Spec Core Team - Governing Board Report - November 2024

The SCT is the 10 people responsible for ensuring the protocol specification continues to move forward. Historically, this has been an all-encompassing role with multiple different functions, though over the last year the SCT has been working with Josh as Managing Director to help define precise expectations of what the SCT is responsible for, and what falls to a wider Foundation responsibility through its Standards Development arm. This is an ongoing effort, with some expectations requiring more thorough discussion. When completed, the team's self-imposed expectations will be documented publicly to help dependent teams and projects better understand the SCT's function and overall response time.

Prioritization

One of the critical functions of the SCT is to review Matrix Spec Changes (MSCs) and ensure they are able to move through the process as efficiently as possible. As volunteers, the team's available time is extremely limited, necessitating a prioritization framework. Each MSC upon being opened is given a "kind" label to categorize it into one of three buckets:

- Core - MSCs which are critical to the protocol's success. Examples include state resolution, cutting new room versions, Matrix 2.0 features (or other major release), and features which significantly increase Matrix's competitive advantage.
- Feature - A change which adds functionality to Matrix, and is not "core" in nature. Prominent examples include custom emoji and markup improvements.
- Maintenance - Proposals which clarify existing spec, or keep things running. Typically these are deprecations/removals, error codes, or clarifying another (accepted) MSC's text.

MSCs can and do migrate between these buckets, but only ever reside in a single bucket. Typically, "core" MSCs are opened by developers working directly on the protocol (such as the SCT itself or by other teams on behalf of the Foundation), "feature" MSCs are opened by the broader ecosystem, and "maintenance" MSCs are opened by both groups.

The team then considers priority at three levels, with varying levels of specificity:

1. Overarching, high level, prioritization set by coordinated major releases (Matrix 2.0, 3.0, etc). This is typically over the span of a year or more, and describes areas for multiple MSCs to attribute themselves to.
2. Quarterly, vague, direction determined around the time of the previous release. This may include some specific MSCs, but typically is a subgenre of the above.

3. Weekly, exact, tasks which should be top of mind. For example, ensuring that spec PRs are reviewed and that FCP checkboxes on specific MSCs are acquired.

Together, these levels create a list of objectives for features and MSCs the SCT would like to see in Matrix. While the SCT does not work on designing or implementing the features themselves, they may reach out to other teams to advocate for their development. Where needed, the SCT may write the MSCs required to begin introducing the desirable functionality, and prioritizes work started by others highly when it aligns with the team's objectives.

Each week, the team weighs the MSCs raised in its Office room on Matrix against its objectives, both long and short term, to determine relative placement in the weekly tasks. MSCs with high alignment are placed first on the list to maximize throughput on those features. MSCs at the end of the list are the least aligned of what is there. Often, those MSCs are still highly important, but the team's limited availability causes them to be ordered as such. The expectation is that highly important MSCs move up in the list as the top of the list is cleared.

Historically, the SCT has relied heavily on its members keeping an eye on the ecosystem to determine what might need attention. As this became unsustainable, the team shifted towards MSCs needing mentions in the SCT Office, maintaining a bit of monitoring to avoid things falling through the cracks. Now, with the Governing Board being seated, the SCT is interested in receiving consolidated advice on what is important to the wider ecosystem which may be hard to convey at an individual MSC level.

The advice generated by the Governing Board would feed into the SCT's overall prioritization framework, aiding discussions and decision making around what the medium to long term priorities should be. The SCT expects that the majority of the advice would be channeled through a new prioritization level, largely on par with the overarching major release level. With the protocol continuing to build its foundational pieces, the team aims to achieve a 9:1 blend of "core" changes to "feature" changes, with "maintenance" making up a statistically insignificant portion. The actual blend is determined by what is presented to the SCT for review.

From January 1st, 2024 until November 5th, 2024, the SCT has accepted 3 core MSCs, 6 features, and 19 maintenance changes for a total of 28 MSCs. This is far off from the 9:1 ideal blend, and is a reflection of the ongoing work from teams to design and implement the Matrix 2.0 features. The SCT expects the remainder of 2024 to focus on Matrix 2.0 MSCs with light to medium feature/maintenance work, and for 2025 to have a higher core to feature ratio. Maintenance levels are expected to remain approximately the same through 2024 and 2025, though where they address a core concern, they may have increased counts.

To compare, the 2023 calendar year saw 28 MSCs accepted with a higher core to feature ratio than 2024 so far: 9 core, 10 features, 15 maintenance. 2023 also saw 136 spec PRs merged and 108 MSCs opened, compared to 2024's 165 spec PRs and 109 new MSCs so far.

Q1-2 2025 Priorities

When creating a plan, the SCT aims to look into the distance, but not so far that the plan becomes impossible to estimate implementation work from third parties. This generates a plan which is largely aligned with work that is ongoing, or about to be started, to ensure there's room for SCT review in those projects. For the first half of 2025, the SCT aims to prioritize the following categories:

1. Completion of Matrix 2.0 projects, as needed.
2. State resolution.
3. Trust & Safety.
4. Faster room joins.
5. Non-core features.

