

Using the Parsing Tool

Active Structure on
Training Wheels



Anti-Money Laundering and Counter-Terrorism Financing Act 2006

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The AML/CTF Act – it runs to 250 pages

A Sentence Can Run to 600 Words

designated agency means:

- (a) the Australian Crime Commission; or
 - (b) ASIO; or
 - (c) the Australian Commission for Law Enforcement Integrity; or
 - (d) the Australian Competition and Consumer Commission; or
 - (f) the Australian Federal Police; or
 - (g) the Australian Prudential Regulation Authority; or
 - (ga) ASIS; or
 - (gb) AGO; or
 - (gc) DIO; or
 - (gd) ASD; or
 - (ge) ONI; or
 - (gf) the Australian Charities and Not-for-profits Commission; or
 - (h) the Australian Securities and Investments Commission; or
 - (ha) the Clean Energy Regulator; or
 - (hb) the Attorney-General's Department; or
 - (i) the Human Services Department; or
 - (k) a Commonwealth Royal Commission whose terms of reference include inquiry into whether unlawful conduct (however described) has, or might have, occurred; or
 - (ka) the Department of Foreign Affairs and Trade; or
 - (l) the Immigration Department; or
 - (m) IGIS; or
 - (n) the Treasury Department; or
 - (o) an authority or agency of the Commonwealth, where the authority or agency is specified in the regulations;
- or
- (p) the police force or police service of a State or the Northern Territory; or
 - (q) the New South Wales Crime Commission; or
 - (r) the Independent Commission Against Corruption of New South Wales; or
 - (s) the Law Enforcement Conduct Commission of New South Wales; or
 - (sa) the Independent Broad-based Anti-corruption Commission of Victoria; or
 - (t) the Crime and Corruption Commission of Queensland; or
 - (u) the Corruption and Crime Commission of Western Australia; or
 - (uaa) the Independent Commissioner Against Corruption of South Australia; or
 - (ua) the Integrity Commission of Tasmania; or

It would be useful
for an intelligent AML/CTF System
to know the relevant Act in detail.

Sounds like a radical approach –
it just might work

Wordgroups

The text has a lot of multi-word objects, ranging from the simple

designated agency means:

(a) the Australian Crime Commission;

to the more complicated

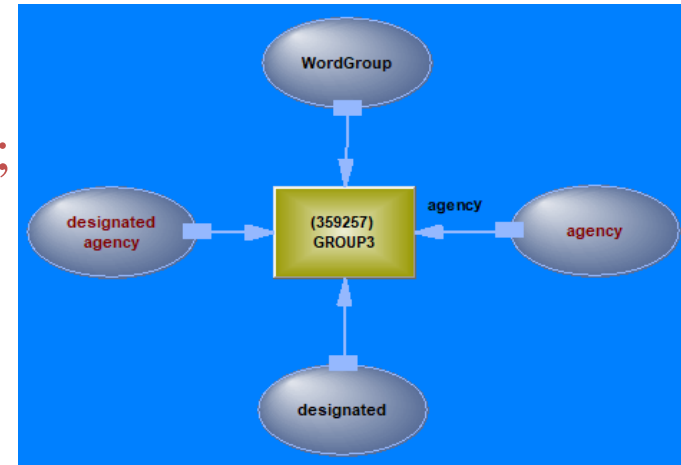
Suspicious matter reporting obligation

(1) A suspicious matter reporting obligation arises for a reporting entity in relation to a person (the *first person*) if, at a particular time (the *relevant time*):

to

multiple-institution person-to-person electronic funds transfer instruction

These are created using wordgroups - groups of words that have a specific meaning.



Parsing Tool

The tool is a set of training wheels, needed while the system is learning how to handle multiple Parts of Speech (a word can be a noun, a verb, a preposition), multiple forms (a verb may have half a dozen forms) and definitions. We don't think about these things – it is all automatic – but the machine has to learn all this.

Eventually the machine will do it all automatically.

Let's Start Simple

The quick brown fox jumps over the lazy dog.

Edit

Update

Cancel

Parse

Match wordgroups during parse

Scan Sentence for Wordgroups

Get Definition

Next Definition

Load Sentence...

Save Sentence

Dismiss

The window for parsing a sentence

First Pass Gives Us Possible Parts of Speech

Possible Parts of Speech

Shows state of all words in sentence – may be hundreds

BeginSentence The quick brown fox jumps over the lazy dog EndSentence

Edit Update Cancel Parse

BeginSentence	The	quick	brown	fox	jumps	over
POS	POS DefiniteArticle	POS Adjective Adverb Noun	POS Adjective Noun Verb	POS Noun Verb	POS Noun Verb	POS Adverb Noun Preposition PrepositionVerb
Subcategory	Subcategory	Subcategory	Subcategory	Subcategory	Subcategory	Subcategory
Source Definition	Source Definition Sense 0 used to emphasi...	Source Definition	Source Definition	Source Definition	Source Definition	Source Definition

