



**MINISTÈRE
CHARGÉ
DES TRANSPORTS**

*Liberté
Égalité
Fraternité*



PBN STANDARD NAMING ASSESSMENT

Direction de la sécurité de l'Aviation civile
Mission Evaluation et Amélioration de la Sécurité

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1. Introduction

Operators informed DSAC in 2017 of a risk of premature descent on PBN or stand-alone approaches. To measure its scope, DSAC has decided to question users of such procedures. Among them, the members of the French Flight Safety Network, of which 5 operators had expressed the wish to contribute to this work.

A collective safety study was therefore carried out at the initiative of DSAC's Safety Coordination Office. It confirmed the threat posed by the possible confusion between the intermediate approach point (IF), the missed approach point (MAPT) and the final approach fix (FAF) and the failure to highlight these points as part of the common path on the approach charts.

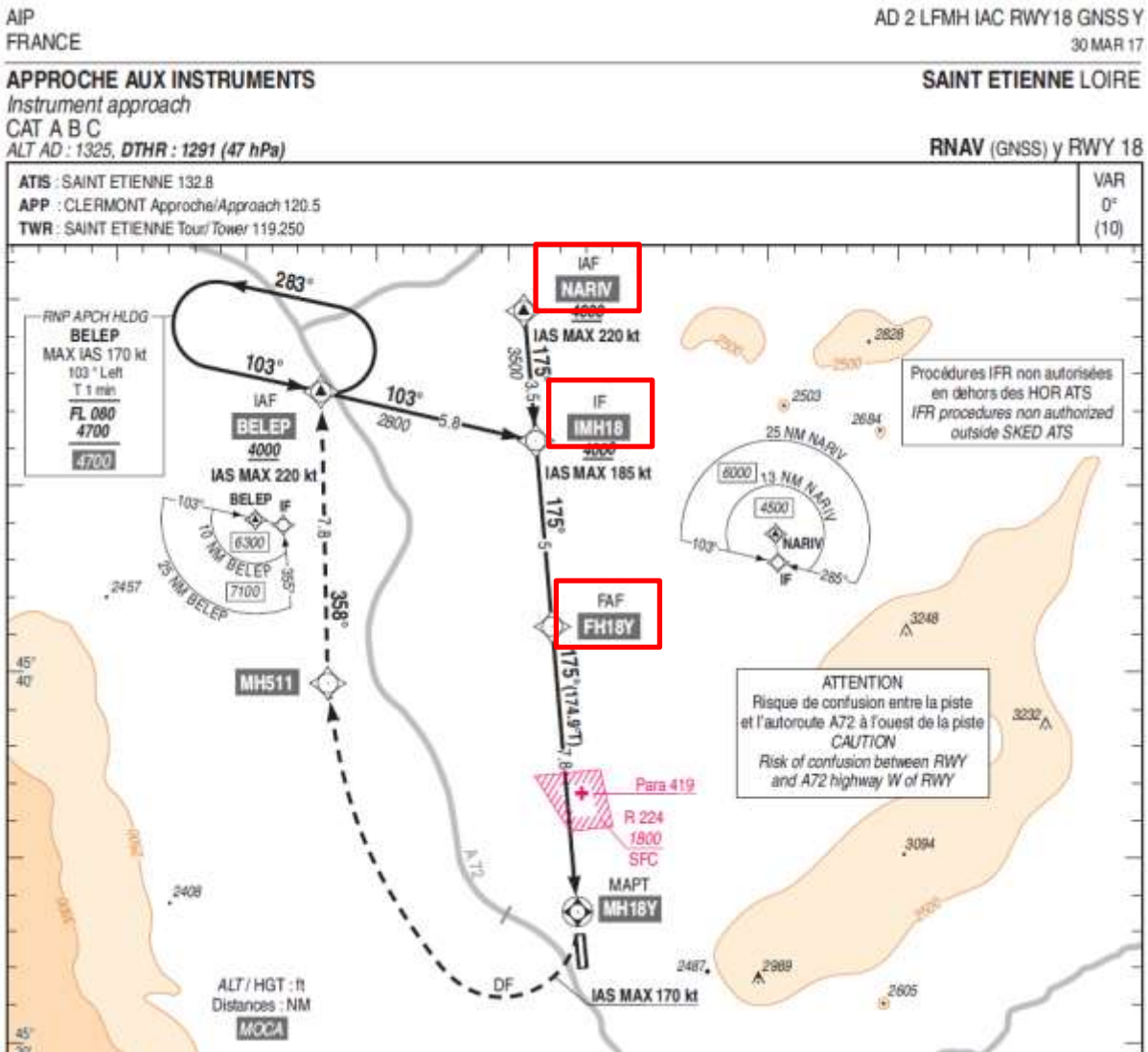


Figure 1. Example of a standardised naming for Saint Etienne Loire (LFMH)

A collective work carried out by DSAC, in collaboration with these operators, as well as the Directorate of Air Transport (DTA), the Directorate of Technology and Innovation (DTI), the Directorate of Air Navigation Services (DSNA), and the Aeronautical Information Service (SIA) enabled us, after verification with the international bodies (ICAO), to propose, establish and test a standardised naming of the three points mentioned above, in order to improve their identification between themselves and in relation to the en-route points, thus limiting the risk of confusion and managing in advance the proper programming of the FMS.

This new naming system, in line with international standards, and accepted for France by ICAO, was introduced at the end of 2017 on the occasion of the IAC charts' updates, during their revision, as explained in the AIC below: https://www.sia.aviation-civile.gouv.fr/pub/media/store/documents/file/l/f/lf_circ_2017_a_023_en.pdf

Following the implementation of this innovative concept, it was decided to launch an evaluation at the end of 2019 among procedure designers, air traffic controllers, pilots, and other airfield actors. This was conducted in the form of an online survey, which was very successful. All the lessons learned from this study, after analysis of the results, are presented in this document.

In six weeks of online surveying, a total of 873 people opened the survey and 746 of them partially replied to the questionnaire. 425 people answered all the questions.

DSAC would like to thank all those who took the time to reply to this survey, allowing it to have representative feedback on the implementation of this standardised naming system. Lessons learned from DSAC's side point to the fact that:

- The transfer of problems by the organisations to the authority allows for a collective study and a search for suitable solutions.
- The involvement of the various Directorates of DGAC leads to a significant saving of time in the search for a solution and a global validation.
- The absence of premature descent events in approach in the ECCAIRS database since the implementation of this naming system, confirms the positive impact on safety.
- Promoting the results of this national implementation towards the international level brings creates great interest on the part of many organisations.

2. Analysis of the panel of interviewees

2.1. Duty of interviewees

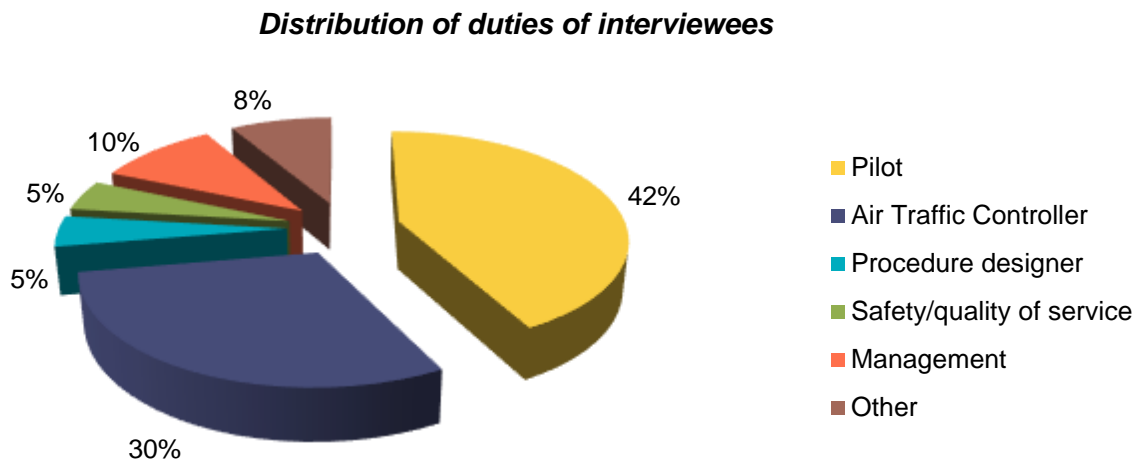


Figure 2. Distribution of duties of interviewees

A majority of pilots and air traffic controllers responded, but not only them.

2.2. Professional experience of interviewees

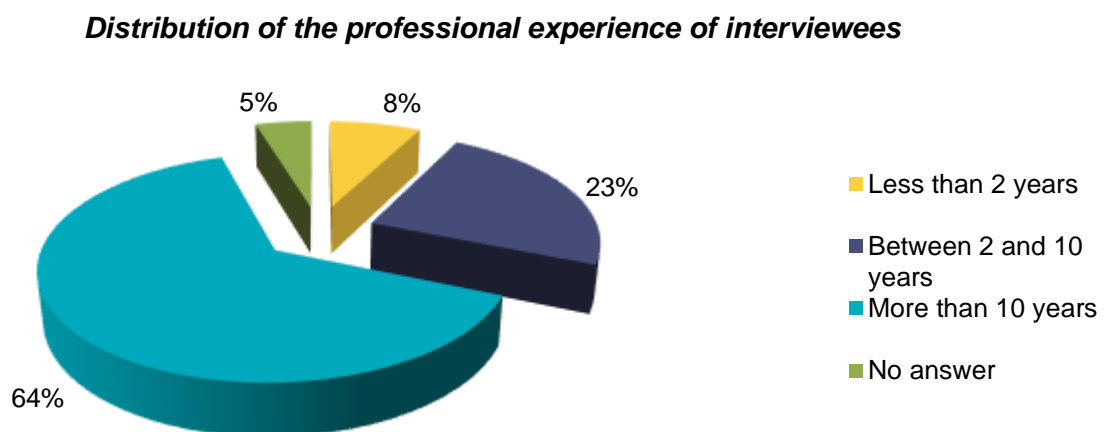


Figure 3. Distribution of the professional experience of interviewees

The majority of respondents are referred to as “experienced”.

