
Luca Minudel
HOW TECHNICAL DEBT CAN KILL YOUR BUSINESS

HOW F1 TEAMS CRACK TECHNICAL DEBT
LUCA MINUDEL
@LUKADOTNET

AGILE PRACTITIONER SINCE 2001-2002

COMPLEXITY PRACTITIONER SINCE 2004

LEAN PRACTITIONER SINCE 2006

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MY PERCEPTION OF TECH EXCELLENCE EXPANDING OVER TIME
SKILLS/QUALITY DEBT (A MESS):
Caused by poor inadvertent technical decisions leading to low-quality code, design, features, etc.

TECHNICAL DEBT:
Intended as deliberately taking short cuts in order to expedite a release. As a consequence of it the development team incurs in loss of productivity, until those short cuts are taken care of with refactoring.

When it makes business sense to do so, this is where business strategy meets engineering strategy.
HOW TECHNICAL DEBT CAN KILL YOUR BUSINESS...
HOW F1 TEAMS CRACK TECHNICAL DEBT...
F1 TEAMS FACE

- Huge pressure to constantly deliver + learn
- Frequent & unescapable reality checks
- Failure and success out in the open
1970s
IT WAS IN 1975 WHEN MCLAREN FIRST DEPLOYED TELEMETRY – CAPTURING 14 DIFFERENT PIECES OF INFORMATION THAT COULD BE DOWNLOADED BACK AT THE GARAGE.

1980s
THE INTRODUCTION OF ELECTRONIC ENGINE MANAGEMENT SYSTEMS ALLOWED GREATER CONTROL OF POWER, DRIVABILITY, AND FUEL EFFICIENCY.

1990s
IT WAS THE ’90s THAT FINALLY SAW AN EXPLOSION OF COMPUTING CAPABILITY – ON THE CAR ITSELF, BUT ALSO THROUGHOUT THE WHOLE TEAM.
2001
WATTS S. HUMPHREY - PIONEER IN SW ENGINEERING,
FATHER OF SW QUALITY

*Every Business is a Software Business*
Software Is Eating The World
People at Google don’t say “IT” (information technology) because the business & tech work closely together - IT is an integral part of the business.
In nowadays digital economy

the Business & Tech

are one and the same
F1 TEAMS' TECH EXCELLENCE UPWARD SPIRAL

To Technical excellence
From Continuous Improvement

To winning races
From a good driver, car, team
TECHNICAL EXCELLENCE → DOWNWARD SPIRAL

TECHNOLOGY

From Technical debt

To Technical bankruptcy

BUSINESS

From a non competitive product

To shrinking market and profits
4 REAL-LIFE SITUATIONS, FOR EACH ONE:
A HORROR STORY ... OR TWO, A SUCCESS STORY
SITUATION #1: RAMPING UP

> FOLLOWING THE SUCCESSFUL RELEASE OF A NEW PRODUCT ...
SITUATION #1: RAMPING UP

... EXPANSION INTO NEW INTERNATIONAL MARKETS, SCALING THE # OF USERS...
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

😊 STORIES: ONE FINTECH START-UP & ONE BANK

Geographic expansion.

From early adopters to a majority of users.
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

TECH EXPECTED TO PULL A RABBIT OUT OF A HAT
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

😢 STORIES: ALTERNATIVE FINALE

Geographic expansion.

From early adopters to the majority of users.
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

BUSINESS FORCED TO SLOW DOWN AND ...
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

BUSINESS FORCED TO SLOW DOWN AND ...
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

😊 STORY: F1

From an ad-hoc solution for a specific track/race to a standard solution for every race.

Promoting experimental app with just one or few users to official app used by the whole team.
EXPANDING IN NEW MARKETS, SCALING THE # OF USERS

RELENTLESS PURSUE OF SIMPLICITY

FROM

SIMPLE DESIGN

= LOW-COST
HIGH-VALUE
FLEXIBILITY

TO
SITUATION #2: STRATEGISING

> RE-USE PARTS OF EXISTING PRODUCTS TO CREATE NEW ONES, SWITCH TO THE LATEST TECHNOLOGIES TO REJUVENATE EXISTING PRODUCTS...
SITUATION #2: STRATEGISING

...TECH IS ASKED BY BUSINESS TO PROVIDE OPTIONS TO ENACT THE STRATEGY...
TECH OPTIONS STRATEGIC FOR THE BUSINESS

😊 STORIES: FAST GROWING ONLINE MARKET RESEARCH, FINTECH

Speed up the creation of new products reusing and integrating parts of the existing products
TECH OPTIONS STRATEGIC FOR THE BUSINESS

LIKE IT OR LUMP IT

~ MENU ~

Cold Soup
TECH OPTIONS STRATEGIC FOR THE BUSINESS

😊 STORY: F1

Switching to a different technology.

Upgrading to a newer version (tools, frameworks, language).
TECH OPTIONS STRATEGIC FOR THE BUSINESS

FROM HIGH COUPLING

TO LOW COUPLING
WITH MINIMAL DEPENDENCIES
TECH OPTIONS STRATEGIC FOR THE BUSINESS

FROM MONOLITH TO MODULARITY
SITUATION #3: FASTER, CHEAPER

BUSINESS IS FACING PRESSURE FROM COMPETITORS…
SITUATION #3: FASTER, CHEAPER

... PRODUCT NEEDS TO EVOLVE FASTER, TIME-TO-MARKET & COSTS NEED TO BE REDUCED
REDUCING COSTS & TIME-TO-MARKET

ież STORY: ONLINE GAMING AND BETTING COMPANY

Striving to achieve:
- More competitive prices
- Faster time-to-market
- Sustainable costs of maintenance/evolution
- Lower costs of clients acquisition
REDCUCING COSTS & TIME-TO-MARKET
CLIMBING A HUMAN TOWER
MAKING YOUR MOVE AT JENGA
STORY: F1

