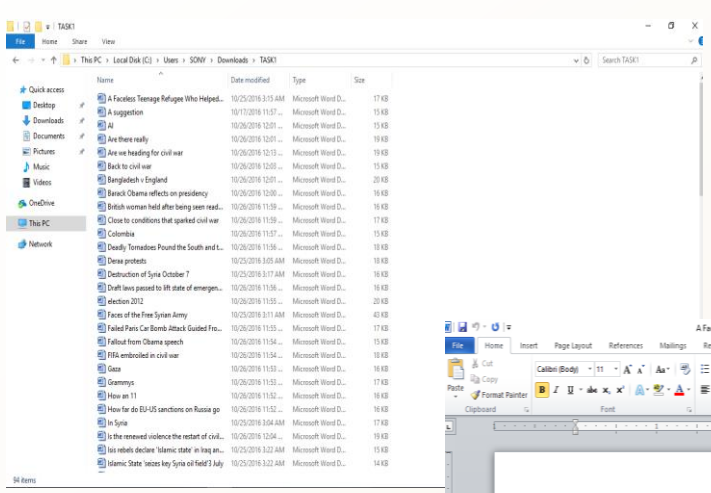
Meanwhile, the US, UK and France are among some 35 member states that have signed a letter calling for the UN inspectors that are already investigating three sites of alleged chemical weapons use in Syria to probe the latest incident as soon as possible.

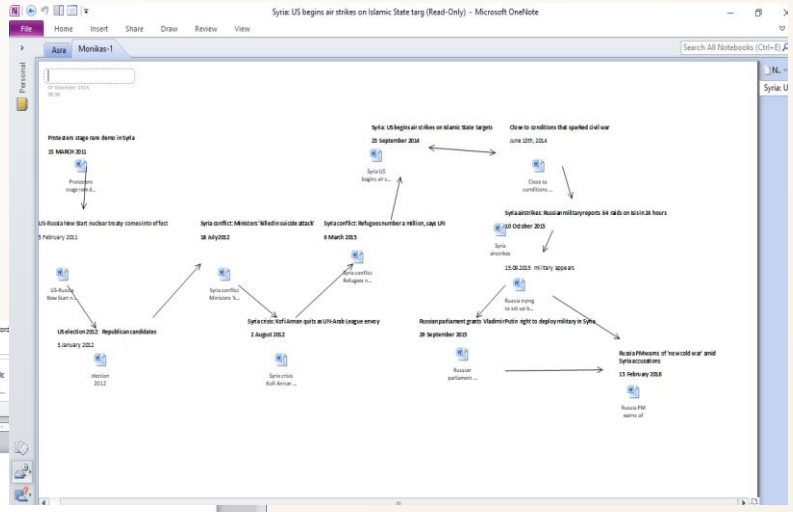
Activist networks reported death tolls from the incident in the hundreds, but these could not be independently confirmed. It is also not clear how many died in the bombardment of the sites and how many deaths were due to any exposure to toxic substances.

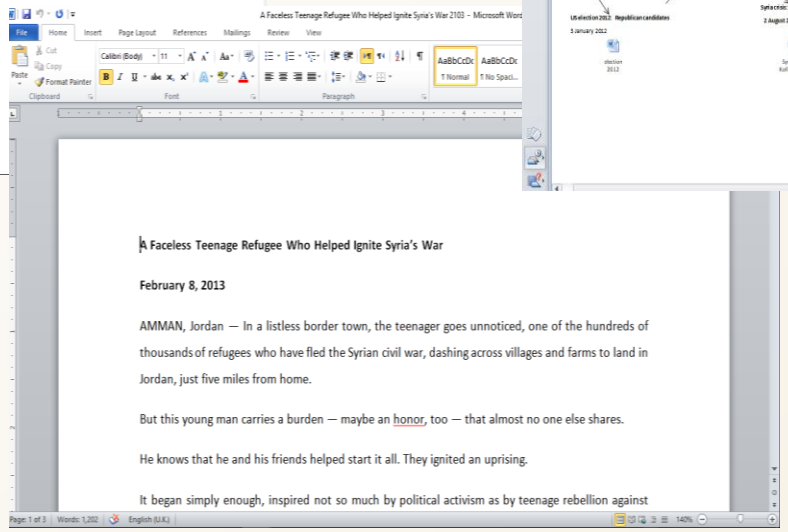
Ghazwan Bwidany, a doctor treating the injured, told the BBC the main symptom, especially among children, was suffocation, as well as salivating and blurred vision. "We don't have the capability to treat all this number of people," he said.

