MAKING MISSOURI

MSDIS

AVAILABLE DIGITALLY

MU Department of Geography

Geographic Resources Center

QA/QC and
Risk Management

presented by:

Tim Haithcoat

University of Missouri Columbia

Quality Control

Cover Two Topics:

- General Principles of Quality Assurance

- Quality Management

Definitions

Quality Assurance (QA)
Pertaining to a comprehensive approach or system for ensuring product quality.

Quality Control (QC)
Pertaining to an action or step designed to test product quality for any number of properties.

Data Quality Properties

- Positional Accuracy

- Attribute Accuracy

- Topological Correctness

- Completeness

♦Database Design
- table formats
- valid codes
- valid feature types
- data resolution

♦Processing Standards
- RMSE
- fuzzy
- dangle
- weed tolerances

Establishing Baselines
(What Constitutes an Error?)

♦ Positional Off-sets
- Edgematching
- Single/double precision
- Shaded border

♦Data Extraction Rules
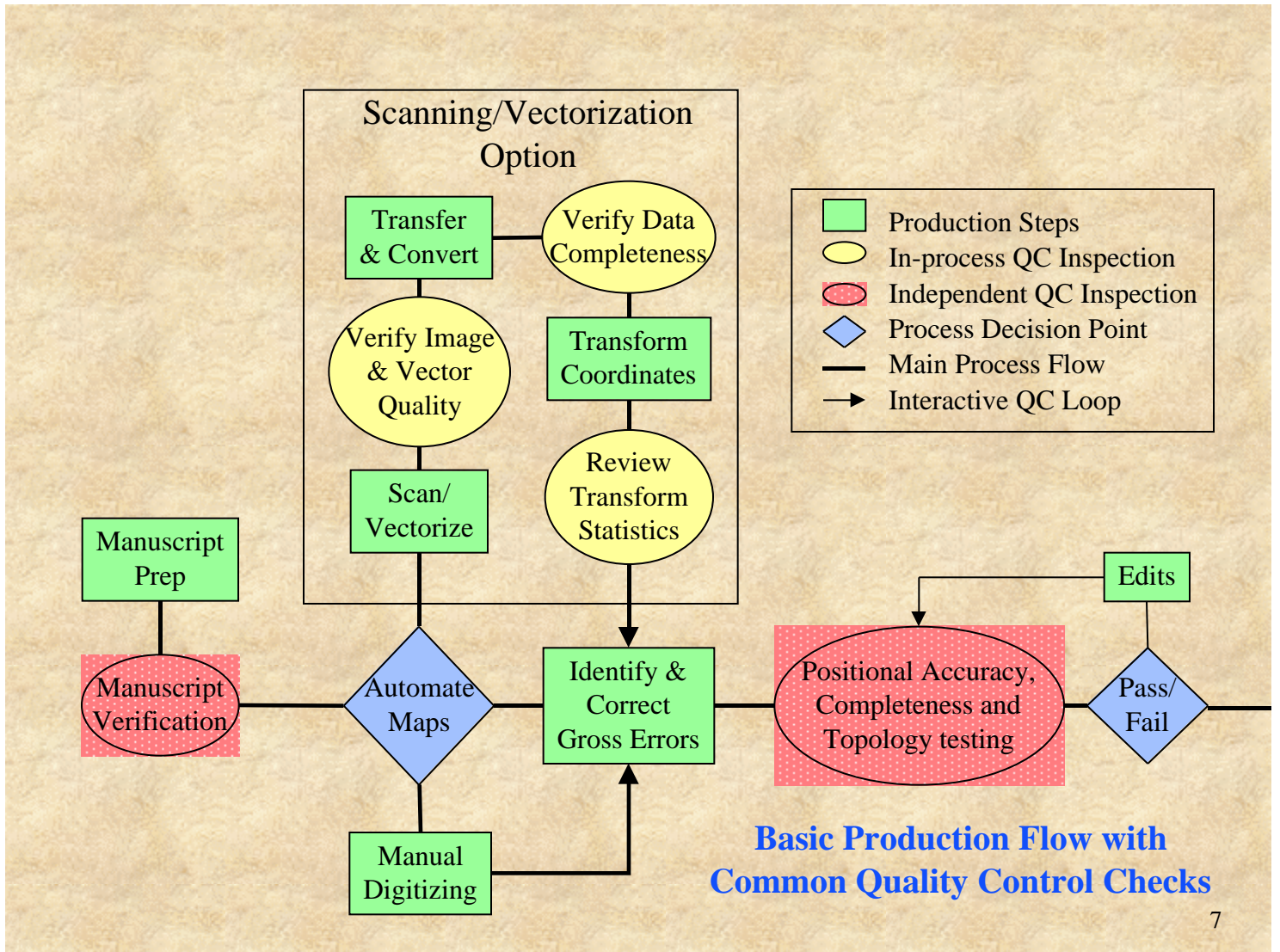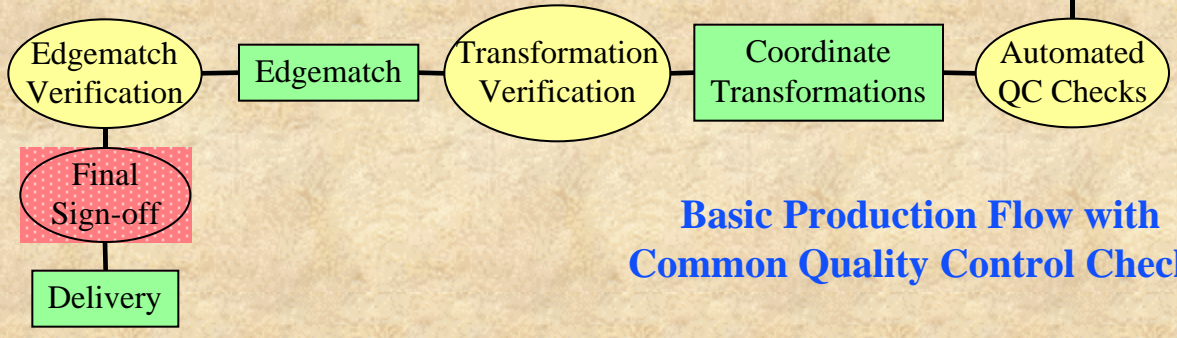- source interpretation
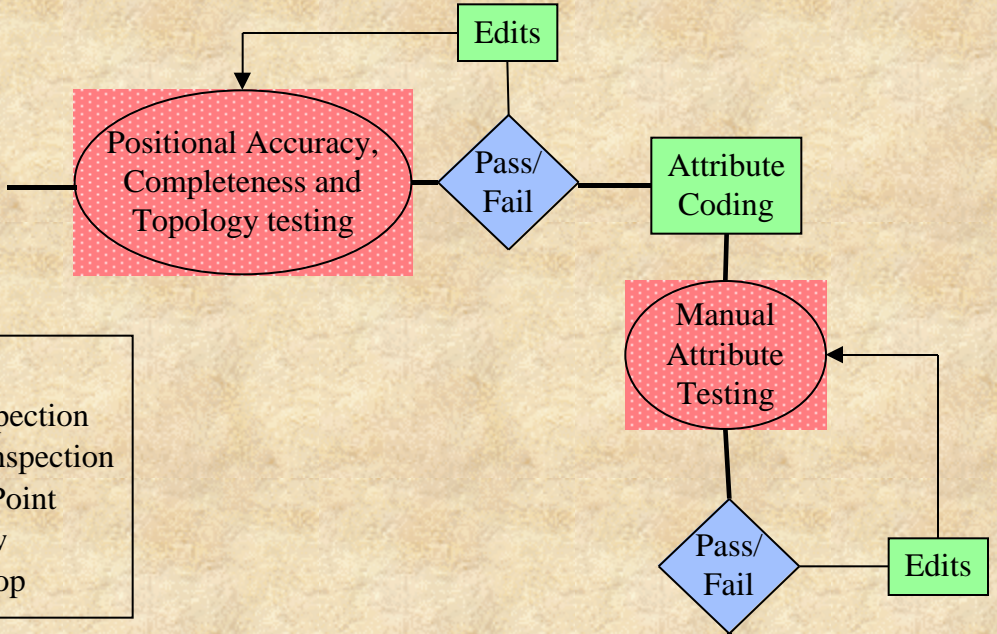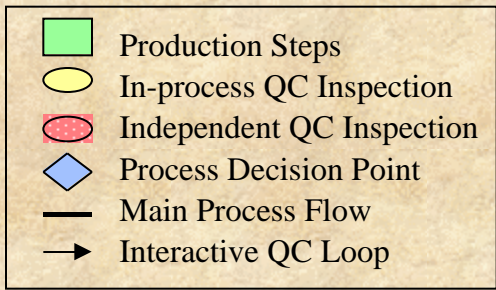- photo interpretation
- generalization

