Resilience in a Changing World

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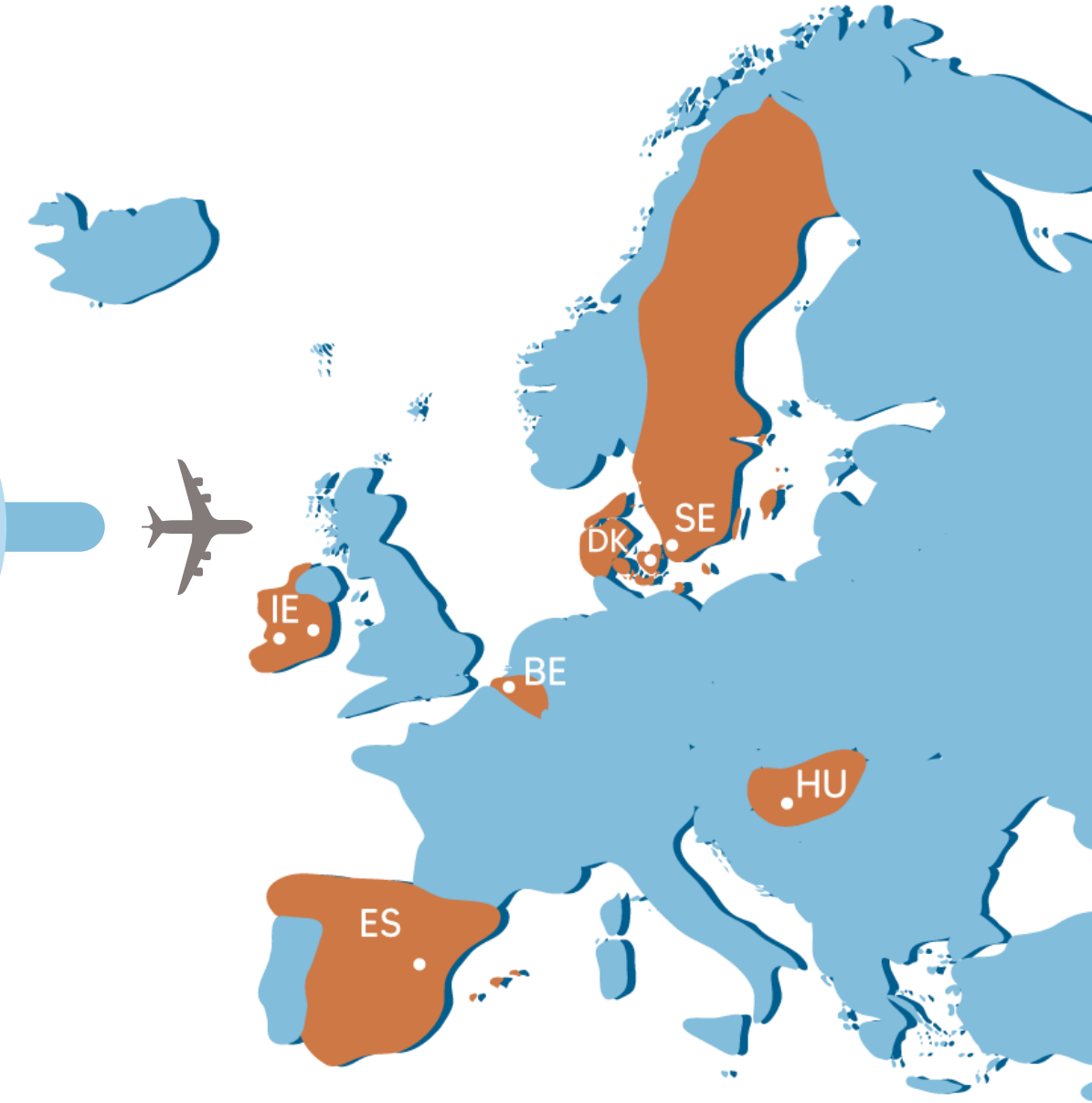
EPN – Entry Point North AB

