

FLINTS : Feature Location and Interfaces Towards Services

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1 Motivation and Approach

- » Legacy systems need to be migrated to modern technologies
 - › experienced developers leaving the organisation
 - › integration with modern systems
 - › incomplete documentation
- » Incremental migration minimizes customer impact
- » Hence our aim is to extract specific services from the existing system one at a time, through



Feature Location » Feature Extraction » Inter-Feature-Modelling

- » FL and IFM are core research areas within Software Engineering
- » Existing research has focused largely on automated approaches and on Open Source Software systems
- » Results of these approaches are disappointing with either low precision or low recall or both
- » Most of the existing work related to IFM concentrated on the complexity of configuration of features in product-line systems
- » Does not address issues like using IFM for ripple effects in software maintenance or system rationalization



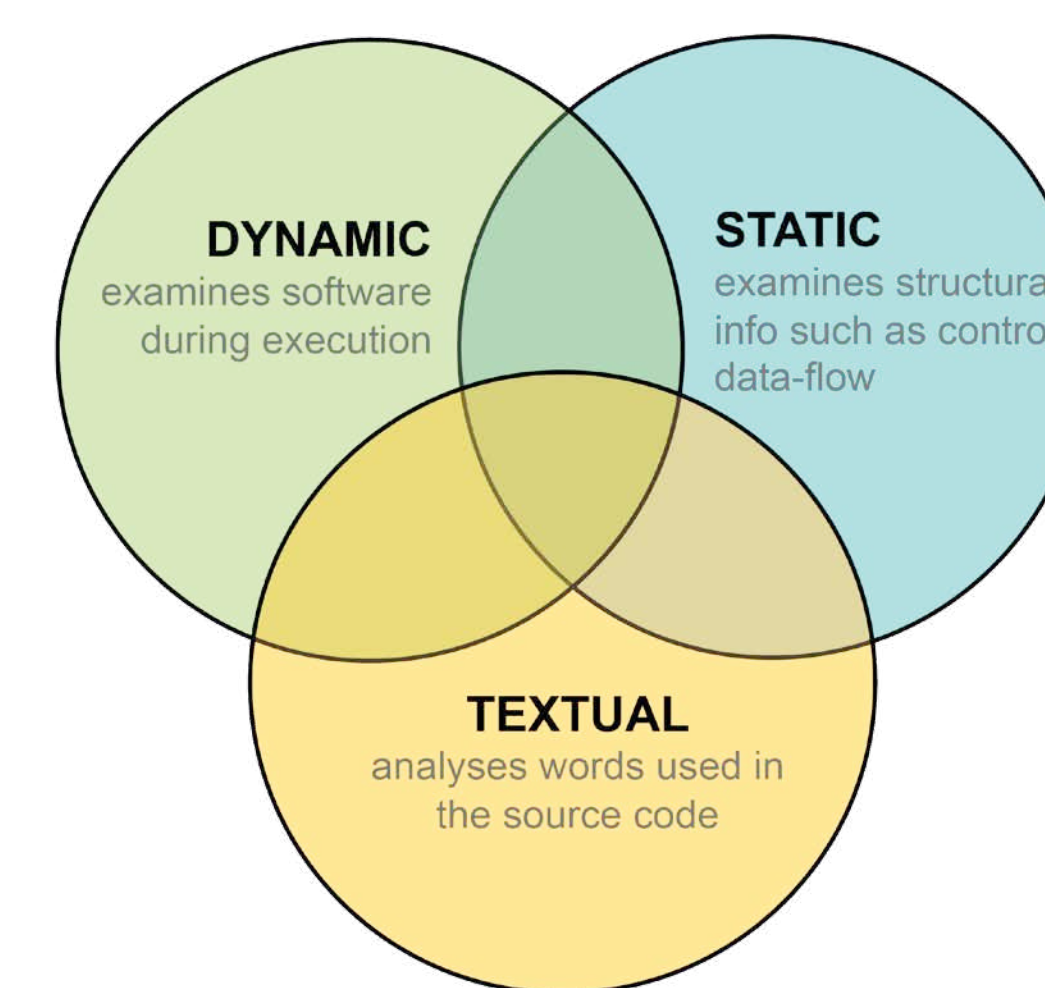
2 Feature Location Techniques

Example – Source Code of a Web Browser

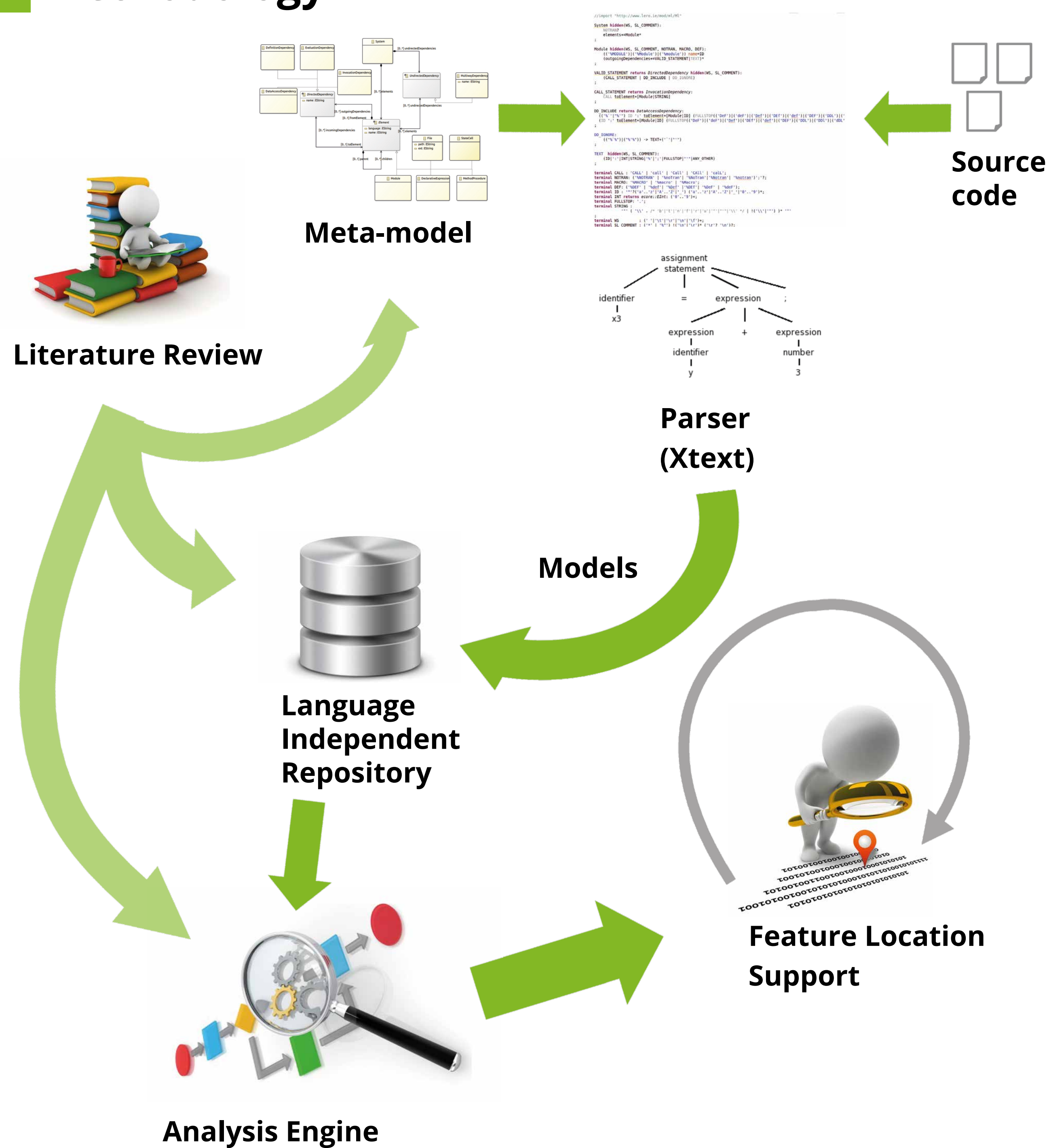
Each Letter = File

S	X	S	B	C	O	O	K	I	E	S	D
A	N	K	C	A	B	R	Y	X	G	R	N
V	V	R	B	E	X	I	T	N	A	E	I
E	T	A	D	P	U	E	I	W	H	N	F
A	D	M	B	Z	N	T	R	I	H	D	B
