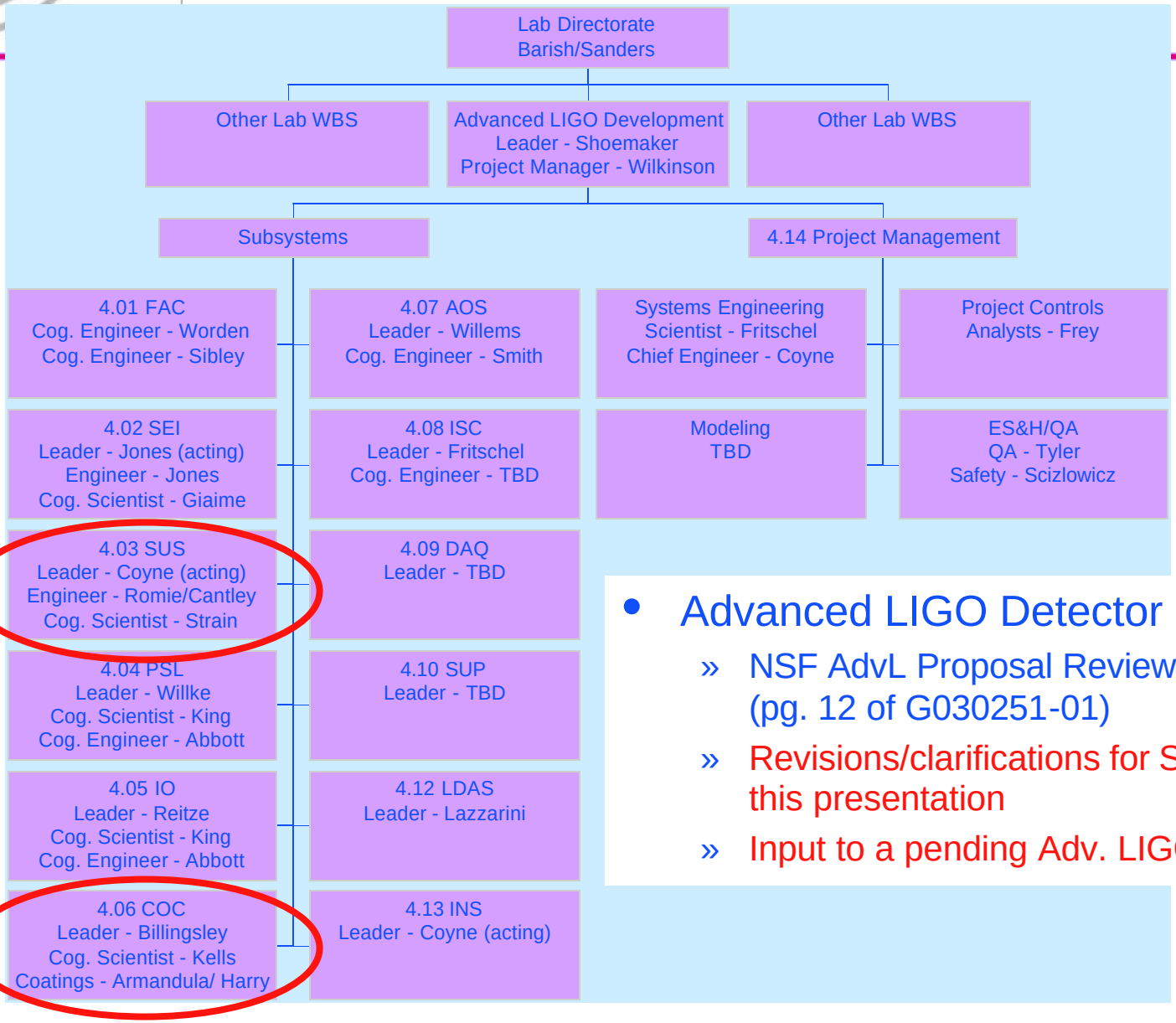
Advanced LIGO:
Detector Organization, Responsibilities, Authority and Decision Tree:
SUS and COC