More than **300** customers

More than **65** countries

More than **10.000** graduates



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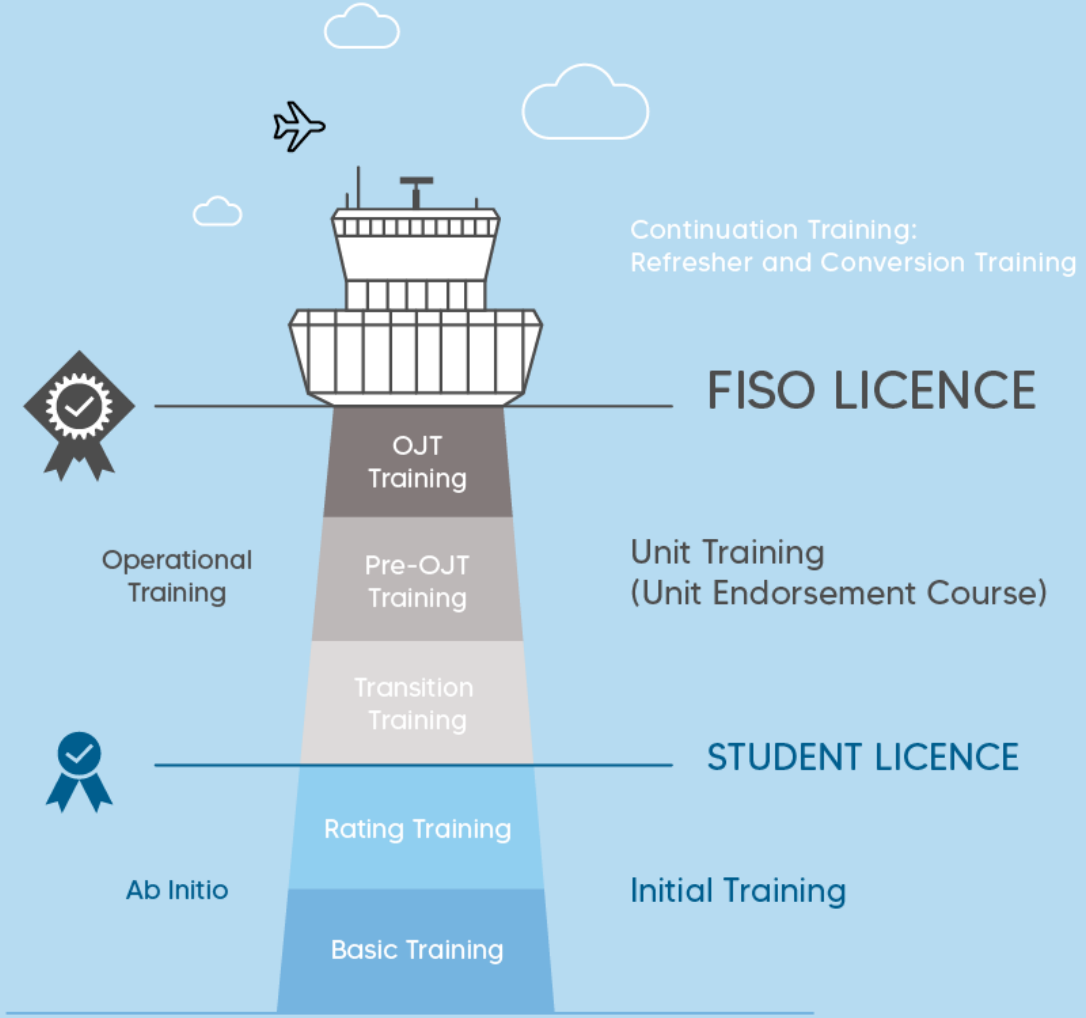
FISO Training at EPN



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Contact Us

Elisabeth Lennartsdotter
Sales & Marketing Director

Sofi Wadsjö
Development Specialist

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The Future of FIS

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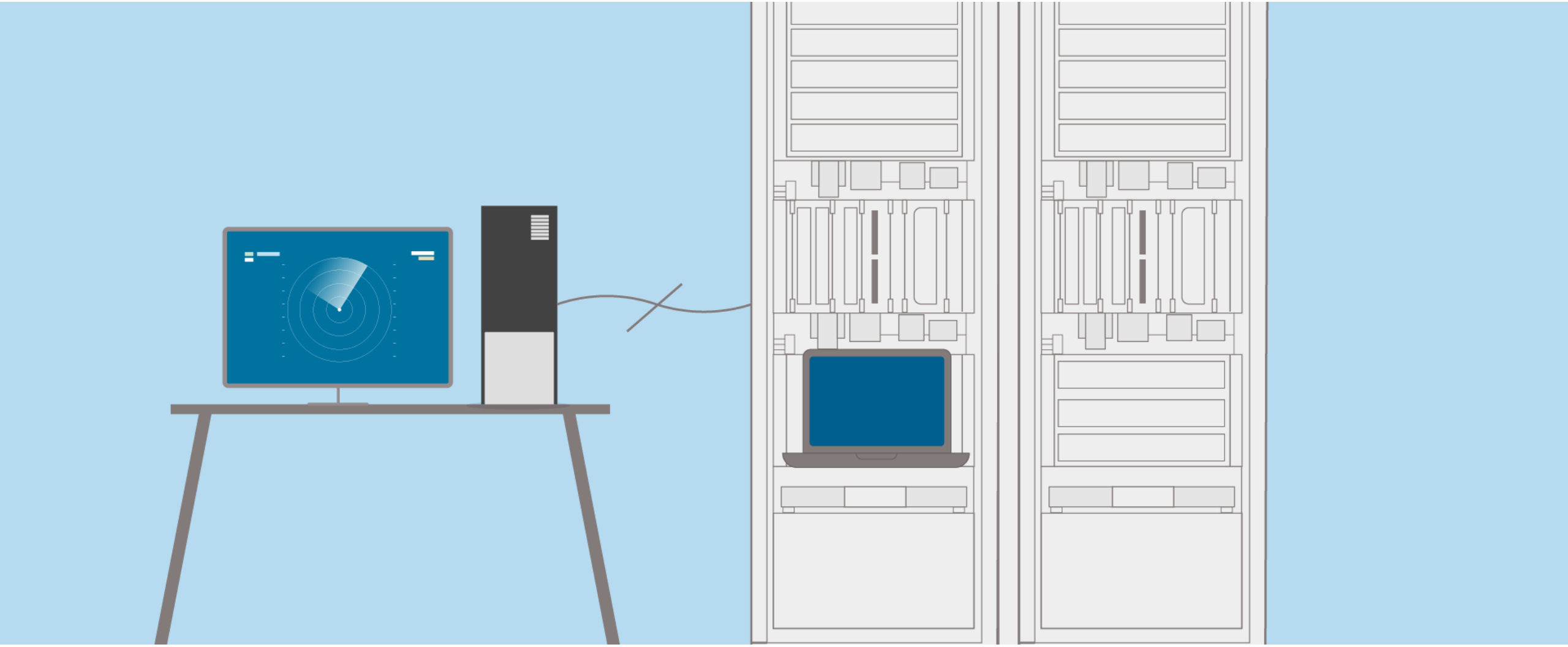

Automation in FIS

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What is Automation?

