Stefano Lambiase

slambiase@unisa.it

Software Project Management

Recent Research on Anti-Patterns and Their Impact

Today's Lecture

- Introduction to measurement and metrics in software project management
- Focus on social debt
- Impact of social debt on technical debt
- Predicting socio-technical debt
- Tools to support the measurement of social debt

Software Project Management, why does it matter?

70%

of software projects

FAIL

Jim Johnson, *“CHAOS 2020: Beyond Infinity.”*, Standish Group (2020).

Factors that influence project outcome

- Project under-estimated 81%
- Bad risk management 75%
- Bad development team management 67%
- **Human and social aspects 75%**
- …

Cerpa Narciso and June M. Verner, *“Why Did Your Project Fail?”*, Communications of the ACM, 2009

Factors that influence project outcome

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Most of the factors that influence project outcomes are related to collaboration and communication between stakeholders.

In other words, they concern the spectrum of software project management responsibilities.

Cerpa Narciso and June M. Verner, *“Why Did Your Project Fail?”*, Communications of the ACM, 2009

Software development has never been so distributed!

Stray and Moe

“Understanding coordination in global software engineering: A mixed-methods study on the use of meetings and Slack”

Journal of Systems and Software, 2020

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Software Project Management

Distributed Software Project Management

Stray and Moe

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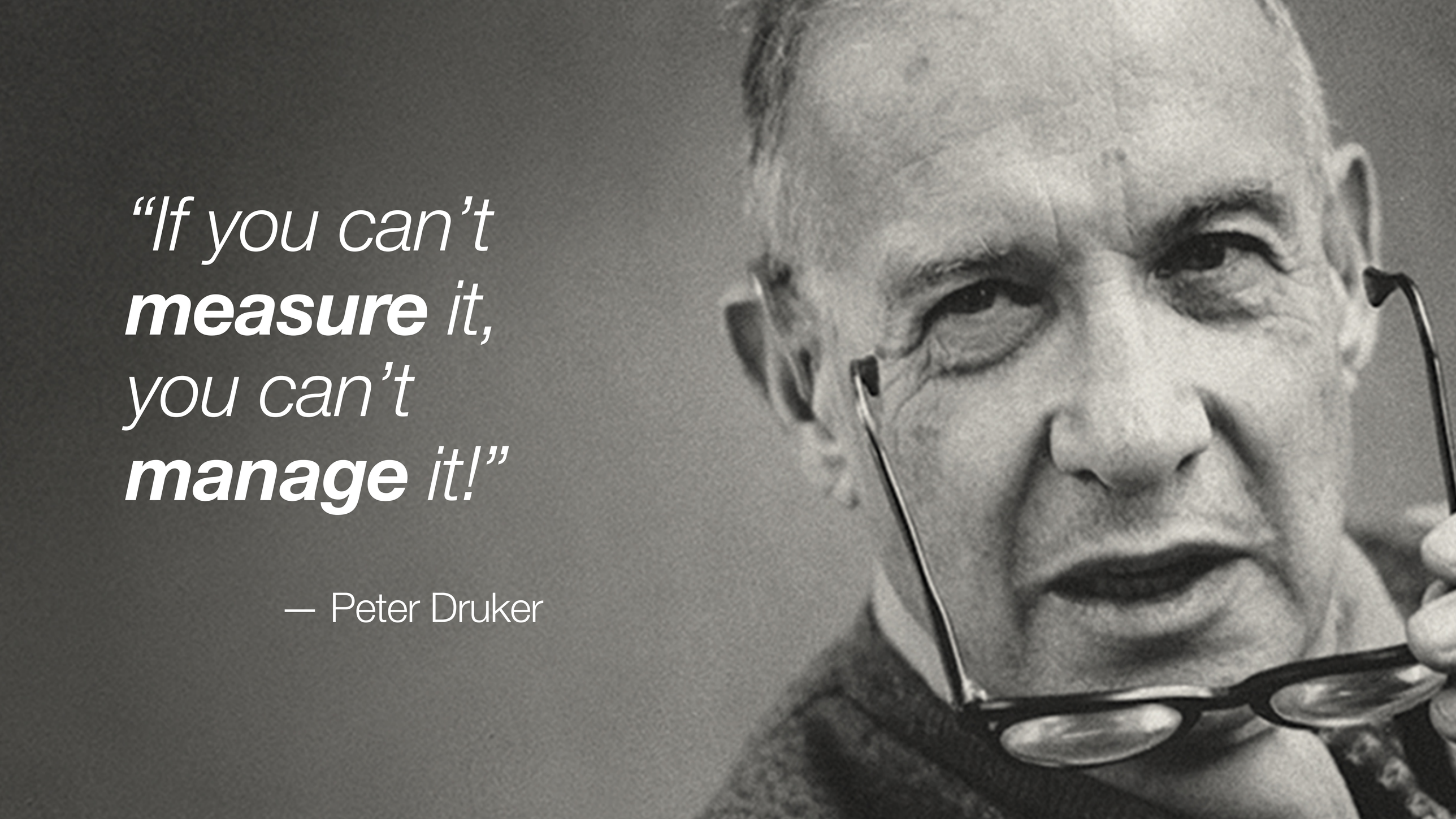
Limitation!

Researchers tend to treat social aspects in a **qualitative** and **abstract** way

“If you can’t ***measure*** *it, you can’t* ***manage*** *it!”*

— Peter Druker



Software Project Management, How to measure?

Category	Metric	Description
Developer Social Network metrics	devs	Number of developers present in the global Developers Social Network
	ml.only.devs	Number of developers present only in the communication Developers Social Network
	code.only.devs	Number of developers present only in the collaboration Developers Social Network
	ml.code.devs	Number of developers present both in the collaboration and in the communication DSNs
	perc.ml.only.devs	Percentage of developers present only in the communication Developers Social Network
	perc.code.only.devs	Percentage of developers present only in the collaboration Developers Social Network
	perc.ml.code.devs	Percentage of developers present both in the collaboration and in the communication DSNs
	sponsored.devs	Number of sponsored developers (95% of their commits are done in working hours)
	ratio.sponsored	Ratio of sponsored developers with respect to developers present in the collaboration DSN
Socio-Technical Metrics	st.congruence	Estimation of socio-technical congruence
	communicability	Estimation of information communicability (decisions diffusion)
	num.tz	Number of timezones involved in the software development
	ratio.smelly.devs	Ratio of developers involved in at least one Community Smell
Core community members metrics	core.global.devs	Number of core developers of the global Developers Social Network
	core.mail.devs	Number of core developers of the communication Developers Social Network
	core.code.devs	Number of core developers of the collaboration Developers Social Network
	sponsored.core.devs	Number of core sponsored developers
	ratio.sponsored.core	Ratio of core sponsored developers with respect to core developers of the collaboration DSN
	global.truck	Ratio of non-core developers of the global Developers Social Network
	mail.truck	Ratio of non-core developers of the communication Developers Social Network
	code.truck	Ratio of non-core developers of the collaboration Developers Social Network
	mail.only.core.devs	Number of core developers present only in the communication DSN
	code.only.core.devs	Number of core developers present only in the collaboration DSN
	ml.code.core.devs	Number of core developers present both in the communication and in the collaboration DSNs
	ratio.mail.only.core	Ratio of core developers present only in the communication DSN
	ratio.code.only.core	Ratio of core developers present only in the collaboration DSN
	ratio.ml.code.core	Ratio of core developers present both in the communication and in the collaboration DSNs
Turnover	global.turnover	Global developers turnover with respect to the previous temporal window
	code.turnover	Collaboration developers turnover with respect to the previous temporal window
	core.global.turnover	Core global developers turnover with respect to the previous temporal window
	core.mail.turnover	Core communication developers turnover with respect to the previous temporal window
	core.code.turnover	Core collaboration developers turnover with respect to the previous temporal window
	ratio.smelly.quitters	Ratio of developers previously involved in any Community Smell that left the community
Social Network Analysis metrics	closeness.centr	SNA degree metric of the global DSN computed using closeness
	betweenness.centr	SNA degree metric of the global DSN computed using betweenness
	degree.centr	SNA degree metric of the global DSN computed using degree
	global.mod	SNA modularity metric of the global DSN
	mail.mod	SNA modularity metric of the communication Developers Social Network
	code.mod	SNA modularity metric of the collaboration Developers Social Network
	density	SNA density metric of the global Developers Social Network

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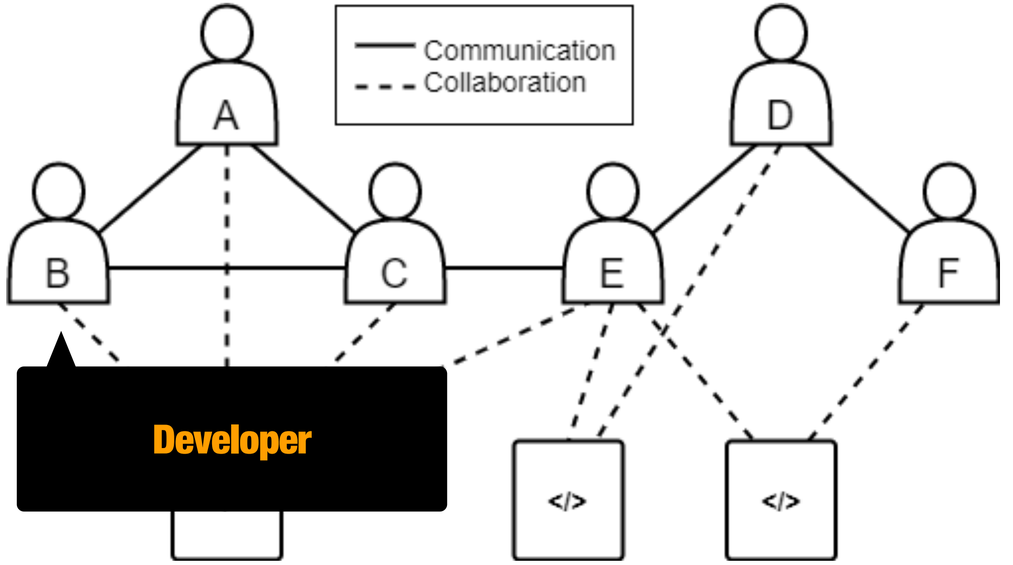

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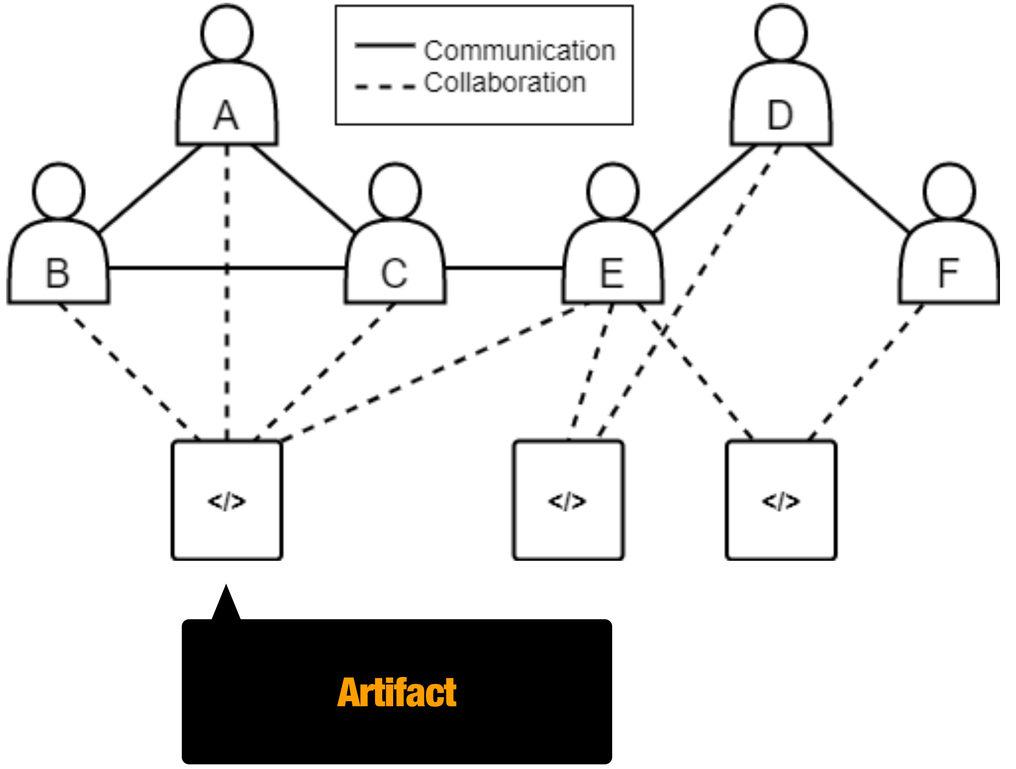

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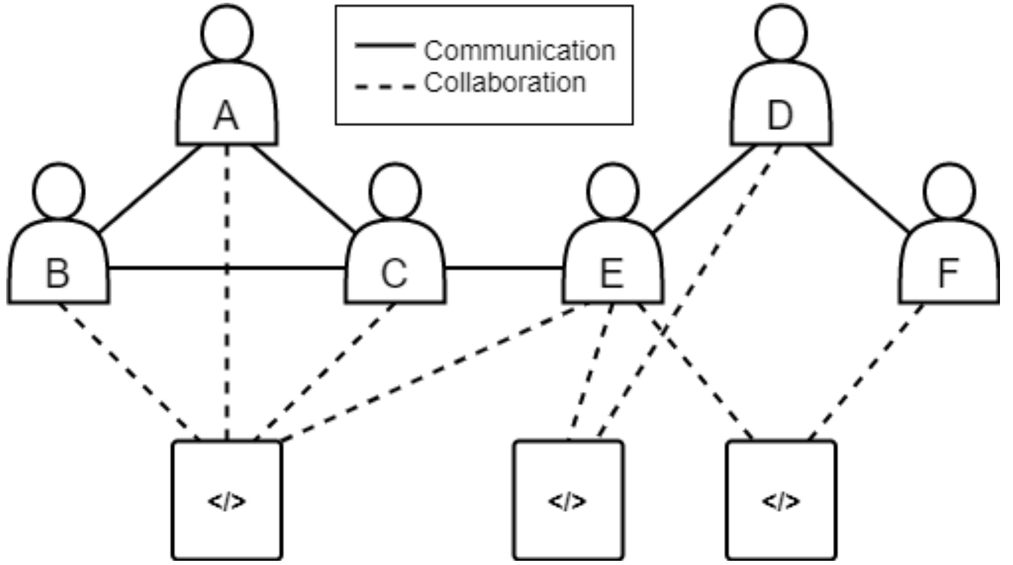

A collaboration edge implies that, e.g., A, B, C, and E co-committed changes on the same artifact within the last X months

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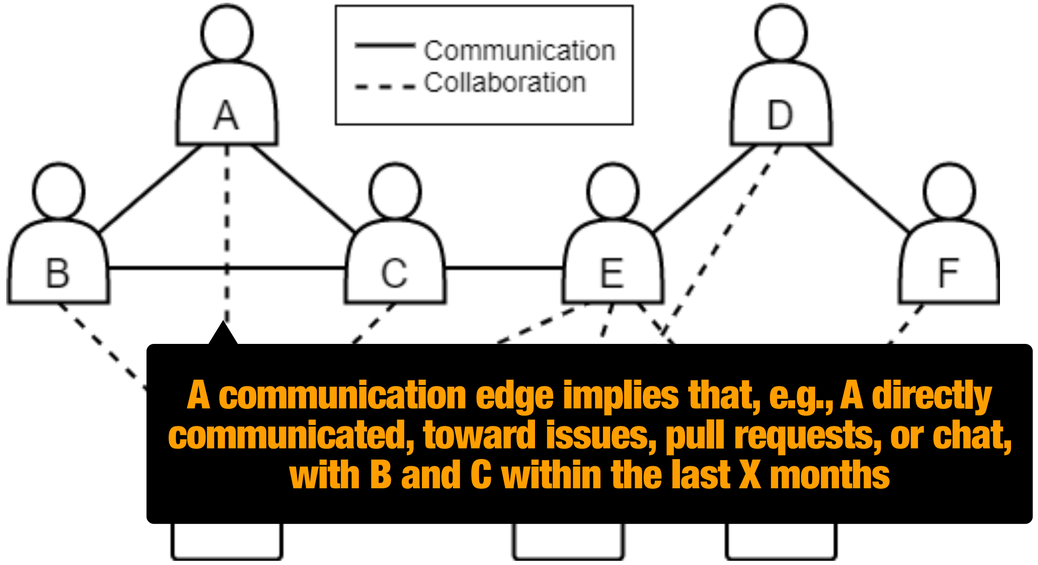

