

# EICUG Plans for the NSAC LRP

Thomas Ullrich on behalf of the  
EICUG LRP Task Force

Electron-Ion Collider

# EICUG Long Range Plan Task Force

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- Olga Evdokimov...



- Marco Radici....



- Renee Fatemi.....



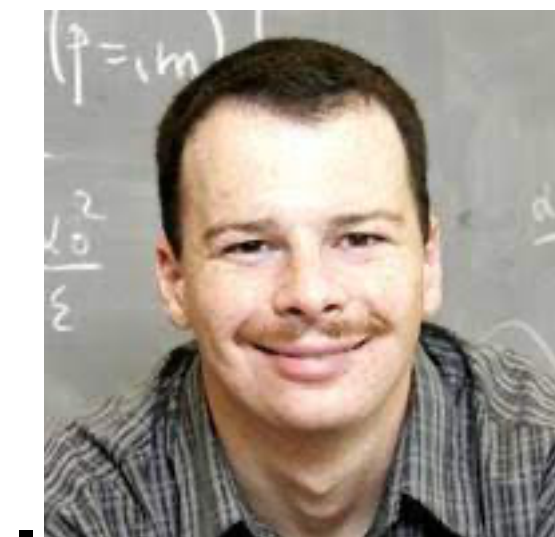
- Thomas Ullrich..



- Tanja Horn.....



- Yuri Kovchegov.....



# What is NSAC?

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- NSAC is an advisory committee that provides official advice to the Department of Energy (DOE) and the National Science Foundation (NSF) on the national program for basic nuclear science research.
- Basic nuclear research is understood to encompass a variety of subfields of experimental and theoretical investigations involving the fundamental interactions, properties, and structures of atomic nuclei.
- The lead responsibility for the direction of NSAC itself, selecting members, putting together meeting agendas and developing charges is shared by the two agencies.
- Meets around 3 times/year in Washington DC as necessary
- Up to 20 members (currently less), 1 chairperson
- Membership is for typically 2-3 years
- Website: <https://science.osti.gov/np/nsac>

# Who is NSAC?

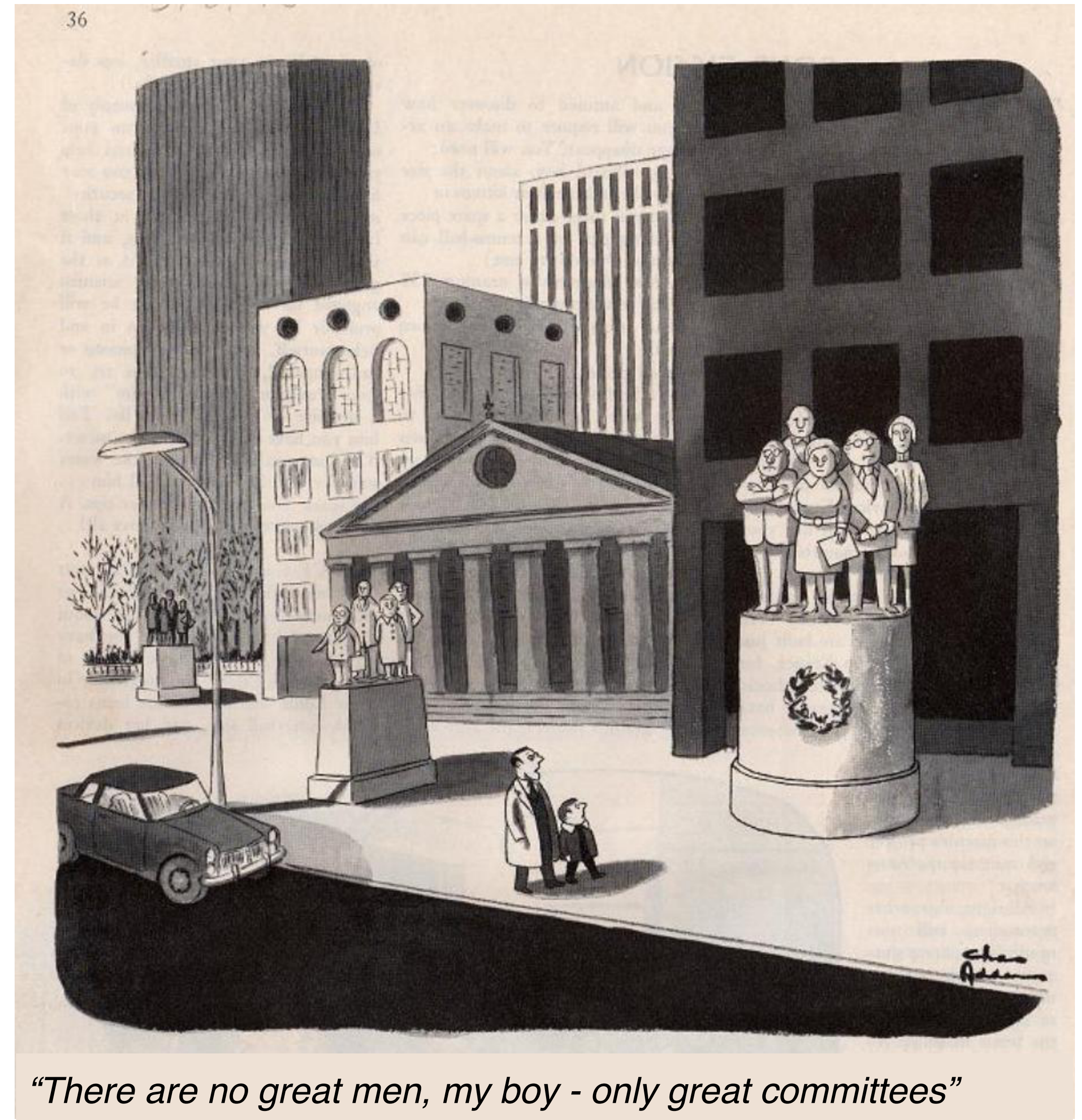
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## Current membership:

<a href="#">Sonia Bacca</a> Johannes Gutenberg- Universität Mainz Mainz, Germany	<a href="#">Oliver Kester</a> TRIUMF Vancouver, Canada	<a href="#">Gail Dodge</a> (Chair) Old Dominion University
<a href="#">Paulo Bedaque</a> University of Maryland	<a href="#">Joshua Klein</a> University of Pennsylvania	
<a href="#">Lee Bernstein</a> Lawrence Berkeley National Laboratory	<a href="#">Cecilia Lunardini</a> Arizona State University	
<a href="#">Romualdo deSouza</a> Indiana University	<a href="#">Rosi Reed</a> Lehigh University	<a href="#">Senta Victoria Greene</a> (2022 APS ex-Officio) Vanderbilt University
<a href="#">Evangeline Downie</a> George Washington University	<a href="#">Fred Wietfeldt</a> Tulane University	<a href="#">Nathalie Wall</a> (2022 ACS ex-Officio) University of Florida

# The Long Range Plan

- Every N ( $N=4-8$ ) years the Nuclear Science Advisory Committee (NSAC) is charged by the Department of Energy's Office of Science and the National Science Foundation's Directorate of Mathematical and Physical Sciences to recommend a **new long range plan** to provide a framework for coordinated advancement of the Nation's nuclear science research programs over the **next decade**.



