Some thoughts & conclusions

Where do we go from here ?

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ART Data Science Workshop - EEC, Brétigny

21 May 2014

"Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist."
Kenneth E. Boulding (1910-1993, Anglo-American economist, co-founder of General Systems Theory and evolutionary economics)

"Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?"
T.S. Eliot (1888-1965, Anglo-American poet, Nobel Prize in Literature 1948)

Systemic Evolvability

The role of data will get more and more critical

Trading information vs **entropy**

knowledge

wisdom ?

IT are ubiquitous technologies, enablers of many innovative ideas

Tons of data are waiting to be exploited

Do we know how to use them in a purposeful way ?

Air Transport is a story of an incredible technical success, achieved through top-down engineering.

Capital-intensive

Strong stakeholders (public and private)

Long time scales

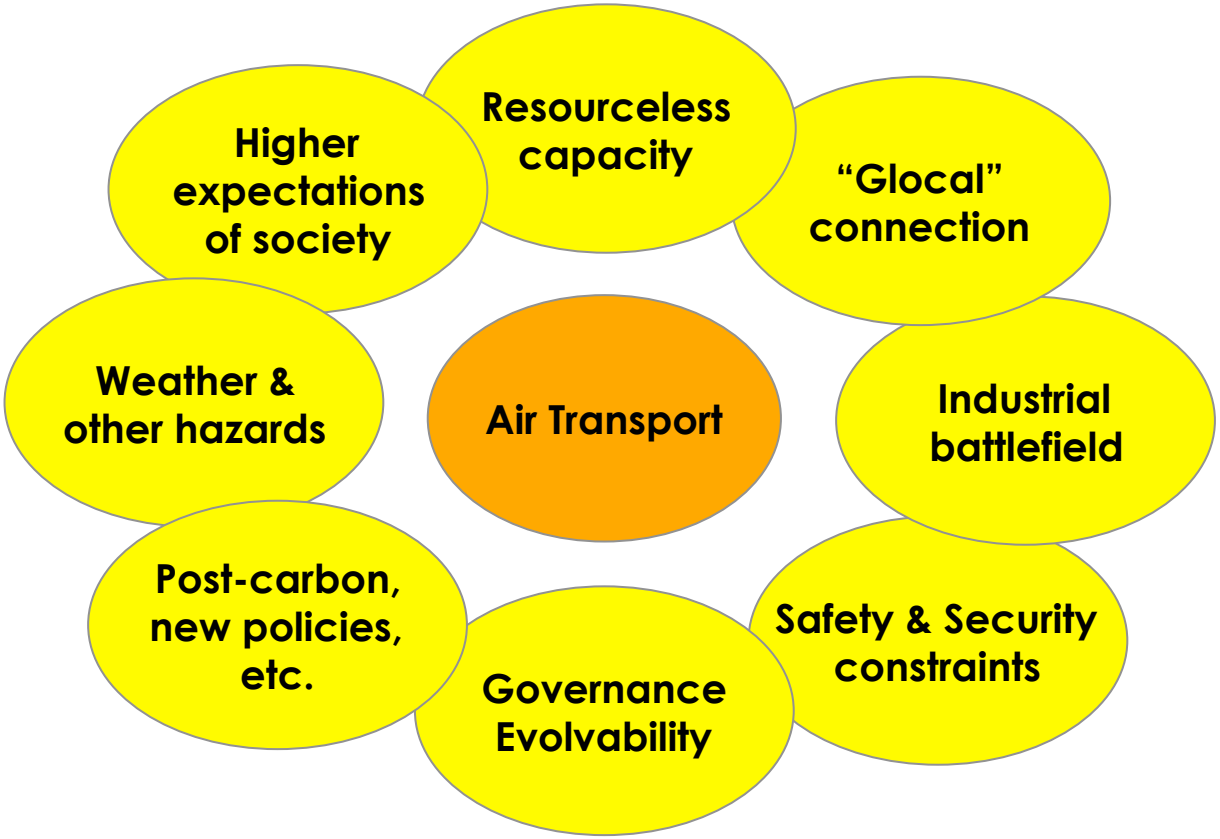
Passengers (and society) expectations are key

Safety and security are critical

Lack of perceived innovation

The divergence is growing between day-to-day operations and societal and business expectations.

