CGNS Steering Committee
Telecon Minutes
12 November 2007
11:00 AM Eastern Time

1. The meeting was called to order at 11:05 AM. There were 15 attendees, listed in Attachment 1.

2. The minutes of the 12 September 2007 meeting were approved as posted on the web site.

3. Steering Committee Membership changes, updates, and issues

   (a) Simon Pereira, who is taking over for Bruce Wedan as the committee representative for ANSYS / ICEM CFD, introduced himself. Simon is the Product Manager for ICEM CFD. The current member list is still at 23 organizations (current maximum is set at 30).
   (b) Thaerocomp (one of the committee member organizations) was renamed to TTC Technologies.
   (c) Current Vice Chair Thomas Hauser is scheduled to be voted in as Chair of the CGNS Committee at the Reno meeting in January 2008.
   (d) We are looking for a CGNS Steering committee member willing to assume the role of Vice Chair (2-yr position) beginning January 2008. The Vice Chair's duty is to help the Chair in the running of the committee. It is expected that the Vice Chair will take over as Chair when the Chair's term ends. Please e-mail nominations to Rumsey (c.l.rumsey@nasa.gov) by Dec 15. You may nominate yourself.

4. Status of previous action items

   (a) Towne will update the Steering Committee Charter to add Concepts NREC, and Rumsey will update the website.
      i. Done.
   (b) Hauser and Wedan will put V3.0 with parallel HDF-5 capability as an alpha release on SourceForge when ready.
      i. Not done yet. Action carries.
   (c) Poinot will continue to test and work with HDF5 external link capability.
      i. Done. Poinot sent in a report. See Attachment 2.
   (d) Allmaras will send Rumsey revised face-based proposal for posting on website.
      i. Not done yet. Feldman emphasized that this capability is still in demand by their customers. Action carries, with addition that Allmaras will also send to Feldman and Pereira for evaluaton. New method needs to be compared against original method given on the website under Proposals for Extension.
   (e) Rumsey will coordinate bringing the Regions proposal to completion.
      i. Not done yet. This item directly ties into item (d) above, particularly with regard to how to get edge-based data for unstructured grids. Action carries.

(f) Rumsey will develop a proposal to handle sprays of unconnected points.

    i. Not done yet. <u>Action carries.</u>

(g) Hann and Hauser will evaluate the capability for writing HDF-5, ADF, or XML in proposed V3.0.

    i. Not done yet. <u>Action carries.</u>

(h) Towne will add the Generalized Connectivity change to the SIDS.

    i. Done.

(i) Rumsey will arrange a telecon for the AIAA short course instructors to start to work out details (likely Monday Sept 17).

    i. Done. These mini-telecons are ongoing.

(j) Towne will make V2.5 the official documentation.

    i. Done.

(k) Wedan will add Hauser as a SourceForge developer.

    i. Done.

(l) Wedan will look into Weinkauf (9/12/07 CGNSTalk) issues regarding automatically closing linked files, problem with unsuccessful opening leaving data structures undefined, issues with `MAXIMUM_FILES`, and use of relative paths.

    i. Status unknown. <u>Action carries.</u>

(m) Hauser will maintain contact with users interested in parallel HDF-5 capability, and let them know when parallel V3.0alpha version is ready to be tested.

    i. Status unknown. <u>Action carries.</u>

(n) Hauser and Rumsey will contact people in Europe regarding possibility of holding a European CGNS User's Meeting sometime in the future.

    i. No resolution yet. <u>Action carries.</u>

5. Open Items (see number 15 below)

    (a) Purpose of open items is to not lose track of long-term issues that come up.

6. CGNS short course for AIAA

    (a) Scheduled for Jan 5–6, 2008 in Reno, NV (just prior to Aerospace Sciences Meeting).

    (b) Led by Thomas Hauser and Ken Alabi, with help from Marc Poinot, Bruce Wedan, and Chris Rumsey.

    (c) Planning for course is progressing, but we need to have some minimum number of attendees signed up by Dec 7, or AIAA will cancel the course.

