THE AI-BASED MANAGEMENT EXPERT SYSTEM

TECHNICAL INTRODUCTION TO THE SYSTEM ARCHITECTURE

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INTRODUCTION

The **Organization Twin Cockpit** is our proprietary, AI-based **Management Expert System** for innovations in management with our management models, survey diagnostics, standards, statistics, benchmark data, and pattern recognition. The cockpit helps users to process the data, view the Organization Twin, conduct simulations and scenarios, make design and development decisions, and customize reports.

Innovations in management involves work, organization, management, leadership, context, and human decision-making. They are all intertwined. Work is work if it has a customer that demands performance. Knowledge work is about humans that make decisions. Organization is required when work requires more than one human to be completed. As such, organization defines the accountability of humans, teams, and institutions. Management is defined as the craft to get work done.

The focus of our Management Expert System are the linkages between accountability, decisions, and performance where good design of the organization's operating system makes a huge difference on how humans perform work and how they cope with context. Faulty design is the #1 reason for failure. It is important to get the design right from the beginning. Design is the necessary step to superior capabilities. That's why management innovation combines the design and the development of capabilities.

Our expert system becomes **artificial intelligence** (AI) with the deep knowledge (theories, models, practices), a high level of human expertise to make decisions, and metadata included that describes work, management, organizations, context, and humans. The Organization Twin Cockpit is the result of years of engineering invested to identify the knowledge with relevant models, structures, and processes for innovations in management. It represents information in distinct visual thinking aids, extracts metadata from our huge database and parses relationships using scientifically identified algorithms. The resulting software now supports experts with that task using the design methodology with the data from their own organizations. The model combines demographic, diagnostic and benchmark data, enables experts and leaders to make distinct design choices, and test their outcomes. As such, we have identified the relevant data with proven algorithms and heuristics to simplify and shorten the design process without any loss in depth.

With the Organization Twin Cockpit, management innovation is available and accessible as an expert system for leaders without the specific knowledge. This dramatically reduced the cost and speed of its design and development as well as faulty designs and risks of failure.

The cockpit comes with up to 91 modules, each with its own knowledge base, decision model, and visual thinking aid. The attached figure shows the map of the expert systems.

Every cockpit is unique as it is fed with individual organization data and the latest master data.

The cockpit comes with five perspectives. (1) ASSESSMENT: Current capabilities that are informed by the **Global Executive Survey** (2) ADOPTION: Design of future capabilities as user interfered decisions provided by the expert system with benchmark information, (3) ADAPTION: Development of capabilities

to close the gaps between current and future, offered by the expert system as algorithms, (4) EVOLUTION: Implementation with the program to close the caps, offered by the expert system with build in experience as published in or books for user interference decisions, and (5) PERFECTION: Leadership, the training of new capabilities, offered by the expert system.

1. ORGANIZATION

We feed the expert system with individual organization data including demographics, assessment results from the **Global Executive Survey** and, in conversation with the organization expert, we add descriptive information about the organization.

The survey is a proprietary online assessment of organizational capabilities by participating executives and experts that want to establish their organization's own twin. Its scientific validity has been independently tested with results published in *Organizational Agility: Testing Validity and Reliability of a Diagnostic Instrument.* (Nold, et al. 2018) Offline versions of the assessment have been published in *People-centric Management* (Michel, 2020), *Agile by Choice (*Michel*,* 2021*)*, and *Better Management* (Michel, 2023). A free version is available on www.management-insights.ch. The results of the assessment are aggregated and then processes and presented directly in the Organization Twin Cockpit.

With the executive survey and demographic information, the Organization Twin Cockpit becomes an organization-*specific* expert system.

Demographic information is reviewed and added to the system (Figure 1) by the systems manager and used for benchmarking purposes and pattern recognition:

- Location
- Scope
- Ownership
- Industry

Other **descriptive information** is added to classify the characteristics of the organization:

- Industry
- Organization form
- Organization size
- Structure
- Life cycle stage
- Accountability

The descriptive information is used for adoption scenarios.

Various policy decisions guide the design of management and organizations. The function as heuristics in the expert system.

FIGURE 1: THE EXPERT SCENARIO COCKPIT

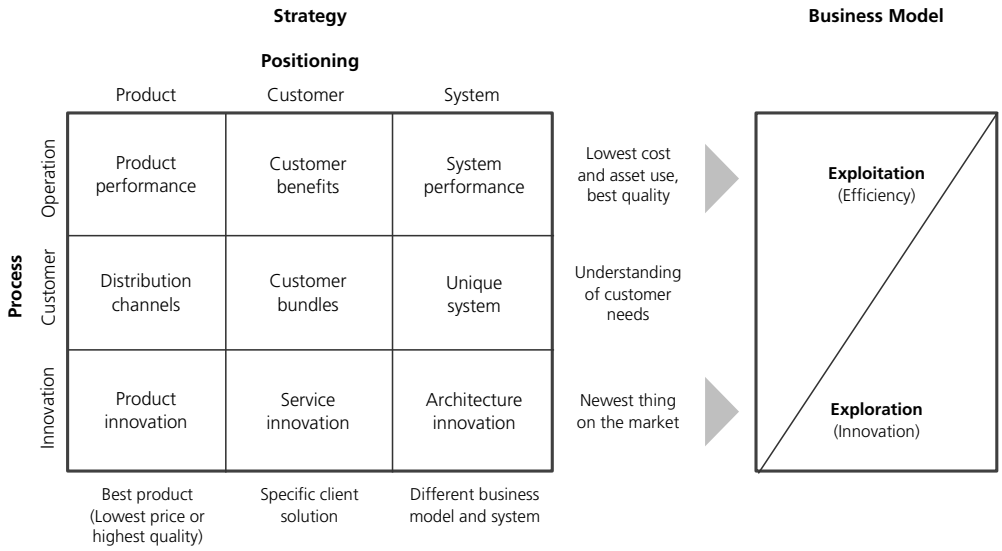
2. BUSINESS

Next, we determine the organization's strategy and business model (Figure 2) in conversation with the client expert.

