

***Migrating from VSE to OS/390:
the Mass Conversion Approach***

*Presented by
Automated Migration Services*

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MVS Justification

Performance ... Simplify and Upgrade the HW/SW Configuration

- *Consolidate several smaller CPUs and /or VSE machines*
- *Eliminate dual VSE + OS/390 production environment*
- *Upgrade to larger processing capacity*
- *Generate cost savings by economy of scale*

Reorganization ... Adapt to New Host Configuration

- *Business growth*
- *Acquisition or merger*
- *Data center consolidation*
- *Operations outsourcing, facilities management*

Modernization ... Positioning for Future

- *Automated operations*
- *Strategic OS/390 products: DFSMS, DB2, ...*
- *Strategic new applications: industry-specific, e-business*

Migration Sub-Projects

Technical Support

- *OS/390 software selection: system and automated operations*
- *HW configuration upgrade: CPU, DASD, tape robot*
- *OS/390 software installation*
- *From OS/390 start-up system to production: sizing and performances, CICS and network, security: data, databases, CICS, ...*
- *DBMS*

Applications

- *Convert in-house developed VSE code, JCL and data to OS/390*
- *Replace purchased applications by OS/390 version*
- *Eliminate or replace some VSE in-house developed applications?*

Operations

- *Job scheduling, back-out, restart and rerun procedures*
- *Report management*
- *Help desk*
- *Automated console*
- *Backups, disaster recovery*

Project Objectives

Operational Needs

- *End-user transparency*
- *Minimal disruption of operations and applications support*
- *No overlap of dual VSE + OS/390 operations*
- *Standardized and automated target OS/390 production*

Cost/Benefit Requirements

- *Reasonable and predictable timeframe (< 1year)*
- *Reduced staff participation focused on learning OS/390*
- *No delay/postponement of development and maintenance*
- *Controlled costs turned into investment*
- *Low risk*

Scope of Work and Challenges

Application Inventory

- *Determination , collection and supply*
- *Elimination of missing and unreferenced elements*

Difficulty

Program Conversion

- *Syntax modification*
- *Device independence*
- *Elimination of VSE-only features*
- *COBOL code upgrade*
- *Feed JCL conversion with file OPEN information*

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JCL Conversion

- *Retrieve application flowcharts*
- *Identify and classify data flows*
- *Define new OS/390 standards*
- *Generate standardized OS/390 JCL*

To be continued ...

Scope of Work and Challenges *(Cont.)*

File Migration

Difficulty

- *File identification and classification (a by-product of JCL conversion)*
- *OS/390 file cataloguing*
- *Device Migration: tape to disk*
- *Migrate files and databases “in-place” or with copy*
- *Tape file migration*

Project Management

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- *Planning, coordination and follow-up - resource availability*

Operations Automation

- *Job scheduler*
- *Report manager*
- *Tape manager*
- *Change control*
- *Help desk*
- *Automated console*

Mass Conversion Methodology

Mass Conversion

Single Switchover Weekend

- *No overlap of VSE + OS/390 production*
- *Minimal disruption of operations*
- *Shorter project timeframe*

Automated Conversion

Enhance process to enhance deliverables

- *Reduced labor and cost*
- *Improved quality of deliverables*

Repetitive Conversion

Repeat trial conversion from refreshed inventory

- *No change control, freeze or duplication*
- *Minimal disruption of applications support*