Starting to Apply Constraints

BeginSentence The quick brown fox jumps over the lazy dog EndSentence



Edit Update Cancel Parse

BeginSentence	The	quick	brown	fox	jumps	over	
POS	DefiniteArticle	Adjective	Adjective	Noun	Verb	Adverb Noun Preposition PrepositionVerb	
Subcategory					IntransitiveVF TransitiveVF		
Source	Definition	Source	Definition	Source	Definition	Source	Definition
	Sense 0 used to emphasi...	Sense 0 moving fast or doin...	Sense 0 of a color produced...	Sense 0 a carnivorous mam...			
		Sub Se... lasting or taking a s...	Sub Se... (of bread) light bro...	Sub Se... the fur of a fox			
		Sub Se... happening with litt...	Sense 1 (of a person) prom...	Sense 1 a cunning or sly pe...			
		Sense 1 (of a person) prom...					
		Sense 2 (of a person's eye ...					
		Sense 3 (of a person's temp...					
			Sense 0 moving fast or doing something in a short time				
			Sub Sense 0 lasting or taking a short time				
			Sub Sense 1 happening with little or no delay; prompt				
			Sense 1 (of a person) prompt to understand, think, or learn; intelligent				
			Sense 2 (of a person's eye or ear) keenly perceptive; alert				
			Sense 3 (of a person's temper) easily roused				

Match wordgroups during parse Scan Sentence for Wordgroups Get Definition Dismiss

Selecting a definition

- These start off as strings from a dictionary.
- When selected, they also get built as structures

Verb forms – having different definitions

Grouping Words

BeginSentence The quick brown fox jumps over the lazy dog EndSentence

Edit Update Cancel Parse

entence	The	quick	brown	fox	jumps	over
POS	DefiniteArticle	Adjective	Adjective	Noun	Verb	Preposition
Subcategory					IntransitiveVF	ActionNounPF NounNounPF VerbNounPF
Source	Sense 0 used to emphasi...	Sense 0 moving fast or d...	Sense 0 of a color produc...	Sense 0 a carnivorous m...	Sense 0 push oneself off ... Sub S... pass over (an ob... Sub S... (of an athlete or ... Sub S... get on or off (a t... Sense 1 (especially of pri... Sense 2 (of a place) be f... Sense 3 take summary po...	

Match wordgroups during parse

Scan Sentence for Wordgroups

Get Definition

Next Definition

Load Sentence...

Save Sentence

Dismiss

The words that form a noun phrase are selected

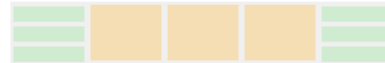
Rolling Up a Phrase

BeginSentence The quick brown fox jumps over the lazy dog EndSentence



Edit

Update



BeginSentence

NounPhraseGroup

ActiveVerbPhrase

NounPhraseGroup

EndSentence

POS

The quick brown fox

jumps over

the lazy dog

POS

Subcategory

Source	Definition

Subcategory

Source	Definition

Match wordgroups during parse

Scan Sentence for Wordgroups

Get Definition

Next Definition

Load Sentence...

Save Sentence

Adding the Implied Words

BeginSentence the person accused of murder refuses to confess Comma and we cannot make him EndSentence

BeginSentence the person accused of murder refuses to confess Comma and we cannot make him EndSentence

Word Properties
Parent Properties
Sentence Properties
View / Edit Word
Edit File
Insert Word(s)
Replace Word(s)
Remove Word(s)
Combine Objects >
Replace Word(s) with Wordgroup
Restore Wordgroup to Word(s)

The person (who is) accused of murder

We need to add in everything that is implied,
so other parts of the discourse can see it

Another Implication

and	we	cannot	make	him	
POS GrammarConjunction	POS Pronoun	POS VerbAuxiliary	POS Noun Verb	POS Pronoun	
Subcategory AdjectiveAdjectiveCF AdverbAdverbCF ClauseClauseCF MiscellaneousMiscellaneousCF ObjectObjectCF RelationRelationCF	Subcategory	Subcategory	Subcategory	Subcategory ObjectPronoun	
Source Definition	Source Definition Sense 0 used by a speaker ... Sub Se... used to refer to th... Sub Se... people in general Sense 1 used in formal cont... Sense 2 used condescendin...	Source Definition Sense 0 can not	Source Definition	Source Definition Sense 0 used as the object ... Sub Se... referring to a pers... Sub Se... often used in place...	Source Definition

refuses to confess and we cannot make him (confess)

The verb “make” with the definition “coerce” does not allow a person as object, so “do something” must be implied