2.3. Age of respondents

Age distribution of respondents

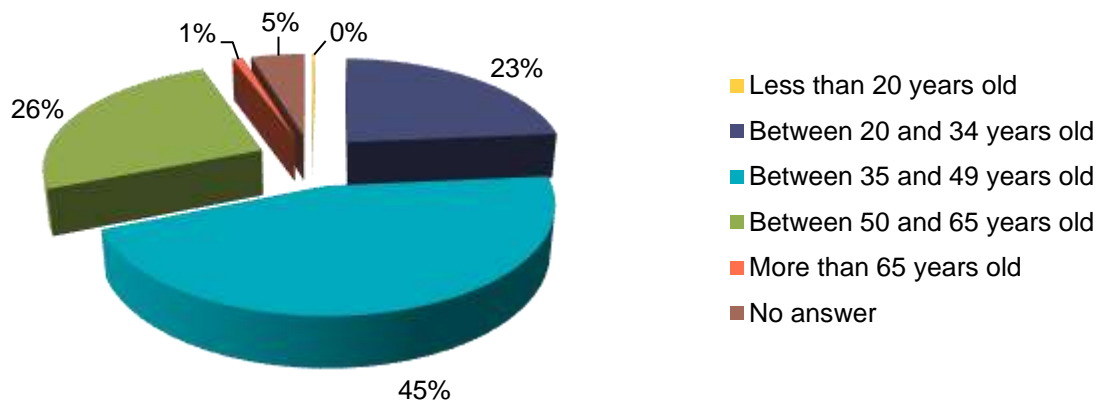


Figure 4. Age distribution of respondents

All age groups are represented with a majority of the so-called “median” population.

3. Knowledge of regulatory changes

Since the title of the questionnaire does not mention the renaming of the points, it formulates a series of open questions gradually narrowing around the target.

Did you notice any changes on the PBN procedure documents in the last 18 months?

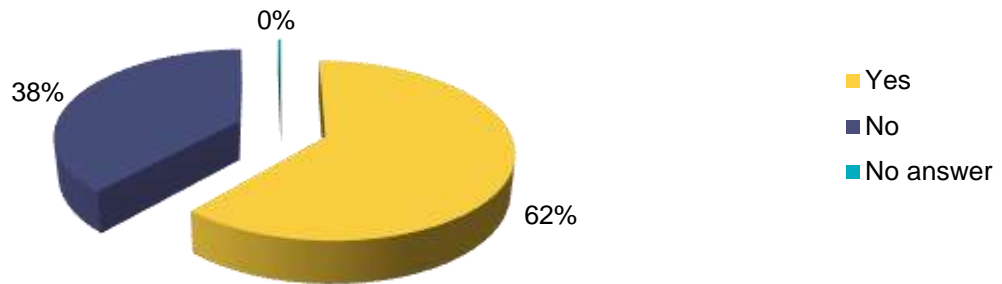


Figure 5. Did you notice any changes on the PBN procedure documents within the last 18 months?

This first question sought to identify a priori knowledge of the changes made.

38 % of respondents indicated that they did not notice changes to the PBN procedure documents. However, many elements have been modified during this period.

Did you notice any changes on the PBN procedure documents in the last 18 months?

Pilots only:

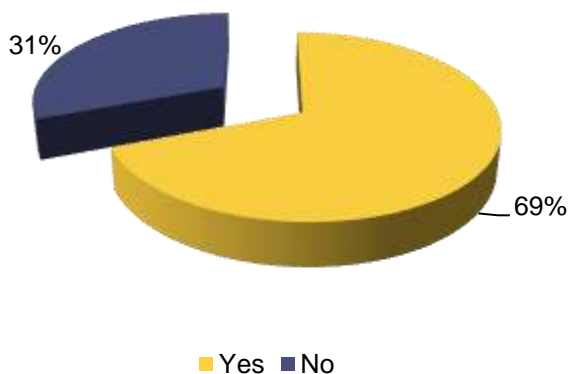


Figure 6. Did you notice any changes on the PBN procedure documents in the last 18 months? (Pilots only)

Air traffic controllers only:

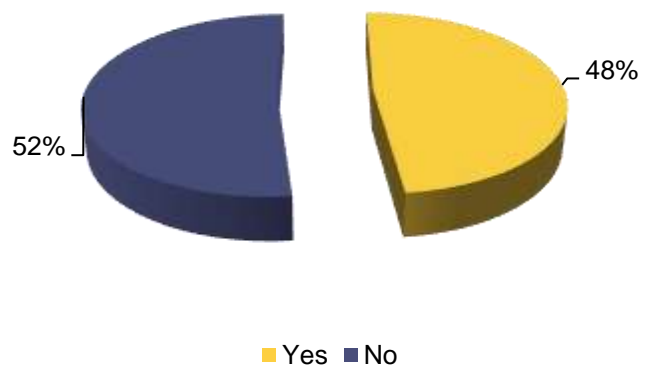


Figure 7. Did you notice any changes on the PBN procedure documents in the last 18 months? (Air traffic controllers only)

Pilots were more likely than controllers to notice changes in PBN documentation in the last 18 months.

What are the changes noticed?

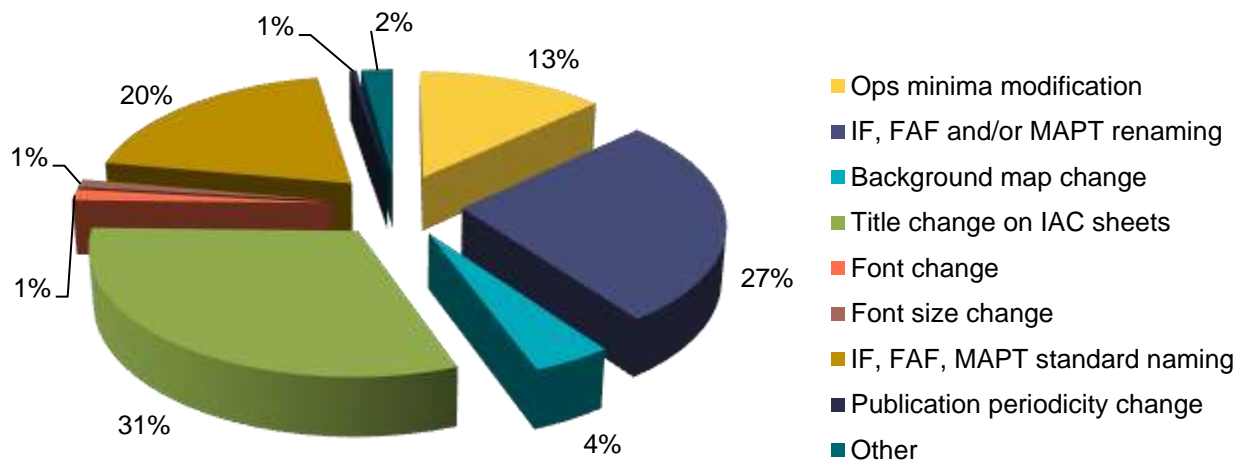


Figure 8. What are the changes noticed?

47 % (20 % + 27 %) of answers mention the standardised naming of points (IF, FAF and MAPT) in PBN approaches.

Note: from the following question, respondents are informed of the renaming.

Did you notice the renaming of the points? (The interviewees are now informed of renaming)

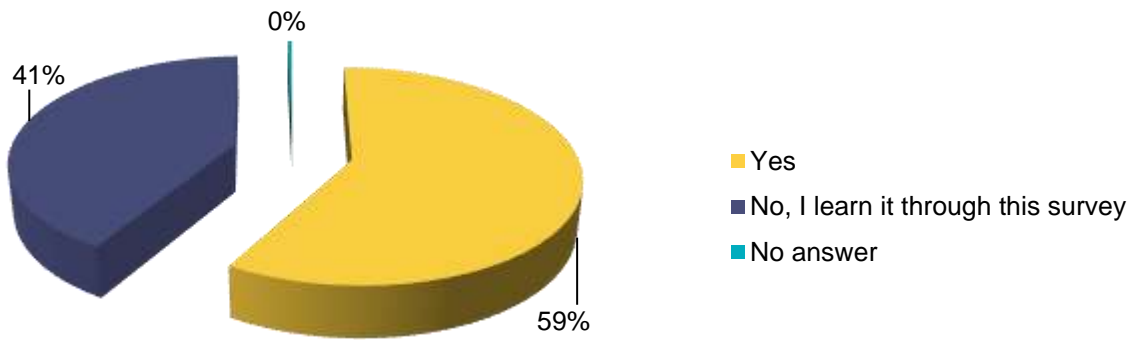


Figure 9. Did you notice the renaming of the points? (The interviewees are now informed of renaming)

It is interesting to note that a higher number of respondents to the previous question confirm that they noticed the renaming when we mention it to them. Interviewees are, at this stage of the questionnaire, informed of the renaming.

