

Safety intelligence/wisdom and Middle Managers

The undiscovered country?

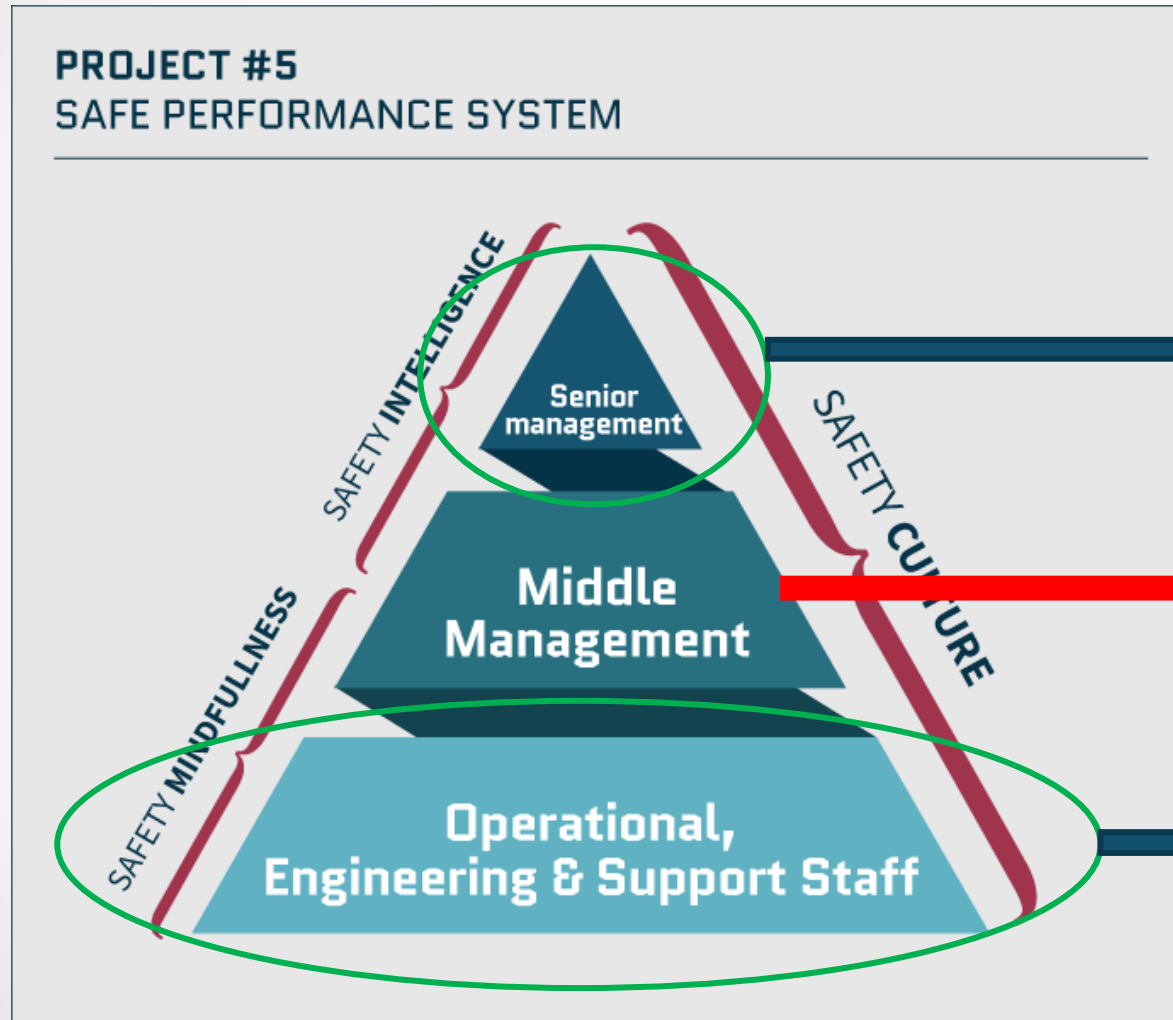
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Partners



Why Focus on Middle Managers?



Quite a bit is known about safety leadership at the top

Very little study has taken place on this layer, yet they are key for enacting safety

There is a large body of knowledge about safety at the 'sharp end'

Middle Managers & Safety

Middle managers are managers who have other managers reporting to them and who hold budget responsibilities. There can be several layers of middle management in an organization.

