

GT4 Experiences

*Migrating **Gridcast** from GT3 to GT4*

Terry Harmer



Acknowledgements

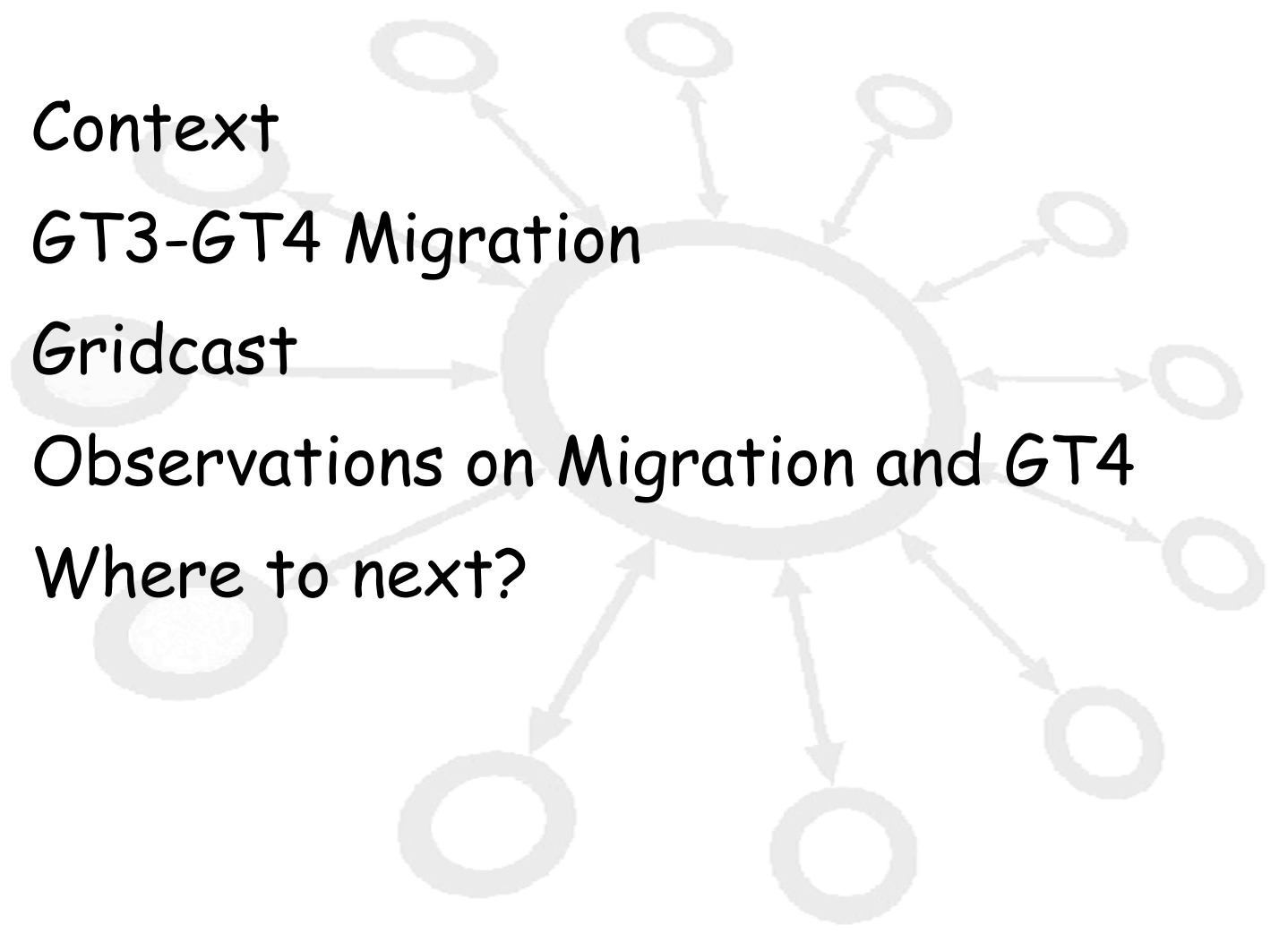


Anthony Stell (NeSC)
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Talk Outline

- 
1. Context
 2. GT3-GT4 Migration
 3. Gridcast
 4. Observations on Migration and GT4
 5. Where to next?