Many combined sources of challenges



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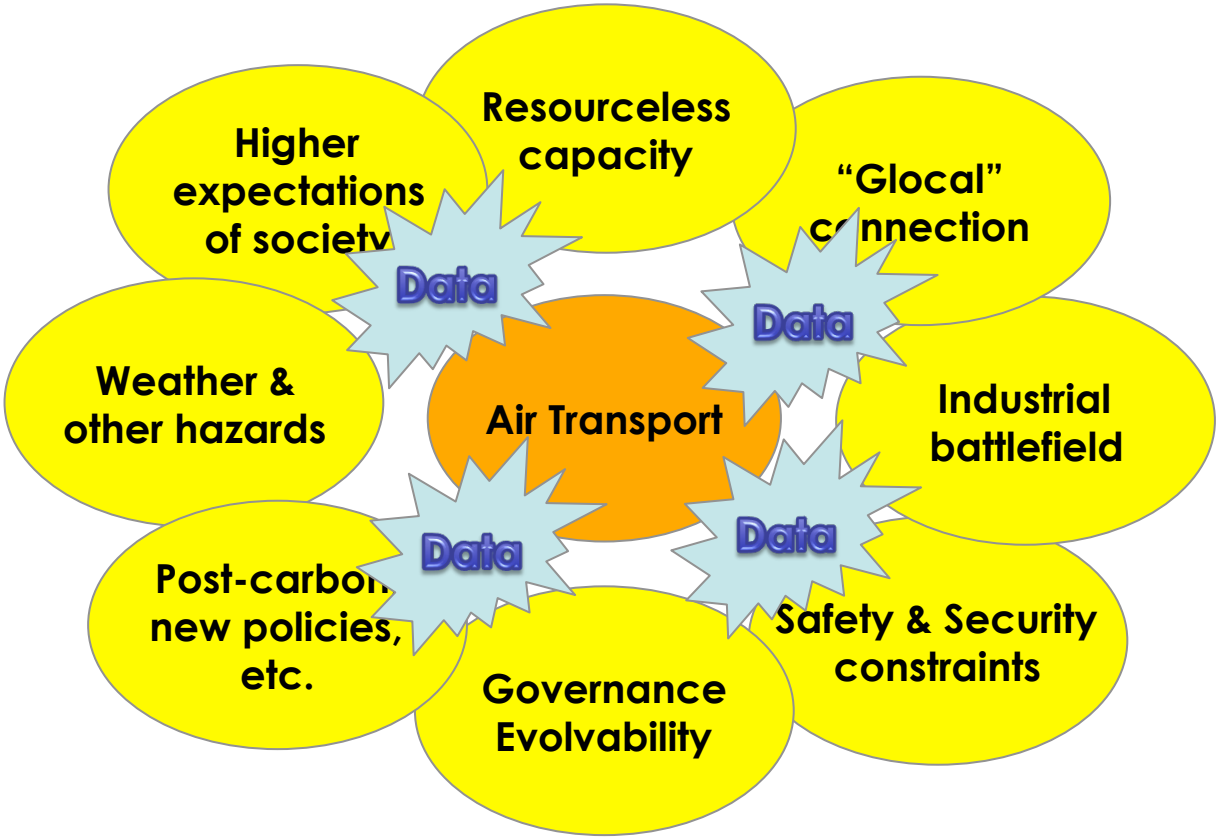

