



# National Science Digital Library *Reusability and Interoperability Workshop*

## *REUSABILITY FRAMEWORK*

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# The Stage for Reusability

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- What?
  - Digital Learning Resources
- How?
  - Adoption
  - Adaptation (may require *modification*)
- Who?
  - Educators
  - Students
  - Authors
  - Collections

## Some Overarching Issues

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- Diversity of potential audiences and uses
  - Math or History?
- Rights, access, attribution
  - R-E-S-P-E-C-T
- Modifiability
  - May the source be with you!
- Educators, authors and students often want *small pieces* of courses or modules
  - Sage on the Stage
  - Guide on the Side
  - Teachers in the Bleachers?
- Collections just point to resources
  - Intermediaries, not distributors
- Interoperability Meter
  - Standards: The ~~yardstick~~ by which we measure success
- Quality versus reusability
  - Context is the friend of learning and the enemy of reuse



# Reusable Design

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- Goal: *Create digital learning resources that*
  - *Do not limit the potential audience*
  - *Lower or remove the barriers to reuse*
  - *Do not reduce learning effectiveness*
- Belief: *Reusable design is good design*

## Reuse Scenarios: Classical

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- *A college professor selects a book for a class*
  - May use all of it, parts of it or just the exercises
  - Cannot copy portions and re-publish without permission
- *A keynote speaker prepares to give the third version of the same talk.*
  - Uses almost all of an existing PowerPoint presentation
  - Alters some presentation elements (such as the opening slide, the footer and the date)
  - Updates a few slides

## Reuse Scenarios: Modern

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- *A student uses a JPEG from a library of astronomical images.*
  - Pastes it into a report as is.
- *A teacher looks for information on native American forestry practices. She finds a university Web site that includes a section on this topic. She assigns it as reading for a report.*
  - Only part of the site will be used
  - Students may cut & paste from the site in their reports
  - May be included in a Web site the class is developing

## Reuse Scenario: Leading Edge

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- *An applet allows students to alter parameters in a differential equation and view the resulting level curves.*
  - May be shown in a class or used in a lab
  - May be provided as supplementary material
  - May be incorporated into an online quiz
  - May be appropriate for courses other than mathematics
  - May require a particular version of a Java™ virtual machine or a viewer for a particular computer algebra system.
  - May be included in a course delivered by a Course Management System

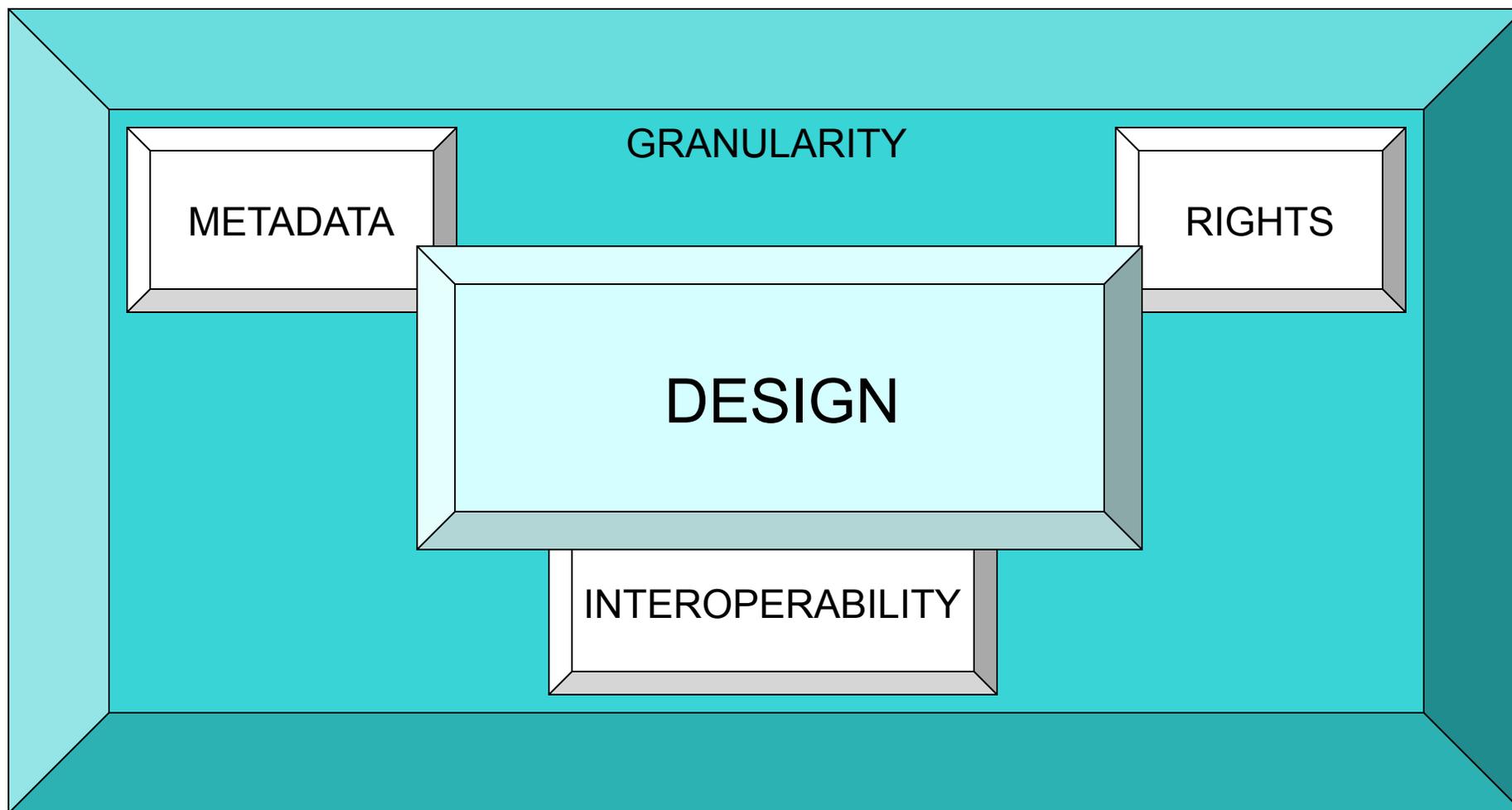
## Reuse Scenario – The Full Monty Hall

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- <http://oregonstate.edu/~robsonr/probpark/unexpected/montyhall.html>
- <http://www.mste.uiuc.edu/pavel/java/dilemma/>
- <http://www.grand-illusions.com/monty.htm>
- <http://math.ucsd.edu/~crypto/Monty/montybg.html>
- <http://mathforum.org/dr.math/faq/faq.monty.hall.html>

# Reusability Framework

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# Reusability Factors

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- GRANULARITY
  - Determines meaning of “reuse”
  - Defined by “content model”
- RIGHTS
  - Copyrights
  - Terms of Use
  - Ability to Modify
  - Attribution
- METADATA
  - Descriptive
  - Context (Educational)
  - Technical
  - Usage Instructions
- DESIGN
  - Content
  - Presentation
  - Structure
  - Pedagogy
  - Context
- INTEROPERABILITY
  - Technical
  - Involves Standards



Next: Granularity

# Questions? Comments?

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