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0	06/23/16	Initial issue	Tobin Oruch, <i>ES-DO</i>	Mel Burnett, <i>CENG-OFF</i>
1	05/25/17	Eliminated CGD for ML-3 associated (SRL3) safety software; clarifications.	Tobin Oruch, <i>ES-DO</i>	Lawrence Goen, <i>ES-DO</i>

1.0 PURPOSE, SCOPE, AND APPLICABILITY

This section, SOFT-ACQUIRE, describes the “how, when, and who” for acquiring software and software services. See Table 21.2-1 for a summary.

See Chapter 21 applicability in SOFT-GEN. In addition:

1. This section applies to workers that are acquiring software. See SOFT-GEN for definition of acquired software.¹
2. To apply this section, the software must first be identified and a draft or final software determination (Form 2033) completed. See SOFT-GEN.
3. **Freeware:** Freeware cannot be acquired without the approval of the Chapter POC or designate(s).² Exceptions: Uncomplicated software tools (described in Chapter 21 applicability in SOFT-GEN), toolbox codes, “Simple and Easily Understood” software used in the design of SSCs, software from other organizations within the DOE complex, and/or software acquired from other government agencies (e.g., US EPA, Army Corps of Engineers). Note: P1011, *Computer Hardware, Software, and Services: Exceptions to Acquisition, Maintenance, and Support* has additional requirements for freeware.

¹ Software developed by a LANL owner (self-developed) would not follow this section, but would follow all others.

² Should be necessary for LANL mission accomplishment and where no feasible alternative solutions are available.

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4. See SOFT-V&V for verification and validation, including commercial grade dedication; see SOFT-MAINT for maintenance of acquired software.
5. Software acquisition includes associated software services throughout this section.

Note on software acquired from an internal-to-LANL supplier (i.e., designed/developed in-house by another LANL organization):

Requirements herein related to contracts and procurements may not apply exactly as written, so user discretion is allowed. Follow applicable concepts and adapt the others as applicable.

Table 21.2-1 SOFT-ACQUIRE Section Summary for SSC and Non-SSC Software (This is a summary only and does not include all requirement details. See text for details.)								
Activity No.	SQM Activity	ML ¹			Implementation Detail			Reference
		1, 2	3	4	How	When	Who ^{2, 3}	ESM Ch. 21 Ref. ⁸
I. For SSC Software								
1	Acquire new software	R	Gr	Gr	<ul style="list-style-type: none"> ▪ Evaluate and document whether to acquire from an NQA-1 -- or Non-NQA-1 qualified supplier and commercially dedicate (CGD)⁴ ▪ Develop a SWDS, (SOFT-GEN-FM01)⁵ ▪ Develop Statement of Work (SOW) ⁶ ▪ Acquire per P840-1, PD210 and CIO-P100 ▪ Use P-card or Purchase Order (PO) ▪ Develop interface agreement, integrated contract orders, interagency agreements or equivalent⁷ ▪ Complete Exhibit H⁵ 	<ul style="list-style-type: none"> ▪ When needed to perform work 	<ul style="list-style-type: none"> ▪ SO (D) ▪ SRLM (R, A) 	SOFT-ACQUIRE, 3
II. For Non-SSC Software								
1	Acquire existing LANL software	R	R	Gr	<ul style="list-style-type: none"> ▪ Look for and evaluate existing LANL software ▪ If suitable, acquire existing software from the SRLM and obtain SRLM authorization to use it ▪ Update documentation (e.g. licenses), as applicable to reflect additional authorized user(s) 	<ul style="list-style-type: none"> ▪ Look for and evaluate existing LANL software before acquiring new software ▪ When needed to perform work 	<ul style="list-style-type: none"> ▪ SU (D) ▪ SRLM (R, A) 	SOFT-ACQUIRE, 4

