

CLIMATE FINANCE EVIDENCE SERIES



Use of AI in Climate Evaluations



28 January 2025

Background



Background & Objectives

**JOINT STUDY BY AF, CIFS, GEF, AND
GCF (SEPTEMBER 2024)**

**EXPLORES POTENTIAL OF AI IN PROGRAM
EVALUATIONS, FOCUS ON CLIMATE CHANGE**

OBJECTIVES:

- Assess AI potential in climate-related evaluations
- Identify opportunities and risks across evaluation stages
- Provide insights for future AI applications



Methodology & Cautionary Note

METHODOLOGY



Literature Review



19 Semi-structured Interviews



Online Survey (32 respondents)

CAUTIONARY NOTE



AI is a broad term with diverse tools and methods



Findings are time-sensitive due to rapid AI evolution



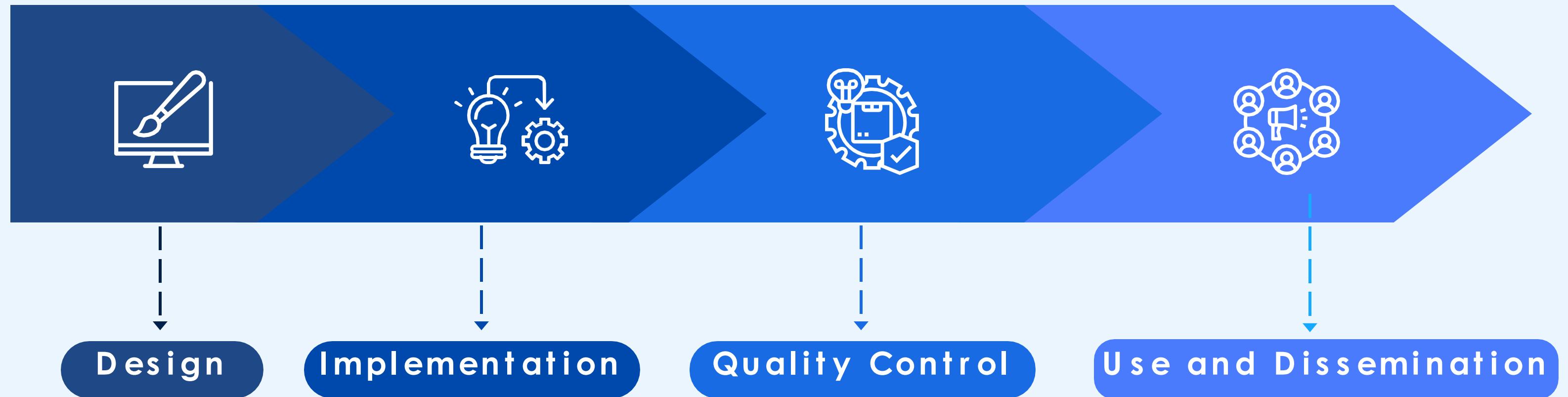
Ongoing supervision and adaptation required



SECTION I

Potential Application of AI in Program Evaluation

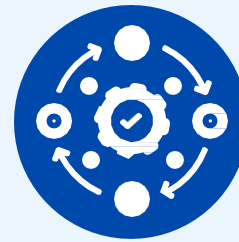
Potential Application of AI in all Evaluation Phases



Design Phase



Synthesis of existing evidence and knowledge



Methodological support



Stakeholder analysis and engagement planning



Risk assessment and resource allocation

Synthesis of Existing Evidence and Knowledge



1.

COMPREHENSIVE LITERATURE REVIEW

- Rapid scanning and analysis of vast academic literature
- Identification of key themes, trends, and knowledge gaps



2.

IDENTIFICATION OF BEST PRACTICES

- Analysis of previous evaluations and outcomes
- Identification of effective methodologies in similar contexts



3.

CONTEXT-SPECIFIC INSIGHTS

- Identification of region-specific or sector-specific factors



4.

TREND ANALYSIS

- Identification of emerging trends
- Forward-looking assessments and predictions

Methodological Support

1 Recommendation of Methodology

- Suggestion of appropriate methodologies based on evaluation questions and context
- Analysis of strengths and weaknesses of different approaches

3 Mixed Methods Design

- Optimal combinations of qualitative and quantitative methods
- Tailored to evaluation objectives and context

2 Sample Size and Power Calculations

- Complex statistical calculations for identification of optimal sample sizes
- Estimation of statistical validity for quantitative evaluations

4 Counterfactual Design

- Assistance in designing robust counterfactual scenarios
- Analysis of historical data to identify suitable comparison groups

