



R E S I D E N T I A L

Architectural Integration

I have the simplest tastes.
I am always satisfied with the best.

Oscar Wilde





Where Technology meets Architecture and Design

Barco Residential brings innovative visual experiences to all areas of the finest residences, combining technology leadership with architectural and interior design. Together with our partners, we have made it our mission to create Architectural Digital Canvases that enable the most immersive entertainment and cultural experiences in luxury homes for customers to share with their loved ones. With this book we aim to provide inspiration using examples of these experiences, created with our custom integration partners, using our established components and processes to create fully integrated solutions that perfectly complement the design and architecture of any residence.

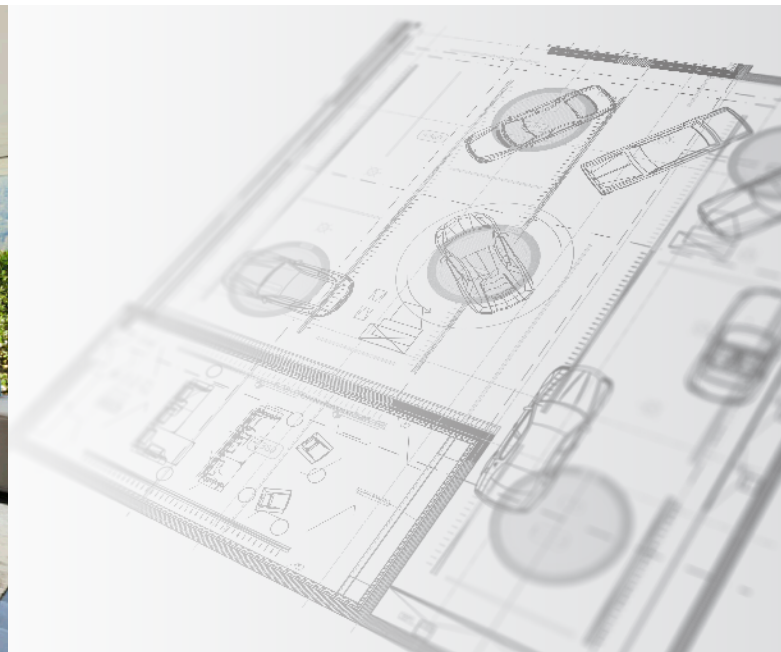
Architectural Integration

Our discerning clients are not just looking for a typical home-theater-in-a-box, much less for an unsightly projector hanging from the ceiling. All too often, technology becomes a 'necessary evil' that impedes

the design imperative of a luxury home or yacht. Each client's lifestyle is unique and every residence is unique. Clients are looking for ways to discretely integrate different experiences into their living

spaces, not limited to Home Theater, but also including New Media Art, Gaming and Architectural Video.

This calls for more customized and architecturally





Courtesy of NIOO



Courtesy of Eagle Sentry

integrated video solutions, that offer far beyond what any mass-produced TV or home theater solution can offer.

Together with our partners, Barco Residential is at the forefront of driving these industry-wide changes, underpinned by our **“Hide Everything but the Image”** philosophy. We focus our development efforts on creating technologies and products that allow integration of systems to enhance rather than impede the architecture and design of the client’s residence, thereby turning technology from a ‘necessary’ evil into a design material for Architects and Designers.



How Design Professionals Work

Architects and designers tend to follow four main steps in any project: Schematic Design, Design Development, Construction Document/Permits and Construction.

Schematic Design

In this step, the architect talks with the client to determine the project requirements and goals. The architect usually starts with rough study drawings that illustrate the basic design. This most often includes spatial relationships as well as basic scale and forms the owner might desire. Also, initial research of regulations is completed at this time. Initial cost estimates are also

investigated based on total project size and complexity.

Design Development

In this phase the architect collects the results from the schematic design phase and takes them one step further. This phase involves finalizing the design and specifying items such as materials, window and door locations and general structural details. Wall thickness, direction of structural beams, placement of doors, lamp fixtures and furnishings are all part of the thought process in this phase.