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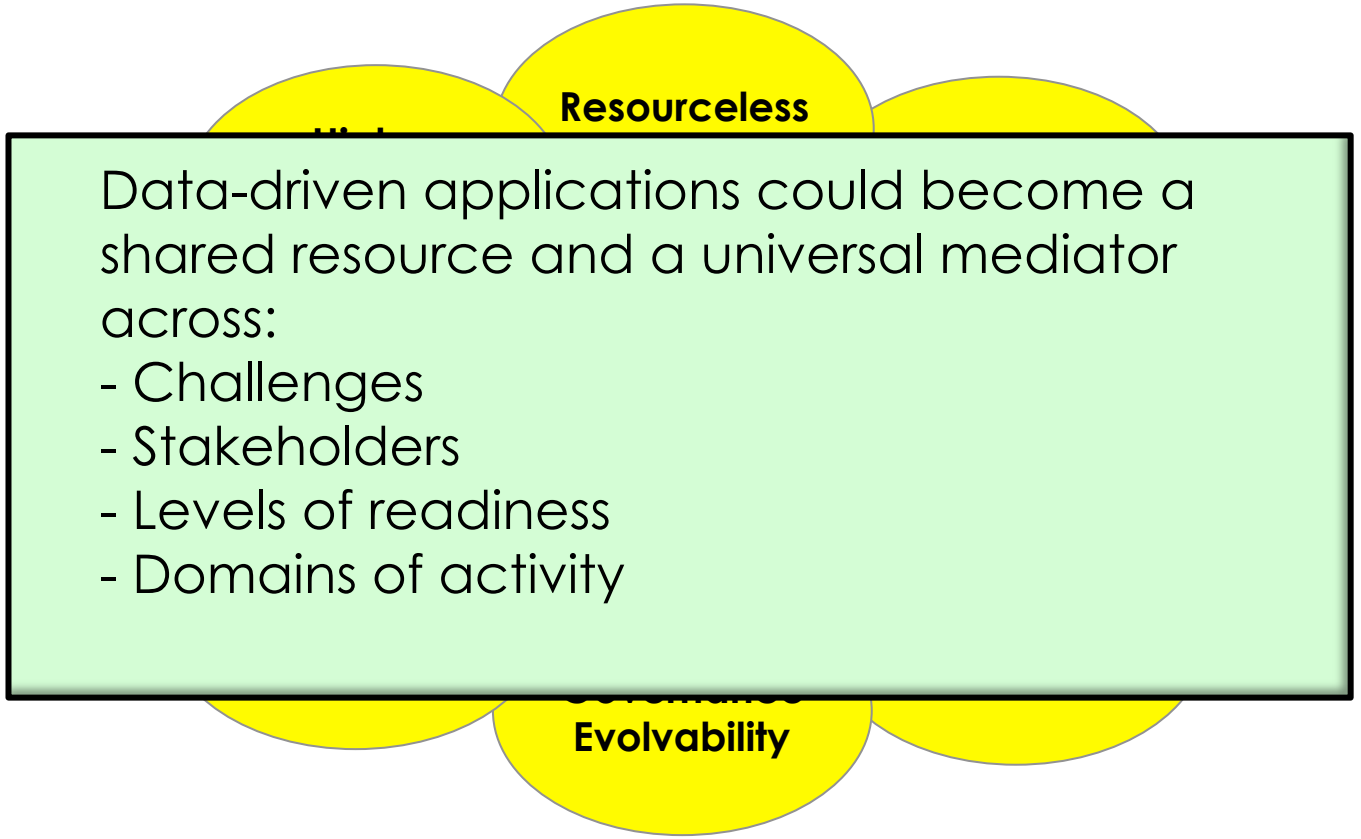


Data-driven applications could become a shared resource and a universal mediator across:

- Challenges
- Stakeholders
- Levels of readiness
- Domains of activity

Excerpts of today

David Pérez: "New techniques lead to new discoveries and to new ideas."

Bart Goethals: "The number of potentially interesting patterns is larger than the number of particles in the universe."

Ludwig Drees: "Predictive analysis allows airlines to quantify probabilities BEFORE things go wrong and to assess the impact of mitigation actions BEFORE implementing them."

Samuel Cristóbal: "We humans are capable of pattern detection, but we need the right context and tools (including visualization) to extract the right meaning."

José R. Fonollosa: "Crowdsourcing can be used to find data-based optimal solutions, attracting outsider talent to a field of research."

Dirk Janssens: "SWIM, a specialized infrastructure to enable a true business transformation !"

6 ideas

Data Science is **NOT** just about buying **Big Data** stuff from vendors.

