

CGNS Steering Committee
Telecon Minutes
2 August 2006
11:00 AM Eastern Time

1. The meeting was called to order at 11:05 AM. There were 14 attendees, listed in [Attachment 1](#).
2. The minutes of the 10 May 2006 meeting were approved as posted on the web site.
3. Steering Committee Membership changes and updates
 - (a) The committee agreed to increase the allowable number of Steering Committee members from 20 to 30, in order to encourage growth. Since we typically have 10-15 people attend each meeting/telecon, extending the limit was not believed to be a problem.
 - (b) Subsequently, Ken Alabi from Thaerocomp introduced himself, and expressed an interest in joining the Steering Committee. Thaerocomp has developed the high-order CFD code AEROFLO, which uses CGNS. The committee approved the Thaerocomp membership.
 - (c) Towne will update the Steering Committee Charter to raise the limit of members to 30, and to add Thaerocomp.
4. Status of previous action items:
 - (a) Wedan and Rumsey will write documentation for SIDS and MLL as appropriate on Rind-for-unstructured and send to Norris and Towne.
 - i. done and posted
 - (b) Wedan to write up documentation on `cg_free` (in MLL).
 - i. done and posted
 - (c) Alonso will forward to Rumsey some preliminary ideas on levels of compliance for vendors, related to problems he has encountered.
 - i. not done yet - action item carries
 - (d) Towne will e-mail AIAA again to check on the status of the Recommended Practice.
 - i. not done yet - action item carries
 - (e) Hauser will send parallel version of CGNS with HDF-5 to Alonso, van der Weide, Poinot, and Wedan to try out.
 - i. not done yet - action item carries
 - (f) Rumsey will schedule a small Telecon the week of May 22 for the tutors and panelists, in case there are any issues that come up that need to be discussed.
 - i. done
 - (g) Wedan and Rumsey will initiate a new proposal for extension, perhaps based on Sayre's existing proposal but also including structured grids, to try to deal with the need for writing data to smaller and/or possibly lower-order regions.

- i. not done yet - action item carries
- (h) Wedan will look at Poinot's string definition header file and determine the best course of action.
 - i. not done yet - action item carries
- (i) Wedan will look into the partial write problem (found by Allmaras), and Rumsey will contact its authors (at Intelligent Light) to ask about it.
 - i. no response yet from IL, problem not fixed yet - first part of action item carries
- (j) Committee members should send comments (to Rumsey) on 4 latest Proposals for Extension by May 31.
 - i. done (5 responses) - further discussion during this telecon (see below)
- (k) Rumsey will e-mail the participants interested in the issue of Allmaras' face-based storage method (Fisher, Poinot, Hann, Weber) and solicit their feedback again.
 - i. done, but no response - further discussion during this telecon (see below)

5. Summary of San Francisco AIAA meeting

- (a) The CGNS events went extremely well. Rumsey earlier sent a summary to Steering Committee members (see [Attachment 3](#))
- (b) Rumsey has made some minor changes to the *www.cgns.org* website to try to initiate some of the recommendations from the SF meeting: (1) a little more detail is now given on the Proposed Extension process, (2) the example files for testing have been better organized, and (3) an FAQ page has been started. It would be nice to somehow develop a more complete test suite of examples, but we will probably need more time and/or volunteers to help accomplish this.
- (c) The possibility of developing the Tutorial session into an AIAA short course was discussed. AIAA has said that if we are interested, they can do market research and help promote it. Hauser and Wedan (offline) said that they would be willing to serve as instructors. Rumsey was not sure, but may be able to help also. Rumsey and Hauser will follow up with AIAA about the possibility of developing an AIAA short course.

6. Open Items (see number 15 below):

- (a) No discussion

7. ISO/STEP

- (a) Nothing new to report.

8. Documentation

- (a) An earlier issue regarding the fact that the number of cells in `Zone_t` is supposed to be the number of highest-order elements has not yet been fully resolved. We need to look at the documentation and make sure it is clear on this issue. Hann will look at the documentation and recommend changes to make it more explicit on the fact that the number of cells in `Zone_t` should be the number of highest order elements.

