

How to Justify a Large-Format Scanner

Large-format scanners have been around since the mid- to late 1980s. Initial demand was created by early adopters looking for new opportunities -- especially in the CAD market, where the need was obvious for scanning legacy drawings. As the market matured, wide-format scanners moved into the mainstream, fueled by explosive price/performance improvements and the introduction of wide-format color scanning in the mid 1990s and wide-format color copying a few years later. During the past five years, color image capturing technology has improved, broadening the applications of wide-format scanners.

Naysayers once commented that wide-format scanning was useful only as a transition technology, until all existing paper documents have been scanned into a system. However, demand over the years has remained continuous. Recently, we've seen a trend among major players in the market to integrate the scanner with the printing device, indicating that these major companies are convinced that the market is viable.

All this raises some interesting questions for businesses, mainly: Do we need such a solution, or not? Wide-format scanners -- ranging in price from \$9,000 to \$30,000 -- are not an investment to take lightly. In this two-part series, I'll provide some introductory information about wide-format scanners -- including uses and general purchasing considerations -- followed by a new tool I've developed that will help you calculate potential ROI (return on investment) so you can make the decision that's right for your company. www.TheOtherSolutions.com/Wfs/wideROI.htm

Applications for Wide-Format Scanning

Several uses exist today for wide-format scanning. Before we delve into financial considerations, let's take a look at how this equipment is used.

Scan-to-File. Scan-to-file is the classic application for wide-format scanners. It originated in the CAD world as a way to reuse legacy paper drawings by scanning them into an electronic format or directly into the CAD system. This allowed business to recoup invested intellectual property from legacy drawings.

Typically, two approaches existed for this application. The first was to convert drawings on demand. The second was to convert all legacy drawings into an electronic drawing archive. The latter was justified by reducing the amount of storage space needed and preventing further deterioration of the drawings. Disaster recovery is another application for scan-to-file. A city engineering department, for example, can use a scanner to make electronic copies of drawings of bridges, utility lines, buildings and more and store them in a safe, fireproof location.

You have two viable options for the scan-to-file approach:

- Outsource the scanning to a third-party scanning service.
- Invest in a solution so you can do the scanning in-house.

Scan-to-Print. Scan-to-print, or S2P, was first applied following the introduction of wide-format color scanners in the late 1990s. These devices allowed business owners to expand their services offerings to include color poster and other wide document reproduction. The scan-to-print workstation was created using a wide-format scanner as the front end to a wide-format printer. Reprographics shops were the first to jump into this new concept for expanding their service into the wide-format arena. Other markets, such as architects, copy shops and photo labs also jumped on the bandwagon.

What makes these solutions attractive for business owners is the potential for a high rate of return on investment. Typically, reprographers charge \$6-\$8 per square foot copied in color -- or \$72 to \$96 for a 36"x48" original on standard bond paper. The relatively inexpensive and fast wide-format inkjet printers that are available today -- such as the Canon imagePROGRAF W8400 (\$5,995) -- a complete "copy solution" could easily be set up for less than \$20,000. Given revenues of \$100 per copy, the payback on the original investment could come quickly.

Scan-to-Application. A new breed of uses, scan-to-application, has popped up in recent years, propelling wide-format scanners into new niche markets. It's amazing to observe the innovative thinking in other parts of industry.

For example, takeoff estimating for the construction industry is a process commonly done with traditional digitizers. I recently stumbled on a new application from [Callidus](#) that targets those contractors who need to make quick and accurate estimates for planning and installation. Callidus takes information from scaled floor plans, site measurements, AutoCAD and scanned drawings to calculate all the figures required for flooring installations, such as carpet, ceramic, wood, raised access and more. This is just one example where an innovative company has found a new way to capitalize on wide-format scanning technology.

Justifying the Investment: In-House or Outsource?

Let's talk about how to justify the investment in a wide-format scanner system. If you need a wide-format scanner for one or more of the applications described above, then you are either a service provider of the technology or a service user. Whatever the case, you can either outsource or in-source the service. It's fairly simple to do your own business calculations to determine which approach would be best for your business. Following are key considerations:

Protecting Intellectual Property. As you consider whether to outsource wide-format scanning needs or purchase your own in-house system, one element is key: the intellectual property held in the drawings. Some companies will not allow such intellectual property to leave the facility. If this is the case with your company, your decision is easy. You have no choice but to invest in your own system.

Financial Considerations. Intellectual property issues aside, the most important factor in determining whether to purchase your own wide-format scanner decision is money. Quite simply, if a wide-format scanner solution does not improve your bottom line, you probably should not invest in one, no matter how fancy the technology might look.

Generally, an in-house investment can offer three possible competitive advantages to a company.

