SAND2015-3190C

Sandia National Laboratories

A Journey to a Common Engineering Environment

National Laboratories Information Technology

NLIT Summit 2015

Karen S. Current

Manager, CIO Relationship Management

kscurre@sandia.gov

Philip Kuhlman

Business Relationship Management Lead

pskuhlm@sandia.gov

Sandia National Laboratories

Exceptional service in the national interest

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.

UNCLASSIFIED

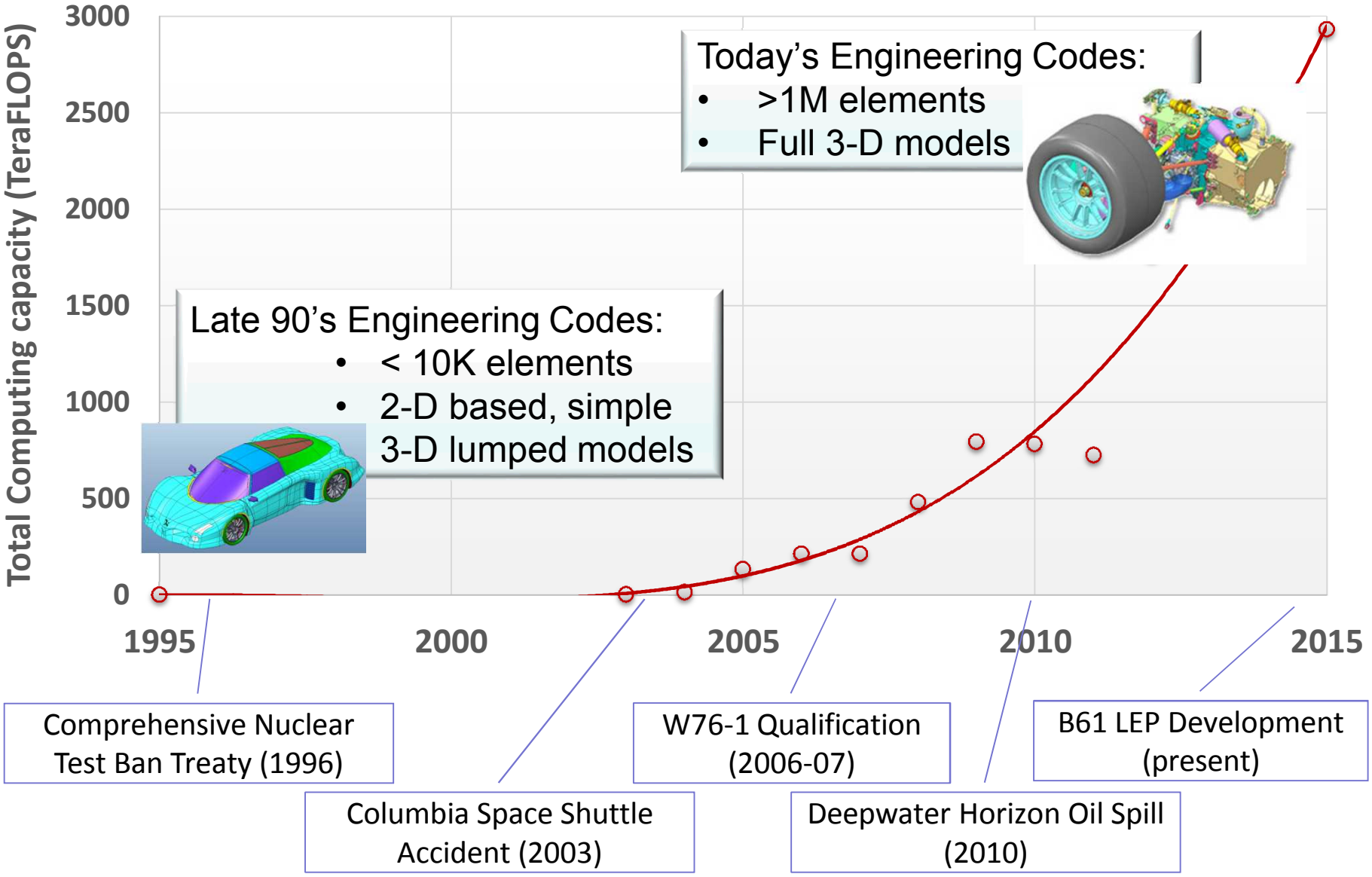
Discussion Topics

Common Engineering Environment (CEE) at Sandia

- How did we get here?
- Enduring Corporate Strategy
- Goals
- What is CEE?
- Stakeholders
- View into CEE
- Next Steps

How did we get here? Technology

Sandia National Laboratories

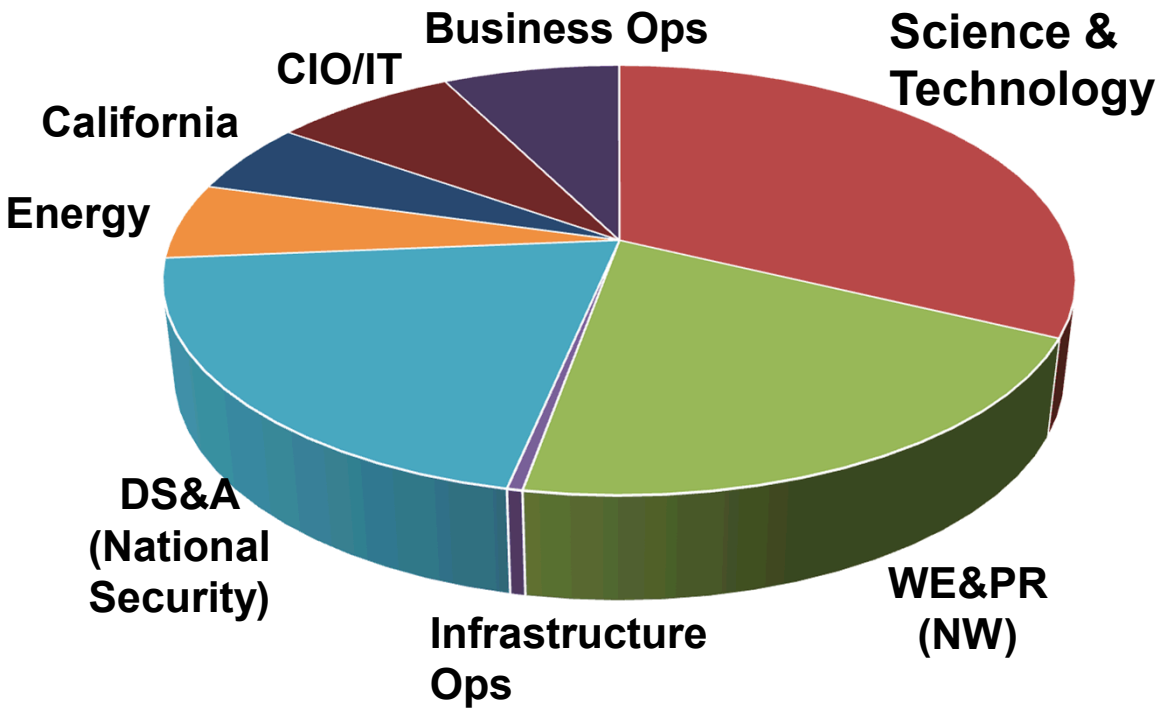


CEE Project in Central Computing

- In existence for 4+ years (previously known as ESHPC)
- Genesis of the Corporate CEE
- Supports Sandia Strategic Goal to implement a CEE
  - Engaged with Comp Sim community, CIO's office, Mission Integration and corporate CEESC

