

Links and Cycles in Web Databases – presentation slides

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Links and Cycles of Web Databases

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What is Mashup?

- What kind of service?
 - To create new web contents combining more than one web contents.
 - Combing Web services and Web DBs with API and Web wrappers .
 - Address + “Google Map”, Blogs + “flickr”(Photo upload site)....
- Reference : Programmableweb
 - <http://www.programmableweb.com/>
 - A portal site of mashups and WebAPIs.
 - There are 2581 mashups and 567 APIs registered. (Dec. 2007)



Purpose

Implementing composition of search engines

- A mashup generator system.
 - Personal-Scripting Meta-cgi (PSM) sytem
- Focusing on search engines of Web services and databases
 - Communication of REST style and web wrappers only.
 - Giving queries and getting search results.
- Supplying some pipe operators.

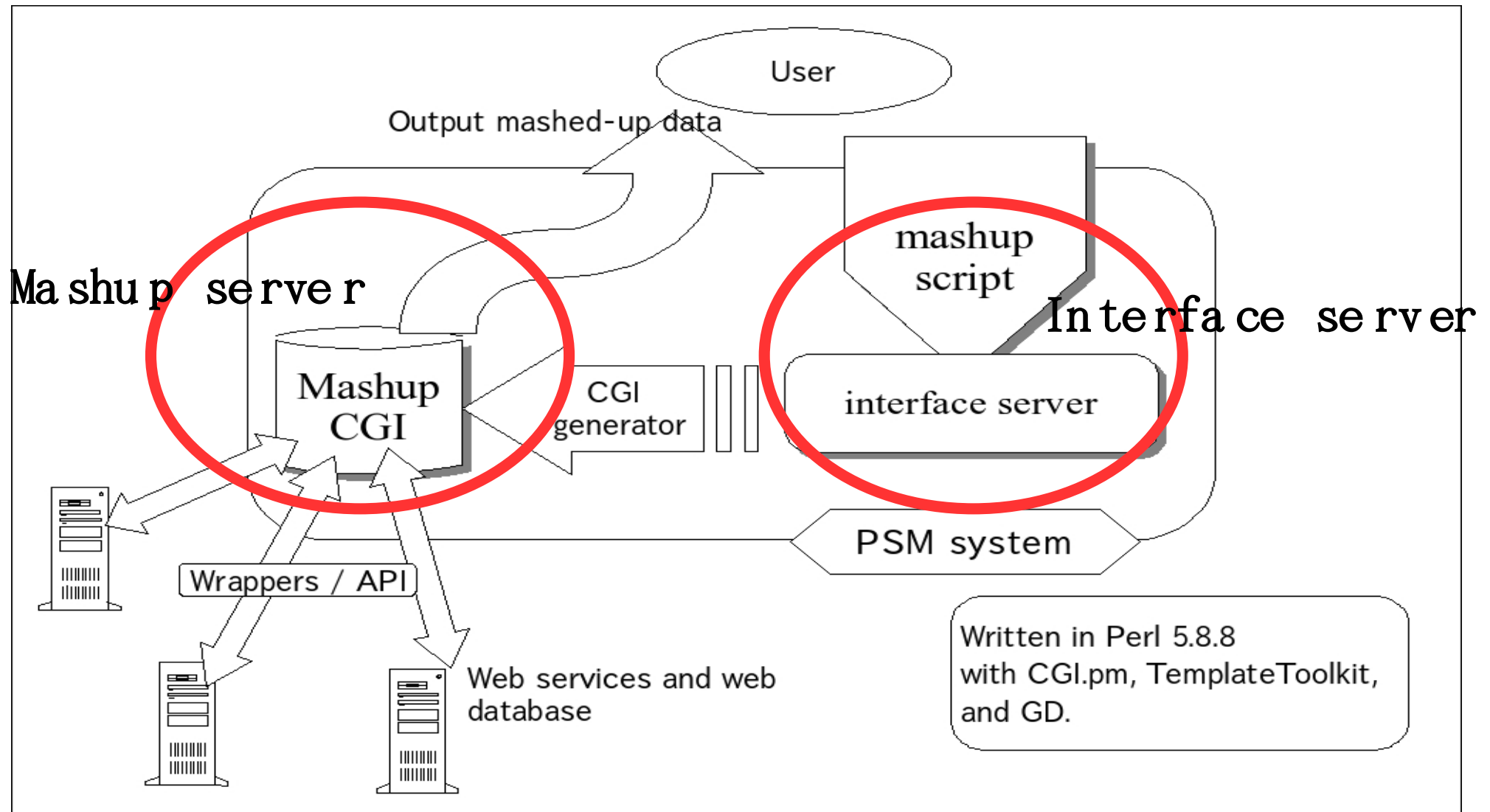