The policy: strategy. Customer strategy, business model, and management context must align.

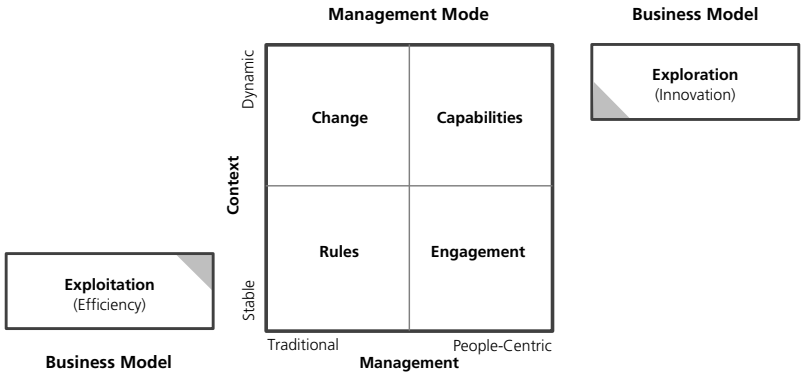
Three core processes and three positioning option determine generic strategies (Hax and Majluf, 1996). The cockpit model offers three options for business models (O'Reilly and Tushman, 2013, 2004). The management context model offers four choices on generic management models. (Michel, *Better Management*, 2022, 53-58. Simulations guide the strategy and business model decisions (Figure 2).

FIGURE 2: STRATEGY AND BUSINESS MODEL



The management context is informed by decision-making and the management model. Alignment indicators guide the decisions (Figure 3).

FIGURE 3: BUSINESS MODEL AND MANAGEMENT CONTEXT



The simulation function helps to adapt strategy, business model, and management context and evaluate future scenarios.

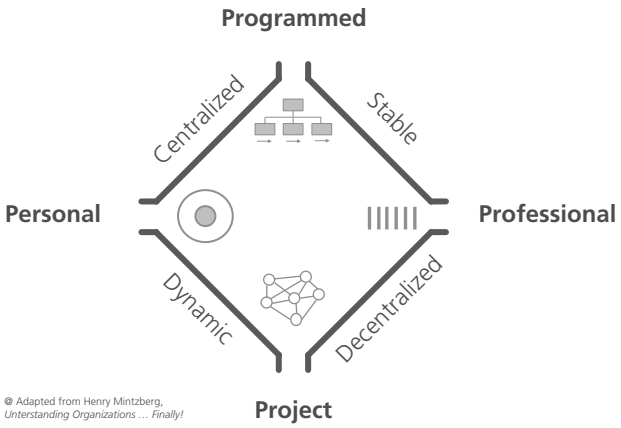
3. ORGANIZATION

Next is organization form which determines organizational levers. The organization form needs to align with the structure and life cycle stage. The expert system's algorithm checks that alignment.

> **The policy: organization**. The management mode, organizational form (Figure 4) and levers need to fit.

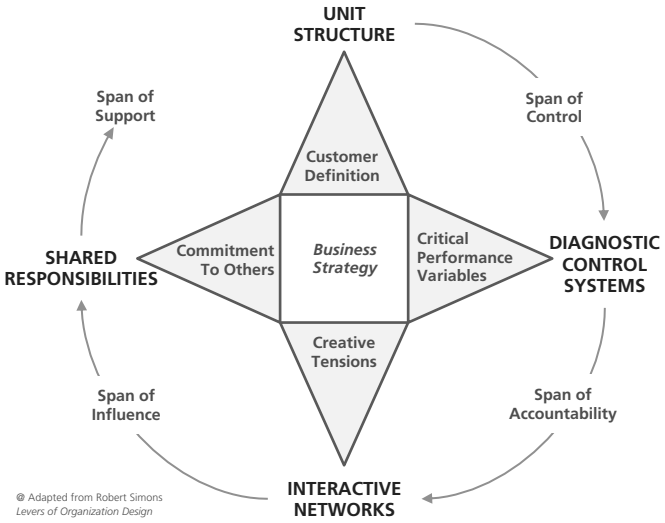
Five organization forms (Mintzberg, 2023) and our heuristic support the decision on the organization levers. With this, structure, control, decision-making, and delegation decisions follow. Comprehensive modules support all organization decisions.

FIGURE 4: ORGANIZATION FORM



The expert system aligns every organization form with corresponding choices of design levers. Design levers (Figure 5) follow Robert Simons *Levers of Organization Design* (HBS, 2005).

FIGURE 5: ORGANIZATION DESIGN LEVERS



With the decision on organization form, important business unit, structure, life cycle stage and accountability decisions follow. These decisions directly impact the design of management.

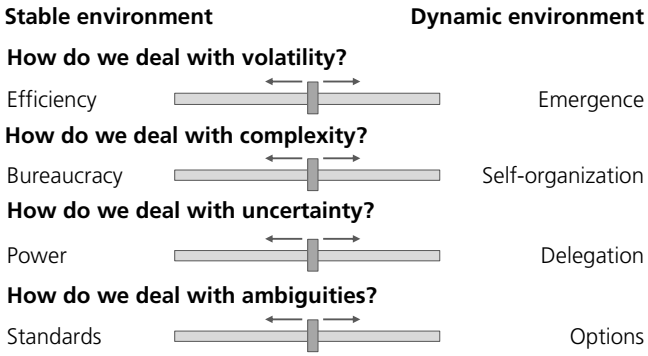
4. CONTEXT

Organizational decisions determine the choice of the leadership toolbox. Environmental decisions determine the decision-making. Both, organizational and environmental decisions need to align with the leadership toolbox for maximum impact.