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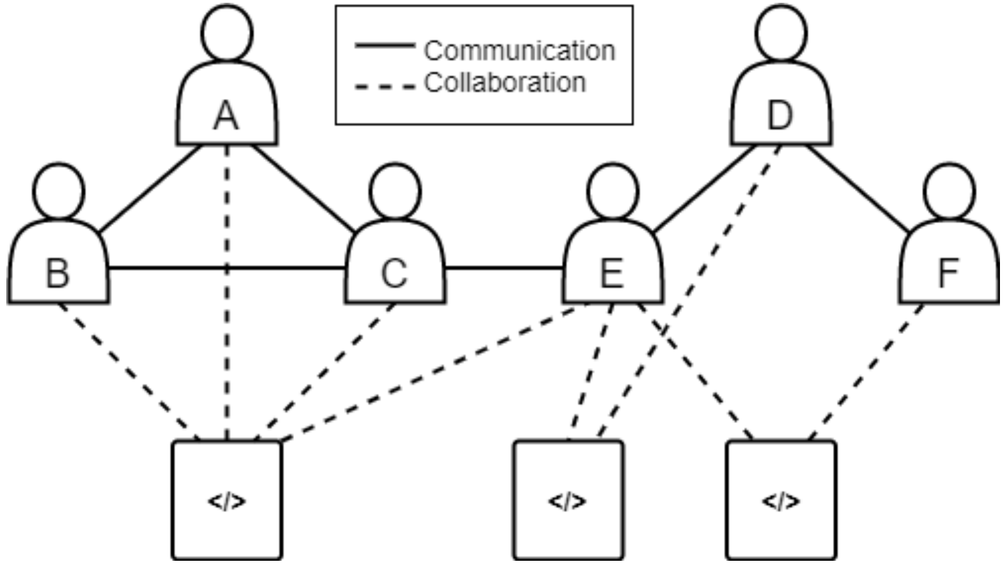

Turnover: In developers' social graphs, turnover refers to the rate at which developers join and leave a particular community, team, or network over a given period. This concept is crucial in understanding the dynamics within a developer community, as **high turnover can disrupt social bonds, collaborative workflows, and knowledge sharing.**

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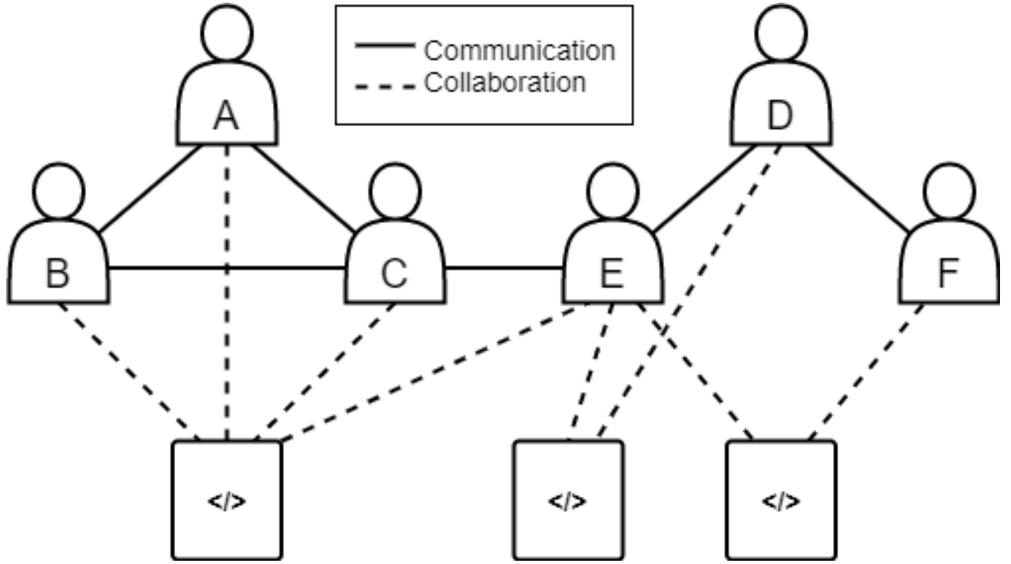

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1. Node turnover: The number of nodes (i.e., developers) entering or exiting the social graph within a specific time frame.
2. Edge turnover: Changes in connections (edges) between developers, reflecting shifts in collaborative or communicative relationships.
3. Turnover rate: A quantifiable measure that reflects the ratio of developers leaving versus those joining.

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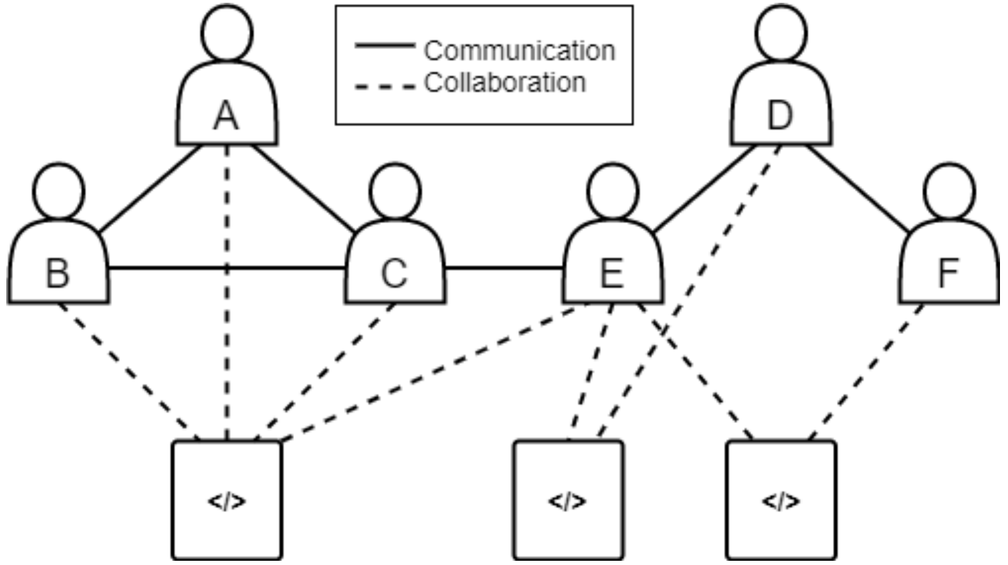

Truck Factor: Also known as the *bus factor*, is a measure of the risk within a software development project that arises from knowledge concentration. It represents the **minimum number of developers who**, **if incapacitated** (e.g., "hit by a truck"), **would cause the project to face severe difficulties in being completed or maintained.**

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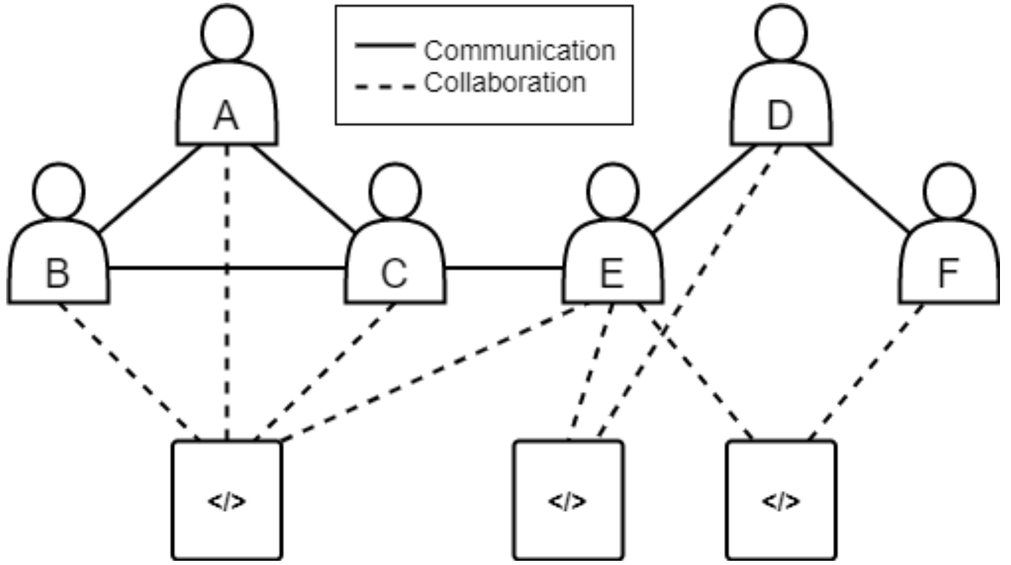

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For example, if a project has a truck factor of 1, it means that only one developer holds critical knowledge or skills; if that developer were to leave, the project would be in jeopardy. Conversely, a higher truck factor indicates better knowledge distribution and a more resilient project structure.

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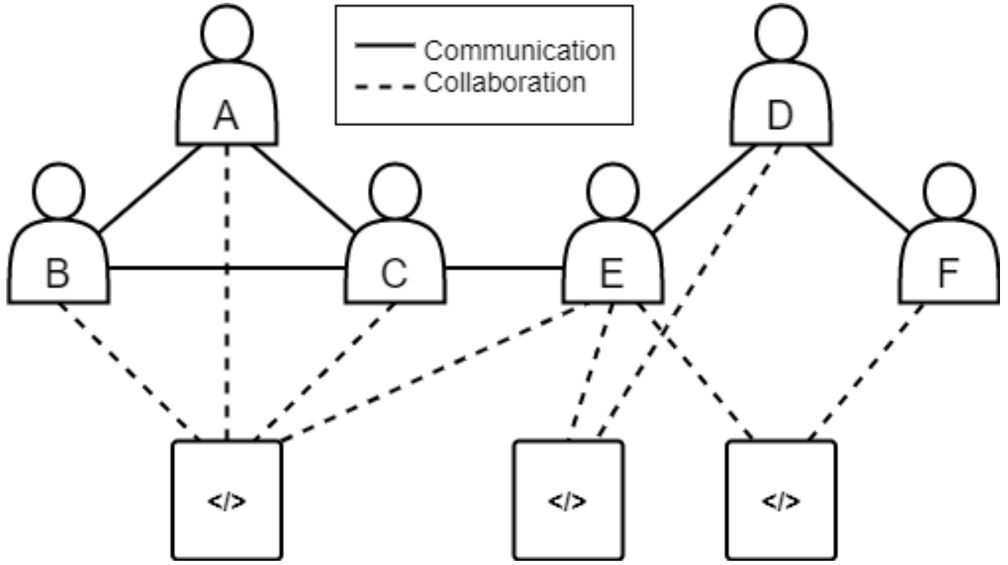

Socio-technical congruence: Alignment between **the social interactions within a development team** (the "social" aspect) and **the dependencies in the technical tasks they work on** (the "technical" aspect). This concept is crucial in collaborative software development, where teams must effectively communicate and coordinate according to the dependencies inherent in their tasks.

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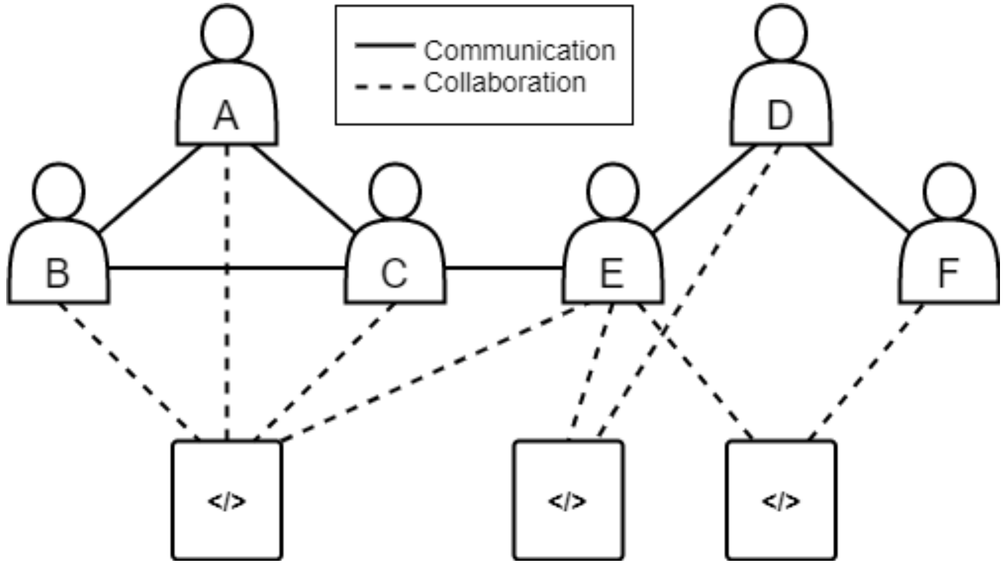

Socio-technical congruence: Alignment between **the social interactions within a development team** (the "social" aspect) and **the dependencies in the technical tasks they work on** (the "technical" aspect). This concept is crucial in collaborative software development, where teams must effectively communicate and coordinate according to the dependencies inherent in their tasks.

Using a socio-technical graph, one can map the alignment between communication and collaboration activities, understanding how developers interact while developing artifacts.

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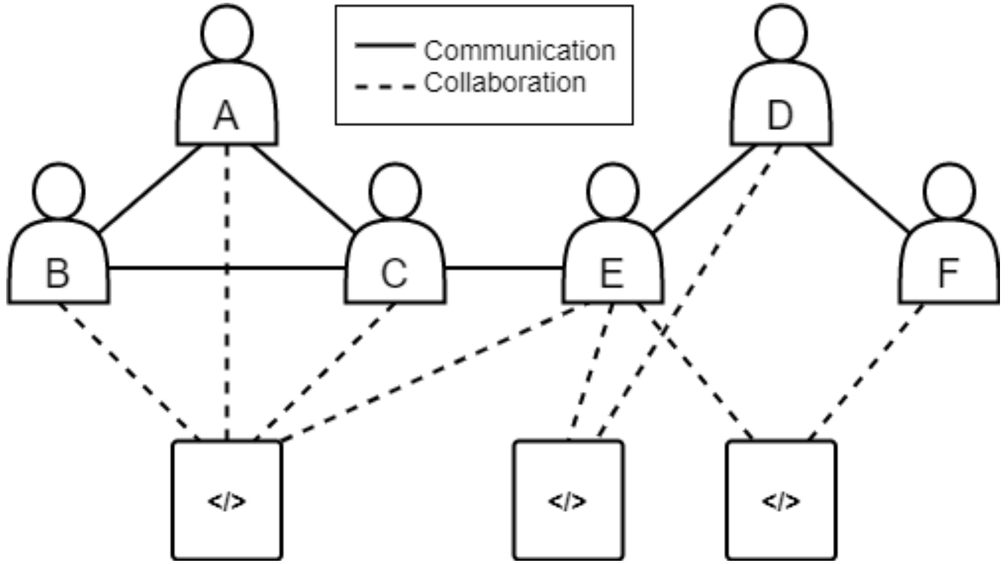

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Index Terms—Empirical software engineering, socio-technical congruence, coordination, awareness, software quality, integration.

1 Introduction

Coordinating the efforts of individuals working together in a team is necessary to build software systems. The complexity of current systems requires contributions from tens or hundreds of people who may span multiple offices, cities, or even continents. To build such systems, we need to ensure that the team is not only capable of developing components of a system, but also has the governance to be able to integrate the interdependent parts into a whole.

