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Deliverable 6.1

ADAPT

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ADAPT

ADVANCED PREDICTION MODELS FOR FLEXIBLE TRAJECTORY-BASED OPERATIONS

This deliverable is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 783264 under European Union's Horizon 2020 research and innovation programme.



Abstract

This deliverable presents the dissemination and communication activities carried out during the first year of the ADAPT project. Furthermore, it includes the results of the first set of the stakeholders' interviews.

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Executive summary

The scope of ADAPT is to propose a set of methods and tools (a solution) at the strategic and/or pre-tactical level of network management that is conducive to the trajectory-based operations, which clearly demonstrates the flexibility, information exchange responsibilities, and benefits for all the stakeholders. The aim of the ADAPT project is to adapt, create and test models and metrics that enable **strategic planning** (early information sharing), by providing the information on **flight flexibility** and **network hotspots**, which can eventually be integrated into the Network Operations Plan (NOP) and serve as a basis for stakeholder collaboration.

ADAPT represents a highly technical and specific project potentially involving all the aviation community as it advocates early information sharing among all the stakeholders as one of its main enablers. It is crucial, for these reasons, to efficiently communicate the goals, approach and results of the project to a wide range of people.

The dissemination and communication activities in the first part of the project are the basis for an effective circulation of the core concepts of the project and its results once they are sufficiently mature.

The first round of interviews with the advisory board members was used to elicit a preliminary set of user needs, convey a more mature picture of the ADAPT solution and understand the main challenges faced by ANSPs regarding the strategic planning.

Next steps involve the dissemination of the latest results coming from the technical work packages both in the scientific community and for the general audience, continuing with the stakeholders' interviews and their involvement, increasing social media activity especially on LinkedIn.

1 Introduction

According to the communication and dissemination plan (please refer to the ADAPT PMP document [1], section 7), the main communication goals are to:

1. Raise awareness, by impacting on the target audience to feed and increase awareness in the project. The main effort is devoted to make the project known, and spread information about the objectives and scope;
2. Generate understanding by conveying specific messages to the target audience will be constant during the two years of the project;
3. Deliver key messages to key decision makers so that the developed methods and tools have an impact on policies or practices;
4. Promote and support the organisation of cross fertilization exchanges with other projects to create and feed synergies with other co-funded projects, whose research questions, solutions and processes could be shared to improve the quality of the SESAR and European R&D.

During the first year of activities of the project the communication and dissemination focus was put on:

- Definition of a shared and recognizable visual identity to be used on social media activities, website, scientific dissemination
- Communicating the core concepts in understandable ways for the general public
- Exploit the social profiles of other research projects related to ADAPT to reach a high number of people
- Clearly convey the project objectives describing the problems that are tackled by the project and how they impact the people's life
- Provide visibility of the project progress

2 ADAPT Visual Identity

The project visual identity set a basic framework for the subsequent communication and dissemination initiatives. The main output of this visual identity definition are the project logo (in the different version for the several media) and the colours' palette to be used in the project material.

The ADAPT logo was selected during the kick-off meeting among a set of 5 different proposals coming from 2 logo concepts.

Concept 1 – Airspace & sectors

The concept is focused on the abstract visualization of airspace sectors, represented as polygons of different shades of blue. As it happens in the actual airspace, sectors are depicted as continuous spaces, the sum of which composes an entire covered space. The logo has been designed in two different versions, a flat version, which recalls a “from top” view, and an isometric version which recalls a “three-dimensional” yet simplified representation of an airspace. The iconic airplane element, is aimed at further strengthening the link to the aviation and air traffic control domain

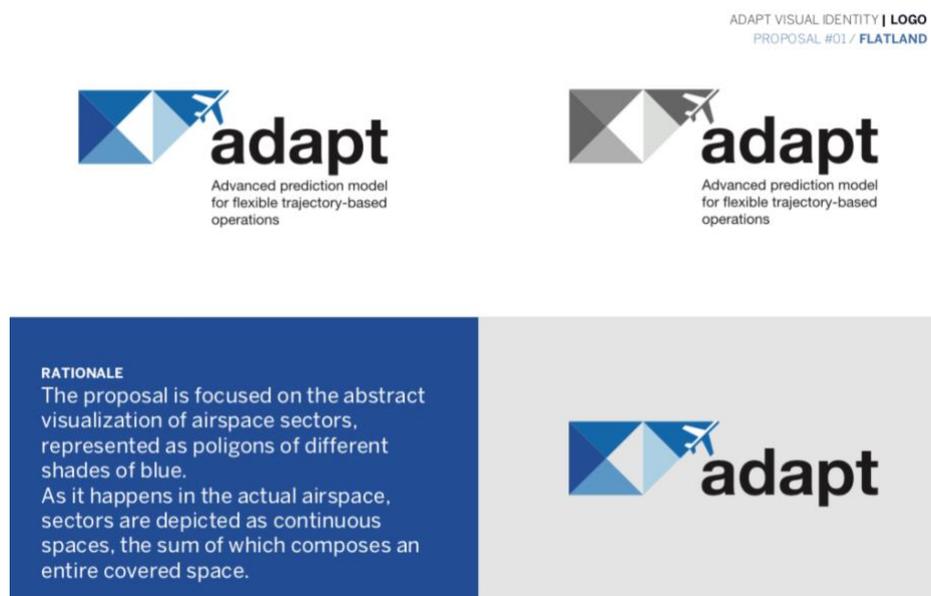


Figure 1 - Proposal 1 Flatland

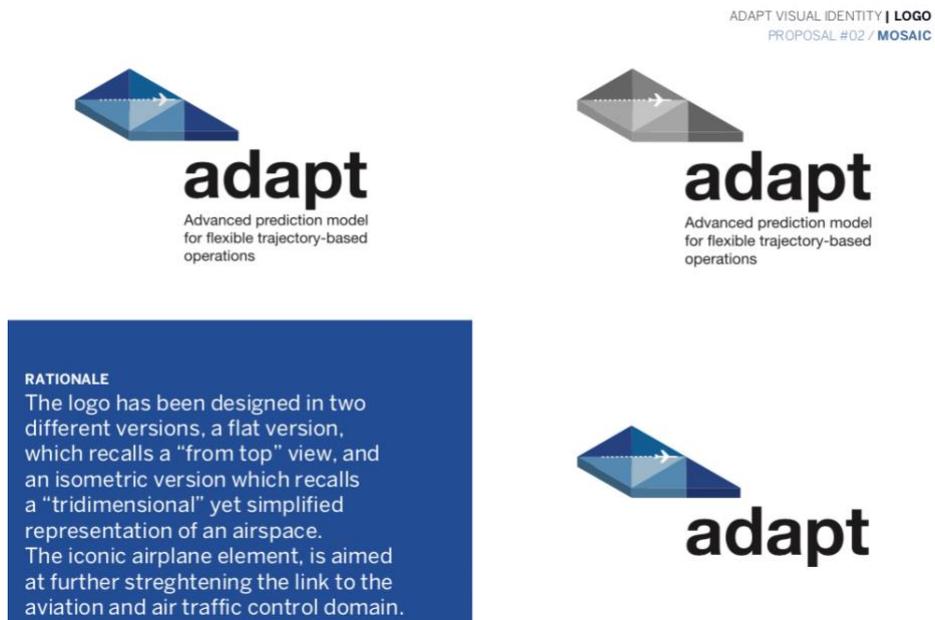


Figure 2 - Proposal 2 Mosaic

Concept 2 – Flexibility & Trajectories

The proposal is focused on the concepts of complexity and flexibility applied to a trajectory-based system. The proposal has been developed according to slightly different perspectives, unified by the visualization of multiple paths recalling the flexibility allowed by the ADAPT model in managing high volumes of traffic.

