SLOID Migration Roadmap

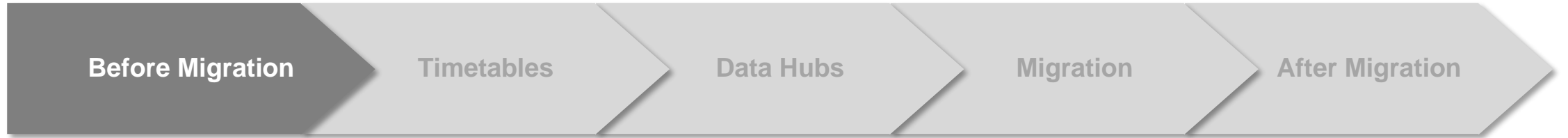| Before Migration | Timetables | Data Hubs | Migration | After Migration |

Initial State & Prerequisites for the Migration

According to version 1.6 of the VDV453/454 realisation guide, before the introduction of SLOIDs, traditional non-train stop point references are composed of the BPUIC and operational platform designation. To match this VDV reference in DiDok, a consuming system has to parse it and do a lookup in different columns. In the periodic HRDF timetable however, only the public platform designation is available or typically no reference at all (to match the VDV HaltID). In some cases the stop points can be identified with the help of another mapping between public and operational designation in the DiDok master data but in many cases (due to non-existing public designations) no mapping is possible at all without SLOIDs.

Data producer ensure that all of their timetable relevant stop point data (see for example the GLEIS model in HRDF) is recorded in atlas(DiDok) and that it fullfills the corresponding requirements (see öv-info.ch section data management), particularly with regard to the (operational) designation. For stop places or stop points owned by other transport organisation, participants should agree on the recorded data.

For all foreign and non-train stop places or stop points with country code 11, 12, 13 or 14 (that are not subject to UIC standards) a SLOID is assigned by atlas (DiDok). Foreign train stations are either identified by their unique UIC-code or a country specific code (for example DeutscheHaltID).

The relevant parts of the V580 specification 09 or national industry standard customer information «Nationaler Branchenstandard Kundeninformation» for replacement transport are implemented, in particular the registration of all replacement stop places and stop points in atlas (DiDok).

All systems (data producer or regional data hub) that exchange VDV data directly with CUS / DDIP are using the latest supported VDV schema version 2017d.

Each and every (traditional) 7- and 9-digit *HaltID* (stop place or stop point) as part of VDV453/454 data exchange, referencing a stop with country code [85, 11, 12, 13, 14], must be uniquely mappable to a corresponding SLOID (and vice versa) as specified in section 6.1.14.5 of the VDV453 realisation guide of Swiss public transport, version 1.6 and onwards (see öv-info.ch). A cleanup of the master data, coordinated by SKI, has taken place to ensure that the above requirements are met, particularly in case where stop point accurate *HaltID*s are exchanged.

