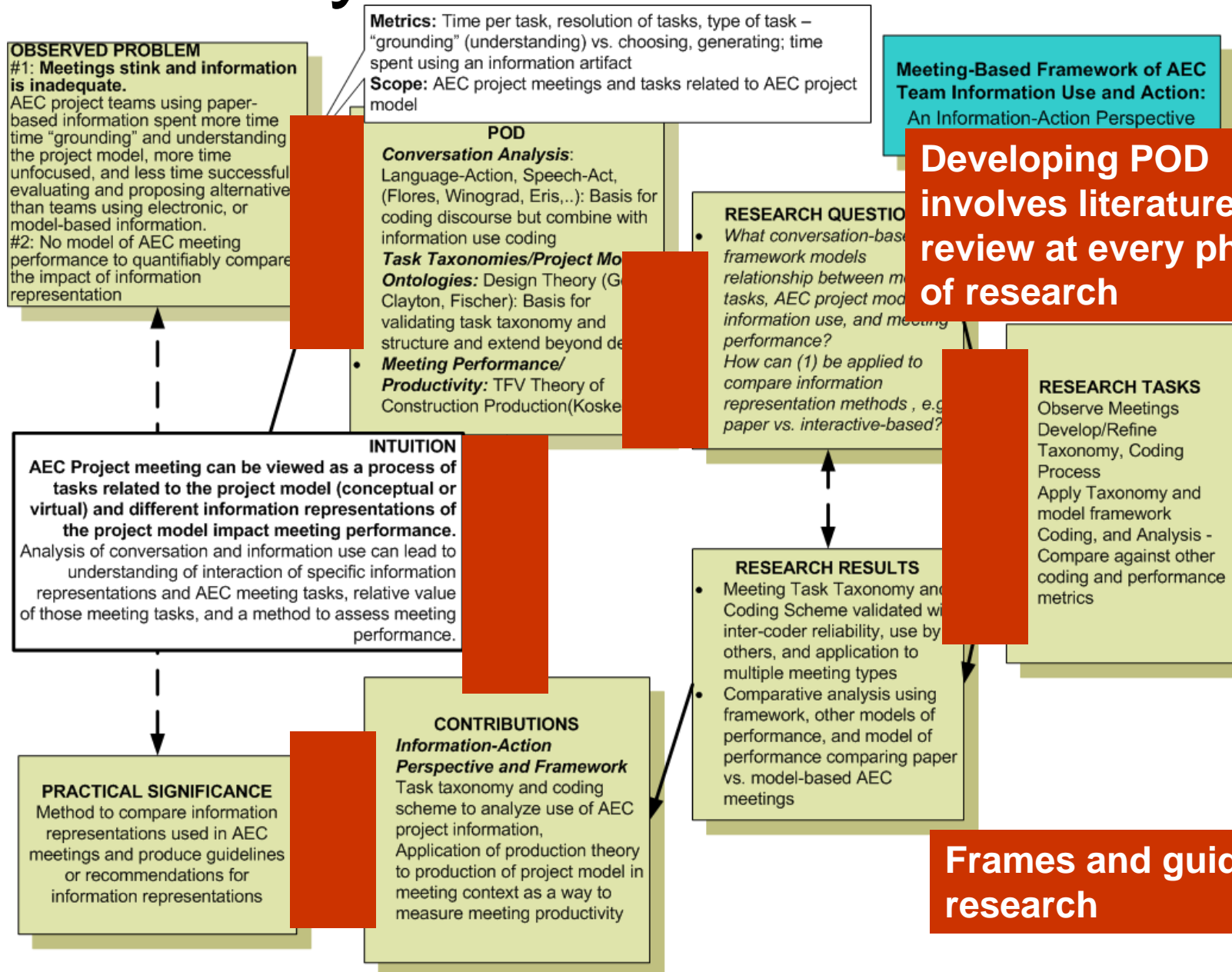


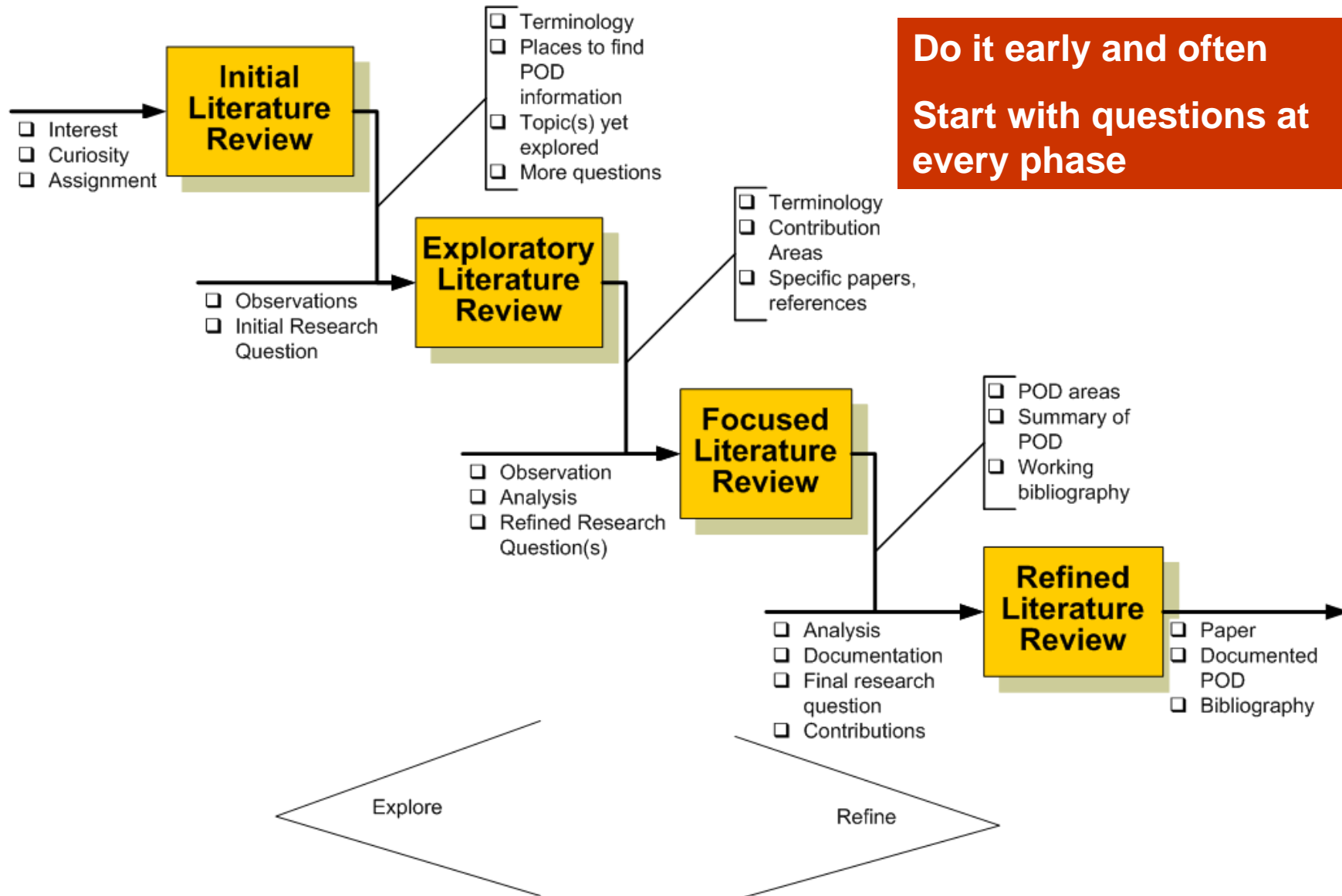
Literature Review Methods: Point of Departure