We describe a case study of socio-technical coordination and its effect on software builds in the IBM Rational Team Concert (RTC) software product.[1] Our approach to investigating coordination is to examine the alignment between the technical dimension of work and the social relationships between team members. This alignment is called **socio-technical congruence** [1]. High socio-technical congruence has been shown to be a predictor of coordination success [1], [2]. The mismatches between the social and technical dimensions, or **gaps**, also have been observed as increasing resolution times for software activities. The objective of this study is to investigate the effects of socio-technical congruence on high-coordination software development activities during a project.

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In complex projects, changes in one component can ripple across other parts of the system. Socio-technical congruence helps ensure that these changes are communicated across the relevant teams, allowing everyone affected to make necessary adjustments before integration, thus reducing build failures.

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Socio-Technical Congruence: A Framework for Assessing the Impact of Technical and Work Dependencies on Software Development Productivity

Marcelo Cataldo
Research and Technology Center
Bosch Corporate Research
Pittsburgh, PA 15212, USA
marcelo.cataldo@us.bosch.com

James D. Herbsleb
School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
jdh@cs.cmu.edu

Kathleen M. Carley
School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
Kathleen.carley@cmu.edu

ABSTRACT

The identification and management of work dependencies is a fundamental challenge in software development organizations. This paper argues that modularization, the traditional technique intended to reduce interdependencies among components of a system, has serious limitations in the context of software development. We build on the idea of congruence, proposed in our prior work, to examine the relationship between the structure of technical and work dependencies and the impact of dependencies on software development productivity. Our empirical evaluation of the congruence framework showed that when developers' coordination patterns are congruent with their coordination needs, the resolution time of modification requests was significantly reduced. Furthermore, our analysis highlights the importance of identifying the "right" set of technical dependencies that drive the coordination requirements among software developers. Call and data dependencies appear to have far less impact than logical dependencies.

Categories and Subject Descriptors

D.2.9 [**Software Engineering**]: Management – *Productivity, Programming Teams.* K.6.1 [**Management of computing and information Systems**]: Project and People Management – *Software development.*

General Terms

Management, Measurement, Human Factors.

Keywords

Collaborative software development, coordination, software dependencies.

ESEM'08, October 9–10, 2008, Kaiserslautern, Germany.

1. INTRODUCTION

A growing body of research shows that work dependencies – i.e., engineering decisions constraining other engineering decisions – is a fundamental challenge in software development organizations, particularly in those that are geographically distributed (e.g., [11][16][25][28]). The modular product design literature has extensively examined issues associated with dependencies. Design structure matrices, for example, have been used to find alternative structures that reduce dependencies among the components of a system [19][43]. These research streams can also inform the design of development organizations so they are better able to identify and manage work dependencies. However, we first need to understand the assumptions of the different theoretical views and how those assumptions relate to the characteristics of software development tasks.

This study argues that modularization is a necessary but not a sufficient mechanism for handling the work dependencies that emerge in the process of developing software systems. We build on the concept of congruence introduced by Cataldo et al [10] to examine how different types of technical dependencies relate to work dependencies among software developers and, ultimately, how those work dependencies impact development productivity. Our empirical evaluation of the congruence framework illustrates the importance of understanding the dynamic nature of software development. Identifying the "right" set of technical dependencies that determine the relevant work dependencies and coordinating accordingly has significant impact on reducing the resolution time of software modification requests. The analyses showed traditional software dependencies, such as syntactic relationships, tend to capture a relatively narrow view of product dependencies that is not fully representative of the important product dependencies that drive the need to coordinate. On the other hand, logical dependencies provide a more accurate representation of the product dependencies affecting the development effort.

The rest of this paper is organized as follows. We first discuss the theoretical background concerning the relationship between technical and work dependencies in software development projects. Next, we present the socio-technical congruence framework followed by a description of data, measures and models used in the empirical analysis. Finally, we discuss the results, their implications and future work.

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When developers' coordination patterns are congruent with their coordination needs, the resolution time of modification requests was significantly reduced

Socio-Technical Congruence: A Framework for Assessing the Impact of Technical and Work Dependencies on Software Development Productivity

Marcelo Cataldo
Research and Technology Center
Bosch Corporate Research
Pittsburgh, PA 15212, USA
marcelo.cataldo@us.bosch.com

James D. Herbsleb
School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
jdh@cs.cmu.edu

Kathleen M. Carley
School of Computer Science
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ABSTRACT

The identification and management of work dependencies is a fundamental challenge in software development organizations. This paper argues that modularization, the traditional technique intended to reduce interdependencies among components of a system, has serious limitations in the context of software development. We build on the idea of congruence, proposed in our prior work, to examine the relationship between the structure of technical and work dependencies and the impact of dependencies on software development productivity. Our empirical evaluation of the congruence framework showed that when developers' coordination patterns are congruent with their coordination needs, the resolution time of modification requests was significantly reduced. Furthermore, our analysis highlights the importance of identifying the "right" set of technical dependencies that drive the coordination requirements among software developers. Call and data dependencies appear to have far less impact than logical dependencies.

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While this is relevant in general, technologically-advanced systems, e.g., ML-enabled systems, are even largely impacted by severe issues if coordination is not congruent

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Software Project Management, How to measure?

Community Patterns

Social Debt

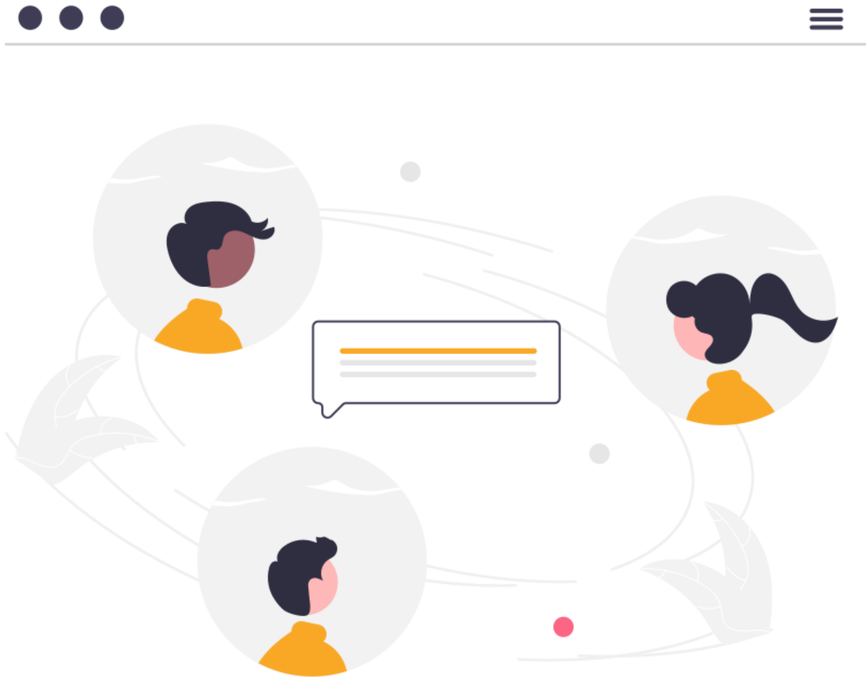
Software Project Management, How to measure?

Community Patterns

Social Debt

COMMUNITY

“An interacting population of various kinds of individuals (such as species) in a common location”



D. A. Tamburri, et al.
“Discovering community patterns in open-source:
a systematic approach and its evaluation.”
Empirical Software Engineering 24.3 (2019): 1369-1417.

YOSHI

Yielding Open-Source Health Information

TOAD

Towards Open-source communities health Analysis and Diagnosis

Tools capable of identifying the community patterns in an open-source community given a set of information and metrics that are obtainable mining a software repository

Measurement

- community structure
- geo-dispersion
- longevity
- engagement
- formality
- cohesion

Community Patterns

- Social Network (SN)
- Network of Practice (NoP)
- Informal Network (IN)
- Formal Network (FN)
- Community of Practice (CoP)
- Project Team (PT)
- Formal Group (FG)
- Informal Community (IC)

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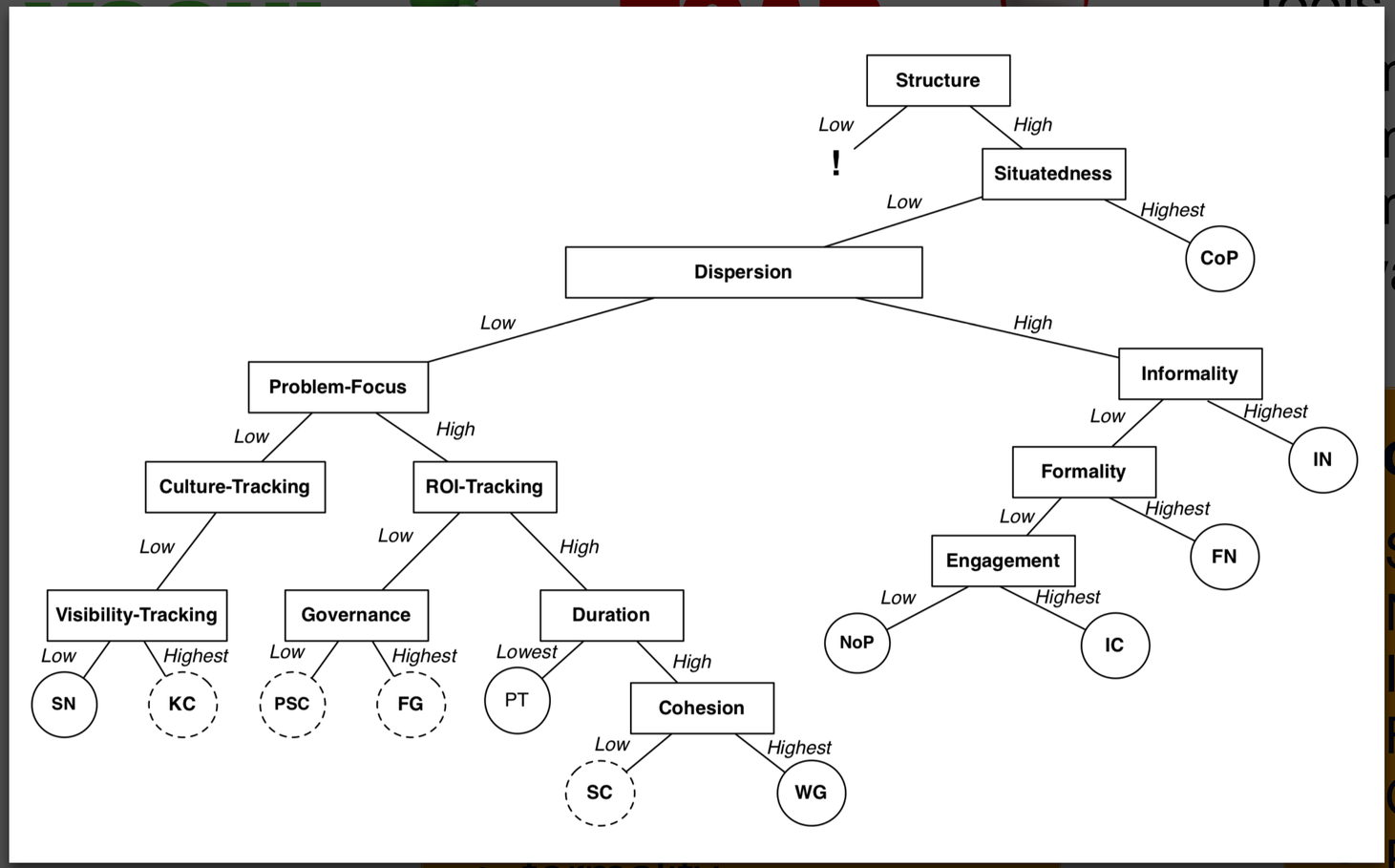

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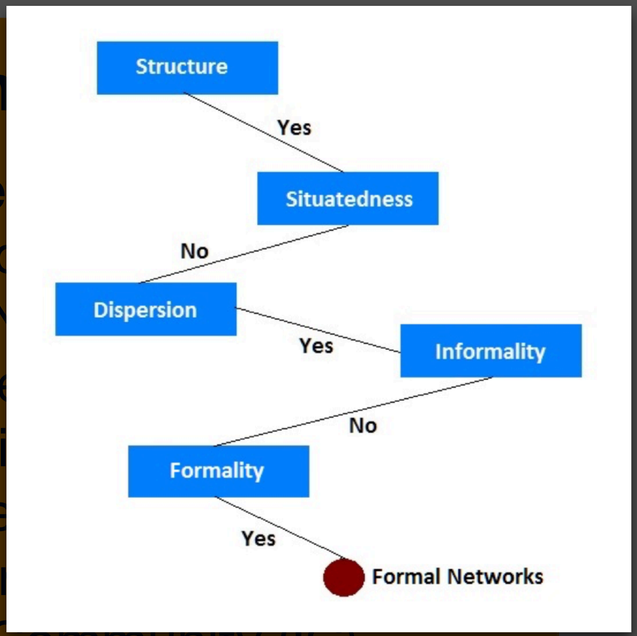

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Software Project Management, How to measure?

Community Patterns

Social Debt

SOCIAL DEBT

Dove le Scienze Sociali incontrano l’Informatica per portare il caos

IMMAGINA!

Scenario di esempio

Avete passato la vostra intera vita a studiare, lavorare sodo e a scalare la gerarchia aziendale.

Dopo anni di sacrifici, finalmente il vostro capo vi ha promossi.

Ora siete dei MANAGER!

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… nonostante ciò, gestire degli esseri umani può essere difficile (soprattutto se si tratta di ingegneri).

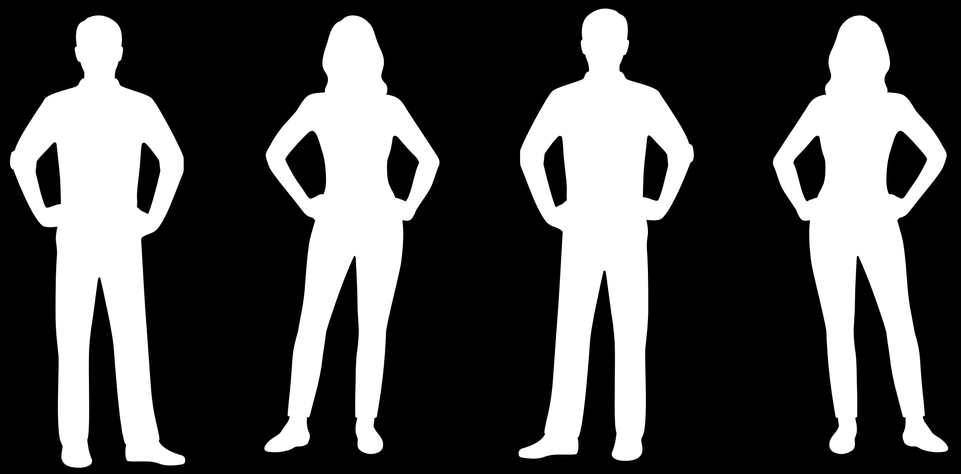
Prendere tale attività alla leggere può portare all’emergere di problemi (sociali) imprevisti e spesso distruttivi.


Merge che rompe tutto
Ritardi nel progetto
Malcontento del Team
Incremento dei costi


SOCIAL
DEBT

SOCIAL DEBT

Sono dei costi aggiuntivi di un progetto software che derivano da ***socio-technical anti-pattern*** non previsti e non gestiti all'interno della comunità software [1].



