CLINICAL MICROBIOLOGY – SETUP & WORKUP

INFORMATION ARCHITECTURE MODEL

TASK-ORIENTED WORKFLOW ARCHIECTURE

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Defining an information architecture that organizes Clinical Microbiology around specimen progression, media orchestration, and state-driven tasks.

01
PURPOSE

Develop a future-state workflow model that reflects how Clinical Microbiology work naturally progresses over time. The model establishes the architectural foundation for orchestrating specimen progression, incubation cycles, task generation, and result release within a unified workflow, providing a blueprint for future interaction design and system implementation.

02
CONTEXT

The Client Advisory Group, workflow interviews, and current-state Service Blueprint demonstrated that the existing Laboratory Management System treated Clinical Microbiology as a series of isolated transactions. Laboratory staff was responsible for maintaining workflow continuity, tracking follow-up work, and reconstructing specimen context as work progressed over multiple days.

While the current-state analysis documented how work was performed, the project required a new workflow model that represented how Clinical Microbiology should function within the product.

Rather than designing individual screens first, the team established a future-state workflow architecture that defined how specimens, incubation, observations, workup activities, and results would progress through the system. This model became the foundation for subsequent information architecture, wireframes, interaction design, and workflow orchestration.

03
METHOD

The Workflow Model was developed by synthesizing findings from the Client Advisory Group, workflow interviews, current-state workflow analysis, and service blueprint.

The model redefined the workflow around specimen progression instead of individual transactions. Each stage of the laboratory process was analyzed to determine:

- how work should begin;
- how workflow state should be maintained;
- when tasks should be generated;
- how incubation and observations should be coordinated;
- how users should progress between activities; and
- how workflow should conclude with result compilation and release.

Rather than prescribing a linear sequence of screens, the model defined the orchestration rules governing the lifecycle of a specimen from receipt through final reporting.

04
DESIGN OBJECTIVES

The Workflow Model was designed to achieve several architectural objectives:

- Establish a continuous workflow across the specimen lifecycle.
- Coordinate user activities through workflow state rather than manual tracking.
- Generate work dynamically based on specimen progression.
- Support repeated incubation and observation cycles.
- Preserve relationships between specimens, organisms, tasks, and results.
- Separate workflow orchestration from interface implementation.
- Create an architectural foundation capable of supporting configurable laboratory practices.

05

WORKFLOW STRUCTURE

The model organizes Clinical Microbiology into four primary workflow stages.

SETUP: The workflow begins when a specimen is received. System-generated activities prepare the specimen for processing while allowing laboratory staff to configure plates before incubation.

INCUBATION: Incubation becomes an active workflow state rather than a passive waiting period. Configuration determines when observations occur, and the system generates notifications as scheduled reads become due. Multiple incubation cycles are supported until workflow completion.

TASKS: Observations, organism workup, identification, susceptibility testing, and condition entry are coordinated through task-based workflow orchestration. Completion of one activity automatically determines the next appropriate task based on workflow state rather than requiring users to manage progression manually.

RESULTS: Once workflow activities are complete, the system compiles observations, interpretations, organism information, and laboratory results into the final report. Review and approval occur within the workflow before release.

06

KEY DESIGN DECISIONS

THEME 1

WORKFLOW PROGRESSION IS DRIVEN BY SPECIMEN STATE

The proposed model replaces isolated task execution with workflow progression based on specimen state. Activities are generated as specimens advance through incubation, observation, workup, and resulting, allowing the system to coordinate workflow rather than relying on user memory.

THEME 2

INCUBATION BECOMES AN ACTIVE WORKFLOW COMPONENT

Instead of treating incubation as time between activities, the model recognizes incubation as a managed workflow state. System configuration determines observation frequency, generates notifications, and schedules subsequent work based on laboratory policies.

THEME 3

TASKS COORDINATE WORKFLOW RATHER THAN REPRESENT INDIVIDUAL SCREENS

Tasks become the mechanism through which users progress through the workflow. Completion of observations, organism workup, identification, susceptibility testing, and condition entry automatically informs subsequent activities, reducing manual coordination while maintaining workflow continuity.

THEME 4

RESULTS ARE THE OUTCOME OF WORKFLOW COMPLETION

Rather than treating resulting as an isolated activity, the model positions result compilation, review, approval, and reporting as the final stage of a continuous workflow. Information collected throughout the specimen lifecycle remains connected until results are finalized and released.

07

HOW THE WORKFLOW MODEL INFLUENCED THE PROJECT

The Workflow Model established the architectural foundation for the redesigned Clinical Microbiology experience.

It shifted the project from redesigning individual interface components to defining how work should progress through the product as an integrated workflow.

The model:

- established specimen progression as the organizing principle for the experience;
- defined workflow states and transitions;
- introduced condition-driven task generation;
- integrated incubation into workflow orchestration;
- established relationships between specimens, organisms, tasks, and results;
- informed the future information architecture;
- guided interaction design;
- provided a framework for configurable workflow behavior; and
- became the blueprint for wireframes, prototypes, and implementation discussions.

08

HOW THIS INFORMED THE NEXT PHASE

With the workflow architecture established, the project could transition from defining workflow behavior to designing user interactions.

The Workflow Model provided the structure needed to develop the information architecture, screen hierarchy, navigation model, and interaction patterns. It also established the sequencing and dependencies that guided wireframe development and ensured the interface reflected workflow progression rather than individual transactions.