Effective Long-Term Digital Information Resource Stewardship (Takeaways)

Risk Model

Lifecycle Risks

Unacceptable Deposit Cost: risk that digitally encoded Resources fail to be deposited with long-term stewardship services because the deposit costs are unacceptably high.

Metadata Mismatch: risk that Digital Resources, when lying fallow in the Digital Stewardship Domain, fail to be discovered or valued appropriately because their metadata lacks a valuable signal.

Unacceptable Use Cost: risk that the costs of re-using Digital Resources in a Use Domain technology environment effectively are unacceptably high.

Intrinsic Risks

Renderability: risk that the stored bits (encoding a Resource) fail to render the Resource Experience properly within the available technology environment. Often called "digital format obsolescence risk."

Loss: risk that the stored bits get lost because their physical encoding becomes indiscernible. More commonly known as "digital media degradation and obsolescence risk."

Corruption: risk that the stored bits suffer undetected change during copying or refreshing.

Authenticity: risk that Digitally Encoded Information Resources lose value or utility because their authenticity is reasonably suspect.

Mitigation Recommendations-Strategies

Harness economic realities-don't attempt to resist them.

Prioritize valuable services not happening elsewhere. Resist the temptation to assume excess responsibility—instead encourage efficient division of responsibility.

- Economics favor integrity maintenance as a centralized, long-term service.
- Economics favor heavyweight renderablity maintenance as a more distributed, reactive, and Use Domain-resourced activity.

In the short term, prioritize long-term stewardship services that emphasize utility to the Primary Use Domain, and consist of integrity maintenance (in support of authenticity management), persistent identification, and disaster recovery. Deposit costs must be minimized—they can easily drive net value negative.

As time proceeds towards the longer-term, offer services focused more on secondary use; these should maximize the probability that Resources get re-used. Centralized stewardship services that maintain Resources' ease-of-*end-use* are, counterintuitively, unlikely to maximize re-use probability! More likely to be effective are services that specifically facilitate Resources' transition back into end-use; these focus on making germane metadata available, and on providing lightweight experienceable Resource surrogates as metadata.

Therefore during deposit, focus first on obtaining strong, credible provenance metadata; then on obtaining (or creating) portable, lightweight, experiential content surrogates—not on heavyweight content normalizing or format migration.

And for content, maximize capture of detail and context from the Primary Use Domain. Enable hierarchical representation so that the natural depth of focus can be easily changed over time as resources and interest allow.

Recognize the paramount importance of perceived—supported by real—security. Use Domains require strong, secure control over access to their Resources.

Tactics

Provide (or integrate seamlessly into) tools native to Use Domain technology environments: this drives down deposit costs and maximizes potential for context capture and value communication.

Support native Use Domain Resource formats and organization. Not only should they be more effective in the long run than "normalized" ones, but they also enhance short-term value to Use Domains, thereby encouraging deposit.

Within the limits of native Use Domain formats, encourage long-term stewardship deposits in as static a form as possible. Consider using hierarchical file system representation as a stewardship service interface for Resources: not only does this encourage a static mind-set, but can also be implemented at extremely low cost in most technology environments.

Regardless of the interface, encourage maintenance of existing hierarchical organization in deposits. This should make deposit more efficient, and also supports the possibility of reducing stewardship costs via logical Resource encapsulation.

For integrity maintenance services, prioritize and provide transparency into reliable corruption detection and management of strong provenance evidence. While corruption prevention is important, it is not essential in the same way.

Incorporate integrity management holistically into Long-term Stewardship services—not just on the bit-management part. Systemic failures are more devastating than well-documented (and therefore contained) stewardship mistakes.

Stewardship Domain. Until that happens the Resource is, for all practical purposes, lost. For a Use Domain to Re-Use a Resource, its existence and value must be communicated by the Long-Term

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> Resource must already have begun receiving alternate stewardship in the Long-Term Stewardship Domain. Re-Use; stewardship ends if the Use Domain abandons it for any reason. To survive abandonment, a In Use Domains, Resource stewardship begins when a Resource is created "from scratch" or retrieved for

