

**CHICAGO
ACADEMY OF
SCIENCES**

**PEGGY NOTEBAERT
NATURE
MUSEUM**



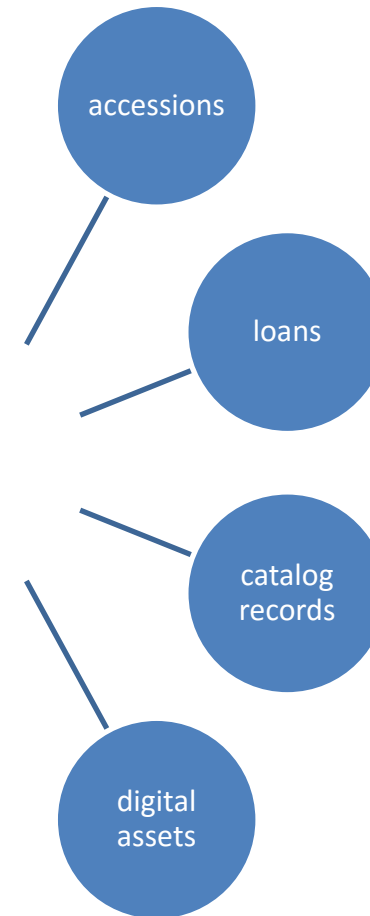
**EVALUATING COLLECTION MANAGEMENT SYSTEMS
FOR INTERDISCIPLINARY NATURAL HISTORY
COLLECTIONS**

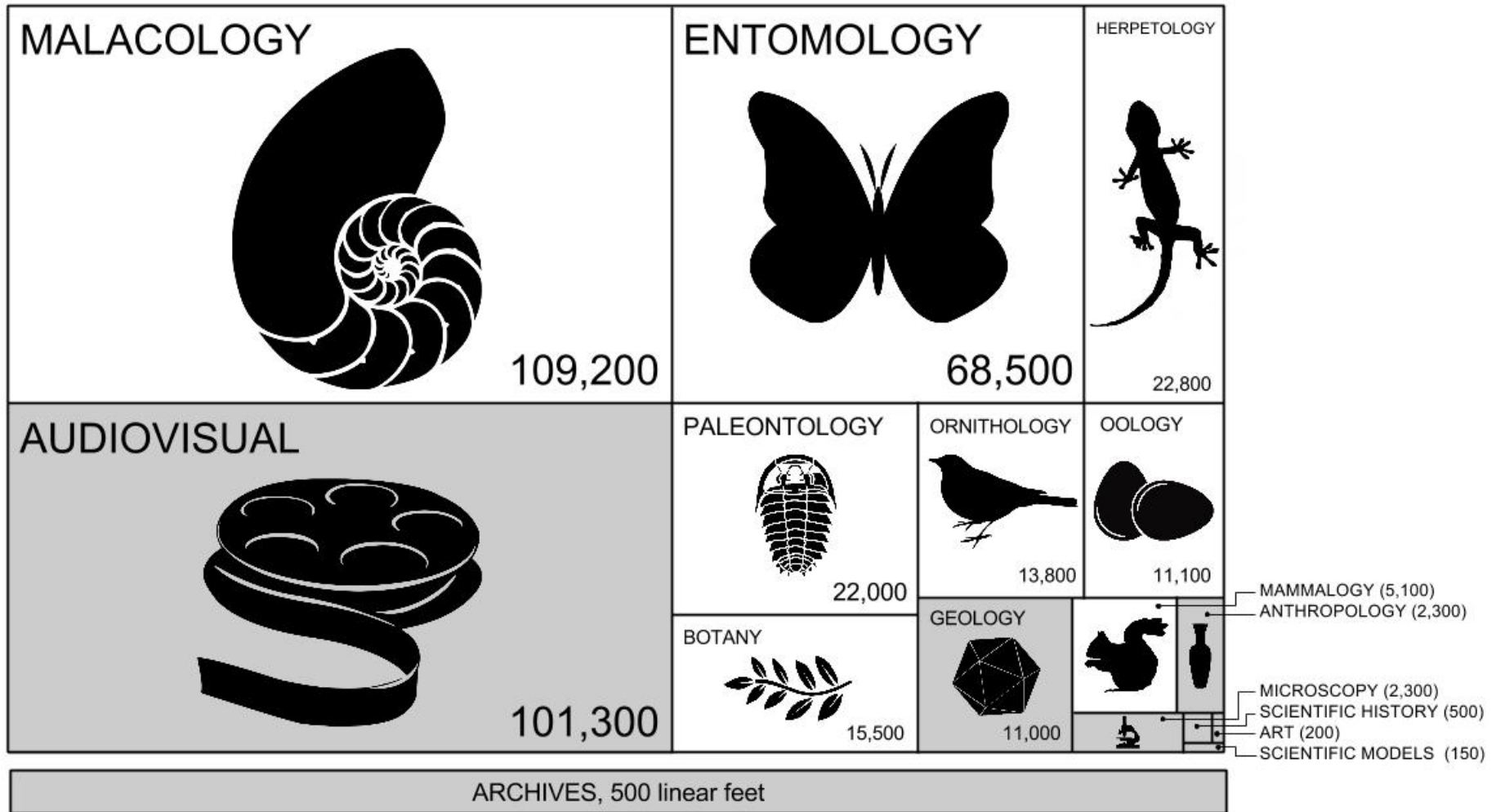
22 JUNE 2016

ERICA KRIMMEL, ASSISTANT COLLECTIONS MANAGER

DAWN ROBERTS, DIRECTOR OF COLLECTIONS

A **Collections Management System (CMS)** is a methodology—often but not always based on software—used by the collections staff of an institution to organize, control, and manage collections objects by tracking information related to and about those objects.





