HOT NEWS FROM ECSS

- In 2006, after ECSS reached a critical mass to be used as a consistent set of standards in Space projects, a revision of the published and ongoing documents was started to ensure full consistency of the whole set, and its suitability for application in business agreements.

- As a result, the majority of the documents has been or will be re-issued in 2008:
  - A first batch has been released on 31 July 2008.
  - A second batch is scheduled to be released in November 2008.

- The few remaining documents will be issued after 2008 as part of the normal ECSS updating process.

THE NEW SYSTEM

- Since the ECSS system now differentiate between standards, handbook and technical memoranda, standards' references include the letters ST. For example, "ECSS-E-40" is now "ECSS-E-ST-40".
- To improve consistency, the system has been better re-structured:
  - M branch standards have been regrouped for better coherence. For example, ECSS-M-40 "Configuration management" and ECSS-M-50 "Information/documentation management" have been regrouped in ECSS-M-ST-40 "Configuration and information management"
  - The numbering system has been simplified to avoid "Parts". For example, ECSS-E-30 Part 4 is now ECSS-E-ST-34.

The detailed architecture of the ECSS system is shown in the following figures *<Click here>*

- In line with a standard practice when releasing new software packages, where all the items in the package are issued at the same version number, and for homogeneity, ECSS authority has decided to re-issue all standards at version number C.
- The highest level standard, ECSS-S-ST-00C "ECSS system - Description implementation and general requirements" has been enhanced to ensure the consistency of the system. Its reading is highly recommended as starting point in the ECSS system for the use of the standards.

- Old Level 1 standards (ECSS-M-00, ECSS-E-00 and ECSS-Q-00) have been superseded. Their material has been moved either to:
  - ECSS-S-ST-00C (if it was generally applicable to all branches), or
  - ECSS-M-ST-10C "Space project management – project planning and implementation", ECSS-E-ST-10C "Space engineering – System engineering general requirements" and ECSS-Q-ST-10C "Space product assurance – Product assurance management" (if it was applicable only to the particular branch).
- The reference number of the standards is used to identify those documents with more generic requirements (reference number with 2 digits, e.g. ECSS-M-ST-10) from those with more specific requirements (reference number with 4 digits, e.g. ECSS-M-ST-10-01). This difference is not intended to indicate higher relevance of some standards with respect to others.

For a complete mapping between the former and the new denomination of documents refer to the following tables *<Click here>*

USE OF ECSS STANDARDS

Use of the ECSS system is described in ECSS-S-ST-00C "ECSS system – Description, implementation and general requirements".

- ECSS documents do not have legal standing by themselves. They are made applicable in projects by invoking them in business agreements (e.g. contracts).
- ECSS standards are designed to be applied as a consistent set, and not individually.
- The set of standards to be applied to a particular project, and each individual standard, can be adapted to the particular specificities of the project. This process, called tailoring, is detailed in ECSS-S-ST-00C.
- Since ECSS standards are intended for application in business agreements, they are focussed on the requirements relevant to a particular subject. **Requirements in ECSS standards are always identified *individually* by the number of the clause, and a minor letter. For example, the following text of ECSS-S-ST-00C includes 2 requirements, 9.3a and 9.3b:**

> 9.3 Requirements on suppliers
> a. The supplier shall demonstrate compliance with Project Requirement Document (PRD) requirements.
> NOTE: An "ECSS compliance matrix" (ECM) is a recommended method to document the demonstration of this compliance. The ECM is part of the project compliance matrix, addressing compliance to the applicable ECSS requirements.
> b. The documentation identifying the compliance to ECSS requirements applicable to the project shall include the following data:
> 1 The complete list of ECSS requirements applicable to the project.
> 2 For each requirement, the actual indication of compliance. When deviation is identified the justification is provided