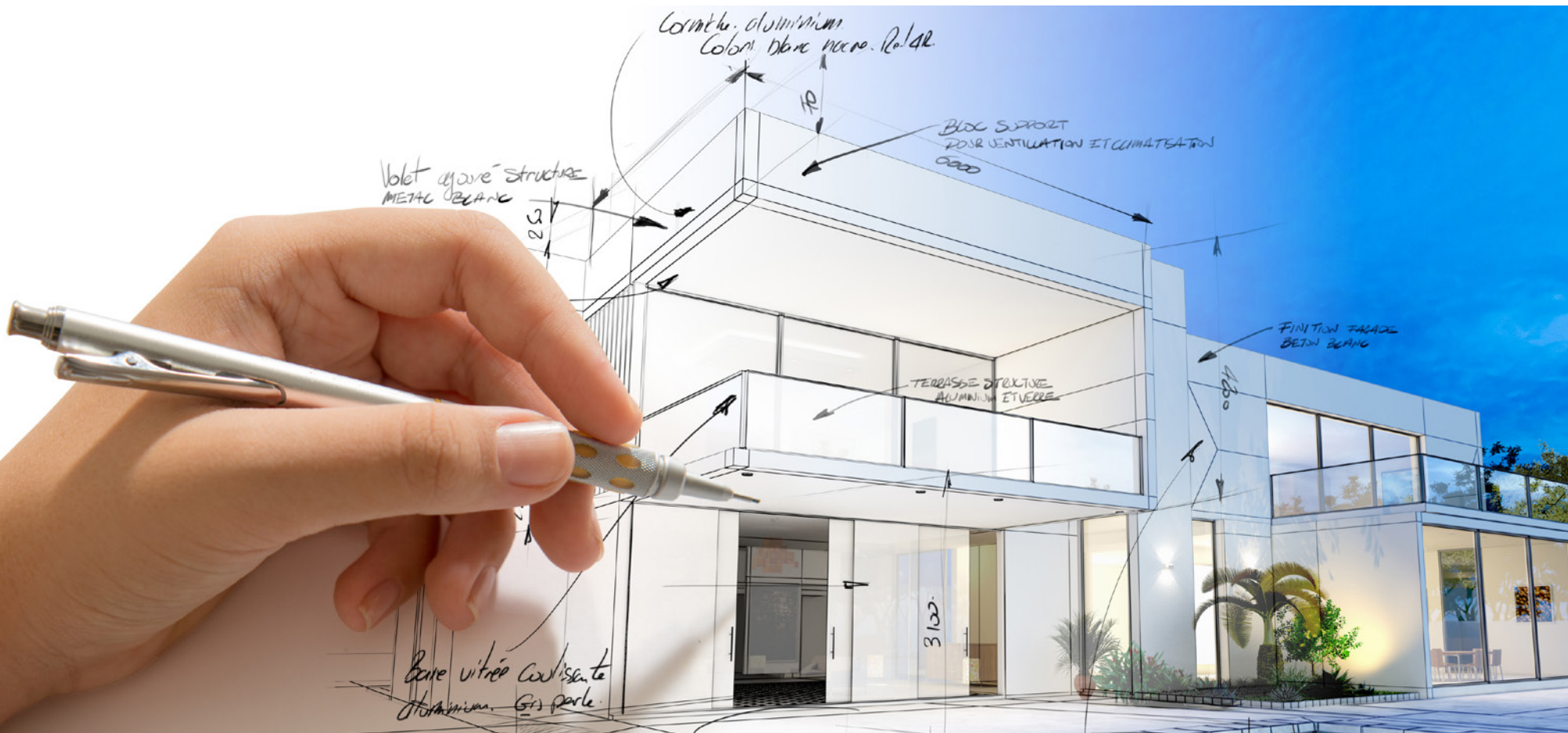
To summarize; the phase where the customer takes

decisions on all the critical aspects of the design.

Design development usually yields a more detailed site plan, as well as floor plans, elevations and sectional drawings with full dimensions.

Construction documents or permits

Once the architect and client are comfortable with the drawings produced from the design development phase, they can move on to the construction documents. The construction document phase produces detailed construction drawings used for the construction of



your project. These drawings typically include specifications for construction details and materials. Once the drawings are completed, the architects send them to contractors for tender as well as to the building department for required permit approvals.

Construction

And finally, the drawings become reality. Walls are built; ceilings are painted etc....

Where do Integrators fit in

Where do integrators and manufacturers fit into the process? Ideally integrators should be involved from step one. This is the time advice and inspiration can be provided as to what kinds of experiences the client might be interested in. Does the client love movies? Is the client interested in New Media Art? Is the client an avid gamer? How can the digital canvases that enable these experiences be integrated seamlessly into the design and architecture of the home?

However, In reality integrators are not usually involved until step four, at which point it's usually too late to make the modifications necessary to enable the different experiences and seamlessly integrate the technology into the fabric of the home. All too often we end up trying to simply retrofit large screens into the home, and a lot of opportunity is missed.

Another challenge is responsibility. Given that technology is so often seen as a challenge rather than an opportunity, architects and designers are sometimes reluctant to take on the responsibility of adding technology to the home, and don't see enough value in involving custom integrators early.

With this book, we hope to highlight the opportunities created for clients, architects, designers and custom integrators by engaging as early as possible in the design process.





Basic elements of interior design

There are four basic elements of interior design: line, form, color and texture. Some people include space when discussing design elements, but traditionally only these four elements are listed in interior design books.

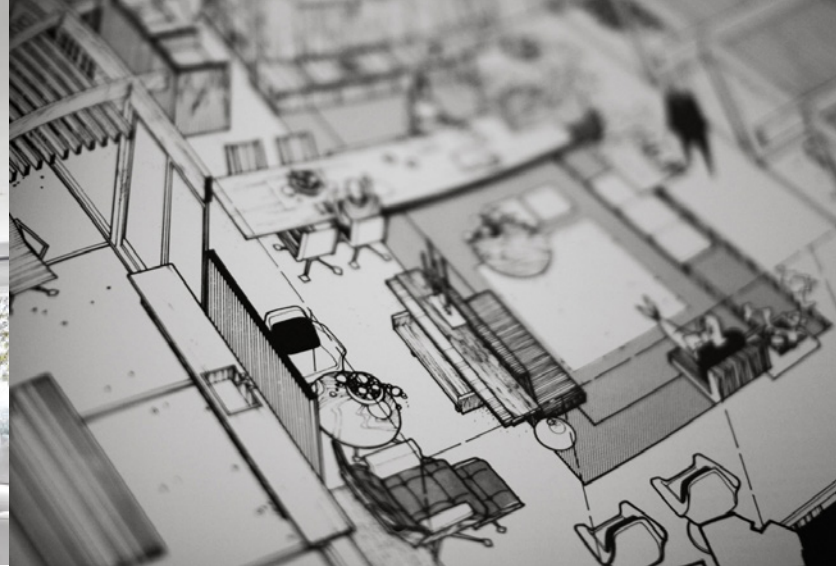
Line: Look at the lines in the room formed by the walls and ceiling. High ceilings usually mean there are more vertical lines than normal, giving the room a vertical feel. Describe the overall line in the room as either horizontal or vertical. There may also be curved lines and diagonal lines that add more interest in the room as it relates to the element of line.

