BIBSYS Ask – the architecture

Hans Olaf Gundersen, BIBSYS

// VI GJØR KUNNSKAP TILGJENGELIG //

BIBSYS

BIBSYS Ask - the architecture

- Federated search client
- Built for the Internet
- Focus: easy access to the content
- Aspect oriented search functionality

BIBSYS

BIBSYS Ask - the architecture

- Uses key technologies:
  - Domain model
  - RESTful web services
  - JSP (JAVA server pages)
  - Javascript and AJAX client side in users WEB-browser

BIBSYS

Domain Model

- Identifies the releationships among all major entities within the system
- Consits of objects with reasonible responsibilites - the domain objects.
- Must be able to complete all tasks for the applications using them.
- The naming of the objects and usage of them should correspond with your business to make it understandable and easy to use and avoid confusion.

For more information, see http://en.wikipedia.org/wiki/Domain_model

BIBSYS

RESTful web services

Also called a RESTful web API

- Simple web service implemented using HTTP and the principles of REST
- Collection of resources, with three defined aspects:
  - the base URI for the web service, such as http://example.com/resources/
  - the MIME type of the data supported by the web service. This is often JSON, XML or YAML but can be any other valid MIME type.
  - the set of operations supported by the web service using HTTP methods (e.g., POST, GET, PUT or DELETE).

For more information, see: http://en.wikipedia.org/wiki/Restful_web_service

BIBSYS

We implement serverside RESTful services as JSP-services

```
<%@page import="java.util.ArrayList"%>
<%@page import="com.thoughtworks.xstream.XStream"%>
<%@page import="com.thoughtworks.xstream.io.json.JsonHierarchicalStreamDriver"%>
<%

//This is a super simple example of a JSON Service
//Defining an inner class to populate with data
class Car {
	private String color="None";
	private int numberOfWheels=4;
	private String brand="Unkown";
	public Car(String _color,int _numberOfWheels,String _brand) {
		color = _color;  numberOfWheels = _numberOfWheels; brand = _brand;
	}
}
//Creating a list to put the "Car"-objects into
ArrayList carList = new ArrayList();
//Adding "Car"-objects
carList.add(new Car("Red",6,"Ford")); carList.add(new Car("Yellow",4,"Volvo"));
carList.add(new Car("Blue",4,"Toyota"));

//Using XStream to automatically serializing
XStream xstream = new XStream(new JsonHierarchicalStreamDriver());
String json = (xstream.toXML(carList));

//Setting proper content type and encoding before responding...
response.setContentType("application/json;charset=utf-8");
%><%=json%>
```

BIBSYS

Response from server running the JSP-service


```
{"list": [
  {
    "color": "Red",
    "numberOfWheels": 6,
    "brand": "Ford",
    "outer-class": {}
  },
  {
    "color": "Yellow",
    "numberOfWheels": 4,
    "brand": "Volvo",
    "outer-class": {
      "@reference": "../../org.apache.jsp.json.example_005fservice_jsp$1$Car/outer-class"
    }
  },
  {
    "color": "Blue",
    "numberOfWheels": 4,
    "brand": "Toyota",
    "outer-class": {
      "@reference": "../../org.apache.jsp.json.example_005fservice_jsp$1$Car/outer-class"
    }
  }
]}
```


BIBSYS

Client code running in users web browser – using AJAX

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8"/>
        <script type="text/javascript" src="/ask2/js/prototype_1_6_1_rc2.js" charset="utf-8"></script>
        <script type="text/javascript">
            function init(_event) {
                //Locating an object in the DOM structure
                var target = $('target');

                //Setting a status message
                target.appendChild(new Element('li').update("Sending request..."));

                //Creating a request to the example service
                new Ajax.Updater(target,'/ask2/json/example_service.jsp',{
                    evalJSON:true,
                    method:'get',
                    insertion: function(_target,_response) {
                        //Clearing status message...
                        _target.update("");

                        //Parsing the response
                        var dataList = _response.evalJSON().list;
                        //Iterate through every item in the response
                        for (var i=0, data; data = dataList[i]; i++) {

