



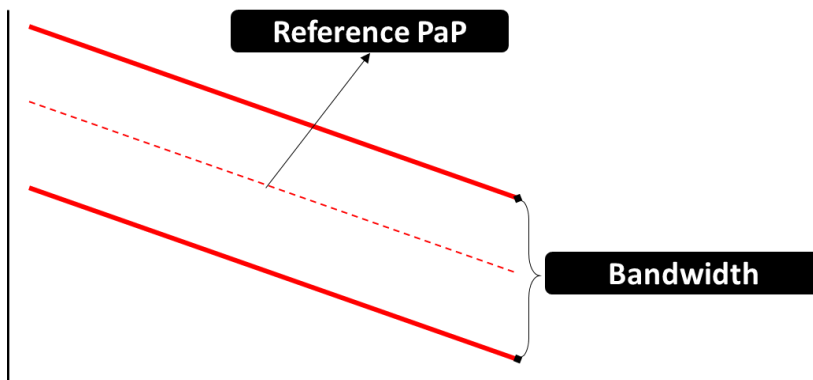
**PaP Product Definition:
Functional Requirements**

Draft version V 0.4

1 Introduction

After a complete revision of the PaP product in 2016 it is necessary to describe the functional requirements of the PaP in its new form. The PaP Product Definition group defined the PaP as guaranteed capacity with only a certain set of attributes to support applicants when requesting capacities.

2 General description of the new PaP

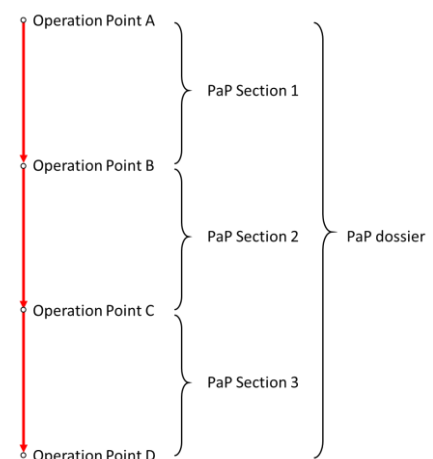


The PaP has been newly defined to reflect a specific number of available paths with certain attributes. It allows applicants to enter additional requirements within the defined thresholds and IMs to construct paths according to the detected needs in the path elaboration phase.

The new PaP will be built in two layers:

- **Bandwidths:** The time limits (earliest to latest moment) in which a certain number of paths are available – but no less than one. The bandwidth can be linear or non-linear.
- **Reference PaPs:** Pre-arranged paths with specific times to indicate a standard path within a timeband (e.g. for publication).

The design of each PaP dossier is up to the IMs and C-OSS involved and should reflect market requirements. It can encompass none to several borders (please also take note of the “single border point approach” within the “Empty Envelope Concept”). Each PaP contains at least two operation points. The line between two operation points is called “PaP section”.



At publication of the PaPs (X-11) the following information has to be available:

- Reference PaP
- Bandwidth (at all published operation points)
- Number of available PaPs per bandwidth

2.1 Technical flexibility of the PaP

When creating the PaP the thresholds of all flexible attributes have to be defined. The C-OSS coordinates these efforts between the IMs and shall ensure that the PaPs have harmonized attributes.

- **Geographic flexibility**
Operation points can be added or removed to specific rules. The PaP is designed to meet the market requirements. Therefore, the main axis should not be changed by the

RUs/Applicants. However, it should be possible to reduce the PaPs on certain lines to allow RUs/Applicants to connect to the RFCs from an origin and to leave the RFC to a destination (Feeder/Outflow).

In order to allow this flexibility the definition of the geographic flexibility can be summarized as follows:

- The IMs in consultation with the C-OSS decide on each operation point if it can be removed or not (protected operation point). This principle should be also used for border points, on which the IMs concerned should agree on a common approach.

It is also necessary for RUs/Applicants to be able to add operation points between the operation points provided in the reference PaP in order to fulfil commercial (e.g. loading/unloading) or organizational (e.g. loco driver changes) needs. For functional reasons, every additional operation point before the first PaP operation point is part of the feeder path and every additional operation point after the last PaP operation point is part of the outflow path.

- **Flexibility with times**

The reasons for defining the bandwidths is to guarantee capacity within certain limits in the pre-booking phase.

- The maximum/minimum time of each reference PaP in each operation point has to be defined before publication of the PaP ("bandwidth"). The bandwidth can be different in each operation point. PCS has to prevent that the times requested by the RU/Applicant exceed the defined bandwidths. C-OSS have to keep the bandwidths in the pre-booking phase. IMs shall be able to provide an offer outside of the bandwidth as provided in the published PaPs if required.