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Analyzing QC Requirements

✔Develop a process-oriented flow
- (i.e., edge matching standards, digitizing standards)

✔Identify key points in the conversion process where data properties could/are change(d)
- (i.e., digitization, transformation, re-projection)

✔Adjust process flow to concentrate QC property checking into as few steps as possible

Scanning/Vectorization Option

- Transfer & Convert
- Verify Data Completeness
- Verify Image & Vector Quality
- Transform Coordinates
- Scan/Vectorize
- Review Transform Statistics

Legend:
- Production Steps
- In-process QC Inspection
- Independent QC Inspection
- Process Decision Point
- Main Process Flow
- Interactive QC Loop

- Manuscript Prep
- Manuscript Verification
- Automate Maps
- Manual Digitizing
- Identify & Correct Gross Errors
- Positional Accuracy, Completeness and Topology testing
- Edits
- Pass/Fail

Basic Production Flow with Common Quality Control Checks

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Edits

Positional Accuracy, Completeness and Topology testing

Pass/ Fail

Attribute Coding

Manual Attribute Testing

Pass/ Fail

Edits

Production Steps
In-process QC Inspection
Independent QC Inspection
Process Decision Point
Main Process Flow
Interactive QC Loop

Edgematch Verification

Edgematch

Transformation Verification

Coordinate Transformations

Automated QC Checks

Final Sign-off

Delivery

Basic Production Flow with Common Quality Control Checks

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Independent Inspection

Will always find errors that elude the data processor.

In-Process Inspection

Useful for controlling simple data processing actions.

General Guidelines
for Cost-Effective Error Checking

- Re-work is always more costly than doing it right the first time.

- Check everything once, and then concentrate on maintaining data integrity through the remaining processes.

- Minimize the amount of materials that have to be handled.

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QUALITY MANAGEMENT
Data Quality Control is Process Control

◆ Process tracking and statusing

Automating Status

Start Task – Initial/Date

Project Number _____   _____ #___   Complete Task – Date

- Error correction tracking & process sign-off charts

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QUALITY MANAGEMENT
Data Quality Control is Process Control

◆ Documentation

- Record existence of anomalous conditions

- Maintain a complete data dictionary (including data extraction rules)

- Always provide staff (or vendor) with detailed written procedures plus diagrams describing graphic decision rules

QUALITY MANAGEMENT
Data Quality Control is Process Control

◆ Communication

- Develop formal mechanisms (i.e., standard symbols/colors for errors)

- Conduct frequent coordination and status meetings

- Provide honest opinions and feedback

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Project Risk Management

The successful GIS implementation plan must be carefully designed to minimize risk. An in-depth analysis of the potential individual risks to a GIS project can be grouped under the following categories.

◆ Corporate Management

◆ Project Funding & Budgeting

◆ Project Planning

◆ GIS Technology

◆ System Implementation

Corporate Management

- inadequate sponsorship

- project management

- lack of full-time project manager

- inability to control pilot project scope

- unrealistic project schedule

- lack of user support by development team

- understaffed project team

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Project Funding & Budgeting

- inadequate cost-benefit study
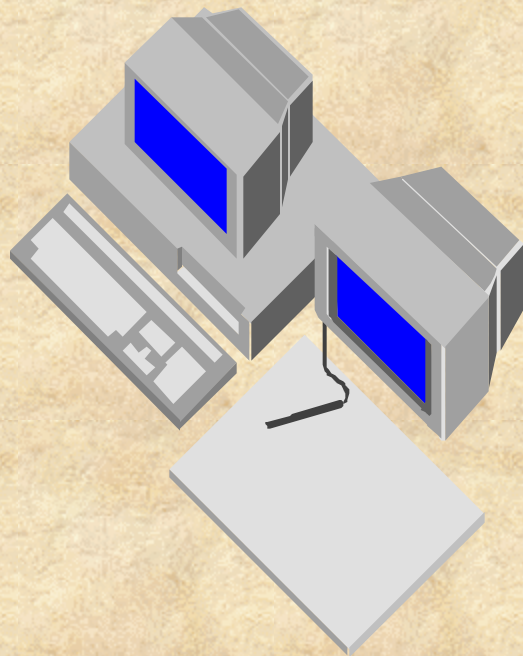- inadequate project funding/budgeting

Project Planning

- failure to include all required activities
- failure to include all effected groups
- failure to set scope based on cost-benefit
- unrealistic user expectations

GIS Technology

- failure to interface to other corporate data

System Implementation

- inadequate conversion staff
- change/expansion of conversion scope
- Labor and personnel issues