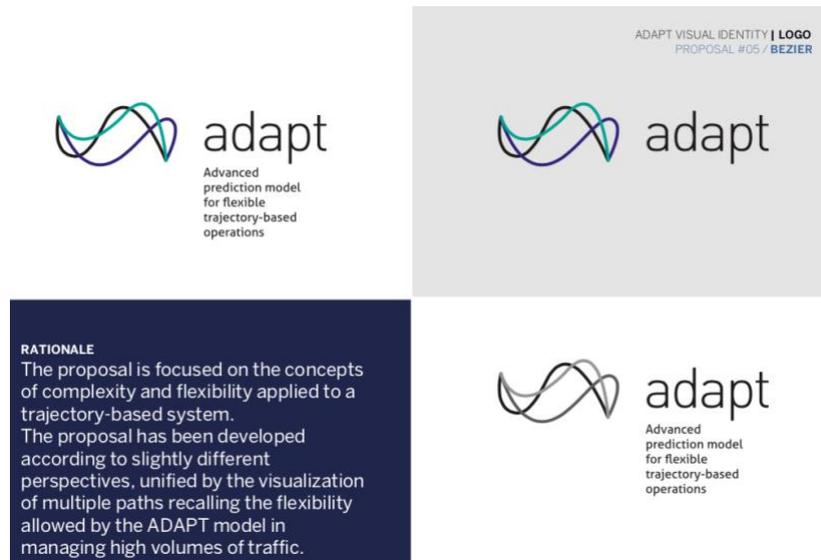


Figure 3 - Proposal 3 Bezier

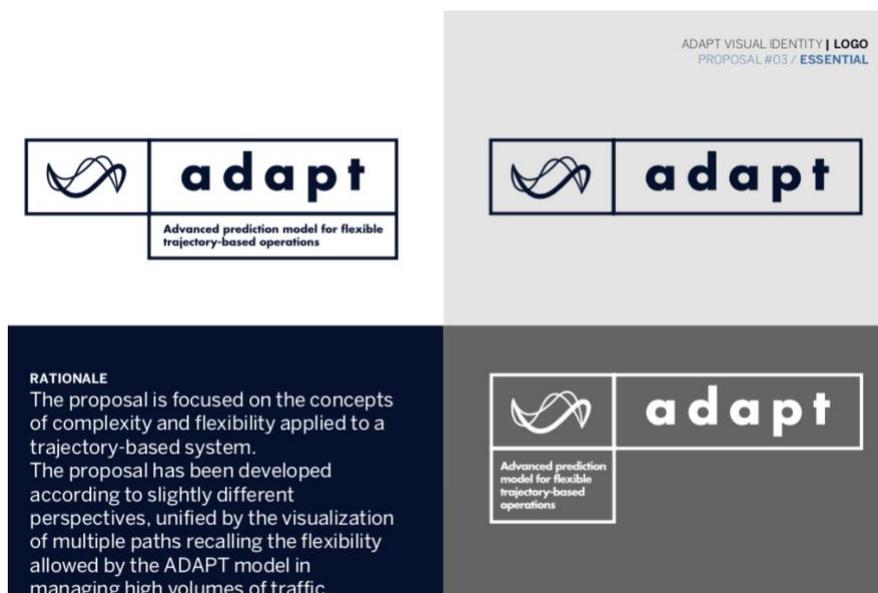


Figure 4 - Proposal 4 Essential

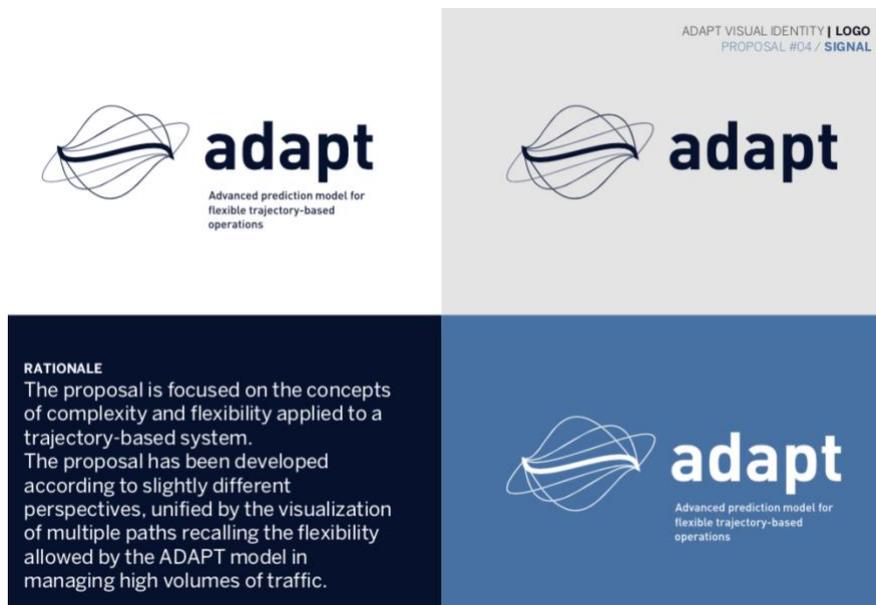


Figure 5 - Proposal 5 Signal

The most voted proposal by the project members was proposal 5 named “Signal”, therefore the following is the ADAPT logo used in the dissemination and communication activities.



Figure 6. ADAPT logo.

3 Communication towards general public

The main goals of the communication towards the general public is to raise awareness about the project goals, to explain in easy terms the possible impact of ADAPT solution on the part of the work flows of various stakeholders. Furthermore, it aims at functioning as a junction between the more basic concepts and the technical side of the project.

This chapter describes the main channels of this part of communication activities and their results. These channels are also used for disseminating more technical content and boosting the relationships between “friend” projects.

3.1 ADAPT Project Website

The ADAPT website has been published on August the 23rd 2018 at the following web address <https://adapt-h2020.eu/>

The website structure can be described as following:

- Home Page: aims at conveying the main topics of the project by presenting in the same place the main activities of ADAPT in a carousel of four simple slides containing a brief description and a visual element that recalls that specific activity. Furthermore, each activity description is linked to a short insight for a more detailed textual description in a dedicated page. In the second part of the page, the list of the most interesting articles is shown, while in the right part the social activity of the twitter profile is shown
- Overview Section: this section contains the link to the following pages:
 - o Goals
 - o Work Structure
 - o Consortium
 - o Advisory Board
- Outcomes Section: this section contains the links to the following page:s
 - o Deliverables
 - o Resources
- Insight & Events Page: contains short articles related to project activities, similar topics of interest for ADAPT and information about events organised by the consortium. Such articles can target different audiences, and therefore they can be related to technical details or basic explanations for general public.

- Contacts: the contact page containing the web form to reach the project coordinator and dissemination manager

Figure 7 and Figure 8 below show the screenshots of the home page and the ADAPT Goals page.

