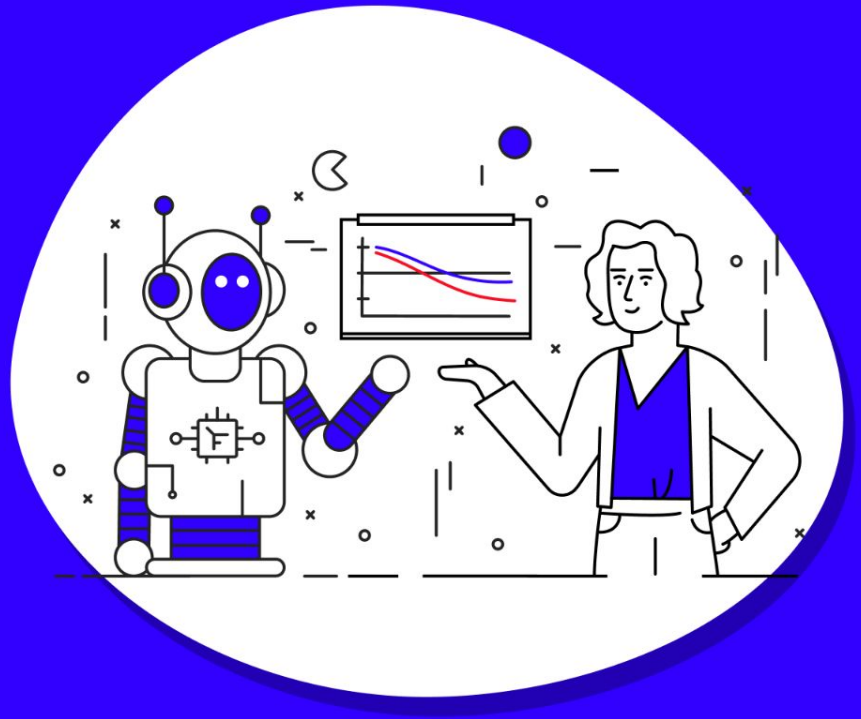
ISMPP17AM

Evolving Congress Competitive Intelligence With Artificial Intelligence: Embracing Change and Setting Trends

Jennifer Ghitha[a], Cheryl Truchana[a], Zena Askerovaa[a], Dheepa Charia[a], Raj Patela[b] and Vivekanandan Mathivanan[b]

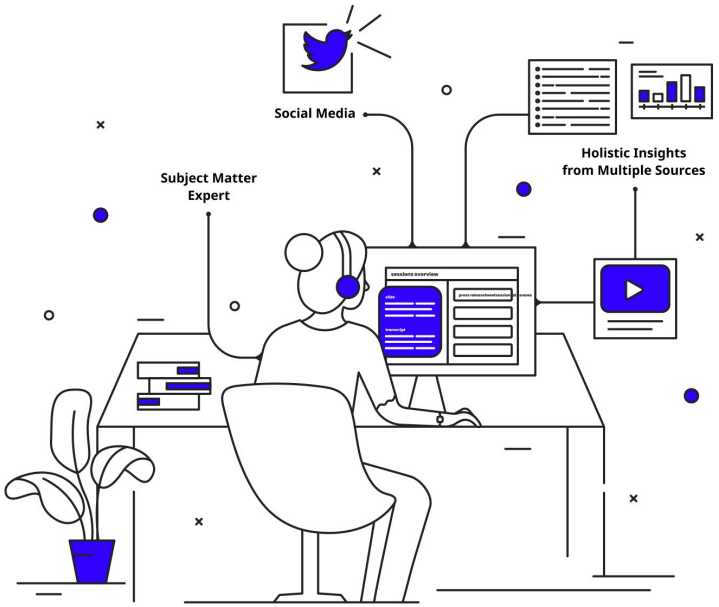
[a]Pfizer Inc., New York, NY, USA
[b]Ferma AI, ZoomRx



The views and opinions expressed in this presentation are those of the presenters and do not necessarily reflect the opinions of our employers

OBJECTIVE

Determine whether artificial intelligence (AI)-based tools can improve congress competitive intelligence (CI) monitoring and the management of emerging scientific data.



