THE EVOLUTION OF REQUIREMENTS PRACTICES IN SOFTWARE STARTUPS

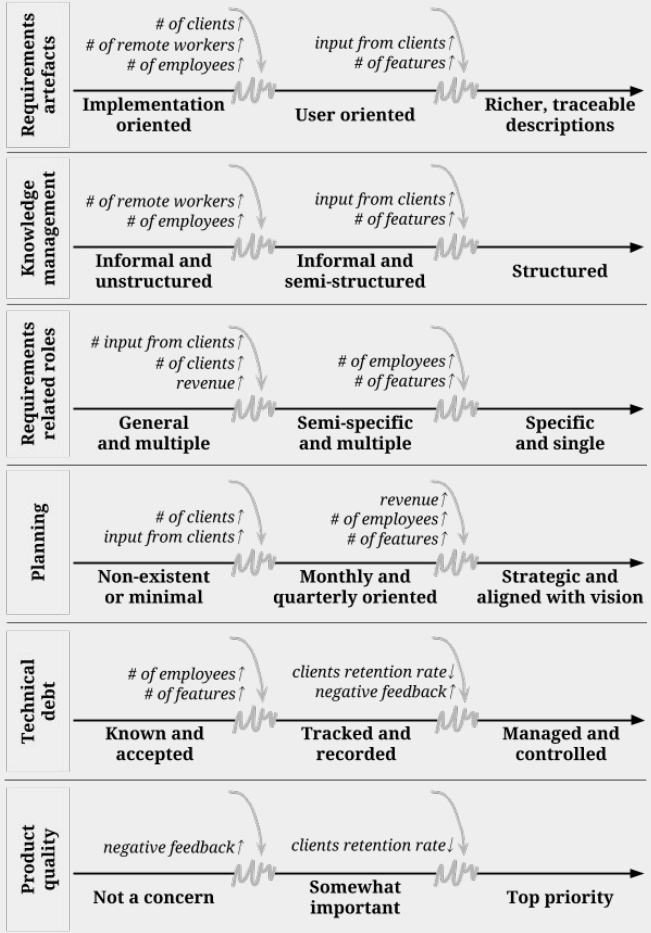
Catarina Gralha[1], Daniela Damian[2], Anthony Wasserman[3], Miguel Goulão[1], João Araújo[1]

[1] Universidade Nova de Lisboa, Portugal
[2]University of Victoria, Canada
[3]Carnegie Mellon University, Silicon Valley, USA

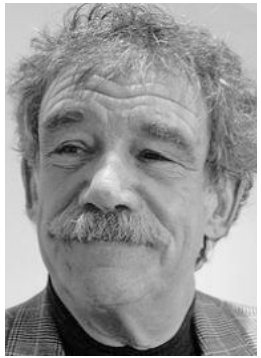
June 1st, 2018

FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA
NOVALINCS LABORATORY FOR COMPUTER SCIENCE AND INFORMATICS
University of Victoria
Carnegie Mellon University Silicon Valley

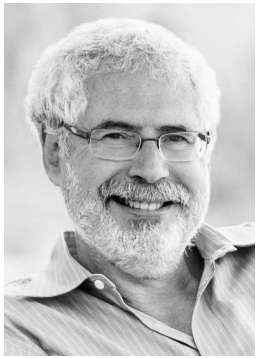
REQUIREMENTS PRACTICE EVOLUTION IN STARTUPS



DEFINITION OF A STARTUP



Bob Dorf



Steve Blank

"An organisation in search of a scalable, repeatable, profitable business model"

"A human institution designed to create a new product or service under conditions of extreme uncertainty"

Eric Ries

IN THIS STUDY, A STARTUP IS A COMPANY THAT...

...has recently spun-off from a large company

...is still at a stage without a solid revenue stream

...has not yet gone public

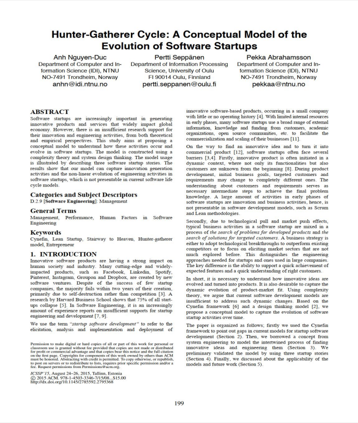
EMERGING COMPANIES

CURRENT STATUS OF RESEARCH

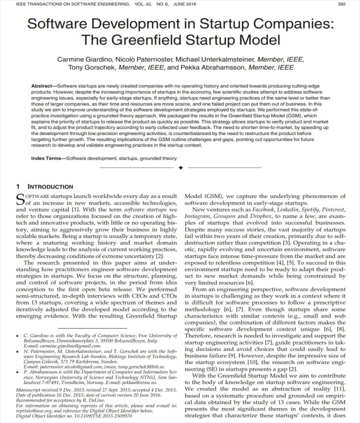
Very little is known about how these *emerging companies* **discover, prioritise and manage information** about **requirements over time**


Requirements Engineering in Software Startups: a Grounded Theory approach

Jorge Melegati and Alfredo Goldman
Department of Computer Science
University of São Paulo
São Paulo, Brazil


Hunter-Gatherer Cycle: A Conceptual Model of the Evolution of Software Startups

Anh Nguyen-Duc, Pertti Seppänen, Pekka Abrahamsson


Software Development in Startup Companies: The Greenfield Startup Model

Carmine Giardino, Nicolò Paternoster, Michael Unterkalmsteiner, *Member, IEEE*, Tony Gorschek, *Member, IEEE*, and Pekka Abrahamsson, *Member, IEEE*

RESEARCH QUESTIONS

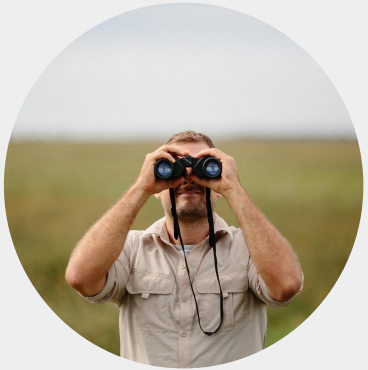
1 How do **requirements practices change over time** in *emerging companies*?