Related works

- Web Mashup Scripting Language
 - Sabbouh et al. 2007
- Mashup feeds
 - Tatemura et al. 2007
- Yahoo Pipes (2007)
 -



The outline of PSM



The system requirements

The system must meet the three requirements...

1. What kind of style is a simple description of composition?
2. What is the solution to display data?
3. What is the efficient way for next search?



1. Which style is a simple description of composition?

- Web services and web dbs : called “component”.
- Components have input and output: called “channels”.

*component '.' chan (':' chan)**

Rhapsody.artist

Rhapsody.album:artist

Amazon.ItemSearch

Amazon.ItemSearch:ProductSearch

R h a p s o d y	
artist	artist
album	album
	track

A m a z o n	
ItemSearch	artist
ProductSearch	album
	URL

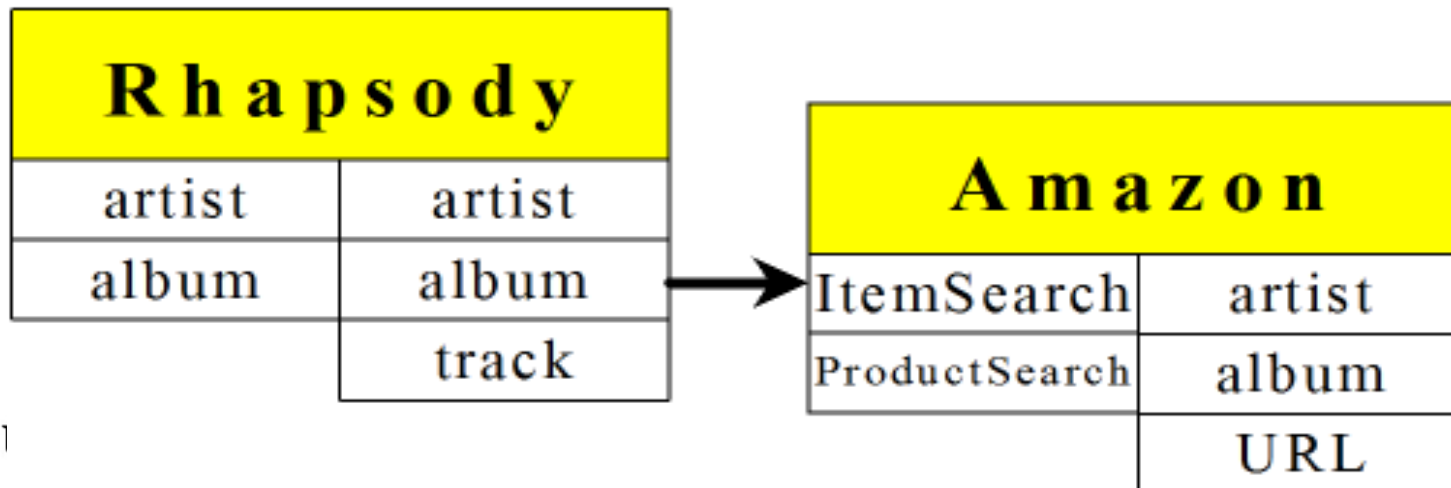


1. Which style is a simple description of composition?

- Composition is represented by edges of components and their channels.