Table 21.2-1 SOFT-ACQUIRE Section Summary for SSC and Non-SSC Software (This is a summary only and does not include all requirement details. See text for details.)								
Activity No.	SQM Activity	ML ¹			Implementation Detail			Reference
		1, 2	3	4	How	When	Who ^{2, 3}	ESM Ch. 21 Ref. ⁸
2	Acquire new software	R	Gr	Gr	<ul style="list-style-type: none"> ▪ Determine and document if software is used in SSC design and is “Simple and Easily Understood”; document and verify with each use ▪ Determine if software is a toolbox code ▪ Evaluate and document whether to acquire from NQA-1 --or Non-NQA-1 qualified supplier and commercially dedicate the software (CGD)⁴ ▪ Develop SWDS, (SOFT-GEN-FM01)⁵ ▪ Develop Statement of Work (SOW) ⁶ ▪ Acquire per P840-1, PD210 and CIO-P100 ▪ Develop CGD documentation per AP-341-703 ▪ Use P-card or Purchase Order (PO) ▪ Develop inter- or intra- LANL agreements⁷ ▪ Complete Exhibit H⁵ 	<ul style="list-style-type: none"> ▪ When needed to perform work 	<ul style="list-style-type: none"> ▪ SO (D) ▪ SRLM (R, A) 	SOFT-ACQUIRE, 4

Table Notes:

¹ ML = Associated Management Level per Form [2033](#). Complete Form [2033](#) prior to acquisition. R = Required. Gr = Required but graded.

² D = Develop or implement; R = Review; A = Approve.

³ SO = Software Owner. SRLM = Software Responsible Line Manager. SU = Software User

⁴ CGD applies to ML-1 and ML-2 safety software only.

⁵ Required for ML-1 through ML-3 (safety and risk significant) software or for any ML if the supplier is required to come onsite to install/maintain the software.

⁶ Applies to ML-1 through ML-3 software only.

⁷ See [P840-1](#) for details. Required for acquisitions from LANL organizations, DOE sites, and/or government agencies.

⁸ Ref. = ESM Chapter 21 section name and subsection number (e.g., Section SOFT-GEN, Subsection 3, Software Identification and Determination).

2.0 KEY DEFINITIONS AND ACRONYMS

See SOFT-GEN for key definitions and acronyms.

3.0 SSC SOFTWARE ACQUISITION

3.1 ML-4 SSC Software

A. How.

1. Acquire in accordance with [P840-1](#) *Quality Assurance for Procurements*, [PD210](#) *Cyber Security Program*, [CIO-P100](#), [Cyber Security Risk Management Plan](#), and the following:
 - a. Procure with a purchase card (P-card) or purchase order (PO) using LANL online systems. Specify software requirements and acceptance criteria.
 - b. Complete an [Exhibit H](#) if the supplier comes onsite to install and/or maintain the software (ref. [P840-1](#)), as required.
 - c. *Guidance: For software acquired from other organizations within LANL or within the DOE complex, use interface agreements, integrated contracts or equivalent where possible. See [P840-1](#) for details and an example interface agreement.*
 - d. Protect against suspect/counterfeit items (S/CI) items by procuring from reputable authorized suppliers and ensuring valid software licenses. See [P330-9](#), *Suspect Counterfeit Items (S/CI)* for additional information.
 - e. Retain acquisition documentation in accordance with the SRLM's governing records management process.

Note: Ensure the correct SWID (obtained when completing Form 2033) is part of the acquisition documentation. See [AP-341-402](#), *Engineering Document Management in Operating Facilities* for details.

B. When. When software is needed to perform work.

C. Who. The SO develops and the SRLM reviews and approves the acquisition³.

3.2 ML-1 through ML-3 SSC Software

Acquire software for ML-1 through ML-3 applications in accordance with this Subsection.

³ Additional review and approval by the requestor's Division Leader and OICO may be required by Acquisition Services Management (ASM). See [ASM 3400.00.0410](#), *Goods or Services Requiring Special Review/Approval* and/or contact an ASM representative.