                            //Creating a DOM-object and presenting it
                            var resultItem = new Element('li').update("A "+data.color+" "+data.brand+" with "+data.numberOfWheels+" wheels;)");
                            _target.appendChild(resultItem);
```

BIBSYS

Client code running in users web browser – using AJAX

```
}
                    }
                }});
            }

            //Init method will be triggered when html-document is completely loaded
            Event.observe(window,'load',init);
        </script>
    </head>
    <body>
    <ul id="target"/>
    </body>
</html>
```

BIBSYS

Result in client web browser

A Red Ford with 6 wheels;)
A Yellow Volvo with 4 wheels;)
A Blue Toyota with 4 wheels;)

BIBSYS / Ask 2

beta

Sources [i]
All
Library database
Default
Unspecified
Humanities
Social sciences
Only your library Show more

java

Creator
cadenhead, rogers(11)
deitel, harvey m(18)
flanagan, david(22)
geary, david m(10)
harold, elliotte rusty(10)
holzner, steven(11)
horstmann, cay s(20)
lewis, john(10)
liang, y daniel(15)
mclaughlin, brett(9)
oaks, scott(10)
schildt, herbert(12)
strøm, øyvind(10)
weiss, mark allen(9)
zukowski, john(11)

Year
1957 1960 1963 1967 1969 1970 1972 1973
1974 1975 1976 1980 1981 1984 1985 1986
1987 1988 1989 1990 1991 1992 1993 1994
1995 1996 1997 1998 1999 2000
2001 2002 2003 2004 2005
2006 2007 2008 2009 2010