Stakeholder Analysis and Engagement Planning

Analysis of project documents, social media, and other data sources

1

Identification of key stakeholders and their relationships

2

Categorization based on influence, interest, and potential impact

3

Stakeholder Mapping

Engagement Strategy Optimization

1

Suggestion of optimal engagement strategies

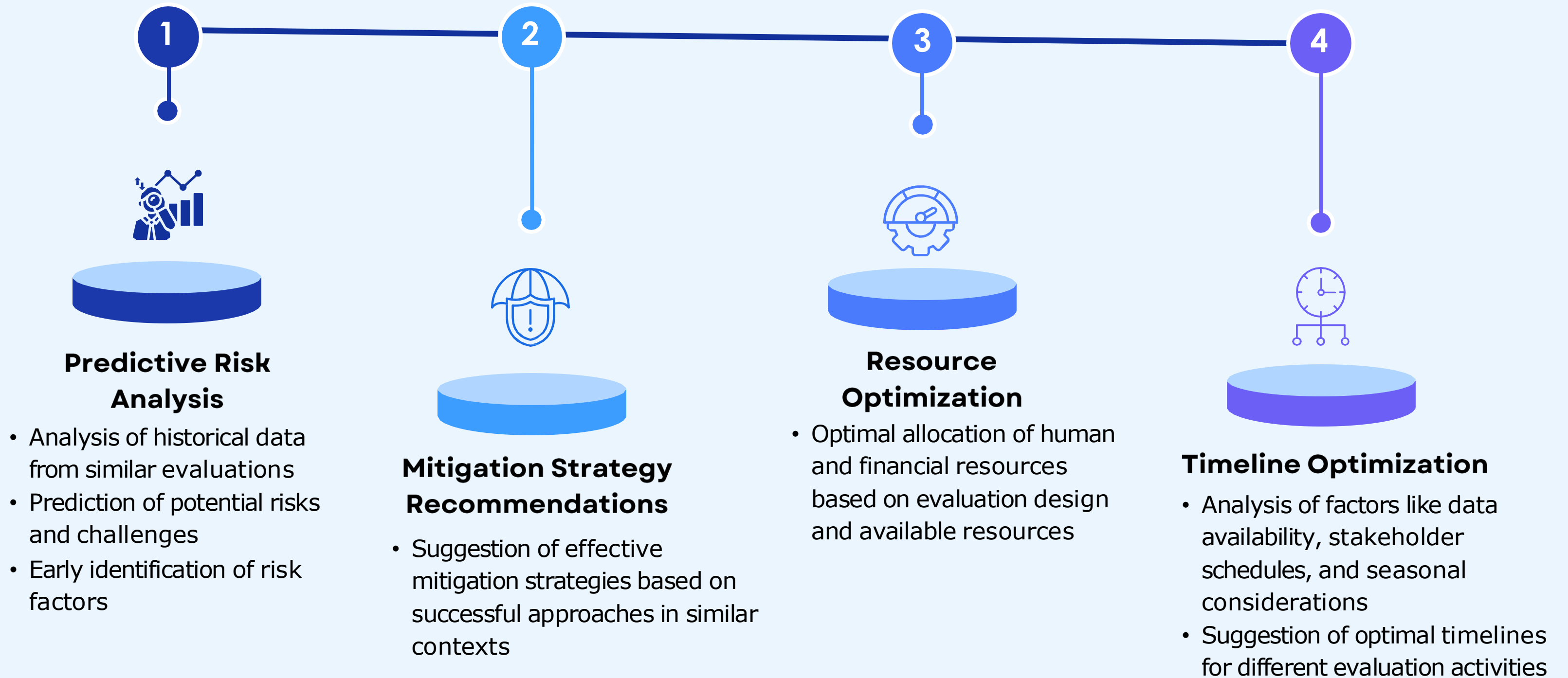
2

Based on stakeholder characteristics and historical engagement data

3

Tailored approaches for different stakeholder groups

Risk Assessment and Resource Allocation



Implementation Phase Applications



Text analysis
and coding



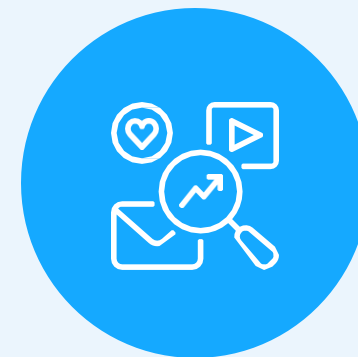
Data aggregation
and monitoring



Survey design and
administration



Geospatial
analysis



Social media and
web analytics



Automated
reporting

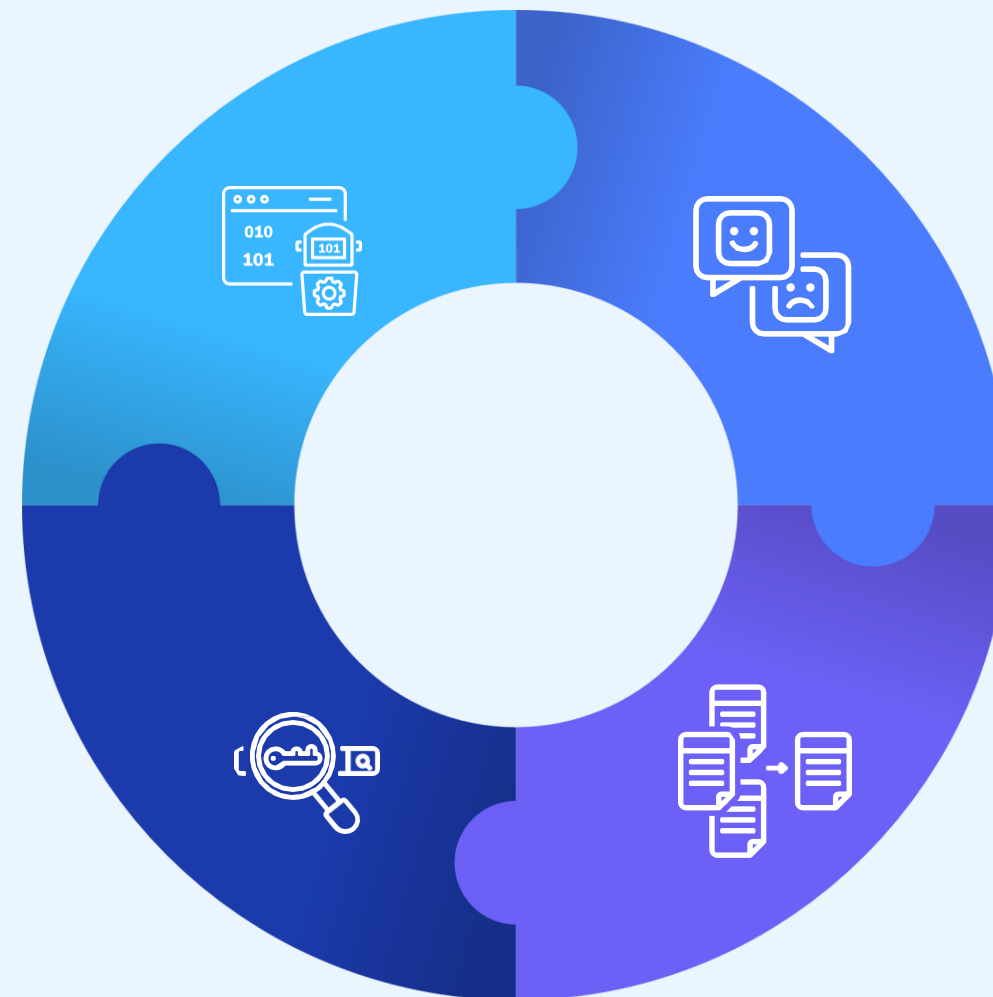
Text Analysis and Coding

Automated Thematic Coding

- Identification and categorization of themes in large volumes of qualitative data
- Improved efficiency and consistency in coding
 - Analysis of interviews, focus groups, and open-ended survey responses

Keyword Extraction

- Identification of important topics and concepts without manual review
- Assistance in document indexing and highlighting areas for further investigation



Sentiment Analysis

- Determination of stakeholder sentiment (positive, negative, neutral)
- Tracking changes in attitudes over time

Summarization

- Generation of concise summaries from lengthy documents
- Facilitation of quick insights and decision-making

Data Aggregation and Monitoring



Automated Data Collection

- Streamlined extraction of data from various sources
