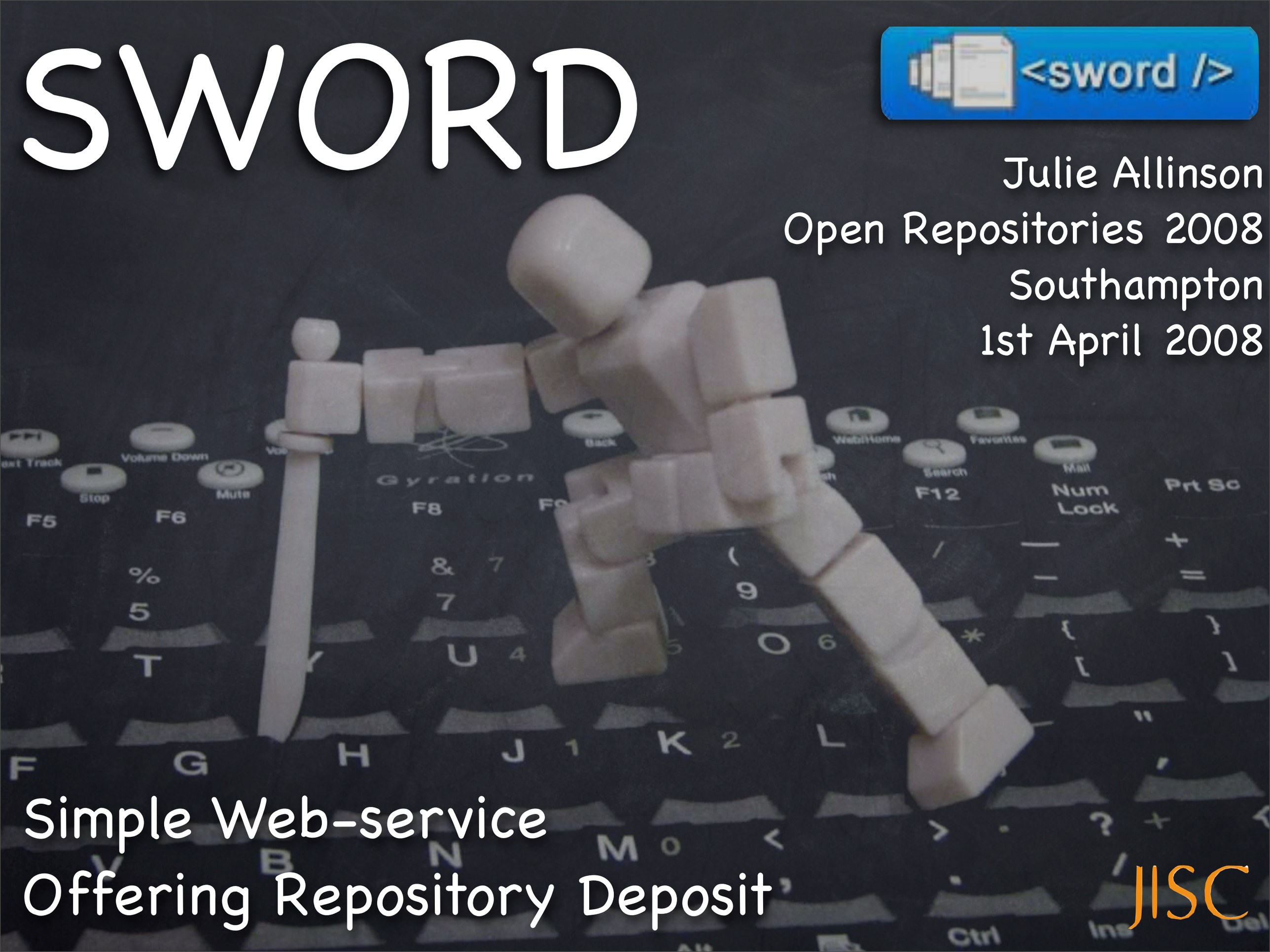
SWORD



Julie Allinson

Open Repositories 2008
Southampton
1st April 2008

Simple Web-service Offering Repository Deposit

JISC

Quick introduction

SWORD?

