**Task**:

1. Review available data. Make an assumption about plausible issue(s) with tasks flow / team performance

2. Create a forecast of expected flow state / team performance in next 6 month.

**Consider 3 key conditions:**

- no issue exist, flow / performance remains the same;

- issue identified and removed partially;

- issue identified and mitigated to optimal state.

3. No limitations for tooling and stat. analysis methods

**Context**:

Small development team, use Scrum framework and typical SDLC cycle.

**8 employees**:

* 5 engineers and Scrum Master from outsourcing company,
* Product owner and Tech Lead from Customer.

Work acceptance done by business users from Customer

Standalone application, minimal or no external dependencies, possible to do 1-2 releases every month.

**Review available data. Make an assumption about plausible issue(s) with tasks flow / team performance**

**Issues:**

* Task with key **APP-32288** (Epic) don’t have Story Score. Fixed replacing the average of Story scores.
* Clusters of outliers in ratio of the time spent on the tasks and the complexity of the tasks were identified:

Chart

Description automatically generated

Pic. 1 – Plot of the ratio of task completion time to task complexity.

Red dot is a fixed NaN (**APP-32288**)

**APP-31613**: the complexity of the task is high, but the speed of work is high compared to others. Probable assumption: the complexity was incorrectly determined or the task was not done completely - there must be defects, or the team's productivity is maximum (the team can be influenced by various factors, motivation).

**APP-30190**: the difficulty of the task compared to others is good, but the time spent on its completion is quite large. Probable assumption: the complexity of the team is incorrectly determined or the performance of the team is reduced (the team can be affected by various factors)

**APP-30176**, **APP-29874**: similarly to the previous one - the complexity of the task compared to others is nice, but the time spent on its work is quite long. Probable assumption: the complexity of the team is incorrectly determined or the performance of the team is reduced (the team can be affected by various factors)

**APP-30149**, **APP-30576**: the complexity of the task compared to others is small, but the time spent on its completion is large. Probable assumption: the complexity of the team is incorrectly determined or the performance of the team is reduced (the team can be affected by various factors)

Task priorities are average (**Medium**).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Issue Type** | **Priority** | **Estimate** | **Key** | **Status** | **Created** | **Resolved** | **Updated** | **Sprint** |
| **23** | Defect | Medium | 13 | APP-31613 | Closed | 10/6/2021 | 12/13/2021 | 12/13/2021 | TTPQD: 2021-10-22,  TTPQD: 2021-11-05,  TTPQD: 2021-11-19 |
| **39** | Story | Medium | 1 | APP-30576 | Closed | 5/12/2021 | 3/8/2022 | 3/8/2022 | TTPQD: 2021-06-18,  TTPQD: 2021-07-02,  TTPQD: 2021-07-16,  TTPQD: 2021-08-13,  TTPQD: 2021-08-27,  TTPQD: 2021-09-10,  TTPQD: 2021-10-22,  TTPQD: 2021-11-05,  TTPQD: 2021-11-19,  TTPQD: 2021-12-03,  TTPQD: 2021-12-17,  TTPQD: 2021-12-31,  TTPQD: 2022-01-14 |
| **40** | Story | Medium | 8 | APP-30190 | Closed | 3/19/2021 | 3/8/2022 | 3/8/2022 | TTPQD: 2021-08-13,  TTPQD: 2021-08-27,  TTPQD: 2021-09-10,  TTPQD: 2021-10-22,  TTPQD: 2021-11-05,  TTPQD: 2021-11-19,  TTPQD: 2021-12-03,  TTPQD: 2021-12-17,  TTPQD: 2021-12-31 |
| **41** | Story | Medium | 5 | APP-30176 | Closed | 3/17/2021 | 3/8/2022 | 3/8/2022 | TTPQD: 2021-07-16,  TTPQD: 2021-08-13,  TTPQD: 2021-08-27,  TTPQD: 2021-09-10,  TTPQD: 2021-10-22,  TTPQD: 2021-11-05,  TTPQD: 2021-11-19,  TTPQD: 2021-12-03,  TTPQD: 2021-12-17 |
| **42** | Story | Medium | 1 | APP-30149 | Closed | 3/12/2021 | 12/13/2021 | 12/13/2021 | TTPQD: 2021-12-03 |
| **43** | Story | Medium | 5 | APP-29874 | Closed | 2/11/2021 | 12/13/2021 | 12/13/2021 | TTPQD: 2021-07-30,  TTPQD: 2021-08-13,  TTPQD: 2021-08-27,  TTPQD: 2021-09-10,  TTPQD: 2021-10-22,  TTPQD: 2021-11-05,  TTPQD: 2021-11-19 |

Chart, scatter chart

Description automatically generated

Pic. 2 – Plot of task duration intervals and their complexity.

**Forecast of expected flow state/team performance in the next 6 month**

Chart

Description automatically generated

Pic. 2 – Plot of predicted team behavior in the next 6 month.

This plot was drawn by using Regression Model. Given results say us that team has problems which impacts on team productivity, consequently, elapsed time for doing tasks will increase.

**Create a forecast of expected flow state / team performance in next 6 month**

**In development**

Chart

Description automatically generated

After the release at the beginning of November, the complexity of the tasks **increased slightly** - an **outlier appeared** (we went beyond the confidence interval), but then it settled down - we have a narrow confidence interval with a decline, which indicates a stable acceleration of the system or a lack of labor of employees. After December until the beginning of January, we have a system **slowdown** and an **outlier**, which indicates a **problem** in the team's productivity. After February, we have a stable system with one emission.

In conclusion, the development team has problems that may be faced in the future.

**In Peer Review**

A picture containing graphical user interface

Description automatically generated

The first release is characterized by an **increase in the complexity** of work. From the second release, from the end of October to the end of November, stability is observed, which is accompanied by **one** **outlier**. From the beginning of December to the end of July, we have problems accompanied by an **increase** in the **time** **spent** on tasks and several outliers. Since the beginning of February, we have an **acceleration of the process**.

The system and team are not stable in Peer Review.

**In Testing**

Chart, line chart

Description automatically generated

Testing is initially accompanied by a single release with **increased time consumption** and **outlier**. From the beginning of mid-November, we have an **accelerated system**, which is further accompanied by an **increase in the complexity of tasks** and a **small emission**, which is not so critical. Next, the team of testers **accelerates again**.

The team shows good and kind of stable performance with few problems.

**In User Acceptance**

Chart

Description automatically generated

The User Acceptance process **is not stable** as there are performance fluctuations. At first, little work was done, and already from the middle of December, the time spent on tasks **increased rapidly**, which indicates problems in testing. After the release, a quick change in the process is expected to accelerate.

The system and team are not so stable.

**Ready for Release**

Chart

Description automatically generated with medium confidence

A **certain stability** is seeing during the preparation for the release of the product. Already at the beginning of March, the time spent on tasks is **rapidly increasing**, which may indicate the presence of **technical debt**. Then the cycle accelerates.

The team have some troubles. The cycle cannot be called stable.