Kathleen Liston

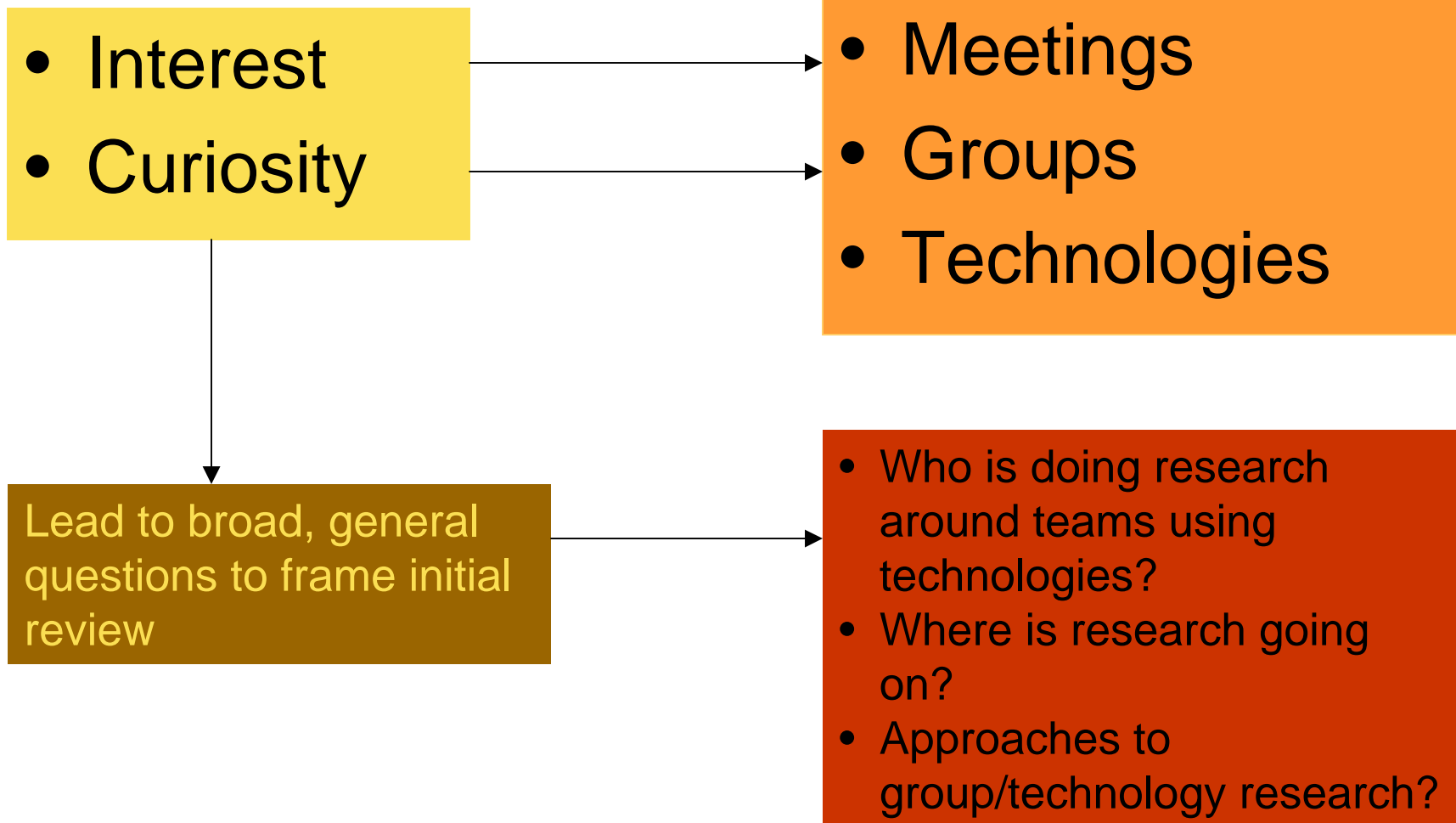
Why Literature Review?



Where and When to Begin?

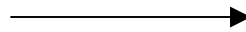


Initial Literature Review: From Scratch



Initial Literature Review

- Find resources related to interest, topic:
 - Institutions, research groups
 - Journals
 - Conferences
 - Organizations
 - Key Researchers



- Meeting research
 - Arizona
 - CDR
 - Mostly “small groups”
- Journals
 - Small Group Research
 - Organization Science
 - Human Interaction
- Conferences
 - CSCW
 - Hawaii Conf. Information

Initial Literature Review

Useful guide for future research explorations

Identify potential gaps, areas unexplored

Domain research does not build on group or Man. Science and vice-versa



Research does not look at format, presentation of information and impact on group process

Exploratory Literature Review

- Topic
- Question
- Methods

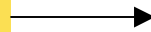
- Use of information, artifacts
- Observe teams
- Analyze activities

Lead to Questions to frame exploratory review

- What examples of observation and analysis of teams exist? Metrics? Models?
- Do any look explicitly at use of information, artifacts?
- What research methods do they use?
- What frameworks exist to observe/analyze teams?

Exploratory Literature Review

- Identify topic areas
- Search, read, highlight
- Outline, summarize
- More questions



- What is Language/Action, applied to groups?
- What is performance? What is a good meeting?
- What is value-add?
- What is difference between task, acts, activities?

