



## Archiving, iRODS and Alloy - Overview



# Digital Archiving Is About:

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## *Bit Preservation*

- Immediate and unrelenting attention to ops
- Hardware / IT oriented.
- Unambiguous – do we still have the bits?

## *Function Preservation*

- Deferrable ( up to a point )
- Software oriented.
- Rules, workflows &c
- Ambiguous – what are we preserving, for whom?

Different skills, different technologies, different time-scales, different impacts, different players ... in fact

... just different



# iRODS Is About:

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- Open source data grid middleware
- Data virtualization
- Automated data operations
- A robust metadata catalog
- Data management policy enforcement and compliance verification



# Alloy Is About Bit-Preservation.

<i>Archives belong to the organization</i>	Contain “finished” objects
	Access via “Roles” ... No “personal” users,
<i>Integrity of objects.</i>	Replication, Checksums, signing &c
<i>Traceable / tamper resistant</i>	Audit logs on storage, signed &c.
<i>Properties ( aka user-metadata)</i>	Finding via metadata ( <i>c.f. search</i> ).
<i>Reconstruct just from storage</i>	No dependence on software No encryption or obfuscation
<i>Disaster resistant</i>	Geographical Dispersion, placement constraints,
	Documented, intuitive structures & naming
<i><u>Support for functional preservation</u></i>	Versions, alternates, dependencies,
<i>“Vault” mentality</i>	Limited access, highly controlled, ‘certifiable’
	No foreign objects inside the shell.



# Alloy Origins

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- a. Market feedback – need for non-proprietary archival solutions.
- b. Principals' experience in operational archives
- c. Principled analysis of the requirements and the desire to deliver a clean, reliable and intuitive system.
- d. Adherence to the fundamentals of good archive practice.
- e. Experience in iRODS (enabling its use as a foundational component for Alloy).



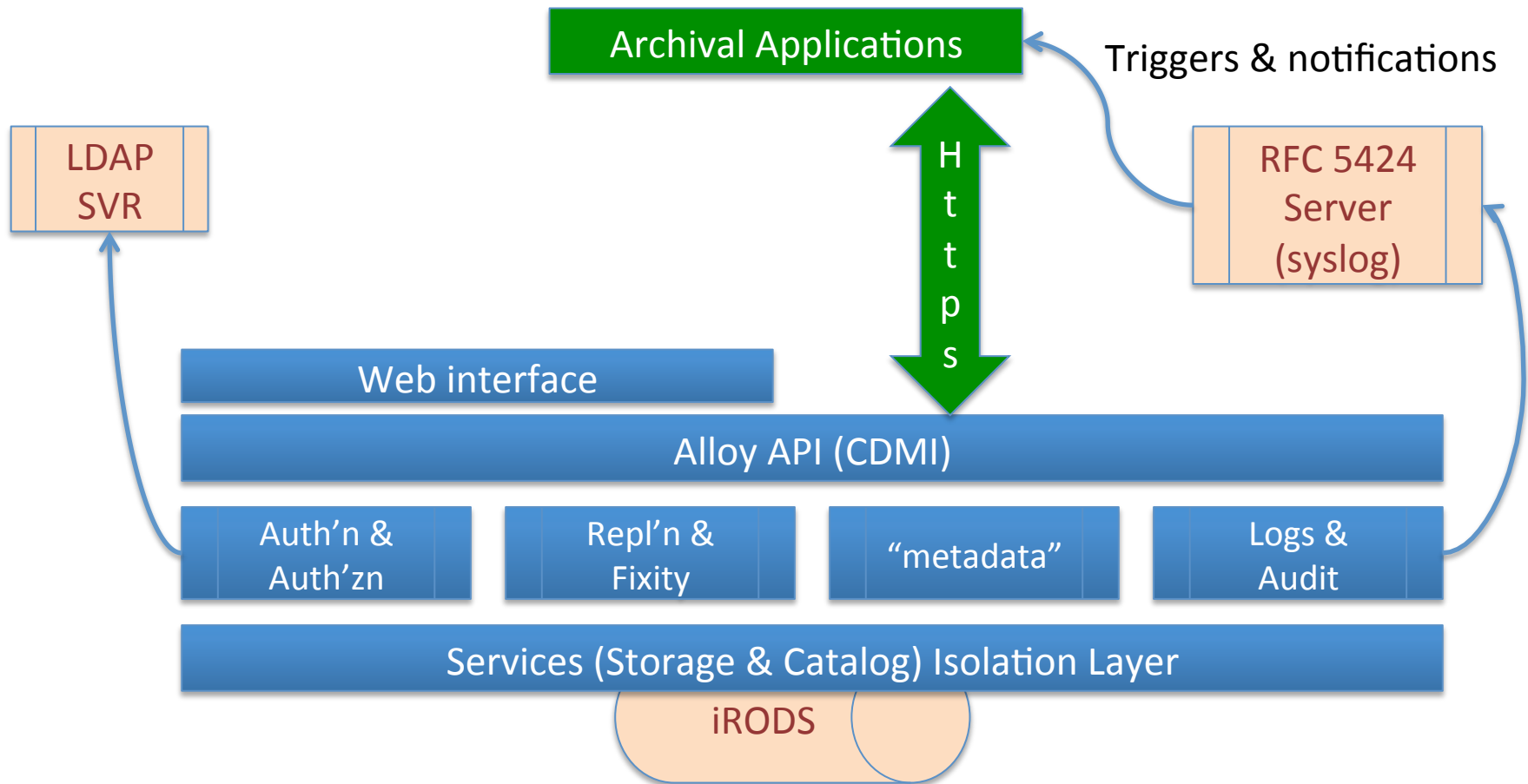
# What Is Alloy?

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- Is a turnkey archival solution that simplifies the creation and management of a TRAC\* compliant archive by ensuring that good archival practice is readily practiced.
- Alloy integrates with existing IT infrastructures where possible, and enables archive applications via simple standards-based API(s).
- Has a clean internal architecture that permits the use of alternate storage layers (ships with iRODS as the storage and metadata provider )



# Logical Diagram





# Using Alloy:

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- Single Front door ( via CDMI )
- RESTful API for data access and admin
- 'out of the box' Browser interface for humans
- Intuitive Replication & Tiering Policy specification
- User can add "properties" (aka user metadata) to data & search on both names and values.
- IETF RFC-5424 (syslog) *external* trigger/rules system
- Authentication via LDAP
- Authorization via roles and ACLs
- Hierarchical ( c.f. Posix / iRODS &c ) and OID access.





# Alloy Provides:

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- Policy driven replication, with healing/rebalancing.
  - Simple to scale out (appliance).
  - Config-file driven deployment.
  - Slaves manage storage and user access – scalable performance.
  - Archive can be reconstructed just from storage – no state is uniquely stored in Alloy.
  - Rules can be attached to the RFC 3164/5424 listener – e.g. logstash, syslog-NG, rsyslog (or custom).
  - All ‘provenance’ relevant logs are stored to archive.
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# Roadmap:

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- Functionality – applications on Alloy
  - TRAC wizard to help prepare for an ISO-16363 audit
  - Escrow, retention and disposition manager
  - Alternate API support ( S3, SWIFT &c)
- Under the covers
  - Additional storage layer support ( ceph, Prop. Object stores based on demand)
  - Master-less cluster
  - Improved inter-operability support
  - Alternate authentication (based on demand ).



# Availability:

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- Software only license V1.1 Available Now
- Appliance from March 2015 (est.)
- Software only license V2 from March 2015 (est.)