Did you notice the renaming of the points? (The interviewees are now informed of renaming)

Pilots only:

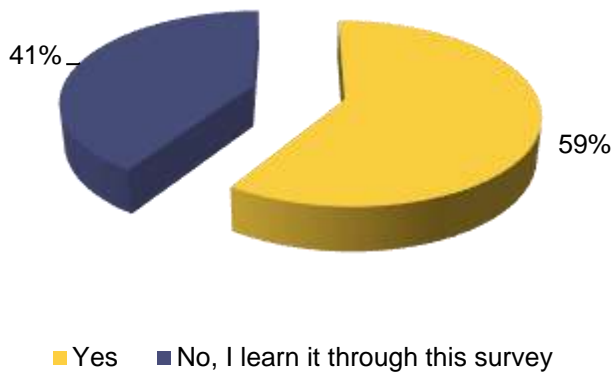


Figure 10. Did you notice the renaming of the points? (Pilots only)

Air traffic controllers only:

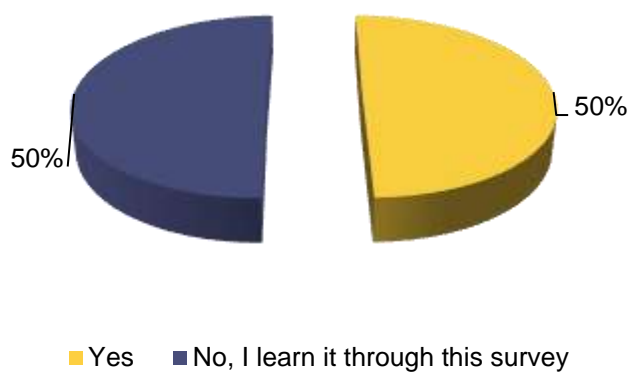


Figure 11. Did you notice the renaming of the points? (Air traffic controllers only)

Do you know the AIC explanation for this renaming?

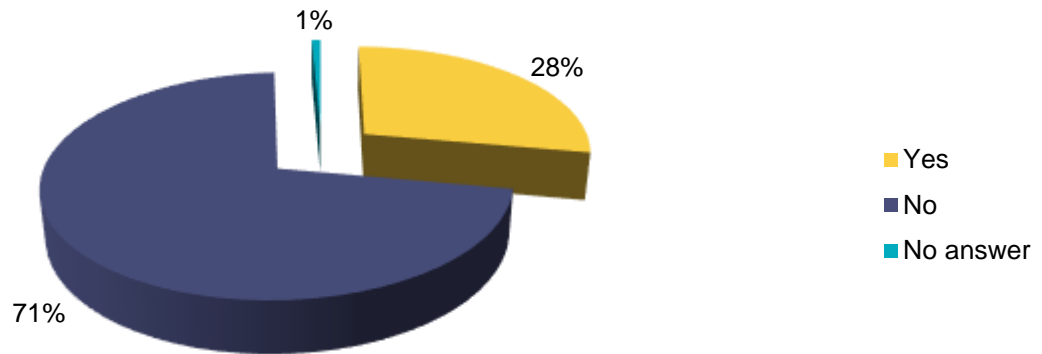


Figure 12. Do you know the AIC explanation for this renaming?

There is an interesting point here on the knowledge, dissemination, use and visibility of AICs.

Do you know the AIC explanation for this renaming?

Pilots only:

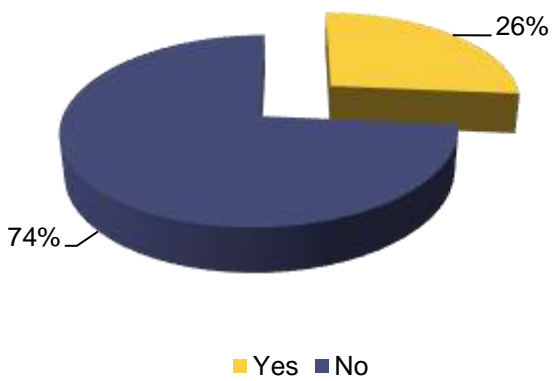


Figure 13. Do you know the AIC explanation for this renaming? (Pilots only)

Air traffic controllers only:

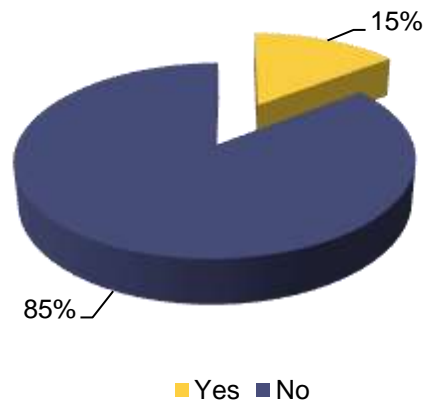
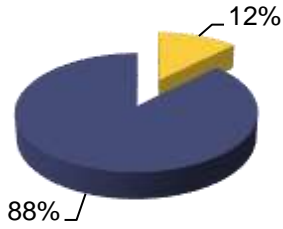


Figure 14. Do you know the AIC explanation for this renaming? (Air traffic controllers only)

Do you know the AIC explanation for this renaming?

Less than two years experience



■ Yes ■ No

Figure 15. Do you know the AIC explanation for this renaming? (Less than two years of experience)

Between two and ten years experience



■ Yes ■ No

Figure 16. Do you know the AIC explanation for this renaming? (Between two and ten years of experience)

More than ten years experience



■ Yes ■ No

Figure 17. Do you know the AIC explanation for this renaming? (More than ten years of experience)

The experience of the respondents appeared to be interesting in terms of knowledge of the AIC.

What do you think of this change (presenting an example of renaming)?

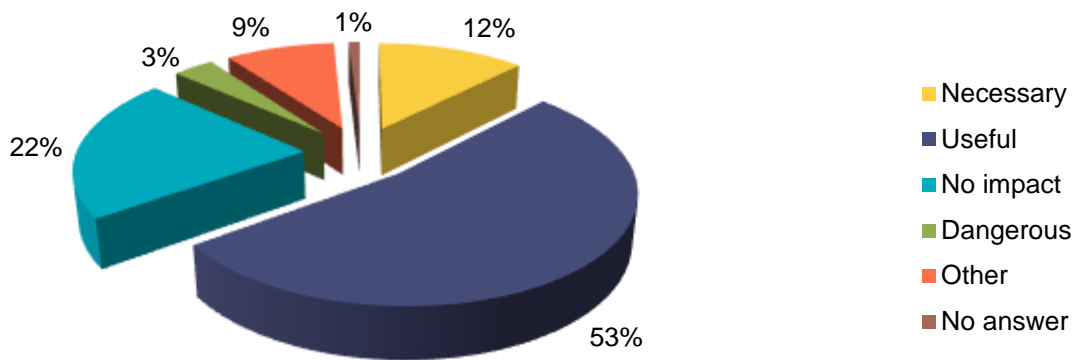
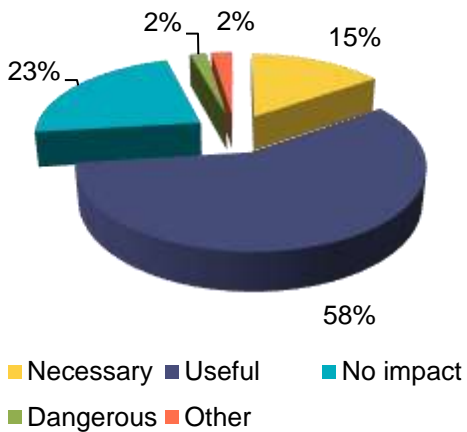


Figure 18. What do you think of this change (presenting an example of renaming)?

While 65 % (12 % + 53 %) find this naming positive, only 3 % find it dangerous.

What do you think of this change (presenting an example of renaming)?

Pilots only:



Air traffic controllers only:

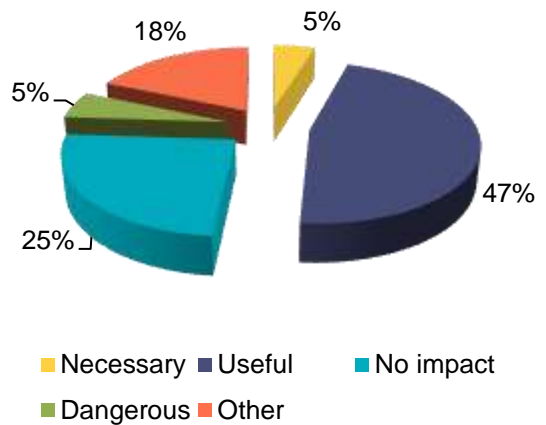


Figure 19. What do you think of this change (presenting an example of renaming)? (Pilots only)

Figure 20. What do you think of this change (presenting an example of renaming)? (Air traffic controllers only)

There was a slight difference between controllers and pilots on the interest felt after this change.

For the pilot, situational awareness regarding the actual positioning of the aircraft on the approach has improved

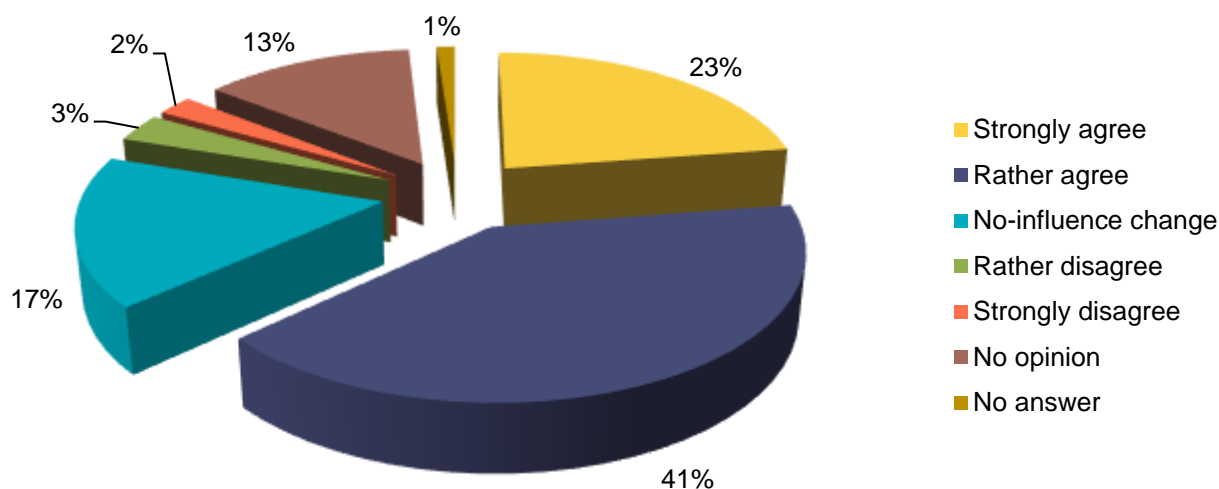


Figure 21. For the pilot, situational awareness regarding the actual positioning of the aircraft on the approach is improved

- 64 % find the situational awareness of the pilot improved by this renaming.
- Only 5 % expressed an opinion to the contrary.

