

# Restoring Trust Relationships within Collaborative Digital Preservation Federations

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**nsf** object observation one opening place preservation project put reason repositories  
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# Question 1

- Do you host your repository and its storage in your own data center?

**1. YES    2. NO    3. Don't Know**

**To vote, text to 41411**

**"RETURN ID869 option"**

**Ex. "RETURN ID869 1"**

**Or go to <http://m.textthemob.com/id869>**

# Do you host your repository and its storage in your own data center?



To vote, text  
**"RETURN ID869  
*option*"**  
to 41411

For example send  
**"RETURN  
ID869 1"**  
to vote for the first  
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## Question 2

- Do you host your repository and its storage in a co-located data center facility that is managed for you?

**1. YES    2. NO    3. Don't Know**

**To vote, text to 41411**

**"RETURN ID870 option"**

**Ex. "RETURN ID870 1"**

**Or go to <http://m.textthemob.com/id870>**



# Do you host your repository and its storage in a co-located data center facility that is managed for you?



To vote, text  
**"RETURN ID870  
option"**  
to **41411**

For example send  
**"RETURN  
ID870 1"**  
to vote for the first  
option.

or go to  
**<http://m.textthemob.com/id870>**

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# Outline

- Organizational Structures to Support Repository Federations
- Trust Building Relationships
- Case Study on Restoring Trust Relationships

# Trust

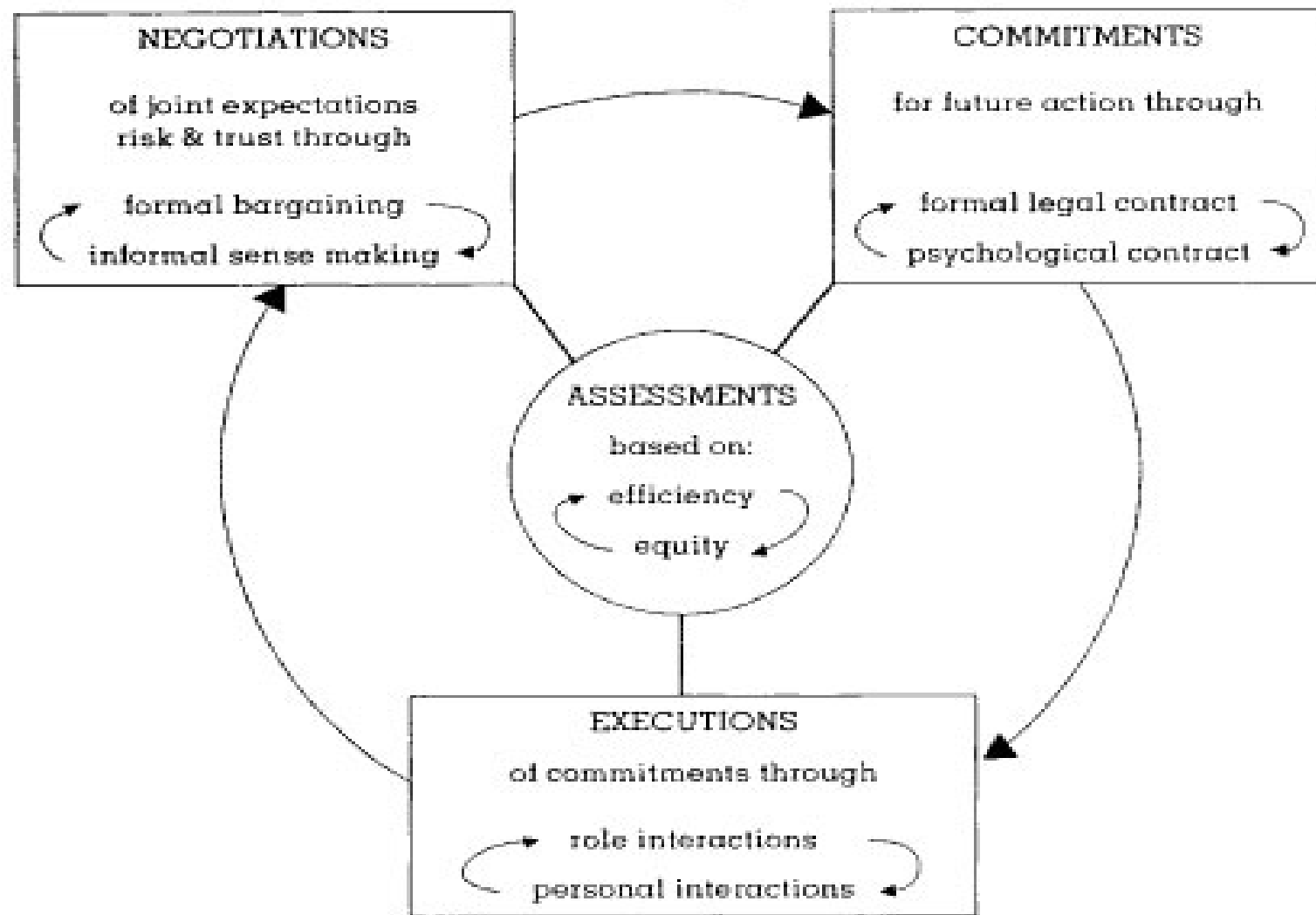
- Walters/McDonald - **Creating Trust Relationships for Distributed Digital Preservation Federations** – iPres 2008