2 What **factors** and **turning points** drive those changes?

STUDIED 16 STARTUP COMPANIES

Age	1..10
Countries	
Domain	
Employees	1..10 to 51..60
Roles	

GROUNDED THEORY: DATA COLLECTION



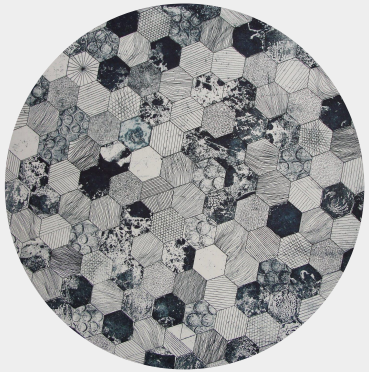
6 full-day observations

14 project meetings attendance

8 focus groups

18 semi-structured interviews

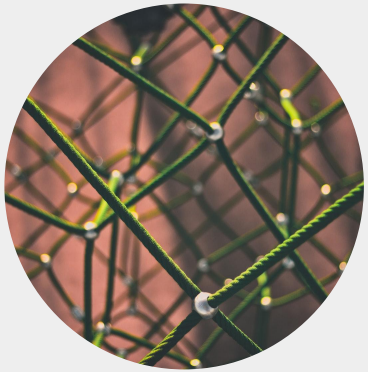
GROUNDED THEORY:
DATA ANALYSIS



open coding

identification of patterns

constant comparison

