WORLD CONFERENCE ON SMART TRENDS IN SYSTEMS, SECURITY & SUSTAINABILITY

3rd World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4 2019)

Strategic analysis of the long-term future needs of educational services

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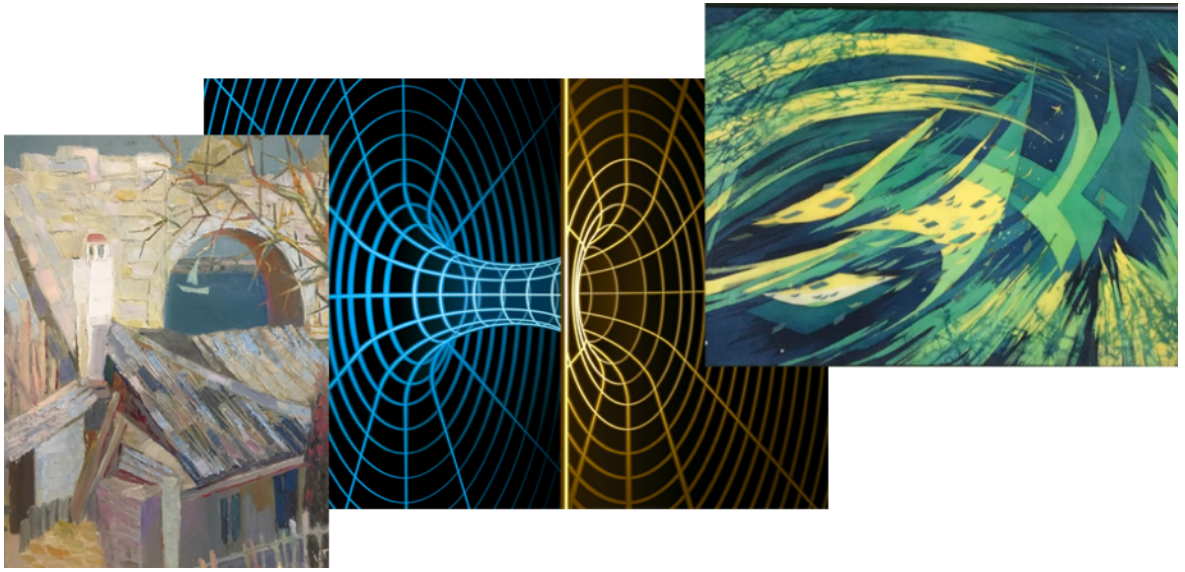
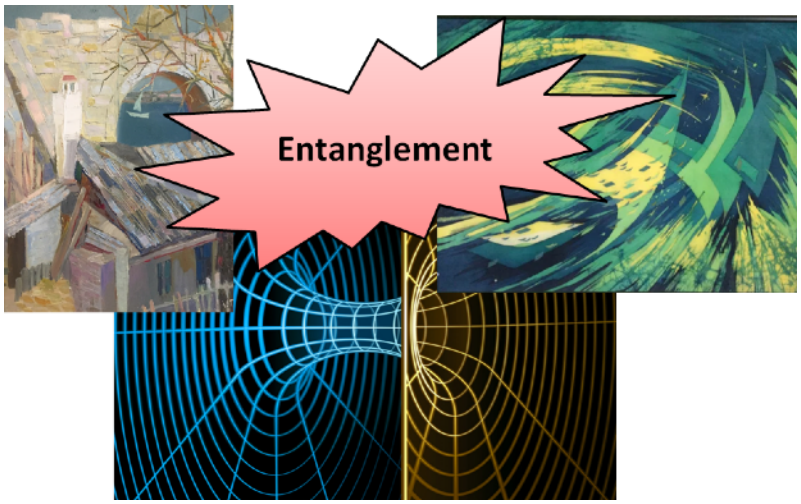


Agenda



How can we improve the forecasting of the long-term future needs of educational services?

