Transforming Clinical Research with Emerging Technologies

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IBM

Watson Health

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Watson Health, a purpose today… a mission for tomorrow

Government

Provide organizations longitudinal analysis of multivariate data sets to benefits and services organizations

So that we can help...

Improve the delivery of health and human services programs, while supporting efforts to better meet individual's unique needs

Value-Based Care

Enhance the ability of organizations to contract, organize for, and deliver personalized, quality care to individuals and populations

So that we can help…

Support the ability of organizations to take on risk, while reducing costs and meeting evolving reimbursement models

Life Sciences

Spur the discovery of medicines by enabling researchers to uncover insights

So that we can help…

Support commercial decisions using insights from real world outcomes, market knowledge, and product surveillance

Oncology & Genomics

Help oncologists more confidently plan treatment regimens, more efficiently match patients to clinical trials, and apply genomic insights to each patient's cancer

So that we can help…

Bring personalized, evidence-based care for more cancers to people around the globe

Imaging

Help radiologists improve productivity so that you can enable patient care with image analysis tools

So that we can help…

Enable better patient care by providing contextually relevant, probability-driven objective assistance

Current healthcare and technology trends

Healthcare

Aging population

Chronic + degenerative diseases

Cost escalation

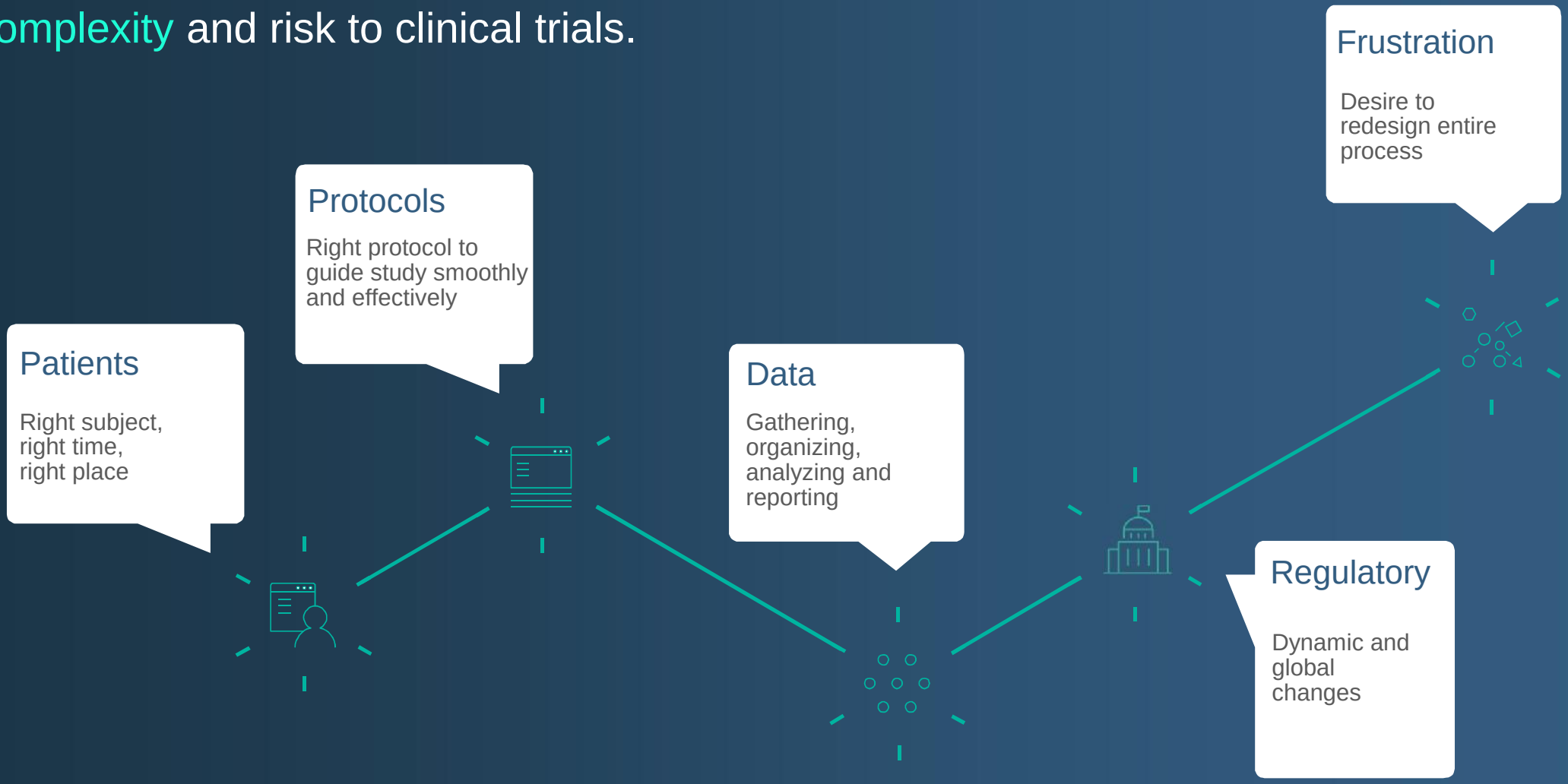
Technology

Disparate data sources

Cloud

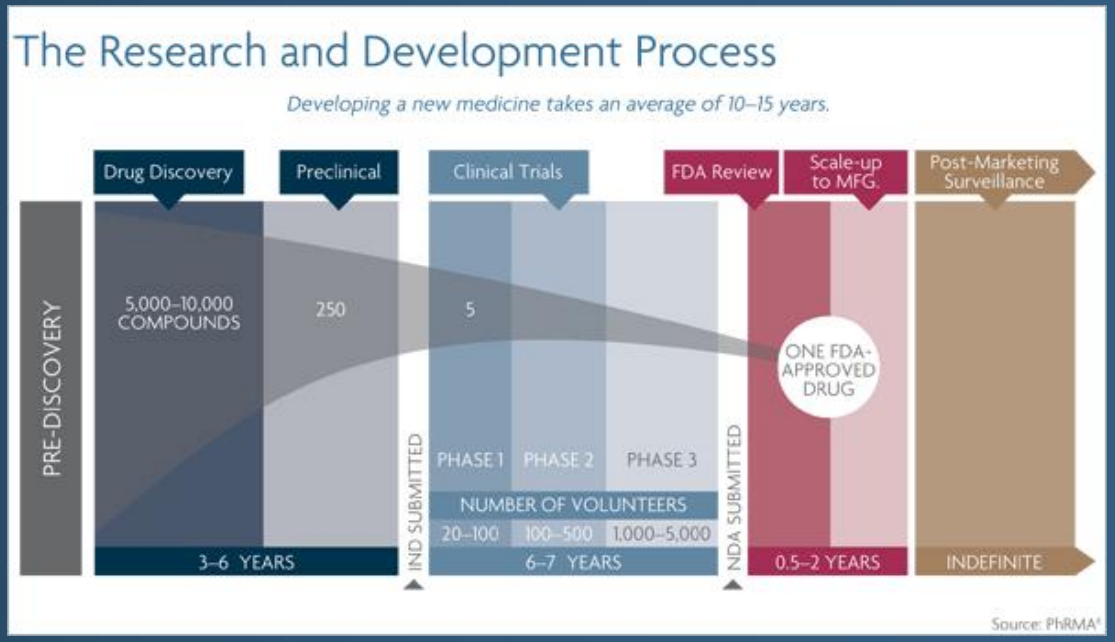
Cognitive

Hurdles that increase cost, stretch timelines, and add complexity and risk to clinical trials.



Despite technology advances, clinical trials remain costly, time consuming and inefficient

- **$2.5B** - The fully capitalized cost of developing and launching a new drug in 2016.
- **60%** - The annual R&D costs attributed to clinical trials.
- **60-70%** of the drug development timeline is attributed to clinical trials.
- **86%** of clinical trials experience delays.
- **$8** million/day - The potential cost of each day of delay in drug development.