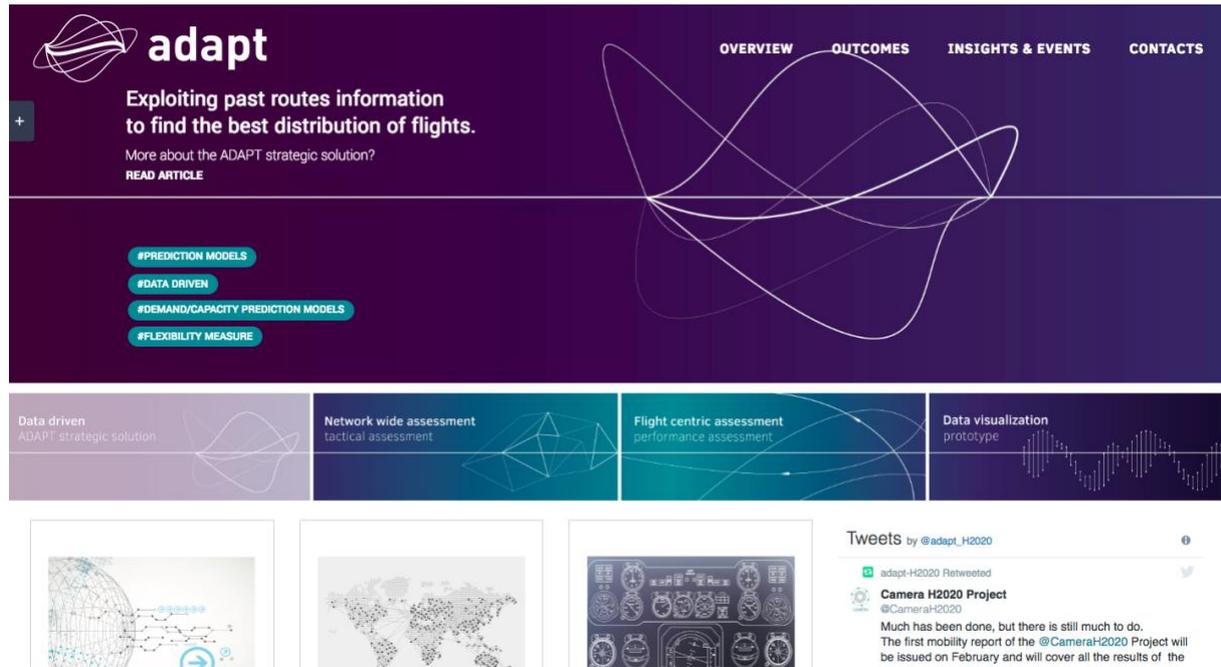


Figure 7 - ADAPT Home Page screenshot

adapt OVERVIEW OUTCOMES INSIGHTS & EVENTS CONTACTS

Our main goal is to enable a better strategic planning that includes a measure of flexibility for the airspace users

A data driven approach to strategic planning
ADAPT develops strategic and tactical models to predict volume, flexibility and complexity of traffic demand across Europe using a data driven approach.

Network wide and flight centric assessment
ADAPT aims at develop data driven models for predicting, at strategic horizons, the traffic demand across Europe. We will assess the models both from a network and from a flight centric perspective.

From complex results to meaningful visualization
By constantly involving the stakeholders we will explore the real operational benefits. The results of our models will be conveyed in the most meaningful way to our users and an ADAPT demo will be developed for the end of the project.

Figure 8 - ADAPT Goals Page screenshot

3.1.1 ADAPT Project Website Analytics

This section shows the information regarding ADAPT website visits in the period from September 2018 to 31st of December 2018. The data has been collected through the Google Analytics Tool¹.

The charts in Figure 9 show the total number of users during the 4 months with the trend of the visits along with the indicators regarding the sessions and the page views. The peak of the activity is located in the months of November and December close to the SESAR Innovation Days participation.

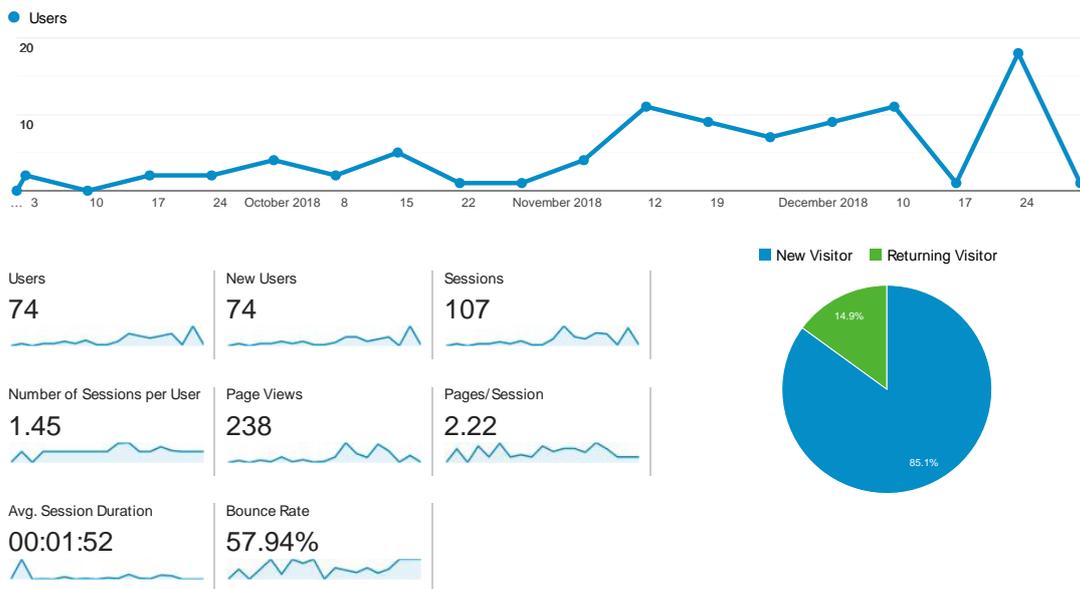


Figure 9 - ADAPT Website visits trends

Figure 10 and Table 1 instead show the geographical location of the users with 6 EU countries in the top ten list.