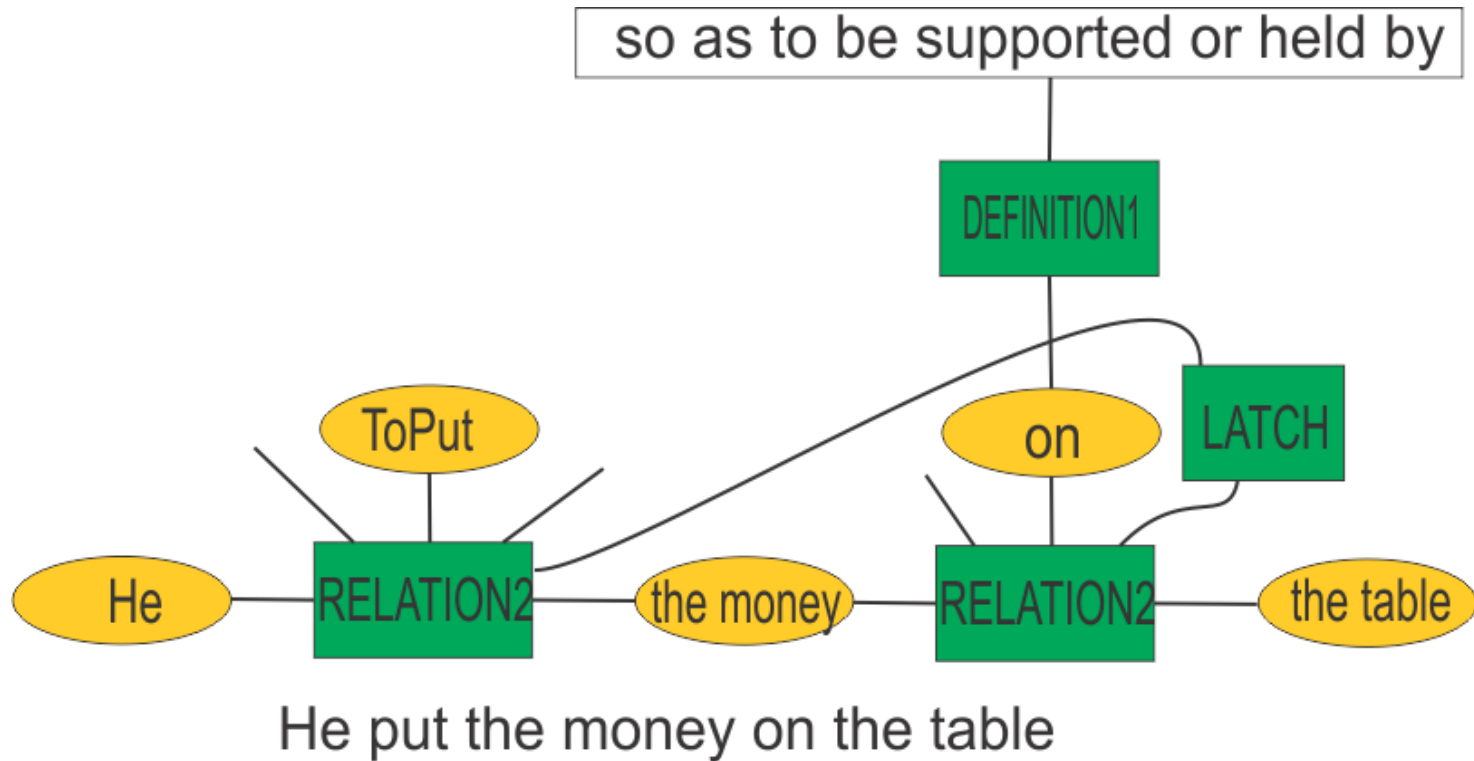
He Put the Money On the Table

BeginSentence he put the money On the table EndSentence

							Edit	Update	Cancel		
BeginSentence	he	put	NounPhraseGroup	On	NounPhraseGroup	EndSentence					
POS	POS	POS	the money	Preposition	the table	POS					
	Pronoun	PastTense									
Subcategory	Subcategory	Subcategory		Subcategory		Subcategory					
	SubjectPronoun	TransitiveVF		ActionNounPF							
				ActionParticiplePF							
				NounNounPF							
				PredicativeNounPF							
				VerbNounPF							

We have an action “put the money”, a preposition and a noun phrase “the table”. The money changes state (its location) and stays that way when the action ceases

Prepositional Relations



The latch maintains the state

Purpose

The purpose of Active Structure parsing is to build a structure which accurately represents the relations and states of the objects described in the text – the more complex the text, the more useful the tool.

If the complexity of the description exceeds the Four Pieces Limit, Active Structure comes into its own as a problem solver.

System Resources

Dictionary: 45,000 words

Wordgroups: 15,000

Dictionary Definitions: 70,000 as built structure

Free Resources: 30 million network elements

Dynamically constructed comparative and superlative adjectives

Dictionary lookup for unknown words

Database for known objects – “Millie from Accounts”

Instructions in English to change internal workings

No Four Pieces Limit

Can it handle your problems?

Outrageous Claims

We are not going to make outrageous claims. What we will say is that an active structure approach, in today's increasingly complex and dynamic world, leaves data-based methods in the dust, where they belong.

We don't expect you to drive by only looking in the rear vision mirror. Active Structure gives you a tool to look forward in your complex world.



Active Structure

by
Interactive Engineering