- **Flexibility of parameters**

Each operation point contains a set of path parameters. Some of which can be subject of calculation (train speed, train length, train weight). Those parameters should be fixed with minimum or maximum parameters.

- All parameters which can be calculated shall be defined at each operation point within the reference PaP with minimum and maximum thresholds. The IMs together with the C-OSS define for all parameters in each operation point between the following two options:
 - If RUs/Applicants and C-OSS exceed maximum values or to fall below minimum values PCS should block the promotion of the dossier.
 - If RUs/Applicants and C-OSS exceed maximum values or to fall below minimum values PCS should warn the user of possible negative effects on the timetable and allocation. The dossier promotion shall not be blocked.
- Other parameters which do not consist of values to be calculated can be changed with PCS providing an information that the C-OSS will check for feasibility with the new parameters.

2.2 Possible approach

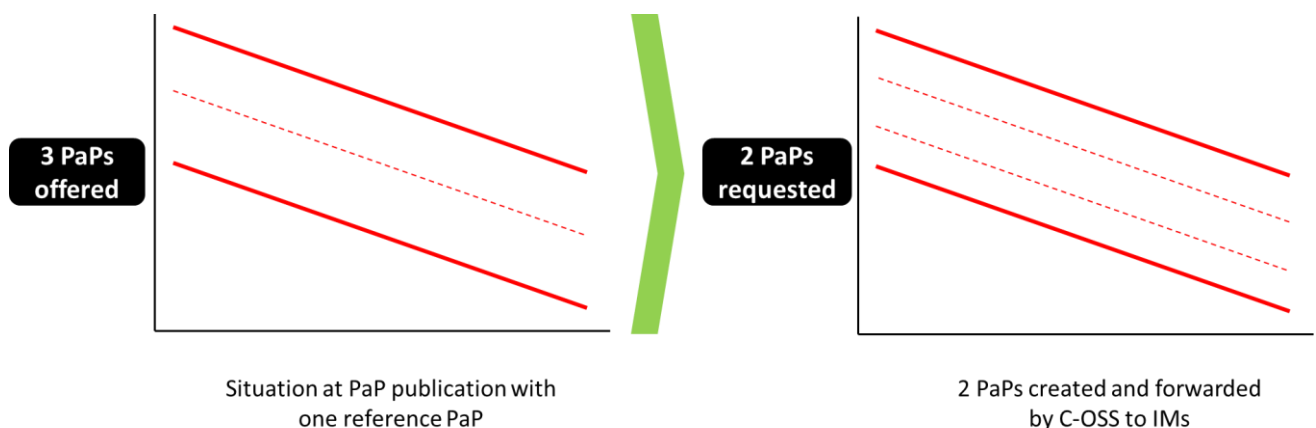
In the new PaP product definition is required to provide bandwidths in which a certain number of PaPs can be requested. PCS must support C-OSS in detecting the number of requested PaPs within the bandwidth and compare it to the number of PaPs available in the PaP dossier. It has to be ensured that:

- each PaP section
- on each operation day
- can only be pre-booked as often as defined before publication.

The critical point in the process is the pre-booking phase, in which the total number of requests per reference PaP is clear, alternative offers have to be provided and the consistency of the complete requests have to be checked.

To achieve the transfer from the reference PaP to the complete request, an intermediate step has to be applied which creates a duplication of the PaP into the final Dossier. Note: This function should be similar to the current creation of alternative offer function. Before this transfer can be done, the C-OSS has to be clear about the number of bookings compared to the requests. For that, an overview with a reference to the concerned dossiers has to be available. If there are more requests than paths available, the system considers this a conflict. The following cases have to be covered:

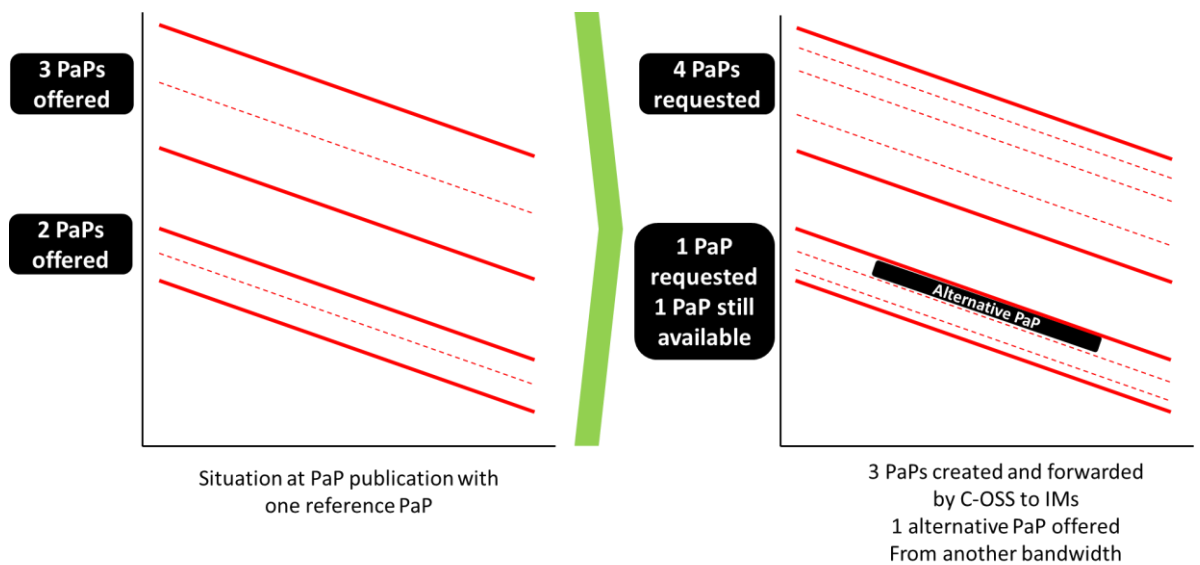
- The number of requests is lower or equals the number of available paths:



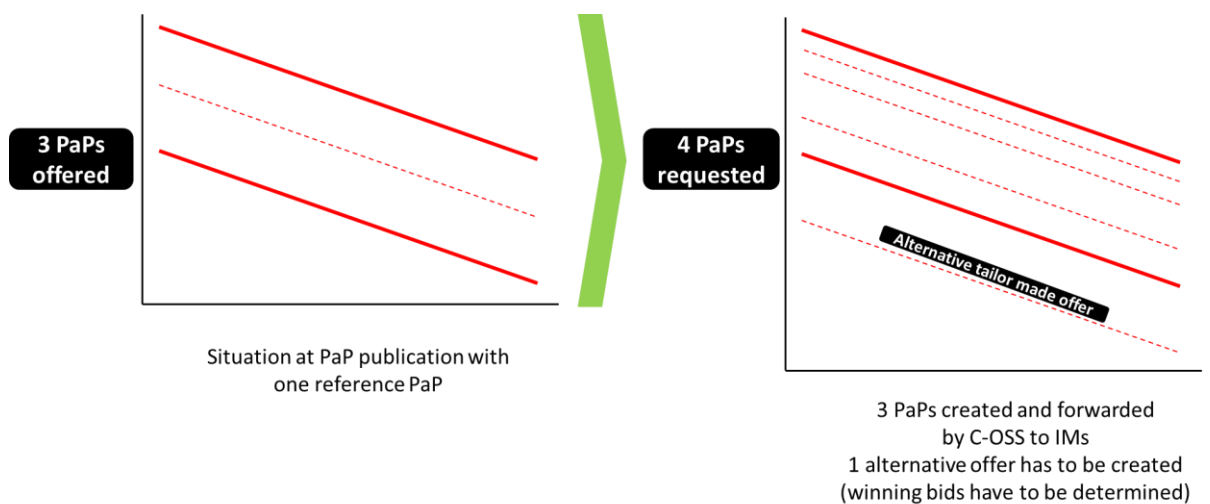
- The number of requests is higher than the number of available paths:

The calculation of the winning bids is done in accordance to the respective guidelines. The other bids can be tackled with two alternatives:

- An alternative PaP from another bandwidth if such PaPs are still available



- A tailor-made alternative.



In both cases, the C-OSS should be able to consult the requesting RU/Applicant to clarify whether the proposed offer/alternative offer fits to the requirements.

2.3 Other issues to be solved

There is a number of related issues which have to be covered with the technical definition:

- Midnight changes: If several PaPs are being requested within one bandwidth around midnight it is necessary that the system does not consider two requests for the same day (shortly after and shortly before midnight) as conflicting request
- The import sheet has to be adapted accordingly.

3 PCS change requests referring to the PaP Product Definition

There are several PCS change requests dealing with overlapping subjects of the PaP product definition. As of 23 May 2017 these are:

CR ID	Name of the CR
1039	New parameter "Maximum Running Time"
1066	Status classification of Flex PaP operation points
1070	Limitation of operation point list on Flex PaP Sections
1076	Possibility to add locations marked as Flex-PaP (blue stripe)
1087	OSS TT view
1102	LOCATION SEARCH FEATURE TO SEARCH FOR PAPS OR CATALOGUE PATH
1197	RFC dossier indicator
1216	PaP-ID in IM-TT
1217	Result PaP-Allocation
1232	RFC Traffic Light
1251	RFC PRODUCTS DEFINITION AND VISUALISATION
1279	Remove intermediate location in flex PaP segment.
1283	remove more points from timetable in one step
1290	Remove border points from flex PaP sections.