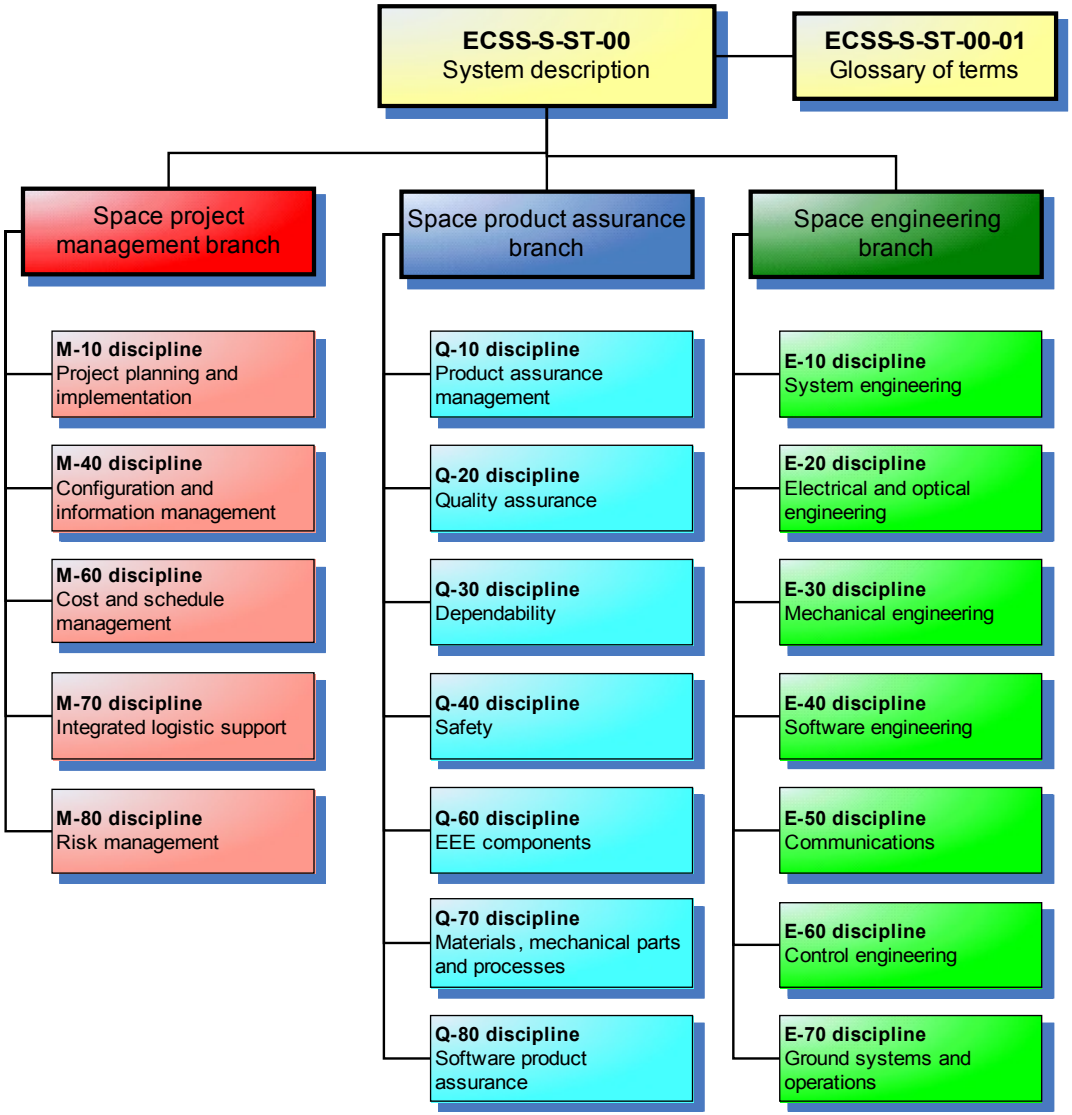
CONTENT OF ECSS STANDARDS

Each standard from Batch 1 includes the following:

- A change log identifying the relevant changes between the new and the previous published version in order to understand the impact of the changes when implementing the standard. Since these changes are sometimes affecting a large part of the standard, a detailed track of individual changes is not provided.
- A description of the scope, coverage and applicability of the standard. It can be found in Clause 1 (Scope).
- The lists the documents referred to in the standard itself.
  - If a document (in whole or in part) is made mandatory by at least one requirement, it is listed in "Normative references" in Clause 2.
  - If the document is called only as a reference to support the descriptive text, it is listed in "Bibliography", at the end of the standard.
- The terminology used in the standard. It is covered in Clause 3 "Terms, definitions and abbreviated terms".

- The requirements and the minimum descriptive text to understand their context. Requirements and descriptive text are clearly separated. Depending of the amount of descriptive text, this can be organized in different clauses than the requirements, or attached to them by mean of NOTES. Clause 4 is generally used to summarize the descriptive information, and subsequent clauses (5, 6, and so) are used to specify the requirements. If the amount of descriptive material so justifies, it is usually regrouped in “Informative annexes”.
- The required content of deliverable documents. It is included in normative annexes called DRDs (Document requirement definition). They are called normative because DRDs constitute requirements. Except in some specific cases, a DRD only specifies the content, and not the structure or format of the document to be delivered.

ECSS ARCHITECTURE



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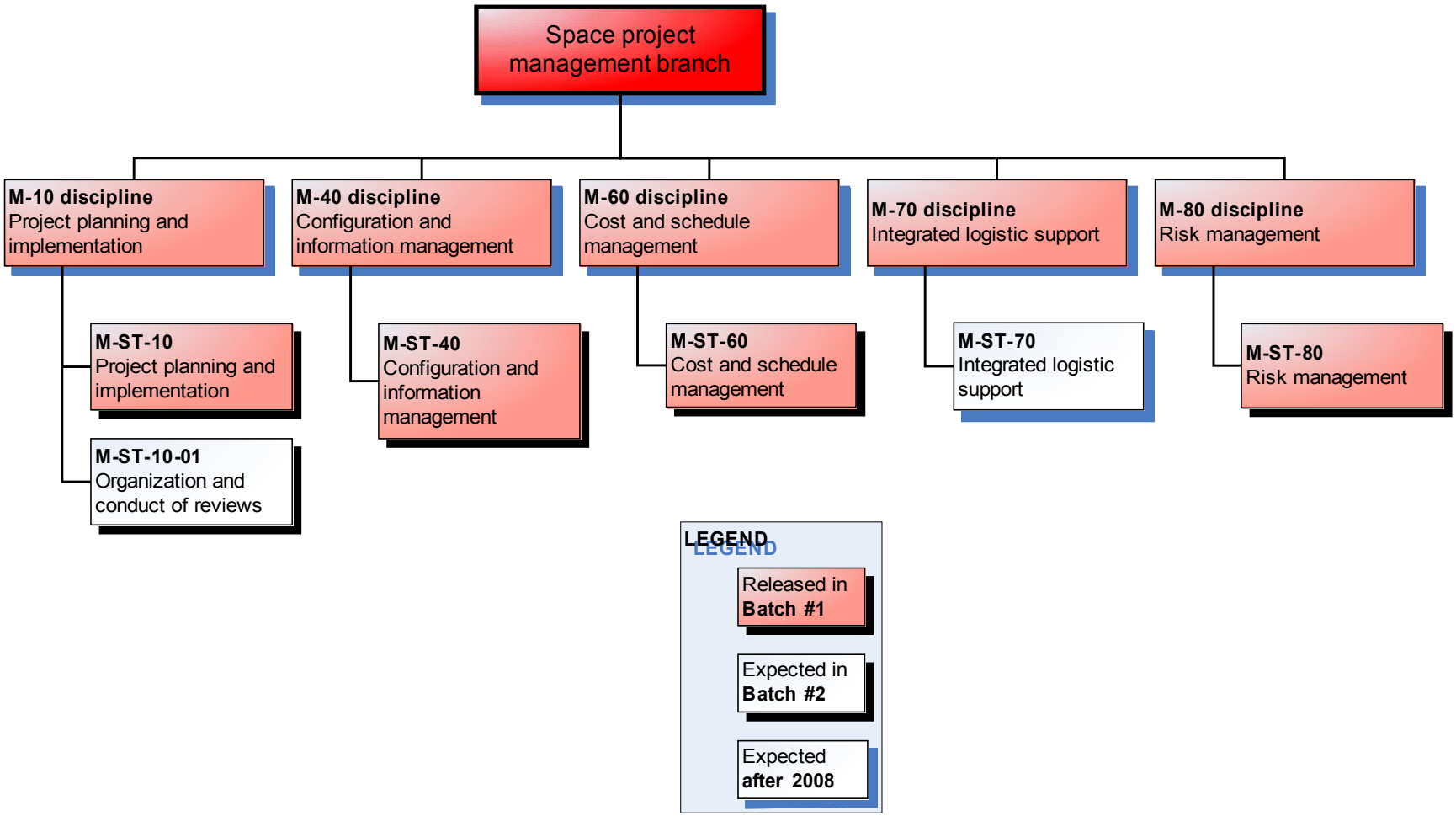

