



EASA

European Aviation Safety Agency

THE EUROPEAN PLAN *for*
**AVIATION
SAFETY**

EPAS 2018-2022



Strategic priorities, enablers and key actions

What is the European Plan for Aviation Safety and why do we need it?

Despite Europe's excellent aviation safety record, recent events remind us of the need to always remain vigilant and constantly search for system weaknesses to act before they manifest in an incident or accident. The European Plan for Aviation Safety (EPAS) is the instrument to prioritise and manage actions to maintain and further improve aviation safety while ensuring efficiency, proportionality and level playing field.

The EPAS seeks to further improve aviation safety throughout Europe. The Plan looks at aviation safety in a systemic manner based on available evidence. It addresses not only the direct causes, but also the underlying or hidden contributing factors behind accidents and incidents. Moreover, the Plan addresses emerging safety issues in order to ensure our high level of safety also in the future.

The EPAS is a key component of the EU aviation strategy at the European level, and is a five-year programme that is constantly being reviewed and improved. As an integral part of the European Aviation Safety Agency (EASA)'s work programme, the Plan is developed by EASA in consultation with the EASA Member States and industry. All EASA Member States have committed to implement it through their State Safety Programmes and Plans. Moreover, 12 non-EASA European Civil Aviation Conference (ECAC) States voluntarily participate in the EPAS activities and EASA initiated work with ICAO to extend the EPAS scope to the entire European and North Atlantic (EUR/NAT)* region. The current EPAS edition covers 2018 to 2022.

Strategy

The strategy of the EPAS is based on the European Commission's Aviation Strategy, EASA's strategic plan, the European Safety Risk Portfolios published in the Annual Safety Review and the European Aviation Environmental Report 2016. The current edition also includes strategic enablers in the areas of technical training, research and international cooperation. The input from Industry and States is also taken into consideration.

Distribution of actions per driver

The EPAS is divided into four drivers, which correspond to different chapters in the document:

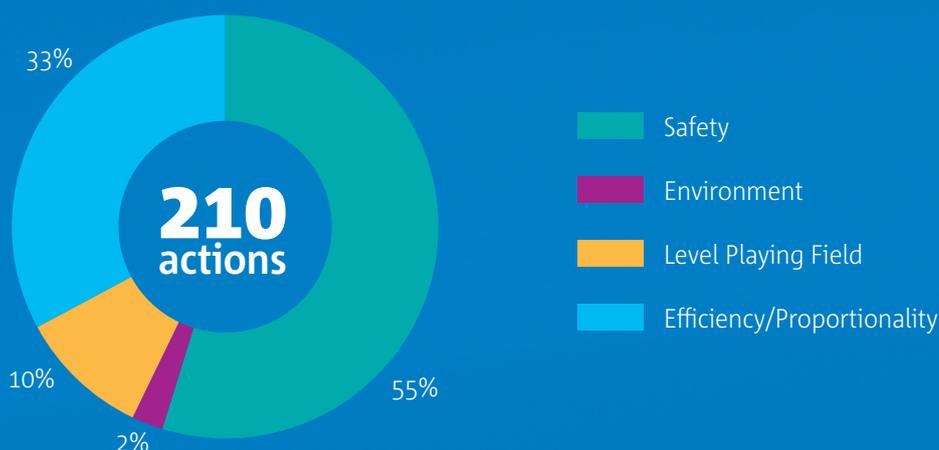
Safety: actions driven by the need to improve the current level of safety in aviation;

Environment: actions driven by the need to improve current environmental protection in aviation;

Efficiency/proportionality: actions driven by the need to ensure that rules are cost-effective in achieving their objectives and proportionate to the risks identified;

Level playing field: actions driven by the need to assure that all players in a certain segment of the aviation market can benefit from the same rules.

The safety driver is the one that contains most of the actions in the plan, followed by efficiency/proportionality.



