

RISK ASSESSMENT AND BEST PRACTICES IN SCHEDULING

PROJECT MANAGEMENT INSTITUTE
COLLEGE OF SCHEDULING
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OVERVIEW The Good, The Bad, and The Ugly

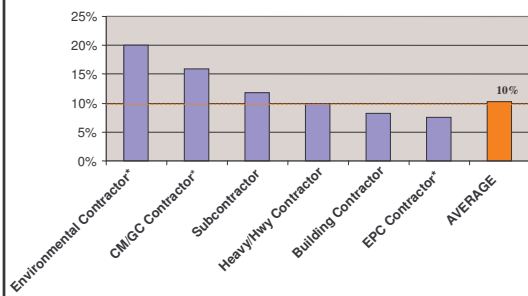
1. Survey of Scheduling Practices and Results
2. Master Scheduling Specification
3. Best Practices
4. Risk Assessment
5. Partnering and Teambuilding
6. Education and Training

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CHANGES AS PERCENT OF TOTAL PROJECT COST - CONTRACTORS



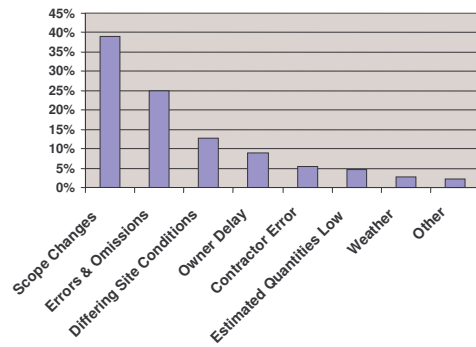
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CAUSE OF CHANGES - CONTRACTORS VIEW



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BEST PRACTICES TO REDUCE CHANGES

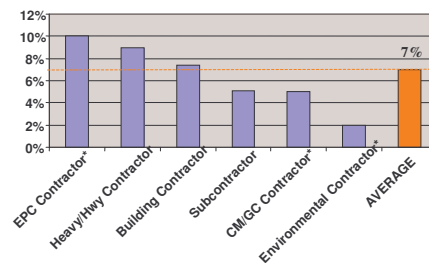
1. Scope Change
 - * Better scope definition (programming and predesign)
 - * Cost and scope management during design
 - * User groups/operations & maintenance in design reviews
2. Design Errors
 - * Select best qualified designer with project management skills
 - * Don't over-emphasize design fees – pay more, get more
 - * Evaluate performance and use for future selection
 - * Constructability reviews and value engineering
3. Differing Site Conditions
 - * Better as-builts of new projects
 - * Risk analysis of site investigation cost vs. benefits
4. Owner Delays
 - * "If you want it bad, you'll get it bad"

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PERCENTAGE OF CHANGES THAT BECOME CLAIMS - CONTRACTORS



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SURVEY RESULT: BEST PRACTICES TO KEEP CHANGES FROM BECOMING CLAIMS

1. People skills, culture, attitude, trust, reasonable expectations
2. Prompt and fair negotiation and payment for change orders
3. Fair and effective contract administration
4. Timely notice of change and submission of change order price
5. Clear communication to avoid misunderstanding
6. Owner/design team understanding cost of delay and disruption
7. Willingness to accept responsibility for error
8. Timely responses to RFIs and questions
9. Win/win negotiation, instead of win/lose
10. Avoid unfair contract terms and conditions
11. Partnering and teambuilding

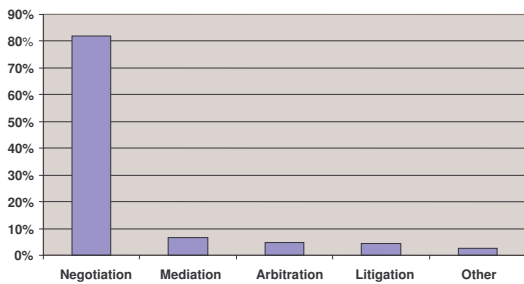
Based on a weighted value of 49 responses, evenly divided between contractors and project owners