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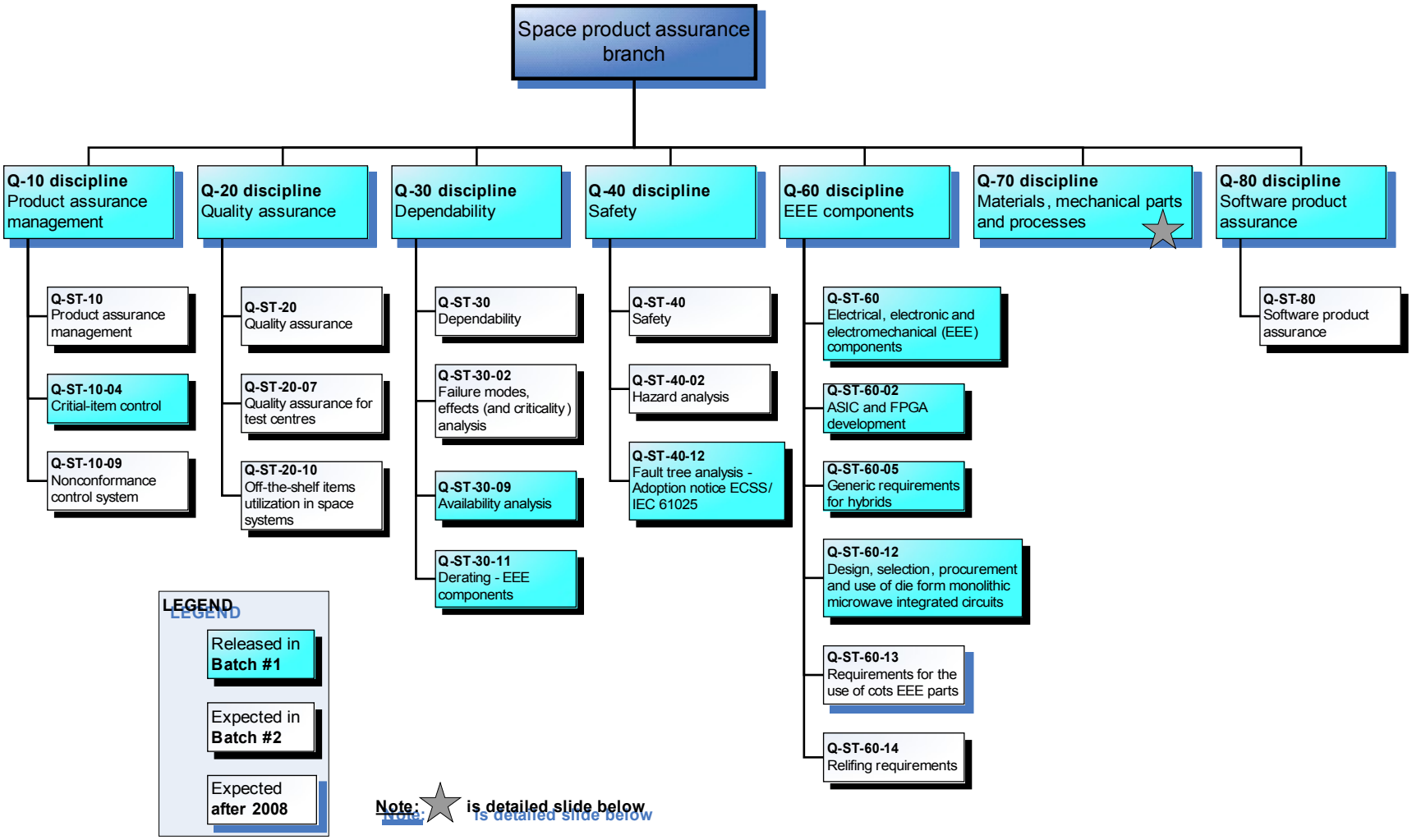