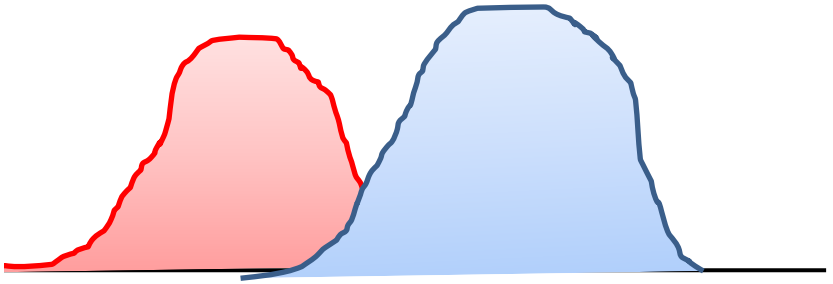
- **Real case: problems**
- **Strategic analysis—the invers problem solving**
- **Advanced education—the way to the future**
- **Methodological approach: convergent paradigm**
- **Ecosystem for advanced strategic analysis**

Real case: problems

Graduates ≠ Needs

Universities

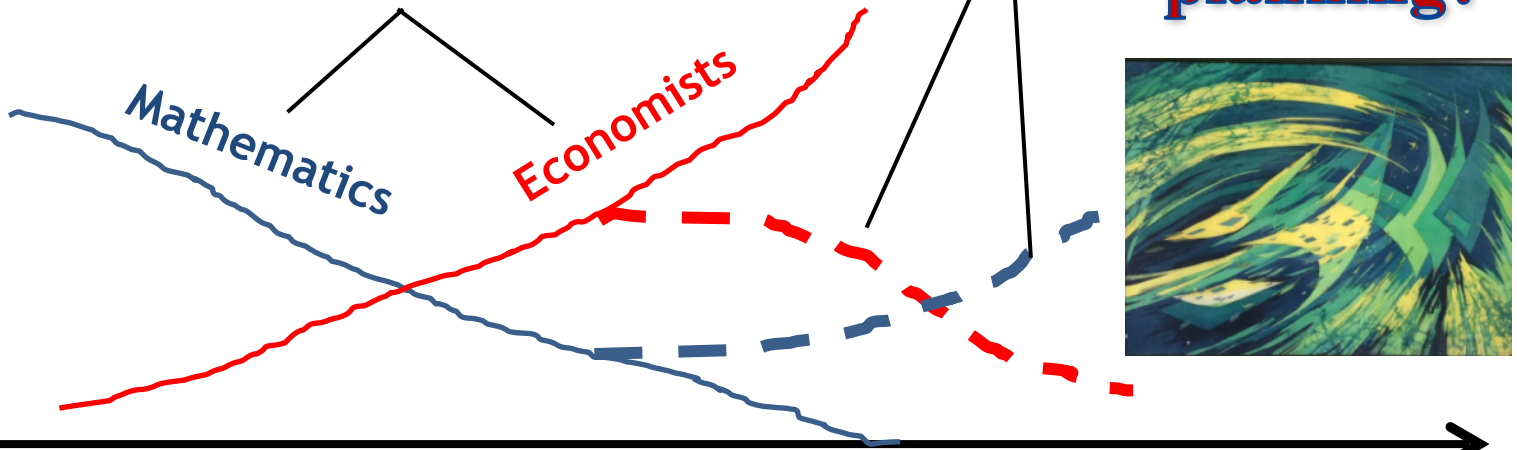
Kindergartens



Professions do not match

Inertial (statistical) forecasts

Long-term strategic planning?



