

Web Map Printing: Which Solution Is For You?

presented by

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Introduction

- Web browsers provide very limited options for content printing, but fortunately...
- There are programming tools available to enhance web map printing
- This presentation will **NOT** address how to develop printing utilities
- In this presentation we **WILL**
 - Summarize available tools and frameworks
 - Demonstrate their capabilities
 - Hopefully help you decide which tool is for you

Tools and Approaches

- Browser print
- Custom light-weight print server
- FOSS or commercial print servers
 - MapFish Print server
 - QGIS server
 - ArcGIS server

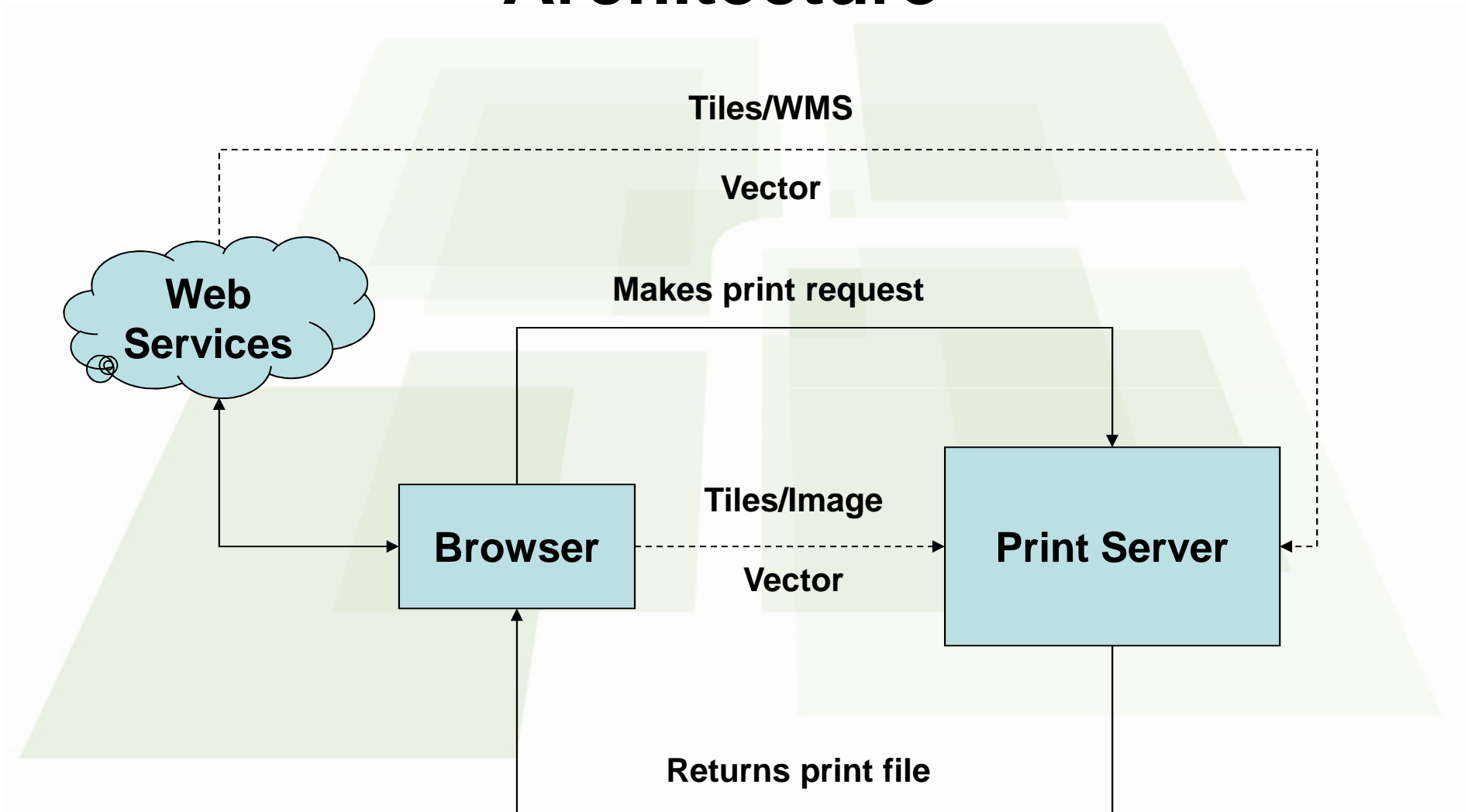
Browser Print

- Applicable cases
 - Simple layout
 - WYSIWYG
 - No control of map resolution
- Output
 - To printer
 - To PDF (PDF plug-in may be required)
- Programming
 - For layout design
- [Demo](#)

Light-weight Print Server Introduction

- Applicable cases
 - Layout control
 - Mash-up: map with other forms of deliverables (e.g., diagram, data table)
 - Map image resolution is possible
- Output
 - As file

Light-weight Print Server Architecture



Light-weight Print Server Workflow

- Basemap as image
 - Export WMS
 - Stitch tile services
- Vector overlay
 - Draw over basemap
- Insert map image into PDF document
- Returns PDF to browser

Light-weight Print Server Demo

- LinearBench Print
 - Python/Django
 - OWSLib: get WMS image
 - PIL: draw overlay over image
 - ReportLab: PDF generation and editing
- [Demo](#)