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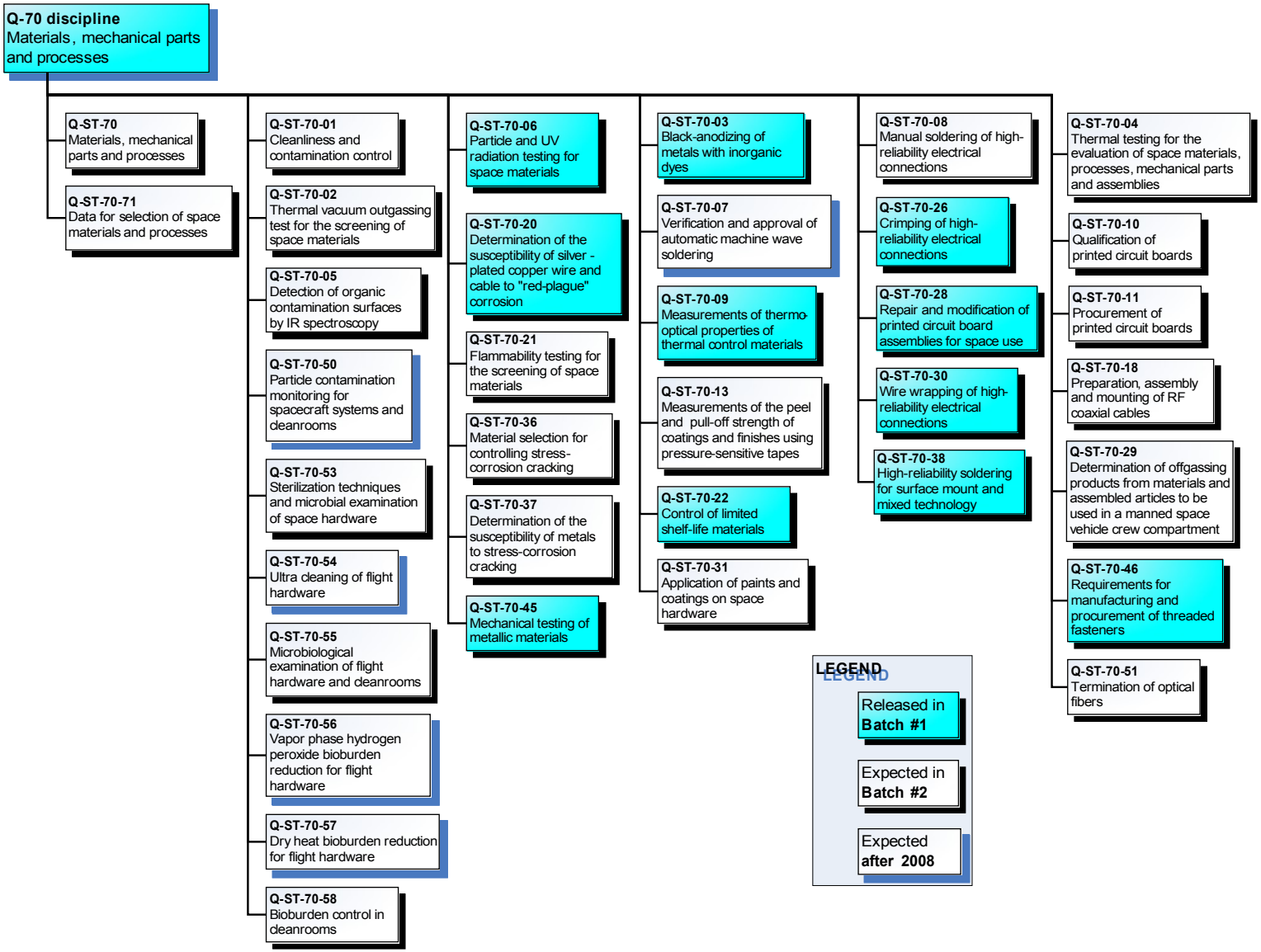

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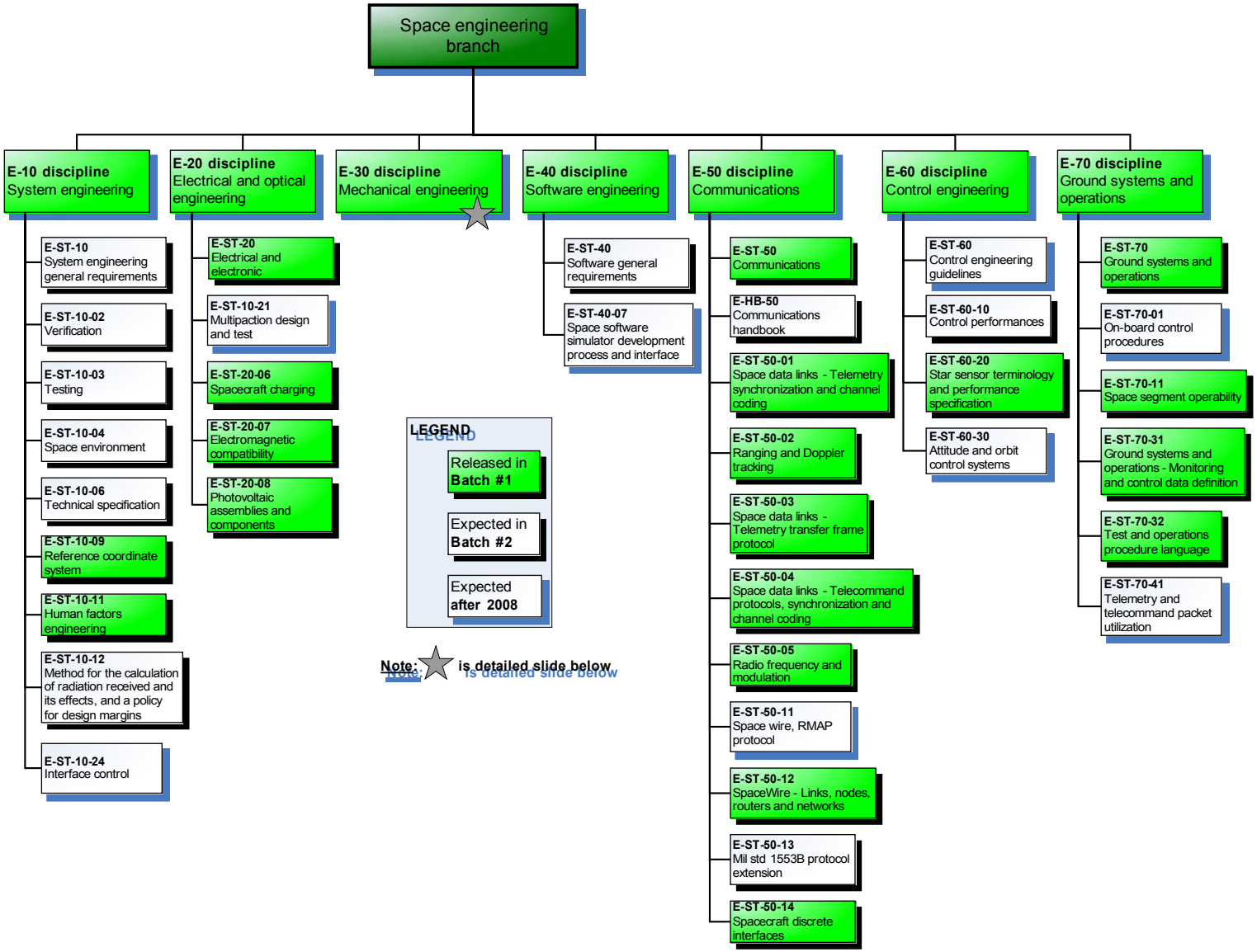

