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10:00 AM

**BUILDING AN ENTERPRISE TEST
LAB**

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Alan Forand is a Systems Architect and a Lead Technologist in EDS' Global Testing Organization Service Centre. Alan has more than 27 years of experience in hardware/software design, development and test consulting along with project management. Alan is a member of a group responsible for the testing of applications and hardware as an independent testing facility for major companies such as General Motors and Dow Chemical. Alan is also a Sales Pursuit Architect working with members of EDS Sales Pursuit teams in the design and implementation of testing facilities for customers worldwide. His background industry knowledge is in the manufacturing, banking, entertainment and automotive fields.



Building an Enterprise Test Lab

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AGENDA

- **Current State: Testing within an Enterprise**
- **Desired State: An Enterprise Test Lab**
- **How to Build an Enterprise Test Lab**
- **Maintain Test Lab Operations**
- **Case Study**
- **Conclusions**

∴∴∴ Current State: Testing within an Enterprise



- **Proliferation of Many Small Developer Focused Test Environments Created Over Time**
- **Test Environments not Managed at an Organization or Enterprise Level**
- **Minimal or Inconsistent Testing Tools Used Due to Cost**
- **Servers and Infrastructure do not Match Production**
- **Limited Leveragability between Test Labs**



❖❖ Current State: Testing within an Enterprise



- **Minimal use of Configuration Management**
- **No Formal Testing Processes in Place**
- **Testing is Done to Validate Code – not to Find Errors**
- **People are not Trained to Work in a Test Lab**
- **No Hardware, Software or Process Consistency between Test Labs**
- **Testing Artifacts are not Collected or Stored**

