

Action Research Findings and Contributions

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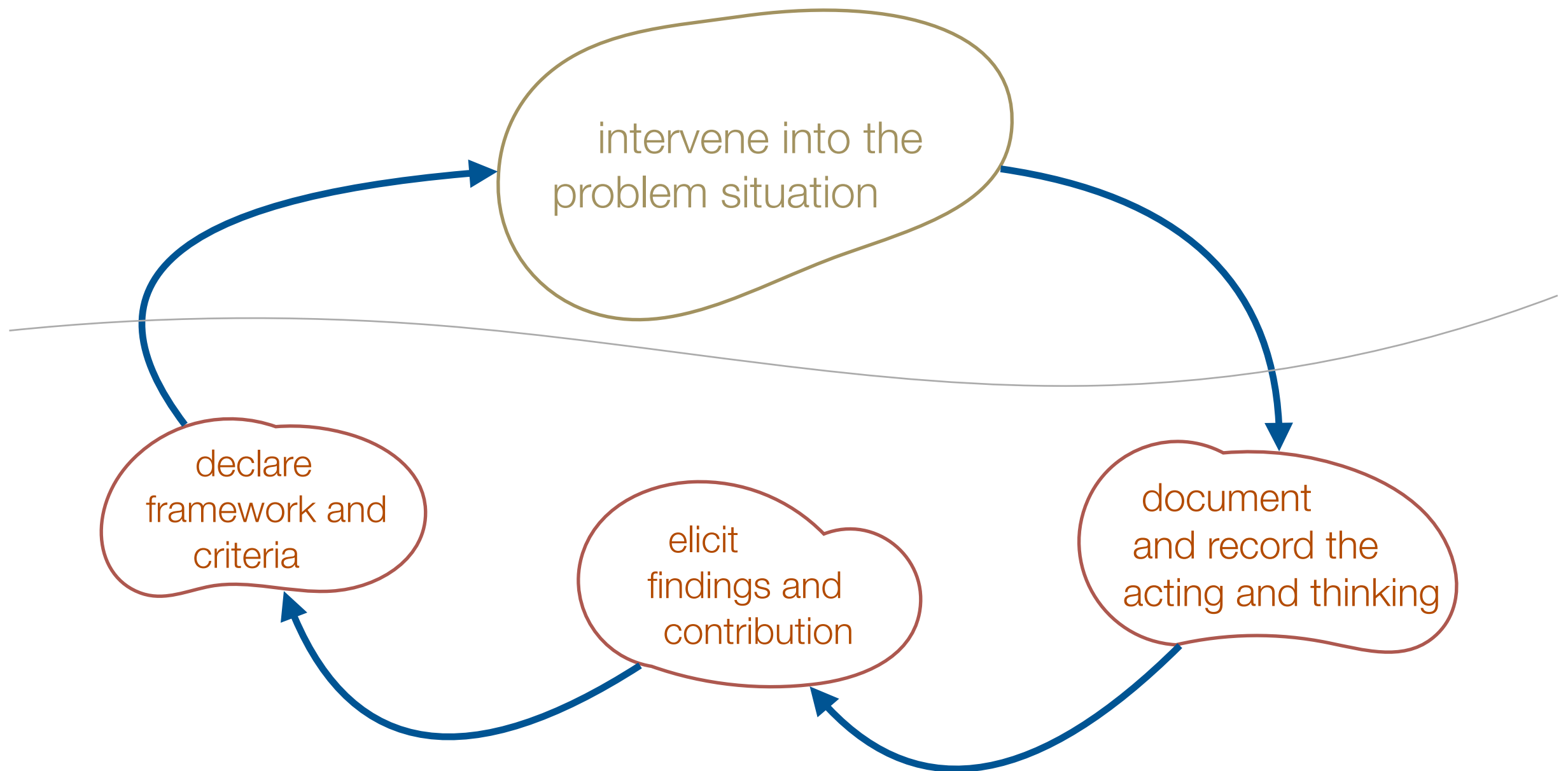


RESEARCH CENTRE FOR
socio-interactive design



AALBORG UNIVERSITY
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Action research: a study of change



