

CONTENT ANALYSIS

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MSc in Informatics 2006, Aalborg University

PhD in Comp. Sci. & Eng. (Information Systems) 2010, Aalborg University

Research:

Management of distributed software development

IT business cases and benefits management

Engaged scholarship



Case studies: Analyzing recordings instead of transcripts

Case study 1: Distributed software development team

Data collected: Video-recorded observations + Audio-recorded interviews

Analysis tool: Atlas.ti v.5.2 (2008)

Case study 2: Co-located software development team

Data collected: Audio-recorded interviews + observations

Analysis tool: Nvivo v.8 (2012)

Case Study 1: The case

Approach

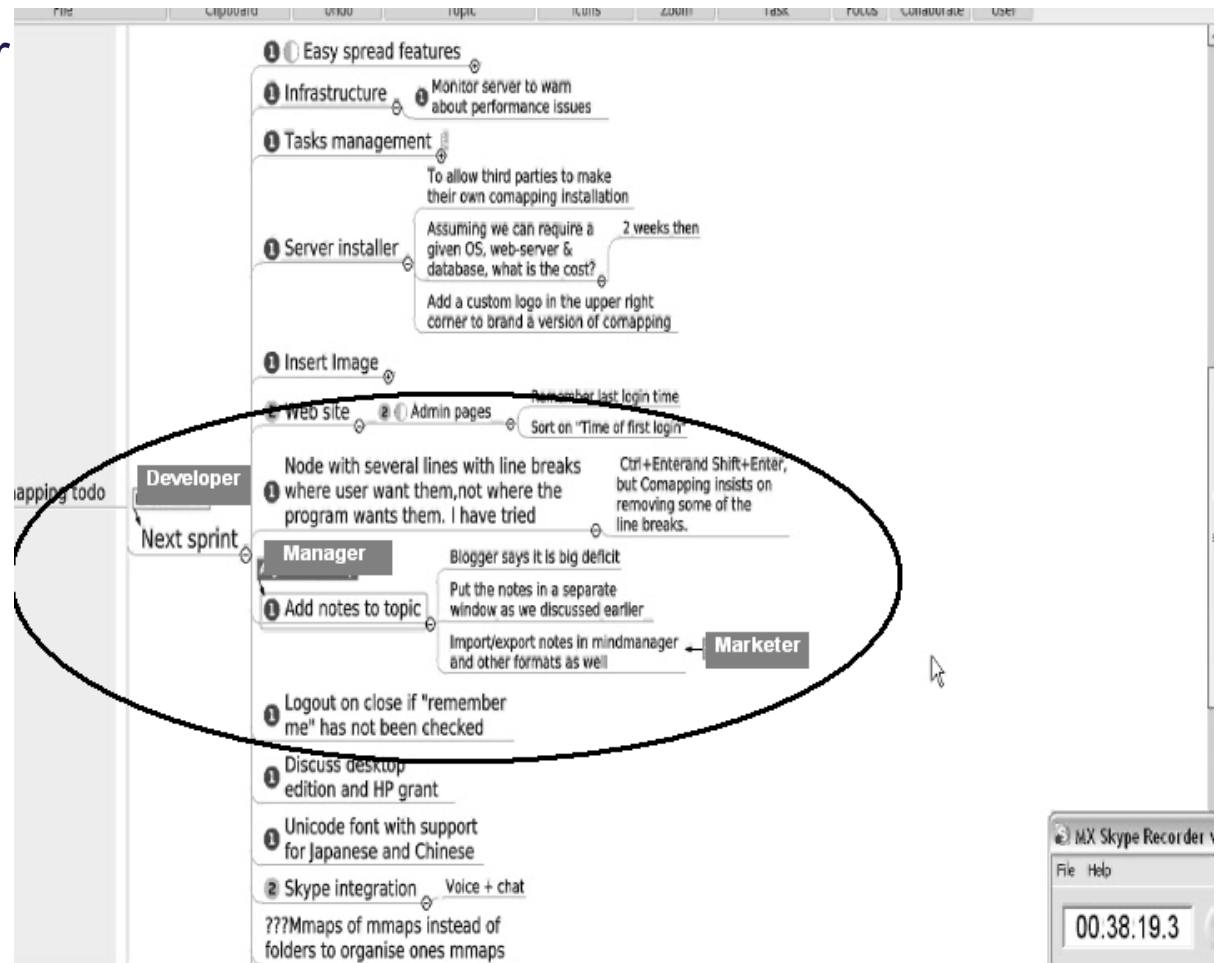
- A single case study with access to a rare case, suitable for testing boundaries of well-formed theory (Yin 2003)