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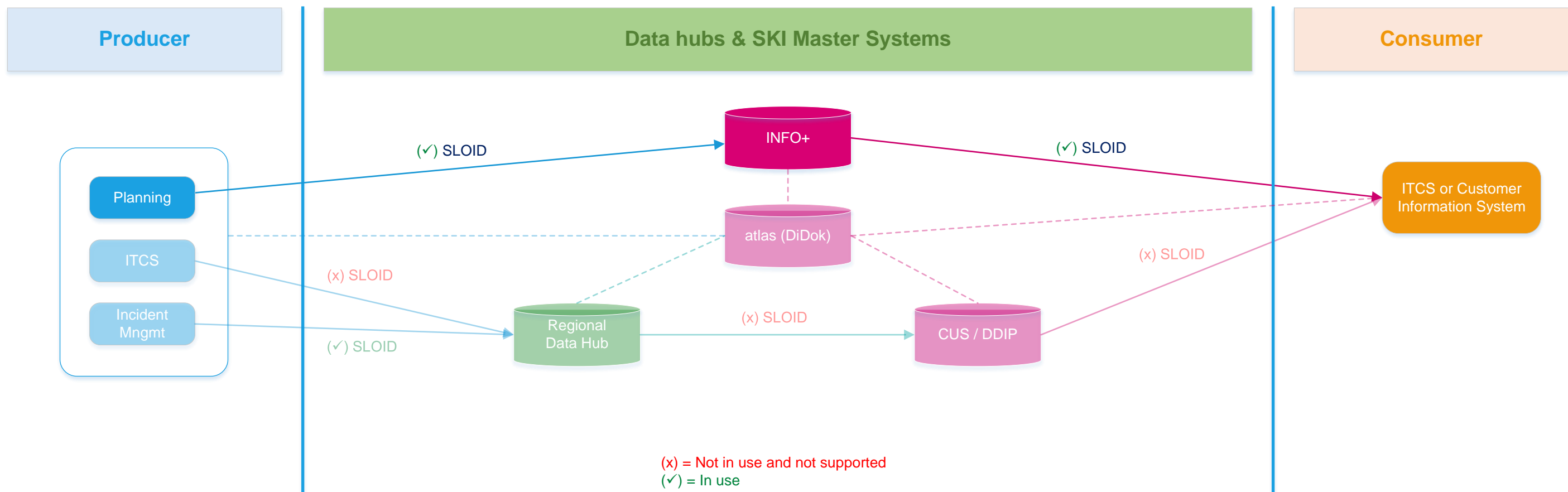| Before Migration	**Timetables**	Data Hubs	Migration	After Migration
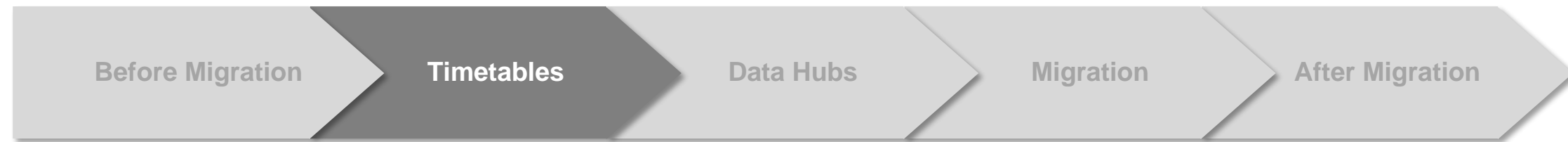
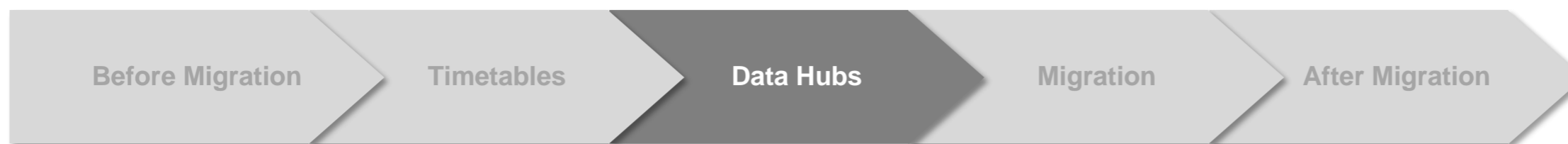## Implementation in the Yearly Timetable

Before an ITCS is allowed to exchange any SLOIDs over VDV453/454 interfaces, stop point mappings with SLOIDs must first be made available in the periodic timetable (see details below), i.e., provided to INFO+. Consequently, customer information systems are able to start implementing support for the new (but optional / backwards compatible) SLOID data that is gradually made available by the planning systems. SLOID mappings of stop points as part of the periodic timetable are already relevant for consuming systems that want to inform customers about the (wheelchair) accessibility at platform level. VDV736 / SIRI situation exchange will also benefit from a timely implementation in the periodic timetable, since SLOIDs are already being used to identify affected stops.

Producers of timetable data ensure that the SLOID is implemented in their planning systems as well as export interfaces (or processes) to INFO+ by the end of this phase. In particular section 7.9 of the HRDF realisation guide version 2.0.5 and stop point accurate GLEIS mappings with SLOIDs must be implemented. Note that the cleanup of stop point master data as described in the previous phase is absolutely essential for this step.

Starting in this phase, consumers of the HRDF timetable are able to implement support for the optional SLOID data, e.g. to accomplish platform accurate routing, better accessibility information or more efficient matching of VDV736 data. However, consuming systems do not have to adhere to the phases described here, but only to the overarching SKI roadmap.