( [http://www.bl.uk/ipres2008/presentations\\_day2/31\\_Walters.pdf](http://www.bl.uk/ipres2008/presentations_day2/31_Walters.pdf) )

- Federating Repositories and Services to leverage costs
- Creating new virtual organizations
- How to establish and maintain trust?



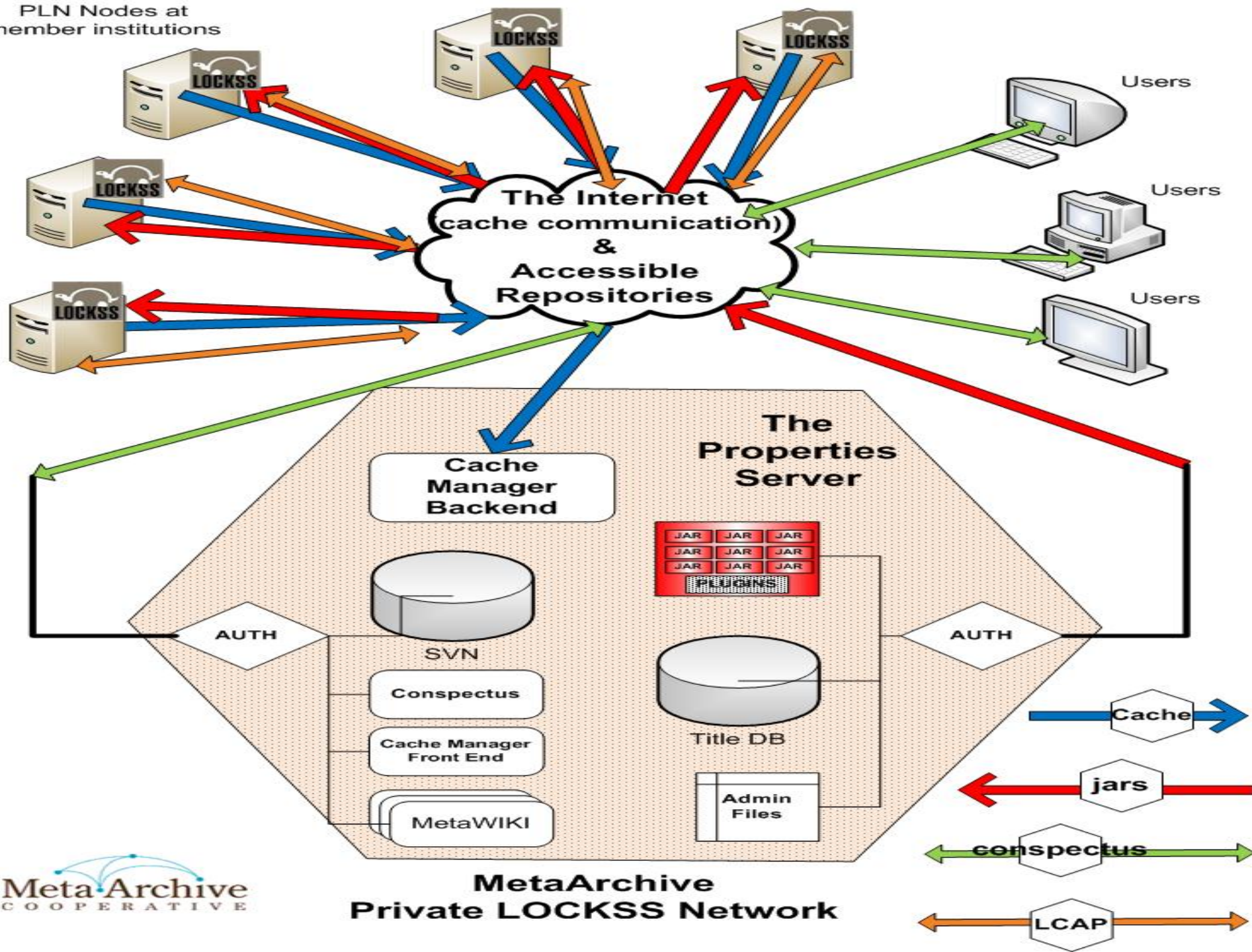
## Process Framework of the Development of Cooperative IORs