CONCLUSIONS

- Leveraging AI for congress CI monitoring enables broader understanding, viewing of data across information sources and more comprehensive insight generation.
- AI efficiently retrieves presentations of interest that can then be utilized for internal reporting. Social media findings can be fully integrated into AI platforms, providing a broader ecosystem of visible information.
- AI is not without limits, and interpretation of data in the context of the landscape still requires subject matter expertise in addition to understanding the use of AI platforms and access to AI.
- Given the breadth of information, AI platforms may need to be supplemented in targeted ways with traditional deliverables (for example, with post-congress reports).
- In order to successfully utilize AI-based platforms for congress CI monitoring, publication professionals need to develop plans for their use over time, including detailed planning for 'packages' of combined pre-, peri- and post-congress deliverables.

BACKGROUND

- There are over 250 medical meetings in oncology every year. In 2020, medical knowledge was predicted to have doubled every 73 days[1]. The COVID-19 pandemic has accelerated technological advances and posting of data online. Many oncology meetings have converted to virtual formats, as well as improved their online presence. Not only are posters and oral presentations being posted online, they remain available post-congress. Moreover, congresses are also increasingly offering sessions during the periods between their regular meetings. High abstract volume, as well as prominence and numbers of attendees demonstrate that congresses remain a major venue for sharing of the latest scientific data and information.

- Companies have traditionally relied upon labour-intensive manual collection and synthesis of large volumes of data and (increasingly present) social media postings from congresses to gather and process competitive data. Individuals and smaller organizations are left to prioritize without these types of resources.

- Artificial intelligence (AI), a loosely defined concept describing automated systems that can perform tasks considered to require "intelligence"[2] is uniquely suited to mining information from congresses given its abilities to identify, extract and summarize large amounts of data. Several companies are developing AI-based tools to extract information from the literature and congress sites, however these tools are not yet widely adopted.

FIGURE 1
Difference in Traditional Congress CI vs. AI Based CI Monitoring

TRADITIONAL CI		AI-BASED CI	EXECUTED IRRESPECTIVE OF METHOD
- Via manual searches of congress site - Priorities captured via spreadsheets	Pre-congress abstract prioritization	- Via interactive microsite that links to congress site as needed	- Slide sets on upcoming Congresses developed and shared internally
- Information and Q&A collected manually - Individuals attend sessions, agencies support write-up of key sessions of interest as needed - Social Media monitored separately	Peri-congress CI monitoring	- Information and Q&A collected via AI faster than via manual methods - Individuals attend sessions as needed through the portal - Social media mentioned alongside key sessions within interface	- Daily alerts on key sessions issued with agency support as needed - Debriefs on key sessions
- Slide sets on Congress sessions, takeaways developed with agency support as needed and shared internally - Materials archived manually for future use	Post-congress reporting	- Sessions not covered by individuals are captured via AI on central platform and can be referred to later - Materials archived within platform for use (all Congresses accessible via single sign-on)	- Slide sets on Congress sessions, key takeaways developed with agency support as needed and shared internally post meeting

RESULTS

- Data obtained with the platform showed that the number of abstracts and attendees at ASH were similar relative to previous years, despite the evolution to the virtual setting.

- Meta-data from other major Congresses in oncology, suggesting similar trends. These data are not easily obtained via traditional CI monitoring (Figure 2).