Producer · **Data hubs & SKI Master Systems** · **Consumer**

Planning → (✓) SLOID → INFO+ → (✓) SLOID → ITCS or Customer Information System

ITCS — (x) SLOID

Incident Mngmt — (✓) SLOID → Regional Data Hub

atlas (DiDok)

Regional Data Hub → (x) SLOID → CUS / DDIP

(x) SLOID

(x) = Not in use and not supported
(✓) = In use

SLOID Migration Roadmap

Implementation in the VDV453/454 Data Exchange

By the end of this phase, CUS / DDIP and all other data hubs must be able to map SLOIDs contained in VDV453/454 data back to traditional ID formats, so that consuming systems can choose the date of their migration (within the next phase) themselves. Data producers and consuming systems may start implementing the SLOID with the goal to be ready sometime during the next phase for the actual migration. Organisational agreements between the participants of the pilot are worked out.

CUS / DDIP (in the role of a data hub) and all other VDV453/454 data hubs still exchange data with traditional ID formats while their implementation of the SLOID is finalized by the end of this phase. The following mapping rules must be observed:

- Any *HaltID* is forwarded unchanged if the mapping throws an error of the second kind as described in the box to the right. This is particularly relevant in case of border crossing journeys, where some or most of the stops are foreign, hence only have a BPUIC and typically <u>no</u> corresponding SLOID.

- Any *HaltID* referencing a stop point / platform must <u>never</u> be mapped to the corresponding stop place. In case of an error, e.g. due to missing master data, the data producer is informed (and responsible for the correction of any missing master data in atlas).

VDV453/454 poducers still provide data with the traditional ID formats (as long as data hubs are not ready yet) while some already start with the SLOID implementaion. Arrangements with pilot participants might be held. A poducer and its regional data hub may agree to already exchange SLOIDs in this phase (CUS excluded). During implementation the following points must be observed:

- The VDV453 data elements *AZBID* and *ASBID* must always reference the SLOID of a stop place (stop points / platforms are generally not supported; CUS for example will map a platform to the corresponding stop place).

- With *AZBID* and *ASBID* in a VDV453 subscription request, consuming systems specify for which stop places they want to receive updates. A stop place may only be subscribed to once at any given time, either via BPUIC or via SLOID. As soon as the consumer supports the latter and all participants have agreed on the time and scope, subscriptions can be migrated. During the actual migration (see next phase), each pair of participants directly exchanging data (e.g. ITCS and data hub or data hub and consumer in the graphic below) must coordinate with each other to prevent gaps in the subscriptions.

Consuming systems, particularly CUS in the role of a consumer, continue to work on their implementations or start in this or the next phase as they are the last stakeholders who have to support the SLOID and only adhere to the final deadline according to the SKI roadmap. In the graphic below, the connection between CUS / DDIP and any customer information systems is marked with (x), as no support is expected from the consuming systems by the end of this phase, even though CUS / DDIP or regional data hubs will already be able to provide SLOIDs. The following mapping rules must be observed:

VDV454

Vehicle type = train:

- Any *IstFahrt* is discarded if mapping of at least one *HaltID* throws an error as described in the box to the right. The responsible data producer is informed and revises the relevant atlas (DiDok) master data.

All other vehicle types:

- Any *SollFahrt* or *IstFahrt* is discarded if mapping of the *HaltID* of either origin or destination stop (i.e., first/last entry in the stop sequence) throws an error of the first kind as described in the box to the right. The responsible data producer is informed and revises the relevant DiDok master data.

- Additionally, CUS as a consumer of VDV454 data with vehicle type other than train will discard any *SollHalt* or *IstHalt* not corresponding to the origin or destination of the journey if mapping of the *HaltID* throws an error as described in the box to the right. All other (mappable) stops of the journey update are processed according to the usual rules specified in the realisation guide of Swiss public transport. In particular, journey updates with *Komplettfahrt* = true, which contain the complete stop sequence, are processed accordingly. It is configurable how many (*HaltID*) mapping errors a given journey is allowed to throw before it is discarded entirely.