Context: Why GT3-GT4 Migration?

- *It sort of chose us.....* (Ron Perrott/Paul Donachy/me)
 - We decided against GT2 based projects
 - BeSC e-Science projects started in GT3 alpha 1.
 - All change...nothing is stable...we've been migrating for 3 years!
- BeSC has focused on niche commercial applications
 - we have a commercial interest
 - *Gridcast* 300k Java GT3.0.2
 - *Manifest* 100k Java GT3.0.2 and GT3.9.5
 - *GridMIL* 50k Java GT3.2
 - *Genegrid* 250k Java GT3.2
 - *Geddm* 300k Java GT3.0.2 and GT3.2
 - *RiskGrid* 100k Java GT3.0.2
 - *PlanningGridGateway* ???k Java GT3.9.5
- BeSC has focused on commercial user groups and deployments
 - Gridcast: GT3.0.2 Test bed deployed since October 2003
 - Pilot user deployments within the BBC

... a slightly different emphasis?

- Our focus means that many grid technology issues may not be obvious in my discussion.
 - Thus
 - We use discovery, registry Technology
 - We use job submission, management ... Technology
 - We use data management, transfer ... Technology
 - We use cycle stealing, utility computing ... Technology
 -
 - These are *technologies* which we use in our applications.
 - The grid focus for us is its use as an integration fabric
 - Integrating current applications and work flows
- 27 June 2006 GGF14 Chicago
- Creating more flexible and reactive business models