The case

- Joint-venture between Denmark and Russia
- Agile practices and cross site coordination with
 - teleconferencing with *Skype*
 - real-time collaborative modeling with *Comapping* a web-based mind mapping tool under development in the project

Case study 1: Data collection

- Data collection over 6 months in 2007
- 10 observations including complete audio and video recordings
- 11 semi-structured interviews



Case study 1: Theoretical framework

Control

meaning any attempt to motivate individuals to behave in manner consistent with organizational objectives (Kirsch 2004)

	Measurement	Evaluation	Rewards and sanctions	Roles and relationships
Formal	Documented goals and behavior	Documented procedures	Following rules and targets	Superior-subordinate
Informal	Shared norms and values	Socialization	Recognition and peer pressure	Clan

Why investigate Control

In distributed settings informal control appears very difficult, yet agile methods heavily reliant on such controls are successfully used in distributed projects (Harris et al. 2006/2009)

Case study 1: Analysis

The screenshot displays the ATLAS.ti Query Tool interface. The main window is titled 'ATLAS.ti Query Tool' and features a menu bar with 'File', 'Edit', 'Documents', 'Quotations', 'Tools', 'Extras', 'A-Docs', 'Windows', and 'Help'. The interface is divided into several sections:

- Families:** A list of document families including 'Evaluation (1)' and 'Measurement (2)'.
- Codes:** A list of codes including '_Observation (53-0)', 'Bonuses (0-0)~', 'Clan (44-0)~', 'Demotion (1-0)~', 'Dialogs (18-0)~', 'Documented (51-0)~', 'Dyad (17-0)~', 'Evaluation (60-0)', 'Evolving goals (26-0)~', 'Expectations (11-0)~', 'Goal alignment (5-0)~', 'Group recognition (8-0)~', 'Hierarchal (5-0)~', 'Measurement (72-0)', 'Norms and values (33-0)~', 'Pay (4-0)~', 'Peer pressure (3-0)~', and 'Procedures (6-0)~'.
- Query:** A text area containing the query 'AND("Clan", "Evolving goals")' and a result area showing '["Clan" & "Evolving goals"]'.
- Create Super Code:** A section with a table of results.

The 'Create Super Code' section contains a table with the following data:

Id	Name	Start	De...	Author
~3:...	2007-02-26_E-Conference_ob...	0:40:5...	4	Super
~1:...	2007-05-21_E-Conference_ob...	0:47:5...	4	Super
~2:...	2007-06-27_Interview_with_A...	1:11:4...	5	Super
~2:...	2007-08-08_Interview_with_Ul...	0:19:4...	4	Super

At the bottom of the window, there are buttons for 'Adjacency Operator Settings', 'Refresh Codes', 'Scope', and 'Help'. The status bar at the bottom indicates 'Result: 4', 'Adjacency: 1 Paragraphs', and 'Scope: All'.

Case study 1: Analysis

- 1) Informal control were used even though the team was short lived and rarely met face-to-face
- 2) Informal roles and relationships such as clan-like control inherent in agile development were pervasively observed in this distributed setting

• 94 statements pertaining to control in the interviews

Elements of Control	Formal	Informal
Measurement (48)	Documented (9) Specified goals (12) Specified behavior (7) Goal alignment (5)	Norms and values (13) Evolving goals (14)
Evaluation (36)	Rules Procedures (3) Specified goals (3) Specified behavior (2) Documented (13)	Norms and values (12) Expectations (5) Socialization (5) Training (2) Dialogs (9)
Rewards and sanctions (10)	Rules Specified targets (1) Pay (4) Bonuses Promotion (1) Demotion (1)	Norms and values (5) Group recognition (5) Peer pressure (1)
Roles and relationships (94)	Dyad (12) Hierarchal (5)	Work group (43) Professional society (1) Clan (34)