- Any *HaltID* referencing a stop point / platform must <u>never</u> be mapped to the corresponding stop place. <u>Not</u> in case of an error <u>nor</u> in case the stop point is missing in the master data.
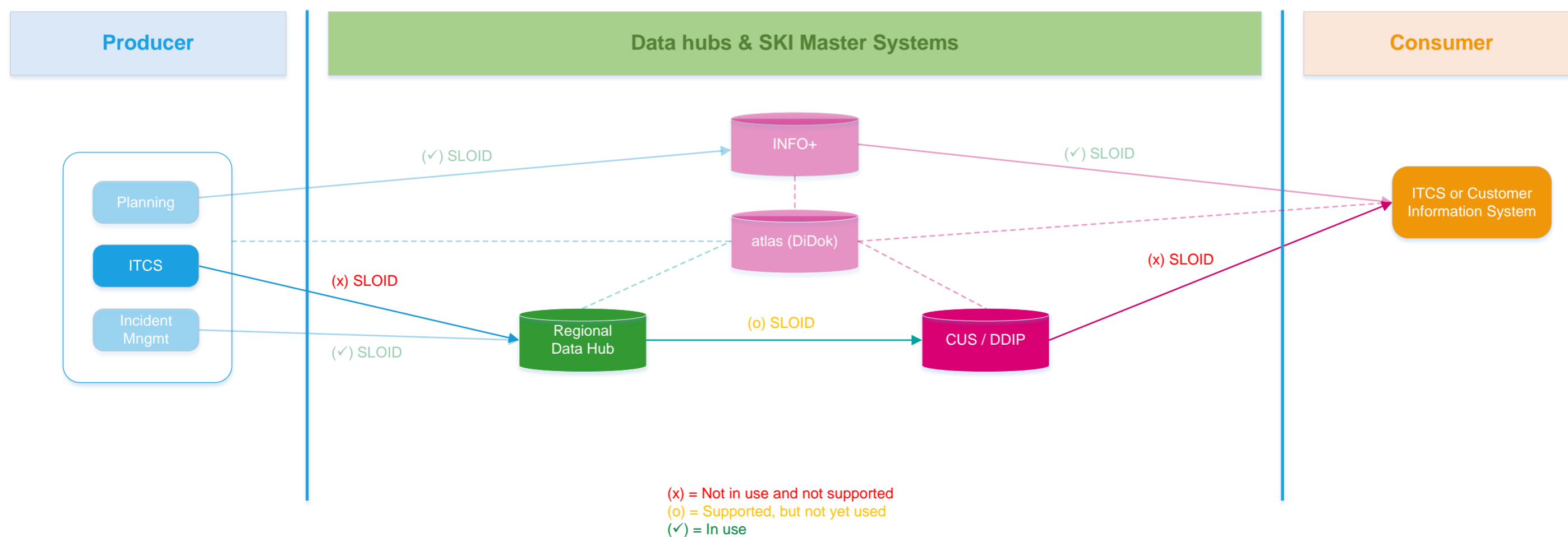
VDV453

- **Fahrplanlage* or **FahrtLoeschen* is always discarded. The responsible data producer is informed and revises the relevant atlas (DiDok) master data.
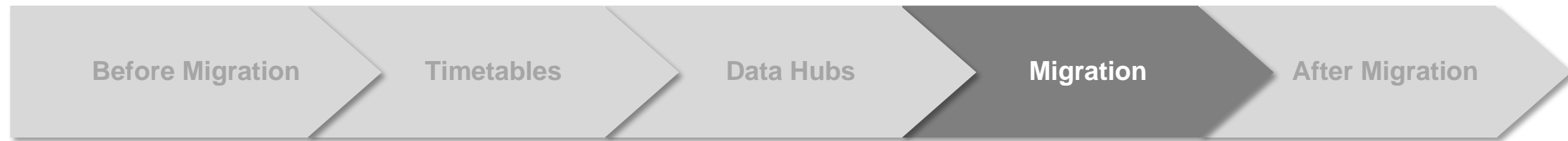
CUS will support the SLOID with the spring release 2025 (on integration environment in march), whereas DDIP is already able to map between SLOID and BPUIC. If possible/reasonable, migration projects are being planned and potentially already some system specific master data recorded or migrated.

> Two types of mapping errors are relevant:
> - The stop place or platform reference of an incoming *HaltID* <u>cannot</u> be found in the master data.
> - The stop place or platform reference of an incoming *HaltID* is found in the master data but <u>no</u> target value. Example: incoming platform SLOID must be mapped to the traditional 9-digit reference which cannot be constructed due to an incorrectly recorded or missing operational designation.