"The full or partial replacement of a function previously carried out by the human operator." - ICAO

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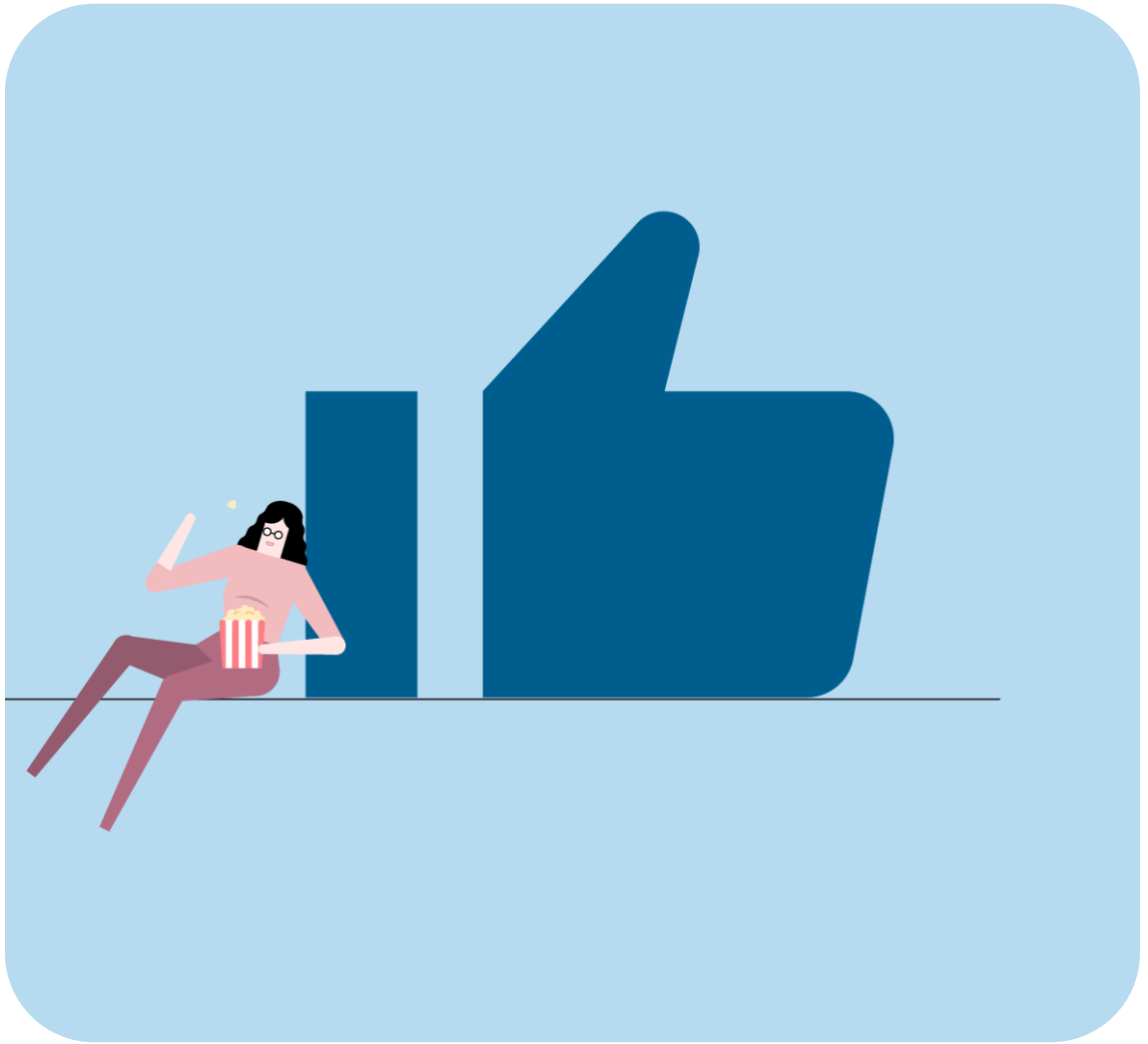
Benefits of Automation

There are three major areas where automation can improve the ATM system:

- Information exchange
- Safety tools
- Efficiency tools



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Enhanced Automation and AI

"The **aim** is that **operations in certain phases of flight** will be **fully automated**, whereby automation is capable of managing both nominal and non-nominal situations. In this new paradigm, **the role of humans will evolve significantly**, **focusing on the tasks or situations too complex for automation to handle**, teaming up with automation to address increasing traffic complexity."