> **The policy: context and management principles**. The levers of decision-making and the management model need to align with management context.

Context. The assessment results determine the dominant management context and with it, the context and management principles. The adaptation of the context determines the context levers (Figure 6).

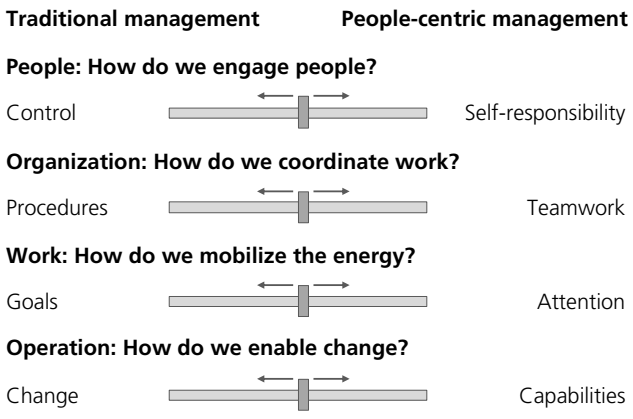
FIGURE 6: CONTEXT LEVERS



The VUCA decisions determine the decision-making principles.

Management. The adaptation of the management levers (Figure 7) enables you to determine your future management context.

FIGURE 7: MANAGEMENT LEVERS



The expert system offers the feedback whether levers fit or not. Context levers result from the ability of the organization to address the VUCA context.

5. MANAGEMENT

Routines of how work gets done and how we think about the future determines the operating model.

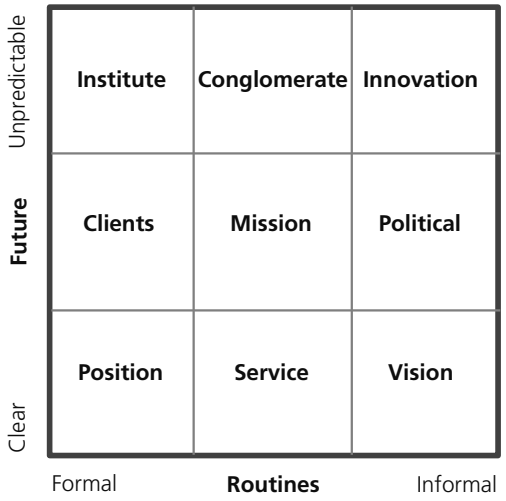
The operating model decision determines the design of all parts of the leadership toolbox. Sophisticated heuristics determine the relationship between organizational decisions and the choice of the leadership toolbox (Michel, *Diagnostic Mentoring*, 2022) based on its huge database. Organizational scenarios and context simulations support the toolbox decisions.

Policy 5: Tools. Tools need to fit management and the demography

- Operating models determine the design of tools.
- Demography determines the choice of tools.

Operating modes determine the design of the leadership toolbox with its rules, routines, tools, and interactions. The heuristics of expert system identify the dominant operating mode. Then, it determines the corresponding design of the toolbox. Operating modes (Figure 8) have been adapted from *Strategy Safary* Mintzberg (1998).

FIGURE 8: OPERATING MODES



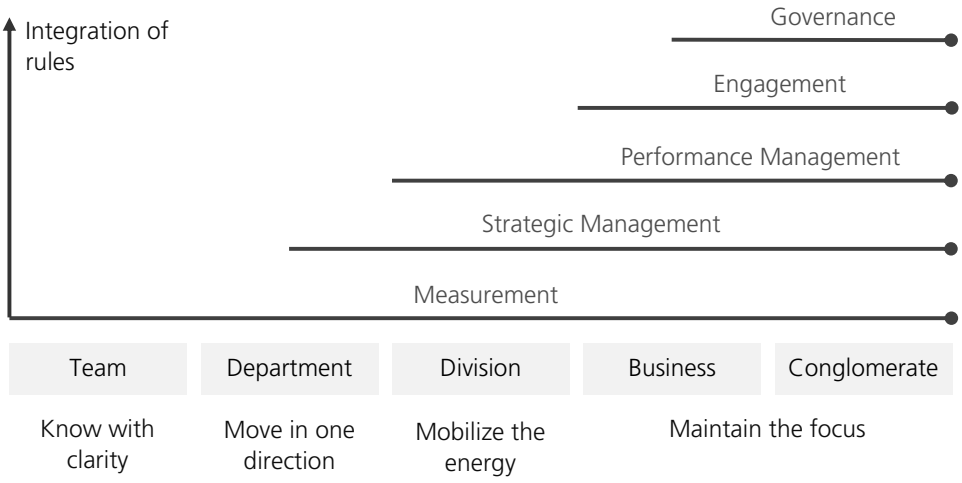
For the adaptation of the leadership toolbox, the expert systems offer the choice and checks with the management context.

The Leadership Toolbox

Demography determines the choice of the leadership toolbox.