They are in-between the top-management (Executive Level) / company vision, and first line managers / reality from the field.

Their practices can have a moderating effect on safety, either positive or negative



Objectives

- Understand how MMs currently take safety into consideration in their daily activities, and what influences the way they do it
- Find out what could help them do it better
- Do this for a range of aviation organizations



Methodology

- Perform MM interviews
- Come-up with a draft bottom-up model
- Confront it to the literature
- Adjust/validate it through a further set of MM interviews
- Combine the insights on the various influencing aspects to produce guidelines

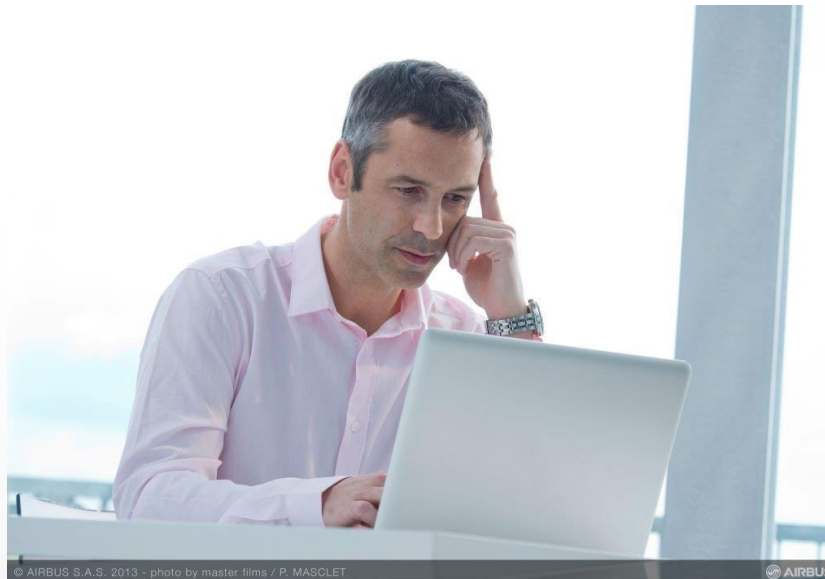
Where are we in the process?

- 30 MM interviews performed
ENAV, Eurocontrol, Boeing RTE, Airbus
- All data analyzed using scientific tools
- An extensive literature review on MMs & Safety
- A draft model developed
- A new interview guideline developed
- 2nd wave interview plan started



What did we learn from the interviews so far?

- Insights on MM's role
- Insights on how MMs currently take safety into consideration in their daily activities
- Insights on what influences the way they do it



The basic building blocks

MINDSET – their personal beliefs and values, what they actually think about safety?



PRACTICES – what do they actually do in their job w.r.t. safety, their decisions, actions, strategies?



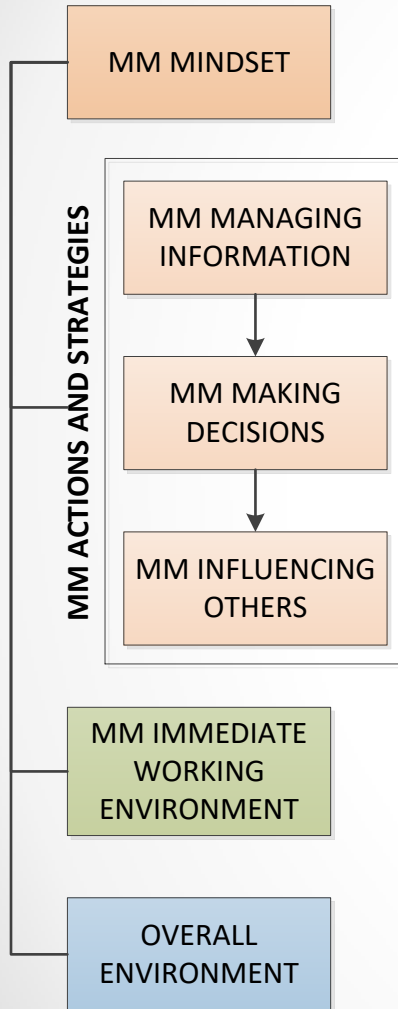
WORKING ENVIRONMENT – what is their ‘latitude’, what are their constraints?



