Interim Performance Report
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Performance, Reliability, and Security

Site speed and availability improvements communicated in our previous biannual report have been maintained during the current reporting period (e.g., average page load times in the 2-3 second range as reported by *Google Analytics*). The following graph illustrates the weekly average (in blue). The weekly average for the preceding 6-month period is overlaid in orange.
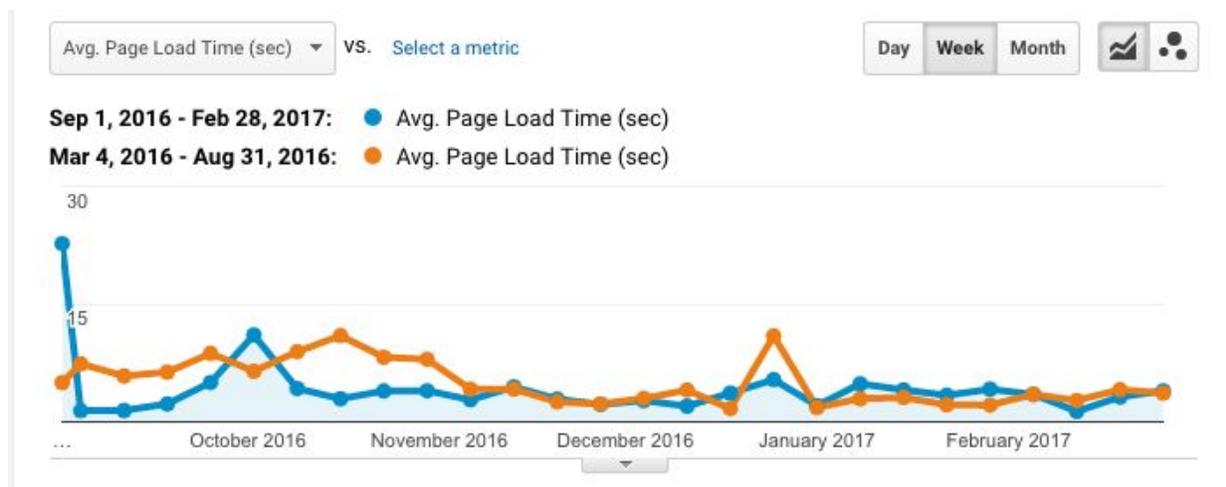
We use the *Uptime Robot* monitoring service to check periodically whether key pages on https://pleiades.stoa.org are available.[1] Between September 1, 2016 and February 28, 2017, *Uptime Robot* reported 10 outages during which users would have received a "503 unavailable" message when attempting to connect to *Pleiades*. Nine of these outages lasted less than one minute and corresponded with scheduled reboots of our server in order to apply system software upgrades. The other outage occurred on 19 October, 2016 and lasted about a half hour. This outage was precipitated by a contributing user's repeated attempts to import a particularly complex modern administrative boundary polygon from *OpenStreetMap*. The structure of this geometric object was so unusual that it caused the *Pleiades* OSM geometry conversion algorithm to consume a large amount of processor and memory resources before ultimately failing without providing any useful feedback to the user other than the absence of an imported location. Prior to the full outage detected by *Uptime Robot*, the site-wide effect of the user's repeated attempts to get the import to work can be seen in a spike in the page load timings shown on the graph above. Jazkarta provided upgrades to the algorithm to improve its ability to handle complex geometries quickly and to provide better feedback to users when imports fail. At the PI's direction, Jazkarta also implemented a metadata test prior to geometry imports in order to keep users from initiating an import of a modern OSM administrative boundary of this type, which is never appropriate for use in *Pleiades*. This problem has not recurred.

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[1] Uptime Robot: https://uptimerobot.com/.

An even larger spike in page load performance may be seen in the diagram above on the first day of September 2016. This performance degradation occurred when a user triggered a latent bug in the spatial component of the *Pleiades* "advanced search" mechanism.   Although it did not cause a full site outage, many users experienced significant page load delays and timeouts during the failure. Here again Jazkarta was able quickly to code and deploy a fix that resolved the problem permanently.

In addition to the *Ubuntu* operating system upgrades mentioned above, two security patches and one minor version upgrade to the *Plone* content management system framework on which *Pleiades* is based were applied during the reporting period. Regular maintenance of this sort continues to help ensure the *Pleiades* site and its users are protected from errors and hacking.

User Interface and Interactions

Several improvements to the *Pleiades* user interface and its supporting code have been made during the reporting period.

Several improvements focused on streamlining the content creation and review workflow for *Pleiades* contributors, reviewers, and editors. A key refinement involved simplifying and accelerating the search-and-pick widgets that are used to establish relationships between Place resources on the "Add/Edit Connection" form and between Location resources and Positional Accuracy Assessment documents on the "Add/Edit Location" form. Many users had singled out both of these widgets as so slow and cumbersome that they constituted major reasons the users did not contribute content more frequently. The editorial workflow interface was also upgraded to make the inclusion of subordinate components the automatic default behavior on any state change. Previously, users were required to make three extra mouse clicks to include subordinate names, locations, and connections (each also requiring its own additional mouse click to select) when submitting a new or revised place resource for review. Now, all subordinate items are included in the state change by default.

Minor improvements to map layout and advance search functionality were also implemented during this period.

Citation and Bibliographic Management

Pleiades "references" (structured citations of primary and secondary resources in print and on-line) were integrated with the *Zotero* citation management service during the preceding period of performance. These capabilities were refined in October and November 2016 to include better validation and error reporting when importing a reference from *Zotero*, as well as complete output of all reference fields in JSON serializations and downloadable exports. Minor bugs in the layout and default values for the bibliographic reference forms were also addressed. The Editors have recently published revised guidance for the use of the expanded references fields.[2]

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[2] Editorial guidelines for references: https://pleiades.stoa.org/help/editorial-guidelines#section-5.