For the air traffic controller, situational awareness regarding the actual positioning of the aircraft on the approach has improved

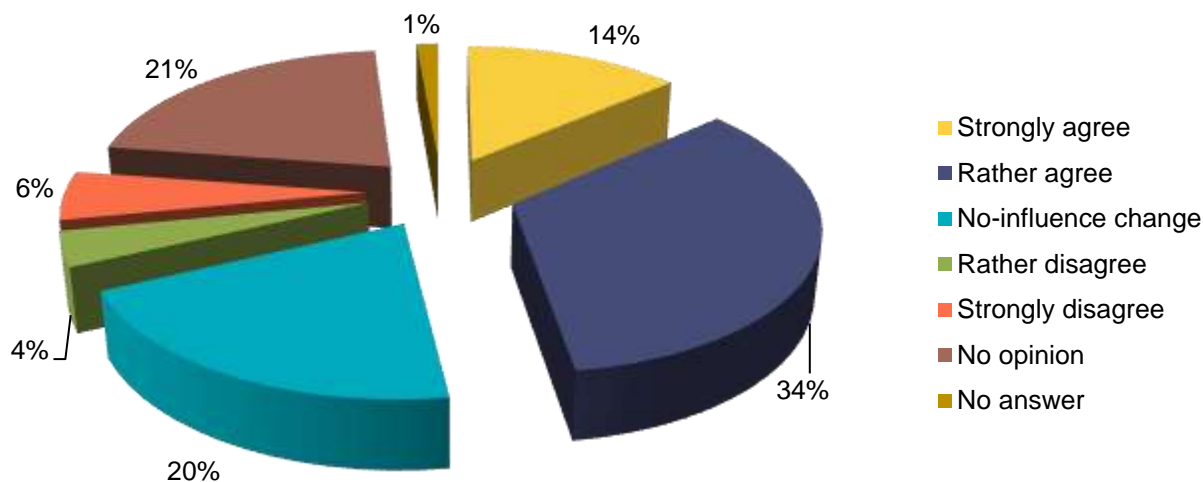


Figure 22. For the air traffic controller, situational awareness regarding the actual positioning of the aircraft on the approach has improved

- 48 % of respondents find that a controller’s awareness of the situation has improved.
- Only 10 % expressed an opinion to the contrary.

Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation?

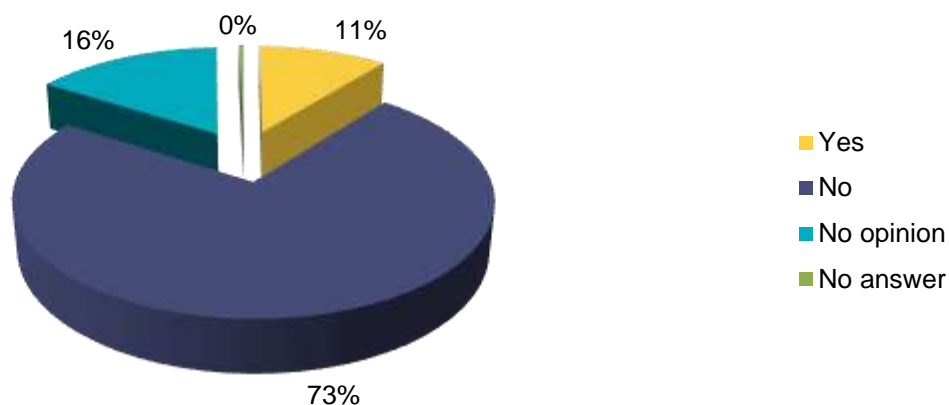
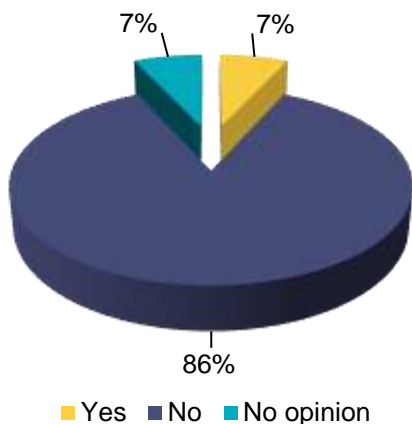


Figure 23. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation?

- 73 % say that this renaming has not been complicated to understand and implement.
- 11 % mention a contrary opinion.

Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation?

Pilots only:



Air traffic controllers only:

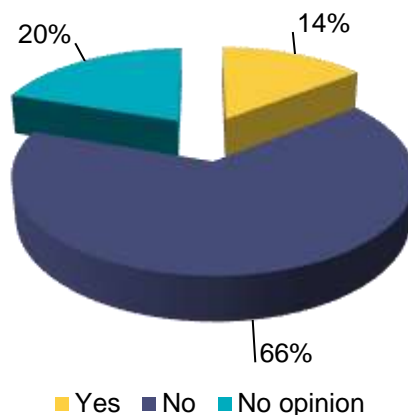
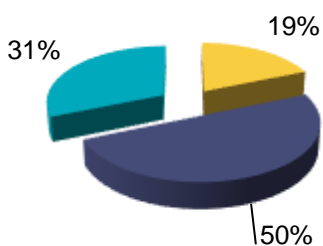


Figure 24. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation? (Pilots only)

Figure 25. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation? (Air traffic controllers only)

Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation?

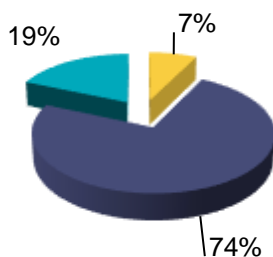
Less than two years of experience



■ Yes ■ No ■ No opinion

Figure 26. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation? (Less than two years of experience)

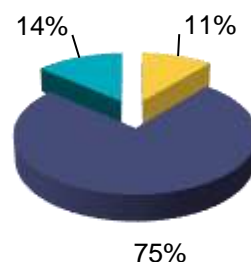
Between two and ten years of experience



■ Yes ■ No ■ No opinion

Figure 27. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation? (Between two and ten years of experience)

More than ten years of experience



■ Yes ■ No ■ No opinion

Figure 28. Has this renaming brought constraints, created new problems, led to difficulties in understanding or implementation? (More than ten years of experience)

The experience of the respondents seemed to have an impact on the results. The more experienced respondents (all specialties combined), the less difficulties they reported as a result of the implementation of the renaming.

4. Dissemination of information

Through which channel have you been informed?

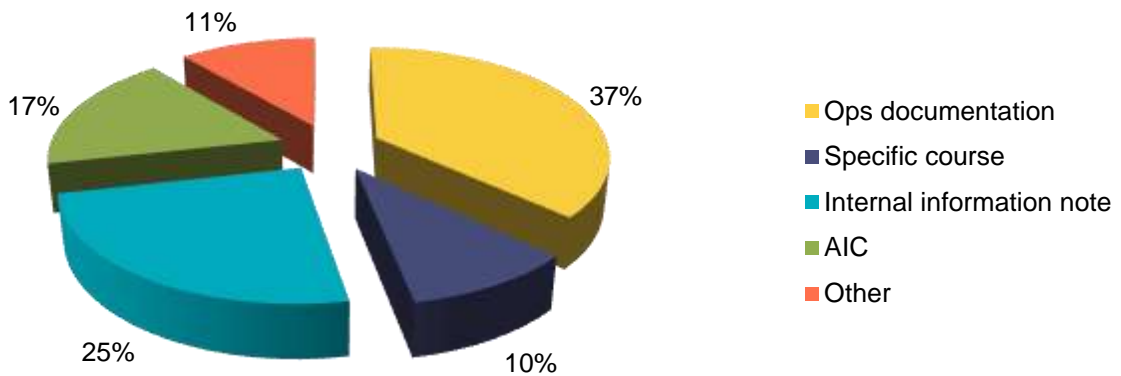


Figure 29. Through which channel have you been informed?

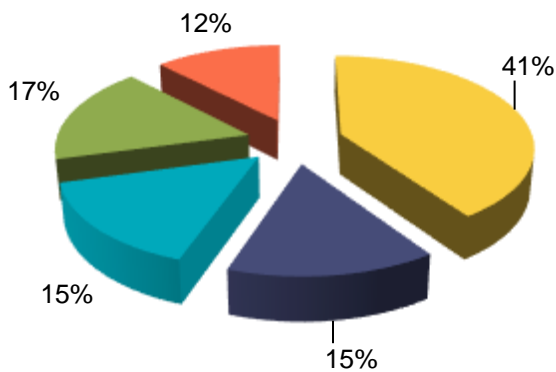
72 % of respondents indicated that they were informed by operational documentation (37 %), by internal information notes (25 %) and specific courses (10 %).

Those informed by the AIC account for only 17 % of the responses, although it is basically the preferred official means of information.

Air traffic controllers appear to exploit the internal information note channel more than pilots to learn about such changes (see below).

Through which channel have you been informed?