- (b) Official documentation has been updated: Rind for unstructured, `cg_free`, zone connectivity donor info now optional, clarifying sentence under `ElementRange` to clarify global numbering system

9. Software

- (a) Issue of incorrect behavior of `_partial_write` routines was discussed. For example, when writing in `MODE_MODIFY` mode, one might write a partial write from $1 - N/2$, but then writing a second partial write from $N/2 + 1 - N$ will destroy the previously written portion. No one can offer a good reason for this behavior, so it is believed to be a bug. The action item to fix this already exists.
- (b) A minor fix for `cgnstools` is needed for IRIX64 (Montreuil). Offline, Wedan agreed to make the fix for `cgnstools` for IRIX64.

10. HDF-5

- (a) In an earlier e-mail from Koziol (NCSA), he said that the “external links” feature hasn’t been checked into HDF5 source code repository yet. It may be there in the next alpha release, but they are not certain yet. Then recently, Poinot found that in *CGNS/hdf5-1.8.0-alpha4*, the HDF5 web site refers to external links (these are our node links) as a possible release. Offline, Poinot said he will test this HDF5 external link capability.

11. Extensions

- (a) A discussion was held on the 4 new proposals for extension:
 - i. Averaging Interfaces - (Magnan)
 - ii. Face Center Connectivity - (deVito)
 - iii. Multiple zone connectivities for time-dependent - (Rumsey)
 - iv. Fluid-structure interaction with deformable boundaries - (Einstein)
- (b) Earlier e-mail responses (only 5 committee members responded) were OK with the first three, but the last one generated some concern. In subsequent e-mail exchanges, it appears that (iv) could be accomplished in a different way, with little or no changes to the SIDS. Therefore, proposal (iv) will be tabled.
- (c) During discussions, several members expressed concerns about (i) Averaging Interfaces, because it appears to be too specialized, without broad enough appeal. For example, some of the members who do rotor-stator applications do things in a different manner than the proposal, and accepting this proposal would mean trying to impose it on those who already use different methods. Therefore, it was decided to table this proposal for the time being, until a compromise or other agreement can be reached, with the recommendation that anyone needing the proposed method handle it through `UserDefined` for now.
- (d) Proposals (ii) and (iii) were accepted.
- (e) Regarding Allmaras’ face-based storage method for SIDS, comments have still not been received yet, other than a note from Poirier regarding the rationale for only allowing cell-based storage. Allmaras will head up a task force to try to finally resolve the issue of the face-based storage method. Members are: Allmaras, Fisher, Poinot,

Hann, Weber, Feldman, Rumsey, Wedan, Imaly. They will hold a mini-telecon in early-September.

12. Other issues:

- (a) Next Steering Committee telecon will be held in late September or early October.

13. Meeting was adjourned at 12:10 PM.

14. Summary of **action items**:

- (a) Towne will update the Steering Committee Charter to raise the limit of members to 30, and to add Thaerocomp.
- (b) Alonso will forward to Rumsey some preliminary ideas on levels of compliance for vendors, related to problems he has encountered.
- (c) Towne will e-mail AIAA again to check on the status of the Recommended Practice.
- (d) Hauser will send parallel version of CGNS with HDF-5 to Alonso, van der Weide, Poinot, and Wedan to try out.
- (e) Wedan and Rumsey will initiate a new proposal for extension, perhaps based on Sayre's existing proposal but also including structured grids, to try to deal with the need for writing data to smaller and/or possibly lower-order regions.
- (f) Wedan will look at Poinot's string definition header file and determine the best course of action.
- (g) Wedan will look into the partial write problem (found by Allmaras).
- (h) Rumsey and Hauser will follow up with AIAA about the possibility of developing an AIAA short course.
- (i) Hann will look at the documentation and recommend changes to make it more explicit on the fact that the number of cells in `Zone_t` should be the number of highest order elements.
- (j) Wedan will make the fix recommended by Montreuil in `cgnstools` for IRIX64.
- (k) Poinot will test the HDF5 external link capability.
- (l) Allmaras will head up a task force to resolve the issue of the face-based storage method. Members are: Allmaras, Fisher, Poinot, Hann, Weber, Feldman, Rumsey, Wedan, Imaly. They will hold a mini-telecon in early-September.

