

CAD for Principals Process Advancement - The Missing Ingredient

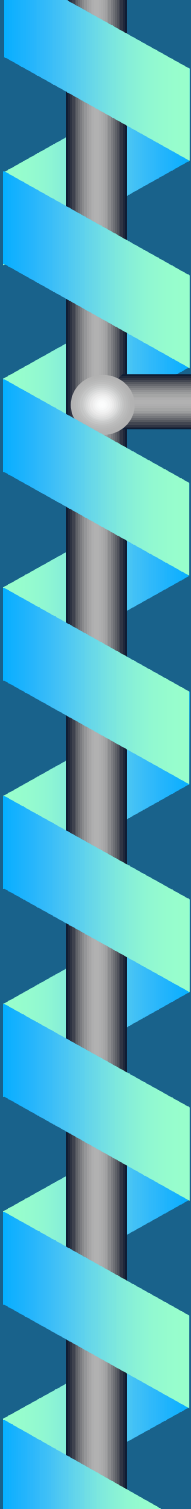
AEC Systems
June 2001

Kenneth H. Stowe, PE
Director of Project Services



George B. H. Macomber Company

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To complain of the age we live in, to murmur at the present possessors of power, to lament the past, to *conceive extravagant hopes* of the future, are the common dispositions of the greatest part of mankind.

Edmund Burke - 1729-1797

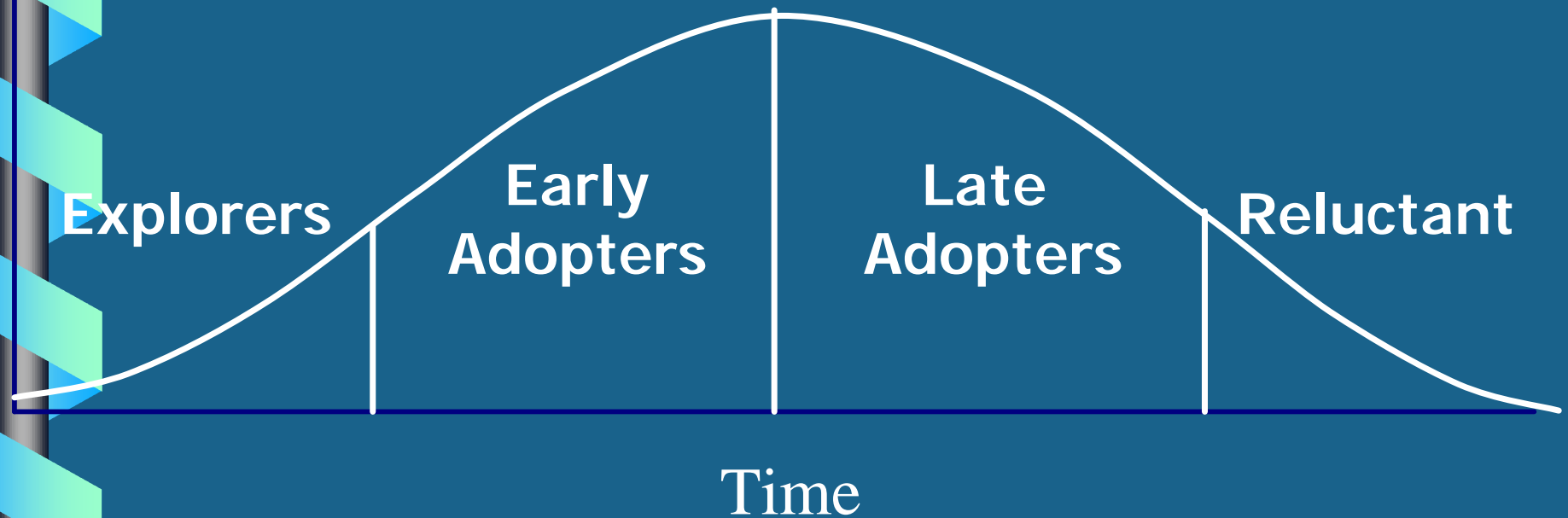
THOUGHTS on the CAUSE of the PRESENT
DISCONTENTS