Phased Conversion

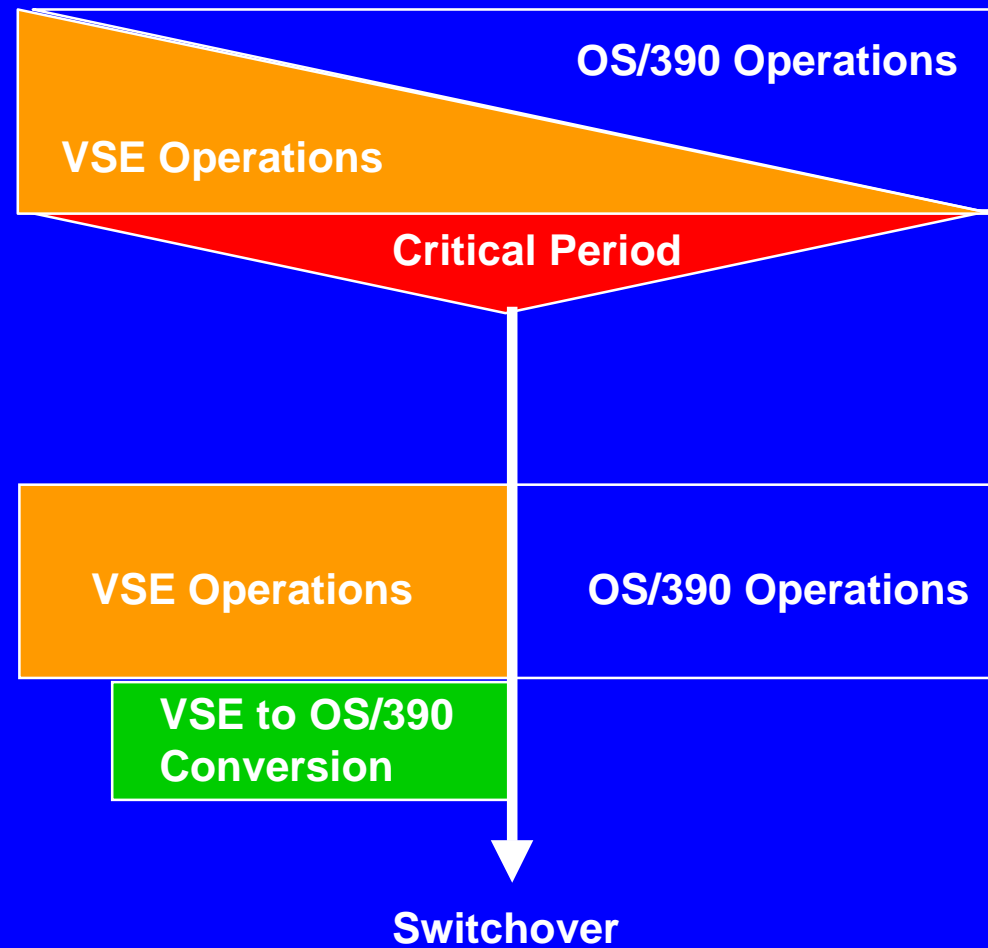
Proven phased project plan

- *Improved project management*
- *Greater visibility and control*
- *On-time completion*

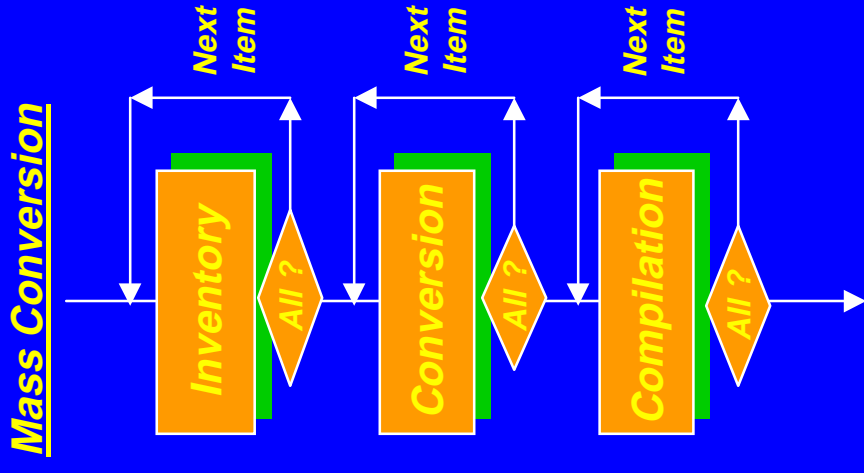
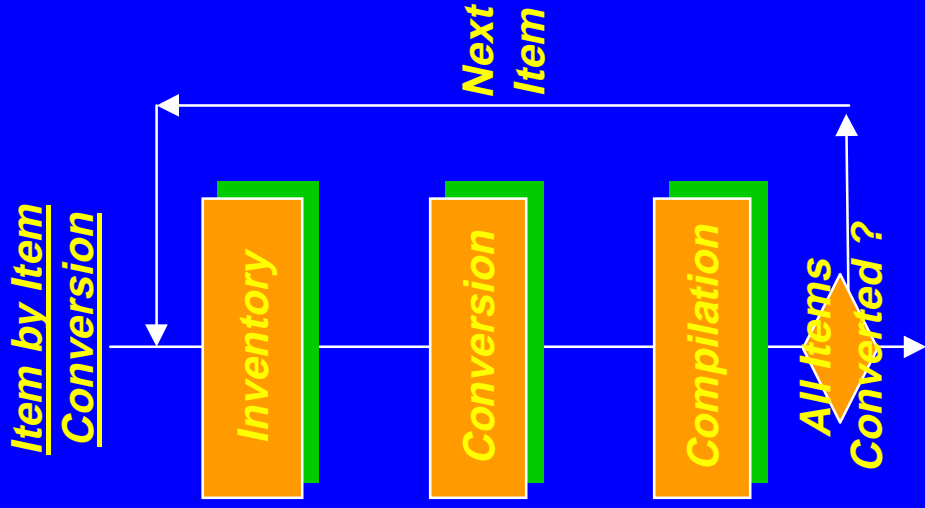
Progressive versus Mass Conversion