- Seamless and ubiquitous access to engineering capabilities and their support.
- Integrated services: engineering apps, graphical workstations, virtual desktops, data storage, HPC.
- Subscription-based menu of services for each supported Sandia environment.

Breakdown of Service Subscriptions



Serving ~20% of Sandia's workforce

Total # of Unique Customers = 2051

Total # of Subscribed Accounts = 8843

How did we get here? Culture/External

Sandia National Laboratories

2005 — Top Down

- CEE proposed for engineering tools (2007)
- Product Lifecycle Management (2008)
- Mission Execution Policy (2008)
- Genesis of CEE Tools Packages (2008)
- SAMS rollout (2009)

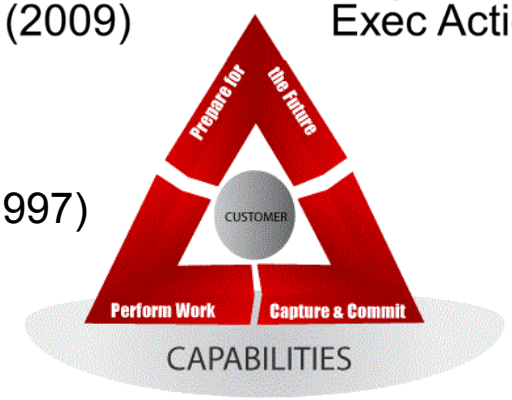
2010 — Bottom Up

- Demand-based CEE Tools offerings (2009)
- sEPM (2009)
- PLM/ME program terminated (2011)
- ECAD Toolset Exec Action (2011)
- Engr Tools Ownership Exec Action (2012)

2015 — Perfect Storm

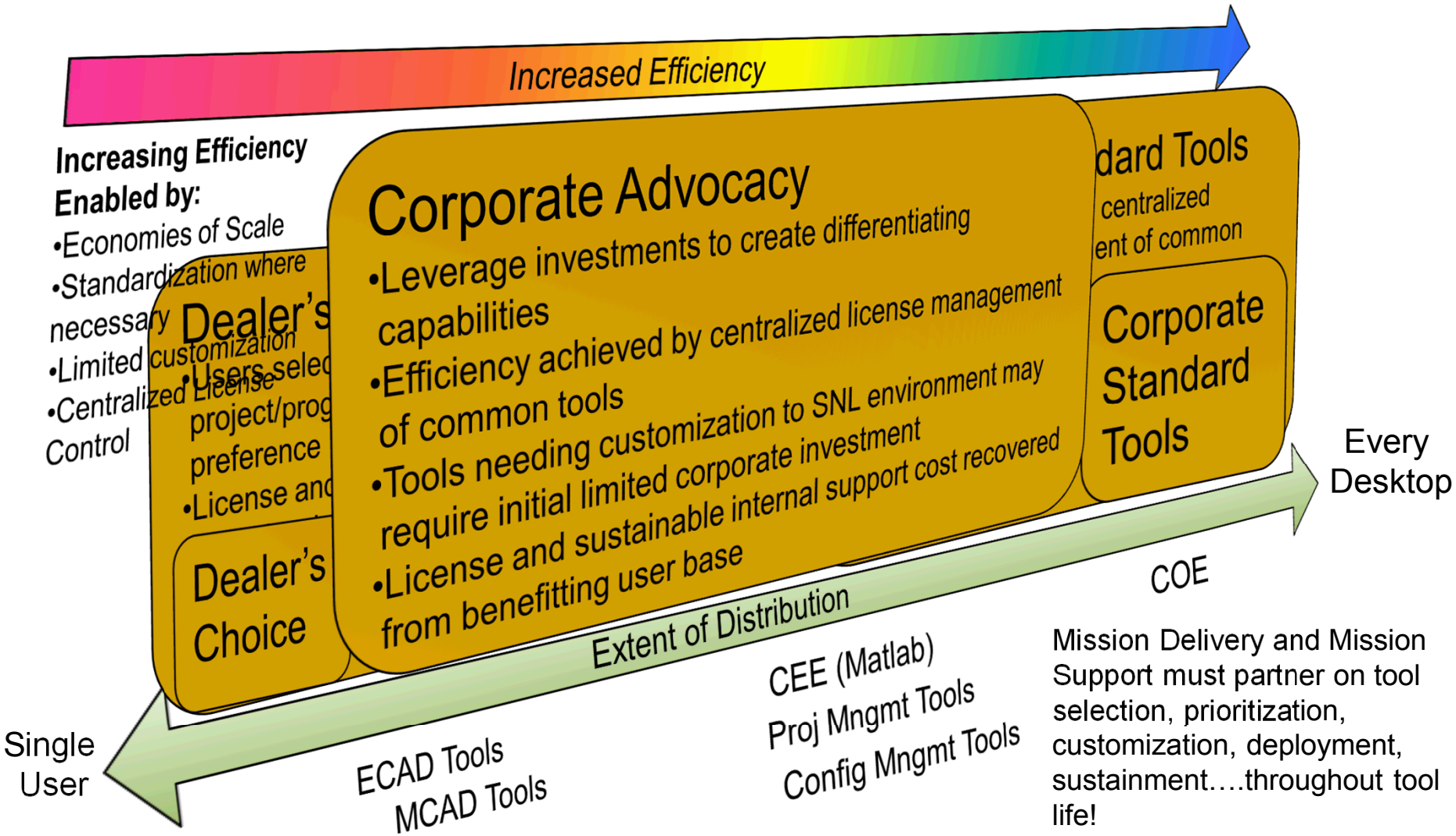
- Strategic Objectives (2012-15)
  - CEE
  - Quality/Project Framework
- CEESC created (2012)
- EVM (2013)
- CEE Portal Launch (2014)

COE genesis (1997)

