

CAPRI

Computer Application Process Review Improvement.®

“Shortening Up Top to Bottom Processes”

Developed by John Wright at Mountain Skies Business Consulting (© 2005)
Remodeled for use with USGS Contour NGTOC Contour Production Systems (2010)

What is CAPRI

Computer Application Process Review Improvement©

CAPRI in itself is not a
Process Improvement System

It is a rather a Methodology for Reviewing and
Documenting Computer Application
Production Processes in order to Move from
Initial State to Future State in the Process
Improvement Cycle

Global Terminology

- **Units** – The Smallest Unit Trackable Where Value to Track Exceeds Time/Money to Track
- **Project** – The Processes in Their Entirety
- **Master Step** – The Step In to Out Within Departments (Generation, QA, QC, Etc.)
- **Sub Step** – Major Steps within a Department
- **Step** – Individual Steps within Sub Step
- **Project Pass** – Processed Through Entire Project with No Error
- **Master Pass** – Processed Through a Master Step with No Error
- **Pass** – Processed Through a Step or Sub-Step with No Error
- **KPI** – Key Production Indicator – The Tracking Metrics
- **Zen State** – The Process that Perfect World Would Encompass
- **Future State** - The State of Compromise Between Current State and Zen State
- **Perfect State** – When ALL CURRENT PROJECT PROCESSES Work with No Error or Rejection (When EVERYTHING Works Right)
- **Worst State** – When all Error Variables are identified at the Step Level (When NOTHING Goes Right)
- **Step Card** – The Card Filled Out for Each Master, Sub Step and Individual Step
- **Initial State** – Detailed Perfect State and Worst State Diagrams Combined
- **Visioning** – The Identification of Development Possibilities looking at each Step and Determining the Level of Automation to be Achieved.
- **Final State** – The Final Document that can be Delivered to Developers to Begin the Process of Change
- **Draft State** – The Project in Full After The Big Think, Ready for Management Review

Step Card

Process Step:

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Cycle Time:

How long does it take to complete the function

Changeover Time:

How long does it take to prepare for the function

Reliability:

% of time the function is able to be completed once started

First Pass Yield:

When the function is completed, how often is it done correctly

of Operators:

How many people perform this operation

Dedicated/Shared Resource

Are the resources dedicated or shared

NOTES:

Step Terminology

- **Cycle Time** - How long does it take to complete the function?
- **Changeover Time** - How long does it take to prepare for the function?
- **Reliability** – Percent of time the function is able to be completed once started?
- **First Pass Yield** - When the function is completed, how often is it done correctly?
- **Number of Operators** - How many people perform this operation?
- **Dedicated/Shared Resource** - Are the resources dedicated or shared?

Beginning Initial State Development

- Define Units of Measure (is it Cell or Block?)
- Determine Key Production Indicators (KPI's)
 - How Many Units Make it Through Project Pass
 - How Many Units Make it Through Master Pass
- Determine Perfect State of the Master Steps of CURRENT Processes Utilizing Step Card

Initial State Process

- Develop Master Steps at Perfect State
- Develop Sub-Steps at Perfect State
- Develop Steps at Perfect State
- Develop Worst State at Sub-Step and Step Level
- Diagram Entire Initial State
- Determine and Record Codes for Entire Initial State