~~GT3.9.4 Experiences~~

~~GT3.9.2 Experiences~~

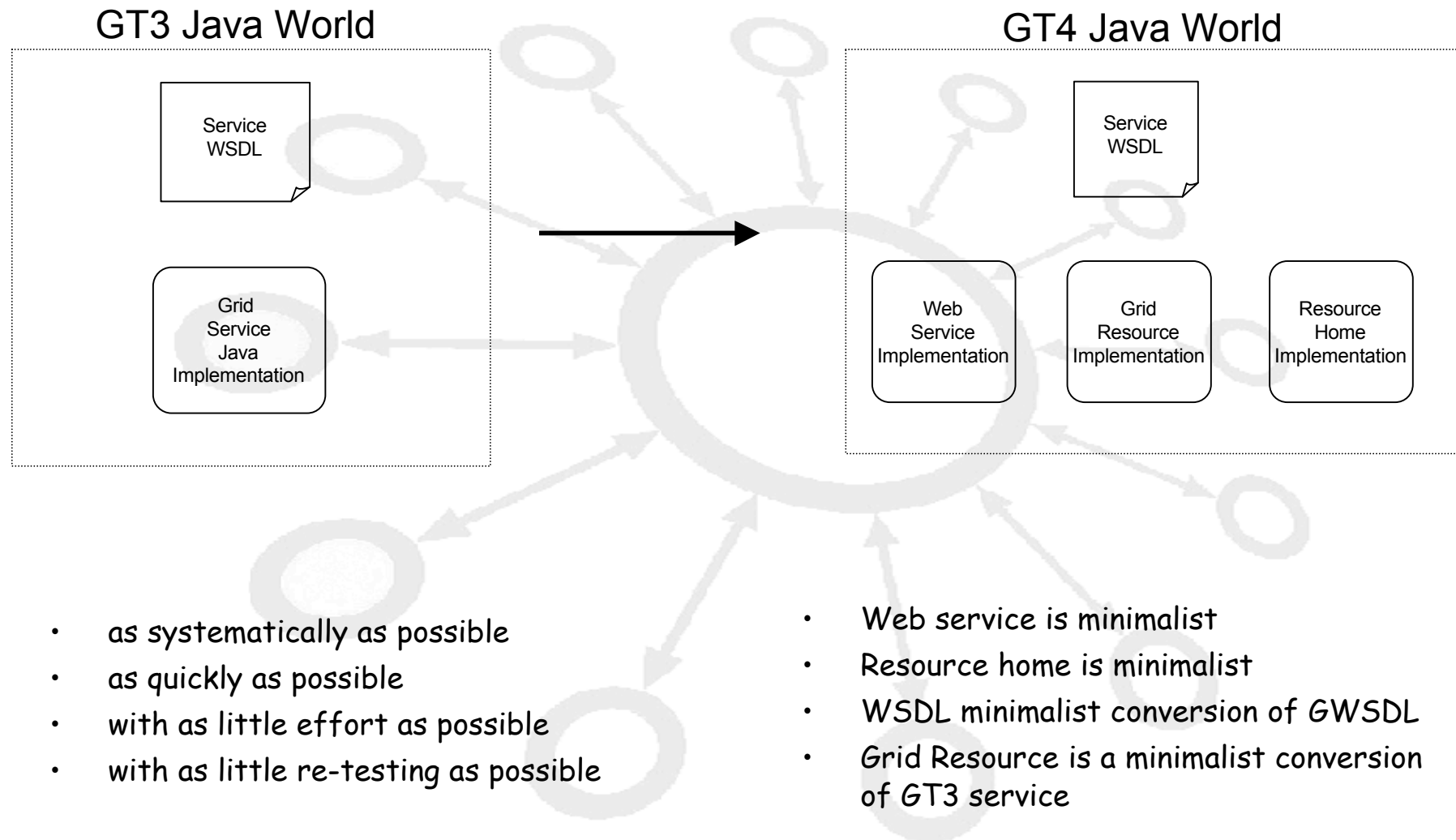
GT4 Experiences

~~GT3.9.5 (GT4 Beta 1) Experiences~~

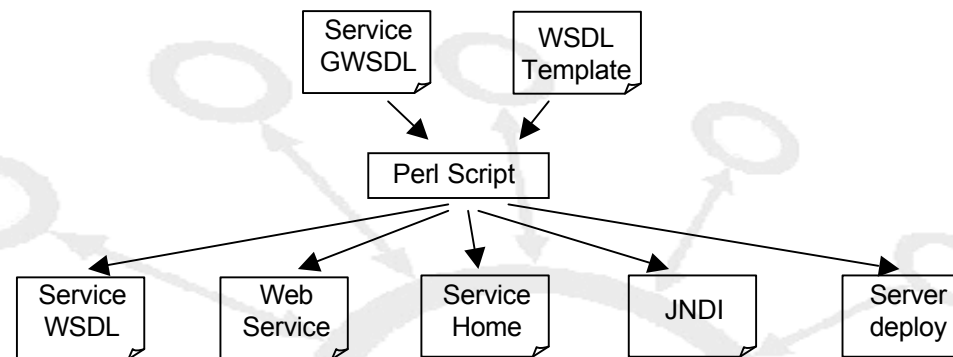
~~GT3.9.3 Experiences~~

~~GT3.9.1 Experiences~~

A Minimalist Migration Model



Migration changes rely on automation



• WSDL

- Include references to WS-.. Specifications
 - The WSDL template
- Argument passing has changed and thus service definitions need to change.
 - Deal with wrapping and ordering arguments

• WEB Service

- We use only to select the grid resource to invoke....it acts as a dispatcher...

