

iDigBio Collection Management System (CMS) Information Gathering

Thank you for taking the time to consider and respond to the following questions. iDigBio will make your responses available to the natural history collections community, both as an online resource available to anyone, and as a reference specifically for participants in our “Introduction to Biodiversity Specimen Digitization” course. This resource will serve as an update to a similar survey we did in 2012: <https://www.idigbio.org/content/biological-collections-databases>.

Please return your completed survey to Erica Krimmel (ekrimmel@fsu.edu).

BASIC QUESTIONS

1. **Name and email of person responding to this survey:** Amanda Roy, Regional Manager (North America), Axiell amanda.roy@axiell.com
2. **Name of Collection Management System (CMS):** EMu (Electronic Museum)
3. **Website:**
 - a. General Site: <https://www.axiell.com/>
 - b. EMu: <https://www.axiell.com/solutions/product/emu/>
 - c. Natural History Collections: <https://www.axiell.com/solutions/natural-history-collections/>
4. **Company or group responsible for maintaining CMS:** Axiell Group
5. **Long-term funding structure for maintaining CMS (e.g., grants, membership, private):** We are a for-profit organization supported by our current and growing user base.
6. **Brief summary highlighting the market niche for this CMS:**
 - a. The EMu Collections Management System has been at the forefront of collections management for more than three decades. Comprehensive and flexible, EMu can accommodate the requirements of any collecting institution.
 - b. EMu has been celebrated in the natural history community for its unique ability to meet the needs of these institutions. For example, with EMu:
 - i. **Manage scientific and research data:** Manage data using taxonomies and synonymies for natural history collections and manage both specimen and lot-based collections.
 - ii. **Capture and study specimen information:** Capture site, event data and field notes from specimen collection, and track the progress of preparations, tissue samples, and destructive and non-destructive loans.
 - iii. **Participate in global and regional initiatives:** Ensure data can be extracted to contribute to aggregators such as GBIF, iDigBio, Vertnet.
 - iv. **Multidisciplinary:** EMu is recognized for its strength in the management of complex and multidiscipline collections within one Catalog. EMu is suited to all types of collections, including:
 1. Natural History collections:

- a. Vertebrate Zoology, with separate disciplines for the main vertebrate groups such as Mammalogy, Ornithology, Ichthyology, Herpetology and Amphibians
 - b. Invertebrate Zoology
 - c. Earth Sciences, including rocks, minerals, gems, meteorites
 - d. Paleobiology, including vertebrate and invertebrate Paleontology and Paleobotany
 - e. Entomology
 - f. Botany
 - g. Horticulture
2. Cultural and human history collections:
 - a. Anthropology, Archaeology and Ethnology
 - b. Physical Anthropology
 - c. Paintings, Drawings, Prints, Sculpture and 3-dimensional objects
 - d. Decorative Art, Performing Art, Photography, Textiles and Digital Objects
 - e. Science and Technology
 3. Living collections
 4. Special collections
 5. Archives
 6. Historical Society collections
 7. Digital Assets

USABILITY QUESTIONS

7. **Restrictions on types of collection objects and/or disciplines (e.g., cannot handle anthropology):**
 - a. EMu supports complex and multidiscipline collections including Natural History, Cultural History, Living Collections, Art, Archives, etc.
 - b. While EMu contains a Bibliography module for recording general bibliographic references, including books, journals, articles, papers and theses, it is not as well suited for managing a library, particularly circulating library collections.
8. **Capacity for handling complex information related to taxonomic names (e.g. taxon concept mapping, recording annotations):**
 - a. EMu has extensive support for scientific information about specimens and other resources. Chief amongst this is the Taxonomy module, which is used to record detailed information about taxa relating to a collection and which incorporates the full taxonomic hierarchy. The Taxonomy module records the scientific names of species, the relationships between names (synonymies), and details that support the scientific name (citations, type specimens, etc.). A Taxonomy record can contain all of the following and more:
 - i. The scientific name of a species (more than twenty ranks can be completed if required).
 - ii. Details about citations.
 - iii. Details about authors (of the taxonomic name and of citations).