¹ <https://analytics.google.com/>

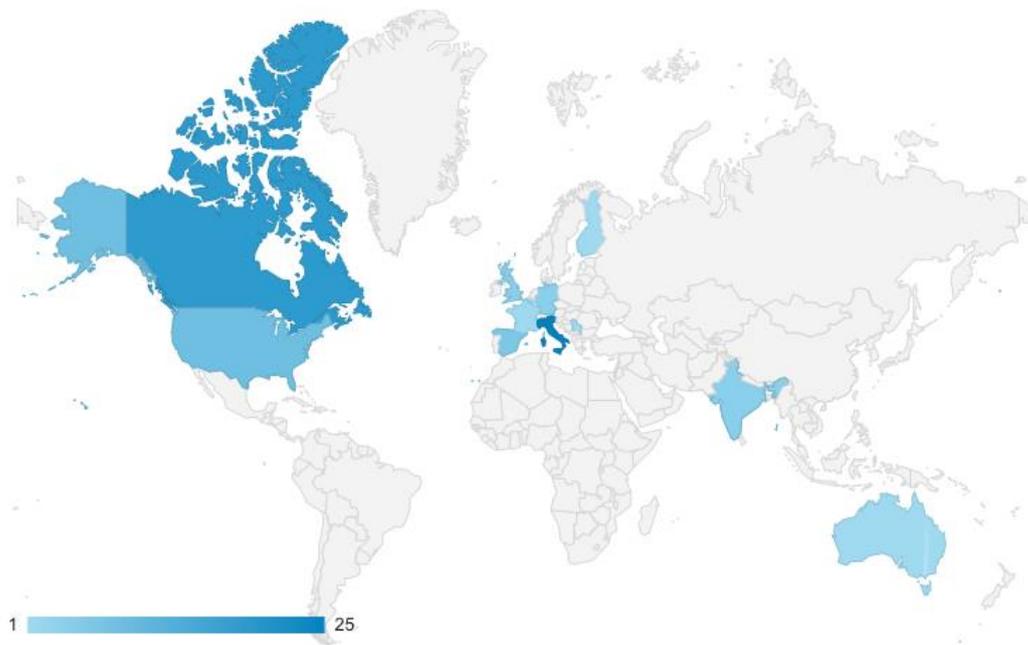


Figure 10 - ADAPT Website visits by country

Table 1 - ADAPT Website visits by country

Country ?	Acquisition		
	Users ? ↓	New Users ?	Sessions ?
	74 % of Total: 100.00% (74)	74 % of Total: 100.00% (74)	107 % of Total: 100.00% (107)
1. 🇮🇹 Italy	25 (33.33%)	25 (33.78%)	54 (50.47%)
2. 🇨🇦 Canada	18 (24.00%)	18 (24.32%)	18 (16.82%)
3. 🇺🇸 United States	8 (10.67%)	8 (10.81%)	8 (7.48%)
4. 🇪🇸 Spain	6 (8.00%)	6 (8.11%)	6 (5.61%)
5. 🇩🇪 Germany	4 (5.33%)	3 (4.05%)	4 (3.74%)
6. 🇬🇧 United Kingdom	4 (5.33%)	4 (5.41%)	4 (3.74%)
7. 🇮🇳 India	4 (5.33%)	4 (5.41%)	6 (5.61%)
8. 🇧🇪 Belgium	2 (2.67%)	2 (2.70%)	3 (2.80%)
9. 🇦🇺 Australia	1 (1.33%)	1 (1.35%)	1 (0.93%)
10. 🇫🇮 Finland	1 (1.33%)	1 (1.35%)	1 (0.93%)

Google Analytics also provides figures of the traffic sources in order to understand in which way the users landed on the website. Three categories are shown in the charts in Figure 11, namely “Direct”, “Organic Search” and “Social”.

- **Direct:** direct accesses happen when users enter the website URL directly in their browsers or when they use a bookmarked link
- **Organic Search:** accesses belong to this category when the user arrived to the website through one of the “default”² search engines.
- **Social:** social accesses happen when users landed on the website by using a link published in the social networks (e.g. LinkedIn, Twitter, Facebook etc.).



	Acquisition			Behaviour		
	Users	New Users	Sessions	Bounce Rate	Pages/Ses...	Avg. Session Duration
	74	74	107	57.94%	2.22	00:01:52
1 Direct	54			67.44%		
2 Organic Search	11			27.27%		
3 Social	10			10.00%		

Figure 11 - ADAPT Website Top Channels

The results show a clear prevalence of the direct accesses with more than 70% of the traffic. Social and Organic search accesses present similar figures with 13.3% and 14.7% respectively.

² The list of the default search engines is published at the following address <https://support.google.com/analytics/answer/2795821?hl=en>

3.2 Social Media Profiles

Profiles on social media are necessary to reach a high number of people, show project progresses in non-formal ways and raise awareness about of general audience and potential stakeholders. ADAPT opened two account: one on LinkedIn³, mainly devoted to reach stakeholders, organisation and practitioners in the aviation domain, and one on Twitter⁴ to reach a broader and more general audience.

Most of the social media activity was carried on during the months of November and December 2018 for both LinkedIn and Twitter when the SESAR Innovation Days 2018 were approaching and the project progresses were more tangible and sufficiently mature to be communicated. The Twitter profile also had a peak of activity on the months of April and May 2018.

The audience reached by through Twitter and LinkedIn is summarized in the following section.

3.2.1 Social Media Profiles Analytics

This section presents the results regarding the audience reached through the ADAPT social media profiles of Twitter and LinkedIn.

The Twitter profile of the ADAPT project was created in April 2018 and since that moment it collected 73 followers posting 99 times. Figure 12 shows the home page of the twitter profile containing the main figures about the activity.

The Twitter profile activity can be analysed through the Twitter Analytics tool. As mentioned before, the social media activity of the ADAPT project focused mainly on April/May when the Twitter account was opened and on November/December around the SID2018 event.

Figure 13 shows the trend over the time of the number of impressions earned through the twitter posts during the months of November and December. By “Impression” Twitter means that the “tweet” posted has been visualized in the tweet feed of a person, while “Engagements” are events related to the active interaction with the content, e.g. likes, retweets, clicks on an image/link contained in the tweet.

The content posted by ADAPT profile reached more than 11 thousands people on Twitter and the two top tweets were the one regarding the SESAR Innovation Days 2018 with 4085 and 2720 impressions.