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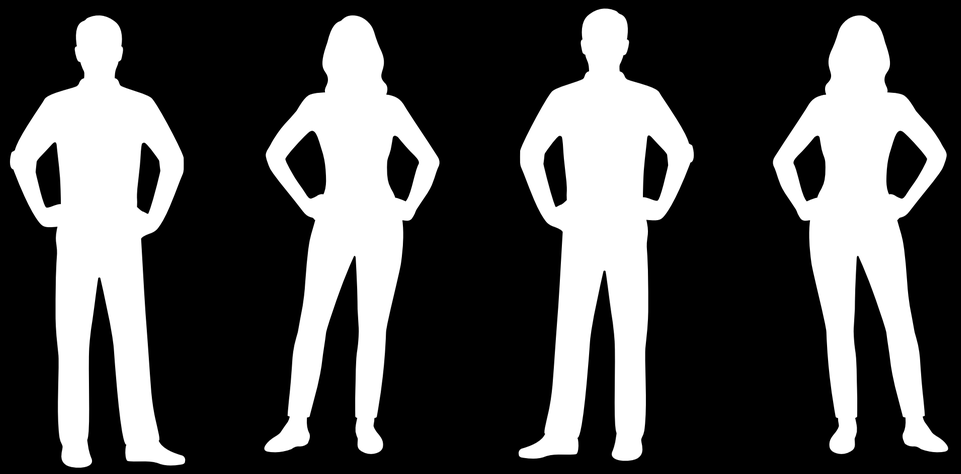

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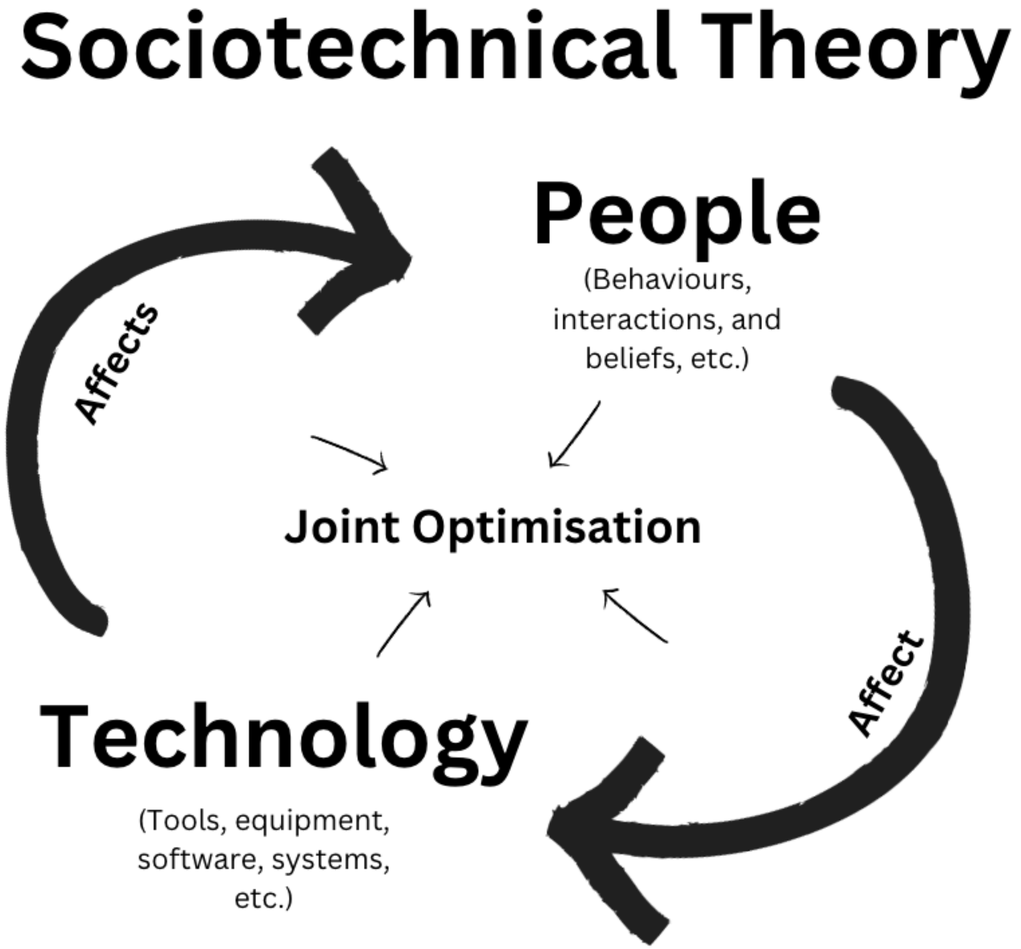
Socio-Technical

Socio-Technical

Cosa significa?

Nel contesto dello sviluppo software, la tecnologia è una parte integrante della vita di uno stakeholder.

Studiare le interazioni di questi stakeholder senza considerare aspetti tecnologici rischia di portare a risultati falsi o incompleti, e dunque, **inutili** [2].



[2] Hoda, Rashina. "Socio-technical grounded theory for software engineering." IEEE Transactions on Software Engineering 48.10 (2021): 3808-3832.

Socio-Technical

Anti-pattern

Anti-pattern

Cosa significa?

Un *anti-pattern* è una soluzione comunemente adottata per un problema ricorrente, che però è tipicamente non efficace, rischiando di risultare invece controproducente.

Social

Anti-pattern

Social anti-pattern fa riferimento a comportamenti e pratiche negativi o controproducenti all'interno di sistemi sociali, in particolare in contesti organizzativi o di team.

Socio-Technical

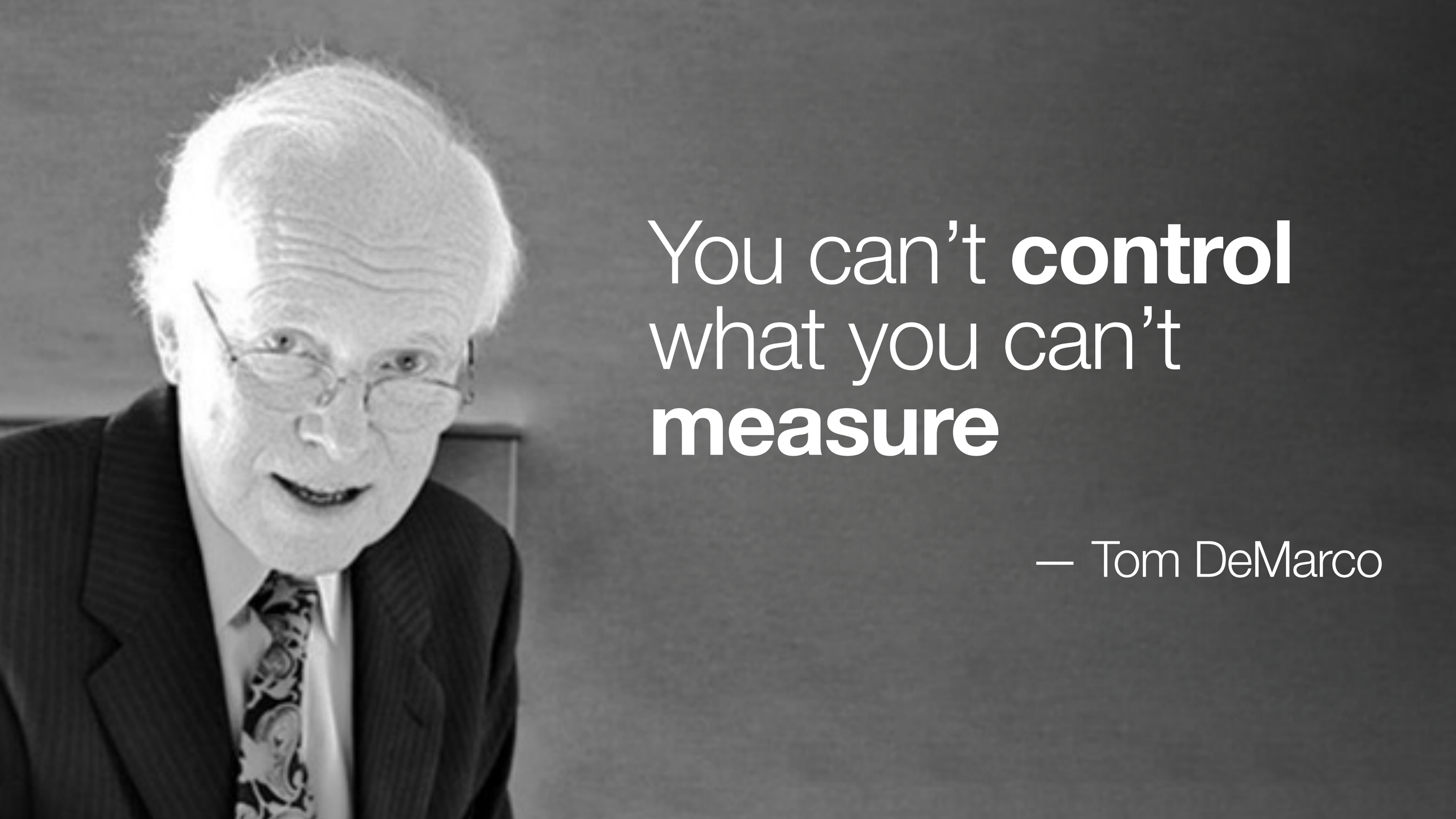
Anti-pattern

Socio-technical anti-pattern fa riferimento a comportamenti e pratiche negativi o controproducenti in sistemi in cui c'è una forte connessione tra persone e tecnologia.

Qual è la differenza?

SOCIAL DEBT

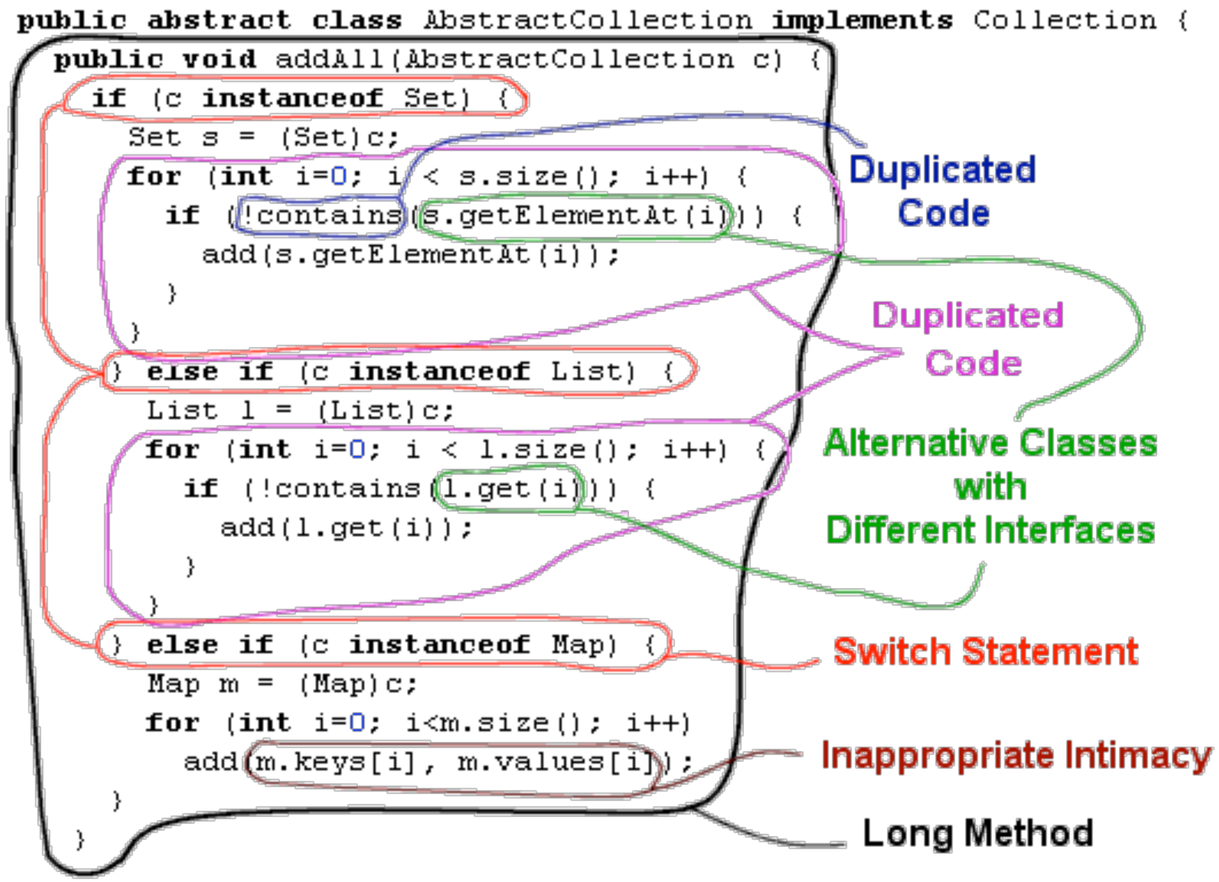
Come possiamo gestirlo?


You can’t **control**
what you can’t
measure
— Tom DeMarco

Code Smell

I Code Smell sono sintomi di scelte progettuali o implementative inadeguate

– Martin Fowler



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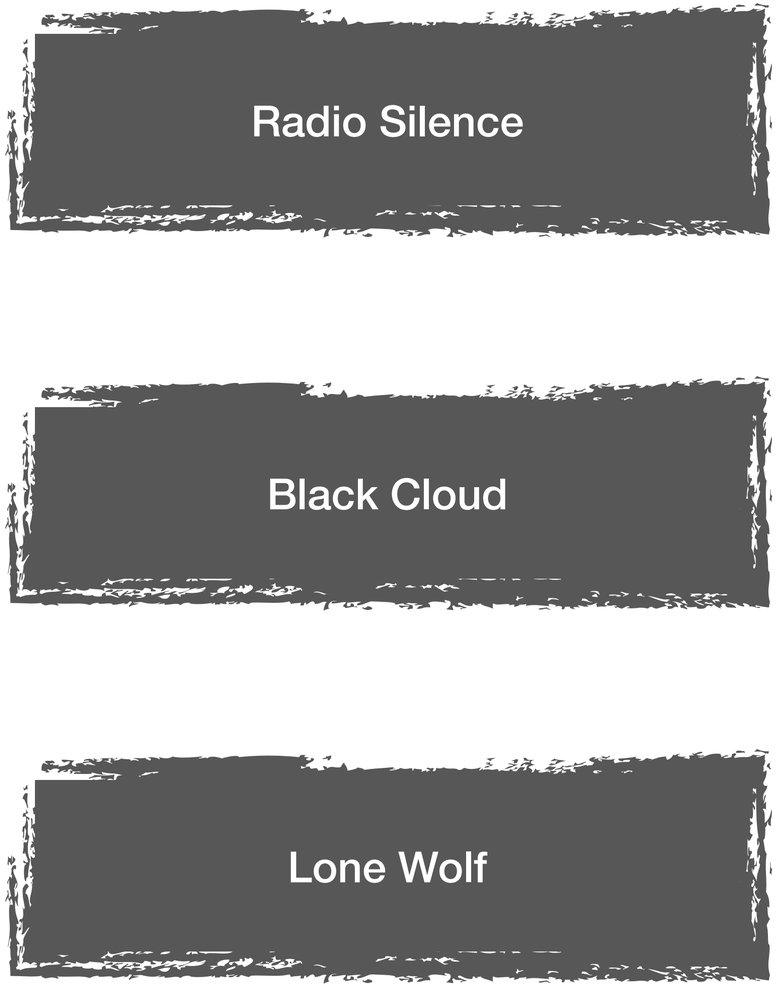

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Community Smells - The Sources of Social Debt:
A Systematic Literature Review

Eduardo Caballero-Espinosa[a,b], Jeffrey C. Carver[c], Kimberly Stowers[d]

[a] *Center for Research, Development, and Innovation in Information and Communication Technology (CIDITIC) - Technological University of Panama*
[b] *Computing Systems Engineering Department - Technological University of Panama*
[c] *Department of Computer Science, The University of Alabama, Tuscaloosa, AL, USA*
[d] *Tim Fletcher, Co., San Jose, CA, USA*

Abstract

Context: Social debt describes the accumulation of unforeseen project costs (or potential costs) from sub-optimal software development processes. Community smells are sociotechnical anti-patterns and one source of social debt. Because community smells impact software teams, development processes, outcomes, and organizations, we to understand their impact on software engineering.

Objective: To provide an overview of community smells in social debt, based on published literature, and describe future research.

Method: We conducted a systematic literature review (SLR) to identify properties, understand origins and evolution, and describe the emergence of community smells. This SLR explains the impact of community smells on teamwork and team performance.

