



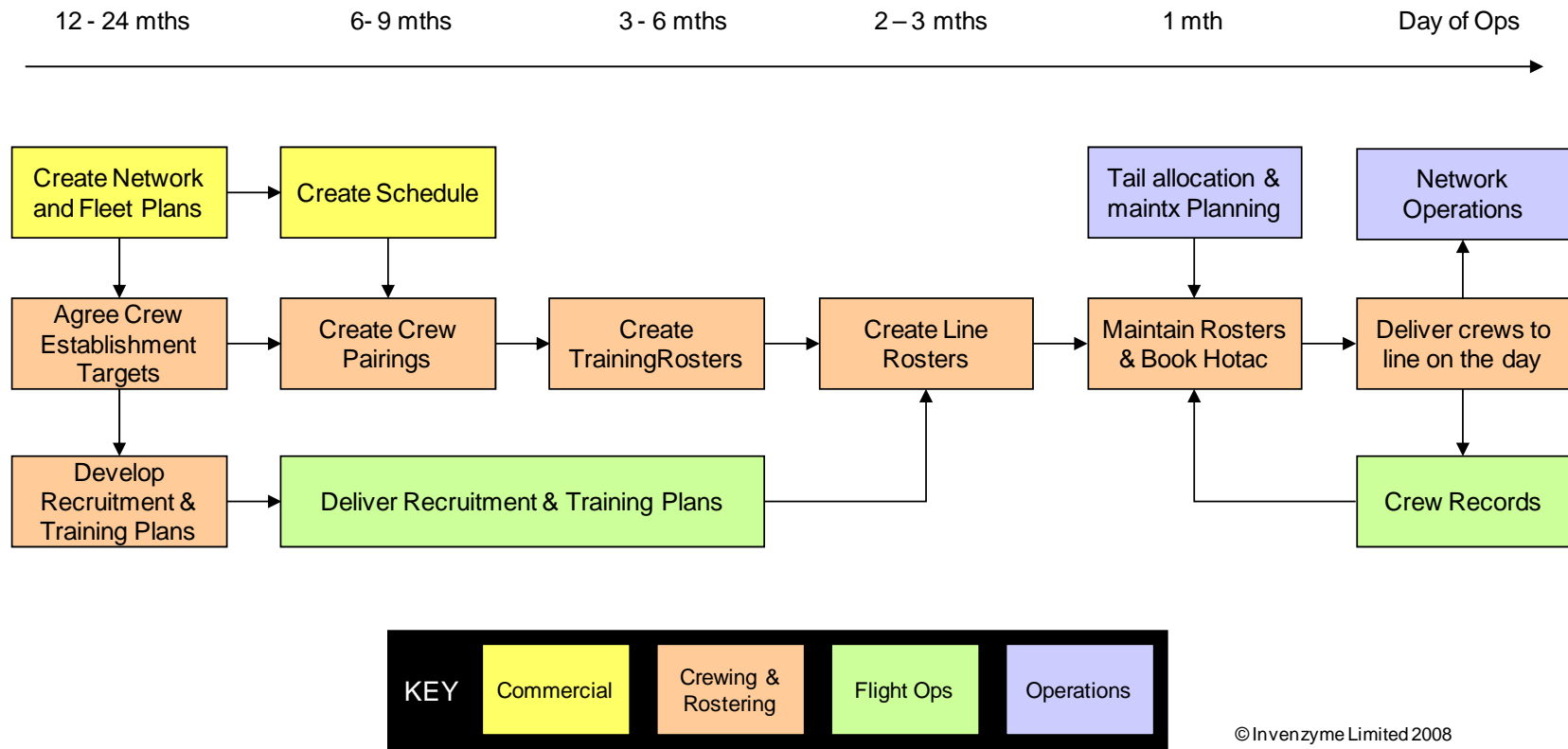
## **Crew Scheduling – A balanced approach to mitigating fatigue**

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# Crew Scheduling – A Strategic View

- **A function at the heart of any airline**
- **At its best, a “broker, un-noticed when everything is running smoothly**
- **At its worst, a “fire-fighter”, seen as the “axis of evil” when things go wrong**
- **To succeed it is vital to “balance” stakeholder interests in what is effectively a supply chain**