Form: Look at whether the lines in the room form a square room, a rectangular room, an oval room or another shape. This is the form of the room. Sometimes a room can contain more than one form, such as an L-shaped room. Describe the room's form by looking at the predominant form of the room.

Color: The color of the room is normally the easiest element to change if you don't like what color is already there. It's easy to describe a room based upon its color, and don't forget to consider whether the color is light, medium or dark, and whether it contains tones of other colors.

Texture: Texture is expressed through fabric choices for the room, in the upholstered furniture, draperies or curtains, the walls and the wood furniture. The latter can be rough-hewn or polished, highly finished wood, which are two very different textures.

Reading any design book, you will quickly notice that these four basic elements are used to design most rooms. As you can see, no technology is mentioned. If we start looking at technology, we will find that it can actually become a design material for some of these elements, including color and texture.



Design & Technology

In recent times, audio and video have been an important feature of high-end homes, with Custom Integrators able to incorporate audio into the design of a room, using in-wall and in-ceiling speakers, or high end designer speakers in living rooms and dedicated listening rooms.

The video solution has often been more challenging. Most designers don't like large TV's taking up walls, and the larger TV's get, the bigger of an 'eyesore' they can become, as they take up more space and are near impossible to seamlessly integrate into the design of the home. Since, as highlighted earlier, Custom Integrators are not involved early enough in the design phase, opportunities to address this are limited.

If Custom Integrators are involved early enough in the design phase, how can we address this challenge and incorporate large screen experiences in the home, without compromising any design elements?

Creating the Architectural Digital Canvas

As discussed, it is important that designers, architects and custom integrators engage much earlier in the design process to determine what kind of experiences the client would like to integrate into their home, and how technology can be used as a design material to enhance the design and architecture of the home.

Firstly, its important the Custom Integrator gains an understanding of the lifestyle and design objectives of the client as well as the design process of the architect and design team involved. This way we can ensure both the client and the design team are fully aware of and can take advantage of all opportunities technology can offer.

Secondly, the Custom Integrator needs to have a thorough knowledge of the technology a manufacturer like Barco Residential brings to the table, and how these technologies and products can be used to create architectural digital canvases to enable the different experiences the client would like to be part of their home.

In terms of projection, examples of this include a thorough understanding of things like free projector rotation and the capabilities of the unique warping engine integrated into Barco Residential projectors. This allows Custom Integrators to install projectors off axis, tilt the projector, correct the geometry, etc. These are some of the tools Custom Integrators, architects and designers can use to make sure there will be no compromises in the design of the home, and no compromise in the video performance that is critical in creating any digital canvas.

When these conversations take place early in the process, opportunities abound to create amazing experiences for the client to share with loved ones in a way that complements and enhances to design of their living space.

In the next pages, we will go into more detail using examples of how we can achieve this in three different areas of the home without compromising the overall design.

Cinema Design

If you asked most people to describe a home cinema, the description would likely include a projector mounted onto a pole at the rear of the room. That's not what most people would consider aesthetically pleasing... With Barco Residential, the projectors need not be visible at all. With correct system design, even a large and powerful projector like the Prometheus III (pictured below) can be hidden inside the ceiling with a correct system design.

Integration

Combining the knowledge of the design team and the Custom Integrator, a private cinema room can be transformed from a space with a projector hanging from a pole as the center piece, to a beautifully designed room, with all technology hidden.

As mentioned earlier, if conversations between architects, designers and Custom Integrators take place early in the design process, we can better plan on how to seamlessly integrate the technology. To hide the projector for example, space inside or above the ceiling, inside a wall, or from a neighboring room

can be foreseen. Additional systems such as mirror drop systems can be planned.

Custom Integrators can make use of all the projectors' special features like the built-in Warp Engine that allows near unlimited freedom in projector placement, including off axis, tilted, etc.. while maintaining a perfect image on screen.

In addition, Barco works with industry partners to make available custom designed mounts, mirrors,

hush boxes, port glasses and cooling devices that enable discrete integration of our products.

All these tools are at the disposal of the Custom Integrator and design team to ensure that there will be no compromises in the design and performance of the room.





ceed





Living Room Design

There is nothing like a well-designed living room to enjoy family time and entertaining loved ones. It's also one of the best places to showcase your design aesthetic by experimenting with color palettes, layers of texture and patterns, and a variety of furniture layouts. It's meant to be comfortable, inviting, and full of style. Visible technology in a living room will in most cases detract from a well-designed space. Each living room has a different set of circumstances, and integrating a big screen, projector and speakers into the space can seem like a daunting task as every installation is different...