Process - Missing Links

- CAD to Estimating Integration
- Recycling of CAD As-Builts
- Cost-Schedule Optimization
- Version Control
- Integrated Model Presentations
- Database Design for Streamlined Efforts
- Construction Logistics Models
- Object Libraries
- 4-Dimensional Simulations
- Downstream Respect
- Trust

Innovation Adoption



Innovation Adoption

More Initial Expense
More Potential Gain
More Risk of Failure

Less Initial Expense
Less Risk of Failure
Lower Potential Gain

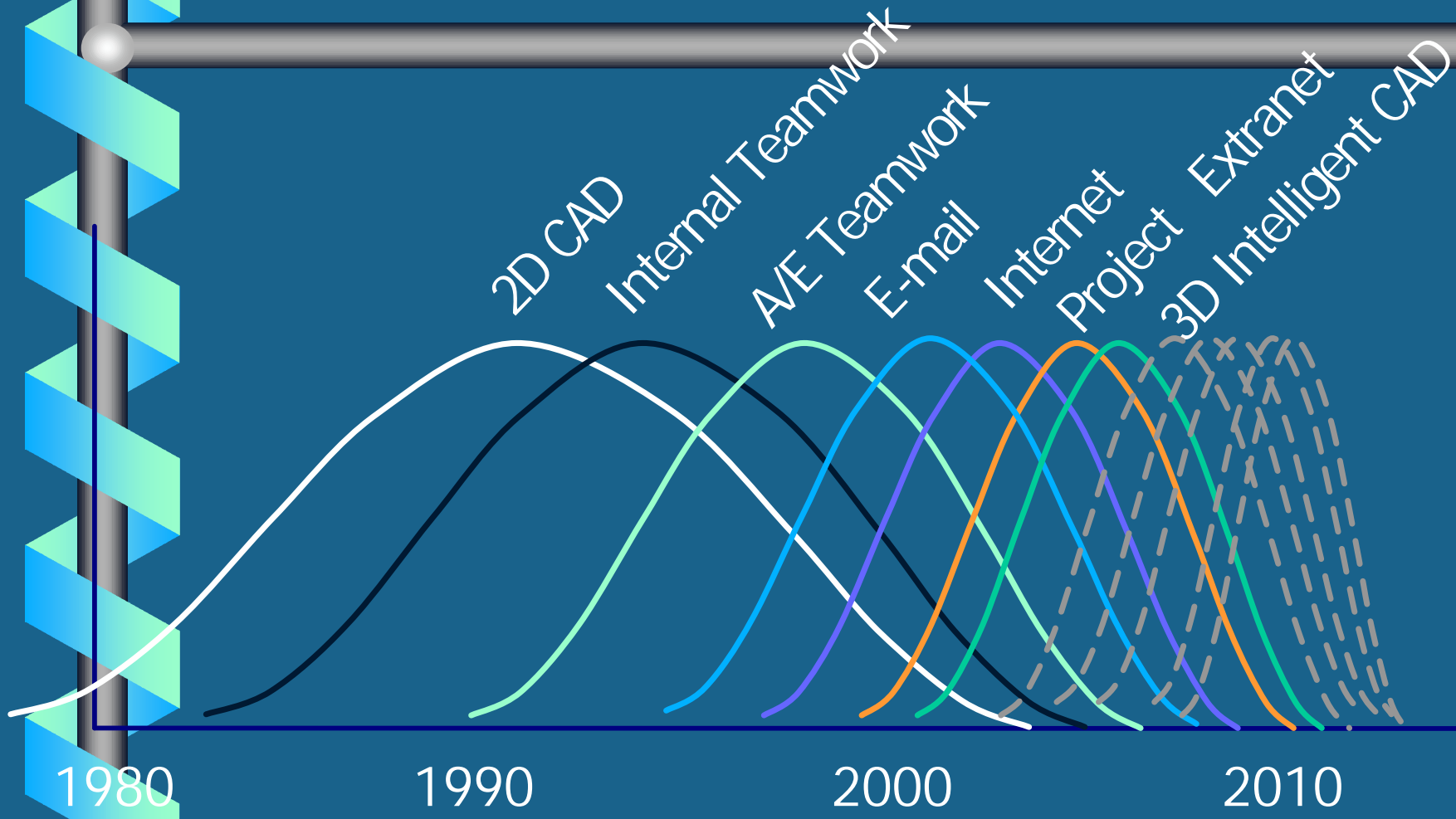
