

Building Intelligent Companies:

Entrepreneurial Management and Design Principles.

Dr. Simon Grand



www.rise.ch / simon.grand@unisg.ch / +41 79 639 38 07.

Basic Idea.

*„Every executive takes his actions with one eye on the matter before him and one eye on the effect of his decisions upon its organizational consequences“ (Herbert A. Simon, *Administrative Behavior*, 2nd Edition, 1957).*

*„Such experience forms the ground for the belief that abstract principles may be discerned in organizations of great variety, and that ultimately it may be possible to state principles of general organization“ (Chester I. Barnard, *Foreword*, First Edition, 1947).*

Basic Idea.

„There is a set of design principles for intelligent systems [...] we feel that recognizing the properties of the real worlds (as infinitely rich), in contrast to virtual ones, is an essential message.“ (Rolf Pfeifer & Josh Bongard, 2007).

Designing and building companies as intelligent systems, according to design principles.

Entrepreneurial management as building companies in the context of innovation and change.

Overview.

1. Context: Patterns of Innovation and Change.
2. Focus: Managerial Challenges.
3. Approach: Design Principles.
4. Outlook: Building Intelligent Companies.

Patterns of Innovation and Change.

Innovation and change require a great amount of resources and time to explore future possibilities.



„The Dual Cyclone™ system is the first breakthrough in technology since the invention of the vacuum cleaner in 1901.

In 1978, James Dyson noticed how the air filter in the Ballbarrow spray-finishing room was constantly clogging with powder particles (just like a vacuum cleaner bag clogs with dust). So he designed an industrial cyclone tower, which removed the powder particles by exerting centrifugal forces greater than 100,000 times those of gravity. Could the same principle work in a vacuum cleaner?

5 years and 5,127 prototypes later, the world's first bagless vacuum cleaner from Dyson arrived."



James Dyson

Patterns of Innovation and Change.

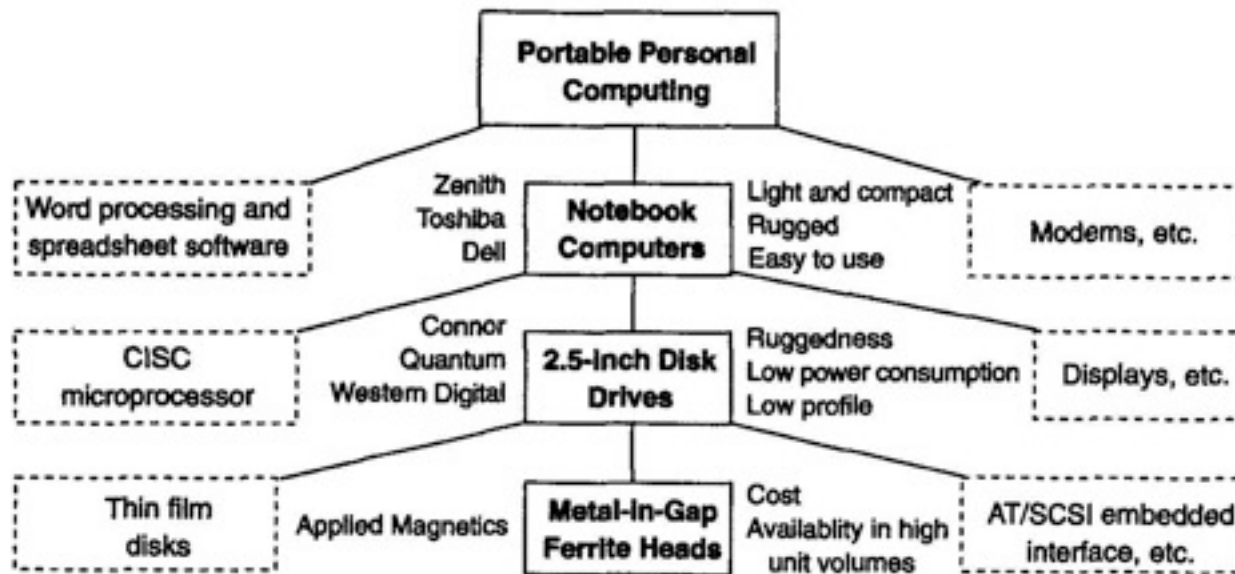
The invention of new ideas does not automatically lead to return appropriation from a successful innovation.



The first computer mouse held by Douglas Engelbart.

Patterns of Innovation and Change.

Innovation and change emerge from the interaction of multiple actors, actions, activities and artefacts.



Patterns of Innovation and Change.

Innovation and change inherently imply value creation and value destruction („creative destruction“).



Industrial Revolution.

Patterns of Innovation and Change.

The evaluation of an innovation or change process is a question of perspective.