Bibliography
hamsun(1)
nordisko(1)

Material
Article E-book Book CDROM Congress Dissertation Internet document CD (music) Student paper These

Subject
computer data databehandling indonesia informatikk internet internett java language objektorientert oriented program programmering

java

Search Reset

A search for «java» in BIBSYS Ask

Hits: 2654

Link to this search

JAVA developer's journal
ISSN: 1938-3886
Material: E-journal
Source:Bibliotekbasen
Bibliotekbasen
Save

Server-side GPS and assisted-GPS in Java
By: Neil Harper
Year:c2010
ISBN: 978-1-60783-985-9
Material: Book
Source:Bibliotekbasen
Bibliotekbasen
Resource
Copies
Loan
Save

Programming Finite Elements in Java
By: Gennadiy Nikishkov
Year:2010
ISBN: 9781848829725
Material: Internet document
Source:Bibliotekbasen
Bibliotekbasen
Resource
Copies
Loan
Save

Operating System Concepts with Java
By: Abraham Silberschatz
Year:2010
ISBN: 9780470398791
Material: Book
Source:Bibliotekbasen
Bibliotekbasen
Copies
Loan
Save

JavaServer faces 2.0, the complete reference
By: Ed Burns, Chris Schalk, Neil Griffin
Year:cop. 2010
ISBN: 978-0-07-162509-8
Material: Book
Resource
Copies
Loan
Save

Sources [i]
All
Library database
Default
Unspecified
Humanities
Social sciences
Only your library
Show more

book_print
flanagan, david
java

Creator
farley, jim(1)
flanagan, david(17)
mclaughlin, brett(1)
petrich, dean(1)

Year
1996 1997 1998 1999 2000 2002
