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Conference Abstract

Are Software Standards possible for Biodiversity, and What Would They Mean to the Fractured Landscape of Biodiversity Virtual Research Environments?

Matthew Yoder ‡

‡ University of Illinois, Champaign, United States of America

Corresponding author: Matthew Yoder (diapriid@gmail.com)

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Abstract

On a global scale, a rich biodiversity informatics infrastructure exists at many different levels, from standards, to software libraries, to national and global data-warehouses. All this infrastructure, however, only truly serves science if someone is using it. A perfectly written standard is a waste of time and energy if it is never applied, and a multi-million dollar software package is a perhaps a poor investment if it only interfaces with a handful of minds. The development of virtual research environments (VRE) are particularly challenging and prone to pitfalls, as at their heart, they are integrative across diverse data-types, and as such require large investments of time and effort to build and maintain.

When the community "solves" one aspect of a VRE, this solution is codified as a standard. To date, within the biodiversity informatics community, these standards almost exclusively address data format and, and to a lesser extent meaning. This makes sense, as a common language is a necessary foundation. However, decades into standards development, we have struggled to get VREs into the hands of researchers. I argue that (among other things) this suggests that the biodiversity informatics community might benefit from a shift of emphasis, from research on data standards to research on software-design standards.

I explore these issues from the perspective of a particular class of VRE, digital workbenches for taxonomists. I pick examples from existing and now legacy VREs to highlight the hard work that needs to be done to overcome their pitfalls. I demonstrate that the most impactful work on VREs has come from the ground up, as communities of researchers form around a nucleus of a biologist's software. This may have profound consequences for the opposite type of initiatives, i.e. those that plan from the top down, such as the Distributed System for Scientific Collections, DiSSCo.

Finally, we highlight what one initiative, TaxonWorks, is doing in this field. As an ambitious project, with long-term funding, it has much to gain, and perhaps ultimately offer, if the questions on this topic are answered to the benefit of all.

Keywords

VRE, software, open-source, taxonomy, taxonomist, standards

Presenting author

Matthew Yoder

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