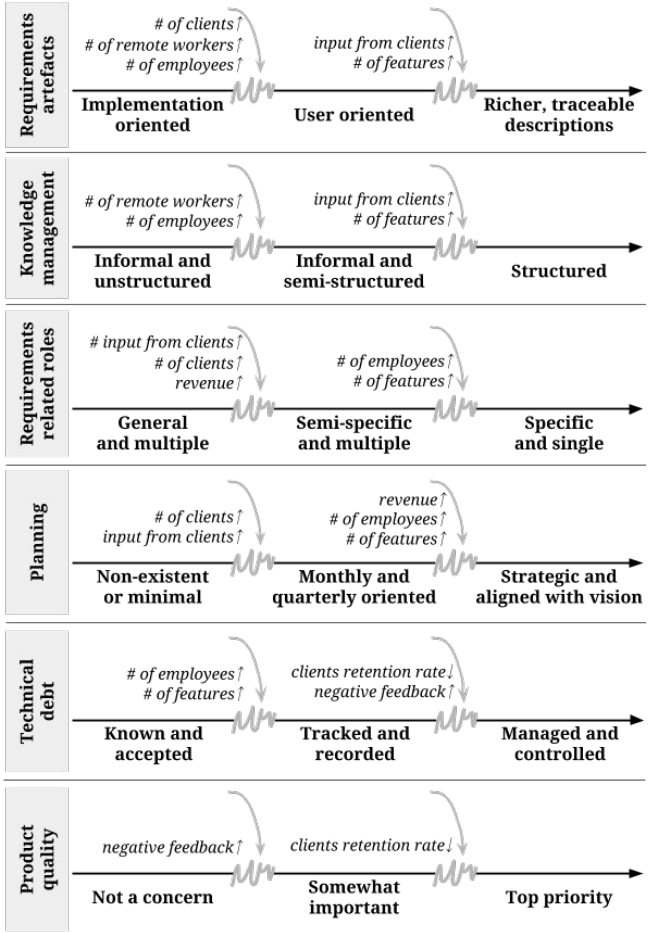


axial coding

identification of relationships

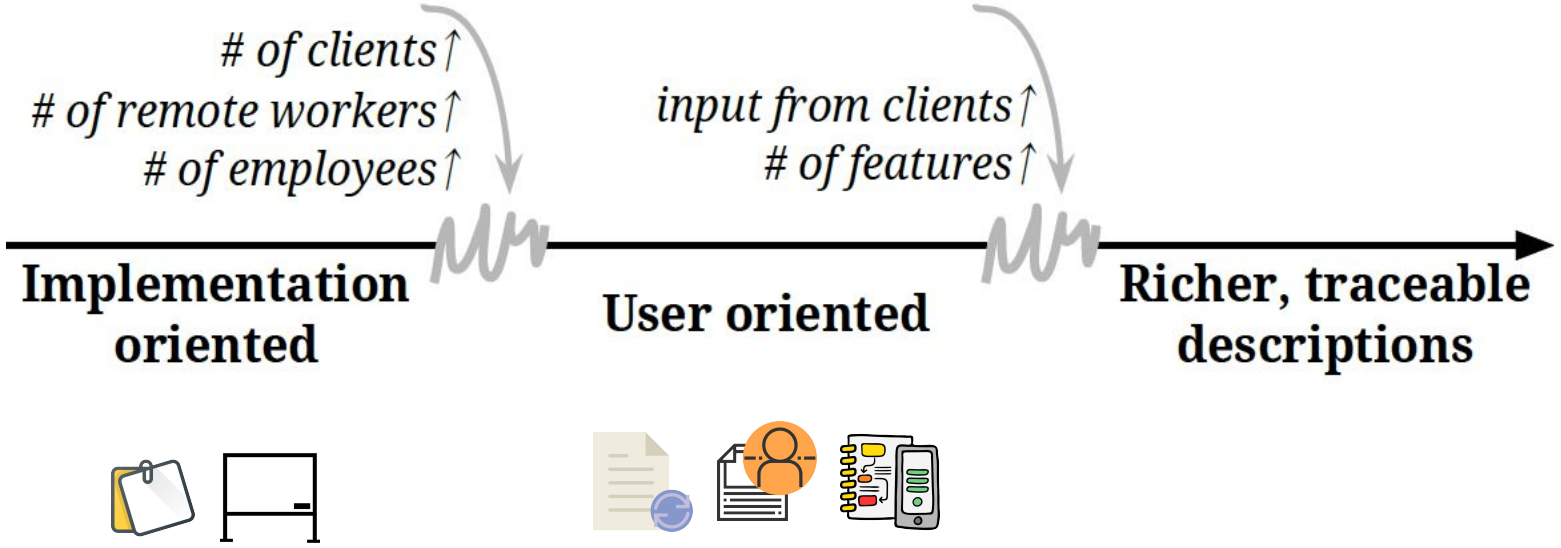
theoretical saturation

REQUIREMENTS PRACTICE EVOLUTION



REQUIREMENTS ARTEFACTS:

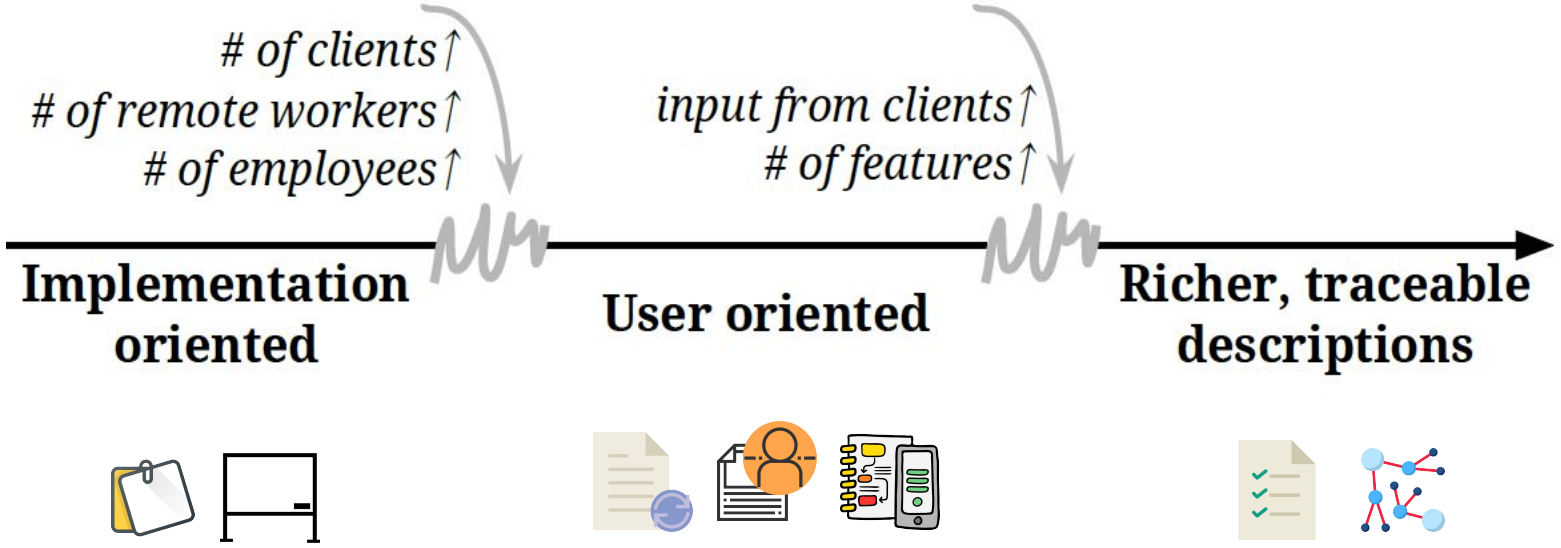
content of information and **user** orientation matters



*“It was mainly because we had more and more **clients** (...) We need to know their **needs** when we are writing code, so (...) **user stories** are important”*