Treemap visualization of CAS/PNNM collection holdings with object or material counts specified in each discipline. Gray background on a discipline indicates that it is non-biological.



- KE Software (Axiell)
- Licensed based on number of users
- Hosting and technical support provided for a fee
- Used at the Smithsonian, Field Museum, London Museum...



- LYRISIS
- Open source, suggested membership fee
- Can easily be installed to run online
- Used at the Walker Art Center, U.C. Berkeley Jepson Herbarium...

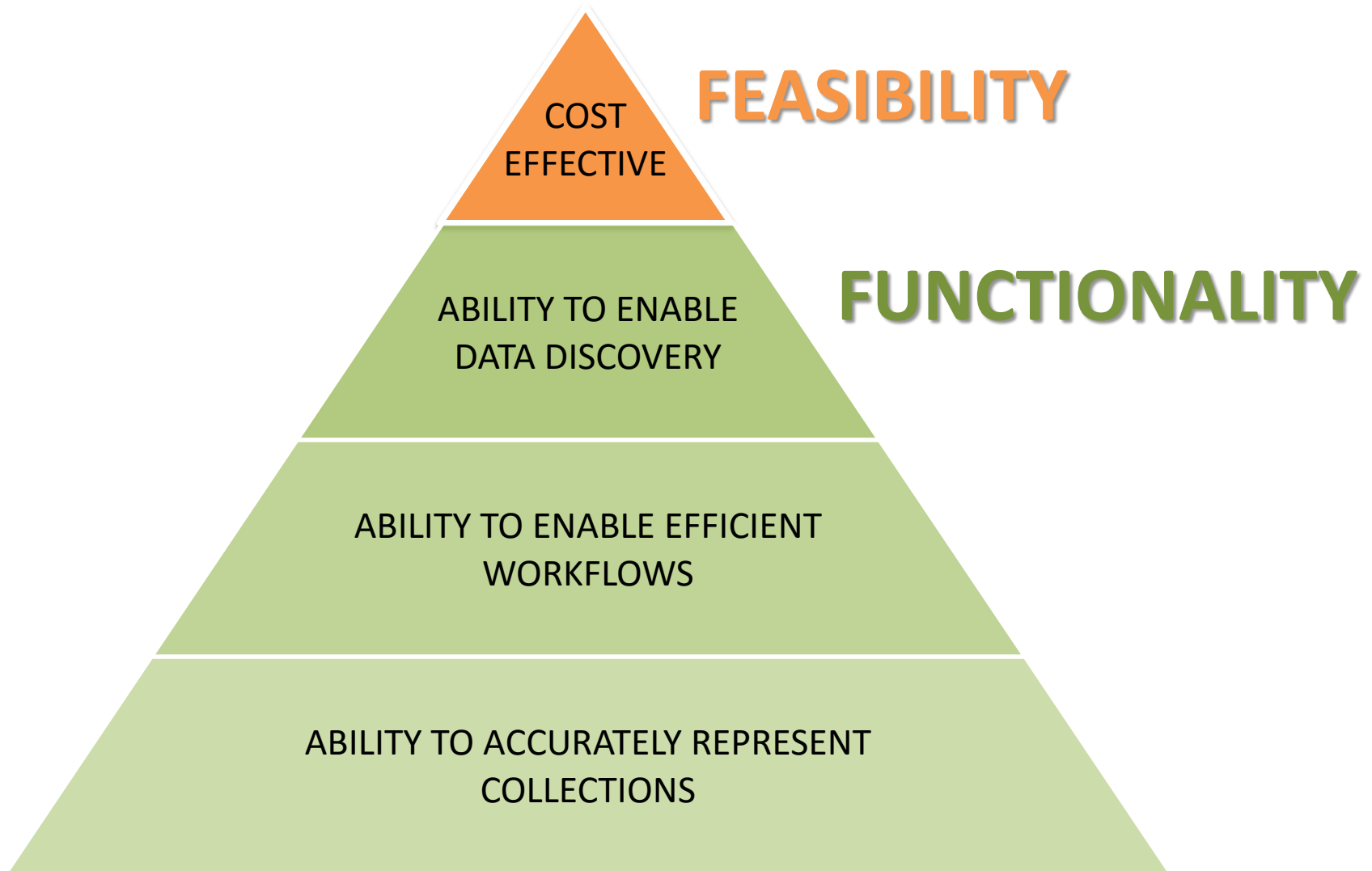


- Univ. of Kansas (funded by NSF)
- Open source, free
- Desktop and cloud-based versions
- Used for 300+ collections