Dennis Coyne, Carol Wilkinson, David Shoemaker

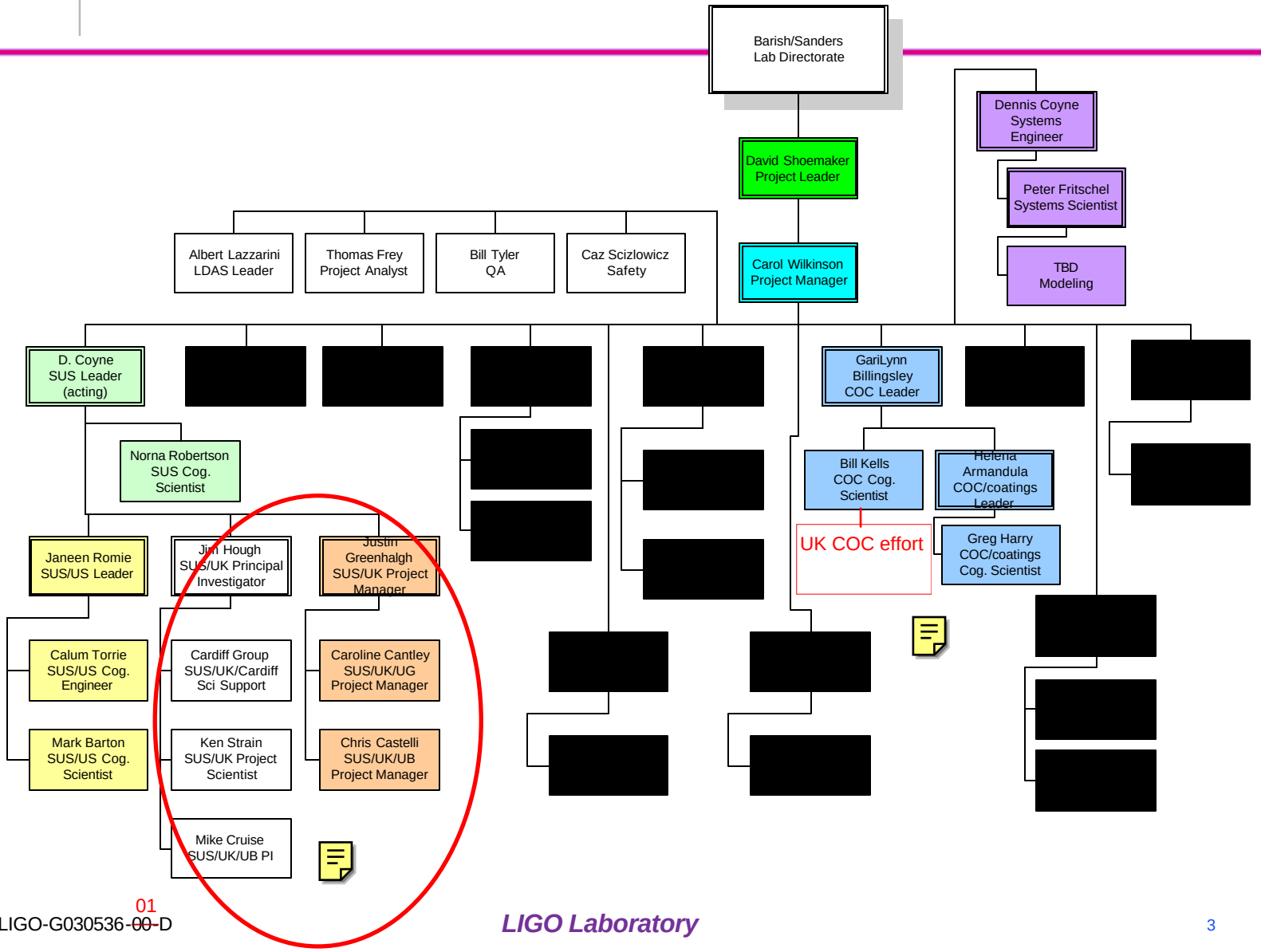
Suspension Workshop @ Caltech, 14 Oct 2003

Organization



- Advanced LIGO Detector organization
  - » NSF AdvL Proposal Review Meeting (pg. 12 of G030251-01)
  - » Revisions/clarifications for SUS & COC in this presentation
  - » Input to a pending Adv. LIGO Project Plan

Organization



Subsystem "Lead" Personnel

Subsystem Leader[1]
Scope: Limited to the associated subsystem.
Reports to: The LIGO Project Manager
Responsibilities:

- Defines the subsystem development plan
- Manages/directs the assigned resources (hardware and personnel) to perform the tasks
- Tracks and reports progress against the plan to management
- Makes decisions (programmatic and technical) at the subsystem level based on advice from staff (in particular the cognizant engineer and cognizant scientist)
- Represents the subsystem in interface discussions as part of the Interface Working Group (IWG), or delegates this responsibility.
- Decides on the readiness for formal and informal subsystem reviews and organizes these reviews
- Manages major subcontracts (as a Technical Monitor), or delegates this responsibility
- Decides on acquisition/procurement strategy (e.g., make or buy)

Authority:

- Has approval (signature) authority for all configuration controlled documents authored/originated by the associated subsystem.
- Has approval (signature) authority for interface agreements in the Interface Control Document (ICD).
- Has approval (signature) authority on all subsystem accounts (to a limit of $10,000 for each purchase order).

[1] In the UK organization, these "Subsystem Leader" is referred to as "Project Manager" for their subset of the project.

Subsystem "Lead" Personnel (continued)

Cognizant Engineer[2]
Scope: Limited to the associated subsystem.
Reports to: The Subsystem Leader
Responsibilities:

- Oversees all technical aspects of the subsystem implementation
- Advises the Subsystem Leader of technical or engineering issues
- Oversees all form, fit, function assessment (CAD, simulation and test)
- Performs trade studies and value engineering as deemed necessary
- Provides input to the Subsystem Leader for decisions (programmatic and technical)

Authority:

- [Has approval (signature) authority for all configuration controlled documents authored/originated by the associated subsystem.]
- Has approval (signature) authority on all subsystem accounts (to a limit of $5,000 for each purchase order).

Cognizant Scientist[3]
Scope: Limited to the associated subsystem.
Reports to: The Subsystem Leader
Responsibilities:

- Defines the subsystem requirements
- Advises the Subsystem Leader of any science or performance related issues
- Oversees all performance related assessment (via analysis and test)
- Provides input to the Subsystem Leader for decisions (programmatic and technical)

Authority:

- Has approval (signature) authority for all configuration controlled documents authored/originated by the associated subsystem.
- Has approval authority for all critical (e.g., supporting design reviews) science and performance documentation (technical memos, test reports, etc.)

[2] In the UK organization, there is no equivalent "Cognizant Engineer" defined.
[3] In the UK organization, the "Project Scientist" is equivalent to the LIGO Lab "Cognizant Scientist".

SUS

- Unique in that the overall scope is shared between the LIGO Laboratory and the UK Team
  - » Significant interfaces
  - » Efficiently share (precious and limited) expertise
  - » Effectively perform technology transfer from the UK to US
  - » Maximize commonality of design and parts
  - » Organizational structure reflects this separation of scope within the SUS program
- Overall SUS Project
  - » Single SUS Leader (Dennis Coyne, acting) who manages the entire SUS project
  - » Single SUS Cognizant Scientist (Norna Robertson) who oversees the science aspects of the entire SUS project
  - » SUS Cognizant Scientist reports to, and is directed by, the SUS Leader