Reference: SESAR European ATM Masterplan

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Levels of Automation

	Perception Analysis Decision Execution	Authority of the human operator
Level 0 Low Automation 2030	Automation **gathers and exchanges data**. It analyses and prepares all available information for the human operator.	Full
Level 1 Decision Support	Automation supports the human operator in action selection by **providing a solution space and/or multiple options**.	Full
Level 2 Resolution support 2035	Automation **proposes the optimal solution** in the solution space.	Full
Level 3 Conditional automation	Automation **selects the optimal solution** and **implements the respective actions** when due and if safe. The **human operator supervises automation and overrides or improves decisions** that are not deemed appropriate. Automation acts under human supervision.	Partial
Level 4 Confined automa 2045	**Automation takes all decisions and implements all actions silently** within the confines of a predefined scope. Automation **requests the human operator to supervise** its operation if outside the predefined scope. Any human intervention results in a reversion to Level 3. Automation acts under **human safeguarding.**	Limited

Reference: European ATM Master Plan – 2025 edition

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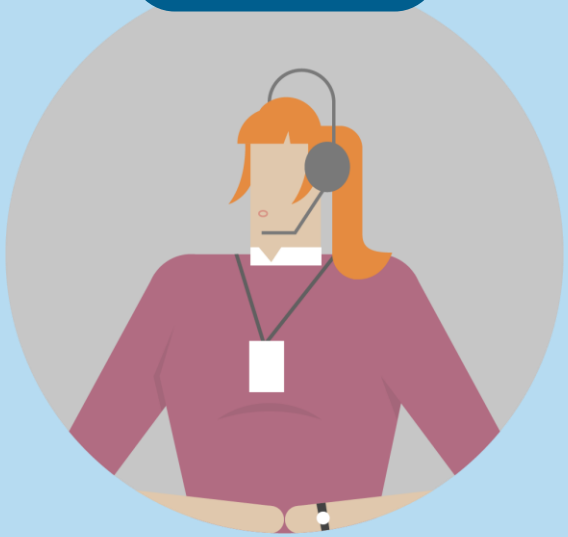
Human Roles

Level 1

Enhanced decision-maker

Level 2



Director

Level 3

Supervisor

Level 4

Safeguarder

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Issues and Challenges with Automation

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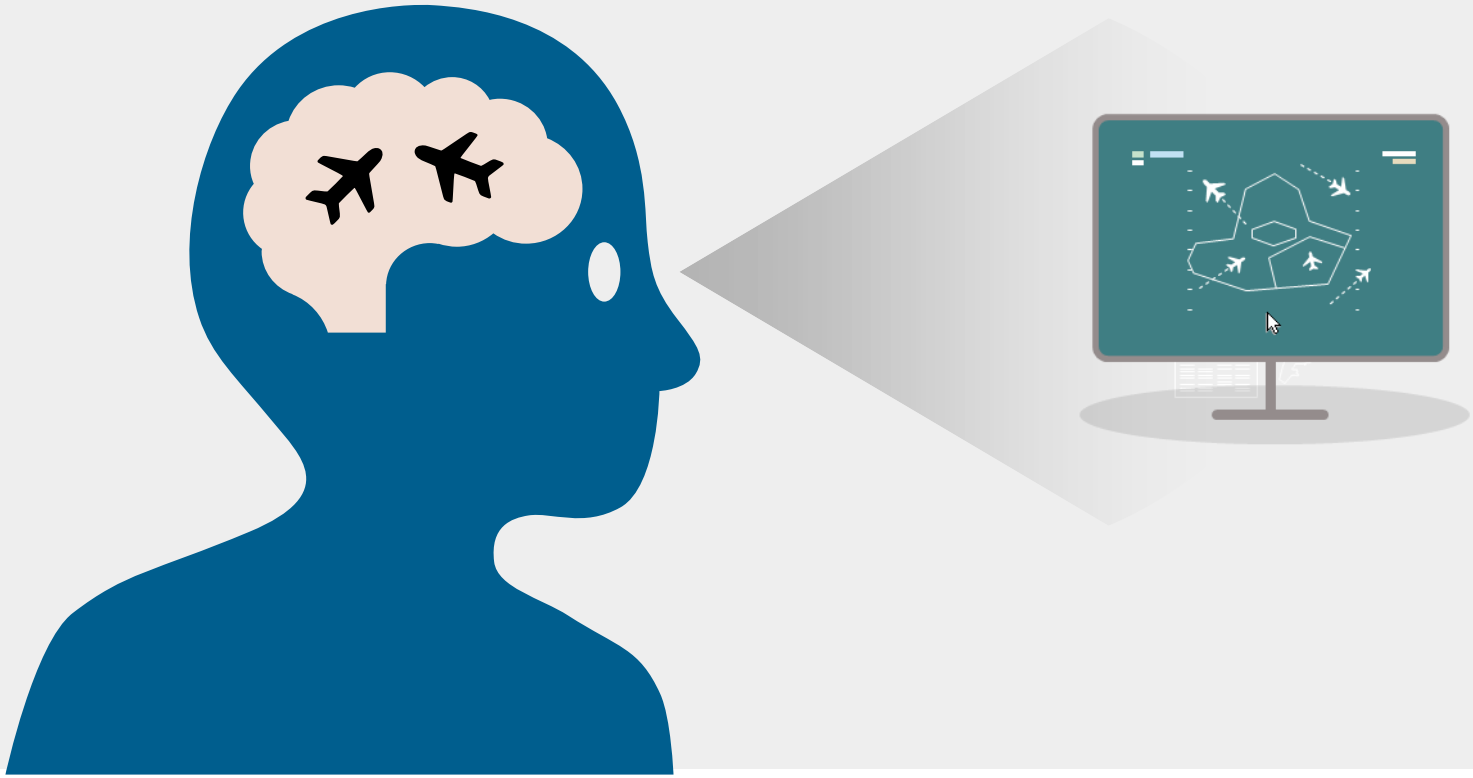
Situational Awareness/Mental Models



