




www.geospatialalpha.com
todd@geospatialalpha.com

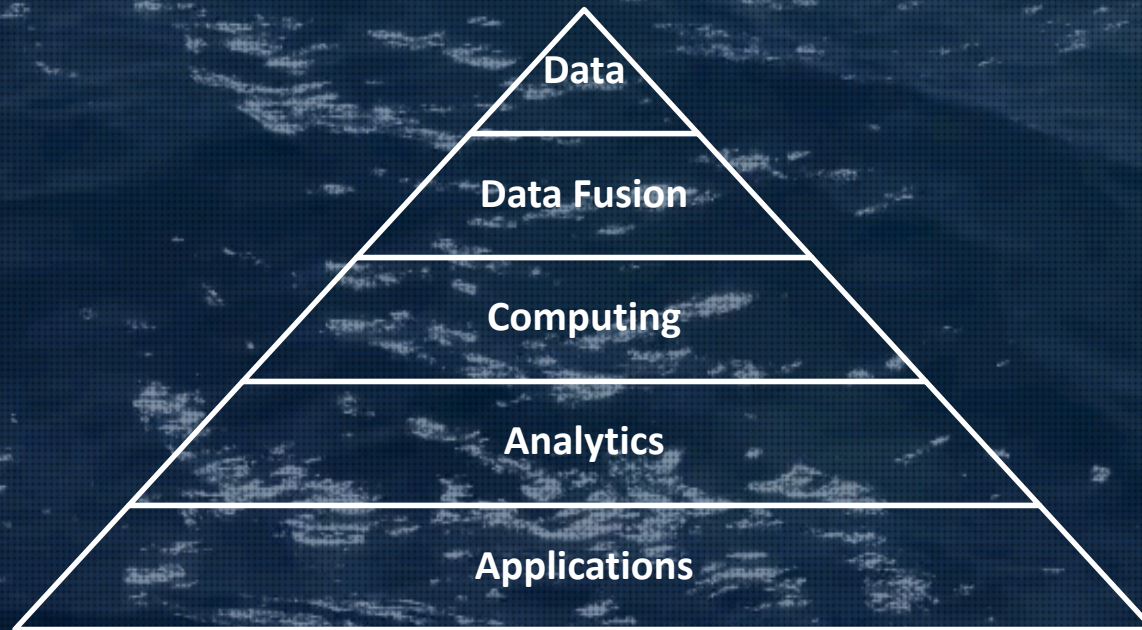
An aerial photograph of a dark blue ocean with white-capped waves, serving as the background for the text.

**“We are building Geospatial Alpha
as the authority in geospatial
intelligence, to mentor, partner and
invest in emerging geospatial
opportunities from advances in
frontier tech.”**

- GSA formed in 2019
- “To be the authority in geospatial intelligence...”



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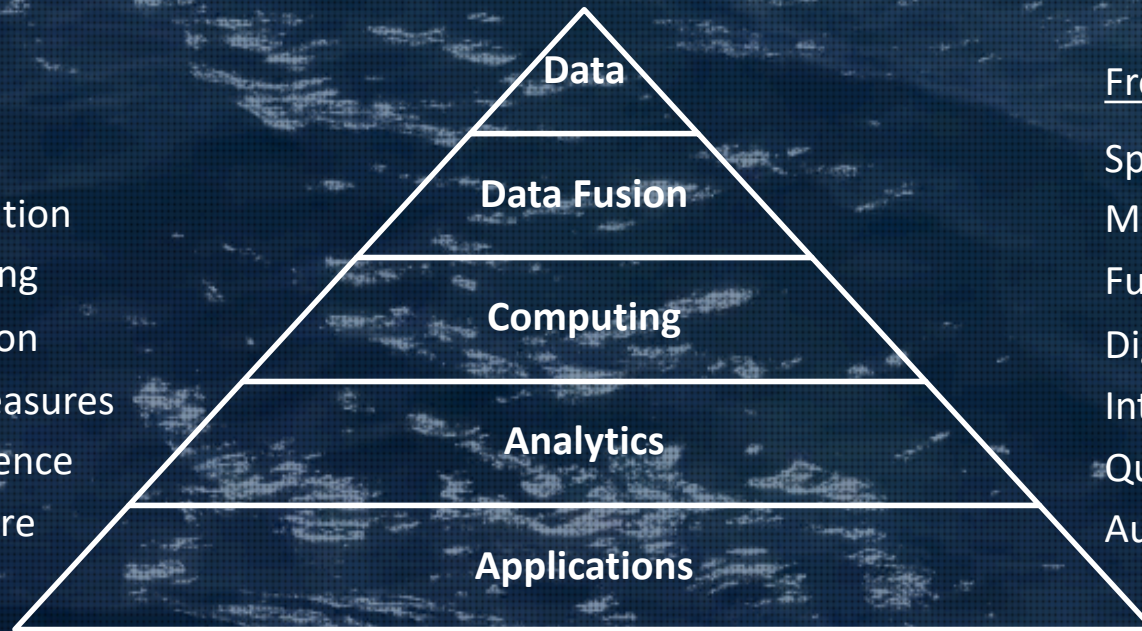