*www.icao.int/EURNAT/Pages/welcome.aspx

Strategic priorities

Systemic safety

Improve safety by improving safety management

Aviation authorities and organisations should anticipate increasingly new threats and associated challenges by developing their Safety Risk Management (SRM) capabilities as part of safety management implementation supported by ICAO Annex 19, and Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of aviation occurrences.

Key Actions:

- Support States in implementing State Safety Programmes;
- Encourage international harmonisation of Safety Management System (SMS) implementation, and human factors principles;
- Incorporate safety management requirements in initial and continuing airworthiness;
- Support the implementation of flight data monitoring (FDM) programmes.

Data4Safety (also known as D4S) is a data collection and analysis programme that aims at leveraging Safety Risk Management capabilities at European level. This includes safety reports (or occurrences), flight data (i.e. data generated by the aircraft via the Flight Data Recorders), surveillance data (air traffic data), weather data — these being only a few from a much longer list.

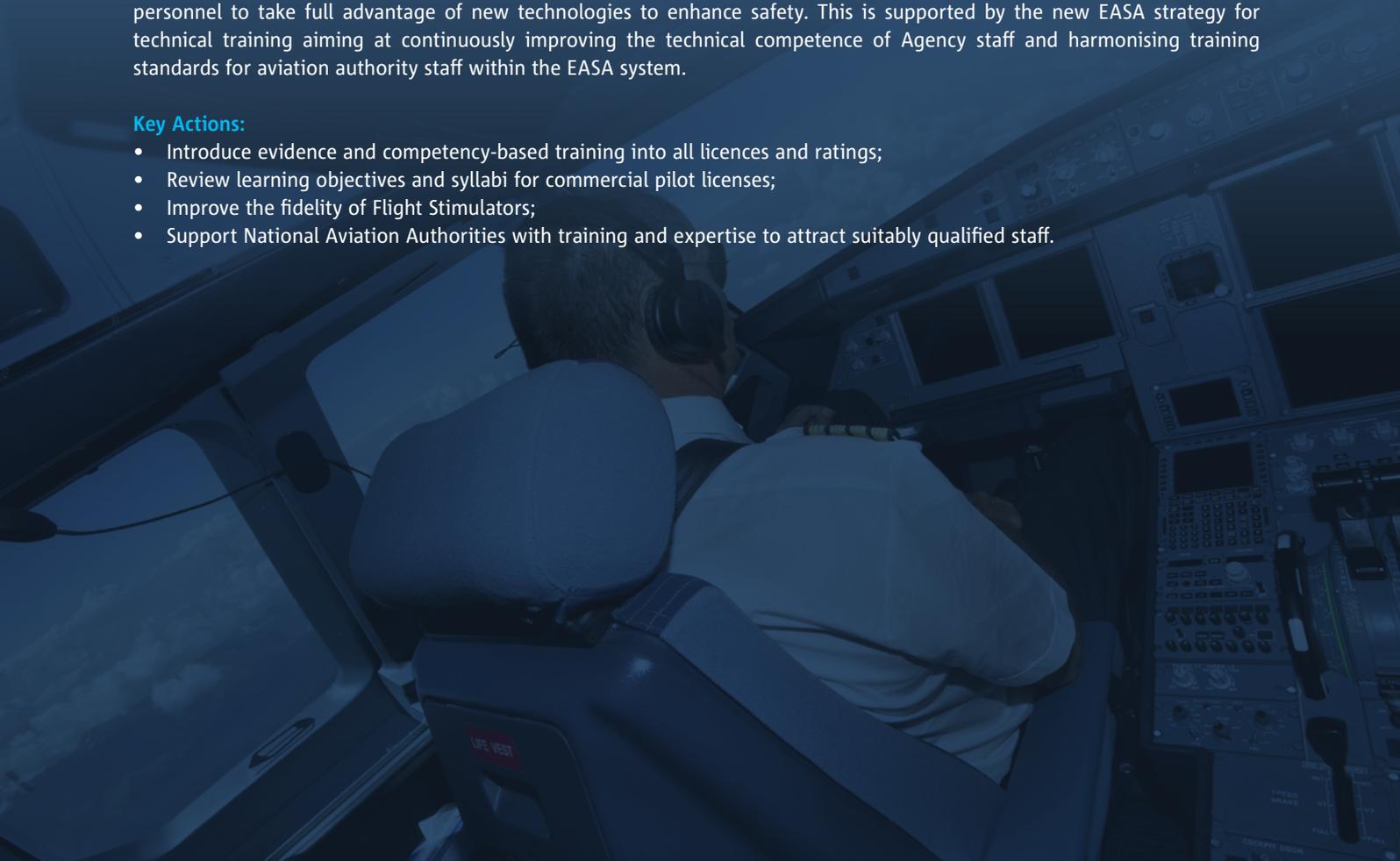
The D4S programme will allow to better identify where the risks are, determine the nature of these risks and verify whether related safety actions are delivering the required level of safety.