7. ISO/STEP

    (a) Keith Hunten sent details on AP209E2; see Attachment 4 (PDF, 5 pages, 41K). CGNS plays into a part of this. He is interested in feedback. Please email: keith.a.hunten@lmco.com

8. Documentation

    (a) References were added to the SIDS to document turbulence models currently used.

9. Software

    (a) Issue of the API forcing a copy of the entire CGNS file temporarily (Bussoletti 9/25/07 CGNSTalk) was discussed. This can cause problems if the file is linked to other files, for example. It can also be painful if the file is large and you are only making a very small change. Also, may be unrelated, but it was noted that if you delete nodes in ADFViewer, the resulting file size still stays the same. The question came up whether all this was an ADF issue or a MLL issue. I.e., does use of HDF5 eliminate the problem? If a MLL issue, is this something that should be worked to correct, or is there a good reason for doing it this way?

    (b) Issue from Guzik (10/02/07 CGNSTalk) on the use of `cg_configure` to avoid the copy. He also mentioned some specific developer issues with `cg_configure`.

    (c) Issue of wanting to write info one element at a time to save memory via `cg_section_write_f`, and issue of possible need for "long" instead of "int" (Miller 10/19/07 CGNSTalk).

    (d) None of these issues was resolved: they will be carried over to the next meeting.

10. HDF-5

    (a) See 4(c) and Attachment 2. No additional discussion.

11. Extensions

    (a) Discussion held on whether current Extension process is working or not. Current process: proposal is made and posted to website, people comment, it is revised and voted on (and often revised and voted on again), then if approved it eventually gets implemented when a developer has time. The process is very slow, but things do eventually seem to get done. Given the CGNS committee circumstances (no money, all volunteer effort), it seems to be the best method. Most felt that CGNS is stable enough and the volume of changes is low enough that the current method is still viable. However, it would be far better if we could fund the maintenance and development effort. Rumsey also mentioned it would be better if we could get our "truck number" higher (if one of our developers gets hit by a truck, do we have others who can still do the work?). Some brainstorm ideas were:

        i. To raise money for maintenance and development, charge committee members nominal annual dues.

        ii. Use proceeds from short course to help fund development work.

        iii. Issue "Call for developers" on SourceForge.

        iv. Use Bugzilla method to report and track problems, request changes, log issues and fixes, etc.

    (b) Status of recent proposals (Face-based and Regions): still in the revision phase.

12. Other issues:

    (a) Next face-to-face meeting Sunday Jan 6 at 7:30PM in Reno, NV at the AIAA meeting (note this is different from the usually held Wednesday PM time slot). Rumsey will try to get the room set up for teleconference capability.

13. Meeting was adjourned at 12:00 PM.

14. Summary of **action items**:

    (a) Hauser and Wedan will put V3.0 with parallel HDF-5 capability as an alpha release on SourceForge when ready.
    (b) Allmaras will send Rumsey, Feldman, and Pereira revised face-based proposal for evaluation, comparison with original proposal, and posting on website.
    (c) Rumsey will coordinate bringing the Regions proposal to completion.
    (d) Rumsey will develop a proposal to handle sprays of unconnected points.
    (e) Hann and Hauser will evaluate the capability for writing HDF-5, ADF, or XML in proposed V3.0.
    (f) Wedan will look into Weinkauf (9/12/07 CGNSTalk) issues regarding automatically closing linked files, problem with unsuccessful opening leaving data structures undefined, issues with `MAXIMUM_FILES`, and use of relative paths.
    (g) Hauser will maintain contact with users interested in parallel HDF-5 capability, and let them know when parallel V3.0alpha version is ready to be tested.
    (h) Hauser and Rumsey will contact people in Europe regarding possibility of holding a European CGNS User's Meeting sometime in the future.
    (i) Rumsey will carry several unresolved CGNSTalk issues over to the next meeting: Bussoletti (9/25/07 CGNSTalk), Guzik (10/02/07 CGNSTalk), Miller (10/19/07 CGNSTalk).

