Conceptual Formatting for DDDAS-Book-II Chapters

To organize the book as a coherent whole, we are suggesting a conceptual structure for each Chapter, comprised of the following 4 levels:

<u>L1</u>: The first part of the Chapter should be at a level such that a person with a general scientific/technical background can understand it, and learn from it (e.g. <u>"Scientific American" article-level</u>). Most of the Introduction Section of the Chapter should be at that level. In the introduction, please include an overview introducing the work in terms of: the importance of the topic and the work presented, in a broader perspective; the state of the art; the challenges and advances sought; how the DDDAS concept is applied or enabled to address these challenges, and what advances are enabled through this work; and the broader impact of the methods and advances presented. Some of the authors, over the years have addressed several application areas as part of their work; please showcase one (or two) application areas or aspects as the focus for the Chapter, and briefly discuss the other areas where the work presented has been applied (as in L4 below).

<u>L2</u>: The second level would be the next 1 or 2 Sections (with subsections) in the Chapter, where it is explained (in more technical detail than the overview) the state of the art, challenges, the methods pursued, and how DDDAS is used to address these challenges (in more specific terms than in the overview). These sections should be at a level that readers in related field(s)/area(s) can understand and learn (<u>something at the level of a professional society monthly magazine article</u>); for example: researchers in other areas who may see a connection and opportunity in applying this work to other areas, and also senior undergraduates and graduate students, who could use the book, and use this work as a reference material, or inspiration for their work. Some of the authors, over the years have addressed several application areas as part of their work; it's worth briefly discussing how the methods have been applied across these areas.

<u>L3</u>: The next set of (1 or 2) Sections (&subsections) in each Chapter would contain specific approaches and results, as would be presented in a journal paper. For example, like the papers authors have submitted for journal publications. For a number of DDDAS projects, publications over the years may have addressed a different facet of the ongoing work in that project. The content of the Chapter contribution for the book should present an integrated synthesis of these efforts and advances.

<u>L4</u>: This would be the Summary Section of your Chapter. It should include discussion of the science and technology impact of individual methods and results presented; the specific impact in using the DDDAS concept in results and advances presented, and new capabilities enabled; new venues and directions created in the field through this work; and possibly how these results and advance may apply to other fields; for projects that have addressed several application areas, the Chapter may include discussion of advances and impact on these other areas. Overall, this section is targeted to a range of possible readers, the experts in the S&T area(s) covered in the Chapter, to those with scientific/technical backgrounds in related or other areas, and also senior and graduate students, who would read and understand the importance and the impact of your work, and could be inspired to utilize in their own work.

It is anticipated that Chapters would be of length ranging between 18-22 pages. It's possible that some authors may contribute more than one Chapters. When I have the final confirmations of contributors to the book, we will collect all the titles and draft abstracts, and will create a TOC for the book.