Producer	**Data hubs & SKI Master Systems**	**Consumer**

Planning · ITCS · Incident Mngmt → Regional Data Hub → CUS / DDIP → ITCS or Customer Information System

INFO+ — atlas (DiDok)

(✓) SLOID · (x) SLOID · (o) SLOID

(x) = Not in use and not supported
(o) = Supported, but not yet used
(✓) = In use

SLOID Migration Roadmap

Migration (starting in April of 2025)

After migration, stop place and stop point references are handled in the same way across all interfaces. As data hubs already support SLOID and the specified mapping functionality (see previous phase) at the start of this phase, both data producers and consumers are able to migrate as "smoothly" as possible.

From the perspective of a data hub, an outgoing VDV stream (according to the subscription of a consumer) typically depends on multiple incoming streams of different producers. VDV data is therefore mapped between traditional stop place or platform ID and SLOID format, bundled as well as forwarded according to the VDV subscriptions and possibly other criteria. A data hub will always provide (to a consumer)
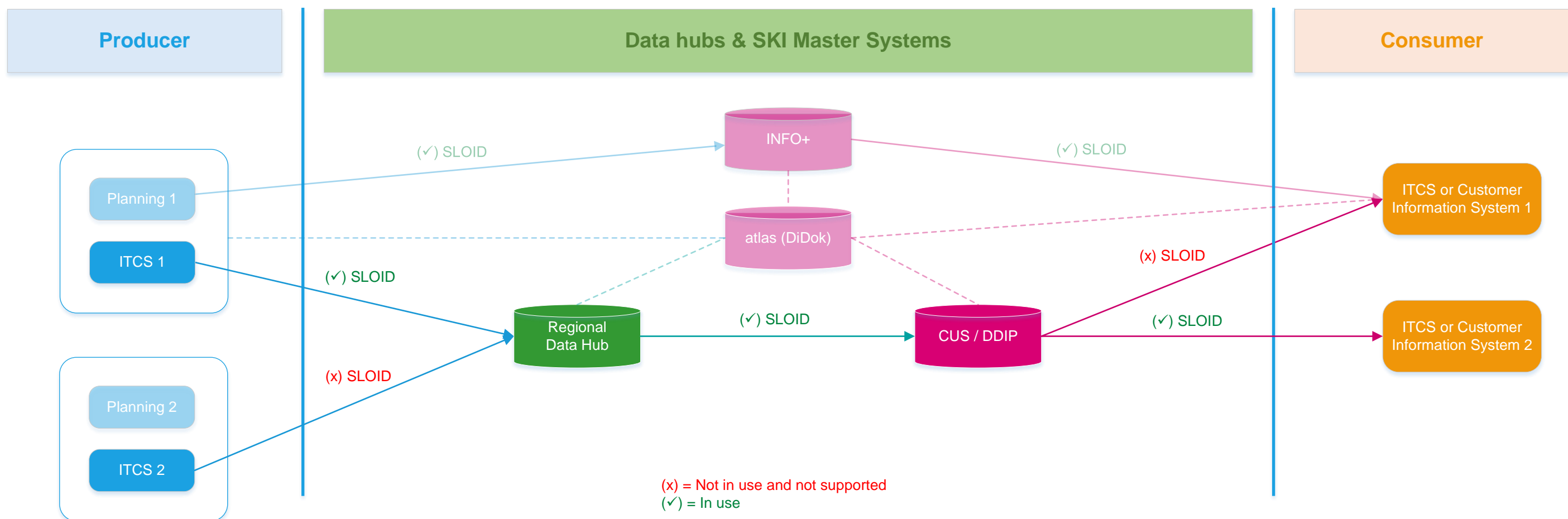
- VDV453 data with AZBID, ASBID and HaltID in the format requested by the consumer since subscriptions explicitly determine the ID format,
- VDV454 data by default in the traditional ID format, unless otherwise agreed upon. The consumer informs the data hub as soon as data with SLOIDs may be provided.

