HSE UNIVERSITY

iFORA

*I*ntelligent *FOR*esight
*A*nalytics

iFORA MINIMISES RISKS OF TRADITIONAL ANALYTICS

Traditional manual analytics

Biased sampling of data sources

- Large volume of data that is impossible to process manually
- Random sampling
- In the public domain
- Not always of good quality
- Obsolete

Analyst

- Overly narrow specialisation, conservatism, limited knowledge of global agenda
- Rushes and makes mistakes
- Lobbies particular interests

Untrustworthy information

- Misinformation risks because of widespread introduction of generative AI

Development of automated data analysis systems

Palantir   ABBYY   Stanford|NLP   Mergeflow

iFOra
Intelligent Foresight Analytics

Dialogflow   SENSE MAKING LAB   SEMANTIC SCHOLAR   Semantic Hub

Analytics based on emerging NLP technology

All available sources

- Many millions of documents
- Full texts
- Various data formats
- Selection based on unified objective quality criteria
- Continuous additions

Automated analysis

- Transparent, reproducible, validated methodology
- Lower human factor risks
- High analytic output rate

Trustworthy conclusions

- High quality and trustworthiness of data
- Lower risk of false reports dissemination
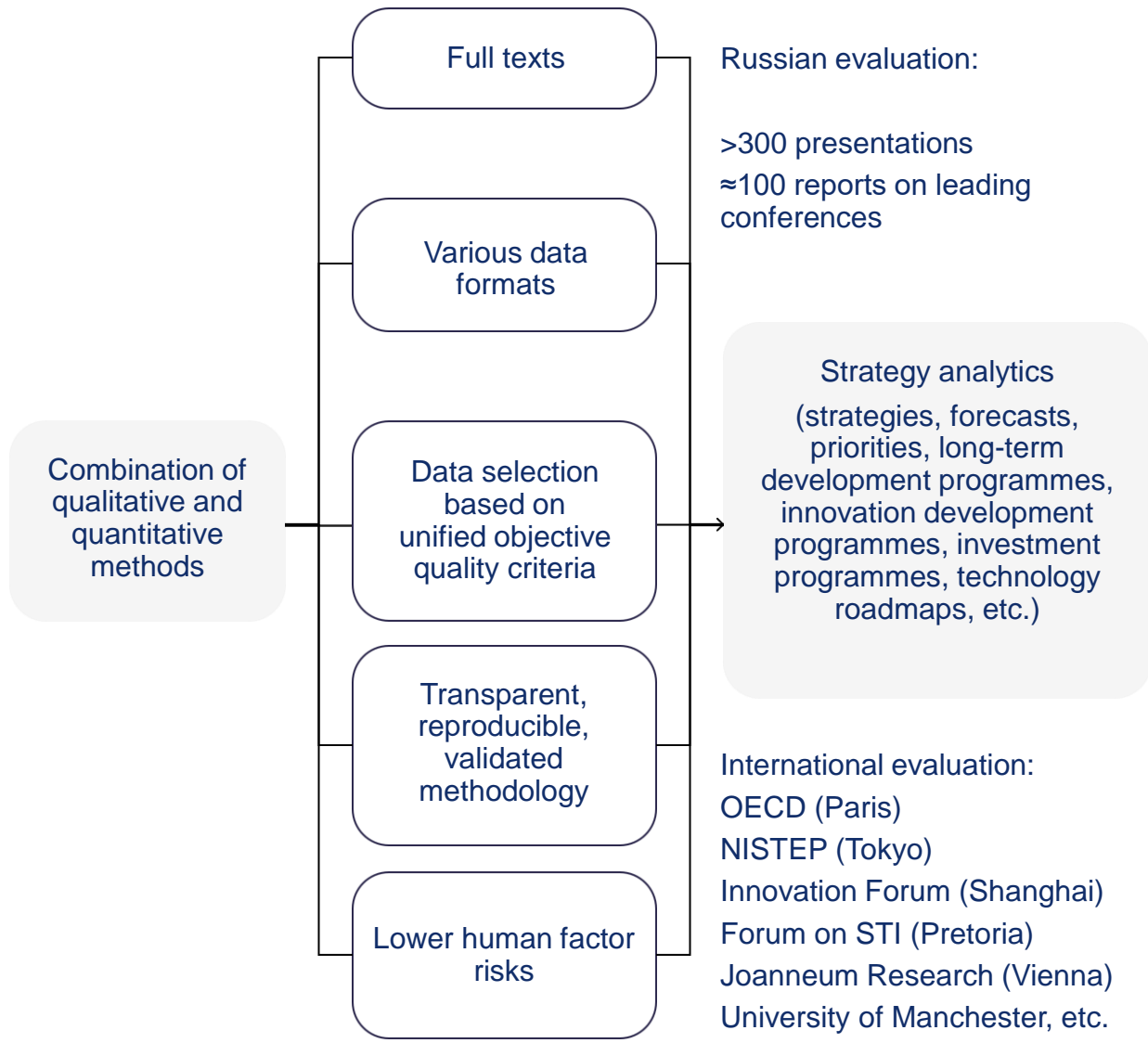
iFORA – INTELLIGENT FORESIGHT ANALYTICS