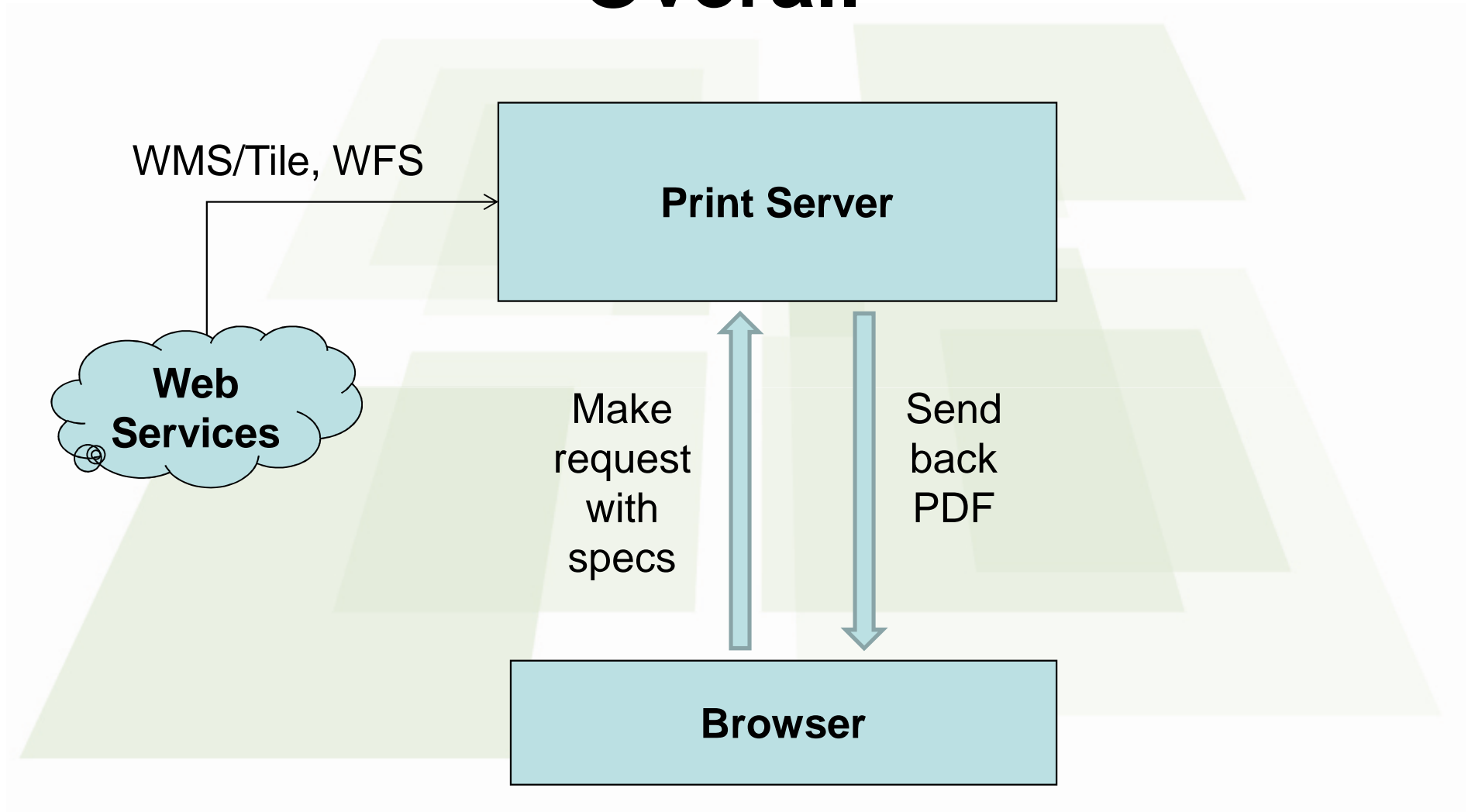
High-quality Map Print Outline

- Applicable cases
 - High resolution
 - Customized layout design
 - Different page sizes
 - Mash-up with various data sources
- Solutions
 - MapFish Print (FOSS)
 - QGIS Server (FOSS)
 - ArcGIS Server

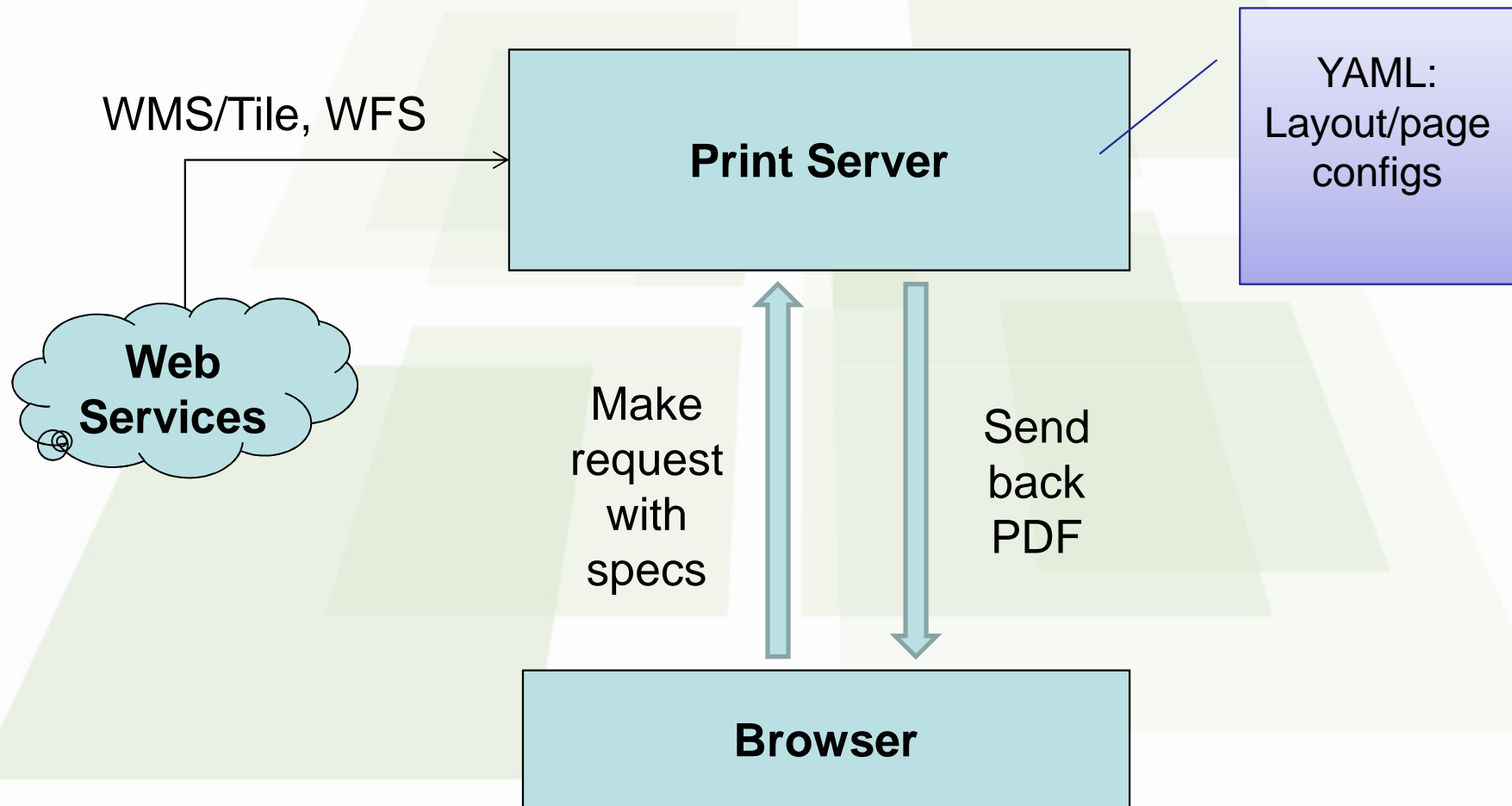
MapFish Print - Intro

- Java-based server
 - Open and flexible framework
 - Does not host data
 - Process web-accessible data services
- Installation and compilation
 - Requires some code to run on your server
 - Java servlet, Python/Pylons and Ruby on Rails
 - GeoServer/MapServer
 - Use plug-ins

