CASSS WCBP 2025

Plenshop: Implementation of the FDA Designation Programs, Innovative Manufacturing Technologies and Platforms

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Agenda

- Introduction to the FDA Platform and Innovative Manufacturing Technologies Designation Programs

- Questions to the Audience
  - Platforms
  - Innovative Manufacturing Technologies

- Next steps and session wrap-up

Advanced Manufacturing Technologies Designation Program

- Program established by section 506L of the FD&C Act. Provides the,

  Criteria for designation of advanced manufacturing technologies (AMT)

  506L(c) of the FD&C Act,

  AMT designation applies to a method of manufacturing within a particular context of use rather than to a specific application

- Program applies to manufacturing methods (or a combination of methods) used for manufacturing drugs, biologics, and API
- Eligibility criteria for AMT Designation as per the FD&C Act

  … such method or combination of methods incorporates a **novel** technology, or uses an established technique or technology in a novel way, that will **substantially improve** the manufacturing process for a drug while maintaining equivalent, or providing superior, drug quality, including by

  (1) reducing development time for a drug using the designated manufacturing method; or

  (2) increasing or maintaining the supply of

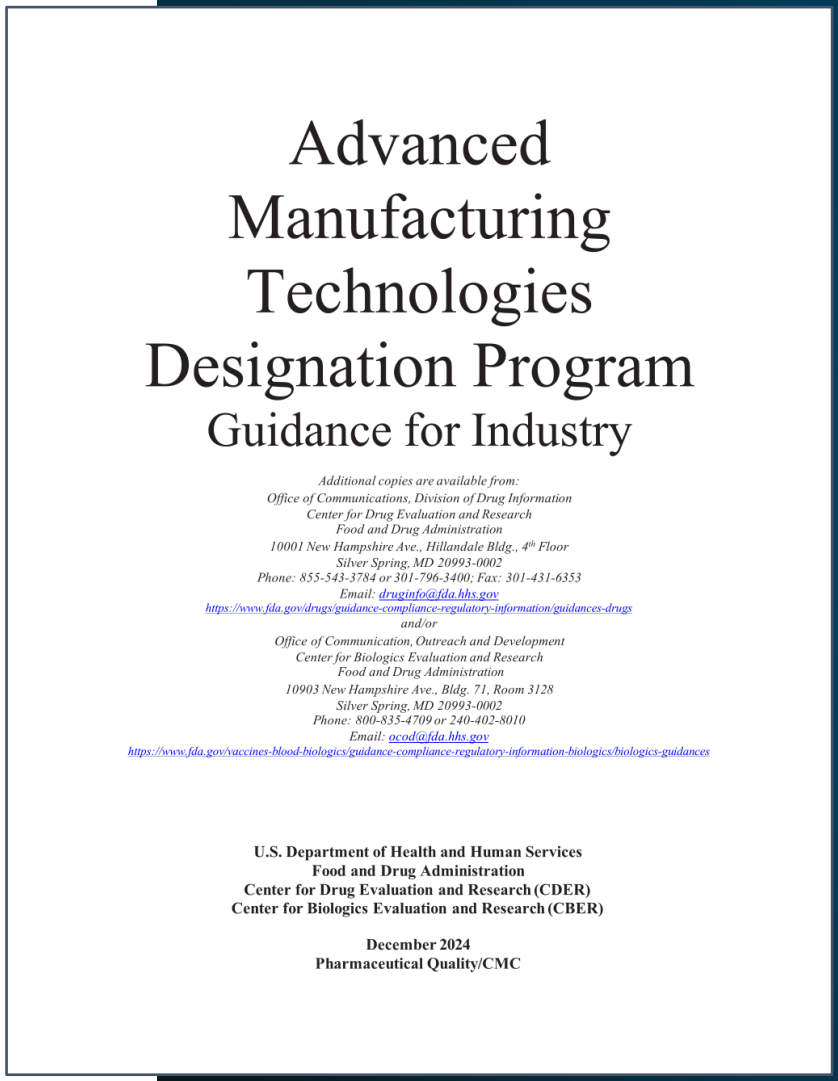
  (A) a drug that is life-supporting, life-sustaining, or of critical importance to providing health care; or

  (B) a drug that is on the drug shortage list under section 506E

  •

AMT Designation Program Contd.

