White Paper on Closer Integration of IDV and McIDAS-V

Abstract:
This White Paper presents a series of recommendations to more closely align the development of Unidata's Integrated Data Viewer (IDV) with SSEC's Man computer Interactive Data Access System - fifth generation (McIDAS-V). The requirements for closer alignment are described below. The eventual goal of this alignment and the most crucial step forward is to merge these two software systems into a unified library and application supported and distributed by both Unidata and SSEC.

Background on current programs status:
The IDV is built upon the VisAD library, developed at SSEC by Bill Hibbard and extended by others (including Community members). Unidata added a high quality user interface and expansive display and data interrogation tools in the IDV and made the package feely available to its user community. In seeking to modernize the very successful McIDAS software, SSEC adapted the IDV as the basis for development of the fifth generation of McIDAS. SSEC has added considerable capability for working with satellite data including the HYDRA data analysis capability and also made the software freely available to anyone. Throughout the development of these software packages the developers from Unidata and SSEC have worked closely together with good communication, although the development efforts have been kept separate.

At present, Unidata has ~2 FTE software developers assigned to IDV development and support. SSEC currently has 4 FTE programmers for development plus 4 in support (MUG - the McIDAS Users Group). We also recognize the continued, substantial contributions by knowledgeable Community members. Unidata's funding is from the NSF with goals to develop and distribute data and the software tools to work with the data to the nation's universities and colleges. SSEC's funding is from NOAA's next generation operational satellite programs and from fees collected from the MUG members. This White Paper makes a non-binding assumption that funding for these programs will continue at approximately the same level for the next few years.

Statement on the need for closer alignment:
Because the development of IDV and McIDAS-V are separate, several "issues" have emerged that are hampering the evolution of both systems and jeopardizing the future possibility to work towards common goals, including the opportunity to explore merging the two software applications and libraries. The longer this separated development continues the more difficult it will be for the developers from both groups to work together for common benefit. This White Paper asserts that by working together, the two projects can combine their talent with their goals to create a higher quality software product that is more useful to students, scientists and other users in a more efficient manner and at reduced costs to both institutions.

An example of one of the "issues" is that SSEC developers need to be able to make changes to the IDV library to facilitate bug fixes and enhancements in a more timely manner. Currently, this is done by requesting Unidata developers to make these changes. SSEC has a well-designed

procedure to track bugs, prioritize development, and make status available to the user community; no such process is in place now at Unidata, but their community has requested this.

For many years, McIDAS was a popular software program with the Unidata user community. A major goal for SSEC is to have the IDV/McIDAS-V software be the geophysical data and analysis tool of choice in the University and research communities. It is believed that by combining the resources of SSEC and Unidata and enabling continued substantial contributions by capable Community members, considerably more progress can be made in enhancements to McIDAS-V and to core IDV capabilities.

A Roadmap for working more closely together:
Below are some topical areas where closer collaboration is needed, and ideas on how to achieve common goals. These topical areas were gathered from discussions with both SSEC and Unidata staff over the past month.

1. A first step is to create a single source repository for the IDV and McIDAS-V code, initially keeping the builds separate, but allowing programmers from all groups to modify the code.
2. Next, establish a single bug tracking system that allows visibility by anyone, but update postings only by members of the team (here after, "team" refers to the developers and others at both SSEC and Unidata involved with the projects, as well as recognized Community members).
    a. Have Unidata developers focus on the IDV "layer" and have SSEC developers focus on the McIDAS-V "layer", but do not preclude cross-overs.
    b. Make sure there is good communication about who is doing what, issues of concern, etc.
    c. Create a shared process for routine testing of changes and enhancements.
3. Designate a coordinator at SSEC and at Unidata who will talk frequently about who is doing what and discuss priorities, etc. Good communication is essential to success.
4. If deemed feasible, develop a longer-term strategy for current IDV users to migrate to the merged IDV/McIDAS-V ("Mc_ID_as-_V_") and create a more unified support. This is accomplished in part by identifying differences between McIDAS-V and IDV and agreeing on ways to mitigate the differences.

Proposed solutions, including issues for discussion regarding the Roadmap
1. Source code management: To begin with the IDV and McIDAS-V software builds would be available as distinct entities. However, all source code for the combined project should be handled in one repository. All approved developers should have full access to the code and be able to make revisions.
    a. SSEC developers would be able to change the code in the IDV library to benefit both Unidata and SSEC, thus increasing the pool of developers
    b. Changes to the IDV code would be coordinated with needs of both communities.
    c. The longer term goal is try to evolve to have one, unified "reference application".
2. Unidata would benefit from the expertise of the SSEC MUG team, who test, document and train users.

a. The groups would continue to use the McIDAS-X model, with Unidata supporting questions from their community and SSEC assisting with issues on their development side.

b. With the capability to modify IDV code, the SSEC developers would also be able to assist with more IDV-level issues.

3. Work scheduling (priority setting): Work scheduling assumes there is more work to be done than people to do it immediately, thus priorities need to be established.

a. Treating all programmers and support staff at Unidata, SSEC and the Community as one group, will allow scheduling of work to be done in a centralized and coordinated manner.

b. One person in each organization would be designated to discuss software and related changes and agree upon priorities. This implies that SSEC programmers might be doing IDV work and vice-versa.

4. Documentation: Much of the current McIDAS-V manual is a duplication of the IDV manual, since the vast majority of the essential user information is the same in both. However there are important differences

a. Since the User Interface is different, examples are different

b. Features added to McIDAS-V have added additional documentation

c. SSEC has deprecated ISL in favor of Jython scripting (and removed the ISL documentation from the manual)

d. As we work to eliminate differences, the documentation will be standardized.

5. Unidata would offer both IDV and McIDAS-V to the community, with a long term mission statement on the goals of the combined effort.

a. Initially, the IDV and McIDAS-V "brands" would remain distinct.

b. The University community would have the option at this stage of using IDV or McIDAS-V, with McIDAS-V having "extras" that focus on image processing, such as HYDRA and the updated image chooser and tabbed panels.

c. Longer term planning will take place to develop a strategy to create a merged software tool for all users. Concerns of users will be considered through a joint effort.