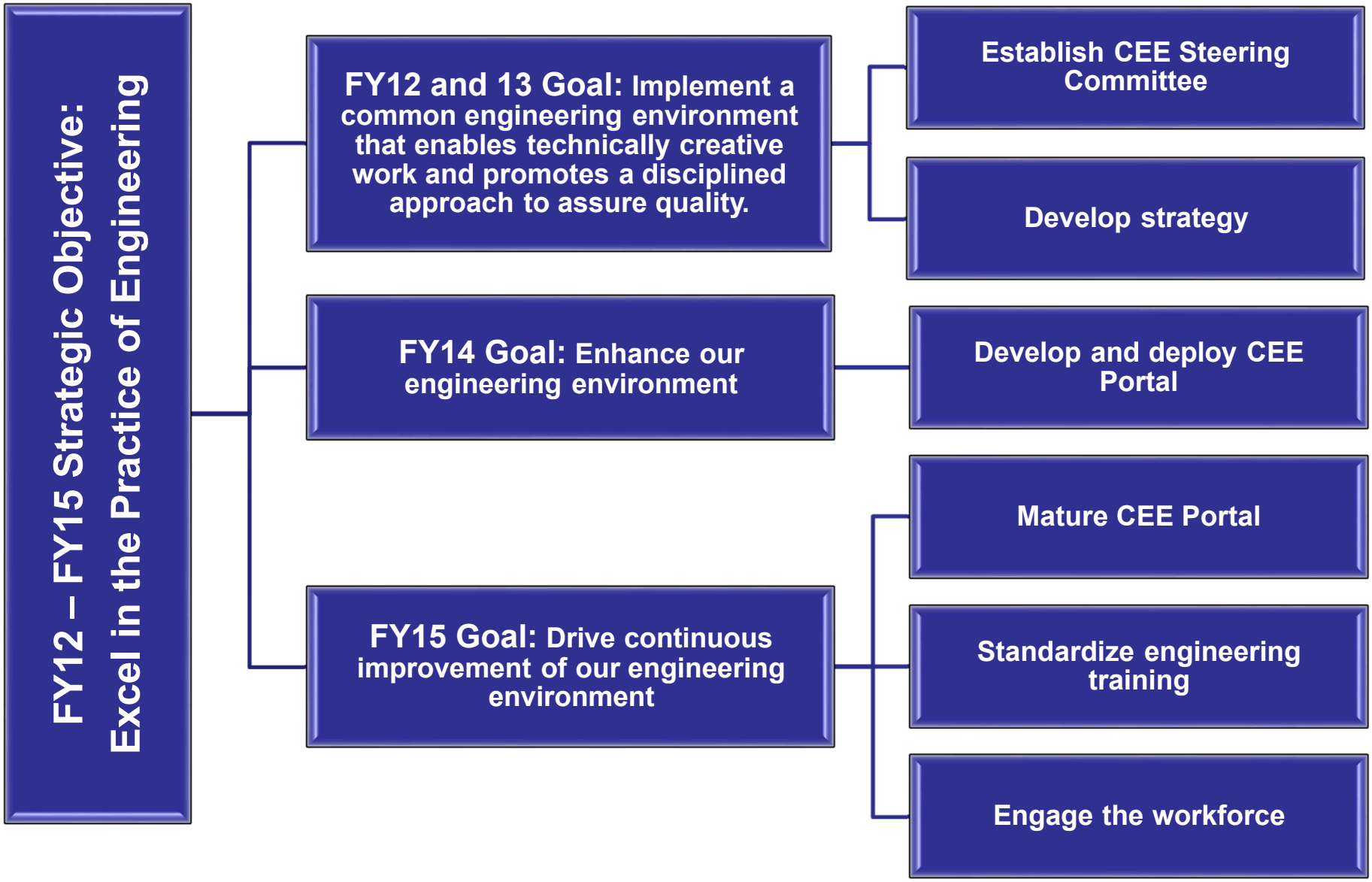


Sustainment Models for Commercial Tools Supporting Mission Delivery

Sandia National Laboratories



CEE Maps to Corporate Strategy



CEE Steering Committee

Comprised of Directors representing business and mission areas across the Laboratory

- **Nuclear Weapons**
- **Defense Systems & Assessments**
- **Energy and Climate**
- **International, Homeland and Nuclear Security**
- **Science and Technology / CTO**
- **Information Technology Services / CIO**
- **Mission Integration**
- **Mission Support (CFO, ES&H, HR, etc.)**
- **Sandia California Site**

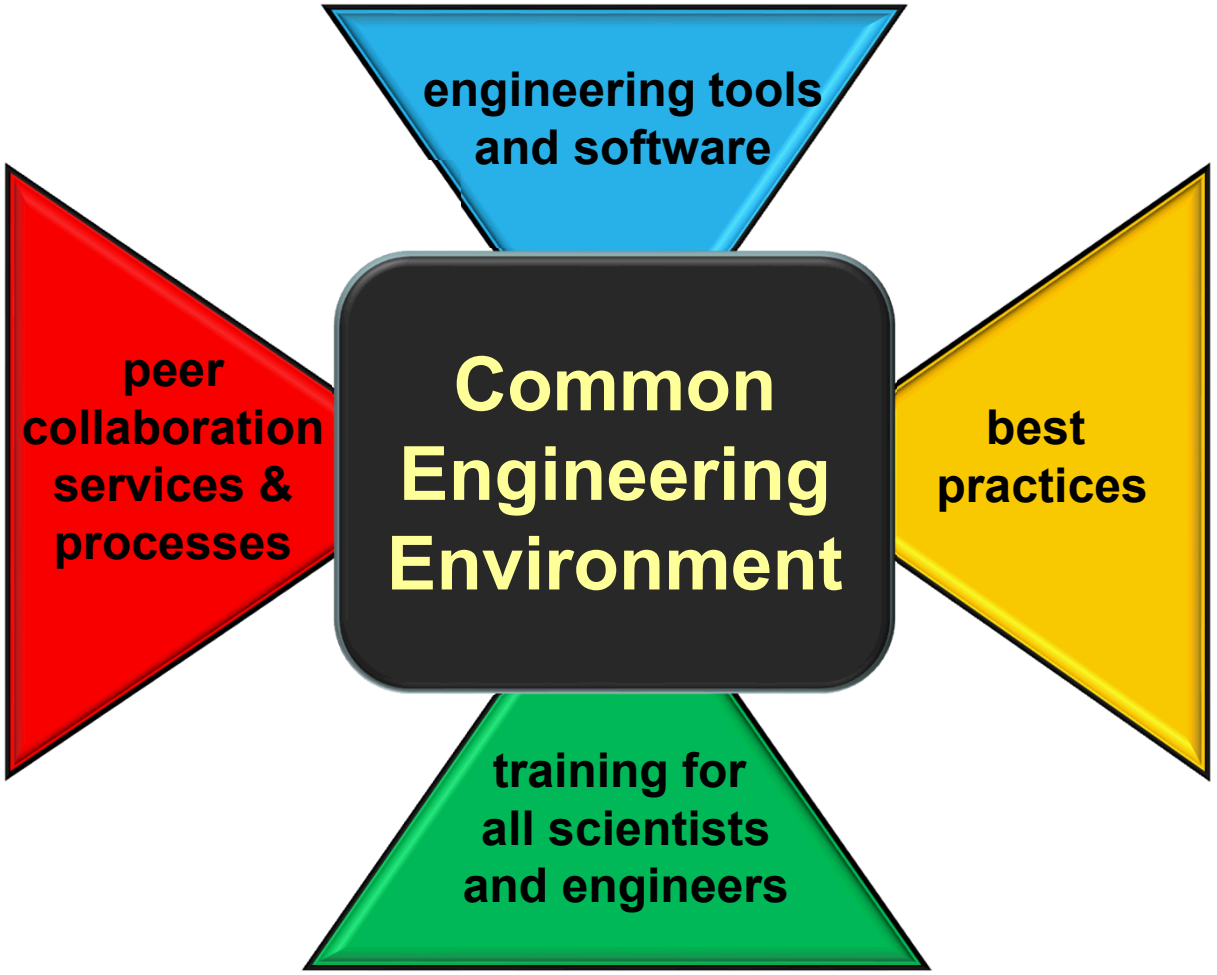
Why Do We Need CEE?