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 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)

Attachment 1: Attendees

Ankur Agarwal	Fluent
Ken Alabi	Thaerocomp
Steven Allmaras	Boeing Commercial
John Chawner	Pointwise
Dan Dominic	Boeing - IDS/PW
Steve Feldman	CD-ADAPCO
Mark Fisher	Boeing - IDS
Richard Hann	ANSYS/CFX
Thomas Hauser	Utah State University
Scott Imlay	Tecplot
Greg Power	USAF/AEDC
Chris Rumsey	NASA Langley
Kurt Weber	Rolls Royce / Allison
Edwin van der Weide	Stanford University

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?)

Attachment 3:

Summary of CGNS activities at AIAA’s meeting in San Francisco, June 2006

As all of you know, the CGNS Steering Committee held two big activities at the San Francisco meeting.

The first was a Panel Discussion: “CGNS Practical Applications in CFD”. Presentations were made by Richard Hann (ANSYS-CFX), Foluso Ladeinde (Thaerocomp), Mark Fisher (Boeing), and

Marc Poinot (ONERA). Marc also presented slides from Eurocopter, whose representative could not be present. Slides from Snecma unfortunately did not make it in time for the presentation. There were between 10-20 attendees present at each of the talks. The focus of the Panel discussion was on uses and needs for CGNS in industry. There were very interesting discussions.

It seems clear that CGNS is beginning to fill a need in industry as a standard CFD data exchange mechanism. It is particularly en route to becoming a de facto standard at many companies in Europe, and it is often specified as the standard for data transfer between different departments or business partners. The fact that CGNS is a vendor-independent standard is one of its attractive features.

Some of the needs mentioned were:

1. better, more complete support of CGNS from third-party vendors
2. more additions to the pool of examples (CGNS files, codes, templates) (particularly unstructured)
3. high order overset BC support
4. better (simpler? more formal?) process for adopting new proposals
5. method for enforcing/ensuring compliance
6. ease of use & implementation (need for simpler subset standard?)

There was particularly a lot of discussion on this latter point. The fact that CGNS has so many options makes it difficult for vendors to fully support it, and also makes many people reluctant to start using it. Having a simpler “subset standard” or “data transfer standard” might make things a lot easier. By the end of the discussion, however, many seemed to agree that although subset standards may be a good idea, allowing flexibility is also an asset. It may be better to leave it up to each user to decide how (specifically) they want to transfer data with their partners. Perhaps “subset standards” may eventually emerge naturally. It was also brought up that, over time, the vendors seem to be slowly improving their capability for reading different possible CGNS options.

I shall make a note to try to address the above needs in future meetings. We would obviously like to focus some energy toward solving them.

The second activity was a tutorial session, divided into 5 separate talks: “Introduction, overview, and basic usage”, “Usage for structured grids”, “Usage for unstructured grids”, “HDF5 usage and parallel implementation”, and “Python and in-memory CGNS trees”. There were over 30 attendees at the beginning of this evening session. These presentations have been placed on the CGNS website.

Another important development has arisen as a direct result of this tutorial session:

The AIAA has approached us, and asked us to think about the possibility of putting together a two-day short course following the same outline as the tutorial, but with a lot more detail (including the development of a database in real time). This short course could be given both at

AIAA conferences as well as at on-site locations. Furthermore, the AIAA Board of Directors voted to make electronic versions of the standards library available free of charge to members. Their goal is to recover lost revenues by offering the short course.

Finally, I want to extend a very sincere “thank you” to the Panelists and to the Tutors who helped make the San Francisco events possible:

1. Richard Hann, ANSYS-CFX
2. Foluso Ladeinde, TheroComp
3. Marc Poinot, ONERA
4. Mark Fisher, Boeing
5. Bruce Wedan, ANSYS-ICEM CFD
6. Edwin van der Weide, Stanford
7. Thomas Hauser, Utah State

Chris