Web Service

```

/*
 * Autogenerated by GWSDL->WSDL @ Thu May 12 10:57:44 2005
 * @author
 * @version 0
 * Modified:
 */

package uk.ac.qub.gridcast.transportFramework.gsiftp.impl.gsiftp;

...

public class gsiftpService extends BaseService
{
    ...

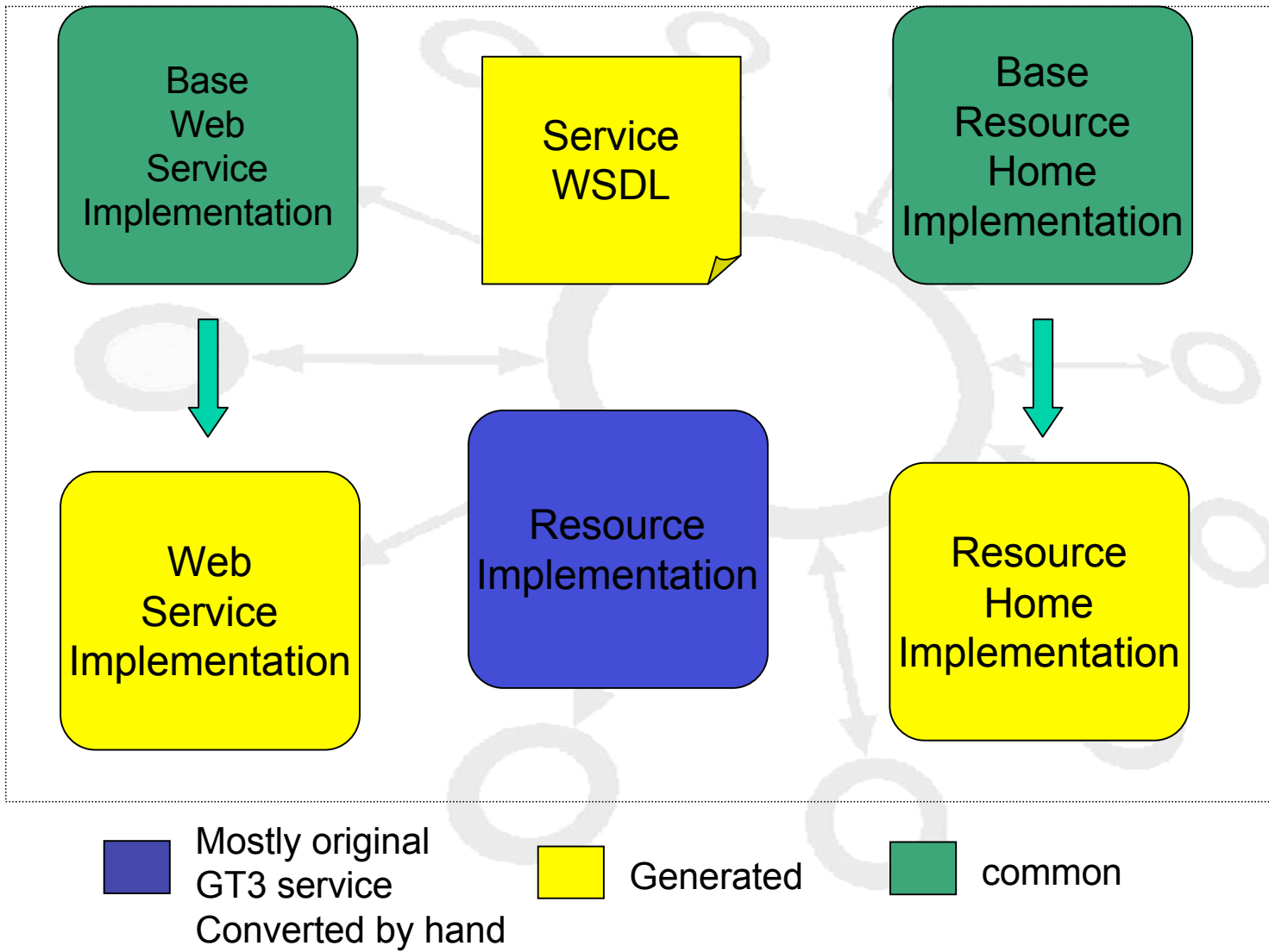
    /**
     * @param Transfer
     * @return TransferResponse
     * @throws RemoteException
     */
    public TransferResponse transfer(Transfer params)
        throws RemoteException
    {
        gsiftpResource serviceResource = (gsiftpResource) getResource();
        serviceResource.transfer(params.getCallingServiceEndPoint(),
                                params.getFromURL(),
