

A Search Federation Framework

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- ◉ A workforce of 10,795
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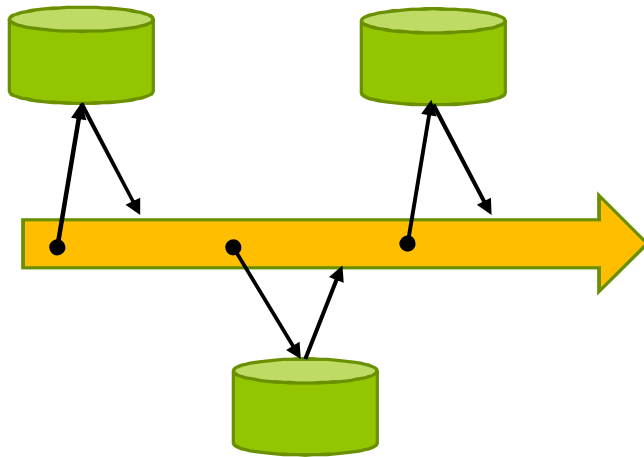
Why federate?

- May not be able crawl and index a data source
- Don't want to duplicate the indexed content in another system
- Don't want to enforce access controls for indexed content from another system
- Get the latest content from the source system

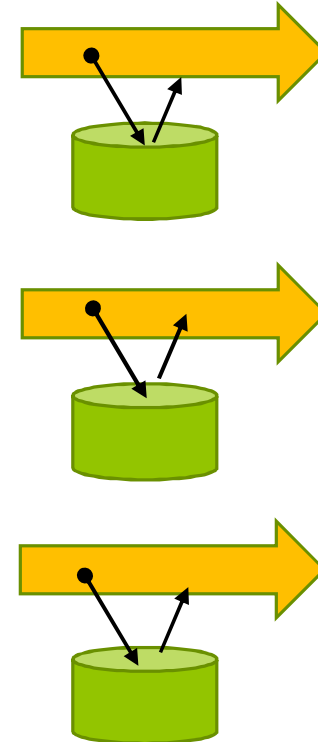
Disadvantages of Federation

- Must impersonate the user to access what they're authorized to see
- Must decide how to interleave/prioritize results
- Responsiveness is tied to the slowest source
- Need to support multithreading for performance

Serial versus Parallel access



Serial access to repositories



Parallel access to repositories

Multithreading issues

- “A programmer says: I have a problem. I’ll use multi-threading to solve it.” Now he has two problems.
- Threadsafe is an oxymoron.” Dr. Richard Hipp
- Multi-threaded programs start out fine and then go downhill from there