OVERALL ENVIRONMENT – what are the major ‘drivers’ or obstacles inside and outside the organization?

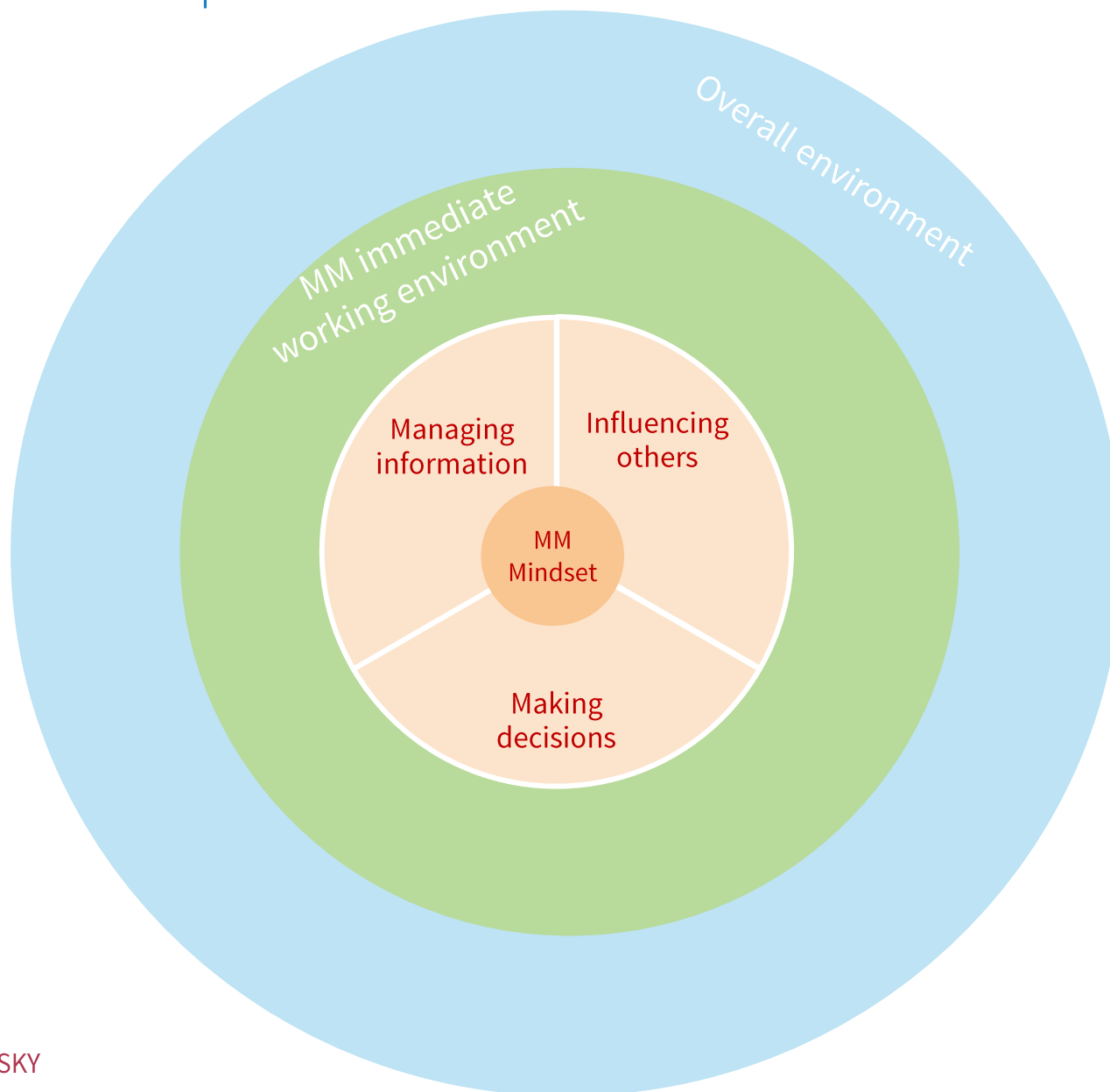


A coding frame derived from the interviews



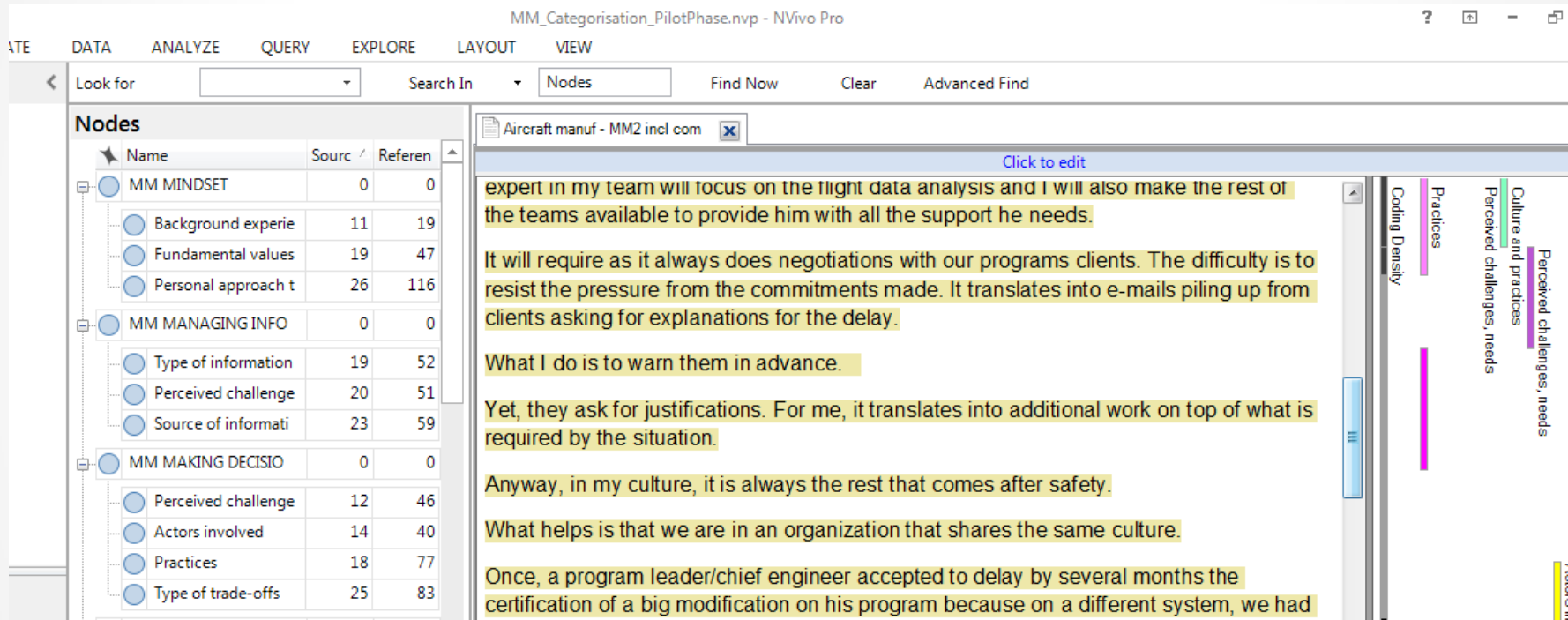
- **MM Mindset** - the MM ‘person’/cognitive frame - who he/she is, the stable patterns, values and attitudes, and their personal approach to safety
- **MM Managing information** - anything related to the information the MM receives, has access to or looks for, or would like to receive/have access to in practice to support him/her in his decisions or influencing practices. The category refers to the MM’s ‘independent’ management of information
- **MM Making decisions** - the way the MM interviewed makes decision in practice (what s/he relies on, who s/he interacts with).
- **MM Influencing others** - anything related to the way the MM influences others in practice (peers, management, staff, other stakeholders), whom s/he interacts with, how s/he makes his/her voice heard.
- **MM Immediate working environment** - the specific context/environment within which the MM operates. This includes both the formal organisational aspects and the actual practices and culture in place that characterise the the unit/sector/department in which the MM operates/acts.
- **Overall environment** - the context and environment in which the MM’s department is embedded, which can influence the MM in his/her job/actions/decisions

From the inner MM person to the overall environment



A scientific analysis of interview data

- All interviews re-coded using the trial coding frame using NVivo (v.11 Pro for Windows, ©QSR International Pty Ltd.)



