CGNS Telecon Minutes

Tuesday, 21 May 2019, 10:00am Eastern Time

1. The meeting was called to order by Bob Bush. Attendees are listed at the end of the minutes.

2. 26 March 2019 minutes were approved as published on the website.

3. Steering Committee Issues

    a. Chris Rumsey announced that he would need to step down as co-chair starting October 2019 (but will remain on the committee representing NASA Langley).
    b. **We are actively soliciting current members interested in serving as a new CGNS Steering Committee co-Chair**. Duties: run telecons, lead/monitor/guide overall forward progress of the committee. This can be considered a career-building leadership role, and a valuable service to the standards community. Please email to Rumsey, Bush, or Wang regarding your willingness to serve.

4. Steering committee attendance:
    a. Committee members (telecon last date attended):

Airbus	05/2019
ANSYS	03/2019
Boeing	05/2019
Cenaero	05/2019
Colo State	05/2019
DLR	05/2019
HDF	05/2019
IL	05/2019
NASA LRC	05/2019
Numeca	03/2019
nVariate	03/2019
ONERA	05/2019
P&W	05/2019
Pointwise	05/2019
SAFRAN	05/2019
Sandia	05/2019
Tecplot	05/2019
TTC	11/2018
TU Delft	05/2019
U Colo	05/2019
U Kansas	03/2019

5. Discussion
    a. NSF Grant proposal – has been submitted by Breitenfeld and is under review. We should hear results by the fall.
    b. ISO Discussion status – would need funding to pursue this, so it has been dropped for now.
    c. Compact storage – Breitenfeld sent an email about this on May 15, 2019 to the CGNS discussion group; this is going into the next version. All automatic; so far seen to give several order speedup for large processor count with parallel. Everyone is encouraged to test it, before it goes live. When it is officially released, the release notes will include a description. There is also a "white paper" that describes it. Breitenfeld to upload white paper about new compact storage to CGNS site.

d. CPEX reviews
   - 0042 and 0043 - only minor things need to be considered before putting to a vote. Poinot and colleagues to prepare final CPEX 0042-43, according to reviews (see appendix) and today's discussion. Check for bounding box consistency with grid coordinates not needed as part of this CPEX, but it could be included later as part of a separate check; need guideline (somewhere) regarding polar/spherical coordinates.
   - 0044 and 0045 - some things need to be considered before putting to a vote. Hillewaert to arrange off-line meetings to determine how to best address the CPEX 0044-45 reviews plus today's discussion. Possibly split 0045 into Lagrange and modal variants, so that Lagrange can be finalized and implemented quicker.
   - 0046 - some work needed to bring this to completion. Hauser to arrange off-line meetings to determine how to best address the CPEX 0046 reviews plus today's discussion.

6. Review action items
   a. Continue to review outstanding JIRA items/tasks.
      i. Item carries.
   b. For CPEX 0040, Guzik to add documentation for additional examples. It is also unclear if the documentation for CPEX 0041 is fully in place in the SIDS and Filemapping docs.
      i. The latter are now in place. Docs for examples are still needed.
   c. Baker and Karman have some changes for P4 higher order changes and will send them to Rumsey to make docs change.
      i. Done. Rumsey to make docs change.
   d. Breitenfeld will add Gutzwiller large unstructured multi-block partial write test to regression test suite and see if he can reproduce the issues.
      i. Carries.
   e. Hillewaert, Poinot, Wang, and Karman to decide about CAD classification. May need new writeup on how best to use current functions to define/describe surface info.
      i. Carries. Noted that implementation of CPEX 0042 and 0043 could be helpful with this.
   f. Breitenfeld to update documentation for Intel compilers (serial and parallel) for Windows.
      i. Carries.
   g. Hauser to check status of NSF project and report to committee
      i. Item no longer needed.
   h. Rumsey to post Hillewaert's CPEX 0044 and 0045, along with an additional proposal on particles by Hauser (0046).
      i. Done.

7. Ongoing action items
   a. Continue to review outstanding JIRA items/tasks.
   b. For CPEX 0040, Guzik to add documentation for additional examples.
   c. Rumsey to make docs change for P4 higher order elements.
   d. Breitenfeld will add Gutzwiller large unstructured multi-block partial write test to regression test suite and see if he can reproduce the issues.
   e. Hillewaert, Poinot, Wang, and Karman to decide about CAD classification. May need new writeup on how best to use current functions to define/describe surface info (implementation of CPEX 0042 and 0043 could be helpful with this).
   f. Breitenfeld to update documentation for Intel compilers (serial and parallel) for Windows.
   g. Breitenfeld to upload white paper about new compact storage to CGNS site.
   h. Poinot and colleagues to prepare final CPEX 0042-43, according to reviews and discussions.
   i. Hillewaert to arrange off-line meetings to determine how to best address the CPEX 0044-45 reviews plus discussions.

j. Hauser to arrange off-line meetings to determine how to best address the CPEX 0046 reviews plus discussions.

8. New business:
   a. None.

9. The next meeting is tentatively scheduled for Tuesday, 25 June 2019 at 10am Eastern.

10. Adjourn

Attendees:

Pat Baker	Pointwise
Scot Breitenfeld	HDF Group
Bob Bush	Pratt & Whitney
Simone Crippa	Airbus
Earl Duque	Intelligent Light
Stephen Guzik	Colorado State
Scott Imlay	Tecplot
Thomas Hauser	U Colorado
Koen Hillewaert	Cenaero
Dimitri Kamenetskiy	Boeing
Steve Karman	Pointwise
Pierre-Jacque Legay	ONERA
Tobias Leicht	DLR
Matthias Moller	TU Delft
Mickael Philit	SAFRAN
Marc Poinot	SAFRAN
Chris Rumsey	NASA Langley
Greg Sjaardema	Sandia

Appendix

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Brief summary of CPEX reviews

0042 (Bounding box)
 - only minor things need to be considered before putting to a vote
 - what if bounding box is inconsistent with coordinate data?
 - consider polar/spherical coords

0043 (Family as a tree)
 - only minor things need to be considered before putting to a vote
 - extend to AdditionalFamilyName_t?
 - address data inheritance, are multiple specs of same data allowed

0044 (Encoding functions)
 - some things need to be considered before putting to a vote
 - allow functions elsewhere (expand initial coverage)
 - can these replace other representations of data
 - how used outside of context of higher order elements?
 - if used outside 0045, naming conventions needed
 - some other detailed suggestions

0045 (Polynomial data & curved grid elements)
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- some things need to be considered before putting to a vote
- guarantee that ctrl pt coord as shared by edge or face is consistent
- predefine common interpolation schemes
- mathex library the best choice?
- interpolation will be limited to degree four?
- Lagrangian best choice for mesh, but what about solutions?
- can ctrl pts default to uniform if not specified?
- direct support for other bases?

0046 (Particle data)
- some work needed to bring this to completion
- required doc changes needed (other than SIDS), e.g., file mapping, MLL
- NODE elements maybe could be used?
- is there implicit ordering of particles?
- maybe need ParticleRange?
- examples needed
- how define RED colliding with GREEN?
- add enumerate to identify tracers?
- relationship with chemistry? mass exchange? thermal radiation? surf tension?
- standard data name identifiers needed
- address ordering, tracking, intro of new particles, breakup, agglomeration
- how to handle changing size of particle arrays

Suggestions:
0042 and 0043 to be finalized (as needed, based on the suggestions) and put to vote
0044 and 0045 to be finalized in concert with subcommittee of existing reviewers
0046 to be revised, and brought back for reconsideration when ready