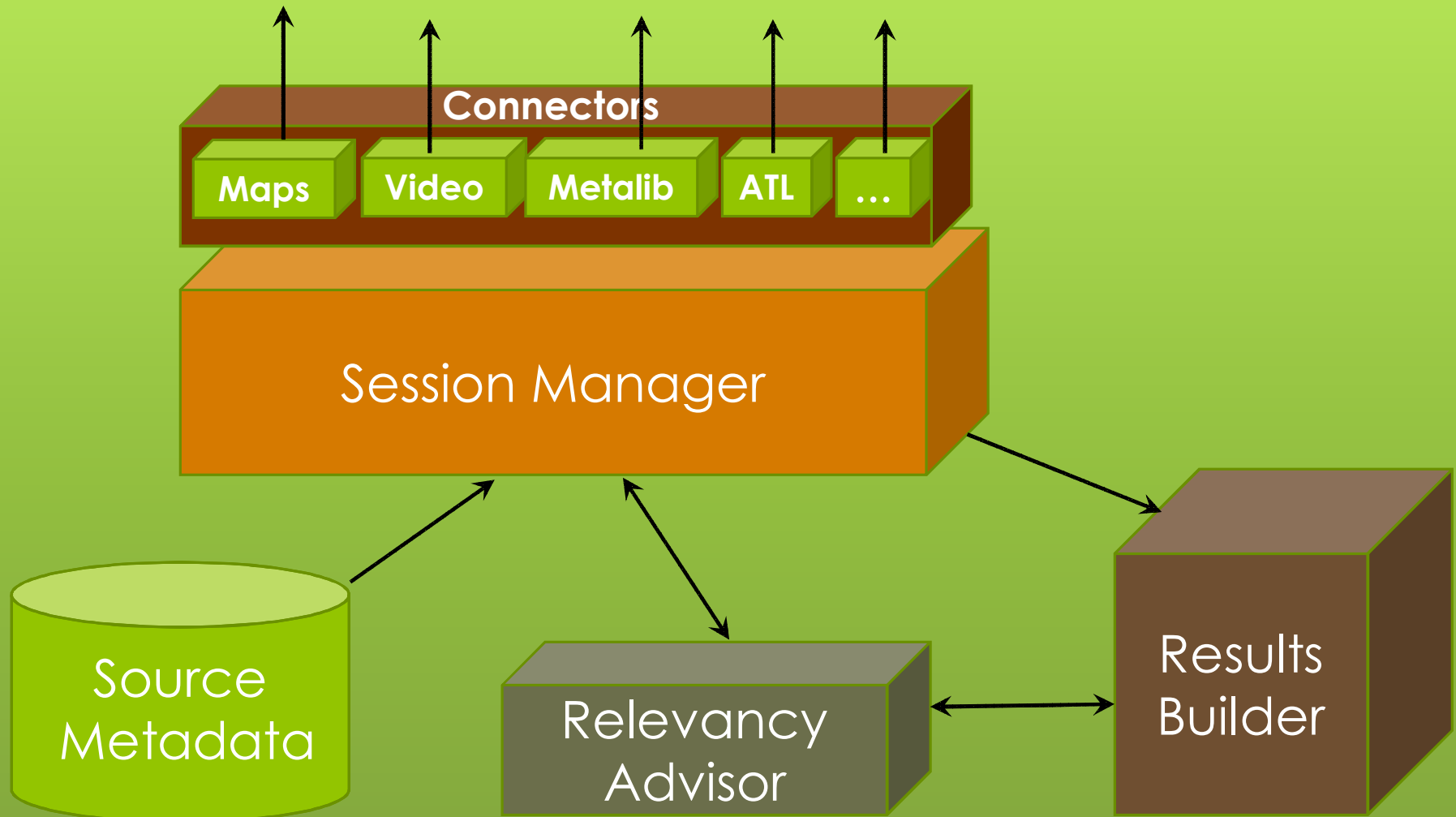
Authentication Trade Offs

- Using entity accounts vs user credentials
 - Easier to utilize an entity account – if you can get system admins to give it super-user privileges
 - More technically challenging to utilize customer credentials – but can now filter content based on their authorizations
 - We used Kerberos constrained delegation of authority -- limits what the application can do on behalf of the user