OUR RECOMMENDED BEST PRACTICES TO AVOID CHANGES BECOMING CLAIMS

Our recommended best practices for avoiding and resolving claims, as incorporated into our Dispute Management Program are:

1. Partnering, teambuilding, and win/win negotiation
2. Better project management, documented procedures
3. Fair contracts that distribute the risks to those with control and ability to pay
4. Understanding of contract interpretation
5. Education and training
6. Adequate staffing and attention to detail

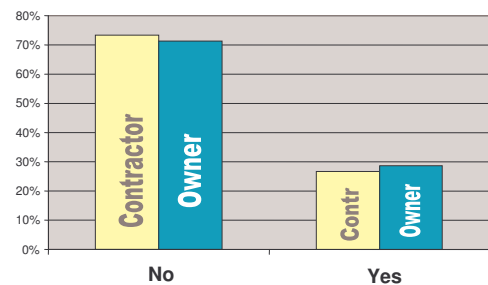
HOW CONTRACTORS SETTLE CLAIMS



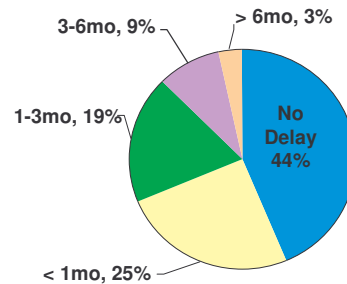
OUR RECOMMENDED BEST PRACTICES TO SETTLE CLAIMS

1. Partnering and Teambuilding
2. Win/Win Negotiation
3. Dispute Review Boards (DRBs)
4. Mediation
5. Project Re-Alignment

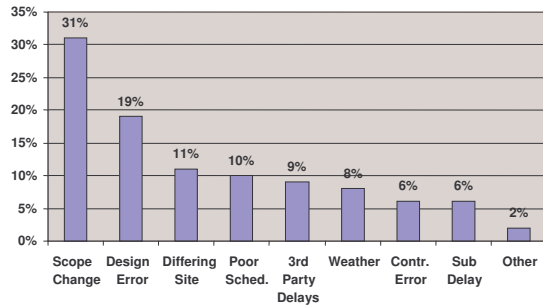
WAS PARTNERING USED ON PROJECTS WITH CLAIMS?



PROJECTS WITH DELAYS - CONTRACTORS



CAUSES OF DELAYS - CONTRACTORS VIEW



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RECOMMENDED BEST PRACTICES FOR OWNERS TO AVOID DELAYS

1. Fewer Scope Changes – through better predesign and architectural programming.
2. Fewer Design Errors – through better project management and quality control.
3. Fewer Differing Site Conditions – through more intensive site investigations and better as-builts.
4. Training Project Personnel in CPM or hiring an expert for schedule review and tracking.
5. Better coordination with utility companies, and penalties for late performance.

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RECOMMENDED BEST PRACTICES FOR CONTRACTORS TO AVOID DELAYS

1. Training project team members in scheduling and providing them with expert support.
2. Involving subcontractors in scheduling and keeping them informed of progress and problems.

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CORRELATION BETWEEN SCHEDULE PREPARER AND DELAYS

SURVEY RESULTS:

- 71% of on-time building contractors – project team
- Plus 1 bldg. contractor – project team and office staff
- Plus 1 contractor – project team and consultants
- 80% of late building contractors – office staff
- Both on-time heavy/hwy – project team/consultants
- All 5 fair heavy/hwy contractors – project team
- Both late heavy/hwy contractors – office staff

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CONTRACTOR SCHEDULING PRACTICES

Contractors View of Their Scheduling Practices	Always	Usually	Sometimes	Seldom
Do you request subcontractor input?	52%	32%	16%	0
Do you prepare monthly updates?	42%	47%	8%	3%
Do you submit narrative reports?	55%	0	0	45%
Do you prepare time impact analysis?	16%	32%	36%	16%