Results: We include 25 studies. Social debt describes the impacts of poor socio-technical decisions on work environments, people, software products, and society. For each of the 30 community smells identified as sources of social debt, we provide a detailed description, management approaches, organizational strategies, and mitigation effectiveness. We identify five groups of management approaches: organizational strategies, frameworks, models, tools, and guidelines. We describe 11 common properties of community smells. We develop the *Community Smell Stages Framework* to concisely

Radio Silence

Black Cloud

Lone Wolf

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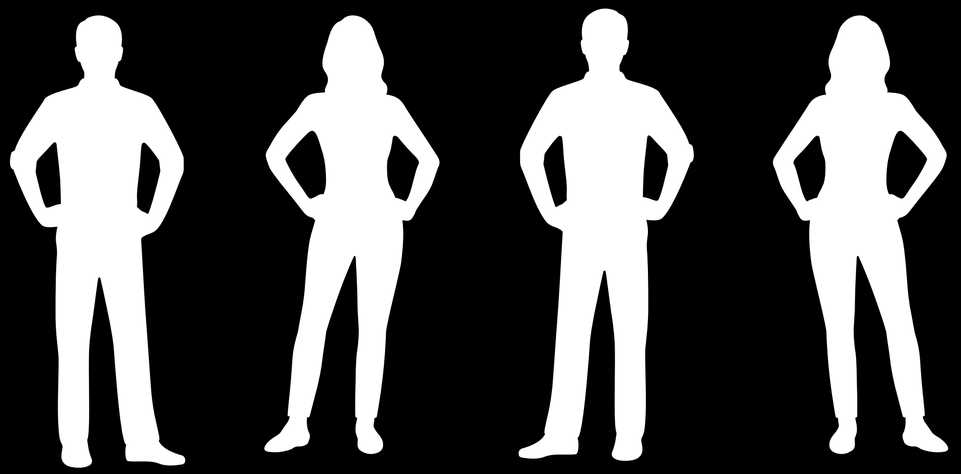
I Community Smell—ossia, **socio-technical anti-pattern** nella comunità di sviluppo—sono precursori di social debt.



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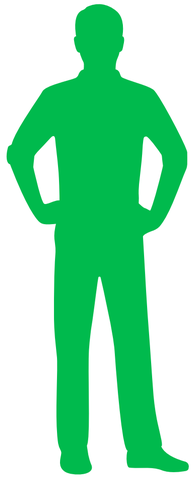
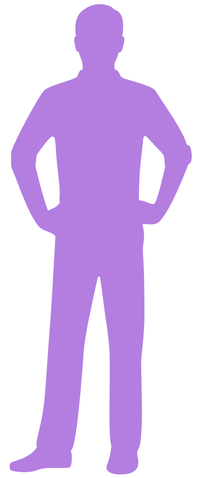


Gilberto

Giulia



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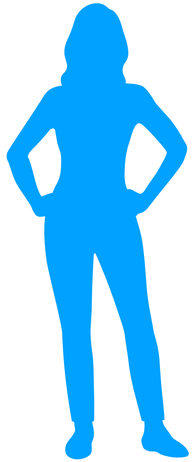

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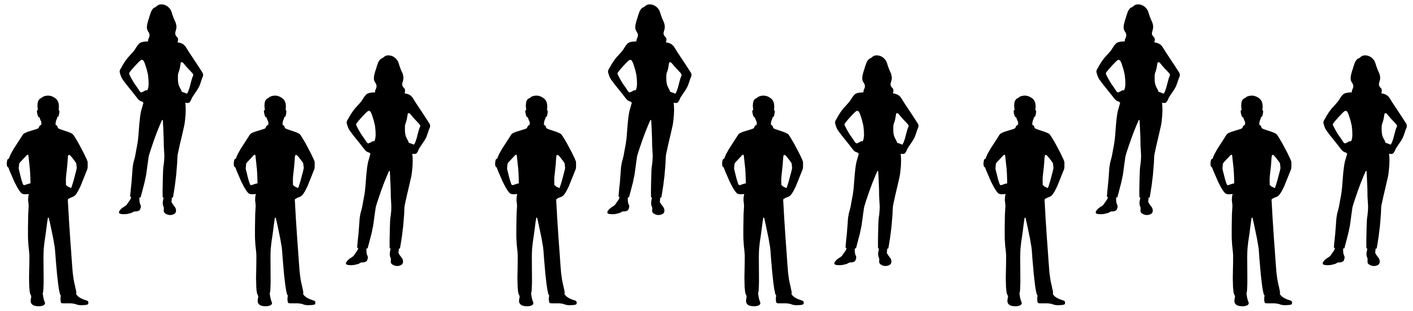

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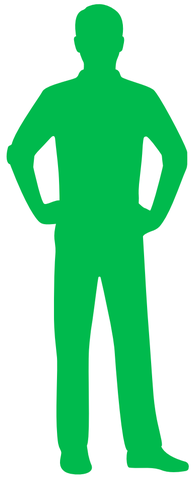

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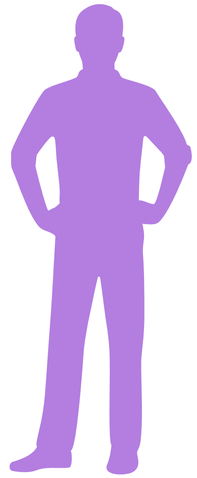

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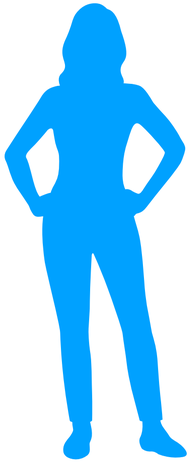

Viviana

ESSE 4

Scenario di Esempio

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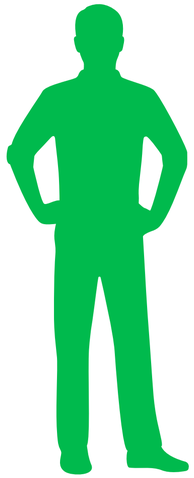
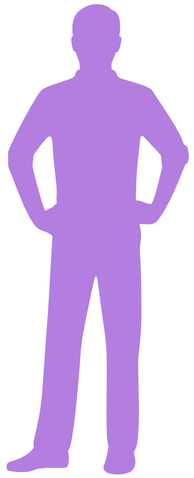
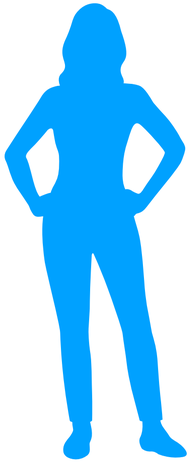


Gilberto

Giulia



Giammaria

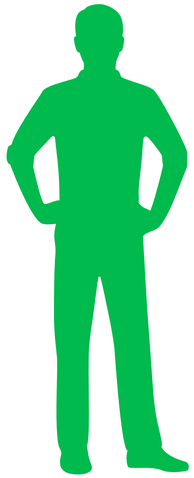


Viviana

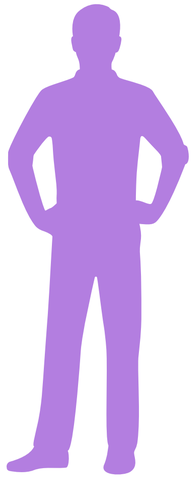
Scenario di Esempio
Comunicazione nel Team

ESSE 4


Tonio Crudo


Gilberto


Giulia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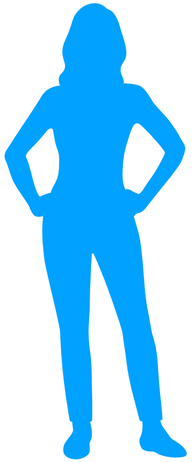
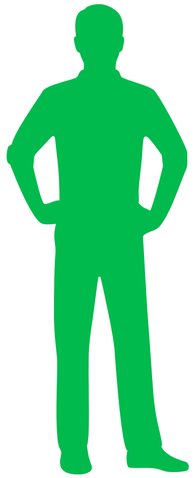

Viviana

slack

Microsoft Teams

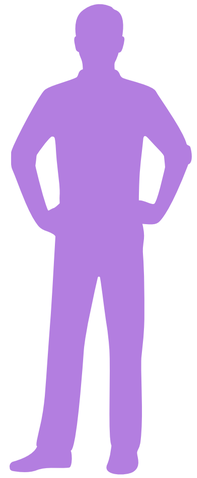
Scenario di Esempio
Comunicazione nel Team

Tonio Crudo

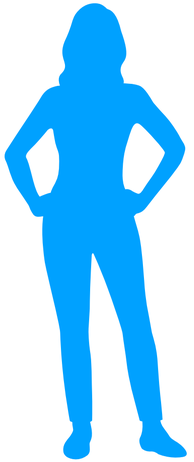


Gilberto

Giulia



Giammaria

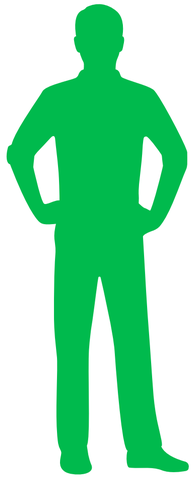


Viviana

Dove si trova la key per accedere al DB?

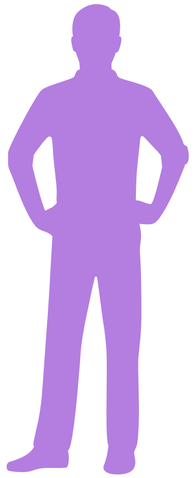
Scenario di Esempio
Comunicazione nel Team

Tonio Crudo



Gilberto

Giulia



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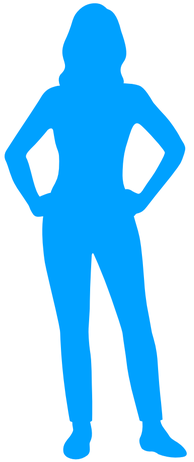


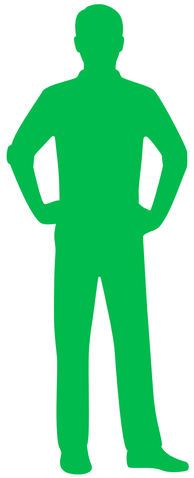
Viviana

Dove si trova la key per accedere al DB?

Chi è che si sta occupando del design pattern?

Scenario di Esempio
Comunicazione nel Team

Tonio Crudo



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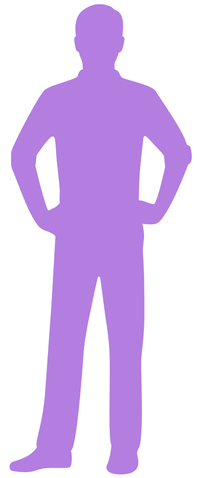
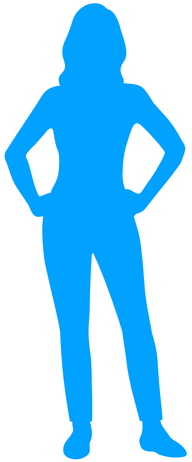


Giammaria

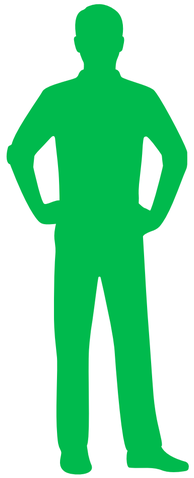
A che ora è il meeting domani?



Viviana

Scenario di Esempio
Comunicazione nel Team

Tonio Crudo



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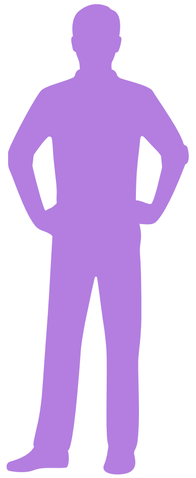

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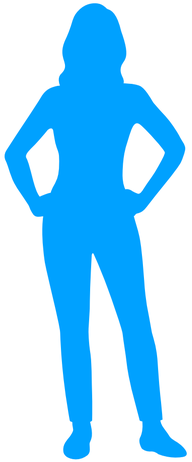
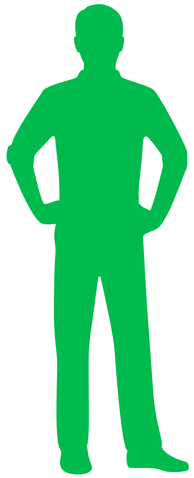


Viviana

Ma quindi il nostro è un MVC?

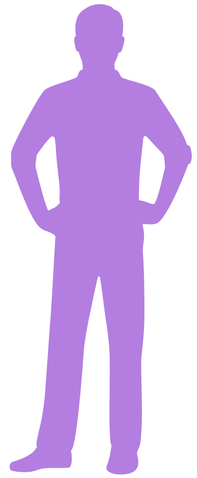
Scenario di Esempio
Comunicazione nel Team

Tonio Crudo

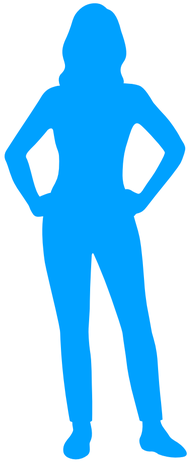


Gilberto

Giulia



Giammaria

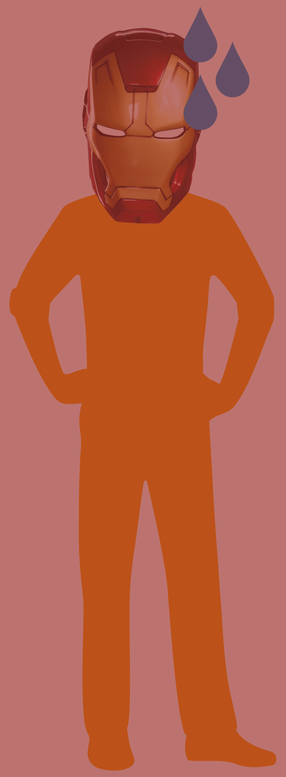


Viviana

Presto, vi rendete conto che la troppa formalità nella comunicazione, con una conseguente diminuzione delle occasioni per scambiare informazioni in maniera informale, ha portato ad una perdita di conoscenza globale, risultando in un overhead di comunicazione verso il manager.

Scenario di Esempio
Comunicazione nel Team

ESSE 4

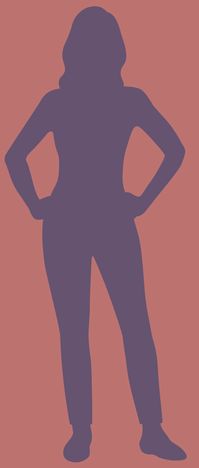


Tonio Crudo

Alberto

Iulia

Gianmaria



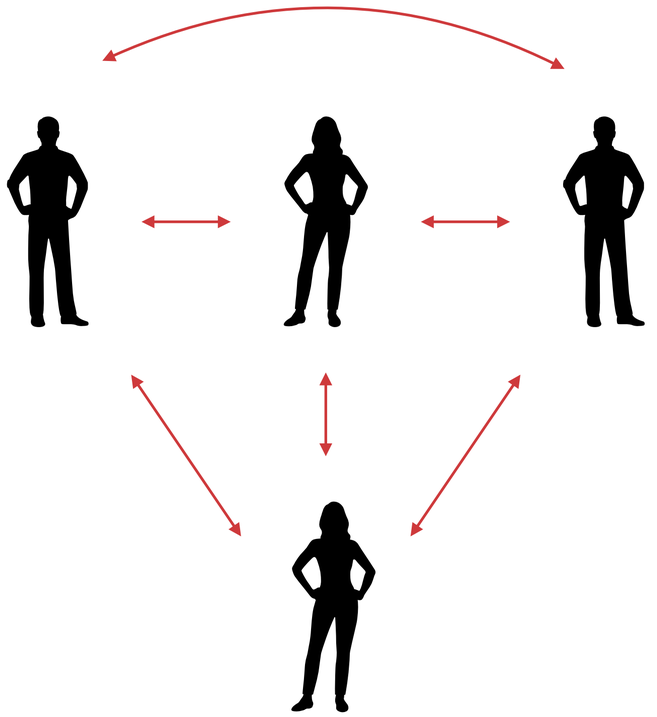
Viviana

BLACK CLOUD

Presto, vi rendete conto che la troppa formalità nella comunicazione, con una conseguente diminuzione delle occasioni per scambiare informazioni in maniera informale, ha portato ad una perdita di conoscenza globale, risultando in un overhead di comunicazione verso il manager.