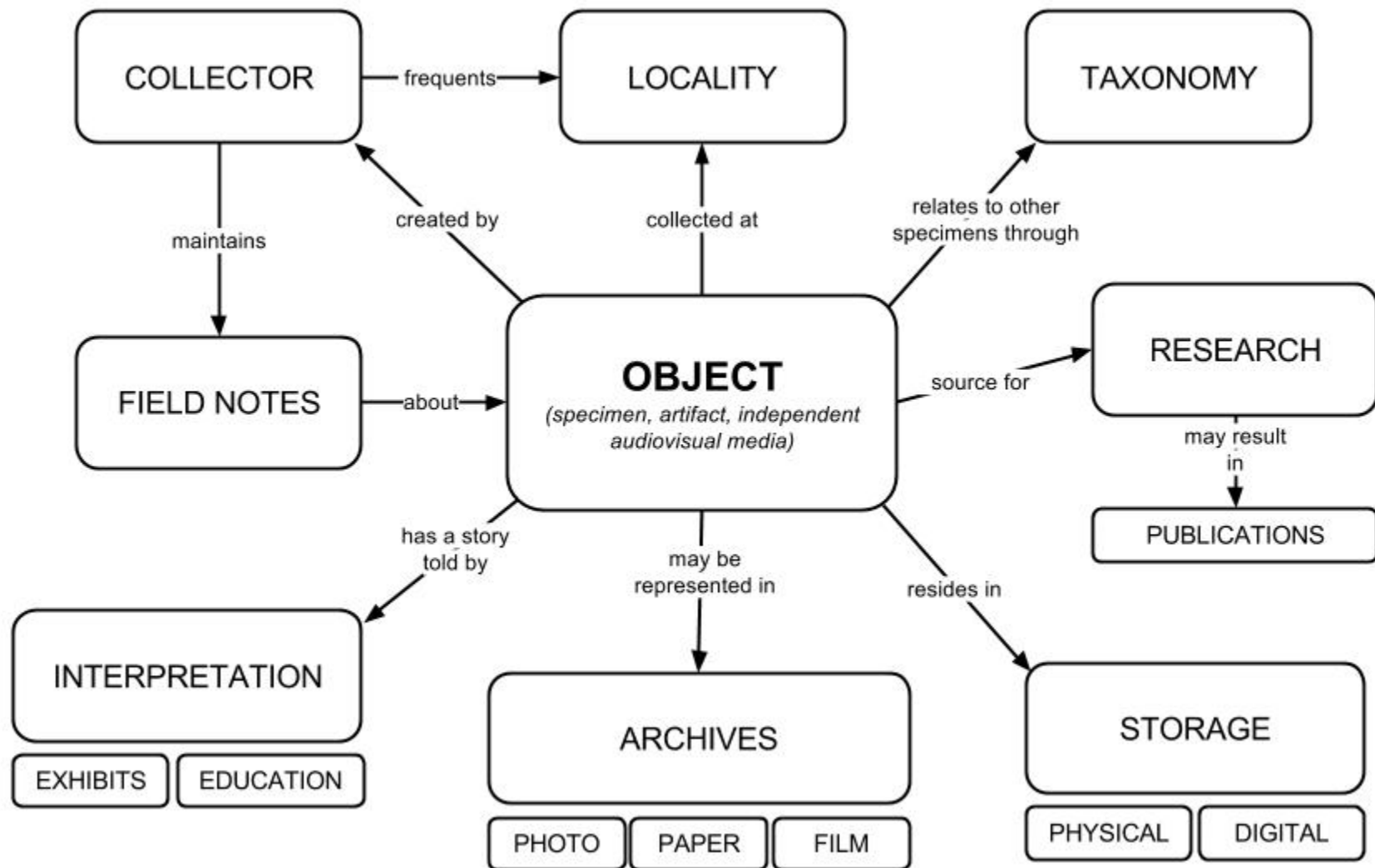


- Consortium of 20 institutions
- Open source, funded by membership
- Data and database hosted online
- Members include U.C. Berkeley, Univ. of Alaska...

- Adlib
- ArchivesSpace
- ARGUS
- Biota
- CollectiveAccess
- Mimsy XG
- PastPerfect
- Re:discovery
- Symbiota
- The Museum System (TMS)
- Vernon CMS
- custom database development (FileMaker, Access, MySQL, etc.)