*"There are no great men, my boy - only great committees"*

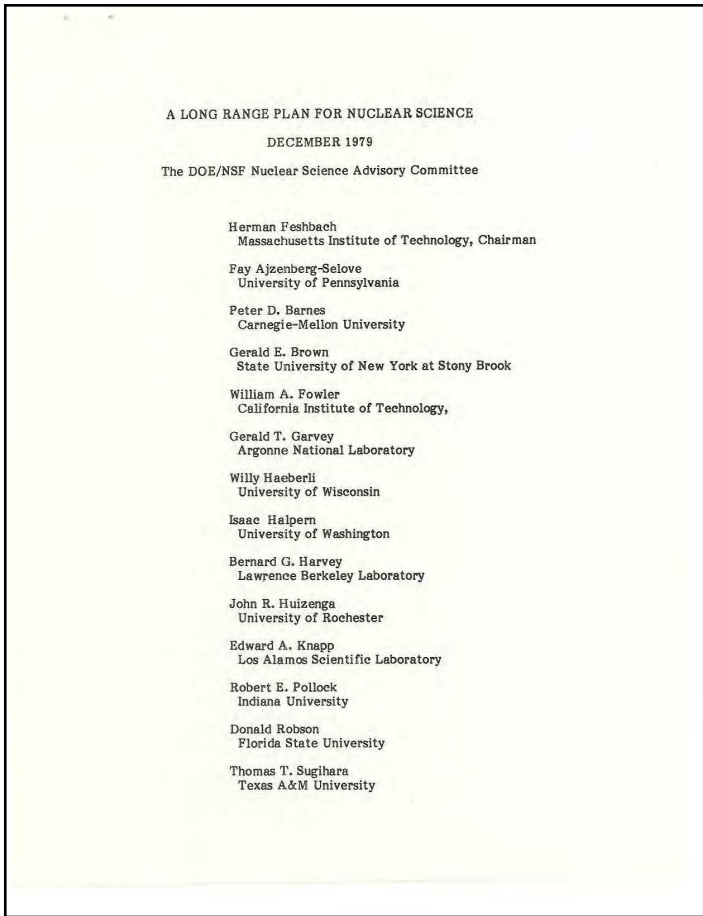
# About ...

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- NSAC LRPs have an excellent reputation in the Office of Science
- Usually the community is well organized in their preparation
- The LRP has typically **few (~4) main recommendation** plus a set of recommended initiatives
- To-Date DOE has realized the recommendation as expressed in the LRPs
- Typically the first recommendation is to **capitalize on the investments made**
  - ▶ Not always the case but common
- Large projects (as the EIC) will need high priority recommendations over a period of time
  - ▶ RICH & CEBAF had 3 LRP recommendations before completion
  - ▶ Realization takes typically 18 months