- iv. References to records of type specimens and other specimens referred to in citations.
 - v. Homotypic and heterotypic synonyms of the name.
- b. Other recorded details include information about the author and year of publication of the taxon, the protologue publication, and a range of other bibliographic references to the taxon. The Taxonomy module supports hybrids, homonyms, common names, conservation status and description.
- c. Taxa can be recorded at any level, from as broad as Kingdom to as narrow as Subspecies (Zoology) or Form and Variety (Botany). With its support for the complex rules relating to the synonymy of taxa, this module makes it simple to search for a taxonomic concept under any of its names.
- 9. Capacity for handling complex information related to geographic places and for facilitating tasks such as georeferencing:**
- a. EMu supports geo-referencing of your collection. Comprehensive geo-referencing details can be stored in EMu and used to map objects and specimens in mapping tools. Geo-referencing information is designed to contain all locality co-ordinate information and associated error values.
 - b. It is possible to map the collection locality of a series of specimens by plotting details on to a map of the world. With a large enough set of specimens, this can provide a distribution map for various species that have been collected.
 - c. EMu also contains Collection Events and Sites modules, which record information about specific collection localities (field trips and archaeological digs). Geo-locate is embedded directly into these modules to provide mapping tools designed to visualize your data. The Collection Events and Sites modules record information about the locality at which objects were collected. Details include:
 - i. Date of collection
 - ii. Expedition details
 - iii. Precise locality and nearest named place
 - iv. Geographic description
 - v. Latitude and Longitude and / or a range of other mapping coordinates
 - vi. Altitude or Capture depth
 - vii. Collector
 - viii. Date and time
 - ix. Prevailing conditions
 - d. In addition to managing information related to geographic places, EMu tracks the location and movement of objects within a museum. When an object is moved from one internal location to another it is updated with the new location, the date, time and staff involved, whilst maintaining the location history for such movements.
- 10. Capacity for handling complex information related to people (e.g. collectors, identifiers, loan agents):**

- a. EMu's Parties module holds information about individuals and organizations involved with the activities of the museum and its collection. Parties can be collectors, loan agents, identifiers, artists, authors, manufacturers, donors, researchers, staff, conservators, carriers, exhibition organizers, insurers, lending and borrowing institutions, and so on. A Party may be an individual, a group or department within an institution, or an external individual, group or organization.
- b. Information that can be recorded includes name, various addresses and phone numbers, email and web addresses, biographical and historic information, media, and more. The Parties module provides support for synonymy of names (one identity known by several names) and is compatible with the Getty Union List of Artists' Names.
- c. As a Party may be connected with many objects and events within an institution, it is possible that a single Party record is linked (attached) to many records in multiple modules. Linking records in this manner saves time and effort as information about a Party need only be entered once in EMu and if any details change, only one record - the Parties record - needs to be updated.

11. Capacity for handling complex information related to extended data facets such as traits of (e.g. morphometrics) and interactions between (e.g. parent-child) collection objects:

- a. EMu supports your research endeavor in numerous innovative ways, but in particular by enabling you to document what there is to know about your objects, specimen and materials to organize this information, report on it and aggregate it. It is possible to search across the entire collection and draw or discover associations between disparate but related items.
- b. The EMu Catalog can be used to document new items derived from an existing object, such as preparations taken from organisms (e.g., skull or tissue sample). The main features of preparations are that the details of an organism are recorded once, and details of each preparation are recorded and linked to its organism. The preparation thereby inherits all scientific details from its organism. Preparation types include skin, skeleton, skull, egg, nest, sample (chip off mineralogy specimen), polished block/section, tissue sample, slide preparation.
- c. EMu also can manage specimen analysis information - whether DNA, chemical, chromatography, a simple x-ray and much more - and share it as required. As well as recording analytical details in EMu, it's a simple matter to include multimedia to support and enhance an analysis.
- d. Regarding tracking interactions between collection objects, EMu's sophisticated record cross-referencing can be used to document the relationships between objects. While frequently used for parent-child relationships (e.g., composite object and its parts), it can also be used for ad-hoc relationships between objects. For example, a photograph which includes a collection object can be related directly to that collection object and vice versa. The nature of the relationship can also be documented (e.g., host-parasite). Relationships can be established between objects within the same or different disciplines. Users can easily browse from an object to its related objects and vice versa. EMu can support museum processes that cross discipline boundaries, for example multi-discipline loans.