Enriching the *Pleiades* Linked Data Graph

As previously reported, one of the key upgrades during summer of 2016 was the implementation of fully attributed and typed "connection" relationships between places. Several minor refinements to this architecture, and full migration of old-style connections, were completed during the current period. The Editors have recently published partial documentation for new connections, and the "connection types" vocabulary has been published to the web.[3] User interface modifications for connections and their related places have been requested by the *Pleiades* user community, and these are now in active development.

Jazkarta also did significant work during this reporting period on enhancements to *Pleiades* user profiles. When these enhancements -- now undergoing testing on our private "staging" server -- are deployed, every contributor to *Pleiades* will be able to add to their profiles links to key profile resources elsewhere on the web (including the OCLC's *Virtual International Authority File* author profiles, the *OrcID* scholarly research and publication identifier system), as well as to social media accounts and institutional websites.[4] These enriched *Pleiades* profiles will also feature a Linked Open Data component: alternate serializations in the Resource Description Framework (RDF) using the FOAF Ontology.[5] These RDF documents will connect the linked geographic data web created by *Pleiades* and its partner projects around the world with existing and emerging scholarly citation and social identity graphs on a global scale. Rollout is anticipated in mid-summer 2017.

Batch Create and Update

Facility for batch creation and update of content reached initial operational capability toward the end of the previous period of reporting. More recently, Jazkarta has carried out some refinements to this capability, notably catering for new-style references in batch uploads. Meantime, Elliott has been working with external partners (some funded by Mellon-supported mini-grants through the *Pelagios Commons*) to test this facility on real, third-party data.[6] This effort revealed the need for command-line capabilities to validate and reformat such data so that the batch upload script runs cleanly and produces new resources in *Pleiades* that do not require significant structural and completeness checking by *Pleiades* reviewers and editors. This code is still a work-in-progress, but (like all *Pleiades* software components) may be reviewed and reused by the public via its code repository on Github.[7]

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[3] Guidelines on connections: https://pleiades.stoa.org/help/editorial-guidelines#section-35. Connection type vocabulary: https://pleiades.stoa.org/vocabularies/relationship-types.
[4] VIAF: https://viaf.org/. OrcID: https://orcid.org/.
[5] RDF: https://www.w3.org/RDF/. FOAF: https://en.wikipedia.org/wiki/FOAF_(ontology).
[6] Pelagios Commons Resource Development Grants: http://commons.pelagios.org/2016/07/announcing-the-pelagios-commons-resource-development-grant-recipients/.
[7] https://github.com/isawnyu/pleiades-batching.

Downloading, Archiving, Reusing

Activity in this area has been driving by user requests and has primarily been concerned with fixing bugs. These included errors and omissions in the nightly KML exports, as well as issues involving access to JSON and RDF serializations of *Pleiades* place resources via HTTPS and for cross-site use. *Pleiades* contributed improvements by the Jazkarta team to the open-source *Ancient World Linked Data Javascript* library that several third-party sites use to create informative map pop-ups for Pleiades links on their pages.[8]

Work with developer Ryan Baumann at Duke University's *Digital Collaboratory for Classics Computing* (a project subawardee) has ramped up during this period. Work so far has focused on the specification and iterative development of a software tool dubbed "geocollider," which will be used to provide third parties the ability to reconcile toponym and location lists against *Pleiades* content and to facilitate better validation of content being prepared for batch upload into *Pleiades* (q.v., sub "Batch Create and Update"). Initial deployment for Geocollider is expected in early summer 2017.

Contribution of exports to the NYU Faculty Digital Repository were put on hold during this period while deficiencies in those exports were rectified as outlined above. Archiving, in accordance with the project data management plan, will recommence in April 2017.

Community Activity and Outreach

Although no grant funds were spent for any of the following activities, they are germane to and reflect the effectiveness of the NEH investment in *Pleiades* and so are presented here.

Pleiades editor Sarah Bond has conducted several workshops on using *Pleiades* during the past year. Retrospective details of these events are forthcoming on the *Pleiades* blog.[9]

In early January 2017 in Toronto, Bond joined *Pleiades* associate editor Ryan Horne and PI/managing editor Tom Elliott to work with participants in the day-long "Ancient Makerspaces" workshop at the Annual Joint Meetings of the Society for Classical Studies and the Archaeological Institute of America.[10] The session, entitled "Make your own map," introduced approximately 20 participants (scholars, instructors, and graduate students) to the use of *Pleiades* and allied tools (like Horne's *Antiquity À-la-carte* application hosted by a *Pleiades* partner, the Ancient World Mapping Center at the University of North Carolina at Chapel Hill).[11]

Also at the joint meetings, Elliott accepted on behalf of the entire *Pleiades* community, the Archaeological Institute of America's "Award for Outstanding Work in Digital Archaeology" for

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[8] AWLD.js: http://isawnyu.github.io/awld-js/.
[9] Pleiades News Blog: https://pleiades.stoa.org/news/blog.
[10] Ancient Makerspaces: http://isaw.nyu.edu/news/isaw-organizes-digital-classics-workshop-ancient-makerspaces.
[11] Antiquity À-la-carte: http://awmc.unc.edu/wordpress/alacarte/.

2017. News of this award was disseminated on the *ISAW News Blog*, in the Winter 2017 issue of the *ISAW Newsletter*, and on the website of the Archaeological Institute for America.[12]

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[12] ISAW News Blog post: http://isaw.nyu.edu/news/pleiades-201611, ISAW Newsletter: http://isaw.nyu.edu/publications/newsletters/isaw-newsletter-17-winter-2017/view, AIA website: https://www.archaeological.org/awards/digitalarch.