→ dependency

Genres of action research papers

New or Modified Technique

- Instrumental knowledge interest
- Structure:
 - Introduction
 - Research Approach
 - The Problem Situation/The Process
 - The New Technique (in an operational way)
 - Why It Is New
 - Conclusion
- Typical research outlets: ISJ, EJIS, JSIS, SJIS
- Typical practitioners outlets: IEEE Software, CACM

Critical Reflection

- Critical knowledge interest
- Structure:
 - Introduction
 - Existing Body of Knowledge
 - Research Approach
 - The Process/Events/Problems/Actions
 - Discussion of How It Contributes
 - Conclusion
- Typical outlet: IT&P, (MISQ), JMIS, +

New Technology

- Instrumental knowledge interest
- Structure:
 - Introduction
 - Related Research
 - The New Technology
 - Research Approach
 - How It Worked
 - Why It Is New
 - Conclusion
- Typical research outlets: CHI, IwC, ISJ, EJIS, SJIS

Iversen, Mathiassen & Nielsen

1. Introduction
2. Background
3. Research approach
4. Research practice
5. Research results
6. Discussion
7. Conclusion

Baskerville & Stage

1. Introduction
2. Problems in controlling prototype development
3. Risk analysis in prototyping
4. Research method
5. Risk analysis in action
6. Discussion of results
7. Limitations of the study
8. Conclusion

Davison

1. Introduction
2. Background and theory
3. Case study – the Hong Kong Police Force
4. Reflections on the techniques and methods
5. Rigor and relevance in AR
6. Conclusions

Iversen, Nielsen & Nørbjerg

1. Introduction
2. SPI assessments
3. Research method
4. The intervention at Brüel & Kjær
5. Discussion
6. Lessons learned
7. Conclusion

Vidgen

1. Introduction
2. Research method
3. The framework of ideas – Multiview
4. The client organization
5. Web IS development methods
6. Reflections
7. Summary

Nielsen & Nørbjerg

1. Introduction
2. The research approach
3. The case
4. CMM and organizational politics
5. Conclusion

Style composition - Mathiassen et al. 2012

Premise Style	Inference Style	Contribution Style
Practical: Argument primarily based in challenges in IS practice Theoretical: Argument primarily based in challenges in IS theory	Inductive: Argument primarily grounded in evidence from the problem-solving cycle that is subsequently embedded into concepts from the research cycle Deductive: Argument primarily grounded in concepts from the research cycle that are subsequently validated or illustrated through evidence from the problem-solving cycle	Experience report: Argument for insights from IS practice that could potentially lead to research contributions Field study: Argument for primary contribution to A or F_A Theoretical development: Argument for primary contribution to F_I Problem-solving method: Argument for primary contribution to M_{PS} Research method: Argument for primary contribution to M_R

Style		1982–2000	2001–2009	Total
Premise	Practical	20 (63%)	29 (57%)	49 (59%)
	Theoretical	12 (37%)	22 (43%)	34 (41%)
Inference	Inductive	16 (50%)	30 (59%)	46 (55%)
	Deductive	16 (50%)	21 (41%)	37 (45%)
Contribution	Experience report	7 (22%)	2 (4%)	9 (11%)
	Field study	8 (25%)	17 (33%)	25 (30%)
	Theoretical development	1 (3%)	3 (6%)	4 (5%)
	Problem-solving method	9 (28%)	19 (37%)	28 (34%)
	Research methodology	7 (22%)	10 (20%)	17 (20%)

Generic structure

Introduction. Introduce area of concern (A) and motivate the objective of study. Introduce problem setting (P), conceptual framing (F), and method of investigation (M) as appropriate for addressing research objective. State principal results by making clear how a contribution (C) is made to one or more of A, P, F, or M (Checkland 1991; McKay and Marshall 2001).

Background. Provide a review of the pertinent literature within those areas to which C is a contribution; consider the principle of theory (Davison et al. 2004). Substantiate the motivation for the study by evaluating what we know and don't know. State the research question (RQ).

Framing. Introduce and argue for F, from A (F_A) or independent of A (F_I), for structuring and supporting data collection and analysis based on action research; consider the principle of theory (Davison et al. 2004).

Methods. Describe and argue for research method (M_R) and problem-solving method (M_{PS}); consider the principle of the cyclical process model (Davison et al. 2004). Introduce P to provide context for analysis (Pettigrew 1987) and to allow for subsequent discussion of transferability of results (Checkland and Holwell 1998); consider the principle of the researcher–client agreement (Davison et al. 2004).