2004 2005 2006

Material
Book

Subject
applet computer databehandling internet java
javabeans javascript language languages
objectoriented objektorientert program
programmering
programmeringsspråk programming
servers web wide world xml

Hamsun-bibliografi

java

Creator flanagan, david x Material Book x

Search Reset

Hits: 20

Narrowing the search using the scan boxes

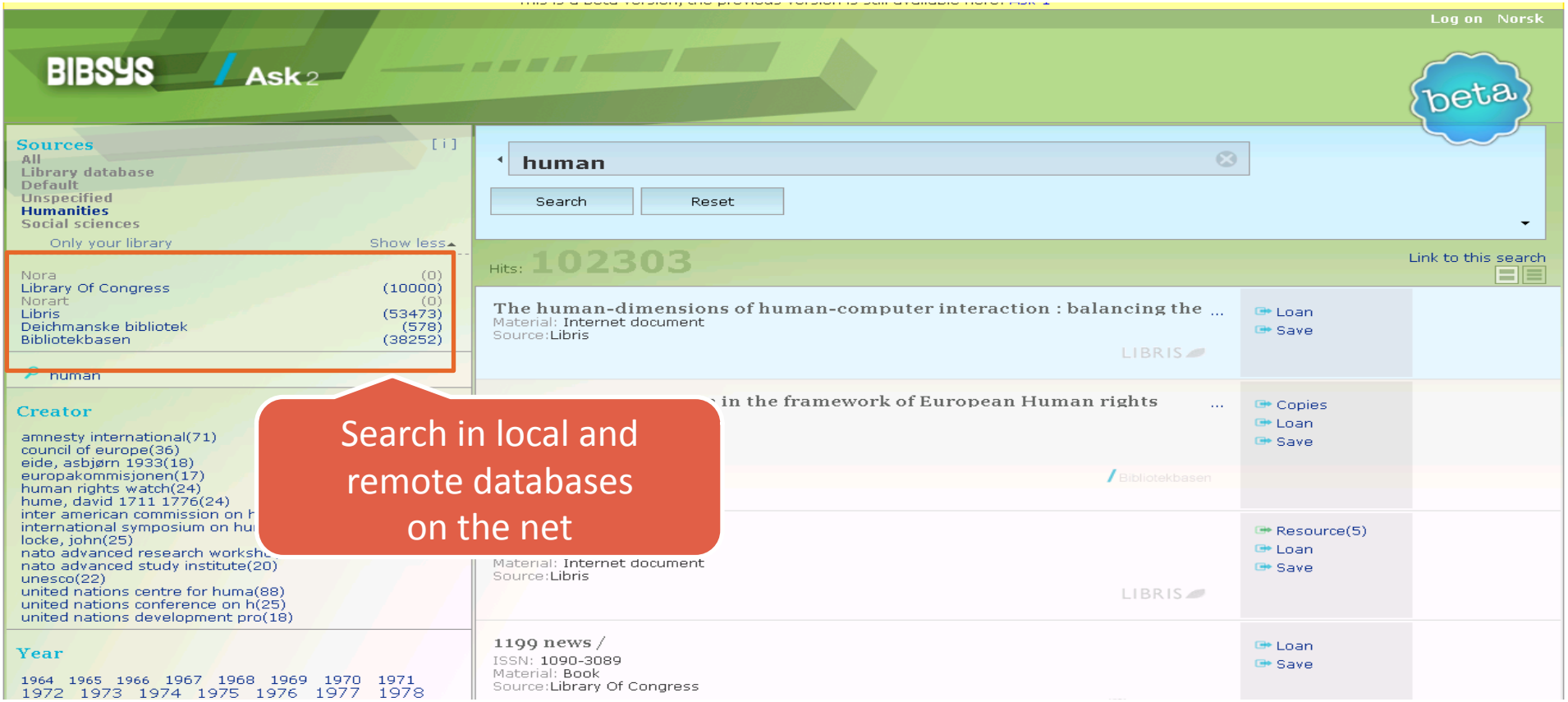
JavaScript, the definitive guide
By: David Flanagan
Year:2006
ISBN: 978-0-596-10199-2
Material: Book
Source:Bibliotekbasen
Subjects: javascript programmering
Bibliotekbasen

Similar documents (2)

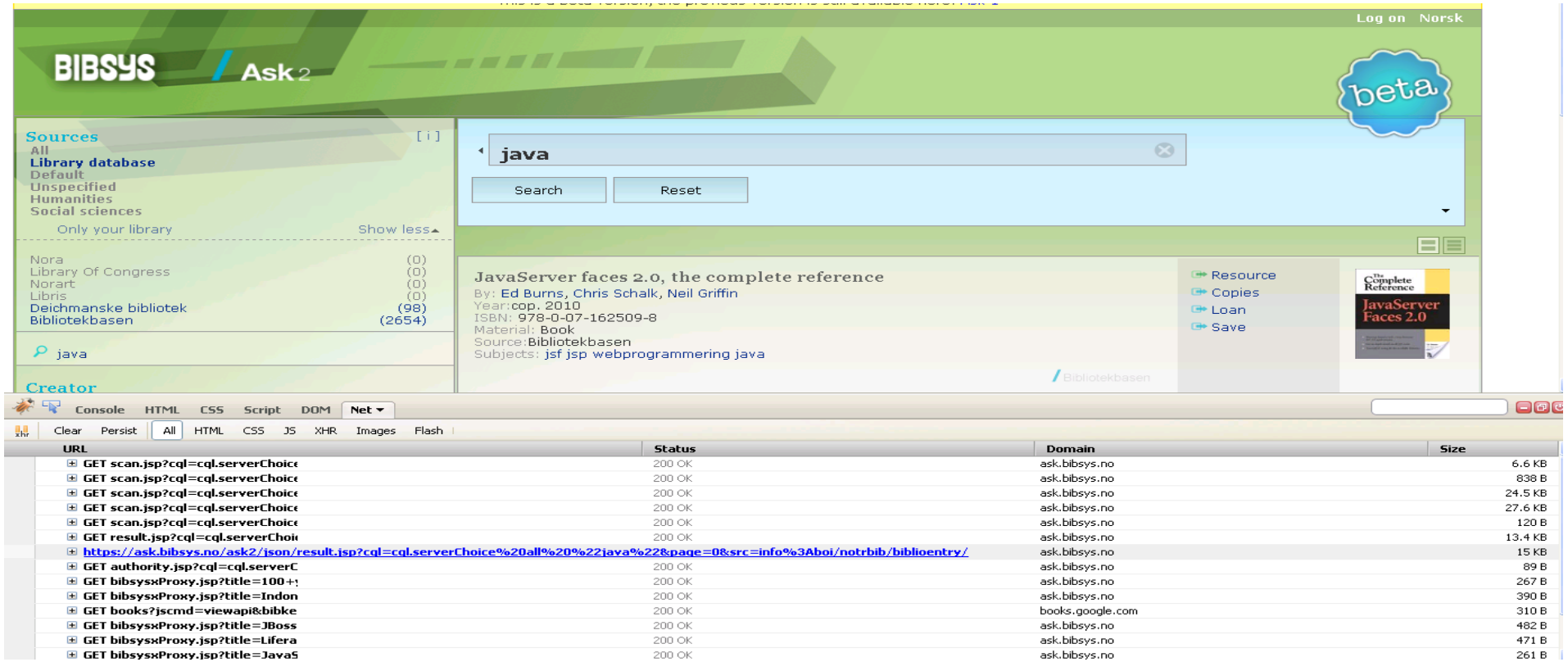
Java in a nutshell
By: David Flanagan
Year:2005
ISBN: 0-596-00773-6
Material: Book
Source:Bibliotekbasen
Subjects: java programmering
Bibliotekbasen

JavaScript, pocket reference
By: David Flanagan
Year:2002, c2003
ISBN: 0-596-00411-7
Material: Book
Source:Bibliotekbasen
Subjects: programmering java javascript
Bibliotekbasen

BIBSYS

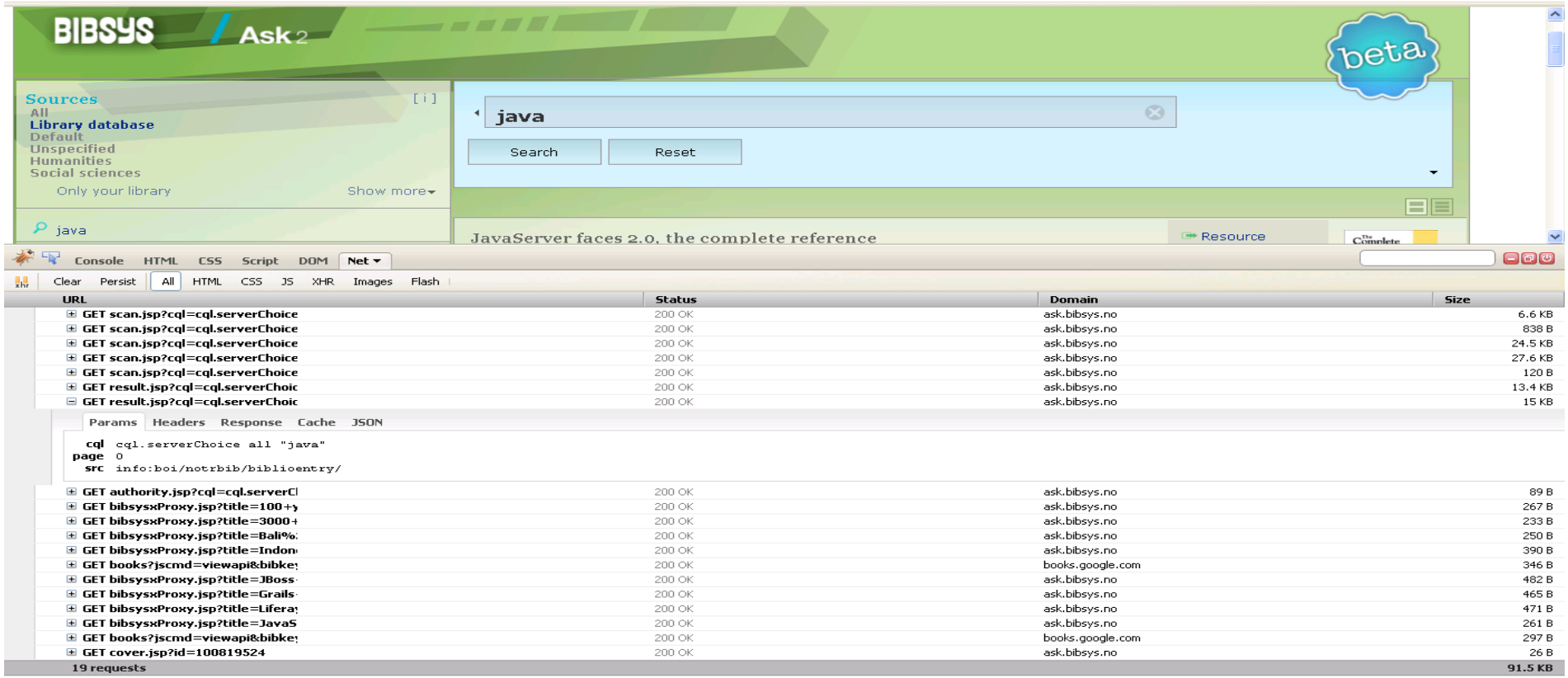

Log on Norsk
BIBSYS Ask 2
beta
Sources
All
Library database
Default
Unspecified
Humanities
Social sciences
Only your library
Show less
Nora (0)
Library Of Congress (10000)
Norart (0)
Libris (53473)
Deichmanske bibliotek (578)
Bibliotekbasen (38252)
human
Creator
amnesty international(71)
council of europe(36)
eide, asbjørn 1933(18)
europakommisjonen(17)
human rights watch(24)