12. Capacity for facilitating linkages between collection objects and extended data stored elsewhere, such as a genetic data repository:

- a. EMu's sophisticated record cross-referencing can be used to document the relationships between objects. While frequently used for parent-child relationships (e.g., composite object and its parts), it can also be used for ad-hoc relationships between objects. Relationships can be established between objects within the same or different disciplines. Additional information in response to question 11.
- b. **Portals:** There have been several initiatives in the museum industry to provide a single gateway to the collections of multiple museums. Of course, this requires an enabling collections management system, and with EMu you can connect your collection to one of the many museum industry portals. If you want your collections management system to integrate with other 3rd party solutions, we can manage integration through our public APIs for 3rd parties (available in perl, php, java, .net, and nodejs).
- c. **Linking to web resources:** EMu provides a mechanism to link from a record in your collection to a web-based resource that might offer additional information about that record. EMu extracts information from the record you are viewing and builds a URL to this other resource. You simply click on that URL and the related web resource is displayed. These resource links can be set up to reference any websites. Examples include:
 - i. Linking from a specimen or taxon to GBIF (Global Biodiversity Information Facility).
 - ii. Linking from a specimen or taxon to a discipline-specific website such as OBIS, MaNIS or mindat.org.
 - iii. Linking from a specimen or collection locality, or even a person's address, to Google Maps.
 - iv. Linking from an artist's record to ULAN (United List of Artist Names) or other artist information repository.
- d. **Linked Open Data:** As part of Axiell's vision for a "connected world of culture" we are working to enable our partnering institutions to make use of data from other institutions that they trust, share their own data, and become a trusted source themselves. The cornerstone of this is Linked data. Axiell is investing in and developing functionality for linked open data. Learn more here: <https://www.axiell.com/blog-post/recording-intro-to-linked-data/>
- e. Axiell also supports web services for EMu. A web service is a software component that uses open, XML-based standards and transport protocols to exchange data with calling clients. The EMu Web Services system comprises several standards-based interfaces that provide access to data stored within EMu and elsewhere. These interfaces allow third party software systems to query EMu and have the results presented in a well-defined XML result set.

13. Capacity for facilitating collection management transactions, such as loans, accessions, and transfers:

EMu manages all aspects of your collection from accessioning and deaccessioning through to incoming and outgoing loans, shipments, location tracking and internal movements, valuations, insurance and indemnity, and more.

- a. **Accessions:** EMu documents the arrival of objects at your institution, some or all of which may ultimately be accepted into the collection and thus fully cataloged. An Accession Lots record is created for new acquisitions such as purchases, gifts and bequests; it documents a summary of the objects in the Lot and can be used to schedule acquisition meetings to accept or reject each object. Details that can be captured include a purchase price for an acquisition, date of receipt, accession numbers for objects (which can be automatically assigned by EMu) and any rights and restrictions over the objects.
- b. **Deaccessions:** Deaccessioning an object results in the object's logical removal from the collection: for most users the object will appear to have been removed from the Catalog. Authorized users however are able to retrieve deaccessioned object records, allowing audits of deaccessioned objects to be undertaken. Deaccession details include the date of deaccession, a reason for deaccession (lost, stolen, destroyed, etc.), terms and conditions of the deaccession, and authorization details.
- c. **Loans:** EMu manages your incoming and outgoing loans, capturing details such as the borrower, objects loaned, start and end dates, approvals, and associated costs. Loan documentation, including a loan agreement form, can be generated from within EMu and can even be scanned and attached to the loan record as a permanent soft copy of the signed agreement.
- d. **Valuation:** The value of an object, the date of its valuation, the valuing authority and the next scheduled valuation are documented in EMu, with a history of valuation information automatically maintained. It is possible to: Set a regular valuation interval frequency (in years or months); Set a specific date for the next valuation; Receive a notification report when the next valuation is due. For security reasons, it is common to restrict access to an object's valuation details to valuation staff and management.
- e. **Insurance:** Insurance policies and related information for objects covered by insurance and other forms of indemnity are all captured in EMu. Details include a policy number, insurance company or indemnifying organization, assessor, date of assessment, total value covered, renewal date and a history of all claims. Insurance details can also be recorded for individual transactions such as loans, external movements and exhibitions.
- f. **Rights/Copyright:** Information about the ownership or other rights or copyright provisions pertaining to one or more objects is captured and maintained in EMu. Details could be: Copyright holder and conditions; Acknowledgement required; Restriction of use; Special conditions which apply to the display, uses and copying of objects; Reproduction restrictions; Details of reproductions of objects, including costs and fees collected.