"We're putting them in mosques, in schools. We are lacking medical supplies now, especially atropine, which is the antidote for chemical weapons." In a statement, the army described the accusations of chemical weapons use as grave, and stressed the military's right to fight what it described as terrorism in Syria.

The setup







A Faceless Teenage Refugee Who Helped Ignite Syria's War

February 8, 2013

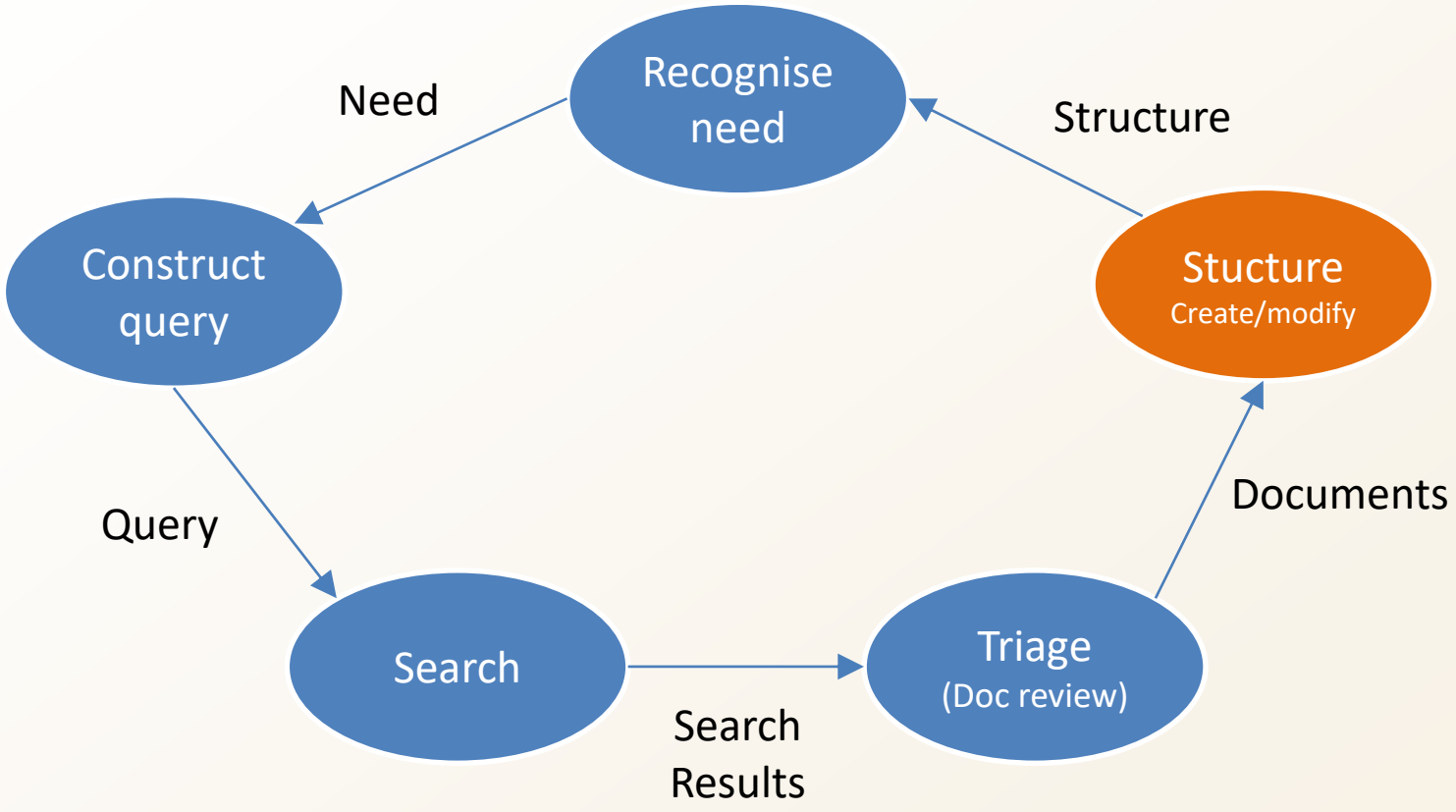
AMMAN, Jordan — In a listless border town, the teenager goes unnoticed, one of the hundreds of thousands of refugees who have fled the Syrian civil war, dashing across villages and farms to land in Jordan, just five miles from home.