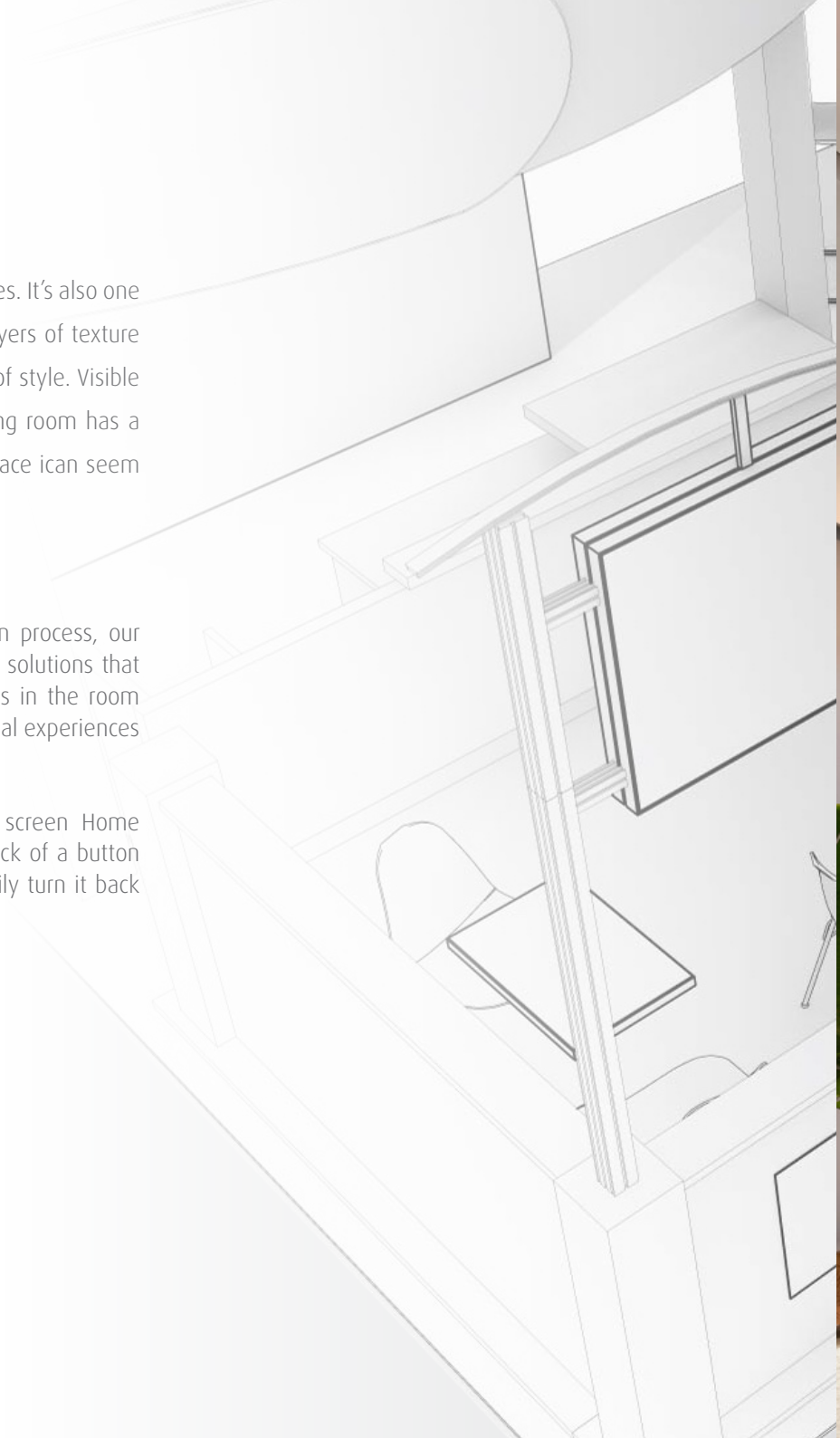
Even ultra-high-end condos or flats in major cities like New York, Hong Kong or London have limitations in terms of square feet or meters. High ceilings are a design element that can add to a sense of space, but offer some challenges in terms of technology integration, as do other design elements such as chandeliers.

As many clients and designers are not aware of the possibilities, often these spaces will end up with relatively small consumer flat screens, as the alternative of having a projector, hanging from a pole in the middle of the room seems too horrible a prospect to conceive...

Fortunately, with Barco Residential, this dilemma can be a thing of the past. Together with our partners, we can offer customized and architecturally integrated video solutions that go far beyond what any mass-produced TV or home theater solution can offer.

With early involvement in the design process, our Custom Integration partners can offer solutions that take into account all design elements in the room and allow creation of large screen visual experiences that can be hidden when not in use.

Turn your living room into a large screen Home Theater or Gaming Space with the click of a button or a voice command, and just as easily turn it back into a living room.







Live Die Repeat: Edge of Tomorrow

When Earth is invaded by time-altering aliens, an officer relives his last day searching for a way to defeat them.



Stewart

Outdoor Design

Outdoor design is a completely different ball game as more factors are involved, although the same set of design rules of course remain in play for outdoor spaces as well. Outdoor installations however also need to contend with ambient light, temperature, humidity and weather. These all provide a unique set of physical challenges that need to be overcome.