SWORD

- Simple Web service Offering Repository Deposit
- JISC funded project 2007
- To provide a standard mechanism for 'doing deposit' into repositories
- Small amount of continuation funding for SWORD II (pending)

SWORD : what it is

- A lightweight protocol for deposit
  - A profile of the Atom Publishing Protocol
- Implementations of the SWORD deposit interface in IntraLibrary, Fedora, DSpace and EPrints
- Three java deposit clients - web-based, command-line and desktop
- NOT a solution to metadata/packaging decisions

Background

Before SWORD there was deposit API

Deposit API

- Discussions at the JISC-CETIS Conference 2005 focussed on the lack of a deposit 'standard'
- Rachel Heery and Repositories Research Team at UKOLN facilitated a working group of repository developers
- to address this requirement for a standard interface for deposit

Motivations

- no standard interface for tagging, packaging or authoring tools to upload objects into a repository
- no standard interface for transferring digital objects between repositories
- no way to deposit into more than one repository with one ‘click’
- no way of initiating a deposit workflow from outside a repository system

Deposit API - achievements

- Common agreement
- Scope and definitions
- Requirements and parameters
- Scenarios
- Outline approach
- Draft XML serialisations

But

- Progress ground to a halt after July 2006 meeting
- Difficult to keep momentum without a formal project and without money!
- November 2006, JISC funding call explicitly mentioned 'deposit' as an area for funding proposals ...

JISC to the rescue

Repositories and Preservation Programme,
Tools and Innovations strand

The project, the funding

- Six months (plus slight extension) funded under the tools and innovations strand of the JISC Repositories and Preservation Programme, in March 2007
- SWORD partners:
  - UKOLN, University of Bath (Project management and dissemination) - Julie Allinson
  - University of Southampton (EPrints) - Les Carr, Seb Francois
  - University of Aberystwyth (DSpace, Fedora, reference client) - Stuart Lewis, Neil Taylor, Glen Robson, Richard Jones
  - Intrallect (IntraLibrary) - Martin Morrey, Sarah Currier
  - Plus some friendly advisors - Jim Downing, Richard Green

SWORD - the acronym

- **Simple** - lightweight, agile and fit-for-purpose
- **Web service** - independent of proprietary software, supports standard interfaces
- **Offering**
- **Repository** - or any system which wants to put or receive content
- **Deposit** - or put, or post, or register, or add - a little step in the ingest workflow

But why ... ?

slicing up the scenarios

Use cases

- Deposit from a Desktop/Online tool - more on next slide
- Multiple deposit - e.g. deposit to institutional and (mandated) funders' repository with one action
- Machine deposit - e.g. automated deposit from a laboratory machine
- Migration/transfer - e.g. to a preservation service
- Mediated deposit - e.g. deposit by a nominated representative, to additional repositories

Desktop tools

- Desktop 'smart' deposit client
  - reference client deposit through SWORD interface
    - Feedforward personal information organiser http://legolas.cetis.ac.uk
    - potential for a Flickr-style batch uploder
    - Facebook plug-in?
- Deposit as 'save as'
  - e.g. from within word processing software

Making scenarios happen

the work

Parameters - mandatory

- Mandatory (level 0)
  - deposit any type of content
  - repository or collection id
  - identifier
  - deposit status (accepted, rejected, error), error codes, error description

Parameters - optional

- Optional (level 1 mandatory)
  - mediated deposit
  - repository / collection name
  - collection policy, description
  - accepted formats
  - format namespace
  - source repository
  - checksum
  - compliance level
  - additional identifiers

Future proofing with layers

- layered approach
- two levels of compliance
  - Level 0 compliance requires a set of mandatory elements
    - and a set of optional elements
  - Level 1 offers a set of additional elements for richer functionality
    - mandatory at level 1

Offering Services

- Explain/Discover service
  - can I deposit? to which collections?
    - what can I deposit? what are the policies?
- Deposit service
  - deposit accepted
  - receipt returned to depositor

Existing standards

- WebDAV (http://www.webdav.org/)
- JSR 170 (http://www.jcp.org/en/jsr/detail?id=170)
- JSR 283 (http://www.jcp.org/en/jsr/detail?id=283)
- SRW Update (http://www.loc.gov/standards/sru/)
- Flickr Deposit API (http://www.flickr.com/services/api/)
- Fedora Deposit API (http://www.fedora.info/definitions/1/0/api/)
- OKI OSID (http://www.okiproject.org/)
- ECL (http://ecl.iat.sfu.ca/)
- **ATOM Publishing Protocol (http://www.ietf.org/html-charters/atompub-charter.html)**