hume, david 1711 1776(24)
locke, john(25)
nato advanced study institute(20)
unesco(22)
united nations centre for huma(88)
united nations conference on h(25)
united nations development pro(18)
Year
1964 1965 1966 1967 1968 1969 1970 1971
1972 1973 1974 1975 1976 1977 1978
human
Search
Reset
Hits: 102303
Link to this search
The human-dimensions of human-computer interaction : balancing the ...
Material: Internet document
Source:Libris
LIBRIS
Loan
Save
in the framework of European Human rights ...
Bibliotekbasen
Copies
Loan
Save
Material: Internet document
Source:Libris
LIBRIS
Resource(5)
Loan
Save
1199 news /
ISSN: 1090-3089
Material: Book
Source:Library Of Congress
Loan
Save
Search in local and remote databases on the net

BIBSYS



A Search with firebug enabled

BIBSYS



Request parameters

BIBSYS

Console HTML CSS Script DOM Net

Clear Persist All HTML CSS JS XHR Images Flash

URL	Status	Domain	Size
GET scan.jsp?cql=cql.serverChoice	200 OK	ask.bibsys.no	6.6 KB
GET scan.jsp?cql=cql.serverChoice	200 OK	ask.bibsys.no	838 B
GET scan.jsp?cql=cql.serverChoice	200 OK	ask.bibsys.no	24.5 KB
GET scan.jsp?cql=cql.serverChoice	200 OK	ask.bibsys.no	27.6 KB
GET scan.jsp?cql=cql.serverChoice	200 OK	ask.bibsys.no	120 B
GET result.jsp?cql=cql.serverChoic	200 OK	ask.bibsys.no	13.4 KB
GET result.jsp?cql=cql.serverChoic	200 OK	ask.bibsys.no	15 KB

Params Headers Response Cache JSON

Response Headers view source