Because without the right tools you may not get the best results.
A Common Engineering Environment (CEE) will help you to:

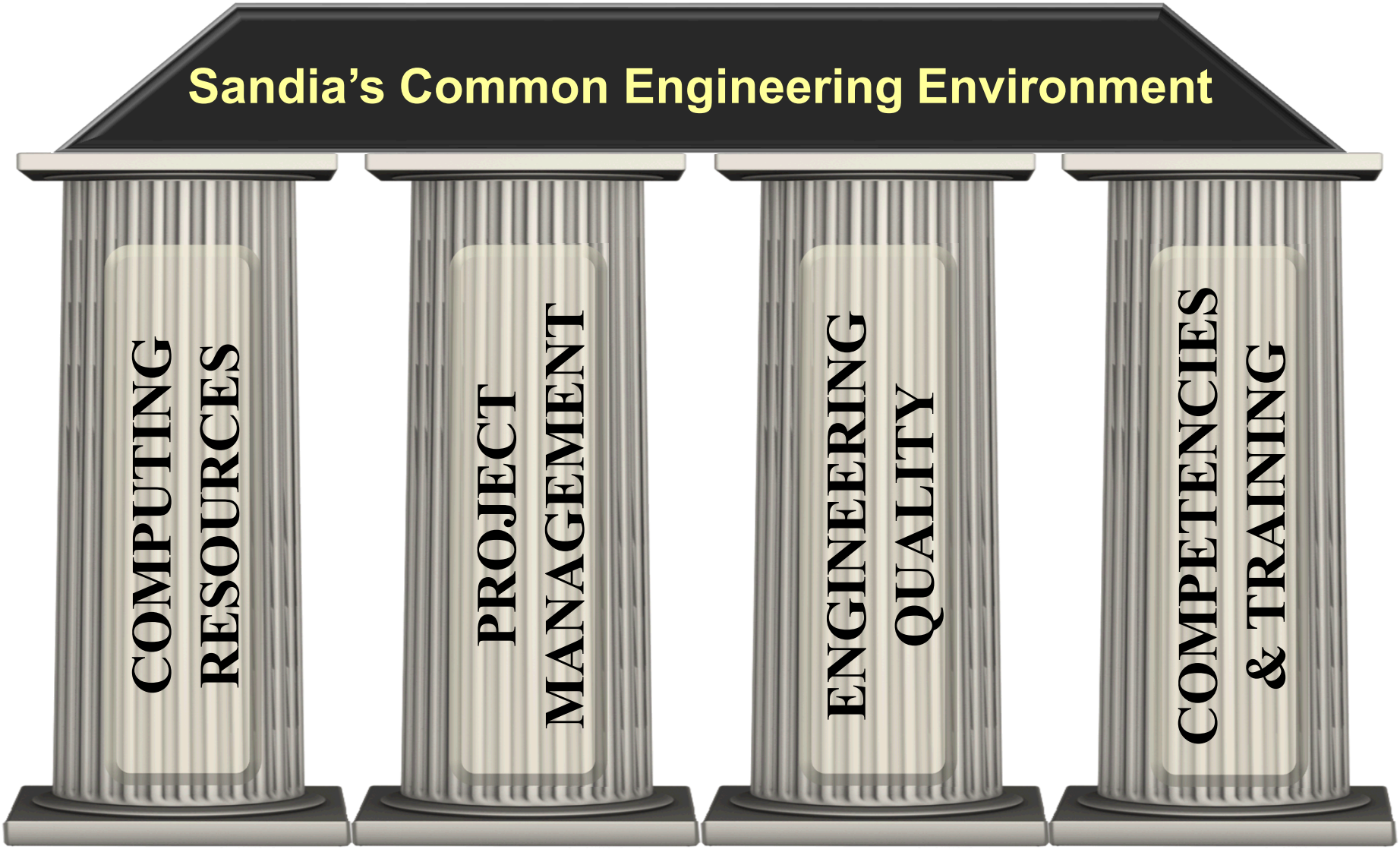
- **excel in the practice of engineering**
- **improve systematic quality approaches through consistency in processes, practices and tools in critical areas such as configuration management, risk management, and project management**
- **realize cost savings through corporate tool purchases including multi-user licenses**
- **enable flexible workforce mobility with common engineering skills**