Contractors' Opinion of Scheduling Quality	Yes	No
Are you satisfied with your scheduling procedures and results?	75%	25%

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SUBCONTRACTOR OPINION OF CONTRACTOR SCHEDULING PRACTICES

Subcontractor Opinion of Contractor Scheduling Practices	Always	Usually	Sometimes	Seldom
Do they request subcontractor input?	5%	19%	62%	14%
Do they prepare monthly updates?	0%	33%	62%	5%
Do they keep subs informed?	0%	19%	43%	38%
Do they submit recovery schedules?	0%	19%	33%	48%
Do they hide delay and then accelerate the subcontractors?	10%	62%	19%	10%

Subcontractor Opinion of Quality of General Contractors' Scheduling	Good	Fair	Poor
What is the quality of contractors' schedules?	36%	28%	36%

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OWNER REPRESENTATIVE SKILLS AND PRACTICES – CONTRACTORS VIEW

Contractor Opinion of Owner Representatives Skills and Practices	Always	Usually	Sometimes	Seldom
Are they well trained in scheduling?	0%	19%	53%	28%
Do they meet to review schedule?	11%	38%	42%	9%
Do they enforce scheduling specs?	2%	33%	40%	25%
Do they keep detailed records?	4%	18%	54%	24%
Do they respond timely to RFIs?	2%	37%	52%	10%

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CORRELATION BETWEEN TIMELY RESPONSE AND FEWER CLAIMS

Timely owner representatives' response corresponds with fewer claims and more settled by negotiation.

- Average changes that become claims = 7%
- Average claims settled by negotiation = 82%

SURVEY RESULTS:

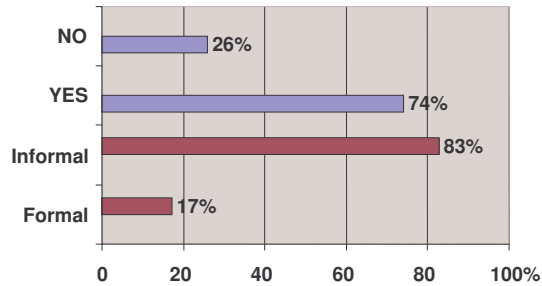
Timely Response	Resulting Claims and Settlement
Always (1 of 1)	5% changes to claims and 100% negotiation/mediation
Usually (6 of 7)	0-1% changes to claims
Seldom (5 of 5)	10-33% changes to claims and 15-50% claims to arbitration/litigation

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CONTRACTORS RISK MANAGEMENT PRACTICES



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CONTRACTORS RECC'D BEST PRACTICES

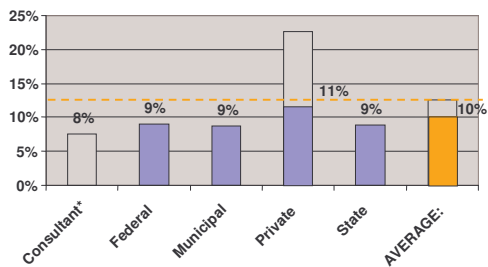
1. Better design with fewer errors and omissions
2. Constructability reviews and other contractor input
3. Different contracts than low bid (e.g. CM, design/build, etc.)
4. Partnering, timely payment, better communication, etc.
5. Detailed site investigations and better as-builts for remodels
6. Stricter prequalification of contractors on low bid contracts
7. Better scheduling by general contractors
8. Better owners representatives (construction managers)
9. Better schedule input and fewer delays by subcontractors
10. Better general conditions that distribute risk fairly to all parties
11. Schedule training for construction managers and/or contractors
12. Better scheduling specifications
13. Dispute review boards (DRBs) on larger projects
14. Stricter enforcement of scheduling specifications
15. Better general conditions that protect the owner from claims

