“Navigation” has traditionally been a key feature within the S3 Passenger service, with its own module called S3 Navigator to manage timetables and perform navigation searches within all configured data. Accurate navigation through the carrier network is a fundamental capability, and quite literally the starting point of the customer journey. Users can simply ask “How can I get from A to B?” and S3 Navigator will consider all timetables and related configuration to come up with the most efficient travel options. This article provides more insight into what is coming with S3 Navigator 2.0 - and how we’ll get there.

The current S3 Navigator provided loyal service in the S3 Passenger landscape for over a decade, but now S3 Navigator 2.0 is on the horizon and the course is set. It is Sqills’ response to increasing demands in advanced data versioning, multi-team and multi-environment data management procedures, and more sophisticated dynamic routing through complex multi-modality networks.

Sqills wants to offer a generic solution

With the upcoming importance of the interconnected transport service providers, the “timetables” S3 Passenger needs for its core seat reservation, inventory management, and ticket sales functions are no longer stand-alone.

With concepts like code-sharing, multi-inventory, connected 3rd party services for the first & last mile of the journey, involving external timetables in public formats like GTFS within S3 Passenger is an increasing priority. It is a challenge that should not depend on externalising the journey planner functionality or manually replicating timetables of partners into S3 Passenger as its only viable solutions. Sqills wants to offer a generic solution in which the operator can import various external timetables from different sources and seamlessly blend them with their native services they manage using either the S3 Passenger GUI’s or its APIs.

In this context, data management is a complex matter in itself. Some data may come from external sources and require an automated import overnight. Other data changes may prepare for the launch of the upcoming summer season services, while minor corrections in the day-to-day timetable take place continuously in parallel. For S3 Navigator 2.0, Sqills was inspired by the source code version management system GIT, in which individual users can create a “branch” of a main version, update it at will for their task at hand, and merge it back for publication when they are done. The merge process verifies there are no conflicts and halts the publication of data to production environments if any anomaly is detected.
This is where S3 Navigator 2.0 really exceeds expectations

At the very heart of the S3 Navigator module lies the capability to find the most suitable travel options between a requested origin and destination. This is where S3 Navigator 2.0 really exceeds expectations: it can autonomously calculate suitable options from the available "raw" timetable data of mixed sources at tremendous scale and with extremely low latency. In the ambition of Sqills, no network will be too large to offer best in class navigation results in low response times at very large volumes – up to the national public transport network level in its entirety.

Opposed to the previous S3 Navigator module, in S3 Navigator 2.0, connections between services no longer have to be modelled explicitly in what was formerly called route links. The module can find routes by simply detecting that different services, potentially from different operators, either pass the same location or intersect in close proximity via a so-called "pathway", such as a short walk between platforms or an underground tunnel between metro stations. Manipulation of such connections has now reversed into a management by exception principle: with optional transfer rules, operators can decide which transfers should be avoided, require more time for passengers, or should only be offered on certain times of the day or certain days of the week. For those interested in the underlying technological marvel: this is accomplished by utilising a custom implementation of the Connection Scan Algorithm powered by the latest computation technology in Kotlin hosted in Amazon's cloud services. In other words: it's seriously new, tech wise.

S3 Navigator 2.0 will be introduced to the S3 Passenger landscape in 3 phases:

Phase 1
Initially, it will power the navigation part of the Journey Search API of S3 Passenger while being supplied by a data import from the existing S3 Navigator module. The only truly noticeable effect is that route links in the current S3 Navigator no longer need to be configured, and the new configuration element of transfer rules will be managed on a dedicated screen in S3 Portal, the first (and only) screen that is based entirely on the new software technology in this phase.

Phase 2
In the second stage, technical dependencies in the S3 Passenger landscape will migrate from the S3 Navigator 1.0 to the S3 Navigator 2.0 module without any noticeable customer impact. This phase is necessary to prepare the landscape for being able to run without the existing S3 Navigator module in it.
During this phase, more screens will become available in S3 Portal to manage data of S3 Navigator 2.0. However, as the module will still be fed automatically with an import from the existing module, those screens will only effectively be used in “read-only” mode in this phase.

Phase 3
The 3rd and final phase of migration is the one that will have the most noticeable impact on S3 Passenger end users: the existing back-office screens in S3 Navigator 1.0 are disabled and all data management activities moves to S3 Portal powered screens running on the API’s of S3 Navigator 2.0. Sqills is committed to making this transition as smooth as possible, and offer the best possible user experience on the new screens.

The modern web-application technology of S3 Portal offers a world of opportunities for more intelligent and user-friendly interaction, and Sqills will guide its customers every step of the way to make use of the new features and capabilities, and get used to the new screens.

All existing S3 Passenger customers will follow the above transition in phases, but can decide at their own pace when to move forward in 2 distinct steps they can plan at their discretion after the software is made available to them by Sqills:

1. Enabling the S3 Navigator 2.0 engine, so that the navigation algorithm runs on transfer rules instead of route links from that moment onwards;

2. Disabling the existing S3 Navigator screens and functions and “go live” with S3 Navigator 2.0 at its full potential.

The end date for support of the current S3 Navigator module will be decided in mutual agreement with the S3 Passenger community. After its loyal service in the S3 Passenger landscape, we will retire the existing module with appropriate honours when we’ve successfully completed our course towards the future - with S3 Navigator 2.0.

For any questions about this development or other existing S3 Passenger evolutions, please contact us without hesitation or schedule an informal Q&A session with the team driving this innovation within Sqills!