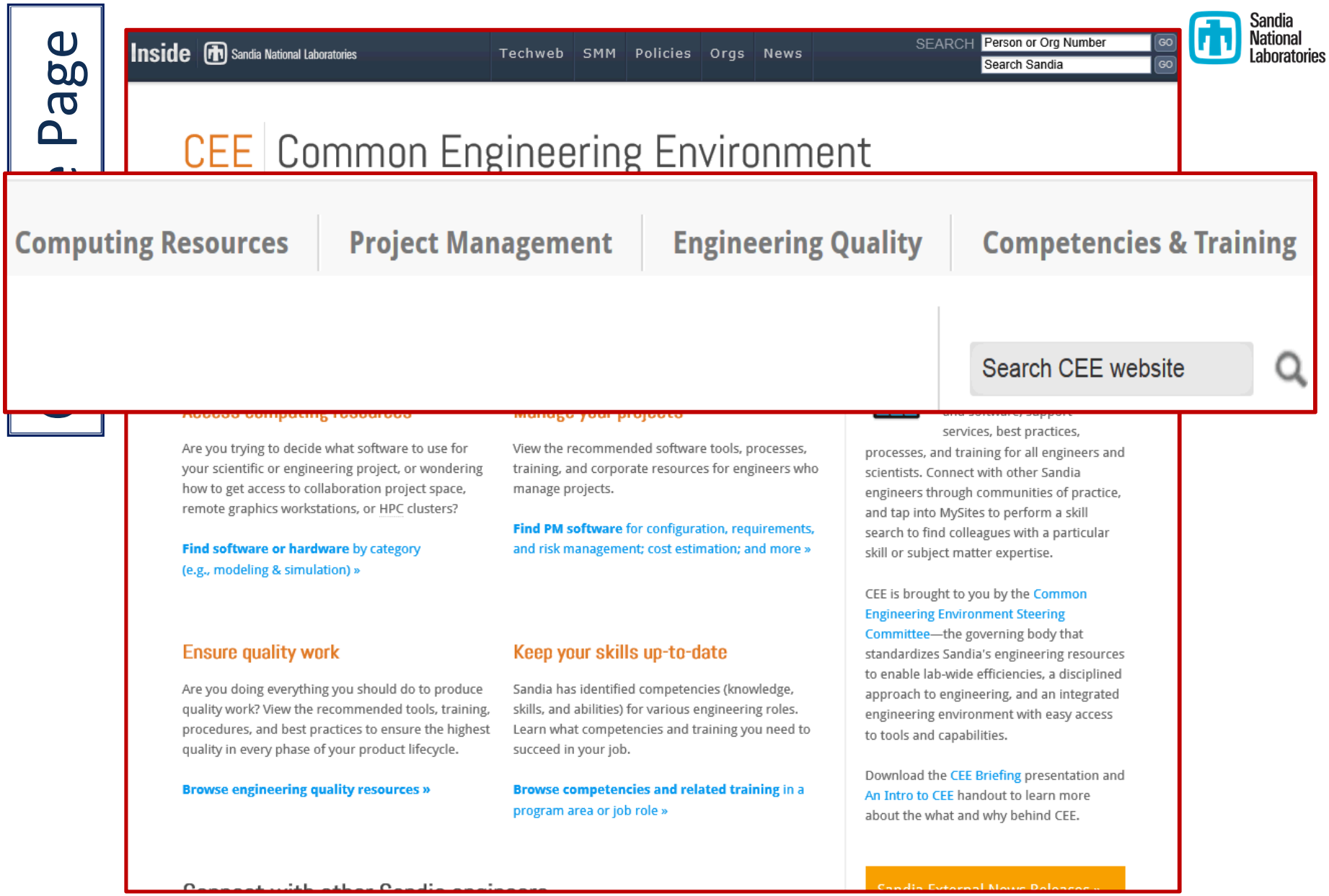
What is CEE?

It's a resource for all engineers and scientists!



Foundation Based on Four Pillars




Inside
Sandia National Laboratories
Techweb
SMM
Policies
Orgs
News
SEARCH
Person or Org Number
GO
Search Sandia
GO
CEE
Common Engineering Environment
Computing Resources
Project Management
Engineering Quality
Competencies & Training
Search CEE website
Are you trying to decide what software to use for your scientific or engineering project, or wondering how to get access to collaboration project space, remote graphics workstations, or HPC clusters?
Find software or hardware by category (e.g., modeling & simulation) »
View the recommended software tools, processes, training, and corporate resources for engineers who manage projects.
Find PM software for configuration, requirements, and risk management; cost estimation; and more »
Ensure quality work
Are you doing everything you should do to produce quality work? View the recommended tools, training, procedures, and best practices to ensure the highest quality in every phase of your product lifecycle.
Browse engineering quality resources »
Keep your skills up-to-date
Sandia has identified competencies (knowledge, skills, and abilities) for various engineering roles. Learn what competencies and training you need to succeed in your job.
Browse competencies and related training in a program area or job role »
services, best practices, processes, and training for all engineers and scientists. Connect with other Sandia engineers through communities of practice, and tap into MySites to perform a skill search to find colleagues with a particular skill or subject matter expertise.
CEE is brought to you by the Common Engineering Environment Steering Committee—the governing body that standardizes Sandia's engineering resources to enable lab-wide efficiencies, a disciplined approach to engineering, and an integrated engineering environment with easy access to tools and capabilities.
Download the CEE Briefing presentation and An Intro to CEE handout to learn more about the what and why behind CEE.

Peer Connect

Sandia National Laboratories

COMMUNITIES OF PRAC

Explore these communities of
with other Sandia engineers w
who are doing similar work:

- **Software Quality Imple**
- **User Experience** Comm

Get the word out about yo
of practice

Is there a community of pract
share with the Sandia enginee
Let us know.

Developed by
Corporate Web Design and Development Services

For Technical Assistance
CCHD | (505) 845-CCHD

EXPERTISE FINDER

Need to find someone with a particular skill or subject matter expertise?