• 54 enactments of control in the mediated communication

Elements of Control	Formal	Informal
Measurement (24)	Documented (15) Specified goals (13) Specified behavior Goal alignment	Norms and values (1) Evolving goals (12)
Evaluation (24)	Rules Procedures (3) Specified goals (13) Specified behavior Documented (14)	Norms and values (1) Expectations (6) Socialization Training Dialogs (8)
Rewards and sanctions (5)	Rules Specified targets Pay Bonuses Promotion Demotion	Norms and values (1) Group recognition (3) Peer pressure (2)
Roles and relationships (53)	Dyad (5) Hierarchal	Work group (38) Professional society Clan (10)

Case study 1: publications

Persson, J. S.; Aaen, I. and Mathiassen, L. 2008 "Real-Time Control Mediation in Agile Distributed Software Development" **Proceedings of the 14th Americas Conference on Information Systems**, pp. 1-8, Toronto, Canada.

(Rejected at special issue in EJIS → Submitted to ISJ, spring 2009)

Persson, J. S.; Mathiassen, L. and Aaen, I. 2012 "Agile Distributed Software Development: Enacting Control through Media and Context" **Information Systems Journal** Vol. 22, No. 6, pp. 411-433.

Case studies: Analyzing recordings instead of transcripts

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Data collected: Video-recorded observations + Audio-recorded interviews

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Case study 2: Co-located software development team

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Analysis tool: Nvivo v.8 (2012)

Case study 2: The case

Research Approach:

Interpretive single case study (Cavaye 1996; Walsham 2006)

Case setting:

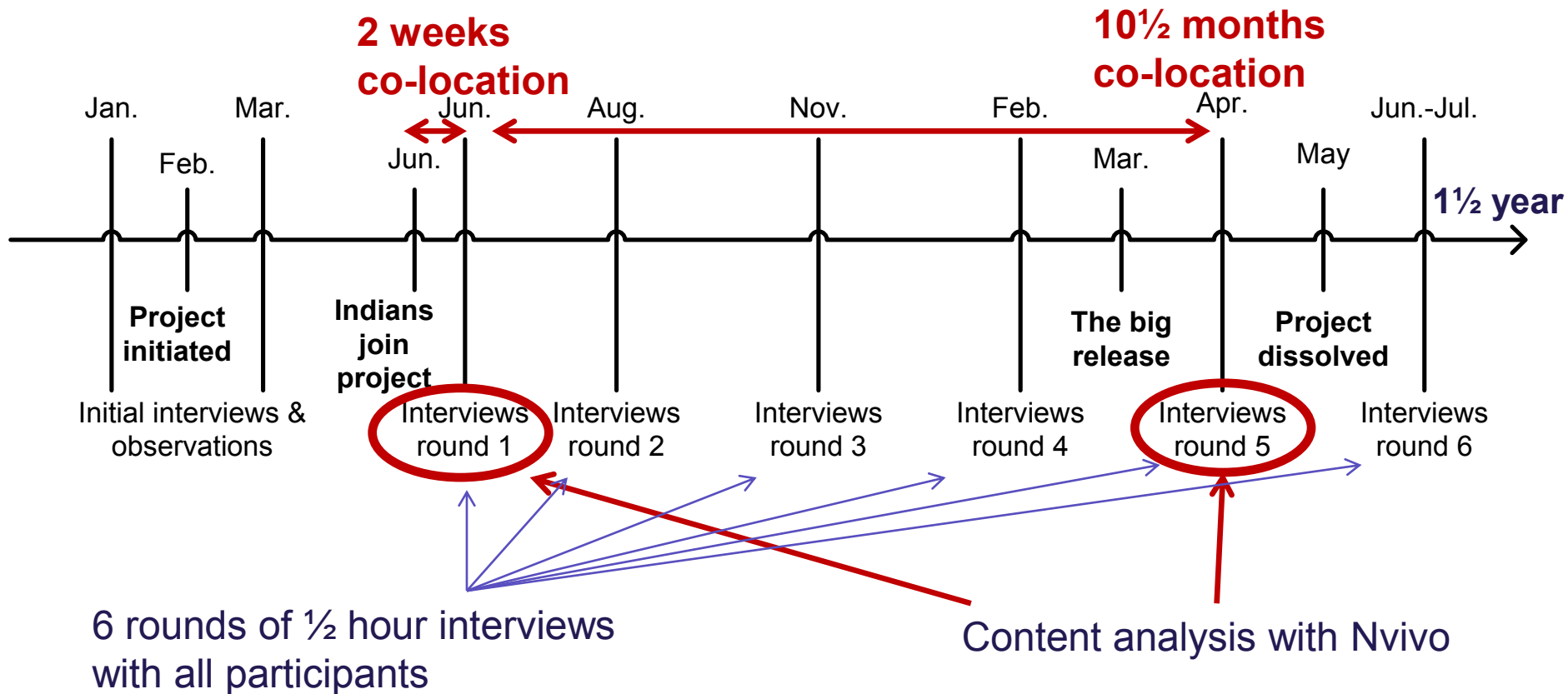
A large IT integration project in the north European financial sector, moving an acquired organization onto the standard IT platform