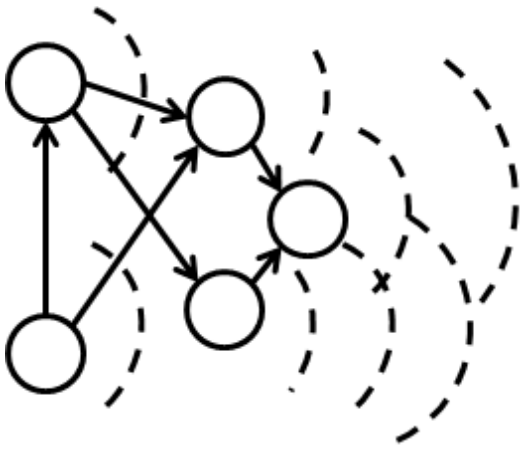
Past

Present

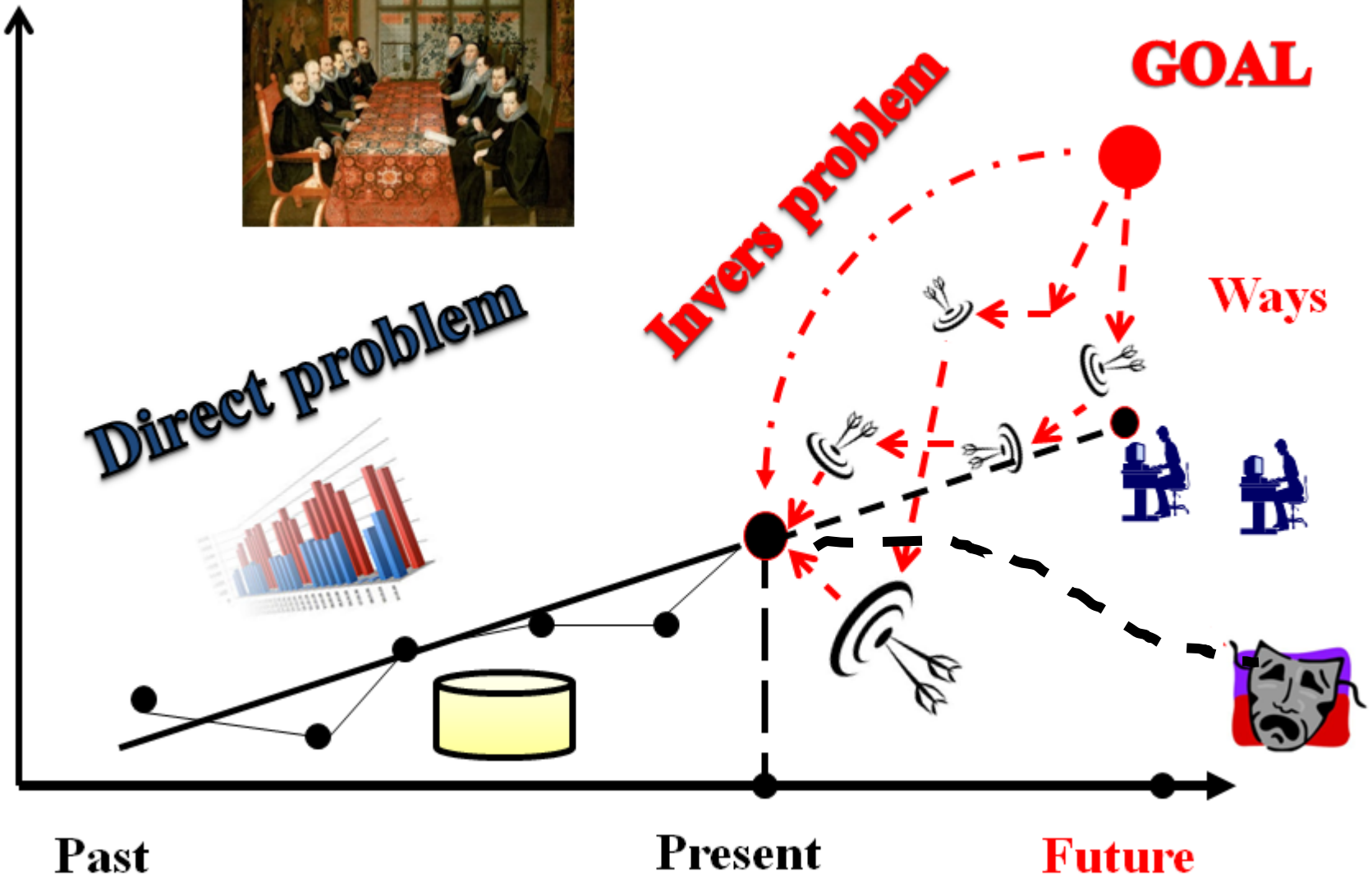
Future

Long-term strategic planning

- Strategic planning is inverse problem solving
- It makes one university different from another
- The future market's events are uncaused
- Strategy is the result of collective work