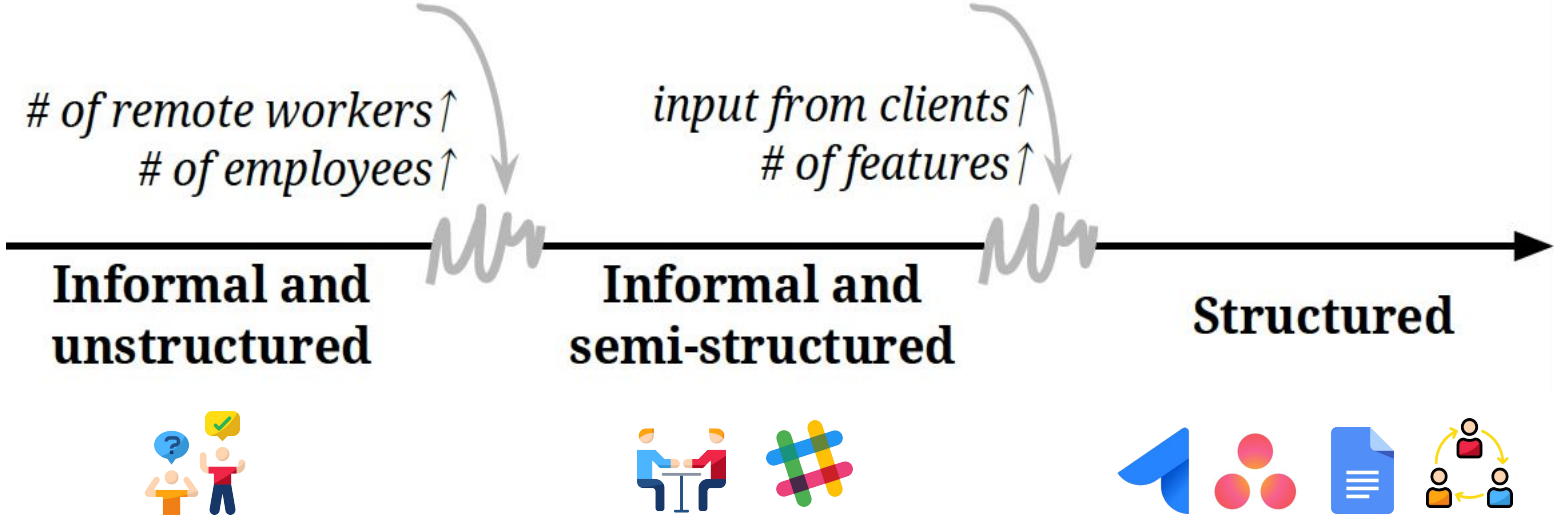
REQUIREMENTS ARTEFACTS:

content of information and **user** orientation matters



KNOWLEDGE MANAGEMENT:

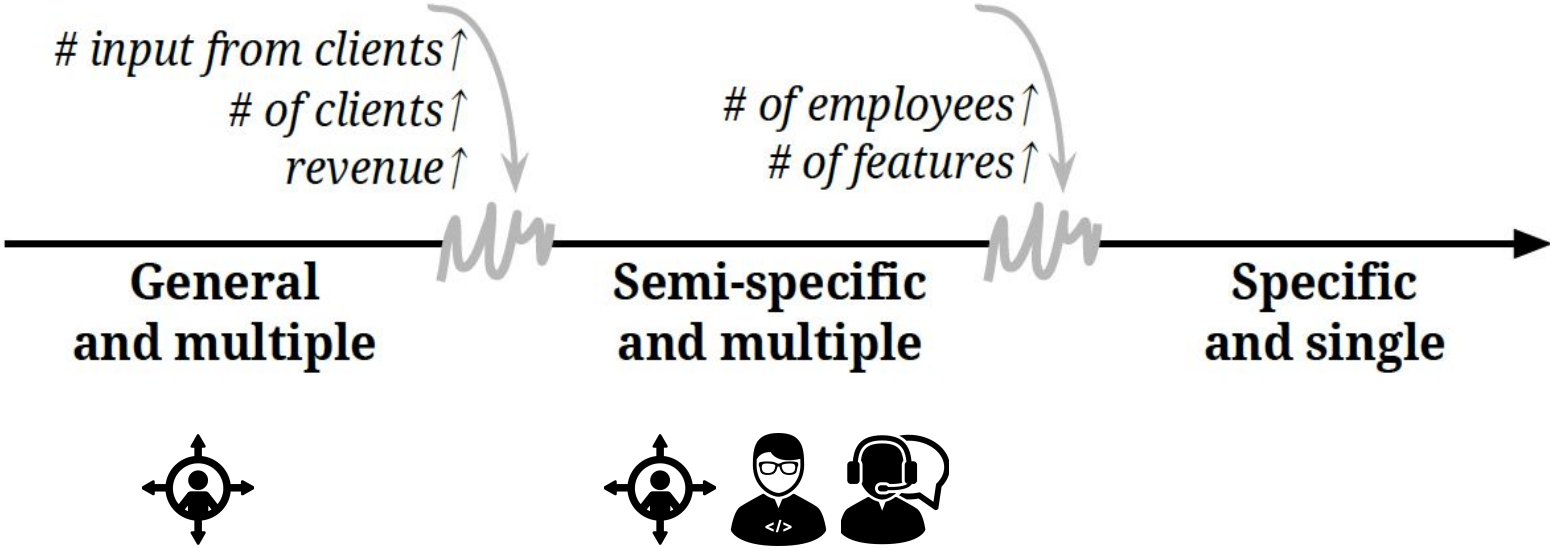
project **communication** and **documentation** matters



*“It’s possible to have good practices and improve the **knowledge dissemination** earlier because the tools are there (...) but there were more important things to do.”*

REQUIREMENTS-RELATED ROLES:

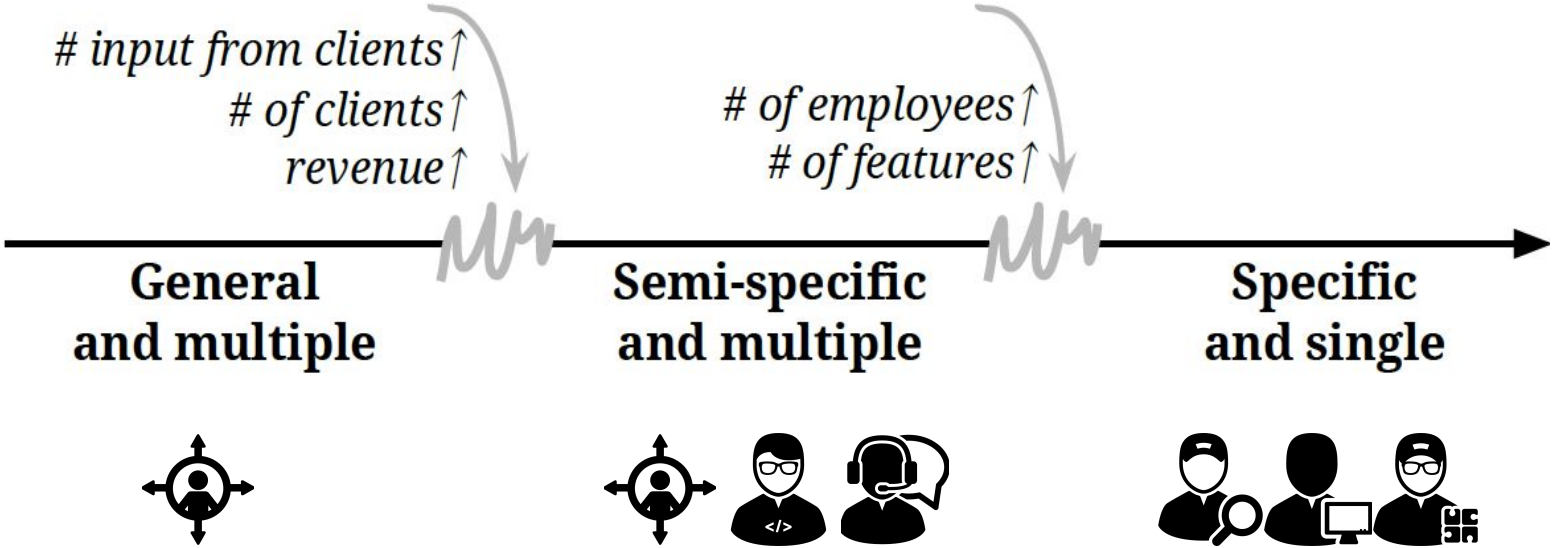
focusing on **customer-facing** roles matters



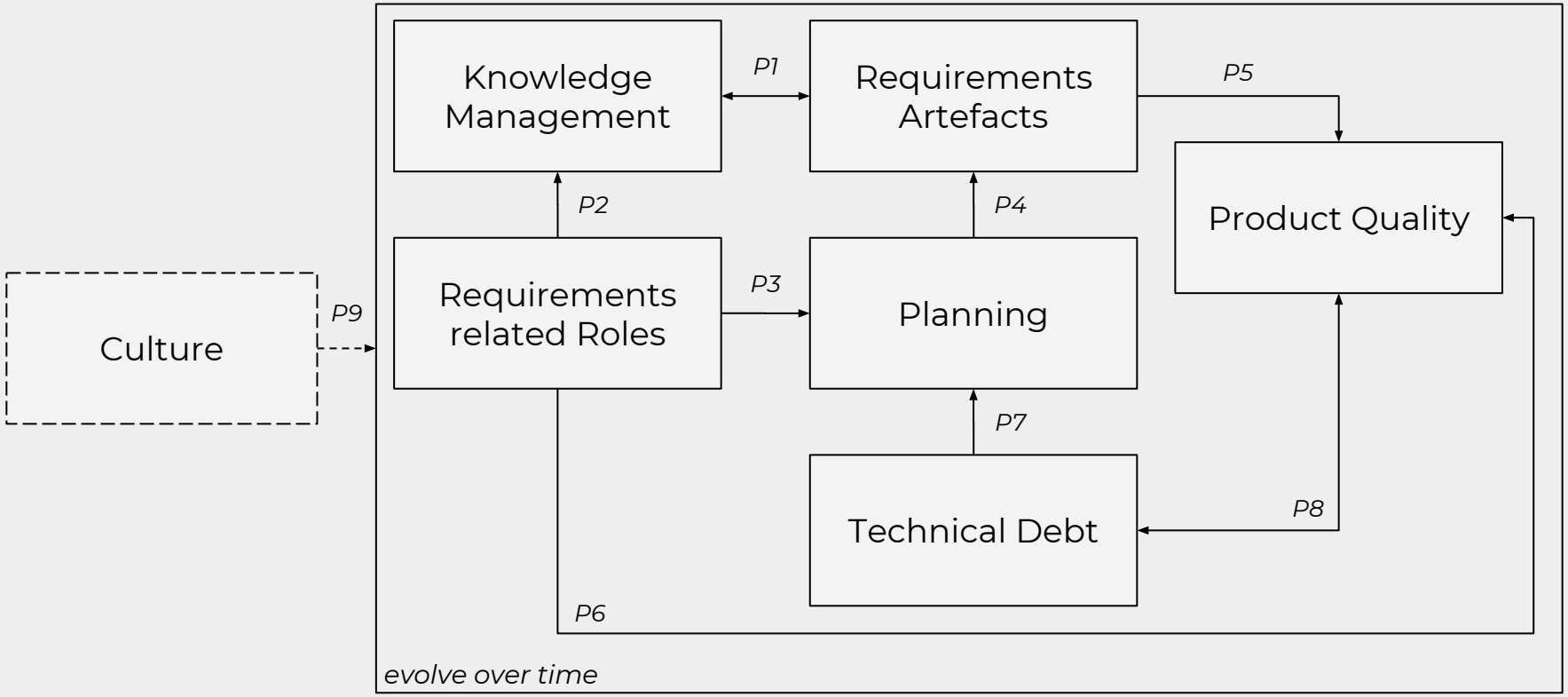
*“We started hiring more people for specific roles. We had **developers** (...) we hired a **client success manager** to stay on track of all of our clients. We still need to be more specialised.”*