- Integration of project reports, monitoring systems, sensor networks, and databases



Data Integration and Aggregation

- Unification of data from different formats and sources
- Holistic view of project for pattern and trend identification



Real-time Monitoring and Analysis

- Processing and analysis of data in real-time
- Timely insights on project progress and issues



Predictive Analytics

- Analysis of historical and real-time data to predict future trends
- Support for proactive decision-making and risk management

Survey Design and Administration



Adaptive Questioning

- Dynamic adjustment of survey questions based on previous answers
- Improved data quality and respondent experience



Natural Language Interfaces

- AI-powered chatbots for conversational survey administration
- Potential for increased response rates and data quality



Response Quality Control

- Real-time flagging of inconsistent or unlikely responses
- Immediate clarification or validation of responses

Geospatial Analysis



Satellite Image Analysis

- Tracking changes in land use, vegetation cover, or infrastructure development
- Particularly relevant for environmental and climate change-related evaluations



GIS Data Integration

- Integration of various geospatial datasets
- Comprehensive spatial analysis of project impacts

Social Media and Web Analytics



Social Network Analysis

- Mapping and analysis of social networks related to the project
- Understanding information flow and influence patterns



Web Traffic Analysis

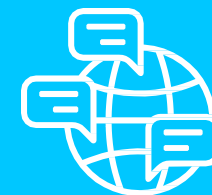
- Assessment of reach and engagement of project-related online resources
- Insights into digital impact of the project