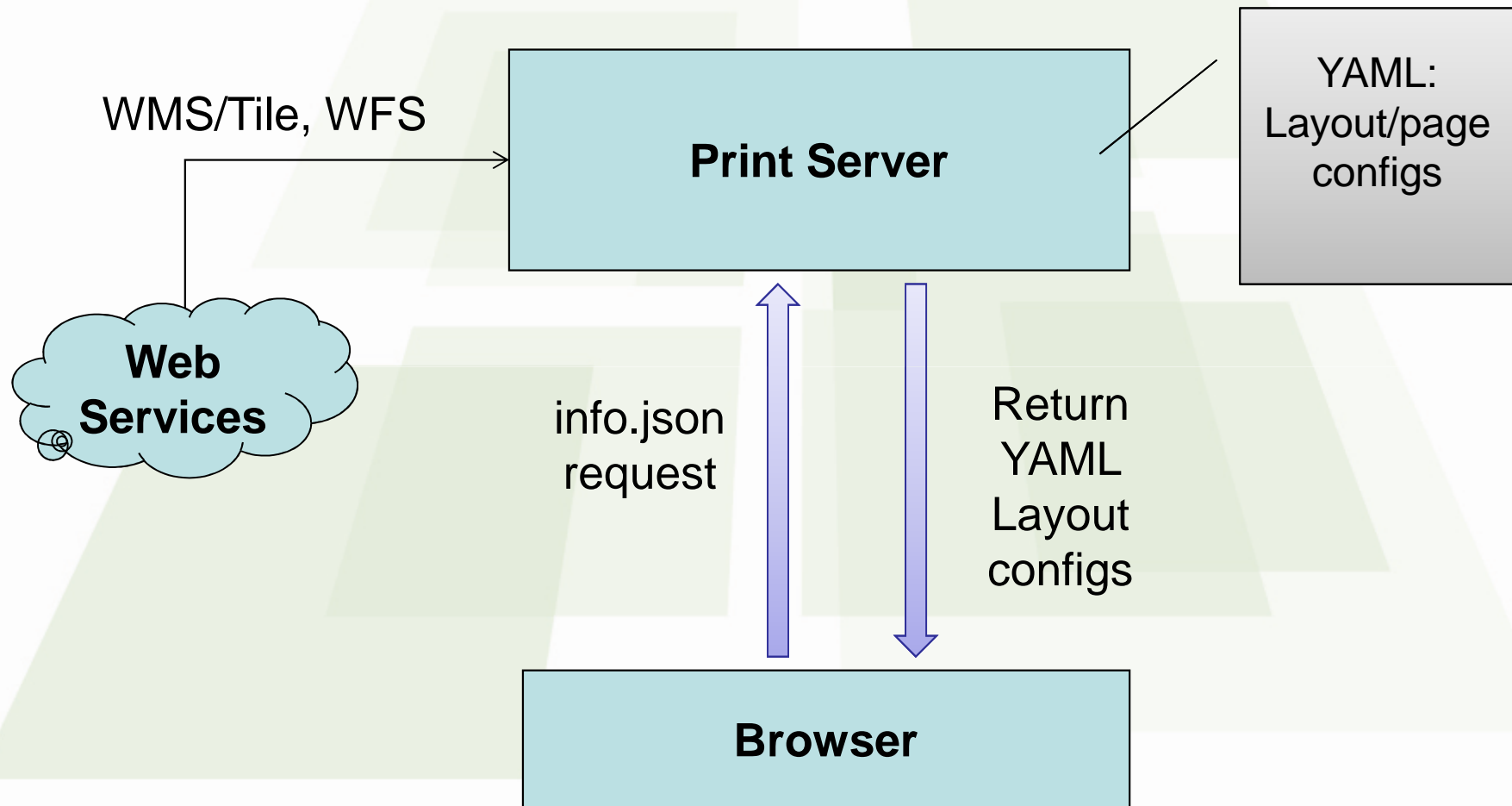
MapFish Print Architecture Overall



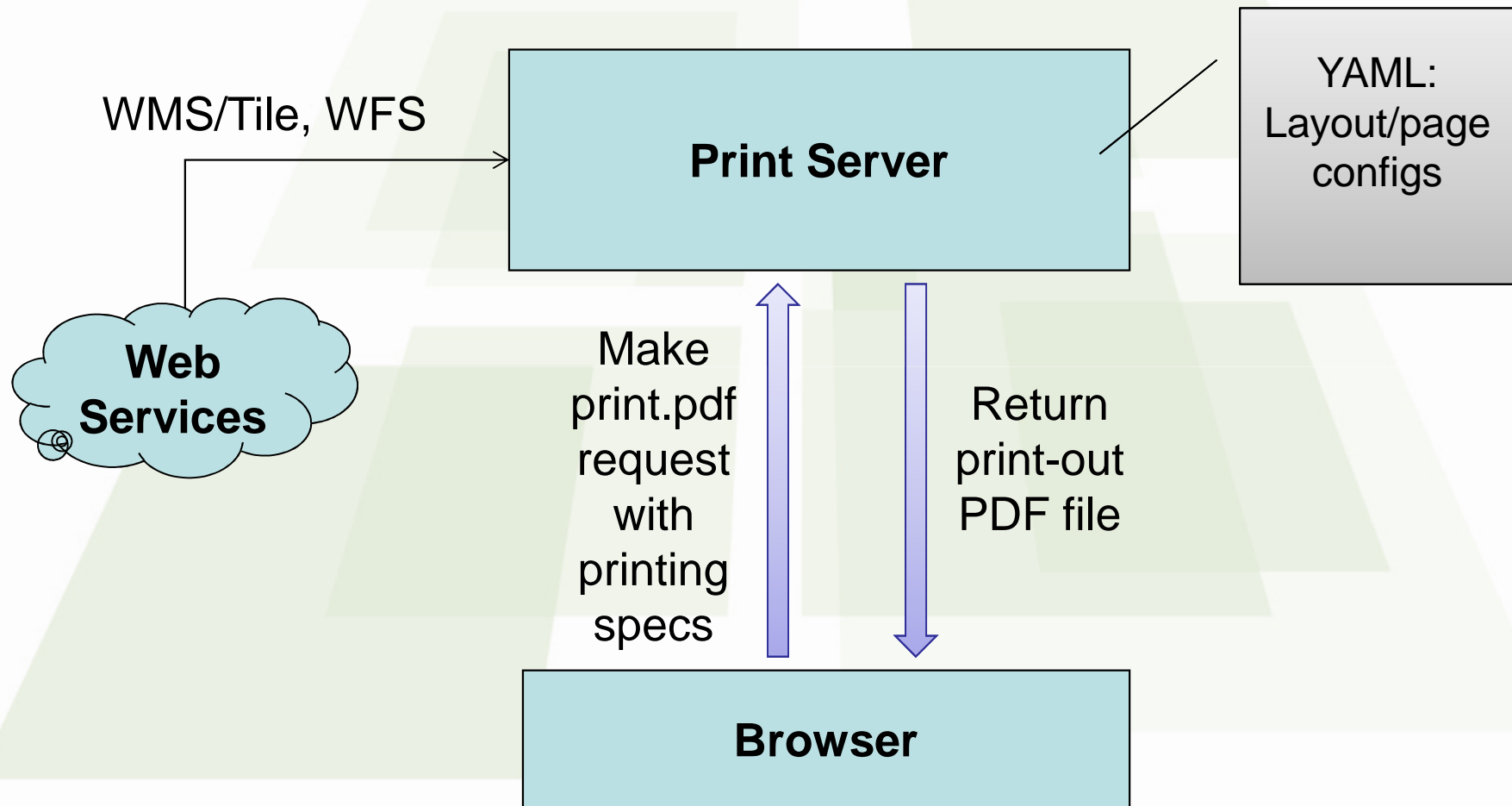
MapFish Print Architecture Server Configuration