³ <https://www.linkedin.com/in/adapt-project-56227816b/>

⁴ https://twitter.com/adapt_H2020



Figure 12 - Twitter Profile of the ADAPT Project

Your Tweets earned **11.6K impressions** over this **61 day period**

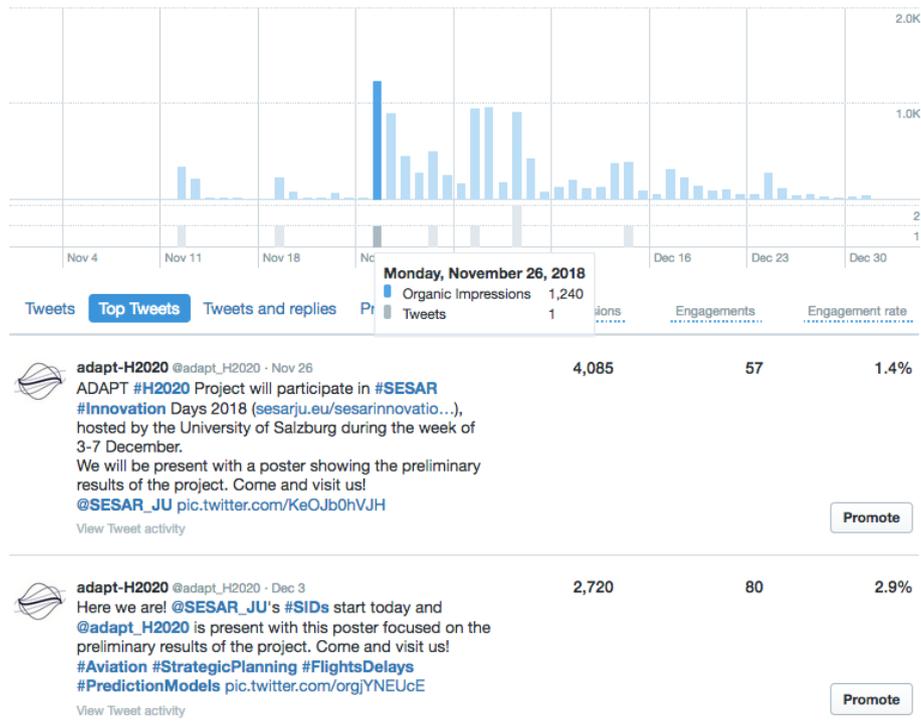
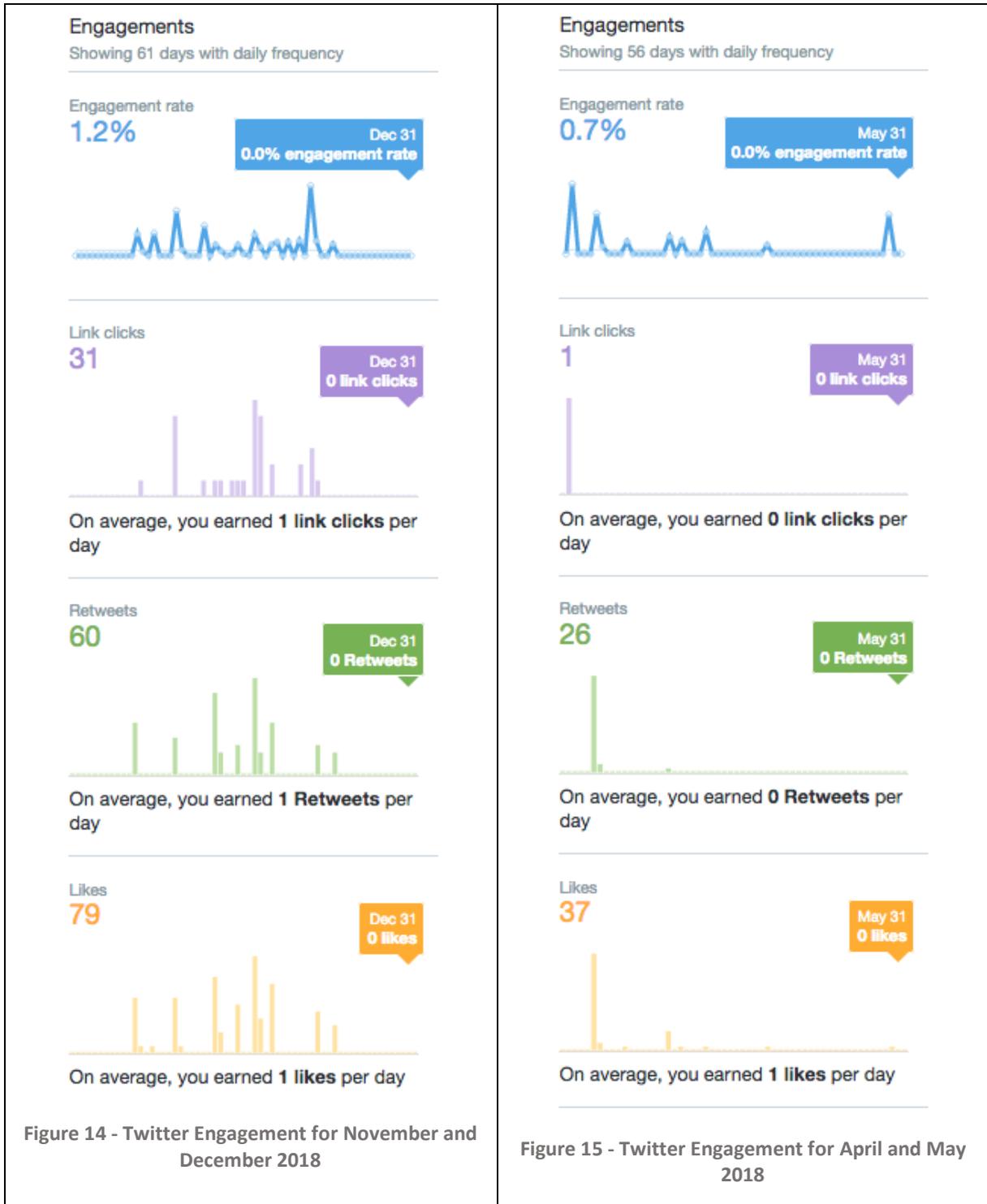


Figure 13 - Twitter Analytics of ADAPT Profile for November and December 2018

Figure 14 and Figure 15 below show the engagement trend in the two periods of activity, namely on November/December and April/May 2018.



LinkedIn does not provide global analytics of the activity when using a free account. However, statistics are available for the single contents posted on the social network. Since its opening at the end of August 2018, the social profile of ADAPT on LinkedIn posted 6 times, including two LinkedIn articles gathering 120 followers mainly in the European aviation domain. Even on LinkedIn the post with the highest number of views is related to the SESAR Innovation Days participation (283 views, 9 likes, 2 re-shares). Figure 16 shows a more detailed view of the audience categories reached with this post.

The complete activity of the ADAPT Project profile on LinkedIn is published at this page <https://www.linkedin.com/in/adapt-project-56227816b/detail/recent-activity/shares/>



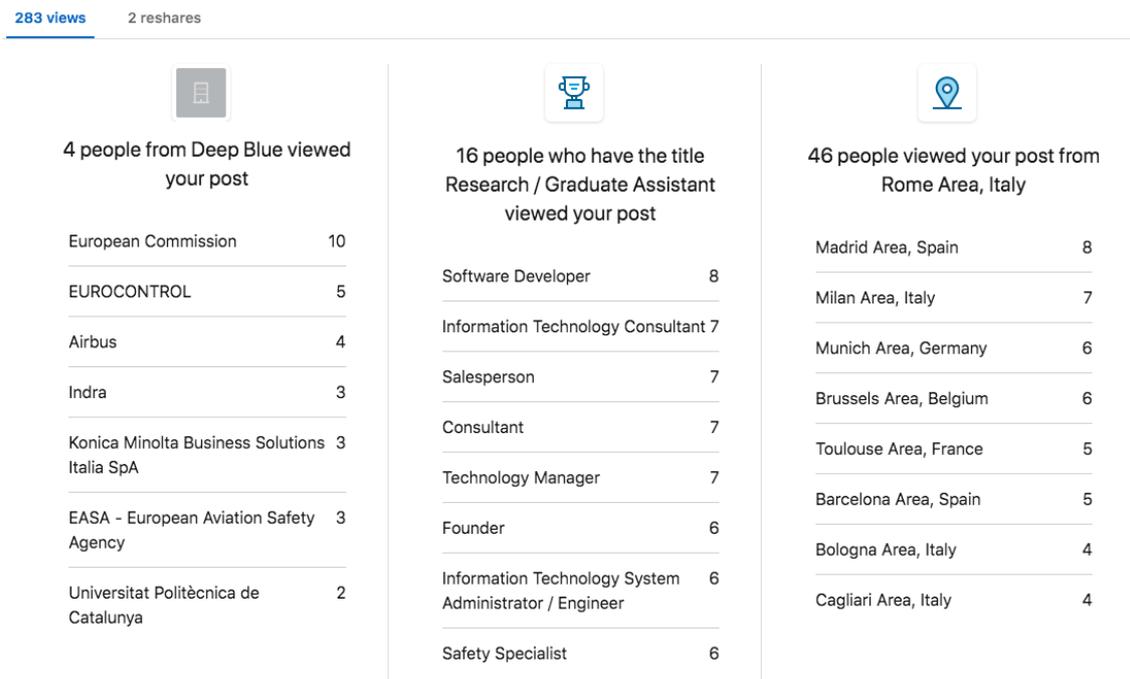


Figure 16 - SID2018 LinkedIn Post details

The second most efficient post in terms of visualization was related to the ADAPT main goals: this post reached 267 people with very similar composition in terms of audience category (aviation related organisations, safety and technology experts).