AUTOMATED REPORT PREPARATION



Report Compilation

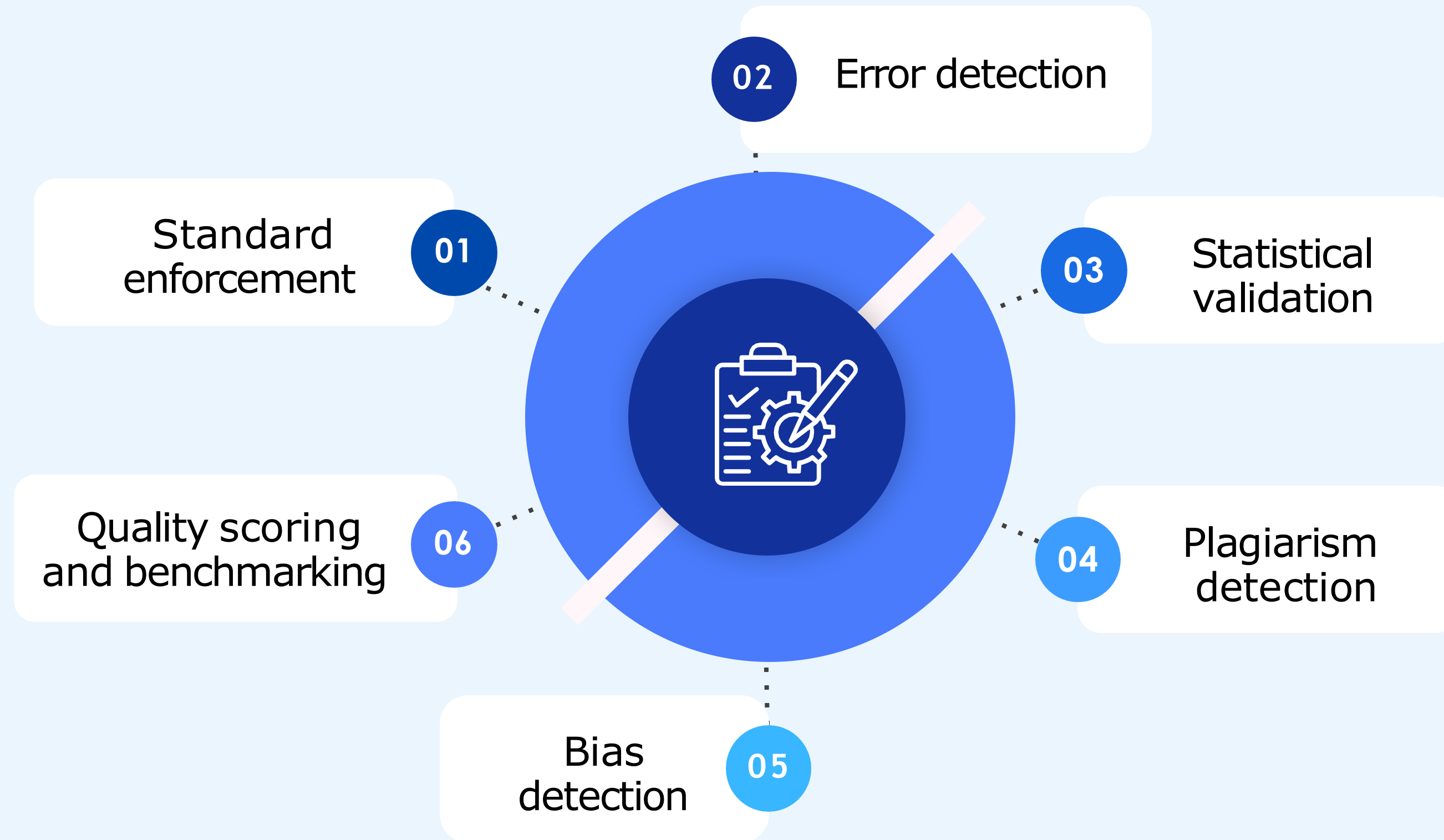
- Automatic compilation of data from various sources into structured reports
- Generation of visualizations and identification of key trends or issues



Multilingual Reporting

- AI-powered translation for report production in multiple languages
- Improved accessibility for diverse stakeholders