# Federating Repository Services

- MetaArchive
  - NDIIPP Funded
  - LOCKSS Virtual Private Network
- HathiTrust (2.9M vols – 108 TB)
  - CIC Funded + CDL + UVA
  - Fedora + Wide Area File System + Discovery Interfaces

PLN Nodes at  
member institutions

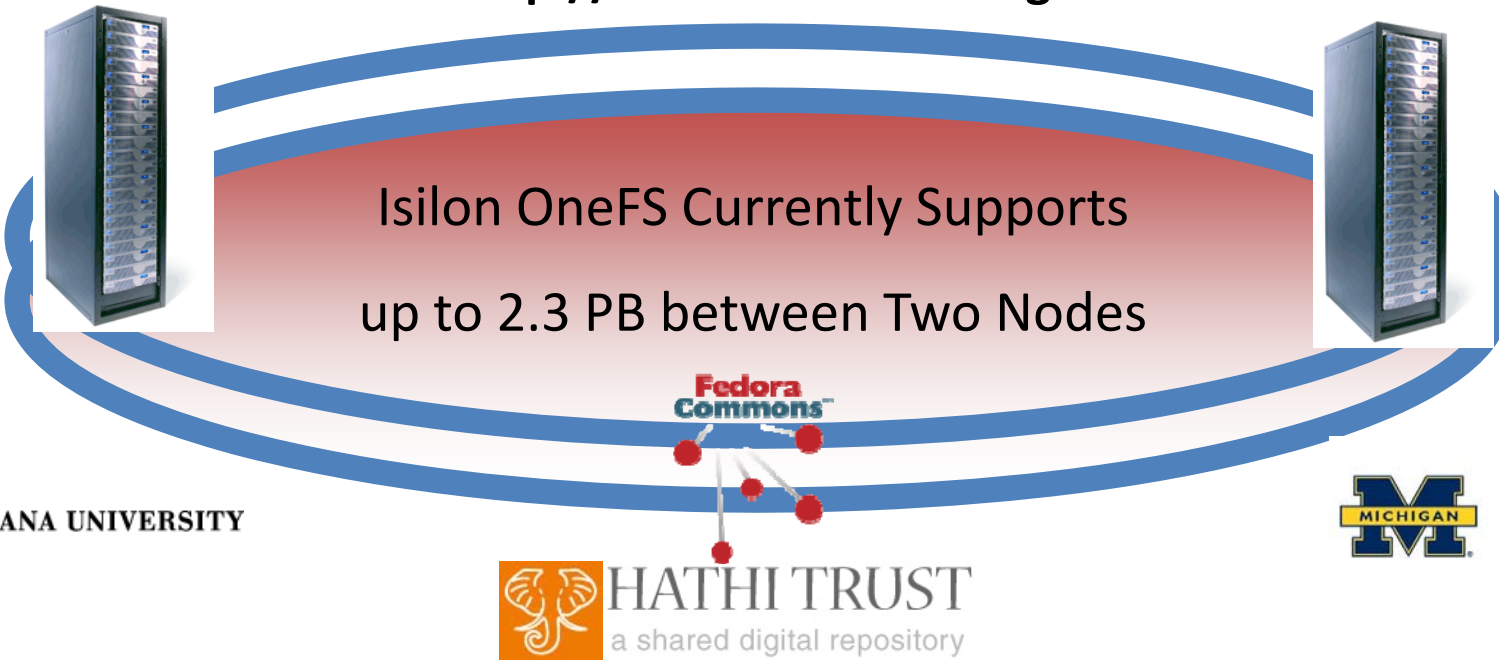


# HathiTrust

Indianapolis

Ann Arbor

<http://www.hathitrust.org>



Isilon OneFS Currently Supports  
up to 2.3 PB between Two Nodes



Two Node Federated Repository

**OR** | Open Repositories

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MCDONALD/WALTERS



# Question 3

- Do you have geographically dispersed replicated storage space for your institutional repository?

**1. YES    2. NO    3. Don't Know**

**To vote, text to 41411  
"RETURN ID871 option"  
Ex. "RETURN ID871 1"**

**Or go to <http://m.textthemob.com/id871>**



# Do you have geographically dispersed replicated storage space for your institutional repository?



To vote, text  
**"RETURN ID871  
option"**  
to **41411**

For example send  
**"RETURN  
ID871 1"**  
to vote for the first  
option.

or go to  
**[http://m.textthe  
mob.com/id871](http://m.textthe<br/>mob.com/id871)**

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# Question 4

- Do you have a federated partnership with other institutional repositories for data replication or preservation?