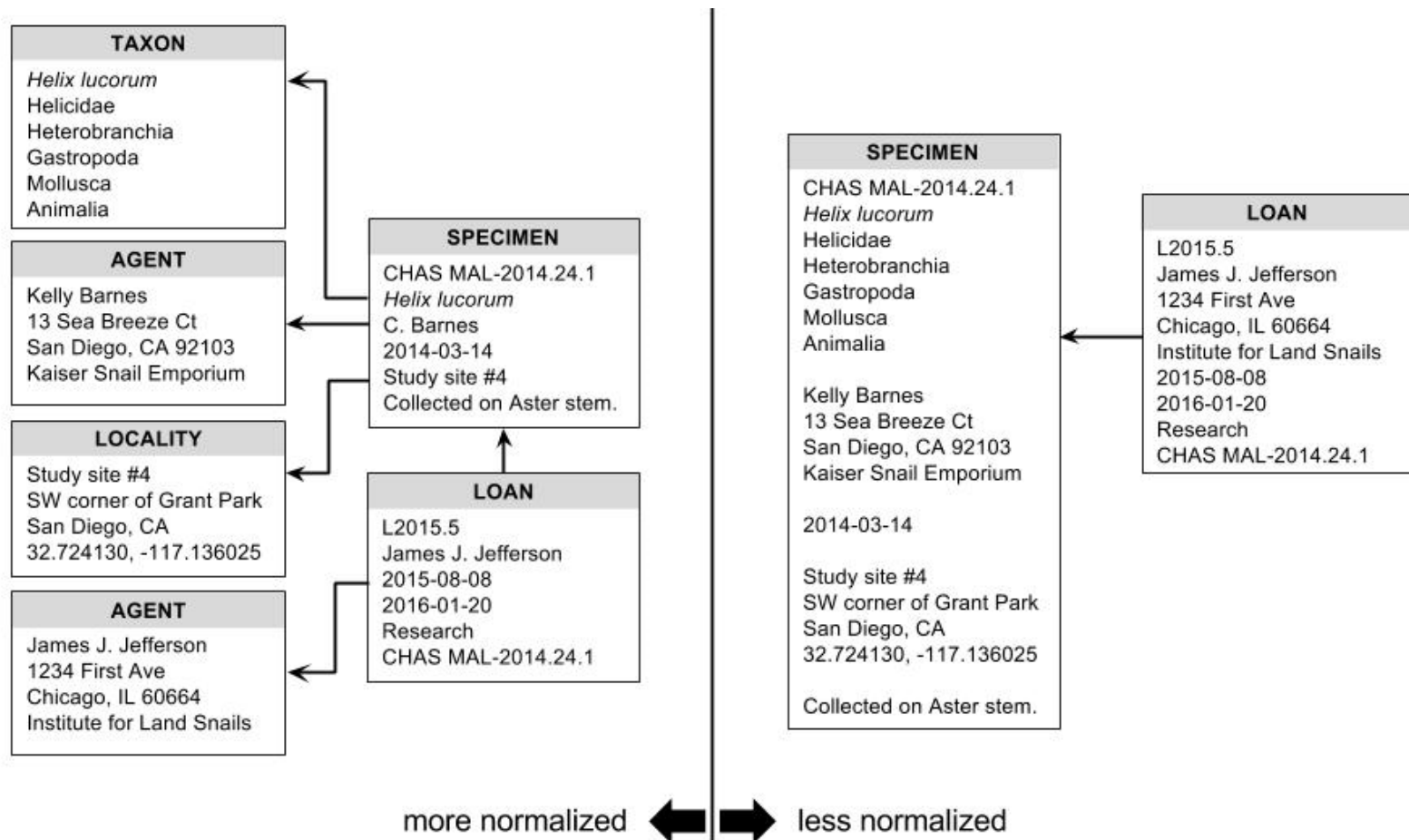


EVALUATING FUNCTIONALITY → ACCURATE REPRESENTATION

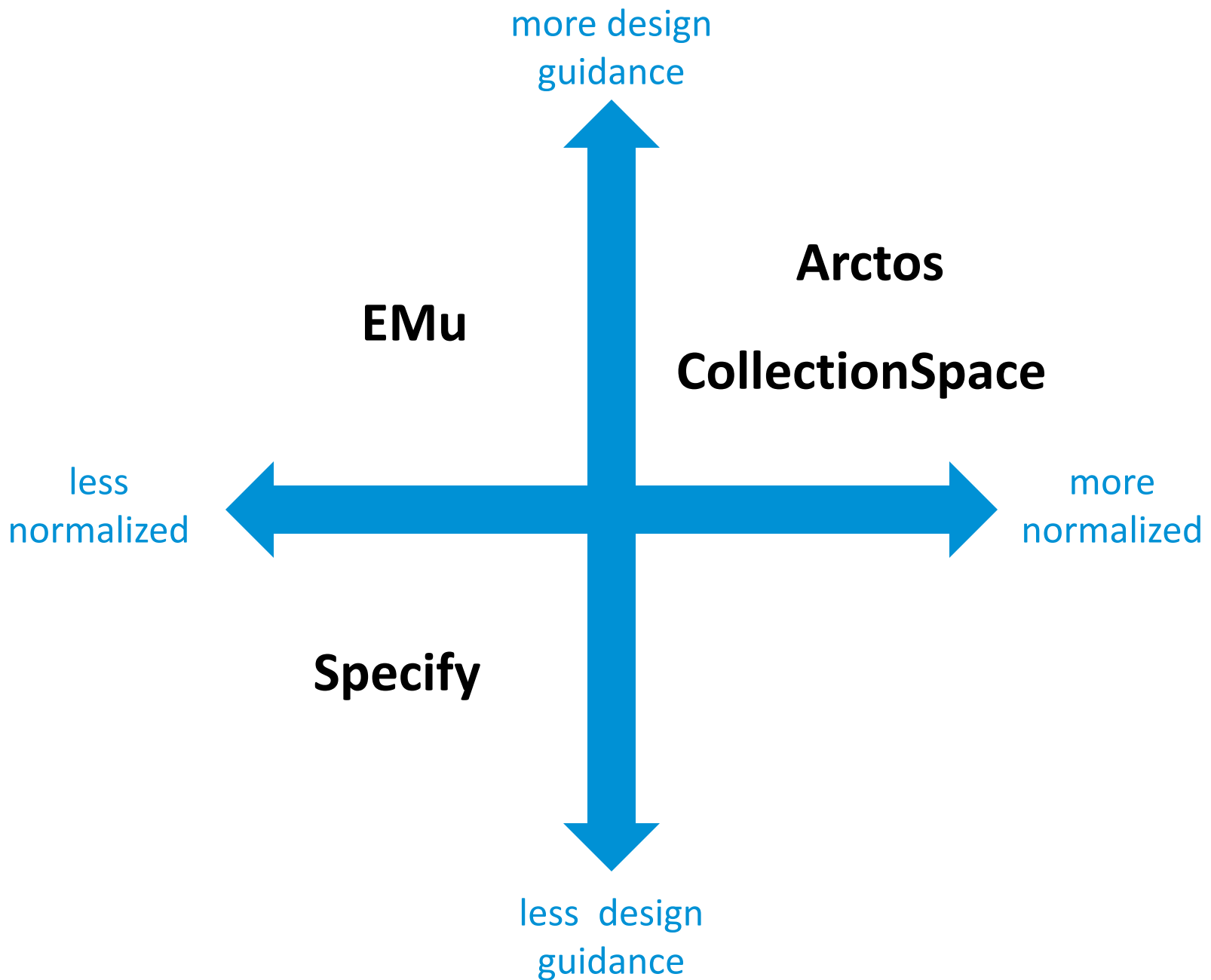


Relationships between CAS/PNNM collection objects and their data that we hope to document digitally with a collection management system.