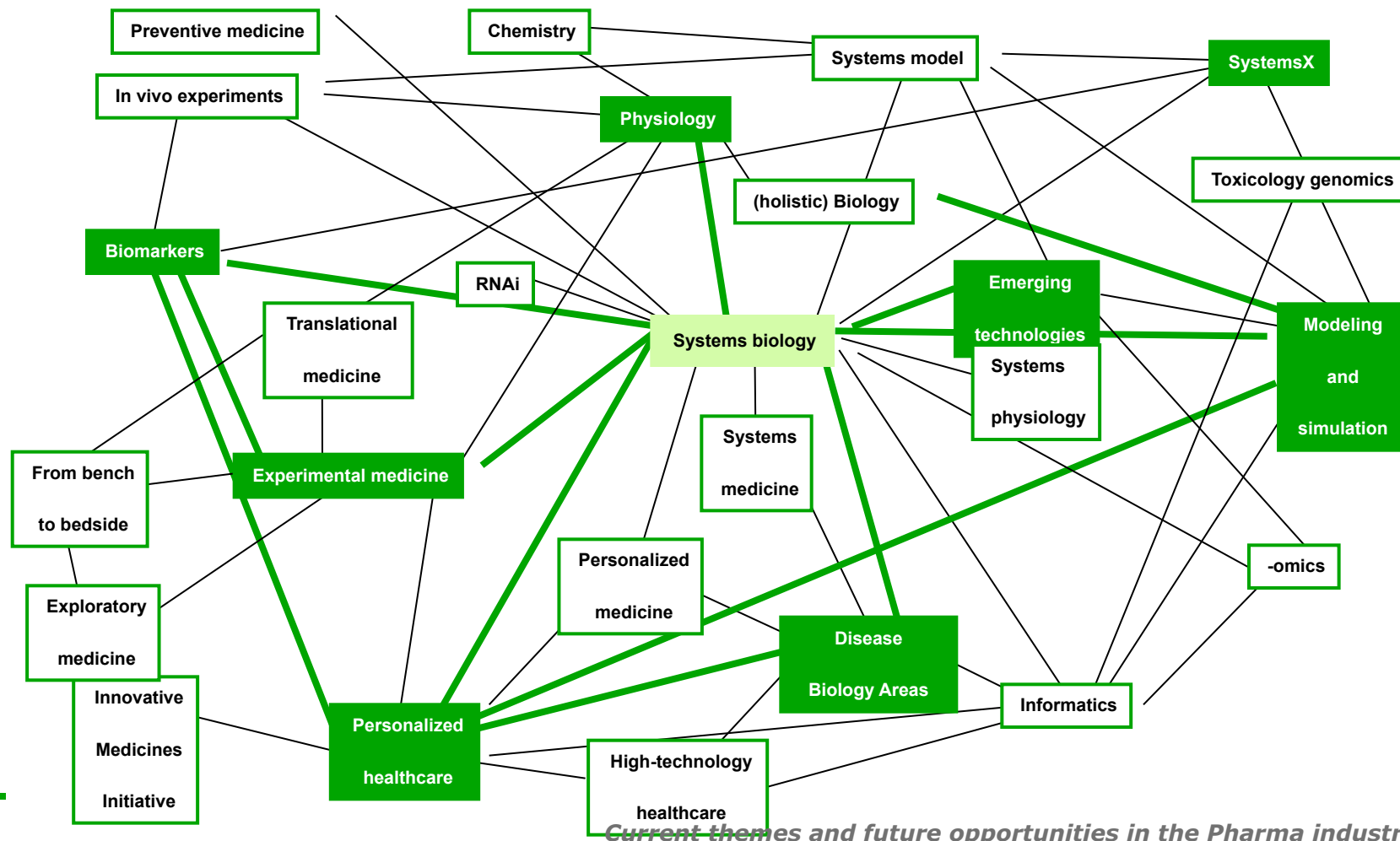


Hybrid Human-Machine Agent.

Overview.

1. Context: Patterns of Innovation and Change.
2. Focus: Managerial Challenges.
3. Approach: Design Principles.
4. Outlook: Building Intelligent Companies.

Managerial Challenges.



Current themes and future opportunities in the Pharma industry.

Managerial Challenges.

Entrepreneurial orientation is confronted with multiple opportunities, new situations and unexpected events.

- **Simultaneity** of multiple and attractive opportunities.
- **Contradiction** to the existing strategy.
- **Limited resources** (financial and non-financial).
- **Heterogeneity** of relevant evaluation criteria.
- **Uncertainty** concerning future development.
- **Ambiguity** in argumentation and legitimation.
- **Competition** among mutually exclusive approaches.

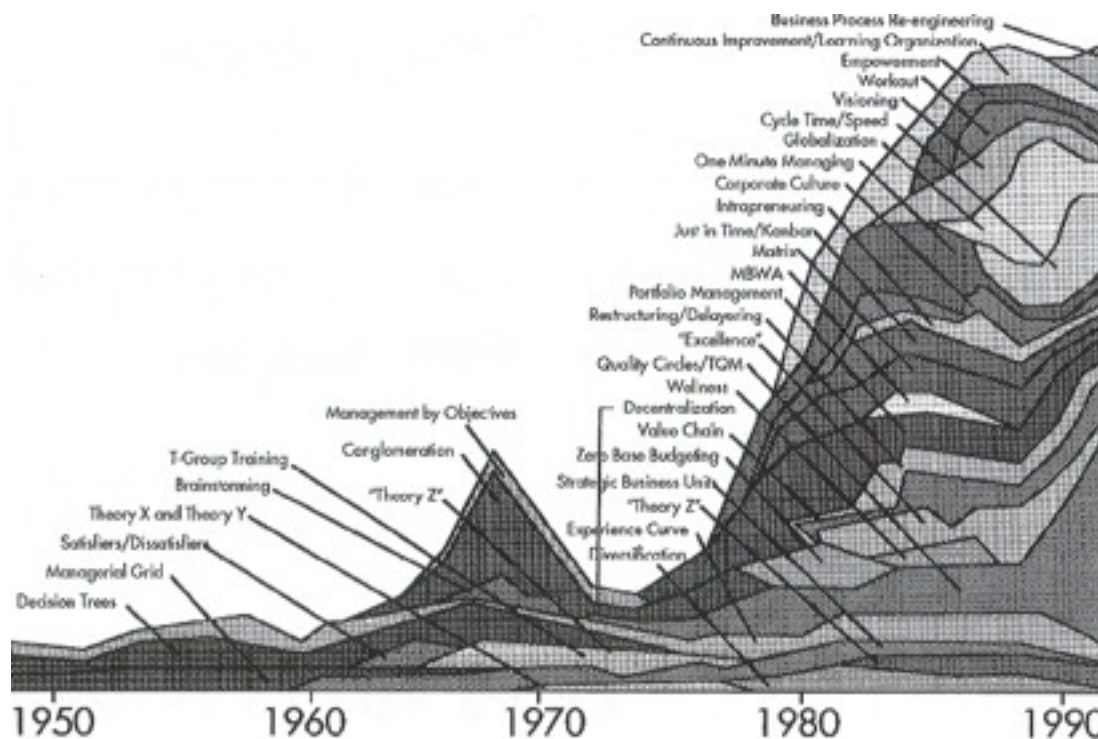
Managerial Challenges.