# Past Long Range Plans

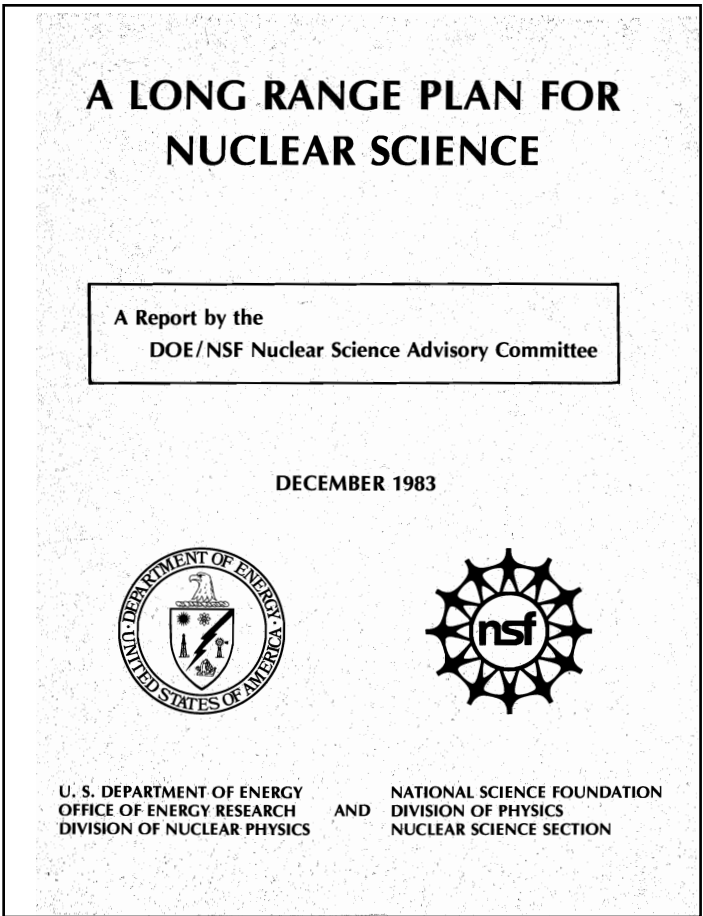
1979



152 pages

+4

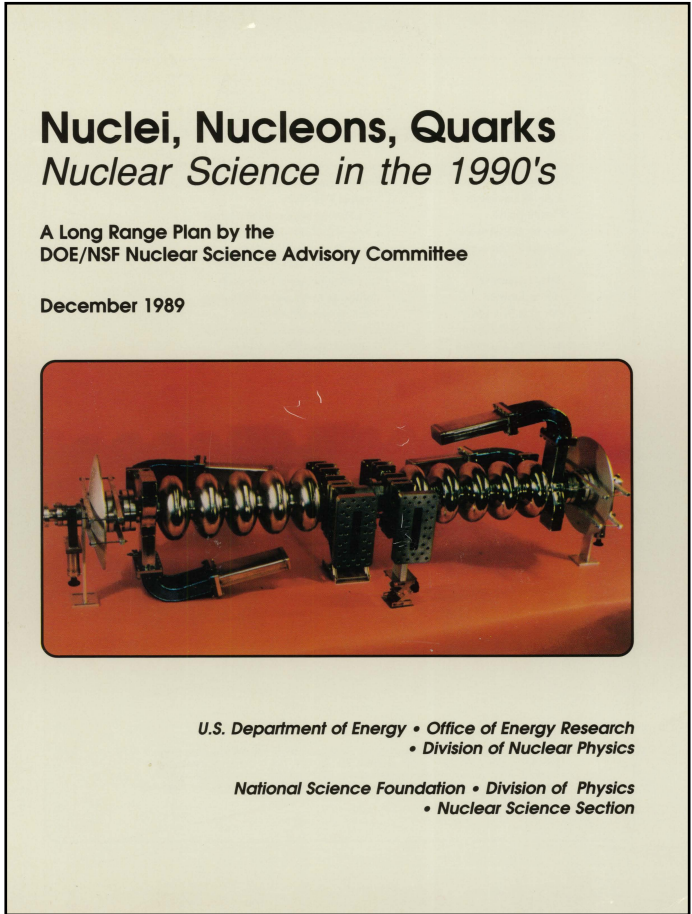
1983



96 pages

+6

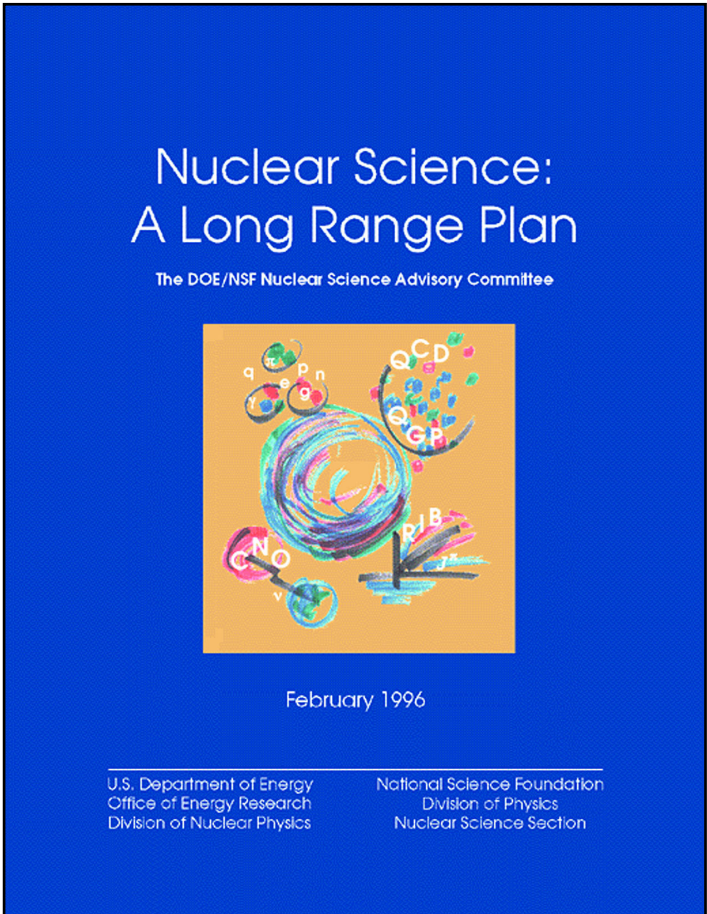
1989



130 pages

+7

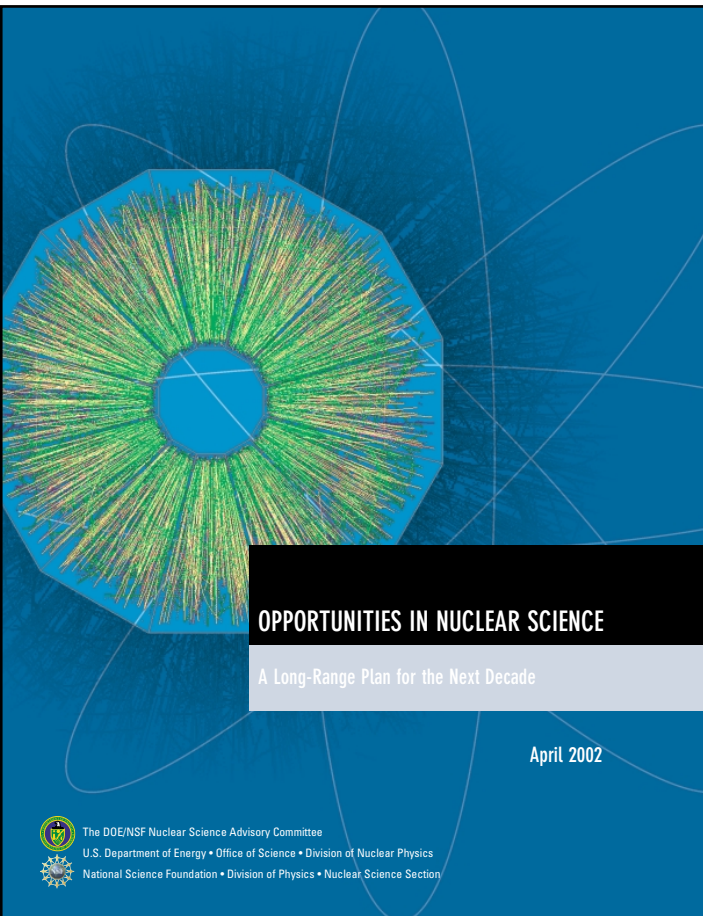
1996



129 pages

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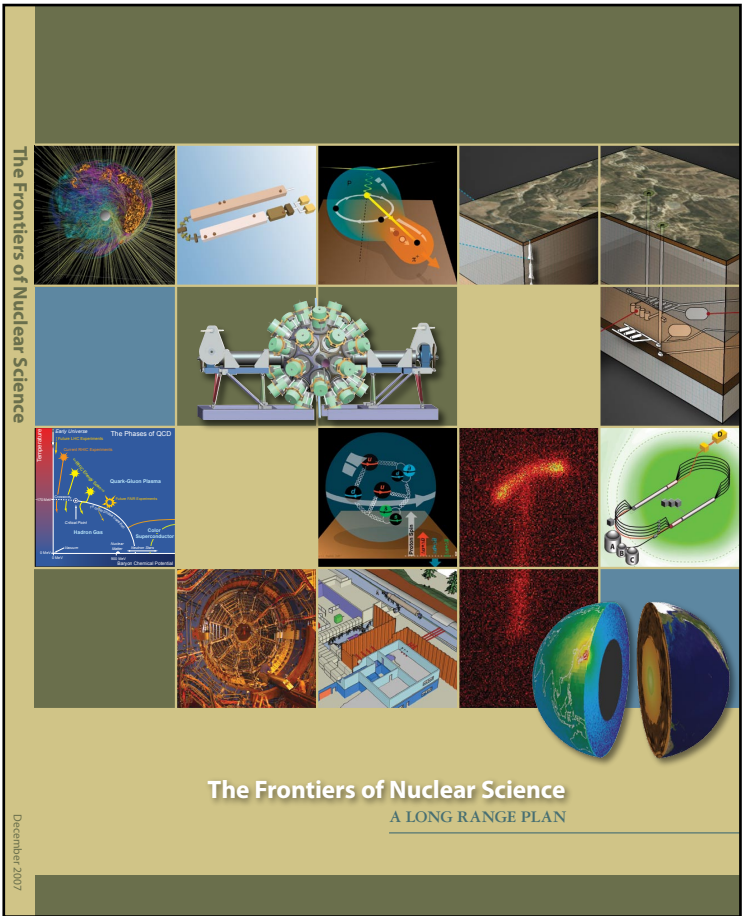
2002



159 pages

+5

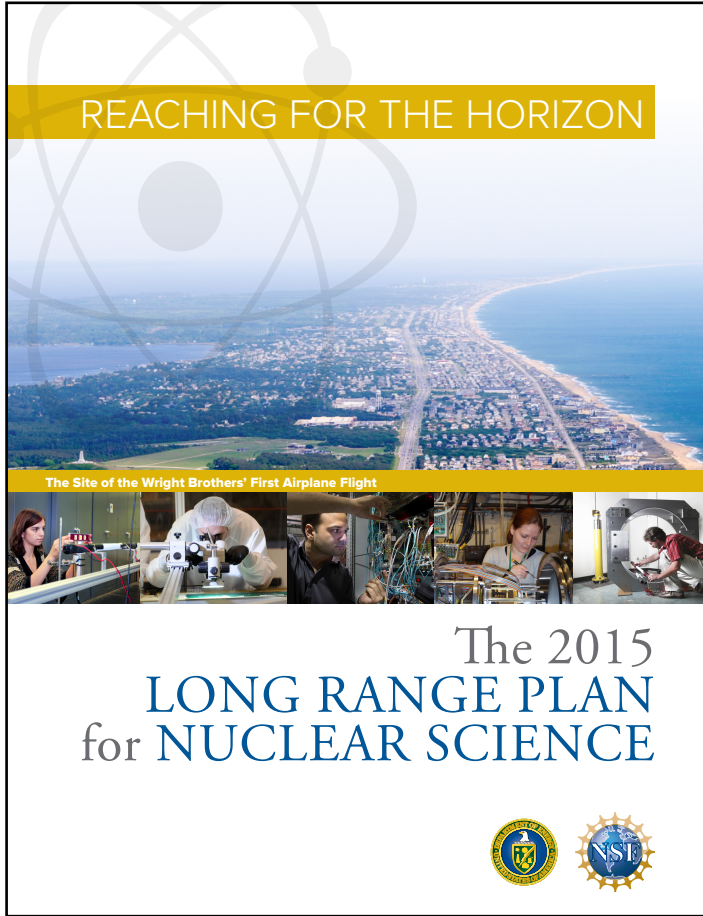
2007



184 pages

+8

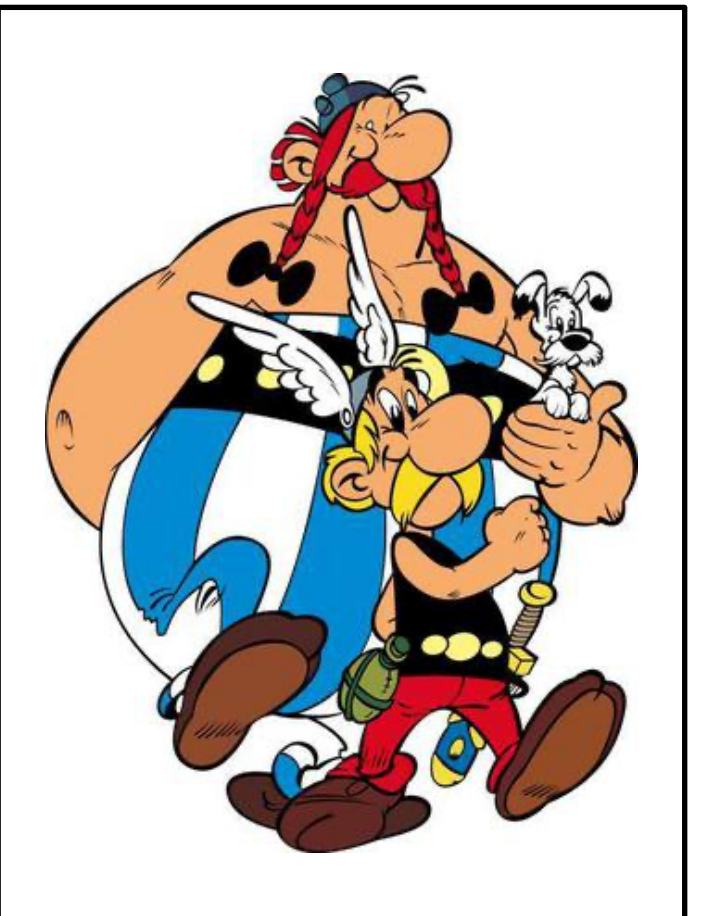
2015



160 pages

+8

2023



# LRP Process

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- DOE and NSF jointly charge NSAC with developing a Long Range Plan (LRP) for NP
- Division of Nuclear Physics (DNP) of the American Physical Society **organized several Town Meetings** to gather community input about the most important scientific goals to be achieved and the facilities, experiments, theoretical progress and resources needed to achieve these goals.
- A **long range plan working group** is formed to prepare the plan. This is NSAC + ~35 scientists from the community. International observers are added to ensure an international perspective. The WG is chaired by the NSAC chair.
- The key output of the town meetings is compiled in “**White Papers**”. They are collected by the LRP WG.
- The key recommendations are decided in **a "Resolution meeting"**. The report is written following the output of the resolution meeting and the input from the WP.
- The WP is delivered to DOE by NSAC.
- The community is encouraged to provide input at every stage of the process