**1. YES    2. NO    3. CAN'T DECIDE**

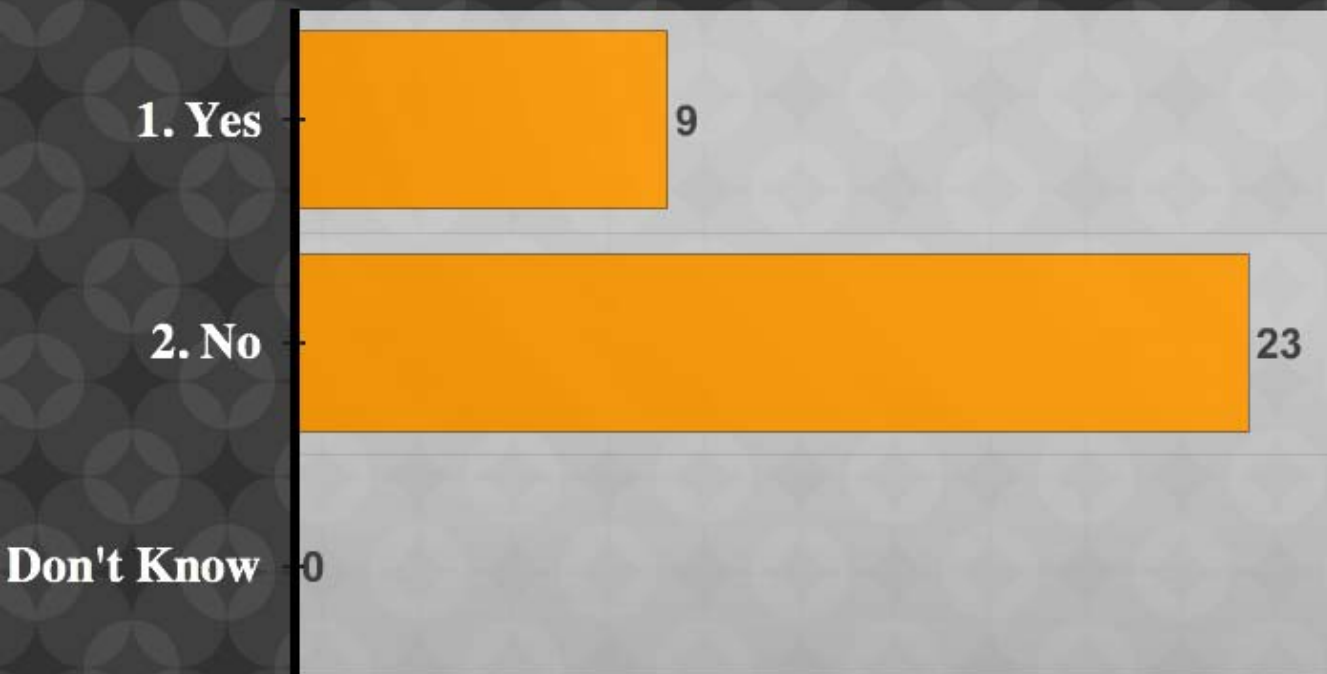
**To vote, text to 41411**

**"RETURN ID872 option"**

**Ex. "RETURN ID872 1"**

**Or go to <http://m.textthemob.com/id872>**

# Do you have a federated partnership with other institutional repositories for data replication or preservation?



To vote, text  
**"RETURN ID872  
option"**  
to 41411

For example send  
**"RETURN  
ID872 1"**  
to vote for the first  
option.

or go to  
**<http://m.textthemob.com/id872>**

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# Case Study

## Southeast Regional Advanced Storage Trust (SRAST)

- Digital repository access/preservation services
- Mass-scale storage for research libraries and data centers in U.S. southeast
- Based in research triangle region of North Carolina
- *Data replicated, backed up across national lambda rail at a similar data center in north Georgia. The Georgia center's purpose is as a dark storage and preservation node only.*



# The Disaster Scenario

- Category 5 hurricane struck coast of North Carolina, widespread electrical power outages Storage servers severely compromised
- SRAST facility sustained major damage, requires 3 month recovery. Access only to digital information in storage in first weeks
- In Georgia (400 miles away), hurricane brought 15” of rain in 3 hours
- North Georgia facility submerged in water from a local river with acres of mud flooding computing facility. Power lost for 48 hours