Sample View of Master Step Diagram

Authorization – The String Pullers Upstairs

Contour Generation – Sally “Step” Smith

Quality Assurance – Chuck “Check” Checkers

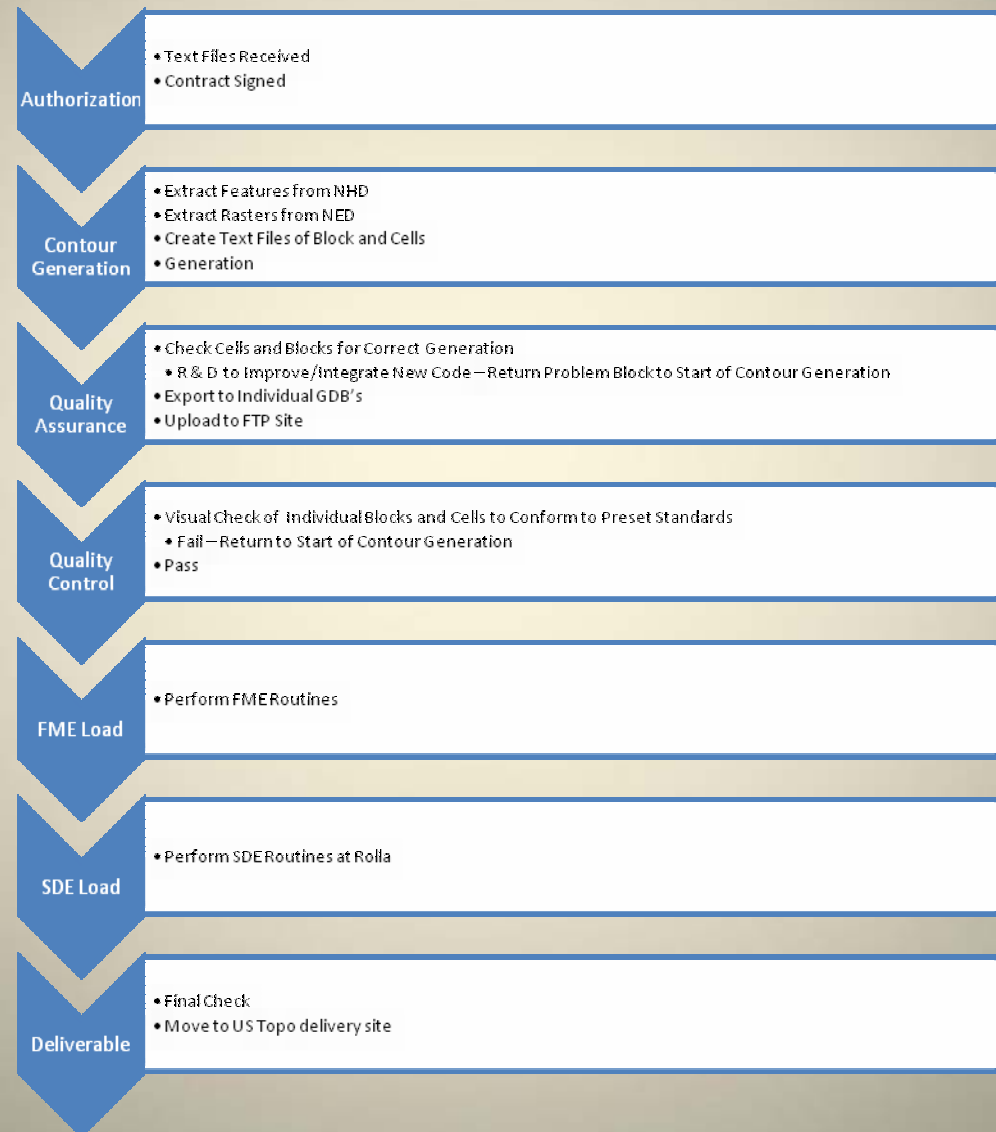
Quality Control – Bob “Better” GetItRight

FME Load – Irma “Igot” MoreStufftoAdd

SDE Load – Theodore “ThatAint” All

Deliverable – Igor “Iget” Allthecredit

Sample View of Sub Step Diagram



Sample View of Step Diagram

QA Step – Check Contours Against Hydro

Add the state hydro (<state>/NHDarmrg.shp, flmrg.shp, and wbmrg.shp) to ArcMap

Add all the cells in one block to ArcMap

Check to be sure there aren't any contours that fall completely within WB or AR. Remove as a temporary fix.