# LRP 2023: Charge (7/13/2022)

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## Charge to NSAC (shortened version)

- NSAC to conduct a new study of the opportunities and priorities for United States nuclear physics research and recommend a long range plan (LRP) that will provide a framework for coordinated advancement of the Nation's nuclear science research programs over the next decade.
- Identify and prioritize the most compelling scientific opportunities for the U.S. nuclear physics program to pursue over the next decade (fiscal year (FY) 2023-2032) and articulate its potential scientific impact.
- LRP should indicate what resources and funding levels would be required, including construction of new facilities, mid-scale instrumentation, and Major Items of Equipment
- Describe the potential impacts and priorities under constant level of effort budgets, 2% growth/year using the FY 2022 enacted funding level
- Submit by October 2023

# Town Meetings

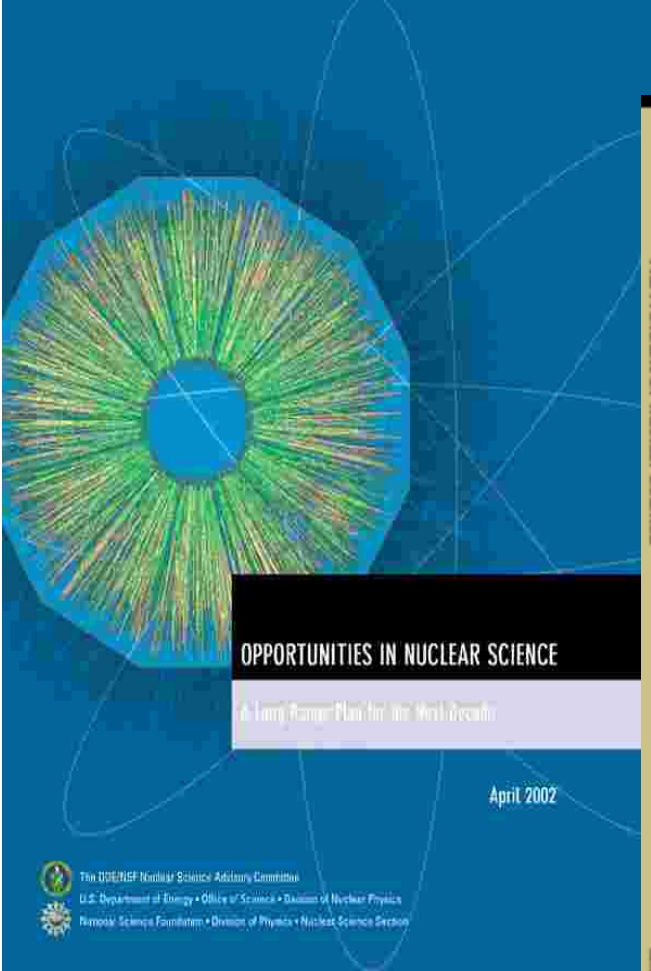
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- 2015
  - ▶ Education and Innovation in Preparation for the 2015 Long Range Plan, NSCL/MSU
  - ▶ Nuclear Structure and Nuclear Astrophysics Meeting, Texas A&M
  - ▶ Fundamental Symmetries, Neutrinos, Neutrons, and Relevant Nuclear Astrophysics, Chicago, IL
  - ▶ Hadron and Heavy Ion QCD Meeting, Temple University
- 2022
  - ▶ Hot and Cold QCD (*EIC lives here*)
  - ▶ Nuclear Reactions, Structure, and Astrophysics
  - ▶ Fundamental Symmetries, Neutrinos, and Neutrons

In the process of being organized

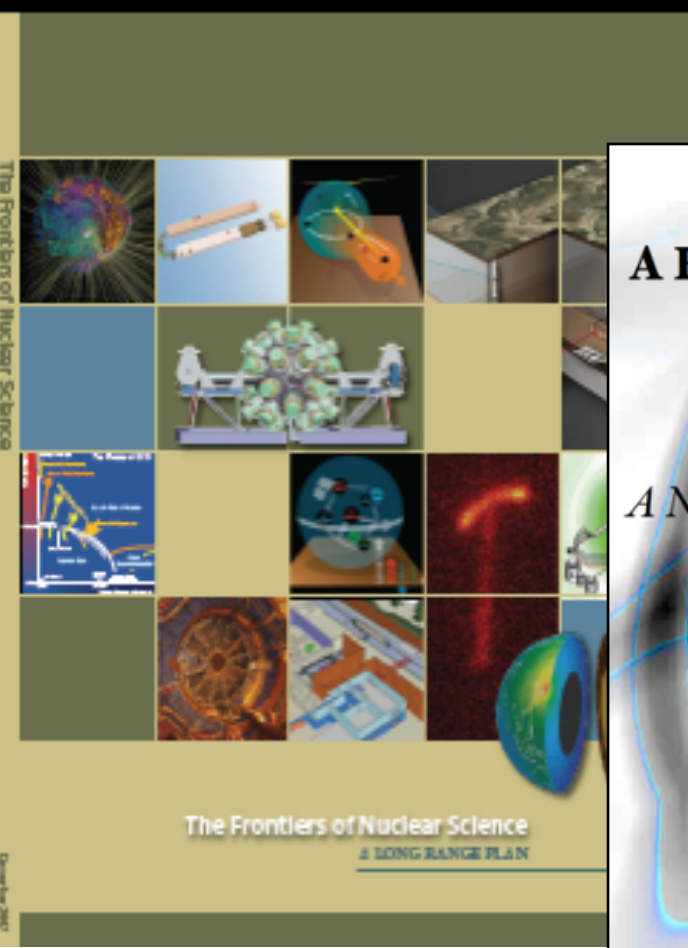
# Scientific Foundation for EIC was Built Over Nearly Two Decades