Reference: The Impact of Automation on Air Traffic Controller's Behaviors

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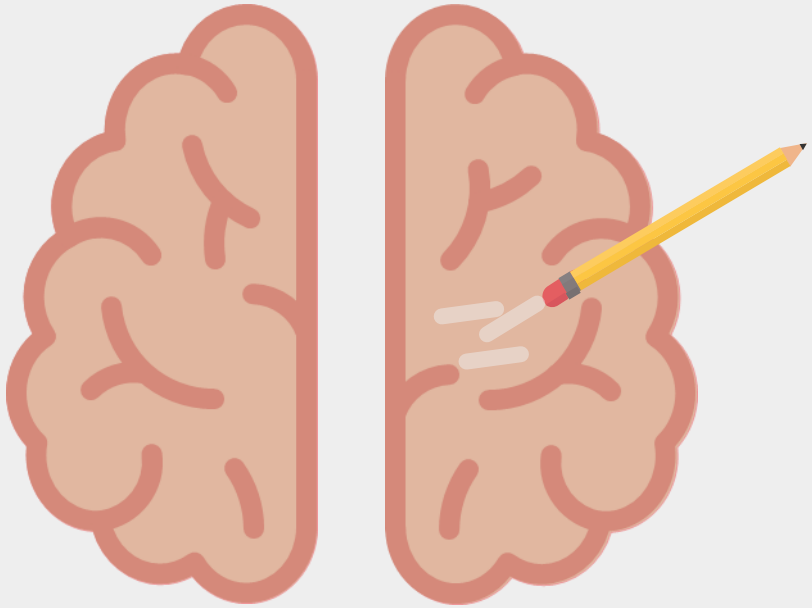
Skill Decay



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Spoofing, Jamming and Other Interference

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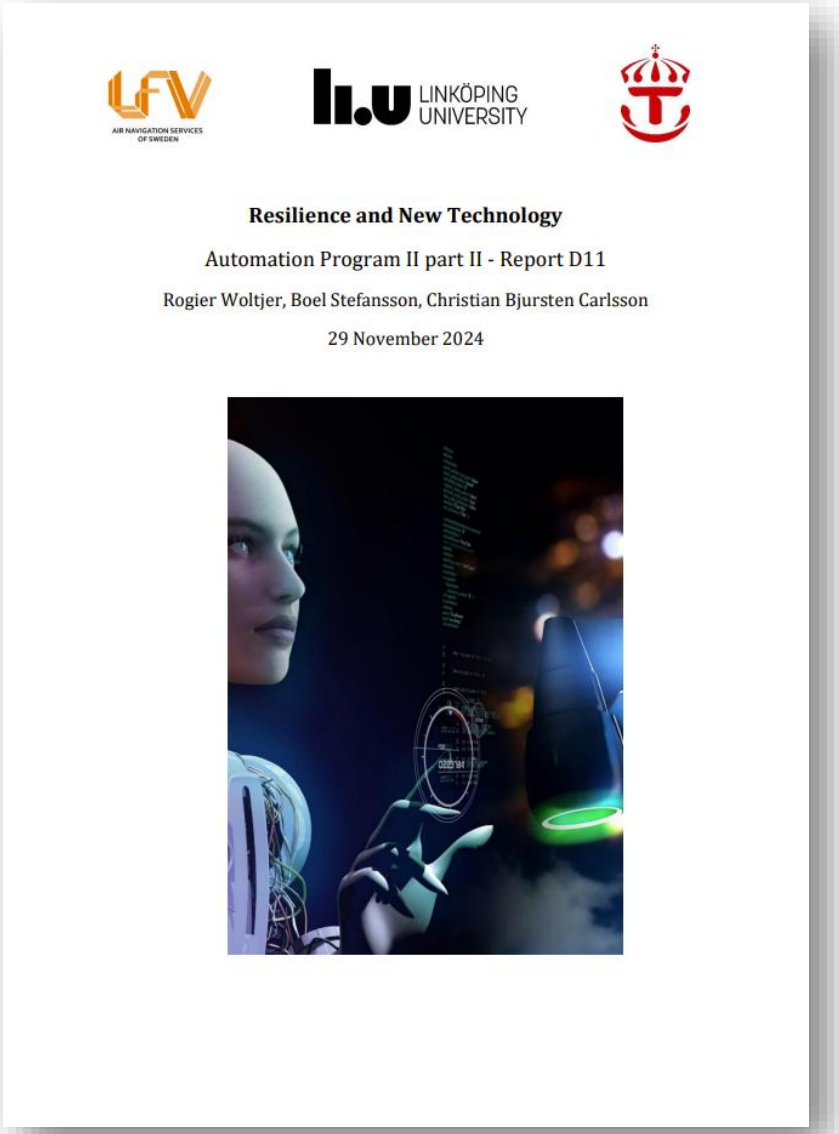
AI in FIS

- DAFI – Digital Automatic Flight Information



Reference: Resilience and New Technology Automation Program II part II - Report D11 Rogier Woltjer, Boel Stefansson, Christian Bjursten Carlsson 29 November 2024