```
            Date  Fri, 23 Apr 2010 06:06:47 GMT
          Server  IBM_HTTP_Server
  Content-Length  15372
      Keep-Alive  timeout=10, max=96
      Connection  Keep-Alive
    Content-Type  application/json;charset=utf-8
Content-Language  nb-NO
```

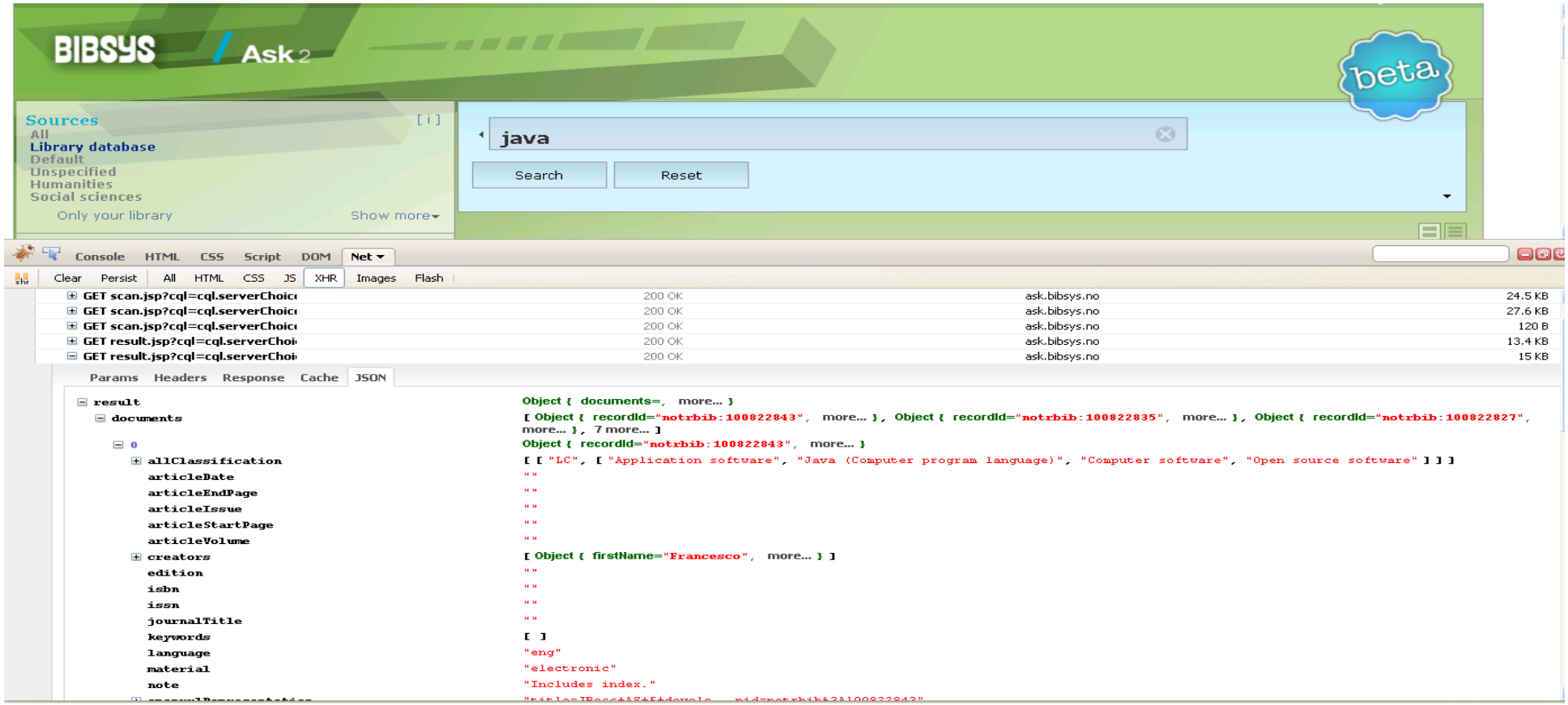
Request Headers view source

