

Developing Your Developers

The whole is greater than
the sum of its parts

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Trulioo

World's leading
marketplace for
identity data
and services.



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We verify 5 billion people in more than 100 countries



Trulioo

The problem

Top-tier software developers are like diamonds, hard to find and constantly trying to be stolen.
But do you already have diamonds in the rough?

Between 0.5 to 1 million software development related jobs will go unfilled in 2020

	Job Postings (Indeed.com)	City Population	Ratio
Vancouver, BC	1,361	675,218	2 jobs / 1000 people
Austin, TX	2,326	950,715	2.4 jobs / 1000 people
San Francisco, CA	5,881	884,363	6.6 jobs / 1000 people
Seattle, WA	9,309	724,745	12.8 jobs / 1000 people

[Indeed.com “software developer”](#)
[United States Census Bureau 2017](#)

Scenario

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- D. Hire 1 expert, 1 skilled and 2 new

Assume that an expert developer has some combination of years of experience, raw intelligence, domain expertise, etc. that allow them to command a higher salary, a skilled developer less so.

Scenario

Let's say you literally can't find any expert developers to hire.

Do you choose to move forward or delay?

Many team theories, many conflict.

- A. Hire 5 new
- B. Hire 4 skilled
- C. Hire 1 expert, 2 skilled
- D. Hire 1 expert, 1 skilled and 2 new

Google: Project Aristotle

“What makes an effective team?”

Conventional wisdom:

“It’s better to put introverts together.”

“You need complementary strengths.”

“Teams are more effective when everyone is friends away from work.”

“A strong team leader is critical for success.”

“Teams should sit together.”

Google: Project Aristotle

“What makes an effective team?”

Between 2012 and 2016, Google brought together their best statisticians, organizational psychologists, sociologists, researchers and engineers to form project Aristotle to definitively answer this question.

They analyzed 115 project teams in engineering and 65 pods in sales, ensuring to include both high performing and struggling teams.

[Google re:Work](https://rework.withgoogle.com)
<https://rework.withgoogle.com>

Project Aristotle: Methodology

Team defined as 3-50 people (median of 9) that must work together to plan, solve problems, and make decisions in service of a project.

Success defined as combination of qualitative and quantitative measure.

- Sales numbers
- Executive rating of team
- Team lead rating of team
- Team member rating of team

Project Aristotle: Methodology

Defined 250 team personal and team characteristics based on academic research

- **Group dynamics:** I feel safe expressing divergent opinions to the team.
- **Skill sets:** I am good at navigating roadblocks and barriers.
- **Personality traits:** I see myself as someone who is a reliable worker.
- **Emotional intelligence:** I am not interested in other people's problems.

Project Aristotle: Initial failure

“We looked at 180 teams from all over the company... We had lots of data, but there was nothing showing that a mix of specific personality types or skills or backgrounds made any difference. The ‘who’ part of the equation didn’t seem to matter.”



[NY Times Article 2016](#)

Project Aristotle: Initial failure

Some groups that were ranked among Google's most effective teams, for instance, were composed of friends who socialized outside work. Others were made up of people who were basically strangers away from the conference room.



[NY Times Article 2016](#)

Project Aristotle: Initial failure

Most confounding of all, two teams might have nearly identical makeups, with overlapping memberships, but radically different levels of effectiveness.

“At Google, we’re good at finding patterns, ...
There weren’t strong patterns here.”



[NY Times Article 2016](#)

Not correlated to team effectiveness...

Colocation of teammates

Consensus-driven decision making

Individual performance of team members

Seniority

Workload size

Team size

Gender balance

How long team together

Socialization out of the office 

Similar hobbies

Similar educational backgrounds

Outgoing or shy team members

Project Aristotle: Second try

Team IQ versus individual IQ

The overall performance of a team doing team-based activities is consistent. In general, if a team is good at one type of activity (e.g. brainstorming) they are likely to be good at other activities (e.g. division of labor and coordination)

The same is true for poor performing teams...