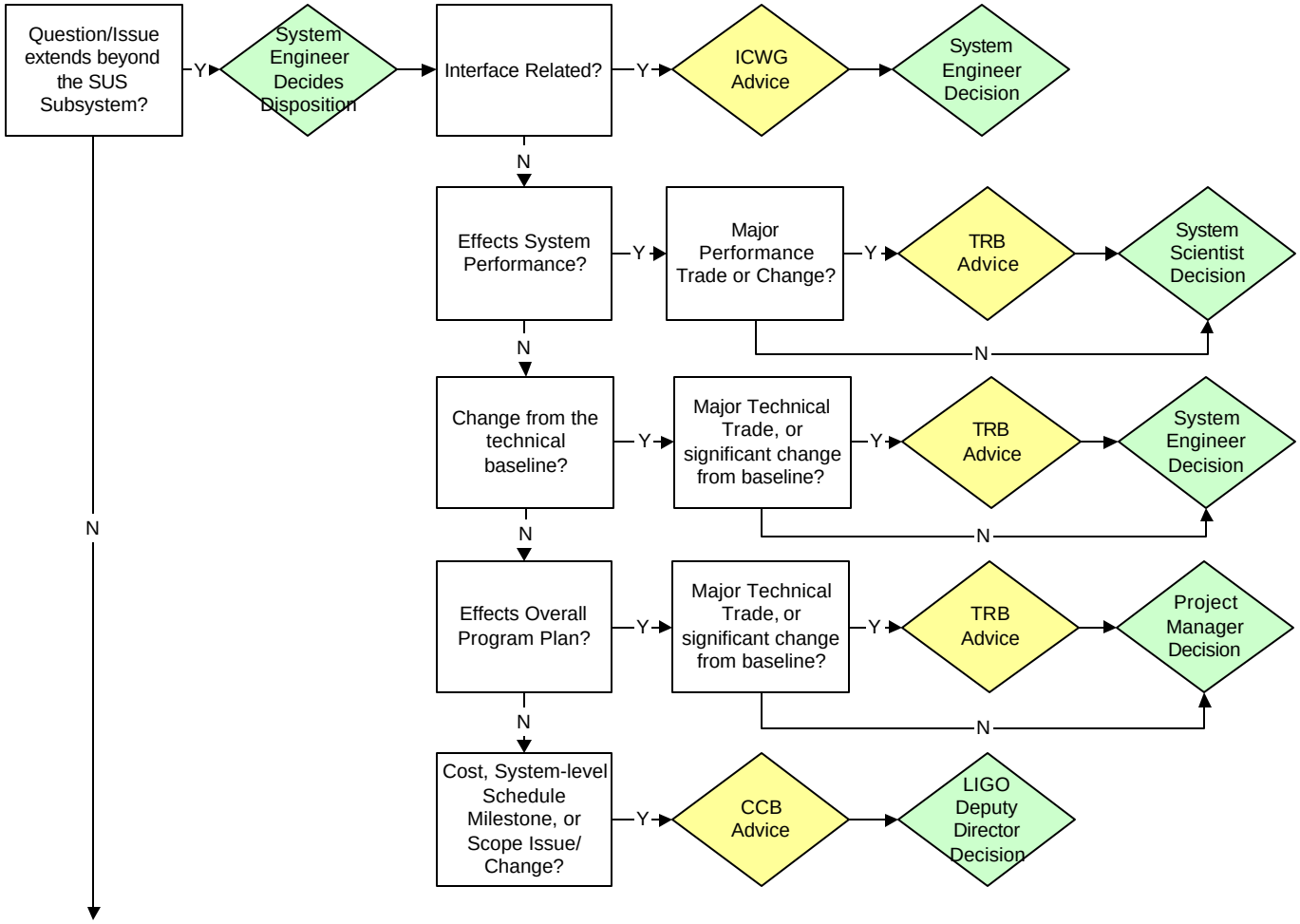
SUS (continued)

- In-Lab (SUS/US) Project
  - » SUS/US Leader is Janeen Romie
  - » Reports to SUS Leader (Dennis Coyne)
  - » Supported by:
    - – SUS/US Cognizant Scientist (Mark Barton)
    - – SUS/US Cognizant Engineer (Calum Torrie)
- SUS/UK Project:
  - » SUS/UK Overall Project Manager (and formal interface point of contact for US) is Justin Greenhalgh
  - » Reports to SUS Leader (Dennis Coyne)
  - » Supported by:
    - – SUS/UK/UG Project Manager (Caroline Cantley)
    - – SUS/UK/UB Project Manager (Chris Castelli)
    - – UK Science Personnel (Jim Hough, Ken Strain, Mike Cruise)