- Observation methods/Metrics:
 - Coding, Satisfaction Attainment
- Group tasks/models
 - Task Circumplex, IPO
- Theories
 - Language/Action, Speech Acts
 - Lean, Production Theory
 - Grounding
 - Information Theory

Explore: Outline, Structure

- Outline and take notes during POD
- Terminology, Acronyms
- Theories, Models
 - Relationships between?
 - Purpose?
 - Limitations?

THEORETICAL POD

Terminology

GSS: Group Support System

- Allows participants in a collaborative group to interact simultaneously and anonymously to generate ideas, make decisions, and solve problems
- Parallel communication, group memory, anonymity (murthy)

GCSS: Group Communication Support Systems, Pinsonneault & Kramer, Fiermestad

- Ftf: Face to Face
- CMC: Computer Mediated communication
- MRT: Media Richness Theories
- DSS: Decision Support Systems
- IR: Information Retrieval
- INSU: Information needs, seeking and use[2]
- CFT: Cognitive Fit

Speech Acts Theory:

- Austin, 1962
- Searle, 1979
- Levinson, 1983

Bales' IPA (hiltz, 1990) Interaction Process Analysis

- Conference Process Analysis

Task Taxonomies: Group Tasks

- *Planning tasks (generating plans)*
- *Creativity tasks (generating ideas)*
- *Intellective tasks (solving problems with correct answers)*
- *Decision-making tasks (deciding issues with right answers)*
- *Cognitive conflict tasks (resolving conflicts of*

Explore: Take Notes, Outline, Start to Organize

- Outlines
- Notes
- Tables
- Include References!

Grath and the Task Circumplex

1. "All studies of group task performance, of course, use some task. Many use two or three; very few use more than that. But the choice of task is often a matter of convenience and fairly arbitrary. Even when a study uses two or three tasks, those tasks may be selected haphazardly; or, at best, they may be selected ad hoc to represent simplified classifications (such as motor versus intellectual, or easy versus difficult). If tasks really make a difference - and everyone agrees that they do - then it seems worthwhile to devote some of our efforts to analyzing and classifying tasks in ways that relate meaningfully to how groups perform them." (p. 53)
2. 8 tasks
 - a) Planning tasks (generating plans)
 - b) Creativity tasks (generating ideas)
 - c) Intellectual tasks (solving problems with correct answers)
 - d) Decision-making tasks (deciding issues with right answers)
 - e) Cognitive conflict tasks (resolving conflicts of viewpoints)
 - f) Mixed-motive tasks (resolving conflicts of interest)

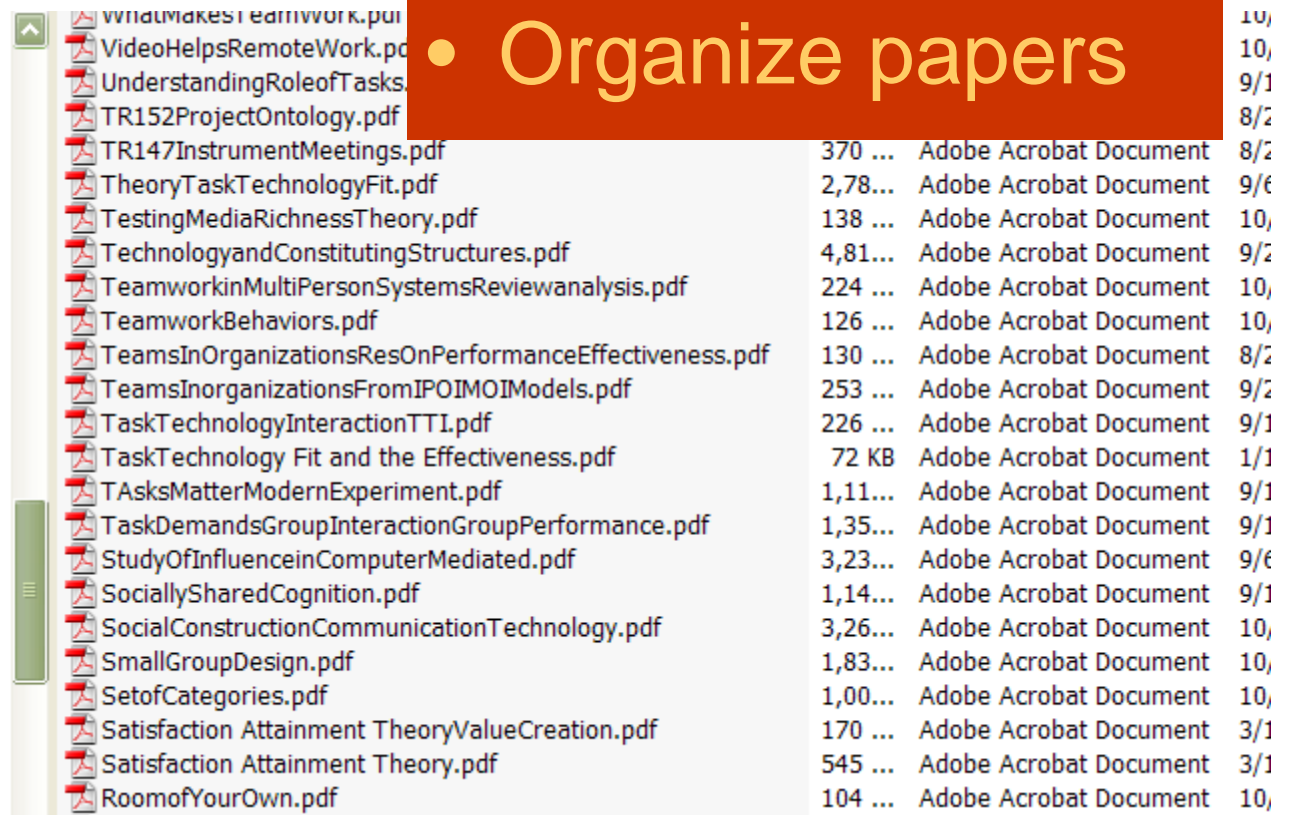
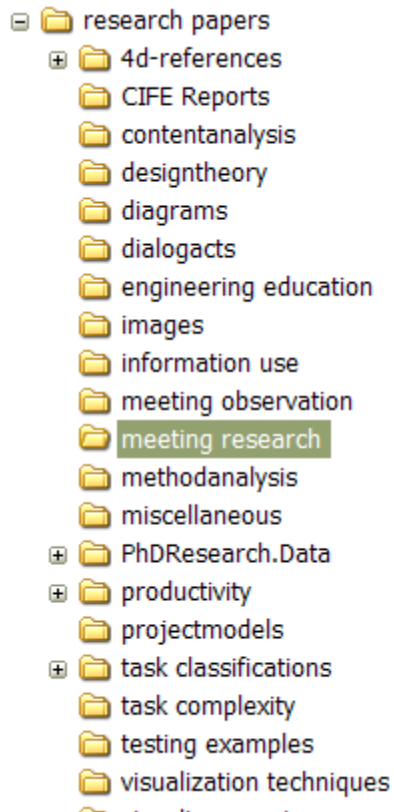
resolving conflicts of power)
tasks (executing performance tasks)