# Generic crew scheduling process



- **Primary goal to have the right crew in the right place at the right time**

## Some background from the easyJet experience

- Growing awareness of pilot fatigue despite operating under CAP371
- CAP371, developed in the 1950's before the advent of high intensity LCC operations
- An efficient low cost schedule produces 2/4/6 sector duties with 5-6 block hours per diem
  - Work is intensive
  - Legal rules now targets, not limits
  - Early starts, late finishes, deep night flights common
- Extra safeguards to CAP371 became important to minimise fatigue and offer acceptable lifestyle

# 6 & 3 & 5/4-5/2 Compared

## 6 & 3 - Scheduling Perspective

- 233 available duty days p.a. only 220 of these utilised
- Early starts resulted in “wasted” duty day called “flexi-days”
- Early/late violations a major challenge and source of roster disruption
- Rolling duty hour limits constrained utilisation in 6 day blocks
- High sickness and attrition rates
- High roster disruption

## 5/4-5/2 - Scheduling Perspective

- 220 usable duty days p.a. – as were utilised under 6&3
- Fewer “wasted” duty days: “flexi-days” repackaged as days off
- Fewer early/late violations
- Lower risk of cumulative limits being a constraint
- Reserve periods to “absorb” disruption
- No loss of productivity – cost neutral

# The challenges of the alleviation and 5/4/5/2

- **The move to 5/4-5/2 created significant challenges for Scheduling:**
  - *Keeping crew “in pattern” during disruption*
  - *Extra “protocol” rules and the “reserve” period*
  - *Complexity of 16 week roster at small bases*
  - *Renegotiating annual leave and migrating leave groups*
  - *Planning 5 days of productive flying within 55 duty hours, and the reverse challenge of high flying hours rising quickly from a run of lates*
  - *Minimising days off during reserve periods*
  - *Focused work with the commercial team on minimising 3 crew duty days*

# Crew Scheduling & Fatigue Risk Management

- Key challenges to reconcile
  - *Creating a roster that allows sufficient recovery time to mitigate fatigue*
  - *Maximising crew utilisation – flexible rostering ideal but not a crew favourite*
  - *Minimising the constraints on future changes in commercial scheduling*
  - *Designing safeguards that do not limit the airline's ability to meet competitive annual flying and duty hour targets*
  - *Providing a tailored approach to bases of different sizes, with different schedules without limiting efficiency*

## FRMS – The Realities

- In isolation, offers limited opportunity to manage fatigue
- Important part of a wider Safety Management System
- SMS will ultimately supersede present day FTL schemes
- Fatigue models have strengths and weaknesses - None are perfect!
- In all cases, assessment/validation of risk is key, and will drive outputs
- Expect to uncover risks not covered by FTL legislation (what do you do?)
- Manage expectations – Don't use FRMS to market increased productivity, nor provide a better crew lifestyle

## Can FRMS enhance productivity?

- 5/4/5/2 at easyJet was productivity neutral
- Whilst the number of wasted duty days fell, the number of available duty days also fell
- 5/4/5/2 created a foundation for a sustainably high utilisation, addressing both fatigue & lifestyle concerns
- A time could be envisaged where FRMS grants operator flexibility to exceed the 900 hours target
  - Rostering based on fatigue “points” rather than FTL

