CGNS Steering Committee
Telecon Minutes
21 March 2007
11:00 AM Eastern Time

1. The meeting was called to order at 11:05 AM. There were 10 attendees, listed in
   Attachment 1.

2. The minutes of the 10 January 2007 meeting were approved as posted on the web site.

3. Steering Committee Membership changes, updates, and issues

   (a) Since last meeting, committee voted by e-mail to allow free and open usage of the
       CGNS logo. Words to this effect have been added to the website.

4. Status of previous action items

   (a) Rumsey to e-mail Craig Day and Michele Ringrose, to remind them to look into the
       status of the SIDS as AIAA Recommended Practice.
       i. Done. The latest document has been approved and will be printed soon.
   (b) Hauser to coordinate with Wedan and put parallel HDF-5 version of CGNS on
       SourceForge as beta release.
       i. Ongoing. Hauser plans to send his 2.4 parallel version to Wedan to integrate.
          Action item carries.
   (c) Poinot will test the HDF5 external link capability.
       i. Ongoing. This relates to last item in (Attachment 2). See report below under
          HDF5. Poinot will continue to test and work with HDF5 external link capability.
   (d) Rumsey to get verification from Towne when the MLL documentation on all the recent
       changes related to 2.5 is posted.
       i. Done and posted.
   (e) Hauser and Alabi will finish completing the AIAA Course Profile Form by March
       2007, and will start putting together the course in detail after that.
       i. Ongoing. Action item carries.
   (f) Rumsey will send Towne the change to `PYRA_14` for fixing in the SIDS.
       i. Done and posted.
   (g) Wedan will see if there is a change needed in the MLL call
       `cg_boco_normal_write` (from Guzik e-mail).
       i. Currently this routine requires a normal index to be input (and written to the file)
          whenever a normal list is written, but this does not make sense for unstructured
          grids because unstructured grids do not use it. As a result, *cgnscheck* complains.
          Wedan will make changes to fix problem associated with `NormalIndex` and
          `cg_boco_normal_write` / *cgnscheck* for unstructured grids.
   (h) Wedan and van der Weide will communicate, and Wedan will look into the issue of
       very slow I/O on some parallel file systems.

       i. Done. This is a fundamental problem associated with files having many (thousands) of nodes. There is no quick fix for this, so this issue has been added to the list of Open Items (see number 15 below).

(i) Allmaras will study Wedan's new formulation as it relates to face-based storage, and will make a recommendation. It may be necessary to hold another sub-committee telecon to discuss it.

       i. Done. The recommendation was to stay with the original Allmaras proposal. But there still may be some misunderstanding about Wedan's proposal, so it is necessary to hold another mini-telecon to discuss. <u>Rumsey will arrange mini-telecon among people interested in face-based storage method.</u>

(j) Rumsey will try to form a sub-committee to perform a more thorough review of the Regions extension before moving forward with it. This will also test to see how well the sub-committee idea works as part of the extension approval process.

       i. Done. Subcommittee (Rumsey, Poinot, Bush, Fisher) has modified the proposal. <u>Rumsey will post the new Regions proposal on the website and announce it to allow for a new round of comments.</u>

5. Open Items (see number 15 below)

  (a) No discussion

6. Possible CGNS short course for AIAA

  (a) See summary given in the January 2007 minutes.
  (b) Alabi made excellent progress putting together a strawman course. The Course Profile (proposal for course) needs to be sent to AIAA soon.
  (c) <u>Rumsey will contact U. Ghia (chair of Committee on Standards) to discuss whether any proceeds from the course can be kept in a CGNS fund for handling incidental expenses.</u>

7. ISO/STEP

  (a) Nothing to report.

8. Documentation

  (a) New version of AIAA Recommended Practice is now fully approved by AIAA and will be printed soon.
  (b) Rumsey reported that several new examples of "real" CGNS files have been added to the website.
  (c) Rumsey reported that as a result of people sending him new examples, an issue came up with one company that may require a new proposal for extension. They use zones with "sprays" of random points with no connectivity. They currently cannot use "NODE" type of connectivity because these are not recognized as 3-D elements in *cgnscheck*. One solution is to allow a new element type (like NODE) — perhaps called UNCONNECTED3D — which would be recognized as valid for 3-D and would be included in the summation of "volumetric" elements. <u>Rumsey will develop a proposal to handle sprays of unconnected points.</u>

9. Software

    (a) Wedan mentioned working on adding a new layer between MLL and ADF. This will allow easily writing HDF-5, ADF, or XML, as desired, at run-time! This is not in the repository yet. Wedan will send a copy of new capability for writing HDF-5, ADF, or XML to Hann.

