Services and support offerings for cGMP compliance

For biopharma customers

The world leader in serving science

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Executive summary

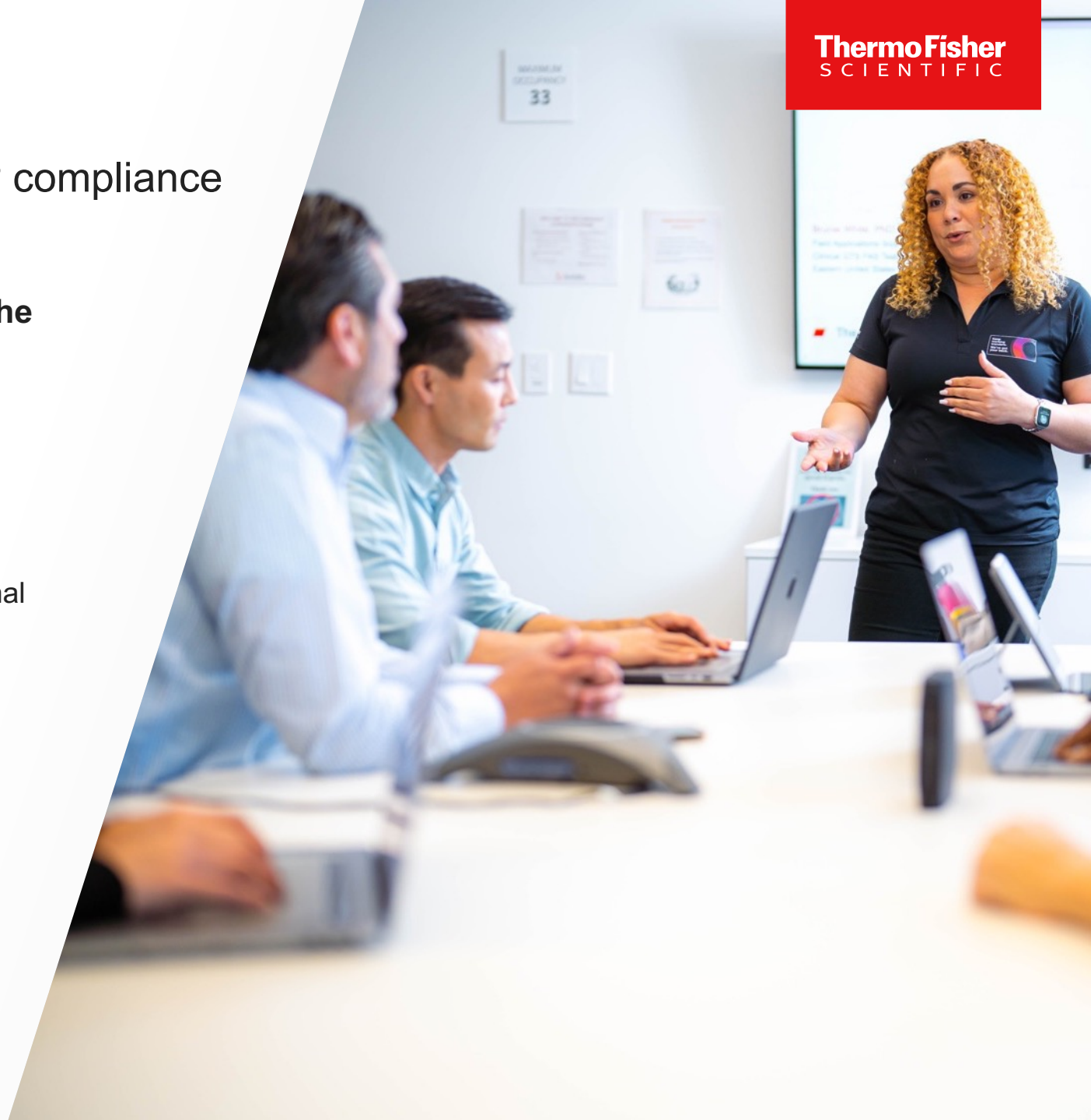
The following solutions are available for cGMP compliance

Qualification services (IQ/OQ/PQ/IPV) address the following CFRs

- 21 CFR Part 58—good laboratory practice (GLP) for nonclinical labs
- 21 CFR Part 210 and 211—good manufacturing practice (GMP) for human drugs
- 21 CFR Part 312—good clinical practice for investigational new drug application
- 21 CFR Part 820—quality system requirements (medical devices)
- 21 CFR Part 11—electronic records and signatures