Data producers migrate at the earliest when their «direct» consumer (typically a data hub) supports SLOIDs. The VDV453 subscriptions are updated accordingly as well as the necessary master data.
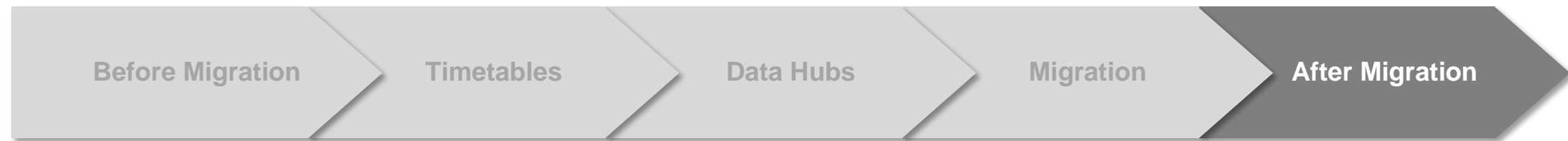
Consumers receive data according to their subscriptions and other criteria (e.g. agreements between the participants), or in other words as requested. They decide when to migrate (as long as it takes place before the final deadline of the SKI roadmap).

The graphic below illustrates the following szenario:

- At a certain point in time during this phase, data producer ITCS1 finishes implementation of the SLOID and therefore informs its regional data hub.
- Both participants agree on how exactly and when the migration takes place.
- The data hub updates/migrates any relevant master data, particularly its VDV453 subscriptions (within the agreed scope), so that the requested *AZBID*s and *ASBID*s reference SLOIDs.
- Producer ITCS1 migrates its VDV data streams accordingly, hence the connection with regional data hub now is marked with (✓).
- A data hub usually bundles other VDV streams (from ITCS2 in this example) when forwarding them to CUS / DDIP or end consumers. In such cases, the data hub must ensure that the VDV453 data stream aggregated from multiple sources has the same ID format throughout, namely the one explicitly requested in the subscriptions.
- In accordance with section 4.5 of the VDV453 realisation guide of Swiss public transport, the VDV454 data stream is generally forwarded untouched to other data hubs or CUS / DDIP, unless otherwise agreed.
- End consumers, or more specifically customer information systems, on the other hand, receive VDV454 data by default in the traditional format, unless otherwise agreed.
- In the example here, ITCS1 already uses SLOIDs, whereas ITCS2 still uses BPUIC. In order to ensure that the bundled data stream to customer information system 1, which doesn't yet support SLOIDs, only contains IDs in the traditional format, CUS / DDIP (or some regional data hub) has to alter the data of ITCS1 (instead of forwarding as is).

(x) = Not in use and not supported
(✓) = In use

SLOID Migration Roadmap

Before Migration → Timetables → Data Hubs → Migration → **After Migration**

Target State

All systems have migrated, hence traditional ID formats are no longer exchanged for stops with the respective country code, particularly CH. Consumers have activated matching based on SLOID and, for example, disable/remove traditional processing of platform references etc.

In all relevant data interfaces (timetable / VDV453/454 / VDV736), a stop place or platform is either identified by the:

- GlobalID (which is equal to the SLOID in case of country code [85, 11, 12, 13, 14]).
- BPUIC otherwise (only allowed for stop places, not platforms).

There are three options for foreign stop places and platforms:

- If the foreign organisation provides globally unique IDs that fullfill the requirements of Swiss public transport (see for example the German DHID), these foreign IDs are recorded as GlobalID in atlas (DiDok). However, note that participants might nonetheless agree to keep using BPUICs in the VDV data exchange as long as a migration to the foreign IDs does not improve customer information.
- Foreign train stations without local ID implementations are identified by their well established 7-digit UIC code, which is recorded as «Didok-Code» (GUI) and «number» (DB/exports) in atlas (DiDok).
- Non-train stop places and platforms with country code [11, 12, 13, 14] and no foreign ID obtain a SLOID.

The implementation sovereignty for the designation of foreign stop places and platforms lies with SKI.

Producer	Data hubs & SKI Master Systems	Consumer

(✓) SLOID

INFO+

(✓) SLOID

Planning 1

ITCS 1

(✓) SLOID

atlas (DiDok)

ITCS or Customer Information System 1

(✓) SLOID

Regional Data Hub

(✓) SLOID

CUS / DDIP

(✓) SLOID

(✓) SLOID

Planning 2

ITCS 2

ITCS or Customer Information System 2

(x) = Not in use and not supported
(✓) = In use