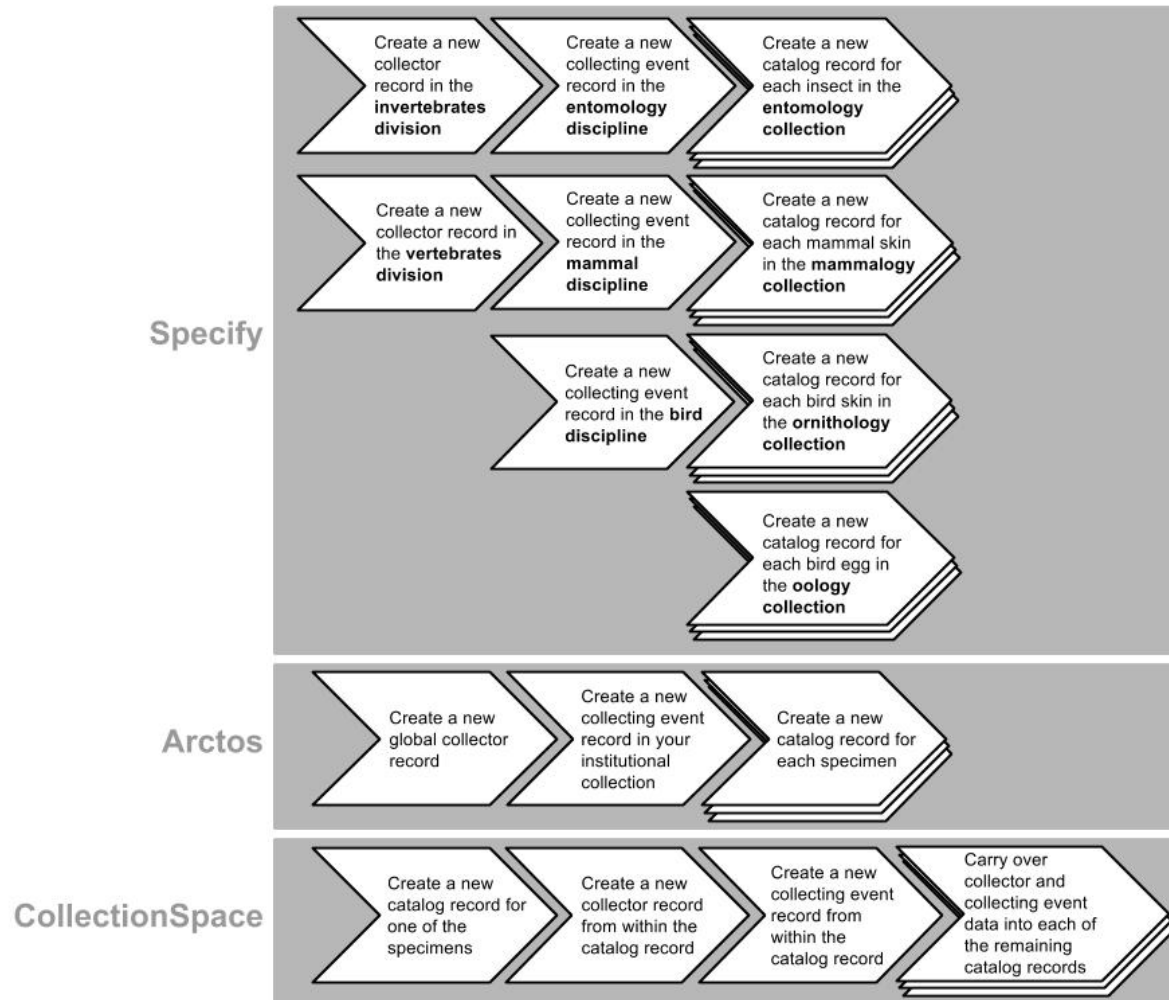
EVALUATING FUNCTIONALITY → ACCURATE REPRESENTATION



Illustrative subset of two fictitious relational databases with different levels of normalization. In the less normalized model, data associated with the person receiving the loan (James J. Jefferson) is captured on each individual loan record. In the more normalized database, data about Jefferson resides in its own table providing consistency across records. It is important to note that this figure does not represent any specific CMS options and is extremely simplified.



EVALUATING FUNCTIONALITY → EFFICIENT WORKFLOW



Comparison of **common transaction handling** between Specify, Arctos, and CollectionSpace for cataloguing specimens from a new accession containing five mammal skins, three bird skins, three bird eggs, and four insects all collected during the same event by the same person. EMu is excluded from this comparison because it can be customized to handle such a transaction according to an institution's preference.

EVALUATING FUNCTIONALITY → EFFICIENT WORKFLOW

	Biological collection support	Paleo collection support	Geological collection support	Cultural collection support	Paper archive support	Observational collection support	Essential coll. mgmt. transactions	Data cleaning (for imports)	Batch editing	User permission levels	Digital asset management system	Content management system	Georeferencing system	Condition tracking	IPM tracking	Pre-loaded vocab. authorities	Can import vocab. authorities	Email reminders	Annotation repatriation
EMu	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Specify	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Arctos	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓
CollectionSpace	✓			✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

Chart showing the **presence or absence of key features** between EMu, Specify, Arctos, and CollectionSpace. The first four columns (those showing support for different types of collections) are based on our holistic assessment of suitability, and are not meant to categorically exclude any types of collections from any particular CMS.

EVALUATING FUNCTIONALITY → EFFICIENT WORKFLOW

Some features of this site may not work in your browser. [Learn more](#) [Log Out](#)

Search Enter Data Manage Data Manage Arctos Reports Portals My S

[customize form](#) [disable calendars](#) [disable sortable](#) [enable sortable](#) [reset default sort](#) - Drag gray cell title

Cat Item IDs

Coln	Cat#	CustomID Type	CustomID	AutoInc?	Accn [pick]
CHAS:Bird					

Entered By: ekrimmel Status: waiting approval

Agents [documentation]

collector	Copy2All	collector	Copy2All
1		2	
3		4	
5			

Other IDs [documentation]

OtherID	ID Type	ID Number	Relationship
OtherID 1			self [pull]
OtherID 2			self [pull]
OtherID 3			self [pull]
OtherID 4			self [pull]

Identification [documentation]

Scientific Name: build
 ID By: Copy2All
 Nature: ID of kin
 Date: Copy2All
 ID Remk:

Attributes

Sex	Age	Fat	Molt	Ossification	Weight	Wt.Unit	Attr.Date	Sync	Determiner	sync

Attribute	Value	Units	Date	Determiner	Method	Remarks

Random Junk

template loaded - enter data

Specify Welcome Data Entry Interactions Trees Record Sets Query Reports Attachments Workbench Sp7demofish X KUFishvoucher

New Collection Object: #####

Cat # ##### Accession # Prev/Exch #
 Cataloger Cat Date Full Date YYYY-MM-DD

Determinations (0) Add
 No Data.
 Field No:Locality

Preparations Add
 No Data.
 Tissues: Collection Object Collection

Col Obj Attribute Add
 No Data.