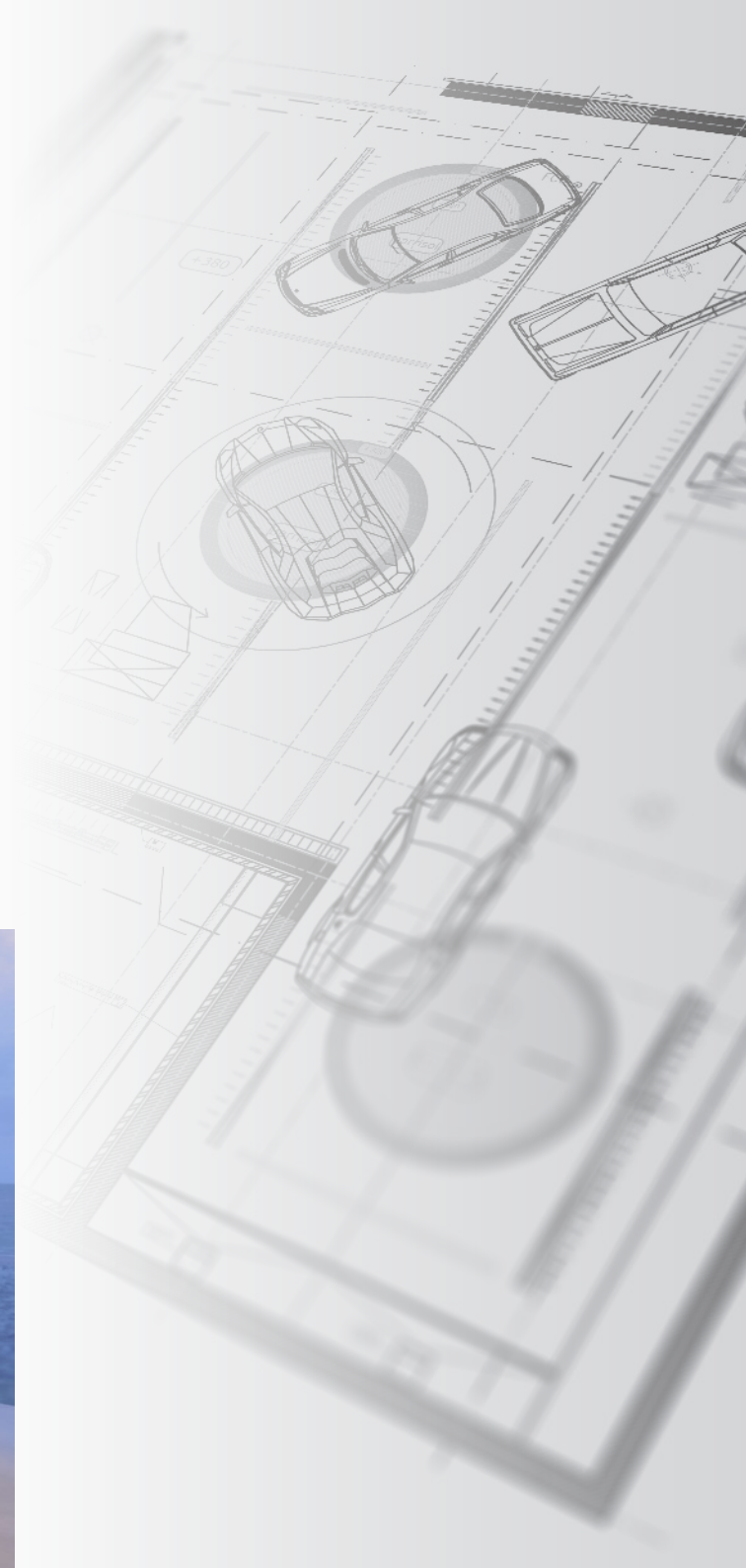
Architectural Integration

With the right design and technology, we can address these challenges. Ambient light is usually particularly challenging as a lot of light output is required from the projector to overcome this, especially with direct sun light.

If the Custom Integrator is involved early in the design process, important considerations like screen and projector placement can be reviewed in function

of how and when the client wants to enjoy the system. Ambient light is much lower in the evening for example, and we can take advantage of cover provided by a roof or ceiling when selecting the projector position. Direct sun light on the screen is almost impossible to overcome, so is never advisable.

Designing a weather-proof box for the projector and





architecturally hiding it in the ground, ceiling, walls or hidden inside outdoor furniture provides many opportunities to ensure a great experience for the client. As before early communication between architects, designers and integrators is the key to success.





Project examples

In the next pages you will find examples of actual projects and project concepts. They illustrate that there are few limitations to how we can use technology to create architectural digital canvases, that allow clients to enjoy their favorite movies, games and art in living rooms, bedrooms and outdoor living spaces in the world's most exquisite homes and yachts.