Check to make sure contours do not fall in waterbodies (wbmrg). If they do, check to see if the wb is broken where the contour falls. If so, ignore, if not, fail and return to Contour Generation Step XXX

Check some turnbacks on some rivers (flmrg). If you note so real bad turn-backs, note in QA Edit FL/TB

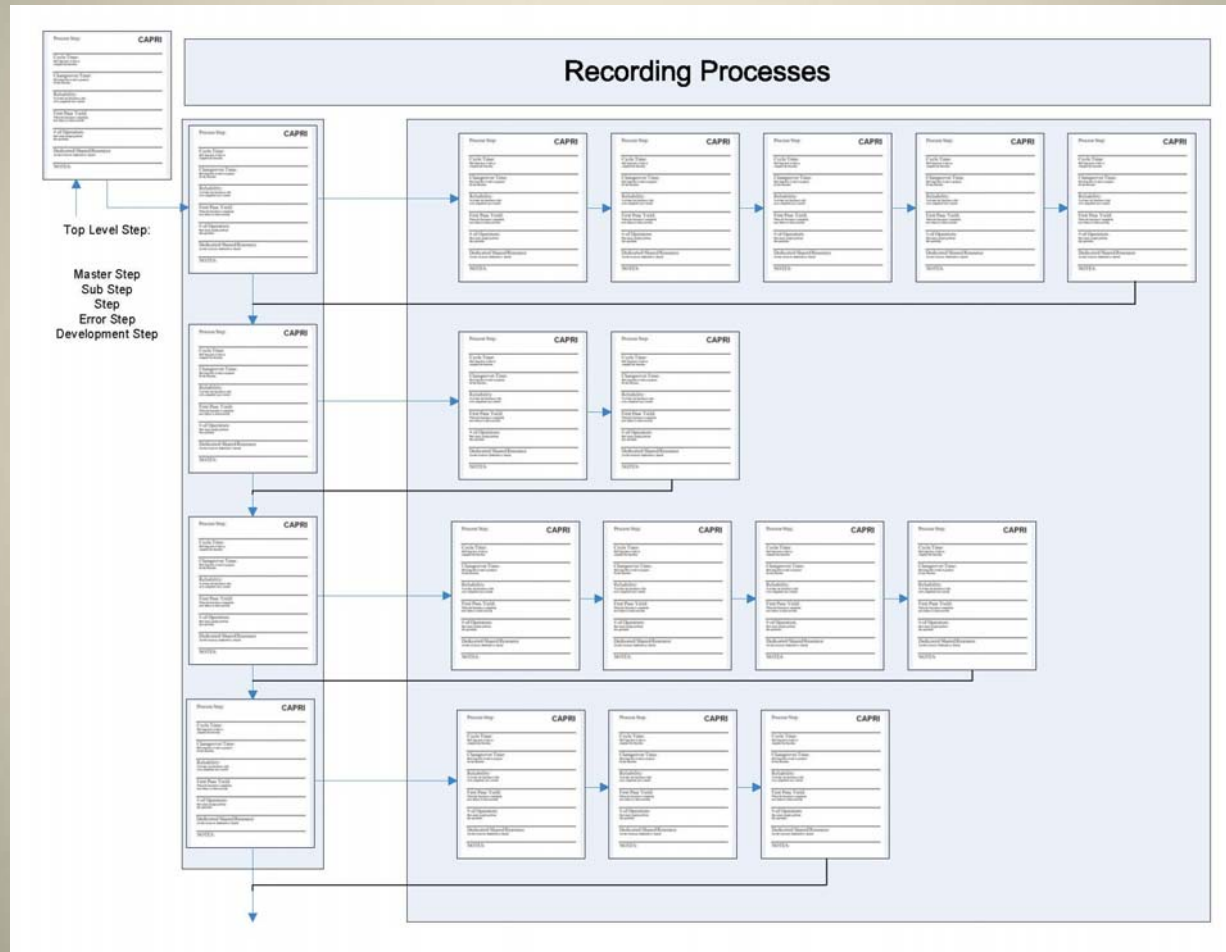
Check contours on double line streams and note the accuracy of the contours crossing them. If any are wrong, flag for QA Edit

After all checks pass, flag for QC.