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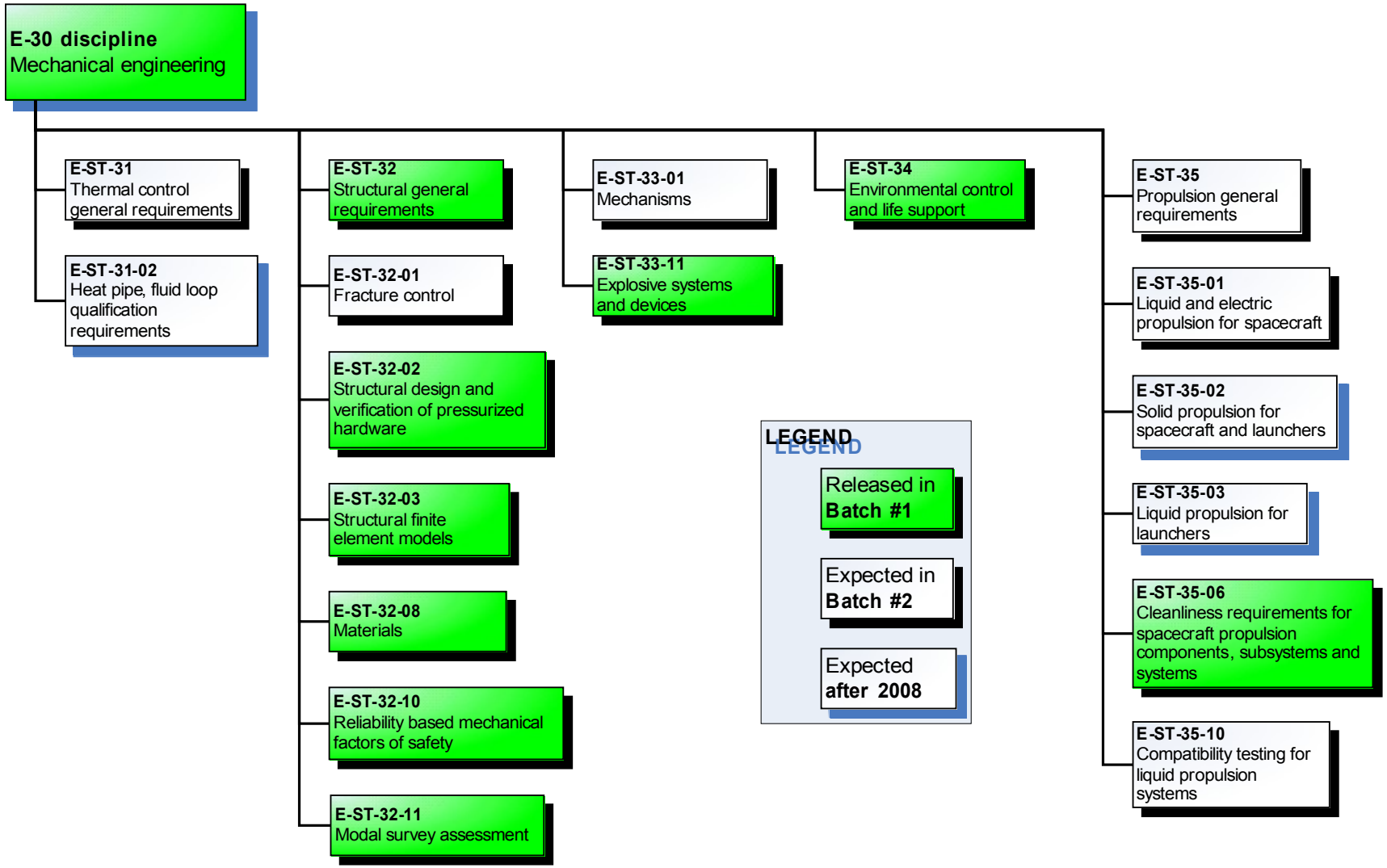