Innovation and change imply continuous local and focused managerial action in specific situations and contexts.

„Managers perform a great quantity of work at an unrelenting pace. / Managerial activity is characterized by variety, fragmentation, and brevity. / Managers prefer issues that are current, specific, and ad hoc. / Managers demonstrate a strong preference for the. / Despite the preponderance of obligations, verbal media the manager appears to be able to control his own affairs.“ (Mintzberg, 1971).

Managerial Challenges.

Entrepreneurial management is confronted with manifold (potentially relevant) frameworks.



Emergence of management frameworks by Richard Pascale.

Managerial Challenges.

Successful innovation and change are self-evident and unquestioned ex post, but uncertain and open ex ante.

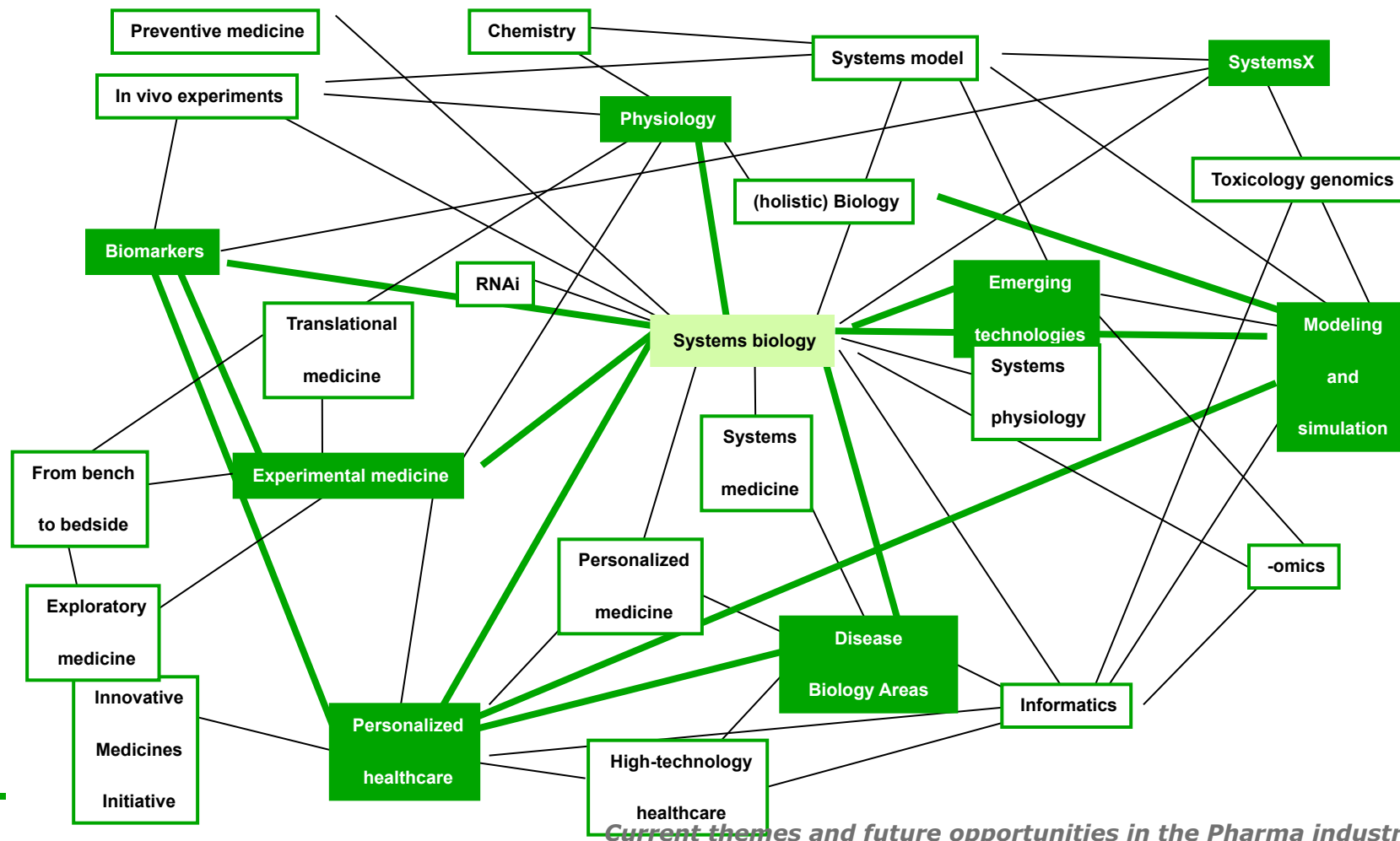


This presentation contains certain forward-looking statements. These forward-looking statements may be identified by words such as "believes", "expects", "anticipates", "projects", "intends", "should", "seeks", "estimates", "future" or similar expressions or by discussion of strategy, goals, plans or intentions. Various factors may cause actual results to differ materially in the future from those reflected in forward-looking statements contained in this presentation among others: (1) pricing and product initiatives of competitors; (2) legislative and regulatory developments and economic conditions; (3) delay or inability in obtaining regulatory approvals or bringing products to market; (4) fluctuations in currency exchange rates and general financial market conditions; (5) uncertainties in the discovery, development or marketing of new products or new uses of existing products; (6) increased government pricing pressures; (7) interruptions in production; (8) loss of or inability to obtain adequate protection for intellectual property rights; (9) litigation; (10) loss of key executives or other employees; and (11) adverse publicity or news coverage.

