NMSC's Data Dashboard

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Institute for Complex Additive Systems Analysis

NMSC Convening

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Overview

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INSTITUTE FOR COMPLEX ADDITIVE SYSTEMS ANALYSIS

Institute Overview

The Institute for Complex Additive Systems Analysis (ICASA)
- Created by NM Legislature in 2001, 21-11-8.1 NMSA, 1978
- Research Division of New Mexico Tech (NMT)
- Base funding via Research and Public Service Project (RPSP)

Mission: To serve as a pivotal research component of New Mexico Tech (NMT), focusing on the design and development of strategies for safeguarding critical infrastructures.

Vision: Empowering the next generation of critical thinkers to tackle the intricate challenges posed by an increasingly interconnected world.

Key Features:

- **Interdisciplinary Approach:** ICASA adopts a cross-discipline perspective to address complex issues.

- **Research Spectrum:** Our work encompasses both basic and applied research, along with software development

- **Support for Education:** We have provided support to over 200+ students, fostering their growth and development.

Recognition: ICASA holds legislative recognition as a RPSP. We engage in projects at the federal, national, international, and private-sector levels. Notably, RiskSense emerged as a spin-off from ICASA.

News Release
U.S. Sen. Pete Domenici & U.S. Rep. Joe Skeen

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FEBRUARY 7, 2001   (202) 224-7098
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DOMENICI & SKEEN: N.M. TECH TO LEAD NATIONAL SECURITY RESEARCH ON INFORMATION. INFRASTRUCTURE SYSTEMS

iCASA Will Be Unique Public-Private-Academic Venture

WASHINGTON -- U.S. Senator Pete Domenici and Congressman Joe Skeen, both R-N.M., today announced that a New Mexico university will host a new cooperative center whose national security work will serve to help protect U.S. computer, telecommunications or power systems vulnerable to failure or cyber attack.

Domenici and Skeen said the new **Institute for Complex Additive Systems Analysis (iCASA)** will be housed at the New Mexico Institute of Mining and Technology in Socorro, N.M. iCASA is a unique cooperative endeavor between the Defense Department, other federal agencies, academia and the private sector. It is funded through a $5 million appropriation secured by the two New Mexico lawmakers in the FY2001 Defense Appropriations Act.

iCASA will be dedicated to the analysis of complex interdependent systems, i.e., networks and critical infrastructures--electrical grids, water distribution systems, and the computer networks on which they rely. In addition to developing fundamental comprehension of large-scale systems, iCASA will also focus on training and education of future experts to deal with assuring the stability of interdependent systems in the United States.

"iCASA will begin addressing one of the most complex vulnerabilities facing the United States today. This is not the threat of mass destruction, but rather mass disruption. The unintended or deliberate disruption to any number of the daily functions upon which our military, as well as our economic prosperity, rely could be catastrophic," **Domenici** said.

"As public officials it is our responsibility to ensure that our national security and most critical information systems are safe from attacks. We must provide the necessary training and education to maintain the highest level of security for our information systems," **Skeen** said.

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Background

- Create a criminal justice data dashboard that is useful for both policy makers as well as the general public.

- Dashboard goals:
  - Implement as much of the Sequential Intercept Model (SIMs) as possible through available data
    - Utilizing 24 data sources across various databases
  - Provide insight into criminal justice trends in a dynamic and interactable method
  - Provide definitions for metrics and terms to help with accessibility as well as transparency