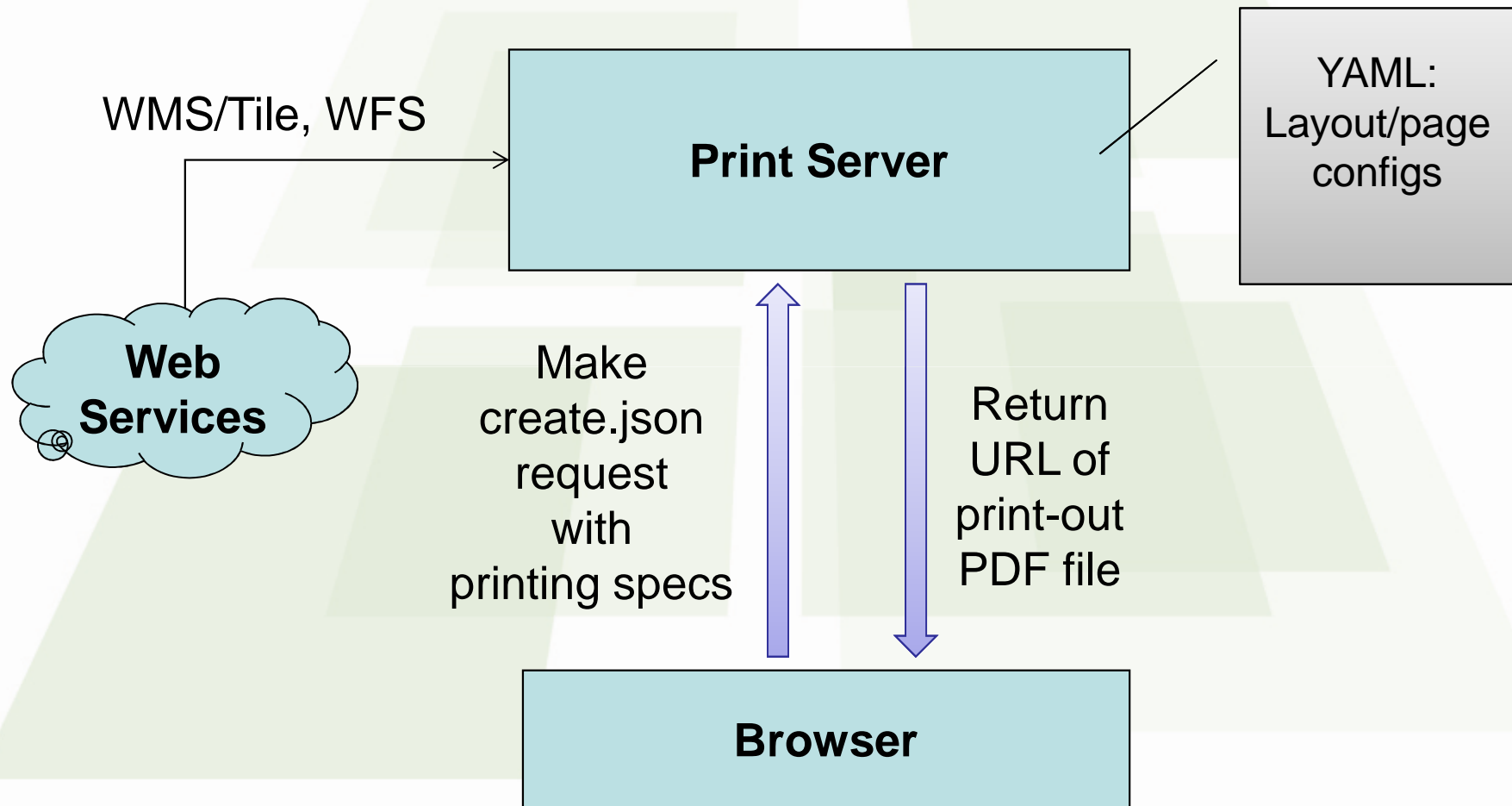
MapFish Print Architecture Protocol – info.json



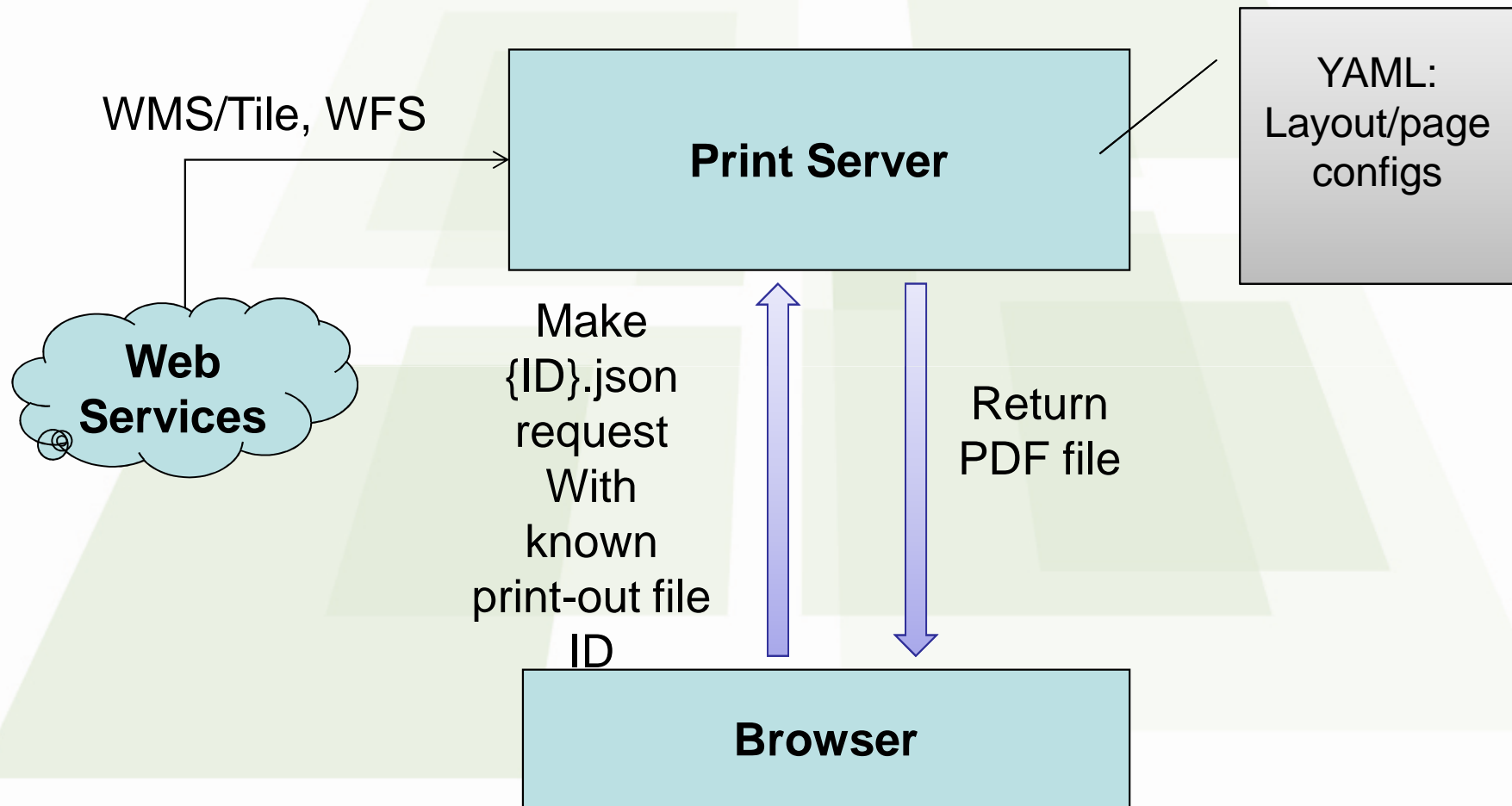
MapFish Print Architecture Protocol – print.pdf



