

## Improving Software Development Cultures

Cultures are patterns in what we do. Often we are so absorbed in our ways of working that we do not notice that they are distinctive of us. Taking a step back and scrutinising our culture by comparing our patterns with others can help us to improve. Different team-cultures approach key aspects of software delivery very differently.

There are of course reasons why cultures emerge. A team that feels its culture could be improved will likely want to consider what factors are driving its current culture, one of which will likely be as simple as habit. Before considering the reasons for a culture it is important first to understand what a team's culture looks like by comparison to other possibilities. One approach is to review documented team patterns and anti-patterns, which tend to focus on the way a team is structured. Let us consider a different route – let us review some comparisons with the intention of bringing out the day-to-day of how a team works and sees itself as working. Then we can review ways to work on key problems that might be highlighted.

The idea of the following sections is that they be used to identify areas for improvement in a team's culture (and areas that a team is strong in) and this will be followed by notes on how improvement might be undertaken. The notes here are intended as suggestions to be used as a diagnostic starting point.

### Deadlines

How does your team tend to talk about deadlines? Which of the below is a closer fit?

1. This needs to be done by X.
2. This needs to be done by X, otherwise we'll miss key target Y.
3. Are we going to be able to do this by X? We need to remember that we can't deliver Y without it.
4. How are we doing on X?

1 is more characteristic of a hierarchical culture where deadlines are expected to be met without much interaction or feedback. 4 could just be a short expression used by people who already know the deadline and understand the significance of the deadline (in which case it would serve as an abbreviated form of 3) but it could also be a way of talking that focuses on what is being delivered without connecting this back to the timelines of delivery or the people that those timelines affect.

There is no scoring for these answers. Traits that are problematic in one environment might be ok in another. Considering the traits is a prompt for a team itself to be able to see if there is a problem.

### Decision-making

1. We need to do X.
2. We need to do X because Y wants it.
3. I'm going to assess the options and report back.

4. Let's schedule a meeting where we can discuss the options.
5. We talk a lot but we never agree anything.
6. We make decisions but nobody ever acts on them.
7. It has to be done this way.
8. It has to be done this way because it is best practice.
9. What are we trying to achieve here? Let's get the relevant considerations down so that we can assess the options properly.

1-3 and also 7-8 all suggest a model where one person makes the decisions without input from others. Some of those answers also suggest that person also doesn't share how they arrive at their decisions with others. It can be efficient to centre decision-making with the most relevant/knowledgeable people but those people then need to share their decision-making in a way that the team can buy into, otherwise the model becomes hierarchical. 5 points to an absence of decision-making, perhaps indicating unclear responsibilities. 6 suggests that decisions are being made in a fashion which cannot be actioned (perhaps too simplistic or ambitious) or it may be that other factors undermine the decisions.

#### Team Failures

1. So-and-so really messed up.
2. Why didn't we have measures in place to prevent this?
3. Those guys in team X really screwed us on this.
4. I've been saying this would happen for ages, you just haven't listened.
5. How do we fix this?
6. I know what caused this problem without even looking.
7. Let's talk about what went wrong so that we can understand what we do to improve.
8. It's ok if there were some individual mistakes – let's talk about what happened with a focus on our process so that we can improve the process if possible.

1-4 all have elements of a blame culture. Allocating blame to individuals does not in itself prevent problems recurring and can lead to a culture where individuals become averse to publicly taking responsibility for tasks for fear of receiving blame. A blame culture could be indicative of a lack of process, since individual mistakes are more likely in the absence of established processes. 3 could indicate a dependency not being managed, or it could be scapegoating. 1-6 are all cases of knee-jerking. It can be tempting to want to know what caused a problem without acknowledging the complexity of the problem. Often a full understanding of all the elements of what went wrong isn't necessary for the key aim of arriving at measures to improve.

#### Team Successes

1. We hit target X.
2. Our statistics are looking better than last year.
3. Our statistics are looking better than that other team's.
4. We have been improving at this and should be able to keep improving.
5. We delivered value in these ways and that helps these parts of the organisation to...

1-3 suggest that the team lacks a vision of what it is doing and is working to goals that are externally-set without an explanation of the reasoning.