Geospatial Alpha

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Technical

Localization
Earth observation
Remote sensing
Computervision
Terrestrial measures
Signal intelligence
5G NR software



Frontier Tech

Space 2.0
Machine intelligence
Future mobility
Digital health
Internet of things
Quantum computing
Augmented reality

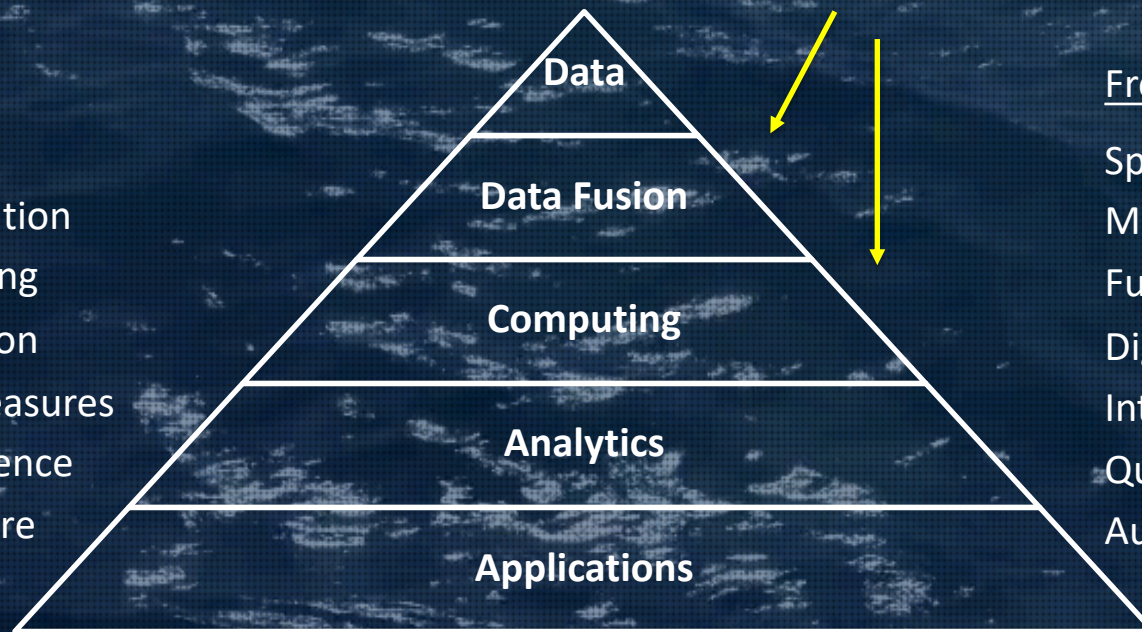
Transportation, Aerospace, Urban, Insurance, Investment, Property

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Todd Simon
Founder, Geospatial Alpha
Geospatial Specialist, DN Capital
GroundTruth, Gravy Analytics
Columbia Business School



Deepak Kamra
General Partner, Canaan Partners
Expert in space-tech
Skybox Imaging, Capella, World View
Harvard Business School



Steve Schlenker
Co-founder, DN Capital
Expert in enterprise software
Harvard Business School



Ehud Levy
Head, Canaan Partners Israel
Expert in telecoms
First investor in Waze
Columbia Business School



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- Mission deployment in stages: consult, mentor, partner, invest.

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Orbital Witness
(London, UK)



Portcast.io
(Singapore)



Oxeo
(Oxford, UK)

Geospatial Alpha

- 2020 Mission: consult, mentor, partner, invest.



