

People's system knowledge - managing the main risks

DETANGLE's objective is identifying the patterns of system knowledge within your teams, across teams and reducing its main risks. People and their system knowledge are a major player in software engineering. If there is no balanced distribution of system knowledge, no right knowledge cooperation within a team and across teams your system gets easily doomed.

In today's engineering practice a major point of ambiguity is the right [level of code ownership](#). Work has to be split across individual people and teams to get it done on time, thus naturally tending to [single code ownership](#). On the other hand, agile practices like [pair-programming](#) aim at reducing single code ownership by promoting common work on code. But there is also the [phenomenon called "diffusion of responsibility"](#). The most extreme manifestation is the case of a real accident. The larger the group of bystanders, the less likely that any individual will provide help. In the context of software engineering, the risk that people introduce errors increases with the number of people having previously worked on the modified code. Consequently, [good code has to find the right balance of code ownership within and across teams](#) in order to promote a sense of personal responsibility from everyone involved.

DETANGLE counts risk to your system knowledge based on the [modularity of committers and teams](#). It analyzes code changes continuously over the repository, thus gaining NEW risk insights based on all changes to the system by committers and teams. The core enabling metrics to control risk to your system knowledge are Committer Cohesion and Committer Coupling. Committer Cohesion measures the extent and ratio of changes to single



code modules due to different committers. Committer Coupling resolves the extent of changes on the common set of code modules by separate committers.

DETANGLE enables managers to identify system knowledge patterns in your teams based on the modularity of committers. [Knowledge islands pose a major risk to your system](#) in case it affects system parts critical to your system or being relevant to any future work. [Knowledge clutters are exposed to the risk of diffusion of responsibility](#). In addition, DETANGLE offers precise information about the system experts, technology experts and key coordinators of your system, i.e. losing any of these team members takes time to compensate for. Finally, [DETANGLE reveals any harmful inter-team and intra-team cooperation patterns](#). In sum, DETANGLE supports both stakeholders, managers and engineers, to manage the main risks of system knowledge.