Figure 17 - LinkedIn ADAPT main goals post

267 views

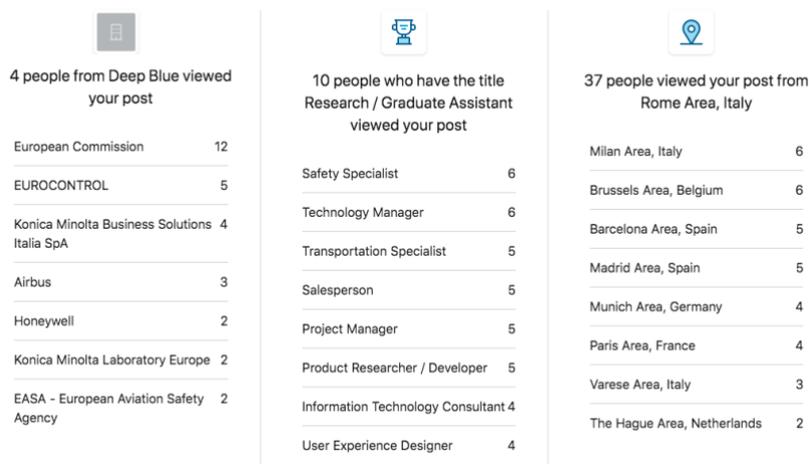


Figure 18 - Audience categories

To better explain the problems tackled by the project, two full articles have also been posted on LinkedIn. It is important to highlight that full articles tend to receive less views due to their length. However, the reached audience usually have a clear interested on the topic. The articles results are reported in Figure 19 and Figure 20

- “Which factors affect flight delays more” reached 21 views and 2 re-shares
- “Capacity-Demand Imbalances problems and solutions” reached 44 views

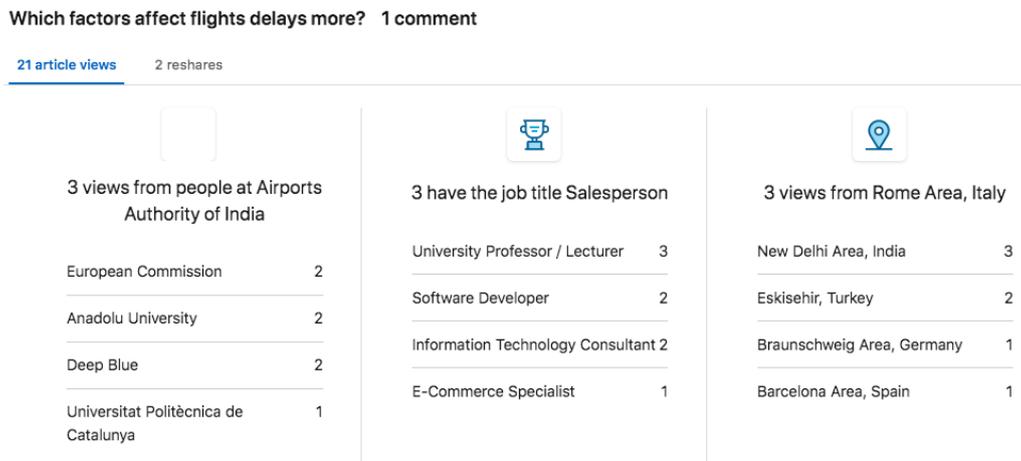


Figure 19 - LinkedIn Full Article - Which factors affect flight delays more

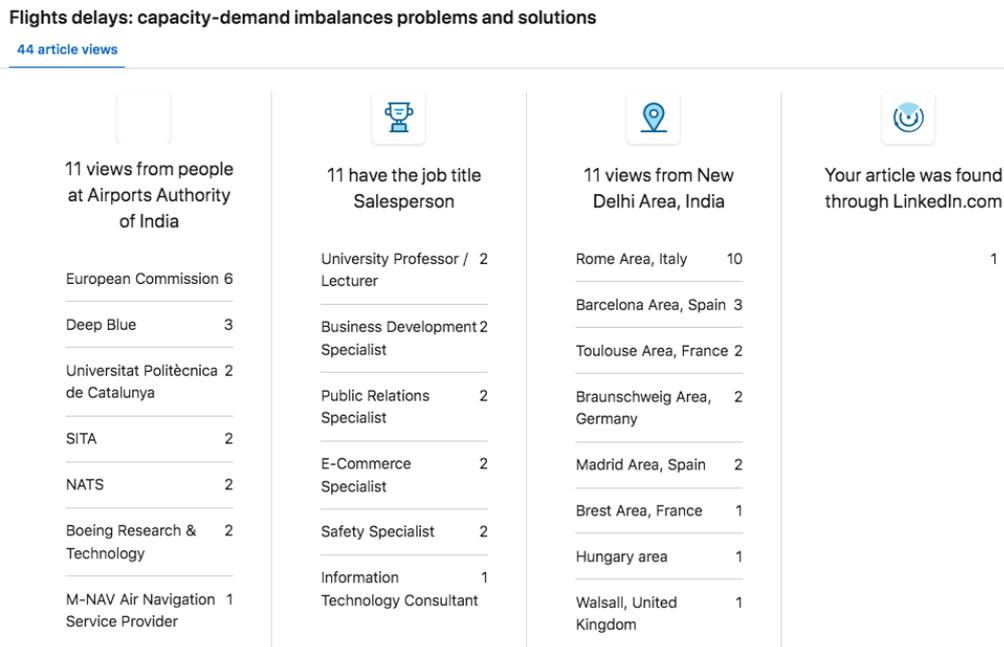


Figure 20 - LinkedIn Full Article - Capacity-Demand Imbalances problems and solutions

4 Dissemination towards scientific community

4.1 SESAR INNOVATION DAYS 2018

ADAPT took part in the 8th **SESAR Innovation Days (SIDs)**, held at the University of Salzburg (3-7 December 2018) to present the latest long-term research in the field of air traffic management. The SIDs are Europe's largest ATM research focused event, with more than 330 participants from both the academic and industrial ATM community.

SESAR Innovation Days are the main vehicle for SESAR Joint Undertaking to share progress and disseminate results of its exploratory research programme. Unlike other scientific events in air traffic management research, SESAR Innovation Days focus explicitly on long-term and innovative research.

During the SIDs, the ADAPT project team presented a poster (see Figure 21 below) describing the main goals, the activities structure as well as the preliminary results of the first 10 months of work.



adapt | Advanced prediction models for flexible trajectory-based operations

Read more about the project <https://adapt-h2020.eu>
 Contact: Lorenzo Castelli lorenzo.castelli@dia.units.it