Overview.

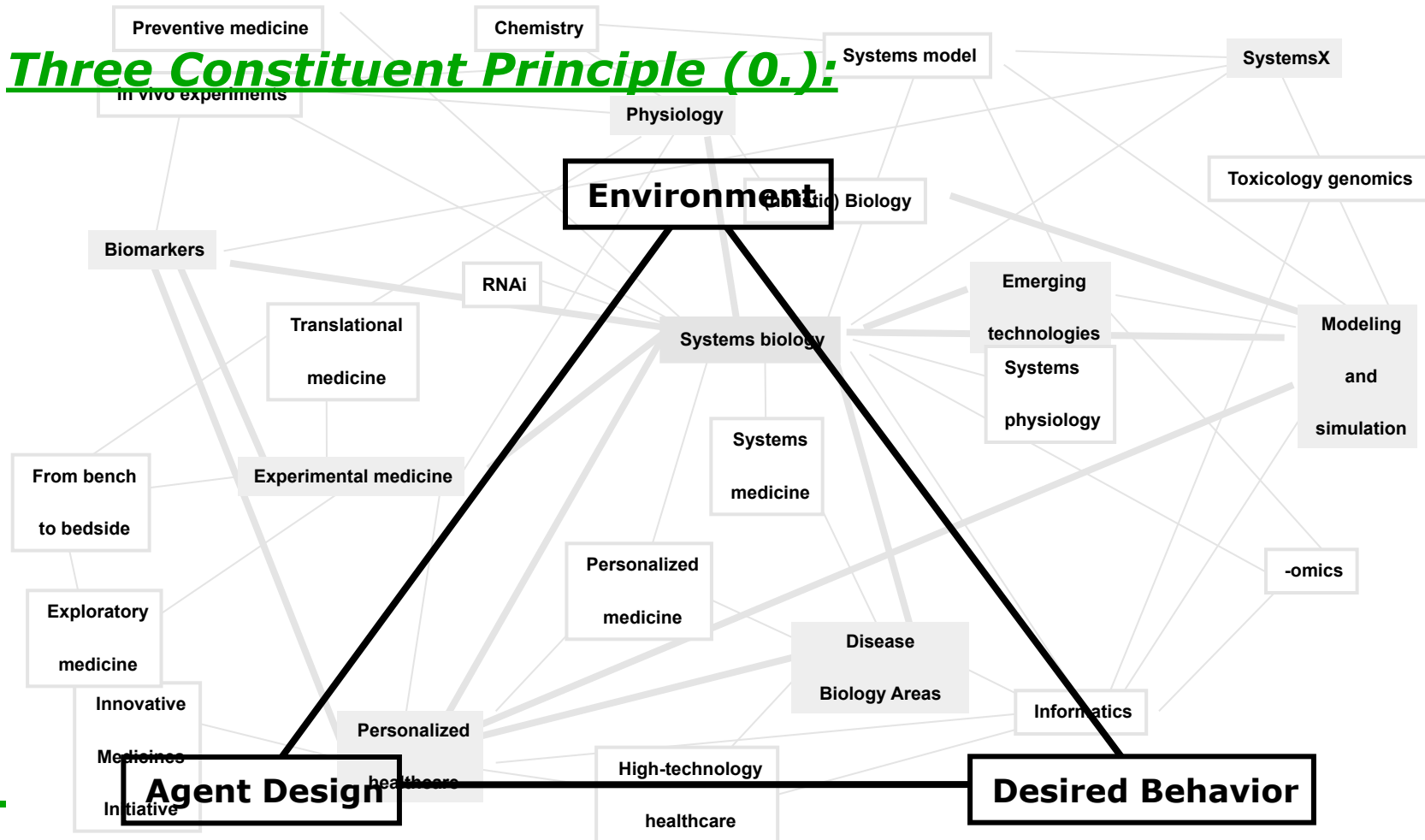
1. Context: Patterns of Innovation and Change.
2. Focus: Managerial Challenges.
3. Approach: Design Principles.
4. Outlook: Building Intelligent Companies.

Design Principles.