14. Capacity for facilitating physical collections care including tracking storage locations and condition reporting:

- a. **Condition Checking:** EMu's Condition Check facility documents an object's condition, the date when it was last checked and by whom and the date of its next scheduled check. A history of all condition statements is maintained. Amongst other things, it is possible to: set a regular condition check frequency (in years or months); set a specific date for the next condition check; and receive a notification report when a scheduled condition check is due.

- b. **Conservation:** Conservation work on collection objects can be scheduled and monitored, capturing examination details, a description of the damage or other reason for conservation treatment, details of the treatment performed, the results of those treatments, and any associated costs. Conservation records make extensive use of the multimedia repository to record images and video of objects before and after conservation work, as well as audio and written documents describing treatments. Conservation information is retained in perpetuity, giving a comprehensive history of the treatments applied to an object, and also providing a knowledge-base to improve the effectiveness of conservation activities.
- c. **Integrated Pest Management:** EMu also has integrated pest management, recording information about the type and location of traps used by an institution to capture pests, and what was found in a trap at a given date and time. A rich suite of reports for analyzing pest trap data is provided, including a sophisticated visualization tool for identifying and tracking infestations within your institution.
- d. **Shipments:** EMu manages and tracks the shipment of objects into or out of a museum whether in response to incoming or outgoing loans and object returns, movements between campuses of a museum, external conservation work, receipt of donations, etc. Details captured for the movement of an object include the purpose of the movement, authorization, location to/from which an object is being moved, date of the movement, courier, consignment details, customs broker, insurance policy, any special handling or packing instructions, associated costs and confirmation of receipt. Shipment documents, including packing slips and receipts on arrival/request to dispatch, can be generated from within EMu.
- e. **Tracking:** EMu tracks the location and movement of objects within a museum. When an object is moved from one internal location to another it is updated with the new location, the date, time, and staff involved. A history of all movements for each object is maintained. EMu supports both fixed and moveable locations. Fixed locations are used to document all the places in which objects may be located. They can be specified in a hierarchical fashion, for example, building-floor-section-room-cabinet-shelf. A moveable location, a Solander box for example, is located in a fixed location, such as a cabinet within a room. When the Solander box is relocated from one cabinet to another, the location of all objects stored in the Solander box is automatically updated. Details, such as location codes, barcodes, dimensions and other location characteristics, can also be recorded. EMu allows users to find and report on objects stored at any location or on any level of a location hierarchy.

15. Capacity to manage media (e.g., 2D images, 3D images, audio, video), and/or to work in sync with a dedicated Digital Asset Management System:

- a. EMu has fully integrated multimedia management, with support for all media types, including:
 - i. Image, video, audio
 - ii. Word processing documents, spreadsheets, presentations
 - iii. Any online or offline resource
 - iv. All Dublin Core Metadata fields (the complete Dublin Core attribute set can be recorded for each multimedia resource), e.g.: Type of resource (image, audio, video, etc.); Format of the resource (GIF, JPEG, AU, WAV,

MPEG, etc.); Source; Description; Creators and other contributors;
Restrictions on the use of the resource.

- b. When an image is added to the multimedia repository, any metadata (EXIF, IPTC or XMP) is extracted from the file and is searchable within EMu.
- c. Any format can be generated on demand and at any resolution and, for efficiency, some derivatives can be generated automatically as multimedia is added to EMu. For instance, when an image is added to EMu, a thumbnail JPEG can be created for browsing, an 800x600 PNG image for publication on the web, whilst maintaining the image in its original format and resolution. Any number of resolutions (size and format) can be stored for a multimedia resource in the Multimedia record.
- d. The concept of derivatives includes all forms of multimedia, not just images. For example:
 - i. A video in AVI format could also be stored as MPEG and MOV versions.
 - ii. A Microsoft Word document may have a PDF, HTML and text version.
- e. Using this mechanism, it is possible to provide full text retrieval for any document type (e.g. Word, Excel, Access, Project, Web Pages, WordPerfect, Lotus Notes) that can be converted to a textual form.
- f. EMu's multimedia repository can also be used to store multimedia resources that aren't specifically related to any collection record (e.g. minutes of meetings, planning papers).
- g. Additionally, Axiell has partnered with Piction to offer a fully integrated digital asset management and collections management solution. This ground-breaking partnership enables museums, libraries, archives, and other cultural organizations to manage and serve media and metadata seamlessly, ensuring the digital assets in the collection can be effectively shared within the institution and beyond.