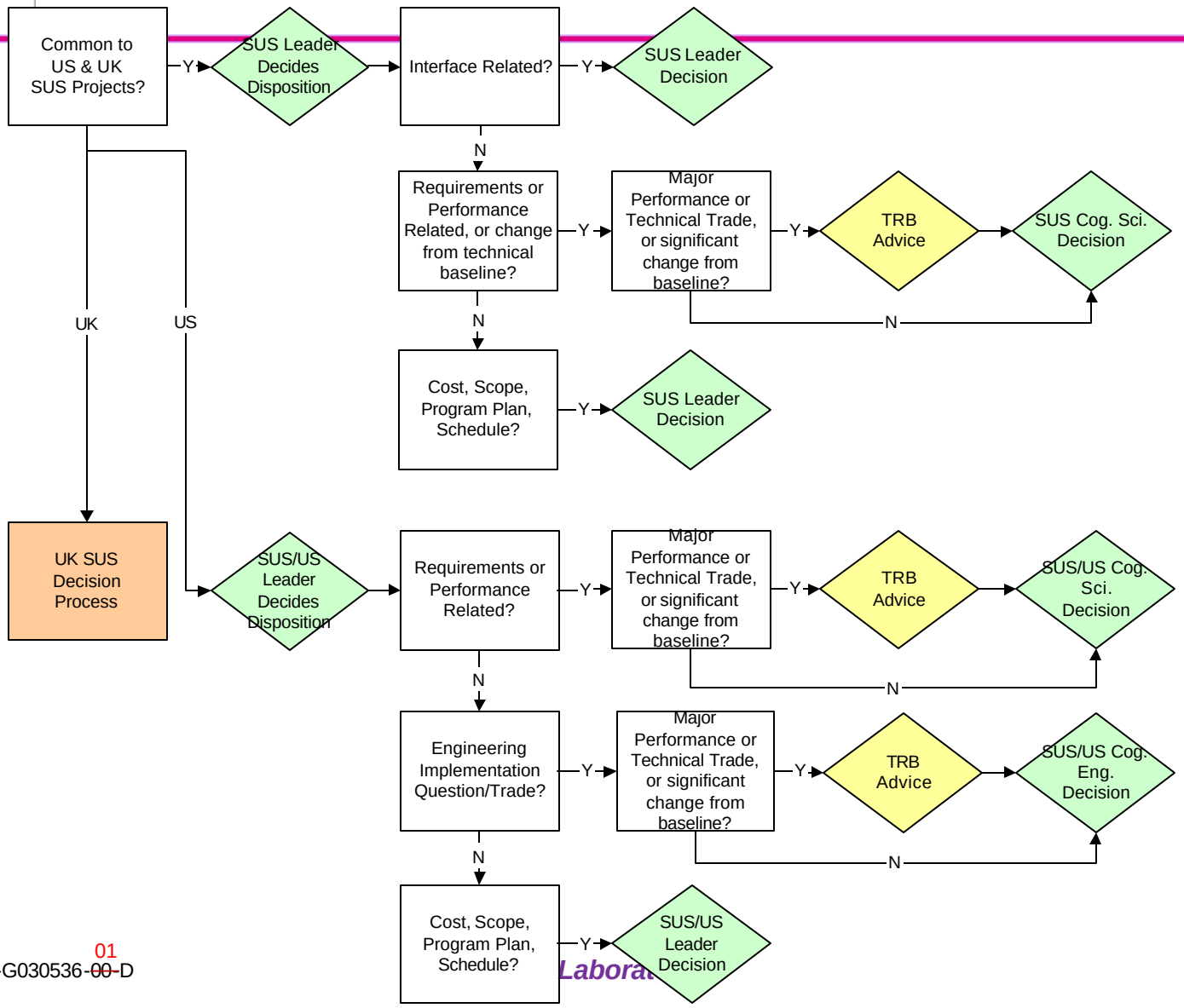
SUS Decision Tree

- Decisions beyond the SUS Scope are referred to the Systems Engineer (Dennis Coyne)
- Decisions within SUS, but effecting both US and UK projects are made by the SUS Leader (Dennis Coyne) or the SUS Cognizant Scientist (Norna Robertson)
  - » Technical interchange will occur freely at all levels between the US and UK efforts
  - » Decisions of any significance which could impact either group must be handled by agreement between the SUS/US Leader (Janeen Romie) and the SUS/UK Leader ("Project Manager"), Justin Greenhalgh
  - » In the event that there is an impasse between the SUS/US and SUS/UK efforts, then the overall SUS Leader (Dennis Coyne) will make the decision
- Decisions within the scope of either US or UK Project are made by the appropriate "lead" personnel
- In the case of impasse, or conflict, the decision is referred to the next highest authority in the organizational chart
  - » For example, if there is a disagreement between the SUS/US Leader and the SUS/UK Leader, the issue is brought to the SUS Leader for resolution
  - » Similarly if there is a disagreement between the SUS Leader and the SUS Cognizant Scientist, then the matter is brought to the Adv. LIGO Project Manager for resolution