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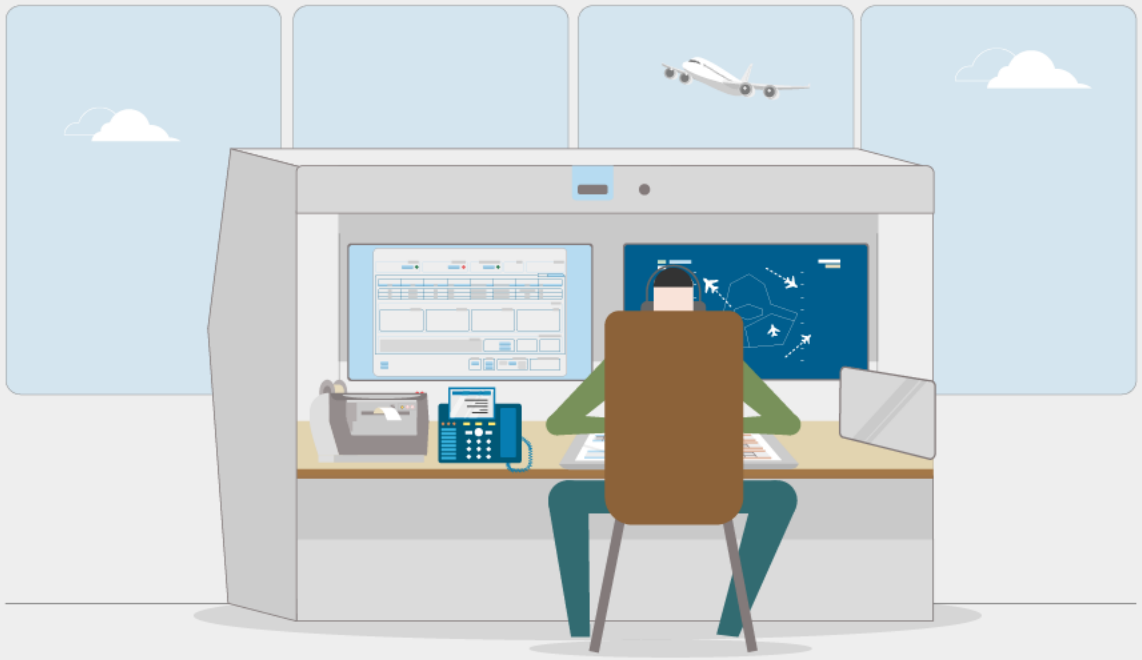
What is FIS?

- A service to provide advice and information useful for the safe and efficient conduct of flights.
- The scope includes; traffic information, NOTAM, SIGMET etc.



Reference: Regulation (EU) 2017/373 Section 3

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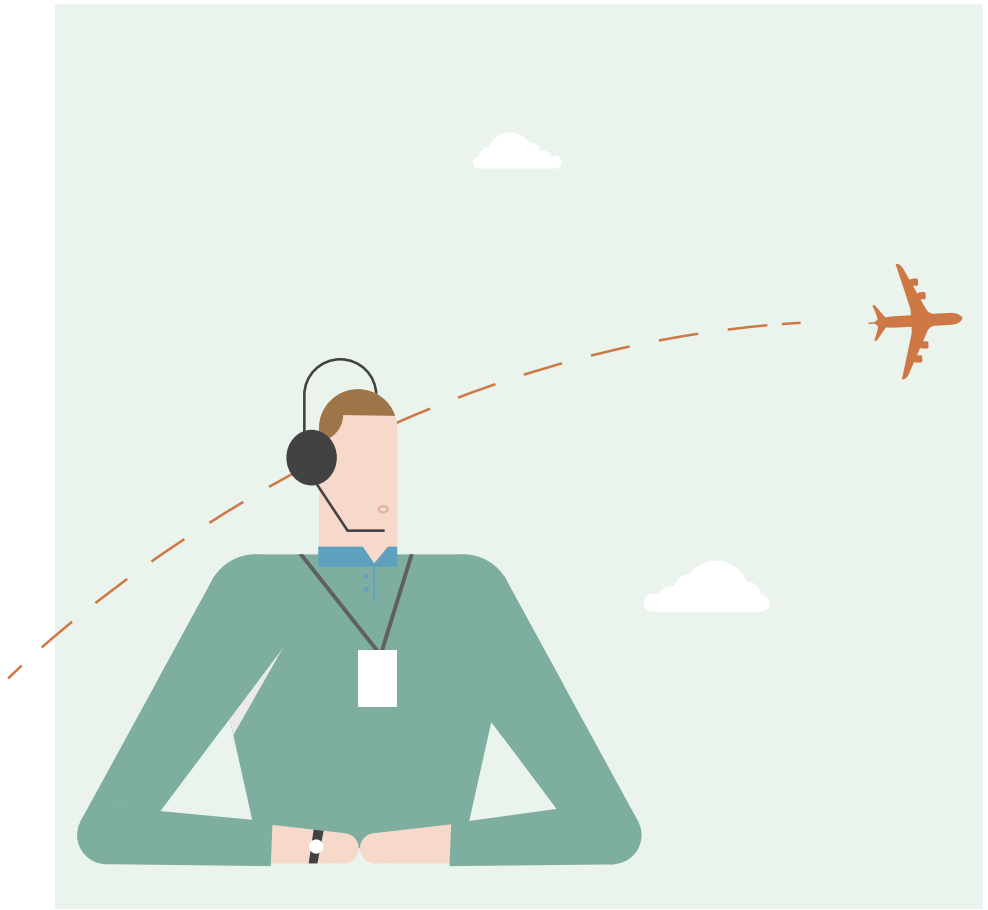
Work-As-Imagined v.s Work-As-Done