	(McGrath, 1984)			Stassens' Interaction Process Analysis
Fundamental Theory				Leadership, Role assessment
Task Organization (Major)	Generate	Planning	<ul style="list-style-type: none"> • Production Tasks: "require the production and presentation of ideas or images" (idea generation tasks) • Discussion tasks: "require an evaluation of issues" • Problem-solving tasks: "require a specification of a course of action to be followed to resolve some problem" (Planning) 	Giving Information Questioning/ Seeking Information Organizing Ideas Clarifying Ideas Summarizing Evaluating Deciding
		Creativity		
	Choose	Intellective		
		Decision-Making		
	Negotiate	Cognitive Conflict		
		Mixed-Motive		
Execute	Contests/ Battles			
	Performances			

view of group decision, changes in pattern of
making
r in future
k (getting job done) or social needs (tension/duality/antagonism)

Explore: Organizing Research

- Save papers, links
- Organize papers



Explore: Summarize, Analyze

- As POD expands, continue to document areas and key findings, limitations

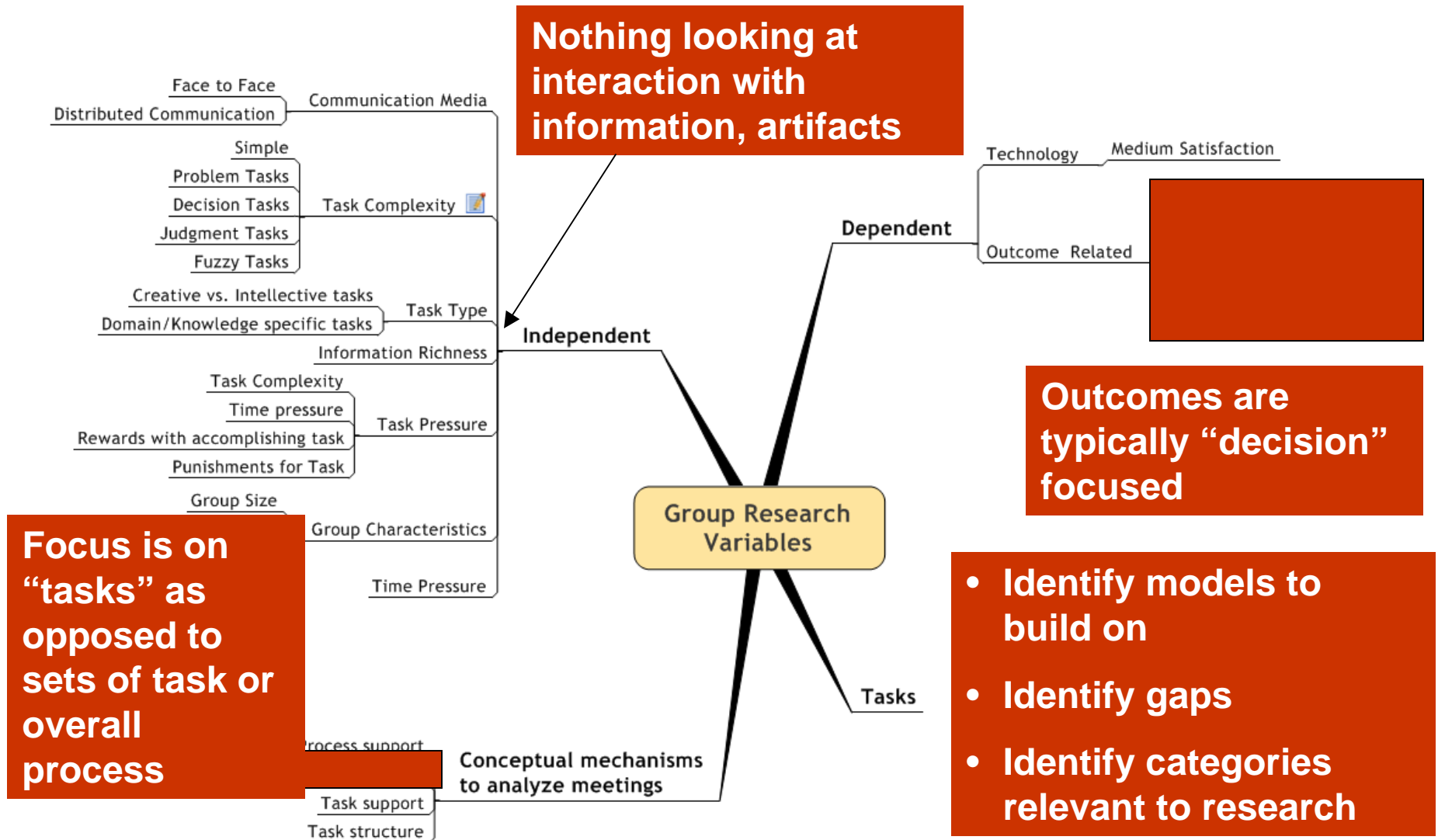
Areas of POD:

- Groupware/Meeting Research
 - Task Frameworks/Typologies
 - Task/Technology Fit
 - Task Complexity
 - Group Interaction Analysis
 - Coding Schemes
 - Conversational segments, utterances
- Information Visualization
- Information Complexity
- Value-Adding Work

Key Findings and Limitations:

- Only 2 studies found on group visualization
- GDSS work predominantly looks at:
 - Limited tasks and not fuzzy tasks
 - Technology attributes are facilitation, structure control oriented, mode of communication
 - Performance is function of task performance (time, quality,)
 - Few look at complexity
- Do not look at how the make-up or dynamics of tasks are changed or relations between tasks->process
- Focus on finding a 'fit' for specific tasks, but meetings are multi-task, specifically at task level
- Good coding scheme examples, but few examples of applying task frameworks to coding of natural meetings since most evaluations look at "result" not "process"
- Typologies do not look at complexity as function of form of information or type of information, just quantity, etc.