Want to:

- Maximise the number of features released
- Evolve a huge code-base with few & relatively small teams
REDUCING COSTS & TIME-TO-MARKET

GRADUALLY AND STEADILY COMPOSING PIECES TO SOLVE THE PUZZLE
REDUCING COSTS & TIME-TO-MARKET

FROM

TO
SITUATION #4: FINAL DESTINATION

> BUSINESS & TECH, IN A DEAD-END RELATIONSHIP STRUGGLE TO...
SITUATION #4: **FINAL DESTINATION**

...**ENSURE BASIC PRODUCT’S RELIABILITY**...
PRODUCT’S RELIABILITY

😊 STORY: SAME ONLINE GAMING AND BETTING COMPANY AS BEFORE

Needs to tackle quickly product’s reliability problems while:
- Keeping customers happy
- Limiting users frustration
- Improving company reputation
- Ensuring service continuity and related revenue stream
PRODUCT’S RELIABILITY

THE HOUSE IS ON FIRE

CONSTANT FIRE-FIGHTING
Don’t create reliability problems or any kind of extra work or extra complexity for the race team (the users).

Recover quickly from bugs and incidents in production.
PRODUCT’S RELIABILITY

SPEED AND RELIABILITY
HOW TO CRACK THE TECH DEBT: LEARNINGS FROM F1 TEAMS

(*) EXAMPLES IN CONTEXT, NOT SILVER BULLET RECIPES
F1 TEAMS – LESSONS LEARNED (*)

(*) EXAMPLES IN CONTEXT, NOT SILVER BULLET RECIPES

1. **A GROWTH MINDSET:**
   continuously learning & improving while delivering

2. **BLAMELESS CULTURE:**
   learning from mistakes, avoid repeats, remove root causes

3. **BIZ-TECH COLLABORATION & TRUST:**
   ...
HOW WE BUILT BUSINESS-TECH TRUST

WE (TECH) WON BUSINESS TRUST BY

- delivering tech excellence that had a tangible positive impact to the business
- sharing with the Business the responsibility of our successes as well as of our failures

OUR BUSINESS WAS OPEN TO

- understand technology implications, constraints and opportunities
- solve problems and find solutions collaborating with us
F1 TEAMS – LESSONS LEARNED (*)

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3. **BIZ-TECH COLLABORATION & TRUST:**
   deliver promised benefits, share success/failure responsibility

4. **TECHNICAL MASTERY AS A STARTING POINT:**
   a quick recap of forgotten lessons...
MEMO: GOALS OF TECH PRACTICES

A. INCREASE THE SPEED OF LEARNING

B. REDUCE THE COST OF CHANGE

C. TAME IRREVERSIBILITY
   (MAKES IT FAST AND CHEAP TO REVERSE PREVIOUS DECISIONS AND RECOVER FROM MISTAKES)
TIPS FOR IMPROVING TECH PRACTICES

I. FOCUS ON SPECIFIC PROBLEMS (NOT GENERIC OR UNIVERSAL)

II. START WITH LOCAL SOLUTIONS (NO SCALING OBSESSION)

III. START SIMPLE & EVOLVE (NOT MAXIMALIST + TAILOR-DOWN)

IV. ADOPT A JUST-IN-TIME JUST-GOOD-ENOUGH APPROACH
(DON’T TRY TO ACHIEVE PERFECTION UP-FRONT)

V. FOCUS ON ONE THING AT THE TIME (NO MULTI-TASKING)

VI. IF SOMETHING IS HARD, DO IT MORE OFTEN
(DON’T WAIT WHILE THE PROBLEM GROWS BIGGER)
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   deliver promised benefits, share success/failure responsibility

4. **TECHNICAL MASTERY AS A STARTING POINT:**
   not as an end

5. **TECH EXCELLENCE PURSUED IN CONTEXT:**
   evolve/adapt tech excellence practices to fit what benefits biz context

(*) EXAMPLES IN CONTEXT, NOT SILVER BULLET RECIPES
TECH EXCELLENCE PURSUED IN CONTEXT

TECH MASTERY
TECH EXCELLENCE PURSUED IN CONTEXT

<table>
<thead>
<tr>
<th>Tech Mastery</th>
<th>Your Business Needs/Goals</th>
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TECH EXCELLENCE PURSUED IN CONTEXT

- TECH MASTERY
- YOUR BUSINESS NEEDS/GOALS
- TECH EXCELLENCE
TECH EXCELLENCE PURSUED IN CONTEXT

Diagram:
- Tech Mastery
- Your Business Needs/Goals
- Tech Excellence
- Another Business Needs/Goals
1. A GROWTH MINDSET: continuously learning & improving while delivering

2. BLAMELESS CULTURE: learning from mistakes, avoid repeats, remove root causes

3. BIZ-TECH COLLABORATION & TRUST: deliver promised benefits, share success/failure responsibility

4. TECHNICAL MASTERY AS A STARTING POINT: not as an end

5. TECH EXCELLENCE PURSUED IN CONTEXT: evolve/adapt tech excellence practices to fit what benefits biz context

(*) EXAMPLES IN CONTEXT, NOT SILVER BULLET RECIPES
LUCA MINUDEL
HELPING BUSINESS & TECH WORK TOGETHER, EFFECTIVELY

CONTACTS:

LUCA.MINUDEL@SMHARTER.COM
@LUKADOTNET
WWW.SMHARTER.COM

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PART 2 – OPEN MIC Q&A
=> POST AND VOTE THE QUESTIONS

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