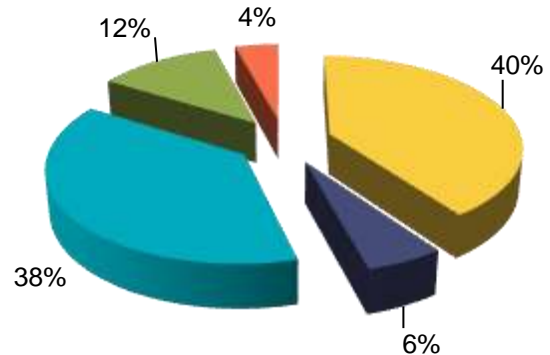
Pilots only:



- Ops documentation
- Specific course
- Internal information note
- AIC
- Other

Figure 30. Through which channel have you been informed? (Pilots only)

Air traffic controllers only:



- Ops documentation
- Specific course
- Internal information note
- AIC
- Other

Figure 31. Through which channel have you been informed? (Air traffic controllers only)

5. Benefit of this change

Following this standardised naming: The key points of the approach path are better identified

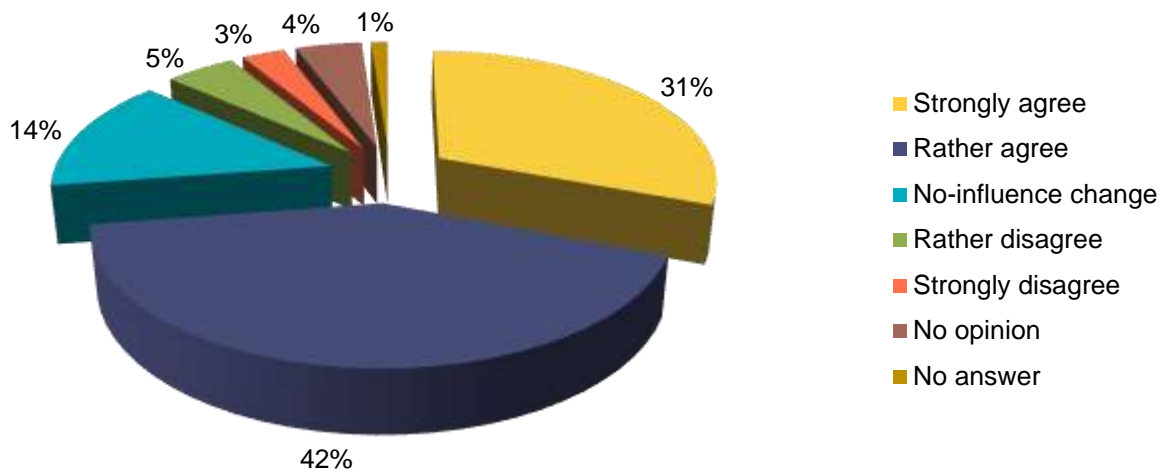
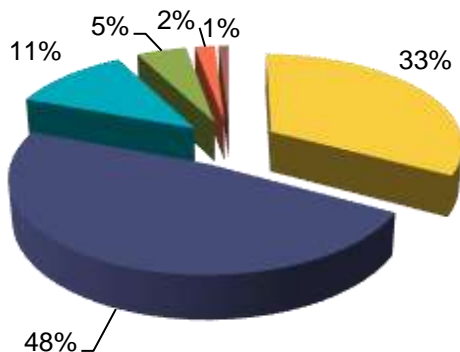


Figure 32. Following this standardised naming: The key points of the approach path are better identified

73 % of respondents recognise improved identification of key points which were renamed to reduce the risk of premature descent (one of the major objectives) while only 8 % express an opposite opinion.

Following this standardised naming: The key points of the approach path are better identified

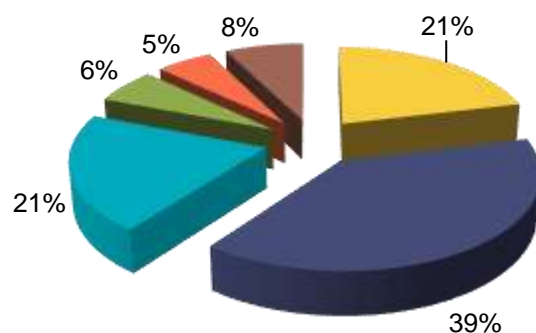
Pilots only:



■ Strongly agree ■ Rather agree
■ No-influence change ■ Rather disagree
■ Strongly disagree ■ No opinion

Figure 33. Following this standardised naming: The key points of the approach path are better identified (Pilots only)

Air traffic controllers only:



■ Strongly agree ■ Rather agree
■ No-influence change ■ Rather disagree
■ Strongly disagree ■ No opinion

Figure 34. Following this standardised naming: The key points of the approach path are better identified (Air traffic controllers only)

Pilots seem to be more sensitive to and affected by the key points, with 81 % (wholly or rather agree) of satisfaction against 60 % for controllers.

Following this standardised naming: The removal of doubt about the selected procedure is more effective (e.g. between X, Y and Z procedures)

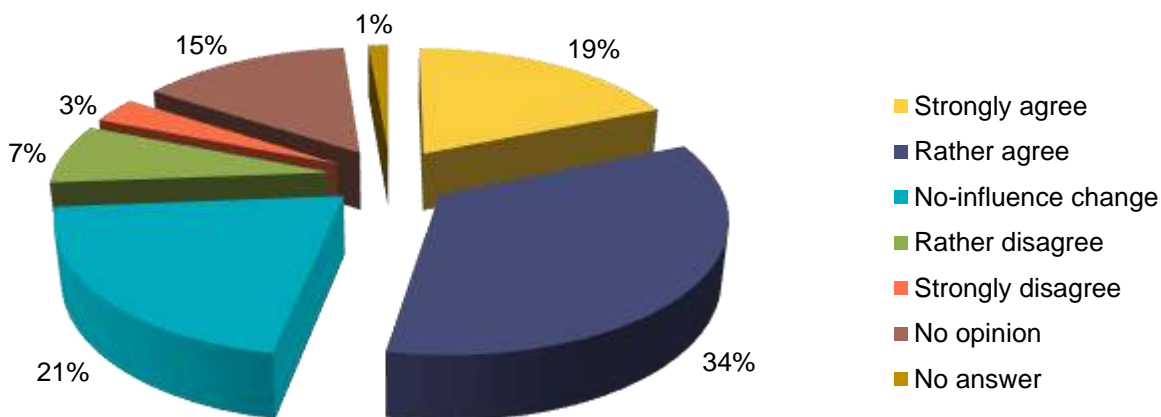
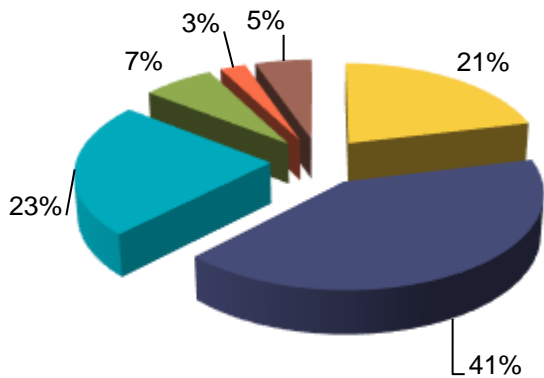


Figure 35. Following this standardised naming: The removal of doubt about the selected procedure is more effective (e.g. between X, Y and Z procedures)

- 53 % recognise an improvement in the “procedure” clearance of doubt.
- 10 % expressed a contrary opinion.

Following this standardised naming: The removal of doubt about the selected procedure is more effective (e.g. between X, Y and Z procedures)

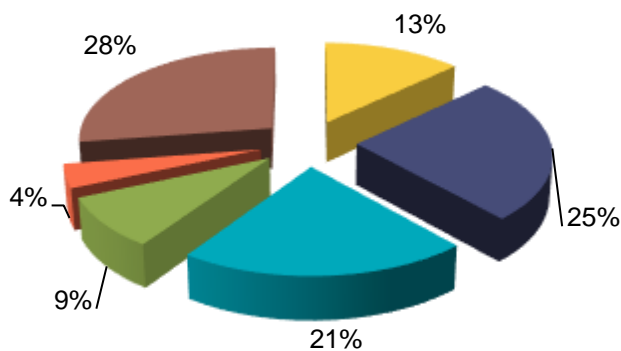
Pilots only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 36. Following this standardised naming: The doubt removal about the selected procedure is more effective (Pilots only)

Air traffic controllers only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 37. Following this standardised naming: The doubt removal about the selected procedure is more effective (Air traffic controllers only)

Pilots report a greater gain in confirmation of removal of doubt on the selected procedure than controllers.