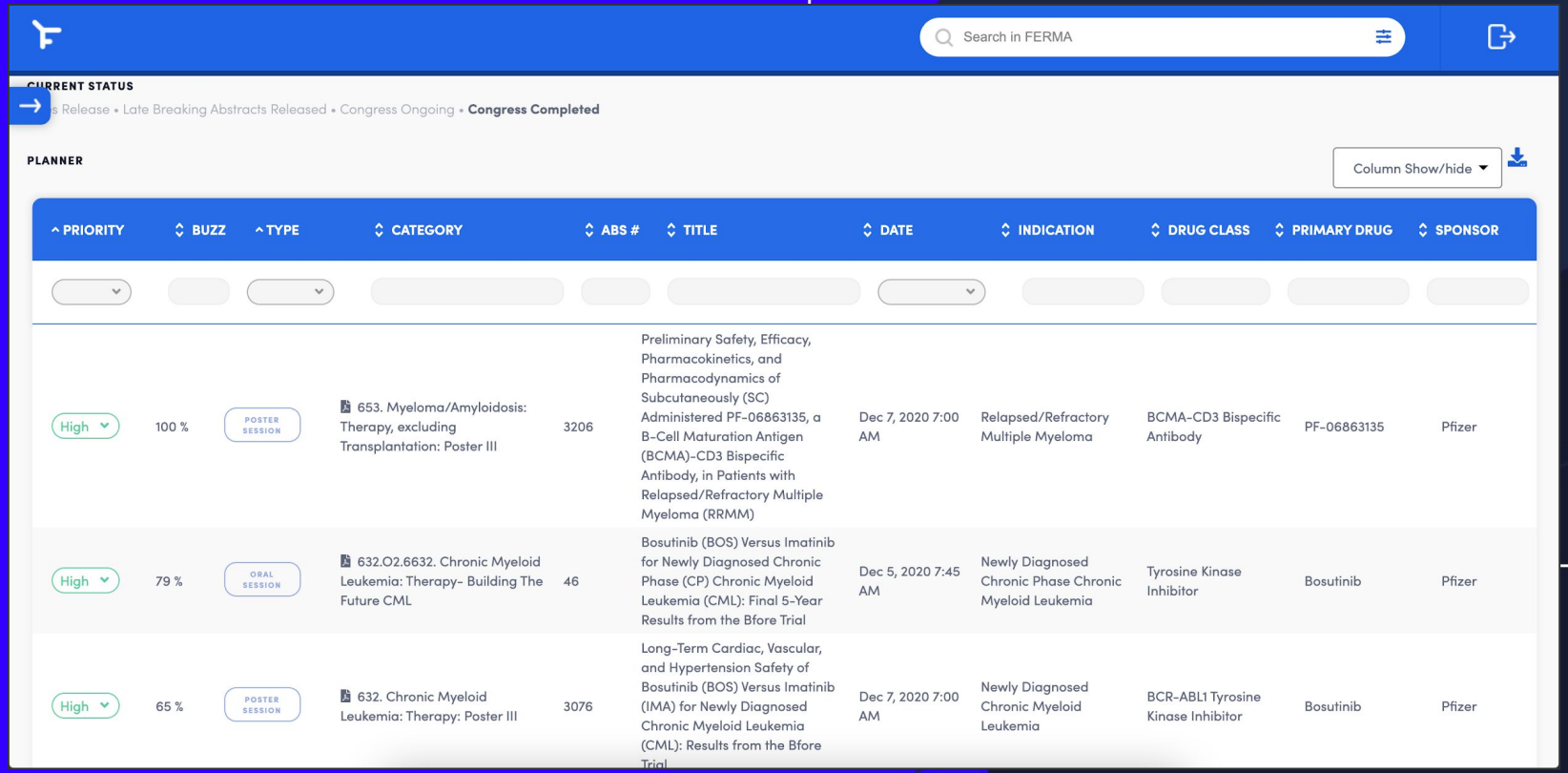
FIGURE 2: Congress Statistics: 2018-2020

	ASCO			ESMO			SABCS			ASH		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
TYPE	In person	In person	Virtual	In person	In person	Virtual	In person	In person	Virtual	In person	In person	Virtual
# OF DAYS	5	5	3	5	5	3	7	5	4	4	4	4
# OF ABSTRACTS	~ 5,800	~ 5,600	~ 5,300	3,352	3,904	2,137	1,596	1,706	1,329	~ 4,800	~ 4,800	4182
# OF ATTENDEES	+ 39,000	+ 42,500	44,750	27,940	29,662	+ 30,000	7,749	8,786	~ 8000	+ 25,000	+ 25,000	23,020