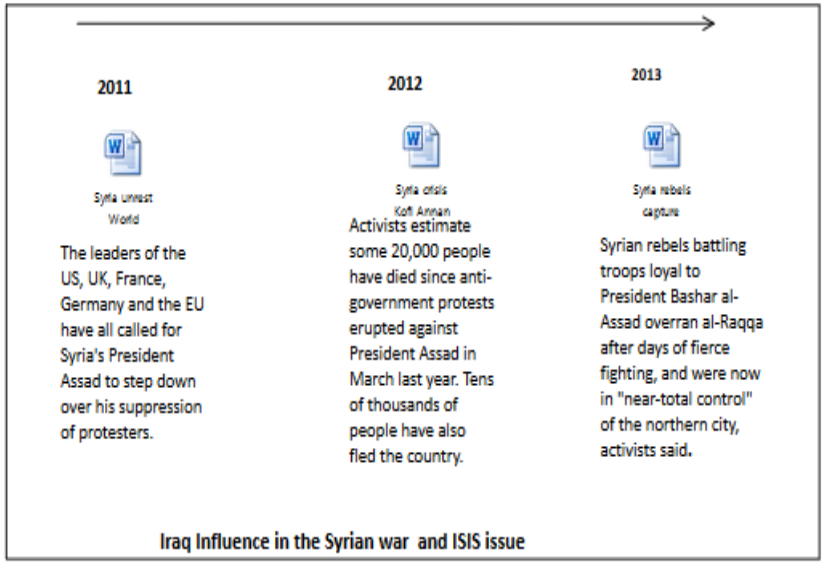
But this young man carries a burden — maybe an honor, too — that almost no one else shares.

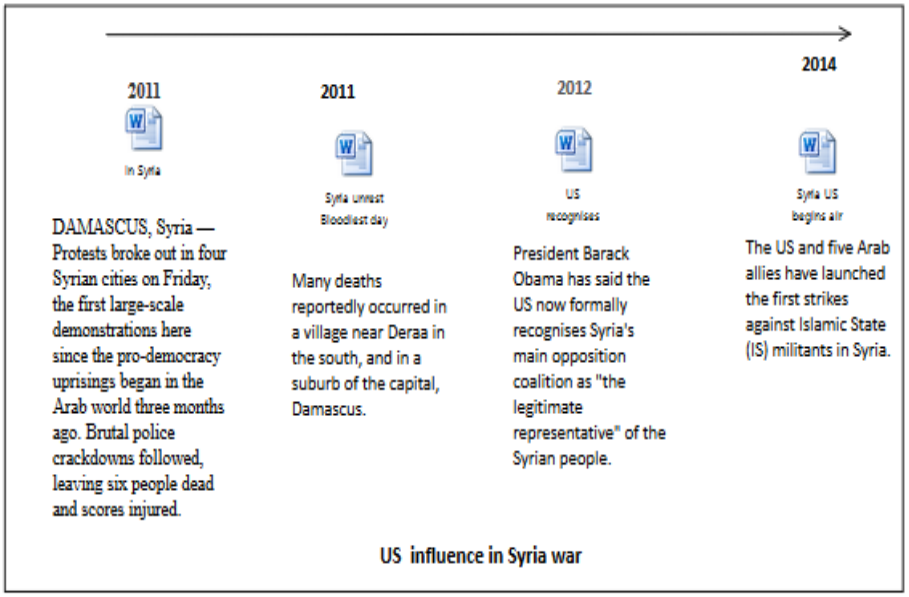
He knows that he and his friends helped start it all. They ignited an uprising.

It began simply enough, inspired not so much by political activism as by teenage rebellion against

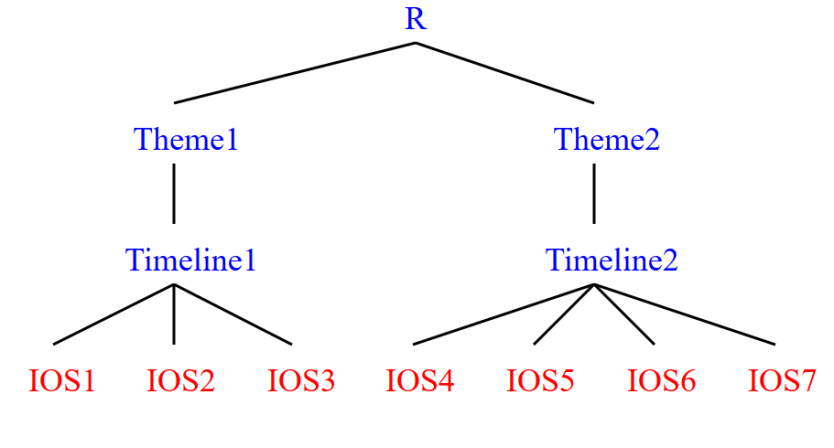
The process


Recognise need
Need
Construct query
Query
Search
Search Results
Triage
(Doc review)
Documents
Stucture
Create/modify
Structure





