



QUALIFICATIONS & CAPABILITIES

Ascel Bio is America's leading commercial disease forecasting and outbreak warning company. Ascel Bio has been accurately forecasting disease outbreaks and outbreak-caused political crisis using OSINT since 2010.

Ascel Bio produces a variety of forecasts and assessments for the marketplace on a subscription basis and has a track record of accuracy and reliability. Ascel Bio has experience with (1) empirically driven sociological models for population-level behavior change in anticipation of, and response to disease outbreaks, (2) processing and analysis of streaming data, (3) development of data extraction techniques and (4) development of models to generate probabilistic forecasts of future events, with the exception of "black swan" / non-routine events.

Ascel Bio Intellectual Property includes, but is not limited to:

- Indicator taxonomy (herein "Tags") that pertains to free text reporting of infectious disease events, crises, and disasters. Tags include derivations of named disease entities, social impact parameters, and epidemiological features.
- Software that ingests free text and marks each packet of text against the Tags and proprietary analytics ("Exigence Engine").
- A heuristic model for social disruption based on precepts in disaster sociology (Ascel Bio's Infectious Disease Impact Scale).
- Software that is able to ingest outputs from Exigence Engine, hospital data (e.g. ICD9/10 codes, laboratory results, or chief complaints), or epidemiological data and produce forecast libraries (herein "Delphi Engine").
- Data visualization strategies specifically pertaining to communication of Exigence Engine and Delphi Engine outputs.

Ascel Bio's team includes individuals with an additional understanding of SIGINT and biological threats.

Ascel Bio licenses for research have important limits on publication, reference, disclosure, and/or incorporation of any portion of Ascel Bio Proprietary Information without a license.

SEEKING

Ascel Bio is seeking to work on a subcontractor basis with partners that have a track record of excellent performance and that enjoy an established relationship with the SIGINT community.

RESEARCH AREAS OF INTEREST

Ascel Bio is interested in research that investigates whether OSINT-based approaches to disease forecasting, when applied to/combined with SIGINT, can (i.) enhance infectious disease data availability, accuracy and timeliness, thereby improving forecasts; (ii.) facilitate proactive verification and rapid mitigation and response measures; (iii.) anticipate infectious disease issues that are of national security concern; and, (iv.) facilitate timely recognition of atypical or non-routine events that may represent a national security issue.

Figure 1 OSINT-derived Tag based forecast, India's 2015 H1N1 full year forecasts. *Validating.*

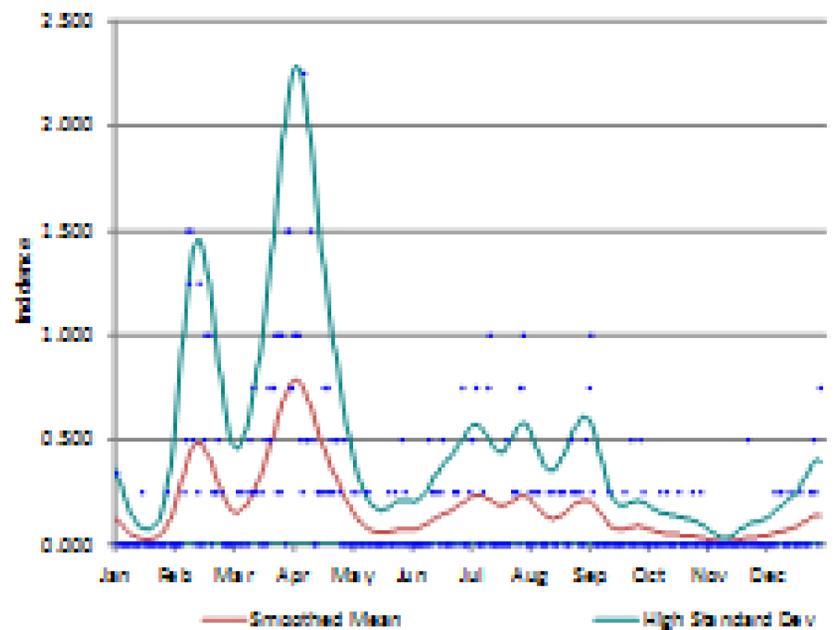


Figure 2. OSINT-derived Tag based forecast, Guinea's 2015 Lassa fever full year forecast. *Already validated.*

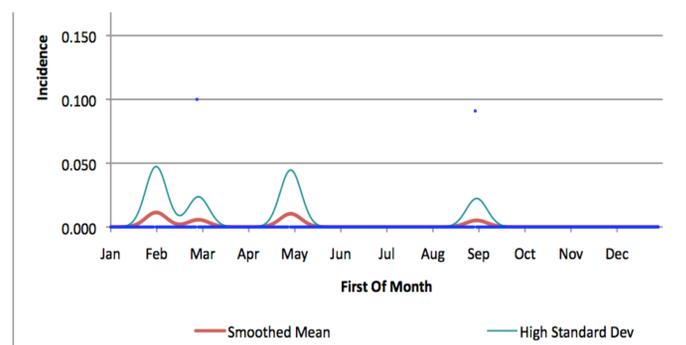


Figure 3. Sampling of Ascel Bio forecasts in over 20 countries in 2014 for over 200 diseases, with validation scores (scores below 1.0 signify a "good forecast").

Country	Disease	Q Score
USA	Lyme disease	0.08
	Ehrlichiosis	0.15
	Salmonella	0.23
	H. influenzae	0.61
	Pertussis	0.63
	Falciparum malaria	0.74
	Measles	0.82
Brucellosis	1.62	
Germany	Campylobacter	0.09
	Cryptosporidium	0.76
	Meningococcus	0.76
	Measles	0.88
	Imported dengue	0.98
	Adenovirus	1.03

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