

## Introduction

Management for modern bioeconomy enterprises uses modern information and management technologies. Such a combination allows you to obtain a synergistic effect of the use of biotechnologies and an information management system.

The subject of research is an information system for a bioeconomy enterprise.

The object of the study is the process of creating a bioeconomy information system based on the principles of Industry and Management 4.0.

Research methods - modeling of technological and business processes, formation of a system of balanced indicators; creation of software for bioeconomy enterprises

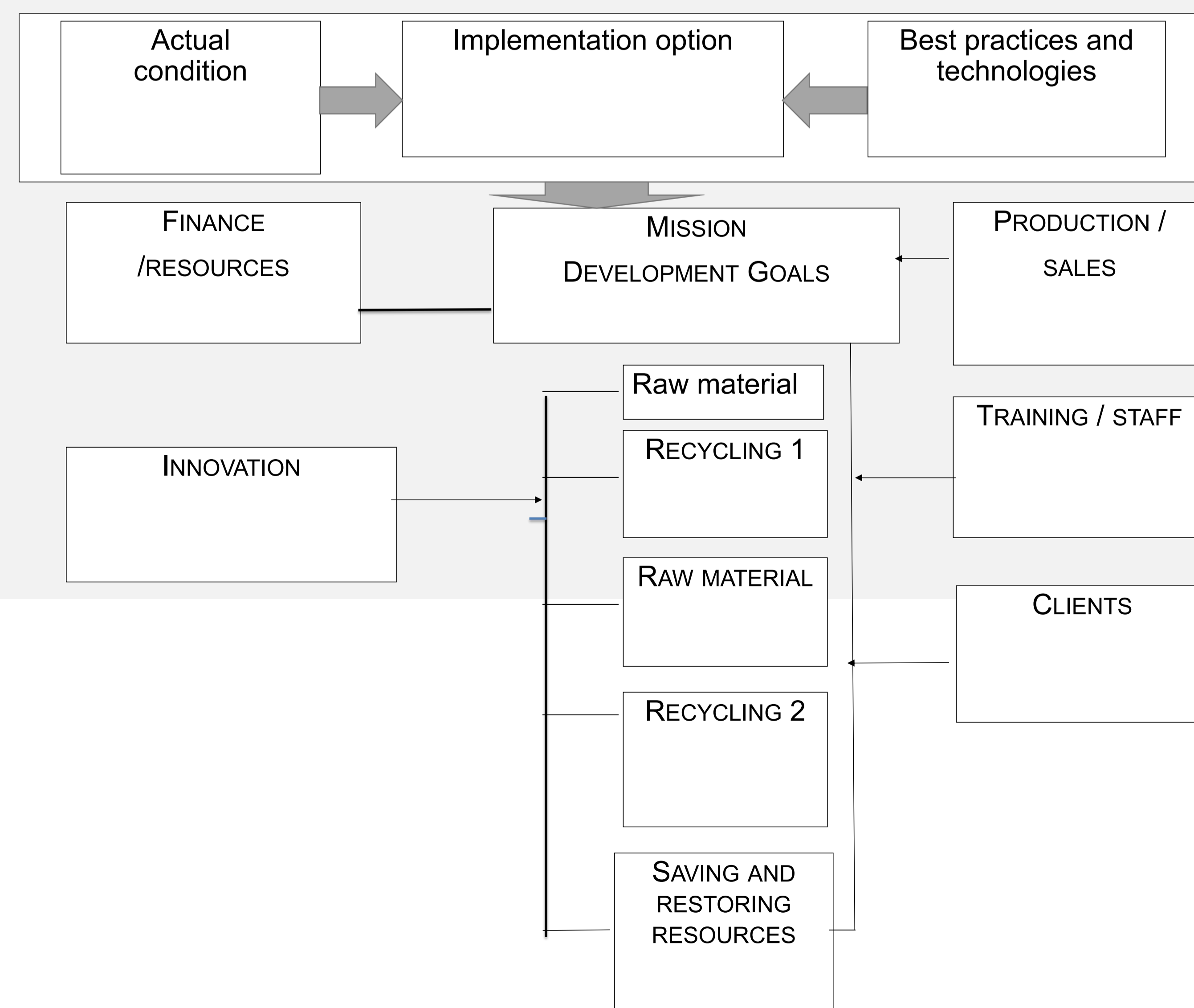
The concepts of Industry and Management 4.0 contain the basic principles of managing bioeconomy enterprises and should be taken into account when building an information environment.

Directions of the strategy	Projections of the balanced scorecard				
	Production/Sales	Innovation	Customers	Finance/Resources	Training/Staff
Farming	Raw material	New farming	The enterprise itself	Farming methods Finance, land, seeds, fertilizers	Agronomy, technology
Processing into fuel production	Fuel production	Processing technologies, waste management	Refueling network, customers, reservoirs	Finance, assets	Processing technologies
Storage & Sales	Addition production	Storage Technologies	Enterprise/Buyers	Finance	Storage and sales technologies
Consulting and support	Filling network, reservoirs, customer-buyers	Continuous technology updates	Loyal customers and partners	Finance/teachers/instructors	Learning technologies

## Methodology

Strategies for enterprises should be based on the rules of the circular economy. Such strategies are formed in relation to such stages - analysis of circular trends in the enterprise and the formation of a mental model of a closed cycle; assessment of the actual state of the life cycle of products, production and management processes; determination of competitive strategy projections and its prioritization. On the basis of the performed research, a roadmap for the strategic development of a bioeconomy enterprise can be built. On the basis of such a map, the main indicators of the level of closed circulation can be determined and the main indicators of a balanced system can be determined for all projections. Special software tools for modeling, measuring and monitoring indicators allow you to enter new projections and create models for the enterprise.

Model of a bioeconomy enterprise based on the concept of mirrors and a balanced scorecard



## Results

Name	Performance	Value	Measure	Value YTD
Training Strategy	80.09%			
Preparation	76.36%	284.889	Score	284.889
Trainer qualification	65.33%	65.333	%	65.333
Trainer communication skills	84%	84	%	84
Estimated training costs	72%	3.2K	\$	3.2K
The match between training program and strategic goals	80%	80	%	80
Level 1. Reaction	87.5%	0.857	Score	0.857
How do you feel about the training?	50%	Neutral	Feedback	Neutral
Would you recommend this training to your colleagues?	100%	1	€	1
Do you want to repeat this training in the future?	100%	Positive	Feedback	Positive
Level 2. Learning	92.11%	58.333	Score	58.333
Exam pass rate	93.75%	75	%	75
Average exam score	94.44%	85	%	85

## Main conclusions

Principles of building an information system for bioeconomy enterprises based on Industry and Management 4.0

1. Interoperability - the use of a complex of machines, devices, sensors and specialists for communication, the use of the Internet of Things, information processing and knowledge generation. Generating data, monitoring indicators in real time and generating recommendations for decision-making are also important for the electronic environment of the bioeconomy.
2. Information transparency - obtaining primary data and their reliable processing and production of knowledge.
3. Technical support with the help of information technologies - a system of data transmission and support of management decisions.
4. Decentralization of management decisions - development of a complex modular system for management of each individual module and the system as a whole thanks to modern technologies.