Orbital Witness
(London, UK)



Portcast.io
(Singapore)



Oxeo
(Oxford, UK)



Overhead
(USA)



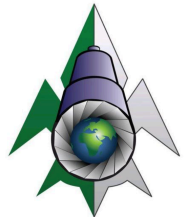
OneView
(Tel Aviv, Israel)



Blue Sky Analytics
(Gurgaon, India)

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Alumni Association
IDF Unit 9900
(Israel)



FrontierSI
Spatial Information Centre
(Australia)



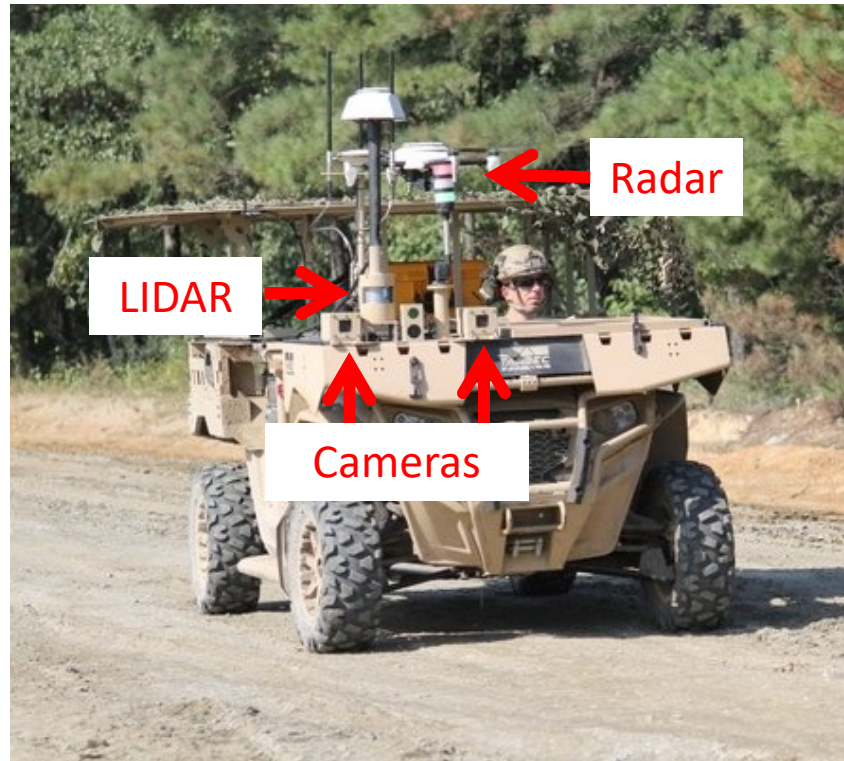
4M Group
UXO Land Release
(Israel)