<Representation> → <Theme>n
<Theme> → <Timeline >n
<Timeline> → <IOS>n



Calculating ‘structuredness’ based on relation contraints

Relation Type	Type of variable	Variable type score	Dimension
Theme	categorical	1	1
Timeline (ordered)	ordinal	2	1
Timeline (linear)	continuous	3	1
Map	continuous	3	2

$S_{rep} = \sum S_{rel}$

$S_{rel} = D \times V$

Where:

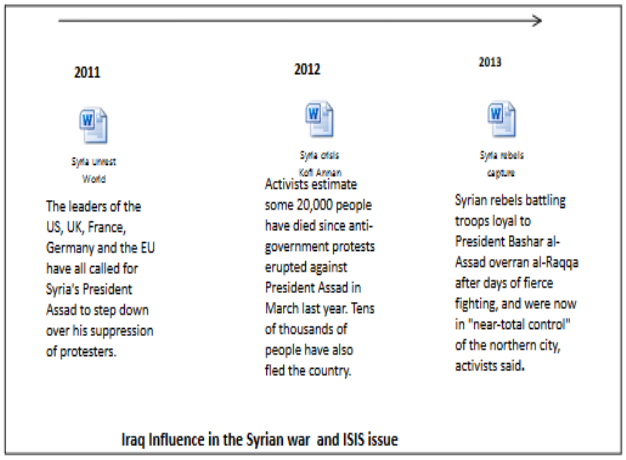
S = Structuredness.

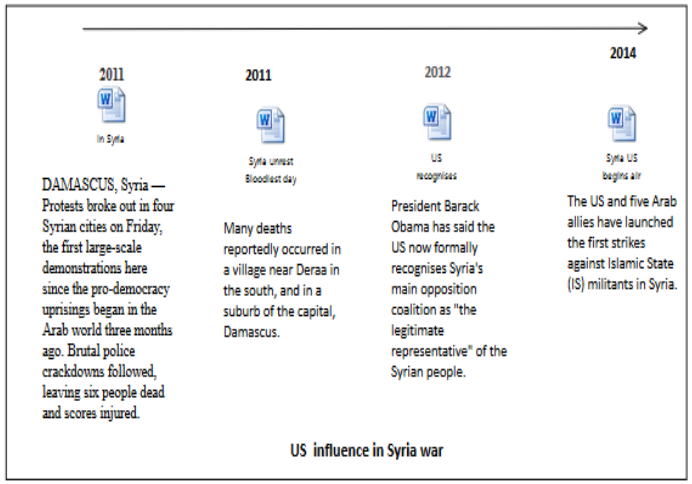
D = Dimensions

V = Variable type.

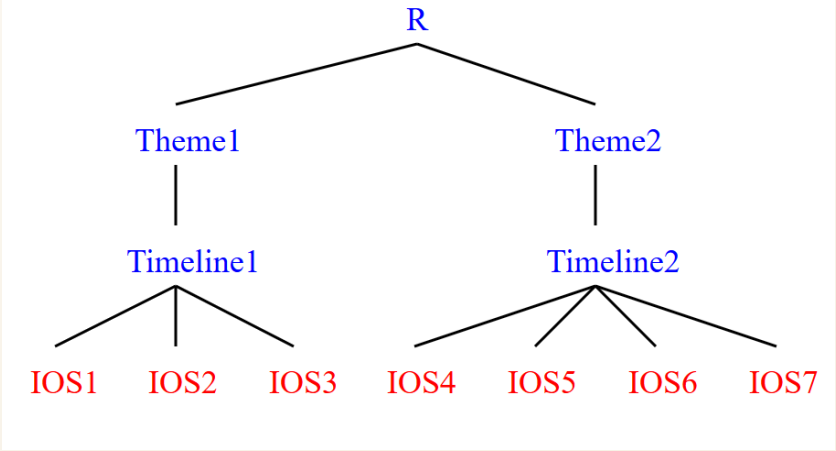
A study of the role of external representations in an investigation task.