REQUIREMENTS-RELATED ROLES:

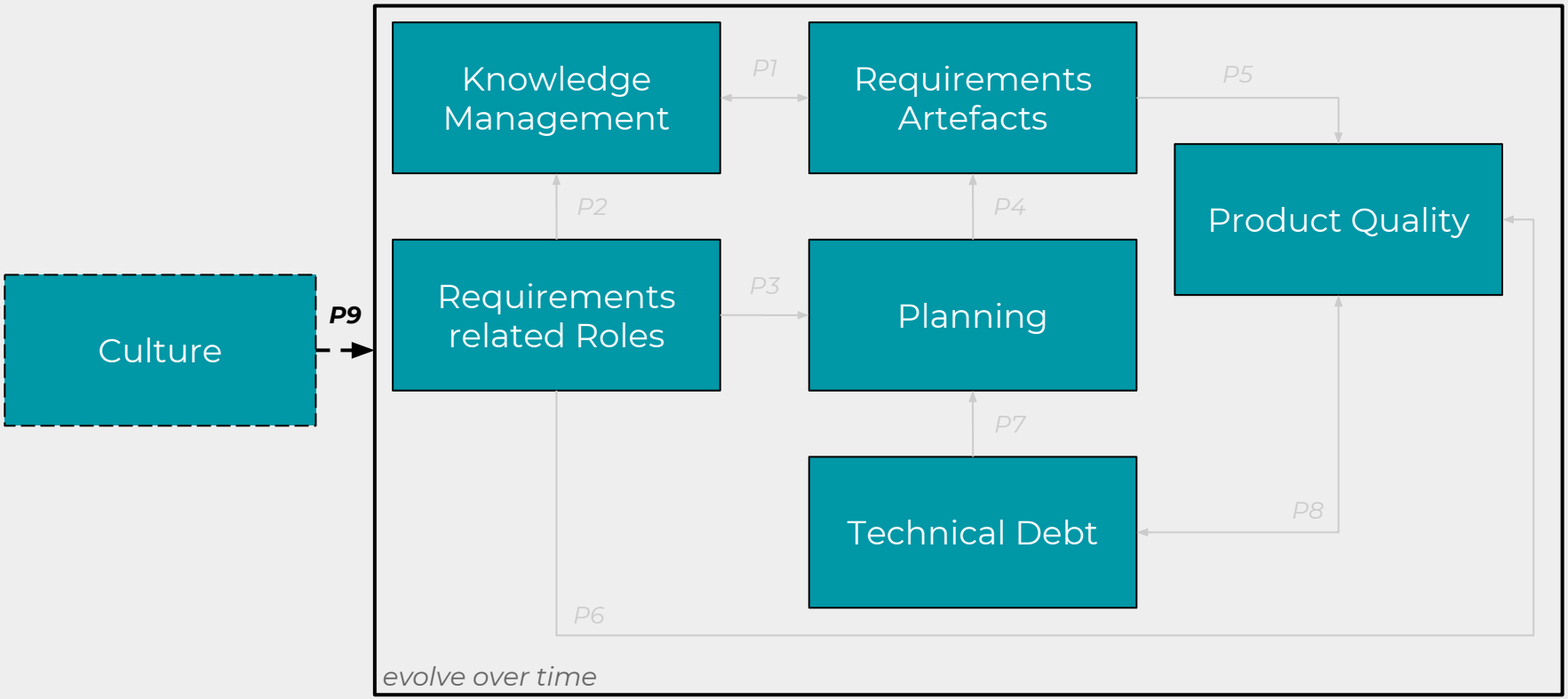
focusing on **customer-facing** roles matters



RELATIONSHIPS AMONG DIMENSIONS IN OUR THEORY



All changes are influenced by a combination of company **culture** and the **co-founders' backgrounds**