10. HDF-5

    (a) Mark Poinot has been looking at the latest external linking capability of HDF5. He sent in the following summary:
        i. The ADFH mount system has been suppressed and changed by HDF5 external links. This new feature is so close to our actual needs that the code is really simplified.
        ii. However, it seems we are the beta tester for this feature. I had a very good support from Quincey Koziol (NCSA) who has quickly released patched versions for our needs and had always gave me answers to my questions within hours.
        iii. The feature is implemented in ADFH but cannot be released. I have a non-blocking issue at close time, which has no effect on the actual use of the links, but that cannot be ignored. Such a close time error indicates an internal error somewhere, and thus this should be tracked and resolved. I had no time to put on this problem, I hope to have a slot during March. Then I would first try to reproduce the problem, in order to reduce the scope and find out whether it is related to ADFH or to HDF5. I suspect the (mis-?)use of HDF5 attributes through an HDF5 group.
        iv. I am very confident in acheiving this by summer 2007, so that we could run tons of tests for a Reno 2008 release. Note that such a release is related to the public release of HDF5 with external links feature.
    (b) Quincey Koziol of NCSA emailed to say that there is a "stable format" snapshot up on their ftp server. Any files created with that snapshot (or later ones) WILL be read by future versions of the HDF5 library. However, they are still wrapping up some features that don't affect the file format, along with some API compatibility issues, so we might have to adapt our code to slight tweaks in the API routine names, etc.

11. Extensions

    (a) Face-based storage proposal (from Allmaras) — ongoing (team needs to meet again!)
    (b) Regions proposal (from Rumsey) — ongoing (new proposal will be posted for comment soon)
    (c) A user (Yang) sent proposal via CGNSTalk for removing restrictions on Generalized Connectivity. He wants to be able to write `CellListDonor` without `InterpolantsDonor`. We already made a change last year to allow no donor information at all, so their proposal is merely a step halfway between writing everything and writing very little. The change required is only a few lines in the SIDS, and perhaps a minor change in *cgnscheck*. No changes would be needed in the MLL. Rumsey will summarize proposal for tweak to generalized connectivity for the committee and will ask for a vote via e-mail.

12. Other issues:

    (a) Next Telecon will probably be mid May.
    (b) Rumsey will not be present at the AIAA meeting in late June in Miami, so it is not known yet whether a face-to-face CGNS meeting will be held there or not. <u>Rumsey will communicate with Hauser about possibility of Hauser leading a CGNS meeting in Miami.</u>

13. Meeting was adjourned at 11:52 AM.

14. Summary of **<u>action items</u>**:

    (a) Hauser to coordinate with Wedan and put parallel HDF-5 version of CGNS on SourceForge as beta release.
    (b) Poinot will continue to test and work with HDF5 external link capability.
    (c) Hauser and Alabi will finish completing the AIAA Course Profile Form by March 2007, and will start putting together the course in detail after that.
    (d) Wedan will make changes to fix problem associated with `NormalIndex` and `cg_boco_normal_write` / *cgnscheck* for unstructured grids.
    (e) Rumsey will arrange mini-telecon among people interested in face-based storage method.
    (f) Rumsey will post the new Regions proposal on the website and announce it to allow for a new round of comments.
    (g) Rumsey will contact U. Ghia (chair of Committee on Standards) to discuss whether any proceeds from the course can be kept in a CGNS fund for handling incidental expenses.
    (h) Rumsey will develop a proposal to handle sprays of unconnected points.
    (i) Wedan will send a copy of new capability for writing HDF-5, ADF, or XML to Hann.
    (j) Rumsey will summarize proposal for tweak to generalized connectivity for the committee and will ask for a vote via e-mail.
    (k) Rumsey will communicate with Hauser about possibility of Hauser leading a CGNS meeting in Miami.

15. Summary of **<u>open items</u>** 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 2](#)).
    (b) Keep track of progress with ISO/STEP.
    (c) Need for official certification process (test for compliance)
    (d) Need to add Karman's additional `PYRA` element type to allowed list (in software and in SIDS)
    (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

Ken Alabi	Thaerocomp
John Chawner	Pointwise, Inc.
Armen Darian	P&W Rocketdyne
Earl Duque	Intelligent Light
Mark Fisher	Boeing IDS
Richard Hann	ANSYS/CFX
Scott Imlay	Tecplot
Chris Rumsey	NASA Langley
Kurt Weber	Rolls-Royce / Allison
Bruce Wedan	ANSYS/ICEM CFD

Attachment 2: Tentative to-do list in association with HDF-5 switchover

- Complete and test parallel implementation
- Complete and test API capability to automatically detect and switch between ADF and HDF-5 (transparent to user?)
- Assess/minimize impact on software vendors using CGNS
- 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 (beta implementation of "external links" is in the works — likely complete in early 2006?)