

# 4. BENEFITS AND OPPORTUNITIES FOR RISK MANAGERS APPLYING AI

## 4.1. GENERAL BENEFITS FOR RISK MANAGEMENT

Across industries, AI is ever more recognised for its potential. It will change people's day-to-day activities, including in risk and insurance management. Insights, that now become visible only when losses occur, can in future emerge before then through learning from large volumes of historical data.

For risk management, key benefits will relate to:

- **Data processing:** Usage of not only structured but also unstructured data in massive amounts; combinations of datasets and updating patterns.
- **Improving efficiency:** Reducing cost by automating day-to-day assistance and guidance in the risk management processes.
- **Real-time and predictive:** Awareness of new exposures, increasing preventative risk advices, faster response time in critical situations.
- **Business decisions:** Better decision-making through greater (predictive) insights and visibility of risk (also for top management).

Current limitations of risk management by functions and silos, and of data sets, research, modelling and monitoring can be overcome. Decisions that have previously been made mainly "from the gut" or by benchmarking will become data-driven and systematic.

It is clear that we are only just beginning to understand the full benefits of AI. It's an evolution. We need to keep thinking about what the outcome should be and where we have come from. Today's AI algorithms are trained to do one clearly defined operation really well. Although for that specific operation, AI far exceeds human capabilities, it is still far from a general all-purpose superpower.

Nevertheless, companies should start their journey of AI if they want to be at the forefront of risk leadership. In that way, they will build the foundation for a technology that soon will reshape the way we deal with risks.

## 4.2. AI ACTION GUIDE FOR RISK MANAGERS

This "AI Action Guide for Risk Managers" has been developed to support the risk manager in identifying key areas to apply AI methods. Risk managers can use this matrix according to their organisation's specific requirements and areas of benefit, especially according to the available data, the risk management steps to be improved (identification, analysis...), claims occurring, lines of business and total cost of risk (TCOR). While in some cases, own implementation of AI applications makes sense, in others, risk managers may choose to partner with insurers, brokers or third-party vendors for greater benefit and cost-effectiveness.

The table below can inspire your thought process. The template in the appendix of the document can help you to develop your own approach and take leadership in your company.

| RISK MANAGEMENT STEP | PROBLEM(S) TO BE SOLVED  | AI USE CASE   | WHAT KIND OF DATA NEEDED?  | AI FOCUS   | MARKET EVOLUTION STAGE  | RISK MANAGER TOUCHPOINTS   |
|----------------------|--|---|--|--|---|--|
| RISK IDENTIFICATION  | <ul style="list-style-type: none"> <li>Reduce manual data collection</li> <li>Simplify assessment to better understand the risk</li> <li>Real-time visibility</li> </ul> | <p>Gathering and filtering relevant internal risk information and mapping to existing assets. Risk identification transforms from a static process (pre-defined intervals) to continuous and real-time.</p> | <p>Internal risk information, e.g. location data, values, financials, technical insights</p>             | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> <li>Computer vision (only if handwriting recognition is needed)</li> </ul> | <ul style="list-style-type: none"> <li>Experimentation</li> </ul> | <p>Review current view and frequency of risk assessments and challenge existing ways of risk information collection.</p>   |
|                      | <ul style="list-style-type: none"> <li>Increase transparency</li> <li>Reduce manual work</li> </ul>  | <p>Scanning and filtering of relevant external 3rd party information and mapping to existing assets. The risk inventory is enriched.</p>  | <p>External information, e.g. news, natural catastrophe reporting, credit scores</p>                     | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul>  | <ul style="list-style-type: none"> <li>In production</li> </ul>   | <p>Identify your areas of greatest benefit using (real-time) 3rd party data, e.g. supply chain. Evaluate external software filtering data based on your requirements.</p> <ul style="list-style-type: none"> <li>Ethical and auditable by design</li> <li>Check the output.</li> </ul> |
| ANALYSE AND ASSESS   | <ul style="list-style-type: none"> <li>Increase transparency</li> <li>Assess risk on a wider data set</li> </ul>   | <p>A recommendation system suggests the probability and impact of single risks by taking all current relevant data into account and connecting them with historic patterns.</p>                             | <p>All data collected in risk identification, historical loss data indicating probability and impact</p> | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul>  | <ul style="list-style-type: none"> <li>In production</li> </ul>   |  |