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CHANGES AS PERCENT OF ANNUAL VOLUME - OWNERS VIEW



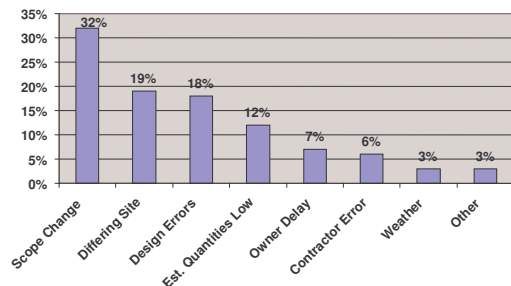
* Not included in average.

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CAUSE OF CHANGES - OWNERS VIEW

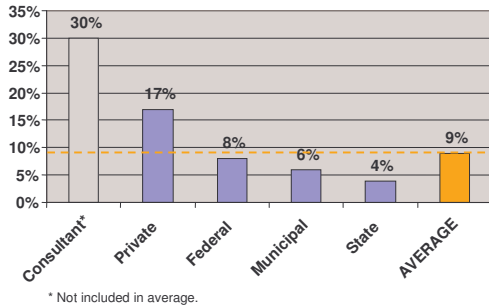


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PERCENTAGE OF CHANGES THAT BECOME CLAIMS - OWNERS VIEW



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CHANGES PER VOLUME AND CLAIMS PER CHANGES - OWNERS

There appears to be a correlation between the amount of changes and the percentage of changes that become claims:

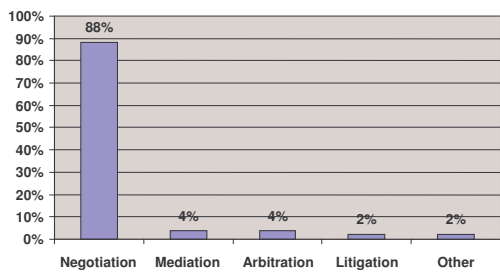
- Changes as a percent of total volume averaged 12%
- Claims as a percent of changes averaged 11%
- 12 owners with 30% changes had 15%+ claims
- 29 owners with 7% changes had < 5% claims

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HOW OWNERS SETTLE CLAIMS

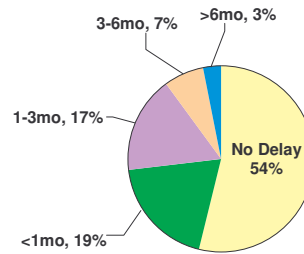


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PROJECTS WITH DELAYS - OWNERS VIEW

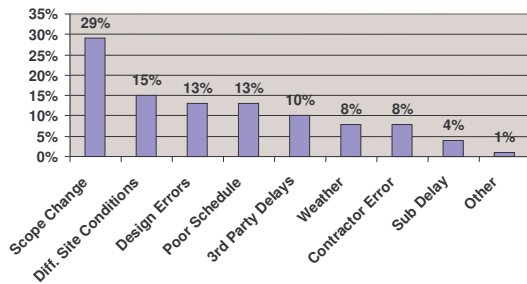


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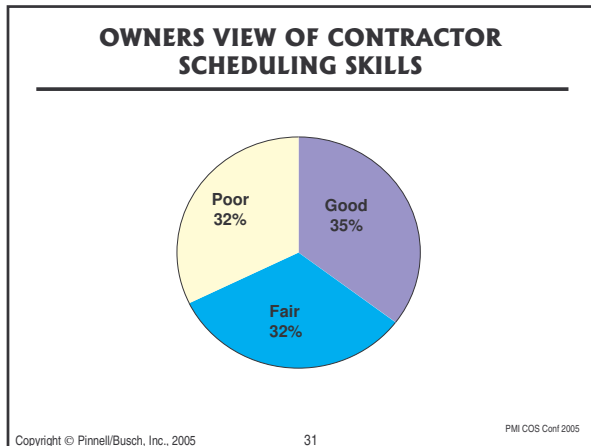
OWNER SCHEDULING SPECIFICATIONS