Computer system validation (CSV) consulting services address the following CFR:

- 21 CFR Part 11—electronic records and signatures



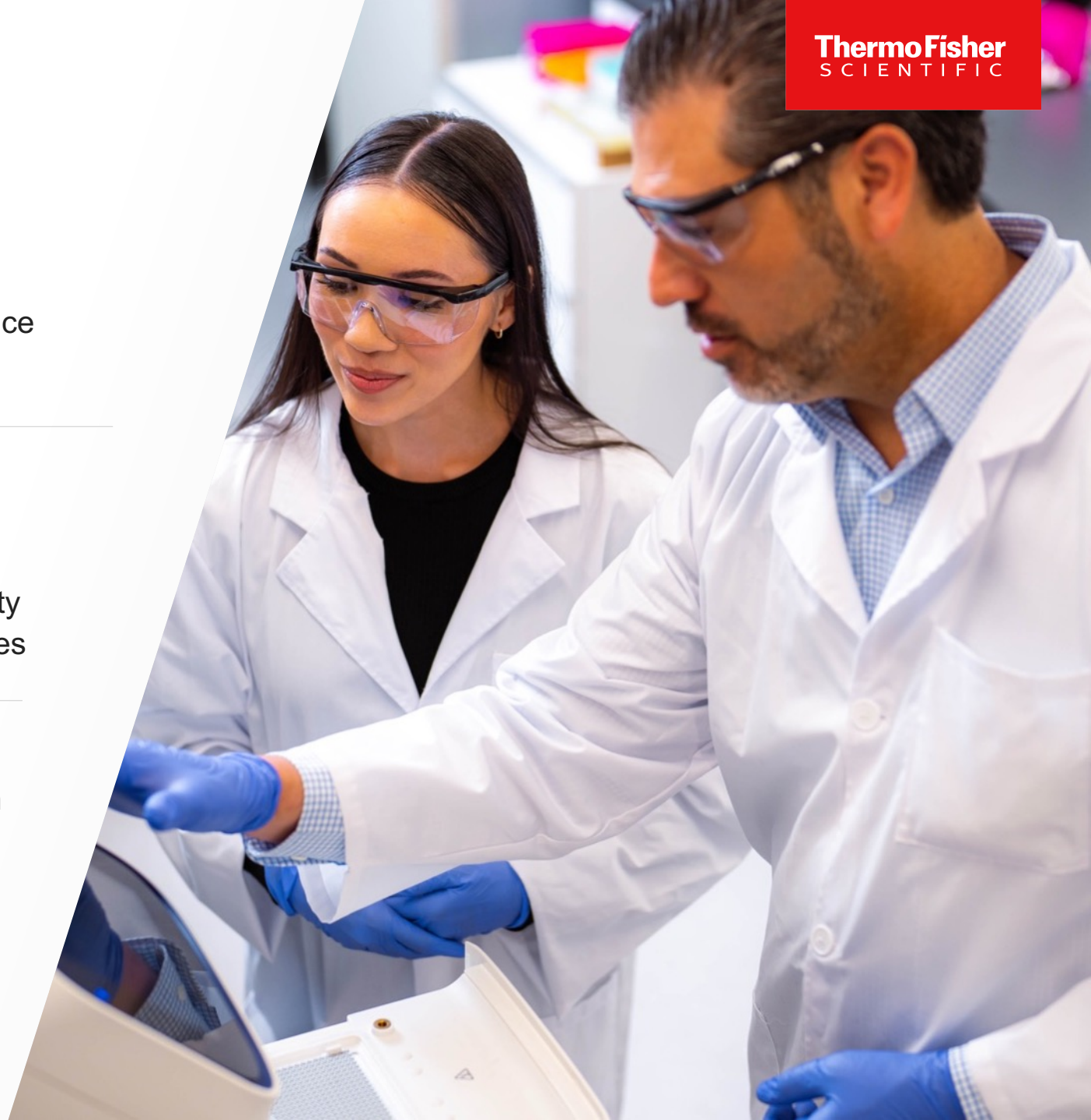
cGMP and FDA's CFR

Regulations related to biopharma

- cGMP refers to the current good manufacturing practice (**cGMP**) regulations enforced by the FDA