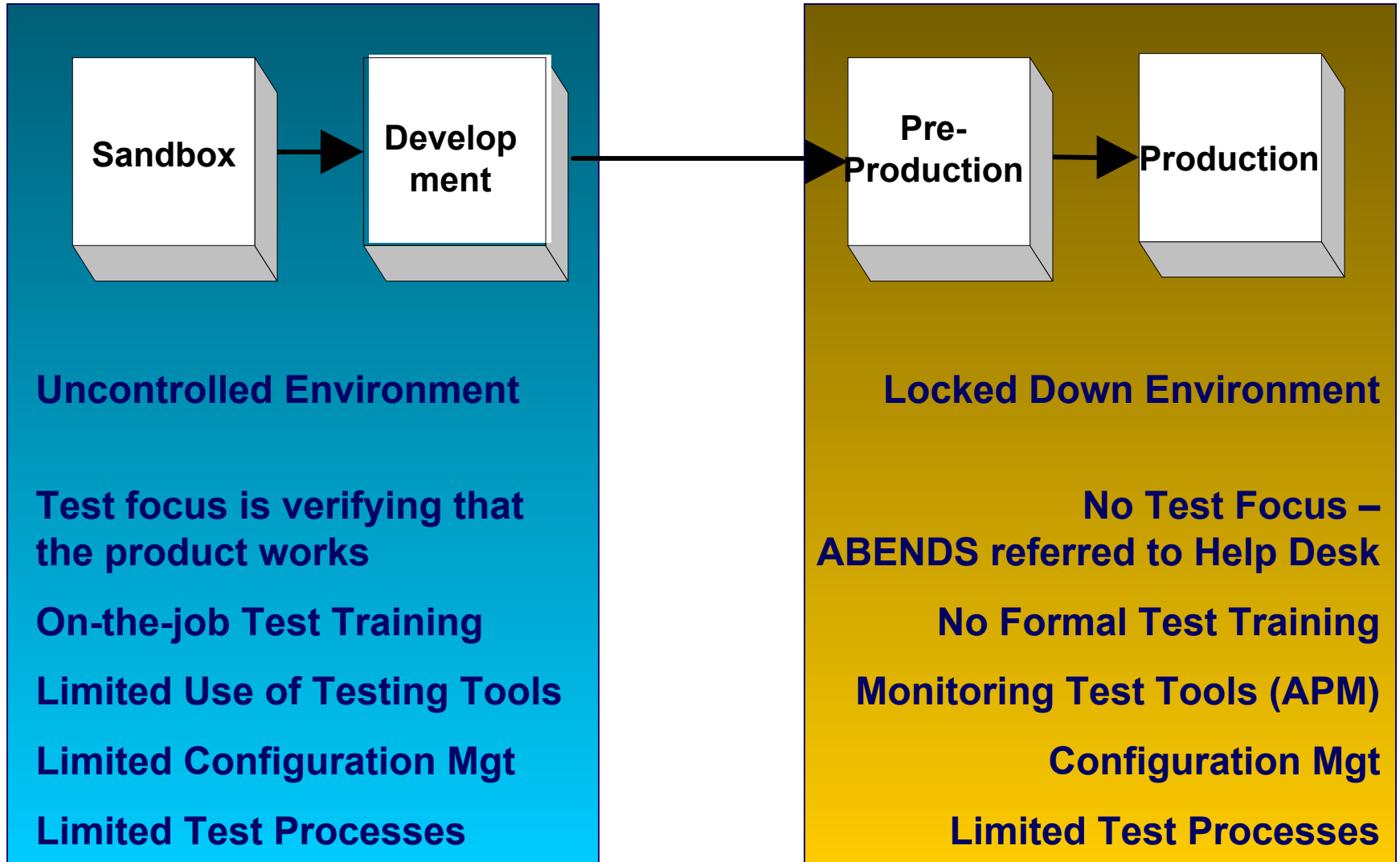
∴ Current State



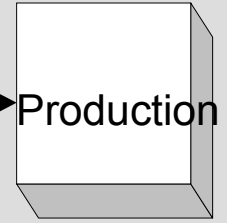
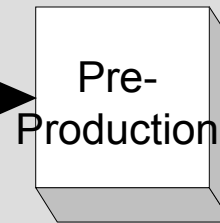
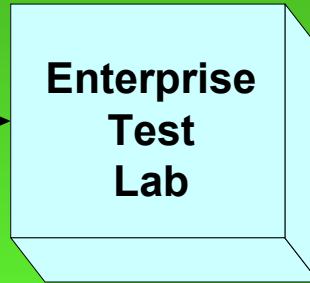
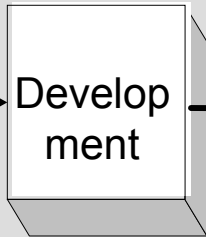
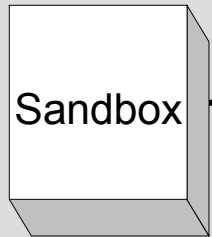
**Which
Environment
should be
Used for
Testing?**



