



The
Pragmatic
Programmers

Become a Great Engineering Leader

Build Effective Skills
to Lead and Grow

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The Shape of My Chart: Structures and Patterns

As you spend more time in industry, you'll notice that there are common org chart shapes that you will encounter time and time again. In this section, we'll look at some of these shapes at the tactical, operational, and strategic levels. This will pave the way for you to learn best practices that you then can use to design your own organizations.

Span of Control

Let's start with the most common question: how many people should a manager manage? This number is known as their *span of control*, which is the number of people that report to a manager. Other terms used include *span of management* or *wingspan*. Deciding an optimal span of control is a key part of organization design, since it determines the relationship between the overall size of the organization and the number of managers required to support it.

There is no hard and fast rule for the ideal span of control. Many organizations aim for around 8–10 direct reports per manager, but a number of factors can nudge this up or down.

At the lower end of the range, you want managers to have at least as many direct reports needed so that they constitute a meaningful team size and output and the manager has enough management work to do. At the upper end of the range, you want to avoid managers having too many direct reports, which can result in them being unable to provide the support and guidance required because they are overloaded. Given that this may change from manager to manager, you should keep track of the average span of control for your department and aim to keep it within a certain range.

Here are some considerations for determining the span of control for individual managers:

- *Practical limits.* If we expect managers to do their job effectively, then there are practical limits to how many people they can manage. For example, ten direct reports could mean ten one-to-one meetings per week in addition to team meetings, individual work, coaching, and mentorship, and having the flexibility to deal with unexpected issues. It's highly unlikely that a manager could do all of this effectively with twenty direct reports. Something has to give.

- *The seniority of the manager.* Typically speaking, the more senior a manager is, the larger their span of control can be. This purely comes down to their experience.
- *The seniority of the reports.* Managing a team of senior individuals is typically less overhead than managing a team of inexperienced individuals. The former will be more self-sufficient and require less guidance, whereas new or inexperienced staff will need more hands-on coaching and mentorship.
- *A manager's level of individual contribution.* Some managers still contribute code meaningfully to their projects and therefore they may benefit from a lower span of control. Conversely, managers that delegate most individual contributor work and focus on strategy and planning are able to manage a larger team.
- *The type of work that the team does.* Highly collaborative teams work better with a lower span of control, since there is more interteam communication and coordination required. Teams that manage many smaller streams of work can be bigger as they work more independently.

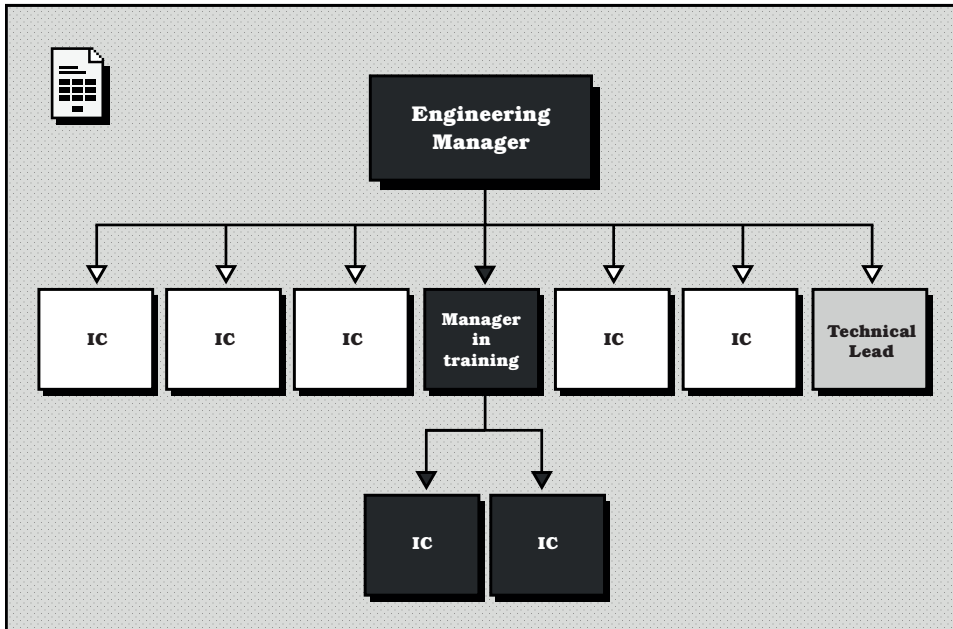
Span of control was a hot topic in industry during the economic downturn following the COVID-19 pandemic⁶. After companies put the brakes on the rapid hiring of the previous years, many companies were left with managers that had too few direct reports. This resulted in a number of companies flattening their organizations during layoffs in order to increase the average span of control of their managers. Many of the lower span managers were let go or had to convert into performing individual contributor roles: clearly neither option is ideal for someone invested in their craft.⁷ The lesson here is that if an organization's span of control isn't kept within an ideal range, then there can be a cascade of highly negative outcomes for individuals when times are tough.