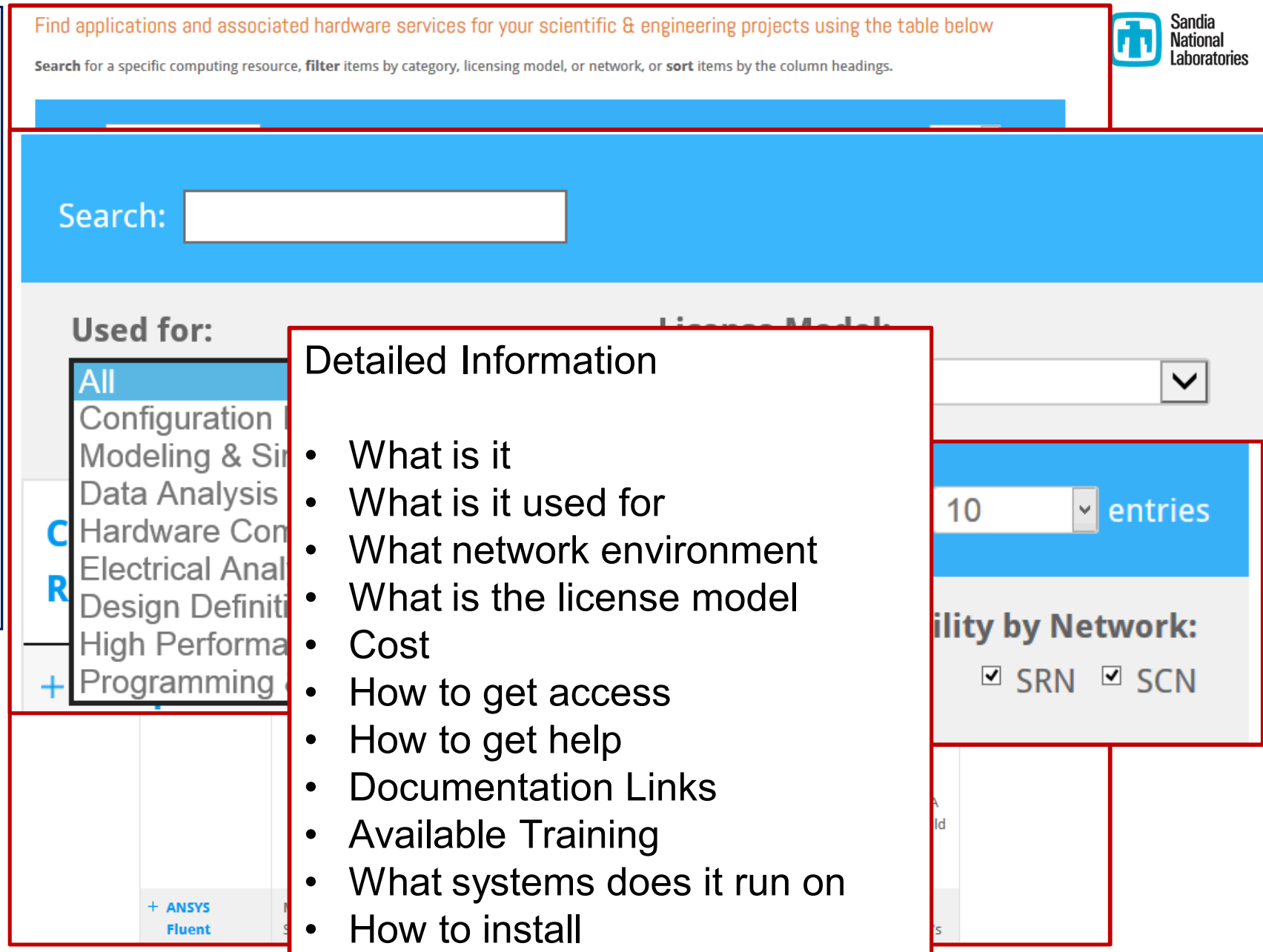
Search MySite profiles by entering a skill or field of expertise below (e.g., MatLab):
(**TIP:** Fill out your MySite profile if you want to be found.)

CIO Relationship Management | Search

Current, Karen S
Manager, Information Systems Engineering
09012 | CIO Relationship Management
Ask me about: **CIO Relationship Management**, IT to enable mission needs...
+ Show more info

Kuhlman, Philip S
Solutions Architect
09012 | CIO Relationship Management
Ask me about: **CIO Relationship Management**, IT to enable mission needs, CEE Portal...
+ Show more info

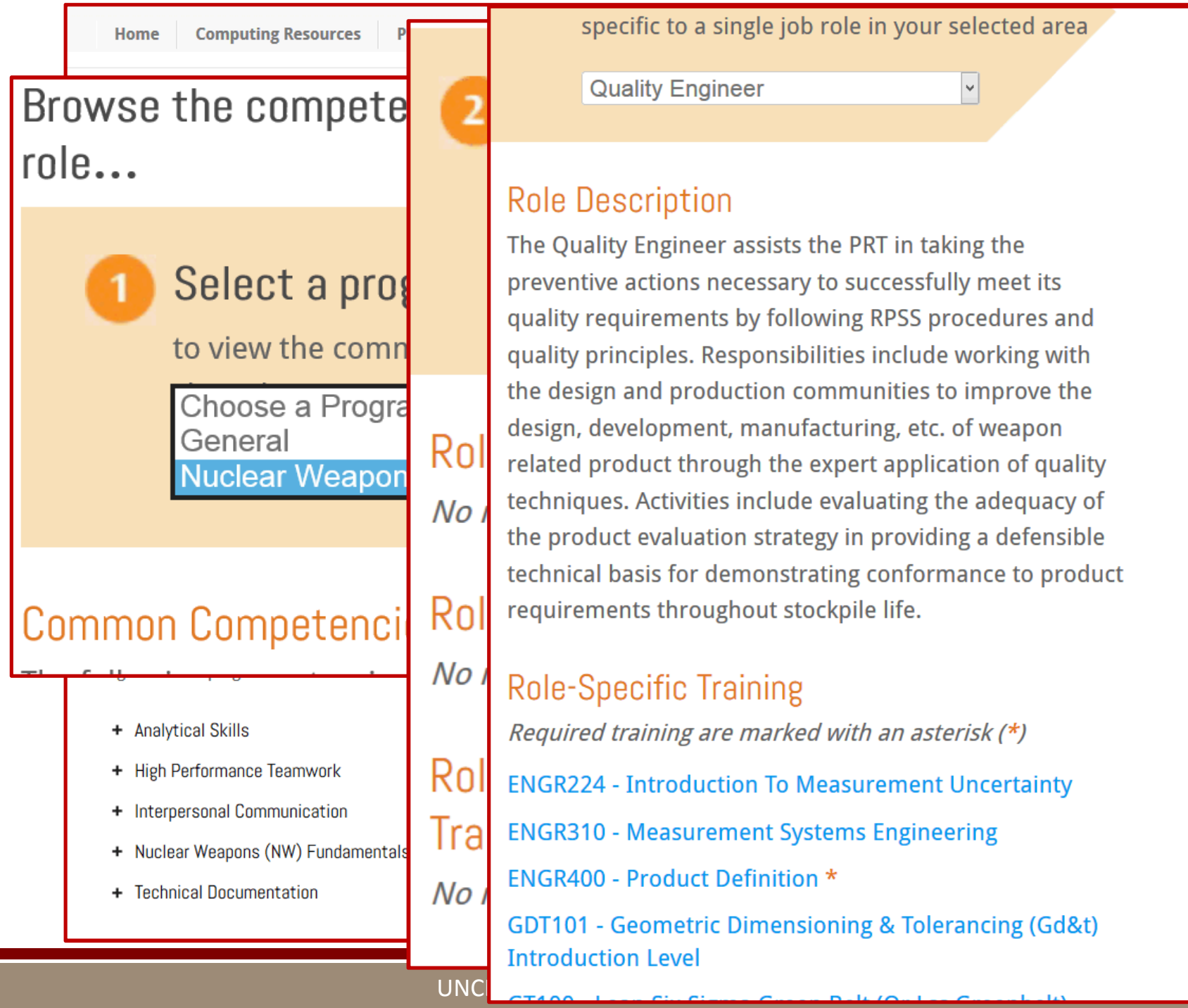
Computing Resources



Detailed Information

- What is it
- What is it used for
- What network environment
- What is the license model
- Cost
- How to get access
- How to get help
- Documentation Links
- Available Training
- What systems does it run on
- How to install

Competencies and Training



CS

Connect with other Sandia engineers

COMMUNITIES OF PRACTICE

EXPERTISE FINDER

Sandia External News Releases »

