# Eagle: A Team Practices Audit Framework for Agile Software Development

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## Abstract

Agile/XP (Extreme Programming) software teams are expected to follow a number of specific practices in each iteration, such as estimating the effort ("points") required to complete user stories, properly using branches and pull requests to coordinate merging multiple contributors' code, having frequent "standups" to keep all team members in sync, and conducting retrospectives to identify areas of improvement for future iterations.

We combine two observations in developing a methodology and tools to help teams monitor their performance on these practices. On the one hand, many Agile practices are increasingly supported by web-based tools whose "data exhaust" can provide insight into how closely the teams are following the practices. On the other hand, some of the practices can be expressed in terms similar to those developed for expressing service level objectives (SLO) in software as a service; as an example, a typical SLO for an interactive Web site might be *"over any 5-minute window, 99% of requests to the main page must be delivered within 200ms"* and, analogously, a potential Team Practice (TP) for an Agile/XP team might be *"over any 2-week iteration, 75% of stories should be '1-point' stories"*.

Following this similarity, we adapt a system originally developed for monitoring and visualizing service level agreement (SLA) compliance to monitor selected TPs for Agile/XP software teams. Specifically, the system consumes and analyzes the data exhaust from widely-used tools such as GitHub and Pivotal Tracker and provides team(s) and coach(es) a "dashboard" summarizing the teams' adherence to various practices. As a qualitative initial investigation of its usefulness, we deployed it to twenty student teams in a four-sprint software engineering project course. We find an improvement of the adherence to team practice and a positive students' self-evaluations of their team practices when using the tool, compared to previous experiences using an Agile/XP methodology.

The demo video is located at https://youtu.be/A4xwJMEQh9c and a landing page with a live demo at https://isa-group.github.io/2019-05-eagle-demo/.