Geospatial Alpha

Multimodal Machine Learning

Ritwik Gupta, Software Engineering Institute, Pittsburgh, PA
rgupta@sei.cmu.edu

Motivating Example



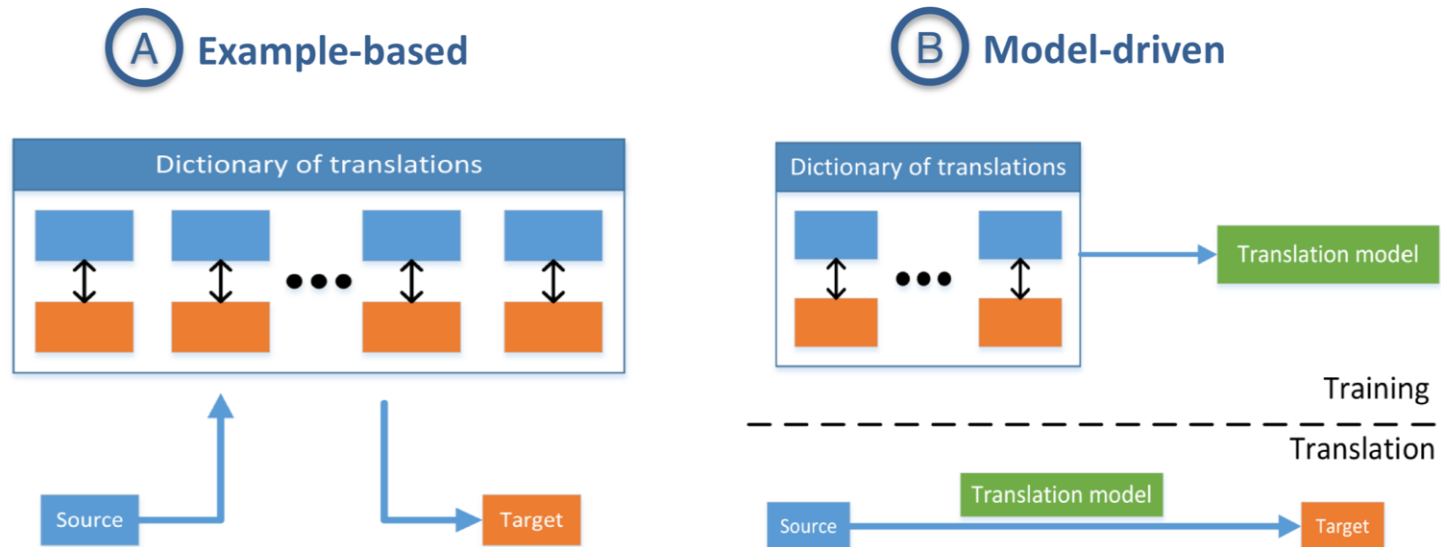
Motivation

- For most common modalities, multimodal machine learning (MMML) is well-studied in shallow and deep learning literature.
 - Video
 - Text
 - Audio
 - However, this usually encapsulates **language**, ergo, these are the language modalities.
- It is not clear how to do MMML for other, non-language modalities that
 - Do not represent language.
 - Have no implicit or explicit structure.
 - Represent information along non-sequential dimensions (time is a sequential dimension)

Challenges

- Representation
 - building embeddings and representations of data that combine available modalities and utilize information common to multiple modalities.
- Alignment
 - having multiple features align with each other temporally or by problem-specific measures of consistency.
- Modeling
 - building algorithms that can effectively exploit multimodal representations.
- Evaluation
 - creating metrics that can communicate how well a model or representation is doing on the multimodal task.
- Engineering
 - making all of the above efficient, tractable, and scalable

Translation



- When one sensor or mode of collection fails or provides insufficient support, translation lets us synthesize that data source using other available modalities.

Evaluation

- Current methods to tell how “good” a representation is or how well a model does is to simply test it on a whole bunch of datasets.
 - Proxy measurement at best
- No metrics exist to directly evaluate “goodness” of representation or model, nor meta-metrics that convey how well a metric translates to real-world ideas of knowledge fusion.



THE 4M GROUP



THE 4M GROUP

4M Group was founded in 2011 by former officers in elite unit of the IDF.

4M Group renowned as an expert in demining counter IEDs and Explosives Remnants of War.

GreenRoad

Specializes in Mechanical Equipment and Robotic Platforms in Mine Clearance and IEDs