But ATM can **learn** a lot from other domains, where knowledge extraction from data is starting to be real.

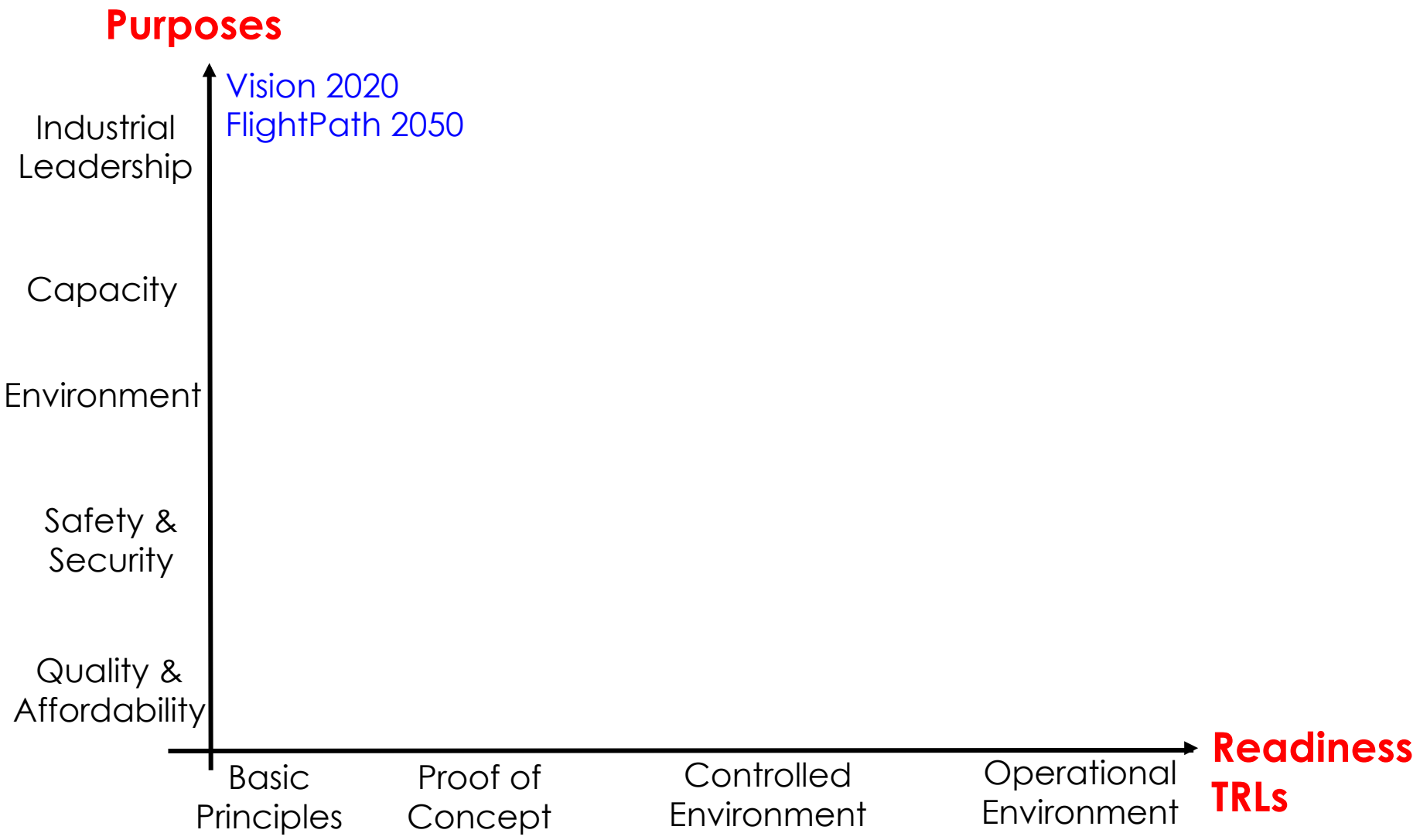
The challenges are not only of adaptation to ATM of ideas proven elsewhere. Tons of **research** are needed.

The use of Data Science for **Safety & Security** purposes could play a **catalyst** role to unleash innovation potential in ATM.