The company engage in extensive use of an Indian outsourcing provider for the first time, initially with the majority co-located in Denmark

Case study focus:

A sub-project of 11 persons with 3 Indian and 5 Danish developers

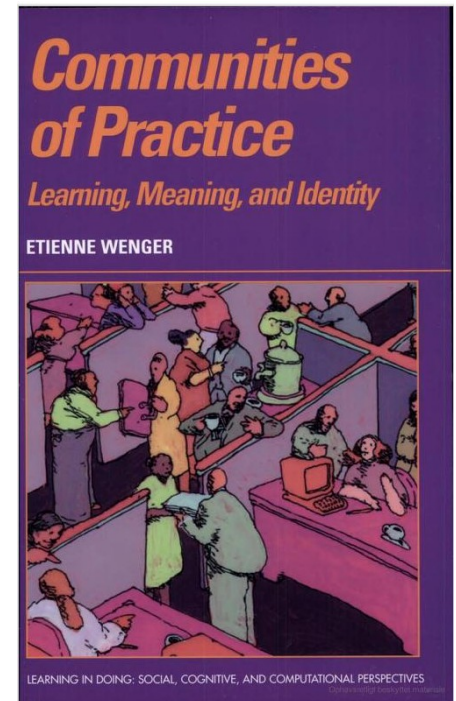
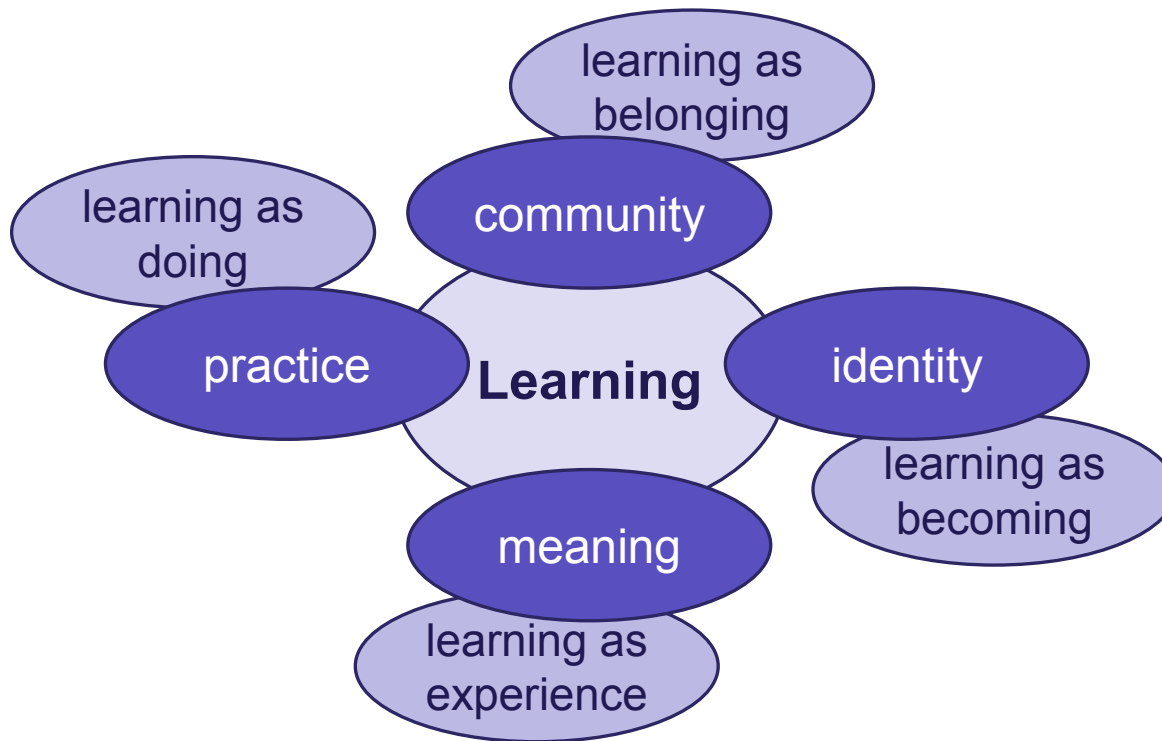
Case study 2: Data collection and analysis