2002



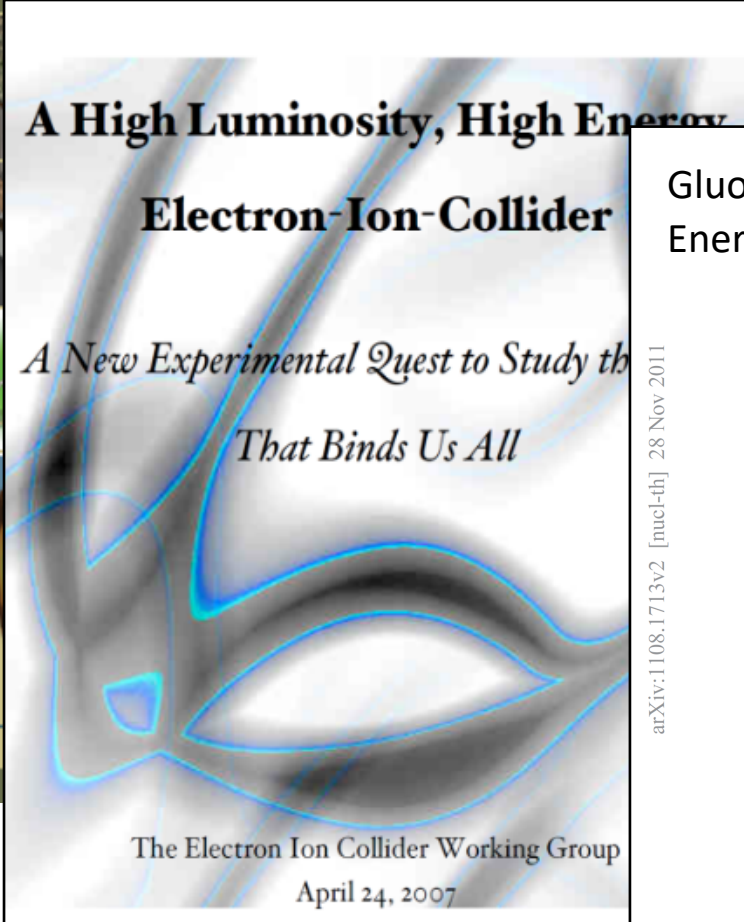
“...essential accelerator and detector R&D [for EIC] should be given very high priority in the short term.”

2007



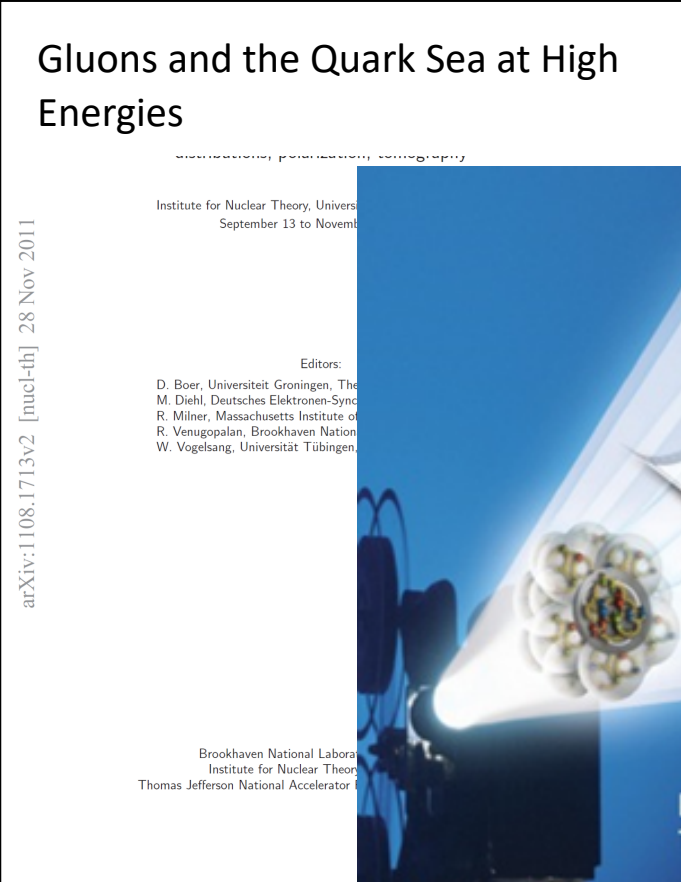
“We recommend the allocation of resources ...to lay the foundation for a polarized Electron-Ion Collider...”

2009



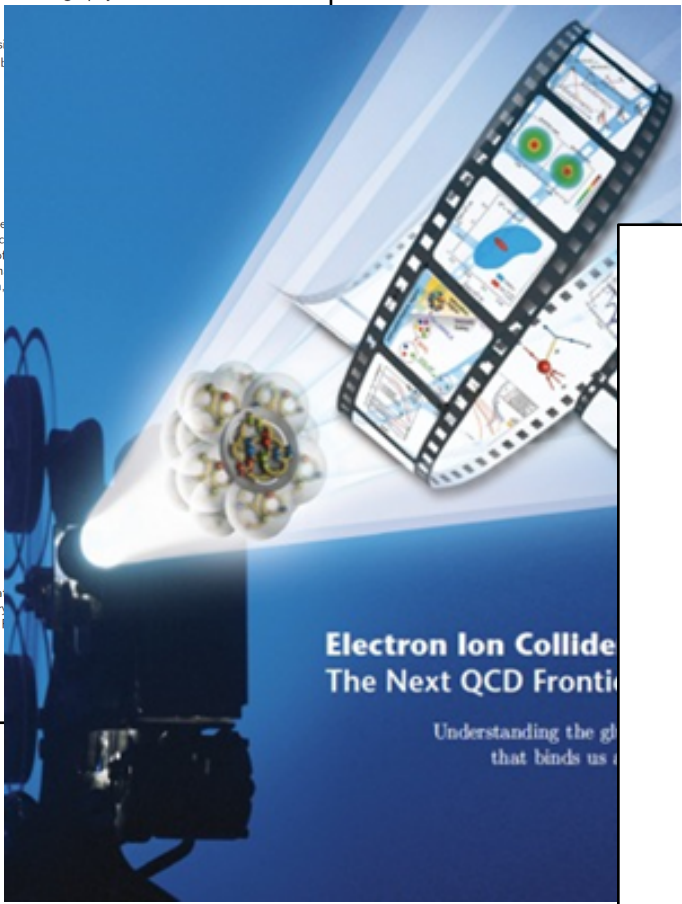
“..a new dedicated facility will be essential for answering some of the most central questions.”