>750m documents

+30k documents daily

Languages

Russian | Roman
English | Cyrillic
Chinese

>300k R&D reports
>354m Scientific publications
>4m Research projects / grants international and national programmes / foundations
>100k Scientific conferences
>122m Patents
>3.5m Clinical research
>5k Educational programmes
>2m Vacancies
>2m Legal framework
>1m Documents of international organisations, consulting companies
>28m Market analytics and professional media
>55m Popular science media
>3.5m Social networks
>3.5m Public procurement data
Other text documents

Combination of qualitative and quantitative methods

Full texts
Various data formats
Data selection based on unified objective quality criteria
Transparent, reproducible, validated methodology
Lower human factor risks

Strategy analytics (strategies, forecasts, priorities, long-term development programmes, innovation development programmes, investment programmes, technology roadmaps, etc.)

Russian evaluation:

>300 presentations
≈100 reports on leading conferences

International evaluation:
OECD (Paris)
NISTEP (Tokyo)
Innovation Forum (Shanghai)
Forum on STI (Pretoria)
Joanneum Research (Vienna)
University of Manchester, etc.

iFORA™ mentioned in *Nature* as an effective support tool for decision-making (Nature, 2020, Vol. 583)

iFORA™ featured by OECD as an example of successful initiative in science digitalisation (OECD Science, Technology and Innovation Outlook 2018)

HSE supoercomputer cHARISMa received a Priority 2020 reward in advanced technology implementation.

Peak performance as of 2023: 2 petaflops.

≈40 Special iFORA Issues (operational analytics)

>100 projects under contracts with largest companies, including global
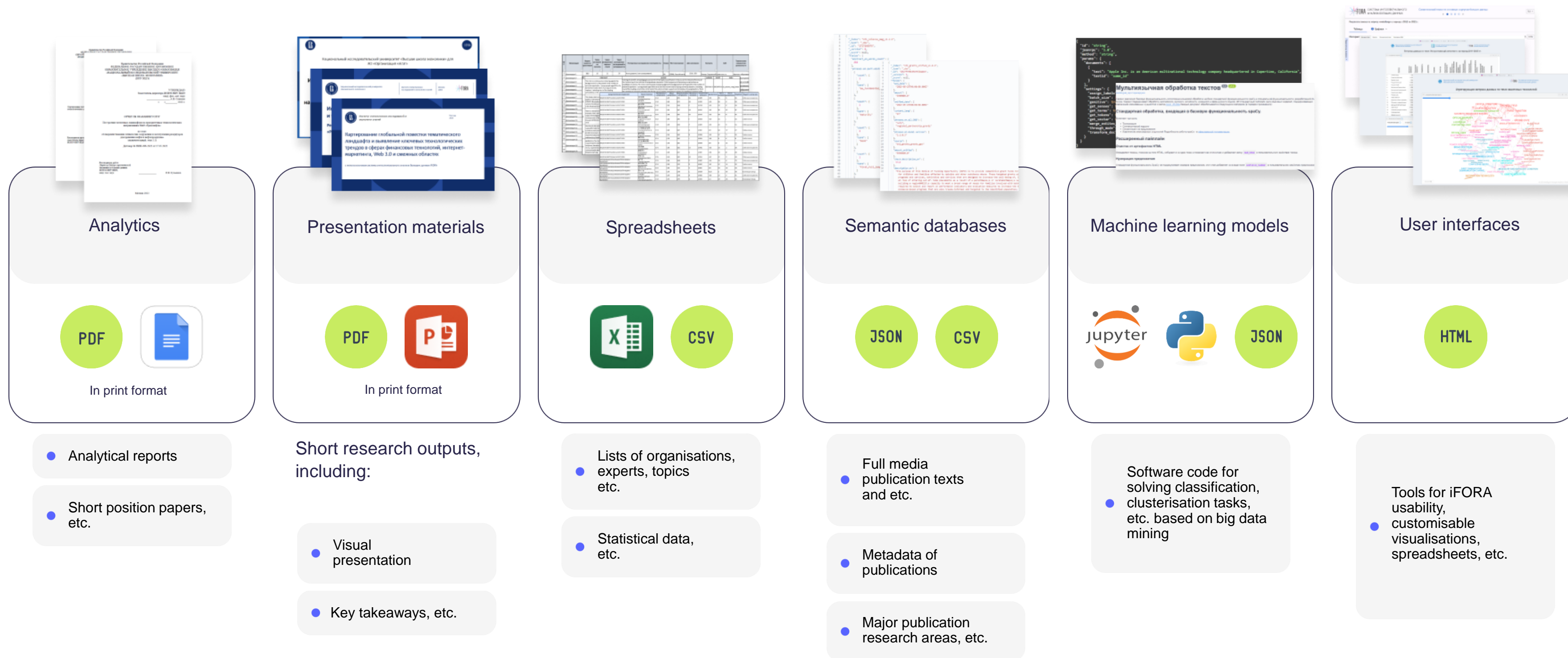
✓ UNLOCKS ADVANTAGES OF AUTOMATED ANALYTICS