Owners' View of their Scheduling Specifications	Yes	No
Satisfied with your scheduling specification?	61%	39%
CPM required for projects over \$5 million?	83%	17%
Do your specs require monthly updates?	93%	7%
Do your specs require narrative reports?	53%	47%
Do your specs require electronic schedules?	57%	43%
Do your specs require impact analysis if delay?	40%	60%

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OWNER EVALUATION OF CONTRACTOR SCHEDULING PRACTICES

Owner Evaluation of Contractor Scheduling Practices	Yes	No
Do your contractors submit monthly updates?	69%	31%
Do you carefully review their schedule updates?	86%	14%
If delayed, do they submit recovery schedule?	59%	41%
Do your contractors generally finish on time?	72%	28%

Owner's View of Contractor Scheduling Skills	Good	Fair	Poor
What is the quality of contractors' schedules?	35%	32%	32%

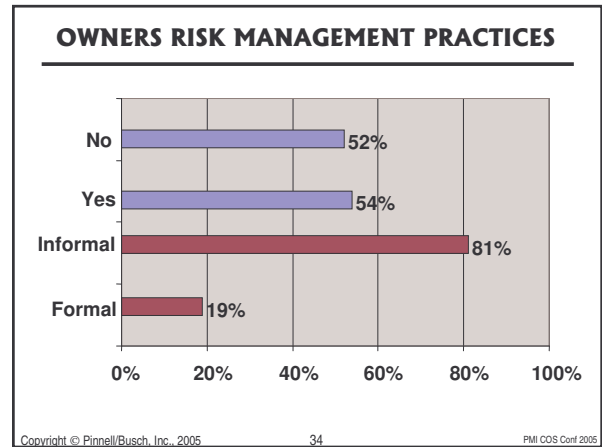
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OWNER REPRESENTATIVE SKILLS AND PRACTICES - OWNERS VIEW

Owner View of Their Owner Representatives' Scheduling Skills and Practices	Yes	No
Are owners representatives trained in scheduling?	44%	56%
Do they meet with contractor to review the schedule?	78%	22%
Do they fully enforce the scheduling specifications?	38%	62%
Do they keep detailed records of progress and delays?	67%	33%