- Interpretation of the term *novel* in the context of the AMT Designation Program-
  - FDA generally considers a novel technology or an established technique or technology used in a novel way to be one for which FDA has limited assessment or inspectional experience.
  - A novel technology can be a completely new technology that FDA has not previously seen in a submission or a technology with which FDA has experience but with a significantly different use than is now being proposed.
- A designated AMT can support a small molecule drug or biological product in original and supplemental applications
  - A/NDAs can incorporate the designated AMT through right of reference for the same context of use as granted to the holder of the designated AMT
  - BLAs cannot reference the AMT information. BLA holder is expected to submit the designated AMT directly to the BLA



Advanced Manufacturing Technologies Designation Program

Guidance for Industry

Additional copies are available from:
Office of Communications, Division of Drug Information
Center for Drug Evaluation and Research
Food and Drug Administration
10001 New Hampshire Ave., Hillandale Bldg., 4th Floor
Silver Spring, MD 20993-0002
Phone: 855-543-3784 or 301-796-3400; Fax: 301-431-6353
Email: druginfo@fda.hhs.gov
https://www.fda.gov/drugs/guidance-compliance-regulatory-information/guidances-drugs
and/or
Office of Communication, Outreach and Development
Center for Biologics Evaluation and Research
Food and Drug Administration
10903 New Hampshire Ave., Bldg. 71, Room 3128
Silver Spring, MD 20993-0002
Phone: 800-835-4709 or 240-402-8010
Email: ocod@fda.hhs.gov
https://www.fda.gov/vaccines-blood-biologics/guidance-compliance-regulatory-information-biologics/biologics-guidances

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)
Center for Biologics Evaluation and Research (CBER)

December 2024
Pharmaceutical Quality/CMC

AMT, CDER ETP and CBER CATT Programs

- All three programs provide opportunities for early engagement with FDA
  - CDER's Emerging Technology Program (ETP) allows engagement with the CDER Emerging Technology Team (ETT) before application submission ……
  - CBER's Advanced Technologies Program (CATT) provides access to early interactions, prior to filing a regulatory submission, to discuss technical and regulatory issues related to the implementation of innovative manufacturing and control strategies
  - ETT and CATT discussions generally occur earlier in the drug development process and are intended for less mature methods and technologies compared to AMT designation
- Engaging with the ETT or CATT is encouraged before requesting AMT designation
  - FDA recommends not requesting AMT designation at the same time as ETT/CATT engagement

Platform Technology Program


Platform Technology Designation Program for Drug Development Guidance for Industry

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

Comments and suggestions regarding this draft document should be submitted within 60 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to https://www.regulations.gov. Submit written comments to the Dockets Management Staff (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852. All comments should be identified with the docket number listed in the notice of availability that publishes in the *Federal Register*.

For questions regarding this draft document, contact (CDER) Melissa Furness at 240-402-8912, or (CBER) James Meyers at 240-402-7911.

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)
Center for Biologics Evaluation and Research (CBER)

May 2024

- **Program established by section 506K of the FD&C Act. Provides the,**
  - Definition of platform technology and designated platform technology
  - Criteria for who can request designation, and once designated, who can leverage the designation
- **Platform Technology as defined in section 506K(h)(1) of the FD&C Act**
  - A well-understood and reproducible technology, which can include a nucleic acid sequence, molecular structure, mechanism of action, delivery method, vector, or a combination of any such technologies that the Secretary determines to be appropriate, that the sponsor demonstrates

    (1) is incorporated in or used by a drug and is essential to the structure or function of such drug;

    (2) can be adapted for, incorporated into, or used by, more than one drug sharing common structural elements; and

    (3) facilitates the manufacture or development of more than one drug through a standardized production or manufacturing process or processes.

Designated Platform Technology Criteria

A platform technology incorporated within or utilized by a drug is eligible for designation as a designated platform technology under this section if,

(1) the platform technology is incorporated in, or utilized by, a drug approved under section 355 of this title or a biological product licensed under section 351 of the Public Health Service Act [42 U.S.C. 262];

(2) preliminary evidence submitted by the sponsor of the approved or licensed drug described in paragraph (1), or a sponsor that has been granted a right of reference to data submitted in the application for such drug, demonstrates that the platform technology has the potential to be incorporated in, or utilized by, more than one drug without an adverse effect on quality, manufacturing, or safety; and

(3) data or information submitted by the applicable person under paragraph (2) indicates that incorporation or utilization of the platform technology has a reasonable likelihood to bring significant efficiencies to the drug development or manufacturing process and to the review process.