❖❖❖ Current State: Environments Within an Enterprise



Desired State: Build an Enterprise Test Lab



Uncontrolled Environment

Test focus is verifying that the product works

On-the-Job Test Training

Limited Use of Testing Tools

Limited Configuration Mgt

Limited Test Processes

Flexible but Controlled Environment

Test Focus is finding errors

Trained Test Personnel

Testing Tools

Configuration Mgt

Formal Test Processes

Locked Down Environment

ABENDS referred to Help Desk

No Formal Test Training

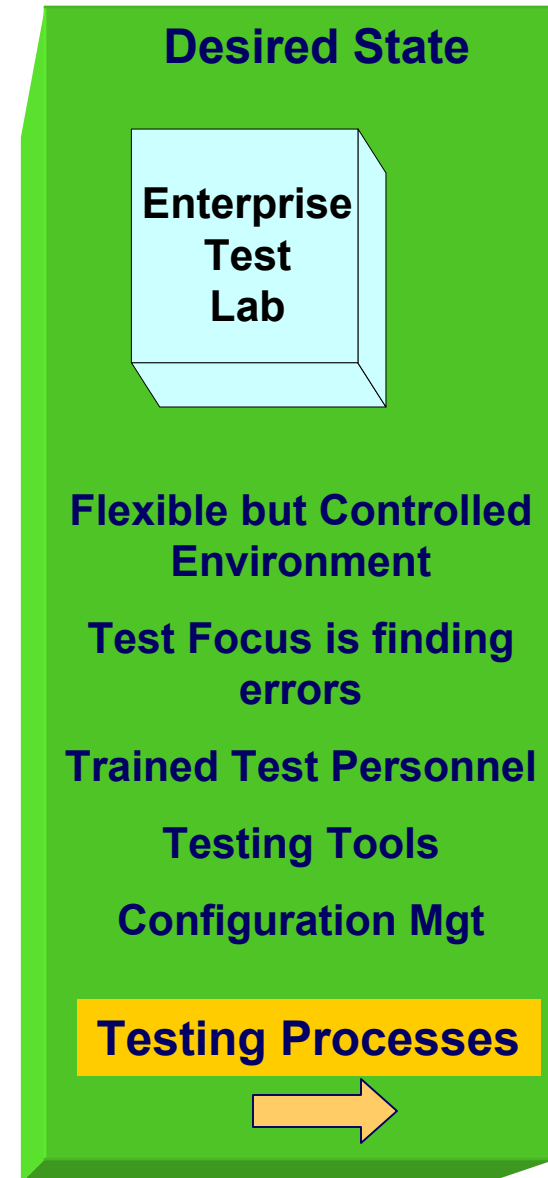
Monitoring Test Tools (APM)