RESULTS

- Prioritization of abstracts using AI allowed for more interactive and rapid ranking of sessions as compared with manually executed CI session prioritization.
- 4,182 sessions were evaluated for prioritization and available via a website (Figure 3a) that allowed stakeholders to view and adjust prioritization. 431 sessions were ultimately prioritized.
- Session prioritization dynamics with the AI-based platform allowed the team to cover and archive larger numbers of sessions as compared with traditional means of coverage that are based on available resources and budget for medical writers. For example, in 2019 when traditional coverage was utilized for ASH only 200 sessions were prioritized for coverage.
- During the congress, individuals were able to access and review content via a central platform while still benefiting from distilled information provided via traditional daily reports (Figure 3b).
- Highly ranked presentations were available for access shortly after they were made available by the congress (typically within 24 hours).
- Social media content was retrieved as it was posted for all presentations.

FIGURE 3a: AI Platform - Session Priorities



PRIORITY	BUZZ	TYPE	CATEGORY	ABS #	TITLE	DATE	INDICATION	DRUG CLASS	PRIMARY DRUG	SPONSOR
High	100 %	POSTER SESSION	653. Myeloma/Amyloidosis: Therapy, excluding Transplantation: Poster III	3206	Preliminary Safety, Efficacy, Pharmacokinetics, and Pharmacodynamics of Subcutaneously (SC) Administered PF-06863135, a B-Cell Maturation Antigen (BCMA)-CD3 Bispecific Antibody, in Patients with Relapsed/Refractory Multiple Myeloma (RRMM)	Dec 7, 2020 7:00 AM	Relapsed/Refractory Multiple Myeloma	BCMA-CD3 Bispecific Antibody	PF-06863135	Pfizer
High	79 %	ORAL SESSION	632.O2.6632. Chronic Myeloid Leukemia: Therapy- Building The Future CML	46	Bosutinib (BOS) Versus Imatinib for Newly Diagnosed Chronic Phase (CP) Chronic Myeloid Leukemia (CML): Final 5-Year Results from the Bfore Trial	Dec 5, 2020 7:45 AM	Newly Diagnosed Chronic Phase Chronic Myeloid Leukemia	Tyrosine Kinase Inhibitor	Bosutinib	Pfizer
High	65 %	POSTER SESSION	632. Chronic Myeloid Leukemia: Therapy: Poster III	3076	Long-Term Cardiac, Vascular, and Hypertension Safety of Bosutinib (BOS) Versus Imatinib (IMA) for Newly Diagnosed Chronic Myeloid Leukemia (CML): Results from the Bfore Trial	Dec 7, 2020 7:00 AM	Newly Diagnosed Chronic Myeloid Leukemia	BCR-ABL1 Tyrosine Kinase Inhibitor	Bosutinib	Pfizer

