SE Journal: Reviewer Response Record
Manuscript ID: SYS-13-106
System Analysis and Identification: Objects, Relations, and Clusters

Editorial Recommendation (1): Three reviewers have looked at the paper. Two of the three recommended rejection, while third recommended a major revision. All of the reviewers offered useful guidance on ways to improve the paper. The two reviewers who rejected the paper (both highly-experienced experts in this area) were frustrated by several confusing aspects of the paper. I want to applaud the authors for conducting this research, but based on the reviews I cannot recommend moving this particular manuscript forward in the publication process at SE.

> *Authors Response:*
> The authors agree that all of the referees offered useful guidance on ways to improve the paper.
>
> The paper's title ("System Analysis and Identification: Objects, Relations and Clusters") and the first sentence in the abstract ("The use of Abstract Relation Types (ART) in the analysis of system structure and system component clustering is the primary focus of this paper.") specify the areas of research for this article. As a result, it was anticipated that expertise in
>
> - abstract relation types
> - systems analysis
> - systems identification
> - objects
> - relations, and
> - clusters/clustering
>
> would be used to provide 'expert' commentary related to this submission. A review of the refereed comments demonstrates a clear lack of knowledge in several key areas specified. A more closely aligned set of expert referees might have been more helpful to address the research. Such expertise does reside in our larger SE community.

Editorial Recommendation (2): I would recommend that the authors study some of the published papers on similar topics (in SE and other respected journals) and seek to structure their paper similarly.

> *Authors Response:*
> This paper addresses some apparent semantic and operational disconnects that became obvious as a result of the research and documentation of 'current' literature on clustering (including DSM), relations, and objects found in our most recent publication in the Systems Engineering Journal – as well as multiple publications over the last decade. The historical depth and breadth of the literature search was motivated by two intriguing themes. The first theme is the impact of computer-based analysis on the semantics of clustering. The second theme is the bifurcated nature of the activity of clustering. Past, and current, literatures clearly indicate two very different views (V-analysis and O-analysis) of the clustering activity. In some communities of practice, one of these historical views has been preempted by the split between the experts in the domain area, and experts in the computer field. In other communities of practice, computing methods developed for one clustering view appear to be applied in an awkward manner to clustering activities that support the other view. These approaches appear to be incompatible in their current applications. A deep historical review of the methods and practices of clustering was necessary to address these disconnects.
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> Both editorial and referee comments indicate that a different 'structuring' of the research would be appropriate. Enhanced formats for structuring the research will be applied in future submissions.

Editorial Recommendation (3): Particular attention is needed to establishing the baseline of current

research and then articulating the paper's contribution beyond that point.

> *Authors Response:*
> Identification of a current research baseline is an activity to accomplish in context. The baseline for this current paper was established by an analysis of the authors' areas of professional research interest, coupled with the state of the authors' publication process. Over the past 10 years, the authors have published a number of professional papers that address formal systems analysis that include the evaluation of objects, relationships and the unique patterns that are developed using these analytical techniques.
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> This paper is a logical follow-on to the paper, "Entropy Metrics for System Identification and Analysis," Simpson and Simpson, Systems Engineering Journal, January 2013. Another paper published in 2011, "Complexity Reduction, a Pragmatic Approach," also laid the groundwork for the current research baseline. In 2009, "System of Systems Complexity Identification and Control," established the logical research questions explored in this paper.
>
> For future publications, the authors will try to provide a more explicit description of the 'baseline in context' upon which their research is predicated.

Editorial Recommendation (4): More use of commonly-accepted terminology would also help future reviewers.

> *Authors Response:*
> Common terminology is important, again – in context. The authors believe that clear communication is critical, especially when some of the 'terminology' semantics are under analysis. The apparent use of the same term to mean different things in the system structuring literature was one of the primary motivators for the current research thread. The authors believe that the current state of systems analysis and clustering research has not firmly established a complete set of essential terms. It has been the authors' experience that common terms and symbols are used to mean very different things in the current systems and analysis literature. The authors' research is centered in the structural modeling work of John N. Warfield. The binary matrix forms and directed graphs used by Warfield were based on the work of Harary. Harary, in 1965, defined a directed graph differently than it is defined today. What Harary called a directed graph in 1965, we would call a strict directed graph today. Terms need to be viewed in their historical, and application, context to fully enhance the semantics of the terms.