Strategy—Invers problem solving

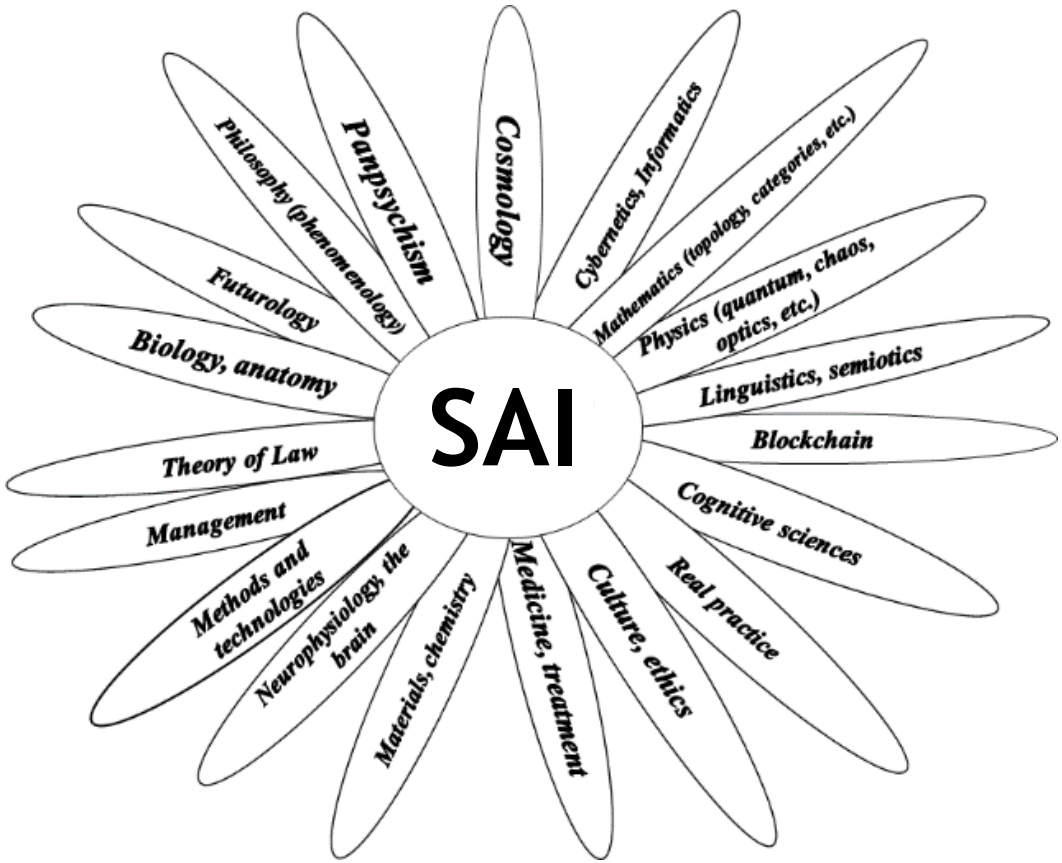


Advanced education forecasting

- Focus on the long-term future
- Strategic and breakthrough project
- Creating the leaders
- Organising social elevators
- Comfortable conditions for students
- Government, business, social collaborations
- Network democracy, etc.

Example

Students begin to study Strong AI (SAI, ASI, AGI) starting from kindergarten:



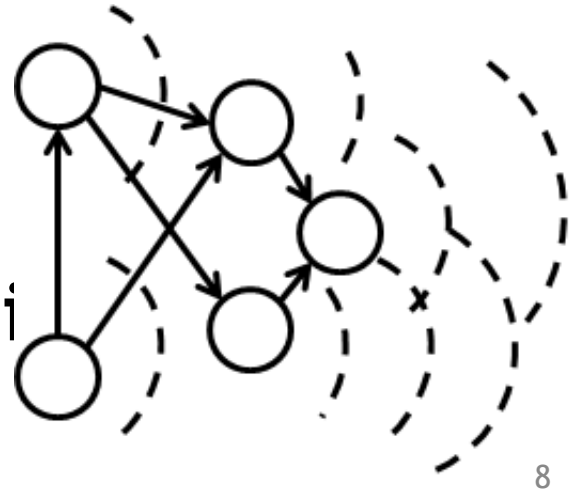
"Dying" professions:

- Notaries,
- Librarians,
- Lawyers,
- Psychologists,
- Banking analysts,
- Secretaries,
- Journalists, etc.

Present — **Future**

Requirements to the new strategic paradigm

- A sustainable multi-level education system
- Cognitive semantics (emotion, feelings, etc.)
- An infinite set of states of forecasting model
- A model may be changed in a quantised manner
- The model can be influenced by an unknown object
- The space of modelling is infinite-dimensional
- The processes must retain thei stability



Evolution of methodological approaches

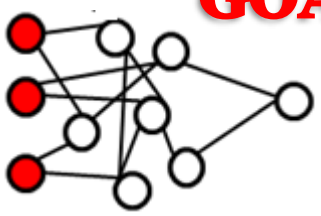
SCIENTIFIC RATIO-NALITY	BASIC PARADIGM	BASIC MECHANISMS AND TECHNOLOGY
Classical, until 1980	Subject – Object	LOGICS, knowledge engineering and bases, thesauruses, frames, semantic networks, statistics, neural networks, system dynamics, differential equations, feedback hierarchical structures.
Non-classical, until 2000	Subject – Subject	NON-CLASSICAL LOGICS (fuzzy, non-monotone, intuitionistic, temporal, modal, etc.), natural computations, artificial intelligence, ontologies, evolutionary computing, discourse, speech acts, network structures.
Post-non-classical	Subject – Meta-subject	CONVERGENT approach is operating using indirect methods. It take into account the collective unconscious, strong AI. It impacts through culture, values, technology assembly of the subjects of development, self-reflective-active environment. Methods: inverse problem solving, cognitive and quantum semantics.