Exploratory Literature Review



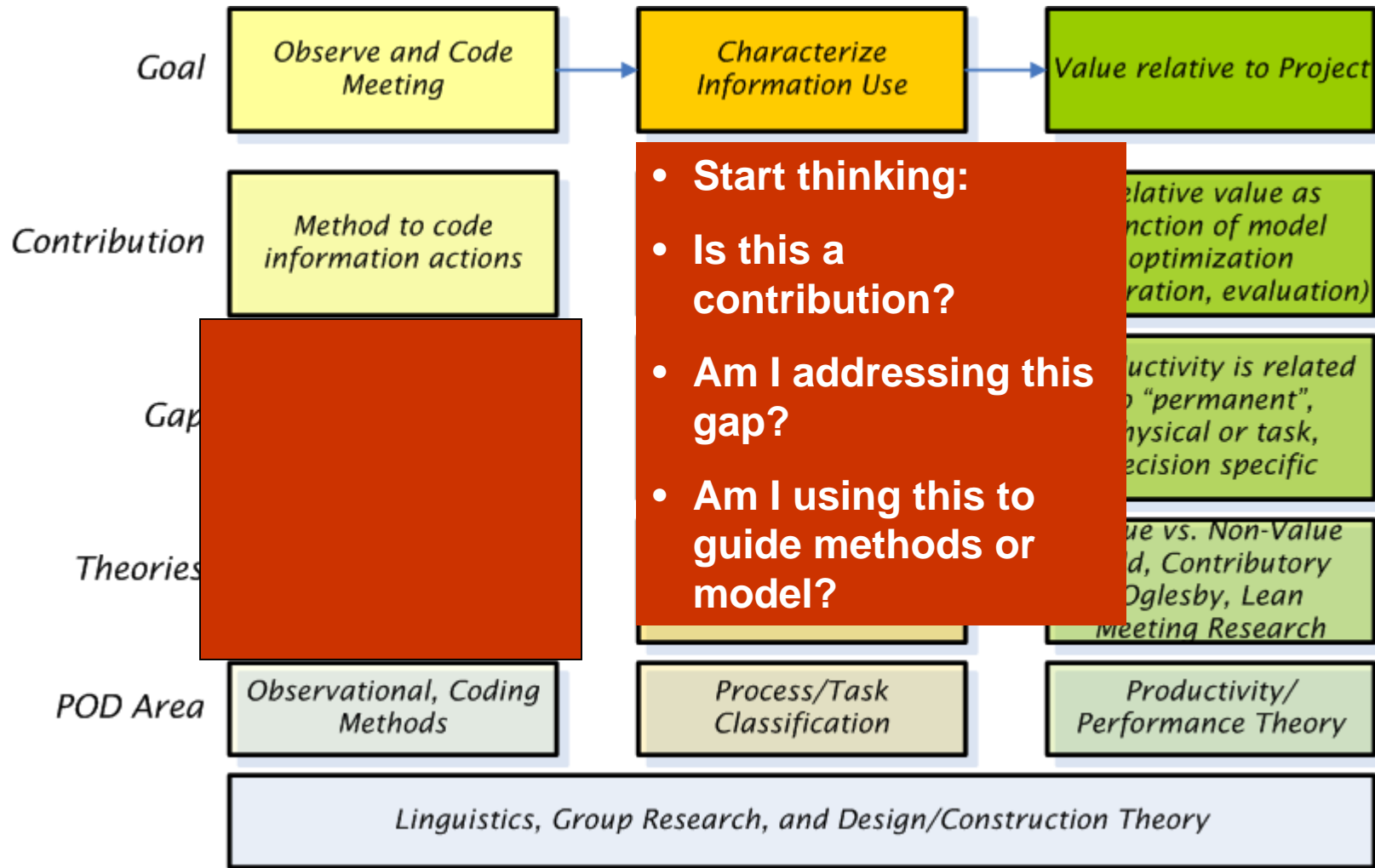
Focused Literature Review

- Map questions, proposed contributions to review
- Discuss scope of research in context of POD
- Organize, structure POD

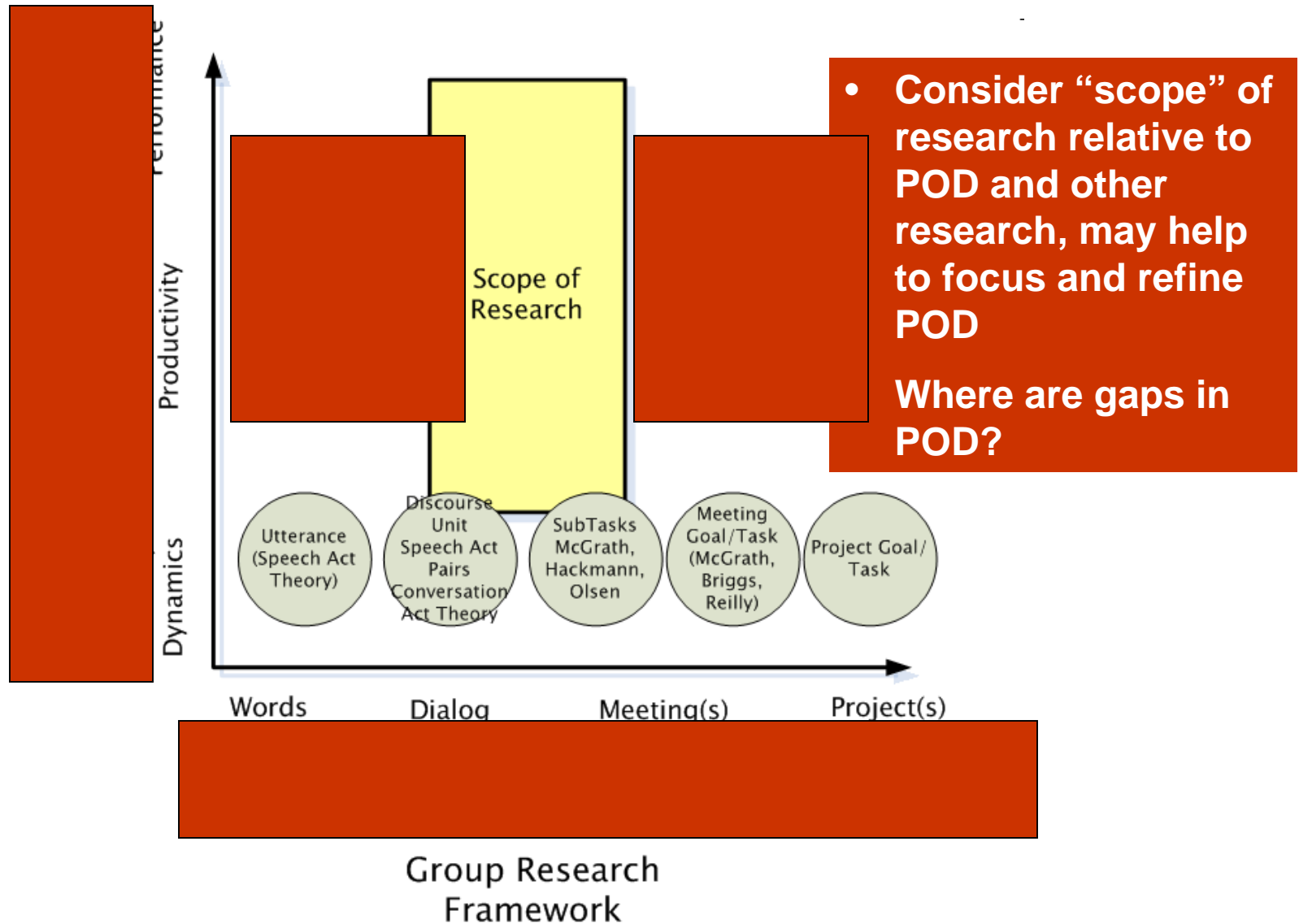
-
- ```
graph TD; A[Map questions, proposed contributions to review] --> B[Research framework/model to POD
Typology to POD
Coding method and analysis to POD]; B --> C[Why is my proposed framework different from existing? -> Compare
What models am I building on and why? Which ones don't apply?
Are my methods and metrics proven, reliable?];
```
- Research framework/model to POD
  - Typology to POD
  - Coding method and analysis to POD