Referee One (R1) Comments:

R(1) Summary Remarks [1 of 4] The authors introduce the use of Abstract Relation Types (ART) to the analysis of N-squared charts and DSMs, for the purpose of clustering.

> *Authors Response:*
> The authors' research in the area of structural modeling introduced Abstract Relation Types (ART) in the early 2000's with the first peer-reviewed papers appearing in 2007. There are numerous, peer-reviewed papers that use ART to support the communication of grouping and clustering of objects during a systems analysis activity. ART was not introduced here for the first time; it has been in the literature for some time.

R(1) Summary Remarks [2 of 4] In short, the paper is poorly written and organized.

> *Authors Response:*
> While the authors acknowledge that any paper can be improved, this remark is devoid of any

indication of how the referee would suggest that the paper be improved.

R(1) Summary Remarks [**3 of 4**] It lacks motivation, proper literature review of existing approaches, and no clear statement of contribution.

> *Authors Response:*
> This paper is one of a series of papers produced by the authors. Due to restrictions on paper length and author resources, a comprehensive review from our recently published papers were not presented in the introduction to this paper. The authors' intimate contextual knowledge of these areas created a situation wherein it might be difficult to understand some of these topics without reading the authors previous research.
>
> For future publication purposes, an introduction will clearly identify the authors previously published work in a given area. While it is clear that all previous research cannot be included in the introduction to any paper, the authors will attempt to provide a concise summary of the research agenda, the research areas addressed to date, and the specific research topics to be addressed in future publications.
>
> The literature review for this paper specifically targeted evaluation of historical terms and views.

R(1) Summary Remarks [**4 of 4**] It is important to mention that it was very frustrating for me to read this paper as I was trying to understand what is ART and how does it work, but I was unable to do so. Some detailed comments are below.

> *Authors Response:*
> This paper is not an introduction to Abstract Relation Types. The authors' publications titled:
>
> - Development and Application of ART (2007),
> - System Description and Evaluation using ART (2007),
> - Development of Abstract Relation Types (2007),
> - Evolutionary Algorithms for System Evaluation (2008),
> - A Pragmatic Complexity Framework (2009),
> - System of System Complexity Identification and Control (2009), and
> - Complexity Reduction: A Pragmatic Approach (2011)
>
> are better sources of ART information.

R(1) [**1 of 7**] The introduction section lacks the proper motivation for the paper. Why SE journal readers would be interested in such an approach? Need for a new way of DSM clustering? Etc. After positioning the paper, then you can start introducing these definitions, which you have started the paper with.

> *Authors Response:*
> The authors agree that a more formal, bounded research agenda in the introduction would help position the reader in the necessary context. This section of the introduction should indicate that the paper is one of a series of publications planned for the Systems Engineering Journal. And clearly identify the two System Engineering Journal Papers in this series that have already been published in 2012 and 2013.
>
> In the view of the authors, DSM clustering is a special case of Interpretive Structural Modeling (ISM), developed by John N. Warfield. The authors are evaluating structural modeling methods, including basic structural modeling and ISM (wherein DSM is viewed as a special case of ISM).
>
> The authors understand that if a referee had no knowledge of the authors' current publications in the

Systems Engineering Journal, then that person may well be disoriented. An overview of our previously published work will be included in future submissions to the Systems Engineering Journal.

R(1) [**2 of 7**] There are very few (5) references newer than 2000. Please make an effort to use/cite/refer to the latest literature; particularly from the SE journal. I find it strange that not a single reference for the SE journal. Please make an effort to cite from the journal you submit to. I am aware of at least half a dozen relevant papers in the SE journal. Please find them and cite them.