Tactical: The Engineering Manager

Knowing that we need to keep a manager's span of control within a reasonable range, let's look at some common org chart patterns that incorporate this.

We'll start at the tactical level, focusing on the place where the span of control is most evident: the Engineering Manager. A diagram of a typical Engineering Manager org chart is shown below, including some less common subpatterns.

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6. The Financial Times provides a good overview of this phenomena: <https://www.ft.com/content/21ccfe54-88f2-4360-a67e-d3fe1e7df1e5>.
 7. You can read Mark Zuckerberg's note on Meta's March 2023 flattening and layoffs on their newsroom here: <https://about.fb.com/news/2023/03/mark-zuckerberg-meta-year-of-efficiency/>.



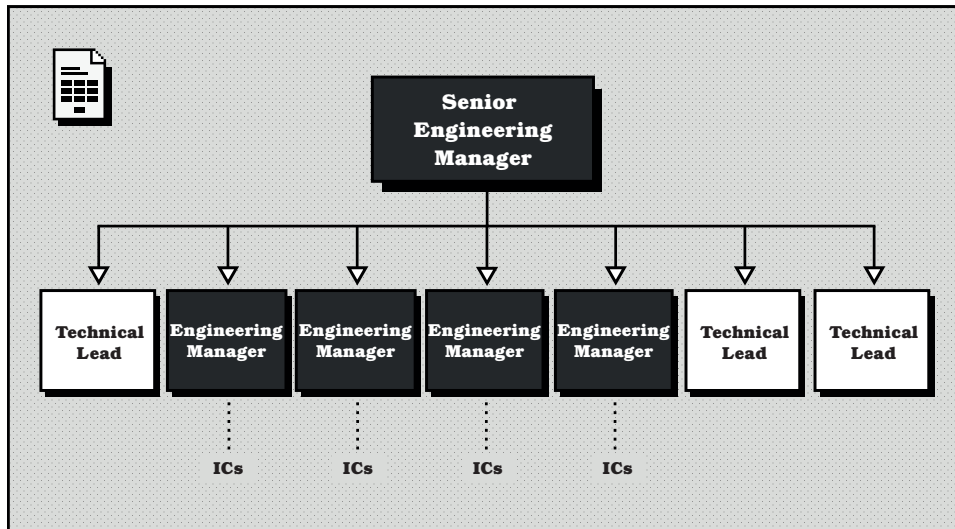
Looking at the diagram, we can see that an engineering manager typically has five to ten direct reports, of which all are individual contributors. This collection of individual contributors is a team, and the engineering manager is responsible for the performance of that team.

Sometimes there may be some slight variations. For example, in the diagram we have labeled one individual contributor as the *technical lead*. This is a common pattern where a senior individual contributor takes on responsibility for the technical direction of the team. This can be a good way to provide career progression to high-growth engineers.

Another variation included in the diagram is a *manager in training*. Sometimes this pattern is used as a way for an individual contributor to try out management in a smaller, safer environment. During times of growth, this can be a great way of systematically incubating new managers. However, this pattern should be used with caution: it can be a dead end for the manager in training if company growth halts, resulting in junior managers with low spans of control that are often first in line when any organization flattening is applied. In the best case scenario, they can revert back to an individual contributor role with their direct reports folding into their manager. However, in the worst case, they may find themselves without a role altogether.