Wright's Wrules for Process Recording

- Post the Standard Unit of Measure and Use it to Determine all Time and Costs.
- Move Away From Hierarchal Recording - Use Right Angles and Branching
- Use Postit's for (different colors) for Error Description, Path Branching, Decisions, etc.
- Choose a Top Level Step and Work Down and Right
- Details – Details - Details

Sample View of Process Recording



Keys of Success to Initial State

- Don't KISS – Every Detail Matters
- Don't Problem Solve
- Get Everyone Who Touches the Process Involved
- Defining Master Steps in the Project Does NOT Require a Meeting and Should Take No More Than an Hour to Set Up
- Use Project Management and Flow Chart Software to Record the Whole Process
- Use the Suggested Step Coding or Develop Your Own and Implement at the Initial State
- Move as Quickly to Get to Initial State as Possible to Minimize Dynamic Changes in the Working Process

Coding for Initial State

This format is suggested for purposes of entering into a project management system and for report sorting

Format – 00<NAME>00.00.00.E00.D00

Where:

00 is the Report Sort by Code

<NAME> is A Short Name or Abbreviation for the Master Process

00 is the Sub Step within the Master Process

00 is the Step within the Sub Step Process

E00 are Error Steps Defined to Return to a Step or Sub Step (Leave off of Non-Error Steps)

D00 is the Development Steps to Achieve a Step or Series of Steps

Initial State Compilation

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Totals		INITIAL STATE	Cycle Time total Minutes/Hours	Changeover Time Minutes/Hours	Reliability % Average	First Pass Yield % Average	# of Operators
Project:	Test		2480	70	89%	70%	
Department:	Project		41.33	1.17			
Date:	1/1/01						
MasterStep Number	Step Description	Cycle Time (in minutes)	Changeover Time (in minutes)	Reliability %	First Pass Yield %	# of Operators	
01PS	Authorization For Work	120	10	95%	95%	1	
02CG	Contour Generation	750	10	95%	85%	2	
03QA	Quality Assurance	500	10	85%	50%	3	
04QC	Quality Control	500	10	95%	95%	4	
05FM	FME Load	250	10	75%	75%	3	
06SD	SDE Load	300	10	80%	85%	2	
07PC	Project Deliverable	60	10	100%	5%	1	

Visioning

- The Time for Problem Solving to Begin
- Plan to Meet by Department Master Step
- Get Developers Involved
- Go Through Each Step and Determine if the Step Can be Automated or Not
- Use Different Colored Paper to Show Human Steps and Automation Steps
- Define the Steps of Automation to Achieve the Step Adding a .D00 on the end of Each Step Number to Show the Change to Implement
- Define the Steps of Automation to Determine and Correct Error Steps
- Remember to Reference the Step Number to Return to After the Error Correction Completes
- Assign a Cost of Required Software, Hardware, and Other Assets other Than Manpower That Need to Be Purchased
- Assign a Amount of Time to Fully Develop, Test, and Implement Each Development Step
- If Possible, Assign the Tasks to the Members Who Will Be Responsible for Completing the Task.
- Determine the Number of Times This Process will be Completed Over the Next Cycle Period Based on the Unit of Measure You Determined at the Beginning

Draft State Summary

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Project: Test	
Department: Project	
Date: 1/1/01	
Number of Repetitions per Year	36000
Average Hourly Employee Rate	\$16.00

Current/Future State Totals	Initial State	Future State	Change Minutes	Hours
Cycle Time	2480	1140	1340	22.33
Changeover Time	70	70	0	0.00
Reliability	89%	99%	9.29%	
First Pass Yield	70%	98%	27.71%	
Total Cost to Implement		\$3,250.00		

Annual Cost Break Down			Annual Improvements
Cycle Time	\$23,808,000.00	\$10,944,000.00	\$12,864,000.00
Changeover Time	\$672,000.00	\$672,000.00	\$0.00
Total Dollar Improvement			\$12,864,000.00
Reliability Improvement			9.29%
First Pass Yield Improvement			27.71%
Break Even Repetitions			9.10

Management Review

- Management Must Calculate an Average Hourly Cost for All the People Involved
- Review the Detail and Summary Sheet to Determine the Cost Effectiveness of the Project Implementation
- It May be Necessary to Kick Back Areas for Clarification or Cheaper Solutions to Specific Problems
- Once Negotiated – Create Final State and Signoff

Pedal to the Metal

The project now moves into Project Management Phase. Take all of the tasks that are considered development and create the project plan from that. Assign the individual tasks on a timeframe and set priorities for each level. Determine the critical path and a project leader and you are off and running.

GOOD LUCK!