Authors Response:
This is an interesting comment from a number of perspectives. First, the authors' 2012 Systems Engineering Journal paper is included in the reference list. The 2012 paper addresses current DSM work published in the Systems Engineering Journal. The current DSM work that addressed in the 2012 Systems Engineering Journal paper elucidated a number of computational and application issues when the published DSM approach was evaluated as a special case of ISM. These apparent issues and disconnects prevented the authors from verifying the work presented in these current System Engineering Journal papers, and motivated the authors to look deeper into clustering, DSM processes, and method development. The classical material in DSM and clustering was then reviewed. During this process, the material for the authors' most recent paper in the Systems Engineering Journal, "Entropy Metrics for System Identification and Analysis," (2013) was prepared. The entropy material laid the foundation for this clustering paper. There are clear, current, 'Systems Engineering Journal' references listed in this work. That referenced paper outlined the issues with some of the current publications on DSM in the Systems Engineering Journal and elsewhere.

It did not seem to be productive to continue to publish the same material again and again in the same journal. It appears that the referee is not familiar with the authors' research area, or the material published currently in the Systems Engineering Journal.

The authors' research work includes a range of computer programs that perform clustering and grouping functions on systems that are represented as a matrix of objects that are organized around a given system structuring relationship. One such program is based on evolutionary programming techniques that were inspired by the work of Derek Hitchins in the area of Automated N Squared Charts. The structural similarity between Automated N Squared Charts, and the structural modeling techniques presented by Warfield's ISM, was a key motivator in the authors' grouping and clustering work. The structural similarity between DSM and ISM is a primary motivator that moved the authors to review current literature and find published examples of DSM applications that could be used to evaluate the authors' computer-based clustering and grouping programs.

One of the early System Engineering Journal papers referenced in our 2011 Systems Engineering Journal paper ('Complexity Reduction: A Pragmatic Approach'), is from Systems Engineering, Vol. 7 No. 1, 2004, titled, "Characterizing Complex Product Architectures," by Sharman and Yassine. The DSM model presented in Figure 1 of their article was used as a test case to verify our computer programs against the peer-reviewed, published literature. Unfortunately, we were not able to verify the outcome of our program using the material presented in this Figure, because of the different system configuration between the base DSM, and the partitioned DSM. Our software clearly indicated that two new system components had been added in the partitioned DSM presented in this figure. The base DSM has 28 'marks' and the partitioned DSM has 30 'marks,' clearly representing two different systems, not two different configurations of the same system. There could be a number of reasons for the difference in the number of 'marks.' The first reason is the DSM partitioning process adds interaction 'marks' as part of the DSM system structuring process. The second reason could be a text and graphics transcription mistake during the publication of the journal article. The reason for the unbalanced set of 'marks' was not clear.

Also in the Sharman, Yassine paper, 'Figure 2, Clustering Example' presents three views of the same

system structure – all of which have the same number of 'marks.' Figure 2 was used to validate the authors' software program. However, the difference in the material presented in the two figures left the authors with some concerns. The authors made an operational assumption that an error in the presentation of the Figure 1 material created this situation. This assumption was based on the fact that any process that modifies a system automatically, without clearly explaining the process and/or purpose, is of little operational value. Given this outcome, the authors continued to search for other examples to test their evolutionary computation programs. The classical work by Steward was selected to continue the study of DSM approach to systems analysis.

Other publications of system structuring work were also gathered, reviewed and used as a basis for verifying our evolutionary programming applications. Another set of published DSM work was published in Res Eng Design (2007) 18:91-109. This work was used as an additional opportunity for the authors to test and verify our software applications. Unfortunately, the authors encountered another set of imbalanced and mismatched system configurations in their 'Figure 1, DSM clustering examples.'

A comment response record that addresses issues with the DSM analysis in this paper can be found at:

http://www.systemsconcept.org/html/Content/Entropy_wp_cr1.pdf

These comments are similar to the issues associated with the current work published in the Systems Engineering Journal. We found the papers, and could not verify the approach. These papers have been cited. It did not make much sense to do it again.