Progressive Conversion

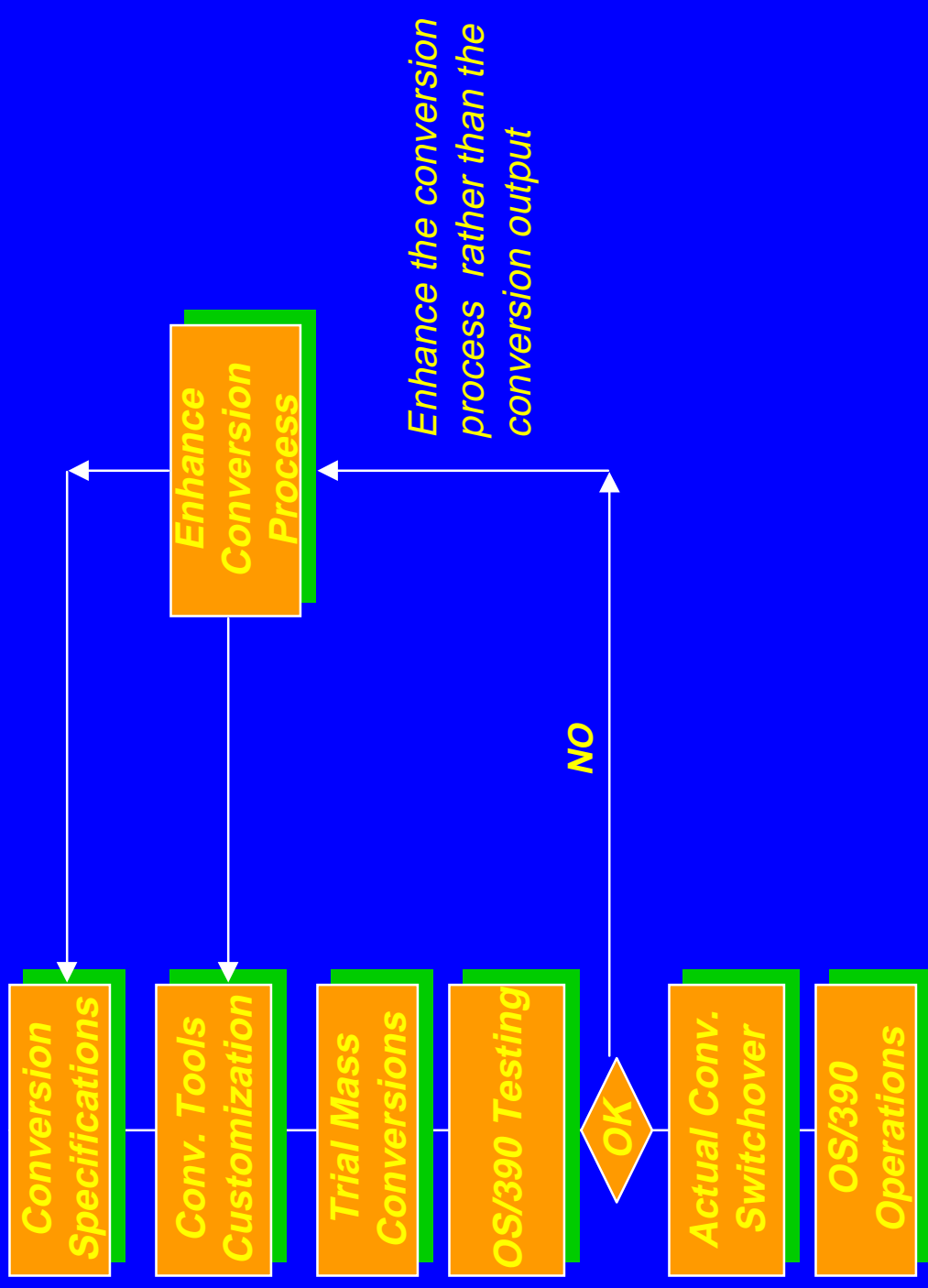
Mass Conversion



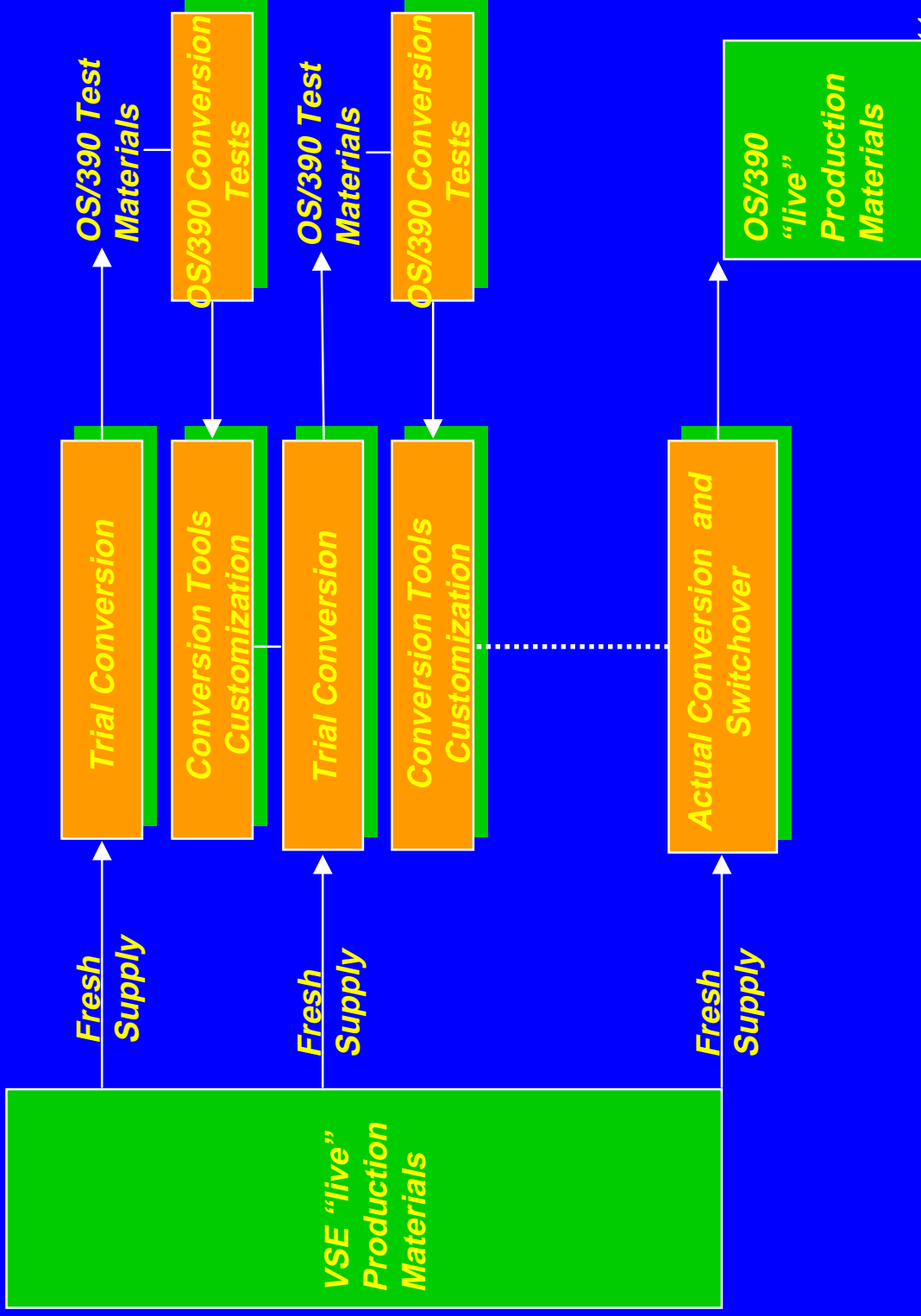
Mass Conversion



Automated Conversion



Repetitive Conversion



Project Phases

Preparation Phases

*Application Inventory
Specifications
Customization*

| <i>Duration</i> | <i>From</i> | <i>To</i> |