Quality Control Phase



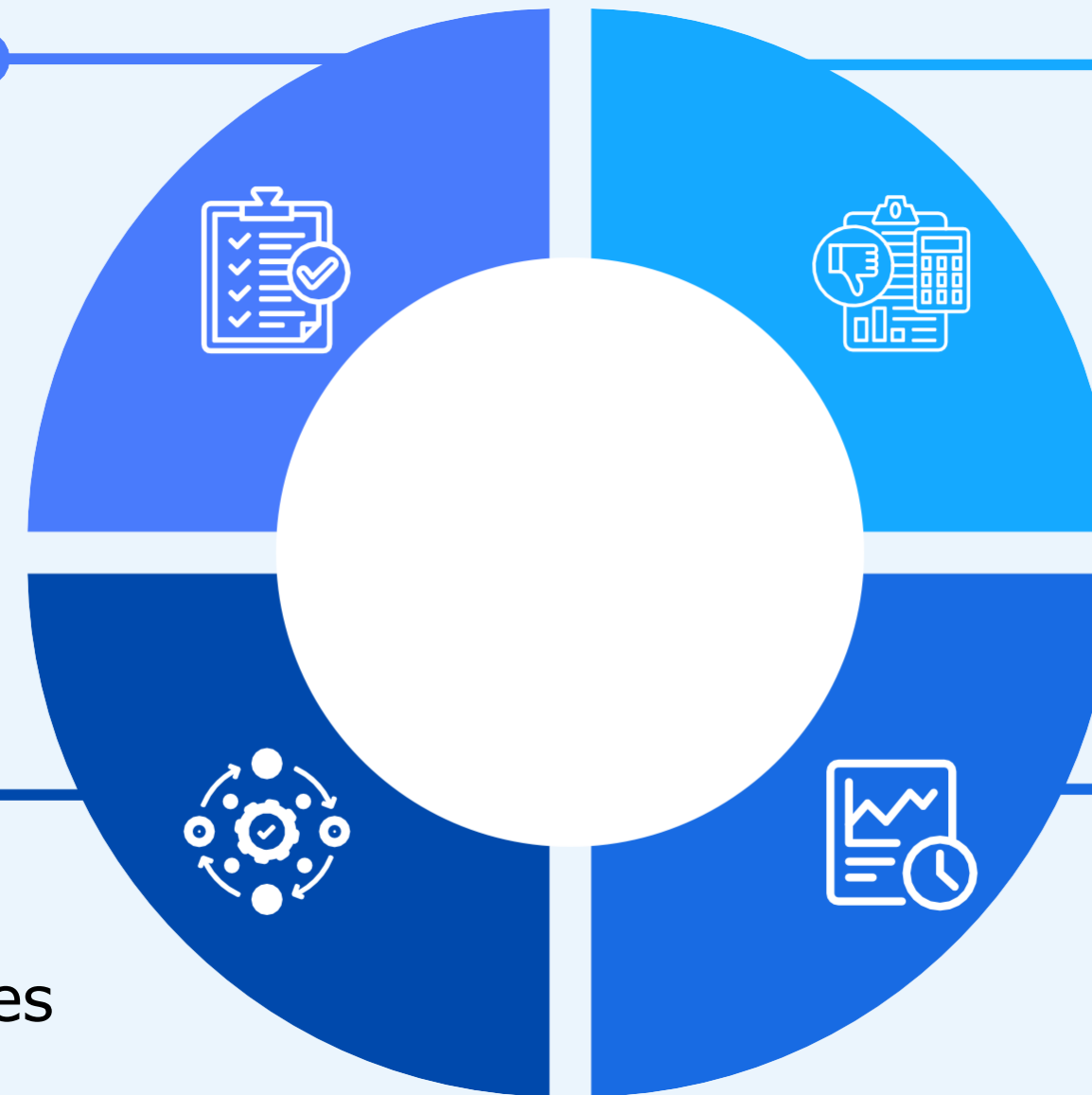
Standard Enforcement

Automated Compliance Checks

- Verification of evaluation reports and data against established standards
- Reduction of human error in compliance checking

Methodological Adherence

- Verification of methodologies against predefined standards and best practices
- Flagging of deviations from approved methodologies



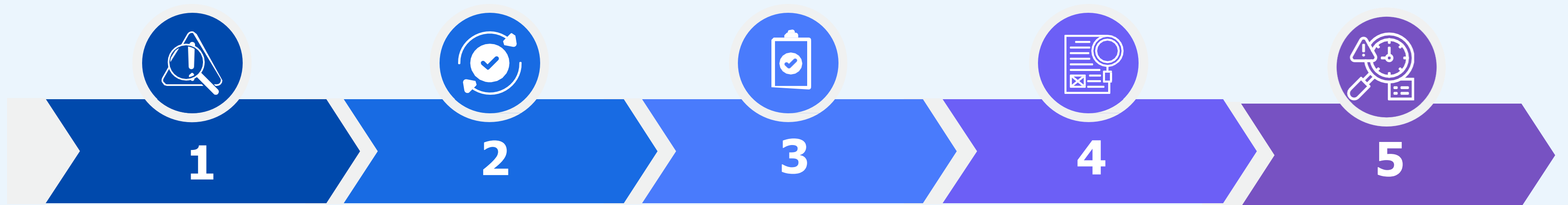
Standardization of Reporting

- Enforcement of standard reporting formats and structures
- Facilitation of comparison and meta-analysis across evaluations

Real-Time Feedback

- Immediate feedback on compliance issues
- Enabling prompt corrections and iterative quality improvement

Error Detection



ANOMALY DETECTION

- Identification of outliers and unusual patterns in datasets
- Particularly useful for large, complex datasets

CONSISTENCY CHECKS

- Detection of discrepancies across different data sources and formats
- Cross-referencing of data points across multiple documents and datasets

VALIDATION OF DATA COMPLETENESS

- Verification of complete required data fields
- Flagging of missing or incomplete data

SYNTAX AND SEMANTIC ANALYSIS

- Ensuring reports are free of grammatical errors and logically consistent
- Improvement of clarity and readability in evaluation reports

PREDICTIVE ERROR DETECTION

- Learning from historical data to predict potential errors in new datasets
- Enabling proactive quality control measures

Statistical Validation



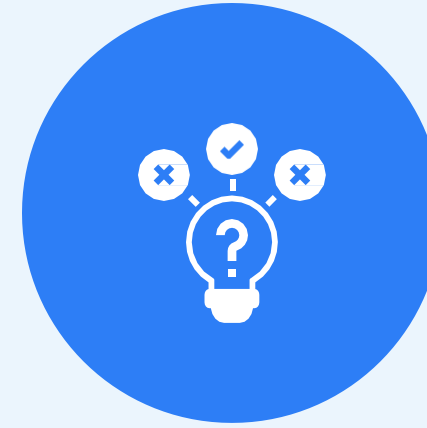
Sample Representativeness

- Assessment of sample representation of target population
- Flagging of potential biases in sampling



Statistical Power Analysis

- Verification of adequate sample size for chosen statistical tests
- Ensuring robust conclusions from quantitative data



Assumption Testing

- Automatic testing of statistical assumptions (e.g., normality, homoscedasticity)
- Flagging of assumption violations for further investigation



Effect Size Calculation

- Calculation and interpretation of effect sizes
- Ensuring practical significance complements statistical significance

Plagiarism Detection

Cross-Document Comparison

- Comparison of evaluation reports against vast document databases
- Identification of potential plagiarism or unattributed content

Paraphrase Detection

- Advanced algorithms to detect rephrased content
- Improvement in identifying subtle forms of plagiarism

Bias Detection



Language Bias Detection

- Analysis of language used in reports to identify potential biases in framing or interpretation
- Ensuring neutral and objective reporting



Data Bias Detection

- Analysis of datasets to identify potential sampling biases
- Detection of underrepresentation of certain groups



Methodological Bias Detection

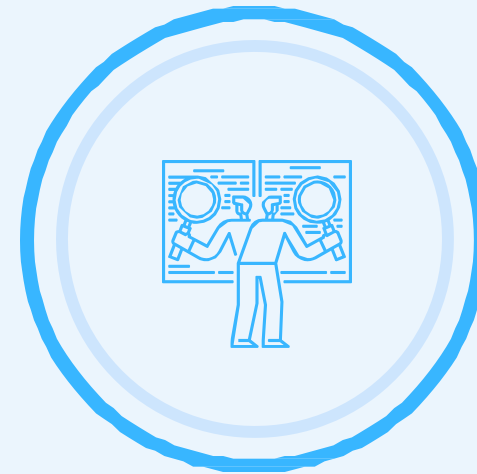
- Flagging of potential biases in methodological choices
- Ensuring fairness and representativeness in evaluation approaches

