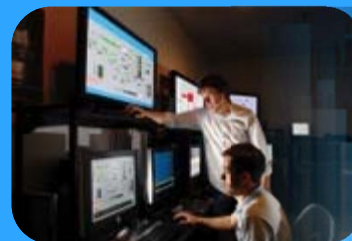


*Exceptional service  
in the national interest*



# Analytics for Sandia Knowledge (ASK)

NLIT Summit 2015



May 2015

## Joselyne Gallegos

Director, Information Solutions  
Sandia National Laboratories

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.



# What We'll Cover

- The Information Needs
- ASK Vision
- Elements of the Solution
  - **Data Governance**
  - **Technical Data Foundations**
  - **Analytic Services** providing new capabilities for the Sandia Enterprise:  
*Predictive Analytics, Expertise Identification,  
Natural Language Question & Answer*

# Sandia's Information Needs

**Worker:** I'm having trouble finding reliable information



**Analyst:** It takes too long to integrate the data that I need to meet this request



**Legal:** We must protect our proprietary and PII data

**Managers:** The numbers don't match across different sources

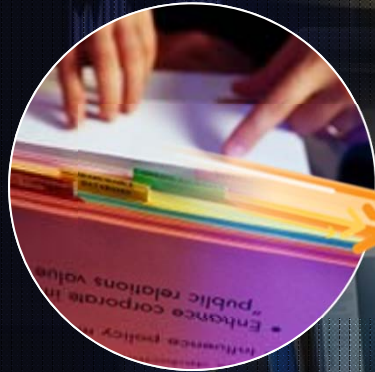


**Executives:** Analyses take too long I need to make a decision ... NOW

**Analyst:** I can't get authorization to access the data I need

# ASK Vision

*Enable timely, informed, and integrated decisions ....*

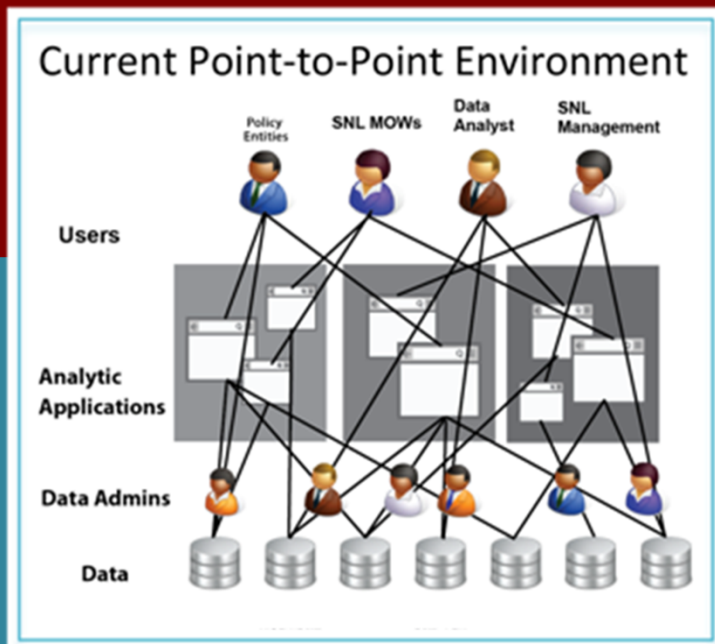


*...anytime, anywhere.*



# Achieving our vision is a multi-year journey

## Current State



## Future State

# Data Governance

## ASK Data Security & Policy Enforcement



CIO