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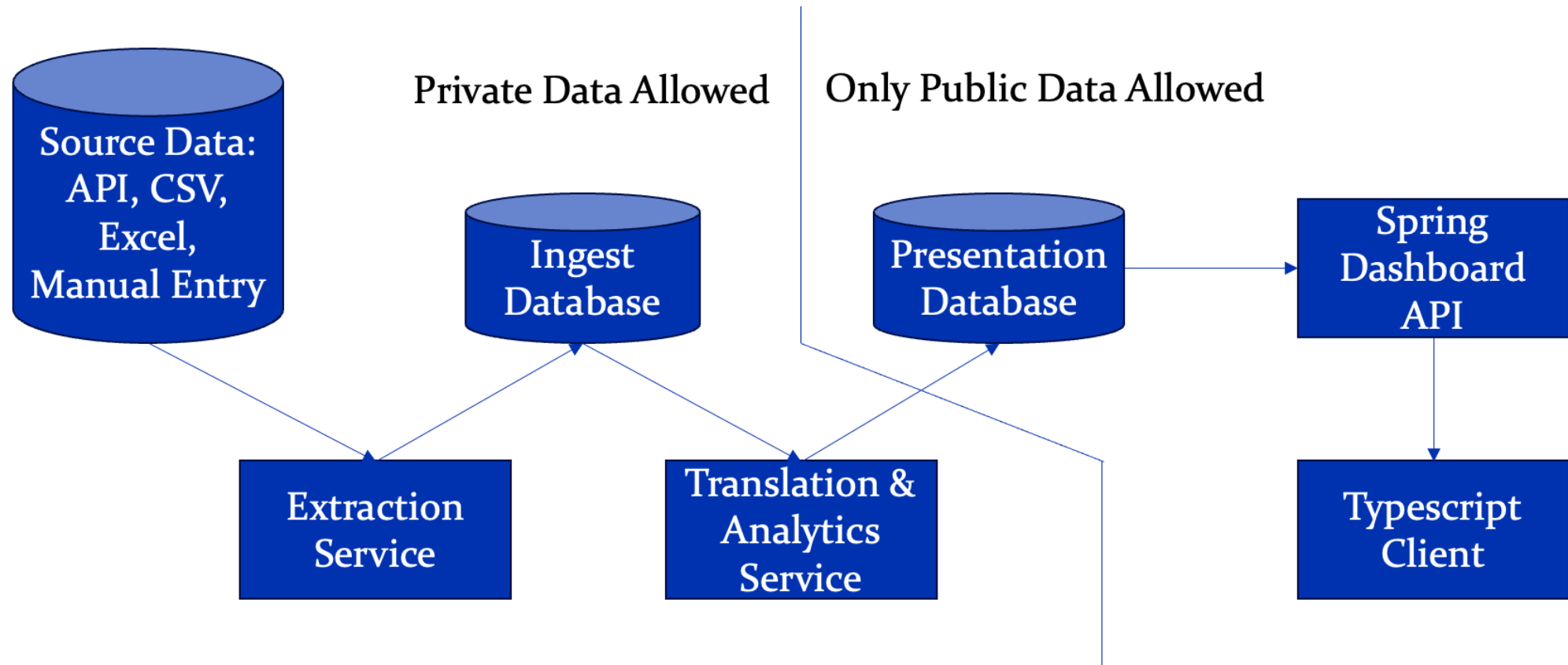INSTITUTE FOR COMPLEX ADDITIVE SYSTEMS ANALYSIS

Background: SIMs

- The SIMs details how individuals with mental and substance use disorders come into contact with criminal justice system.

- No behavioral health data so pivoted to create similar analytics with available data
  - using NMDX + other sources

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Design Overview

- Design philosophy aims to create a framework that:
  - Is easy to use and understand
  - Protects sensitive data from external use
  - Allows for easy integration of new data sources
  - Simplifies the creation of new visualizations
  - Provides mechanism for transparency on analytical methods

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Design Overview

Private Data Allowed | Only Public Data Allowed

Source Data: API, CSV, Excel, Manual Entry

Ingest Database

Presentation Database

Spring Dashboard API

Extraction Service

Translation & Analytics Service

Typescript Client

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Demo

Future Work

- Add more analytics and data sources
    - Potentially bring in more partners and their data

- Implement more cutting-edge research analytics
    - Find recent research papers and analytics from new criminal justice papers

- Finish UI tweaks for better usability
    - Feedback loop from users to tweak UI

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Conclusion

- Dashboard backend complete

- Robust visualization framework that allows for easy expansion

- Large portion of initial analytics implemented
  - More analytics to come

Dashboard in a good state and on-track to be deployed at the end of the fiscal year.

Questions?

- For follow up questions please reach out to:

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