Results. Present results of the problem-solving cycle based on M_{PS} ; consider the principle of change through action (Davison et al. 2004). Present results of the research cycle based on M_R . Focus on representative data, use tables and graphs (Day 1971); consider the principle of learning through reflection (Davison et al. 2004).

Discussion. Discuss Cs as response to RQ based on *Results* and related to *Background* literature; consider the principle of learning through reflection (Davison et al. 2004). Don't repeat results, discuss relationships to literature, provide possible explanations, explicate conclusions with evidence for each conclusion, and state theoretical and practical implications (Day 1971).

Analysis

Analyzing Data

- Load the data into a tool: HyperResearch, Atlas.ti, NVivo, DeDoose, ...
- Code the data to understand it
- Find the results
- Document the contribution

Coding from data

- Primarily inductive
- Read, make sense, and design the codes to apply
- Apply the codes
- Structure the code in relationships between codes (hierarchies)
- Know as:
 - Contents analysis
 - Grounded theory

we have sort of an internal PO instead of the customer has the PO role and in some case, even on the customer site, but we basically have the scrum master internally on our team. And Also let's say the customer don't attend those meetings, but we do it internally so it is not like real scrum but methods which sort of goes best with our needs.

How long are your sprints normally?

ends, in this company, what I have seen so far is two weeks basically, but in my previous company it was a one week sprint, so it depends quite a lot on the project. I haven't been the scrum master or I haven't been the PO system so I don't really know what are the reasons why sometimes they use two weeks or one week but I think it is mostly because of that when it is not about real scrum where we do it like a real scrum and so when we use it internally it doesn't really have to be that strict rules about the sprint length. I think the best benefit comes from the daily reviewing and sort of work estimation method and the concept of sprint is not that important when we do it fully internally, so it is basically the same as a sprint is only in cases when the customer doesn't understand agile methods and they don't want to use agile methods so we give some sort of specification first and they want to see result, so some customers are like they want to see the benefits from the agile methods and so they don't want to do it more properly in a way.

worked in projects where the customer had a good understanding of scrum, since you joined the company?

id, you were not really part of the sprints? Who is usually part of the sprints?

ample have this one project where we were sort of responsible for making the , you know all the requirements and methods so we proposed sprints length and all the you know actual, how to do it , the whole thing was fine and they accepted and such.

ist asking cos you mentioned earlier you have not really been part of the sprint planning ...

a slightly not all the truth because I haven't been designing, been responsible for designing the sprint, of course sprint planning and such and why should we do it , all the tasks, of course I haven't been part of the process where we decide how long sprint we gonna have. Although I think that there should be some sort of, ...we haven't done it properly obviously..

ause of your role in usability?

is mostly because of the scrum master which is sort of in a way responsible for the practices and it has been mostly a proposal from him so he has been responsible for coming up with the plan . I think we have , I have never been a scrum master myself. I have been a team member and sort of a PO for the team so I think it must have been just because it has been a proposal from the scrum master. And yes you have been a team member do they have like daily stand up meetings?

part of it?

about user stories, how does it work here? Who defines them? That is if you use them?

es like if the customer is very traditional , old fashioned then we might not even use agile methods all. And in that case we quite often do the requirements specification just by the old methods and not agile. But when the customer is such that they understand the value of agile and development methods specification methods, then in that case we quite often use user stories. So it is either way, if it is a waterfall type projects or it is sort of very very modern , then we use agile , and sort of use

Coding from F

- Primarily deductive
- Use F(s) to design a coding scheme
- Read and apply the codes
- Analyse
 - contents
 - frequencies
 - relationships

▶	Assimilation stage
	Aberrations
	Great Quotes
▼	Agile practice
	On-site customer
	Testing first
	Collective ownership
	Continuous integration
	40-hour week
	Misc agility
	Sprints
	Pair programming
	Retrospectives
	Refactoring
	Scrum board
	Simple design
	Daily Scrum
	Planning game
	Backlog
	User stories
▶	Integration
	Experience
▶	Misc.

Presenting Data

- Displaying authentic data
- Displaying summarised data
 - Time
 - Organisation
 - Process
 - Effects
- Displaying relationships

Displaying Authentic Data

“The schedule lists the products’ general features and a first step in a project is to write a more detailed product description based on this feature list. The following extract from an interview with a project manager shows an important aspect of this.