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|----------------------|--|--|---|--|---|---|
| AGGREGATE            | <ul style="list-style-type: none"> <li>Automate a very difficult manual task</li> <li>Increase transparency on how certain risks are correlated and the overall risk exposure</li> </ul> | <p>Risk dependency identification:<br/>Correlations between certain risks can be evaluated by machine learning models, identifying connections that are not easily observable.</p> | All data collected in the risk identification | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul>                          | <ul style="list-style-type: none"> <li>Experimentation</li> </ul> | <ul style="list-style-type: none"> <li>Ethical and auditable by design</li> <li>Check the output.</li> </ul>  |
|                      | <ul style="list-style-type: none"> <li>Real-time visibility of a company's changing overall risk exposure</li> </ul>   | <p>Feed new data continuously into the aggregation model and use machine learning for model validation, e.g. detecting anomalies in data points and correlations.</p>              |   | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul>                          | <ul style="list-style-type: none"> <li>Experimentation</li> </ul> | <ul style="list-style-type: none"> <li>Identify your most relevant data points (risks-related) that have the greatest impact on probability and risk exposure. Once identified connect them to the machine learning aggregation model.</li> </ul> |
| MONITOR              | <ul style="list-style-type: none"> <li>Improve risk protection</li> </ul>  | <p>Video surveillance of property facilities and automatic detection of risks. Send a alert if a hazard level rises, e.g. somebody smoking in a dangerous area.</p>                |   | <ul style="list-style-type: none"> <li>Computer vision</li> <li>Mathematical / logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>Experimentation</li> </ul> | <ul style="list-style-type: none"> <li>Challenge traditional ways of risk engineering especially in property, static / dynamic assets etc.</li> </ul>   |

MONITOR

|  |   |  |   |   |  |
|--|---|--|---|---|--|
| <ul style="list-style-type: none"> <li>• Avoid accidents, increase workforce health</li> </ul>   | <p>Enhance workplace safety by using smart device data and reinforcement learning models to give employees direct feedback on their behavior.</p>                 | <ul style="list-style-type: none"> <li>• Raw sensor data or aggregated data if provided, e.g. by vendor / 3rd party</li> </ul> | <ul style="list-style-type: none"> <li>• Mathematical / logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>• In production</li> </ul>   | <ul style="list-style-type: none"> <li>• Evaluate workers' compensation/ employee liability impact and safety to decide on further actions and investments in smart devices and adjusted software.</li> </ul>                          |
| <ul style="list-style-type: none"> <li>• Faster reaction time on relevant risks / events</li> <li>• Overall greater resiliency</li> <li>• Preventive instead of reactive</li> <li>• Better protection of assets / workforce</li> </ul> | <p>An alert system based on machine learning models extracting the relevant information for their risk profile will notify risk managers in case of an event.</p> | <ul style="list-style-type: none"> <li>• Various internal / external data depending on specific alert / risk</li> </ul>        | <ul style="list-style-type: none"> <li>• Mathematical / logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>• Experimentation</li> </ul> | <ul style="list-style-type: none"> <li>• Challenge traditional ways of responding to risk, moving "from insured to protected".</li> <li>• Identify high risk areas and discuss what immediate alerts would help protection.</li> </ul> |

| RISK MANAGEMENT STEP    |                                       | PROBLEM(S) TO BE SOLVED   | AI USE CASE  | WHAT KIND OF DATA NEEDED?  | AI FOCUS  | MARKET EVOLUTION STAGE   | RISK MANAGER TOUCHPOINTS   |
|-------------------------|---------------------------------------|---|--|--|---|--|--|
| RISK MANAGEMENT PROCESS | RESPOND AND IMPROVE                   | <ul style="list-style-type: none"> <li>Faster reaction time for risk mitigation measures</li> </ul>   | <p>Scan historic risk mitigation measures for the present risk type and recommended actions based on the real-time situation, e.g. proposal of free capacity in another building after a fire.</p>   | <ul style="list-style-type: none"> <li>Claims management data</li> </ul>   | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>Early stage</li> </ul>                              |  |
|                         | INSURANCE & CLAIMS MANAGEMENT PROCESS | <ul style="list-style-type: none"> <li>Better price modeling thanks to the high volume of available data and the machine learning algorithm</li> <li>Insurance cover only for the time of usage of Better pricing according to actual behavior</li> </ul> | <p>Combine data sets (relevant for pricing) and apply machine learning techniques (cross-company) to produce pricing alternatives.</p> <p>Dynamic insurance products based on the machine usage or the behavior of individuals. The integrated machine learning technique identifies the covered period.</p> | <ul style="list-style-type: none"> <li>Internal, external and related data sets</li> <li>Raw sensor data or aggregated data if provided, e.g. by vendor / 3rd party</li> </ul> | <ul style="list-style-type: none"> <li>Mathematical / logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>Experimentation</li> <li>Experimentation</li> </ul> | <ul style="list-style-type: none"> <li>Start specific dialogues with brokers and underwriters on those products.</li> <li>Review your current insurance products regarding dynamics, e.g. logistics, leasing, motor.</li> <li>Start specific dialogues with brokers and underwriters on these products.</li> </ul> |