- Why is my proposed framework different from existing? -> Compare
- What models am I building on and why? Which ones don't apply?
- Are my methods and metrics proven, reliable?

# Link POD to Contribution



# Define work in context of POD





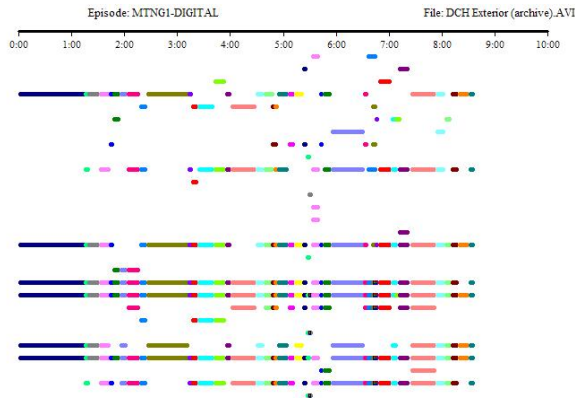
# Focused Literature Review

Consider best way to communicate POD

Table Chart

Series: MTNGI

- Activity Design Framework : Framing Future Artifact
- Activity Design Framework : Making Sense of Artifact
- Activity Design Framework : MS of Process
- Activity Design Framework : State of Artifact
- Activity Design Framework : State of Process
- Bales-IPA : Agrees
- Bales-IPA : Asks for Opinion
- Bales-IPA : Asks for Orientation
- Bales-IPA : Gives Opinion
- Bales-IPA : Gives Orientation
- Bales-IPA : Gives Suggestion
- Bales-IPA : Shows Tension Release
- DFCS : PA - Problem Analysis
- IHF : Analyze
- Information Artifact : Conceptual
- Information Artifact : Digital
- Information Artifact : None
- Information Artifact : Not present
- Information Type : 4D model
- Meeting Type : PreConstruction
- Olson : Clarification
- Olson : Meeting Management
- Olson : Other
- Olson : Walkthrough
- Project Model : Process
- Project Model : Product
- TAM Acts : Descriptive
- TAM Acts : Unassigned



Jasal Coding

(Poole and Roth 1989),  
Decision Function Coding System (DFCS) **Error! Reference source not found.** and Group Working Relationships Coding System (GWRCS) (Poole 1983), adapted and based on Fischer's Decision Proposal Coding System

Decision behaviors and model phases and acts of decision paths in groups

(See **Error! Reference source not found.**)

- Decision Function Phases
  - Problem Analysis
  - Problem Critique
  - Solution Analysis
  - Solution Development and Elaboration
  - Solution Critique
  - Orientation
  - Tangent
  - Confirmation
  - Disorganized/Nonfocused
- Working Relationship Categories (GWRCS)
  - Focused Work
  - Critical Work
  - Opposition
  - Accommodation
  - Tabling
  - Open Discussion
  - Integration

Discuss key findings, limitations

Define metrics or rationale for POD

|                                               |                                                                                                                                                                                                                                                                       |                                                                                                                                                   |                                                                                                                    |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                               | <ul style="list-style-type: none"> <li>▪ Seek structuring</li> <li>▪ Seek solution proposals</li> <li>▪ Seek clarify-defined-repeat</li> <li>▪ Seek evaluation</li> <li>▪ Procedure</li> <li>▪ Seek Procedure</li> <li>▪ Irrelevant</li> <li>▪ Fragmentary</li> </ul> | <ul style="list-style-type: none"> <li>▪ Asks for suggestion</li> <li>▪ Disagrees</li> <li>▪ Shows tension</li> <li>▪ Shows antagonism</li> </ul> |                                                                                                                    |
| Analysis Methods                              | Combined coding with coding of the "product" of the work                                                                                                                                                                                                              | Coding of teams, in lab and field                                                                                                                 | 47 decisions in natural groups, coded dialog                                                                       |
| Key Findings                                  |                                                                                                                                                                                                                                                                       | Various studies, student groups, in lab and in field; found correlations between groups with overt agreement behavior and satisfaction            | Wide variation in decision paths, some teams exhibited unitary decision path, 50% non-unitary(Poole and Roth 1989) |
| Limitations from current research perspective | Too many categories, and lacks consistency across the activities, difficult to interpret and apply                                                                                                                                                                    | Behavioral focus, does not capture or relate to "product" or target of action                                                                     | Organizes categories into                                                                                          |