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LIST OF BATCH 1 STANDARDS

Batch	Actual ID (Downloadable from ECSS Website)	Branch	Actual Title	Old reference
1	ECSS-E-ST-10-09C	Engineering	Reference coordinate system	First issue (no previous version)
1	ECSS-E-ST-10-11C	Engineering	Human factors engineering	First issue (no previous version)
1	ECSS-E-ST-20-06C	Engineering	Spacecraft charging	First issue (no previous version)
1	ECSS-E-ST-20-07C	Engineering	Electromagnetic compatibility	First issue (no previous version)
1	ECSS-E-ST-20-08C	Engineering	Photovoltaic assemblies and components	ECSS-E-20-08A
1	ECSS-E-ST-20C	Engineering	Electrical and electronic	ECSS-E-20A
1	ECSS-E-ST-32-02C	Engineering	Structural design and verification of pressurized hardware	First issue (no previous version)
1	ECSS-E-ST-32-03C	Engineering	Structural finite element models	First issue (no previous version)
1	ECSS-E-ST-32-08C	Engineering	Materials	ECSS-E-30 Part 8A
1	ECSS-E-ST-32-10C	Engineering	Reliability based mechanical factors of safety	First issue (no previous version)
1	ECSS-E-ST-32-11C	Engineering	Modal survey assessment	ECSS-E-30-11A
1	ECSS-E-ST-32C	Engineering	Structural general requirements	ECSS-E-30 Part 2A
1	ECSS-E-ST-33-11C	Engineering	Explosive systems and devices	ECSS-E-33-11A (before ECSS-E-30 Part 6A "Pyrotechnics")
1	ECSS-E-ST-34C	Engineering	Environmantal control and life support (ECLS)	ECSS-E-30 Part 4A
1	ECSS-E-ST-35-06C	Engineering	Cleanliness requirements for spacecraft propulsion components, subsystems and systems	First issue (no previous version)
1	ECSS-E-ST-50-01C	Engineering	Space data links - Telemetry synchronization and channel coding	ECSS-E-50-01A
1	ECSS-E-ST-50-02C	Engineering	Ranging and Doppler tracking	ECSS-E-50-02A
1	ECSS-E-ST-50-03C	Engineering	Space data links - Telemetry transfer frame protocol	ECSS-E-50-03A
1	ECSS-E-ST-50-04C	Engineering	Space data links - Telecommand protocols, synchronization and channel coding	ECSS-E-50-04A
1	ECSS-E-ST-50-05C	Engineering	Radio frequency and modulation	ECSS-E-50-05A
1	ECSS-E-ST-50-12C	Engineering	SpaceWire - Links, nodes, routers and networks	ECSS-E-50-12A
1	ECSS-E-ST-50-14C	Engineering	Spacecraft discrete interfaces	ECSS-E-50-14A
1	ECSS-E-ST-50C	Engineering	Communications	ECSS-E-50 Part 1A and Part 2A
1	ECSS-E-ST-60-20C	Engineering	Star sensor terminology and performance	First issue (no previous version)

			specification	
1	ECSS-E-ST-70-11C	Engineering	Space segment operability	ECSS-E-70-11A
1	ECSS-E-ST-70-31C	Engineering	Ground systems and operations - Monitoring and control data definition	ECSS-E-70-31A
1	ECSS-E-ST-70-32C	Engineering	Test and operations procedure language	ECSS-E-70-32A
1	ECSS-E-ST-70C	Engineering	Ground systems and operations	ECSS-E-70 Part 1A and Part 2A
1	ECSS-M-ST-10C	Management	Project planning and implementation	ECSS-M-10B "Project breakdown structures", ECSS-M-20B "Project organization", ECSS-M-30A "Project phasing and planning" and contribution from ECSS-M-00A "Management Policy and principles"
1	ECSS-M-ST-40C	Management	Configuration and information management	ECSS-M-40B "Configuration management" and ECSS-M-50B "Information/documentation management"
1	ECSS-M-ST-60C	Management	Cost and schedule management	ECSS-M-60B
1	ECSS-M-ST-80C	Management	Risk management	ECSS-M-00-03B
1	ECSS-Q-ST-10-04C	Product assurance	Critial-item control	ECSS-Q-20-04
1	ECSS-Q-ST-30-09C	Product assurance	Availability analysis	ECSS-Q-30-09A
1	ECSS-Q-ST-30-11C	Product assurance	Derating - EEE components	ECSS-Q-30-11A
1	ECSS-Q-ST-40-12C	Product assurance	Fault tree analysis - Adoption notice ECSS/IEC 61025	ECSS-Q-40-12A
1	ECSS-Q-ST-60C	Product assurance	Electrical, electronic and electromechanical (EEE) components	ECSS-Q-60B
1	ECSS-Q-ST-60-02C	Product assurance	ASIC and FPGA development	ECSS-Q-60-02A
1	ECSS-Q-ST-60-05C	Product assurance	Generic requirements for hybrids	ECSS-Q-60-05A
1	ECSS-Q-ST-60-12C	Product assurance	Design, selection, procurement and use of die form monolithic microwave integrated circuits (MMICs)	ECSS-Q-60-12A
1	ECSS-Q-ST-70-03C	Product assurance	Black-anodizing of metals with inorganic dyes	ECSS-Q-70-03A
1	ECSS-Q-ST-70-06C	Product assurance	Particle and UV radiation testing for space materials	First issue (no previous version)

1	ECSS-Q-ST-70-09C	Product assurance	Measurements of thermo-optical properties of thermal control materials	ECSS-Q-70-09A
1	ECSS-Q-ST-70-20C	Product assurance	Determination of the susceptibility of silver-plated copper wire and cable to "red-plague" corrosion	ECSS-Q-70-20A
1	ECSS-Q-ST-70-22C	Product assurance	Control of limited shelf-life materials	ECSS-Q-70-22A
1	ECSS-Q-ST-70-26C	Product assurance	Crimping of high-reliability electrical connections	ECSS-Q-70-26A
1	ECSS-Q-ST-70-28C	Product assurance	Repair and modification of printed circuit board assemblies for space use	ECSS-Q-70-28A
1	ECSS-Q-ST-70-30C	Product assurance	Wire wrapping of high-reliability electrical connections	ECSS-Q-70-30A
1	ECSS-Q-ST-70-38C	Product assurance	High-reliability soldering for surface mount and mixed technology	ECSS-Q-70-38A rev. 1
1	ECSS-Q-ST-70-45C	Product assurance	Mechanical testing of metallic materials	ECSS-Q-70-45A
1	ECSS-Q-ST-70-46C	Product assurance	Requirements for manufacturing and procurement of threaded fasteners	ECSS-Q-70-46A
1	ECSS-S-ST-00C	ECSS system -	Description, implementation and general requirements	ECSS-S-00A and contributions from ECSS-M-00A "Management Policy and principles", ECSS-E-00A "Engineering Policy and principles" and ECSS-Q-00A "Product assurance Policy and principles"