R(1) [**3 of 7**] What are the references to V-analysis and O-analysis?

> *Authors Response:*
>   *Cluster Analysis*, Robert C. Tryon and Daniel E. Bailey, 1970, McGraw-Hill, Inc.

R(1) [**4 of 7**] The section "Historical context" is written in a very unusual way: A listing of the paper title and then a short summary!!! I am not sure how useful is this! If this is supposed to be a "literature review" section, then the discussion of these papers must be value-adding not a summary list. How does the literature compare/contrast to the proposed model?

> *Authors Response:*
> The authors agree that this is a unique presentation format; it was truncated to save space. The connection between the "Historical Context" and the different views of clustering is important to establish the semantic impact of computer analysis on the clustering process, as well as the two different views and definitions of a cluster.
>
> In future publications, aspects of historical development will be grouped into themes, and presented as a narrative summary.

R(1) [**5 of 7**] After reading the section "Abstract Relation Type", I still do not understand what is it? This must be the most important section of the paper as the authors claim that their contribution is the use of ART in DSM analysis for clustering purposes. I recommend that the authors considerably expand this section and clearly describe how ART works. It is also unclear whether ART is a new tool introduced by the authors or whether ART has been invented elsewhere and merely used in this paper. Clearly state your contribution.

> *Authors Response:*
> This paper is not an introduction to Abstract Relation Types. The authors' publications titled:

- Development and Application of ART (2007),
- System Description and Evaluation using ART (2007),
- Development of Abstract Relation Types (2007),
- Evolutionary Algorithms for System Evaluation (2008),
- A Pragmatic Complexity Framework (2009),
- System of System Complexity Identification and Control (2009), and
- Complexity Reduction: A Pragmatic Approach (2011)

are better sources of ART information, and introduce the ART concepts. As you are no doubt aware, it is not feasible to republish all of one's current papers (or even all of one's original research on one topic area) in every paper. Much of this information is contained in the authors' work published in 2012 and 2013 in the Systems Engineering Journal, as well as in papers published in other venues.

For future publications, the authors will provide additional detailed references related to the specific topics at hand.

R(1) [**6 of 7**] The authors refer to figure numbers without explaining what are these figures and what are we looking at. Additionally, the figures at the end of the paper have no numbers or captions to follow!!

Authors Response:
The authors have observed from the comments from multiple referees, that the referees were reviewing different sets of the files required by the online submission process. It is not evident in the submitted 'comprehensive' PDF file that there are figures at the end of the paper lacking numbers or captions.

That said, the authors will review future submissions for the Systems Engineering Journal to assure that the correct process is being followed.

R(1) [**7 of 7**] I stopped reading after page 6. I suggest to the authors to consult with an editing service to help them better organize the paper and present their ideas more clearly. The way the paper is currently written, it is very unclear, confusing, and simply has no value to SE readers.

Authors Response:
If the reader is not familiar with the current state of the authors' publications, did not notice or was unaware of the supporting information published in the Systems Engineering Journal in 2012 and 2013, then the authors can understand this response.

The authors recommend that the reviewer read the published, peer-reviewed work prepared by the authors to better understand the state and content of the authors' current research. It is not possible to compress approximately 100 pages of published material as an introduction to every paper.

For future publications, the authors will provide scope boundaries of current work, and related and future research.

Referee Two (R2) Comments:

R(2) [**1 of 7**] The paper focuses on ART and its application to automated N2 charts and design structure matrices.

Authors Response:

Those are some of the main themes of this work.

R(2) [**2 of 7**] It would be helpful if the authors could provide a more detailed explanation of ART prior its application in both examples. This should include a more detailed discussion of Figure 6 and its three spaces (marking, outcome, and value) and more detail about how the spaces are developed and relate to each other. Consider bringing in more detail from your previous papers about the spaces and how to apply ART.