“Functional Composition of components”

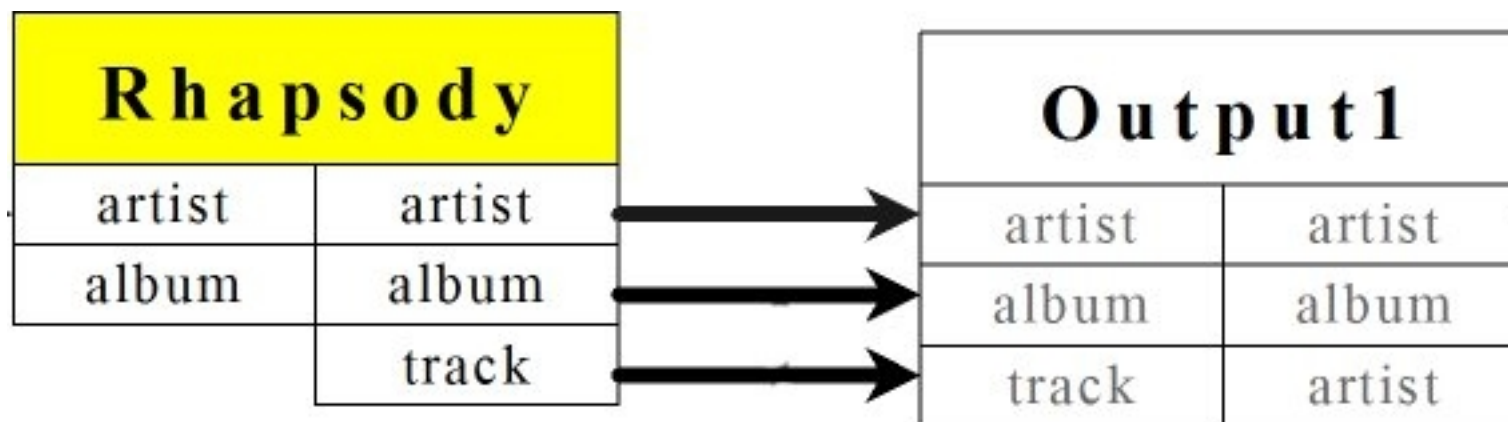
Rhapsody.album \rightarrow Amazon.ItemSearch
Functional Composition



2. What is the solution to display data?

- Regarding data as lists of records (tables).
- “**User interface component**” (UIC) = Web browsers