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- A. How.
1. ML-1 and ML-2 Safety Software: Acquire from an NQA-1 qualified supplier, or, acquire from a Non-NQA-1 qualified supplier and commercial-grade-dedicate (CGD) the software. See [AP-341-703](#), *Commercial Grade Dedication* for CGD.
 - a. Make the acquisition strategy decision above considering the following:
 - i. the availability of NQA-1 qualified suppliers (see the [LANL Institutional Evaluated Supplier List, \(IESL\)](#));
 - ii. performance history;
 - iii. cost, schedule and other commercial factors applicable to the software lifecycle.
 2. Develop a software data sheet (SWDS). Use SOFT-GEN-FM01, *Software Data Sheet Form (SWDS)*. Document the NQA-1/Non-NQA-1 acquisition strategy on the SWDS. As required by the SRLM, document supporting rationale on the SWDS or elsewhere.
 3. ML-3 and Risk Significant software: May acquire from a Non-NQA-1 qualified supplier, and CGD is not required.⁴ *Guidance: Current P840-1 requires receipt inspection; however, use of Exhibit H part number verification (PNV) version is generally adequate because V&V at installation ensures quality.*
 4. Develop a Statement of Work (SOW). Use the applicable SOW forms (from ES-EPD, AP-341-702, or equivalent). *Guidance: [ASM website](#).* Address the following requirements:

Note: Throughout SOFT-ACQUIRE, **treat bold text (not headings)** as ML-1 and ML-2 requirements but guidance for ML-3. In this subsection, plain text is a requirement for ML-1 through ML-3.

- a. Identify the software requirements, **including but not limited to specific functionality in specified environments, acceptance criteria, and supplier/LANS interfaces**; for designed software, see SOFT-DESIGN.
- b. Require documentation (and/or computer programs) describing methods used in developing and validating the software (e.g., test cases). See SOFT-DESIGN and SOFT-V&V.
- c. **From NQA-1 qualified suppliers, and when available from Non-NQA-1 qualified suppliers, require the supplier to report software errors to the purchaser, and as appropriate, the ability for the purchaser to report software errors to the supplier.**
- d. Specify software features, including requirements for safety, security functions and performance as applicable.
- e. Specify requirements for supplier notification of new releases or other issues (in addition to errors) that impact the software operation.

⁴ Per Alternate Method QPA-VAR-2016-005.1.

- f. **As required, specify mechanisms for the users to obtain assistance in operating the software.**
 - g. Specify quality assurance requirements (e.g., conform to DOE Order 414.1D or ASME NQA-1-2008/NQA-1A-2009 or [ASME NQA-1-2008/NQA-1A-2009](#), *Quality Assurance Requirements for Nuclear Facility Applications, Part I and Part II*). Specify quality assurance requirements on an [Exhibit H](#) for ML-1 through ML-3 (safety and risk significant) software, and for any ML software if the supplier is required to be onsite to install/maintain the software.
 - h. *Address the following guidance:*
 - 1) *For ML-1/ML-2 safety software that will undergo CGD, specify required supplier support to CGD the software (e.g., access for supplier assessments, surveys, 3rd party dedicators). Also see SOFT-V&V (3.0.N) for additional requirements when performing CGD.*
 - 2) *Specify training and/or technical support required to promote successful installation and use of the software.*
 - 3) *Consider specifying minimum acceptable performance history for similar applications.*
 - 4) *Specify desired method/media for computer program delivery (e.g., electronic download, compact disc).*
 - 5) *Consider attaching marked-up vendor product information that identifies key software requirements (e.g., 64 bit, Windows 10 operating system, Delta V version 10.2).*
 - 6) *As needed, contact the Office of Chief Information Officer (OCIO) for assistance implementing [PD210](#) and/or [CIO-P100](#)*
5. As required, clarify LANL-supplier division of responsibility on the SWDS.
Example: LANL was planning to acquire software for an ML-2 application. The supplier provided notifications of defects, new releases or other issues that may impact the software operation on the supplier's website. The SWDS specified that prior to each use, the SRLM must review the supplier website and/or contact the supplier to ensure the notification requirement was fully satisfied.
6. Acquire in accordance with [P840-1](#), [PD210](#), and [CIO-P100](#). Note the following:
- a. For intra-laboratory acquisitions use interface agreements per [P840-1](#). See [P840-1](#) for an example interface agreement. Address SOW requirements in the agreement.
 - b. For inter-laboratory acquisitions from other organizations within the DOE complex, use integrated contract orders (ICOs) per [P840-1](#). Address SOW requirements in the ICO.
 - c. Do not use P-cards for purchasing software associated with ML-1 through ML-3 applications (unless a formal exception is obtained per [P840-1](#)).