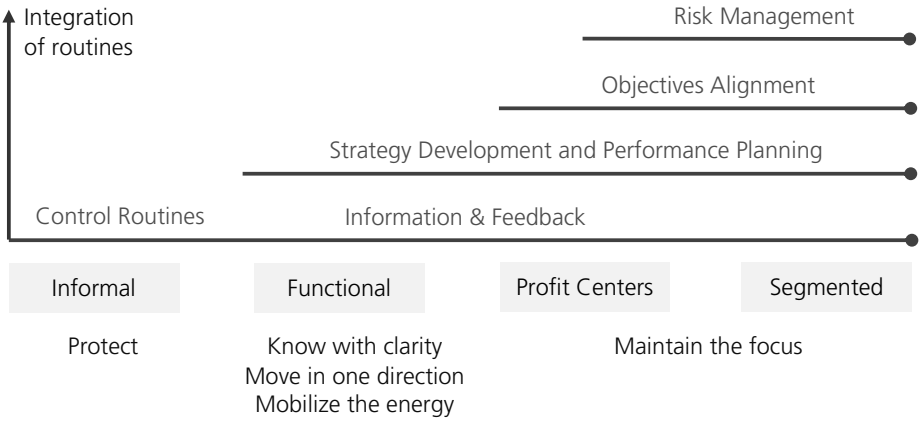
The unit structure determines the choice of rules (Figure 9).

FIGURE 9: THE CHOICE OF RULES



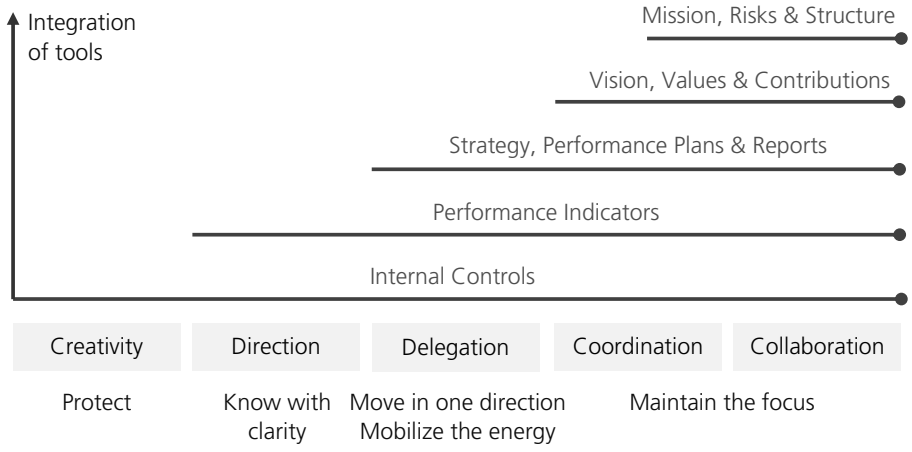
Organizational structure determines the routines (Figure 10).

FIGURE 10: THE CHOICE OF ROUTINES



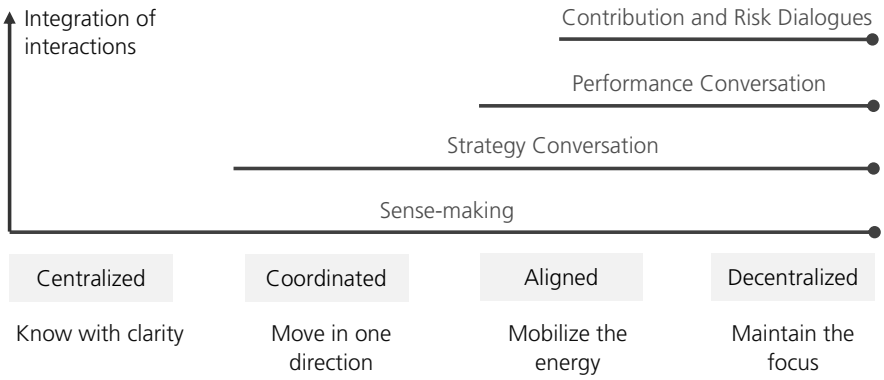
The life cycle stage determines the choice of tools (Figure 11).

FIGURE 11: THE CHOICE OF ROUTINES



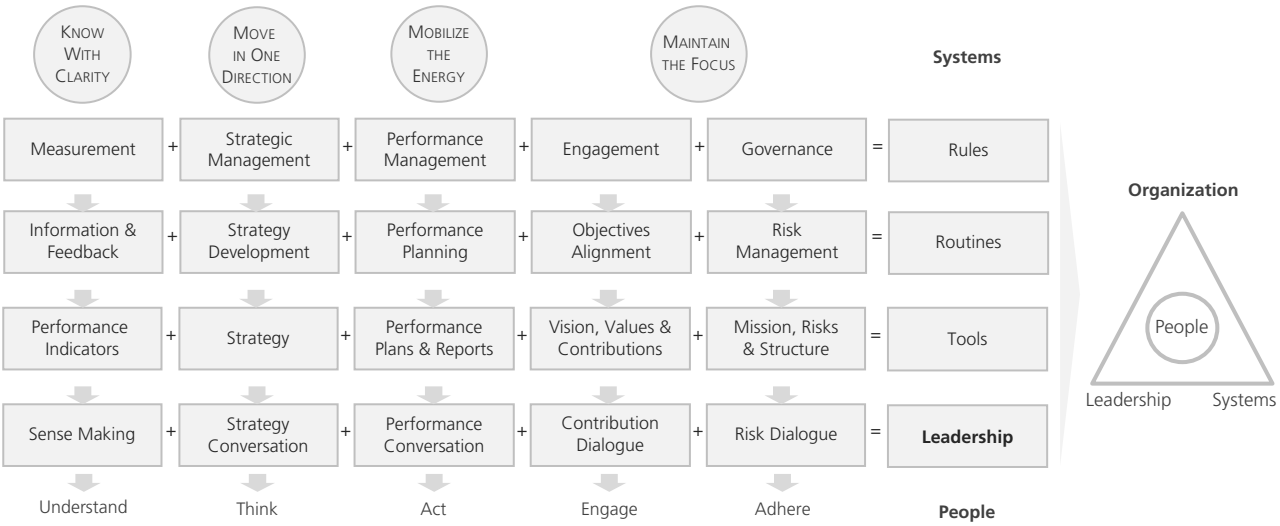
The degree of decentralization determines the choice of interactions (Figure 12).