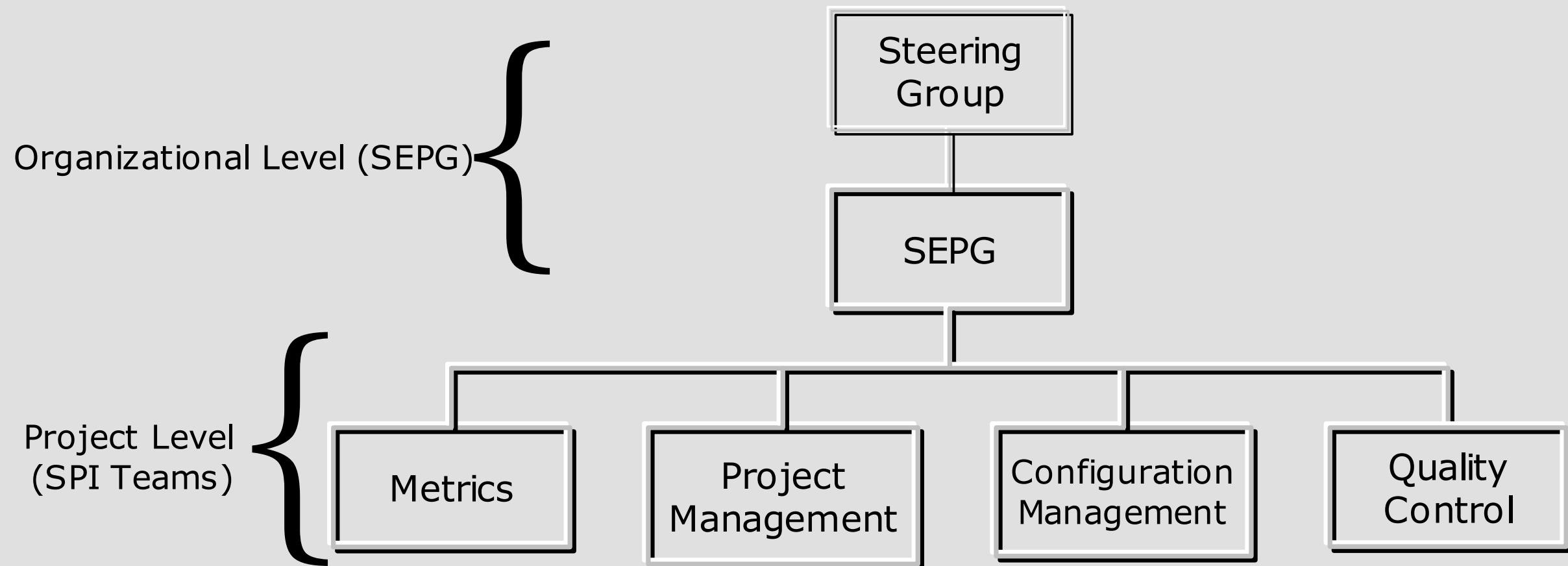
“... [management] announces next year’s products before there is a requirements specification or anything. That means that we launch projects based on mere headlines because we have to.”

The project managers realize that this is a perfectly reasonable approach from a marketing and sales point of view. Without a launch schedule the sales representatives would be unable to plan their sales efforts and cater for the customers’ needs and demands “

Displaying: Time

Meeting	Project management improvement	Quality assurance improvement
2/98	Improvement ideas explored	New project manager appointed Training of quality meeting facilitators in progress
4/98	Competence center design presented Education design presented	
5/98	Competence center road show held Education planned in detail Self-assessment design presented	Quality meetings are being facilitated New initiatives are being discussed
8/98	Competence center status report Education director hired Requirements for self-assessment tool engineered	
9/98	Education and self-assessment integrated into overall SPI plan	Dissatisfaction with the improvement plan and activities
11/98	Competence center incentives, 1 st run completed Education, status reported Self-assessment tool, requirements completed	New project manager appointed
1/99	Competence center incentives refocused Self-assessment tool tested Education: new director	QA transferred from improvement to maintenance
5/99	Self-assessment tool, 2 nd release being developed Education, 1 st run completed	Post mortem integrated into the design