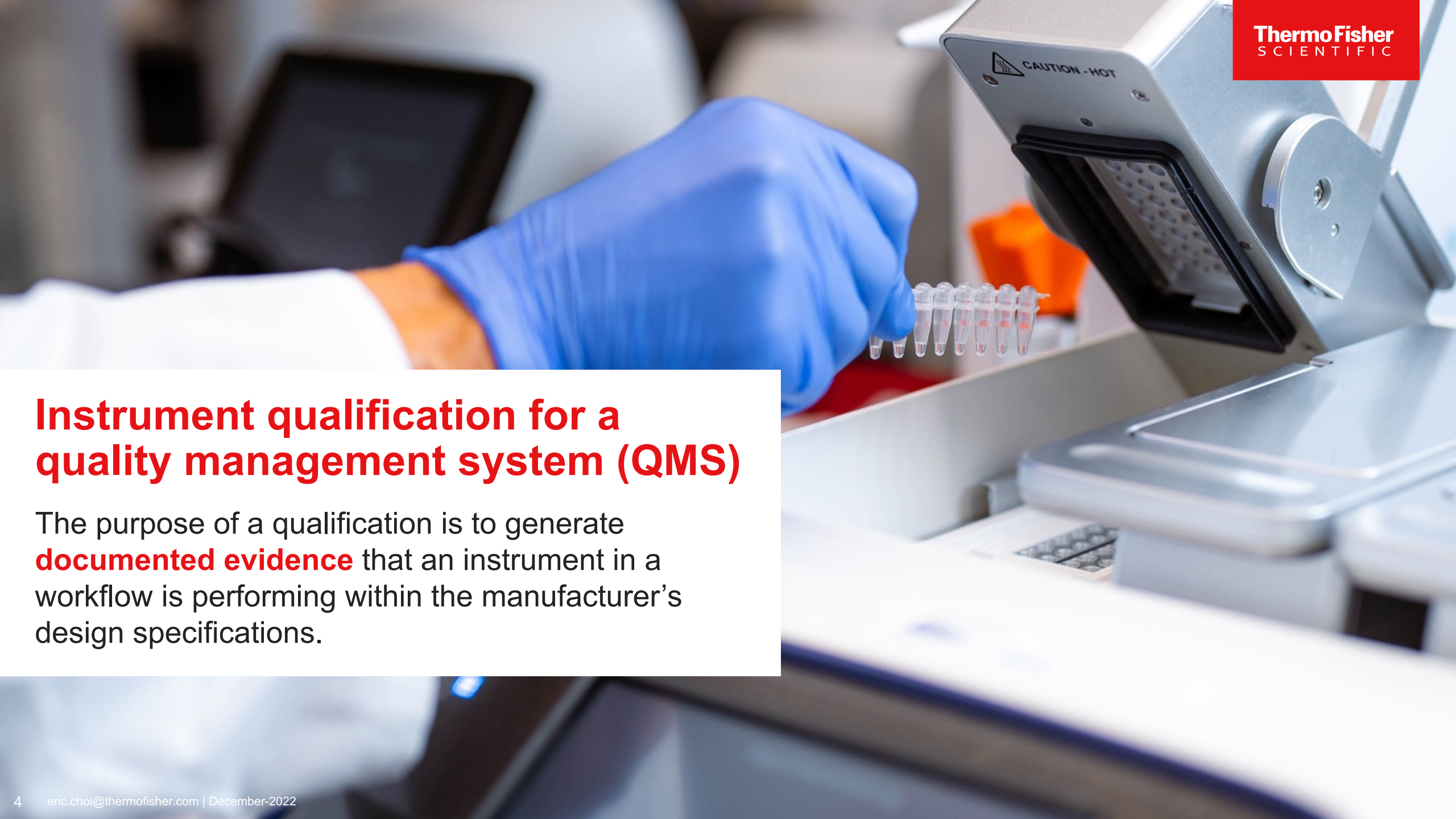
- cGMP regulation includes establishing strong quality management systems, obtaining raw materials of appropriate quality, establishing robust operating procedures, detecting and investigating product quality deviations, and maintaining reliable testing laboratories

- FDA's Code of Federal Regulations (**CFR**) states pharmaceutical- or drug quality–related regulations in Title 21, including sections in parts 1–99, 200–299, 300–499, 600–799, and 800–1,299



FDA – Facts About the Current Good Manufacturing Practices (CGMPs)

FDA – Current Good Manufacturing Practice (CGMP) Regulations



Instrument qualification for a quality management system (QMS)

The purpose of a qualification is to generate **documented evidence** that an instrument in a workflow is performing within the manufacturer's design specifications.