Designated Platform Technology (DPT)
'Significant Efficiencies' and Benefits

What is meant by 'significant efficiencies' to the drug development, manufacturing or review process?

- A prior test, study, or manufacturing process involving the approved or licensed drug could be leveraged in a subsequent application in such a way as to allow the subsequent application to generally be developed and reviewed in a more streamlined manner.
- Does not change the User Fee Agreement goal date.

Benefits: Sponsor originally granted the DPT (or 3rd party with full rights of reference) may leverage the DPT information in a subsequent application when supported by sufficient preliminary evidence

- Early interactions with the FDA, timely advice, interactive communication, etc.
- Leveraging data from a prior product that used the DPT (e.g., batch and stability data)
- Leveraging certain nonclinical safety data
- Considering inspectional findings, including prior findings, related to the manufacture of a drug that uses the DPT

Key Take Aways

- The term ‘Platform Technology’ used differently in the past
- The FD&C Act definition of Platform Technology may not include some technologies historically considered to be platform technologies.
- A platform technology is not limited to manufacturing technologies. Can be applied to nucleic acid sequence, molecular structure, mechanism of action, delivery method, vector, etc.
- A technology that meets Platform Technology eligibility criteria may not always meet the eligibility criteria for Designated Platform Technology
- Platform Technology Designation granted to individual companies – not the technology per se
- Designation can be revoked if the designation criteria are no longer met

Reference: May 2024 Platform Technology Designation Program for Drug Development, Guidance for Industry (Draft)


FDA
U.S. FOOD & DRUG
ADMINISTRATION
Thank You!

The FDA Advanced Manufacturing Technologies Program

What are the challenges that industry sees in the implementation of the program?

Where do we think that the greatest opportunities lay for the program?

When do we think that timing for first interaction with the agency is the most appropriate to realize maximum value?

Data without development or commercial products, how do we manage this? Models or model products, what gives us the best opportunity?

Data : they are not detailed in the guidance, but how do we agree on a set that would meet the agency's expectations?

The FDA Platform Designation Program

What are the challenges that industry sees in the implementation of the program?

Where do we think that the greatest opportunities lay for the program?

Do we see the benefits that could be gained for structural elements (nucleic acid sequence, molecular structure, vector, etc.)?

What would be the special considerations associated with these?

When do we think that timing for first interaction with the agency is the most appropriate to realize maximum value?

Data : they are not detailed in the guidance, but how do we agree on a set that would meet the agency’s expectations?

Next Steps

The FDA designation programs relate to one agency and one market, how do we expand the opportunities to other markets?

FDA Back-Up Slides

CBER Advanced Technologies Team (CATT) Program

Purpose

- To promote dialogue, education, and input between CBER and prospective innovators/developers
- Novel technologies that can have a significant impact on product development, manufacturing process and control strategies, and may also have regulatory implications.
- Issues related to the implementation of these technologies for CBER products.

Submission

- A brief description of the technology or product class.
- A brief explanation why it is substantially novel and unique
- Impact of the technology or product class for improved biologic product manufacturing, characterization, quality, safety, or efficacy
- A summary of the manufacturing or development plan and any questions regarding challenges