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- d. Protect against suspect/counterfeit items (S/CI) items by procuring from reputable suppliers and ensuring valid software licenses. See [P330-9](#), *Suspect Counterfeit Items (S/CI)* for additional information.
 - e. Retain acquisitions documentation in accordance with the SRLM's governing records management process.
Ensure the correct SWID (obtained when completing Form 2033) is part of the acquisition documentation. See [AP-341-402](#) for details.
 - f. See LANL Institutional Evaluated Supplier List ([IESL](#)) for a listing of NQA-1 qualified suppliers.
 - g. See [AP-341-703](#), *Commercial Grade Dedication* for CGD. (See SOFT-V&V [e.g., 3.0.N] for use of performance history for dedicating computer programs, etc.) Identify and control acquired software during the dedication process.
- B. When. Acquire when software is needed to perform work.
- C. Who. The SO performs acquisition activities. The SRLM must review and approve software acquisitions.⁵

4.0 NON-SSC SOFTWARE ACQUISITION

Before acquiring new Non-SSC software, look for and evaluate whether existing LANL software may be used; if existing LANL software is suitable, then acquire it from the SRLM Subsection 4.1. If existing software is not suitable, then identify the desired new software and acquire it per one of the following subsections:

- Subsection 4.2: New ML-4 Non-SSC Software
- Subsection 4.3: New Software used in SSC Design that is "Simple and Easily Understood"
- Subsection 4.4: Other New Non-SSC Software

4.1. Existing Non-SSC Software (All MLs)

- A. How.
1. Look for existing software at LANL that may be suitable. *Review the Engineering Services Division software inventory. Contact the ES-Div Software Coordinator, SRLM, or subject matter expert (SME) that may be using the desired software or similar software. The Coordinator should be listed on ES-Div and Chapter 21 webpages.*
 2. Evaluate whether existing software is suitable for the intended application. Evaluate limitations (including licenses), boundary conditions, performance (including issues/risks), and bases. Incorporate the following in the evaluation:
 - a. Ensure the ML of the existing software is commensurate with the intended use. *For example, if CAESAR II software were acquired and managed as ML-3 software, it can only be used on ML-3 and ML-4 applications. It cannot be used on ML-1 or ML-2 applications unless: (a) it were determined to be "Simple and Easily Understood" software used in design, or (2) it were commercial grade dedicated.*

⁵ See previous footnote regarding other approvals such as ASM.

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- b. Ensure the industry code associated with the software is appropriate for the intended application. *For example, CAESAR II, version 7.0 is based on the 2012 edition of American Society of Mechanical Engineers (ASME) B31.3; the software should be used only for designs where this edition of the code is appropriate.*
 3. If the existing software is determined to be suitable, contact the SRLM to acquire the software and obtain authorization to use it per the SRLM's instructions. (Note that use may be limited by license restrictions in some cases.)
 4. The SRLM reviews and authorizes his/her software use in the intended application by the additional software users. As applicable, the SRLM updates documentation (e.g., license agreements, etc.) to reflect additional users.
 - B. When. Before acquiring new software, look for, evaluate and acquire existing LANL software if suitable. Acquire when needed to perform work.
 - C. Who. The software user (SU) completes required acquisition actions. The SRLM of the existing software reviews and authorizes new users/applications

4.2. New ML-4 Non-SSC Software

See Subsection 3.1 and apply to Non-SSC ML-4 software.

