

# Metrics White Paper

## March 2010

### Introduction

Through the years, Unidata has conducted metrics collection activities. However the efforts and their results have been somewhat erratic and inconsistent. Some of the methods used were:

- Gleaning information from e-mailed software support queries
- Collecting statistics from the dynamic data streams provided via the Local Data Manager (LDM) to community participants
- Telephone campaigns
- Collecting web-based information
- And other disparate methods.

The NSF Panel Review Committee's Recommendation from the 2013 proposal<sup>1</sup> stated:

*The UPC should examine its community assessment strategies and methods to determine if they will provide the types and depth of information necessary for the successful implementation of the proposed work. If the current system is found to be lacking, new approaches should be explored to provide an ongoing and consistent community database to cover the term of this proposed work.*

Therefore, Unidata's efforts have been directed toward defining specific information to be mined from Unidata's web site on a regular basis. This has been a non-trivial task, but the payoff should go far toward collecting the information as required for sponsors, governance committees, strategic partners, presentations, scientific papers, budgets, proposals, and other instances where information is needed about Unidata. The fields of information should be reviewed periodically to embrace and satisfy the needs of Unidata, the community, and the sponsors.

Jennifer Oxelson, software engineer and web developer, has been instrumental in the development of procedures for collecting the statistics from Unidata's registration system, which she dubbed Metrics of Unidata's Influence.<sup>2</sup> All staff have been contributing information relevant to their specific niches.

### Roadmap

Nearly seven years ago (circa 2003), there was a growing realization that the community was changing rapidly and the community characterization was transforming. Review of the early process of collecting information, along with the recognition that Unidata must provide improved analysis and

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<sup>1</sup> Unidata 2013: A Transformative Community Facility for the Atmospheric and Related Sciences, NSF Panel Summary Review, 8/26/08

<sup>2</sup> Metrics of Unidata's Influence, <https://wiki.ucar.edu/display/unidata/Metrics+of+Unidata%27s+Influence>

characterization was clear. A new registration system was installed at the time, but was found to be insufficient for the needs, so the system was enhanced to be a more flexible and comprehensive system that provided important profile information when visitors downloaded certain software or tools from Unidata's web site.

Determining the classification of data to be captured, ad hoc committees were convened to discuss relevant data collection with the experts from each domain. Jennifer Oxelson led the meetings where she gathered information from the vantage point of the data registration system. These meetings provided a data characterization as a starting point. The idea is to begin with classifications and to have flexibility with the system to enable changes which eventually meet the goals of providing a core set of metrics to be used to measure and provide useful guidance to meet Unidata's objectives. The strategic plan<sup>3</sup> and the NSF funding proposals<sup>4</sup> are important in identifying the areas and themes of focus for the future.

Unidata's governing committees continue to play a role in providing recommendations and guidance of elements under consideration for Unidata's future endeavors. Strategies have included:

- Community surveys conducted by Unidata's Users Committee (1993, 2001 and Unidata's inclusion in UCAR's Community Surveys conducted in 2000, 2005, 2009<sup>5</sup>)
- Plans are underway for a new Users survey conducted by the Unidata's Users Committee to be discussed during the March 2010 meeting<sup>6</sup>
- Nelson Consulting, LLC Metrics Assessment, 2006, conducted an extensive assessment, based on the recommendation of the NSF Review Panel<sup>7</sup>
- Measuring the Productivity, Quality, and Impact of UCAR Programs, Report of the UCAR Metrics Committee<sup>8</sup>

The Unidata Program Center (UPC) Ad hoc groups have met to discuss the next steps for improving data collection and determining the classification of required data, especially pertinent to their domains. The data was then synthesized and the initial information to be gleaned from the data management system

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<sup>3</sup> Unidata, A Strategic Outlook <http://www.unidata.ucar.edu/2007stratplan/Unidata.pdf>

<sup>4</sup> Unidata's 5-year Funding Proposal, Summary  
[http://www.unidata.ucar.edu/staff/mohan/Project%20Summary\\_V2.pdf](http://www.unidata.ucar.edu/staff/mohan/Project%20Summary_V2.pdf)

<sup>5</sup> Unidata and UCAR Community surveys  
<http://www.unidata.ucar.edu/committees/usercom/2010survey/index.html>

<sup>6</sup> Process toward Unidata Users Survey-2/16/10  
<http://www.unidata.ucar.edu/committees/usercom/2010spring/surveyprocess.html>

<sup>7</sup> The Metrics Assessment of the Unidata Program, 12/31/06, Nelson Consulting, LLC  
<http://www.unidata.ucar.edu/2006assessment/executivesummary.pdf>

<sup>8</sup> Measuring the Productivity, Quality, and Impact of UCAR Programs, Report of the UCAR Metrics Committee,  
<http://www.ucar.edu/communications/metrics/metrics05.pdf>

was determined. Many metrics can be captured, but a framework needs to be created to make the data useful. Indicators should include measures of input versus output. Qualitative feedback from the community is needed. Much of the feedback can be retrieved through surveys, including the processes already in place, mentioned in the Introduction above.

Including this one, we have two additional documents that are inextricably related:

1. The Process toward Unidata Users Survey, (referenced above)
2. A synthesis of Collecting Metrics and Metrics of Unidata's Influence<sup>9</sup>

These documents can be used to support the development of a community survey. The information about the community and their use of Unidata software, tools, data, and services will help to steer Unidata in the direction needed to support implementation of proposed work and planning for the future. The "synthesis of collecting metrics and metrics of Unidata's influence" provides examples of future metrics collection. Some of these indices have already been established, and a solid core of data is reported in staff status reports. Together, these documents provide information that should be useful in determining survey questions which could populate the metrics activity.

### **Summary**

To meet the evolving needs of the community, Unidata needs to create a firm and substantive metrics framework with future steps and best practices. Sponsors, community, and the UPC should be considered as part of the mix in what is measured, how it is measured, and why it is measured.

Recommendations about future steps and best practices will be gathered and used for consideration. If there are other organizations similar to Unidata, comparisons should be made with them. The UPC needs to continue to refine the elements of the data collected, and, in particular, how to present the results making it useful for future planning and better serving its constituents.

Metrics planning and implementation require significant resources. We propose to begin slowly working through any issues that might occur, thus enabling rapid response to the issues. This process will allow metrics collection to grow in accordance with the needs and to make course corrections as needed.

Data collection frequency will be considered in conjunction with governing committee bi-annual meetings. This would coincide with status reports from each group within Unidata. Data tracking can be shared with committee members and can be compared with surveys and other methods of information acquired from the community. This process is subject to review, and the methodology may change, depending on resources and needs of the UPC, community, and sponsors.

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<sup>9</sup> A Synthesis of Collecting Metrics and Metrics of Unidata's influence, Feb 2010, Miller, Oxelson-  
<http://www.unidata.ucar.edu/committees/usercom/2010spring/collecting%20metrics.html>