- **Innovation.** Adding an in-house wide-format scanner allows a company to offer new, even innovative, services or solutions for in-house use or to sell to clients. Scanners get drawings into an electronic format where they can be viewed and edited simultaneously by many different people in the architectural/engineering department -- leading to improved workflow and tracking.
- **Differentiation.** Wide-format scanning can help a company differentiate itself from competition and expand into other business areas. Architectural firms could offer a new online service in which a client can select, view, download and edit construction or engineering drawings in real time -- which was impossible when drawings were available only on paper. Expanding services can expand your client base and in turn expand your revenue.
- **Cost.** Finally, your solution to this puzzle will come down to whether your investment can either reduce costs or increase profits, depending on whether you're using the technology

for your own in-house service or to provide services to outside clients. Either way, you need a method to determine if the potential return justifies the investment.

Until now, we've had very few financial tools to help determine whether and when to invest in a wide-format scanner. Granted, some of you have probably thrown some numbers down on a piece of paper in an attempt to answer these questions. However, most prospective owners of wide-format scanners realize they are encroaching on new turf, and they have no idea how to obtain and calculate realistic numbers for such an investment.

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My company, [The Other Solutions](#), has developed a tool that can simplify this decision-making process. This [tool](#), presented on our Web site, is designed for both the novice and experienced user. It consists of a two-stage analysis you can use for business justification, whether you're a service bureau or are considering a scanner for in-house use.

Step 1: Narrow Your List of Options

You can skip this step if you're already familiar with the wide-format scanner industry, but the first thing you need to do is narrow your list of wide-format scanner choices. The top three manufacturers of wide-format scanners offer 67 different models, and the choices can seem overwhelming. Step 1 calls on our Wide-Format Scanners Buyers Guide. Use it to reduce the choices to a more manageable number. By answering questions about your industry and the document sizes you use, you can pretty much narrow your selection to a list of three to five scanners.

Step 2: Determine and Justify Your ROI

This is the real deal because it gets to the root of justifying your business investment. It presents two scenarios and their break-even values and return on investment. The first break-even analysis is based on an equipment purchase; the second applies to leasing the equipment. Then finally, the return on investment indicates whether it is financially better to buy or lease equipment rather than outsourcing the scanning work to a service bureau.

In a nutshell, this tool simply asks you to enter actual equipment, scanning and copying parameters, production parameters, the actual cost of a scan-to-file or scan-to-copy/print and optional requirement plan. Then it automatically calculates the return on investment.

Here's a look at parts of the tool in more detail.

Scanner Cost. This is the sum of the scanner model price and any optional upgrades and extra software. This calculation is based on the manufacturer's suggested retail prices. If a discount or extra fee applies for you, you can enter any addition or subtraction in the Capital Cost Adjustment field.

Computer Cost. Select which type of computer system you have or intend to buy. There are four options:

- Standard: Regular PC with an approximate cost of \$1,000.
- Premium: Higher-end PC with an approximate cost of \$2,000.
- High-end: Very high-performance PC with an approximate cost of \$5,000.

- Compatible PC is already owned.

The higher-end PC can handle more throughputs and will affect the total amount of scans you can process in a given day. If you already have a PC, select "I have a PC" to avoid adding this cost to the ROI analysis. If you will purchase a PC that does not match the cost of any of those listed, you can adjust the amount in the Capital Cost Adjustment field.

Scan2File & Scan2Print Cost. In this section, you can estimate the cost or revenue income for just copying or just scanning. The first two lines cover the cost of scanning to a file in black-and-white and in color. Most black-and-white scans are paid as a flat rate per scan, while color scan costs are normally calculated per square foot. For copying, the industry standard is to charge per square foot, both for black-and-white copies and for color. If you are paying or earning other costs, just adjust the appropriate fields. If your new scanner would be for in-house use, enter the cost of getting the job done at the local service bureau.

Scanning & Copying. Here you specify the breakdown of your anticipated scanning and copying work. Enter the percentages for each size of document you use: E (36 x 48"), D (24" x 36") and C (18" x 24"). Enter the percentages of black-and-white vs. color work as well as Scan2File vs. Scan2Print applications. In both cases, the numbers will automatically be adjusted to add up to 100%.

Production Parameters. This section is applicable mostly to facilities that have more than one scanner and printer. The default values (1 scanner, 1 printer, 1 shift of 8 hours per working day) should be sufficient for most ROI calculations.

Requirement Plan. We are finally coming down to the last section that needs to be filled out before we can proceed -- the requirement plan or expected number of drawings. Specify the number of drawings to be handled in a given time frame. For example, a city engineering department might estimate the volume it will scan/copy at 1,200 drawings in two years. These values are important and are required to calculate the net present value of your investment.

These figures should generate the breakdown of purchase, lease and the net present value of the investment. Every time a parameter is entered or changed, the calculator will automatically recalculate the return on investment. A positive net present value indicates that you should go ahead and invest. If the net present value is negative, you are better off outsourcing your scanning needs.

The Outcome

Following are two examples showing different cost breakdowns and their results using the ROI tool.