Explorers

Early
Adopters

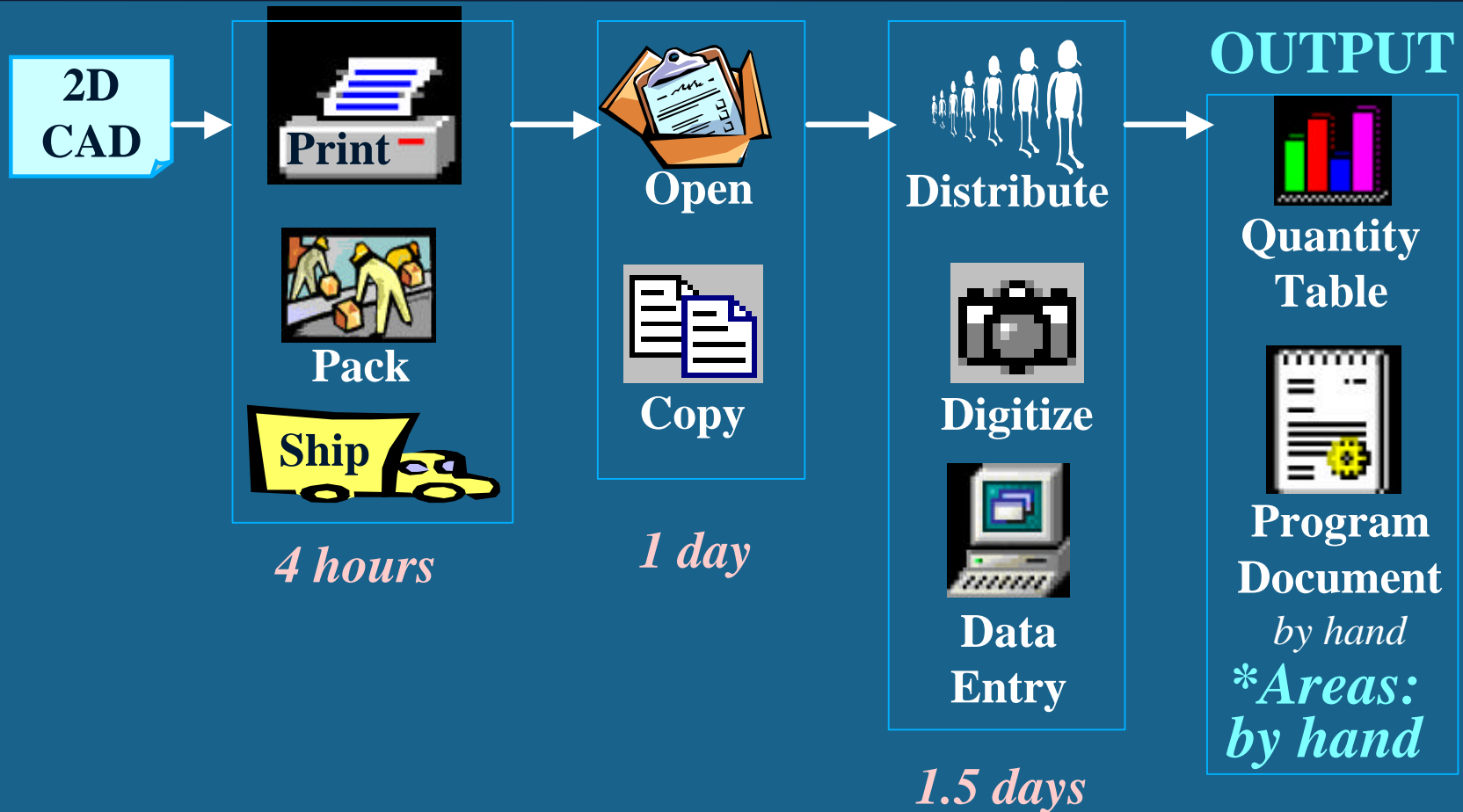
Late
Adopters

Reluctant

Innovation Adoption

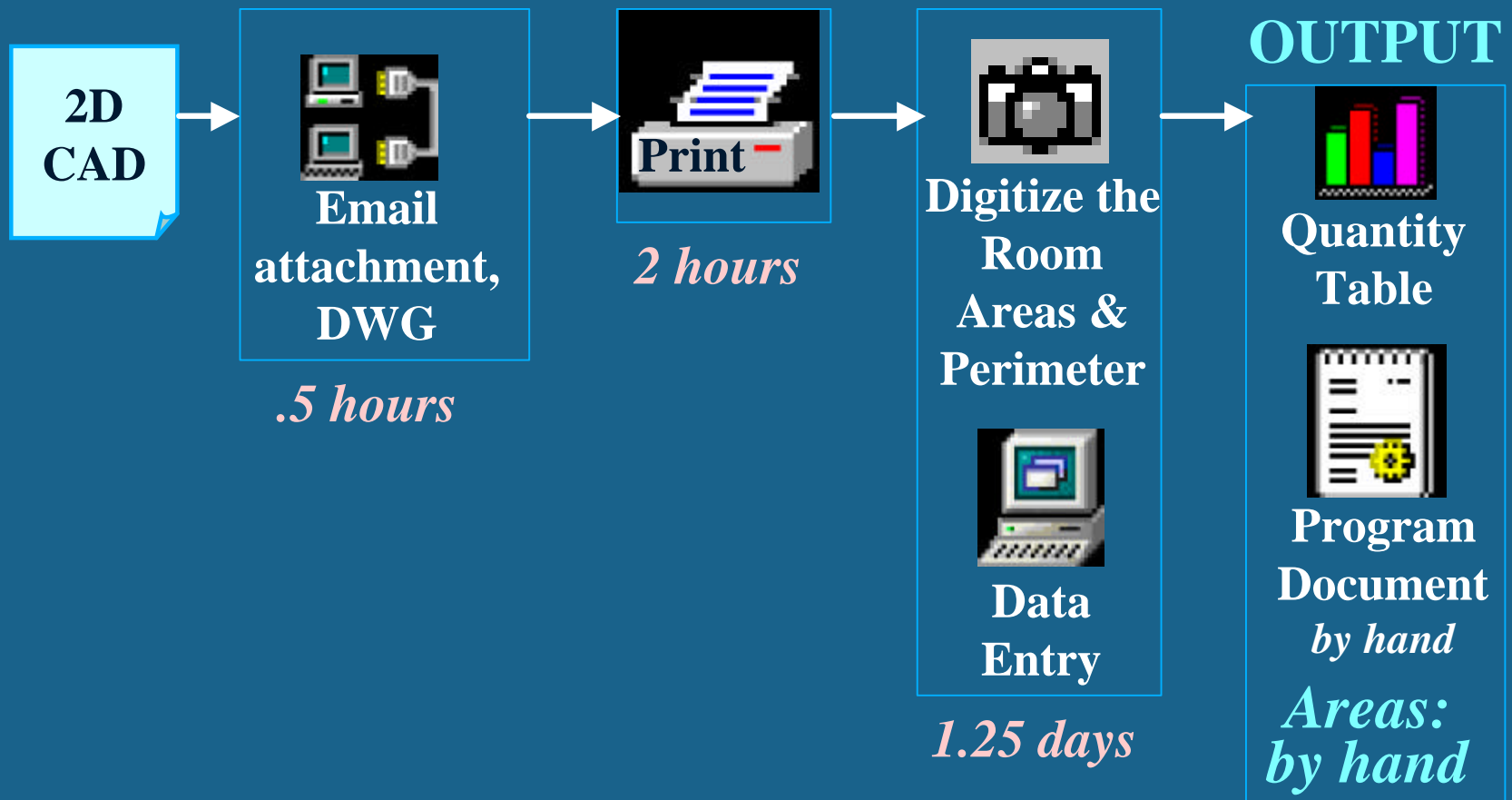


TRADITIONAL PAPER QUANTIFICATION PROCESS - 3 days



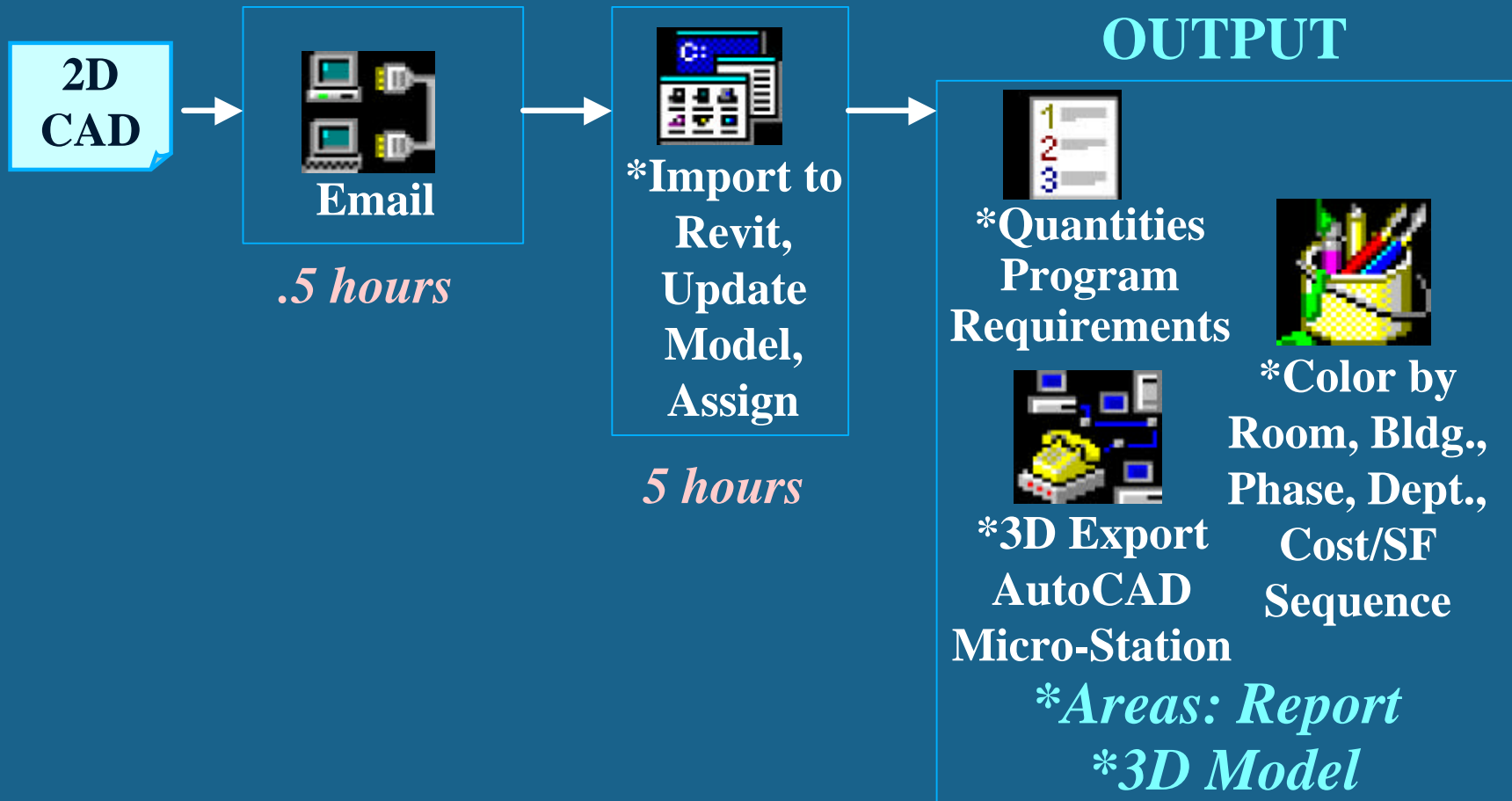
Net: 3 days

EMAIL THE CAD FILE & PRINT AT ESTIMATING OFFICE - 1.5 days



Net: 1.5 days

EMAIL & IMPORT CAD INTO OBJECT-BASED CAD - 5.5 hours



Net: 5.5 hours

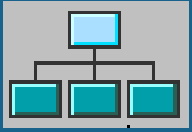
EMAIL OBJECT-BASED CAD & Lift Quantities - 3 hours