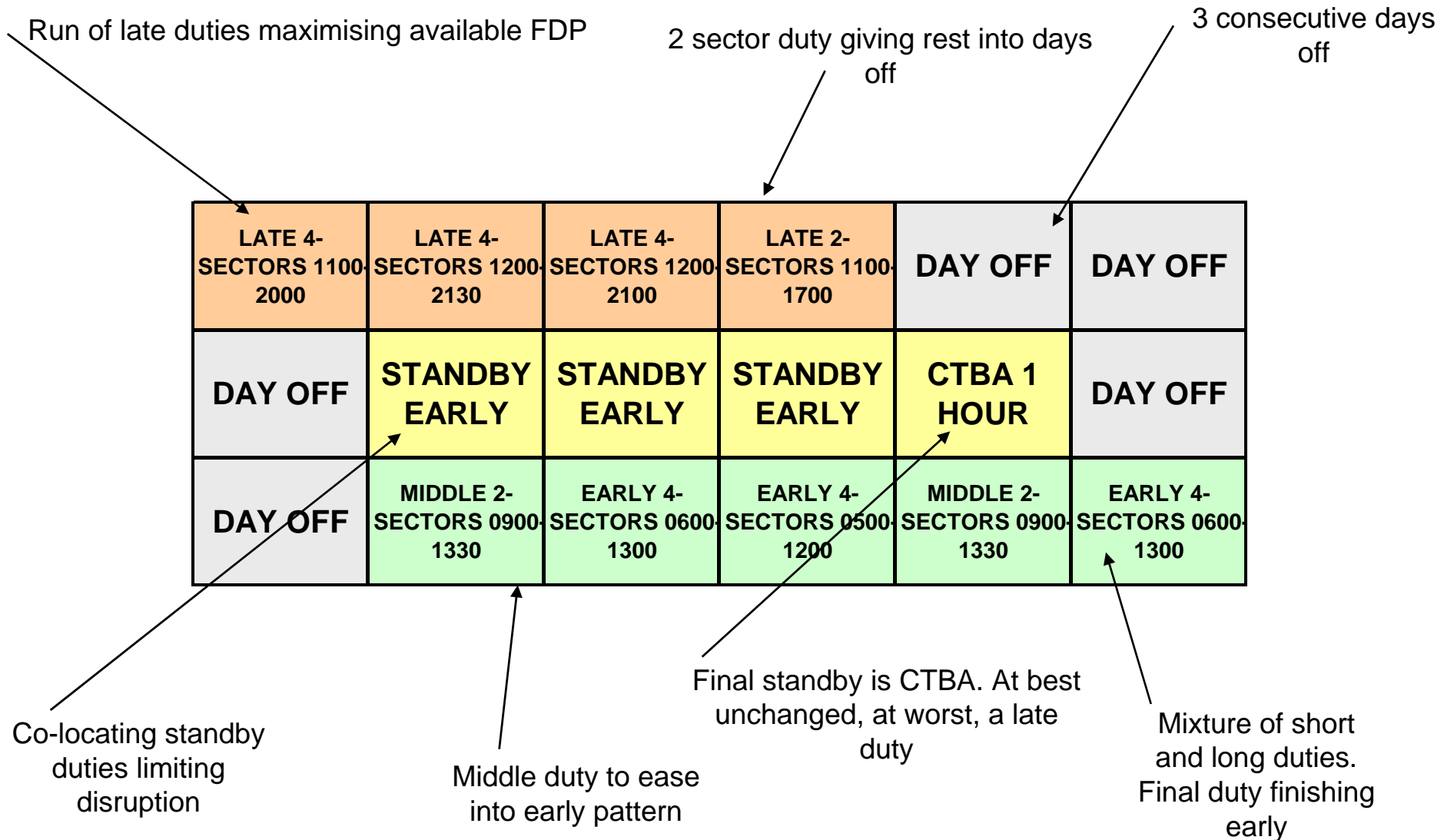
# Best Practise Roster Design

1. Effective relationships with stakeholders – crew friendly schedule
2. Communicate with crew and be visible
  - Rostering is 75% science and 25% judgement
  - Explain the 25%, it isn't always obvious
3. Measure Roster Stability - take steps to limit roster disruption
4. Perform FTL Discretion Analysis
  - Routes should not routinely exceed 10%
  - Problem areas should be investigated and action taken
  - Over time, this will enhance roster quality and balance safety and productivity effectively

## Best Practise Roster Design – Specifics

1. Create pairings that reflect the schedule – avoid complexity
2. Publish the roster well in advance. Crew have a right to plan their lives!
3. Maximise productive time at work. Limit positioning and time spent out of base e.g. create duties that fall within a 2:1 ratio of duty to flight time
4. Apply FDP buffers - Never roster to the limit
5. Co-locate standby duties. Dotting them across a roster increases the risk of disruption
6. Avoid circadian shift. A run of earlies or lates is better than a mixture of both
7. Roster consecutive days off. Single days off do little to mitigate fatigue

# Sample Roster – Effective utilisation and recovery



# Summary

- ◆ Air Crew rank 3rd – 4th largest airline operating cost – achieving high utilisation in a sustainable way is essential
- ◆ The easyJet experience has shown that this is achievable – but not without significant work
- ◆ There are rewards – FTL alleviations, Industry and consumer reputation, Insurance reductions
- ◆ Crew Planning is a key stakeholder in FRMS – ultimately the benefits will manifest in the roster
- ◆ Avoid the contradictions of FTL rules versus FRMS rules – they don't always match!

# Credits

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