Rhapsody.artist:album:track → Output1

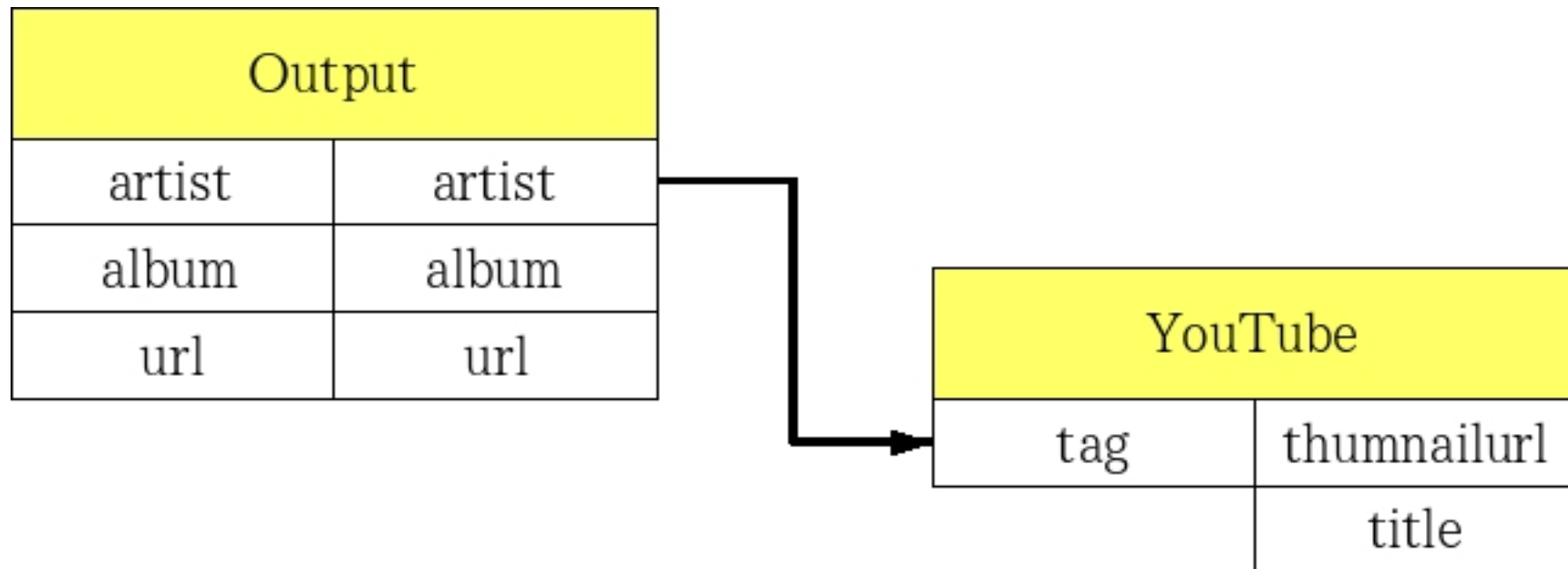


Use interface component

3. What is an efficient way for next search?

- Output channels of UIC are hyperlinks to the CGI with instances.

“CGI links”



Loops and filter components

- Loops in mashup scripts.... **Cycle** in the graph of mashup
 - One uses search engines repeatedly.
 - If there is at least one UIC components in the loop, its execution necessarily terminate at the UIC components.
- Filter/visualizing components are available.
 - Sort
 - Uniq
 - Histogram
 - BarGraph, LineGraph, PointGraph



The system requirements

The system must meet the following three requirements...

1. Which style is a simple description of composition?

We propose the “Functional Composition”.

2. What is the solution to display data?

We define the “User interface component”.

3. What is the efficient way for next search?

We define the “CGI links”.



- See the movie of execution of PSM...