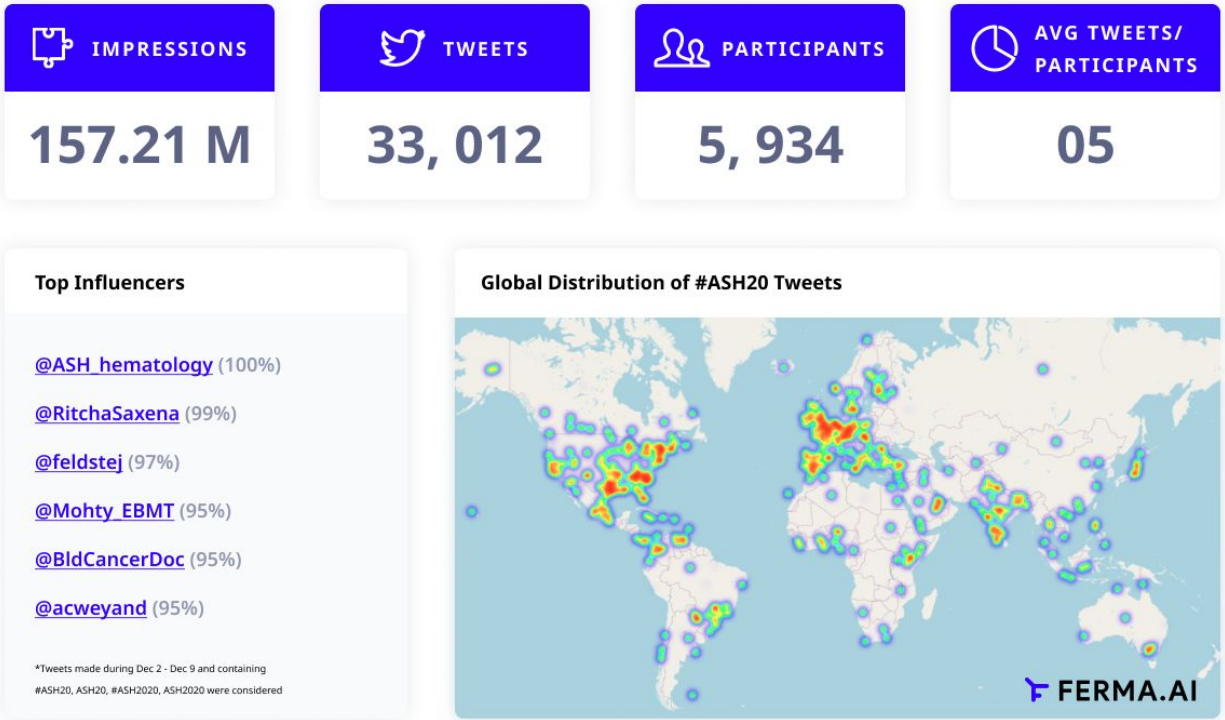
FIGURE 3b: AI Platform - Session Overview

RESULTS

- Social media influencers were identified from 33,012 tweets and insights were integrated within the platform. Previously with traditional coverage, social media insights were obtained through a separate vendor and required approximately 2 weeks of wait time for analysis (Figure 4).

- Using AI resulted in cost savings of 40-50% relative to traditional coverage methods executed in partnership with Medical Communications agencies.

FIGURE 4: ASH2020 Twitter Activity By the Numbers*



Video: AI Platform Walkthrough

https://www.youtube.com/watch?v=X5Yti13WPsg

CONSIDERATIONS

A CHECKLIST

Some considerations when evaluating AI-based platforms for CI monitoring

- Is the platform appropriate given the congresses that need to be evaluated?
- Are sufficient congress data available online for ingestion, upload or integration into the platform?
- How much training (if any) will teams need to use the system?
- What analytic capabilities are already embedded within the platform vs. what will need to be added/created?
- How will you/your team generate insights based on findings from the platform?
- What is your plan for pre-, peri-, and post-meeting coverage? Do you need it for 1 meeting or many (ie, can you bundle services?)
- How is the information stored? For how long?

LEARNINGS

- AI-based platforms can help users obtain data efficiently by enabling enhanced access to presentations, transcripts from key sessions, Q&A, and images. Overall, there was a 36% time savings using AI-based CI monitoring vs. the traditional approach (Figure 5).

- The portal served as a central repository and key resource for all cross-functional stakeholders.

- AI-based technology for CI monitoring is however still in its infancy, and medical professionals need education on the basics in order to identify optimal platforms to suit their needs as well as evaluate platform limitations and opportunities. The quality of algorithms for various CI monitoring platforms are dependent upon the amount of data from congresses that are available online.

