Raiders of the Lost Code: Preserving the MOSS Codebase - Significance, Status, Challenges and Opportunities

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We report on the current status of the software repository of the Map Overlay and Statistical System (MOSS) and upcoming actions to ensure long term preservation of the codebase as a historic geospatial source. MOSS is the earliest known open source Geographic Information System (GIS). Active development of the vector-based interactive GIS by the U.S. Department of Interior began in 1977 on a CDC mainframe computer located at Colorado State University. Development continued until 1985 with MOSS being ported to multiple platforms, including DG-AOS, UNIX, VMS and Microsoft DOS. Many geospatial programming techniques and functionalities were first implemented in MOSS, including a fully interactive user interface and integrated vector and raster processing. The public availability of the WWW in the early 1990s sparked a growth of new Open Source GIS projects, which led to the formation of the Open Source Geospatial Foundation (OSGeo). The goal of OSGeo is to support and promote the collaborative development of open geospatial technologies and data. This includes best practices for project management and repositories for codebases. From its start, OSGeo recognised MOSS as the original forerunner project. After the decline of active use of MOSS since the 1990s, the U.S. Bureau of Land Management (BLM) continued to provide the open source MOSS codebase on an FTP-Server, which allowed use, analysis and reference by URL. This service was discontinued at some point before 2018, which was eventually discovered due to a broken URL link. This led to a global search and rescue effort among the OSGeo communities to track down remaining offline copies of the codebase. In mid 2020 a surviving copy of the MOSS codebase was discovered at the University of Latvia, which is temporarily preserved at the German Institute of Economic Research (DIW Berlin). OSGeo has agreed to make MOSS the first OSGeo Heritage Project to ensure long term preservation in a OSGeo code repository. This is a significant first step to enable MOSS-related research based on the FAIR (Findable, Accessible, Interoperable, Reusable) paradigm. Follow up actions will be required to enable scientific citation and credit by persistent identifiers for code and persons, such as Digital Object Identifiers (DOI) and Open Researcher Contributor Identification Initiative-ID (ORCID-ID) within the OSGeo repository environment. This will advance the OSGeo portfolio of best practices also for other open geospatial projects.