- Research data on servers in NC and GA were lost. Backed up on tape in GA (rotational backup, leaves 48 hours worth of data loss)
- Tape storage room hit by water and mud, damaging tape’s structure. Small portion of tapes recovered, only portions of data retrieved



# The Main Question?

*What is this collaborative storage facility to do to regain the trust of its customer institutions?*

- Three recommended trust recovery steps:
  - 1) Initial public communiqué
  - 2) Transparent accounting of circumstances that led to data loss and recovery
  - 3) Independent audit

# Initial Public Communiqué

*“Framework for inter-org. trust prior to loss is critical. Engaging all groups in the IOR/VO is important”*

- 1) Stabilize physical facilities, verify, understand data loss
- 1) Publicly acknowledge the disaster occurred
  - extent of damage to facilities, IT systems, data lost
- 2) Provide means to communicate with SRAST personnel and management (i.e. facilities, IT systems, data management, customer relations) should be given

# Intent of the Communiqué:

- Demonstrate openness, transparency, authenticity in SRAST's communications with public, partners, customers  
*(Holland and Lockett, Ring and Van de Ven assert importance of communication in their research)*
- Communication Plan expressed in MOU and annual renewal statement
- Partners may not want disaster-related information to be public, however, its release establishes public credibility in the face of disaster
- Establish near-term emergency communication, long-term multi-tiered communication responses (Childs 2008)