                                params.getToURL(),
                                params.getTransactionId());

        return new TransferResponse();
    }

    .....
    ...

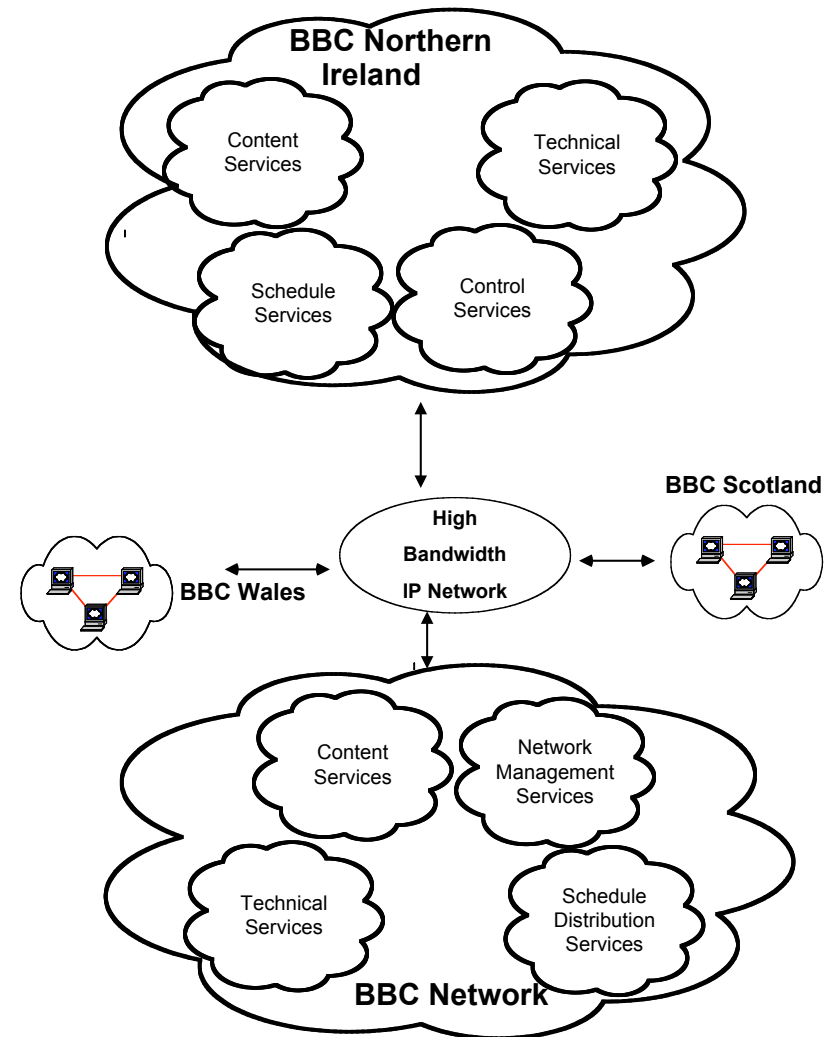
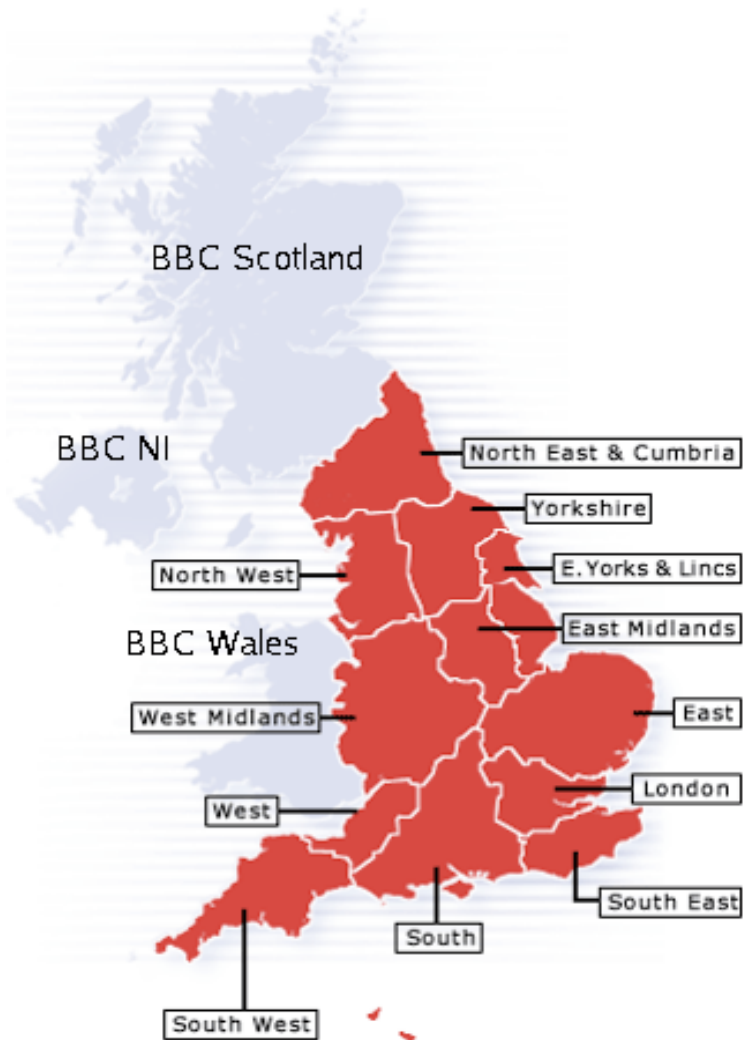
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Implementation Structure

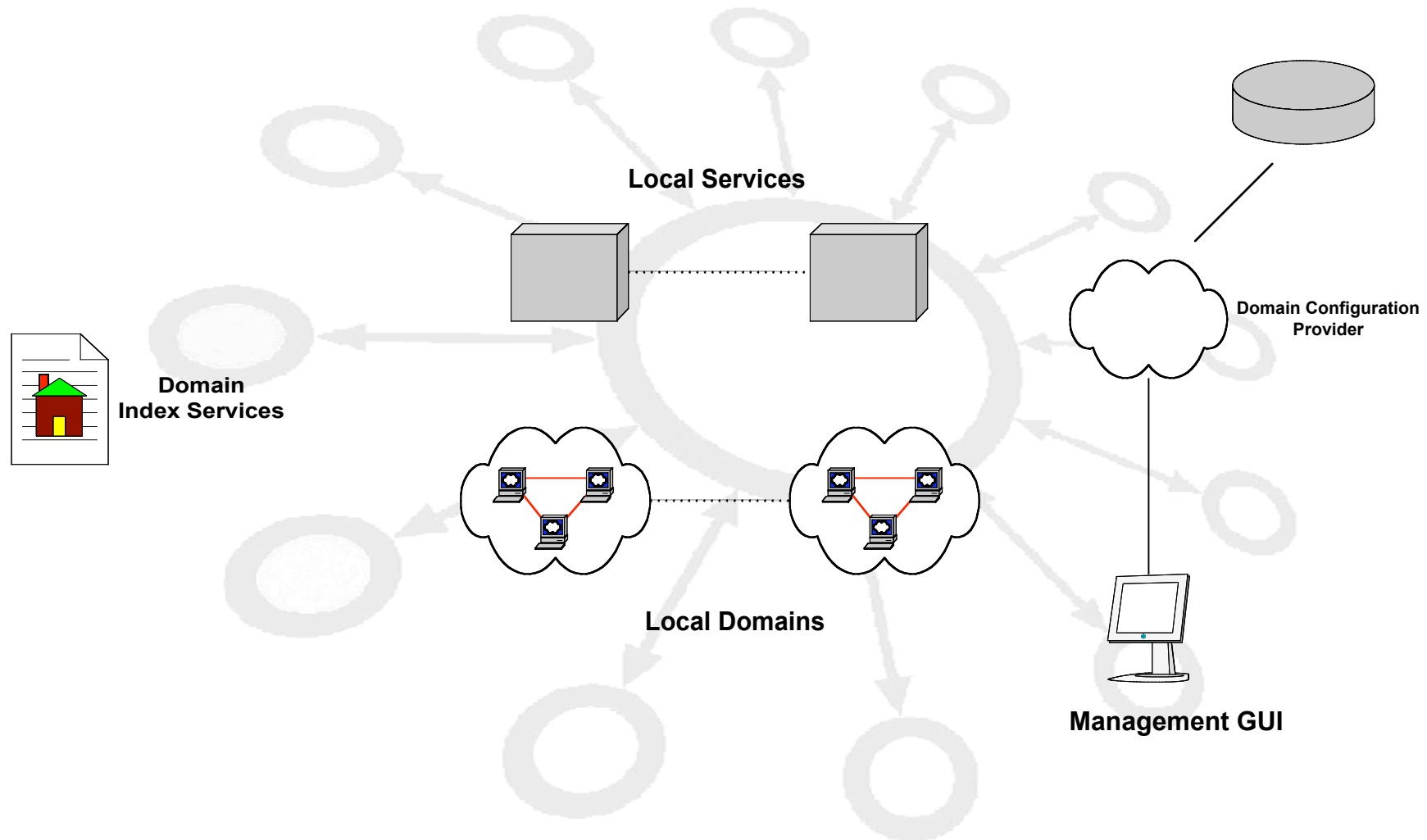


Where are we....?

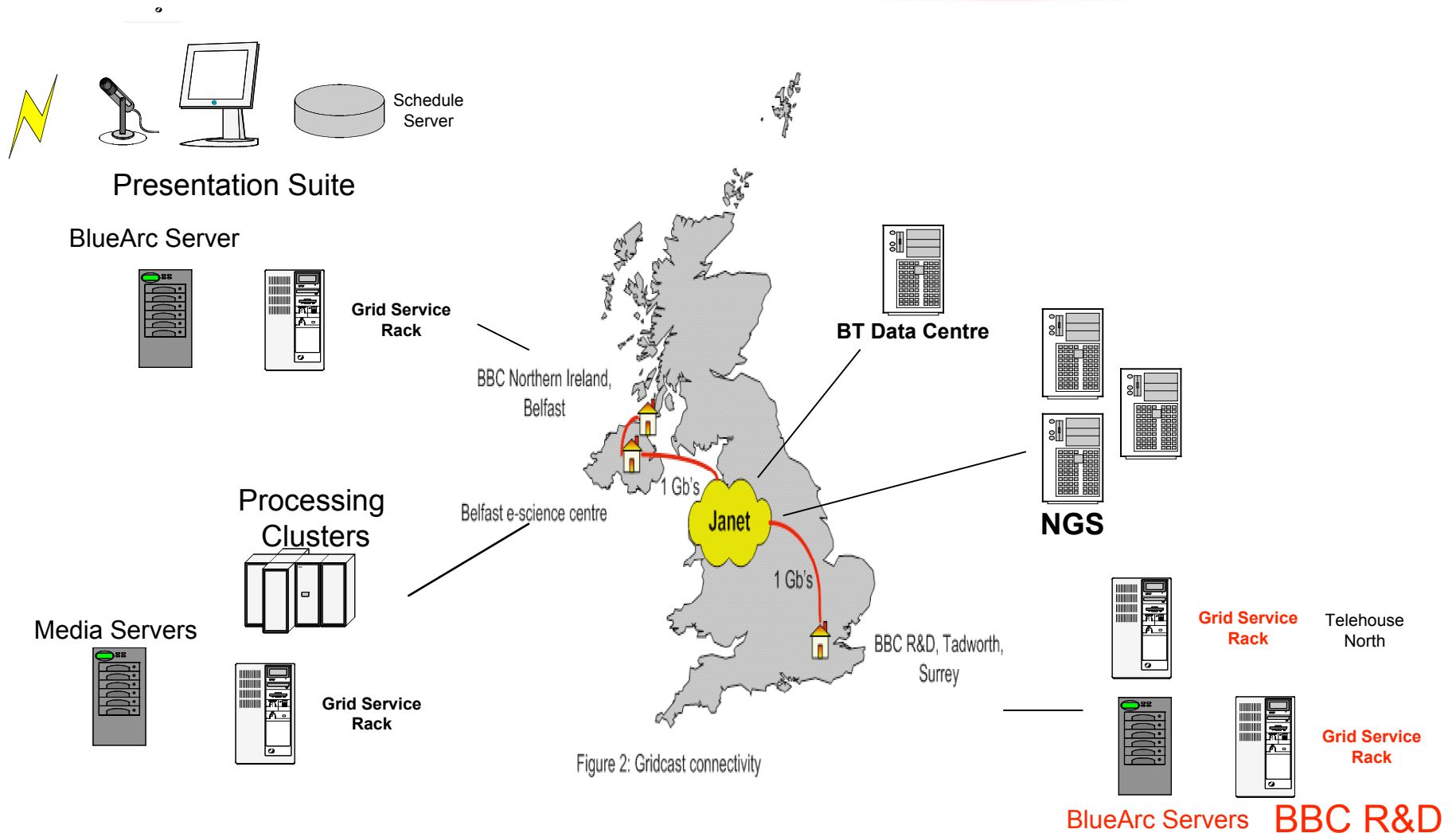
- Gridcast code base is converted
 - 300k of Java, 100+ services
 - 2-ish person effort
- We did not require significant changes to our GT3 services to make them GT4 resources.
- Deployed on our test grid
 - Real users since GT3.9.5
- Far from a completed GT4 system