Black Cloud

Un esempio di Community Smell



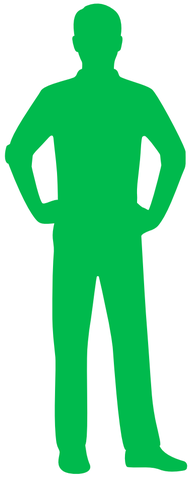
Questo smell si presenta quando le organizzazioni non mettono in condizione i compagni di team di interagire socialmente e comunicare tra loro in maniera efficace.

Per cui, le condizioni in cui lavorano non supportano lo scambio di conoscenza (ad esempio, esperienza professionale o comprensione dei progetti in corso) durante lo sviluppo software [3].

[3] Caballero-Espinosa, Eduardo, et al. "Community smells—The sources of social debt: A systematic literature review." Information and Software Technology 153 (2023): 107078.

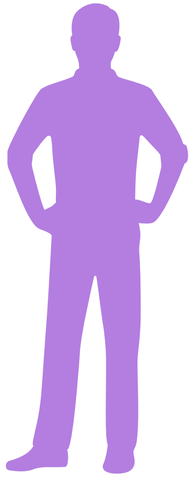
Scenario di Esempio Lavoro di gruppo

Tonio Crudo



Gilberto

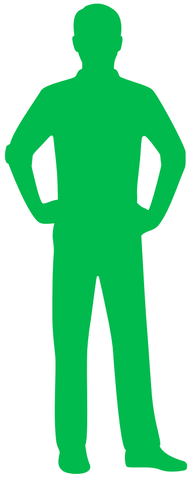
Giulia



Giammaria

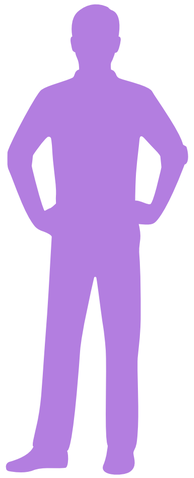
Scenario di Esempio Lavoro di gruppo

Tonio Crudo



Gilberto

Giulia



Giammaria

```
IDENTIFICATION DIVISION.
       PROGRAM-ID. ADD_NUMBERS.
       DATA DIVISION.
       FILE SECTION.
       WORKING-STORAGE SECTION.
       01  FIRST-NUMBER    PICTURE IS 99.
       01  SECOND-NUMBER   PICTURE IS 99.
       01  RESULT          PICTURE IS 9999.
       PROCEDURE DIVISION.

       MAIN-PROCEDURE.
           DISPLAY "Here is the first Number "
           MOVE 8 TO FIRST-NUMBER
           DISPLAY FIRST-NUMBER

           DISPLAY "Let's add 20 to that number."
           ADD 20 TO FIRST-NUMBER
           DISPLAY FIRST-NUMBER

           DISPLAY "Create a second variable"
           MOVE 30 TO SECOND-NUMBER
           DISPLAY SECOND-NUMBER

           *>COMMENT: COMPUTE THE TWO NUMBER AND PLACE INTO RESULT*
           COMPUTE RESULT = FIRST-NUMBER +  SECOND-NUMBER.

           DISPLAY "The result is:".
           DISPLAY RESULT.
         STOP RUN.
END PROGRAM ADD_NUMBERS.