FIGURE 12: THE CHOICE OF INTERACTIONS



In combination, rules, routines, tools, and interactions create the leadership toolbox (Figure 13).

FIGURE 13: THE LEADERSHIP TOOLBOX

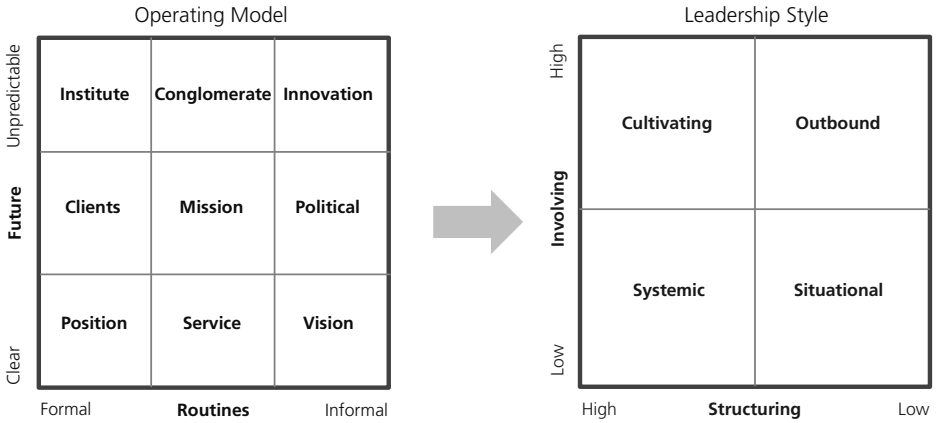


The leadership style must align with the operating model. The degree of structuring and involving determine the leadership style (Figure 15). Simulations support the leadership style decisions.

The policy: leadership. Leadership style needs to fit with management modes.

- Align leadership style levers.
- Align leadership style with management modes.
- Align the leadership scorecard with the leadership style.

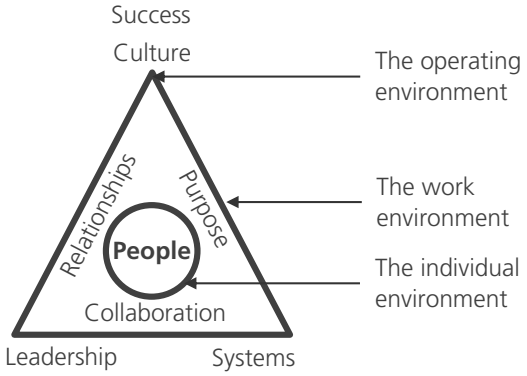
FIGURE 14: LEADERSHIP STYLE



6. PEOPLE AND WORK

The performance triangle (Figure 15) and leadership scorecard (Figure 16) determine how work gets done. AI-based reference and benchmark data supports the decisions on capabilities.

