THE TECHNOLOGY VALUE STREAM

From Concept to Cash: Understanding Lead Time and Processing Time in DevOps

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INTRODUCTION TO THE TECHNOLOGY VALUE STREAM

- Definition: the sequence of activities required to convert a business idea into a technology-enabled service that delivers value to the customer.

- Importance in DevOps: Aligns technology efforts with business goals
- Identifies bottlenecks and inefficiencies
- Enables continuous improvement
- Facilitates faster delivery of value to customers

DEFINING LEAD TIME VS. PROCESSING TIME

- Lead Time:
  - Definition: The total time elapsed between the creation of work and its delivery to the end user
  - Includes: Wait time, handoffs, reviews, and actual work time
  - Example: From feature request to production deployment
- Processing Time:
  - Definition: The actual time spent working on a task
  - Excludes: Wait times, delays, and non-value-adding activities
  - Example: Time spent coding, testing, and deploying a feature

Key Differences:

- Lead Time = Processing Time + Wait Time
- Lead Time often significantly longer than Processing Time
- Processing Time is a subset of Lead Time

THE COMMON SCENARIO: DEPLOYMENT LEAD TIMES REQUIRING MONTHS

- Traditional Software Development Lifecycle:
- Waterfall or lengthy iterative processes
- Siloed teams with limited communication
- Manual handoffs and approvals

- Reasons for Extended Lead Times:

1. Manual Processes:
    1. Manual testing and quality assurance
    2. Manual deployment and configuration
2. Siloed Teams:
    1. Lack of collaboration between development and operations
    2. Handoffs causing delays and miscommunication
3. Lack of Automation:
    1. Manual build and integration processes
    2. Manual environment setup and configuration
4. Extensive Testing Cycles:
    1. Long QA phases
    2. Infrequent, large releases requiring comprehensive testing
5. Bureaucratic Obstacles:
    1. Multiple levels of approval
    2. Change Advisory Boards (CABs) with infrequent meetings

COMPONENTS OF LEAD TIME

- Wait Time:
  - Work items sitting in backlogs
- Handoffs Between Teams:
  - Development to QA; QA to Operations
- Approvals and Reviews:
  - Code reviews
- Deployment Windows:
  - Monthly release cycles
- Queue times:
  - Waiting for testing environments

CONSEQUENCES OF LONG LEAD TIMES

- Delayed Time-to-Market
- Reduced Competitiveness
- Increased Risk of Project Failure
- Customer Dissatisfaction:
- Reduced Innovation
- Increased Costs
- Employee Burnout

OUR DEVOPS IDEAL: DEPLOYMENT LEAD TIMES OF MINUTES

- Key Enablers:
  - Automation
  - Continuous Integration/Continuous Delivery
  - Infrastructure as Code
  - Microservices Architecture
  - Feature Flags