Quality Scoring and Benchmarking



Multi-criteria Quality Assessment

- Simultaneous assessment of multiple quality criteria
- Generation of comprehensive quality scores for evaluations



Benchmarking

- Comparison of evaluation quality against a database of previous evaluations
- Providing context for quality assessments and identifying areas for improvement



Trend Analysis in Evaluation Quality

- Tracking of quality trends over time and across different types of evaluations
- Identification of systemic quality issues or improvements

Use And Dissemination Phase



Synthesis of Evaluation Results

Meta-analysis

- Sophisticated analysis across multiple evaluation reports
 - Identification of common themes, trends, and patterns
- Comprehensive understanding of program effectiveness across contexts and time periods

Trend Analysis

- Identification of emerging trends, persistent challenges, and evolving best practices
 - Longitudinal analysis of program implementation and outcomes



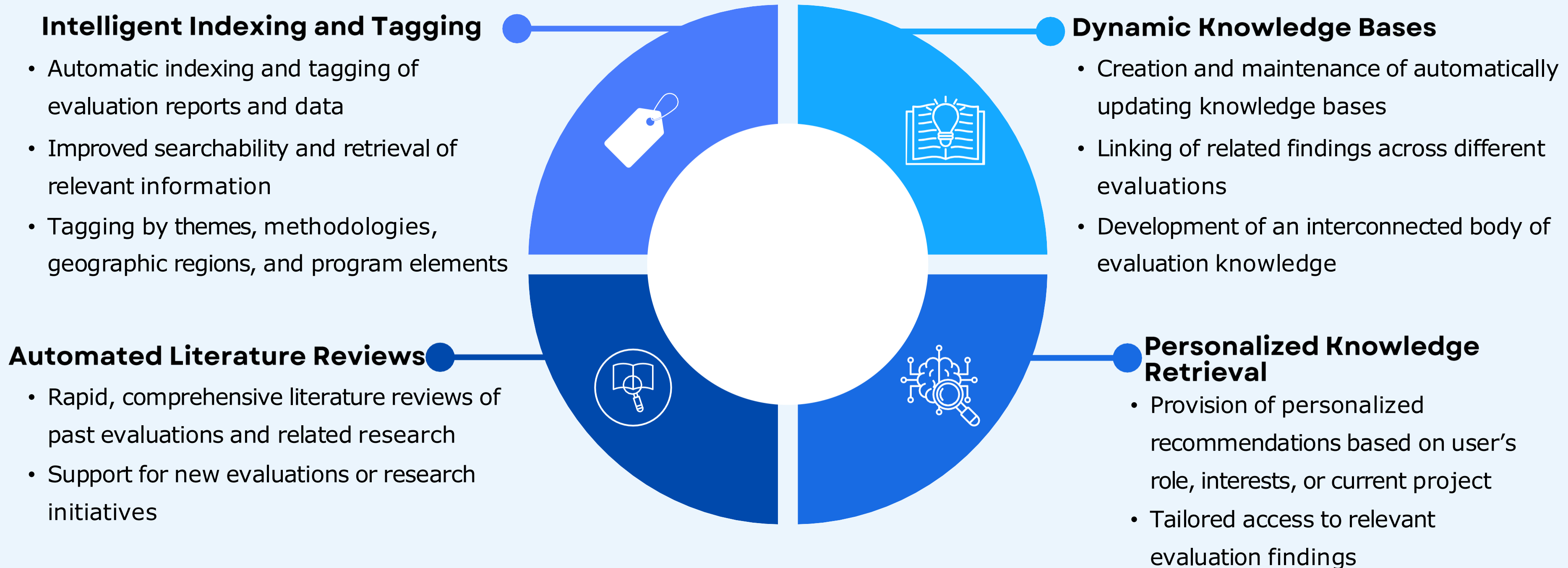
Cross-sectoral Insights

- Identification of connections and insights across different sectors or program types
- Uncovering unexpected synergies or lessons

Contextual Analysis

- Analysis of how different contextual factors influence program outcomes
- Understanding what works, where, and why

Knowledge Management

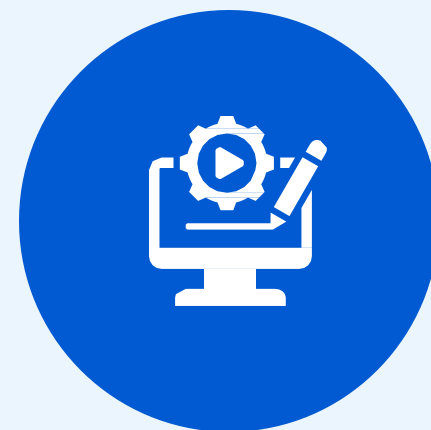


Tailored Reporting and Dissemination



Audience Segmentation

- Analysis of stakeholder data to identify different audience segments
- Determination of specific information needs for each segment



Content Customization

- Generation of tailored reports or summaries for each audience segment
- Highlighting of most relevant findings for each group



Multi-format Content Generation

- Automatic generation of various content formats (e.g., executive summaries, full reports, presentations, infographics)
- Creation of diverse materials from the same evaluation data



Multilingual Dissemination

- AI-powered translation for dissemination in multiple languages
- Increased accessibility for diverse stakeholders

Interactive Data Visualization



Dynamic Dashboards

- Creation of interactive dashboards for dynamic exploration of evaluation data and findings
- Real-time data manipulation and visualization