Following this standardised naming: The removal of doubt on the selected runway is more effective (e.g. between L, C and R)

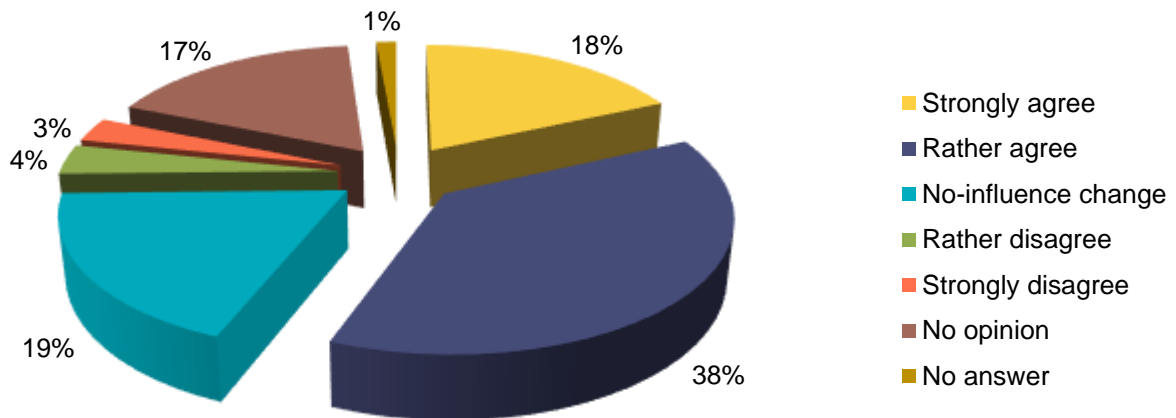
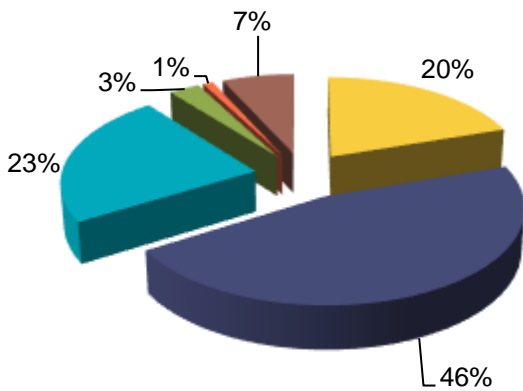


Figure 38. Following this standardised naming: The removal of doubt on the selected runway is more effective

- 56 % recognise an improvement in the awareness of the selected runway.
- Only 7 % expressed an opinion to the contrary.

Following this standardised naming: The removal of doubt on the selected runway is more effective (e.g. between L, C and R)

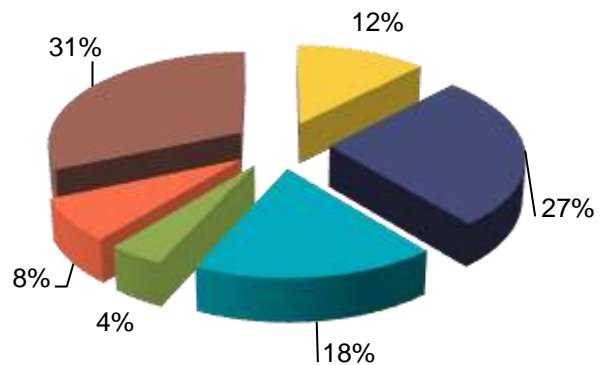
Pilots only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 39. Following this standardised naming: The removal of doubt on the selected runway is more effective (Pilots only)

Air traffic controllers only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 40. Following this standardised naming: The removal of doubt on the selected runway is more effective (Air traffic controllers only)

66 % of pilots recognise an improvement in the awareness of the selected runway compared to only 39 % of air traffic controllers. About 12 % of the controllers do not agree with this doubt retrieval, whereas for pilots it is only 4 % of the respondents.

Following this standardised naming: The memorisation of the path points of the procedure is easier

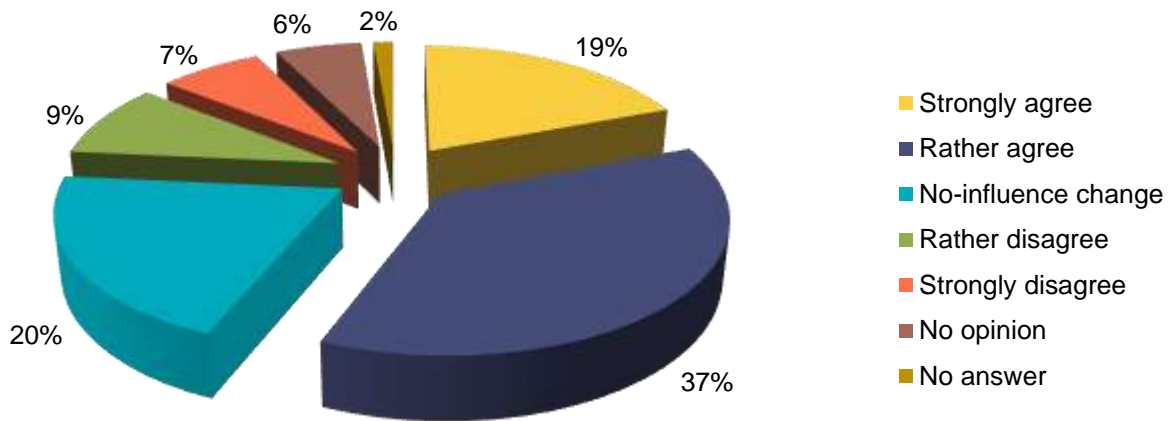
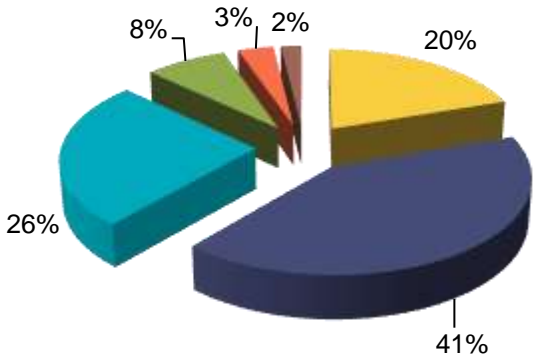


Figure 41. Following this standardised naming: The memorisation of the path points of the procedure is easier

56 % recognise better memorisation of path points (16 % opposite).

Following this standardised naming: The memorisation of the path points of the procedure is easier

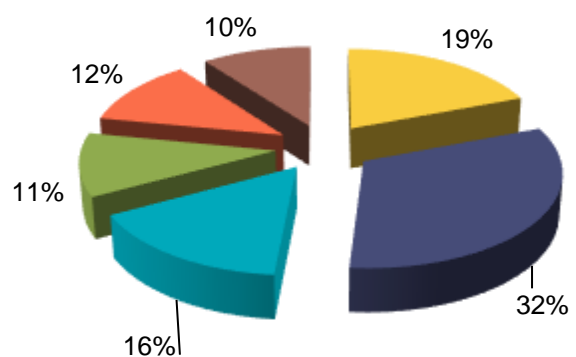
Pilots only:



■ Strongly agree ■ Rather agree
■ No-influence change ■ Rather disagree
■ Strongly disagree ■ No opinion

Figure 42. Following this standardised naming: The memorisation of the path points of the procedure is easier (Pilots only)

Air traffic controllers only:



■ Strongly agree ■ Rather agree
■ No-influence change ■ Rather disagree
■ Strongly disagree ■ No opinion

Figure 43. Following this standardised naming: The memorisation of the path points of the procedure is easier (Air traffic controllers only)

Following this standardised naming: The risk of premature descent (e.g. at IF instead of FAF) is reduced

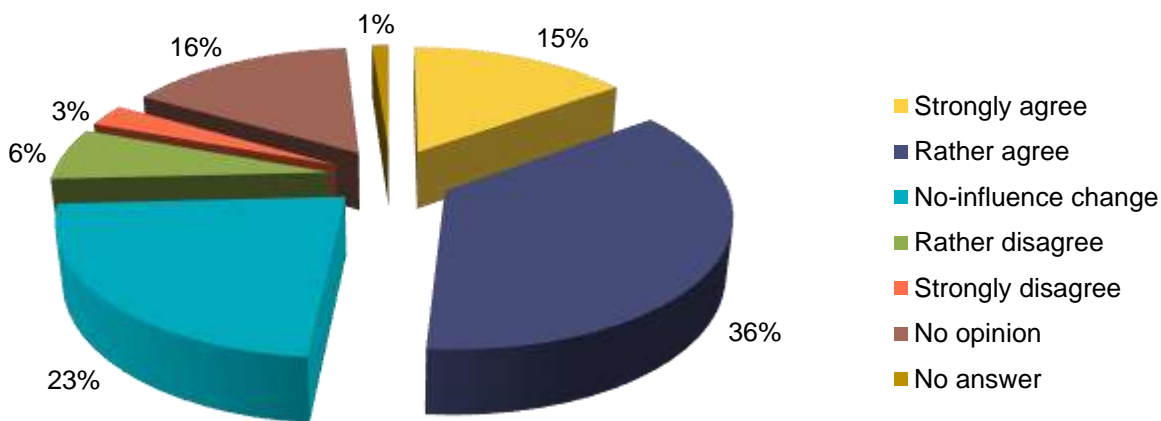
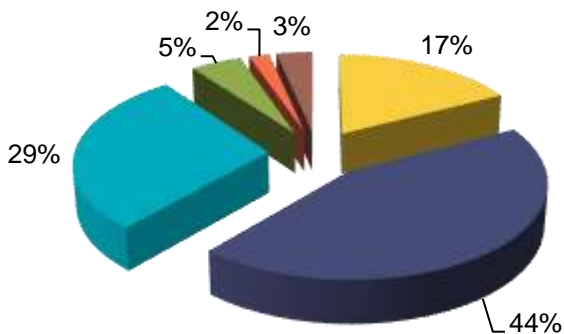


Figure 44. Following this standardised naming: The risk of premature descent (e.g. at IF instead of FAF) is reduced

While 51 % recognise a decrease in the risk of premature descent, only 9 % report an opposite opinion.

Following this standardised naming: The risk of premature descent (e.g. at IF instead of FAF) is reduced

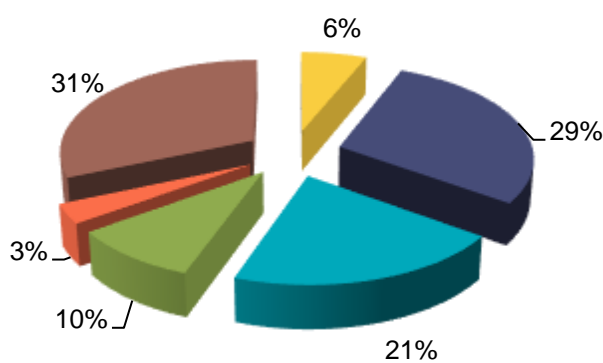
Pilots only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 45. Following this standardised naming: The risk of premature descent (e.g. at IF instead of FAF) is reduced (Pilots only)

Air traffic controllers only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 46. Following this standardised naming: The risk of premature descent (e.g. at IF instead of FAF) is reduced (Air traffic controllers only)

Pilots who are directly affected by this operational risk recognise a decrease in this risk more than the controllers.

