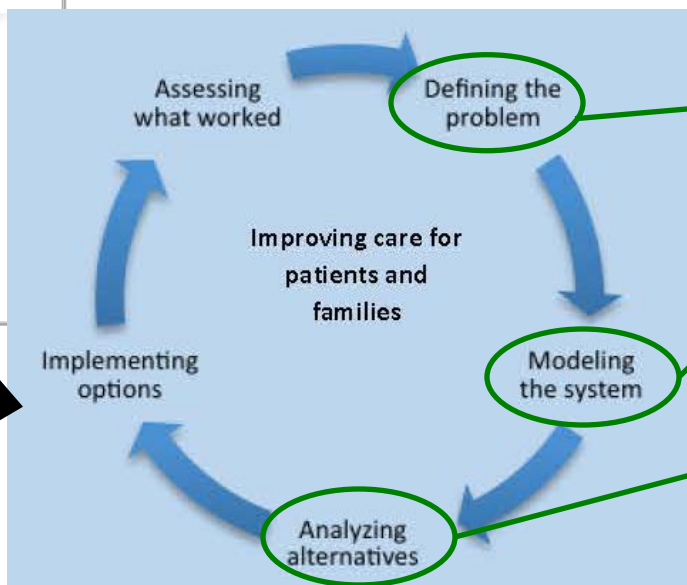# Modeling for a Healthy Future

The overall goal is to gather information to direct, and ensure value-add of, INCOSE activities with respect to alignment with the recommendations of May 2014 PCAST report.

<u>From the PCAST Executive Summary:</u> *"Other industries have used a range of systems-engineering approaches to reduce waste and increase reliability, and health care could benefit from adopting some of these approaches. … Notwithstanding the instances in which these methods and techniques have been applied successfully, **they remain underutilized throughout the broader system**."*

REPORT TO THE PRESIDENT
BETTER HEALTH CARE AND LOWER COSTS:
ACCELERATING IMPROVEMENT THROUGH
SYSTEMS ENGINEERING

Executive Office of the President
President's Council of Advisors on
Science and Technology

May 2014

Assessing what worked · Defining the problem · Modeling the system · Analyzing alternatives · Implementing options — Improving care for patients and families

- <u>Session 1. Stakeholder Needs</u> – what do healthcare delivery organizations believe are the high payoff applications of the systems approach?

- <u>Session 2. Capabilities</u> – what are the key tools systems engineers can bring to bear to meet stakeholder needs?

- <u>Session 3. Application Context</u> – what approaches should the systems engineering profession pursue to improve healthcare delivery?

This workshop will not solve any problems. It is intended to start the process of defining the terrain of problems from a systems engineering perspective so that INCOSE (as an organization and as a collection of individuals) can better understand how systems engineering can contribute.

Outcomes

- Initiatives *INCOSE could pursue* to contribute to application of systems engineering to improving healthcare
  - **Form partnerships with key professional organizations & flagship institutions to capture opportunities of common interests [9]**
  - (*Apply or enhance tools for*) SE for medical devices [5]
  - **Translate SE principles into healthcare terminology** (*to explain SE to healthcare professionals/to create appropriate CME for MDs, RNs, …*) **[7]**
  - (*Apply or enhance tools to address*) Patient Safety / Risk Management (*in healthcare provider organizations*) [4]
  - (*Apply or enhance tools for*) SPC and data characteristics [3] (*to enable big data analysis/evidence-based medicine*)
  - Make use of M&S + visualizations to communicate impact of systems engineering/systems approach [2]
  - (*Apply SE methods to show*) How to integrate computer aided diagnosis/clinical decision support into the overall health delivery process [3]
  - (*Apply*) **MBSE (architecting & streamlining)** (*to build SE models*) **of specific depts (e.g., OR, ED, pharmacy) – reference architectures [7]**
  - Documenting "good" practices (*for safe, efficient, effective healthcare and for applying SE methods to healthcare*) [3]