MapFish Print Architecture Protocol – create.json



MapFish Print Architecture Protocol – {ID}.pdf



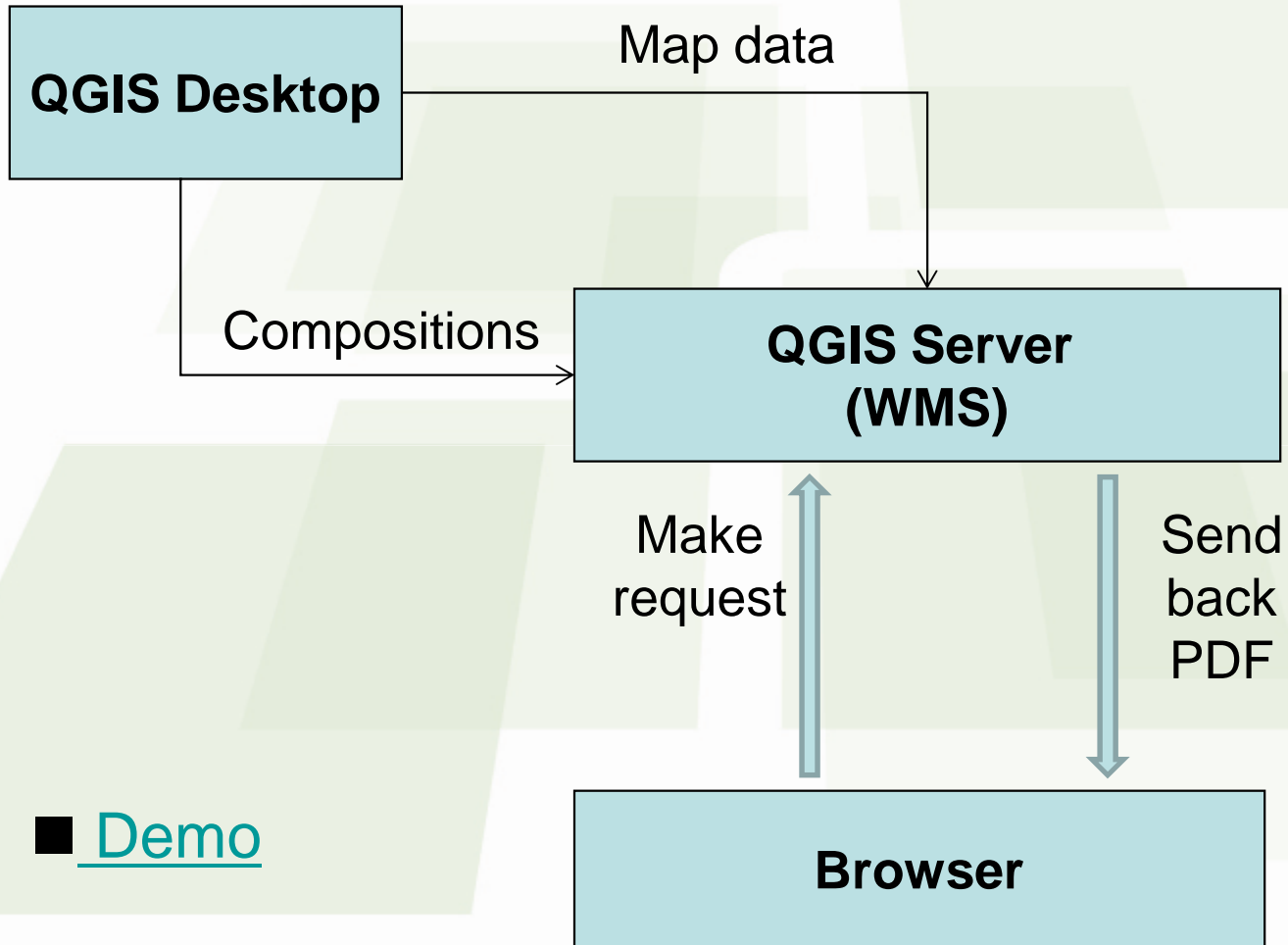
MapFish Print - Demo

- GeoExt
 - Rich-client interactive application framework
 - JavaScript, ExtJS + OpenLayers
 - Best support for MapFish Print
- [Demo](#)

QGIS Server Print - Intro

- QGIS
 - Similar to ArcGIS Desktop
 - FOSS GIS software
- QGIS Server
 - Same core libs as QGIS Desktop
 - Provide WMS as web-accessible map
- QGIS Composer
 - Map layout design tool (in QGIS Desktop)
- QGIS Server Print
 - Enable getPrint request capability in QGIS Server