Authors Response:
This paper is not an introduction to Abstract Relation Types. The authors' publications titled:

- Development and Application of ART (2007),
- System Description and Evaluation using ART (2007),
- Development of Abstract Relation Types (2007),
- Evolutionary Algorithms for System Evaluation (2008),
- A Pragmatic Complexity Framework (2009),
- System of System Complexity Identification and Control (2009), and
- Complexity Reduction: A Pragmatic Approach (2011)

are better sources of ART information and introduce the ART concept. The main contribution of ART is a well-defined format for information presentation, that is, prose information, graphic information and mathematical information. Our current research focuses on structural modeling, and the application of basic structural modeling and interpretive structural modeling to a range of classical systems analysis methods and techniques. Complete ART forms are under construction, but each ART form will contain sufficient substance (and nuance) to be an independent topic for a paper in its own right. It is difficult to determine how to organize this type of information in a series of papers.

We considered including "a more detailed discussion of Figure 6 and its three spaces (marking, outcome, and value) and more detail about how the spaces are developed and relate to each other." but concluded there was insufficient space in this article. Completed ART forms will be published later, hopefully starting in the middle of 2014.

For future submissions, an outline of the authors' general research goals will be provided, that indicate how previously published papers fit into the research goals, and how the current paper fits into the research agenda.

R(2) [**3 of 7**] More clearly distinguish the ART contribution from the automated N2 chart and DSM methods.

Authors Response:
The authors will evaluate this recommendation. The ART form is, to put it simply, a well-defined format for describing a system and its structure, behavior and/or other system attributes of interest.

R(2) [**4 of 7**] Discuss the differences between Figures 2 & 3 (e.g. asymmetric vs symmetric). What is the objective in presenting these two figures and what is being emphasized?

Authors Response:
This is a crucial point. The authors will continue to clearly indicate the importance of this method. The essence of structural modeling, as developed by Warfield, is the careful, controlled, verifiable transformation of a natural-language relationship into a mathematical relation. Warfield strongly emphasized that three language forms were necessary to effectively complete this task. These three language forms are prose, graphics and mathematics. Figure 2 and Figure 3 have the same prose

entries. However, Figure 2 and Figure 3 have different graphic content that changes the semantics of the system structure and behavior, and also changes the matrix entries. Figure 2 and Figure 3 demonstrate an instance where all three language forms are necessary to communicate the system structure. The mathematical relation then represents the system structure.

R(2) [**5 of 7**] How is Figure 4 "adjusted"? What exactly was adjusted? This is unclear. It would also help the reader to provide more explanatory information about the figure.... Fig. 8.13 from Hitchin's text includes a tangled set of interacting systems (figure 4?) and is then untangled.

Authors Response:
This example was used in our last two Systems Engineering Journal publications. Those publications contain more detail. The example presented by Hitchins was probably drawn by hand, to illustrate an evolutionary computational approach. Once the mathematics and logic were developed for this example, and computer code was written to verify the example, it became clear that there were a few connection errors in the 'hand-drawn' graphic. That is, there were connections indicated in one of the graphics, but not taken into account and incorporated into the translation graphic. This is to be expected with hand-drawn graphics of this size. After the authors evaluated the example using a computer program, the errors became apparent, and the graphic needed to be adjusted.

Some DSM examples published in the Systems Engineering Journal also have these types of errors (which is to be expected when a human is doing this type of detailed work by hand). These errors are a key indicator of the need for mathematics-based graphics generation and analysis.

R(2) [**6 of 7**] Same title "Design Structure Matrix Examples" is used on page 5 as well as page 9.

Authors Response:
The authors appreciate notice of this error.

The page 5 title (from the 'text-only' PDF) accurately reflects the intent of the section. The full article PDF has that section on page 8 rather than on page 5.

The page 9 title (from the 'text-only' PDF) should be changed to "Design Structure Matrix Implementation Issues," to accurately reflect the intent of that section The full article PDF shows that section on page 18, rather than on page 9.

