

Barco

# The Power of Pixels: How you can improve meeting & collaboration efficiency

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## INTRODUCTION

All organizations want to improve business performance. So, how can the modern business organization ensure that its meeting and collaboration rooms foster sensible thinking and smart, efficient decisions?

A wide range of studies have shown that high-resolution displays improve meeting and collaboration efficiency over displays with low resolution. In this paper, we highlight some of the challenges organizations face while trying to improve efficiency and the Barco products that turn these challenges into opportunities.

### Key findings

- Data errors are discovered and corrected more quickly when all data is displayed in a single visualization environment
- Task times are reduced dramatically (by up to 63%) when working in spreadsheets or word processing documents
- Increased screen space increases productivity (9%)
- User satisfaction increases with screen size and pixel count
- Widescreen format gives the best results
- For desktop environments, a multi-screen setup can increase effectiveness too – but bezels are seen as a drawback.

*If you're able to squeeze out 10% more productivity, do you know how much money that will save?*

Mary Czerwinski, Microsoft Research

## A WORLD OF MEETINGS

We might not like meetings very much, but meetings are the most effective way to transfer information and knowledge within an organization. A meeting is the most common way to collaborate – and it's the forum in which critical business-related decisions are made.

A study by the National Statistics Council shows that employees spend 37% of their time in meetings; and another study shows that more than 11 million formal meetings are held every day in the United States alone.

Imagine the benefits of increasing productivity in these meetings by 10%.

## THE COMMON CHALLENGE

Every management team is constantly searching for ways to improve its company's efficiency. The reason is simple: the more efficient a business is, the more opportunities it has to become successful.

One piece of advice that keeps coming up in articles, books and presentations on the topic is simply: *take advantage of technology*.

While there are many ways to "take advantage of technology", they often require making significant investments (CAPEX), changing work processes, and providing education and training, as well as dealing with resistance in the organization and growing consultancy fees.

But what if efficiency and employee satisfaction levels could be increased without large investments and costly education and training?

## THE CHALLENGE IDENTIFIED

All over the world, you will find meeting, collaboration and board rooms with more or less the same display setup: a projector, a flat panel screen, or both. The majority of these displays have low resolution (WXGA or lower) and, based on statistics from projectorcentral.com, low resolution is still popular.<sup>i</sup>

However, display resolution statistics<sup>ii</sup> from online sources clearly indicate that users working in (and with) technology have high-resolution displays on their laptops or workstations. The statistics from w3schools<sup>iii</sup> indicate that 47% have Full HD or "other high"<sup>iv</sup> resolutions.

Clearly, a lot of work is being done on high-resolution display monitors; and yet, data is presented and discussed and – critical decisions are made – with low-resolution presentation screens.

The low-resolution displays in meeting and collaboration rooms limit:

- Efficient collaboration
- Efficient interpretation of data (big data)

But the solution already exists, as you will discover below.

## **DOCUMENTED BENEFITS**

There are a wide range of studies and well-documented tests that clearly show the benefits of large displays. Some of these tests have been conducted on regular monitors, while others have been conducted on single- or multi-channel projection systems. All of them indicate increased productivity and end-user satisfaction.

## **REDUCED TASK TIMES**

In general, the larger the display (without being so large that you cannot view all of it) the more efficiently you work. A study conducted by Pfeiffer Consulting<sup>v</sup> documented that a larger display increased efficiency by more than 50% on almost all tasks when working in spreadsheets, and efficiency increased by more than 60% when combining text from multiple Word documents.

In another study, conducted by the University of Utah<sup>vi</sup>, widescreen displays consistently facilitated better performance compared to non-wide-screen setups. The users even preferred widescreen over a dual-screen setup, because the widescreen was not interrupted by a bezel. This study also showed that larger screen space increased productivity and that end-users greatly preferred larger screen real estate.

## **INCREASED REAL ESTATE ALLOWS MORE COMPLEX WINDOWS LAYOUT**

In multiple studies<sup>vii</sup>, Mary Czerwinski (and many others from Microsoft Research) has concluded that there is a clear trend toward larger displays, and evidence indicates that they increase user productivity as well as user recognition and memory.

Larger displays offer opportunities for more complex window layout arrangements. Czerwinski writes: "With multi-monitor displays, users try to avoid placing windows across bezels, but

this effort is both time-consuming and error-prone. In addition, users can easily waste screen real estate in window layout.”

Another study, conducted to verify whether a large screen can support collaboration<sup>viii</sup> findings concluded that: “large screen interaction does offer a higher speed of interaction when compared to small screens”, and the results show “a distinct advantage for large screens in interaction speed when compared to small screens, and test subjects expressed preference for interacting with the large display.”

These studies also document increased efficiency (speed) and user preference for large-screen systems.

## **ANALYZING COMPLEX DATA**

While not all organizations need to analyze data as complex as seismic surveys and lease boundaries (such as geoscientists do) the Halliburton<sup>ix</sup> study conducted by Mary Cole and Phill Norlund, documents the challenge of visualizing large datasets and disparate data types at full resolution. Their study shows that a large high-resolution display helps, as the need for content scaling is reduced, and “by viewing all of the data at full resolution, the interpreter can see the forest and the trees.”

Obviously, a single WQXGA resolution display does not provide enough resolution for these kinds of data sets (regional interpretation of a 2D seismic line 160 kilometers long) but the study’s conclusion that high-resolution display environments can support more efficient workflows is highly applicable.

## THE SOLUTION: TAKING ADVANTAGE OF TECHNOLOGY

Fortunately, the challenge described in this paper has a very simple solution: **invest in a high-resolution display in your meeting, collaboration, conference or boardrooms.**

This solution is simple, because the majority of these rooms are already equipped with a low-resolution projector, which can be easily replaced.

A distinct benefit of projectors or displays with up to WQXGA (2560 x 1600) resolution is that they can be fed content through a single cable (HDBaseT, Dual DVI or HDMI) and that a wide range of laptops and workstations can already provide such output.

By replacing your current projector with a new, high-resolution one, you also reduce investments for installation, configuration and education – the room's features do not change – and you are ready to capitalize on the benefits of the wide-screen, high-resolution display.

## REFERENCES

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- i As of 29 September 2014, the top 10 of the most popular "Conference room" projectors for Small, Large and Auditoriums were SVGA (2), XGA (5), WUXGA (5), WXGA (7) and HD (11)
  - ii From w3schools.com, w3counter, screenresolution.org, jwag.biz, rapidtables.com, statcounter.com, Wikipedia (steam),
  - iii From the website: "W3Schools.com is for people with an interest for web technologies. This fact indicates that the numbers below might not be 100% true for the average internet users. The average internet-user might have a lower screen resolution."
  - iv 1440x900, 1600x900, 1680x1050, 1920x1200, 1360x768, 2560x1440 resolutions.
  - v "30 Inch Apple Cinema HD display productivity benchmark", Pfeiffer Consulting
  - vi "NEC Monitor Size and Aspect Ratio Productivity Research", University of Utah
  - vii Microsoft Research : "The Large-Display User Experience", "Toward Characterizing the Productivity Benefits of Very Large Displays Experience", George Robertson, Mary Czerwinski, Patrick Baudisch, Brian Meyers, Daniel Robbins, Greg Smith, and Desney Tan
  - viii "Large Screen Interaction as a Supporting Tool for Collaboration", Jesper Jonathan Bisgaard, Morten Heise, Carsten Steffensen
  - ix "High-resolution displays effective for regional interpretation", Mary Cole and Phill Norlund, Halliburton