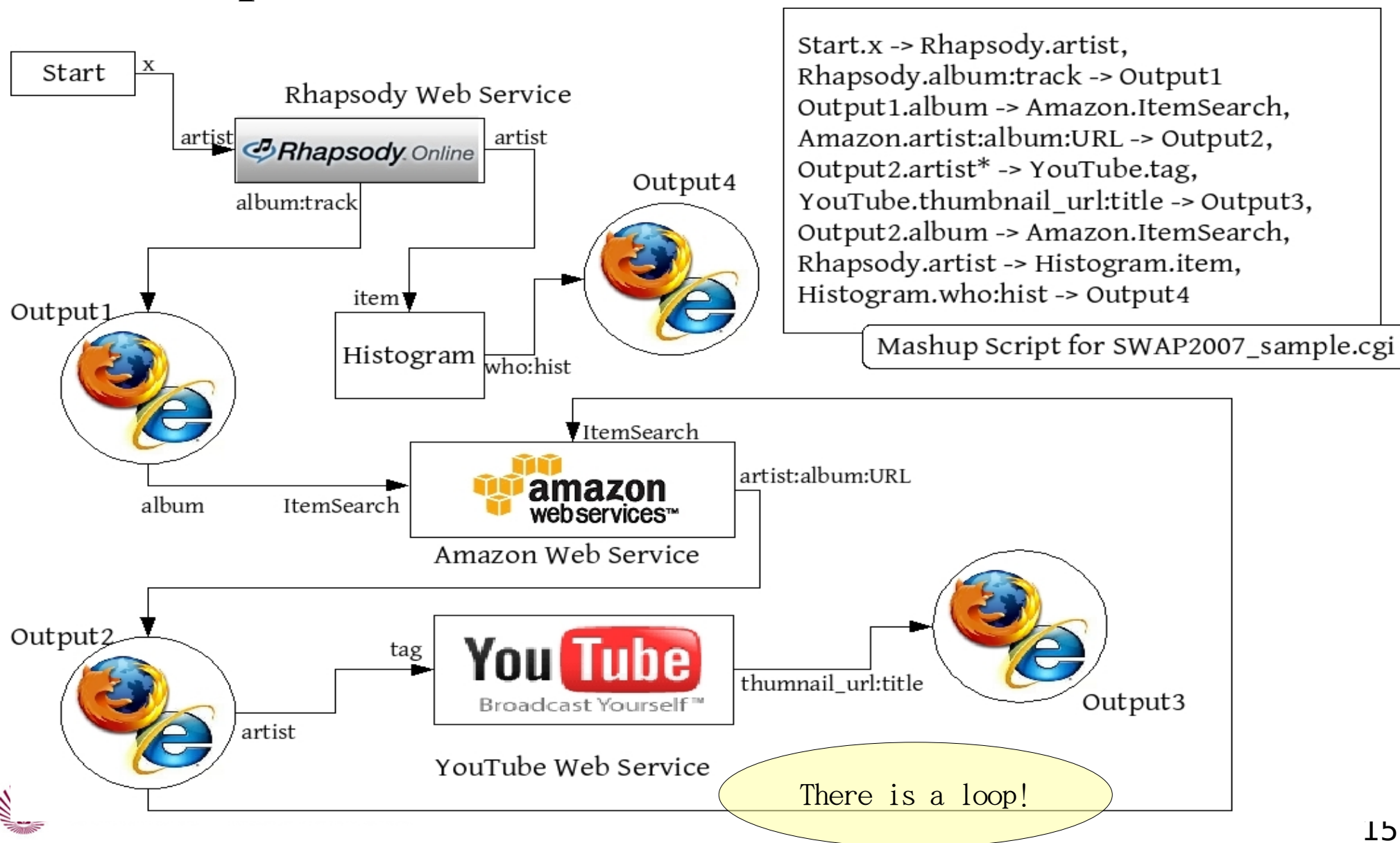


Example

```
Start.x -> Rhapsody.artist,  
Rhapsody.album:track -> Output1  
Output1.album -> Amazon.ItemSearch,  
Amazon.artist:album:URL -> Output2,  
Output2.artist* -> YouTube.tag,  
YouTube.thumbnail_url:title -> Output3,  
Output2.album -> Amazon.ItemSearch,  
Rhapsody.artist -> Histogram.item,  
Histogram.who:hist -> Output4
```



Example



PSM generator

Generate to... .C

Components

use

Connections (e.g., C.u:v:w -> D.x:y:z)

Start.start -> Amazon.ItemSearch,
Amazon.artist:album:URL -> Output1,
Output1.artist* -> Rhapsody.artist,
Rhapsody.artist:album:track -> Output2

完了

Untitled Document - Mozilla Firefox

ファイル(F) 編集(E) 表示(V) 履歴(S) ブックマーク(B) ツール(T) ヘルプ(H) del.icio.us(L)

<http://hyoka-inf.ofc.kyushu> Google

[Output1] Search result of AmazonWebService.

[Top](#)

Gets 488 hits.