4.3. New Software Used in SSC Design that is “Simple and Easily Understood”

- A. How.
 1. Determine if the software is in the category of software that is used in SSC design that is “Simple and Easily Understood”. The Responsible Engineer (RE) completes the determination using the following criteria. Each criterion must be satisfied.
 - a. The software is used in the design of SSCs;
 - b. The results of the computer program can be easily confirmed through hand calculations;
 - c. A person technically qualified, as determined by the SRLM, in the subject can review and understand the program and the supporting calculations; and,
 - d. The software can be individually verified with each use (e.g., calculation). See SOFT-V&V for individual verification requirements.

If the software is in this category, then acquire the software as ML-4 software in accordance with Subsection 4.2. Such software is excluded from commercial grade dedication (CGD) or the requirement to acquire from an NQA-1 supplier.
 2. If the software is not in this category, then acquire in accordance with Subsection 4.4.

Note: If the software is safety software, frequent use of the software may justify CGD or acquisition from an NQA-1 supplier.
- B. When. Acquire when software is needed to perform work.

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- C. Who. The SO develops and the SRLM reviews and approves the acquisition (see footnote for Paragraph 3.1.c regarding ASM).

4.4. Other New Non-SSC Software

Software for ML-1, ML-2, and/or ML-3 applications that is not “Simple and Easily Understood” software used for SSC design must be acquired in accordance with this subsection. This includes toolbox codes.

A. How.

1. Using the requirements of this subsection determine whether to acquire software from:
 - the [DOE Safety Software Quality Assurance Central Registry](#) (hereafter Registry);
 - an NQA-1 qualified supplier; or
 - a Non-NQA-1 qualified supplier.
2. Toolbox codes: Determine if the software is listed on the Registry. If listed, it is a toolbox code.⁶ Acquire in accordance with the following:
 - a. Only the version of the toolbox code listed on the Registry may be acquired without performing CGD or acquiring from an NQA-1 supplier.
 - b. *If the software is from other DOE site, acquire using an integrated contract order (ICO) in accordance with [P840-1](#) and this subsection.*
 - c. *If the software is from another government agency, acquire using an inter-agency agreement (IAA) in accordance with [P840-1](#) and this subsection.*
3. Excluding toolbox codes, acquire ML-1 and ML-2 safety software from an NQA-1 qualified supplier, or acquire from a Non-NQA-1 qualified supplier and commercial grade dedicate (CGD) the software. See [AP-341-703](#), *Commercial Grade Dedication* for CGD.
 - a. Make the acquisition strategy decision above considering the following factors:
 - i. the availability of NQA-1 qualified suppliers (see the [LANL Institutional Evaluated Supplier List. \(IESL\)](#)) and/or the feasibility of adding NQA-1 qualified suppliers to the IESL,
 - ii. performance history;
 - iii. cost, schedule and other commercial factors applicable to the software lifecycle.
4. Develop a SWDS. Use SOFT-GEN-FM01, *Software Data Sheet Form (SWDS)*. Document the NQA-1/Non-NQA-1 acquisition strategy on the SWDS. As required by the SRLM, document supporting rationale on the SWDS or elsewhere.
5. ML-3/Risk Significant Software: May acquire from a Non-NQA-1 qualified supplier; CGD does not apply. *Guidance: Current P840-1 requires receipt*

⁶ P840-1, Revision 8 doesn't address the central registry.

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inspection; however, use of Exhibit H part number verification (PNV) version is generally adequate because V&V at installation ensures quality.

6. Develop a Statement of Work (SOW). Use the applicable SOW forms (from ES-EPD, AP-341-702, or equivalent). *Guidance: [ASM website](#).* Address the following requirements:

Note: Throughout SOFT-ACQUIRE, **treat bold text (not headings)** as ML-1 and ML-2 requirements but guidance for ML-3. In this subsection, plain text is a requirement for ML-1 through ML-3.

