

# Free Route Airspace planning

- Theory of planning
  - Challenges

# Segment concept

- Airways
- Terminal procedures
- Published directs
- Company directs (blocked for other users)

# Segment limits

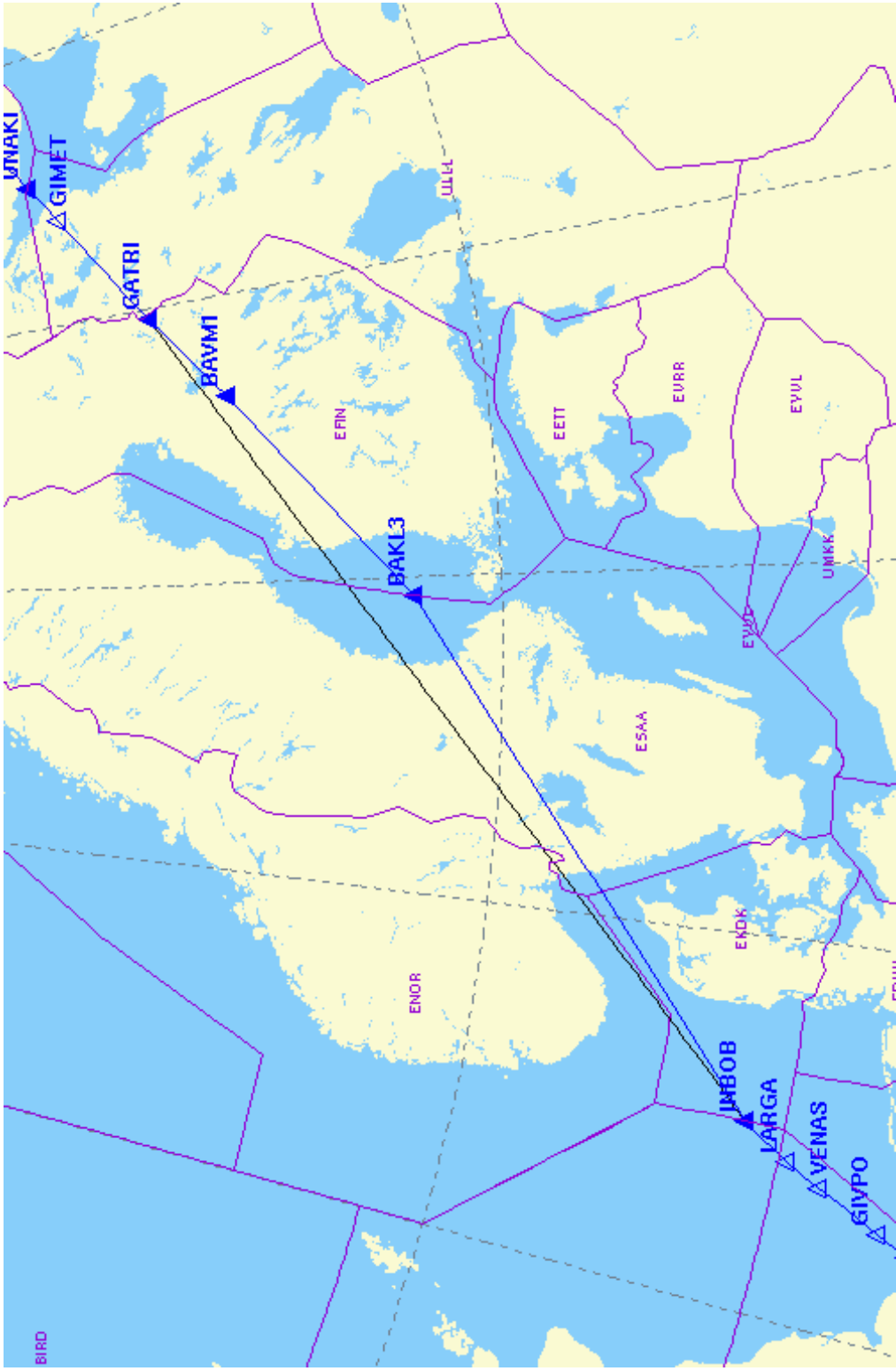
- Times of validity
- Height Limits
- Direction
- Clash with IFPU performance or taxi time data
- TAXI: TOW:

# How does that work with FRA?

- Many directs!
- Many options but system performance issues
- Driftdown/Depressurisation considerations
- Restricted area avoidance horizontal and vertical
- Controlled direction....and length!

# Long directs

- Is Great Circle the best trajectory?
- Yes, for shorter segments but not always for longer
- Weather accuracy
- No climbs
- No fuel checks
- No chasing or avoiding winds





# How are airlines using FRA?

- No standard approach to design
- Complexity, too many variants –
  - Transition height at different FLs
  - Transition levels
  - Keeping original airways in place
- As simple as possible for ease of use by CFPSPs and humans!
- Single transition FL, FRA above, airways below
- Freeflight concept



# How much benefit does FRA give us?

- Not great benefits from individual FRAs
- Contiguous FRAs e.g Borealis FRA
- Cross border points can be limiting
- Cross border without waypoints
- RAD effect
- RAD still growing and more complex
- RAD definitions in FRA
- FMC v Computer Flight Plan
- Fly the plan?

Many thanks. Questions?

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