

SIM-TBASSCO – Semantic Interoperability Measures: Template-based Assurance of Semantic Interoperability in Software Composition

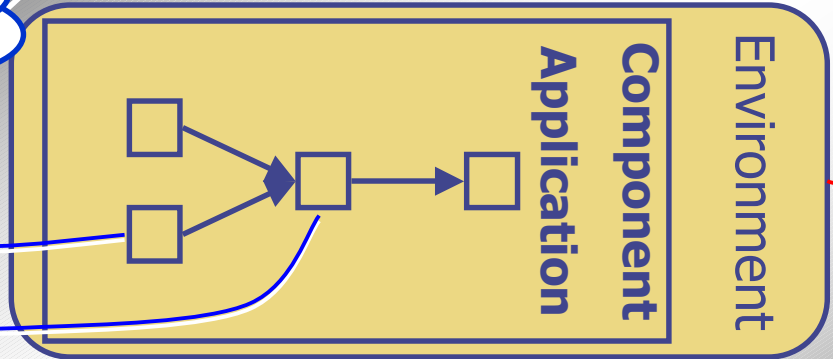
Robert Neches, Ke-Thia Yao, In-Young Ko
USC Information Sciences Institute

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Component-based Software Development

How can I build an correct application with these components?



Application Developer



Component Database

- by function, by I/O data

Architectural Styles

- synchronous, asynchronous

Component Framework

Component Developer

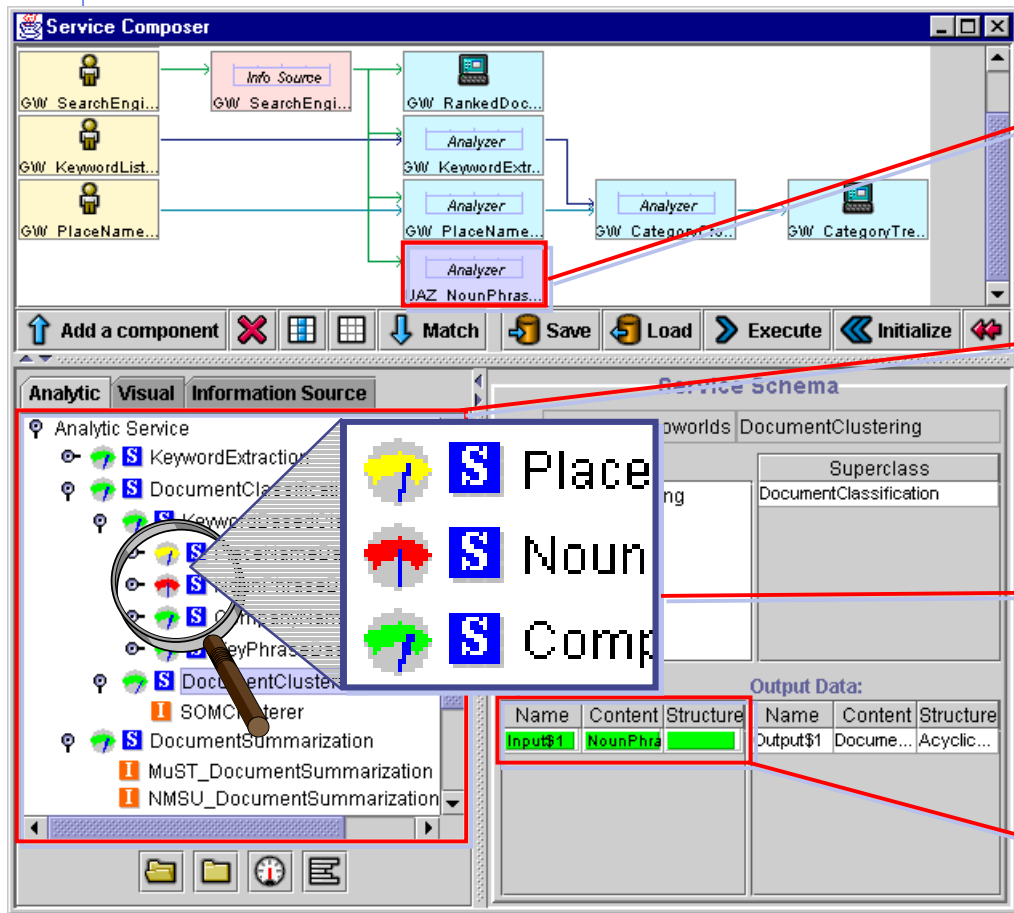
How do I make a new component interoperable?

How do I best configure this application for my local environment?

**System Architect/
Administrator**

Design-time Semantic Gauges

Application Scripting



Evaluate options for adding a service into an existing flow of connected component services

Graph-Based Metric returns semantic interoperability levels of the candidate services

Dial Gauges show the overall interoperability levels

Bar Gauges show the I/O semantic interoperability levels for each input of a service

Design-time Semantic Gauges

Application Scripting



Service Composer

GW SearchEngi... Info Source GW SearchEngi... GW RankedDoc... Analyzer GW KeywordExtr... Analyzer GW KeywordList... Analyzer GW PlaceName... Analyzer GW PlaceName... UAZ NounPhras...

Match Save Load

Analytic Visual Information Source

- KeywordExtraction
- DocumentClassification
- KeywordBasedClassification
- PlaceNameBasedClassif
- NounPhraseBasedClassi
- CompanyNameBasedCla
- KeyPhraseBasedClassifi
- DocumentClustering
- SOMClusterer
- DocumentSummarization
- MuST_DocumentSummarization
- NMSU_DocumentSummarization

URI: www.isi.edu/geoworlds

Description: Services of classifying documents based on place names provided.

Input Data:

Name	Content S
Input\$1	Document
Input\$2	PlaceName

PlaceNameBasedClassification

Service: PlaceNameBasedClassification

Input: Input\$1

C: DocumentCollection->NounPhraseBasedCategories

S: open

Data Input

Input: Input\$2

C: PlaceNameList->PlaceNameListWithLatLong

S: open

Data Input

Resource	Gauge
S DocumentClustering	97%
I SOMClusterer	97%
S CategoryManipulation	97%
S CategoryFanOut	95%
S KeywordExtraction	92%
S NounPhraseExtraction	92%
S CompanyNameExtraction	92%
S CompanyNameBasedClassification	92%
I GW_CompanyNameExtractor	92%
S DocumentClassification	92%
S KeywordBasedClassification	92%
S DocumentSummarization	92%
I MuST_DocumentSummarization	92%
I NMSU_DocumentSummarization	92%
S LanguageIdentification	92%
I MuST_LanguageIdentification	92%
S KeyPhraseBasedClassification	91%
I GW_KeywordExtractor	91%
S PlaceNameBasedClassification	79%
I GW_PlaceNameExtractor	79%
S NounPhraseBasedClassification	56%

List view shows the sorted list of the services based on the gauge results

Compound Gauge shows the detail sub-gauges for I/O interoperability and data input/conversion penalty