Project Aristotle Second try

Team norms

Established team norms, how people behave, overrides individual behavior



Project Aristotle Findings

The researchers found that what really mattered was less about who is on the team, and more about how the team worked together.



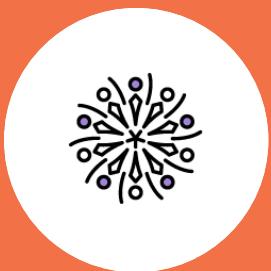
Psychological
safety



Dependability



Structure
and clarity



Meaning



Impact

<https://rework.withgoogle.com/guides/understanding-team-effectiveness/steps/identify-dynamics-of-effective-teams/>

Project Aristotle

5 Unique Dynamics of Effect Teams

Psychological safety: Psychological safety refers to an individual's perception of the consequences of taking an interpersonal risk or a belief that a team is safe for risk taking in the face of being seen as ignorant, incompetent, negative, or disruptive.

Dependability: On dependable teams, members reliably complete quality work on time (vs the opposite – shirking responsibilities)

Structure and clarity: An individual's understanding of job expectations and the process for fulfilling these expectations

Meaning: Finding a sense of purpose in either the work itself or the output is important for team effectiveness.

Impact: The results of one's work, the subjective judgement that your work is making a difference, is important for teams

Great, what now?

1. Survey and discussion

Fill out survey

Discuss results

2. Re-framing work

Change mindset from execution to learning problems

Acknowledge your own fallibility

Model curiosity and ask lots of questions

3. Change your own behavior

Tools and guides available

Team Effectiveness Discussion Guide

Below is a sampling of improvement indicators and guiding questions:

Psychological Safety

Signs that your team needs to improve psychological safety:

- Fear of asking for or giving constructive feedback
- Hesitation around expressing divergent ideas and asking "silly" questions

Questions to ask yourself:

- Do all team members feel comfortable brainstorming in front of each other?
- Do all team members feel they can fail openly, or will they feel shunned?

Dependability

Signs that your team needs to improve dependability:

- Team has poor visibility into project priorities or progress
- Diffusion of responsibility and no clear owners for tasks or problems

Questions to ask yourself:

- When team members say they'll get something done, do they?
- Do team members proactively communicate with each other about delays and assume responsibility?

Structure and Clarity

Signs that your team needs to improve structure and clarity:

- Lack of clarity about who is responsible for what
- Unclear decision-making process, owners, or rationale

Questions to ask yourself:

- Do team members know what the team and project goals are and how to get there?
- Do team members feel like they have autonomy, ownership, and discrete projects?

Meaning

Signs that your team needs to improve meaning:

- Work assignments based solely on ability, expertise, workload; little consideration for individual development needs and interests
- Lack of regular recognition for achievements or milestones

Questions to ask yourself:

- Does the work give team members a sense of personal and professional fulfillment?
- Is work matched to team members based on both skills/ability and interest?

Impact

Signs that your team needs to improve impact:

- Framing work as "treading water"
- Too many goals, limiting ability to make meaningful progress

Questions to ask yourself:

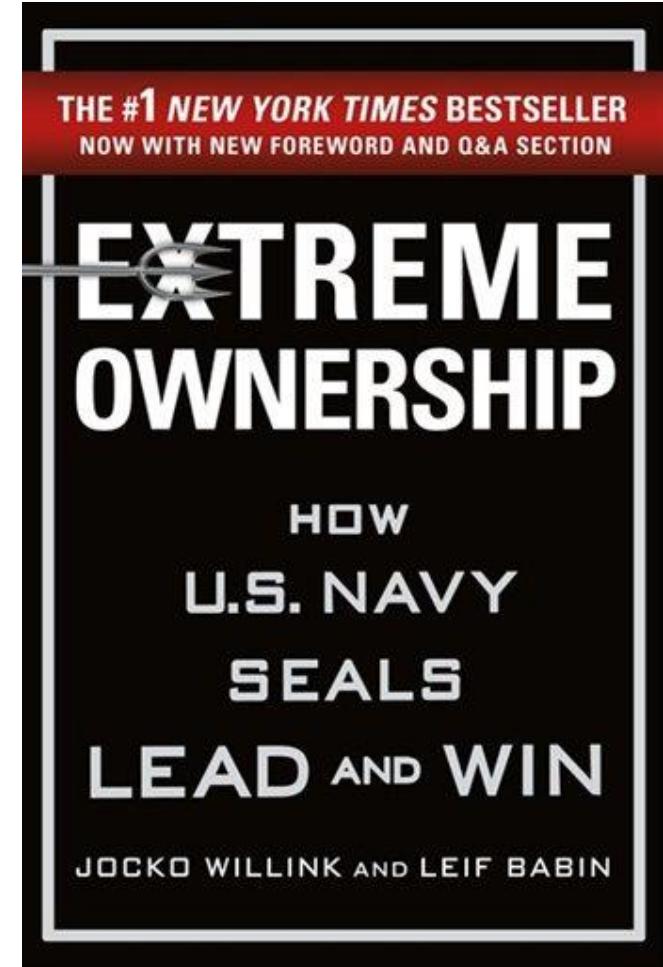
- Do team members see their work as creating change for the better?
- Do team members feel their work matters for a higher-order goal?
- How are current team processes affecting well-being/burnout?

Aside: Extreme Ownership

Extreme Ownership

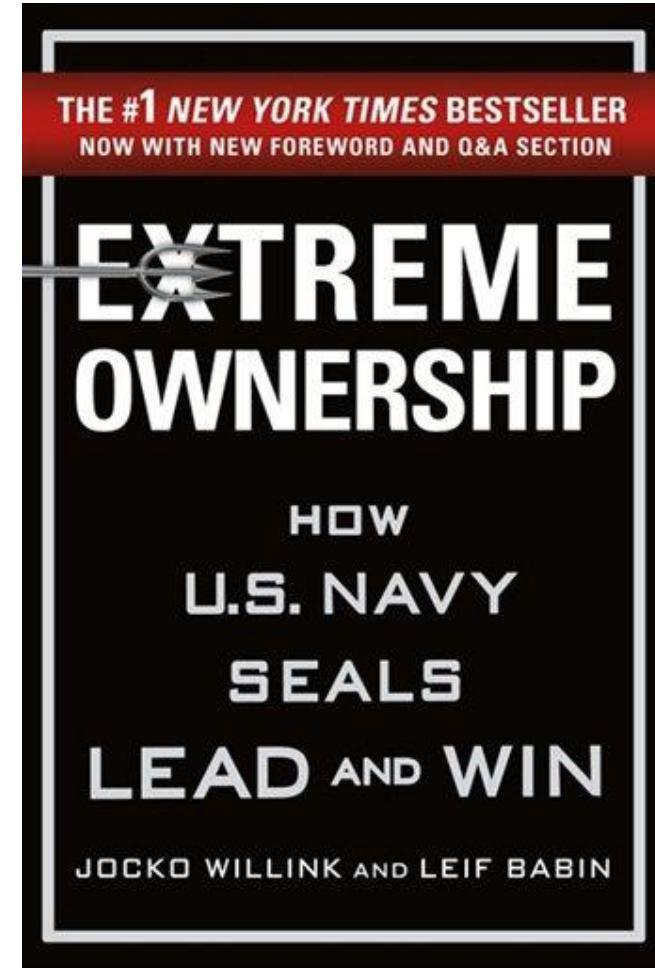
Every mistake is ultimately the responsibility of the leader.
Acknowledging your own fallibility is hard...

“There are no bad teams, only bad leaders.”