```

Scenario di Esempio Lavoro di gruppo


```
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       FILE SECTION.
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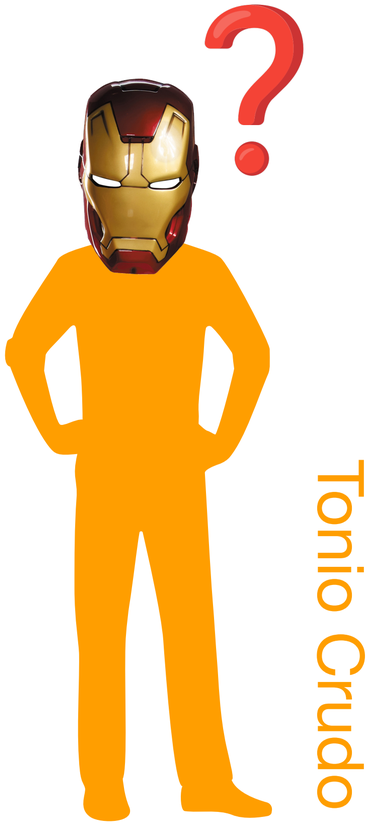
Scenario di Esempio Lavoro di gruppo



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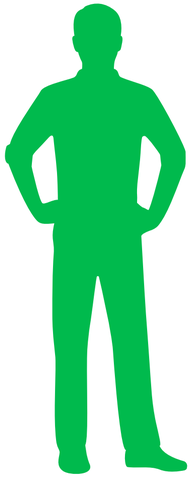
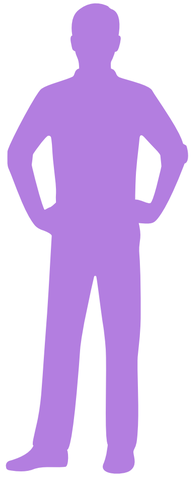


Gilberto

Giulia



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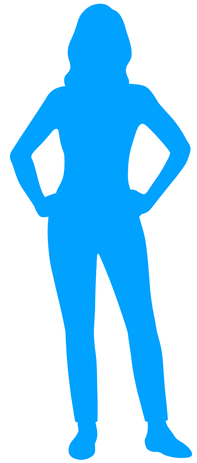
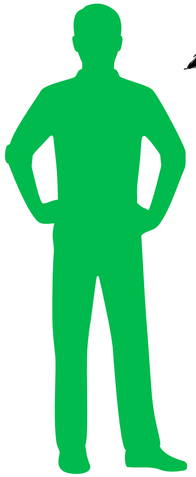


Viviana

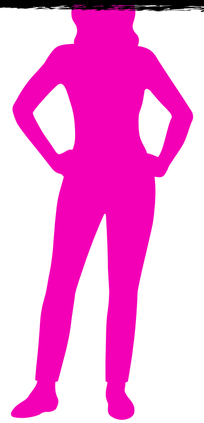
Scenario di Esempio Lavoro di gruppo

Tonio Crudo



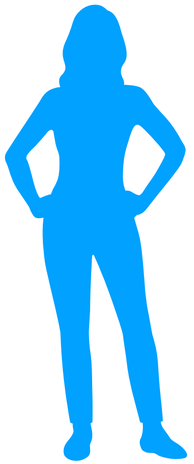
Gilberto

Ha riscritto tutto il mio codice senza chiedermelo!

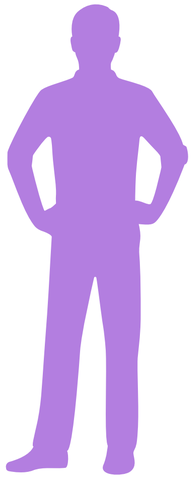


Gisella

Continua a insistere che il sito dovrebbe essere azzurro quando abbiamo scelto per il rosso!



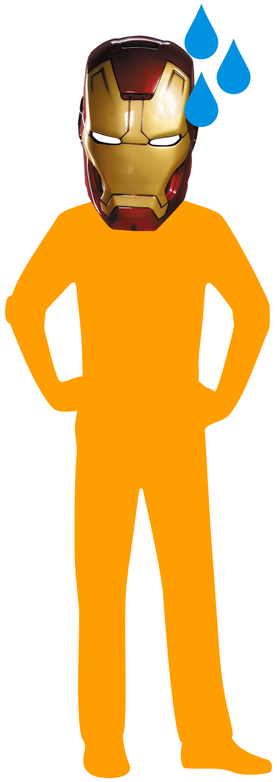
Viviana



Giammaria

Perché continua a usare il PascalCase se abbiamo deciso di fare tutto in camelCase?!?

Scenario di Esempio Lavoro di gruppo



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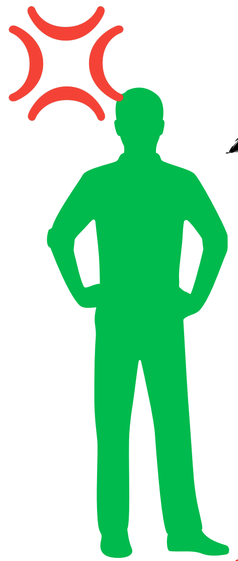

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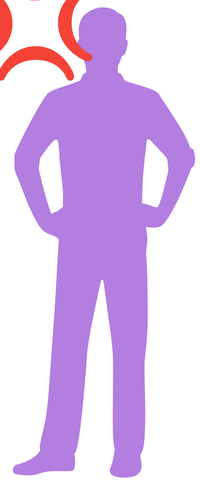

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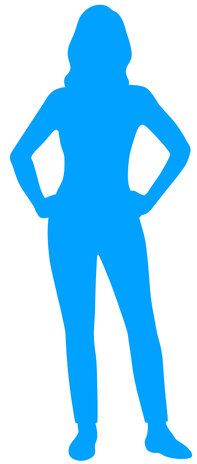
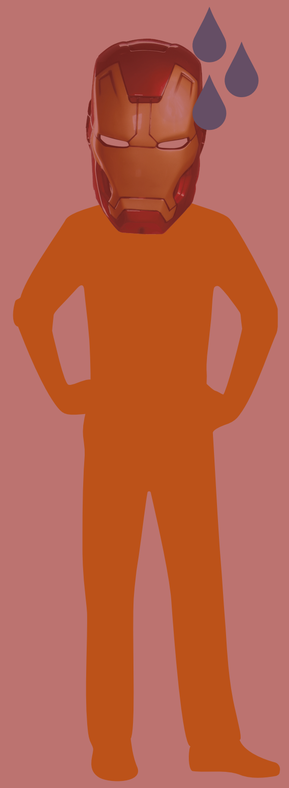


Viviana

I don’t care!

Scenario di Esempio Lavoro di gruppo



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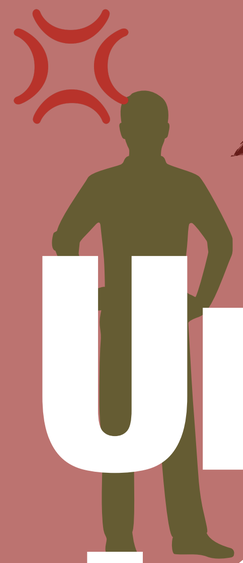
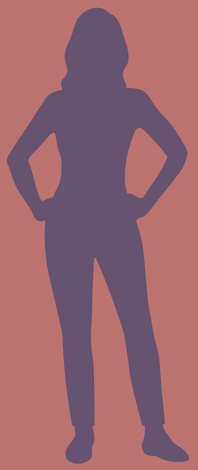


Riccardo Riammaria



Viviana

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I don't care!

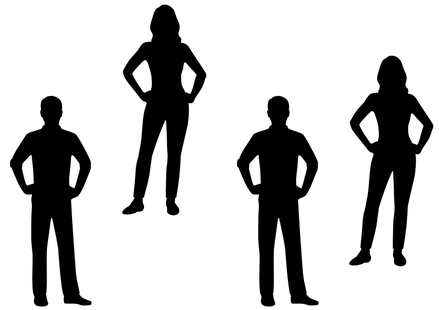
Unmanaged LONE WOLF

Lone Wolf

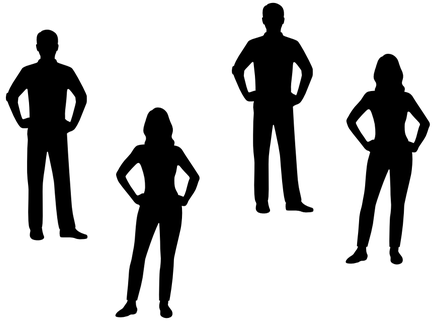
Un esempio di Community Smell

È uno scenario in cui un membro del team si isola e lavora da solo, evitando la comunicazione con i suoi colleghi.

Una situazione simile porta a task eseguiti in isolamento e perdita di controllo sul tracciamento del progetto, oltre che a un generale malcontento del gruppo [3].



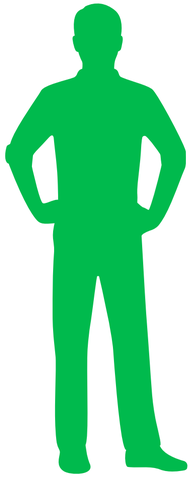
Lone Wolf



[3] Caballero-Espinosa, Eduardo, et al. "Community smells—The sources of social debt: A systematic literature review." Information and Software Technology 153 (2023): 107078.

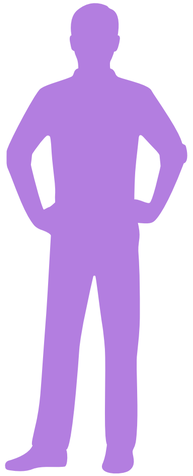
Scenario di Esempio

Tonio Crudo

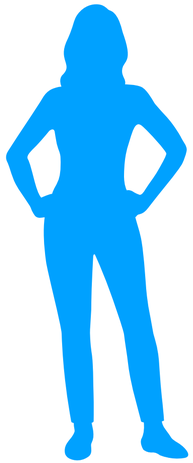


Gilberto

Giulia



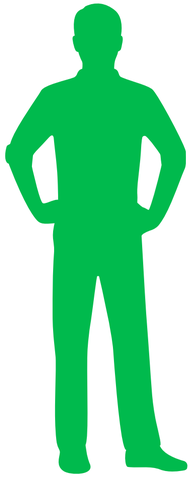
Giammaria



Viviana

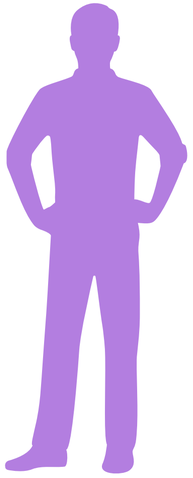
Scenario di Esempio

Tonio Crudo



Gilberto

Giulia



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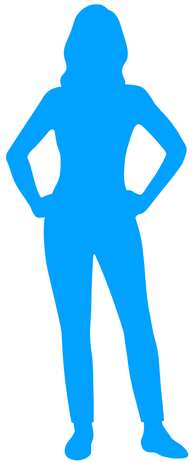
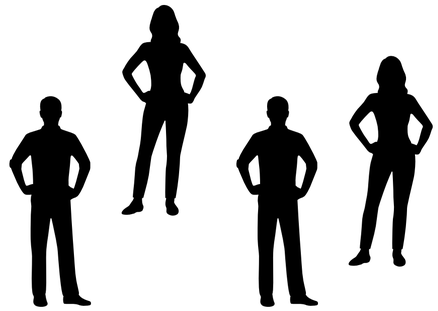
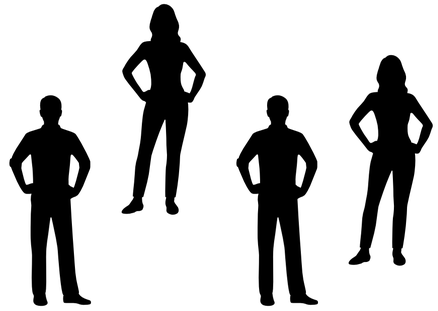


Viviana

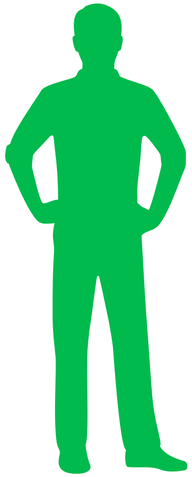
Ruggero





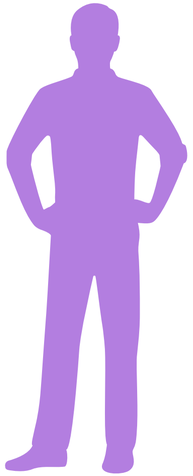
Scenario di Esempio

Tonio Crudo



Gilberto

Giulia



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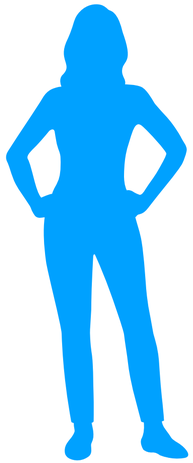
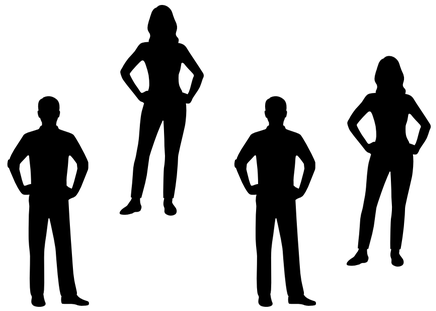
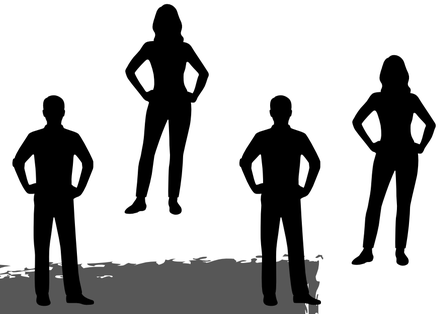


Viviana

Ruggero



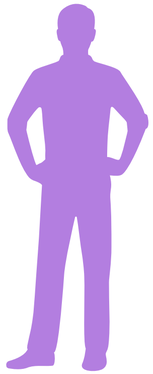


É necessario definire un modo per far comunicare i due team di sviluppo!

Scenario di Esempio

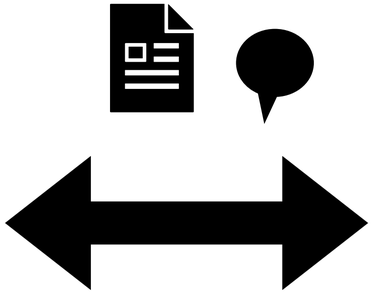
Tonio Crudo

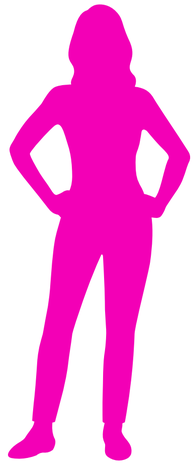
Gilberto



Giammaria

Viviana





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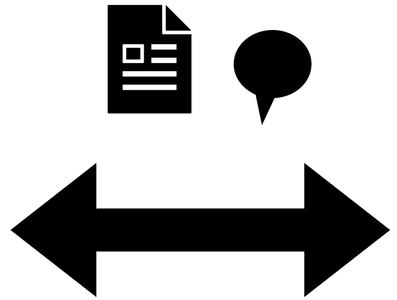
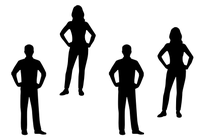
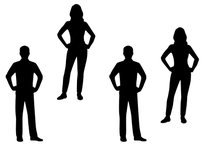


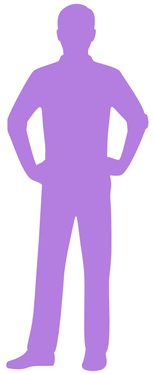




Scenario di Esempio

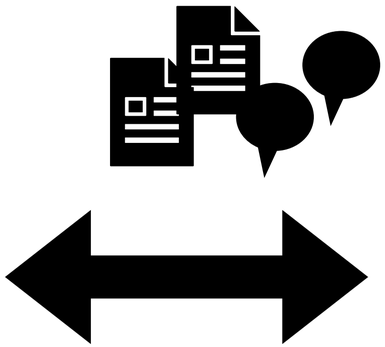
Tonio Crudo

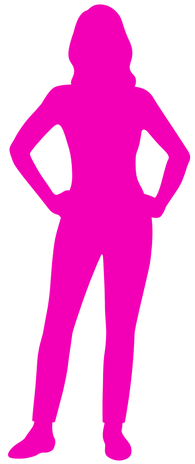
Gilberto



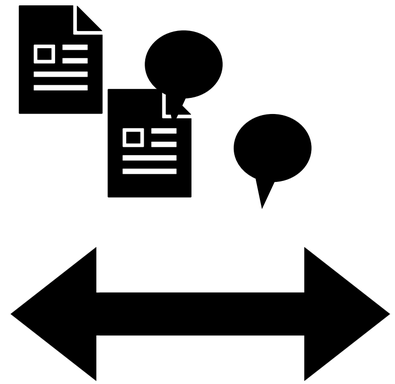
Giammaria

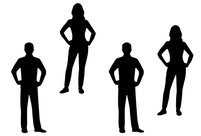
Viviana

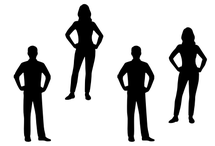




Giulia



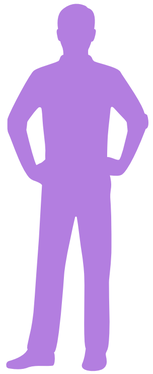




Scenario di Esempio

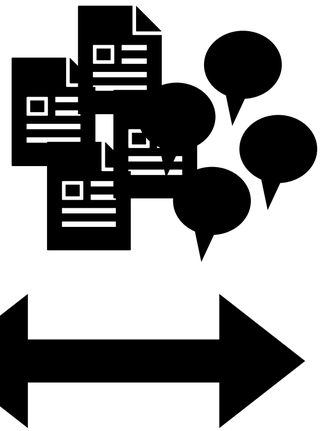
Tonio Crudo

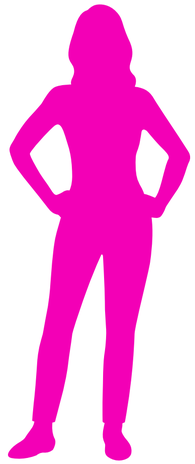
Gilberto



Giammaria

Viviana





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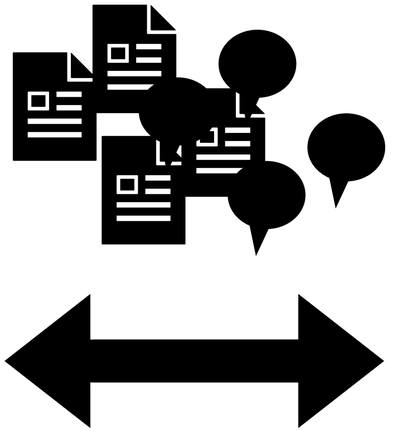
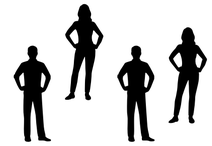
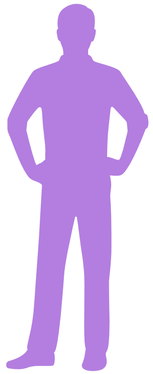




Scenario di Esempio

Tonio Crudo

Gilberto