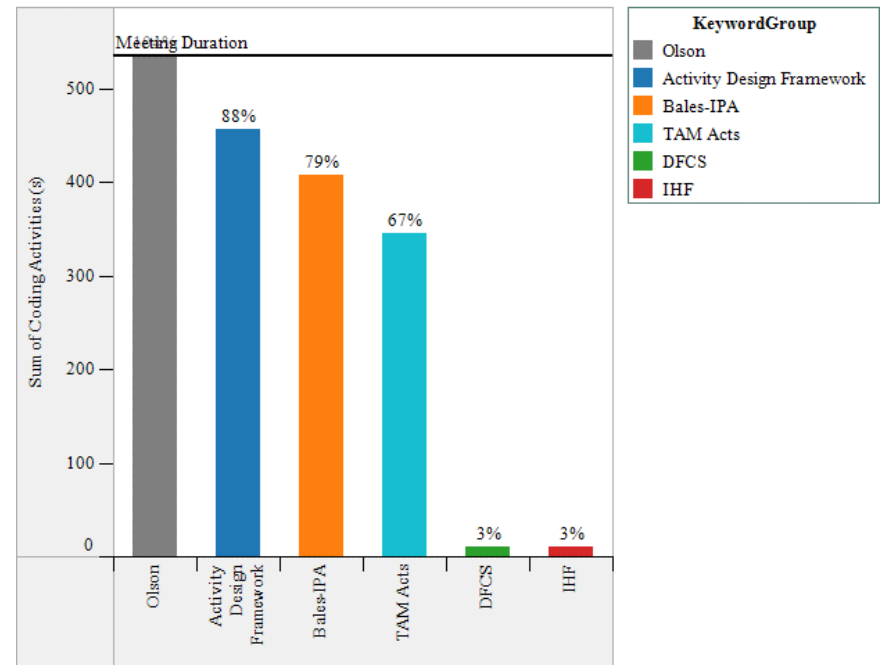
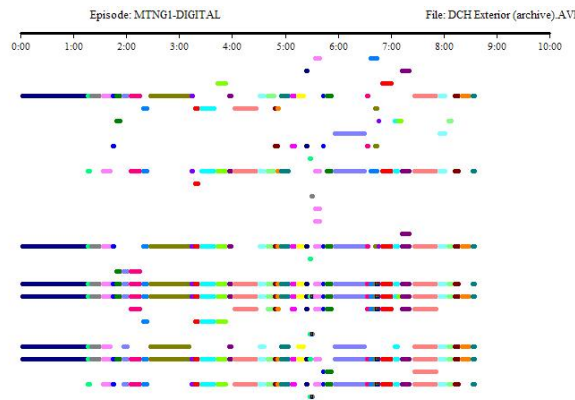
# Focused Review: Communicate

- Use charts to compare BOD and position research

Coverage of Coding Scheme for Meeting Duration

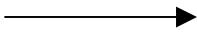
Series: MTNG1

Activity Design Framework : Framing Future Artifact  
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 Olson : Other  
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 Project Model : Process  
 Project Model : Product  
 TAM Acts : Descriptive  
 TAM Acts : Unassigned



Sum of ClipDuration for each KeywordGroup. Color shows details about KeywordGroup. The data is filtered on Meeting 1, which keeps 44 members. The view is filtered on Exclusions (KeywordGroup), which keeps 6 members. The marks are labeled by Keyword Time.

# Refined Literature Review

- Organize and document
  - Contributory or Significant POD
    - Building on?
    - Influenced or framed research, but not contributing to
  - Refer to literature for any “holes”
- 
- POD for Group Models
  - POD for Group Task Classification
    - General
    - Domain
  - POD for Group Process/Outcome
    - Observation Methods
    - Coding processes
    - Inter-rater reliability
  - POD for Artifact Interaction
    - Domain
    - General

# Refined Literature Review

**POD on Information,  
Artifact Classification/  
Interaction**

**OD on Group  
Models**

**POD on Methods to**

**Use a research model,  
framework to organize or  
summarize results of POD**

# Refined Literature Review

## 3.2 Group Research and Models of Team Interaction, Actions, and Team Effectiveness or Performance

Group researchers study the psychology, communication, and organizational behavior of groups. AEC project teams are a specific type of group and several group research case studies have observed architects and engineers, particularly in design activities (INSERT REF TO: ). The theories, models, and findings from group research are relevant to this research and specifically provide an initial framework to model the AEC meeting process, team activities, and sources for methods to analyze meeting outcome. The review was framed by the scope of this research relative to the overall field of group research (Figure 11) and the following parameters:

Present POD

- Rationale

- [REDACTED] group research studying groups in meetings and discourse, not at the micro-level of utterances or individual interactions such as gestures and not at the macro-level of groups within an organization. The unit of analysis for the TAP framework are activities observed through discourse and bounded by the meeting
- [REDACTED] Research that models groups as an input-process-output
- ***Purpose of group analysis:*** Activities of group as a unit vs. studying individual activity and interaction. The focus is on the interaction of the team with the project artifacts. Emotional behaviors and non-verbal analysis is not emphasized.
- [REDACTED] Within the group research literature there are several groups that focus on the interaction of groups with technology or digital artifacts:
  - Researchers developing Group Decision Support Systems (GDSS) within Management Information Science
  - Computer Supported Cooperative Work (CSCW)
  - Electronic Meeting Systems (EMS) (Nunamaker et al. 1991)
  - Design Studies: Researchers look at process of design from a group perspective

# Refined Literature Review

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# Focused Literature Review

## Present POD

- Key Findings
- Analysis
- Limitations addressed in your research

Table 1: Significant research models and frameworks of group interaction and group process where corresponding coding schemes were developed and employed for analysis.

| Researchers                                  | Perspective       | Theory                                                                                                                       | Cited <sup>1</sup> | Level of Analysis    |                           | Cross-Analysis? Or Tested By? |
|----------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------|-------------------------------|
|                                              |                   |                                                                                                                              |                    | Unit of Analysis     | Process                   |                               |
| (McGrath 1984)                               | Functional - Task | NEED TO REVIEW AGAIN                                                                                                         | 828                |                      |                           |                               |
| (Hackman 1987)<br>(Hackman and Morris 1975)  |                   | Input-Process-Output, coding for both activities and "product" –specific to the work product in the study                    | 505<br>232         | Discourse            | Activities of group       |                               |
| (Bales 1976) , Originally 1951<br>**         | Behavior          | Interaction Process Analysis                                                                                                 | 652                | Utterance            | Socio-Emotional Actions   | (Carletta et al. 1996)        |
| (DeSanctis and Gallupe 1987)                 |                   | Task Circumplex: The tasks groups perform                                                                                    | 614                | Task, Discourse Unit | Group Tasks               |                               |
| (Olson et al. 1992; Olson and Olson 2000) ** | Activity          | Coding scheme for describing what teams "do" differentiate between tasks related to what they are doing vs. management tasks | 378                | 1 minute intervals   | Activities group is doing |                               |
| (Putnam 1981) and<br>(Zigurs et al. 1988)    | Influence         | Procedural Message, Capture Attempts to Influence Group                                                                      | 91                 | Turn                 | Influence Actions         | (Zigurs et al. 1988)          |
| (McGrath 1991)                               |                   | Time Interaction Performance                                                                                                 | 247                |                      |                           |                               |
| (Fisher 1970)                                |                   | Categories of Verbal Interaction                                                                                             | 60                 |                      |                           |                               |
| (Rogers and Farace 1975)                     | Transactions      | Transactional view of messages void of content                                                                               | 47                 |                      |                           |                               |
| (Poole and Roth 1989) **                     | Decision          | DFCS                                                                                                                         | 64                 | Coding method        |                           |                               |