Semantic interpretations

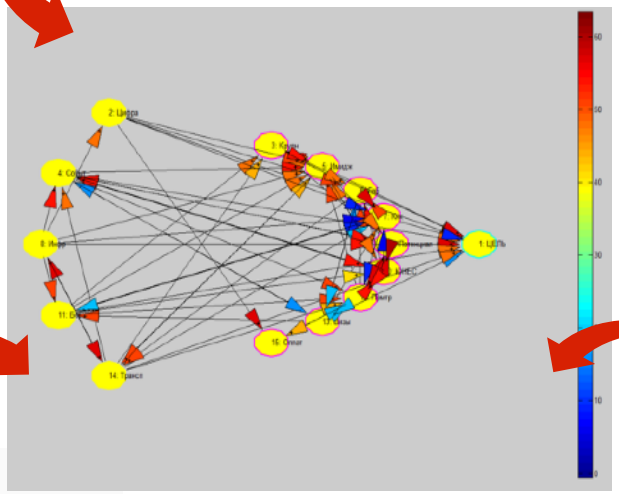
Strategic conversations

Non-logical information

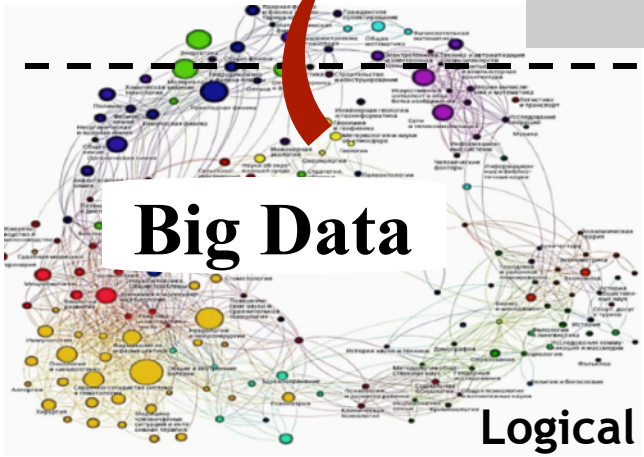
Cognitive semantic (uncaused events, emotions, thoughts)