Worked example

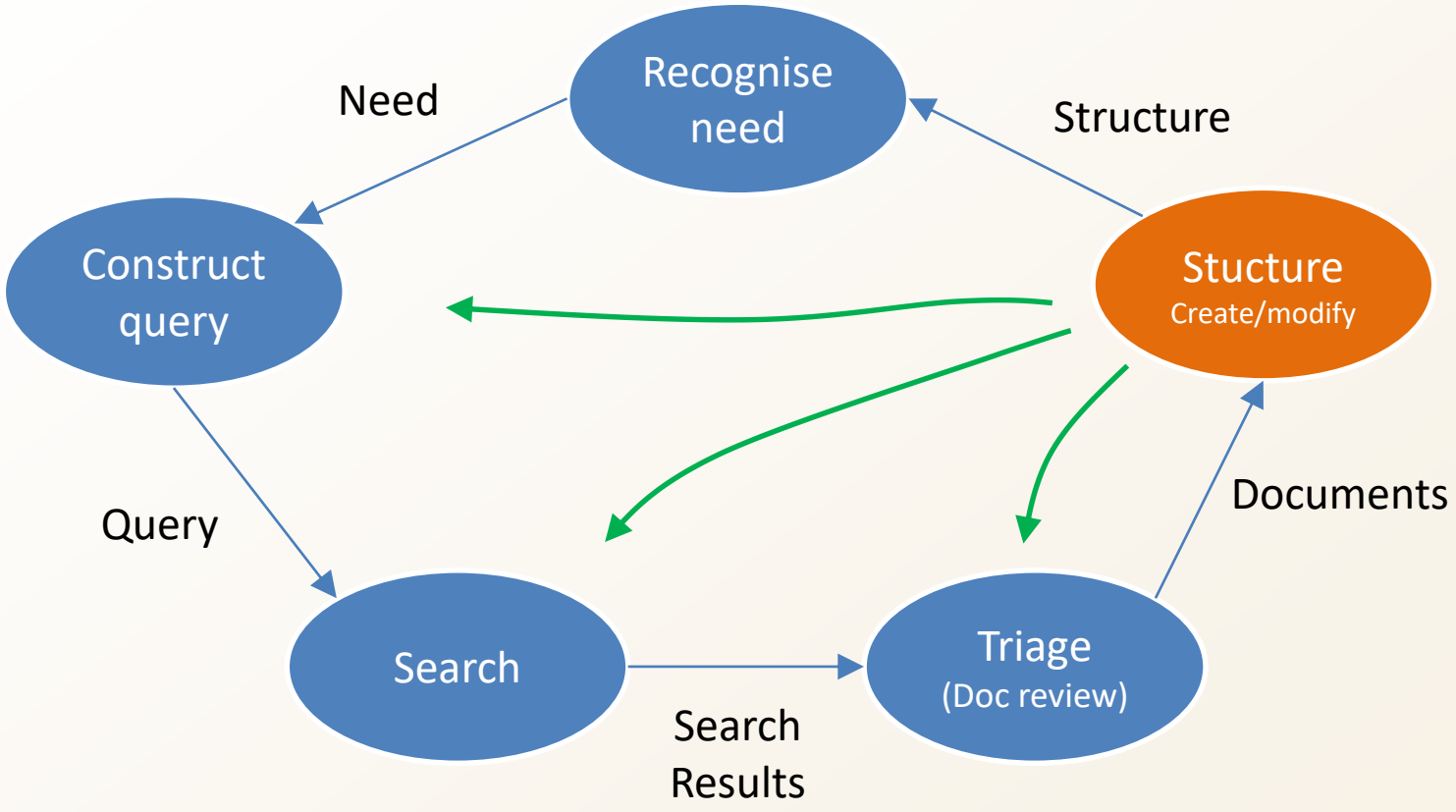




	Type score	Dims	**Total**
Theme	1	1	**1**
Theme	1	1	**1**
Timeline	2	1	**2**
Timeline	2	1	**2**
		Srep	**6**