What is a qualification?

What is instrument hardware qualification?

IQ
Installation qualification

OQ
Operational qualification

PQ
Performance qualification

IPV
Instrument performance verification

Installation qualification

IQ—installation qualification

- Verifies that the instrument and accessories match order invoice and shipping manifest
- Verifies that the customer site meets the requirements of the instrument for installation
- Verifies configuration of instrument being installed
- Verifies criteria for successful hardware installation

Operational qualification

OQ—operational qualification

- Performs functional subsystem diagnostics
- Identifies any computer or software components
- Performs relevant subsystem-level tests
- Performs relevant subsystem-level calibrations
- Helps ensure all critical subsystems are performing within the manufacturer’s specifications

Performance qualification and instrument performance verification

PQ— performance qualification	**Dx/IVD**
IPV— instrument performance verification	**RUO**

- Ensure that the system is performing within the manufacturer’s specifications
- Standard system-level run assesses performance of all subsystems working together

When is qualification required?

For life science instrumentation (Dx/IVD and RUO), qualification should be performed:

- Upon installation or relocation of instrument
- After any critical or significant repair*
  - When the service requires secondary testing to prove the performance of a subsystem of a full instrument system, or affects the way data would be generated from the system
- Upon annual planned maintenance per manufacturer
- Upon preplanned maintenance per customer quality systems
- After a change to the instrument configuration
- Prior to a change in laboratory use

* To help understand what the major or critical repair requalification event recommendation is, we follow a risk-based approach.

Why is qualification important?

- Provides documented evidence of performance over time
- Supports quality management systems
- Supports process validation
- Mitigates risk to results
- Helps maintain sample integrity
- Provides evidence of suitability for use

Validation in a quality system

The objective of validation is to produce **documented evidence**, which provides a high degree of **assurance** that all parts in scope will consistently work correctly within specifications when brought into use.

What is computer system validation (CSV)?

Validation of computer systems supports data accuracy, reliability, consistency in intended performance, and the ability to discern invalid or altered records as a critical requirement of electronic record compliance, described in the FDA 21 CFR 11.10(a) and EU Annex 11.

What is the value of our CSV services?

Thermo Fisher Scientific offers **CSV consulting services**, providing comprehensive validation consulting, testing, and documentation that help ensure that computer data security, auditing, and e-signature (SAE) software features are in compliance with industry standards and regulatory guidance.

Computer system validation (CSV)

What does a Thermo Fisher CSV provide?

- **Documentation** that a computer system meets a set of defined system requirements
- **Focus** on user requirements for the software
- **Verification** that **electronic record-keeping systems** are performing to specifications (including accuracy and reliability)
- **Audit-style template documentation** for development
- **Process validation** of each system's ability to identify altered or invalid records

How frequently should they be performed?

- At installation
- After a major change in the software state (e.g., software upgrade*)
- After a need to repair or replace computer hardware*
- When migrating to new systems or processes*

* We recommend performing risk analysis as part of your established change control process.

Thermo Fisher CSV saves you time and money

What customers typically have:

- **Quality department**—supporting the larger business but not focused on a particular workflow or lab operation
- **Lab infrastructure**—focused on the operation of the lab but not understanding validation or quality management system needs
- **Third-party consultant**—filling the gap between quality department and validation but not familiar with instrument software or the SAE features

What customers typically need:

- Dedicated staff
- Documentation
- Knowledge of validation and SAE features

What our CSV consulting services bring:

- **Dedicated project management**—focused on driving the project from start to finish
- **Experienced validation specialist**—understanding of industry-accepted validation process
- **SAE software workflow specialist**—knowledge of features and functions of the software being validated
- **Experienced CSV specialist**—focused on execution of SAE feature testing in approved qualification documentation
- **Pre-form template documentation**—flexible to accommodate some customer needs into core documentation

Computer system validation (CSV)

Why choose Thermo Fisher?