TOWARDS RE FOR STARTUPS

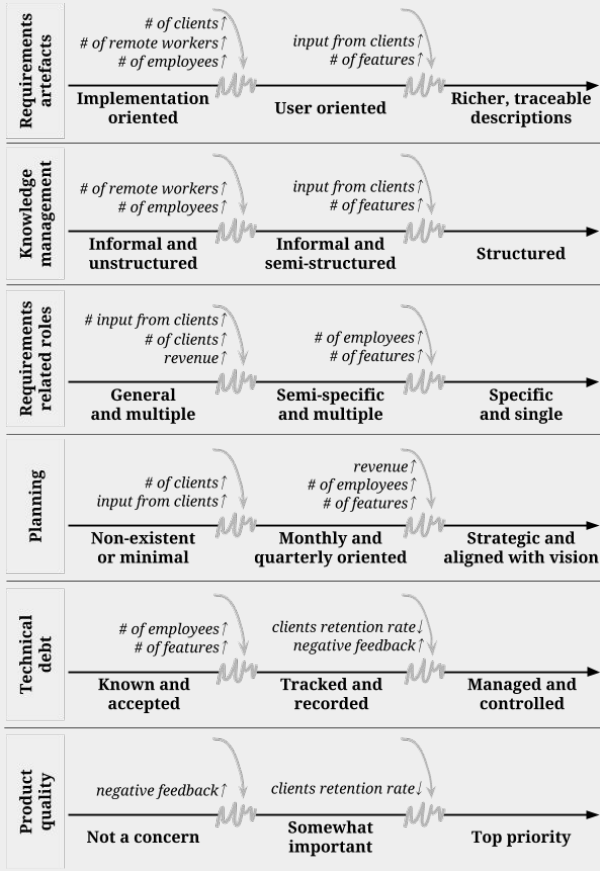
no initial idea of a final product

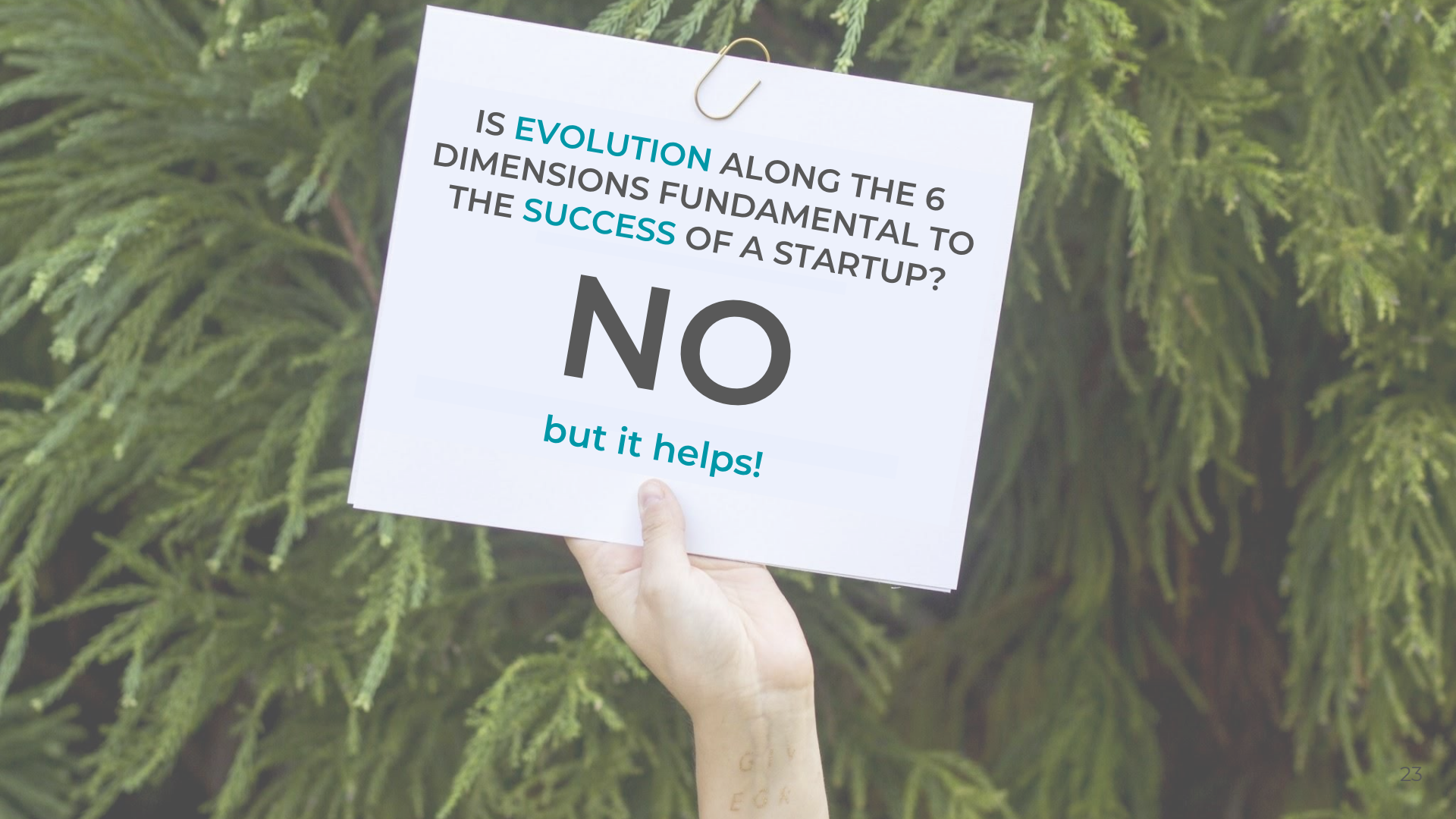
client and market feedback matters

evolution towards a structured, plan-, documentation- and client-oriented approach

reactive changes, when they bring benefits

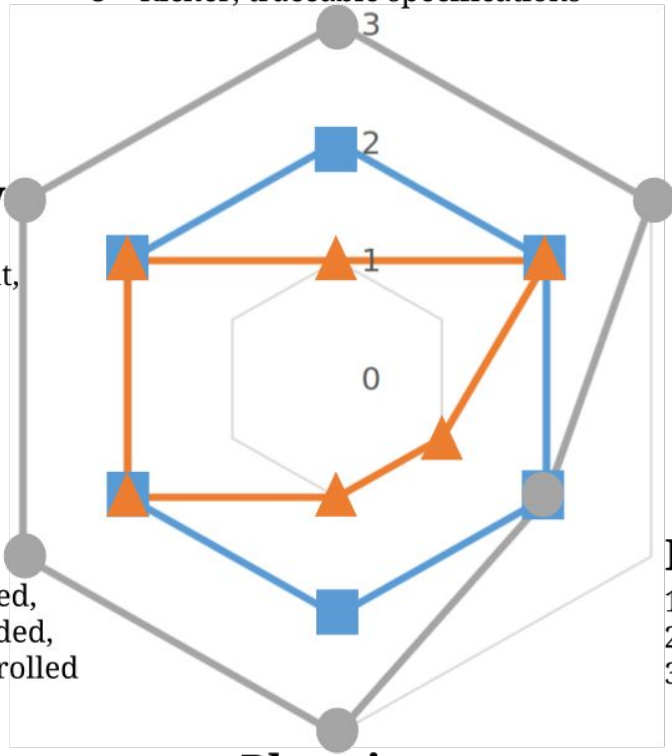
pragmatic lightness towards an *engineering* of requirements




IS EVOLUTION ALONG THE 6 DIMENSIONS FUNDAMENTAL TO THE SUCCESS OF A STARTUP?
NO
but it helps!