Human factors and competence of personnel

As new technologies emerge on the market and the complexity of the system continues to increase, it is of key importance to have the right competences and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take full advantage of new technologies to enhance safety. This is supported by the new EASA strategy for technical training aiming at continuously improving the technical competence of Agency staff and harmonising training standards for aviation authority staff within the EASA system.

Key Actions:

- Introduce evidence and competency-based training into all licences and ratings;
- Review learning objectives and syllabi for commercial pilot licenses;
- Improve the fidelity of Flight Stimulators;
- Support National Aviation Authorities with training and expertise to attract suitably qualified staff.



Operational safety

Commercial Air Transport Aeroplane operations

It can be observed from the data that in 2016 the number of non-fatal accidents involving EASA Member State operators was below the 10-year average, with 16 accidents compared to an average of 23.1 over the previous 10 years. At the same time, there was a 36 % increase in the number of serious incidents in 2016 resulting in a total of 106 serious incidents compared with the 10-year average of 78.2. In terms of fatalities, the single fatal accident in 2016 (Bombardier CRJ-200) resulted in 2 fatalities, which is much lower than the 10-year average.

This operational domain is the main focus of the EASA safety activities.

The European Safety Risk Management process¹ identified the following as the most important risk areas for CAT Aeroplanes:



Aircraft upset in flight (Loss of Control)

Aircraft upset or loss of control is the most common accident outcome for fatal accidents in Commercial Air Transport aeroplane operations, accounting for 75 % of them. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters.

Key Actions:

- Review and promote training provisions on recovery from upset scenarios;
- Improve mitigation of loss of control risk during go-around or climb phases;
- Member States to address loss of control in flight by taking actions at the national level and measuring their effectiveness.

¹ The EPAS is developed through the EU Safety Risk Management process which consists of five clear and specific steps, managed by EASA: 1 - Identification of Safety Issues, 2 - Assessment of Safety Issues, 3 - Definition and Programming of Safety Actions, 4 - Implementation and Follow-up and 5 - Safety Performance Measurement, where this last step feeds back into the identification of safety issues.



Runway excursions and collisions

In the past decade, runway excursions accounted for 13 % of the fatal accidents in Commercial Air Transport aeroplane operations involving airline/cargo operations. This includes actual runway excursions and occurrences related to directional control or braking action during landing, such as long, fast, off-centred or hard landings or technical problems with the landing gear. Runway collisions have been the outcome in 1 % of fatal accidents in the past decade.

Key Actions:

- Require on-board technology to reduce runway excursions;
- Improve aircraft performance in Commercial Air Transport operations;
- Promote and implement the European Action Plan for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE);
- Member States to address runway safety by taking actions at the national level and measuring their effectiveness.



Rotorcraft operations

This area includes both Commercial Air Transport (CAT) and offshore operations as well as aerial work performed by rotorcraft. In 2016, there were 2 fatal accidents in CAT rotorcraft operations, 1 fatal accident in offshore operations and no fatal accident in aerial work.