Select the Scanner Brand					
Scanner Brand	<input type="text" value="GTCO Calcomp"/>				
Scanner cost		Scanning & Copying			
Scanner Model	<input type="text" value="ScanPlus V 742 HS"/>	<input type="text" value="100"/> % E-size	<input type="text" value="0"/> % D-size	<input type="text" value="0"/> % C-size	
Upgrade	<input type="checkbox"/> to Plus or Pro <input checked="" type="checkbox"/>	<input type="text" value="10"/> % Color	<input type="text" value="90"/> % B/W		
Software	<input type="text" value="I have the Software"/>	<input type="text" value="90"/> % Scan2File	<input type="text" value="10"/> % Scan2print		

Computer cost		Production Parameter	
Computer	<input type="text" value="Standard"/>	Hours per shift	<input type="text" value="8"/> hour
Capital cost adjustment		Number of shift per day	<input type="text" value="1"/> shifts
Cost adjustment	<input type="text" value="0"/> \$	Scanners & Printers in Operation	<input type="text" value="1"/> qty
Scan²File & Scan²Print cost		Requirement Plan	
Cost B/W scans	<input type="text" value="20.00"/> \$/scan	Number of drawings	<input type="text" value="1200"/> ?
Cost Color scans	<input type="text" value="3.90"/> \$/sq ²	Available time	<input type="text" value="365"/> Calendar days ?
Cost B/W copying	<input type="text" value="0.75"/> \$/sq ²	Working days per week	<input type="text" value="5"/>
Cost Color copying	<input type="text" value="7.00"/> \$/sq ²	Drawing in a batch	<input type="text" value="1"/> ?
Capital project		Reserved	
Capital investment	<input type="text" value="16790"/> \$		
Lease/month	<input type="text" value="407"/> \$	Terms	<input type="text" value="36"/> Month
Net Present Value	<input type="text" value="7278"/> \$	IRR	<input type="text" value="58"/> %
Required to break even: LEASE		Required to break even: PURCHASE	
Number of copies	<input type="text" value="2"/> per month	Number of copies	<input type="text" value="76"/>
Number of scans	<input type="text" value="17"/> per month	Number of scans	<input type="text" value="686"/>
Working days to break-even	<input type="text" value="1"/> days	Working days to break-even	<input type="text" value="4"/>
Further Action			
Show me the details			
I am ready. Send me a quote:			
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The above example -- a scenario in which the wide-format scanner use would be mostly scan-to-file -- finds a net present value of the investment of \$7,278 after one year of scanning 1,200 drawings to file in black-and-white. A positive net present value indicates that we should go forward and invest in a wide-format scanner.

Select the Scanner Brand				
Scanner Brand	<input type="text" value="GTCO Calcomp"/>			
Scanner cost		Scanning & Copying		
Scanner Model	<input type="text" value="ScanPlus V 742 HS"/>	<input type="text" value="100"/> % E-size	<input type="text" value="0"/> % D-size	<input type="text" value="0"/> % C-size



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Upgrade	<input type="checkbox"/> to Plus or Pro	<input checked="" type="checkbox"/> Scanner Sta	90 % Color	10 % B/W
Software	JETimage		10 % Scan2File	90 % Scan2print
Computer cost			Production Parameter	
Computer	Standard		Hours per shift	8 hour
Capital cost adjustment			Number of shift per day	1 shifts
Cost adjustment	0 \$		Scanners & Printers in Operation	1 qty
Scan2File & Scan2Print cost			Requirement Plan	
Cost B/W scans	20.00	\$/scan	Number of drawings	1200
Cost Color scans	3.90	\$/sq ²	Available time	730 Calendar days
Cost B/W copying	0.75	\$/sq ²	Working days per week	5
Cost Color copying	7.00	\$/sq ²	Drawing in a batch	1
Capital project			Reserved	
Capital investment	18780	\$		
Lease/month	455	\$	Terms	36 Moni
Net Present Value	53877	\$	IRR	116 %
Required to break even: LEASE			Required to break even: PURCHASE	
Number of copies	6	per month	Number of copies	231
Number of scans	1	per month	Number of scans	26
Working days to break-even	1	days	Working days to break-even	5
Further Action				
Show me the details				
I am ready. Send me a quote:				
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This ROI analysis shows a net present value of \$53,877 after two years of scanning 120 documents to file and copying 1,080 drawings. Again, the conclusion is to move forward and invest.

Where to Go From Here?

Armed with this new tool and the data it provides, you can now better justify the "go, no go" decision for your business. If you go for investing, the next step is where to get the best deal. But



that's a whole separate topic -- and one I'll save for another article!

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About the Author.

Henrik Vestermark, an independent consultant and professional with experience in the wide format scanner industry since 1988. His expertise includes experience in all aspects of the wide format and large format digital capture market, with experience in the development, sales & marketing for a wide format scanner manufacturer. In 2006 Henrik Vestermark started his own company, The Other Solutions—a web based provider focusing on delivery of affordable solutions and consultancy to the IT and wide format markets, specializing in the identification of business needs and justification of solutions.