QGIS Server Print - Architecture

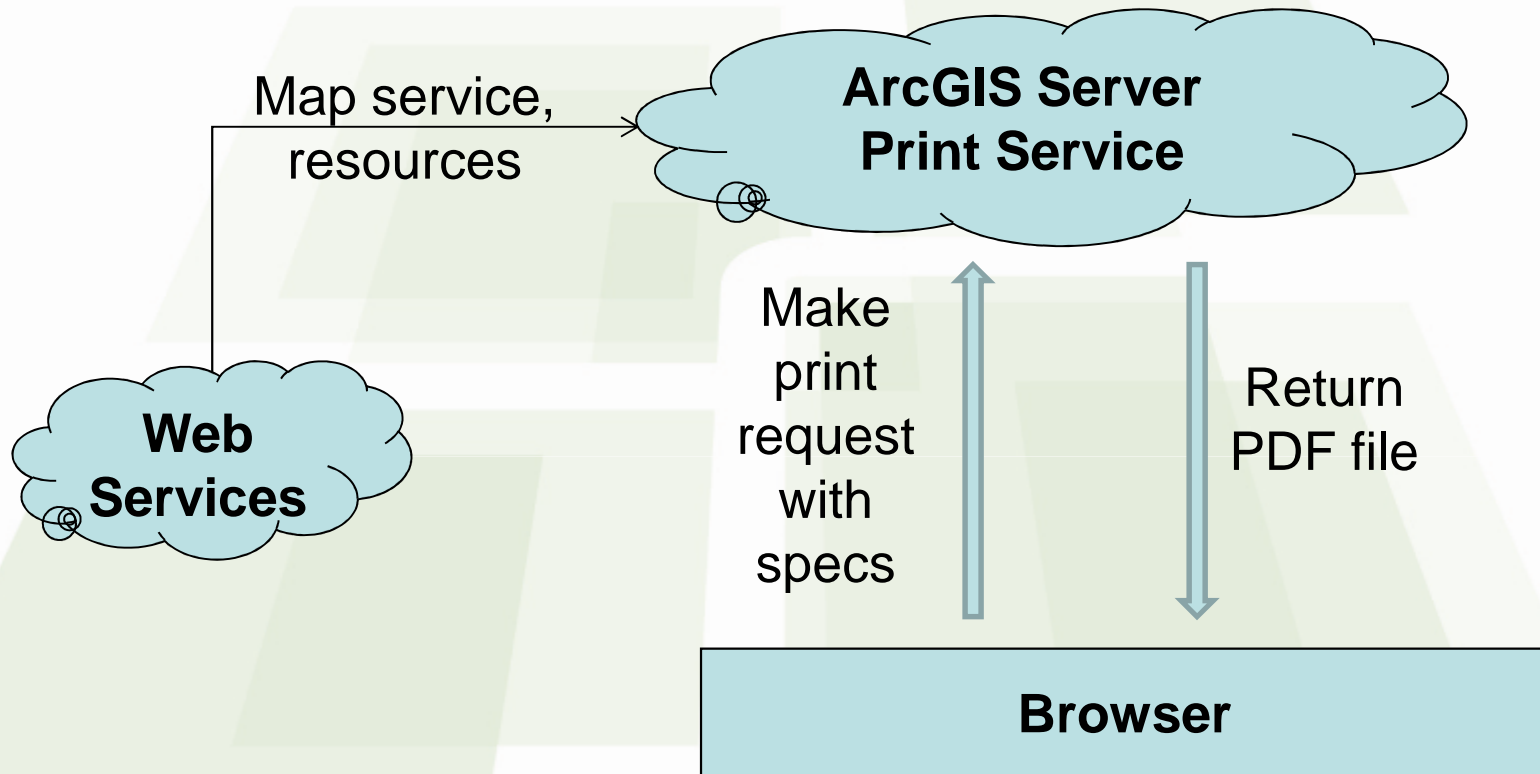


■ [Demo](#)

ArcGIS Server Print

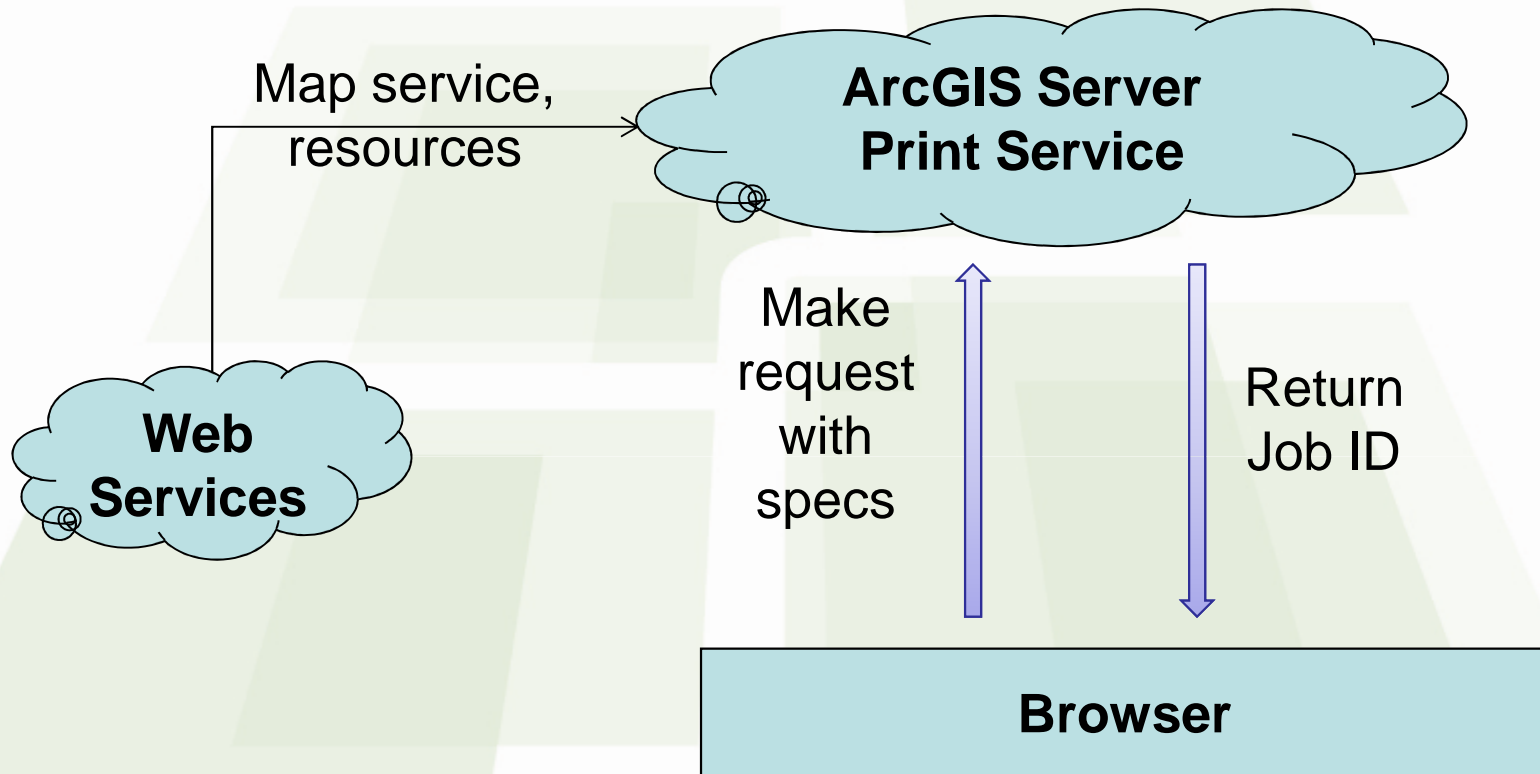
- ArcGIS Server
 - Host resources available online
 - Map data (Esri Map Service, WMS, WFS, WCS, etc)
 - Geo-processing tools
 - Sharing and interoperability
- ArcGIS Server Print
 - Basic print vs advanced print
 - Geo-processing service
 - Map printing complex configurations
 - Map display properties, basemap, operational layers, export, layout options