15. Summary of **open items** from prior meetings (these are different from action items, in that they are open or unresolved issues that we want to keep track of, but there are no specific actions required of anyone at this point in time):

    (a) Keep track of/resolve HDF-5 "to-do" list (Attachment 3).
    (b) Keep track of progress with ISO/STEP.
    (c) Need for official certification process (test for compliance)
    (d) Need to make Karman's changes to `PYRA` elements: change `PYRA_14` to `PYRA_13`, without the centroid, and add `PYRA_14` with the base mid-face defined (in software and in SIDS). Need to wait until V3.0 for this due to compatibility issues.
    (e) Need to upgrade/update *User's Guide* as appropriate (such as additional specific examples)
    (f) Need to resolve slow behavior and larger file sizes that can occur in CGNS files when there are many (thousands) of nodes.

Attachment 1: Attendees

Steve Allmaras	Boeing Commercial
Mark Anderson	Concepts NREC
Patrick Baker	Pointwise
John Bussoletti	Boeing Commercial
Steve Feldman	CD-ADAPCO
Ashish Gupta	Airbus - India
Richard Hann	ANSYS / CFX
Subarchan Kundu	Airbus - India
Simon Pereira	ANSYS / ICEM CFD
Greg Power	USAF / AEDC
Chris Rumsey	NASA Langley
Renaud Sauvage	AM-Airbus
Charlie Towne	NASA Glenn
Kurt Weber	Rolls Royce / Allison
Edwin van der Weide	Stanford

Attachment 2: Report on CGNS/HDF5 with external links from Marc Poinot (Onera)

The CGNS/ADFH has been changed and we can use now the HDF5 external links feature. This allows some new capabilities such as the node creation in a sub-tree through a link, more than one level of link (I've tested up to 7)... The use of external links reduces *a lot* the complexity of the code and thus would lead to a better maintenance of ADF layer. All the Bruce's tests are ok (using cgnslib v2.5) and I also passed my pyCGNS v3.1 test suite that intensively calls both ADF and MLL APIs.

I think we can integrate this external link implementation as the new CGNS/HDF5 implementation. Moreover, there is no other hanging issue that could delay the official announce of a full CGNS/HDF5 library. I will push for that, Quincey Koziol (NCSA) says they may release the HDF5 v1.8 (we actually use for external links) by the end of the year.

These are the points I see now:

1. Take sources and merge to Sourceforge
2. Update SIDS-to-HDF5 document
3. Find a volunteer team to test (including soft editors), shake the CGNS/HDF to increase the coverage of API and check 100% implementation.
4. Prepare a set of examples that shows the benefits of HDF5 tools added to existing CGNS tools, encourage full-HDF5 based tools for CGNS
5. Make an official announce
6. Find an HDF5 conference and make some presentation on CGNS use

I can take parts of [2], [4] and [6]. Maybe Bruce can handle [1] and take a look at the code. All

CGNS users can re-link the MLL and test their applications to fulfill [3] (including ONERA). We could have a test matrix saying if the user has tested his nown use of MLL on read/write/modify, with/without links, pre/post ADF/HDF files with `adf2hdf` ...

Then [5] has to be discussed next week or in Reno.

Now, I really want to thank Quincey Koziol (QAK) and the NCSA team, they really gave me an efficient support during these past months. This is not a matter of simple email replies but actually in terms of hours of actual work. Thanks again.

Attachment 3: Tentative to-do list in association with HDF-5 switchover

- Complete and test parallel implementation
  - under development
- Complete and test API capability to automatically detect and switch between ADF and HDF-5 (transparent to user?)
  - under development
- Assess/minimize impact on software vendors using CGNS
  - under development (success with automatic detection transparent to user will minimize impact)
- Make changes recommended by HDF-5 to improve usability with HDF-5 (e.g., character strings as opposed to character arrays)
- Assess compression capability of HDF-5
- CGNS configure scripts will need to be modified to check for availability of appropriate HDF-5 libraries.
- Possibly add flag-based options when opening CGNS files. For example: "follow links" vs. "don't follow links"; "use ADF" vs. "use HDF-5"; "translate file automatically" vs. "leave the file as-is"; "compress" vs. "don't compress".
- Look into eliminating need for ID's from MLL
- Resolve "link-of-links" problem: will require HDF-5 fix by NCSA
  - under development (1.8.0 beta)