R(2) [**7 of 7**] "More research is needed to further develop the general ART method and techniques." is a sentence in the conclusion. What is missing from the general ART method and techniques that needs more research?

Authors Response:
The authors agree that they have failed to communicate their research plan in a robust fashion. Once the content of an ART form is determined, then the process for ART distribution must be evaluated. Much of the information between different ART forms will be the same. How much change is required before it is a new ART form? What is the naming convention needed to uniquely identify an ART form. Should a complete, computer, virtual machine be established as the basis for each ART form? A common virtual machine can greatly reduce the confusion and errors associated with the application of an ART form. These operational aspects of ART form distribution, operation and maintenance are topics of future research.

Referee Three (R3) Comments:

R(3) [**1 of 13**] It was difficult for me to understand the paper intention by reading the introduction. I could not find a stringent way towards the research problem and had to aggregate it from different statements made in the paper. The introduction would definitely require an improved structure.

> *Authors Response:*
> For future publication purposes, an introduction will clearly identify the authors previously published work in a given area. It will also include a brief section that presents the overall research topics and thread from the collection of papers, as well as how the research results align with current published work.

R(3) [**2 of 13**] A small oversight in the introduction is mentioning "Weiner" two times instead of "Wiener".

> *Authors Response:*
> Noted. Corrections to this misspelling will be made.

R(3) [**3 of 13**] The statements in the bullet point list in the "historical context" would need references. The entire chapter "historical context" is a collection of interesting contributions. However, I'm missing conclusions, interpretations, findings from mentioning these ones. What is the intention and the benefit of this collection? Only then one can assess if this collection is appropriate.

> *Authors Response:*
> This paper is one of a series of papers in the authors' research agenda. The previous two papers that were published in the System Engineering Journal, indicated a need to perform a 'deep dive' into the history of graphical and structural modeling methods and techniques. Two research themes associated with structural modeling and clustering techniques are driving the authors' actions in this area. These research themes were discussed in responses to previous editorial and referee comments.

R(3) [**4 of 13**] Only starting at page 3 I could see a link to the initially mentioned topic; I doubt the importance of the statements made in the introduction and the historical context for the work executed.

> *Authors Response:*
> It is unfortunate that the guiding themes appeared hidden.
>
> In future submissions, the authors will attempt to improve this section by outlining a structured research agenda.

R(3) [**5 of 13**] Introduction of the ART approach should be restructured as the reason for going into details remains unclear at this point of the contribution. In the chapter "Automated N Squared Chart (AN2C) Example" the authors state: "Due to the directional and asymmetric nature of the connections, there may be cases where...". Here, a sloid example would definitely be required.

> *Authors Response:*
> Our current 'Abstract Relation Type' for a simple system type is now under development. This document, for one system type is about 40 pages long and may be as much as 60 pages when it is complete. Developing two ART form documents, and comparing them, will require even more space, which is not likely to be acceptable in a journal format.
>
> The authors believe that these types of examples are necessary and in fact critical. A long-term plan is to develop a catalog of these ART forms, to serve as a clearly documented basis for structuring systems of different types.
>
> For future publications, a simple explanation of different system matrix representations is possible in

the context of a journal article. The authors are in the process of preparing a more comprehensive, yet simple explanation.

R(3) [**6 of 13**] The chapter "Design Structure Matrix Examples" also needs intensive restructuring and subdividing. I had to read it several times to bring together all statements made. Mentioned literature is rather old and DSM is an ongoing research topic with many publications. The chapter needs to implement state of the art research. The paragraphs with general introduction to DSM should be removed, as this can easily be cited from well known publications. Statements made on papge 7 do not consider the existence of binary DSM and therefore are wrong. The formation of values in Figure 12 is not clear to me and is not explained.