- a. Identify the software requirements. Include as specific functionality in specified environments (as applicable), acceptance criteria, **and supplier/LANL interfaces.**
- b. Require documentation (and/or computer programs) describing methods used in **developing and** validating the software (e.g., test cases).
- c. **From NQA-1 qualified suppliers, and when available from Non-NQA-1 qualified suppliers, require the supplier to report software errors to the purchaser, and as appropriate, the ability for the purchaser to report software errors to the supplier.**
- d. Specify software features, including requirements for safety, security functions and performance as applicable.
- e. Specify requirements for supplier notification of new releases or other issues (in addition to errors) that impact the software operation.
- f. *As required, specify mechanisms for the users to obtain assistance in operating the software.*
- g. Specify quality assurance requirements (e.g., conform to DOE Order 414.1D or ASME NQA-1-2008/NQA-1A-2009, Quality Assurance Requirements for Nuclear Facility Applications, Part I and Part II). Specify quality assurance requirements on an [Exhibit H](#) for ML-1 through ML-3 (safety and risk significant) software and for any ML software if the supplier is required to be onsite to install/maintain the software.
- h. For software that includes models (see SOFT-GEN for definition and SOFT-DESIGN for additional information), ensure the appropriateness of the model for the application in addition to the appropriateness of the computer code used to provide the outcome of the model.
- i. *Address the following guidance:*
 - 1) *Specify minimum design codes for the software. As a fictitious example, SAP2000 must satisfy ASCE 10-97 for steel frame design and ACI 318-08 for concrete frame design.*
 - 2) *For safety software that will undergo CGD, specify supplier support that may be required to dedicate the software (e.g., access for supplier assessments, surveys, third-party*

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dedicators). Also see SOFT-V&V (3.0.N) for additional requirements when performing CGD.

- 3) Specify training and/or technical support required to promote successful installation and use of the software.
 - 4) Specify whether single user, multiuser server-based, or cloud-based licenses are required (contact the ES-Div Software Coordinator for support).
 - 5) Consider specify minimum acceptable performance history for similar applications.
 - 6) Specify desired method/media of computer program delivery (e.g., electronic download, compact disc).
 - 7) Consider attaching marked-up vendor product information that identifies the key software requirements (e.g., 64 bit, Windows 10, ASME B31.3 2012 Edition).
 - 8) As needed, contact the Office of Chief Information Officer (OCIO) for assistance implementing [PD210](#) and/or [CIO-P100](#).
7. As required, clarify LANL-supplier division of responsibility on the SWDS.
- Example: LANL was planning to acquire software in an ML-2 application. The supplier provided notifications of defects, new releases or other issues that may impact the software operation on the supplier's website, rather than a more direct notification such as email. The SWDS specified that the SRLM will review the supplier website and/or contact the supplier prior to each use for the information and thereby ensure the requirement was satisfied.*
8. Acquire in accordance with [P840-1](#), [PD210](#), and [CIO-P100](#). Note the following:
- a. See LANL Institutional Evaluated Supplier List ([IESL](#)) for a listing of NQA-1 qualified suppliers
 - b. See [AP-341-703](#), *Commercial Grade Dedication* for CGD. (See SOFT-V&V (e.g., 3.0.N) for use of performance history for dedicating computer programs and other CGD requirements.)
 - c. *Guidance: Intra-laboratory acquisitions should use interface agreements per [P840-1](#). See [P840-1](#) for an example interface agreement. Address SOW requirements in the agreement.*
 - d. For inter-laboratory acquisitions from other organizations within the DOE complex, use integrated contract orders (ICOs) per [P840-1](#). Address SOW requirements in the ICO.
 - e. Do not use P-cards for purchasing software associated with ML-1 through ML-3 applications (unless a formal exception is obtained per [P840-1](#)).
 - f. Protect against suspect/counterfeit items (S/CI) items by procuring from reputable authorized suppliers and ensuring valid software licenses. See [P330-9](#), *Suspect Counterfeit Items (S/CI)* for additional information.

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- g. Retain acquisitions documentation in accordance with the SRLM's governing records management process.

Ensure the correct SWID (obtained when completing Form 2033) is part of the acquisition documentation record number. See [AP-341-402](#) for details.

- B. When. Acquire when software is needed to perform work. Complete acquisition prior to approval for use as described in SOFT-V&V.
- C. Who. The SO performs acquisition activities. The SRLM must review and approve software acquisitions (See previous footnote regarding other approvals such as ASM.).