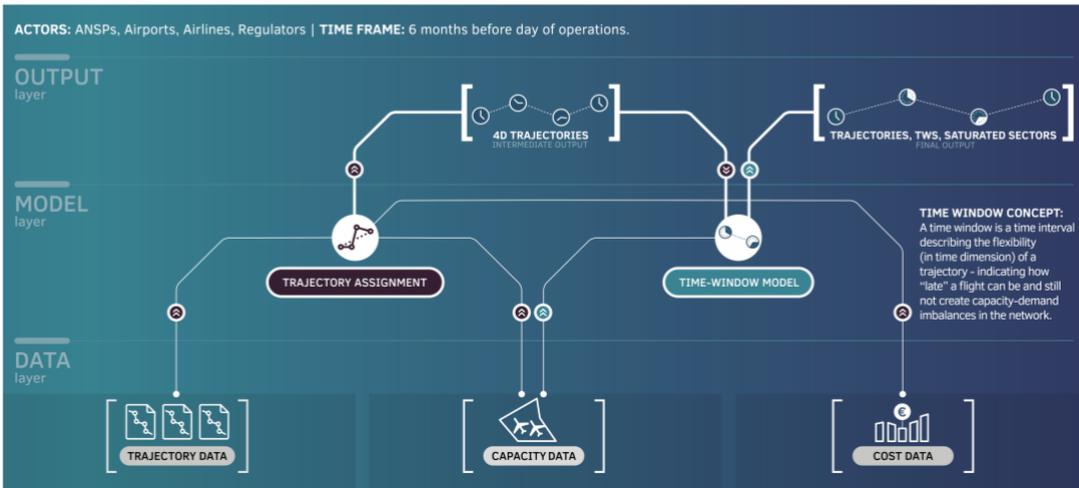


ADAPT develops strategic models and tools, enabling strategic planning (early information sharing), by providing information on trajectories and flight flexibility (through the assignment of time windows (TWs) and network hotspots.

Network-wide assessment of the trajectories and TWs determined by the ADAPT models, will be performed using the tactical simulation, to identify whether the conflict detection and resolutions needed operationally could be performed within the assigned TWs.

Flight-centric assessment looks into the individual flight performance where fuel consumption, weather conditions and arrival delay of individual flights are simulated and then compared to the assigned strategic 4D trajectory and TW.

The outcomes of the project will be developed into static and dynamic visualizations, abstracting the relevant features and allowing users to understand the type and operational impact of the models.



EUROCONTROL's DDR2 flight demand and trajectories

- (m1) the last filed flight plans
- (m0) initial flight plans
- m1 for trajectories and sector crossings
- m1 and m0 for departure times

EUROCONTROL's DDR2
 Data regarding the airspace environment such as:

- sector shapes
- sector activations
- sector and airport capacities

DELAY & ANS PROVISION COSTS
 Cost of delay models developed by the University of Westminster (Cook & Tanner, 2015) revised for 2017.
Cost of ANS provision to calculate route charges:

- Central Route Charge Office unit rates
- Oceanic rates

SCENARIO DEFINITION

To be able to assess ADAPT models, a baseline is compared with the ADAPT solution scenario.

BASELINE SCENARIO

Obtain a realistic baseline scenario through route assignment disregarding sector capacities. Consistent with current practice of not considering capacities at strategic phase.

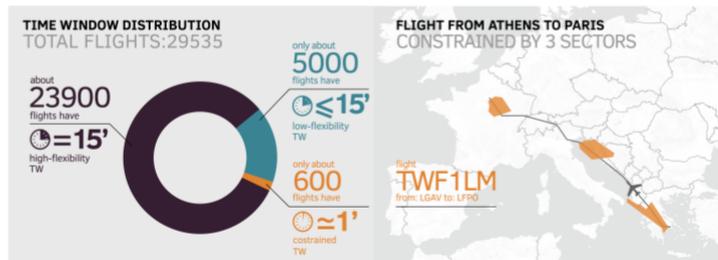
SOLUTION SCENARIO

Application of ADAPT models on the Sep.1st 2017 traffic. The models process 29 535 flights, over 22 862 sector-hours. The optimal solution is found in less than 3 minutes, with the optimality gap less than 0.1%.

1 SEPT 2017 Test day:
 Busy but not unduly disrupted day.

PRELIMINARY RESULTS

In the baseline, capacity is breached in a number of sector-hours, while that is not the case in the solution scenario.



NEXT STEPS

Development and assessment of the ADAPT solution and metrics definition:

Tactical assessment of ADAPT solution:

- Network-wide: focus on operational suitability of TWs for the entire European network.
- Flight-centric: considering fuel consumption and delay of individual flights.

Metrics definition:

- A (strategic) measure of the (economic) risk of saturated sectors.
- Statistical robust metrics on sector level, e.g. di-FORK, complexity metrics, percolation.



This project has received funding from the SESAR Joint Undertaking under grant agreement No 783264 under European Union's Horizon 2020 research and innovation programme.



Figure 21 - ADAPT Poster presented at SID2018



5 Stakeholders' involvement and preliminary results of interviews

This chapter describes the preliminary results of the collaboration between the ADAPT project and the advisory board (AB) members. Stakeholders have been involved in the following ways:

- During the dedicated stakeholder's meeting: the 1st stakeholder's meeting was held in London with the participation of the advisory board group. The objectives were to introduce the project concepts to the advisory board, gather their initial opinion about envisaged results and obstacles
- Face to face meetings and exchange of e-mails: for technical questions
- Interviews as part of the task T2.2 Interviews with stakeholders

Results emerged during the 1st stakeholder's meeting are summarised below and organised by topic, along with a brief description.

Airlines Involvement

Airlines have a great flexibility available with the current way of managing the flight plans. *"It is essential for ADAPT to deliver arguments for overall benefits for extending time horizon"*. If strategic flight planning and early filing of the flight plans are introduced it should be clear if there is a benefit for airlines, e.g. will airspace costs be reduced depending on the filing time?

Accurate time horizon definition

As the ADAPT concept can theoretically be applied to a wide time range, namely from months to a few days before the operations, it is necessary to define more clearly what is the target time horizon of the envisaged concept and what benefits it provides for that specific case.

Sectorizations and declared capacity

New sectorisation in ANSPs is produced about once a year while exact configurations are decided on the day of operations. The exact configuration applied is based on the traffic demand and ATCO availability on the day of operations. Some ANSPs have pre-set configurations that are applied in specific traffic scenarios.

Also the way the declared nominal capacities are considered while managing the traffic seems to differ from case to case. Some ANSPs regularly manage more traffic than the declared capacity, while this is not the case for others. The motivations, however were not investigated. Most of those capacity figures have been validated through EUROCONTROL's simulations. The AB members doubt that these numbers would change significantly in the near future.

Granularity of the results

The capacity of pieces of sectors is not useful for an ANSP. Even the sector capacity figures themselves are obtained from simulations and experience, therefore in the ADAPT context focusing on smaller parts of an airspace was not considered to be useful. Geographical distribution of hotspots could be a useful piece of information, but calculating the exact capacity figures would not be necessary.

Flexibility versus predictability

Flight planning should remain flexible as possible even with the adoption of the ADAPT concept: ANSPs and airlines would not support taking the flexibility out of the picture. AB member stated that the historical data are rather good for prediction of traffic today – the ANSPs use the historical data to predict the demand in the future. A more strategic planning process is considered positively, but with the assumption that is not introducing any rigidity. The views on this topic appear to be widely different. Some consider that high predictability invariably locks the system in an inflexible state, while others consider that high predictability on certain issues can offer more flexibility as there is more knowledge/data on what type of flexibility is available.

Some other ANSPs stated that they would like to have a better plan sooner (e.g. 12 months ahead), however, the desired planning horizon seems to differ across the ANSPs. One reason behind this could be the fluctuation of ATCO availability over the year, impacting certain ANSPs harder than others. AB members confirmed that everyone would like better predictability, without losing flexibility.

Meteorological Effects

ADAPT plans to employ en-route wind data for the assessment of the solution. It was pointed out by the AB that wind has a rather low impact factor. On the other hand, weather at the airport has an impact that is an order of magnitude larger and could be useful to include such data in the analysis.