The Axiell and Piction collaboration establishes a sustainable path for museums and archives to manage, preserve, and distribute their digital assets. Metadata management, digital workflows, support for advanced ingestion of data, and content distribution are all part of the enterprise solution. The integration of Axiell's collection management software with Piction's DAMS enables institutions to thoroughly document the life cycle and use of their digitized and born-digital materials and enhances their ability to create digital experiences across all their collections.

16. Capacity for mobilizing collection object data (e.g., publish directly to an IPT, or export custom text files):

- a. **Reporting:** EMu's comprehensive reporting subsystem allows any information to be drawn from any set of records for reporting purposes. EMu is packaged with a suite of more than one hundred predefined reports. It also comes with a series of tools to generate new and customized reports in numerous formats using a wide range of report writers, including XML, Crystal Reports, Microsoft Word, Excel and PowerPoint. Creating a new report is a matter of selecting fields, and designing the report using a standard report writing tool, such as Crystal Reports. You can add sorting criteria and other options and can then save that report to EMu, granting access to it to other users or groups of users if desired.

- b. **Exports/Imports:** EMu has been designed to connect you and your collection to the rest of the world. EMu facilitates the interchange of information with other compliant museums and makes it easy to associate other web resources with your collection material.
 - i. EMu allows the import of data in XML format directly into any or all modules of the system. An EMu import can be used to create new records or modify existing records. EMu can even import multimedia resources and extract various metadata elements directly from the resources themselves. All of your validation rules are applied to imported data and records are created according to your own security profile. EMu can also import data in CSV or tab-delimited formats.
 - ii. With EMu it is also a simple matter to choose any fields from any modules and export them in XML format to a file, to another application or directly to another person via email. Of course, data exported from EMu can be imported into EMu. This means that you can export data from your system and send it to another EMu user for import into their system. EMu users around the world are thus able to interchange data electronically. But it is not just EMu users. If any group of museums can agree on an XML-based standard for data interchange, you can be confident that EMu will be able to export to that format and import from it.
- c. **Mobilize your data:** With EMu we ensure data can be extracted to contribute to aggregators such as GBIF, iDigBio, Vertnet, and others. Institutions currently using EMu also utilize GBIF IPT instances as repositories for their data. Data is derived from their collections management system. EMu also provides a mechanism to link from a record in your collection to a web-based resource that might offer additional information about that record. EMu extracts information from the record you are viewing and builds a URL to this other resource. You simply click on that URL and the related web resource is displayed. For additional information, see response to question 12.

17. Capacity for mobilizing collection object media (e.g., serve publicly online via a stable URI):

- a. EMu supports your public engagement efforts in numerous ways including through exhibition management and publication to the web. You might choose to provide Intranet access to a live EMu data set or opt to replicate selected records to a web server that sits outside a firewall.
- b. IMu, or Internet Museum, broadly describes Axiell's strategy and toolset for distributing data held within EMu, including media associated with the collection, via the Internet. Distribution includes the publishing of content on the web, but goes far beyond this to cover sharing of data via the Internet (Portals, online partnerships, etc.); publishing content to new mobile technologies, etc.
- c. To facilitate these various Internet projects, we have produced a set of documents that describe how to implement and customize IMu components, including:
 - i. APIs (for Web Developers)
 - ii. Web pages for publishing EMu

Implemented using standard web technologies, the IMu Web interface can be integrated easily with any existing website. It is highly configurable onsite and is provided with a rich suite of web tools, allowing almost any form of web interface to be configured.