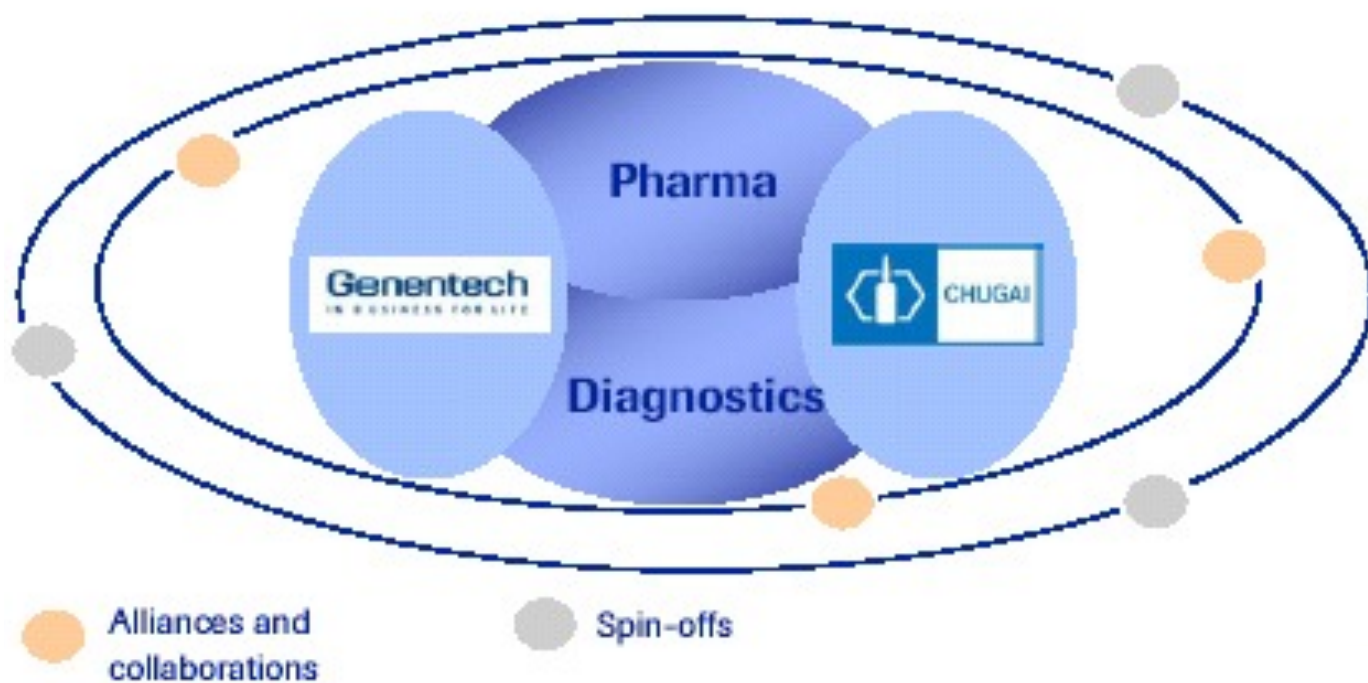


Current themes and future opportunities in the Pharma industry.

Three Constituent Principle (0.):



Design Principles.



Design Principles.

Principles for Organizational Design (1.1 – 1.3):

- 1.1 **Principle of ecological balance**, *aligning relevant sub-systems, interaction patterns and task distribution.*
- 1.2 **Principle of relevant heterogeneity**, *in terms of redundancy, parallel processes, abstraction.*
- 1.3 **Principle of cheap design**, *by exploiting the environment and the interaction patterns.*

Design Principles.

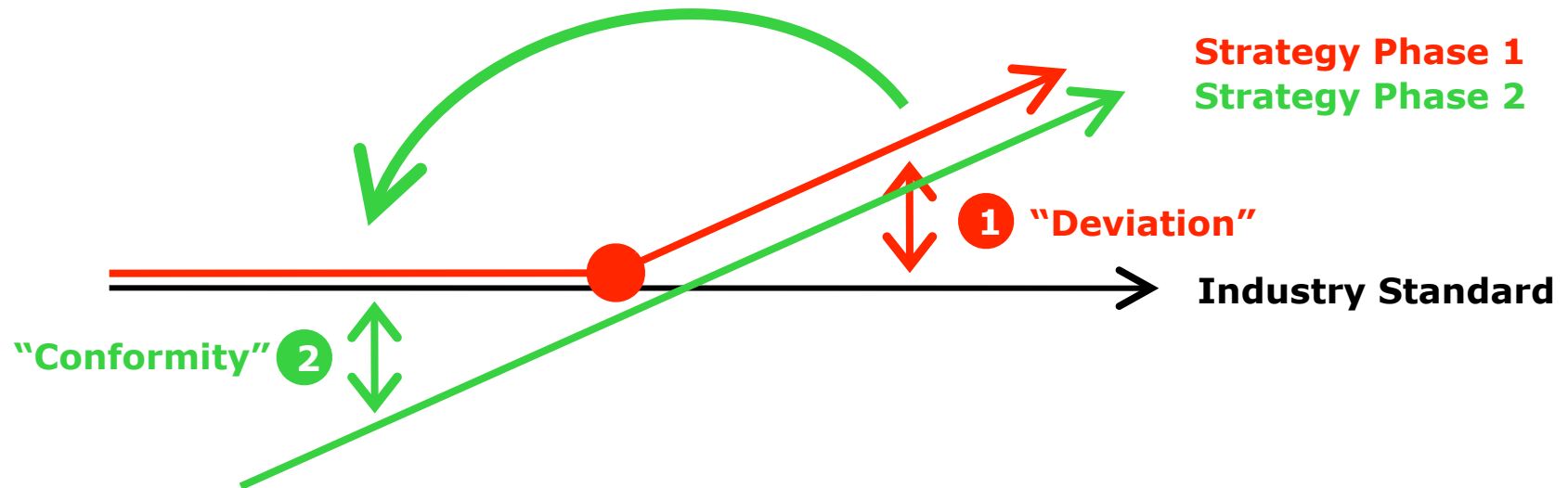
„At Roche, we are dedicated to innovating healthcare. All our efforts are directed towards developing novel solutions for major unmet medical needs. Over the years, our search for better ways of maintaining and restoring health has resulted in a steady stream of pioneering therapeutic and diagnostic products and services.“ (Franz B. Humer)

Design Principles.

Principles for Managerial Action (2.1 – 2.3):

- 2.1 **Principle of constrained action**, *to limit the possible action space (through basic values and scaffolding).*
- 2.2 **Principle of information self-structuring**, *requiring continuous interactions to create relevant information.*
- 2.3 **Complete agent principle**, *importance of complete agent beyond isolated components.*

Design Principles.



Design Principles.

Principles for Managerial Mindset (3.1 – 3.3):

- 3.1 **Frame-of-reference principle**, to gain adequate interpretations of patterns, activities and outcomes.
- 3.2 **Principle of designing for emergence**, to benefit from multiple time scales, agents, interactions.
- 3.3 **Principle of diversity and complicity**, achieving flexibility and stability, exploration and exploitation.

Overview.

1. Context: Patterns of Innovation and Change.
2. Focus: Managerial Challenges.
3. Approach: Design Principles.
4. Outlook: Building Intelligent Companies.

Building Intelligent Companies.