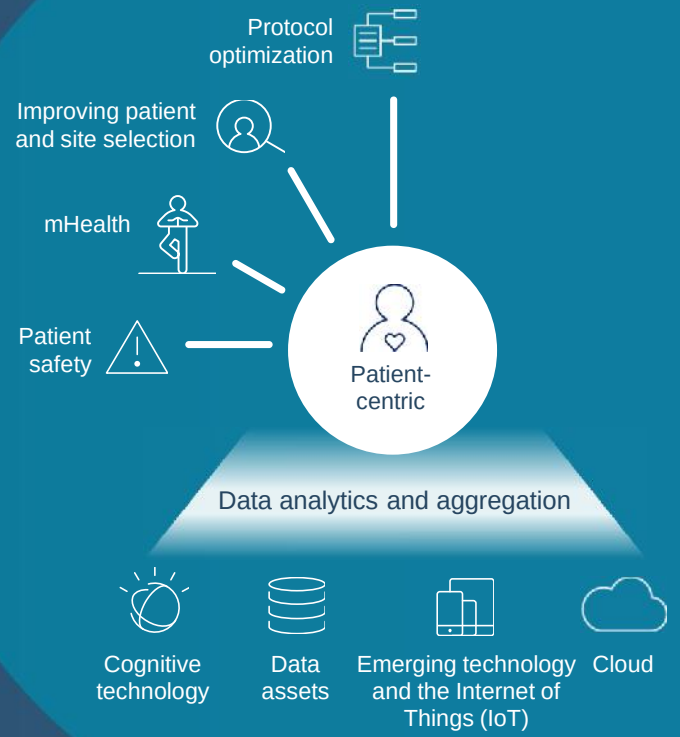
Transformation in clinical trials means moving away from linear processes and incremental changes.

Clinical development value chain

Research — Development — Commercialization

- Marketplace assessment and molecule development (preclinical)
- Clinical trial protocol development
- Site selection and patient recruitment
- Study conduct, data collection and operations
- Study analysis, clinical study report and submission
- Postmarketing and real-world evidence studies (postmarket requirements and commitments)
- Safety and pharmaceutical vigilance