ArcGIS Server Print Architecture Overall

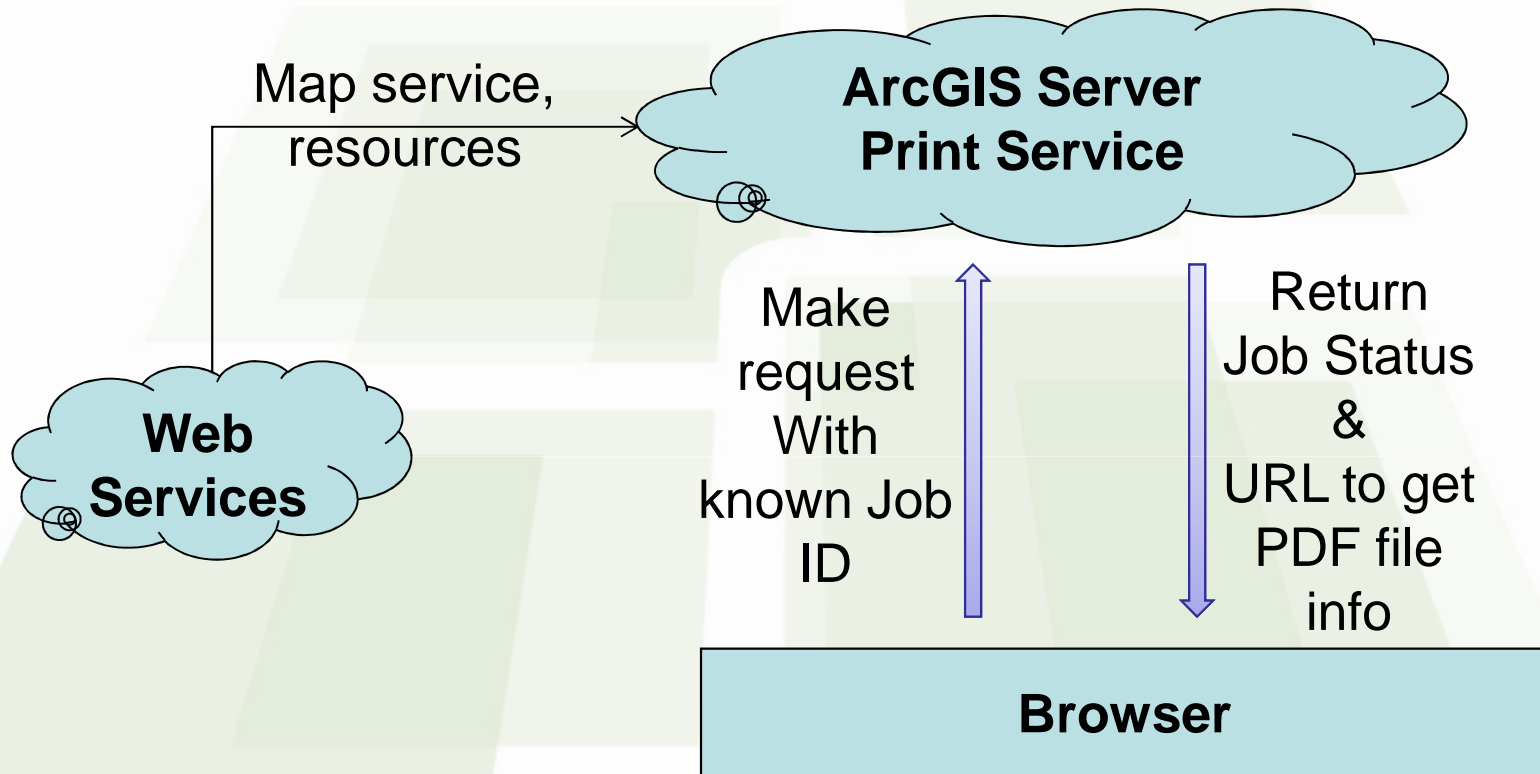


ArcGIS Server Print Architecture

Request – Submit Print Job

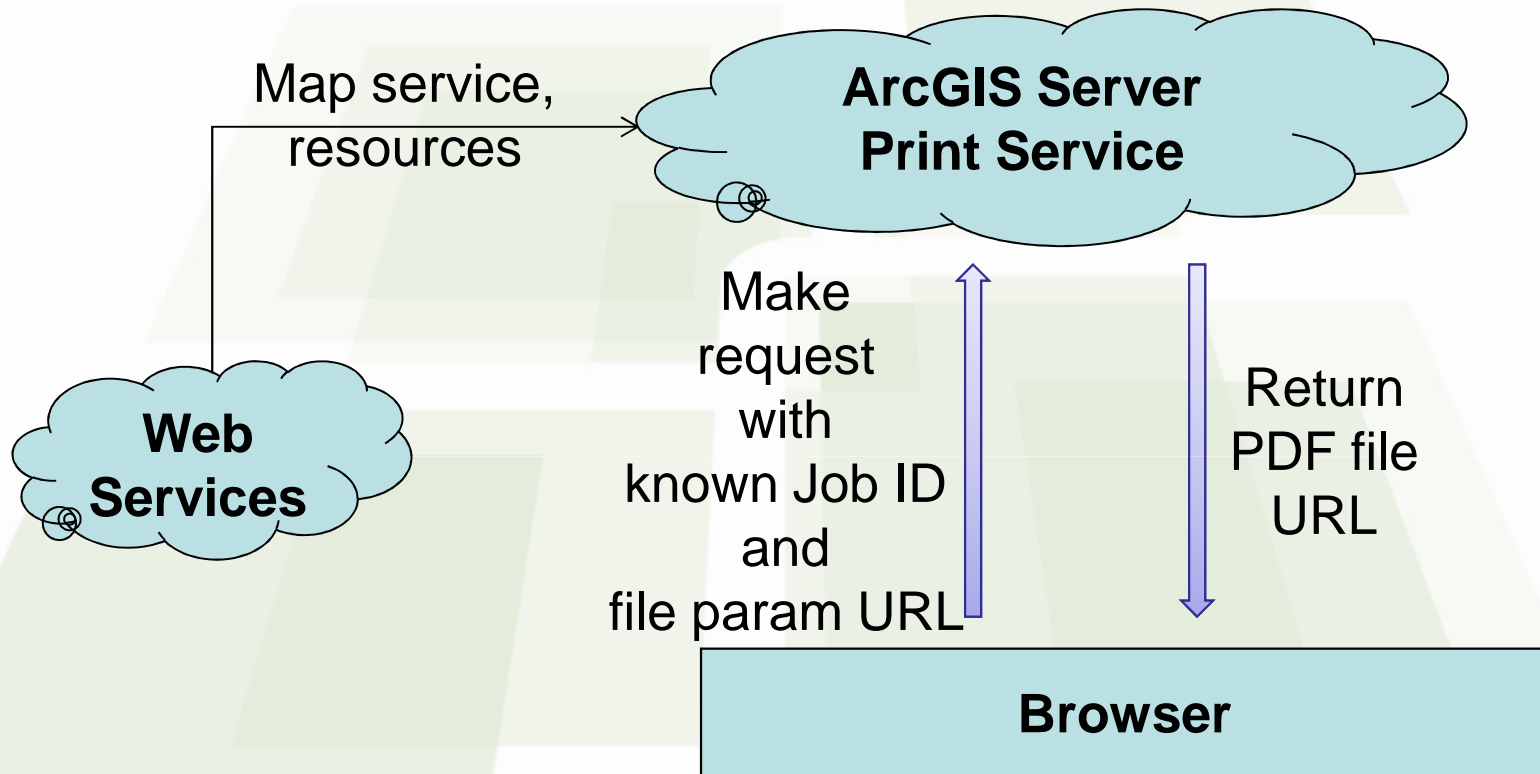


ArcGIS Server Print Architecture Request – Get Job Status

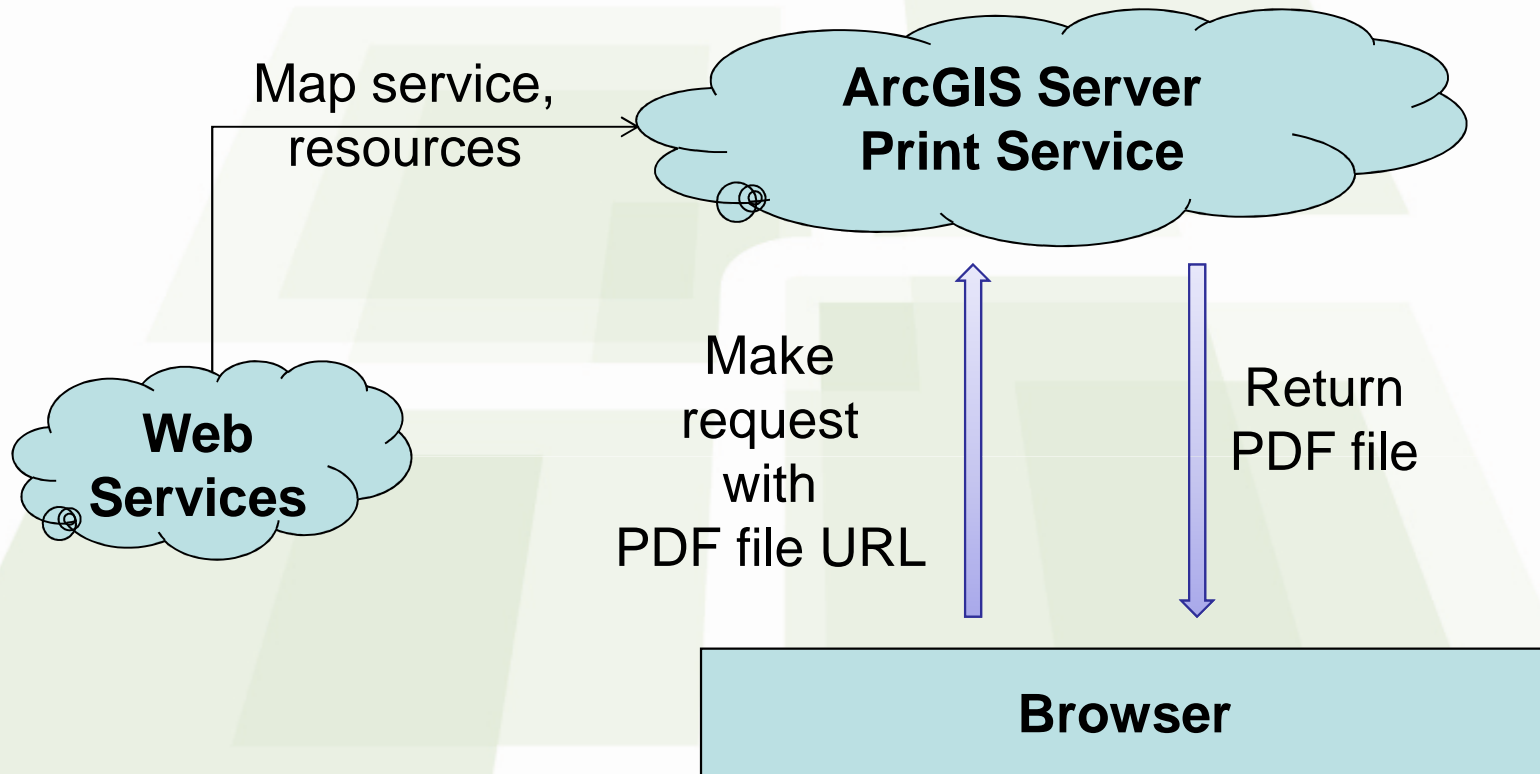


ArcGIS Server Print Architecture

Request – Get PDF File Info



ArcGIS Server Print Architecture Request – Get PDF File



ArcGIS Server Print

Basic vs Advanced

- Main difference
 - Page size: Basic has limit of 11*17 inches
 - Resolution: Advanced uses vector data to generate image
 - Coding: Advanced allows you to write your own service using ArcPy
- Advanced print: how?
 - Prepare map document
 - Publish it online in ArcGIS Server
 - ArcPy script
 - Accept parameters: web map configs and your own params
 - Print and export map
 - Publish script as geo-processing service
- Demos
 - [Basic print](#)
 - [Advanced print](#)

Comparison Summary

Item	Browser Print	Custom Print Server	MapFish	QGIS	AGS Basic	AGS Advanced
Purpose	WYSIWYG	Highly customized	High-quality map output			
Resolution Control	No	Limited	Yes			
Map Service Mashup	No	Yes	Yes	No	Yes	
Non-map Data Inclusion	No / Limited	Yes	No			
Layout Control	Limited	Yes	Yes			
Page Size Control	No	Limited	Yes	Yes	<= 11 x 17 inches	Yes