Entrepreneurial management creates and stabilizes basic values with respect to the following areas:

- **Definition of identity**: How do we specify our self-understanding? How do we operationalize it?
- **Definition of success**: How do we define success? How do we measure success?
- **Definition of effort**: How do we identify valuable effort? For whom do we create value?
- **Definition of quality**: How do we set our quality level? How do we operationalize it?
- **Definition of innovation**: How do we qualify the „new“ and our approach to innovation?

Building Intelligent Companies.

The entrepreneurial management of innovation and change implies the establishment of strategic references.

Protective Belt:

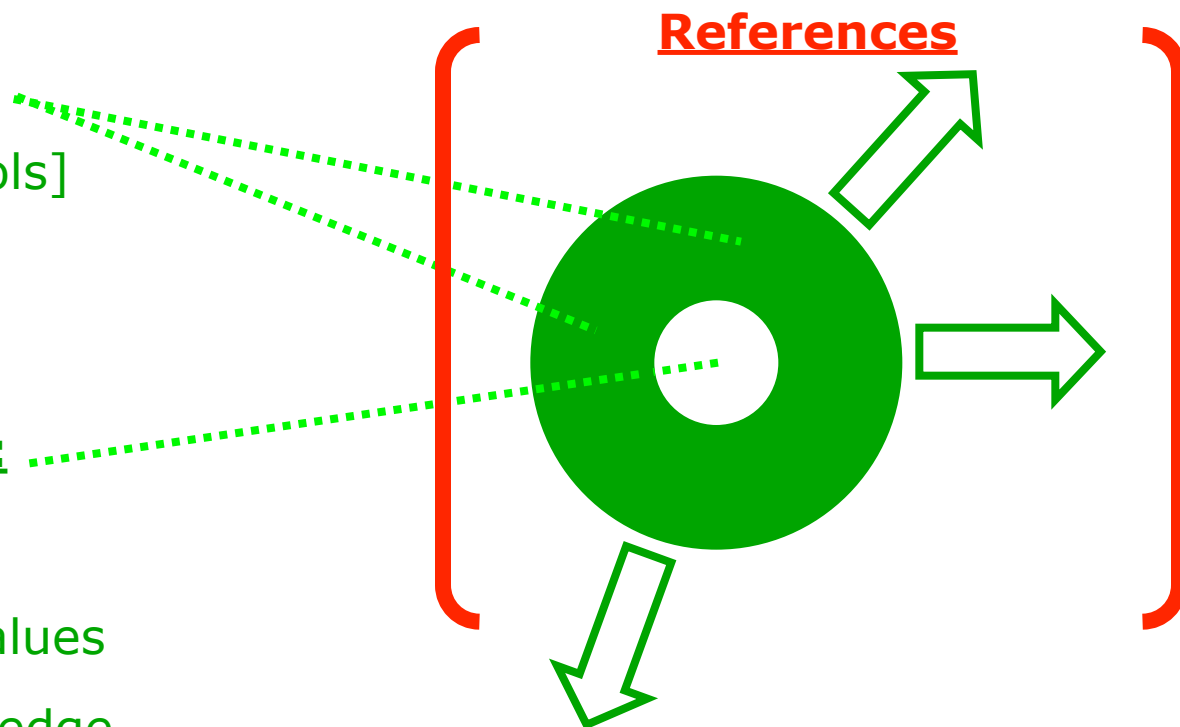
[Screen of Symbols]

- Explications
- Rationalizations

Axiomatic Core:

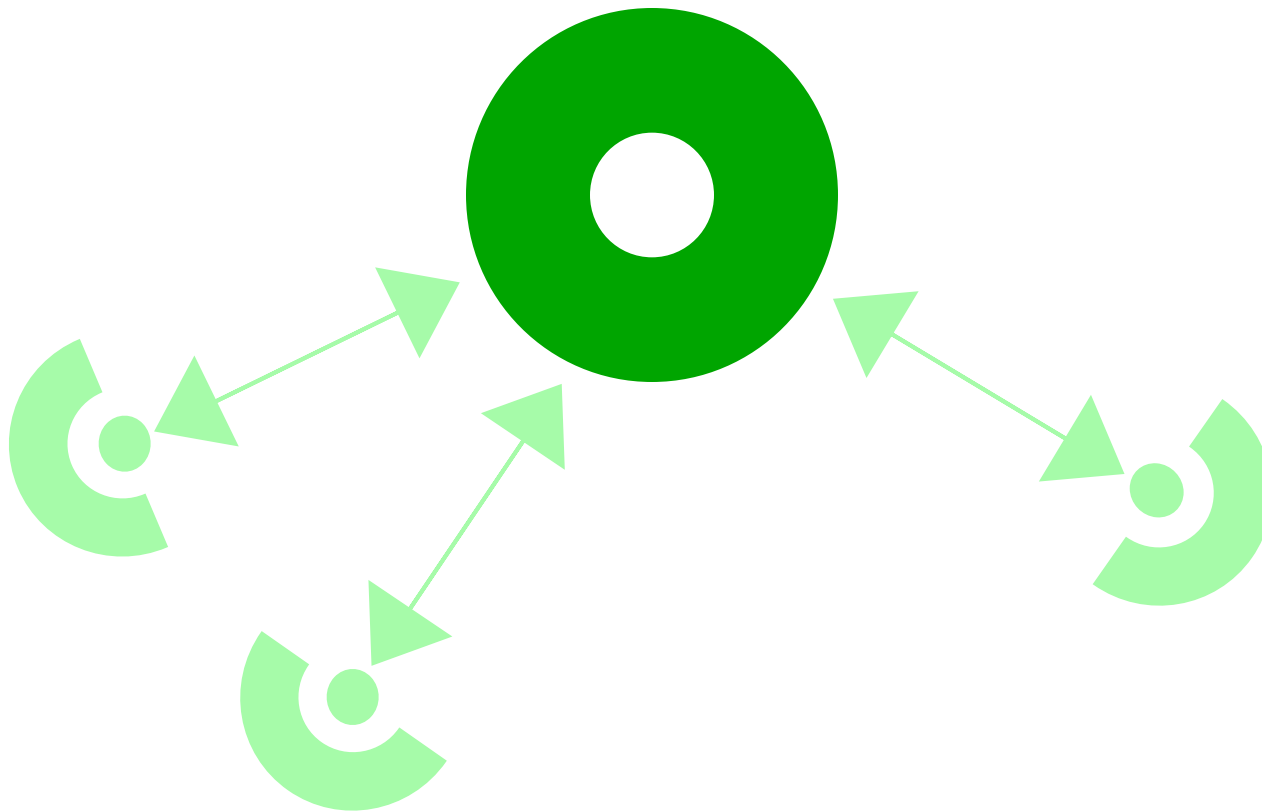
[Rational Void]