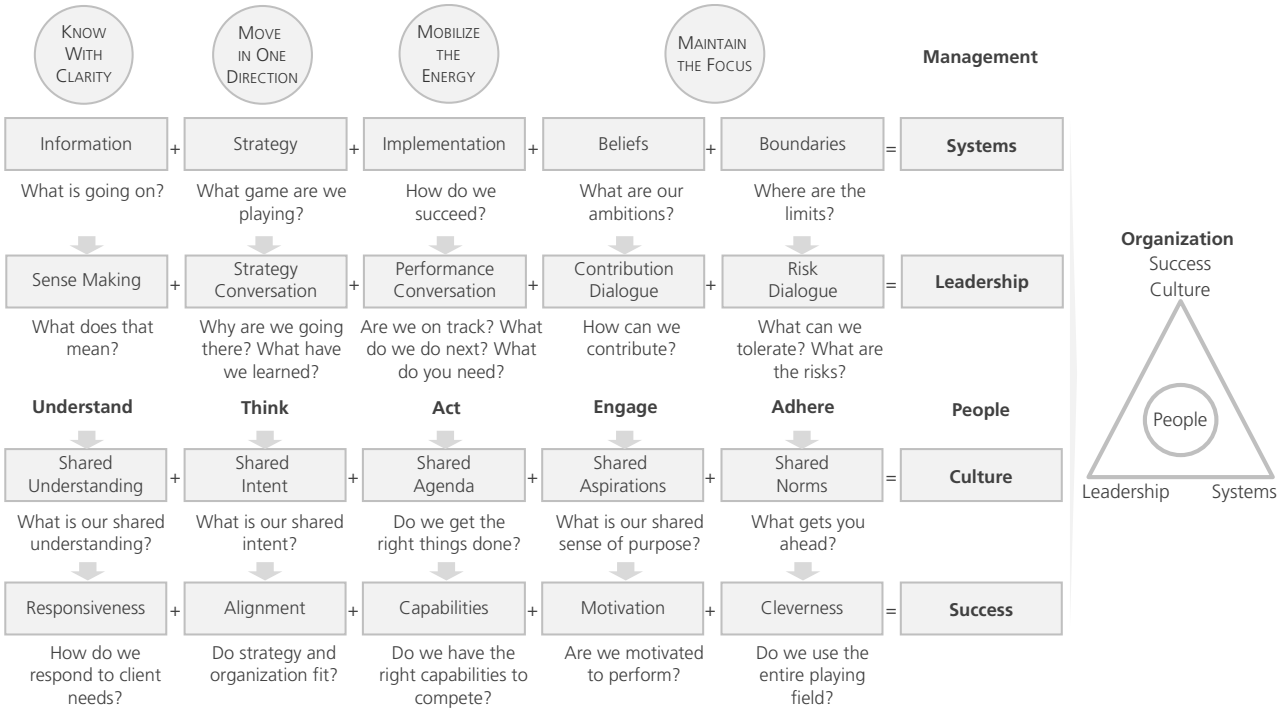
FIGURE 15: THE PERFORMANCE TRIANGLE



Statistical correlations provide information on the relationships and sensitivity of all elements. In combination, these elements determine organizational maturity.

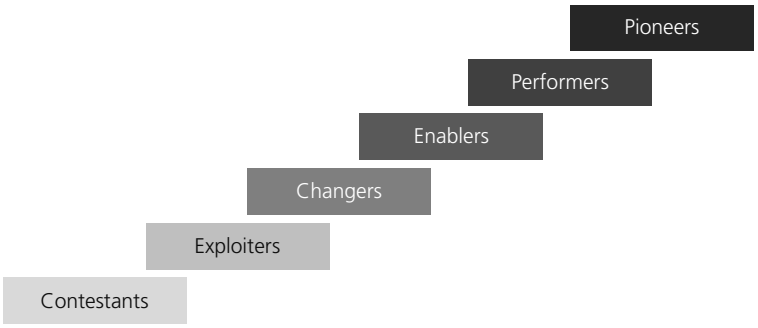
The leadership scorecard must support the chosen leadership style (Figures 16).

FIGURE 16: LEADERSHIP SCORECARD



Organizational capabilities determine organizational maturity (Figure 17).

FIGURE 17: ORGANIZATIONAL MATURITY

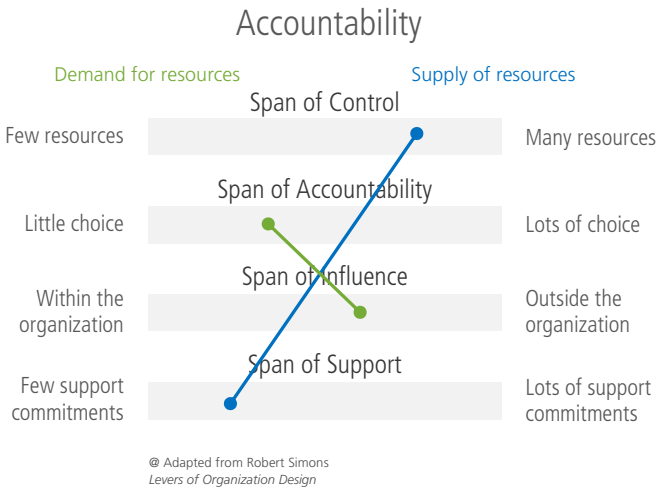


The expert systems provide the choice for the adoption of desired maturity standard.

Accountability. The choice of accountability and organization from also determine the accountability levers which are uses to design jobs.

The policy: accountability. Align structures and accountabilities.

FIGURE 18: ACCOUNTABILITY LEVERS

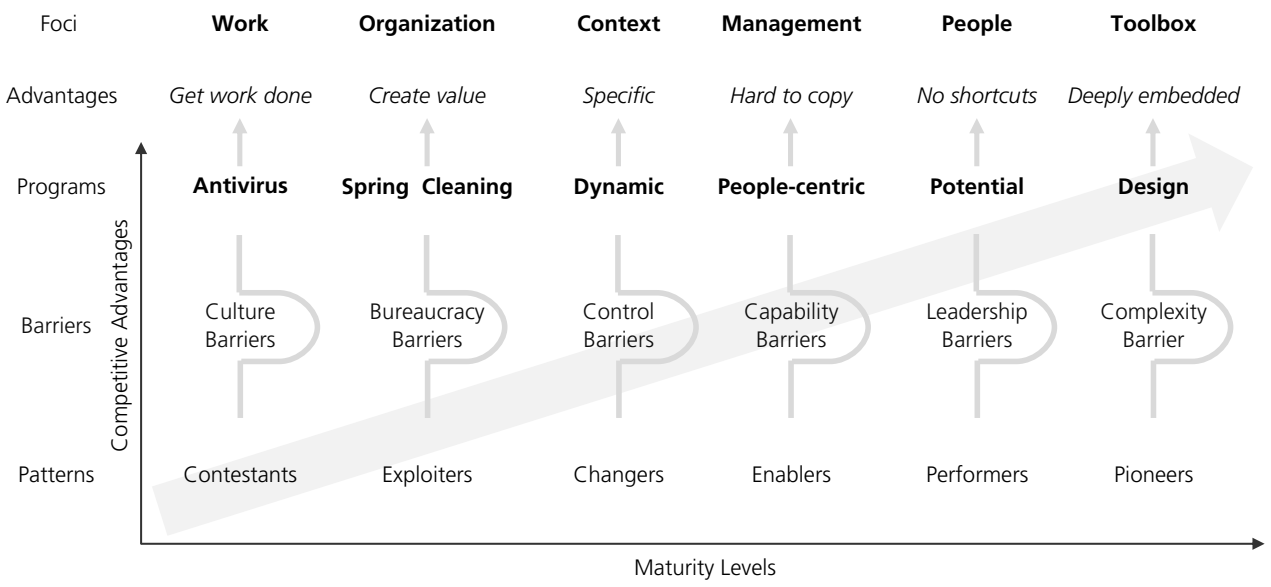


7. PROGRAMS

Development programs. Three modules provide guidance for the capability development decisions: Transition strategies, the development program, and development paths.