```
            Host  ask.bibsys.no
      User-Agent  Mozilla/5.0 (Windows; U; Windows NT 5.1; nb-NO; rv:1.9.2.3) Gecko/20100401 Firefox/3.6.3 (.NET CLR 3
                  .5.30729)
          Accept  text/javascript, text/html, application/xml, text/xml, */*
 Accept-Language  nb,no;q=0.8,nn;q=0.6,en-us;q=0.4,en;q=0.2
 Accept-Encoding  gzip,deflate
 Accept-Charset   ISO-8859-1,utf-8;q=0.7,*;q=0.7
      Keep-Alive  115
      Connection  keep-alive
X-Requested-With  XMLHttpRequest
X-Prototype-Version  1.6.1
         Referer  https://ask.bibsys.no/ask2/html/
          Cookie  WT_FPC=id=129.241.16.2-684411376.30056269:lv=1265191237360:ss=1265191237360; JSESSIONID=0000eTlKuc-PdkVOnTe3pk4A0aW
                  :14ldp2kuc
```

GET authority.jsp?cql=cql.serverC	200 OK	ask.bibsys.no	89 B
GET bibsysxProxy.jsp?title=100+y	200 OK	ask.bibsys.no	267 B
GET bibsysxProxy.jsp?title=3000+	200 OK	ask.bibsys.no	233 B
GET bibsysxProxy.jsp?title=Bali%:	200 OK	ask.bibsys.no	250 B
GET bibsysxProxy.jsp?title=Indon	200 OK	ask.bibsys.no	390 B
GET bibsysxProxy.jsp?title=JBoss	200 OK	ask.bibsys.no	482 B
GET bibsysxProxy.jsp?title=Grails	200 OK	ask.bibsys.no	465 B
GET bibsysxProxy.jsp?title=Lifera	200 OK	ask.bibsys.no	471 B
GET bibsysxProxy.jsp?title=JavaS	200 OK	ask.bibsys.no	261 B
GET cover.jsp?id=100819524	200 OK	ask.bibsys.no	26 B
17 requests			90.9 KB

Response headers

BIBSYS



Response from server

BIBSYS

Ask2 - Beta

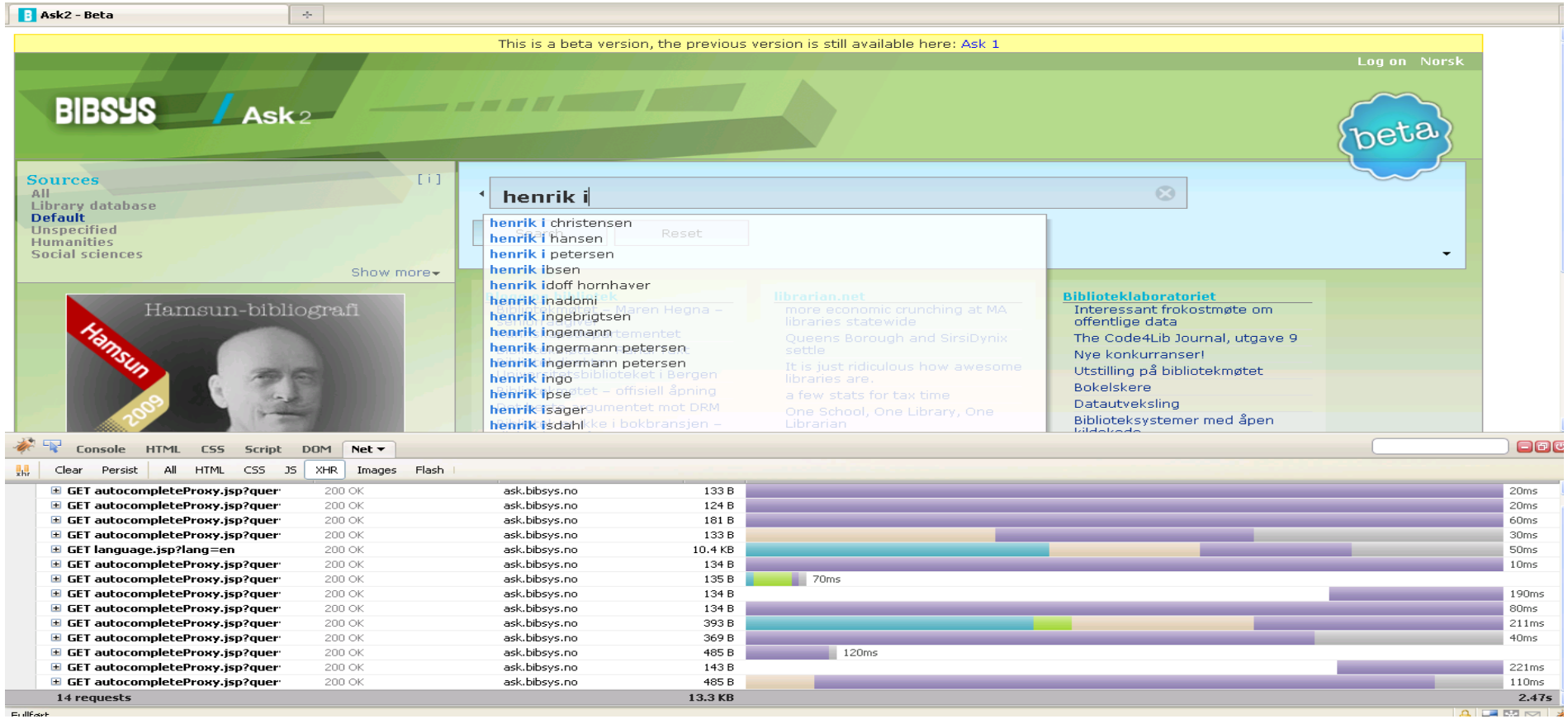
Console HTML CSS Script DOM Net

Clear Persist All HTML CSS JS XHR Images Flash