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LIST OF EXISTING DOCUMENTS TO BE RE-ISSUED
(Batch 2 and documents released after 2008)

Batch	Actual ID (Downloadable from ECSS Website)	New ID (when re-issued)	Branch	Title
2	ECSS-E-10-02A	ECSS-E-ST-10-02C	Engineering	Verification
2	ECSS-E-10-03A	ECSS-E-ST-10-03C	Engineering	Testing
2	ECSS-E-10-04A	ECSS-E-ST-10-04C	Engineering	Space environment
2	ECSS-E-10 Part 6A rev. 1 "Functional and technical specification"	ECSS-E-ST-10-06C	Engineering	Technical specification
2	• ECSS-E-10 Part 1B "System engineering – Requirements and process", • ECSS-E-10 Part 7A "Product data exchange" • ECSS-E-10-05A "Functional analysis"	ECSS-E-ST-10C	Engineering	System engineering general requirements
After 2008	ECSS-E-20-01A	ECSS-E-ST-20-01A	Engineering	Multipaction design and test
2	ECSS-E-30 Part 1A "Mechanical – Thermal"	ECSS-E-ST-31C	Engineering	Thermal control general requirements
2	ECSS-E-30-01A	ECSS-E-ST-32-01C	Engineering	Fracture control
2	ECSS-E-30 Part 3A	ECSS-E-ST-33-01C	Engineering	Mechanisms
2	ECSS-E-30 Part 5.1A (part of) "Liquid and electrical propulsion for spacecraft"	ECSS-E-ST-35-01C	Engineering	Liquid and electric propulsion for spacecraft
2	ECSS-E-30 Part 5.1A (part of) "Liquid and electrical propulsion for spacecraft"	ECSS-E-ST-35C	Engineering	Propulsion general requirements
2	• ECSS-E-40 Part 1B "Software – Principles and requirements" • ECSS-E-40 Part 2B "Software – DRDs"	ECSS-E-ST-40C	Engineering	Software general requirements
After 2008	ECSS-E-60A	ECSS-E-ST-60C	Engineering	Control engineering
After 2008	ECSS-E-70-41A	ECSS-E-ST-70-41C	Engineering	Telemetry and telecommand packet utilization
2	ECSS-M-30-01A	ECSS-M-ST-10-01C	Management	Organization and conduct of reviews
After 2008	ECSS-M-70A	ECSS-M-ST-70C	Management	Integrated logistic support
After 2008	ECSS-P-001B	ECSS-S-ST-00-01C	ECSS system -	Glossary of terms
2	ECSS-Q-20-09B	ECSS-Q-ST-10-09C	Product assurance	Nonconformance control system
2	ECSS-Q-20-07A	ECSS-Q-ST-20-07C	Product assurance	Quality assurance for test centres
2	ECSS-Q-20B	ECSS-Q-ST-20C	Product assurance	Quality assurance

2	ECSS-Q-30-02A	ECSS-Q-ST-30-02C	Product assurance	Failure modes, effects (and criticality) analysis (FMEA/FMECA)
2	ECSS-Q-30B	ECSS-Q-ST-30C	Product assurance	Dependability
2	ECSS-Q-40-02A	ECSS-Q-ST-40-02C	Product assurance	Hazard analysis
2	ECSS-Q-40B	ECSS-Q-ST-40C	Product assurance	Safety
After 2008	ECSS-Q-60-13A	ECSS-Q-ST-60-13C	Product assurance	Requirements for the use of cots EEE parts
2	ECSS-Q-60-14A	ECSS-Q-ST-60-14C	Product assurance	Relifing requirements
2	• ECSS-Q-70B "Product assurance Materials, mechanical parts and processes" • ECSS-E-30 Part 7A "Engineering Mechanical parts"	ECSS-Q-ST-70 C	Product assurance	Materials, mechanical parts and processes
2	ECSS-Q-70-01A	ECSS-Q-ST-70-01C	Product assurance	Cleanliness and contamination control
2	ECSS-Q-70-02A	ECSS-Q-ST-70-02C	Product assurance	Thermal vacuum outgassing test for the screening of space materials
2	ECSS-Q-70-04A	ECSS-Q-ST-70-04C	Product assurance	Thermal testing for the evaluation of space materials, processes, mechanical parts and assemblies
2	ECSS-Q-70-05A	ECSS-Q-ST-70-05C	Product assurance	Detection of organic contamination surfaces by IR spectroscopy
After 2008	ECSS-Q-70-07A	ECSS-Q-ST-70-07C	Product assurance	Verification and approval of automatic machine wave soldering
2	ECSS-Q-70-08A	ECSS-Q-ST-70-08C	Product assurance	Manual soldering of high-reliability electrical connections
2	ECSS-Q-70-10A	ECSS-Q-ST-70-10C	Product assurance	Qualification of printed circuit boards
2	ECSS-Q-70-11A	ECSS-Q-ST-70-11C	Product assurance	Procurement of printed circuit boards
2	ECSS-Q-70-13A	ECSS-Q-ST-70-13C	Product assurance	Measurements of the peel and pull-off strength of coatings and finishes using pressure-sensitive tapes
2	ECSS-Q-70-18A	ECSS-Q-ST-70-18C	Product assurance	Preparation, assembly and mounting of RF coaxial cables
2	ECSS-Q-70-21A	ECSS-Q-ST-70-21C	Product assurance	Flammability testing for the screening of space materials
2	ECSS-Q-70-29A	ECSS-Q-ST-70-29C	Product assurance	Determination of offgassing products from materials and assembled articles to be used in a manned space vehicle crew compartment