"the Atom Publishing Protocol is an application-level protocol for publishing and editing Web resources"

- benefits
  - supports many of our parameters and requirements, in particular file deposit
  - it already exists and has growing support
  - it is well-used in popular applications
  - it has an extension mechanism
  - Google have created their own profile (gdata)
  - good fit with the Web architecture
- drawbacks / risks
  - too much of a retrofit?
  - it is designed for a single package/file OR an atom document - this means that we need to package up metadata and files

SWORD profile of APP

- 'POST' only - SWORD does not deal in update/delete
- 'POST' binary files only - SWORD does not (currently) specify how to post ATOM documents
- Categories not used
- SWORD extensions
  - HTTP Header extensions
  - APP / ATOM extensions
- Recommendations for discovery
  - accessed from /sword-app/
  - service document at /sword-app/servicedocument
  - use of <link> header to point to sword implementation

How it works ...

- APP works by issuing HTTP requests (GET, POST)
  - GET Service Document (explain/discover)
  - POST ATOM document or file to collection URI
- HTTP response and ATOM document is returned
- HTTP basic authentication is required

Parameters - mandatory

- Mandatory (level 0)
  - deposit any type of content - APP yes
  - repository or collection id - APP yes
  - identifier - APP yes
  - deposit status (accepted, rejected, error), error codes, error description - APP yes (and extension)
  - compliance level - extension

Parameters - optional

- Optional (level 1 mandatory)
  - mediated deposit - extension
  - repository / collection name - APP yes
  - collection policy, description - extension
  - accepted formats - APP yes
  - format namespace - extension
  - source repository - APP yes
  - checksum - extension
  - compliance level - extension
  - additional identifiers - APP yes

Examples - GET (explain)

```
GET /sword-app/servicedocument
HTTP/1.1
Host: www.myrepository.ac.uk
X-On-Behalf-Of: lcarr
```

Examples - GET (explain)

```
status: The status is: Code: 200, Message: 'OK'
<?xml version="1.0" encoding="UTF-8"?>
<service xmlns:dcterms="http://purl.org/dc/terms/" xmlns:atom="http://www.w3.org/2005/Atom"
xmlns:sword="http://purl.org/net/sword/" xmlns="http://purl.org/atom/app#">
  <sword:level>1</sword:level>
  <sword:verbose>true</sword:verbose>
  <sword:noOp>true</sword:noOp>
  <workspace>
    <atom:title type="text">Fedora SWORD Workspace</atom:title>
    <collection href="http://glen.dnsalias.org/sword/deposit/collection:open">
      <atom:title type="text">Open Collection</atom:title>
      <accept>text/xml</accept>
      <accept>application/zip</accept>
      <accept>application/x-zip-compressed</accept>
      <accept>application/atom+xml</accept>
      <accept>image/gif</accept>
      <accept>image/jpeg</accept>
      <accept>image/jpg</accept>
      <sword:collectionPolicy>This collection accepts
        any deposit from anyone</sword:collectionPolicy>
      <dcterms:abstract>This is a collection of objects
        which can be freely deposited to. This is aviable
        for the SWORD test project</dcterms:abstract>
      <sword:mediation>true</sword:mediation>
      <sword:treatment>Preservation actions may occur
        on submited deposits</sword:treatment>
      <sword:formatNamespace>uri</sword:formatNamespace>
</collection>
```

Examples - POST (deposit)

```
POST /burning-collection HTTP/1.1
Host: www.myrepository.ac.uk/sword-app
Content-Type: application/zip
Authorization: Basic ZGFmZnk6c2VjZJldA==
Content-length: nnn
Content-MD5: md5-digest
Content-Disposition: filename=mydeposit.zip
X-On-Behalf-Of: lcarr
X-Format-Namespace: METS
```