There are several MSCs already written which could fit into these areas, and many more to be written. As the SCT continues to work towards a Matrix 1.13 release in November/December 2024, the Q1 2025 plan will become more specific on which MSCs will be receiving the highest priority attention. As an early projection, this is likely to include:

- Matrix 2.0 - OIDC, VoIP, and Simplified Sliding Sync completion, as needed.
- State Resolution - Iterative improvement MSCs are to be determined.
- T&S - "Reporting v2" (a revamp of the abuse reporting system in Matrix).
- T&S - Functionality requested by the T&S Working Group.
- Faster room joins - Improvements as required to facilitate implementation.
- Non-core features - Early versions of Extensible Profiles.

Looking further ahead to Q3 and Q4 2025, the SCT is seeking broad themes which are of interest to the wider Matrix ecosystem.

Matrix 2.0 progress

The SCT is eagerly awaiting the developers of Matrix 2.0 features to put their MSCs forward for FCP review. Currently, the team is aware of implementation and iteration on the majority of Matrix 2.0 features, and expects the MSCs to be ready for review by the end of the year, if not fully accepted. Accounting for the upcoming holiday season, and therefore a slowdown in implementation/iteration, the Matrix 2.0 spec release is expected in early 2025.

For more information on Matrix 2.0, please see this blog post from Matthew.

Operations

The SCT's daily work happens primarily in public rooms on Matrix, and a single internal room for discussing more sensitive matters such as adding/removing SCT members, security concerns, and reaching alignment on divided subjects. The public rooms are made available for community members to ask questions about the spec, seek review on their MSCs from both the SCT and community, and help improve the spec's actual text.

At times, the public rooms have become difficult to work in, leading to more discussions happening in the internal room. Some of the community members in these rooms foster an environment of hostility and assumed malice, demoralizing the SCT members in the process. The SCT has worked with the Foundation more broadly to improve communications in the public rooms, though success has been slow-moving and varied at times. The team would appreciate specific focus in the area of community management and engagement to foster an alternative atmosphere - one where SCT members feel comfortable communicating out in the open by default.

Release schedule

When Matrix 1.1 was released in 2021, a goal to release every quarter was set in motion. Since then, the specification has been released every quarter. There were a couple of instances where the spec release slipped into the next quarter, though these releases were attributed to the prior quarter rather than taking the slot of the quarter they ended up in.

This cadence has been incredibly valuable for balancing the need of frequent specification releases with developing complete features. When more time is needed to complete a blocking feature, the spec release can go out towards the end of the quarter rather than the typical middle. This has allowed spec releases to go out every 2-5 months on average, depending on feature load and development requirements. It is a goal of the SCT to not release so quickly that implementations feel overwhelmed, and not so slowly that Matrix loses competitive advantage for being a relatively lightweight standards process.

The SCT expects to continue quarterly releases for the foreseeable future, and is constantly monitoring to ensure the balance is correct in the frequency of releases.

Team dynamics

The SCT consists of 10 members, one of which is the Project Lead, and another who is a Guardian. In the current composition, the Project Lead and Guardian roles are held by Matthew while the remaining 9 are regular members. The Project Lead is responsible for helping the SCT reach consensus in cases of disagreement or division on MSCs, and the Guardian's presence is to act as a safety net to the committee's actions.

The current Spec Core Team members and their approximate areas of expertise are:

- Matthew Hodgson - Project Lead and Guardian
- Erik Johnston - Servers
- Richard van der Hoff - Servers, Cryptography, Governing Board representative
- David Baker - Clients, Identity, Push, Media
- Hubert Chathi - Cryptography, General
- Travis Ralston - Bots, Bridges, Application Services, Media, Governing Board representative
- Alexy Rusakov - Clients
- Tulir Asokan - Bots, Bridges, Application Services
- Patrick Cloke - Servers
- Andrew Morgan - Servers, Application Services, Spec Process

In addition to these roles, 7/10 members work at Element, and Travis holds the Director of Standards Development title at the Foundation. The majority of members working at Element prompts a standing agenda item at monthly meetings to ensure Matrix is prioritized over Element:

> 📌 Make damn sure we don't subconsciously (or otherwise) prioritise enterprisey MSCs for Element over mainstream MSCs for Matrix.

There have been a few instances where the prioritization was questioned in this context since 2019, however thorough discussion on each case has resolved those concerns. The SCT welcomes cases which may need more discussion being raised through the Managing Director to the Guardians.

To help pursue the Foundation's objectives and create a proper specification, the SCT works closely with the Foundation's Security team to review upcoming MSCs, called "proto-MSCs", with heavy security context. These MSCs are rare, and are reviewed ahead of time to ensure they have the maximum possible success in the process - it would be unfortunate if a state resolution change, for example, ended up being rejected after the vulnerability was disclosed. The Security team additionally raises concerns about the spec to the SCT for comment, offering a perspective for teams working on a resolution to consider.

Conclusion

The SCT is tasked with maintaining the specification and keeping the protocol moving forward. The exact details of what this entails are being determined through expectation-setting exercises, and should be ready for public use in the coming months. Meanwhile, the SCT continues to review MSCs and spec PRs, release the spec, and work as openly as possible - all in a volunteer capacity.

The team's ongoing commitment to protocol development has resulted in 226 merged MSCs as of November 5th, 2024, and seeks to take on the remaining 495 open MSCs as they continue to receive implementation effort. Where these MSCs are targeting Matrix 2.0, T&S, or core protocol functionality, the SCT looks forward to prioritizing them to the top of the list over the next few quarters. The Governing Board's input for future quarters is greatly appreciated for ensuring the spec moves in a direction best for Matrix.