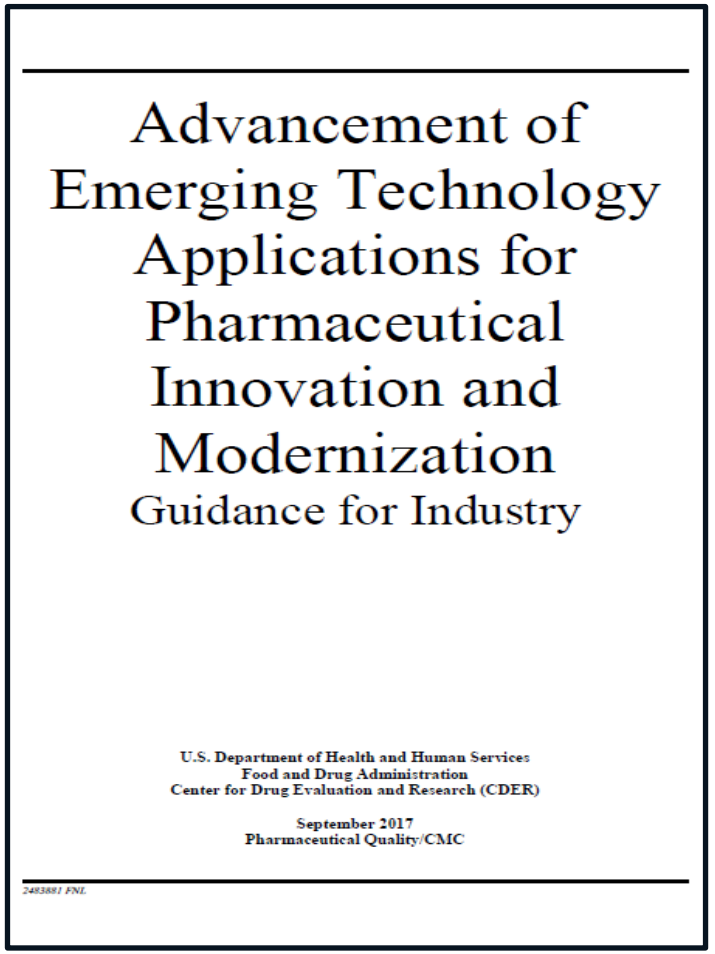
Contact: *Industry.Biologics@fda.hhs.gov*

What is The Emerging Technology Program?

WHAT	An OPQ program established in late 2014 that promotes and facilitates the **adoption of innovative approaches to pharmaceutical product design and manufacturing**
WHO	A **cross-functional team** (approximately 30 members with additional ad-hoc subject matter experts) with representation from all relevant FDA quality review and inspection programs **Offices include: OPQ, OC, ORA (*One Quality Voice*)**
HOW	The program provides an **opportunity for industry to engage and collaborate early with the FDA** to discuss, identify, and resolve technical and regulatory issues during the development and adoption of a novel technology

What is an Emerging Technology?

- The technology pertains to pharmaceutical quality
- The technology is new to FDA and there is limited experience and knowledge in regulating the technology
- It is novel to the pharmaceutical and related industries
- It has the potential to modernize pharmaceutical manufacturing, including the body of knowledge related to product quality
- Has the potential to improve product safety, identity, strength, quality, or purity


Advancement of Emerging Technology Applications for Pharmaceutical Innovation and Modernization

Guidance for Industry

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)

September 2017
Pharmaceutical Quality/CMC

2483881 FNL

Framework for Regulatory Advanced Manufacturing Evaluation (FRAME)

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Industry 4.0 for pharmaceutical manufacturing: Preparing for the smart factories of the future

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ABSTRACT

Over the last two centuries, medicines have evolved from crude herbal and botanical preparations into more complex manufacturing of sophisticated drug products and dosage forms. Along with the evolution of medicines, the manufacturing practices for their production have advanced from small-scale manual processing with simple tools to large-scale production as part of a trillion-dollar pharmaceutical industry. Today's pharmaceutical manufacturing technologies continue to evolve as the internet of things, artificial intelligence, robotics, and advanced computing begin to challenge the traditional approaches, practices, and business models for the manufacture of pharmaceuticals. The application of these technologies has the potential to dramatically increase the agility, efficiency, flexibility, and quality of the industrial production of medicines. How these technologies are deployed on the journey from data collection to the hallmark digital maturity of Industry 4.0 will define the next generation of pharmaceutical manufacturing. Achieving the benefits of this future requires a vision for it and an understanding of the extant regulatory, technical, and logistical barriers to realizing it.

1. Introduction

The term Industry 4.0 refers to the fourth industrial revolution which brings together rapidly evolving technologies such as the internet of things (IoT), artificial intelligence (AI), robotics, and advanced computing to dramatically change the landscape of manufacturing. Industry 4.0 is characterized by integrated, autonomous, and self-organizing production systems. New thinking will be required to realize Industry 4.0 for pharmaceuticals and overcome the inertia of current manufacturing infrastructure, operations, and regulation. While implementing many of the advanced technologies and manufacturing approaches needed to enable Industry 4.0 may not be easy, it may well be worthwhile as they bring the potential for higher output, increased manufacturing safety, improved quality, better value, increased agility, additional flexibility, and reduced waste (Etzell, 2016; Buvailo, 2018; Baur and Wee, 2015; Clemons, 2016; Tilley, 2017).