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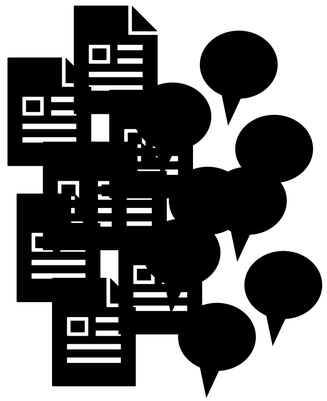

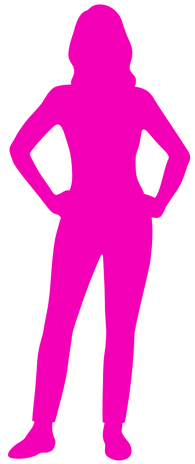

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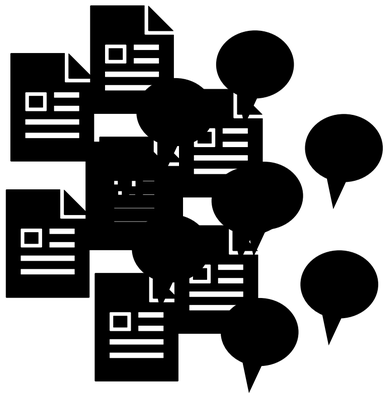
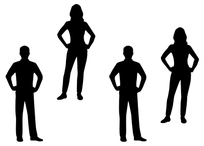
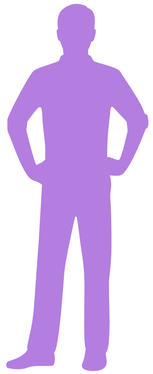




Scenario di Esempio

Tonio Crudo

Gilberto



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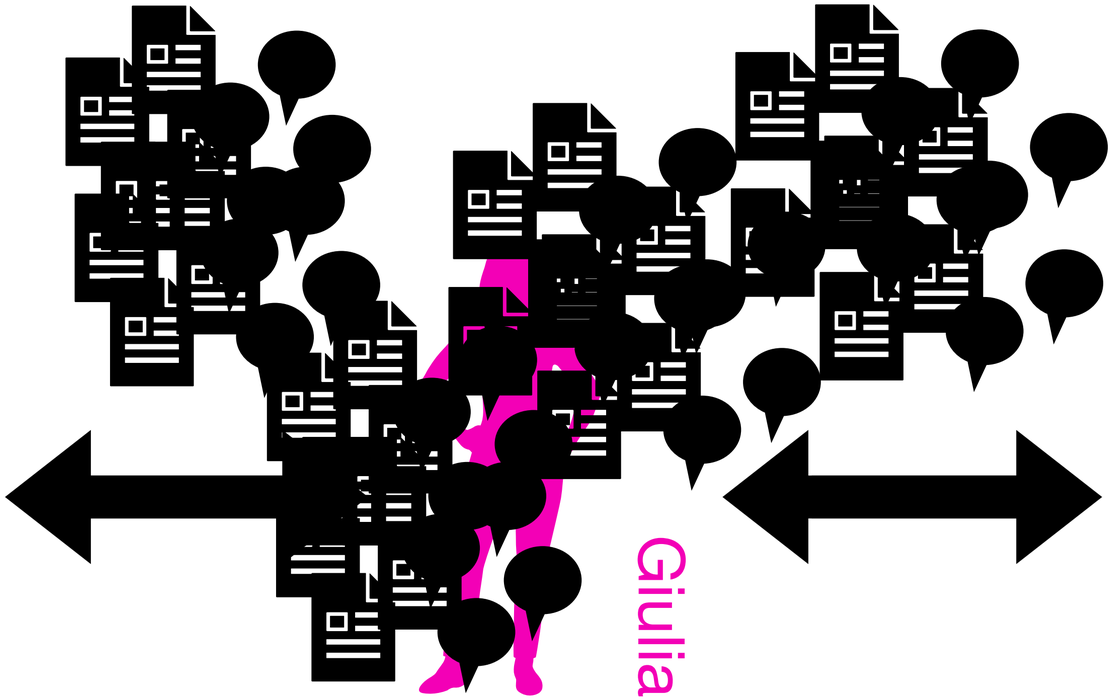

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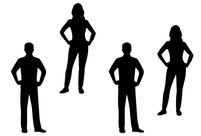
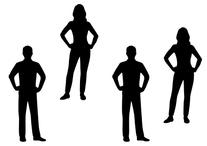
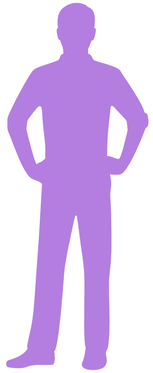




Scenario di Esempio

Tonio Crudo

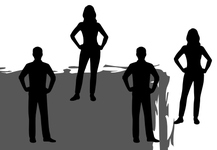
Gilberto



Giammaria

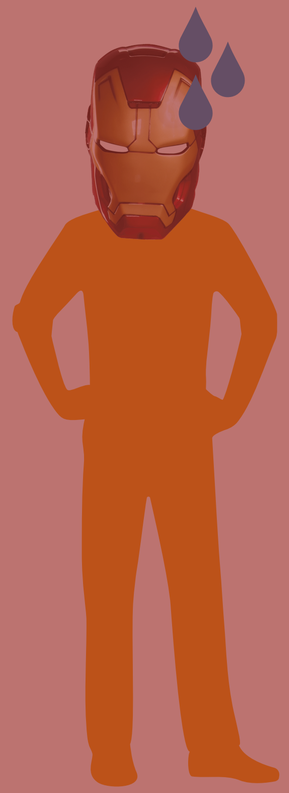
Viviana

Giulia



La povera Giulia non è in grado di gestire tutto questo scambio di informazioni, inevitabilmente risultando in una perdita di alcune di esse.

Scenario di Esempio



Tonio Crudo

Gilberto Giammaria

Viviana

Giulia

RADIO SILENCE

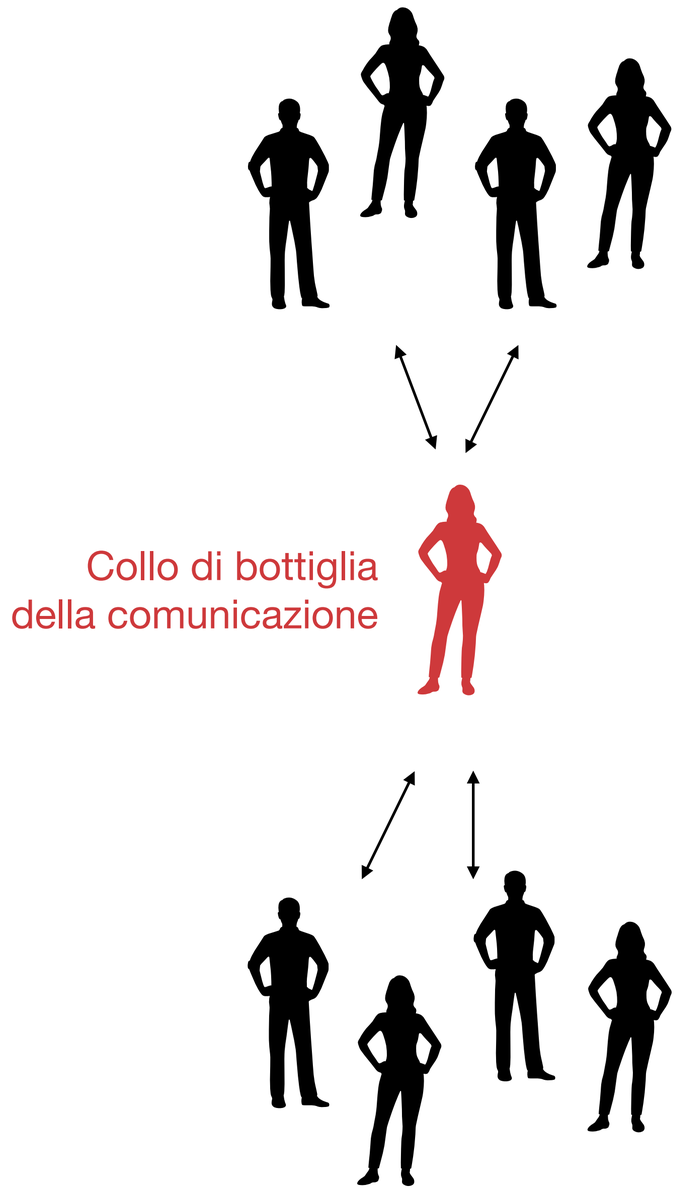
La povera Giulia non è in grado di gestire tutto questo scambio di informazioni, inevitabilmente risultando in una perdita di alcune di esse.

Radio Silence

Un esempio di Community Smell

È uno scenario in cui i capi e i membri del team eseguono i task seguendo un’organizzazione estremamente formale e complessa. In questo modo, le strutture comunicative non permettono uno scambio efficiente di informazioni tra i team.

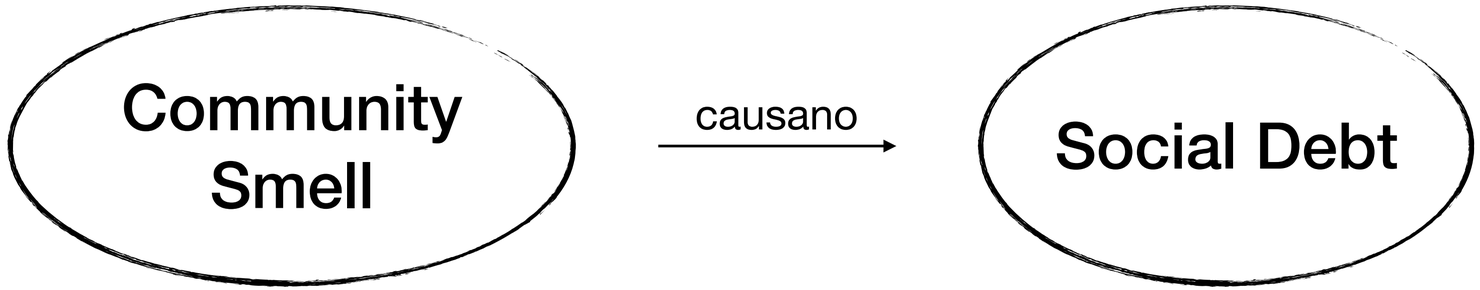
Ad esempio, si può verificare quando è una sola persona a fungere da intermediario per le comunicazioni tra diversi team, provocando un sovraccarico comunicativo e ingenti ritardi [3].



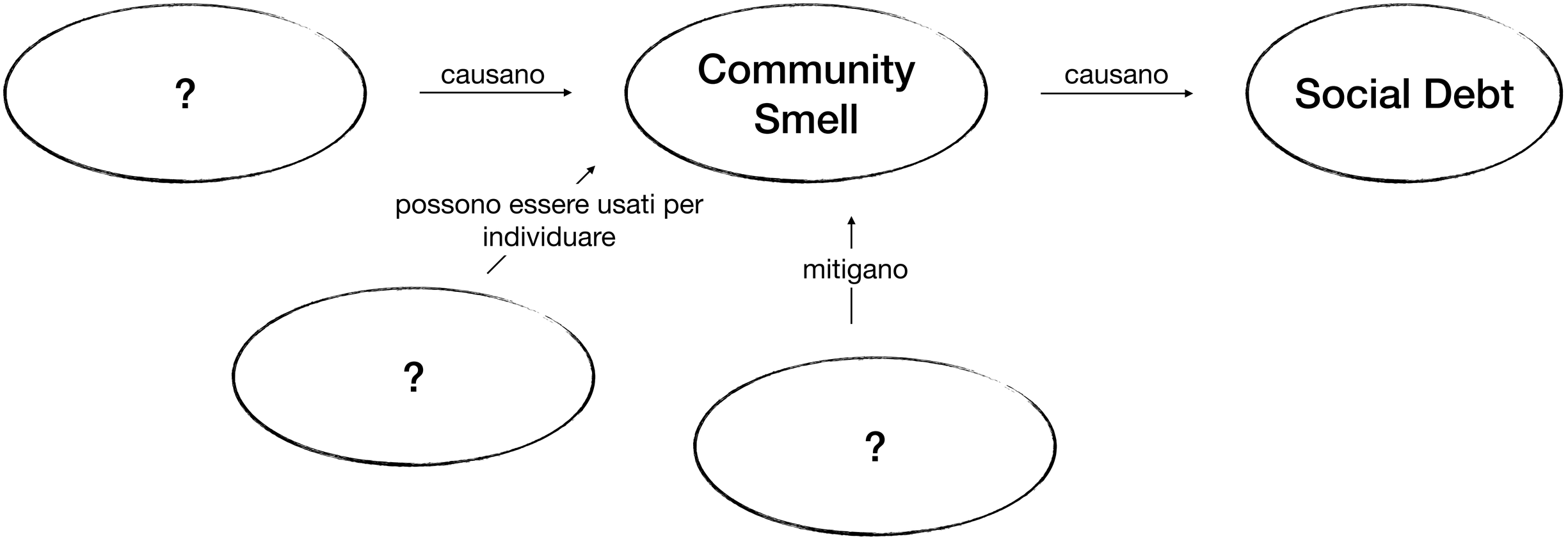
[3] Caballero-Espinosa, Eduardo, et al. "Community smells—The sources of social debt: A systematic literature review." Information and Software Technology 153 (2023): 107078.


VICTORY

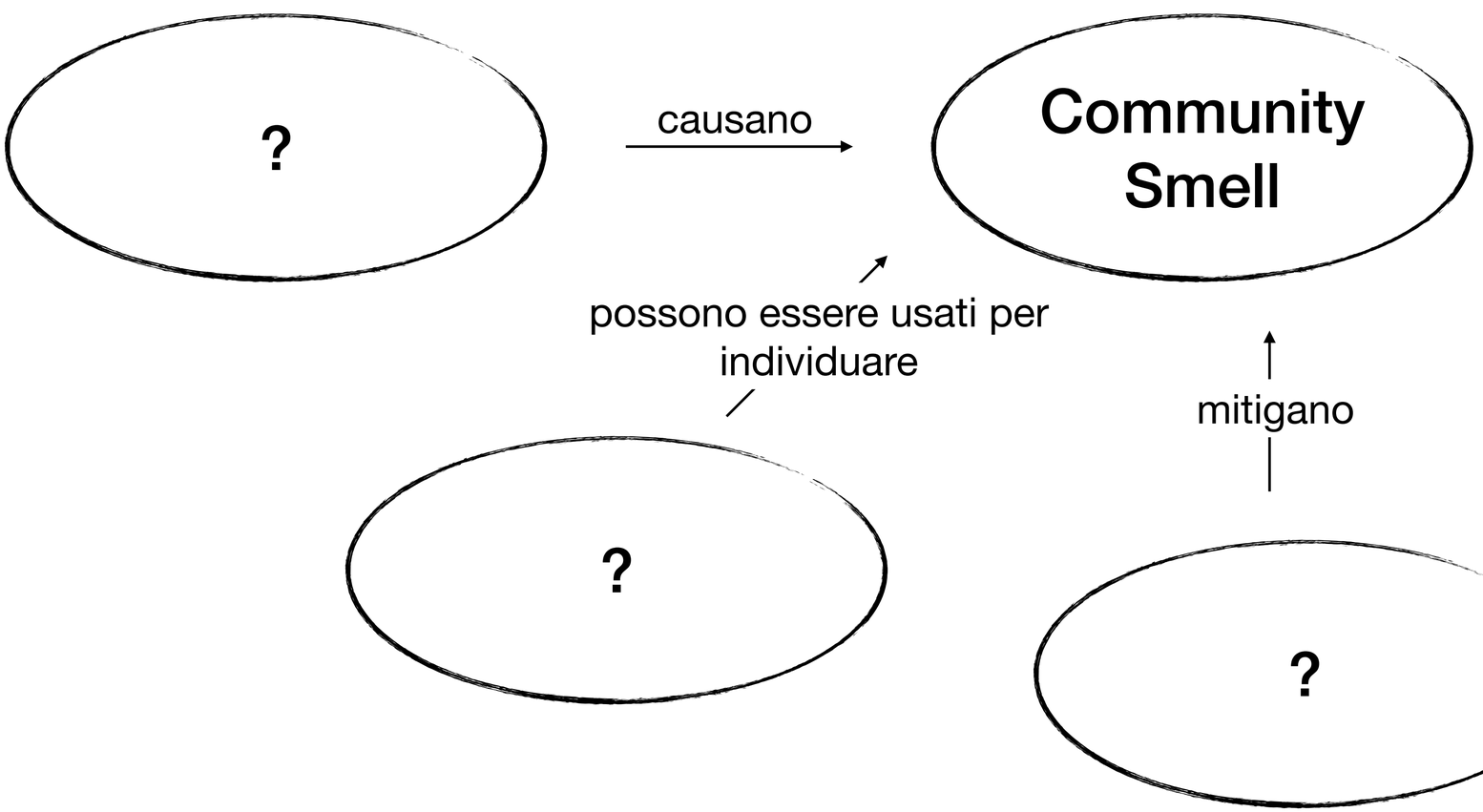
Community Smell & Social Debt



Community Smell & Social Debt

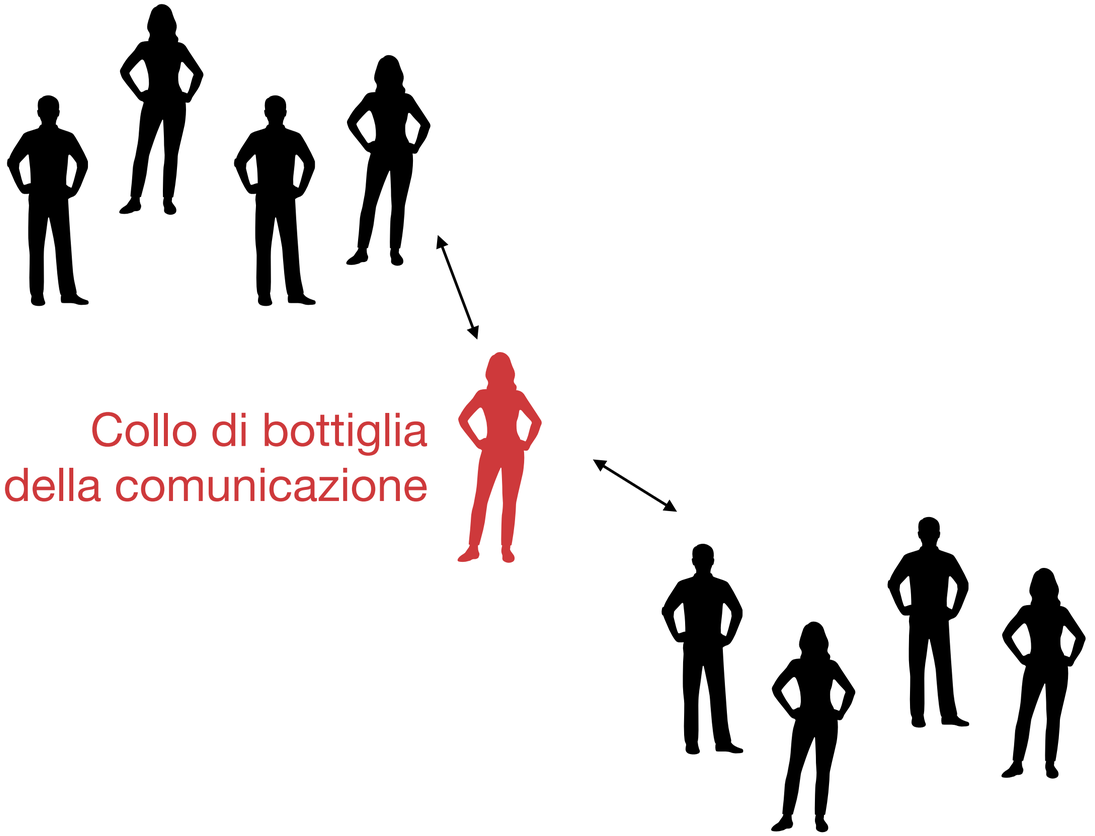


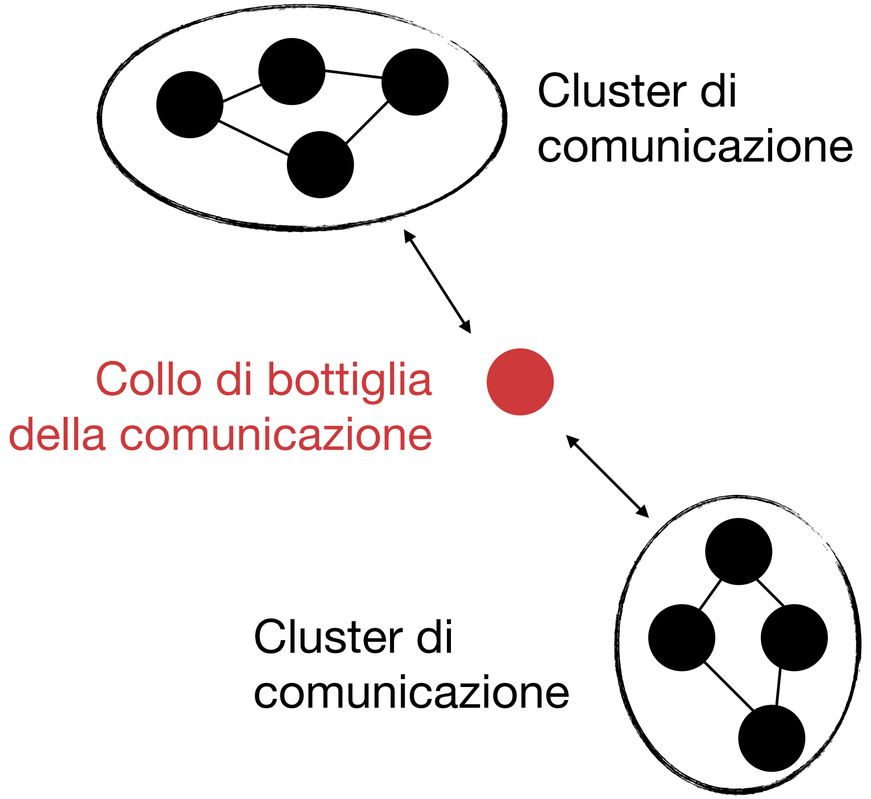
La Ricerca sui Community Smell



Radio Silence

Rappresentazione degli smell come grafi





[3] Caballero-Espinosa, Eduardo, et al. "Community smells—The sources of social debt: A systematic literature review." Information and Software Technology 153 (2023): 107078.

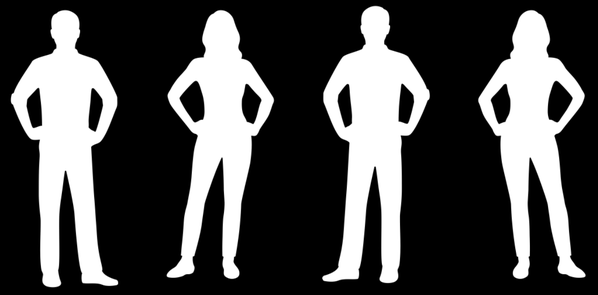
Conclusioni

Che cosa avete (presumibilmente) imparato?

SOCIAL DEBT

Sono dei costi aggiuntivi di un progetto software che derivano da ***socio-technical anti-pattern*** non previsti e non gestiti all'interno della comunità software [1].

I Community Smell—ossia, **socio-technical anti-pattern** nella comunità di sviluppo—sono precursori di social debt.



[1] Tamburri, Damian A., et al. "What is social debt in software engineering?." 2013 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE). IEEE, 2013.

- Cos'è il Social Debt
- Cos'è un socio-technical anti-pattern
- Cosa sono i community smell
- Qual è la correlazione tra community smell esocial debt

Materiale esterno di ricerca

[1] Tamburri, Damian A., et al. "What is social debt in software engineering?." 2013 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE). IEEE, 2013.

[2] Hoda, Rashina. "Socio-technical grounded theory for software engineering." IEEE Transactions on Software Engineering 48.10 (2021): 3808-3832.

[3] Caballero-Espinosa, Eduardo, et al. "Community smells—The sources of social debt: A systematic literature review." Information and Software Technology 153 (2023): 107078.

[4] Palomba, Fabio, et al. "Beyond technical aspects: How do community smells influence the intensity of code smells?." IEEE transactions on software engineering 47.1 (2018): 108-129.

[5] Catolino, Gemma, et al. "Gender diversity and women in software teams: How do they affect community smells?." 2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS). IEEE, 2019.

[6] Lambiase, Stefano, et al. "Good fences make good neighbours? on the impact of cultural and geographical dispersion on community smells." Proceedings of the 2022 ACM/IEEE 44th International Conference on Software Engineering: Software Engineering in Society. 2022.

[7] Almarimi, Nuri, Ali Ouni, and Mohamed Wiem Mkaouer. "Learning to detect community smells in open source software projects." Knowledge-Based Systems 204 (2020): 106201.