Configuration Mgt

Limited Test Processes

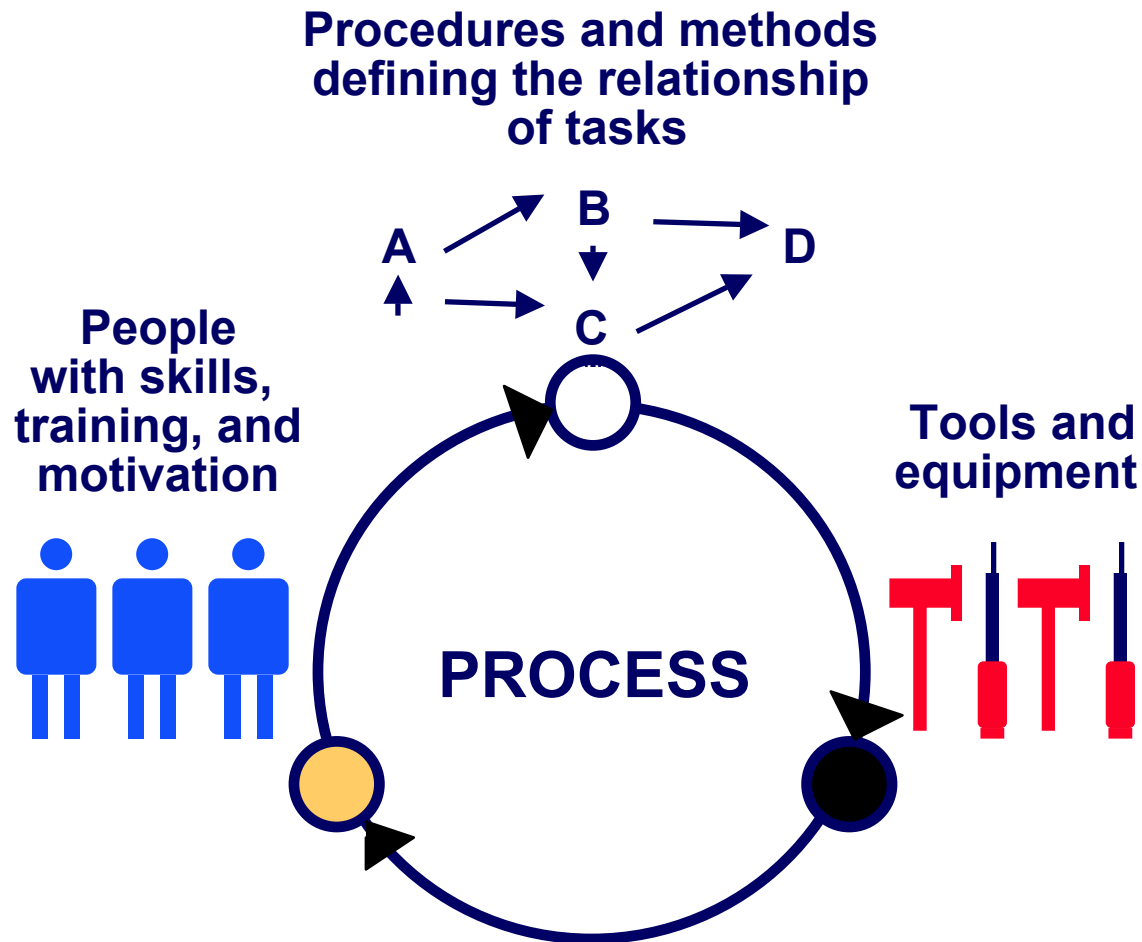
Desired State: Enterprise Test Lab

- An **Enterprise Test Lab** is a stable and rigorous independent 'production-like' testing environment using consistent processes and trained personnel along with the proper testing tools and automation to reduce production failures and improve the 'end-to-end' experience of the end user.
- A well designed test lab has the ability to:
 - Reduce Overall Costs
 - Consolidate and Leverage People, Processes, Hardware and Testing Tools
 - Increase Defect Detection during Testing
 - Increase Throughput by Effective Use of People, Processes, Tools, Configuration Management and Artifacts
 - Improve Testing Reliability through Configuration Management and Artifact Collection
 - Increase Effectiveness on Multi-Vendor Solutions
 - Decrease Production Failures



❖❖❖ The Testing Differentiator: Processes

➔ *The means by which people, procedures, methods, equipment, and tools are integrated to produce a desired end result.*