Current

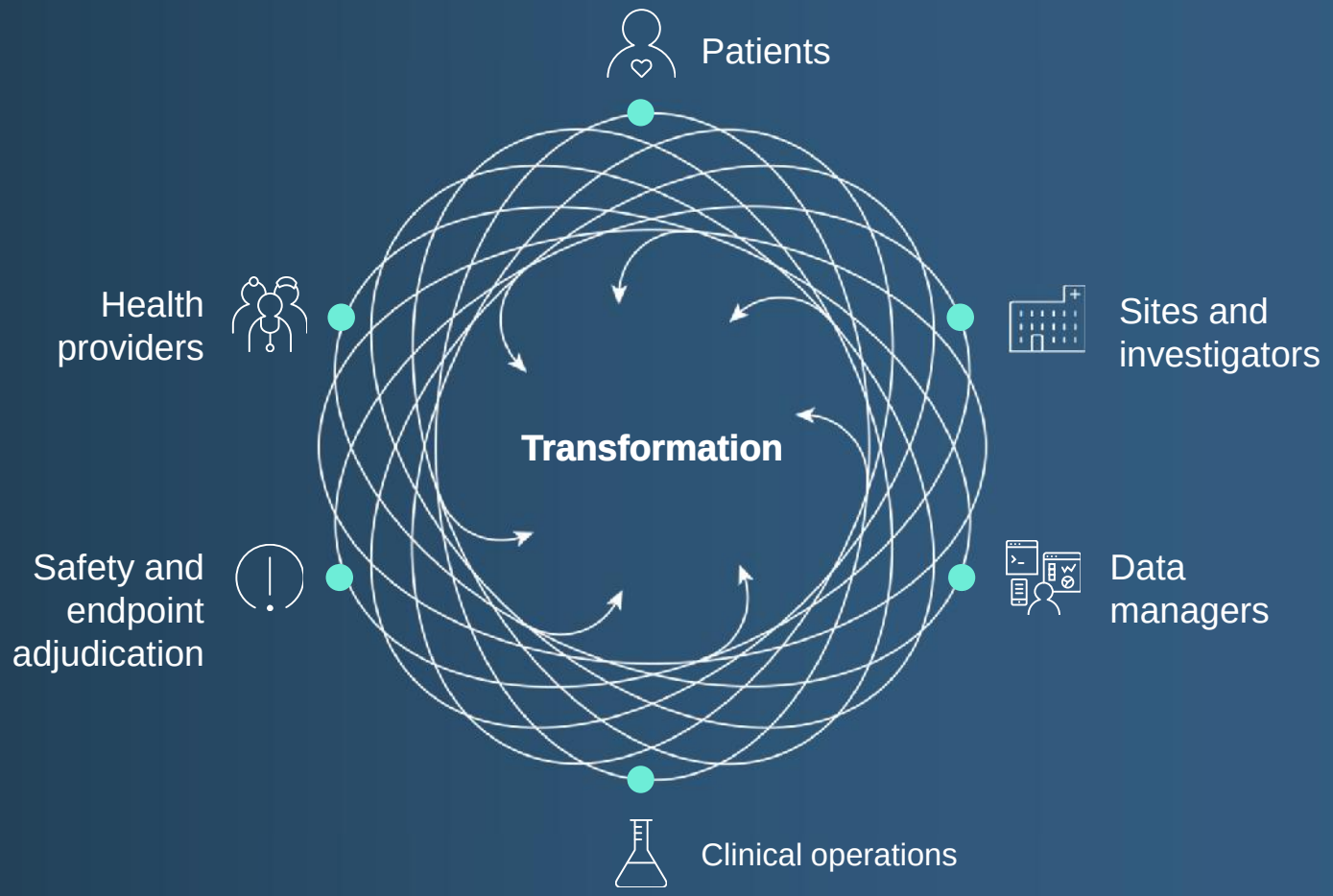


Transformed

An ecosystem to integrate all functions and stakeholders into a single, seamless ecosystem.

Adapts to your trial ecosystem and research requirements

Brings stakeholders into a single, seamless, integrated ecosystem



How IBM Clinical Development is leveraging Watson Assets

Enhance Manual Medical Coding (MedDRA / WhoDrug)