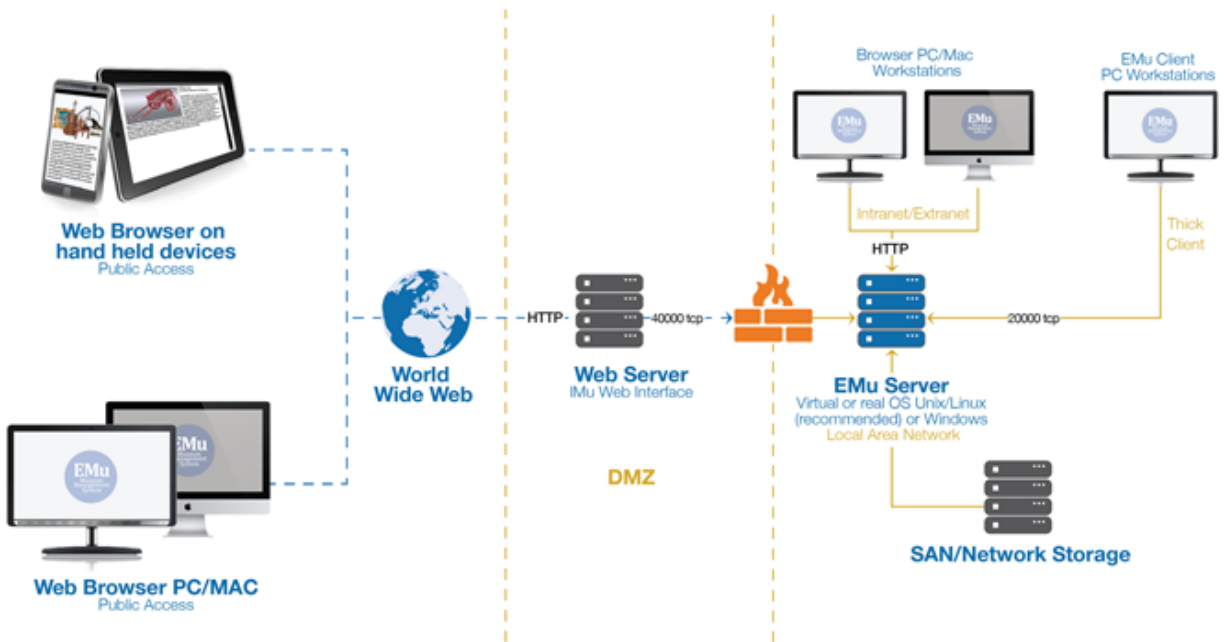
18. Ability for users to customize the CMS:

- a. Almost every aspect of EMu can be customized quickly and inexpensively to meet local requirements. Examples of customizations include:
 - i. The EMu Catalog can be modified or completely redeveloped to match the types of collections managed by a museum as well as the historic data that it holds, regardless of the different data standards that may have applied over its lifetime.
 - ii. The security aspects of EMu are completely configurable. New groups can be added. Individual user profiles can be modified from their associated group profiles.
 - iii. New reports can be created, and existing reports modified, by any authorized users.
 - iv. The EMu modules are separable and extensible. This means that third party systems can be used for some functions (e.g. use of a third party imaging system).
 - v. EMu's web interface, IMu, is completely configurable and extensible. IMu APIs are all open source.
 - vi. Users can purchase a source license to EMu enabling any form of modification to be applied.

IMPLEMENTATION QUESTIONS

19. Computer infrastructure (hardware, software) required:

- a. EMu is a collections management system that provides both client-server and web browser access to a collection. A typical hardware connectivity setup for an EMu installation is illustrated below. In this setup a multi-user server machine provides database server facilities to both:
 - i. Local and remote EMu client workstations
 - ii. Local and remote browser-based Internet/Intranet users



- b. Large EMu sites may have a dedicated web server located outside the corporate firewall. In this case EMu web services reside on the external web server and gain access to the EMu server via a secure connection through the corporate firewall.

20. In-house IT expertise required:

- a. In the case of a local or on-premise implementation of EMu, Axiell assumes institutions will have some degree of in-house IT support to manage internal servers and backups, supplemented by our Customer Support/Helpdesk services.
- b. Axiell also offers a hosted solution for EMu, located in Ashburn, VA in an Equinix Data Center and the infrastructure is built to optimize the Axiell product suite. We are also able to offer storage in other data centers globally, including in our European data center if preferred. When contracting Axiell's managed services hosting package, Axiell will provide the hardware for hosting the EMu product suite instance. Axiell will be responsible for the configuration of the EMu servers on which your implementation of EMU would be deployed, consisting of hardware, operating system, and related software. Axiell will maintain the EMu server in good working order and set up and provide access to the EMu server via remote access for administrators and heavy users of the system. This will include regular hardware and operating system maintenance, maintenance of security systems and firewalls, performing backups and restoring after any system failures.