Architectural guide

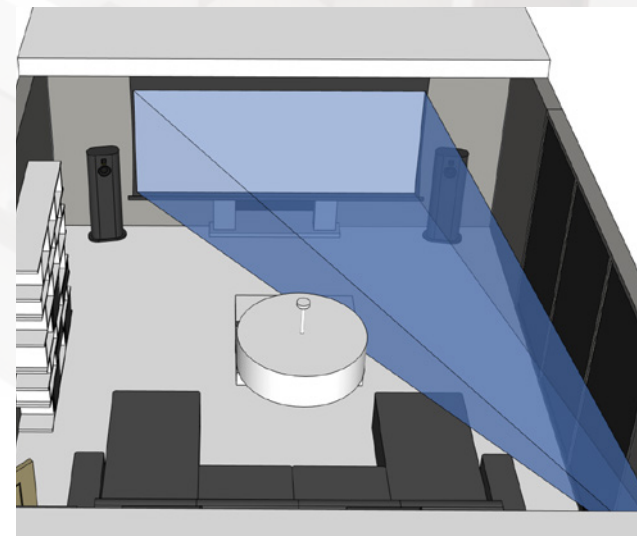
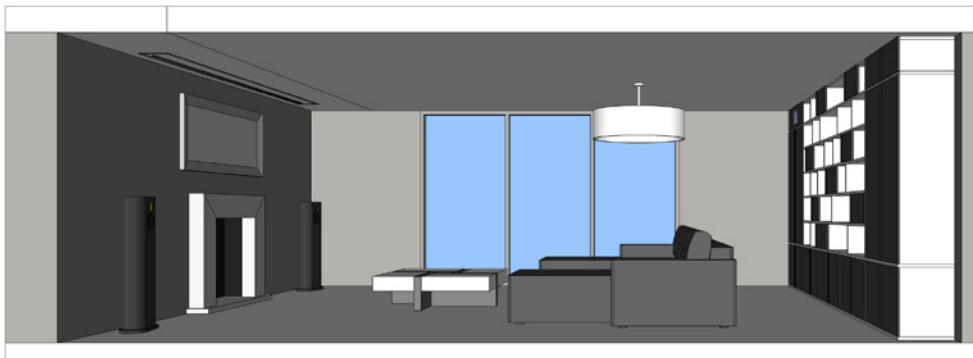
How can we ensure that our knowledge is shared with architects and designers? As mentioned, it is critical that the custom integrator is involved as early as possible in the design process (Schematic Design phase and Design Development phase). The projects in the next pages are intended to give some practical examples to inspire architects and designers with the opportunities offered by audio & video design and close collaboration with Custom Integrators who often have design staff employed to help with the process.

The first project was a living room where the customer wanted a big screen TV, which was considered easy for the architect, no changes to the room itself, just design a big TV over the fireplace.

When our team was involved, we offered an alternative solution to hanging a 65" TV over the fireplace. The homeowner had assumed a TV was the logical solution, as there were large windows on the side, a fireplace in the front of the room, a large light fixture in the center of the room and a bookshelf on the entire backwall. These were all challenges that needed to be overcome.

Our team wanted to create a solution with no changes to the room itself when the TV wasn't in use. The proposal included removing all visible technology. This included hiding the floor standing speakers.

Instead of having a TV hanging on the wall, the client was given the option to have art over the fireplace. There was no need to remove the chandelier, the projector became a part of the bookshelf.





Courtesy of dzyñ

The top picture shows the room when the technology isn't used and the TV is replaced with art. The bottom picture shows what the room becomes when technology is used. Resulting in a large digital canvas coming down from the ceiling.



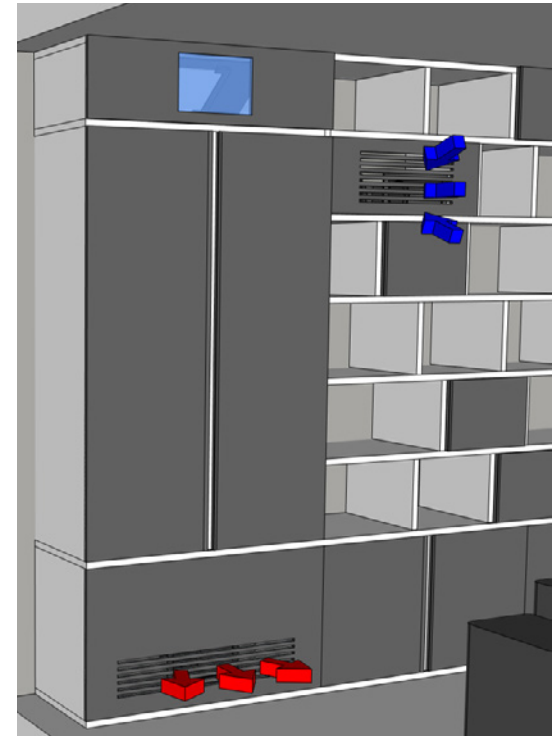
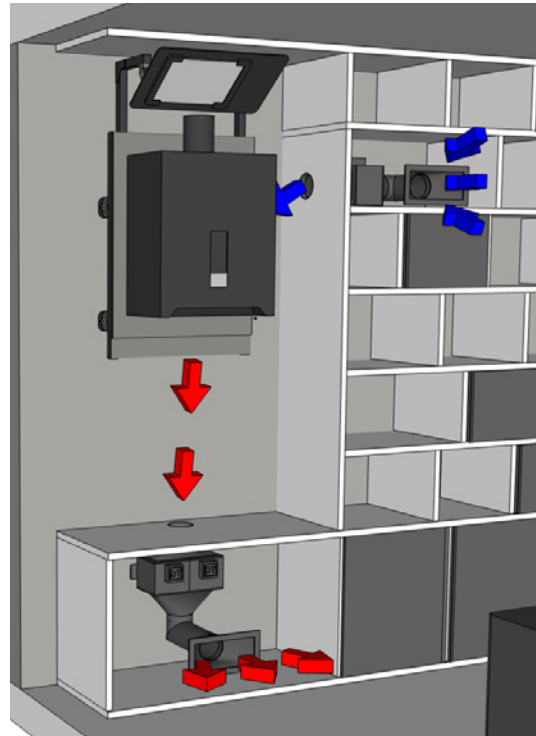
Courtesy of dzyñ

Hide everything but the experience

The installation seems complex, but the Custom Integrator took care of all technical details, while the design team could focus on the overall design.