Senior Engineering Manager

The next org chart shape belongs to the Senior Engineering Manager. It is the first shape where we encounter somebody managing managers. A diagram of a typical Senior Engineering Manager org chart is shown below.



Looking at the diagram, we can see that a Senior Engineering Manager typically has five to ten direct reports. The direct reports are usually Engineering Managers, with each running a team of five to ten individual contributors following the previous org chart pattern. The Senior Engineering Manager is responsible for the performance of the teams as a whole, and these teams are often responsible for a larger product or service. At a big company, this org chart size could be forty to one hundred people.

Although a Senior Engineering Manager is not squarely pegged at the operational level, they are an extremely important interface for Directors. Organizationally, they wrap a layer of management around a group of related tactical teams, giving them the close support that they need to be successful.

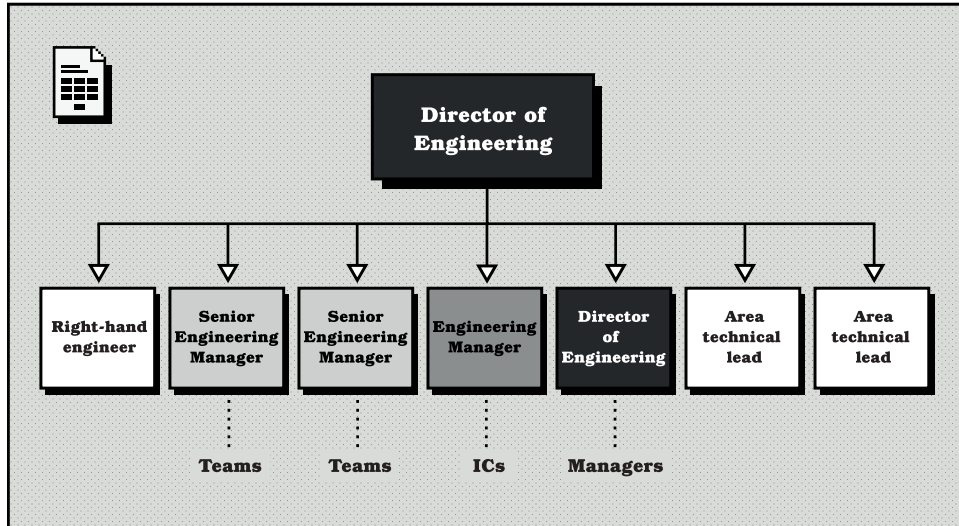
A variation is also shown where the Senior Engineering Manager may have a number of senior individual contributors reporting to them. These are often the leads that are responsible for the technical direction of individual aspects of the area spanned by the org chart. It is an expansion of the technical lead pattern that we saw for the Engineering Manager.

Having technical leads report directly to the Senior Engineering Manager can be a good way to provide career progression for senior individual contributors and for the Senior Engineering Manager to have a better understanding, and

ability to influence, the direction of each of their teams. We'll see this pattern of senior individual contributors reporting to senior managers repeat as we go up the org chart.

Operational: The Director of Engineering

A Director of Engineering is responsible for a larger operational area that is comprised of multiple underlying teams. A diagram of a typical Director of Engineering org chart is shown below.



A Director of Engineering typically has five to ten direct reports. Their management reports can vary in seniority depending on the size of their org. In the diagram, we see multiple Senior Engineering Managers, an Engineering Manager, and even another Director. This is because Director can in theory be a *terminal* position (i.e. no further natural progression is possible) that is bounded by the strategic and operational needs of the company, and those in Director roles can be experienced enough to manage people at the same level as them. At a larger company, an organization size could be one hundred to five hundred or more people.

Directors wrap a layer of management around an operational area, allowing VPs to define a clear interface between themselves and the group of operational teams. This is a key part of the org chart design: it allows VPs to focus on the strategic direction of the company, while Directors focus on the operational matters needed to travel in that direction.