SUS Decision Tree



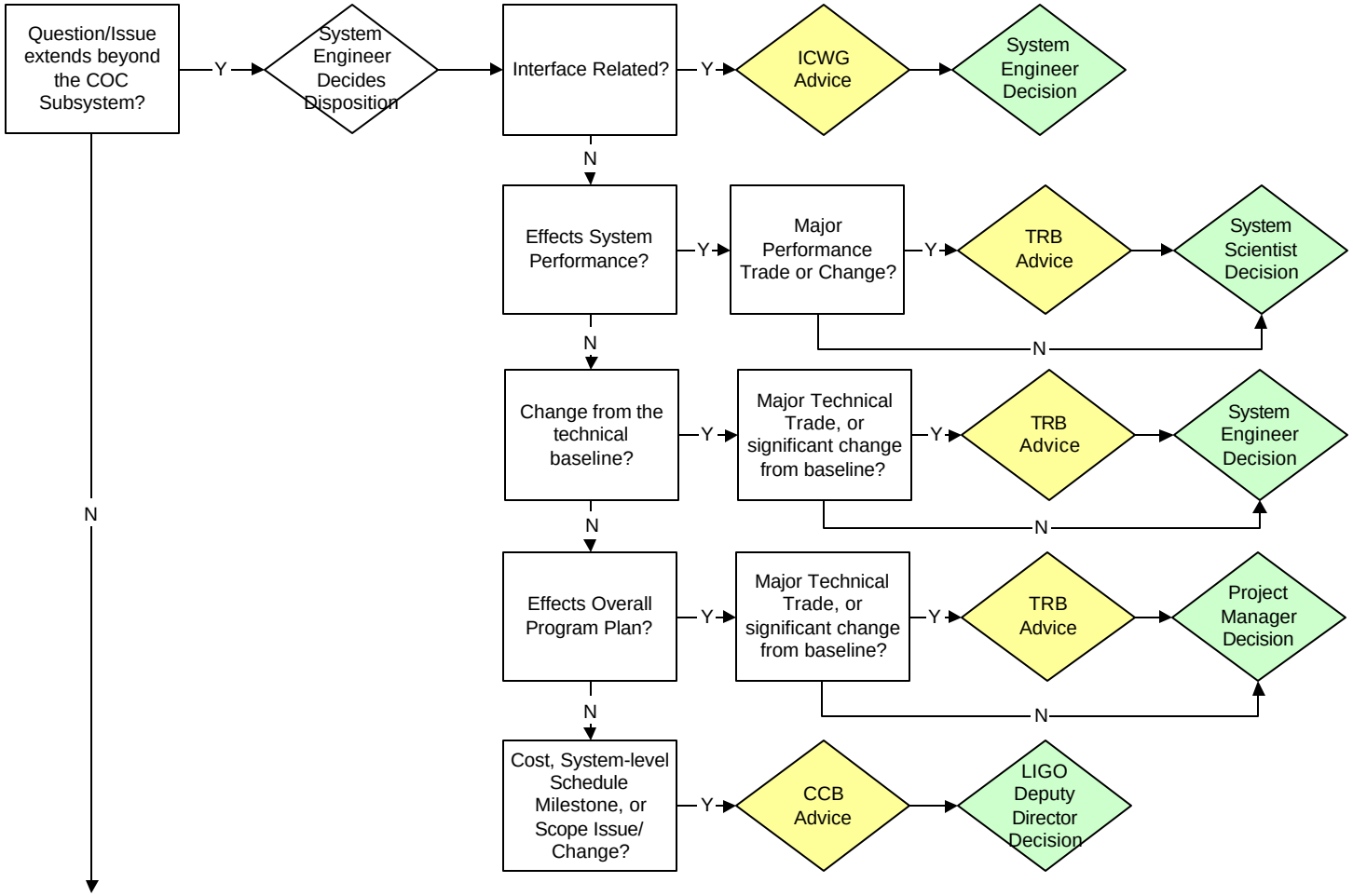
SUS Decision Tree (concluded)



COC

- Overall COC Project:
  - » COC Leader (GariLynn Billingsley)
  - » Reports to AdvL Project Manager (Carol Wilkinson)
  - » Supported by COC Cognizant Scientist (Bill Kells)
- COA/Coatings
  - » Due to technical challenges associated with high performance optical coating development, this aspect of the COC Project has it's own COC/Coatings Leader (Helena Armandula)
  - » The COC/Coatings Leader (Helena Armandula) reports to the COC Leader (GariLynn Billingsley)
  - » The COC/Coatings Leader is supported by the COC/Coatings Cognizant Scientist (Gregg Harry)
- Since virtually all of the engineering for COC is contracted outside of the LIGO Lab, there are no assigned Cognizant Engineers
  - » The responsibilities generally performed by a cognizant engineer falls to the two Leaders (GariLynn and Helena)

COC Decision Tree



COC Decision Tree (concluded)