## Data Governance & Integration Team

## Data Governance Council

## Sandia Directors

Lab Strategic Intent

New Request

Optional Participants

Data Governance Coordinator

Data Integration Professional

ASK Developers

Data SMEs

Functional SMEs

- Legal
- Human Resources
- Procurement
- Other Functional Areas

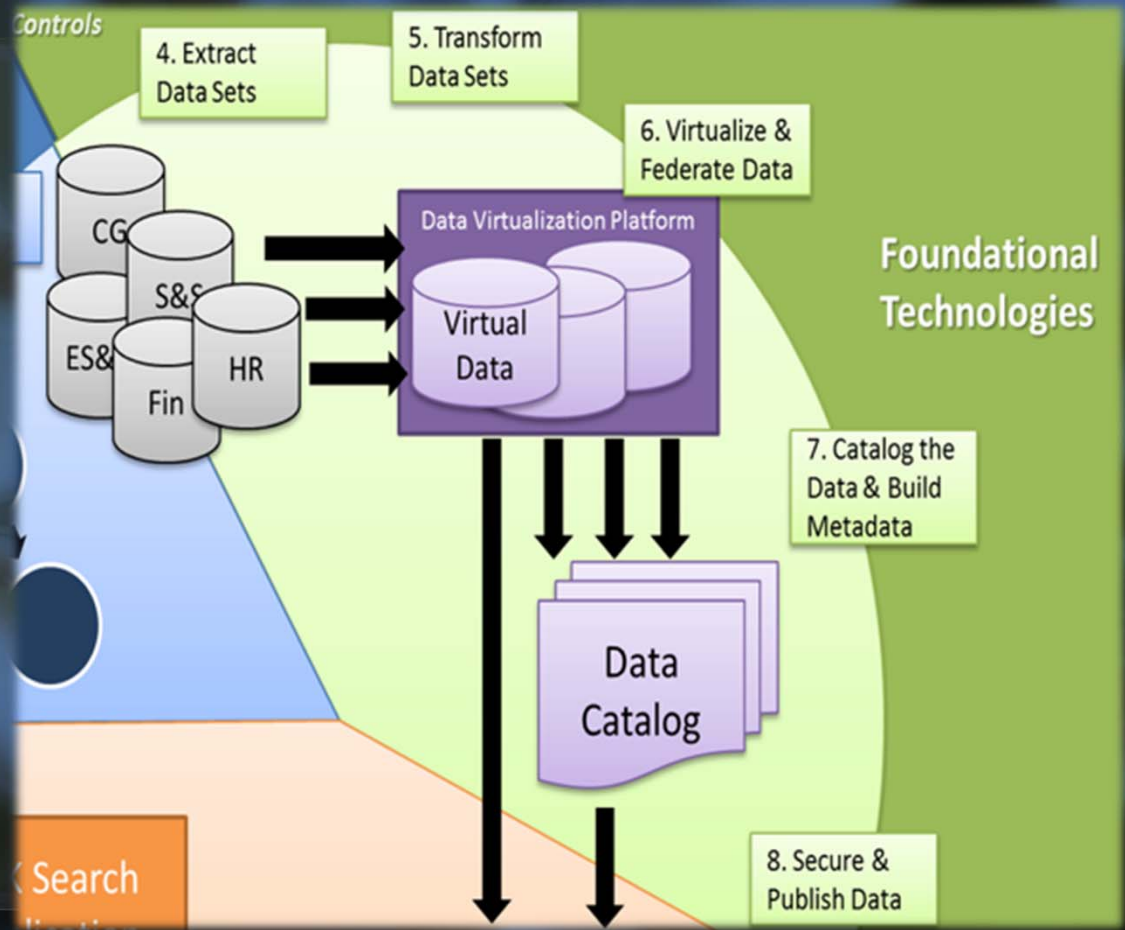
# Deliver Integrated Quality Data



## ASK Data Services

- Data Extraction
- Data Transformation
- Data Federation
- Data Virtualization\***
- Data Catalog\***
- Data Publication\***
- Published Data\***

\*New ASK Capabilities



# ASK Data Central for Data Scientists and Analysts

## *Browse and Download Data*

ASK | Analytics for Sandia Knowledge

Home / Data Scientist

## Data Central

Beta Release v0.1

*Data to your desktop. Your single point of access to corporate data sets.*

### Home

Learn more about ASK Data Central.

### Browse Data

Use Categories and Sub Categories to discover data sets.

◀ Continue Browsing

Download

### Characterization

UCI-Sensitive/PII

## Employee Award History

Historical information by fiscal month from FY 2010 to present. Record of non-base awards for active employees.

Field Name	Description	Type
fiscal_year	Fiscal Year	VARCHAR (4)

# Predictive Analytics

*FY14: Two Predictive Models Developed*  
*FY15: Predictive Models Implemented for Use*



In the next 6 months ...

What is the risk

That Sandia organizations  
will experience

High consequence  
incidents?