Attachments
 Generate Label on Save Command N/A DIA Cit

Inventory Edited by Date Edited
 Save Save and Add Another

collectionspace

Hi, Administrator Sign out

Advanced search All Record Types Search

My CollectionSpace Create New Find and Edit Administration

2016.1.18 - Ming Vase Cataloging

Current Record Acquisition Cataloging Condition Exhibition Group Intake Loan In Loan Out Med

5 of 31 Return to search Create new from existing Delete Save
 Created 2016-06-02T15:52:24.069Z by admin@core.collectionspace.org
 Modified 2016-06-02T16:29:55.078Z by admin@core.collectionspace.org

Object Identification Information

Identification Number* 2016.1.18 Select number pattern
 Number of Objects
 Number Number Type
 Responsible Department Please select a value
 Collection Please select a value
 Record Status New

Brief Description
 Distinguishing Features
 Comments
 Computed Current Location

Media Snapshot
 Terms Used
 Cataloging Show Add
 No records yet.
 Procedures Add
 No records yet.

Multimedia (1) - Display

File Edit Select View Tools Tabs Multimedia Window Help

76 Collar of Cloak - Lohengrin (image/jpeg)

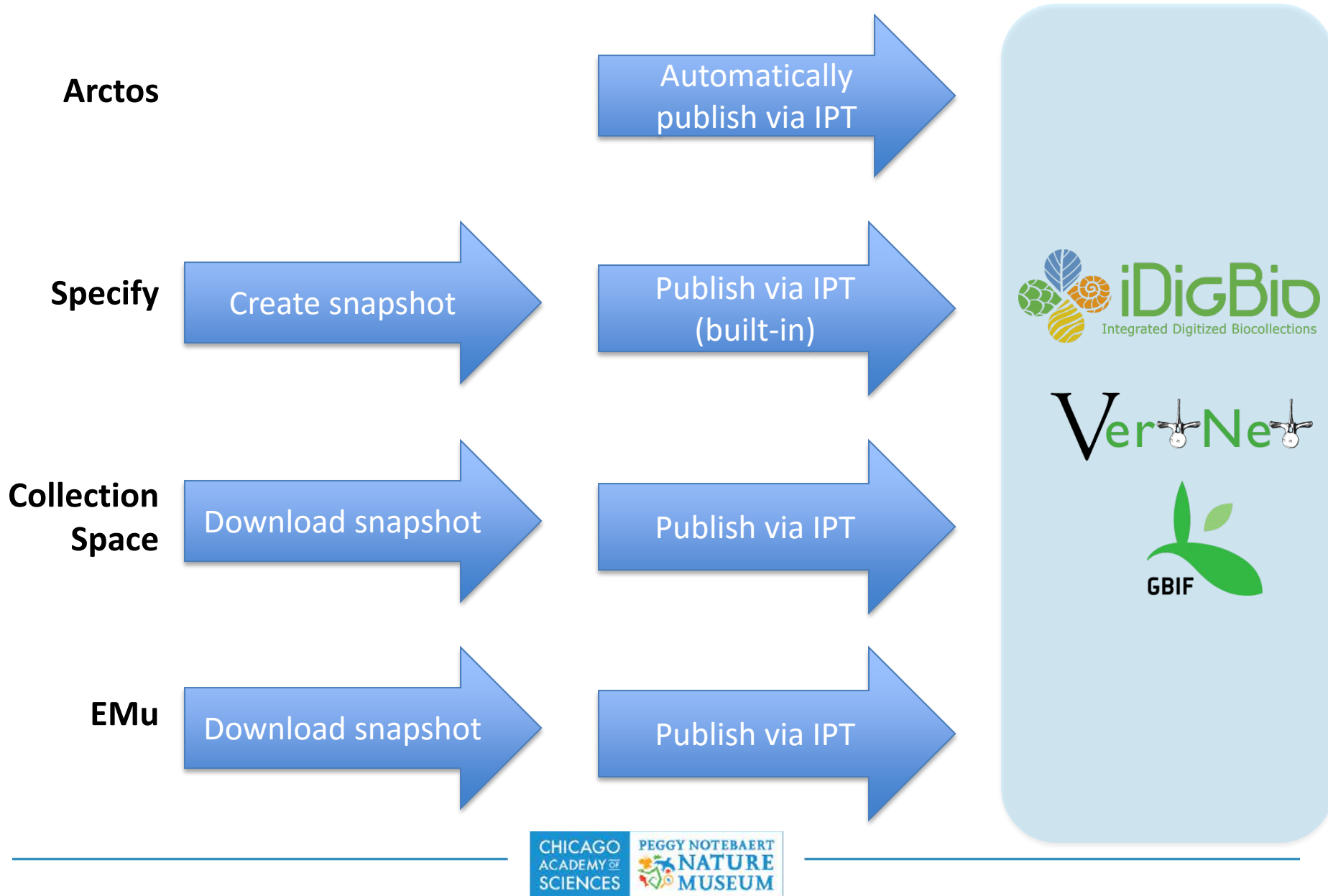
Image Attributes
 Identifier: image.19.JPG
 Image Type: True Color
 Colour Space: RGB
 Compression: JPEG
 File Size (bytes): 163184