The European Safety Risk Management process identified the following areas where risk controls can be improved to further reduce the number of accidents:



Rotorcraft upset (Loss of Control)

This is the key risk area with the highest priority in CAT and offshore rotorcraft operations (7 fatal accidents in the past 10 years). Rotorcraft upset is the second most common accident outcome for aerial work operations (9 fatal accidents in the past 10 years).

Key Actions:

- Improve the certification specifications and standards relating to the certification of rotorcraft hoists;
- Strengthen the existing requirements for rotor drive system lubrication;
- Improve specifications on the use of vibration health monitoring (VHM) systems to detect imminent failures of critical rotor and rotor drive components;
- Improve mitigation of risks relating to restricted pilot vision.



Terrain and obstacle collision

This is the second priority key risk area for offshore rotorcraft operations. Obstacle collision is the most common outcome in aerial work operations (11 fatal accidents in the past 10 years) and the second most common accident outcome in the CAT rotorcraft domain (4 fatal accidents in the past 10 years).

Key Action:

- Introduce requirements for rotorcraft terrain avoidance warning systems.

Address safety risks in General Aviation in a proportionate and effective manner

In the last years, accidents involving recreational aeroplanes have led to an average of nearly 80 fatalities per year in Europe (excluding fatal accidents involving micro light aeroplanes as these are not within EASA remit). This makes it one of the aviation sectors with the highest yearly number of fatalities. The **General Aviation Roadmap** is key to the EASA strategy in this domain.

Although it is difficult to gauge the evolution of safety performance in **General Aviation** due to the lack of consolidated exposure data (e.g. accumulated flight hours), it is reasonable to assume that step changes in the existing safety level are not being achieved at European level, despite all initiatives and efforts.

Therefore, in 2016 EASA decided to organise a workshop on **General Aviation** safety to share knowledge and agree on the actions to improve safety in this domain. The following strategic safety areas were identified during this workshop: preventing mid-air collisions, coping with weather, staying in control, and managing the flight.

Key Actions:

- Improve the dissemination of safety promotion and training material by authorities, associations, flying clubs, insurance companies, targeting flight instructors and/or pilots;
- Encourage the installation and use of modern technology;
- Launch a campaign to help pilots “stay in control”;
- Increase weather awareness for pilots;
- Address airspace infringement risks through an EU wide promotion campaign.



Emerging safety issues

Ensure the safe operation of drones

The number of drones within the EU has multiplied over the last two years. Available data shows an increase in close encounters between drones and manned aircraft, thereby confirming the need to mitigate the associated risks. 15 non-fatal accidents were included in the European Central Repository² in 2016.

Furthermore, the lack of harmonised rules at EU level makes unmanned aircraft systems (UAS) operations dependent on an individual authorisation by every Member State, which is a burdensome administrative process that stifles business development and innovation. In order to remove restrictions on UAS operations at EU level, so that industry can make optimum use of unmanned aircraft technologies, to create jobs and growth while maintaining a high and uniform level of safety, EASA is engaged in developing the relevant regulatory material.

Key Actions:

- Introduce a regulatory framework for the operation of drones;
- Coordinate European activities to promote safe operation of drones to the general public.



² The European Central Repository (ECR) is the central database of all occurrences reported to the National Aviation Authorities or to EASA, the reporting of which is governed by Reg. (EU) 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation.



Impact of security on safety

Cybersecurity

The multiplication of IT applications and network connections increases the vulnerability of the whole aviation system. It is essential that the aviation industry shares knowledge and learns from experience to ensure systems are secure from individuals/organisations with malicious intent.

On 10 February 2017 EASA signed a Memorandum of Cooperation with the Computer Emergency Response Team of the EU Institutions (CERT-EU).

EASA and CERT-EU will cooperate in the establishment of a European Centre for Cybersecurity in Aviation (ECCSA). ECCSA's mission is to provide information and assistance to European aviation manufacturers, airlines, maintenance organisations, air navigation service providers, aerodromes, etc. to protect critical elements of the system.