#### Personal Roadblocks

1. I'm stuck on this.
2. Nobody has told me how to do this.
3. This stuff is undocumented and confusing; I don't see how anyone could work with it.
4. Only X knows anything about this, it needs to be them that does this.
5. I left so-and-so a voicemail, I can't do anything until they reply.
6. I am hitting some roadblocks with this, can I speak with you when you're free?
7. I've tried some approaches but there's something I'm missing about this, could I run it through with you and see if you've got some thoughts?
8. I'm finding this a bit confusing, could you give me some guidance and maybe we'll find a way to capture it so that it's less confusing for the next person.

1-5 might all be symptoms of an unwillingness to take responsibility, which is a trend that can emerge in response to a blame culture or when effective delivery is expected without also being valued.

#### Team Vision

1. I don't know about X many months down the line, that's not my job.
2. I assume so-and-so has a plan for what to do with this down the line but hasn't explained it.
3. I don't really know what all this is going to achieve in the end, I've been meaning to have a chat with so-and-so about it but haven't found the time.
4. This particular stage of the project will make a big difference, people should really be able to see the what value it delivers and what potential it has when we complete this.

1-3 are indicative of individuals feeling disconnected from what their work achieves. This may be a symptom of responsibility-avoidance (1), excessively protective hierarchy (2) or an overly aggressive schedule (3).

#### Team Practises and Best Practices

1. We don't have time to put processes in place.
2. We have processes but nobody follows them.
3. We have some processes but they're really not best-practice, we don't have time for best-practice.
4. We only ever follow best-practice.
5. Our processes are working out ok on the whole, we're working on improving some of them and putting more structure around certain things in the future. Most of the team understands where we're at and how we're improving.

6. We have processes that work well for us, we're flexible about them and keep looking for ways to improve them.

1 could be a symptom of an overly-aggressive schedule. 2 might indicate that agreed processes are too simplistic and individuals therefore have to break from them, or it may indicate a failure to communicate process and commit to working in a structured way. 3 might be an indicator of other problems (perhaps best practice could be followed if other constraints were addressed) or it might just indicate a certain perfectionism on the part of the person making the judgment (is there really always a best-practice applicable to one's own situation?). 4 might indicate a perfectionism, that could be a symptom of authoritarianism if not practised flexibly. 5 and 6 point to a flexible and collaborative environment.

### Team Planning

1. I just get told when things have to be done by, there's no discussion of whether it's achievable.
2. We talk about how to get things done by certain dates. The dates come first and we figure out how to make it fit.
3. We try to assess how big each piece of work is but normally everyone already knows what answer is wanted and we have to make the size fit what 'management' wants.
4. We try to plan things but we don't really know what it is that we're planning at the time when we plan it.
5. We try to put together some plans but things change so fast, we don't really have time for planning.
6. We always fail to hit our targets so we try to push all of the targets out when it comes to planning.
7. We talk about how big each piece of work is, normally we try to compare it with others for sizing, and then we try to plan out how we could break it down and allocate it to put it on a schedule.

1-5 all suggest a planning process that lacks feedback loops and is a one-sided discussion. 4 and 5 could just be indicative of not giving planning the time and attention it requires. 6 expresses evasive and protective behaviour that would be symptoms of some other problem. 7 is suggestive of an open and understanding communication.

### Individual Planning

1. Normally I get told I have to do something and then I start by trying to figure out what it is they want done.
2. I don't have enough time for planning, I just do whatever I'm asked to do as quickly as possible.
3. I try to plan my work before I start it but I get interrupted so often that I forget where I'd got to and often end up trying to do it quickly to make up for time lost.
4. I normally start by thinking about what the piece of work aims to achieve, how to break it down and whether we've done anything similar before that I can start from.

1 suggests a one-way communication, perhaps because of an overly hierarchical structure. 2 & 3 could be an indication of an unstructured environment that lacks clear processes and responsibilities, or of an unstructured way of working on the part of the individual.

#### Working Hours

1. I often work late to try to make up for failing to get what I needed to done during the day.
2. I often work extra hours to do additional work that everyone had overlooked.
3. I often work extra hours as new work for me comes to light that I only find out about late-on.
4. Some people work long hours but I'm not sure what they actually produce – I suspect they're just posturing.
5. I can't imagine a situation where we'd want to put extra hours in.
6. We occasionally put in extra hours when special situations come up and we try to share those hours fairly.
7. We sometimes put in extra hours when we get really into something but normally we don't find that we need to so.

Sustained periods of long working hours can become problematic for a team culture, particularly if the extra work is not planned or if it is not fully acknowledged to be taking place.