Image Attributes
 Width (pixels): 861
 Height (pixels): 567
 Colour Depth: 24
 Planes: 1
 MIME Type: image
 MD5 Checksum: f3a42e2e5a1f717479a04a73d2e

Identifier	MIME Format	Width (pixels)	Height (pixels)	Colour Depth	File Size (bytes)
1 image.19.JPG	jpeg	861	567	24	163184
2 image.19.thumb.jpg	jpeg	90	59	24	2772
3 image.19.320x240.gif	gif	320	240	24	85650
4 image.19.640x480.jpeg	jpeg	640	480	24	383388

Multimedia Details Characteristics EXIF IPTC XMP Resolutions
 Display Item 39 of 131

EVALUATING FUNCTIONALITY → DATA DISCOVERABILITY



MONETARY COMMITMENT

		Arctos		Specify		EMu		CollectionSpace	
<i>first year costs</i>		Licensing / membership fee	\$8,010 5% of whole	\$0 N/A	\$25,555 5 licenses	\$3,000 optional			
		Licensing / membership fee	\$8,010 5% of whole	\$0 N/A	\$0 N/A	\$3,000 optional			
<i>annual costs (after year one)</i>	Technical support	\$0 included	\$0 included	\$26,538 install, config, proj. mgmt	\$2,900 (\$145/hr)				
	Technical support	\$0 included	\$0 included	\$5,994 for 5 licenses	\$2,900 (\$145/hr)				
	Additional software required	\$0 N/A	\$0 N/A	\$495 for one Crystal license	\$0 N/A				
	Software upgrade/ develop.	\$0 included	\$0 included	\$0 included	\$0 N/A				
	Data migration	\$2,800 (\$70/hr)	\$0 included	\$13,089 estimate by KE	\$3,600 (\$90/hr)				
	Staff training	\$0 not offered	\$1,500 travel costs	\$9,000 on-site, 4 days	\$0 not offered				
	Internet access license	\$0 N/A	\$0 N/A	\$4,414 one license	\$0 N/A				
	User interface for online data access	\$0 included	\$0 included	\$8,000 IMu config.	\$6,500 site design				
	Website hosting	\$0 included	\$10,000 new server	\$10,000 new server	\$10,000 new server				
	Website hosting	\$0 included	\$0 N/A	\$0 N/A	\$0 N/A				
Cloud backup	\$0 included	\$1,230 9 TB	\$1,230 9 TB	\$1,230 9 TB					
Cloud backup	\$0 included	\$1,230 10 TB	\$1,230 10 TB	\$1,230 10 TB					

MONETARY COMMITMENT

	Arctos		Specify		EMu		CollectionSpace	
Licensing / membership fee	\$8,010	5% of whole	\$0	N/A	\$25,555	5 licenses	\$3,000	optional
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Technical support	\$0	included	\$0	included	\$26,538	install, config, proj. mgmt	\$2,900	(\$145/hr)
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User interface for online data access	\$0	included	\$0	included	\$8,000	IMu config.	\$6,500	site design
Website hosting	\$0	included	\$10,000	new server	\$10,000	new server	\$10,000	new server
Website hosting	\$0	included	\$0	N/A	\$0	N/A	\$0	N/A
Cloud backup	\$0	included	\$1,230	9 TB	\$1,230	9 TB	\$1,230	9 TB
Cloud backup	\$0	included	\$1,230	10 TB	\$1,230	10 TB	\$1,230	10 TB

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Website hosting	\$0	included	\$0	N/A	\$0	N/A	\$0	N/A
Cloud backup	\$0	included	\$1,230	9 TB	\$1,230	9 TB	\$1,230	9 TB
Cloud backup	\$0	included	\$1,230	10 TB	\$1,230	10 TB	\$1,230	10 TB

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Website hosting	\$0	included	\$10,000	new server	\$10,000	new server	\$10,000	new server
Website hosting	\$0	included	\$0	N/A	\$0	N/A	\$0	N/A
Cloud backup	\$0	included	\$1,230	9 TB	\$1,230	9 TB	\$1,230	9 TB
Cloud backup	\$0	included	\$1,230	10 TB	\$1,230	10 TB	\$1,230	10 TB

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Website hosting	\$0	included	\$0	N/A	\$0	N/A	\$0	N/A
Cloud backup	\$0	included	\$1,230	9 TB	\$1,230	9 TB	\$1,230	9 TB
Cloud backup	\$0	included	\$1,230	10 TB	\$1,230	10 TB	\$1,230	10 TB

TIME COMMITMENT

	Arctos		Specify		EMu		CollectionSpace	
Collections staff training	24	<i>hours x 2 ppl</i>	24	<i>hours x 2 ppl</i>	32	<i>hours x 2 ppl</i>	40	<i>hours x 2 ppl</i>
Collections staff support for CMS	1,600	<i>hours</i>	3,000	<i>hours</i>	2,000	<i>hours</i>	3,000	<i>hours</i>
Collections staff support for CMS	100	<i>hours</i>	175	<i>hours</i>	200	<i>hours</i>	200	<i>hours</i>
Volunteer training by Collections staff	3	<i>hours</i>	3	<i>hours</i>	3	<i>hours</i>	3	<i>hours</i>
IT staff training	24	<i>hours x 1 pers.</i>	24	<i>hours x 1 pers.</i>	32	<i>hours x 1 pers.</i>	40	<i>hours x 1 pers.</i>
IT staff support	8	<i>hours</i>	30	<i>hours</i>	20	<i>hours</i>	64	<i>hours</i>
IT staff support	0	<i>hours</i>	28	<i>hours</i>	24	<i>hours</i>	28	<i>hours</i>
IT staff support	8	<i>hours</i>	40	<i>hours</i>	8	<i>hours</i>	40	<i>hours</i>





