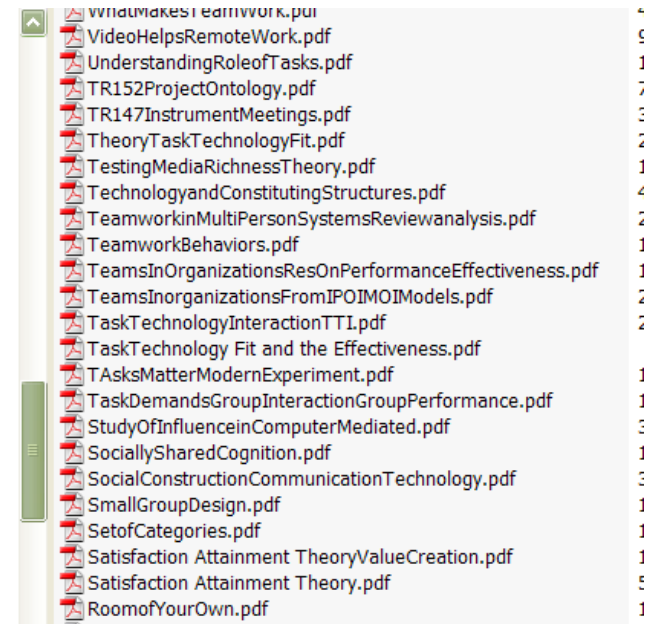
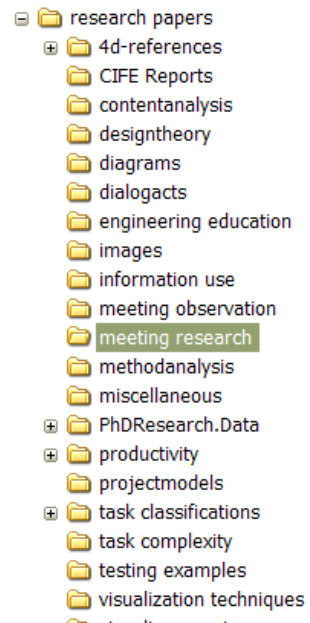
# Methods for Literature Review

- Creativity
- Diligence
- Inquisitiveness
- Patience...and knowing when to stop 😊
- Google is your friend..



# Practical Tips: Getting Started

- Setup research folder
  - Create sub-folders for topic areas
- Develop a consistent naming scheme for papers:
  - Paper title
  - Author-Year
  - Author-Title
  - Endnote number



# Software Tools

- Software tools:
  - EndNote
  - Microsoft Word
  - Mind Map software
  - Adobe Acrobat
  - Web Browser

- Why Endnote?
  - Stores all references
  - Can adjust format styles per journal, conference, or other publication requirements
  - Add links to papers for better management
  - Add keywords, notes for searching and organizing literature review

# Online Search

| Web Site                                                                                                            | Good for...                                                                                                         | Not...                                                      |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| google.scholar.com                                                                                                  | Quickly highlighting popular and seminal research<br>Lists # of citations – good indicator of importance of paper   | Older papers are only found once you know the author, title |
| <a href="http://www.google.com">www.google.com</a>                                                                  | Comprehensive search across websites                                                                                | Online resources publicly available                         |
| <a href="http://sulair.stanford.edu">http://sulair.stanford.edu</a>                                                 | Finding specific reference by author or book title– especially books<br>Finding a journal                           | General search                                              |
| <a href="http://www.dictionary.com">www.dictionary.com</a>                                                          | Great for citing definitions or clarifying common terms                                                             |                                                             |
| <a href="http://www.wikipedia.com">www.wikipedia.com</a>                                                            | Excellent source for general description of theories, models, terms with references to other sources                | <u>Referencable material</u>                                |
| <a href="http://www11.tdnet.com/frames.asp">http://www11.tdnet.com/frames.asp</a><br>(Socrates Electronic Journals) | Finding a journal online site                                                                                       |                                                             |
| <a href="http://citeseer.ist.psu.edu">http://citeseer.ist.psu.edu</a>                                               | Finding references by authors                                                                                       | Does not cover all domains                                  |
| <a href="http://search.epnet.com">http://search.epnet.com</a>                                                       | If you know general database you want to look in                                                                    | General, intro research                                     |
| <a href="http://www.census.gov/compendia/statab">www.census.gov/compendia/statab</a>                                | Statistics of U.S.                                                                                                  |                                                             |
| <a href="http://www.questia.com">www.questia.com</a>                                                                | Online books in areas of sociology, education, group research<br>Great tools to bookmark, highlight, and cite books | Engineering in general                                      |
| <a href="http://www.lii.org">www.lii.org</a>                                                                        | Librarian's internet index                                                                                          |                                                             |
| <a href="http://del.icio.us">http://del.icio.us</a>                                                                 | Grass-roots <u>bookmarking</u>                                                                                      |                                                             |

# Practical Tips: Online Search

- General search sites
- AEC specific
- Magazines, Commercial Sites

# Practical Tips: Documenting References

- Start with outline
  - Insert notes, references within outline and expand as needed
- Use tables to structure notes
  - Select criteria, ideas
- References end of papers are best source for more information
- Go to specific university or institution web sites. Many papers and reports can be found at specific schools.
- Go to researcher's home page. I've found old, out-dated papers not available online through some academics.
- Email the researcher. I've also emailed the researcher and one fedexed a hard-copy of the paper.

# Practical Tips: Miscellaneous

- Stanford's SU LAIR has a great intro page for sources for hard to find documents:  
[http://sulair.stanford.edu/research\\_help/how\\_find/index.html](http://sulair.stanford.edu/research_help/how_find/index.html)
- PhD Thesis, working papers, reports.
  - There is a searchable thesis database found through the Stanford site. My experience is it's best to go the university and department site or email the researcher directly
- Using PDF:
  - You can highlight, add bookmarks, search. Get to learn Adobe Acrobat – very useful tool