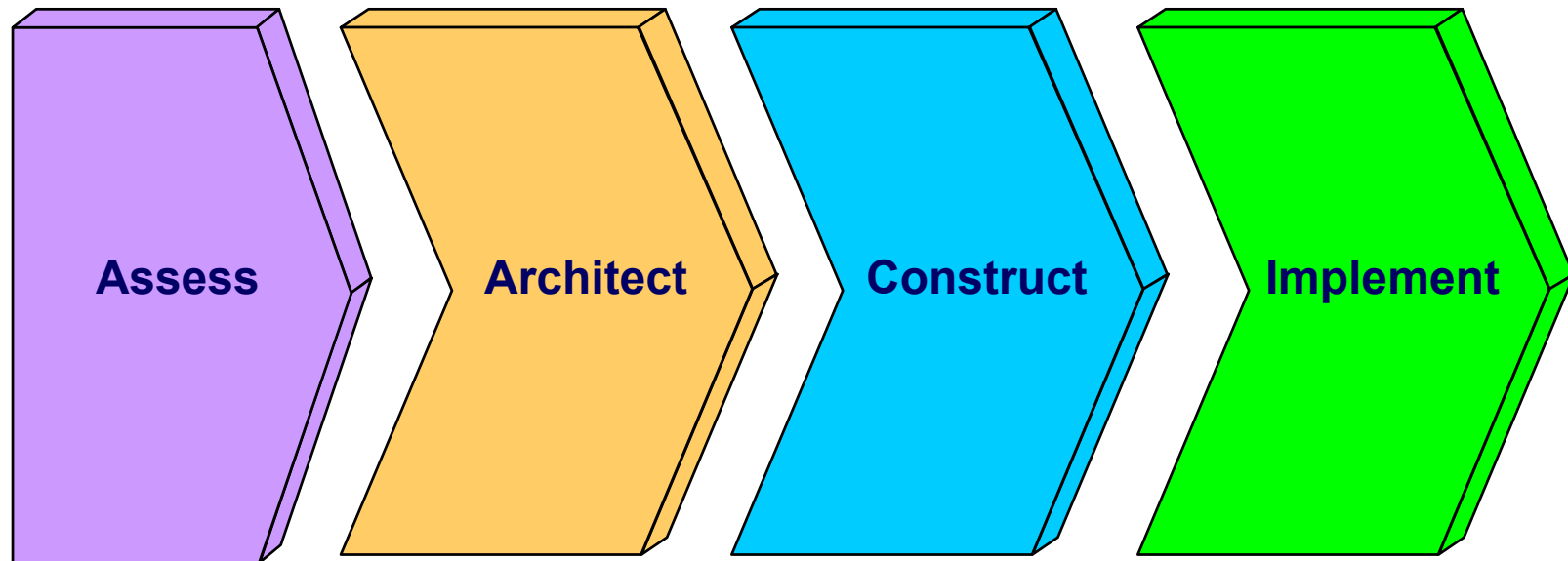
❖❖❖ Test Processes – Required

- **Lab Management Processes**
 - Request for Service
 - Scheduling
 - Configuration Management
 - Testing Artifacts
Data Repository
 - Training
- **Test Processes for each Testing Service**
 - Test Procedures
 - Test Checklists



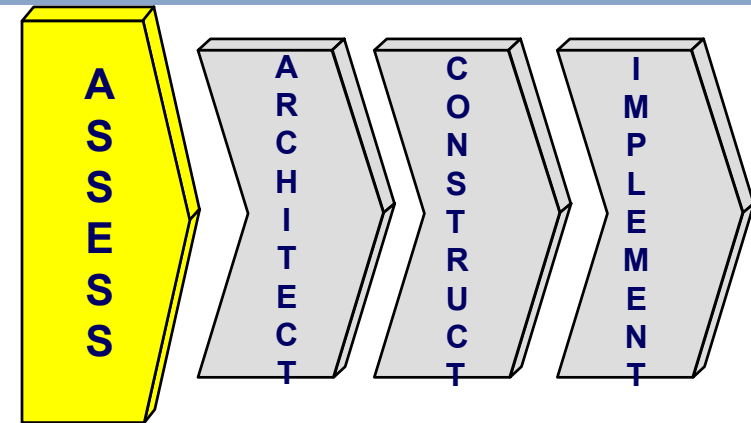
❖❖ How to Build an Enterprise Test Lab

To build an Enterprise Test Lab requires the execution of the following phases:



Assess Phase

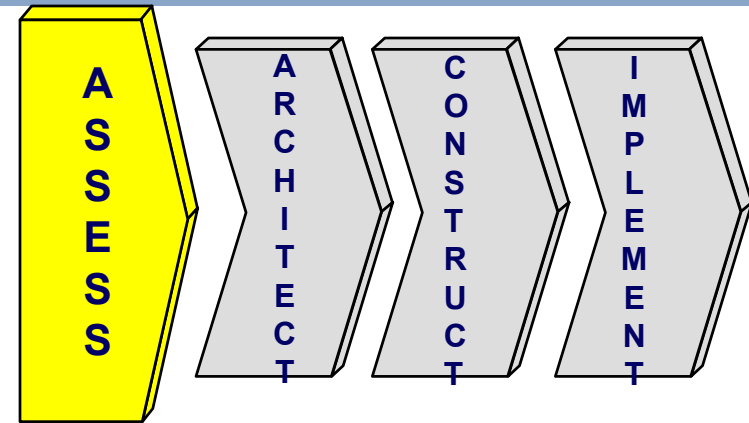
- The **Assess Phase** is conducted to determine the requirements of a test lab along with the business drivers behind why a test lab is being created.



- The steps in this phase require that the following issues be addressed:
 - Why are you creating a test lab?
 - What is the costs around supporting all the labs?
 - What is the organizations current testing environment processes and needs?
 - What are the requirements for the existing and new test lab?

Assess Phase (Continued)

- How many concurrent testing events will be needed?
- What are the Entry / Exit “Rules of Engagement”
- What is the physical and logical design of the current production infrastructure?
- What processes are in place for testing?
- What metrics will need to be collected?
- How do you validate that the lab is operating effectively?
- What types of testing is being conducted in the lab?