The screenshot displays the NVivo Pro interface for a project named 'MM_Categorisation_PilotPhase.nvp'. The 'Nodes' list on the left contains the following categories and their associated counts:

Name	Source	References
MM MINDSET	0	0
Background experie	11	19
Fundamental values	19	47
Personal approach t	26	116
MM MANAGING INFO	0	0
Type of information	19	52
Perceived challenge	20	51
Source of informati	23	59
MM MAKING DECISIO	0	0
Perceived challenge	12	46
Actors involved	14	40
Practices	18	77
Type of trade-offs	25	83

The main text area shows a snippet from 'Aircraft manuf - MM2 incl com' with several paragraphs of text. The text is highlighted in yellow, indicating it has been coded. The text includes:

- expert in my team will focus on the flight data analysis and I will also make the rest of the teams available to provide him with all the support he needs.
- It will require as it always does negotiations with our programs clients. The difficulty is to resist the pressure from the commitments made. It translates into e-mails piling up from clients asking for explanations for the delay.
- What I do is to warn them in advance.
- Yet, they ask for justifications. For me, it translates into additional work on top of what is required by the situation.
- Anyway, in my culture, it is always the rest that comes after safety.
- What helps is that we are in an organization that shares the same culture.
- Once, a program leader/chief engineer accepted to delay by several months the certification of a big modification on his program because on a different system, we had

On the right side of the text area, there is a vertical bar with a color-coded legend for the coding frame, showing categories like 'Perceived challenges, needs', 'Culture and practices', 'Perceived challenges, needs', and 'Practices'.

- An evaluation performed to assess:
 - coding consistency/ability to support the codification/description of the data
 - internal/external validity, in content analysis process
 - inter-reliability performed during the coding process

Some preliminary insights – examples

Mindset – what may help



- Safety-related experience (safety activity or safety event)
- “No safety no business” mindset i.e. safety is part of what we do, not the “big thing” on top of daily business

MM
Mindset

Some preliminary insights – examples

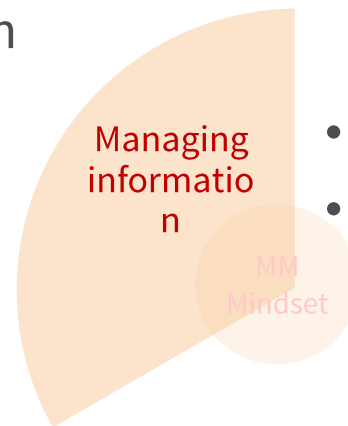
Managing information

Sources of information

- They are varied: documentation, safety department/manager and an important source is people (e.g. staff, peers, experts) through informal ways
- Not many safety messages from above
- Seek information from external interfaces (A/L, ACCs, suppliers)

Type of information

- Safety analysis
- Event reports
- Qualitative info and expert judgment
- Informal info. (incl. rumours)
- Statistics although mixed feelings about their meaning & relevance



Challenges

- Access to data: some don't have, some don't have time to analyse them
- Use of operational data: not always possible (restricted use); pure numbers without context are meaningless
- Lack of relevant safety indicators

Some preliminary insights – examples

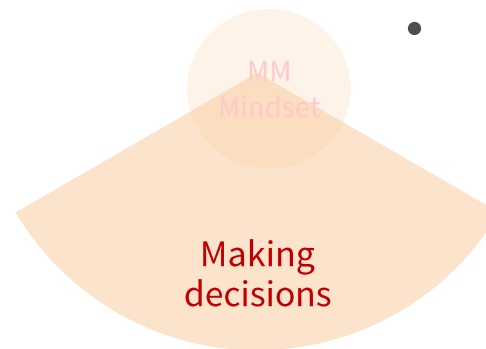
Making decisions

Practices

- Collective discussions involving various viewpoints (or just safety manager)
- Escalation process if no consensus
- Some cases where formal process, safety assessment & safety threshold

Types of trade-offs

- Resources allocation
- Cost & business case
- Time/delay
- Production/capacity
- Quality
- Industrial/business setting