> *Authors Response:*
> All of the system structuring methods referenced in this paper and other papers by the authors are from the point of view of Warfield's structural modeling, including basic structural modeling and interpretive structural modeling. Stewards work, from 1981, stated:
>
> > "The method discussed here for formulating the problem was developed by Warfield (1976) and others, who refer to these methods under the name Interpretive Structural Modeling. This chapter discusses our interpretation of their methods of formulating the problem, and uses the techniques developed in this book to extend their methods of analysis."
>
> This quotation can be found on page 240 of *Systems Analysis and Management: Structure, Strategy, Design*, by Donald V. Steward, 1981.
>
> As a future submission related to this research, the authors will adapt their work to indicate their interest in DSM ***only as a special case of ISM***. The current work on DSM is interesting, but the authors are not aware of any current DSM techniques that present themselves as ISM methods. Once a clear distinction is made regarding the relationship between DSM and ISM, then the structural modeling research may move on to other versions of DSM that represent themselves as ISM techniques. General DSM techniques are of interest in this research insofar as they are represented as ISM methods.
>
> The title of this article is "System Analysis and Identification: Objects, Relations and Clusters." This work is focused on Warfield's use of system structuring, clustering and analysis. While this work includes DSM, in as far as they say they use ISM techniques, it is also about other methods and mechanisms.

R(3) [**7 of 13**] On page 9 the same structure "Design Structure Matrix Examples" appears a second time. This did not improve my understanding of the structure.

> *Authors Response:*
> The authors appreciate notice of this error.
>
> The page 5 title (from the 'text-only' PDF) accurately reflects the intent of the section. The full article PDF has that section on page 8 rather than on page 5.
>
> The page 9 title (from the 'text-only' PDF) should be changed to "Design Structure Matrix Implementation Issues," to accurately reflect the intent of that section The full article PDF shows that section on page 18, rather than on page 9.

R(3) [**8 of 13**] A discussion of the statements made would be required, but is not included in the paper.

> *Authors Response:*
> The authors agree that the discussion sections could be improved.

For future submissions, an overall, structured format will be developed to guide and direct such discussions.

R(3) [**9 of 13**] Summary and conclusions are too short and do not reflect the content of the paper (descriptions are not detailed). The outlook comprises one sentence only; however this one is unnecessary: "More research is needed to further develop...". Does this really need to be stated at all?

Authors Response:
The authors agree that they have failed to communicate their research plan in a robust fashion. Once the content of an ART form is determined, then the process for ART distribution must be evaluated. Much of the information between different ART forms will be the same. How much change is required before it is a new ART form? What is the naming convention needed to uniquely identify an ART form. Should a complete, computer, virtual machine be established as the basis for each ART form? A common virtual machine can greatly reduce the confusion and errors associated with the application of an ART form. These operational aspects of ART form distribution, operation and maintenance are topics of future research.

R(3) [**10 of 13**] The structure of the paper needs to be improved in order to support the paper content.

Authors Response:
For future submissions, an opening section that introduces the research agenda and progress to date will be included.

R(3) [**11 of 13**] The key message of the paper is missing completely and would have to be mentioned and reflected, e.g. in form of a chapter "Discussion"

Authors Response:
The authors agree. Future publications will include a "Discussion" section.

R(3) [**12 of 13**] Cited literature is not adequate. Some nice sources are mentioned, but no (only own) current publications are integrated. DSM literature and conclusions drawn from it is incomplete.

Authors Response:
This paper is about DSM as a special case of ISM. Only DSM literature that clearly state the methods used are ISM-related, or that their methods are based on Warfield's binary matrix approach is considered. Once the relationship between ISM and DSM is clearly defined, then other DSM methods and techniques can be evaluated to determine if they are special cases of ISM or Warfield's mathematics of structure (basic structural modeling.) Evaluation of 'more current analysis' related to DSM is being considered for future papers.

R(3) [**13 of 13**] Objective and possible benefit of the paper remained unclear to me.

Authors Response:
This is the third paper is a series of research papers published by the authors in the System Engineering Journal. The authors could have done a better job of placing the content of this paper in the context of their published research and their planned research.

For future submissions, the research themes will be developed and used to guide the reader through the paper.

Bottom line, the authors skipped too many steps, and too much contextual information remained unstated.