Aside: Extreme Ownership

Aristotle	Extreme Ownership
Psychological Safety	12. DISCIPLINE = FREEDOM
Dependability	4. MANAGE YOUR EGO
Structure and clarity	6. KEEP THINGS SIMPLE
Meaning	3. CLARITY AND BELIEF
Impact	3. CLARITY AND BELIEF



Psychological safety observations

Equality in distribution of conversational turn-taking

On some teams, each person spoke on the individual task more

On other teams, every team member would speak equally on the same tasks (Sprint Poker!)

Structure of conversations not as important as equity

Demonstrating higher than average social sensitivity

Being aware of how somebody feels based on non-verbal cues

<https://rework.withgoogle.com/guides/understanding-team-effectiveness/steps/identify-dynamics-of-effective-teams/>

What's your social intelligence?

Social intelligence test

Find out how well you can read emotions of others just by looking at their eyes. Compare yourself to others.

The ability to read the emotions of others is linked to "social intelligence" which, in turn, is linked to performance on team-based problem solving tasks.

socialintelligence.labinthewild.org

Progress: face 26 of 37

panicked

incredulous



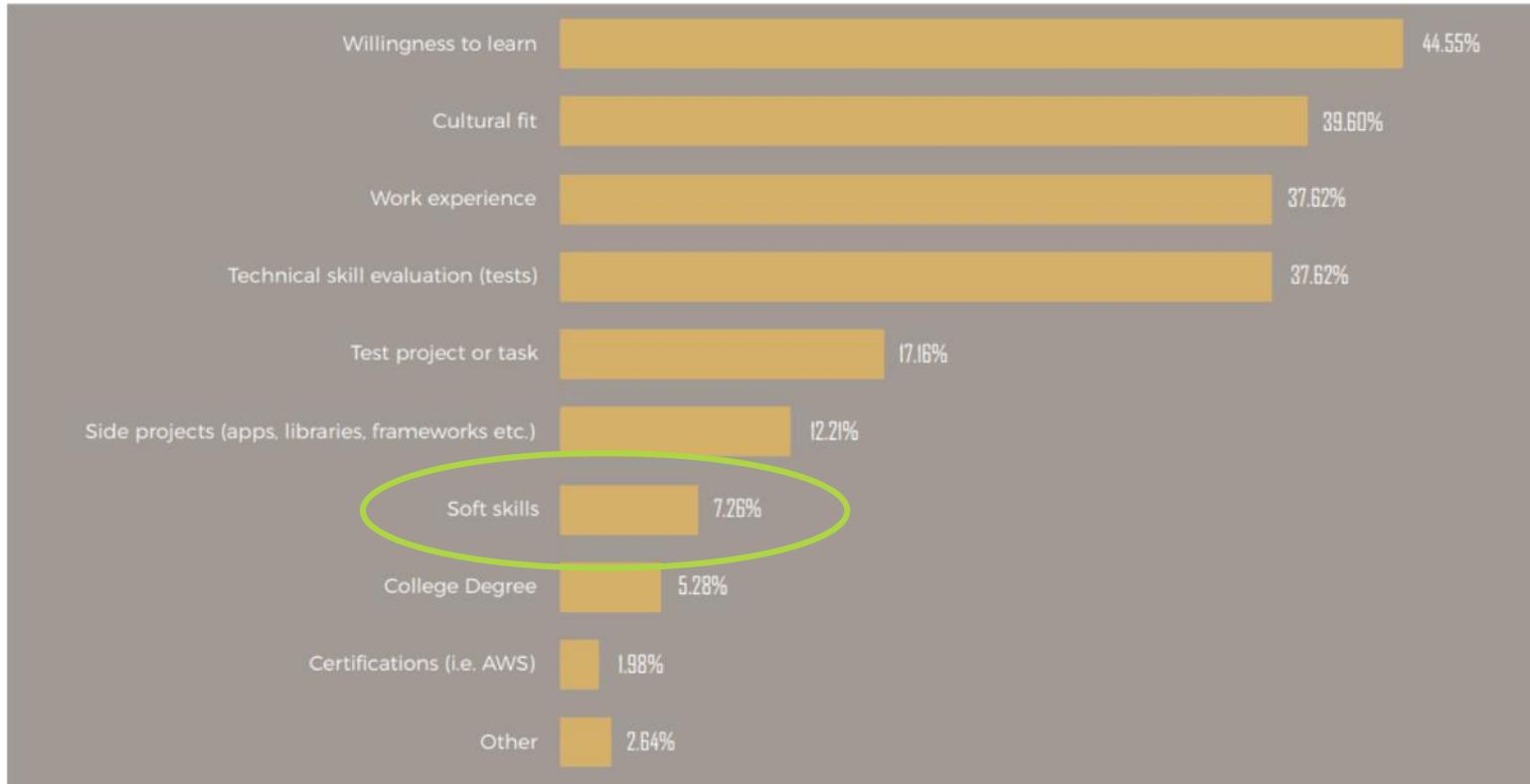
despondent

interested

What emotion are the eyes showing?

panicked
incredulous
despondent
interested

What are your most important hiring criteria?



https://codingsans.com/uploads/landing/State-of-Software-Development-2018_final.pdf

Trulioo lunch time conversation

“If I’m constantly worried about making mistakes, it stresses me out, and not having a clear head makes me less efficient.”

“When I first joined, I was worried so much about the code review, I spend too much time trying to make sure everything was perfect, instead moving on to the next ticket.”

“If I’m worried about making a mistake, I’m going to concentrate on the requirements as written, instead of questioning if there is a better approach.”