|-----------------|------------------|----------------|
| <i>2 m</i> | <i>mid-JAN</i> | <i>mid-MAR</i> |
| <i>3 m</i> | <i>start-FEB</i> | <i>end-APR</i> |
| <i>3 m</i> | <i>mid-FEB</i> | <i>mid-MAY</i> |

Conversion Phases

*Trial Conversions (2 w to 2 d)
Regression Testing
Online
Batch
Simulated Production*

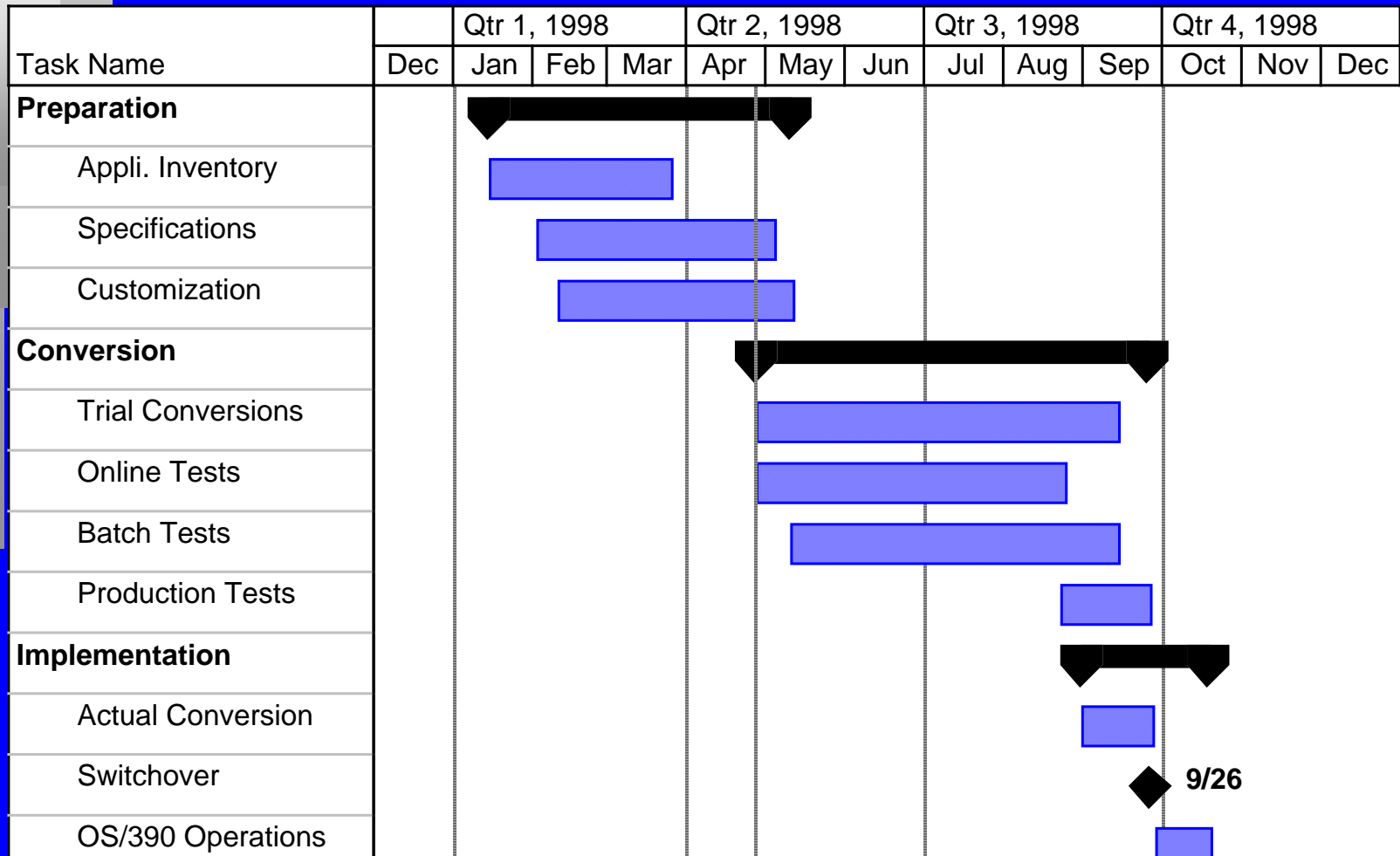
| | | |
|------------|----------------|----------------|
| <i>5 m</i> | <i>end-APR</i> | <i>end-SEP</i> |
| <i>4 m</i> | <i>end-APR</i> | <i>end-AUG</i> |
| <i>4 m</i> | <i>mid-MAY</i> | <i>mid-SEP</i> |
| <i>1 m</i> | <i>mid-AUG</i> | <i>end-SEP</i> |