21. Estimated costs for initial set up:

- a. Costs for an initial set up of EMu vary depending on several factors including the number of concurrent users/licenses, the extent of legacy data migration and other implementation services required (such as training, customizations, etc.), whether add-ons such as publishing collections online will be part of the project, and if Axiell will be hosting and storing the data. Therefore, project costs can vary from tens of thousands of dollars to hundreds of thousands of dollars. Axiell is always happy to create a tailored quote for a project or provide some example pricing case studies to help institutions budget. Some of the initial set up elements to consider allocating funds for are:
- i. Licenses
 1. Licensing for EMu is by concurrent users. Thus, EMu can be made accessible to a wide user base with the license only affecting the number of users who can run the system simultaneously. Additional licences can be purchased at any time.
 - ii. Installation and set-up
 - iii. Data migration
 - iv. Onboarding/training
 - v. Customization and configuration
 - vi. Project management
 - vii. Annual recurring costs for support and maintenance
 - viii. Add on products and services, including:
 1. **Hosting:** If preferred over a local or on-premise implementation, Axiell also offers a hosted solution for EMu, located in Ashburn, VA in an Equinix Data Center. The infrastructure is built to optimize the Axiell product suite. We are also able to offer storage in other data centers globally, including in our European data center if preferred.
 2. **IMu:** IMu, or Internet Museum, broadly describes Axiell's software strategy and toolset for distributing data held within EMu via the Internet. Distribution includes the publishing of content on the web but goes far beyond this to cover sharing of data via the Internet (Portals, online partnerships, etc.), publishing content to new mobile technologies.
 3. **Axiell GO:** Axiell Go is a responsive web-based interface that enables users to access their collections from any modern device. User experience is at the heart of the design, allowing staff with little to no training to be able to complete tasks remotely. You are now able to streamline operations and increase the overall efficiency of your workforce.
 4. **Sapphire:** Sapphire is a rapid data entry and editing interface to your EMu data. Users can create attractive web forms that integrate seamlessly with EMu from desktop or mobile devices that are tailored to the workflow and collections of each department. The simplified design is perfect for part time or occasional staff who may not be familiar with EMu.

5. **Integrated Pest Management:** EMu's Integrated Pest Management records information about the types of locations of traps used by an institution to capture pests, and what was found in a trap at a given date and time. A rich suite of reports for analysing pest trap data is provided, including a sophisticated visualization tool for identifying and tracking infestations within your institution.
6. **Axiell DAMS – Powered by Piction:** Axiell and Piction collaborate to establish a sustainable path for museums and archives to manage, preserve, and distribute their digital assets. Metadata management, digital workflows, support for advanced ingestion of data, and content distribution are all part of the enterprise solution. The integration of Axiell's EMu with Piction's DAMS enables institutions to thoroughly document the life cycle and use of their digitized and born-digital materials and enhances their ability to create digital experiences across all their collections.
7. **CultureConnect:** Axiell's EMu is integrated seamlessly with CultureConnect's audience engagement software to advance the technology landscape for museums, libraries, archives, and other cultural institutions. Customers can easily build mobile guides, in-gallery interactives, online exhibitions, virtual programming, and distance learning tools by directly accessing the media and data in their collection management system.

22. Estimated costs for ongoing expenses such as membership or upgrades:

- a. Axiell's annual support and maintenance package includes access to all new versions of the licensed software as well as unlimited access to Axiell's Helpdesk service during the company's normal business hours. Helpdesk support is available via telephone, email, and our customer service portal (Hornbill).
- b. The rate of the maintenance is calculated as a percentage of the total license costs. This cost is applied annually and may be subject to the consumer price index (CPI).

23. Migration or other new user services offered:

- a. **Migration:** Most clients switching to EMu will have one or more sources of legacy data in various software systems. An important component of a successful implementation of EMu is the migration of legacy data into the collections management system.
- b. **Training:** EMu is accompanied by established and proven training material, experienced trainers and comprehensive Help documentation. Axiell has extensive experience training staff in both user and administrative roles. The educational approach behind Axiell-developed training courses stresses learning through doing and a train the trainer approach. Training is typically delivered onsite at the customer's location and in some circumstances can be provided remotely.
- c. **Support:** For customers subscribed to the annual maintenance and support services, Axiell provides unlimited telephone support, online support, and

upgrades of the software as they are released. Axiell uses a customer support portal/ticketing system (Hornbill) for all project and post-implementation (ongoing support) related issues, alongside telephone and email.