Case study 2: Theoretical framework

Communities of Practice:

A comprehensive explanation of knowledge sharing as collective learning



Case study 2: Coding scheme

- 1) *Sustained mutual relationships – harmonious or conflictual*
- 2) *Shared ways of engaging in doing things together*
- 3) *The rapid flow of information and propagation of innovation*
- 4) *Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process*
- 5) *Very quick setup of a problem to be discussed*
- 6) *Substantial overlap in participants and who belongs*
- 7) *Knowing what others know, what they do, and how they can contribute to an enterprise*
- 8) *Mutually defining identities*
- 9) *The ability to assess the appropriateness of actions and products*
- 10) *Specific tools, representations, and other artifacts*
- 11) *Local lore, shared stories, inside jokes, knowing laughter*
- 12) *Jargon and shortcuts to communication as well as the ease of producing new ones*
- 13) *Certain styles recognized as displaying membership*
- 14) *A shared discourse reflecting a certain perspective on the world*

Short form

- 1) *Sustained mutual relationships*
- 2) *Shared ways of engagement together*
- 3) *Rapid flow of information*
- 4) *Conversations and interactions are ongoing*
- 5) *Quick setup of problems*
- 6) *Overlap in who belongs*
- 7) *Knowing what others know, do, and contribute*
- 8) *Mutually defining identities*
- 9) *Ability to assess actions and products*
- 10) *Specific tools, representations, and artifacts*
- 11) *Lore, stories, jokes, and laughter*
- 12) *Jargon and shortcuts to communication*
- 13) *Styles displaying membership*
- 14) *Shared discourse and perspective*

Case study 2: Data analysis

Indicators of Community of Practice

Danish Software Developer
2 weeks after Indians arrival:

“ I share an office with one... I think we try to include him (the Indian developer) and he tries to be included.

There are off course some language issues. Sometimes we want to discuss something with the person next to you in Danish because it is difficult to do in English. Then he is excluded because we talk Danish in some situations. But, when we have had a discussion, we sometimes follow up with a summary to him- saying we have just discussed this and this, what do you think of that?”