2	• ECSS-Q-70-25A "Application of black coating Aeroglaze Z306", • ECSS-Q-70-33A "Application of the thermal control coating PSG 120 FD", • ECSS-Q-70-34A "Application of the black electrically conductive coating Aeroglaze H322" • ECSS-Q-70-35A "Application of the black electrically conductive coating Aeroglaze L300"	ECSS-Q-ST-70-31C	Product assurance	Application of paints and coatings on space hardware
2	ECSS-Q-70-36A	ECSS-Q-ST-70-36C	Product assurance	Material selection for controlling stress-corrosion cracking
2	ECSS-Q-70-37A	ECSS-Q-ST-70-37C	Product assurance	Determination of the susceptibility of metals to stress-corrosion cracking
2	ECSS-Q-70-71A rev.1	ECSS-Q-ST-70-71C	Product assurance	Data for selection of space materials and processes
2	ECSS-Q-80B	ECSS-Q-ST-80C	Product assurance	Software product assurance

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LIST OF NEW DOCUMENTS TO BE ISSUED
(Batch 2 and documents released after 2008)

Batch	New ID (when re-issued)	Branch	Title
2	ECSS-E-HB-50A	Engineering	Communications guidelines NOTE: Not a standard, but considered of high relevance to the implementation of E-50 and CCSDS communication standards
2	ECSS-E-ST-10-12C	Engineering	Method for the calculation of radiation received and its effects, and a policy for design margins
After 2008	ECSS-E-ST-10-24C	Engineering	Interface control
After 2008	ECSS-E-ST-31-02C	Engineering	Heat pipe, fluid loop qualification requirements
After 2008	ECSS-E-ST-35-02C	Engineering	Solid propulsion for spacecraft and launchers
After 2008	ECSS-E-ST-35-03C	Engineering	Liquid propulsion for launchers
2	ECSS-E-ST-35-10A	Engineering	Compatibility testing for liquid propulsion systems
After 2008	ECSS-E-ST-40-07C	Engineering	Space software simulator development process and interface
After 2008	ECSS-E-50-11C	Engineering	Space wire, RMAP protocol
2	ECSS-E-ST-50-13C	Engineering	Mil std 1553B protocol extension
2	ECSS-E-ST-60-10C	Engineering	Control performances
After 2008	ECSS-E-ST-60-30C	Engineering	Attitude and orbit control systems (AOCS)
After 2008	ECSS-E-ST-70-01C	Engineering	On-board control procedures
2	ECSS-Q-ST-10C	Product assurance	Product assurance management NOTE: New document, with contribution from ECSS-Q-00A.
2	ECSS-Q-ST-20-10C	Product assurance	Off-the-shelf items utilization in space systems
After 2008	ECSS-Q-ST-70-50C	Product assurance	Particle contamination monitoring for spacecraft systems and cleanrooms
2	ECSS-Q-ST-70-51C	Product assurance	Termination of optical fibers
2	ECSS-Q-ST-70-53C	Product assurance	Sterilization techniques and microbial examination of space hardware
After 2008	ECSS-Q-ST-70-54C	Product assurance	Ultra cleaning of flight hardware
2	ECSS-Q-ST-70-55C	Product assurance	Microbiological examination of flight hardware and cleanrooms
After 2008	ECSS-Q-ST-70-56C	Product assurance	Vapor phase hydrogen peroxide bioburden reduction for flight hardware
After 2008	ECSS-Q-ST-70-57C	Product assurance	Dry heat bioburden reduction for flight hardware
2	ECSS-Q-ST-70-58C	Product assurance	Bioburden control in cleanrooms

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LIST OF DOCUMENTS TO BE DISCONTINUED

ID	Branch	Title	Notes
ECSS-M-00B	Management	Policy and principles	Material common to the 3 branches moved to ECSS-S-ST-00C. Material specific to M branch, moved to ECSS-M-ST-10C
ECSS-M-00-02A	Management	Tailoring of space standards	Included in ECSS-S-ST-00C
ECSS-M-20B	Management	Project organization	Included in ECSS-M-ST-10C
ECSS-M-30A	Management	Project phasing and planning	Included in ECSS-M-ST-10C
ECSS-M-50B	Management	Information/ducumentation management	Included in ECSS-M-ST-40C
ECSS-Q-00A	Product assurance	Policy and principles	Material common to the 3 branches moved to ECSS-S-ST-00C. Material specific to Q branch, moved to ECSS-Q-ST-10C
ECSS-Q-60-11A	Product assurance	Derating and end of life parameters drift - EEE components	Derating, included in ECSS-Q-ST-30-11C. End of life parameters drift, to be moved to the Technical memo ECSS-Q-TM-30-12
ECSS-Q-70-25A	Product assurance	Application of the black coating Aeroglaze Z306	Included in ECSS-Q-ST-70-31C
ECSS-Q-70-33A	Product assurance	Application of the thermal control coating PSG 120 FD	Included in ECSS-Q-ST-70-31C
ECSS-Q-70-34A	Product assurance	Application of the black electrically conductive coating Aeroglaze H322	Included in ECSS-Q-ST-70-31C
ECSS-Q-70-35A	Product assurance	Application of the black electrically conductive coating Aeroglaze L300	Included in ECSS-Q-ST-70-31C
ECSS-E-00A	Engineering	Policy and principles	Material common to the 3 branches moved to ECSS-S-ST-00C. Material specific to E branch, moved to ECSS-E-ST-10C
ECSS-E-10 Part 7A	Engineering	Product data exchange	Generic requirements, moved to ECSS-E-ST-10C. Specific material moved to the Technical Memo ECSS-E-TM-10-20
ECSS-E-10-05A	Engineering	Functional analysis	Generic requirements moved to ECSS-E-ST-10C
ECSS-E-30 Part 7	Engineering	Mechanical parts	Included in ECSS-Q-ST-70C

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