GOAL



Cognitive models



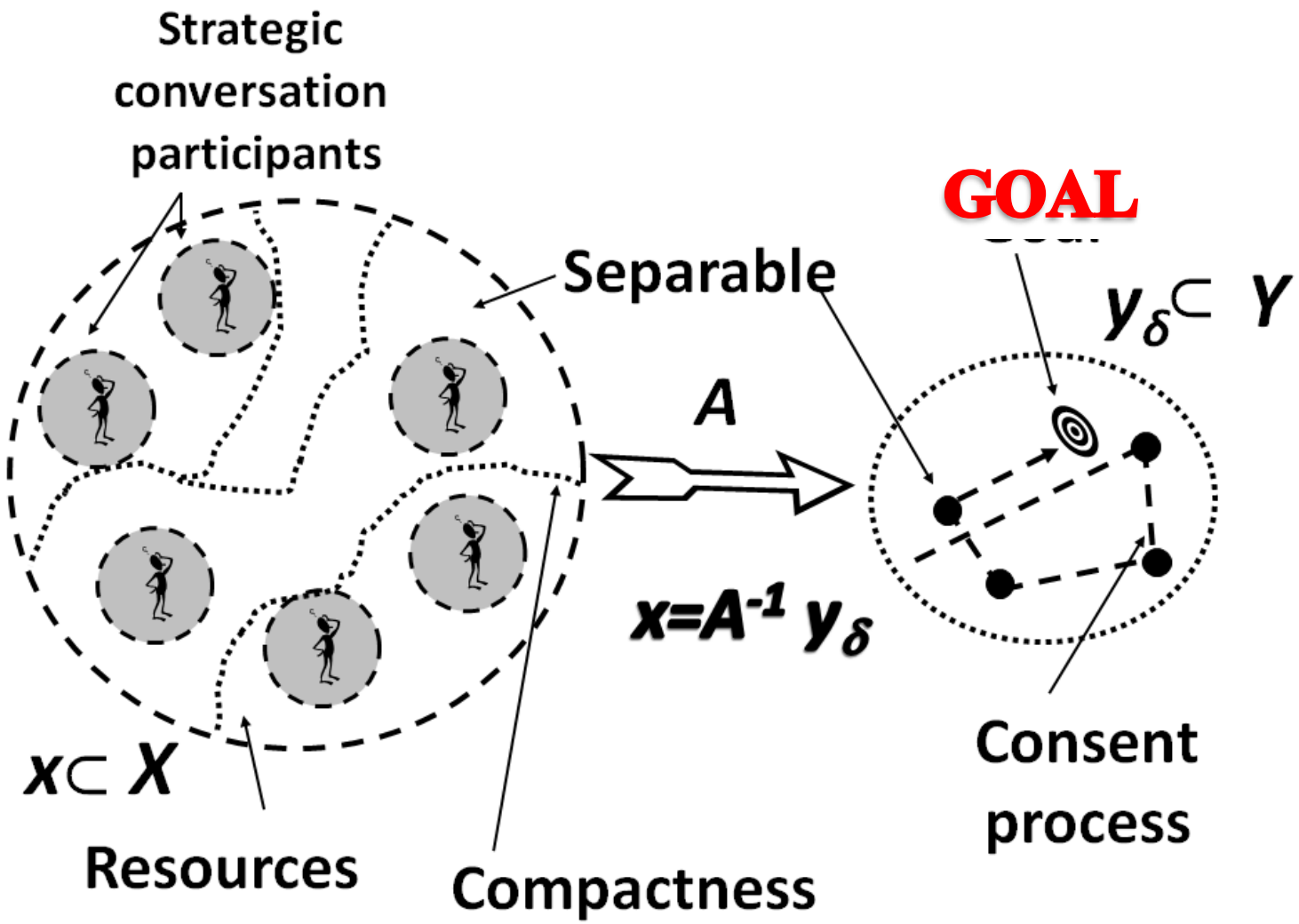
Big Data

Formalized information

IoT

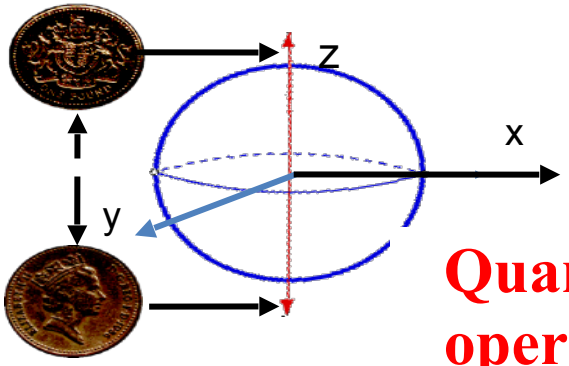
Logical semantics (objects, things)

