


Magical team size numbers – 2, 3, 5-7, 12, 50, 150, 1500 and how to avoid wasting everybody's time

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By Sebastian Radics



Helping and guiding teams to become highly successful is the focus of being an agile coach. I'm currently reading [Team Genius: The New Science of High-Performing Organizations](#) – an amazing book about important aspects to consider for teams. With this post I'll provide a short recap on team size considerations that I've been searching for a long time.

There are some magic numbers to consider when talking about teams and next units build with teams that are connected with the way we as humans perceive our environment.

The numbers are 2 – 3 – 5-7 – 12 – 50 – 150 – 1500.

First of all – as humans we must form teams – it's encoded in our DNA.

...even the best leaders have a limit to their successful span of control, usually 6-10 people, the number of people they can manage at the highest levels of productivity.

Beyond that, even the most talented leaders simply don't have enough intellectual, emotional or temporal bandwidth to provide the requisite personal attention.

Structural stability (like in nature there are stable and unstable structures).

...Pairs 2 are the most stable structure at all, not just because of their simplicity, but also because they manifest those most basic of all human relations: friendship and marriage.

Trios 3 work too, but often it seems like serial pairing. History doesn't show troikas, triumvirates that worked for long.

when trios work, it's because their individual members' skills are so different yet dovetail perfectly.

Dunbar considers 3-5 as the circle of our very closest friends.

As the next bigger units (there is not an easy answer for the question of optimum team size) research shows 5-7 team members to be the **optimum team size**. 4-9 team members continues to function effectively. Teams are known to *function cohesively with a size up to 12 members!*

But eight team members would never reach a consensus decision because there is no tiebreaker.

There we can find the Scrum's magical number 7 plus or minus 2.

human short term memory is capable of capturing and briefly holding between five and nine items of information. Above that our brain move toward splitting down to stable quintet or sextet.

Another interesting number is the Dunbar number 150 – a suggested cognitive limit to the number of people with whom one can maintain stable, genuinely social relationships (the number of people one knows and keeps social contact with, knowing who they are and how they relate to us).

It does not necessarily imply that you trust them, but it does mean that you can know something about them and their basic capabilities.

Dunbar also found the number 50 to be the circle of your *good* friends, a small tribe with whom we can travel in dangerous country and 150 being your friends, the optimal size for a group of people living together in a community.

1500 – the largest Dunbar number – is roughly the size of a large military battalion, the smallest unit capable of independent operation. It is basically the number of faces you can put names to.

With more than 1500 you start encountering people whom you are not quite sure if you've ever met them before – strangers start appearing and it gets a lot more "riskier". E.g. HP used 1500 as the maximum division size.

Dunbar numbers: 5 "clique" – 15 "sympathy group" – 50 "band" – 150 "friendship group" – 500 "tribe" – 1500 "community"

A great question? Imagine that you have just been given a software development group consisting of 100 developers. Now imagine that you're given a really important project to work on. Which would be better?

a) Get all 100 people working on the project (with good project management and leadership) or ...

b) Find the 7 strongest people in the group who are willing to work on the project and spend savings (from the remaining 93) on giving the 7 people the absolute best tools and environment they need and want and to make them happy and comfortable.

The mathematics of networks

$N(N-1)/2$ = number of connections for N team members. 2 team members = 1 connection, 3=3, 4=6,... 6=15, 32=496, 1500=1124250. We can handle, much less maintain only a small number of connections. Relationships degrade quickly as the number of team members grows.

Even with tools of social networking we cannot keep up with the necessary time and bandwidth to maintain the connections.

“Big teams usually wind up just wasting everybody’s time” by Richard Hackman. ...

It's managing the links between members that gets teams into trouble.

“Too often, even the most ambitious and enlightened schemes crash on the rocky shore of human nature – that is, whatever other advantages these schemes enjoy, they have failed to build the appropriate teams to employ their strengths.”

Next time we consider team, department or division sizes lets remember the mentioned numbers and use them as an orientation to further drive splitting groups to appropriate sizes.

Did you experience situations when you had to reorganize and divide groups? Do the mentioned critical group sizes match with your experience? Thanks for sharing your insights with your comment 😊

Further readings

- [Why big teams suck: 7 +/- 2 is the magical number once again](#)
- [The Dunbar number as a limit to group sizes](#)
- [The magical number of misunderstandings](#)
- [The optimal team size is five](#)