H	A	K	H	S	T	O	U	N	E	E	R
B	O	O	I	E	F	R	C	D	L	R	L
T	L	O	S	T	E	O	E	O	P	E	N
I	N	B	T	L	P	V	S	W	T	I	Z
S	W	I	O	Y	L	T	R	S	J	O	G
I	O	A	R	H	O	T	A	B	O	U	T
V	D	D	Y	P	D	P	P	M	A	I	K

C++ Java COBOL



3 Methodology



4 Results

- » Assessment of manual FL approaches in our industrial partner
- » Design of and implementation of the initial Language Independent Repository
- » Initial Proof-of-Concept (POC) parser for commercial legacy system
- » Development of POC graphical and list-based FL UI
- » Analysis and selection of existing FL techniques for that tool
- » Integration of the developed FL technique into the POC tool

Future Work

- » Action Research towards FL tool/technique refinement
- » Ongoing review of Feature Location Techniques (FLTs) relevant to legacy, heterogeneous systems
- » Derivation of new FLTs
- » Enrichment of IFM notations

Publications

- » H. Jordan, J. Rosik, S. Herold, G. Botterweck, and J. Buckley. **Manually locating features in industrial source code: The search actions of software nomads.** In Proceedings of the 23rd International Conference on Program Comprehension (ICPC 2015), 2015.
- » M. Chochlov, M. English, and J. Buckley. **Using Chageset Descriptions as a Data Source to Assist Feature Location.** In Proceedings of the 15th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2015), 2015.