Trulioo lunch time conversation

“I think developers inherently feel that their reputation is inherently tied to the quality of code they produce. Being overly focused on not making mistakes means everything I’m not assigned is somebody else’s problem.”

“I’m afraid to point out other people’s mistakes during retrospectives, because I don’t anyone else to point out my mistakes.”

Avoiding risk is the opposite of innovation

Software is an inherently creative activity

How many different ways could you implement
“If you are happy and you know it clap your hands?”



Avoiding risk is the opposite of innovation

Innovation is all about questioning and taking risks

When to refactor?

When to question the requirements and constraints?

When to do something “just for fun”?



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Individual performance and seniority are not indicators of effective teams, therefore hiring as many developers as possible and ensuring psychological safety will result in the high amount of output.

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Individual performance and seniority are not indicators of effective teams, therefore hiring as many developers as possible and ensuring psychological safety will result in the high amount of output.

Ummm... No.

Software development teams

High amount of task dependencies

e.g. MVP: view interacts with controller, controller interact with model, model interacts with business logic layer, model interacts with data layer, data layer interacts with database, database interacts with operating system, etc. etc.

Individual mistakes can be costly

Broken build prevents all check-ins, failed QA causes delays, hard to find bugs eat up resources, deployed issues causes hotfixes, etc.

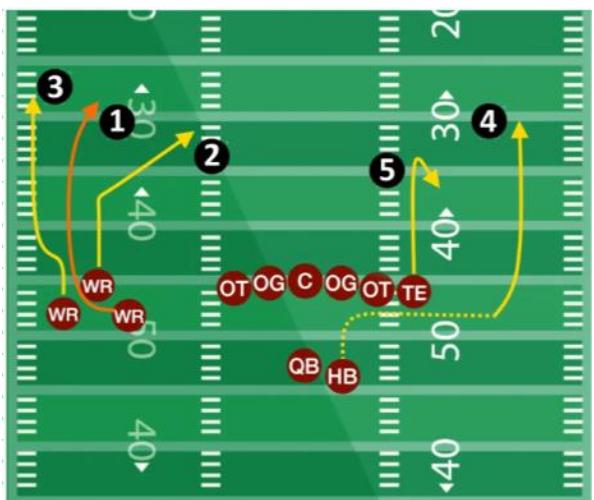
Individual mistakes are extremely visible