#### Hierarchy and Dynamics

1. I wouldn't want to have lunch with anyone less senior than me, we wouldn't have anything to talk about.
2. I wouldn't want to have lunch with anyone more senior than me, it would just be uncomfortable.
3. We occasionally do social events but they feel very forced and people don't say what they're really thinking.
4. We have some problems but I understand they're not all the manager's fault and could happily have lunch with management.
5. We have some problems but I understand they're not all the fault of the team members and happily have lunch with any of them.
6. We're lucky as we all happen to get on pretty well. We see eye-to-eye at work and sometimes choose to do things out of work together. We have similar philosophies on how to do things.
7. We're quite different as people but we work well together as a team. I'm not sure we'd be all that compatible outside of work but as a team we work great together.

Many cultural problems relate in some way to divisions between or within teams, often divisions of specialism, responsibility or hierarchy. Divisions are not problematic in themselves, only when they lead to behaviour that obstructs collaboration. It is not a problem if team members don't socialise outside of work but it may be a problem if the reason why they wouldn't consider socialising is due to divisions created within the workplace culture.

### Team Development

1. We have a specific set of tools that we use and introducing new tools wouldn't work for us.
2. We've been using proven tools for a long time, why would we risk something new?
3. We always think about whether there's an industry-standard practice we can use, even if we'd have to learn how to use it first.
4. We always try to embrace new things. Sometimes we do so even where the new thing might not have been the best choice if we'd researched it more.

Remaining open to outside influences and trying to follow industry developments can be very beneficial to a team culture. But teams do need to be wary of the bleeding edge and of bringing in new elements just for their own sake.

### Design

1. We would really like to do more design as we often find we miss things or have to do major refactoring that we could have avoided (as it wasn't due to requirement change).
2. We spend a lot of time in design meetings and thinking about the future. Much of what we plan for never actually materialises.
3. The developers all do some design to some extent or other. Developers have to be comfortable doing low-level design in order to work the way we do.
4. We work from very detailed specifications that do all of the design up-front. We like the structure that this gives us.
5. We work from very detailed specifications that do all of the design up-front but we normally have to diverge from them or go back to the author and get the specification revised a lot.

There are many balancing acts played out in design and teams can lost balance with them. Key trade-offs are that between planning for the future vs adding complexity for things that might never happen and the trade-off on how much design to be done by a dedicated design function. The right balance will depend on the team. What the team says about the approach will help indicate whether the approach in play is working.

### Multiple Teams

1. Our different teams have a good relationship and we communicate well together.
2. I often have to repeat things to the other team or fill in for the work they've failed to do.
3. Our colleagues in the other team seem to disagree with us about what the responsibilities are.

A team may be composed of sub-teams and if so it is important that everyone speak openly about the differences in role and expectation between the different teams. If one sub-team is perceived to be underperforming and the open discourse is one of success then this can undermine the sub-teams that are performing well.

## Requirements

1. Our requirements take forever to produce and still keep changing.
2. We get different answers about what the requirement is from different people.
3. We get quite long documents but nobody seems to be able to say what a system that would realise them would actually do.
4. Our requirements are pretty clear and fit in with a vision of the application. We share information well and people collaborate to see what a new feature brings to the application.

1 and 2 might indicate that too many people have been involved in the requirements process or that decision-making for the process has been insufficiently planned.

## Code

1. The code seems to have evolved in lots of confusing ways and now nobody feels very comfortable with it.
2. We'd like to improve the code as we go along but we normally feel we don't have the time to do so.
3. We've got historical problems but we're comfortable with what we're adding today. The historical stuff doesn't affect us today and isn't likely to affect us in the future.
4. We have ideas on how we can keep improving the code, we know what benefits they bring and we take opportunities to realise them as they come up.

It is natural that developers can only work with part of a codebase at a time and other parts can look problematic as a result. Issues with the codebase could be caused by parts of the codebase being poorly written but the team could also be ill-at-ease with the codebase if the team doesn't have a good grasp of all of the technologies or of the vision for the product. The codebase can appear confusing if one isn't able to see what it aims to achieve.

## Testing

1. We don't have time to do testing.
2. We have a test team but they work in isolation and nobody understands what they do.
3. We do a lot of testing but the defects that get through into live sometimes look surprisingly obvious.
4. We share the burden of testing and the key people know the system really well.
5. There is a lot more we could test but we can't get access to all of the relevant systems.
6. We would test more but we don't have a lot of test data and we're reliant on other teams to create it.