See the latest science, technology, and engineering news at Sandia

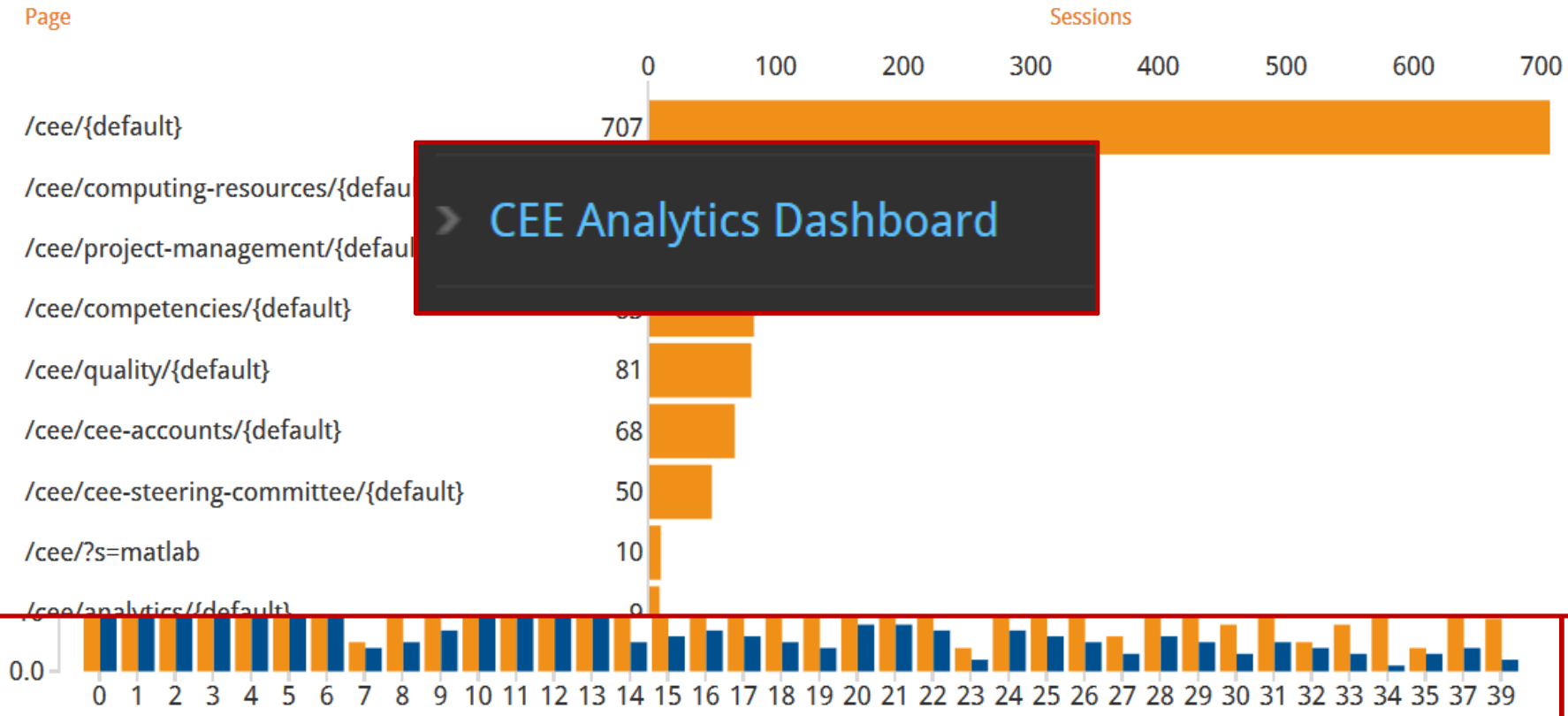
Sandia National Laboratories

VISITOR DEMOGRAPHICS

Yrs of Service | Job Title | Division | Center | Site Location

TRAFFIC

Top Pages | Visitors | Pageviews | Browser | OS



CEE Analytics Dashboard

Metrics

Sandia National Laboratories

1951 unique visitors (Oct. 1, 2014 – Apr. 10, 2015)
Q1: 1084 unique visitors Q2: 630 additional new visitors

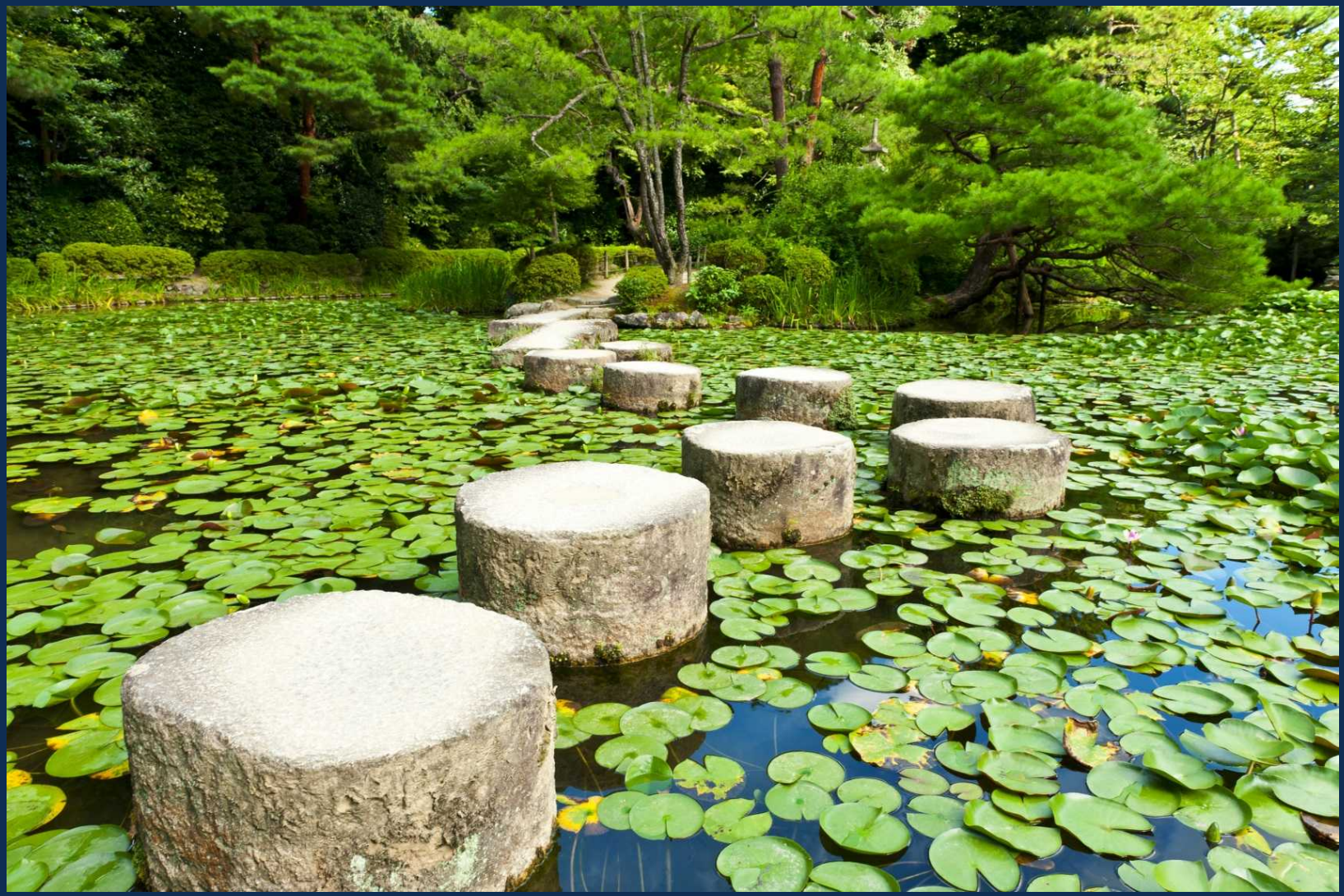
Division	% of unique visitors
1000	19%
2000	24%
5000	14%
6000	8%
8000	8%
9000	13%
Other	14%