iFORA IS BASED ON MODULAR APPROACH

AND COMBINES SPECIALIZED MODULES FOR SPECIFIC TASKS

Trends	Technology development analysis	Technology independence assessment	Market assessment	Forecasts	Risk assessment	Legal environment analysis	Regional analysis	Identification of competence networks and competences	Analysis and prediction of professional competences	Emerging NLP solutions / services
Trend fitting	Science and technology landscape mapping	Calculation of technology importance and dynamics in the country and globally	Qualitative market assessment	Consensus forecasting	Competitiveness analysis	Analysis of legal framework, standards	Identification of development barriers for regional business	Identification of enterprise' networks	Identification of promising professions related to emerging technologies	Automated summarisation of texts
Assessment of importance and dynamics of trends	Technology life cycle analysis	Identification of different selected technology development levels in the country and globally	Market maturity assessment	Building of timelines of the future	Reputation analysis	Priority identification	Analysis of reputation in media spaces	Identification of enterprise's specialisation	Identification of most promising competences	Profile document analysis based on NER models
Structural changes analysis	Technology sector impact analysis		Procurement analysis		Identification of strategy development directions and threats	Comparison of national and international agenda	Calculation of independent rankings	Analysis of educational programmes		Development of interactive interfaces and data marts
Hype mapping	Technology readiness level determination	Support measures selection	Building of technology and product portfolios	Selection of product development areas				Expert landscape analysis	Formation of project teams, experts selection	
Identification of emerging trends					Risk systematisation and mapping	Analysis of gaps in legal framework	Identification of key trends to work "blank spots"		Juxtaposition of trends and demand on personnel competences	Development of customised machine learning models
	...	Identification of possible growth points	...	Identification of possible growth points		...		Identification of professional community leaders		
...					Identification of media and advertising impact		...		...	...
		...		...				...		
					...					

iFORA HELPS GET RESULTS IN VARIOUS FORMATS

Analytics	Presentation materials	Spreadsheets	Semantic databases	Machine learning models	User interfaces
PDF · (Doc)	PDF · PPT	Excel · CSV	JSON · CSV	jupyter · Python · JSON	HTML
In print format	In print format				

Analytics
- Analytical reports
- Short position papers, etc.

Presentation materials

Short research outputs, including:
- Visual presentation
- Key takeaways, etc.

Spreadsheets
- Lists of organisations, experts, topics etc.
- Statistical data, etc.

Semantic databases
- Full media publication texts and etc.
- Metadata of publications
- Major publication research areas, etc.

Machine learning models
- Software code for solving classification, clusterisation tasks, etc. based on big data mining

User interfaces
- Tools for iFORA usability, customisable visualisations, spreadsheets, etc.

TRENDS

- Science and technology landscape mapping

- Structural changes analysis and priority setting

- Technology trend importance and dynamics assessment

- Identification of most promising science and technology trends and evaluation of their dynamics

- Technology and product trend funnel

- Comparative analysis of S&T landscapes in the country and globally

- Identification of emerging areas in science and technology

- Hype mapping

- Matrices of interdisciplinary networking in science

TECHNOLOGICAL DEVELOPMENT ANALYSIS

- Thematic analysis

- Technology life cycle analysis

- Comparative analysis of science and technology policy in the country and globally

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- Identification of technology readiness level

MARKET ASSESSMENT

- Qualitative market assessment

- Technology market maturity assessment

- Technology impact on economy sectors

- Market demand analysis

- Assessment of the enterprise's need for solutions based on digital technologies

- Assessment of procurement and its scientific content

- Regional procurement analysis

- Procurement volume and structure

- Buyers and suppliers connections

- Identification of emerging markets and technologies

IDENTIFICATION OF COMPETENCE NETWORKS AND CENTRES

- Identification of enterprise's specialisation

- Identification of enterprise's networks

- Identification of competence centres

- Identification of professional community leaders

- Analysis of competence networks

- Mapping of best R&D researchers

- Assessment of countries and companies ranking positions

ANALYSIS AND PREDICTION OF PROFFESIONAL COMPETENCES

- Identification of promising professions related to emerging technologies

- Identification of most promising competences

- Formation of project teams, experts selection

- Juxtaposition of trends and demand on personnel competences

RISK ASSESSMENT

- Competitiveness analysis

- Reputation analysis

- Identification of strategy development directions and threats

- Risk systematisation and mapping

- Sentiment and content analysis

- Identification of media and advertising impact indicators

EMERGING NLP SOLUTIONS / SERVICES

- Automated summarisation of trends

- Profile document analysis based on NER models

- Development of interactive interfaces and data marts

- Development of customised machine learning models

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