Displaying: Organisation



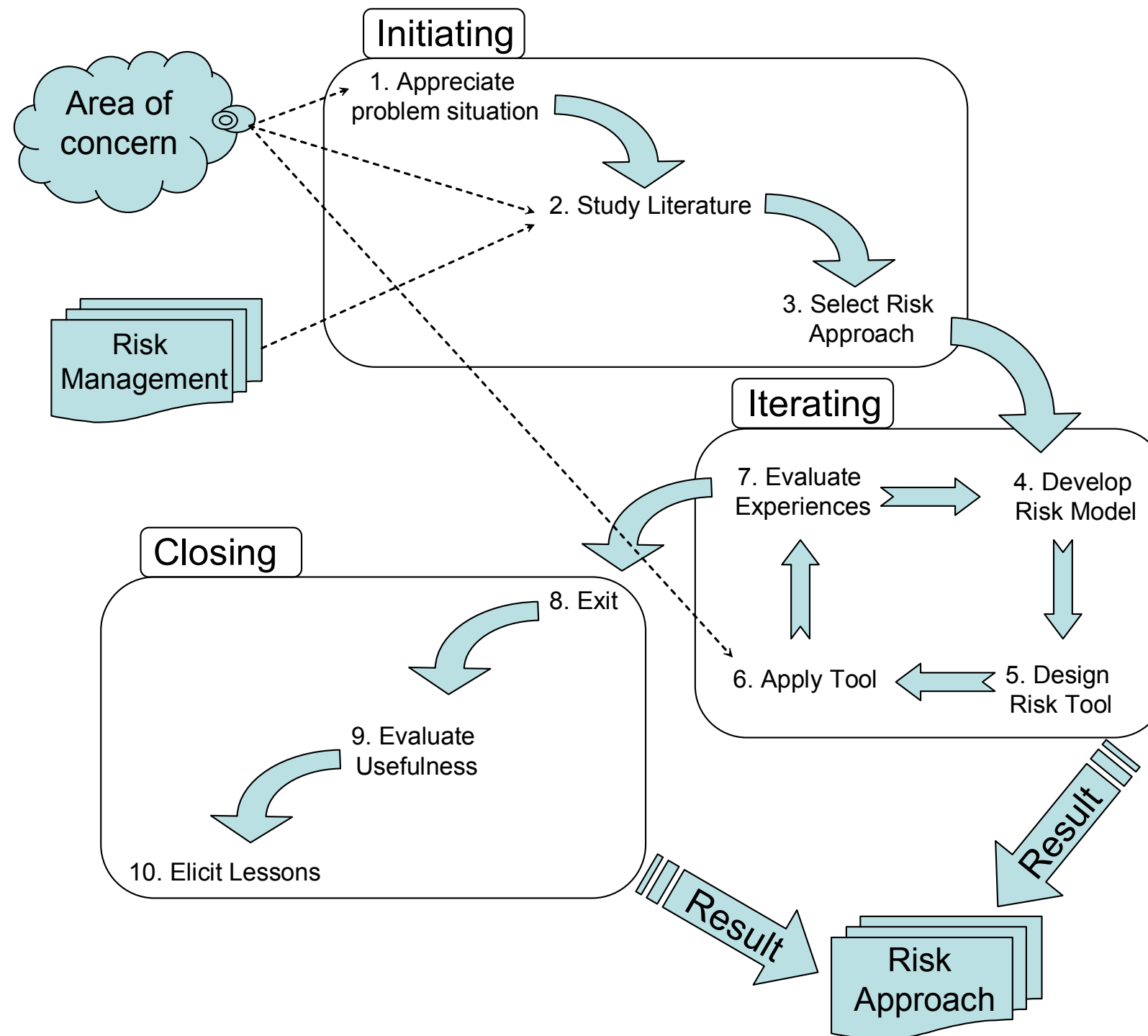
Displaying Process

	(Susman & Evered 1978)	(Checkland 1991)	(McKay & Marshall 2001)	Our approach
Initiating	Establish the client-system infrastructure	1. Enter problem situation	1. Identify: problem and research theme 2. Reconnaissance: problem context and research literature 3. Plan and design: problem solving and research questions	1. Appreciate problem situation 2. Study literature 3. Select risk approach
Iterating	1. Diagnosing 2. Action planning 3. Action taking 4. Evaluating 5. Specifying learning	2. Establish roles 3. Declare framework and approach 4. Take part in change process 5. Rethink 2-4	4. Action steps 5. Implement 6. Monitor: problem solving and research 7. Evaluate in terms of: problem alleviation and research questions 8. Amend plan based on 7	4. Develop risk model 5. Design risk tool 6. Apply tool 7. Evaluate experiences
Closing		6. Exit 7. Reflect on experience and record learning in relation to framework, approach, and problem situation	9. Exit, if: problems alleviated and research questions resolved	8. Exit 9. Assess usefulness 10. Elicit research results

Displaying Process

5. Design risk tool		List of risk items and actions [r1-3] Strategy sheets [r1-3]	Additional step and items reformulated [r2-3]	Improved documentation scheme [r1-3]		
6. Apply tool		Risk assessment of Quality Assurance [p5-7; r2-3]	Risk assessment of Project Management [p3-4; r1-2]	Risk assessment of Metrics Program [p2; p8; r3]	Risk assessment of Diffusion [p9-10; r4; r3]	
7. Evaluate experiences		Lessons learned [p5-7; r2-3]	Lessons learned [p3-4; r1-2]	Lessons learned [p2; r3]	Lessons learned [p9-10; r4; r3]	
8. Exit			Delay after 3 rd iteration			Action part closed
9. Assess usefulness			Assessment of first two projects [p1-4; p11; r1-4]			Assessment of Metrics [r1-3] and Diffusion projects [r1-3]

Displaying Process



Displaying Effects

	Project management		Quality assurance	
	Primary changes	Spin-offs	Primary changes	Spin-off