- d. **User Community:** Users of EMu automatically become part of a broad and welcoming user community, gaining access to a global community of organizations and their experts.
 - i. **User Conference:** Axiell hosts an annual user conference in North America, which customers can attend for free. The user conference includes presentations by both Axiell; on the latest news and developments, and by customers; on their projects and experiences. This has enormous benefits to all our customers, as it allows them to discuss and share common issues and can act as a sounding board. This in turn allows for a more informed product development roadmap from Axiell, where we can respond fully to future user requirements. Every year a client institution graciously donates a space for the event – in 2019 we were at the Denver Museum of Nature and Science and in both 2020 and 2021 the conference was held virtually.
 - ii. **Natural History Special Interest Group:** Axiell has a dedicated Natural History Special Interest Group that meets at least annually at our user conference to discuss updates to standards and community needs. EMu is in use at the largest natural science institutions in the world, and as such we are committed to ensuring it remains at the forefront of the natural science community. As institutions are required to change, our products are built to evolve with them. We actively solicit the feedback of the community to better understand how to manage complex data requirements, such as Nagoya protocol and molecular data according to the appropriate standards. Additionally, a group of clients have also convened an Archives working group in the past few years to drive improvements to the Archives utility in EMu.
 - iii. **Axiell Collections Management User Forum:** Axiell customers are given free access to an online community where customers can share details about their use of Axiell products and collaborate on innovative ways to use Axiell's technology to meet new and unique needs. This space is also monitored by Axiell staff who regularly contribute to the conversation and answer questions as needed.
- e. **Newsletter:** All Axiell customers can sign up to receive customer newsletters which are issued every month and cover the latest news and updates from Axiell. News is also communicated via the Axiell website, including blog posts from industry experts and case studies detailing other Axiell customers and their projects (<http://www.axiell.com>). The website also has links to all user and technical documentation about Axiell products, including EMu, which are freely available to customers.
- f. **Axiell Ideas Portal:** Axiell provides its customers with access to the software platform Aha! where they can request and vote for changes in their software. Axiell customers can submit product ideas or upvote other submissions to influence the direction of Axiell's product roadmaps. In this space customers may also ask development questions.

24. Example institutions/collections using your CMS:

- a. EMu is a proven product with a large client base around the world and more than 3 decades in operation. EMu is installed in more than 400 museums, galleries, archives, herbaria, and botanical gardens across thirteen countries throughout North America, Europe, Australasia, North Africa and the Middle East. Axiell is proud of our extensive client base and believe that these clients validate both the technology and the service that the company provides.
- b. Our natural history customers include: Field Museum of Natural History, Smithsonian Institution – National Museum of Natural History, American Museum of Natural History, Denver Museum of Nature and Science, Canadian Museum of History, Canadian Museum of Nature, Yale Peabody Museum of Natural History, Carnegie Museum of Natural History, Oxford University Museum of Natural History, the New York Botanical Gardens, Botanic Gardens of Adelaide, Museum of New Zealand Te Papa Tongarewa, and more! For an expanded client list please reach out to Axiell.

**25. Representative for potential users to contact: [+1-416-238-5032](tel:+14162385032)
sales-alm@axiell.com**

26. Best resources to point potential users to (e.g., presentations, brochures, recorded webinars):

- a. General Site: <https://www.axiell.com/>
- b. EMu Product Page: <https://www.axiell.com/solutions/product/emu/>
- c. EMu Brochure: <https://www.axiell.com/cdn.triggerfish.cloud/uploads/2021/07/emubrochure2021.pdf>
- d. EMu high-level overview demonstration video: <https://www.axiell.com/solutions/emu-full-demo-video/>
- e. Natural History Collections Page: <https://www.axiell.com/solutions/natural-history-collections/>
- f. Resources about how Axiell serves the Natural History community: <https://www.axiell.com/knowledge/blog/?blog-topic=natural-history&sort=desc>
- g. Resources about EMu: <https://www.axiell.com/knowledge/blog/?product-category=emu&sort=desc>