Keys	artist	album	URL
baroque+lute	Denis Vigay , Jascha Silberstein , Julian Lloyd Webber , Franklin Cohen , Tomaso Albinoni , Johann Sebastian Bach , Samuel Barber , Ludwig van Beethoven , Georges Bizet , Alexander Borodin , Claude Debussy , Franz Joseph Haydn , Roman Hoffstetter , Alessandro Marcello , Benedetto Marcello , Pietro Mascagni , Jules Massenet , Wolfgang Amadeus Mozart , Sergey Rachmaninov , Maurice Ravel	The #1 Adagios Album	Detail...
baroque+lute	Johannes Hieronymus Kapsberger , Alessandro Piccinini , Gary Cooper , Matthew Wadsworth , Mark Levy	14 Silver Strings	Detail...
baroque+lute	Hopkinson Smith (Lute)	The 17th Century of Hopkinson Smith: Giovanni Girolamo Kapsperger / Gaspar Sanz / Francisco Guerau / Vieux Gaultier / Charles Mouton	Detail...
baroque+lute	Wilfred Tachezi , Isaac Albeniz , Anonymous , Johann Sebastian Bach , Fabritio Caroso , Domenico Cimarosa , Anton Diabelli , Johann Friedrich Fasch , Enrique Granados , Franz Joseph Haydn , Johann Ludwig Krebs , Carlos	25 Guitar Favorites	Detail...

完了

PSM generator - Mozilla Firefox

ファイル(E) 編集(E) 表示(V) 履歴(S) ブックマーク(B) ツール(T) ヘルプ(H) del.icio.us(L)

http://localhost/~masa/Development/F... Google

lute+baroque	Respighi, Domenico Scarlatti, Franz Schubert, Fernando Previtali, Turin Radio Symphony Orchestra & Chorus, Carlo Zecchi, Gioconda de Vito	Cetra Recordings (1935-1941)	B000004YNI7	Detail...
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Generate to...

Components

use Rhapsody,

Connections (

Start.start ->
Amazon.artist:a
Output1.artist*
Rhapsody.artist

実行 リセット

完了

[Output2] Search result of HistogramUniversalComponent.

[Top](#)

Gets 2176 hits.

Keys	who	point
	Johann Sebastian Bach	206
	Anonymous	143
	John Dowland	113
	George Frideric Handel	104
	Antonio Vivaldi	93
	Henry Purcell	54
	Domenico Scarlatti	46
	Wolfgang Amadeus Mozart	45
	Claude Debussy	42
	Johann Pachelbel	41
	Ludwig van Beethoven	41
	Tomaso Albinoni	40

完了

Implementation

- Coded in Perl ver. 5.8.8
 - CGI.pm
 - TemplateToolkit
 - GD, ChartDirector
- Data structures
 - XML, table of HTML are transformed in **lists of hashes**.



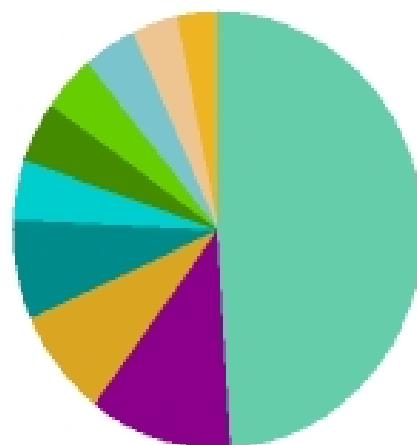
Summery and future works

- We propose the mashup generator system.
 - Functional composition
 - User interface component
 - CGI link
 - Filters and visualizing component
- Future works
 - GUI improvement of the interface server



Top APIs for Mashups >>

Last 14 days All



- GoogleMaps (48%)
- Flickr (11%)
- Amazon (7%)
- YouTube (7%)
- 411Sync (4%)
- eBay (4%)
- YahooMaps (4%)
- VirtualEarth (3%)
- del.icio.us (3%)
- Yahoo (3%)

ProgrammableWeb.com 12/12/07

Click on a slice or label to see that API

Top Mashup Tags >>

Last 14 Days All



- mapping (23%)
- shopping (10%)
- social (8%)
- travel (8%)
- WAP (8%)
- news (8%)
- search (7%)
- mobile (7%)
- widgets (7%)
- video (7%)

ProgrammableWeb.com 12/12/07

Click on a slice or label to see those mashups