The policy: transitions. Align transition strategies and development paths.

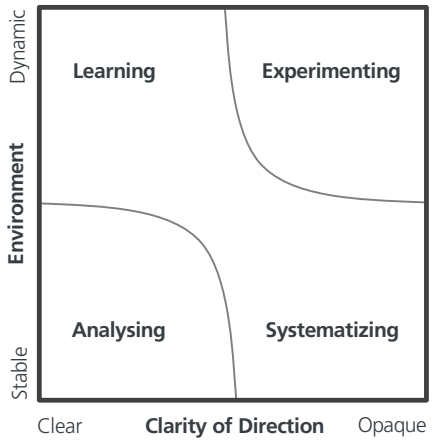
FIGURE 19: DEVELOPMENT PROGRAMS



The algorithm of maturity levels and competitive advantage informs the development program decisions.

Development path. Clarity on the direction and the environment determine the ideal development path.

FIGURE 20: DEVELOPMENT PATHS



Development programs and paths need to fit.

Algorithms with standards on organizational maturity and competitive advantage guide the development program decisions (*Patterns of Mastery*, Michel et. al., 2025).

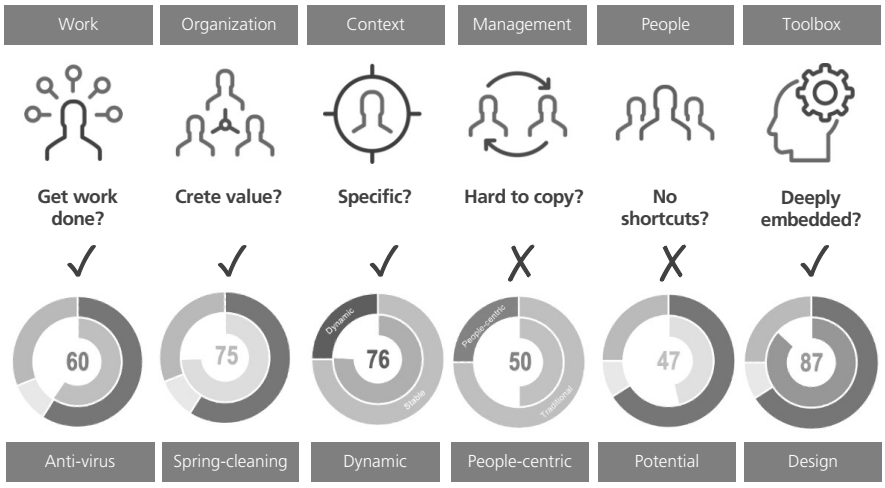
Development paths suggest how to develop capabilities.

8. STANDARDS

Competitive advantage is the standard for the evaluation of the design decisions.

> **The policy: competitive Advantage**. Evaluate the integration of the concepts with the criteria for competitive advantages.

FIGURE 21: COMPETITIVE ADVANTAGE



9. MASTER DATA

Our master database keeps learning with new business cases that alter the statistics.