 - Inclusion of notifications
 - Take advantage of features of WS-Notification
 - Integration of PFRMTS and CAS



Service Architecture



Focus on real deployments



Conversion concerns - General

- Stability
 - Another GT release and yet another model
 - Standardisation process eases concern
 - To prove commercial application we need a period of stability
- Documentation
 - 3.9.2 documentation was sketchy
 - GT4 documentation is significant improvement on GT3
 - A service tutorial early in the development cycle was good
- Support
 - Stability would help
 - To permit focus on the applications rather than middleware

Conversion concerns

- Container support
 - Need deployable service environment
 - We have had problems with support for our platform of choice (Tomcat/Axis)
 - Cross platform/container support
- More files to manage...resource,service,home
 - Hasn't proven to be that much of a problem
 - Additional files have been auto-generated
- Effort in converting the GWSDL
 - Perl script deals with that issue for us
- Effort in converting the GT3 service
 - This has not proven to be that much of an issue for

Observations on migration

- GT4 installation was straightforward with fewer installation problems than GT2/3.
 - Binary installation makes things much easier
 - Issue as to the level of expertise required to install the middleware
- GT4 documentation a significant improvement
 - It was good to have a service primer early in the process.
- GT4 services demonstrated *significant* improvements in performance over their GT3 versions.
- GT4 services demonstrated significantly better reliability than our GT3 services.
- (UK ETF hat) need to address the migration of GT2 to GT4.

What next...?

• Development

- Development/Re-engineering to take advantage of developments
 - Significant work on data management.
 - RFT, GridFTP, specialist media servers
 - WS-Notification
 - Trigger service
 - Data replication
- Deployment
 - BBC Broadcast

• Business

- EBU middleware group
- IBC Amsterdam (September)
- Broadband - home delivery work (Autumn-Winter 2005)