*Revit
Intelligent
Model



Email
.5 hours



Assign
certain WBS
values



Generate
Quantities &
Other
Builder's
Needs
2.5 hours

OUTPUT



Quantities
Program
Requirements



Color by
Room, Bldg.,
Phase, Dept.,
Cost/SF
Sequence



3D Export
AutoCAD
Micro-Station

*Areas: Report
3D Model*

Net: 3 hours



Ways to move a culture forward:

- Incentive
- Select Challenging Owners
- Select Advanced Team Members
- Tools
- Process Re-engineering for Total Value
- Shared, Selective Risk-taking

Steps to CAD to Estimating Integration

Planning

Plan

- CAD

Real Time Model Sharing

Post Intelligent Models

- Schedule

Post Drwgs, Quant, Versions, Assumptions

Post Drawings and Quantities

Post to Secure Websites

Post to FTP Sites

E-mail attachments

Disc Swapping

Print Pack Ship

Maintenance

Maintenance Tools

- Routine Facility Maintenance
- Equipment Maintenance
- Furniture, Inventory, Manuf
- Space Allocation
- CAFM
- Work Order

gn

Design Tools

- CAD
- Financial Forecasts
- Schedule - Resource Allocation
- Specification Writing
- Constructability
- CAE

Construction

Construction Tools

- Estimate
- Schedule
- Job Cost Accounting
- Document/Scope Control
- Contract Management
- CAD