2010



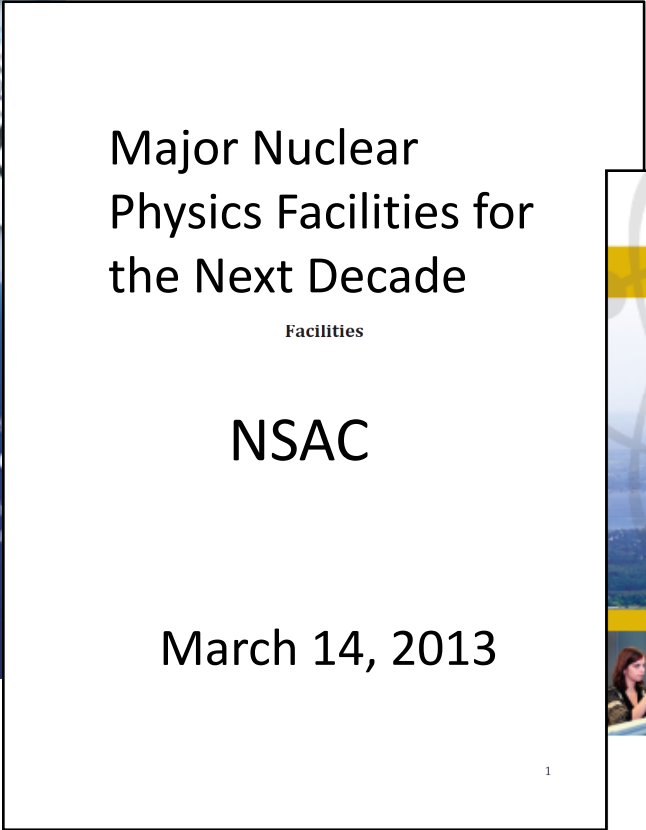
“The quantitative study of matter in this new regime [where abundant gluons dominate] requires a new experimental facility: an Electron Ion Collider.”

2012



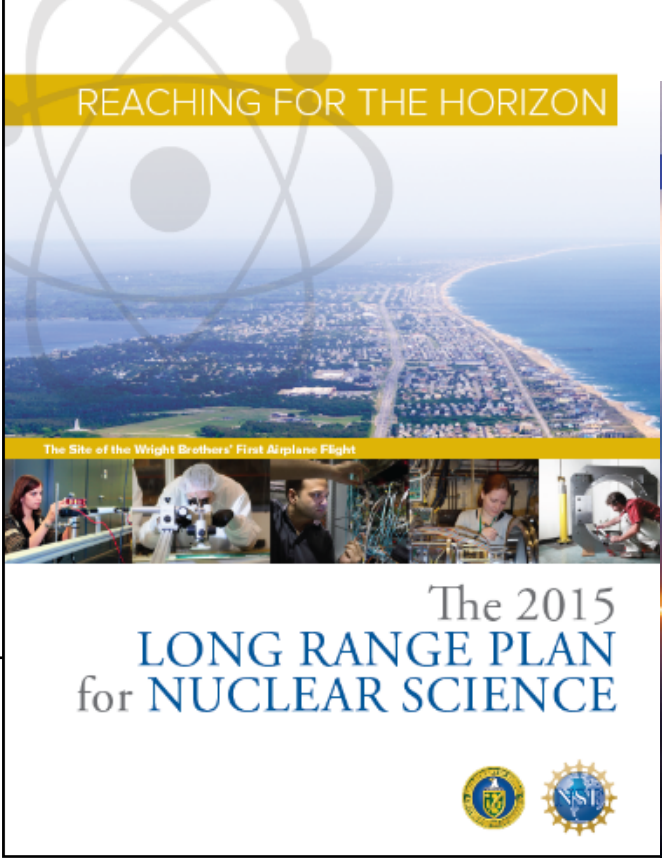
Electron-Ion Collider..absolutely central to the nuclear science program of the next decade.

2013



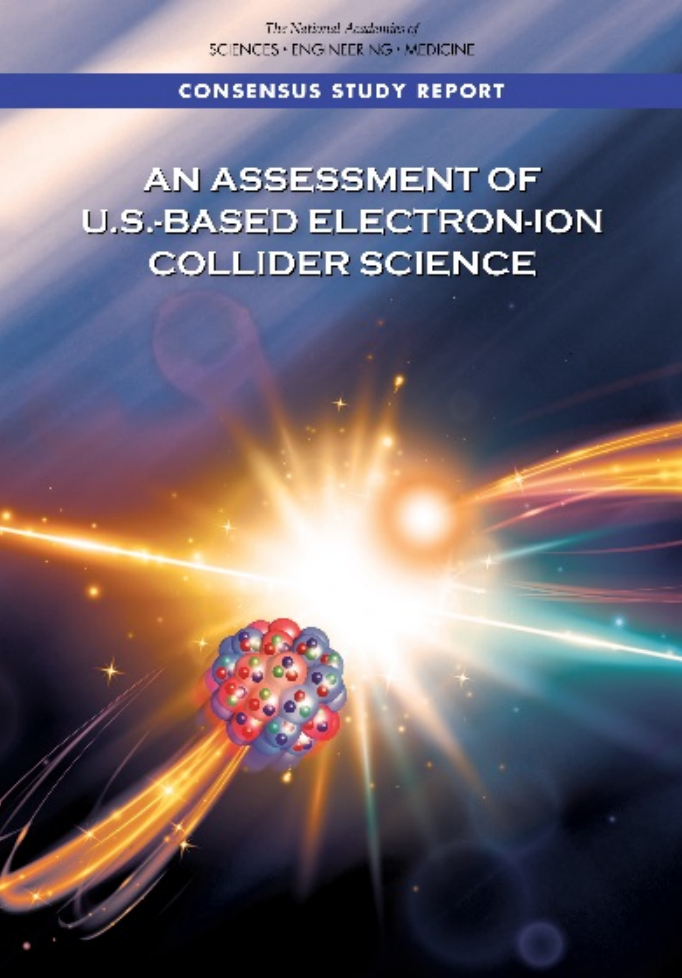
Electron-Ion Collider..absolutely central to the nuclear science program of the next decade.

2015



Electron-Ion Collider..absolutely central to the nuclear science program of the next decade.

2018



“a high-energy high-luminosity polarized EIC [is] the highest priority for new facility construction following the completion of FRIB.”

The science questions that an EIC will answer are central to completing an understanding of atoms as well as being integral to the agenda of nuclear physics today.”