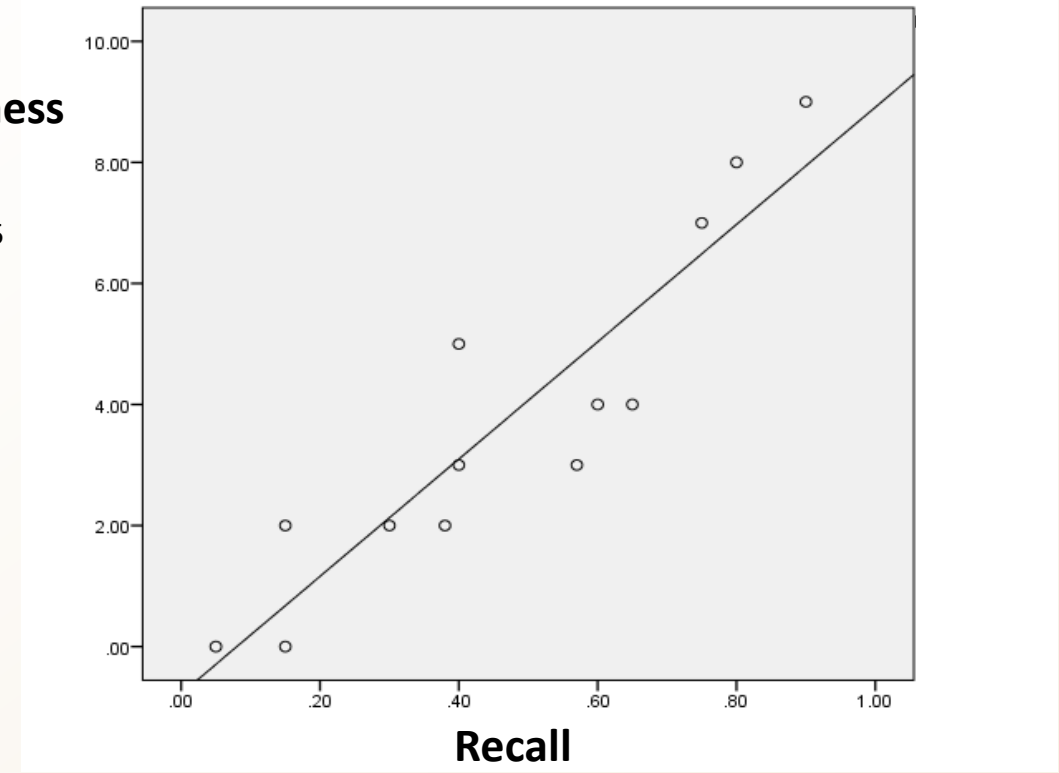
What is the relationship between structure and document filtering performance