In complex multi-system environments getting testing adequate structures in place can also involve managing dependencies as the system may sit within a space of other systems.

## Notes on Improving Software Development Cultures

The first step to improving a culture is identifying what it is about that culture which could improve. The next step is having everyone involved acknowledge this. Both steps are difficult. Gaining acknowledgement from everyone involved is particularly difficult as some individuals may be very invested in established ways of working and may even see any suggestions for change as a personal attack, even if it is stressed that the aim is overall team improvement. Addressing serious cultural problems can therefore require buy-in from senior figures and can sometimes require changes to the team structure. It is important to target changing the behaviours of any key instigators of the negative culture and this will likely require being able to talk openly but it is preferable to do this in a way that minimises possibility of conflict.

If the key issues are around communication between those setting deadlines and those delivering upon them then it may be useful to look for examples in on-going planning and look to initiate conversations about those. In some environments one may encounter resistance to having such conversations and in extreme cases some managers or stakeholders may express an attitude along the lines of “I am telling you what the deadline is, all I need from you is to deliver to it”. This can be a difficult conversation to have but it is possible to have it with responses along the lines of “there are limitations on what can be done given the amount of time and resource that we have – wouldn’t you like to be aware of those limitations?” or “if I were to hypothetically say that only 70% could be done by that deadline, wouldn’t you want to talk about which 70% that should be?” or “it might help us to deliver this more efficiently if we better understood what it is that is particularly important about it and what is driving the deadline”.



If a team is working in unstructured ways and isn't clear about responsibilities then one approach is to start by identifying the areas which are most problematic, bring all of the key people together and try to agree a more structured approach on the key pain areas first. The approach needs to be sensitive to the complexities of what is being done as if it is over-simplified then it will not be adopted. Adoption may also fail if not all of the relevant individuals buy into the change.

Problems with decisions not getting made or frequently changing are closely related to a lack of process or structure. One needs to review or establish who the decision-makers are, how the decisions are arrived at, how they are communicated and what the method of feedback is.

Addressing a blame culture requires that everyone try to look at faults as collective more than individual. A good example can be set by individuals being forthright about acknowledging their own fault in mistakes in a way that puts the mistake into a wider context. (E.g. "I was rushing to meet that deadline and I know that's not an excuse".) It is important that this change is seen in figures who are seen as leaders within the team or above the team.

Some problems may be related to hierarchy but hierarchical team structure is not necessarily a problem in itself. Where hierarchy tends to get mixed up in problems is when people act in an overly hierarchical fashion and mechanisms of feedback break down – when senior staff fail to explain their thinking and junior staff fail to act autonomously or request explanation.

If a team shows signs of being generally de-motivated then turning this around requires changes that empower them. It might be that the team is de-motivated because of other problems (e.g. a blame culture or unstructured working) and if so the key is to address those things as a pre-condition for any other attempts at culture changes. There can be lots of reasons for a team being de-motivated. It may be that the team doesn't have a clear vision of what they're achieving, in which case it might be useful to connect the team more directly with people and situations that make it clear what the team's work is achieving. It may be that the team feels constrained by long-established decisions on the project and doesn't feel the freedom to innovate. Alternatively, perhaps the team is bored with the technologies it is using and would like the opportunity to consider new ones. Problems where a team has lost its mojo tend to require a certain amount of sensitivity and creative thinking in order to turn around. It can also be worth considering the team structure as it may lack people with the attributes to be leaders.

Certain methodologies and practices are intended to encourage certain cultural characteristics and the creators of Agile in particular were quite conscious of these aims. Looking to adopt established industry practices can be a route to culture improvement. The difficulty of course is which specific practices will help a specific team, since wholesale change of methodology is costly and not always effective. The more pragmatic strategy is to identify key pain areas and target those first.

In order to bring about change from the inside one should try to picture oneself as an outsider and try to see what one is doing as an outsider would see it. An outsider's view (such as that of a coach or consultant) can be useful but not easy to obtain. Any outsider will also need to have the inside explained to them and even if they see a route to change, the insiders still have to see it too. If

change is to be brought about from the inside then it requires some initial reflection and comparison with other teams or the industry's recorded wisdom. Each team is unique but common patterns do emerge and the comparisons discussed can be used as a way to see how broad patterns might be exhibited in particular situations with the aim of helping to bridge the gap between industry wisdom and observed practice.