Key Actions:

- Develop and implement a Strategy for Cybersecurity in Aviation;
- Implement a regulatory framework covering all aviation domains;
- Introduce new Cybersecurity provisions in the certification specifications.

Conflict zones

Since the tragic downing of Malaysian Airlines flight MH17, there is a general consensus that States shall share their information about possible risks and threats in conflict zones. Numerous initiatives have been taken to inform the airlines about risks on their international flights.

An EU high-level Task Force was set up to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones. The Task Force final report (issued on 17 March 2016) contains recommendations for various stakeholders and a proposal to set up a Conflict Zone Alerting System at European Level, through cooperation between Member States, European institutions, EASA and other aviation stakeholders.

Key Action:

- Disseminate information to air operators in order to mitigate the risk associated with overflying conflict zones.

Address current and future safety risks arising from new and emerging business models

Due to the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and oversight authorities has increased.

Key Actions:

- Support National Aviation Authorities in the practical implementation of cooperative oversight;
- Improve the understanding of operators' governance structures;
- Ensure that National Aviation Authorities have the ability to evaluate and oversee operators' management systems.

Strategic enablers

Research

The EASA Research Strategy is articulated around four main objectives:

1. **enabling urgent aviation safety research:** provide reactivity after incidents or accidents or support the identification of latent safety issues;
2. **getting ready for global standards:** make certain that the EU has the means to play a leading role for setting up global standards with respect to emerging and future technologies;
3. **reduction of time to market:** support the industry upstream, ensure that the regulatory framework is not an impediment to innovation;
4. **cohesive Research Planning and Monitoring:** provide synergies, avoid duplication and dispersion of research efforts.

EASA will take a proactive role in assuring, in collaboration with Member States, Industry and the aviation research community, the consolidation of the research needs to respond to current safety issues identified in EPAS

International Cooperation

One of the European Commission's 10 key priorities is that the EU becomes a stronger global actor. EASA supports the EU and cooperates with national, regional and international organisations alike, in order to enhance global aviation safety and support the free movement of European products and services.

The strategic priorities at an international level are to:

- promote safety and environmental protection for European passengers beyond Europe's border;
- support European industry interests;
- enable the European approach in the ICAO system.





Technical Training

The new Basic Regulation proposes a framework for pooling and sharing of technical resources between the National Aviation Authorities and EASA. The implementation of this new approach requires a stronger harmonisation of job profiles as well as of training and assessment standards for aviation personnel.

To address these challenges and further improve safety and efficiency, EASA will focus on the following key areas:

- continuous development and maintenance of EASA staff competences, as well as the harmonisation of training and assessment standards for aviation inspectors;
- implementation support to aviation authorities and aviation organisations as well as lectures to universities;
- support of the international cooperation strategy through training services; and
- continuous improvement of the European Central Question Bank (ECQB), currently used for theoretical examinations of commercial pilots.

For the continuous development of technical competencies of authority staff, EASA will closely work together with the Common Training Initiative Group (CTIG), composed of training managers from Member States and additional European Civil Aviation Conference (ECAC) countries.

Oversight

By introducing authority requirements, and in particular strict oversight requirements, the rules developed have significantly strengthened Member States' oversight capabilities and improved efficiency through risk-based and cooperative oversight.

To support Member States the EPAS includes six focused oversight tasks, addressing standardisation actions from EASA as well as oversight actions led by Member States.

EASA will continue to support Member States in the practical implementation of cooperative oversight, e.g. by way of existing trial projects and by exchanging best practices and guidance.

Environment

The aviation industry needs to minimise its impact on the environment as much as possible while providing safe air transport. In addition, it is key to ensure that European environmental requirements are consistent with the rest of the world to guarantee a level playing field.

Climate change and noise: Introduce the CAEP/10 recommendations

Actions in this area will contribute to meet European targets on climate change prevention by implementing the ICAO CO₂ standard. In February 2016 the ICAO Committee on Aviation Environmental Protection (CAEP) adopted entirely new CO₂ and particulate matter emission standards. The agreed CO₂ standard needs to be implemented in the European system to become effective.