WAI

WAD

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WAD Examples

Uncertainty management

Communication

Preconditions of work

Understanding user needs

Information aspects

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Resilience

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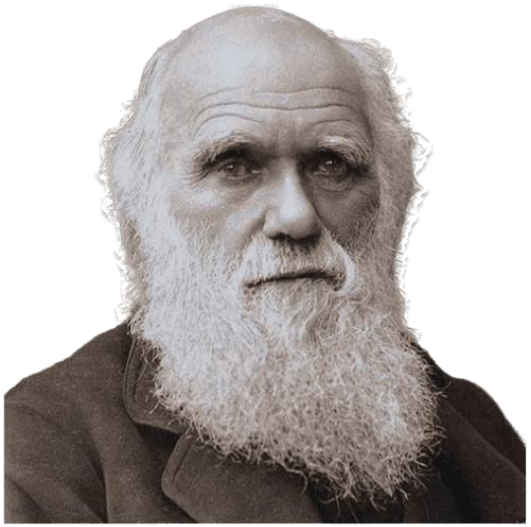
What is Resilience?

Resilience is the ability to **adapt, recover, and grow** in the face of challenges, uncertainty, or adversity. It doesn't mean avoiding stress or discomfort—it means being able to **navigate through it** and come out stronger or wiser on the other side.



"Its not the strongest that survive it is the one that is most adaptable to change" – Charles Darwin

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Key Aspects of Resilience During Change

Emotional Strength
Resilient people can manage their emotions effectively. They acknowledge fear, sadness, or frustration without being overwhelmed by them.

Cognitive Flexibility
Shift your thinking, reframe problems, and see multiple perspectives. This helps adapt to new situations more easily.

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Pain

"The pain of losing something is twice as powerful than the pleasure of gaining something else."

- Daniel Kahneman

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Loss

"People do not fear change they fear loss"
Simon Sinek

Reference: https://simonsinek.com/

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Sense of Purpose
Having goals, values, or a sense of meaning helps you stay grounded and motivated during transitions.

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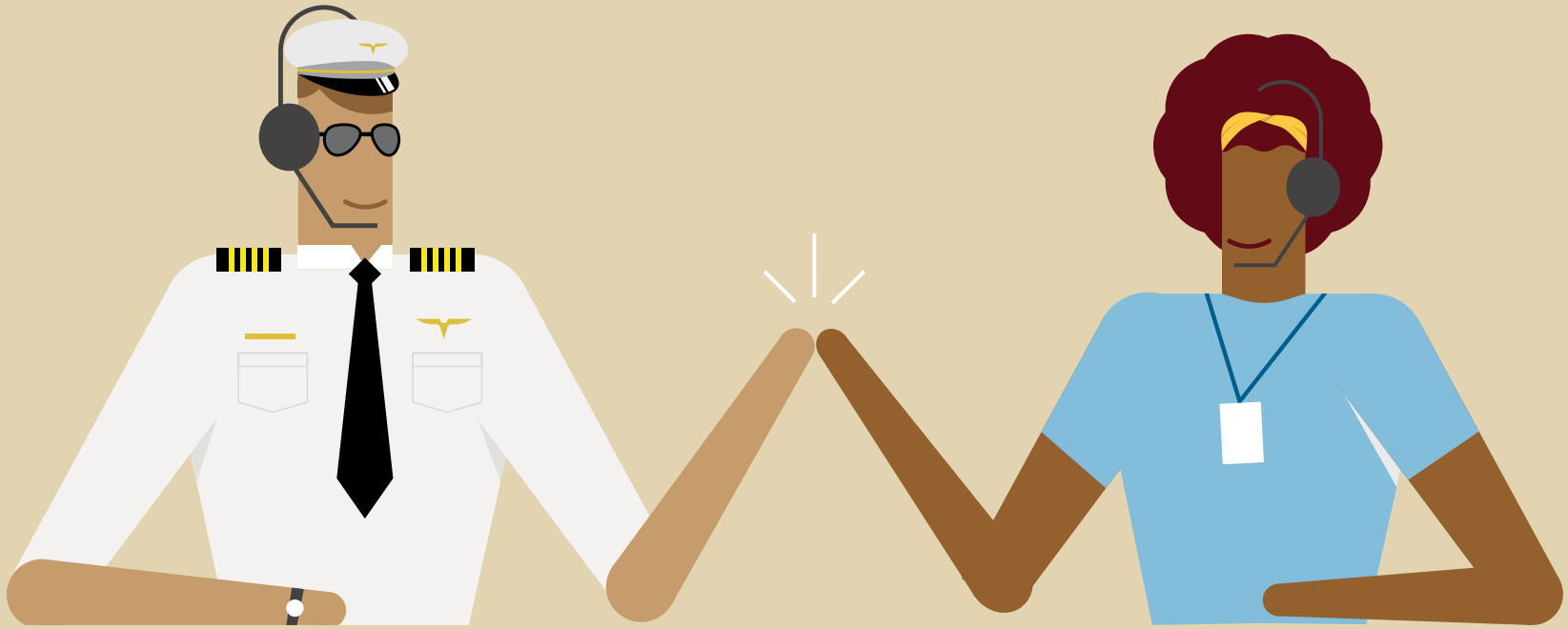
What is FIS? Who are You?