# Transparent Accounting of Circumstances that Led to Data Loss and Recovery

- 1) Independent 3<sup>rd</sup> party employed to investigate conditions that created SRAST's vulnerabilities during the natural disaster
- 2) Focus on SRAST's strengths, weaknesses, opportunities in its IT, organizational, accountability systems. Documents them
- 3) Final report is a public document, transmitted to SRAST's management and customer/partner institutions
- 4) Becomes basis for a fully independent audit. Begins process of improving SRAST's processes, policies, infrastructures to rebuild services and trust of customers (Holland/Lockett 1998)

# Independent 3<sup>rd</sup> Party Audit

- 1) Expertise to audit SRAST repository practices (TRAC, DRAMBORA)
- 2) Report on veracity of SRATS's technical approaches, policies, procedures, organizational methods to promote transparency, documentation practices, and formalized inter-org. relationships
- 3) Report released to SRAST and customers/partners
- 4) SRAST to use findings as pathway to rebuild IT systems, management and accountability systems, inter-organizational relationships, services
- 5) Result: lengthen long-term involvement of partners, strengthen relationships that may be jeopardized during losses (Ring and Van de Ven Prop. 7)



# Question 5

- Have you ever had hardware failures within your institutional repository infrastructure?

**1. YES    2. NO    3. CAN'T DECIDE**

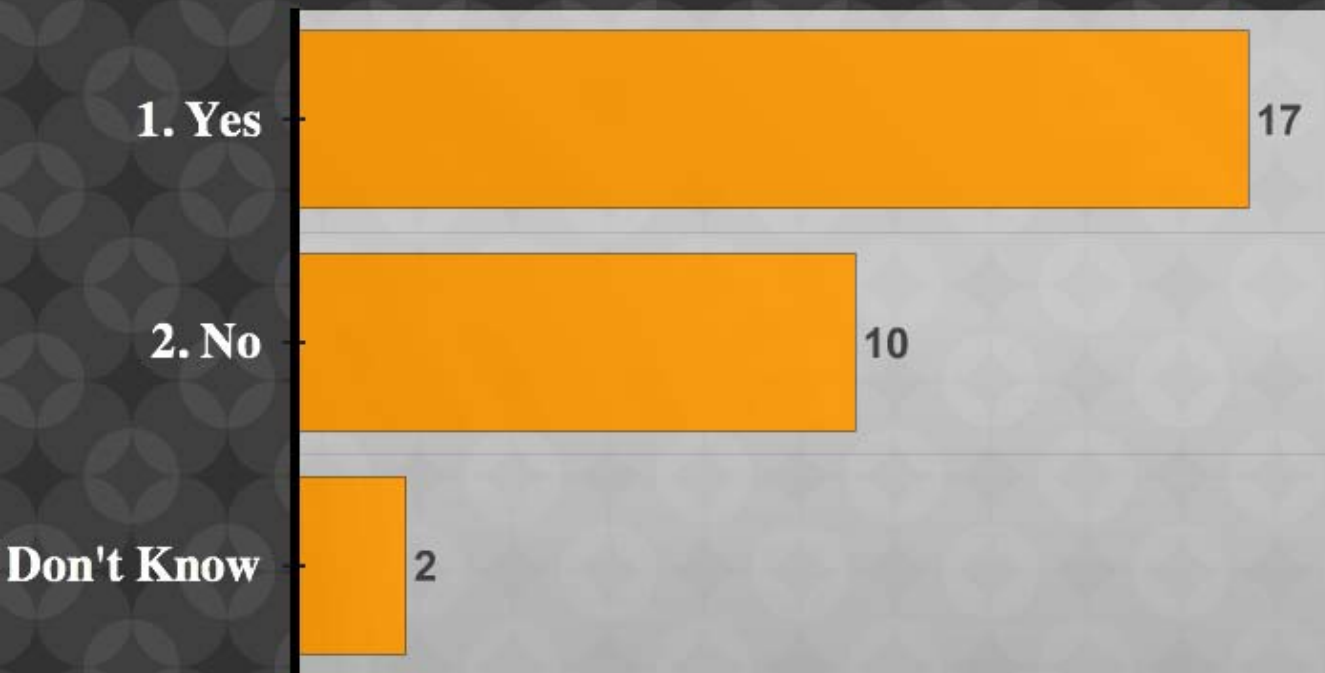
**To vote, text to 41411**

**"RETURN ID873 option"**

**Ex. "RETURN ID873 1"**

**Or go to <http://m.textthemob.com/id873>**

# Have you ever had hardware failures within your institutional repository infrastructure?



To vote, text  
**"RETURN ID873  
option"**  
to 41411

For example send  
**"RETURN  
ID873 1"**  
to vote for the first  
option.