Requirements artefacts

1 = Implementation oriented, 2 = User oriented,
3 = Richer, traceable specifications



Product quality

1 = Not a concern,
2 = Somewhat important,
3 = Top priority

Knowledge management

1 = Informal and unstructured,
2 = Informal and semi-structured,
3 = Structured

Technical debt

1 = Known and accepted,
2 = Tracked and recorded,
3 = Managed and controlled

Requirements-related roles

1 = General and multiple,
2 = Semi-specific and multiple,
3 = Specific and single

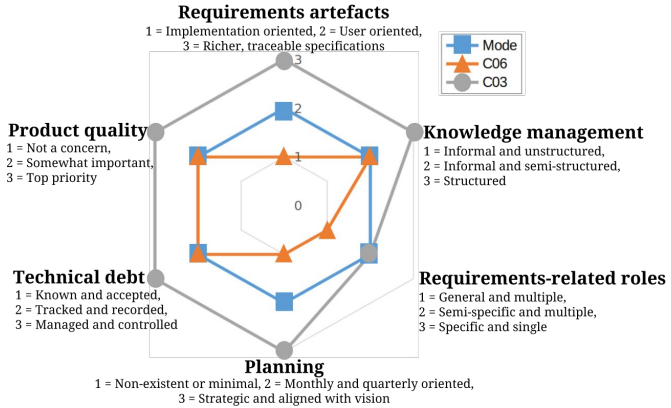
Planning

1 = Non-existent or minimal, 2 = Monthly and quarterly oriented,
3 = Strategic and aligned with vision

IMPLICATIONS FOR PRACTICE

track evolution

place itself along each dimension



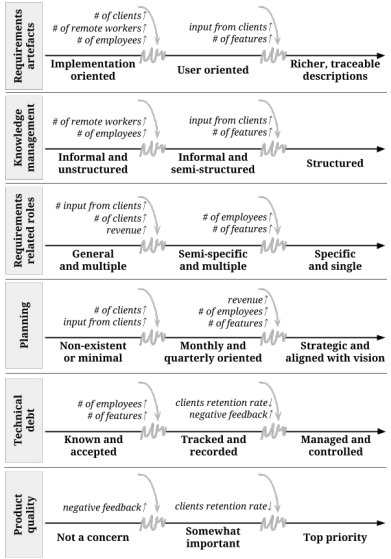
IMPLICATIONS FOR PRACTICE

track evolution

place itself along each dimension

plan ahead

insight about how to address a turning point



IMPLICATIONS FOR PRACTICE

track evolution

place itself along each dimension

plan ahead

insight about how to address a turning point

culture

CEO, co-founders

IMPLICATIONS FOR PRACTICE

track evolution

place itself along each dimension

plan ahead

insight about how to address a turning point

culture

CEO, co-founders

people and their beliefs

change over time

TOWARDS RE FOR STARTUPS

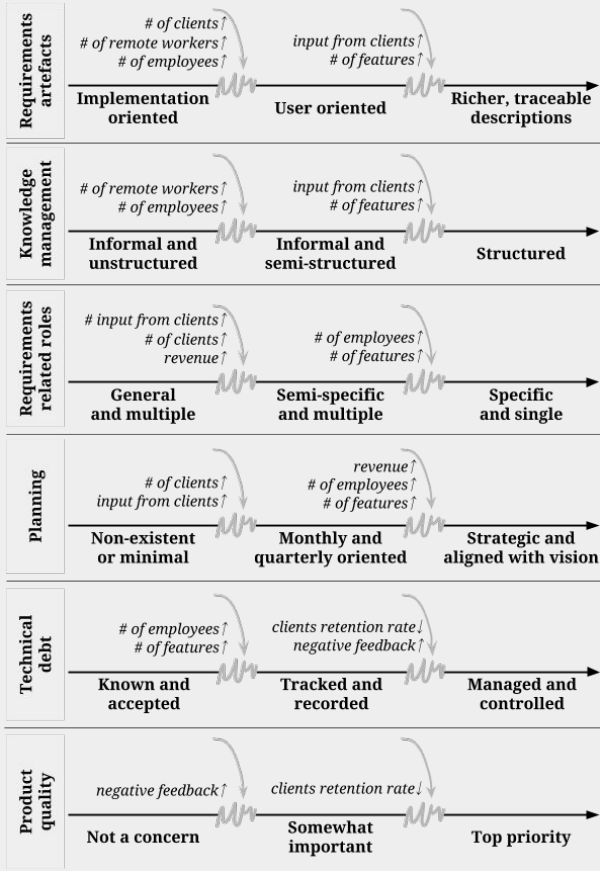
no initial idea of a final product

client and market feedback matters

evolution towards a structured, plan-, documentation- and client-oriented approach

reactive changes, when they bring benefits

pragmatic lightness towards an *engineering* of requirements



THANK YOU

QUESTIONS?