FIGURE 22: THE EXPERT SIMULATION COCKPIT

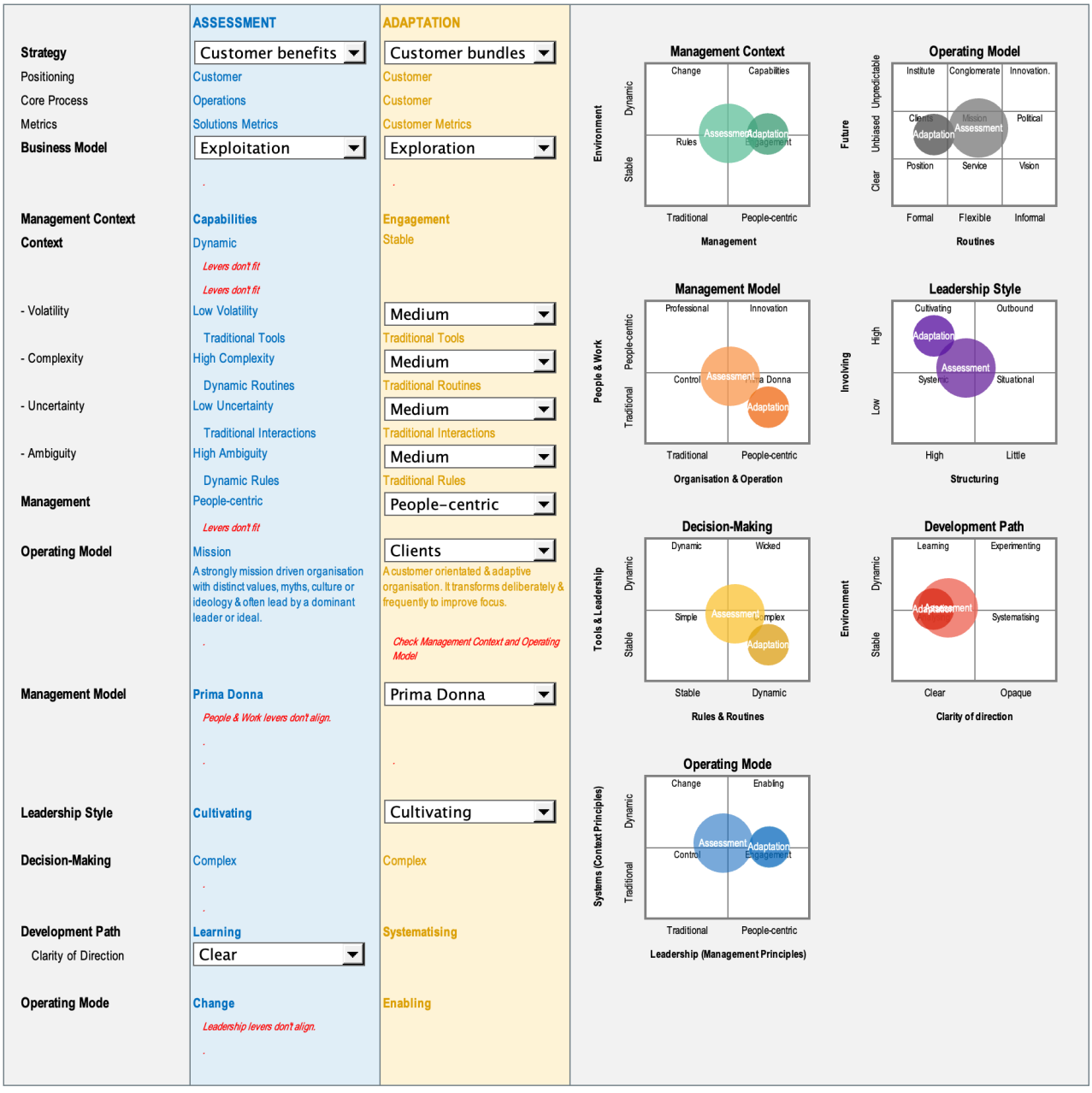
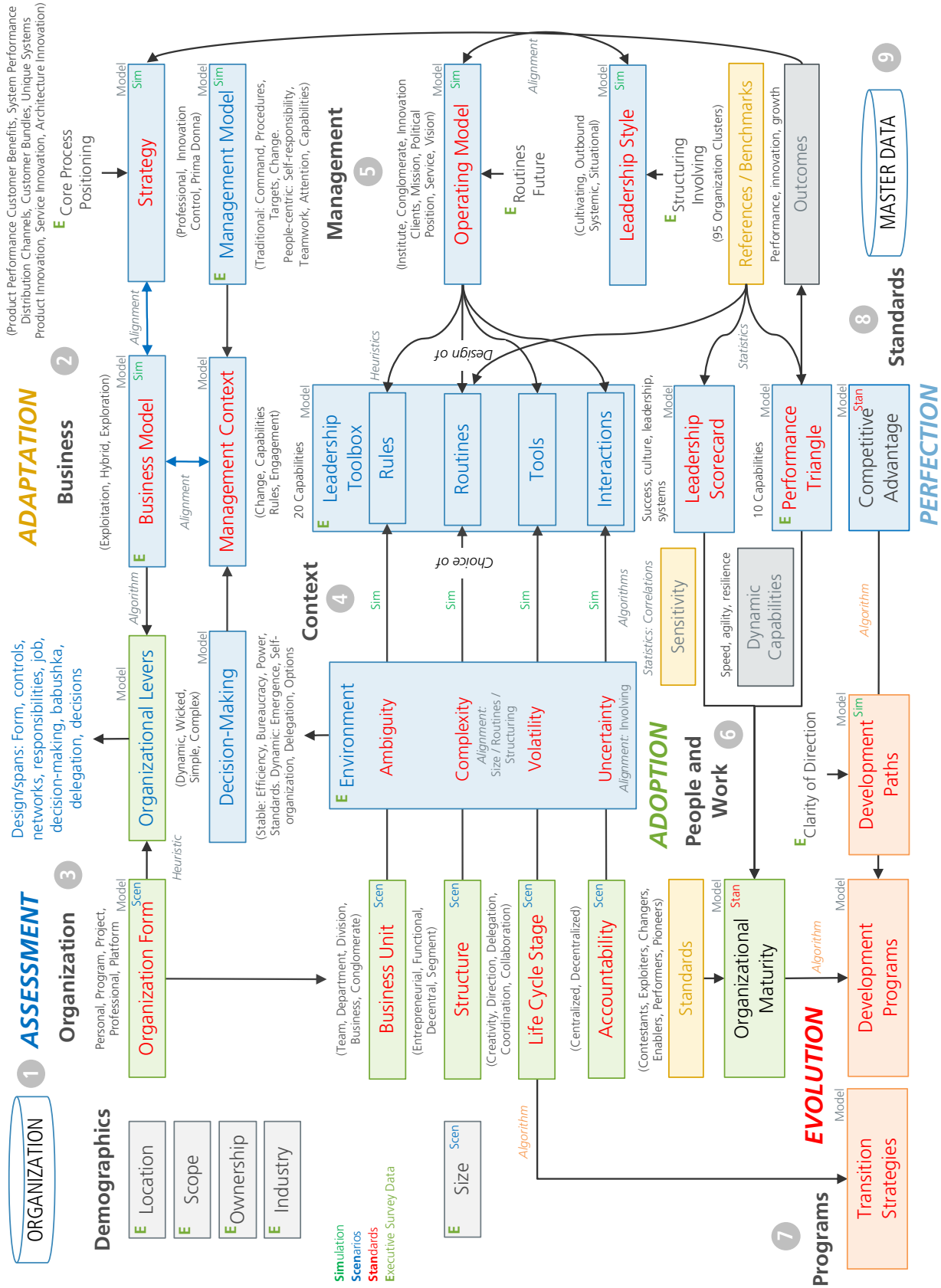


FIGURE 23: THE AI-BASED HEURISTICS AND ALGORITHMS



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