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# Question 6

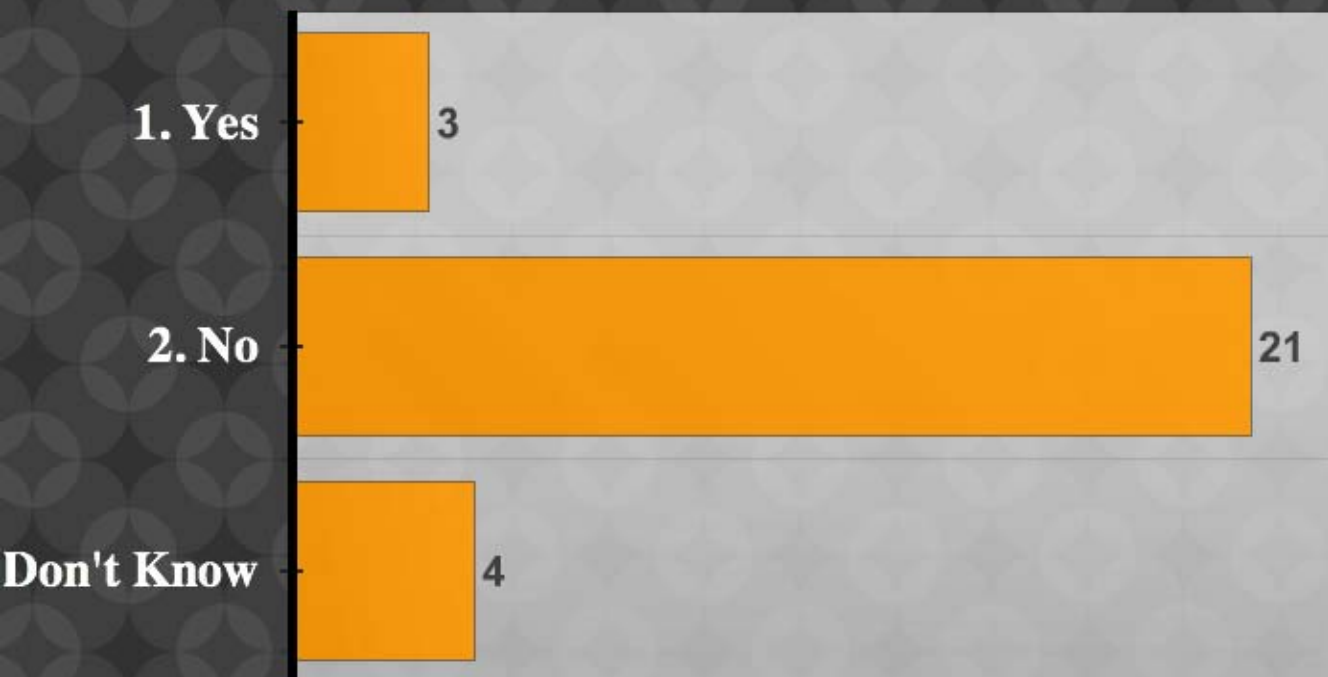
- Have you ever lost data from your institutional repository?

**1. YES    2. NO    3. CAN'T DECIDE**

**To vote, text to 41411  
"RETURN ID874 option"  
Ex. "RETURN ID874 1"**

**Or go to <http://m.textthemob.com/id874>**

# Have you ever lost data from your institutional repository?



To vote, text  
**"RETURN ID874  
option"**  
to **41411**

For example send  
**"RETURN  
ID874 1"**  
to vote for the first  
option.

or go to  
**<http://m.textthemob.com/id874>**

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# Comments and Discussion