Structuredness and Recall

Structuredness

Pearson's R = .915
P = 0.000

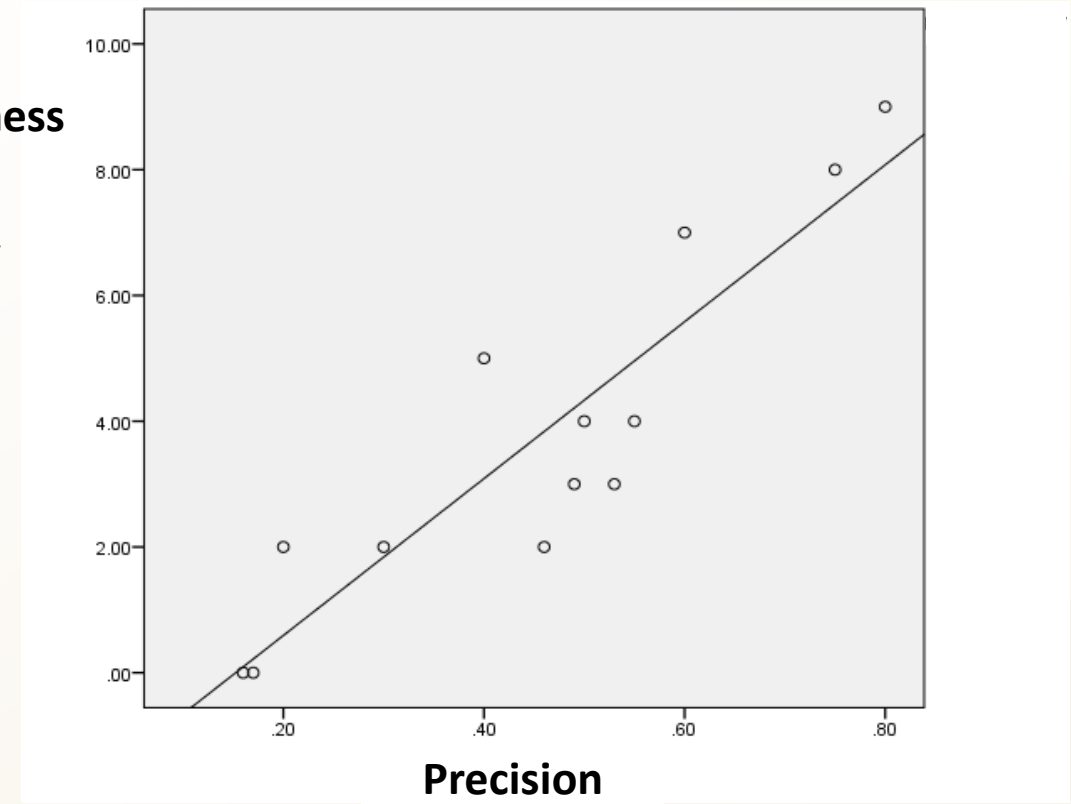


Recall = The proportion of all relevant documents that were judged as relevant by the study participant.

Structuredness and Precision

Structuredness

Pearson's R = .904
P = 0.000

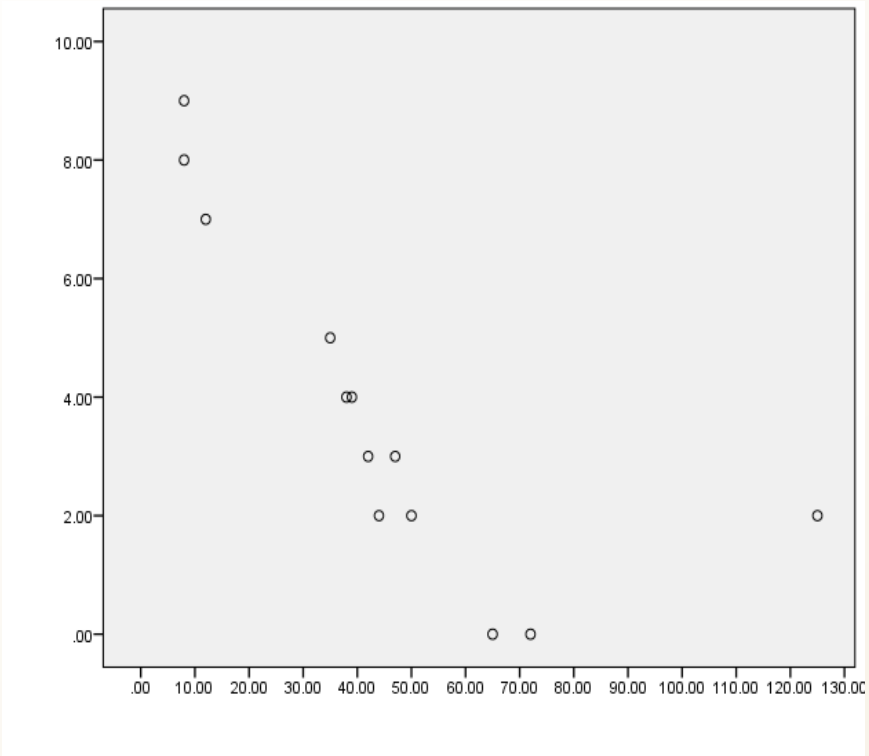


Precision = The proportion of documents judged relevant by the study participant that were relevant.