☼☼☼ Assess Phase - Testing Services

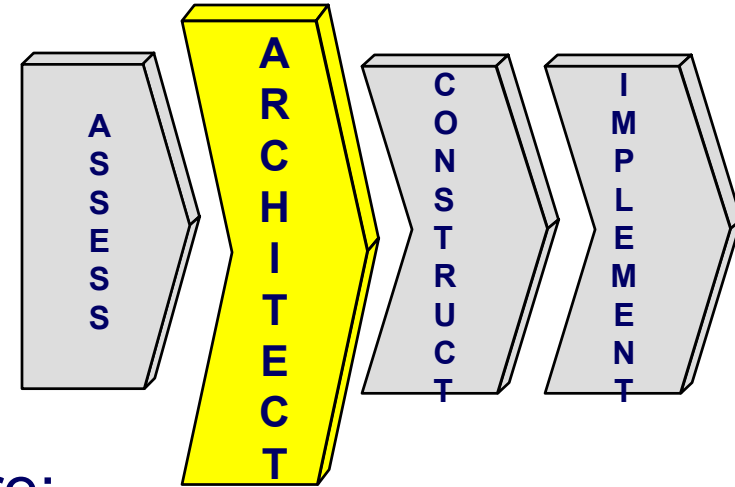
➡ Determine the types of testing services required in the Enterprise Test Lab as part of the Assessment Phase.

Some examples are listed below:

- Test Automation
- Integration
- Data Integrity
- Interoperability
- Regression
- System
- Performance
- Benchmarking
- Acceptance
- Security
- Operational Readiness
- Disaster Recovery
- Fail Over

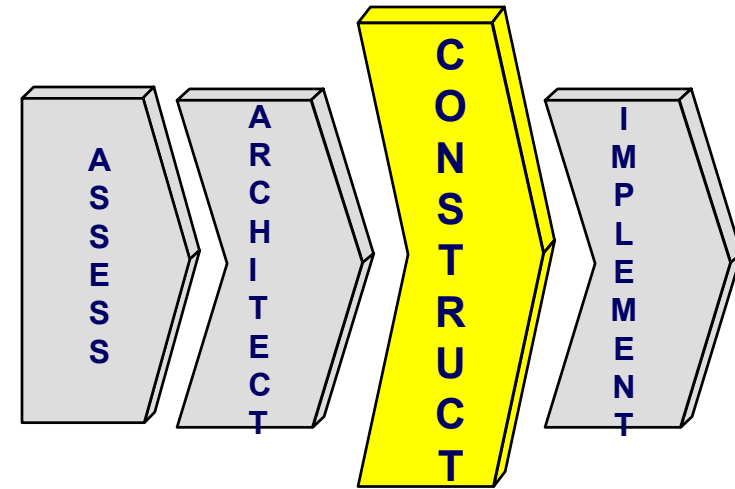
Architect Phase

- The **Architect Phase** determines the necessary components of the test lab in terms of hardware, software, processes and personnel required for effective operations
- The Steps of the Architect Phase are:
 - Create the Test Specifications Definition
 - Create the Technical Requirements Definition
 - Develop the Architecture Diagram
 - Develop the Test Lab Business Model and Budget
 - Build the Technical Model Scalability Assessment



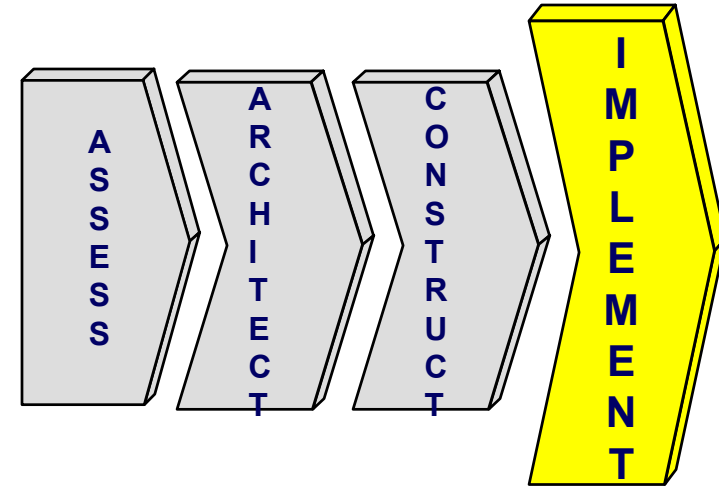
Construct Phase

- The **Construct Phase** will create the physical lab by using currently existing hardware or software along with purchasing any additional required elements. In addition, test specialists, lab administrators and support personnel are recruited and trained in the new test processes.
- The Steps involved in this phase are:
 - Acquire, Install and Set Up of the Physical Test Lab
 - Create and Scope the Business Pipeline
 - Revise and Write New Testing Processes
 - Train Personnel