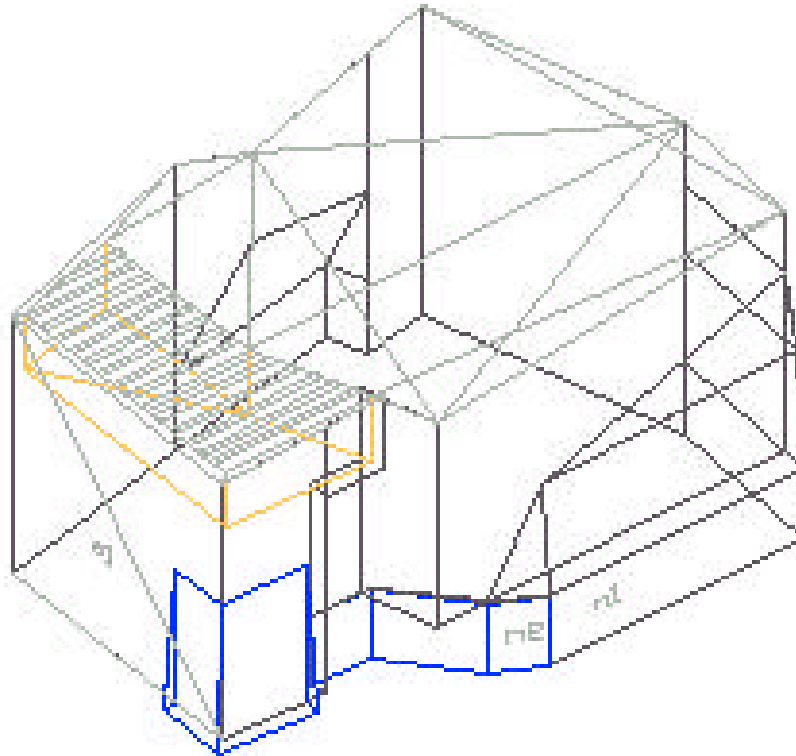
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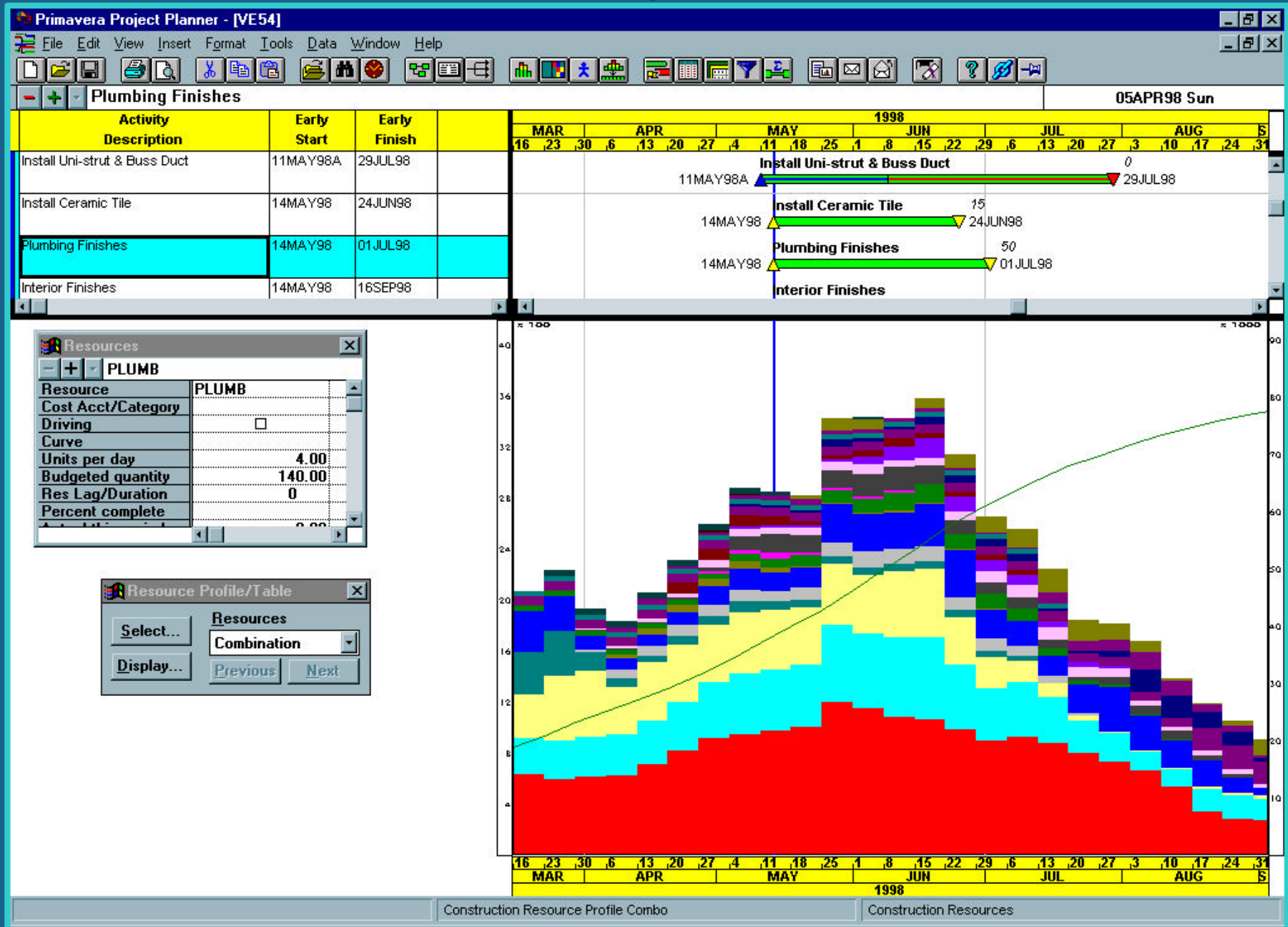
CAD to Estimating Integration

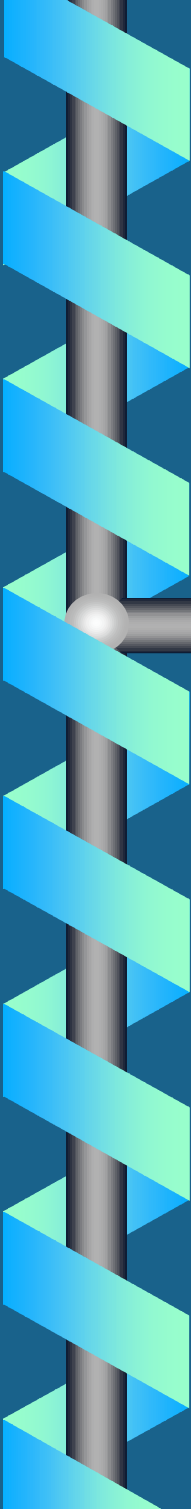
Intelligent CAD files - instead of paper

- to the estimator for quantity take-off
- assumptions clarified for the team



Advanced CPM Planning - Resource Analysis





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