1.1. Industry 1.0

If Industry 4.0 is the future, then Industry 1.0 is the starting point of the modern pharmaceutical industry. The application of herbal or botanical preparations as medicines has spanned the history of civilization. Only in the last two centuries have we seen dramatic changes in how materials are processed and formulated for medical use. Industry 1.0 saw the manual processing of botanical, mineral, and animal derived materials transition from simple hand-operated tools to commercial-scale machinery able to crush, mill, blend, and press larger quantities of medicines (Anderson, 2005). In the 19th century, larger-scale production of drugs utilizing non-electrical power-driven machinery emerged from two sources – individual pharmacies or the dye and chemicals industry (Sonnedecker and Urdang, 1976; Daemmrich and Bowden, 2005). This movement from laboratory-scale to wholesale production of drugs fueled the establishment of a pharmaceuticals industry in the 19th century – an industry that has seen tremendous growth over the last century. Yet, some of the early machines from the first industrial revolution, such as pneumatic mills and tablet presses, are still commonly used today.

1.2. Industry 2.0

The second industrial revolution was enabled by electricity and early electronic machines and assembly lines with pre-set controls that

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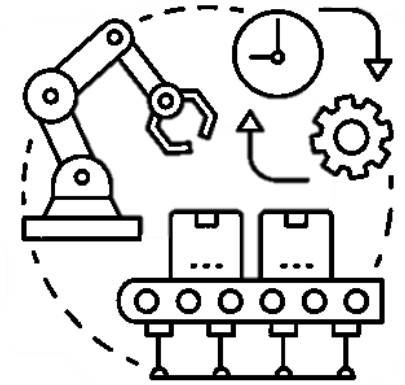
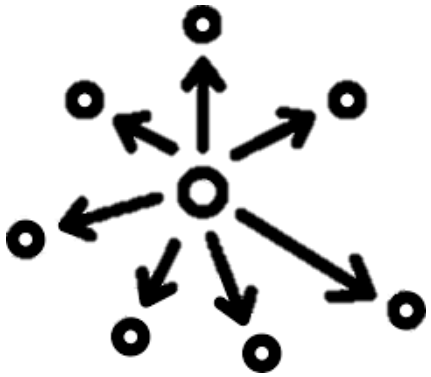


End to End Continuous Manufacturing (E2E CM)

Artificial Intelligence (AI)



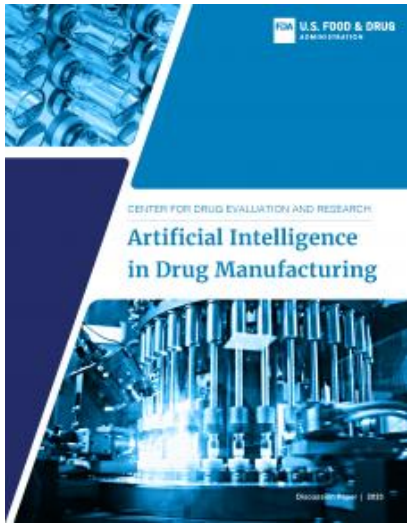
Distributed Manufacturing (DM)

Point of Care (POC) Manufacturing

*Arden, N. Sarah, et al. "Industry 4.0 for Pharmaceutical Manufacturing: Preparing for the Smart Factories of the Future." *Int J Pharm* (2021): 120554.

Distributed Manufacturing and Point-of-Care Manufacturing of Drugs

Distributed Manufacturing of Drugs: Stakeholder Feedback and Action Plan



Artificial Intelligence in Drug Manufacturing

FRAME Approach

Seek and Analyze Input	Ensure science-and risk-based thorough understanding of advanced manufacturing technologies
Address Risks	Ensure regulations and policy are compatible with future advanced manufacturing technologies for timely adoption
Clarify Expectations	Explain to stakeholders current thinking on technology and issue guidance as needed
Harmonize	Aligned with FDA efforts to work through ICH to develop international guidelines on advanced manufacturing