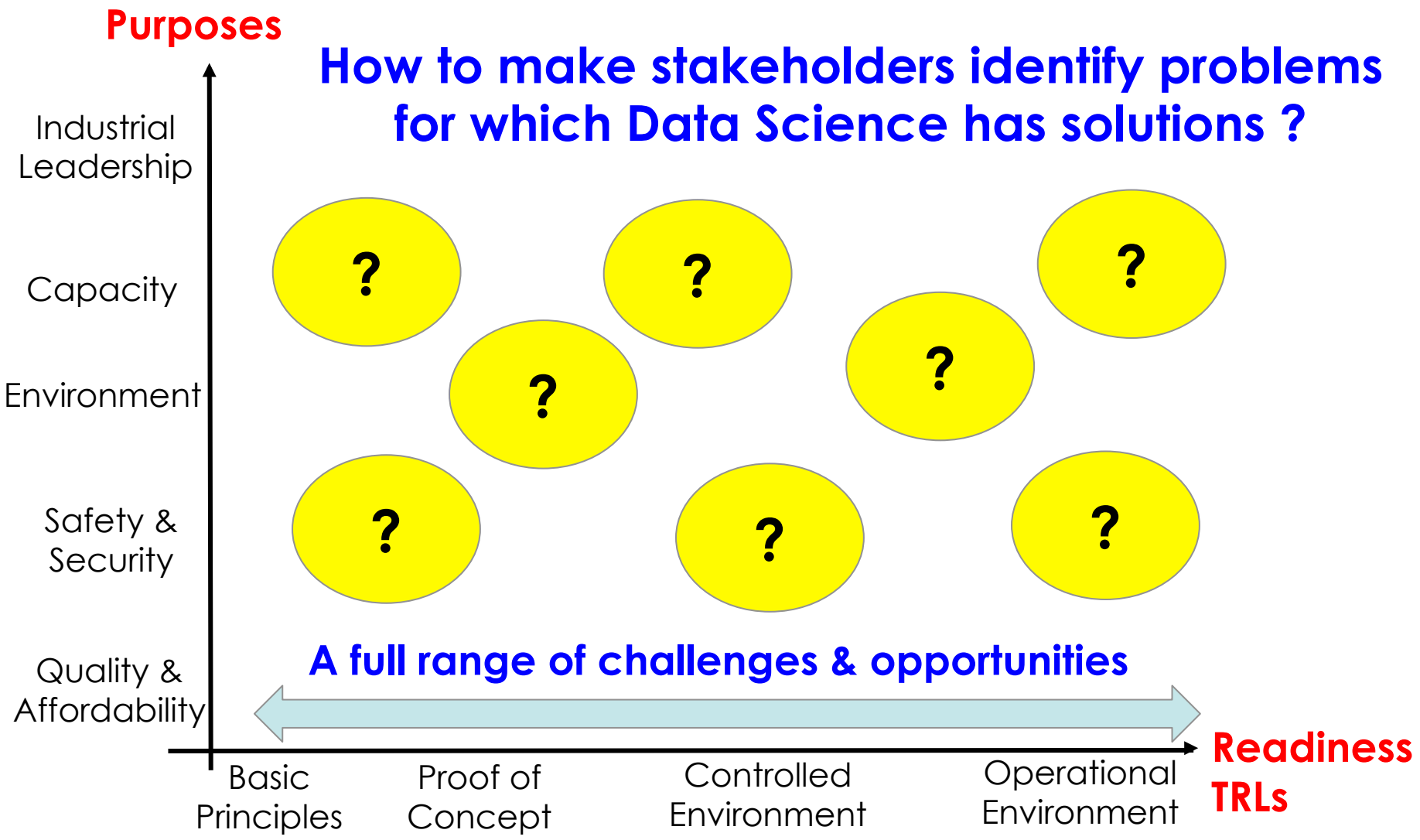
Getting closer to the IT industry could also help in meeting **passengers** expectations.

A lot is about frameworks of interpretation **> Hermeneutics > Purposes**

A Map of Data Science for ATM



Map of Data Science for ATM



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