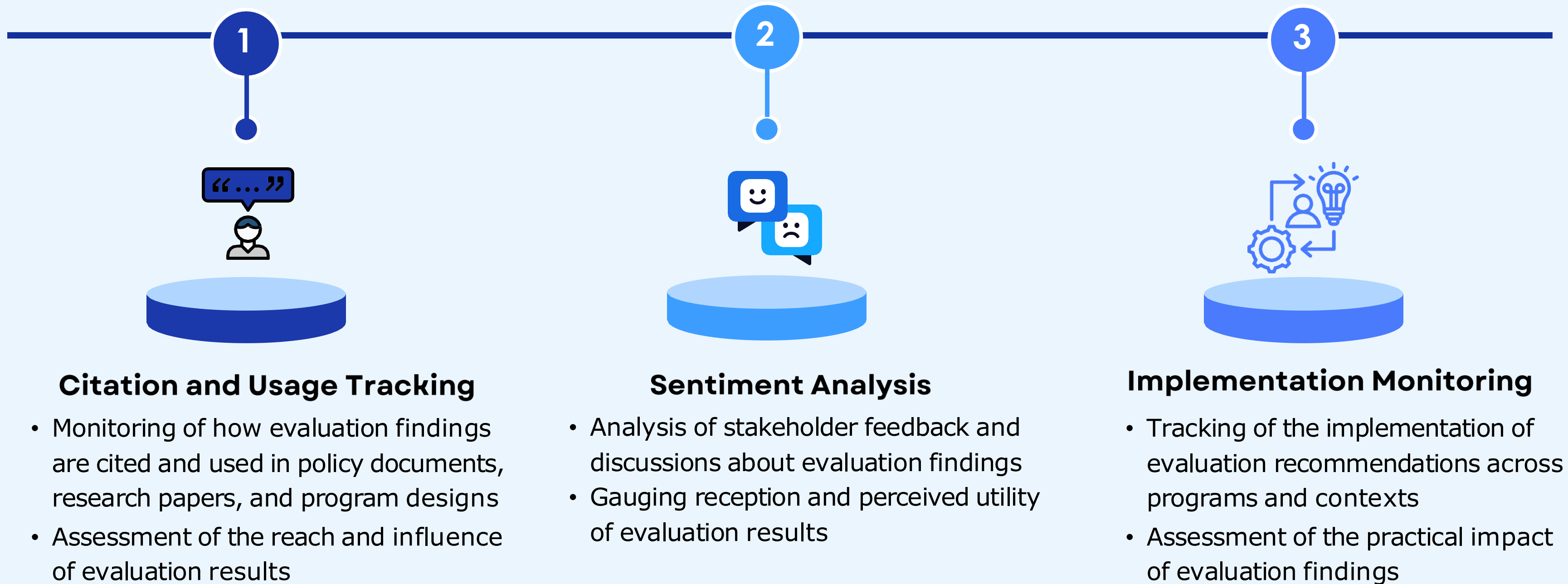
Predictive Visualization

- Generation of visualizations showing past, present, and predicted future trends
- Based on evaluation findings and AI-driven forecasting

Natural Language Querying

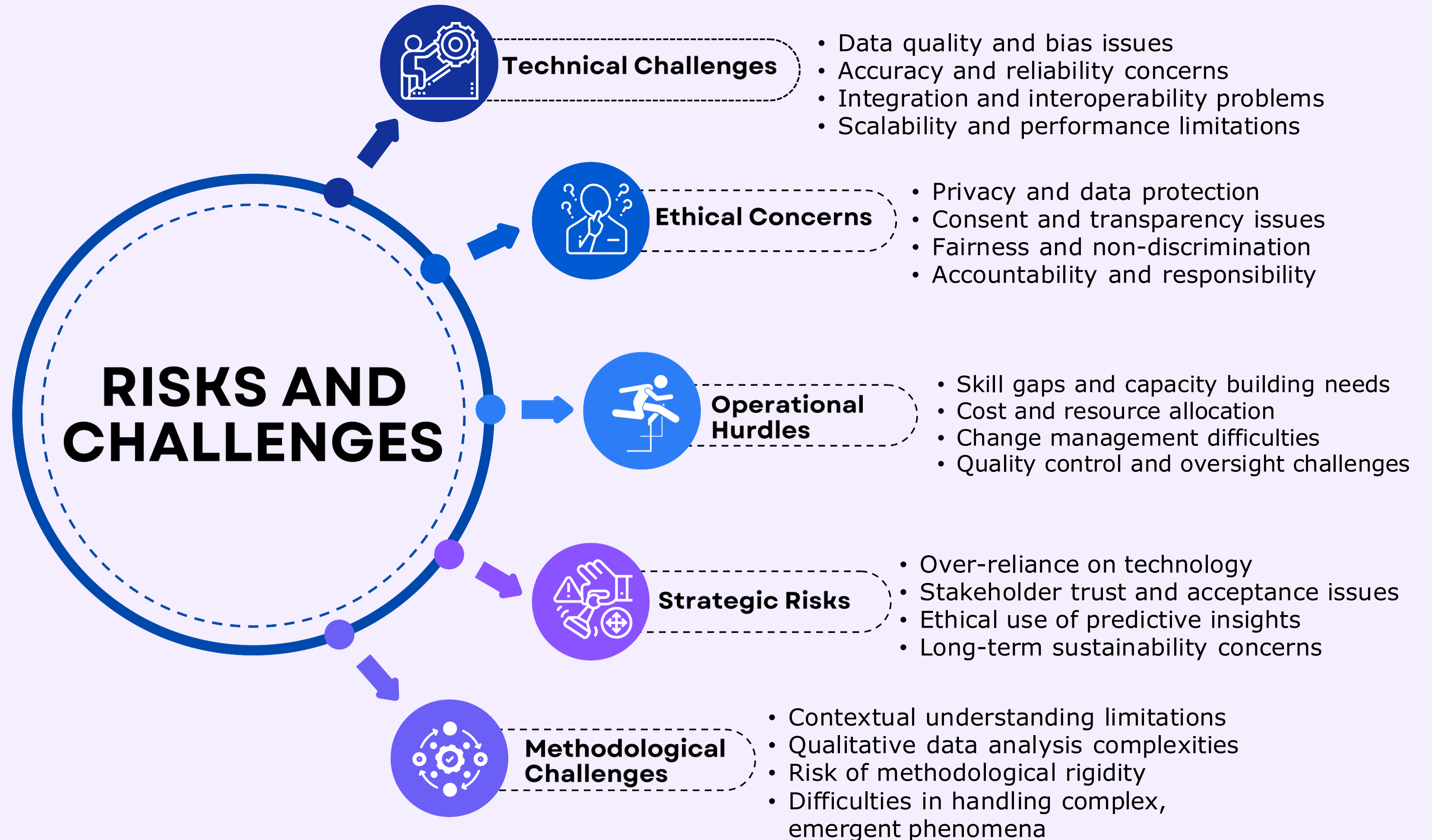
- Enabling users to explore evaluation data using natural language queries
- Making data more accessible to non-technical stakeholders