❖❖❖ Implement Phase

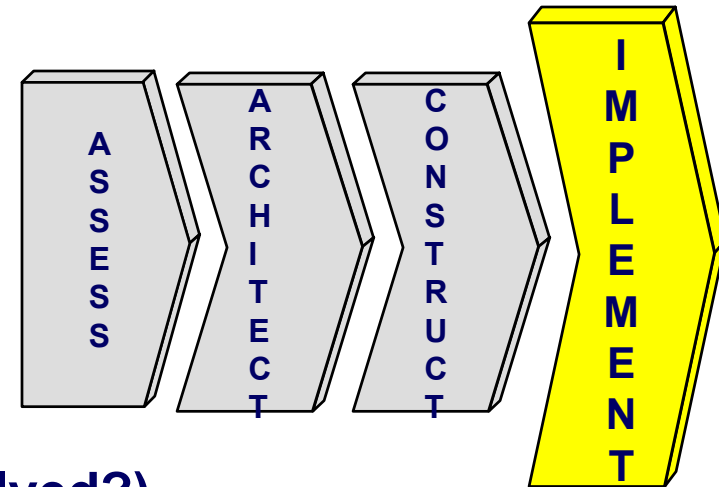
- The ***Implement Phase*** will cover the overall operations of an enterprise test lab. This includes processes for lab scheduling, lab management, test process improvement from lessons learned and metrics collection.
- Implementing an Enterprise Test Lab can be done as a phased approach based on business objectives and priorities.



❖❖❖ Implement Phase

- **The steps in this phase require that the following issues be addressed:**

- **How quickly testing events occur within the test lab (timing)**
- **Scheduling (when will testing occur for a particular event, who will be involved?)**
- **Overall project management**
- **Software testing tools**
- **Lessons learned**
- **Ongoing costs (manpower, hardware, maintenance, space)**
- **Metrics**
- **Lab Management**



❖❖❖ **Maintain Test Lab Operations**

- **To maintain operations within an Enterprise Test Lab requires that the following issues be addressed on an ongoing basis:**
 - **Changes in the Production Environment**
 - **Customer / Contract Requirements Changes**
 - **Process Improvement Requests**
 - **Scheduling Issues**
 - **Resource Allocation Adjustments**
 - **Service Offering Adjustments**
 - **Ongoing Costs**
 - **Lessons Learned**



Case Study: Create an Enterprise Test Lab for a Large Manufacturing Company

Services Featured

- **Assessment of Testing Activities**
- **Enterprise Test Lab Creation**
- **Test Lab Management**
- **Test Lab Maintenance Support**

⌚ **The Business Issue**

Standardize testing globally in support of a standard office environment and to test build images and applications in a Enterprise Test Lab environment prior to field deployment supporting more than 80,000 seats on Unix and Windows platforms.

⌚ **Before**

- Many levels of testing at multiple sites
- Site specific testing occurring
- No consistent builds
- 27 Primary Testing Sites
- No Consistent Processes
- No ISO Certified Labs
- No Resources Consistently Trained or Leveraged at Labs

⌚ **After**

- Testing centrally managed at one location with satellite sites
- Testing valid for all sites globally
- Consistent build
- One Enterprise Test Lab
- Consistent Processes
- ISO 9001:2000 Certified Enterprise Test Lab
- Resources Trained and Leveraged

❖❖❖ Conclusion

- **An Enterprise Test Lab can provide:**
 - **Performance & Reliability**
 - **Robust Testing Environment**
 - **Scalability**
 - **Increased Throughput**
 - **Repeatability**
 - **ISO Standards & Certification**
 - **Cost Savings**



Questions



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