1) *Sustained mutual relationships*



2) *Shared ways of engagement together*



3) *Rapid flow of information*



4) *Conversations and interactions are ongoing*

5) *Quick setup of problems*



6) *Overlap in who belongs*

7) *Knowing what others know, do, and contribute*

8) *Mutually defining identities*

9) *Ability to assess actions and products*

10) *Specific tools, representations, and artifact*

11) *Lore, stories, jokes, and laughter*

12) *Jargon and shortcuts to communication*

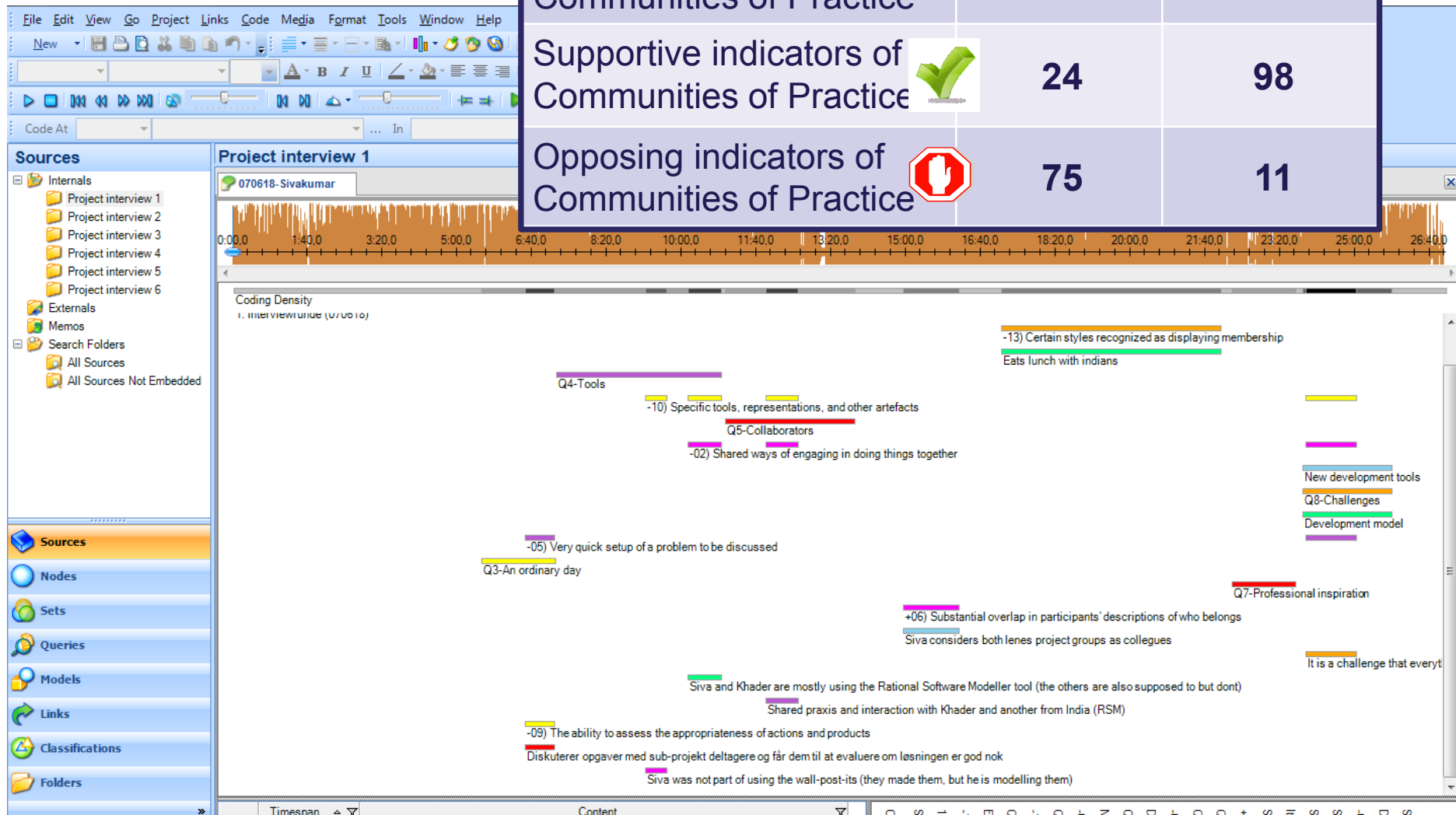


13) *Styles displaying membership*

14) *Shared discourse and perspective*

Case study 2: Data analysis

	2 weeks co-location	10½ months co-location
Statements pertaining to Communities of Practice	36	37
Supportive indicators of Communities of Practice 	24	98
Opposing indicators of Communities of Practice 	75	11



Case study 2: 2 weeks co-location

Project Developers

Indian software developer :
 “ ... at present in the specification phase I am using RSM [IBM Rational Software Modeler]... it's a customized version for **the company**... **the other Indian Developer** is also making use of it, the others are also supposed to use it, but since it is a new tool they need some training... they do the work they are comfortable with, and I do the work I am comfortable with...”

	DDs	IDs	PM
1) Sustained mutual relationships			
2) Shared ways of engagement together			
3) Rapid flow of information			
4) Conversations and interactions are ongoing			
5) Quick setup of problems			
6) Overlap in who belongs			
7) Knowing what others know, do, and contribute			
8) Mutually defining identities			
9) Ability to assess actions and products			
10) Specific tools, representations, and artifacts			
11) Lore, stories, jokes, and laughter			
12) Jargon and shortcuts to communication			
13) Styles displaying membership			
14) Shared discourse and perspective			