Struturedness and Average Triage Time

Structuredness

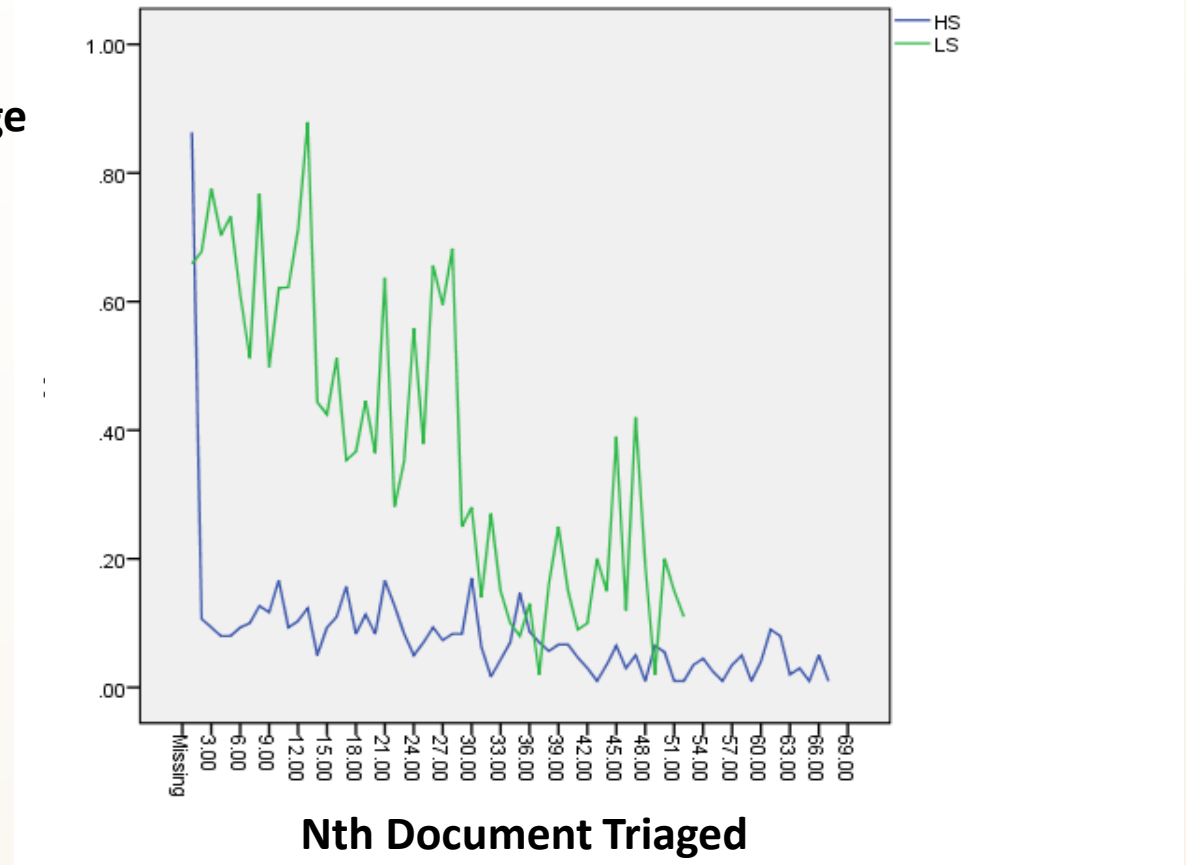
Pearson's R = .755
P = 0.003



Average Triage time

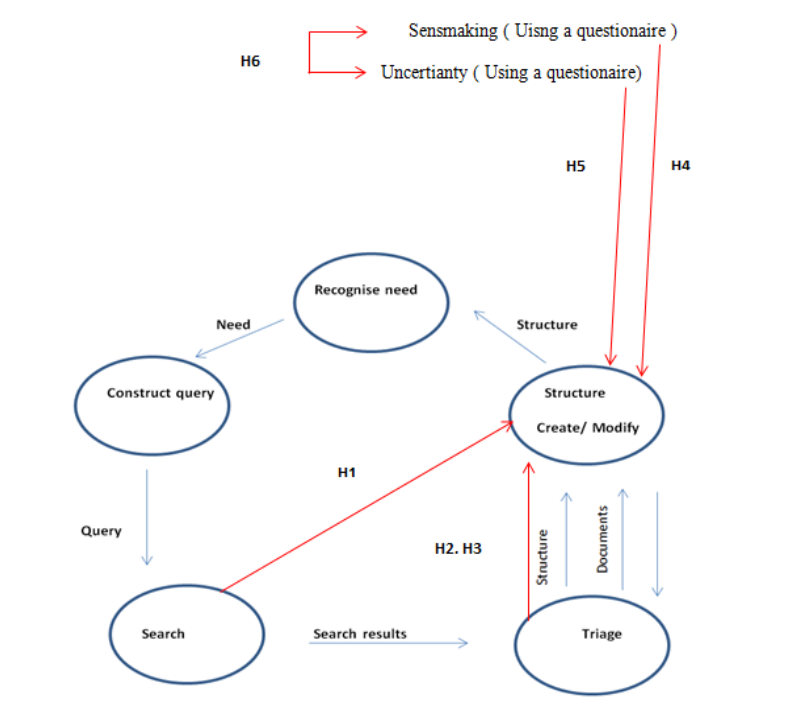
A study of the role of external representations in an investigation task.

Mean triage time



Nth Document Triaged

Further study



- **H1: Structuredness correlates with query specificity.**
- **H2: Structuredness correlates (inversely) with triage time.**
- **H3: Structuredness correlates with triage quality.**
- **H4: Structuredness correlates with perceived sensemaking.**
- **H5: Structuredness correlates (inversely) with perceived uncertainty.**
- **H6: Perceived sensemaking correlate (inversely) with perceived uncertainty.**

The Storyteller by Douglass Crockwell