Assessment metrics

During the discussion with the advisory board, some metrics were proposed to be employed for the ADAPT assessment

- Arrival punctuality
- Fuel consumption
- Sensitivity of the smallest time windows

5.1 First round of interviews with advisory board members

The first round of interviews involved four persons from the advisory board group focusing on the ANSP subgroup and it aimed at:

- Convey a clear and more mature picture of the ADAPT concept
- Outline the current status of the strategic planning processes in the organisation, including
 - o the time frame of the current process
 - o the actors involved
 - o the maturity of the process
- Investigate what roles are involved, both in the organisation and outside its perimeter
- Having a preliminary understanding of the potential benefits of the ADAPT concept including possible usages not foreseen by the consortium

The following participants were involved following a semi-structured interview approach:

- Giancarlo Ferrara, ENAV
- Debora Palombi, ENAV (as part of the ENAV team involved in the strategic planning activities)
- Miriam le Fevre, COOPANS Consortium/Naviair
- Marko Hrastovec, Slovenia Control

Results are here reported by summarizing all the four interview answers.

Current strategic planning processes

As expected, participants pointed out different situation in the different organisation: while all the ANSPs interviewed have already in place a strategic planning process, the maturity, the standardization and the goals of such processes appear to be different. From one side, bigger ANSPs such as ENAV have a team dedicated to the strategic planning, on the other side the activity lacks a formalized and well defined structure, therefore making the results less objective and repeatable: *“we do not have a deterministic model as ADAPT would be telling us what is going to happen”*. Looking again at the ENAV situation, the team is composed of 3 people: one person for the analysis and prediction of the traffic

flows and 2 persons for the identification of the changes to the airspace/network needed to better accommodate the traffic.

The picture seems to depend on the complexity of the managed airspace: bigger airspaces give the opportunity to manage the traffic through different options, and this can result in a more difficult situation to predict. Naviair and Slovenia Control, for example, reported to have no difficulties reaching high accuracy for the strategic prediction of the demand, in horizontal plane, while the vertical is more problematic.

Reasons for strategic planning

The mentioned reasons behind the strategic planning are the followings:

- Identify the best sector configuration for the traffic flow
- Identify potential issues early enough to allow the ANSPs to implement a change in the airspace/network
- Plan the shifts in the most accurate way

Data used for strategic planning

Data used for the strategic planning is mainly of two kinds

- Historic data coming from Eurocontrol: DDR2 data and Statfor Data⁵
- Internal data about the airspace environment and results coming from fast time simulations

Dissemination of the results (internal or outside the organisation)

With the exception of Eurocontrol providing some data for the analysis, the whole process and its results live in the borders of the organisation. Results are not shared with external actors.

Possible usages: a CDM to ease the exchange with airlines

The biggest potential added value of ADAPT has been by far identified as a collaborative and objective decision-making system to be used mainly between ANSPs and airlines. This emerged during the interview with ENAV. The following is the part of the interview to clarify the concept:

“I guess the added value of ADAPT would be exactly this. To enable a collaborative decision making in the strategic stages among us and airlines mainly. It's not easy to deal with airlines as their business is different from our business; I see ADAPT includes a cost model for operations and delays, but it is very unlikely that they will adhere to that cost model. This is because they all follow their own cost model based on their business model. For example, think about a simple delay of a flight. The cost might be

⁵ <https://www.eurocontrol.int/statfor>

different if you have many connecting passengers you would need to protect or not. If you are a low-cost company operating only in Europe, you don't care about it, if you are operating world-wide you probably do. Think about extras shifts for the pilots and all the people working. [The cost] It is not only affected by fuel, or airspace rates and it ranges widely from company to company. They have their own systems to calculate that (e.g. LIDO of LuftSystems).

Question: how do you see this CDM working? They would have the trajectories assigned and the time window, and then what happens?

Answer: they can still use their system to see if they are happy with what they have, and if not, they can ask for a change. At this point you would apply one of the pricing mechanism in the ADAPT models”

Possible usages: sectorisation support tool

One of the possible usage, identified during all the interviews, is the possibility to provide through ADAPT a specific sector configuration or network change based on the issues identified by analysing the assigned trajectories. Moreover, by early sharing the trajectory information this feature would be even more valuable. For example, the biggest uncertainty faced by Naviair, which creates problems in using sectorisation efficiently was reported to be the uncertainty on the flight level on which they will receive the flights. Their vertical division is on the flight level 345, and most of the traffic is between 330, 340, 350 and 360, and are easily interchangeable (by aircraft performance). Not being sure on which level the flight are entering the airspace makes it difficult to use the vertical sector division properly.

Possible usages: training

In case a concept like ADAPT would be operational, its output would be the set of trajectories that are most likely to be flown at the of operations. Although it wouldn't be the main use case for ADAPT, this set of trajectories can be used in the training sessions in two ways:

- As training for the new air traffic controllers that need to familiarize with the airspace or portions of it
- As training for experienced controllers that are going to manage the same traffic the day of the operation. In this way it would be possible to train them for specific days (peak days, unusual situations) in advance.

Concerns and possible obstacles

A preliminary identification of possible obstacles in the adoption of the ADAPT concept led to the following points:

- Strategic planning and high predictability can lead to a less flexible management
- Interaction with airlines business models (see previous point about CDM for more details)

- Compatibility with new air traffic management concepts: ENAV for example recently adopted the free route concept, introducing several challenges related to the new definition of the sectors and identification of hotspots
- Uncertain events impact should be assessed to understand their impact on the ADAPT solutions
- A great source of limitation in the air traffic management would remain the airport environment having much more rigid and structural constrains

6 Conclusions and next steps

During the first year of dissemination activities, the ADAPT project put the basis for an effective distribution of its core concepts and results. The communication and dissemination activities are mainly employing the following instruments:

- Social Media: through the LinkedIn and Twitter accounts
- Project Website
- Conferences and Events
- Direct relationships with stakeholders

By the analysis of the activity on the social networks, Twitter confirmed its ability to reaching more people in the general audience but revealed difficulties in identifying the reached audience categories. Communications in the LinkedIn community, on the other hand, seems to get to less people but allows to naturally target organisations and practitioners in the domains of interest. Moreover, it hosts more structured content through which might be easier to explain articulated concepts as the ones involved in the ADAPT project.

The first round of interviews allowed the consortium to explore the ANSP segment of the stakeholders.

The future steps are the followings:

- Increase the social media activity especially on LinkedIn and on the project website by exploiting the more mature results produced by the technical work packages
- Increase the scientific dissemination with the exploitation of the same results
- Completing the interviews in the advisory board group and possibly extend them to external stakeholders in order to include airlines
- Going into the details of the usage of the ADAPT solution to feed the data visualization task

7 References

[1]. ADAPT, 2018. D1.1 Project Management Plan

8 Acronyms

AB: Advisory Board

ANSP: Air Navigation Service Provider

ATC: Air Traffic Control

AU: Airspace user

CODA: Central Office for Delay Analysis

DBL: Short name of ADAPT partner: Deep Blue

DCI: Dynamic cost indexing

DDR2: Demand Data Repository

ECTL: EUROCONTROL

IFPS: Integrated Initial Flight Plan Processing System

NM: Network Manager

UNITS: Short name of ADAPT partner: Università degli Studi di Trieste

UoW: Short name of ADAPT coordinator: University of Westminster

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