Case study 2: 10 ½ months co-location

Project Developers

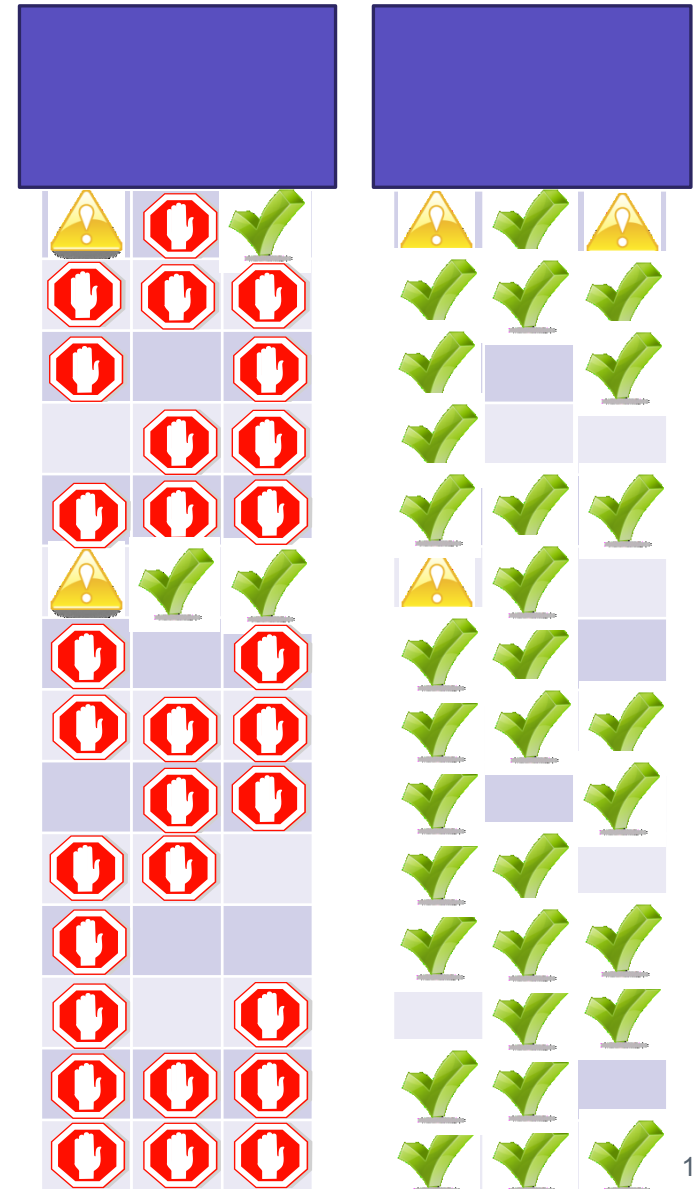
Indian software developer:
“... They feel we are one among them, not separated by you being from India. Their treatment brought us close. Our thoughts are similar, that is the thing, that made us more close. We used to make fun in our rooms when working and we used to laugh together and that gives a better relation...”

	DDs	IDs	PM
1) Sustained mutual relationships			
2) Shared ways of engagement together			
3) Rapid flow of information			
4) Conversations and interactions are ongoing			
5) Quick setup of problems			
6) Overlap in who belongs			
7) Knowing what others know, do, and contribute			
8) Mutually defining identities			
9) Ability to assess actions and products			
10) Specific tools, representations, and artifacts			
11) Lore, stories, jokes, and laughter			
12) Jargon and shortcuts to communication			
13) Styles displaying membership			
14) Shared discourse and perspective			

Case study 2: Findings

RQ: *When co-locating cross-cultural software developers, 1) what knowledge sharing practices may emerge over time,*

- 1) *Sustained mutual relationships*
- 2) *Shared ways of engagement together*
- 3) *Rapid flow of information*
- 4) *Conversations and interactions are ongoing*
- 5) *Quick setup of problems*
- 6) *Overlap in who belongs*
- 7) *Knowing what others know, do, and contribute*
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- 12) *Jargon and shortcuts to communication*
- 13) *Styles displaying membership*
- 14) *Shared discourse and perspective*



Case study 2: Publication

Persson, J.S. 2013 “The Cross-Cultural Knowledge Sharing Challenge: An Investigation of the Co-location Strategy in Software Development Offshoring” **Proceedings of the IFIP WG 8.6 Transfer and Diffusion of IT**, pp. 310-325, Bangalore, India.



In progress 😊

Content analysis

Case study 1: Distributed software development team, Atlas.ti v.5.2 (2008)

Case study 2: Co-located software development team, Nvivo v.8 (2012)

Problems:

- Sequential data collection and analysis.

- The appropriate theoretical framework(s).

- Inter-coder reliability?

The interesting contribution ← what, where, and how should you look for it
(Davis 1971: That's Interesting!)