Years of Service	% of unique visitors
0-5	37%
6-10	12%
10-15	17%
16-20	9%
20-25	8%
25-30	8%
>30	9%

Job Description	% of unique visitors
R&D Mech Eng	12%
R&D Comp Sci	8%
R&D Sys Eng	6%
R&D Electrical Eng	6%
R&D Electronics Eng	4%
R&D Other	21%
Non R&D	43%

52% increase in sustained usage after CEE was added to TechWeb homepage

Next Steps



IT Next Steps

- **Configuration Management Strategy**
  - What tools should be used for what purposes
- **License services integration**
  - Consistency in provisioning services
- **Tools survey**
  - Next tools?
- **CEE Portal improvements**
  - User feedback (filtering, inclusion, usability)
  - Content management (distributed providers)
    - Duplication
    - Provider interface

Future Indicators of Efficiencies

Sandia National Laboratories

CEE KPIs

- Ease of access and individual customer demand
- Customer usage and total demand
- Completeness of the suite of tools available versus others that may be needed
- Centralization versus staff owned/supported

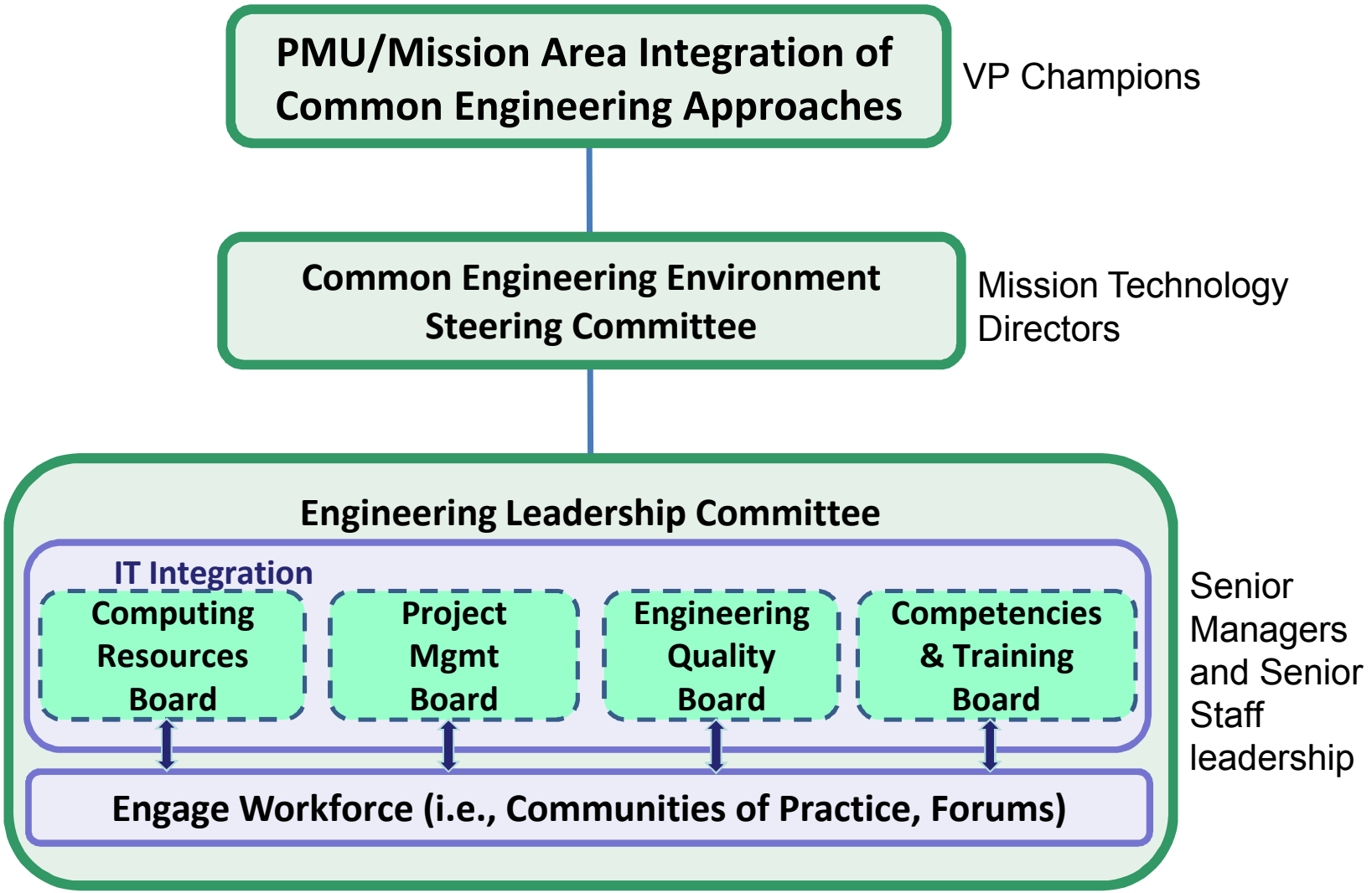
Resultant Metrics

- Number of CEE downloads
- Number of shared licenses
- Trend of non-CEE licenses purchased through SAMS
- Cost avoidance estimate

Causal Metrics

- What's available and what is being used that is available:
  - Preferred engineering best practices
  - Processes
  - Training Courses
  - CEE Tools
  - CEE software tools
  - Support services

Proposed Structure for CEE Sustainment



Sandia National Laboratories