- Fundamental Values
- Common Knowledge
- Basic References



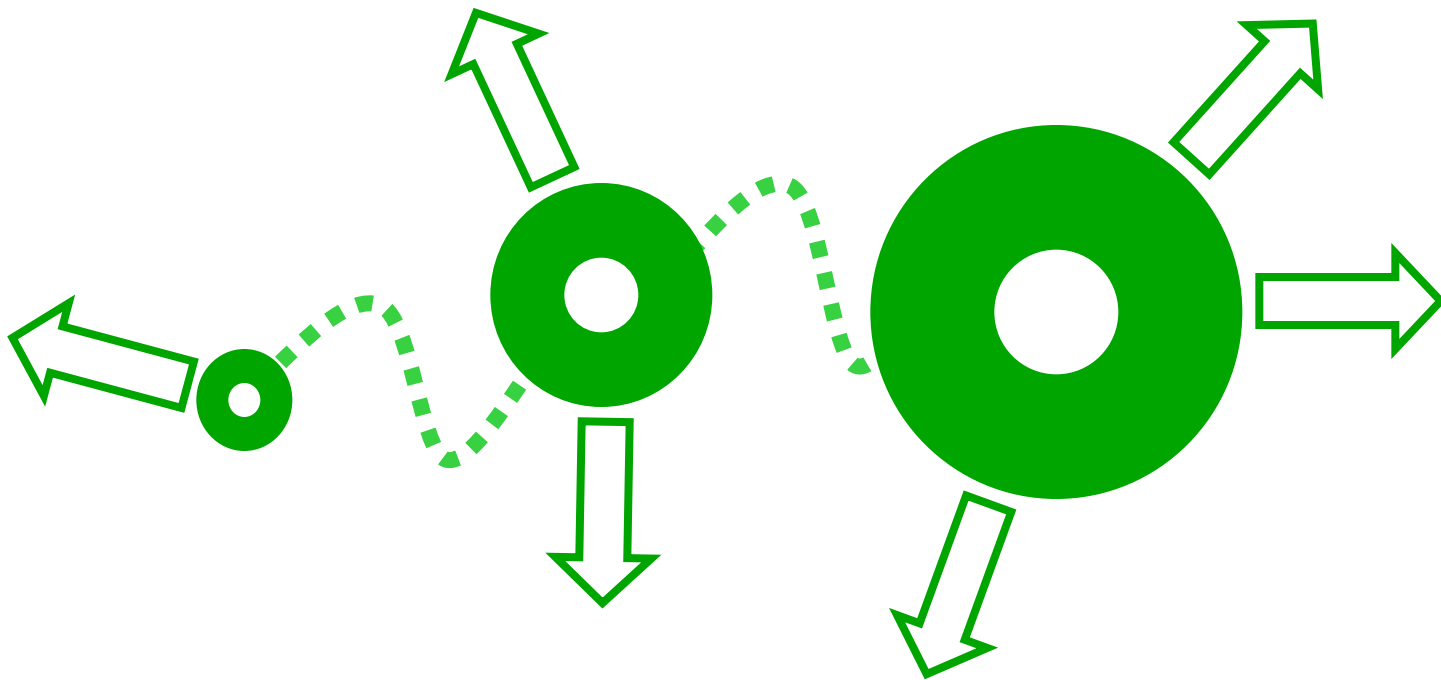
Building Intelligent Companies.

The entrepreneurial management of innovation and change implies situated reinterpretation and adaptation.