Structural	Competence center established and generally considered a useful idea; VP in charge An incentive scheme for project managers is inaugurated A 10-days education is in operation and evaluated positive Benchmark standard for project management formulated as 10 key process area Self-assessment tool developed and used in the education	Collective focus on project management Education is popular Mixed feelings about the incentive scheme Data from the self-assessment tool provides SPI group with useful insight	Quality assurance described in 5 quality meetings Facilitators of quality meetings are trained in the process	Little focus on quality assurance inside projects Top management is attentive to whether quality meetings are being held

Displaying relationships

Media	Codes																																																
	Assimilation stage	Initiation (1)	Adoption (2)	Adaptation (3)	Acceptance (4)	Routinization (5)	Infusion (6)	Extensive use (6a)	Integrative use (6b)	Emergent use (6c)	Misc assimilation	Aberrations	Great Quotes	Agile practice	On-site customer	Testing first	Collective ownership	Continuous integration	40-hour week	Misc agility	Sprints	Pair programming	Retrospectives	Refactoring	Scrum board	Simple design	Daily Scrum	Planning game	Backlog	User stories	Integration	Misc integration	Enablers	Attitude	Compromises	Skill set	Upfront design (Claim 1)	Low-fi prototypes (Claim 2)	Testing in between (Claim 3)	Parallel (Claim 4)	Embedded (Claim 5)	Fully integrated (Claim 6)	End users (Claim 7)	Misc integration	Experience	Misc.	Non-integrative usability	Totals	
UX interview last.docx												3		2	1						1	2					3	1		1		2		1	1	4		1	2		4	3	1	4	4			41	
UX designer2					2	1						2	2	2	4		1			3	5		1				4			7	1	1		7		2	3	8	5	8	8	18	8	8	4			115	
UX designer 1						2					1	2		3	2		1				2	1					2	5	1		3	2	1	12	5	3	2	1	9	2	6	6	1	8	5	1		89	
Summary of interviews (not)																																																	
Scrum Master												4		4	4	1					7		3			2	1	9	1		1			2		1		2	4	2	6	2	2	3	2			63	
Product manager			1									2	3	5	1	8				1	3						1				4	1	1	2			4	3	7		2	2	3	2	2	12		70	
Interview guide																																																	
helsinki.doc												4		8	2		1		1		4		2				1	3		1	1	1		2		3	3	5	1	8		1	1	2			55		
Totals			1		2	3					1	17	5	24	14	9	3		1	4	22	3	6			2	12	18	2	9	10	7	2	24	8	10	12	18	32	13	34	31	16	26	19	13			