Key Actions:

- Develop Particulate Matter (PM) regulations and guidelines;
- Improve the certification specifications relating to the environmental technical manual on noise certification.



Efficiency

Better Regulation: rules are evidence-based, where appropriate performance based, proportionate, fit-for-purpose, simply-written and contribute to the competitiveness of the industry

Applying Better Regulation principles means for EASA that efforts must aim at:

- a transparent and streamlined regulatory process supported by efficient stakeholder consultation;
- actors involved in the drafting of regulatory material that have been appropriately trained in drafting performance-based rules;
- a plain and easily understandable language also for non-native English speakers;
- communication and IT platforms that give stakeholders easy access to consulted deliverables and regulatory material, including soft law; and
- a regulatory approach that is performance-based where appropriate and respects the principles of subsidiarity and proportionality; in line with the EASA policy on Performance-Based Regulations adopted in 2016.

Reduce the regulatory burden for General Aviation

EASA is fully engaged in developing simpler, lighter and better rules for General Aviation. This will be achieved in line with the General Aviation Roadmap created in partnership with the European Commission and stakeholders.

Key Actions:

- Introduce licensing requirements for B2L and L Part-66 aircraft maintenance licences;
- Review the existing requirements for providing private pilot training outside approved training organisations;
- Review Part-M for General Aviation.

Enable the implementation of new technologies developed by Single European Sky ATM³ Research (SESAR)

EPAS also caters for the regulatory needs of the SESAR common projects and other new technological developments by enabling the implementation of new working methods and technologies developed by SESAR with focus on data management.

Key Actions:

- Develop requirements for extended data link operations for safety-critical message use;
- Ensure technical and operational requirements for remote tower operations;
- Implement performance-based navigation in the European air traffic management network
- Develop implementing measures to enable the timely deployment of the ATM functionalities and other operational changes.

Better Regulation: Cool-down period

When the European regulatory framework for aviation started being set up in 2002, the volume of regulations to be created was necessarily significant. As this process is now largely completed, a 'cool-down period' was proposed by stakeholders in order to stabilise the regulatory system and reduce the burden on stakeholders. Accordingly, EASA introduced cooling down ceilings in its five-year plan.



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Level playing field

Enable all-weather operations

The European industry should have the capability to take full advantage of the safety and economic benefits generated through new technologies and operational experience. The all-weather operations project touches on a wide range of areas, including aerodrome minima, aerodrome equipment, and procedures both for Commercial Air Transport and General Aviation.

Facilitate European emerging technologies and innovations

The objective of this priority area is to enable the introduction of new technologies.

Open rotor engine technology is one of these technologies. The related activity will identify and recommend harmonised requirements and advisory material for engine and aircraft certification specifications to address the novel features inherent in open rotor engine designs and their integration with the aircraft.

A number of manufacturers are working on electric propulsion for aircraft. EASA has currently one application for a type certificate (TC). Many projects are experimental or geared towards the ultra-light market with national type certification. The market potential is significant with related effects on job creation and economic growth, as well as environmental benefits. However, concrete actions are expected only for future EPAS editions, once EASA has collected sufficient technical experience with the certification of these types of aircraft.

Harmonise Flight Time Limitation (FTL) rules for CAT rotorcraft and commercial specialised operations

The objective is to assure a level playing field and the application of scientific principles regarding FTL, especially for operators performing cross-border operations where harmonisation is seen as necessary. Currently, Member States' national rules apply with respect to flight time and rest in CAT operations with helicopters and in commercial specialised operations (SPO). No specific fatigue safety issues have been identified so far.

EASA will ensure that regulatory initiative is exercised taking into account the principles of subsidiarity and proportionality.



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Where can I find more information?

The full EPAS document and related materials can be found at

www.easa.europa.eu/easa-and-you/safety-management/european-plan-aviation-safety

Inquiries concerning the EPAS can be sent to:
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