License	No	Per libraries used	FOSS		High	
Coding	None or little client-side effort	Complex in both server and client sides	Server side: Limited but depends on level of customization Client side: Web APIs			

Conclusion

- Need a quick and dirty print from a web page in WYSIWYG fashion
 - Use browser print
- Need mash-up map with other deliverables
 - Develop your own print server
- Need high-quality map output
 - Use ArcGIS server if you have invested already
 - Consider MapFish if you want to save license cost
 - Use QGIS Server if you are QGIS user and WMS print is needed
 - All above high-quality solutions enable RESTful services, so support third-party APIs consume printing services

Questions?

Further Reading

- ArcGIS Server high-quality tutorials
 - Basic:
<http://resources.arcgis.com/en/help/main/10.1/index.html#//0154000005z3000000>
 - Advanced:
http://resources.arcgis.com/en/help/main/10.1/index.html#/Tutorial_Advanced_high_quality_web_map_printing_exporting_using_arcpy_mapping/0154000005z2000000/
- MapFish Print documents
 - <http://www.mapfish.org/doc/print/>
- QGIS Server tutorial
 - http://hub.qgis.org/projects/quantum-gis/wiki/QGIS_Server_Tutorial
- Light-weight server print – tile stitching method
 - <http://trac.osgeo.org/openlayers/wiki/TileStitchingPrinting>

THANK YOU!