Safety and Service

Give yourself an anchor of stability in the unknown.

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Problem-Solving Skills
Instead of feeling stuck, look for solutions, act, and adjust your strategies as needed.

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Know/Choose Your Role

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Emotional Strength
Resilient people can manage their emotions effectively. They acknowledge fear, sadness, or frustration without being overwhelmed by them.

Cognitive Flexibility
Shift your thinking, reframe problems, and see multiple perspectives. This helps adapt to new situations more easily.

Optimism and Hope
Maintain a hopeful outlook and believe that things can improve, even when the path is unclear.

Problem-Solving Skills
Instead of feeling stuck, look for solutions, act, and adjust your strategies as needed.

Support-Seeking Behaviour
Know when and how to reach out for help, whether from friends, family, or professionals.

Sense of Purpose
Having goals, values, or a sense of meaning helps you stay grounded and motivated during transitions.

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References

- The Impact of Automation on Air Traffic Controller's Behaviors, Yanjun Wang, Rongjin Hu, Siyuan Lin, Michael Schultz and Daniel Delahaye, *Aerospace*, 2021.
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- Digitalisation and AI in air traffic control: balancing innovation with the human element, EUROCONTROL, 15 October 2024
- European ATM Master Plan, Making Europe the most efficient and environmentally friendly sky to fly in the world, 2025 EDITION
- Overcome the Fear of Change | Simon Sinek
- Navigate and Embrace Change | Simon Sinek

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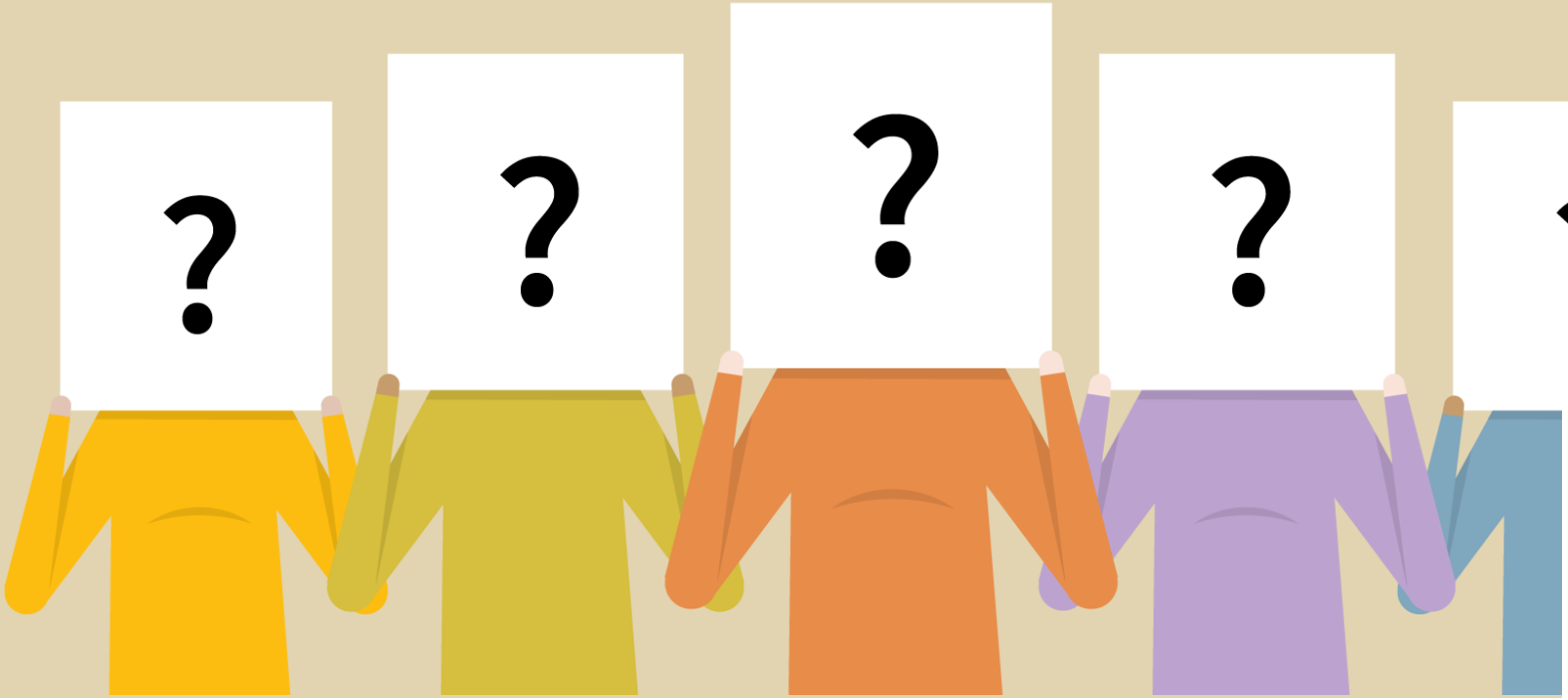

Questions?

Sofi Wadsjö
Development Specialist

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