## **IMPACT**

Sandia's assurance  
approaches become proactive

# ASK Expertise Identification

Always Current - Self Maintaining

SKILLS →  
SAND →  
LDD →

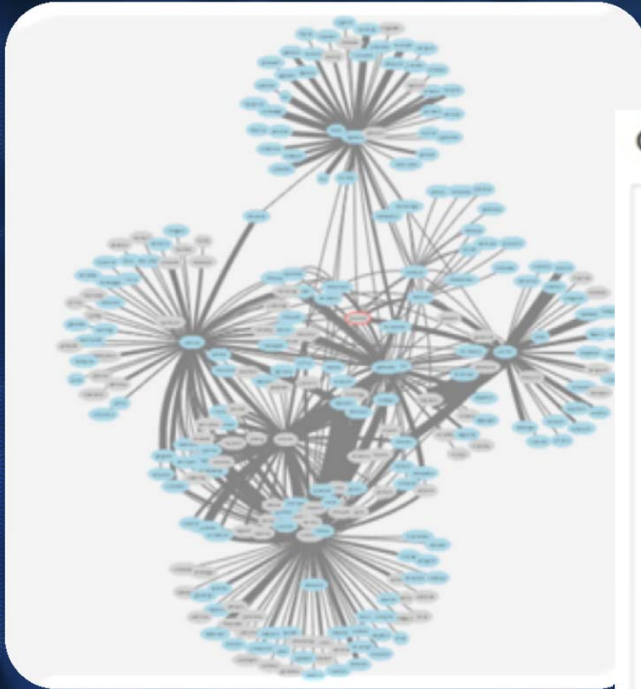


Find an Expert 



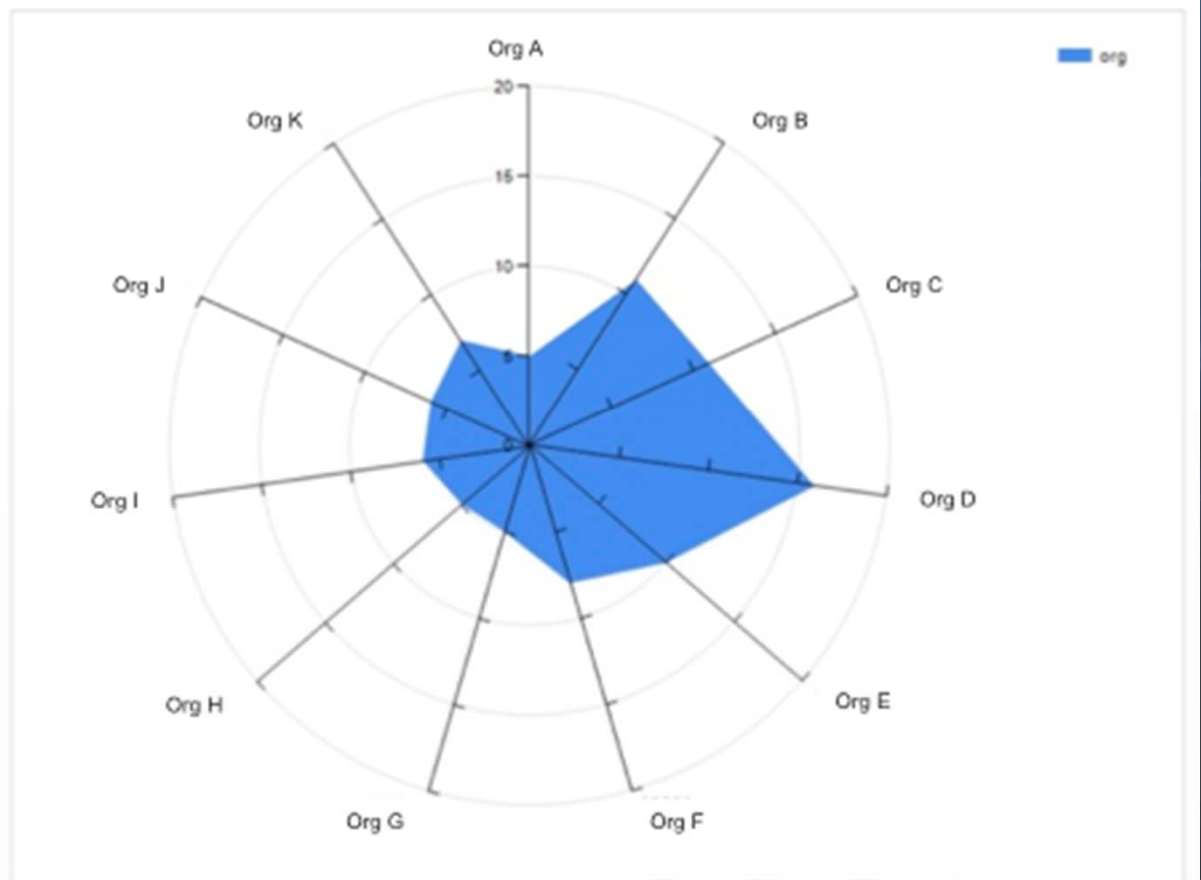
# ASK Expertise Identification

*Co-Author Network Graph*

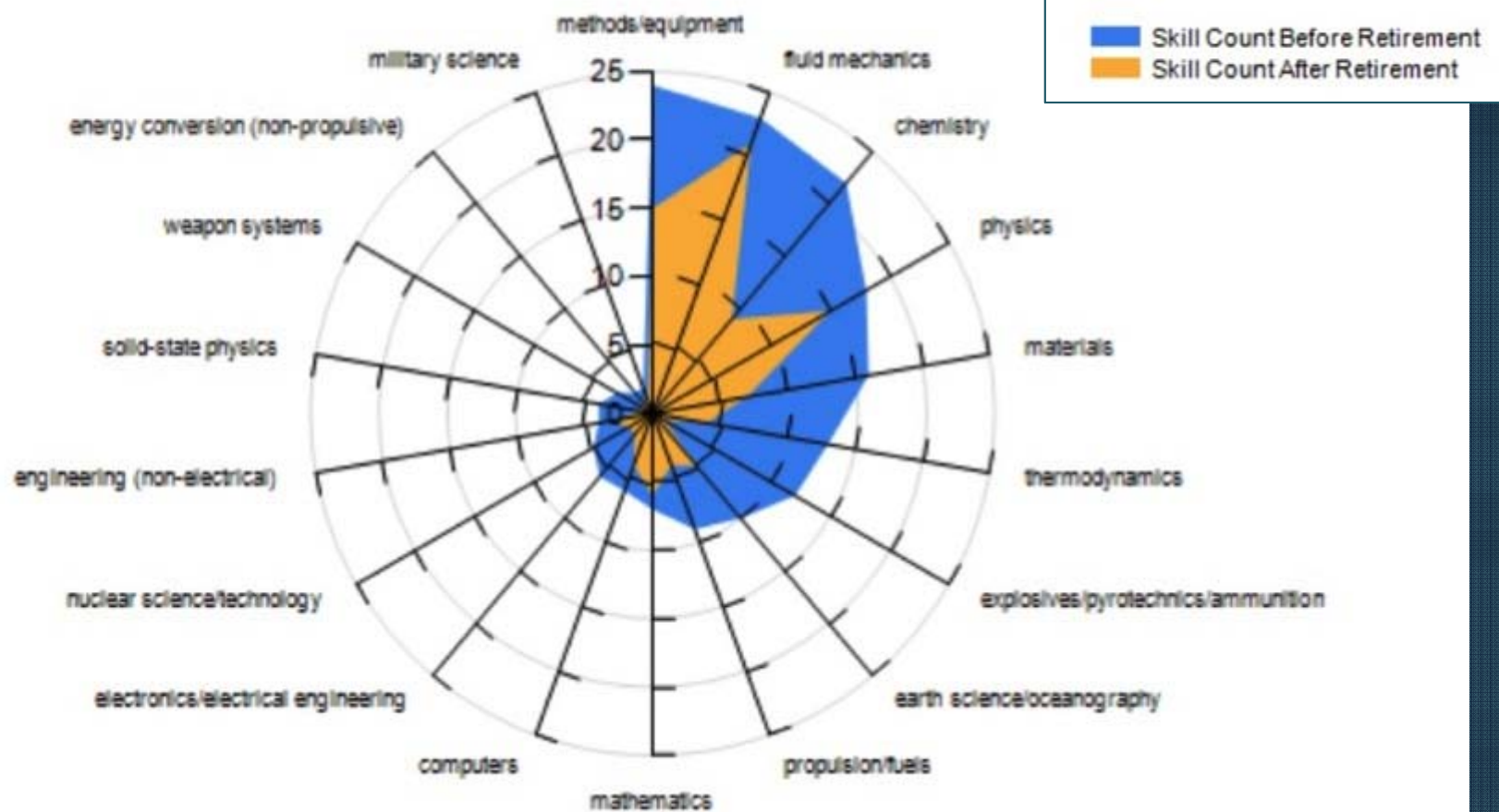


*Organizational Expertise*

Orgs with Expertise in 'thermodynamics' by Number of References



# Loss of expertise in an organization due to retirement



# ASK Natural Language Question & Answer

I would like to know....



Expertise Data  
Person Data  
HR Data



## We will be able to answer questions like...

“How many employees who graduated with a masters degree from University X in the last 10 years have expertise in cybersecurity and what organizations are they working in?”



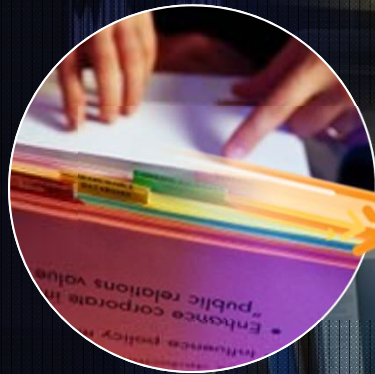
5 employees from University X  
have expertise in cybersecurity  
and are working in Center 123.

2 employees from University X  
have expertise in cybersecurity  
and are working in Center 456.



# ASK Vision

*Enable timely, informed, and integrated decisions ....*



*...anytime, anywhere.*