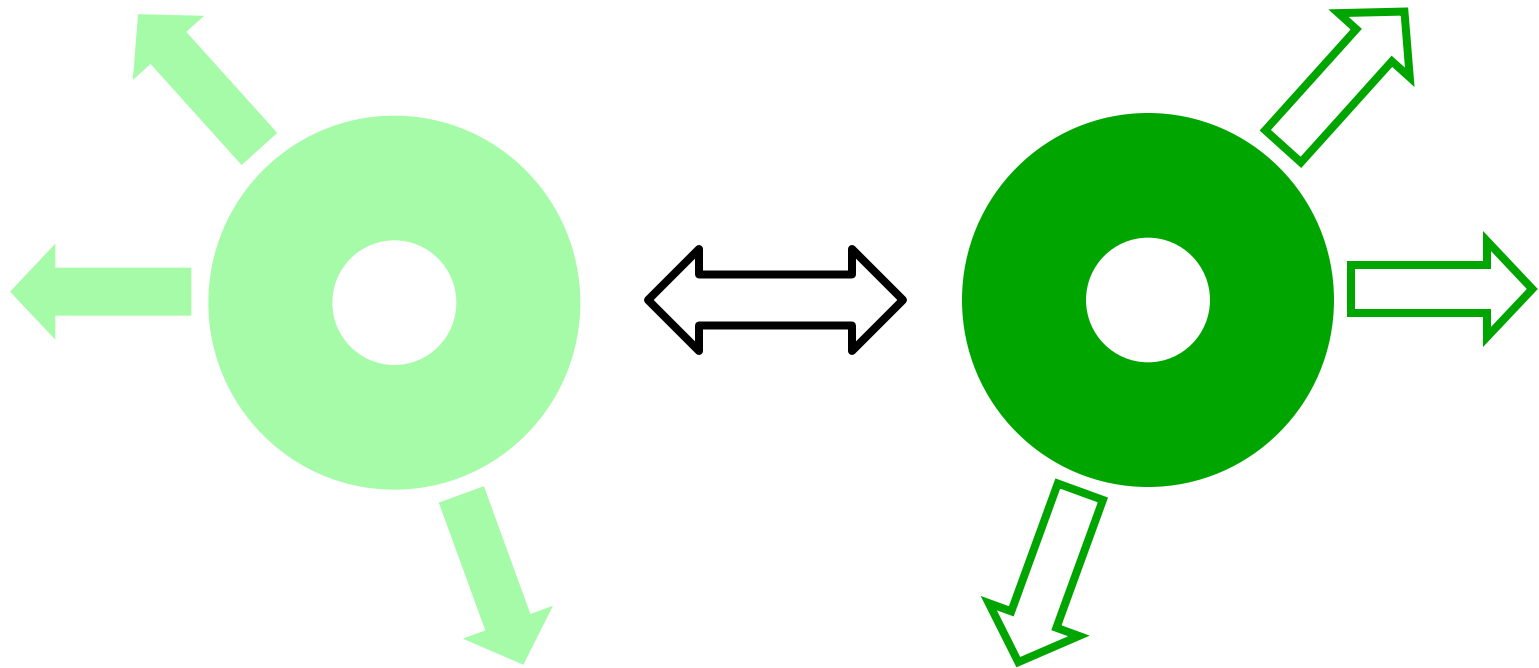
Building Intelligent Companies.

The entrepreneurial management of innovation and change implies the routinization of these references.



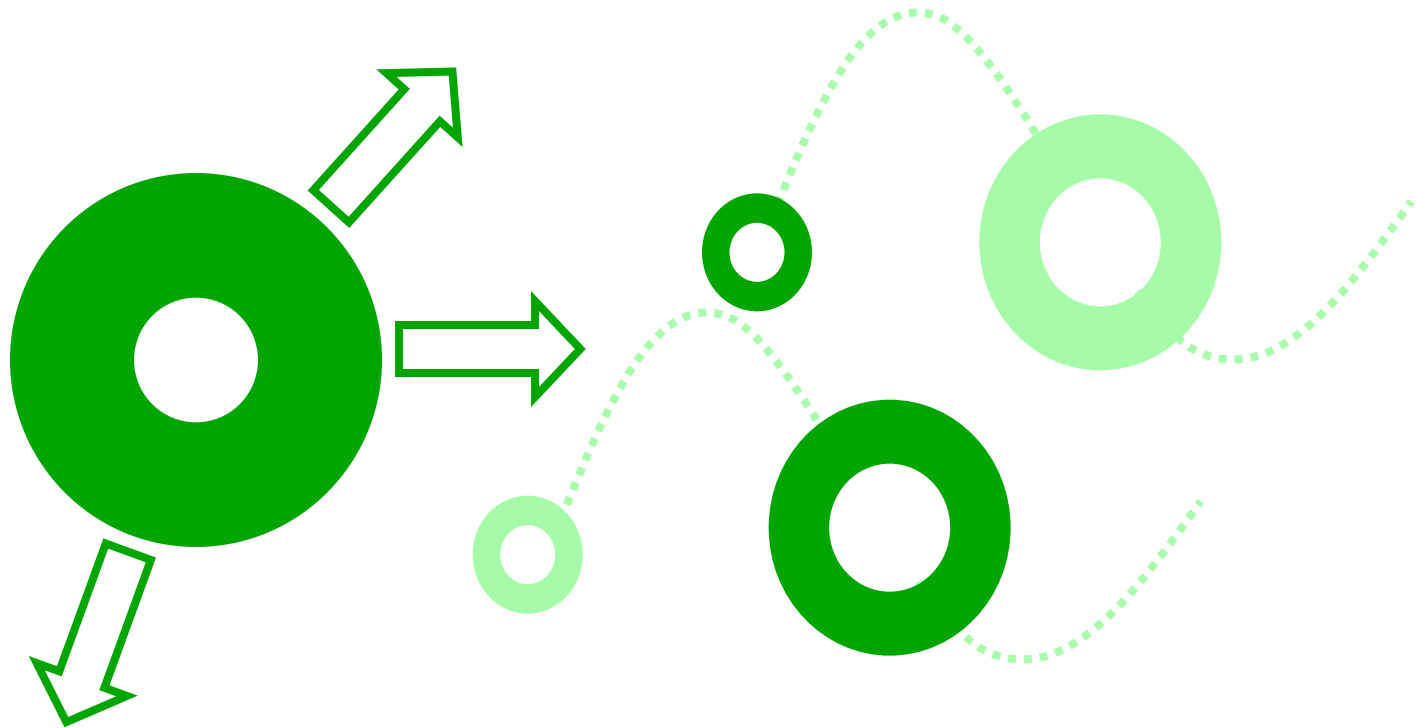
Building Intelligent Companies.

The entrepreneurial management of innovation and change implies competition for attractiveness against alternatives.



Building Intelligent Companies.

The entrepreneurial management of innovation and change implies experimenting with alternative references.



Building Intelligent Companies.

Principle of synthetic design (4.):

„How do I know what I think until I see what I do.“ (Karl E. Weick)

„If I cannot build it, I do not understand it.“ (Richard Feynman)