Code reviews, unit tests, breaking the build, QA

Strong-link vs weak-link activities

Weak-link

Average level team is more important than any individual contributor, due to mistakes being costly



[Football Tutorials – Spread Office](#)

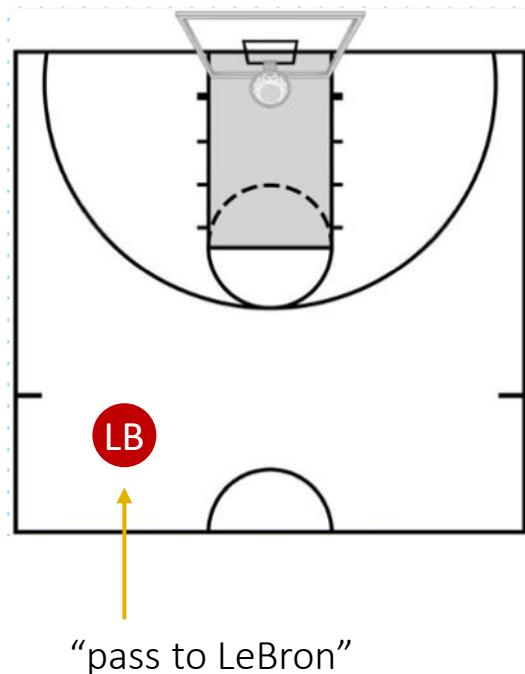
“The Numbers Game” by Chris Anderson and David Sally
Revision History Podcast “My Little Hundred Million” Malcolm Gladwell

Strong-link vs weak-link activities

Strong-link

The “superstar” is more influential to the outcome than the average level of all the other team members

“The Numbers Game” by Chris Anderson and David Sally
Revision History Podcast “My Little Hundred Million” Malcolm Gladwell



Scenario

You are hiring software developers for a new project, with a yearly salary budget of \$320K. Assuming a expert developer costs \$125K, skilled developer costs \$80K, and a new developer \$60K, what mix of experience would you choose?

Individual performance and seniority are not indicators of effective teams, therefore hiring as many developers as possible and ensuring psychological safety will result in the high amount of output.

However, mistakes are costly, therefore we should avoid hiring people who are more likely to make mistakes.

- A. Hire 5 new
- B. **Hire 4 skilled**
- C. Hire 1 expert, 2 skilled
- D. Hire 1 expert, 1 skilled and 2 new

Real life examples

Document Verification Demo Portal: Strong-link

- Trulioo provides single API customer calls to get results from multiple identity verification vendors
- Customers new to document verification have a hard time envisioning the complete solution (image capture)
- Created new project to show complete solution in demo application
- Solution requires connecting to existing platform, but not modifying platform

Real life examples

Extended Business Search: Weak-link

- KYB normally used to verify details of a business to comply with financial AML regulations (registration country and number, current status, ownership structure, etc.)
- New case where customer needs to augment and display firmographic information to their users (website, doing business as name, telephone, etc.) not normally required for verification
- New partner had to be integrated, new return values from API call, UI changes in portal

Real life examples

	Demo Portal: Strong-link	Extended Search: Weak-link
Avg. Story Point per Ticket	Higher	Lower
Dependencies between tickets	Lower	Higher
QA effort required	Lower	Higher
Scalability requirements	Lower	Higher
Maintainability	Lower	Higher

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- A. Hire 5 new
Never do this
- B. Hire 4 skilled
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- B. Hire 4 skilled
Default choice, most projects are weak-link activities
- C. Hire 1 expert, 2 skilled
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Strong link activity only
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Strong link project with small, independent bits

Follow-up

Me

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Trulioo

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Other identity verification questions?

Come visit me at our booth!

References

Project Aristotle

<https://rework.withgoogle.com/guides/understanding-team-effectiveness/steps/identify-dynamics-of-effective-teams/>

NY Times Article

<https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html>

Social Intelligence Test

<http://socialintelligence.labinthewild.org/mite/>

Thank you



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