Implementation Phases

*Actual Conversion and Switchover
Initial OS/390 Operations*

| | | |
|--------------|----------------|----------------|
| <i>1m+2d</i> | <i>end-AUG</i> | <i>end-SEP</i> |
| <i>1 m</i> | <i>end-SEP</i> | <i>end-OCT</i> |

Project Schedule



Conversion Tools

Automate

- *Application inventory verification*
- *Code conversion / upgrade / compilation-linkedit*
- *JCL conversion*
- *File migration*
- *[Project-management]*

Designed for Mass Conversion

- *One submission to convert all items*
- *Fast and resource-thrifty*
- *Summarized result review + detailed cross-references*

Customizable

- *All generic modifications included*
- *Installation and execution parameters*
- *Exit routines*
- *Pre/post-processors*

→ **CORTEX MS or AMS proprietary conversion tools**

Conversion Tools (Cont.)

Application Inventory

- *Separation of elements per type*
- *Identification of missing and unreferenced elements*
- *Cross-references between elements, statistics and counts*

Language Conversion

- *COBOL conversion and upgrade to COBOL for OS/390*
- *Assembler and RPG conversion*
- *Conversion of Easytrieve[-plus], DYL260/280, QUICKJOB, etc.*
- *Mass compilation and linkedit*

JCL Conversion

- *Retrieve job stream flowchart from VSE JCL, standard labels, VTOC and catalogs, converted code (file OPEN mode)*
- *Enterprise-wide file/step cross-references and file classification*
- *Generate standardized OS/390 JCL*

File Migration

- *Generate file migration procedures from JCL conversion data*
- *Read VSE-created tapes: DOCTOR D, MAXBACK, ...*

MVS Standards

Naming Conventions

- *Including datasets, jobs, procs, includes, steps, parameter libraries*
- *Excluding programs, entry-points, copybooks, includes, ddnames*

JCL Streams

- *Including JCL stream structure: run JCL, JCL procedures, includes*
- *Excluding job/jobset re-definition*
- *Traditional or DFSMS/DFPv3-type DD statements*