Examples - POST (deposit)

```
<?xml version="1.0"?>
 <entry xmlns="http://www.w3.org/2005/Atom"
        xmlns:sword="http://purl.org/net/sword/">
   <title>My Deposit</title>
   <id>info:something:1</id>
   <updated>2007-05-14T14:27:08Z</updated>
   <author><name>mmorrey</name></author>
   <summary type="text">A summary</summary>
   <content type="application/zip"
      src="http://www.myrepository.ac.uk/my_deposit.zip"/>
   <link rel="edit-media"
      href="http://www.myrepository.ac.uk/lcarr/workflow/my_deposit" />
   <link rel="edit"
      href="http://www.myrepository.ac.uk/lcarr/workflow/my_deposit.atom" />
   <contributor><name>lcarr</name></contributor>
   <source>
        <generator uri"http://www.myrepository.ac.uk/sword/" version="1.0">
         SWORD @ My Repository</generator>
   </source>
   <sword:treatment>Treatment description</sword:treatment>
   <sword:verboseDescription>description</sword:verboseDescription>
   <sword:noOp>true</<sword:noOp>
  <sword:formatNamespace>http://www.loc.gov/METS_Profile/</sword:formatNamespace>
</entry>
```

The Technical

implementing the profile

Implementation

- Repository implementations
  - DSpace
  - EPrints
  - IntraLibrary
  - Fedora
- Client implementations
  - Java client library
    - command-line, desktop and web clients

SWORD Demonstration Client

File Options Help

- Services & Posted Files
  - http://sword.aber.ac.uk/dspace-sword/servicedocument
    - DSpace at My University
      - Collection with workflow step 1
      - Daggers
      - SWORDS
      - Simple Collection
  - http://glen.dnsalias.org/sword/servicedocument
    - Fedora SWORD Workspace
      - Open Collection

Collection Policy	This collection accepts any deposit from anyone
Namespace	uri
Treatment	Preservation actions may occur on submited deposits
Mediation	true
Accepts	text/xml application/zip application/x-zip-compressed application/atom+xml image/gif image/jpeg image/jpg

Messages

```
status: Requesting the document from http://cakeordeath.ecs.soton.ac.uk/cgi/servicedocument
status: Requesting the document from http://sword.aber.ac.uk/dspace-sword/servicedocument
<?xml version="1.0" encoding="UTF-8"?>
<service xmlns:dcterms="http://purl.org/dc/terms/" xmlns:atom="http://www.w3.org/2005/Atom"
xmlns:sword="http://purl.org/net/sword/" xmlns="http://purl.org/atom/app#">
  <sword:level>1</sword:level>
  <sword:verbose>true</sword:verbose>
  <sword:noOp>true</sword:noOp>
  <workspace>
    <atom:title type="text">DSpace at My University</atom:title>
    <collection href="http://sword.aber.ac.uk/dspace-sword/deposit/123456789/28">
      <atom:title type="text">Collection with workflow
        step 1</atom:title>
      <sword:collectionPolicy>NOTE: PLACE YOUR OWN LICENSE
        HERE This sample license is provided for informational
        purposes only. NON-EXCLUSIVE DISTRIBUTION LICENSE
        By signing and submitting this license, you
        (the author(s) or copyright owner) grants to
        DSpace University (DSU) the non-exclusive right
        to reproduce, translate (as defined below),
```

User testing

- Four case studies, implementations in:
  - SPECTRa tool
  - arXiv
  - White Rose Research Online
  - SOURCE project

The future ...

where seamless deposit actually happens?

Is anybody using SWORD?

- In addition to the case study implementations:
  - Feedforward has already implemented
  - ICE project is looking at SWORD
  - DSpace and EPrints installations already exist
  - Microsoft eChemistry work
  - OAI-ORE interest
  - more are planned
- NISO activity around deposit - hopefully this will recognise SWORD

SWORD II and beyond

- Small amount of continuation funding
- What for? up for discussion/scoping
  - additional APP support (update/delete)
  - more clients (.net / php etc)
  - more tools (for desktop and web-based deposit)
  - ORE testing (deposit of Resource Map as ATOM document, deposit of Resource Map as XML file)
  - ongoing support for code and test installations

Questions?

www.ukoln.ac.uk/repositories/digirep/index/SWORD

Julie Allinson <j.allinson@gmail.com>