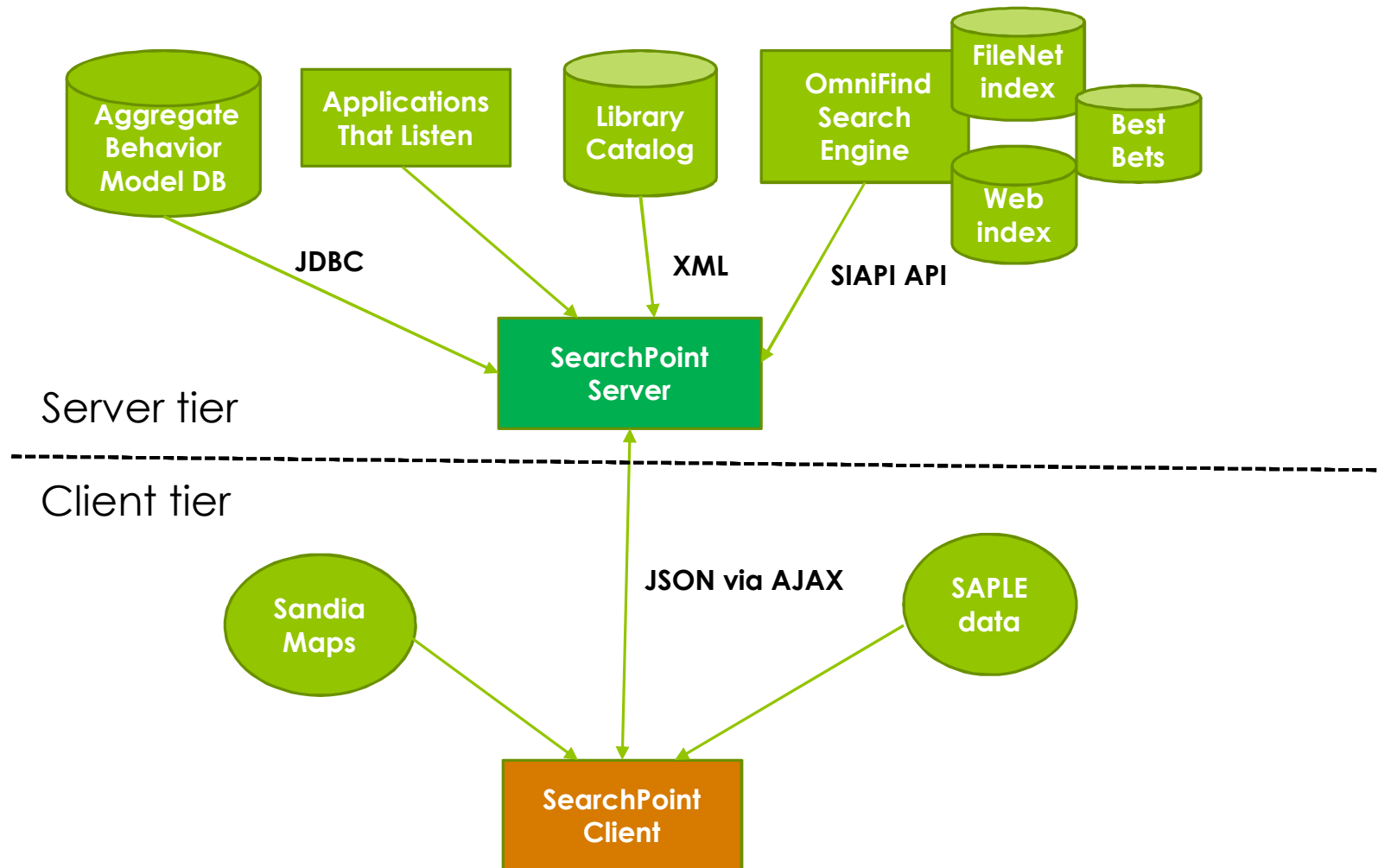
Client vs Server Federation

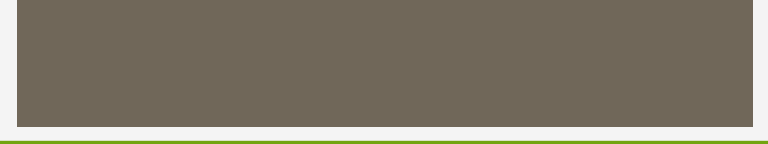
- Do we conduct federation on the client?
 - Want to use all the power available at the desktop
 - Requires more complex logic on the client
- Do we perform federation on the server?
 - Multi-threading issues add complexity
 - Keeps the client simpler (3 tier architecture)

Federator Architecture



SearchPoint Data Sources





Federation of map data

The screenshot displays the SearchPoint web application interface. The browser window title is "SearchPoint - ipoc". The address bar shows the URL: <https://webprod.sandia.gov/SearchPointNext/search.html?coll=snl1&pageBegin=0&query=ipoc>. The page header includes the "SearchPoint" logo and "SON/SRN Web". A login status "Logged in as jherzer" is visible in the top right. Below the header, there are tabs for "SON/SRN Web", "Corporate Policy System", "Technical Library Catalog", and "FileNet". A search bar contains the text "ipoc" and a "Search" button. The main content area shows search results for "ipoc", starting with "Showing 1 to 25 of 507 from SON/SRN Web". The results list includes:

- 1. IPOC**
IPOC Innovation Parkway Office Center IPOC ...
<https://info.sandia.gov/ot/IPOC/>
- 2. Innovation Parkway Office Center (IPOC) and Badge Office Map**
Innovation Parkway Office Center IPOC IPOC Benefits Procurement Facilities Maps Badge Office badging bad
https://eims.sandia.gov/Workplace/getContent?objectStoreName=EIMS_RO5&objectType=document&vsId={9D1BE45D-B1D8-454B-A146-BB48DE5CAE17}
- 3. Badges in IPOC**
...However this requirement is a little different in two specific locations at IPOC ...All other IPOC I
<https://info.sandia.gov/iss/home/article/badges-in-ipoc-139.html>
- 4. Sandia Maps**
Sandia Maps. IPOC Research Park Maps Tech Area Maps Innovation Parkway Office Center IPOC Gates Maps Bul
<https://info.sandia.gov/maps/>
- 5. Department 10241 (National Security Programs and Pulsed Power Sciences Procurement)**
...IPOC Pod Lead 5000 5200 5900, - IPOC Pod 5700 non USND5
Wall
<http://cfo.sandia.gov/procure/scmPages/Depts/dpt.10241.html>
- 6. Employee Caring Program I Sandia National Laboratories**
...IPOC 2nd Floor Break Room 10 00 a.m. 2 00 p.m., HILE Community Circuit Oct. 17th at Hardin Field, - The Community Involvement O
<http://give.sandia.gov/index.html>
- 7. IPOC**
Link to Sandia map application
<https://info.sandia.gov/ot/IPOC/>

On the right side of the page, there is a map titled "Go to Sandia Maps". The map shows the Innovation Parkway Office Center (IPOC) and surrounding areas, including Research Rd SE, Innovation Pkwy SE, and Development Rd. A red pin is placed on the map, indicating the location of the IPOC. The map also shows other buildings and streets in the area.

Load testing with JMeter