Utility Steps

- *File management steps: sort, copy, backup*
- *DBMS*
- *Service steps*

Automated Operations

- *Job scheduler*
- *Report manager*

DFSMS/DFPv3 Simplified JCL

Attribute Removed from DD Statements

- *VOLSER* OS/390 catalog
- *RECL* OS/390 at open (except IDCAMS/REPRO output)
- *BLKSIZE* OS/390 at open
- *RECFM* OS/390 at open
- *ORG* OS/390 at open
- *DSCB* ACS routine provides pattern DSCB for tape files
- *SPACE* Replaced by DFSMS' data class (DC)
- *UNIT (disk files)* ACS routine provides default value

Attributes Kept in DD Statements

- *DSN* Appl. + standard + file-id + class or job (&&work)
- *DISP* 9 basic cases identified automatically
- *UNIT (tape files)* Can be further reduced by using HSM

Attribute Added to DD Statements

- *DATACLAS* S/M/L/XL file sizes

Conversion Team

Consultants

Experience:

- OS/390
- Conversion tools
- VSE to OS/390 conversion
- Project planning & management

Responsibilities:

- Identify & address conv. issues
- Convert in-house applications
- OS/390 standards recommendation
- Follow methodology and plan

Internal Team

Experience:

- Current VSE Operations
- Current VSE Applications
- [Current OS/390 Operations]

Responsibilities:

- OS/390 system resources
- Application inventory
- Regression testing
- Automated operations tools

Shared Project Responsibilities

| | Consultants | Internal |
|-----------------------------------|-----------------------------|--------------------------|
| Project Management | Consultants | Overall, Customer |
| HW/SW/Office Space | [Mostly on-site] | Provide |
| OS/390 System | | Install, Support Operate |
| Project Planning | Project, Switchover | Tests |
| Application Inventory | Verify | Supply |
| Conversion Specifications | Develop | Review |
| Conversion Tools | Provide, Develop, Customize | |
| Manual Conversion | OS/390, VSE | VSE |
| Automated Conversion | Perform | |
| Online Application Tests | Corrections, Assistance | Run, Validate |
| Batch Application Tests | Corrections, Assistance | Run, Validate |
| OS/390 Automated OPS Tools | Limited assistance | Install, Set-up |
| Switchover | Prepare, Support | Run, Support |
| Initial OS/390 Operations | Support | Run, Support |

Assisted Project Responsibilities

| | Consultants | Internal |
|-----------------------------------|---------------------------------------|----------------------------------|
| Project Management | Consultants | Overall, Customer |
| HW/SW/[Office] | [Mostly off-site] | Supply |
| OS/390 System | | Install, Support, Operate |
| Project Planning | Consultant tasks only | Project, Test, Switchover |
| Application Inventory | Verify | Supply |
| Conversion Specifications | JCL + Code + Files | Overall, Standards, Naming Conv. |
| Conversion Software | Provide, Develop, Modify | |
| Manual Conversion | OS/390, VSE | VSE |
| Automated Conversions | Perform (twice?)* | |
| Online Application Tests | Corrections (1 st 6 weeks) | Run, Validate |
| Batch Application Tests | Corrections (1 st 6 weeks) | Run, Validate |
| OS/390 Automated OPS Tools | | Install, Set-up, Operate |
| Switchover | | Run, Support |
| Initial OS/390 Operations | | Run, Support |

* Consultants should address the conversion-related test exceptions identified during the first 6 weeks of testing by correcting the conversion tools and re-running a mass conversion from a fresh supply of the conversion inventory

Mass Conversion Benefits

Fast and Predictable

- *Reasonable timeframe*
- *Switchover date and cost known up-front*
- *Proven approach*

Less Disruptive

- *Single production switchover*
- *No tracking, freeze or duplication of VSE application changes*
- *Minimal disruption to operations and applications support*

Turn Cost Into Investment

- *Internal staff focused on reusable OS/390 skills*
- *Complete and consistent application inventory*
- *State-of-the-art OS/390 production environment*
- *Positioning for future growth*