Transparency

- Thermo Fisher provides complete visibility into the CSV process, project planning, documentation reviews, test execution, and summarization of results to facilitate regulatory compliance and ensure success as you move into production

Integrated support

- Highly experienced specialists act as project managers to efficiently guide your CSV
- Dedicated CSV specialists are available to support and execute validation test plan
- As the manufacturer of record, we provide end-to-end support for Thermo Fisher solutions

Flexibility

- An assessment of needs and initial consultation are included in each engagement to ensure every laboratory receives the optimal solution for its unique situation
- An adaptable solution based on your needs and guided by regulatory and international validation standards is ensured

Technical acumen

- We have completed hundreds of CSV consulting engagements
- We interface regularly with various Thermo Fisher stakeholders, including R&D, to ensure technically excellent service

Learn more about instrument qualifications, or contact an instrument qualifications specialist at **thermofisher.com/iqoqpq**

Learn more about CSV, or contact a CSV specialist at **thermofisher.com/csv**

Where are qualifications applicable?

GxP*

- 21 CFR Part 58—good laboratory practice (GLP) for nonclinical labs
- 21 CFR Part 210 and 211—good manufacturing practice (GMP) for human drugs
- 21 CFR Part 312—good clinical practice for investigational new drug application
- 21 CFR Part 820—quality system requirements (medical devices)
- 21 CFR Part 11—electronic records and signatures
- ISO 9001
- ISO 13485
- ISO 14971
- ISO 17025
- ISO 15189

* GxP covers GMP (Good Manufacturing Practice), GLP (Good Laboratory Practice), GDP (Good Documentation Practice), and GCP (Good Clinical Practice).

Where do qualifications come from?

Quality system regulation requirement

21 CFR 820.70 Production and Process Controls

Equipment

Each manufacturer shall ensure that **all** equipment used in the manufacturing process meets specified requirements and is appropriately **designed, constructed, placed, and installed to facilitate maintenance, adjustment, cleaning, and use**.

- Maintenance schedule
- Inspection
- Adjustment

Where do qualifications come from?

Quality system regulation requirement

21 CFR 820.75 Process Validation

Where the **results of a process cannot be fully verified by subsequent inspection and test**, the process shall be validated with a high degree of assurance and approved according to established procedures.

Establish and maintain procedures

- Validation shall be performed by **qualified** individuals.
- Monitoring of control methods, data, date, and personnel shall be **documented**.
- When changes or deviations occur, the manufacturer shall **review, evaluate, and revalidate**.

“Establish” means:
Define, document, and implement (train personnel) with records to show a process is consistently followed.

Overview of total validation process and consulting service

ThermoFisher SCIENTIFIC

Weeks 1–2	Week 3	Weeks 4–6*	Weeks 6–8*	Weeks 8–10*	Week 11	Week 12 and after
Validation project planning	**Creation of draft validation documentation package**	**Customer review process**	**Development and test enablement of validation documentation**	**Customer review process**	**CSV test plan execution†**	**Validation project closure**
● Customer delivers PO for service ● Internal project planning begins ○ Customer project kickoff meeting scheduled ○ Customer questionnaire completed**	● **Create pre-testing draft documentation:** Validation plan (VP) User requirement specification (USR) Risk assessment (RA) System configuration specification (SCS) Quality assurance assessment checklist (optional)	○ Draft pre-testing documentation to be provided to customer ○ Customer reviews and returns pre-testing documents with comments** ● Re-drafting of documentation package based on customer comments	○ Final approvals from customer for pre-testing documentation** ● **Creation of draft test documentation:** Validation test plan (VTP) CSV software installation qualification (IQ) CSV software operational qualification (OQ) CSV software performance qualification (PQ)	○ Draft test documentation provided to customer ○ Customer reviews and returns test documents with comments** ● Re-drafting of documentation package based on customer comments ○ Final approvals of test documentation** ● **Creation of draft documentation:** 21 CFR Part 11 assessment of traceability matrix (TM)	○ Certified CSV specialist on-site or by remote access ○ Execution of approved IQ, OQ, and PQ† ● Drafting of validation summary report (VSR)	○ Final approvals of 21 CFR Part 11 assessment and traceability matrix (TM) ● Final traceability matrix (TM) check-off ○ Validation summary report (VSR) approval ○ Signing and exchanging of project-closing documentation

Legend

- Off-site
- On-site or remote
- Validation closure
- Critical review process
- ● Internal engagement
- ○ Customer engagement

* Timeline dependent on level of customer feedback and turnaround time.

** Critical milestones that can affect timeline.

† Execution depending on service purchased.

Overview depicted is a generic workflow and is dependent on customer feedback and engagement.

Thank you