4MDEFENSE

Operational Mine Clearance Company

4MANALYTICS

Minefield Location Intelligence Solution

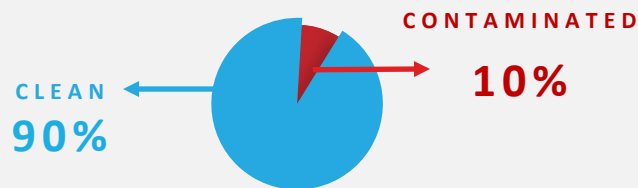




THE PROBLEM



50 BILLION SQM
100% Suspected Hazardous Area



But yet, **100%** of the area gets almost the same treatment

YEARS OF CLEARING
1100

COUNTRIES CONTAMINATED
62

PEOPLE GET KILLED ANNUALLY
2,000

ERW INJURIES EACH YEAR
15-20K

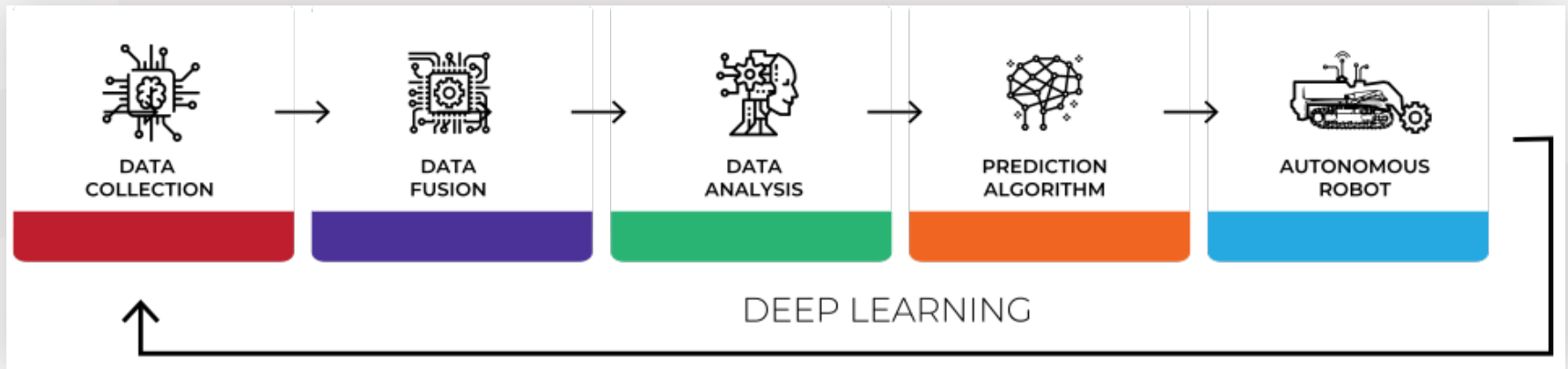
COST OF CLEARING
\$100 - \$150B





SAFER PLANET with YOU and AI

4M ANALYTICS SOLUTION



4M ANALYTICS KEY TEAM MEMBERS



ITZIK MALKA

CEO & Co-Founder

Former officer (Major) of the IDF. Serial entrepreneur



NIR COHEN

COO & Co-Founder

Former officer of the IDF. Serial entrepreneur



YOAV COHEN

CTO & Co-Founder

Former officer (Colonel), head of the Geospatial-Intelligence agency (9900)



DR DROR BEN AMI

Data Scientist
Team Leader

PhD in Mathematics.
Over 30 years experience in data science and Artificial Intelligence



ELI SMADAR

Software Architect

Aerospace Engineer.
Over 35 years experience working with data and software development



RAZ EZRA

Chief Product Officer

BA in business & computer science. Former officer (Captain) of the IDF and Project Manager