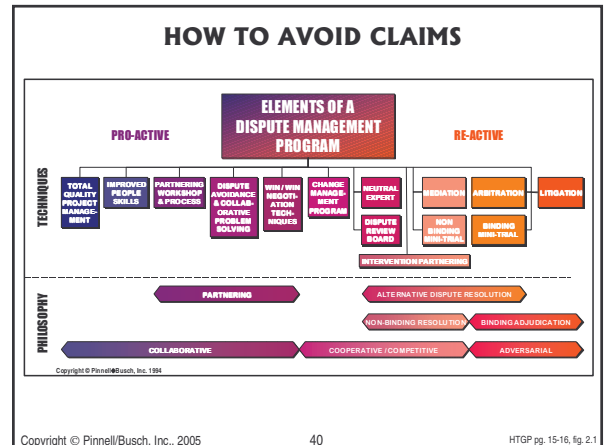
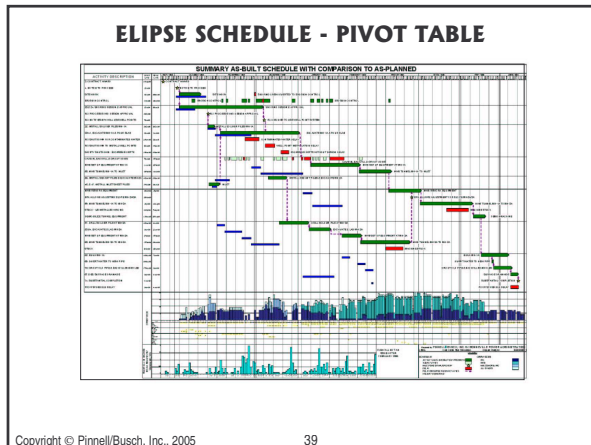
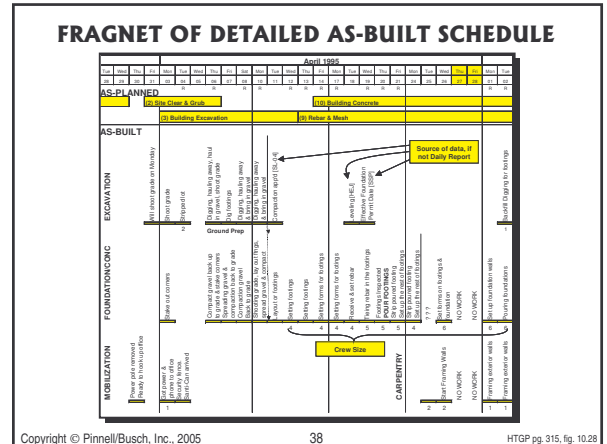
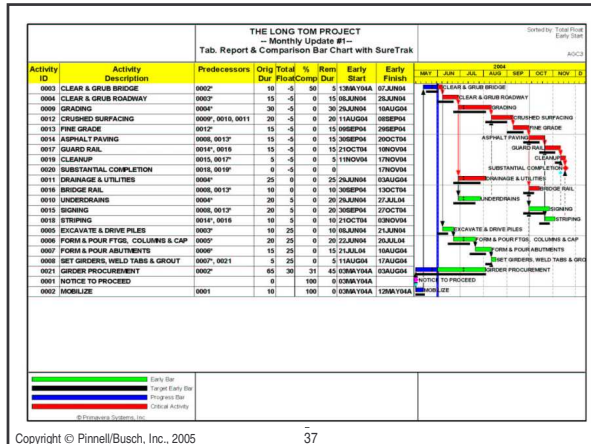
Owner View of Their Owner Representatives' Response Time	Always	Usually	Sometimes	Seldom
Timely response to RFIs and COs?	19%	78%	3%	0%

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- ### OWNERS RECC'D BEST PRACTICES
1. Better design with fewer errors and omissions
 2. Constructability reviews and other contractor input
 3. More detailed site investigations and better as-builts
 4. Different contracts than low bid (e.g. CM, design/build, etc.)
 5. Better scheduling by general contractors
 6. Partnering, timely payment, better communication, etc.
 7. Better owners representatives (construction managers)
 8. Stricter prequalification of contractors on low bid contracts
 9. Stricter enforcement of scheduling specifications
 10. Better schedule input and fewer delays by subcontractors
 11. Better scheduling specifications
 12. Better general conditions that distribute risk fairly to all parties
 13. Schedule training for construction managers and/or contractors
 14. Better recordkeeping and contract administration
 15. Better general conditions that protect the owner from claims
 16. Dispute review boards (DRBs) on larger projects
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- ### SCHEDULE REVIEW & ACCEPTANCE PROCESS
- ◆ **Require Timely and Compliant Submittals**
 - ◆ **Owner's Initial Review Upon Receipt, Prior to Meeting**
 - ◆ **Joint Meeting with Contractor's Scheduler & Superintendent**
 - Presentation by Contractor, Ask Questions, Take Notes
 - Review Critical Path in Sequence -- Logic, Crew, Work Qty ...
 - Check Work Quantities, Production Rates, & Durations
 - Check Critical Crew Chases (crane, equipment fleet, ...)
 - When Done, Brainstorm for Improvements
 - ◆ **Accept at the Meeting** or as soon as possible afterwards
 - ◆ **If Reject** - state exactly why and require re-submittal by a specific date. Offer to discuss – to ensure you get what you need.
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Scheduling Best Practices:
Specification, Procedures,
Risk Assessment and Change
Management
Session Number

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