As you can see from the end result, the architect's design intent is practically untouched. The projector is built into the wall/bookshelf and the screen is built into the ceiling. Even the speakers are built-in, and the grill is customized to match the colors of the wall, all seamlessly integrated. When the system is not in use, all technology is hidden. When the system is in use, the only difference in look and feel of the space is the screen that drops down in front of the fire place.

In this project, being part of the design process early on was key for the Custom Integrator, when we had the opportunity to easily work within the design imperative for the space. Coming into the project later on would have made it impossible or prohibitively costly to integrate this large screen experience in the space, resulting in a less integrated, less aesthetically pleasing installation that lacked the wow factor.







Courtesy of dzyn

Living Room Project

This is a living room project where the customer chose to use a Barco Balder projector* hidden inside a Motorised Mirror Drop (MMD)** from Display Technologies. The projector is completely hidden when not in use. As an alternative to a screen that is always visible, a motorized in-ceiling screen could have been used to hide all projection elements when not in use.

The screen used for this project was a Frontier Screen*** from the same company.





* Barco Balder

A divine force, Barco Balder brings beauty and life to the most refined home cinema and media rooms. Balder is forged from the finest components such as aluminum and glass. Balder not only shares the same Ultra HD and HDR 10 compatible electronics as big brother Loki, but the optical design and new single laser engine are also derived from the Loki platform.

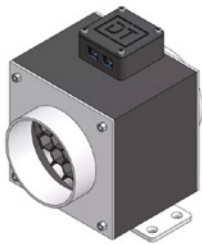
[HTTPS://WWW.BARCO.COM/EN/STATICPAGES/LANDINGPAGES/RESIDENTIAL/PAGE/PRODUCTDETAILPAGES/BALDER](https://www.barco.com/en/staticpages/landingpages/residential/page/productdetailpages/balder)



** MMD

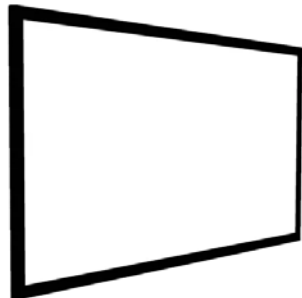
DT Motorised Mirror Drop is an in-ceiling projector mount featuring dual high performance optical mirrors, custom projector interface and flexible alignment adjustment. It is intended for applications where it is aesthetically advantageous to hide the projector in the ceiling – only dropping the compact mirror system when the projector is in use.

[HTTPS://DISPLAYTECHNOLOGIES.CO.UK/DT-MOUNTS/MOTORISED-MIRROR-DROP-DT-MMD/](https://displaytechnologies.co.uk/dt-mounts/motorised-mirror-drop-dt-mmd/)



Mistral 1

DT Mistral 1 is a single module air movement unit capable of moving up to 200 m³/hr with optimised static pressure and low noise. It can be easily daisy chained so one Mistral Commander can control multiple units.



*** Frontier (DT-FRNT)

The DT Frontier is an on-wall projector screen with fixed velvet surround featuring simple install mounting system, front loading image surfaces and veBlack magnetic front frame.

[HTTPS://DISPLAYTECHNOLOGIES.CO.UK/DT-SCREENS/FRONTIER-DT-FRNT/](https://displaytechnologies.co.uk/dt-screens/frontier-dt-frnt/)



Courtesy of dzyn /

Living room Short Throw

Here is another living room project where the customer had extra space above the screen to build in a motorized lift where the Barco Residential Balder with the 90 degree ultra-short throw lens is used. This combination opens up an entirely new market where you can create a large, very bright image. All products are completely hidden inside the ceiling and you will only see a small box of approx. 8" x 8" (20cm x 20cm) in the ceiling when the system is used.

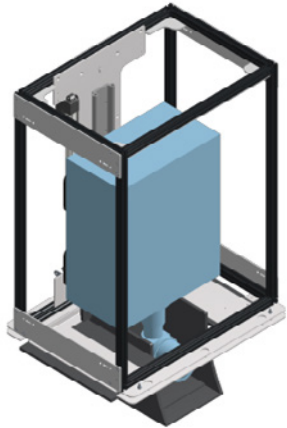




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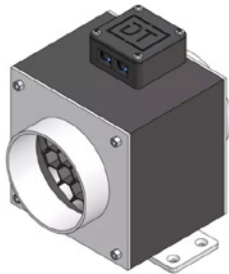
<https://www.barco.com/en/staticpages/landingpages/residential/page/productdetailpages/balder>



** DT-V-M-USTM

DT Vertical Motorized Ultra Short Throw Mount is an in ceiling projector lift is a custom projector interface and flexible alignment adjustment. It is intended for applications with the projector lens pointing down and forward towards the screen.