FIGURE 5: Impact of AI

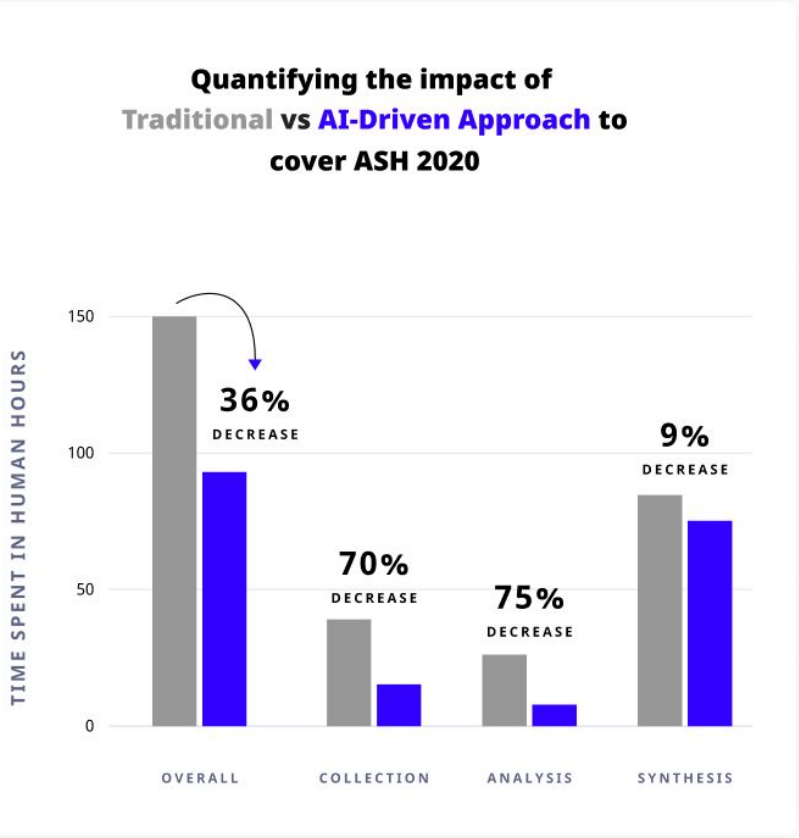
In order to quantify the ability of AI to reduce the amount of human time-spent on congress competitive intelligence (CI) monitoring and data management processes, two teams were deployed. Team A utilized a traditional (non-AI assisted) approach and team B utilized an AI-driven approach. The two teams analyzed all the 4182 abstracts and summarised 50 high priority sessions with implications across multiple disease areas. Through this research, the human hours spent on key processes (data collection, analysis, and synthesis) were logged.

Team B's AI-driven approach results in 36% fewer hours spent relative to traditional approach.

The biggest impact was seen in data collection and analysis-related tasks (eg: finding if an abstract is relevant based on the competitive landscape, mapping relevant tweets to a session, etc.). Within this category, use of AI resulted in a 72% reduction in human hours.

However, complex tasks involving the synthesis of complex information (eg: deriving implications from a 20 minute video session) required human intelligence to get quality results. In this area, use of AI resulted in only a 9% decrease in human hours.

Overall, AI integration into congress CI resulted in more time to focus on tasks requiring high-levels of human intelligence.



CONCLUSIONS

- Leveraging AI for congress CI monitoring enables a broader understanding of scientific information across an ecosystem of data that are available at large meetings.
- AI efficiently retrieved presentations of interest and performed objective tasks quickly relative to traditional CI collection methods.
- The platform was utilized during the congress and provided users with information on the sessions and transcripts. CI monitoring was connected with social media postings, which helped users understand sentiment.
- To fully optimize CI monitoring, it is necessary to ensure various cross-functional users understand the utility of the platform, proactively identify and address questions the teams may have related to AI in general, as well as educate on platform mechanics.
- Interpretation of the data in the context of the landscape still requires subject matter expertise.

References

1. Densen P. Challenges and opportunities facing medical education. Trans Am Clin Climatol Assoc. 2011;122:48-58.

2. Chen, J. et al. Current status of artificial intelligence applications in urology and their potential to influence clinical practice. BJU Int. 2019;124:567-577.

Acknowledgment

- The authors would like to thank Sashi Nadanaciva for her support in the pilot and submission

Disclosure

- All authors participated in the research process or development of the concept discussed, were actively involved in writing the abstract, and approved the submitted version.

Note

- All materials accessible from the Ferma.AI platform are for internal reference only.