TIME COMMITMENT

	Arctos		Specify		EMu		CollectionSpace	
Collections staff training	24	<i>hours x 2 ppl</i>	24	<i>hours x 2 ppl</i>	32	<i>hours x 2 ppl</i>	40	<i>hours x 2 ppl</i>
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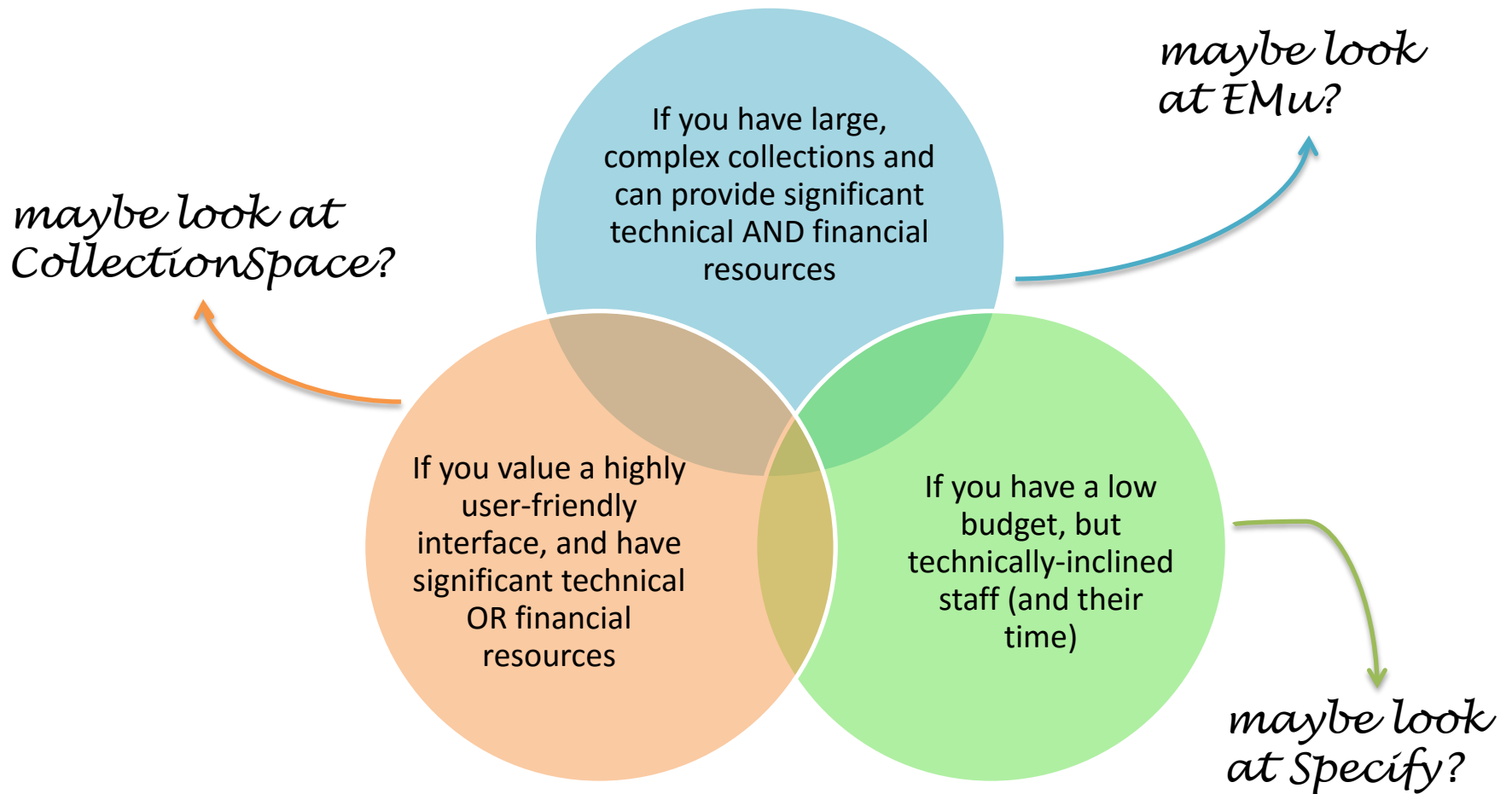
MONETARY + TIME COMMITMENT

	Arctos	Specify	EMu	CollectionSpace
First Year Cost of CMS	\$10,810 + 0.8 FTE	\$2,730 + 1.5 FTE	\$75,907 + 1.0 FTE	\$10,730 + 1.6 FTE
First Year Cost of Online Access	\$0 + 0 hrs	\$10,000 + 28 hrs	\$22,414 + 24 hrs	\$16,500 + 28 hrs
Annual Cost of CMS	\$8,010 + 0.05 FTE	\$1,230 + 0.1 FTE	\$7,224 + 0.1 FTE	\$7,130 + 0.12 FTE
TOTAL TEN YEAR OPERATING COST	\$82,900 + 2,655 hrs	\$23,800 + 5,068 hrs	\$163,337 + 4,015 hrs	\$91,400 + 5,375 hrs

For CAS/PNNM, Arctos was the best option.

	Arctos	Specify	EMu	CollectionSpace
Collection management workflow				
Data discoverability				
Online data accessibility				
Initial software cost				
Continuing software cost				
Use of collections staff time				
Use of IT staff time				

But one size does not fit all.



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MUSEUM



THANK YOU!

Questions and feedback may be directed to ekrimmel@naturemuseum.org

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