Challenges

- Grey areas where there is no industry standards or lots of uncertainty

Some preliminary insights – examples

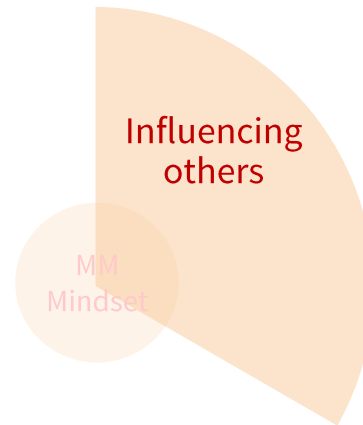
Influencing others

Practices

- Explaining, giving meaning
- Show added-value or interests to the ones to influence
- Daily work with them

Who

- Peers
- Staff
- Management
- External stakeholders (sub-contractors, partners, Authority)



Challenges

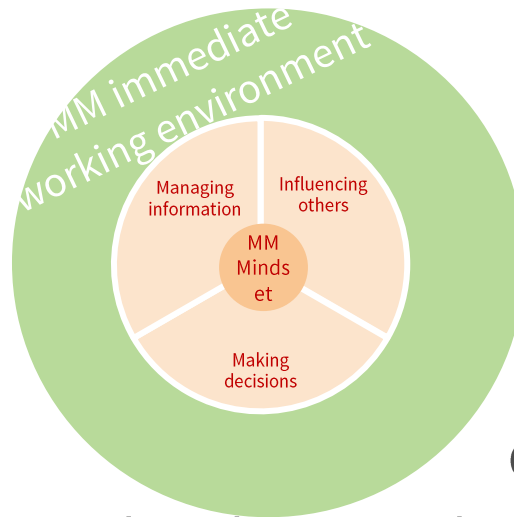
- There is no Truth
- No “business case” for grey areas
- Not necessarily an official share of voice on safety ← can be listened to... or not

Some preliminary insights – examples

Immediate working environment

Culture

- Supported by their managers to maintain decisions with safety impact
- Safety first means something vs delivering on time & within budget is the main target (1 pers.)



Resources

- Safety experts either within the division or in dedicated groups
- Standard processes
- Data/information

Challenges

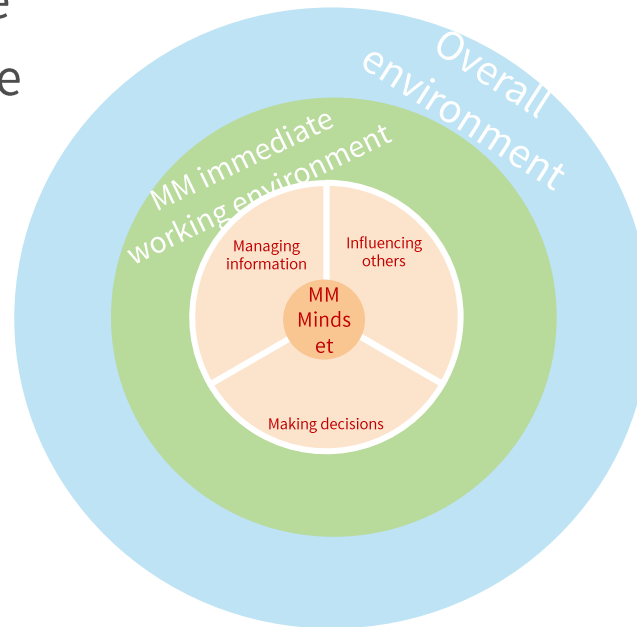
- Keep developing experience on the job area and safety expertise build-up vs HR policy on mobility
- Developing people safety mindset vs short-term cost reduction
- Connecting separate teams e.g. safety and other teams
- Complexity of systems, processes...