<https://displaytechnologies.co.uk/dt-mounts/vertical-mirror-mount-up-dt-vmm-up/>



Mistral 1

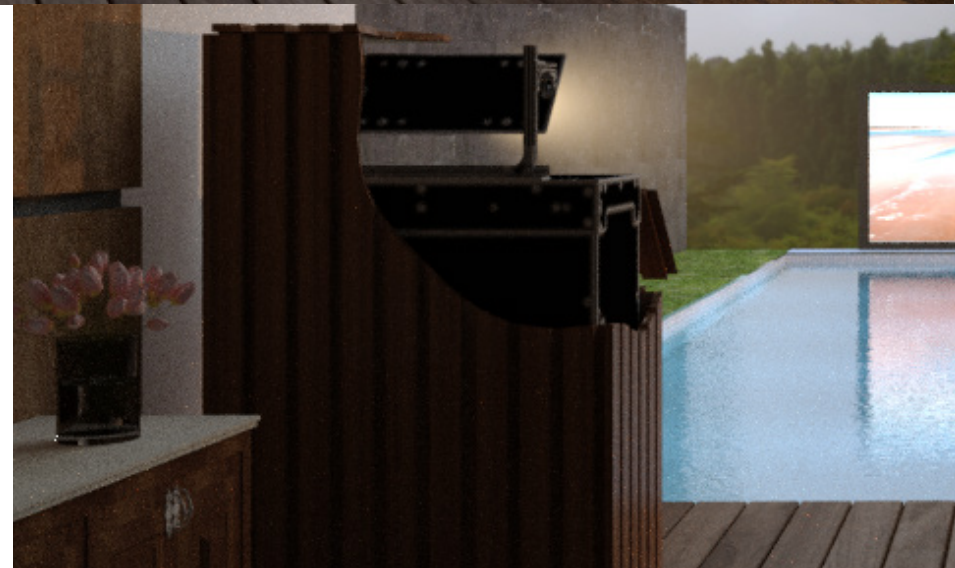
DT Mistral 2 is a dual module air movement unit capable of moving up to 400 m³/hr with optimised static pressure and low noise. It can be easily daisy chained so one Mistral Commander can control multiple units.



Courtesy of dzyn

Outdoor Project

This is an outdoor project where the customer chose to use a Barco Residential Loki projector * to overcome ambient light in the afternoon, when the sun is setting. The projector is hidden inside a Vertical Mirror Mount (VMM)** from Display Technologies. This project could have been taken further to also motorize the screen and VMM into the ground so it's completely hidden when not in use.





* Barco Loki

Loki's alluring image quality is unmistakable, right from the very first encounter. Striking and assertive, his soul is a dual laser light engine coupled to award winning DLP™ technology and world class optics. Loki is unmistakably Barco Residential, precision engineering and manufacturing at its finest.

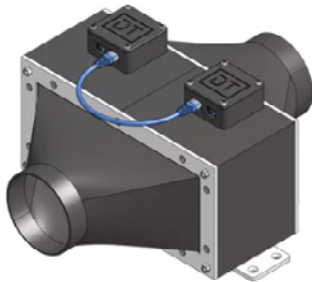
[HTTPS://WWW.BARCO.COM/EN/STATICPAGES/LANDINGPAGES/RESIDENTIAL/PAGE/PRODUCTDETAILPAGES/LOKI](https://www.barco.com/en/staticpages/landingpages/residential/page/productdetailpages/loki)



** VMM-UP

DT Vertical Mirror Mount Up is an on wall projector mirror mount featuring high performance optical mirrors, custom projector interface and flexible alignment adjustment. It is intended for applications with the projector lens pointing up and the base of the projector pointing away from the screen.

[HTTPS://DISPLAYTECHNOLOGIES.CO.UK/DT-MOUNTS/VERTICAL-MIRROR-MOUNT-UP-DT-VMM-UP/](https://displaytechnologies.co.uk/dt-mounts/vertical-mirror-mount-up-dt-vmm-up/)



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Courtesy of Eagle Sentry

Combined outdoor/bedroom

This impressive project was done by Eagle Sentry. In a large home in Las Vegas they have managed to engineer two different solutions using only one projector and “one” screen. The screen is a Stewart and called Gemini. Inside the screen casing you have two different screen materials. One screen is a front projection material, the other screen is a rear projection material. The projector is the powerful Balder with 5000 lumens where the image automatically goes into a desktop rear mode if the rear projection material is selected. Everything is hidden when not in use.

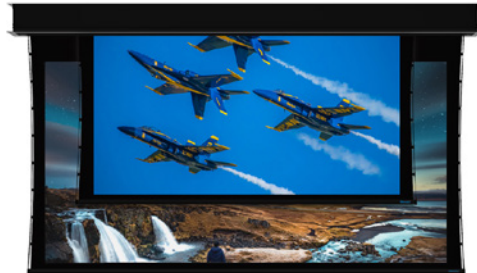




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**Gemini from Stewart Flm screen

This unique screen system offers two separate fabrics in a retractable configuration. Specify Phantom or FireHawk in HD format for daytime viewing. Then, have a reference cinema fabric in Scope format to enjoy your favorite movies at night. No one but Stewart makes this screen..





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