|                             |  |   |  |  |   |   |
|-----------------------------|--|---|--|--|---|---|
| <p><b>RISK TRANSFER</b></p> | <ul style="list-style-type: none"> <li>• Faster underwriting</li> <li>• Inconsistency or fraud spotted faster</li> </ul> | <p>Handwriting recognition in questionnaires and text mining in required documents, such as historic insurance contracts and risk reports, to automatically compile all relevant information.</p> | <ul style="list-style-type: none"> <li>• Policy documents</li> </ul>   | <ul style="list-style-type: none"> <li>• Mathematical /logical Intelligence</li> <li>• Computer vision</li> </ul>  | <ul style="list-style-type: none"> <li>• <b>In production</b></li> </ul>  | <ul style="list-style-type: none"> <li>• Discuss with insurer or broker.</li> </ul> |
|                             | <p><b>CLAIMS</b></p>   | <ul style="list-style-type: none"> <li>• Increased speed and accuracy in the notification process</li> </ul>  | <p>First notice of loss is performed by machines, sensors or drones that in combination with algorithms can directly identify losses and details of the event.</p>   | <ul style="list-style-type: none"> <li>• Raw sensor data or aggregated data if provided, e.g. by vendor / 3rd party</li> <li>• Historical claims data</li> </ul> | <ul style="list-style-type: none"> <li>• Mathematical /logical Intelligence</li> <li>• Computer vision</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Experimentation</b></li> </ul>          |
| <p><b>CLAIMS</b></p>        |  | <ul style="list-style-type: none"> <li>• Efficiency in claims process</li> <li>• Improvement in safety</li> </ul>   | <p>Incident optimization. Receive quantitative and qualitative information such as visual data or text. The claim can be automatically classified and processed.</p> | <ul style="list-style-type: none"> <li>• Pictures from personal devices, drones, satellites</li> <li>• Claims forms, e-mails, documents</li> </ul>               | <ul style="list-style-type: none"> <li>• Mathematical /logical Intelligence</li> <li>• Computer vision</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Experimentation</b></li> </ul>          |

**INSURANCE & CLAIMS MANAGEMENT PROCESS**

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|----------------------|---|---|--|---|--|---|
| <b>CLAIMS</b>        | <ul style="list-style-type: none"> <li>Faster or automated settlement</li> <li>24/7 assistance</li> </ul>     | Chatbot-based claims triage   | <ul style="list-style-type: none"> <li>Internal, external and related data sets</li> </ul> | <ul style="list-style-type: none"> <li>Mathematical /logical Intelligence</li> <li>Linguistics</li> <li>Interpersonal Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>In production</li> </ul>                      | <ul style="list-style-type: none"> <li>Screen market for chatbot-solutions and integrate in internal claims process.</li> </ul> |
|                      | <ul style="list-style-type: none"> <li>Balance sheet benefit</li> <li>Faster loss ratio adjustment</li> </ul> | Improve prediction of reserves  | <ul style="list-style-type: none"> <li>Internal, external and related data sets</li> </ul> | <ul style="list-style-type: none"> <li>Mathematical /logical intelligence</li> </ul>  | <ul style="list-style-type: none"> <li>Experimentation</li> </ul>                    | <ul style="list-style-type: none"> <li>Review impact of reserves for the company / risk transfer.</li> </ul>                    |
|                      | <ul style="list-style-type: none"> <li>Fair claims handling</li> </ul>  | Fraud detection   | <ul style="list-style-type: none"> <li>Historical claims data</li> </ul>                   | <ul style="list-style-type: none"> <li>Mathematical /logical intelligence</li> </ul>  | <ul style="list-style-type: none"> <li>In production</li> </ul>                      | <ul style="list-style-type: none"> <li>Pre-analysis could be relevant in-house or focus area for insurers.</li> </ul>           |
|                      | <b>RESTITUTION MANAGEMENT</b>   | <ul style="list-style-type: none"> <li>Cost optimisation</li> <li>Increased speed and quality of service</li> </ul> | Choice and control of 3rd parties  | <ul style="list-style-type: none"> <li>External data sets</li> </ul>  | <ul style="list-style-type: none"> <li>Mathematical /logical Intelligence</li> </ul> | <ul style="list-style-type: none"> <li>In production</li> </ul>   |

- **Early stage** - Early market development, still in research, development phase
- **Experimentation** - Proof of Concept (POC) or Minimum Viable Product (MVP) stage, first pilots taking place in the market
- **In production** - "In production" phase, solution starts scaling, companies have implemented it in their service offerings