Convergence approach: the invers problem solving

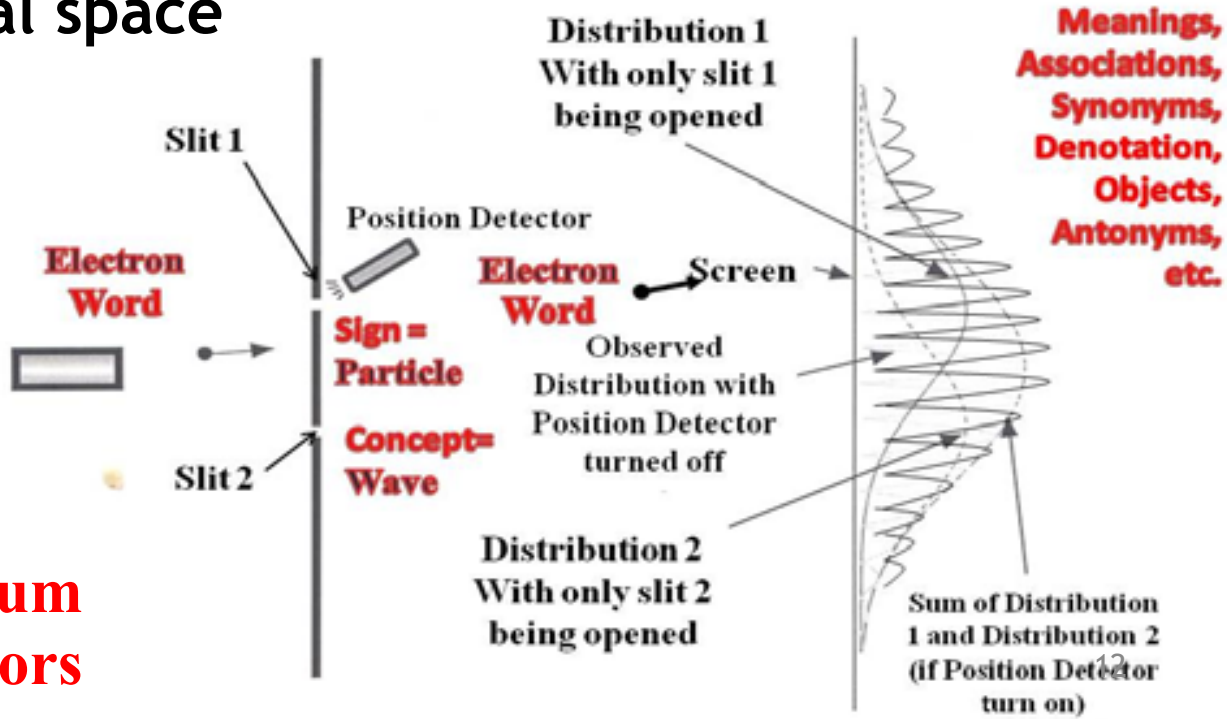


Convergence approach: the quantum principles

- A quantum particle represents as a particle and as a wave
- Any attempt to detect the wave leads to collapse
- Any change in the state of a occurs in a jump-like manner
- A particle cannot have zero-values of its parameters
- A particle cannot be measured autonomously
- Infinite-dimensional space
- All phenomena are probabilistic , etc.