# Plan (Vicki Green, NSAC 7/13)

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## Draft Timeline for DNP contribution to NSAC Long Range Planning Process 2022-2023

- May/July 2022 DNP chair-line starts organizing and involves Executive Committee
  - Executive Committee
    - Presented with Town Hall topics from DNP chair line
    - Nominates conveners
    - Approves venue selection process
  - DNP Chair contacts conveners
  - Pre-planning for Town Halls
- July 2022
  - General email to the community outlining the process, announcing the Town Meetings, and inviting engagement.
  - [July 2022— NSAC Charge letter](#)
- September-November 2022 Town Meetings conducted
- October 2022 Special LRP Community Update at the DNP Fall meeting (10/27-30/22)
  - Talks by NSAC Chair, DNP Chair on the process, and brief reports from conveners of each Town Meeting.
- February 2023 White papers for each Town Meeting submitted to NSAC/LRP WG
- October 2023
  - DNP Fall Meeting Plenary Session Devoted to LRP pending DNP Chair approval.

# Role of EIC User Group

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- Coordinate EIC related LRP efforts with host labs
- Work with Town Hall conveners to help organize EIC section of the “Hot and Cold QCD” meeting
  - ▶ speakers, topics, ...
- White Paper
  - ▶ Take input from community and labs
  - ▶ Original Plan: Compile early draft for the Town Hall Meeting
    - ◉ Meant as input for discussion at Town Meeting
    - ◉ Allows early input of community in drafting process
    - ◉ **Note: not possible if Town Meeting is before October/November**
  - ▶ Submit early (end 2022) before deadline (2/2023)
    - ◉ Improve chances that resolution working group will actually read it
- Work with LRP working group to optimize EIC related part
  - ▶ assume that EICUG members are in LRP WG

# EIC White Paper

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## General Idea:

- Need EIC community agreement, so it is easiest to start with the latest writeup
  - ▶ e.g. Executive Summary Yellow Report
- Try to complete early
  - ▶ Gives the resolution working group the input they need
- Keep short
  - ▶ Aim for a short document as people tend not to read long documents
    - ~40 pages at most not including references and/or appendices.
  - ▶ Look for figures that have a chance to make it in the LRP
    - Should be unique for the EIC to evade questions if the same can be done with say UPCs at LHC or with fixed target at JLab.
- Provide material and “sound bites” the resolution working group needs in their work

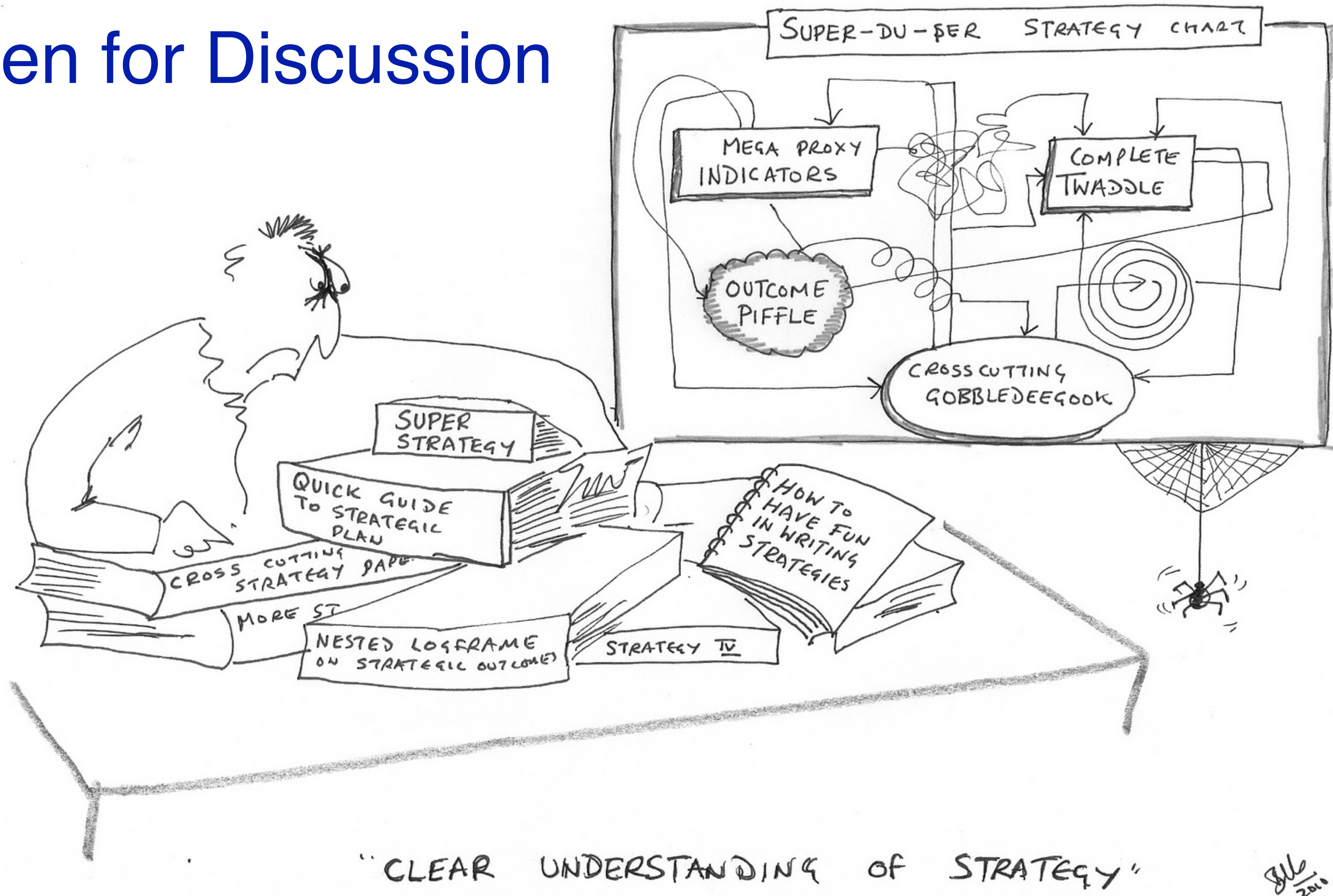
# EIC White Paper

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## Approach:

- Start from the EIC Yellow Report executive summary
  - ▶ polish it to make the best case.
- Do need to show that
  - ▶ the EIC has a long history of nuclear science community endorsement in the US
  - ▶ the requirements have remained near constant and the science case only has been growing over the years.
- Diversity, equity, and inclusion (DEI) to be folded in fundamentally
- Remind community of the strong case for the EIC and the ongoing detector effort
- Need to address the second detector need
- Point to the synergy of EIC with detector R&D and technologies, with advanced computing/AI and with accelerator science and technology.
- Show the international interest and that the EIC is unique worldwide.

# Open for Discussion



"CLEAR UNDERSTANDING OF STRATEGY"

gub  
2010