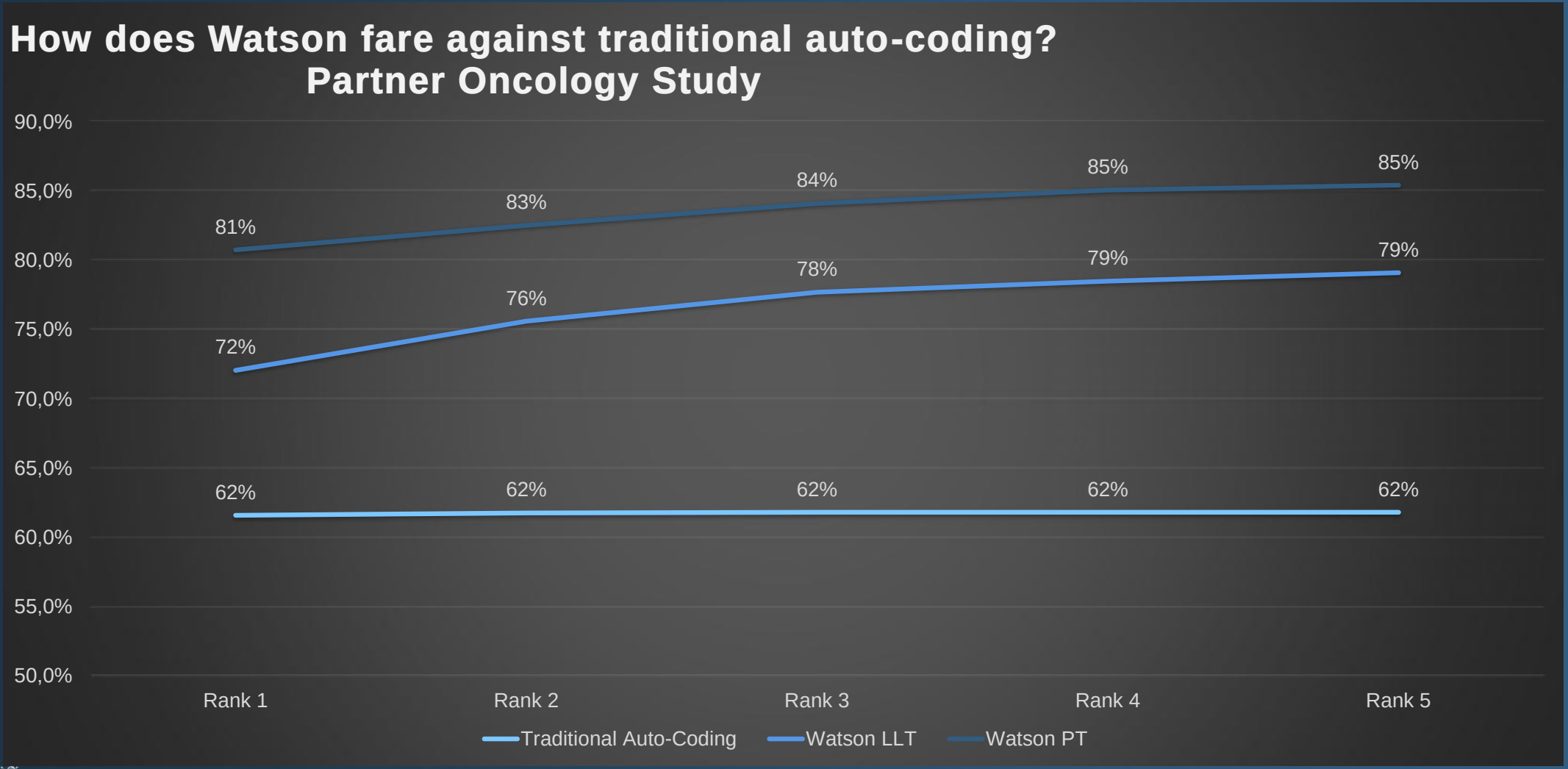
Enhance Endpoint Adjudication

Enhance Data Monitoring with Watson APIs

Watson for Medical Coding: MedDRA

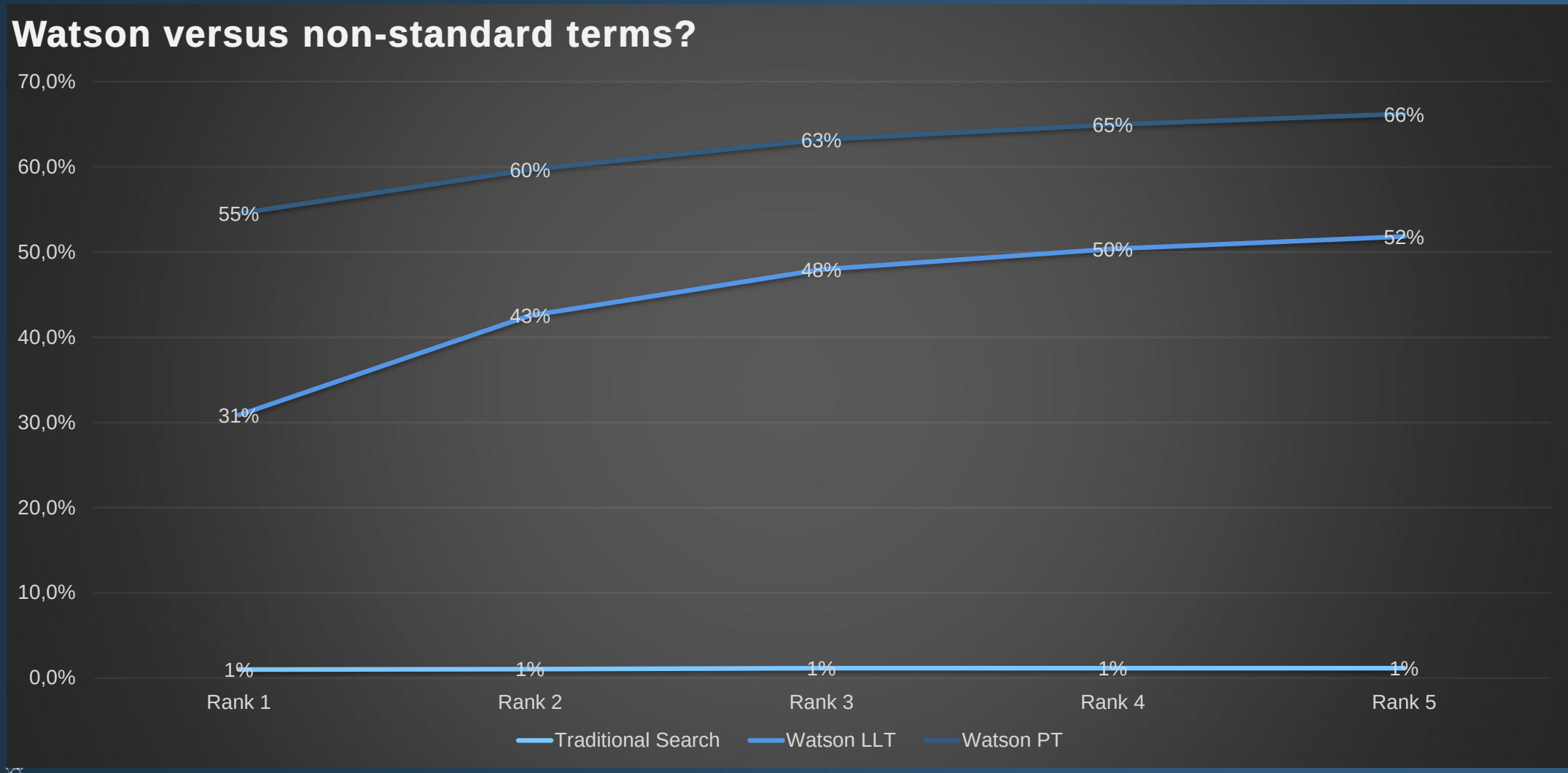
Traditional Auto-Coding	VS	Cognitive Coding
Dictionary matching		Natural language processing (NLP)
Matching algorithms		SME training and refinement
Synonyms		Support a variety of trained models General coding Client specific Therapeutic specific Etc.
Stop words		
Replacement words		Interactive coding suggestions with confidence levels
		Feedback loop for periodic retraining

Increased accuracy with Watson for Medical Coding*



*Based upon retrospective analysis on 4,651 AE checks, Watson for Medical Coding is still in development.

Increased accuracy with Watson for Medical Coding*



*Based upon retrospective analysis on 2,403 AE checks, Watson for Medical Coding is still in development.

IBM CD – Enhance Endpoint Adjudication

Traditional Doc Review	VS	Cognitive Document Review
Heavily relies on Source Documents Collection		Heavily relies on Source Documents Collection
Trained individual at Site to perform relevant deidentification		Natural language processing (NLP) & Watson APIs
Trained individual to review doc and spot gaps		Can Support Therapeutical specific trained models
Back and Forth communication between Site and doc reviewer		Interactive suggestion for deidentification actions (for site at time of upload)
Trained Individual (Adjudicators) to perform assessment		Interactive suggestions with confidence levels for missing information and duplicated events (for doc reviewer)
		Interactive suggestions with confidence levels for Endpoint assessment (for adjudicators)
		Feedback loop for periodic retraining

How IBM Clinical Development is leveraging Watson Assets

Enhance Data Monitoring with Watson APIs

Increase Patient engagement with Watson Chat Bot
(ePRO, Support, Orientation)

Thank you

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