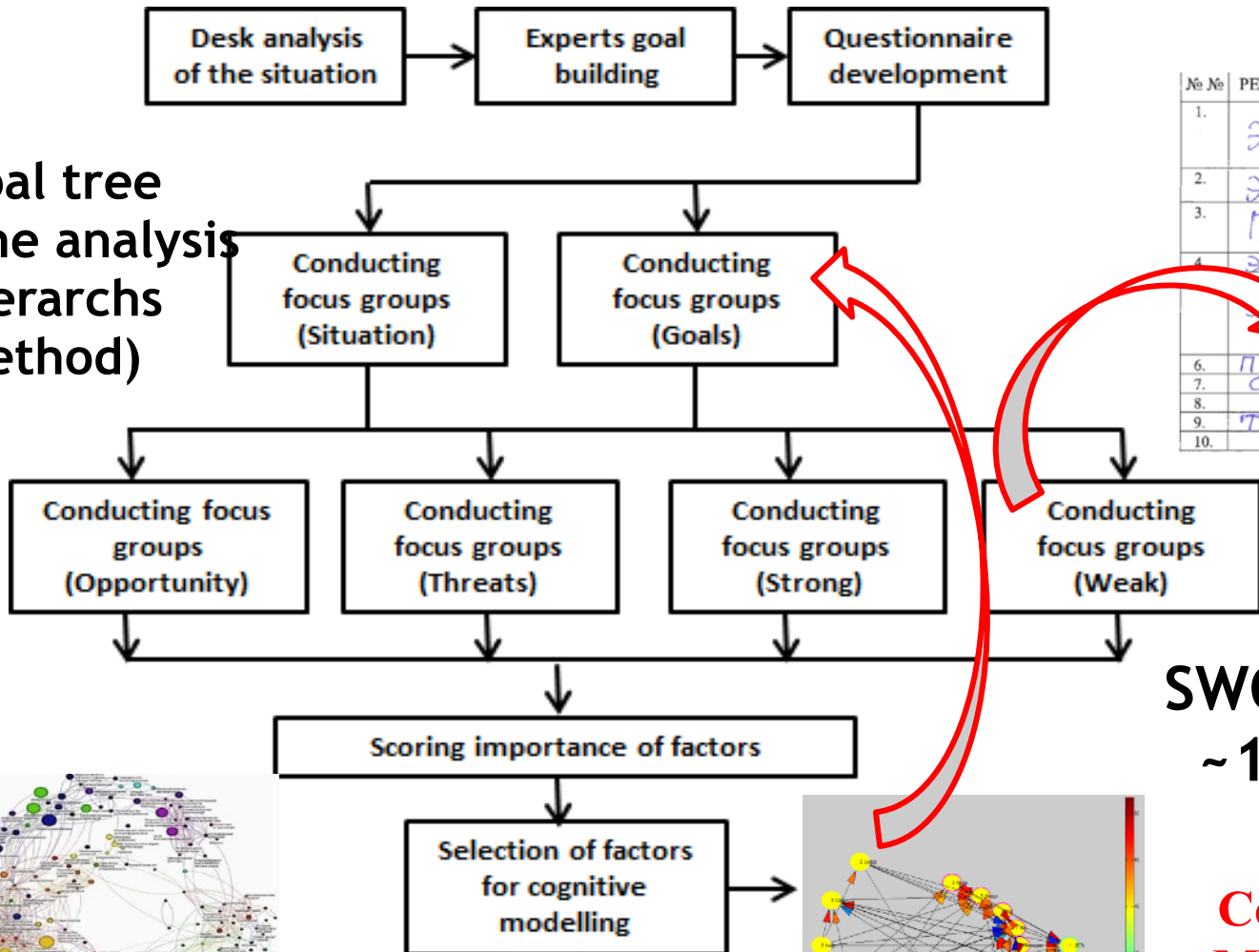


Quantum operators



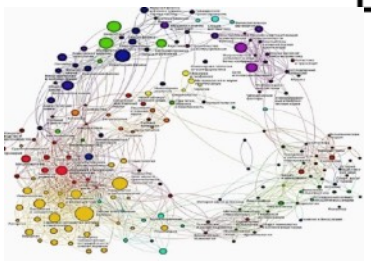
The order of strategies' procedures

Goal tree (the analysis hierarchs method)

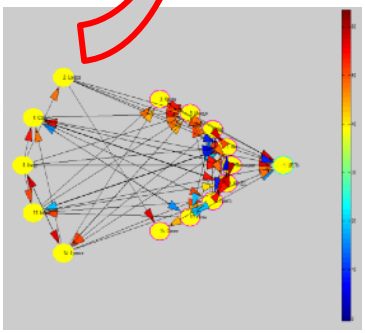


№ №	PEST	ФАКТОР	БАЛЛ
1.	Э	Конкуренция со стороны популярных туристических мегаполисов (Гонконг, Токио, Лондон, Париж и др.) постепенно усиливается: конкуренты формируют программы долгосрочного развития туризма.	8
2.	Э	Города-конкуренты инвестируют значительные средства в продвижение	7
3.	П	Города –конкуренты упрощают или упраздняют визовый режим для всех туристов или отдельных категорий туристов	7
4.	Э	У городов –конкурентов развито дешевое авиасообщение	9
5.		Города-конкуренты занимают значительную долю на нишевых туристических рынках (например, MICE: Москва принимает в 5-7 раз меньше конференций/конгрессов чем города-лидеры рейтинга ICCA)	8
6.	П С	Санкции и их влияние	8
7.	С	Создание негативного имиджа России	9
8.			
9.	Т	Транспортная недоступность Москвы для некоторых категорий туристов	7
10.			

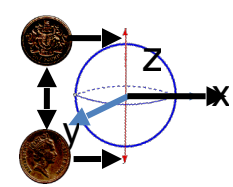
SWOT-analysis: ~100 factors



~ 15 factors and ~ 60 connections



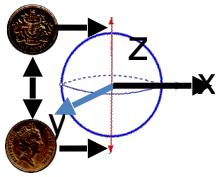
Cognitive Modelling



Ecosystem for the strategic analysis

Strategic conversations

Quantum semantics



START

Verification of the cognitive model

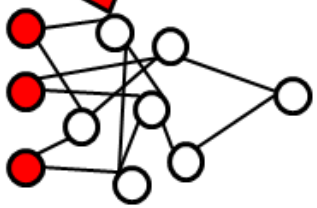
Lows

Big Data Analysis

Feedback

Experts

- ✓ Goals
- ✓ Segments
- ✓ Directions
- ✓ Market segments
- ✓ Specialty
- ✓ Competences
- ✓ Experience
- ✓ Breaks
- ✓ Support



Cognitive modelling

Definitions

Method

Metrics

Questions

Cabinet researches

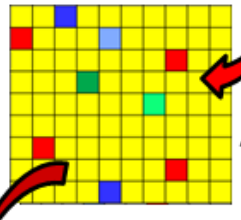
Surveys of experts, focus groups, strategic conversation

Survey Results

Optimization

Segments

Competences



Universities, colleges, schools, etc.

Feedback

Forecast of Needs

FINISH

National report

Regular report

Educational trajectories

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Thanks!
Your questions?

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