Impact Tracking and Feedback Loop



Section II

Risks and Mitigation Strategies



Developing robust ethical guidelines and governance frameworks



Capacity building and training



Ensuring data quality and bias detection



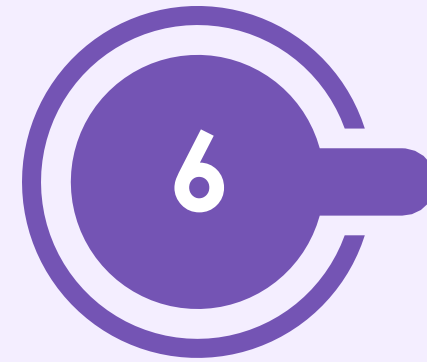
Implementing human oversight and expertise integration



Promoting transparency and stakeholder engagement



Mitigation Strategies



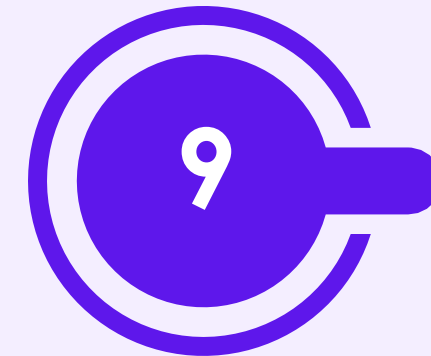
Continuous monitoring and evaluation of AI systems



Developing context-aware and flexible AI systems



Implementing strong data privacy and security protocols



Engaging in collaborative AI development



Section III

AI in Climate Change
Program Evaluations



STRATEGIC APPROACH

- Gradual, critical, and responsible AI adoption
- Start with simple applications, progress to complex tasks
- Develop tailored AI applications for evaluation needs
- Foster a culture of experimentation and innovation
- Continuous assessment of AI impact and value-added

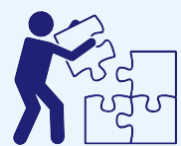


GOVERNANCE & ETHICS

- Develop AI governance frameworks and ethical guidelines
- Establish protocols for data privacy and security
- Create risk assessment procedures for AI projects
- Ensure transparency in AI use within evaluations
- Regular ethical reviews of AI systems and outputs



Way Forward



CAPACITY BUILDING

- Invest in AI skills and training for evaluation staff
- Promote collaboration between evaluators and AI experts
- Organize workshops and knowledge-sharing sessions
- Develop AI literacy across all levels of organization
- Create a core team of “AI champions”



IMPLEMENTATION

- Conduct AI readiness assessments
- Implement pilot projects with clear objectives
- Develop AI-assisted evaluation toolkits
- Establish validation frameworks for AI outputs
- Create feedback loops for continuous improvement

Key Recommendations for the Climate Funds



SHORT-TERM ACTIONS

- Maintain and institutionalize AI Joint Working Group
- Initiate small-scale AI testing pilots
- Establish basic validation protocol
- Develop initial AI guidelines
- Create AI experience log
- Organize AI awareness sessions
- Develop 1-2 year AI integration roadmap



LONG-TERM STRATEGY

- Establish joint AI Governance Framework
- Develop comprehensive Validation Framework
- Invest in AI Capacity Building
- Strengthen Data Infrastructure
- Create AI-Assisted Evaluation Toolkits
- Foster collaboration and knowledge sharing
- Develop AI-specific evaluation criteria



STAKEHOLDER ENGAGEMENT

- Engage with external stakeholders
- Establish partnerships with academia and tech companies
- Develop AI Communication Strategy
- Implement feedback loops for continuous improvement



ETHICS AND SUSTAINABILITY

- Prioritize environmental considerations
- Establish AI Ethics Review Process
- Develop ethical guidelines for AI use
- Regularly audit AI systems for biases

THANK

YOU!

Q&A