```
{"result": {
  "documents": [
    {
      "recordId": "notrbib:100822843",
      "title": "JBoss AS 5 development, develop, deploy, and secure Java applications on this robust
, open source application server",
      "creators": [
        {
          "relatorcode": "",
          "firstName": "Francesco",
          "lastName": "Marchioni",
          "normalizedName": "Marchioni, Francesco",
          "presentableName": "Francesco Marchioni"
        }
      ],
      "year": "c2009",
      "publicationName": "Packt Pub.",
      "publicationPlace": "Birmingham, U.K.",
      "isbn": "",
      "issn": "",
      "pages": "1 online resource (vii, 397 s.), ill",
      "edition": "",
      "series": [
      ],
      "note": "Includes index.",
      "keywords": [
      ],
      "allClassification": [
        [
          "LC",
          [
            "Application software",
            "Java (Computer program language)",
            "Computer software",
            "Open source software"
          ]
        ]
      ],
      "openurlRepresentation": "title=JBoss+AS+5+development%2C+develop%2C+deploy%2C+and+secure+Java
+applications+on+this+robust%2C+open+source+application+server&author=Marchioni%2C+Francesco&year=c2009
&sid=BIBSYS%3AAsk2&pid=notrbib%3A100822843",
      "language": "eng",
      "material": "electronic",
      "resources": [
      ],
      "physicalform": "n",
      "typeofcontent": [
        "e",
        "v"
      ],
      "articleVolume": "",
      "articleIssue": "",
      "articleStartPage": "",
      "articleEndPage": "",
      "articleDate": "",
      "journalTitle": ""
    },
    {
      "recordId": "notrbib:100822835",
      "title": "Grails 1.1 web application development, reclaiming productivity for faster Java web development"
,
      "creators": [
```


Response from server

BIBSYS



Autocomplete in action

BIBSYS

Advantages

- Services are not tied to one application. Services are targeted for one goal and are reused.
- It is easy to add services
- Layers below the RESTful webservices are independent of the database server
- JSON (JavaScriptObjectNotation) streams are simple and Javascript understands JSON native.

BIBSYS

Disadvantages

- Webbrowser might tell you «mixed content» when your application mix secure and unsecure connections.

- Some webbrowser have slow performance or/and bad implementation of javascript.

BIBSYS

Questions?

We would love to tell you more about

BIBSYS Ask at our stand no 7 at the

Emtacl10 exhibition

BIBSYS