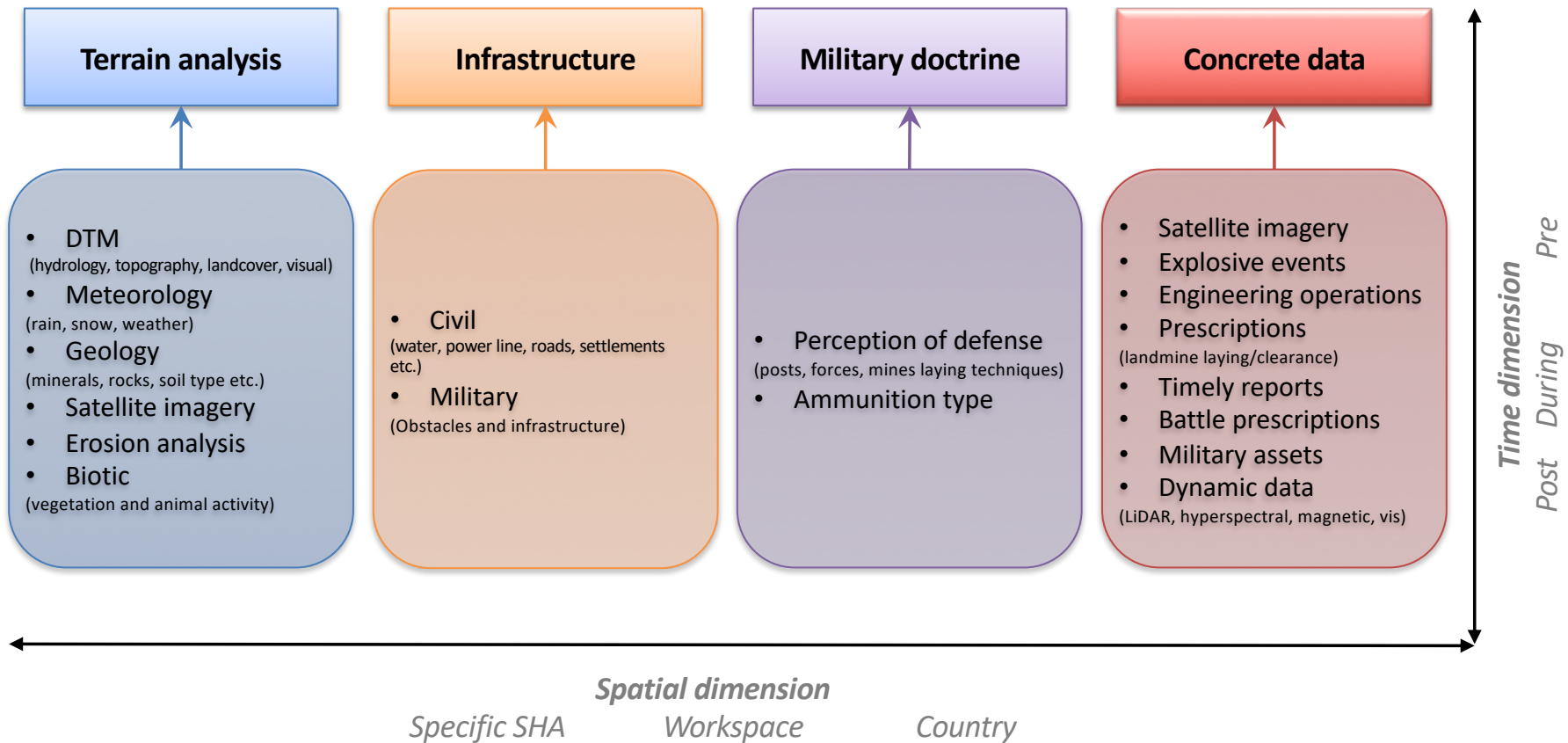


DR YOTAM PELED

Remote Sensing
Team Leader

PhD in Electrical Engineering.
Over 20 years experience in signal processing & data fusion

Data collection process

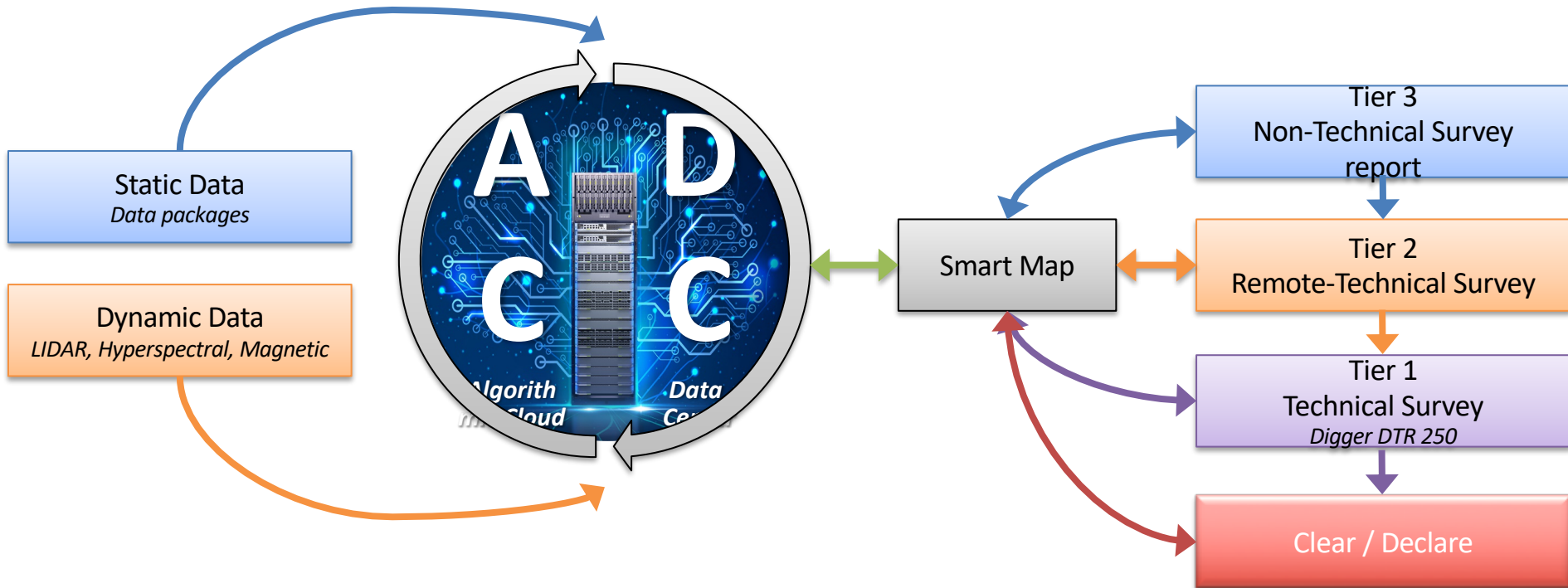


SYSTEM ARCHITECT

Input

Process

Product



CASE STUDY

THE GOLAN HEIGHTS

Current Numbers

100
YEARS



1B
Billion Dollars
TOTAL COST



100
Million SQM
SUSPECTED
HAZARD AREA



Our Numbers

5
YEARS

80M
Million Dollars
TOTAL COST

20
Million SQM
DEFINED
HAZARD AREA

-95%



-92%



-80%



-95%



5 YEARS

100 YEARS

-92%



80M\$

1B\$

-80%



20M SQM

100M SQM