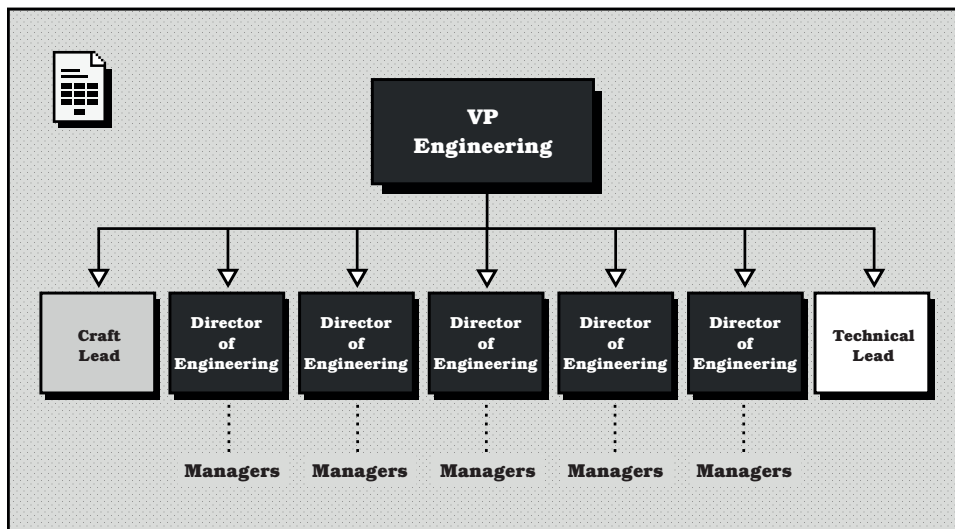
In our diagram we also highlight two options for senior individual contributors. The first is an *area technical lead*, which is an extension of the pattern that

we saw for the Senior Engineering Manager. We also introduce a new concept, the *right-hand engineer*. This is a senior individual contributor that is responsible for the technical direction of the *whole* operational area. They form a close partnership with the Director.

Both of these patterns provide career progression for senior individual contributors and allow the Director to have a better understanding, and ability to influence, the direction of each team. We even spend a whole chapter on this subject in [Chapter 5, The Sharpest Tool in Your Toolbelt, on page ?](#).

Strategic: The VP of Engineering and CTO

Our final pattern is that of the VP of Engineering. A diagram of a typical VP of Engineering org chart is shown below.



We can see that, like other managers, a VP of Engineering typically has five to ten direct reports. However, their direct reports are usually Directors. Each of these Directors provides an interface into the operational levels that they manage. Collectively these Directors form the implementation of the strategy that the VP defines. Sometimes a VP can manage other VPs. They may possibly also manage high-growth Senior Engineering Managers who are soon progressing into a Director role. At a larger company, a VP's organization size could be five hundred to one thousand or more people.

In terms of individual contributors, we see similar patterns to the Director org chart. There may be area technical leads, although this is less common, as they usually map better to Directors. However, there may be one or more *craft leads*. These are senior individual contributors that are responsible for

the technical direction of a particular discipline, such as frontend, backend, or mobile. They form a close partnership with the VP and set the technical strategy for the area that the VP is responsible for. Again, we'll dig deeper into the implementation of these roles in a later chapter.

For the sake of brevity, we won't show the CTO org chart here, but it is similar to the VP org chart. The main difference is that the CTO is responsible for the entire engineering organization, and therefore has a larger potential organization size, with one or more VPs reporting to them.

Your Turn: Your Own Org Patterns

We've looked at some common patterns in theory, but what have you seen in practice?

- Take a look at the org chart at your current company. Does it fit into one of the patterns that we've described here? If not, how does it differ?
- Are there any parts of your company's org chart that you feel are suboptimal? Why is that? What kind of refactoring would you do based on the patterns here that could make things better?
- Does your organization utilize senior individual contributors in a similar way to the patterns that we've described here? Do you think that this is a good idea? Why or why not?