This standardised naming makes me more effective in my work

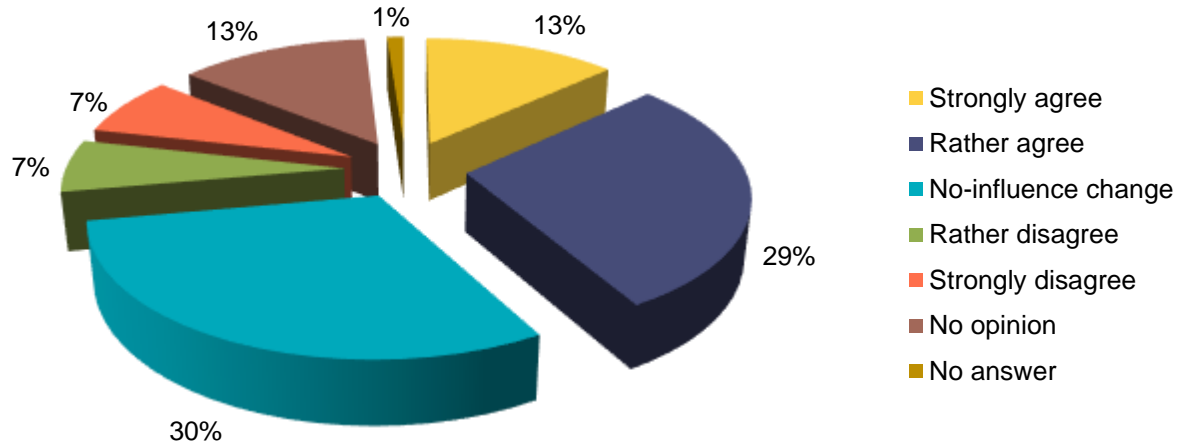


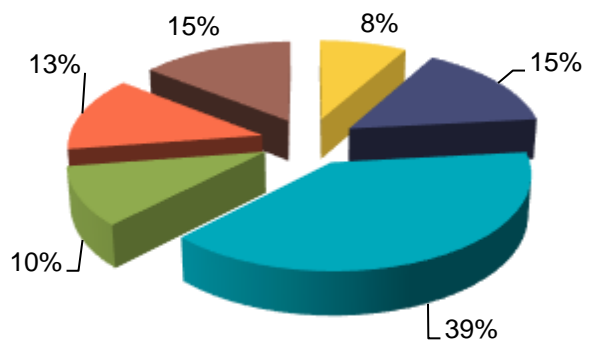
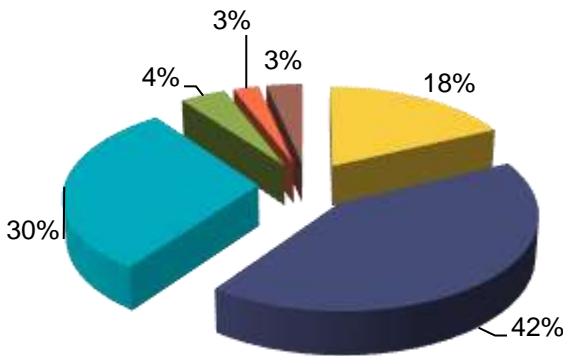
Figure 47. This standardised naming makes me more effective in my work

While 42 % recognise an improvement in efficiency in their work as a result of this renaming, 30% report no change and only 14 % are of the opposite opinion.

This standardised naming makes me more effective in my work

Pilots only:

Air traffic controllers only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 48. This standardised naming makes me more effective in my work (Pilots only)

Figure 49. This standardised naming makes me more effective in my work (Air traffic controllers only)

Pilots reported feeling more efficient in their work (60 %) as a result of this renaming.

I feel safer with this standardised naming

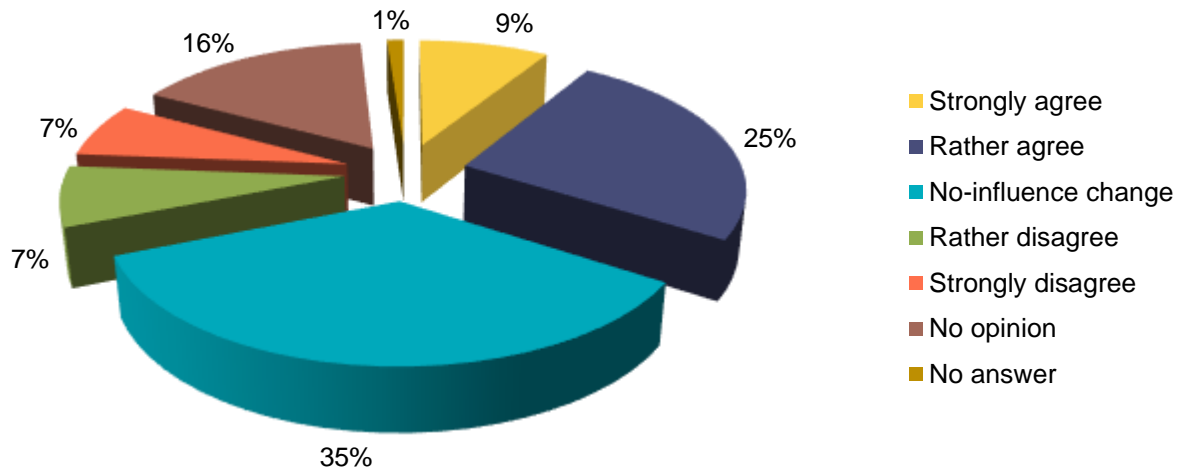
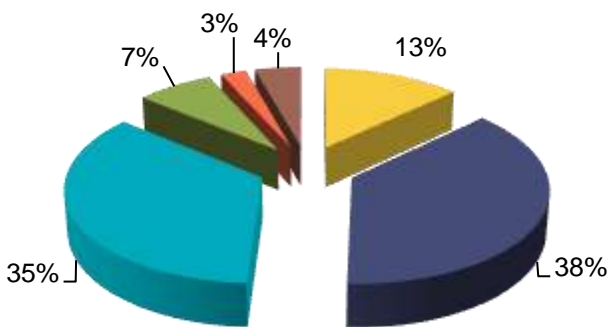


Figure 50. *I feel safer with this standardised naming*

While 69 % recognise an improvement or a maintaining of the sense of safety, only 14 % mention the contrary. Differences in feelings between pilots and controllers appear after this renaming.

I feel safer with this standardised naming

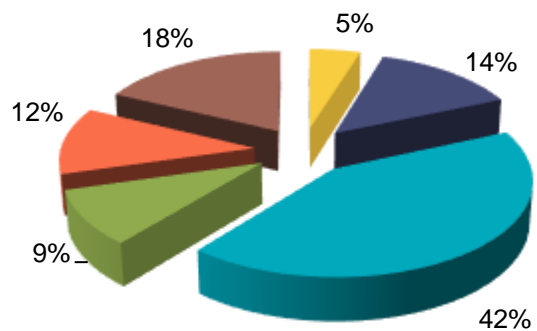
Pilots only:



- Strongly agree Rather agree
- No-influence change Rather disagree
- Strongly disagree No opinion

Figure 51. *I feel safer with this standardised naming (Pilots only)*

Air traffic controllers only:



- Strongly agree Rather agree
- No-influence change Rather disagree
- Strongly disagree No opinion

Figure 52. *I feel safer with this standardised naming (Air traffic controllers only)*

Following this standardised naming: I note fewer safety events on approach

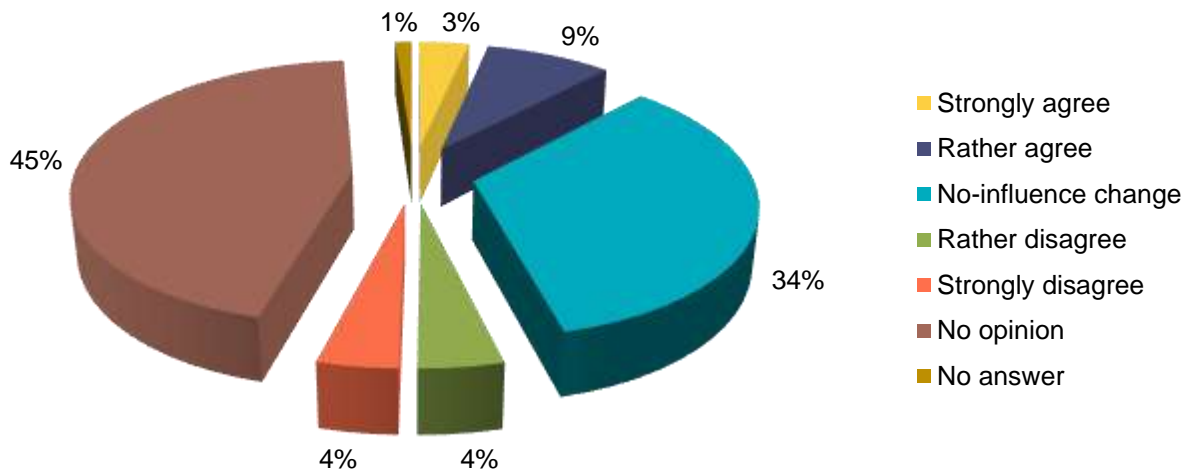


Figure 53. Following this standardised naming: I note fewer safety events on approach

46 % (3 %+ 9 %+ 34 %) mention an improvement or stability at least in the number of safety events, compared with only 8 % mentioning the opposite.