Some preliminary insights – examples

Overall environment

Culture

- Open & trust culture
- Safety mindset there



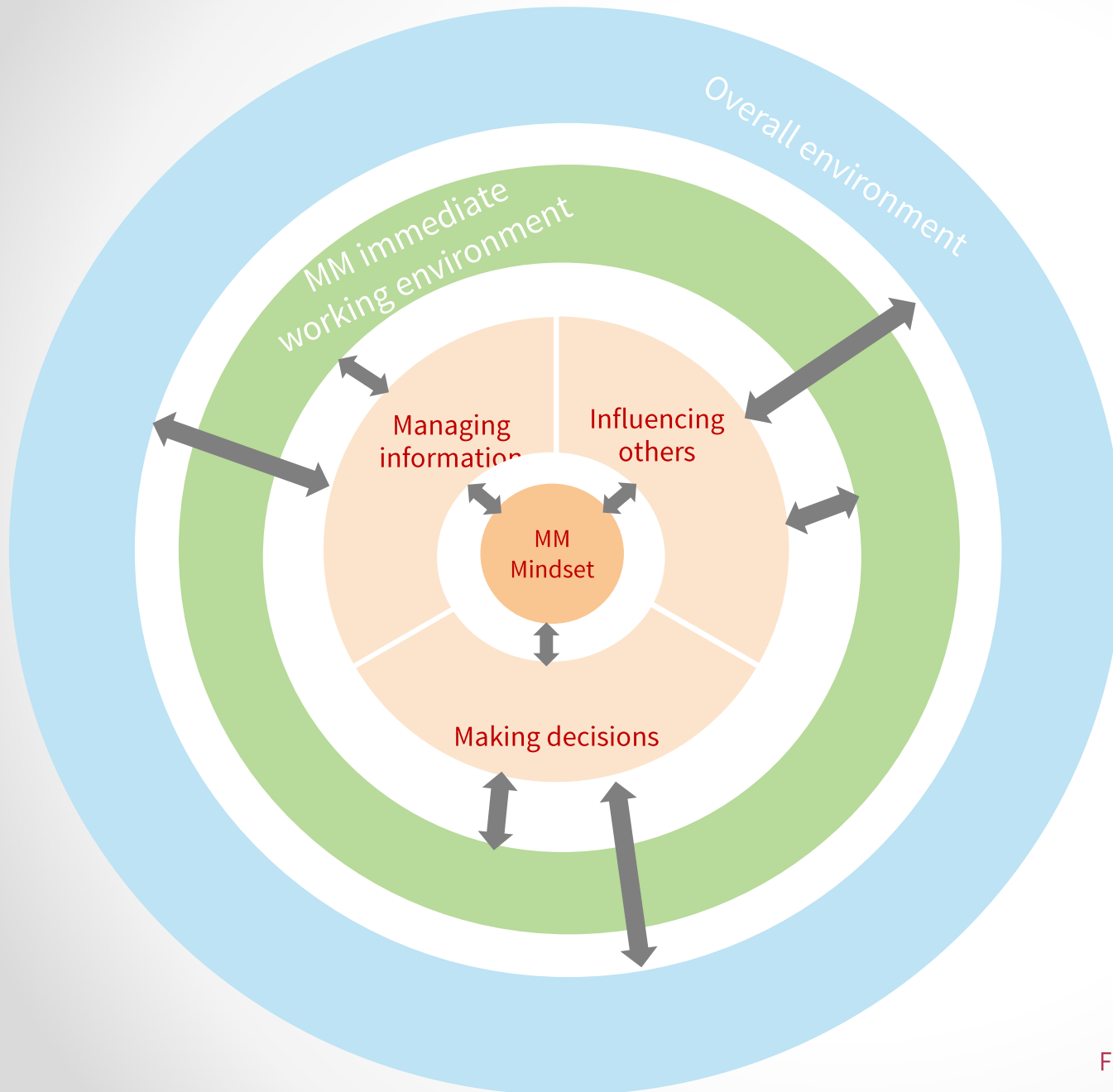
What may help... or not

- The way safety is organized within the organization
- Methods to perform safety analysis
- Variety of reviewers both internal & external having different decision powers and being independent

Challenges

- Resisting pressure
- More processes & procedures may dilute reflection and reduce the sense of responsibility

A draft model...



MMs safety wisdom consideration are heavily influenced by **organizational** aspects on top of personal aspects

Next steps

- Second wave of interviews (March – June 2017)
- Enhanced and validated model
- Guidance on common problems and how to overcome them
- A White Paper for the aviation industry (Xmas 2017)



Consortium

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Office national d'études et de recherches aérospatiales
Centro para a Excelência e Inovação na Indústria Automóvel
Centro Italiano Ricerche Aerospaziali
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<http://www.futuresky.eu/projects/safety>

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