Renamed trajectories seem potentially less dangerous than those not yet modified

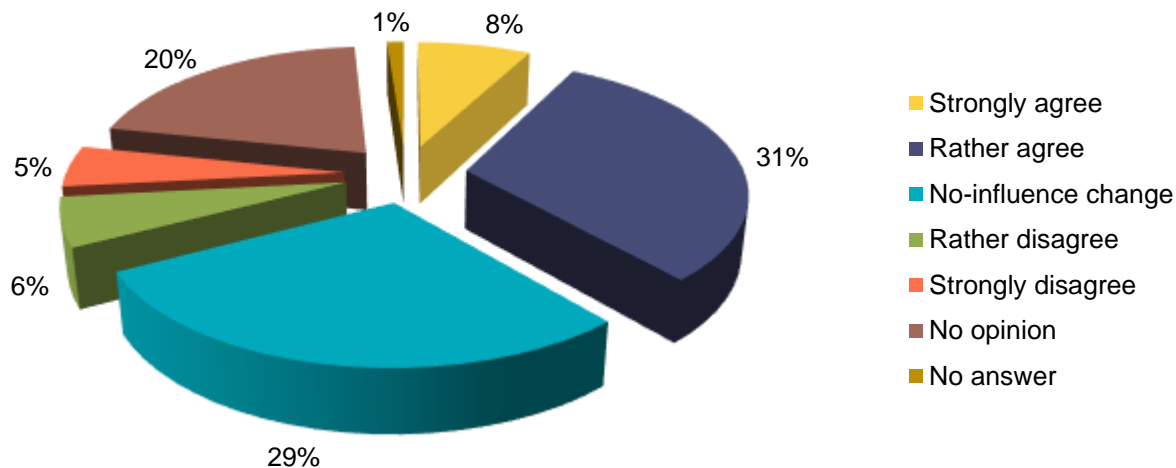


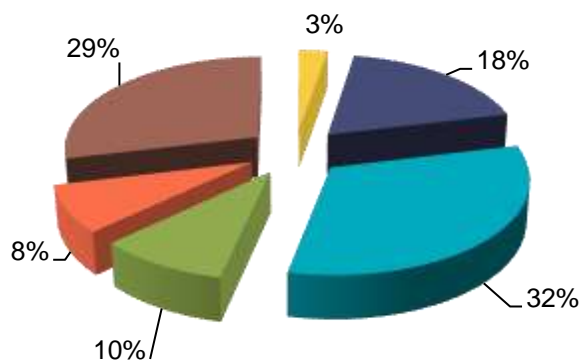
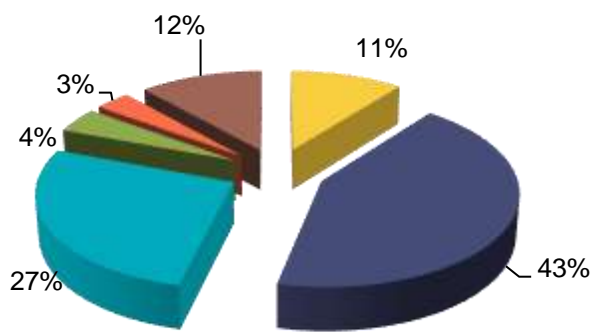
Figure 54. Renamed trajectories seem potentially less dangerous than those not yet modified

While 68 % (31 %+ 8 %+ 29 %) of respondents recognise a decrease or stability of the dangerousness of trajectories, only 11 % express a contrary opinion.

Renamed trajectories seem potentially less dangerous than those not yet modified

Pilots only:

Air traffic controllers only:



- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

- Strongly agree
- Rather agree
- No-influence change
- Rather disagree
- Strongly disagree
- No opinion

Figure 55. Renamed trajectories seem potentially less dangerous than those not yet modified (Pilots only)

Figure 56. Renamed trajectories seem potentially less dangerous than those not yet modified (Air traffic controllers only)

Pilots more often report a feeling of improvement on this point than controllers.

6. Integrating these changes into your methods

Which approach charts do you use?

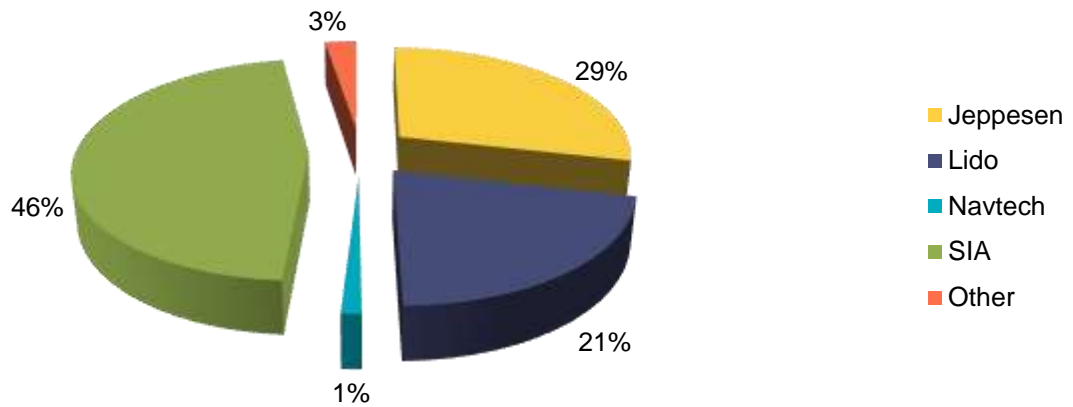


Figure 57. Which approach charts do you use?

Did you have to change your practices (briefing...) in order to take advantage of the renaming of points in PBN approaches?

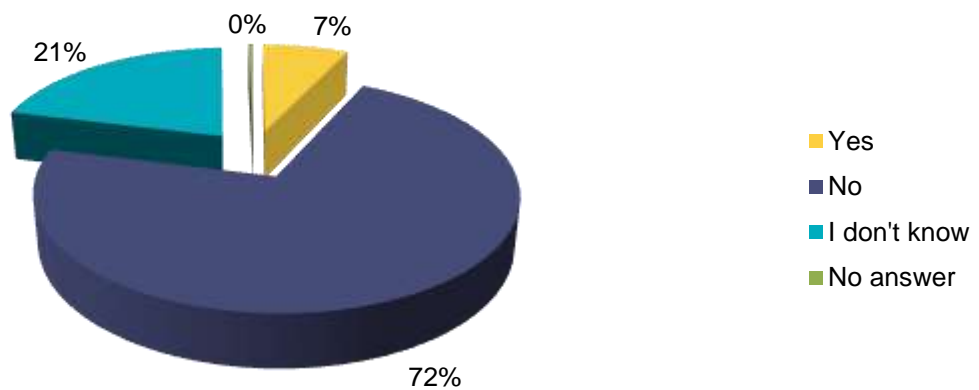
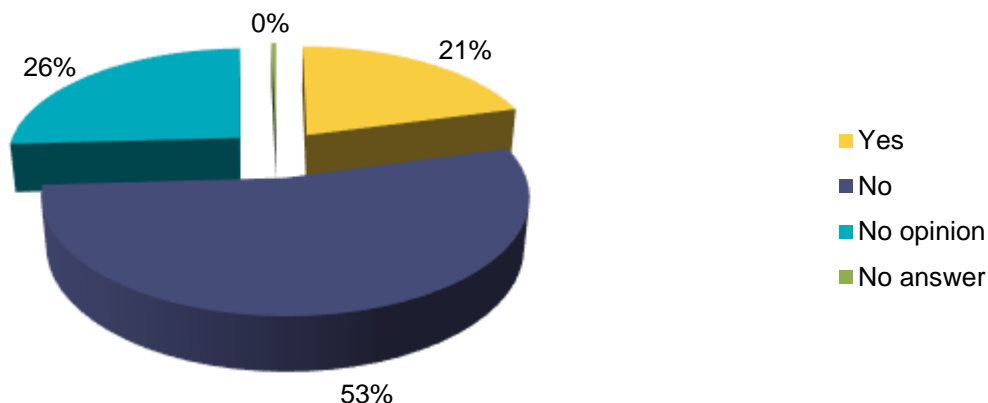


Figure 58. Did you have to change your practices (briefing...) in order to take advantage of the renaming of points in PBN approaches?

Only 7 % of respondents report that they needed to change their practices to take advantage of the renaming.

Has this renaming led to improvements in your knowledge and practice of PBN approaches?



If so, what improvements? The population of the 21 % responding positively is asked to list the types of improvements as a result of renaming.

Note: the following list has been translated from French.

Anticipated preparation of the aircraft before the IF
A better knowledge of the approach path without using the vertical profile
Better visualisation of trajectories and understanding of the procedure.
Better awareness of the IAF/IF/FAF sequence
Knowledge of the naming of the satellite airports
Deepening knowledge by seeking in the doc the reason for this change.
A Better situational awareness.
Key points in the approach path are better identified.
Charts are easier to use.
The removal of doubt about the selected procedure is more efficient (e.g. between Y and Z).
The removal of doubt about the selected runway is more efficient (e.g. between L, C and R).
It is easier to remember the waypoints of the procedure.
The risk of premature descent (e.g. at IF instead of FAF) is lower.
Point identification, but also standardisation with the FMC for machine/pilot consistency.
Clearer.
Knowledge update after these changes
The renaming provides clarification.
Improvement not in knowledge but in practice because points are better identified and are in a more logical way.
Better knowledge and use.
In practice, this makes it possible to be clearer during crew briefings, for example.
Knowing how the points are named, improves knowledge.

Better knowledge in the procedures design.

Identify the different phases of approaches and constraints in the vertical profile.

Better identification of the different approach phases.

Easier to retrieve the point's position when practicing with the documentation

Better identification of the point's roles.

Mandatory.

Clearer structure and design.



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