

Designing for Outdoor

large format LCD in a public environment

The Outdoor Challenge



The **Key** Considerations

- Application and Context





The **Key** Considerations

- Application and Context
- Architecture





The **Key** Considerations

- Application and Context
- Architecture
- Environment





The **Key** Considerations

- Application and Context
- Architecture
- Environment
- Operation





Application and Context

■ Transit

■ Information and Advertising



Application and Context

- Transit
- QSR
- Information and Advertising
- Menus and Promotion



Application and Context

- Transit
- QSR
- Retail
- Information and Advertising
- Menus and Promotion
- Marketing and Interactive



Application and Context

- Transit
- QSR
- Retail
- Street Furniture
- Information and Advertising
- Menus and Promotion
- Marketing and Interactive
- Advertising and Experiential

Portrait ?

Architecture

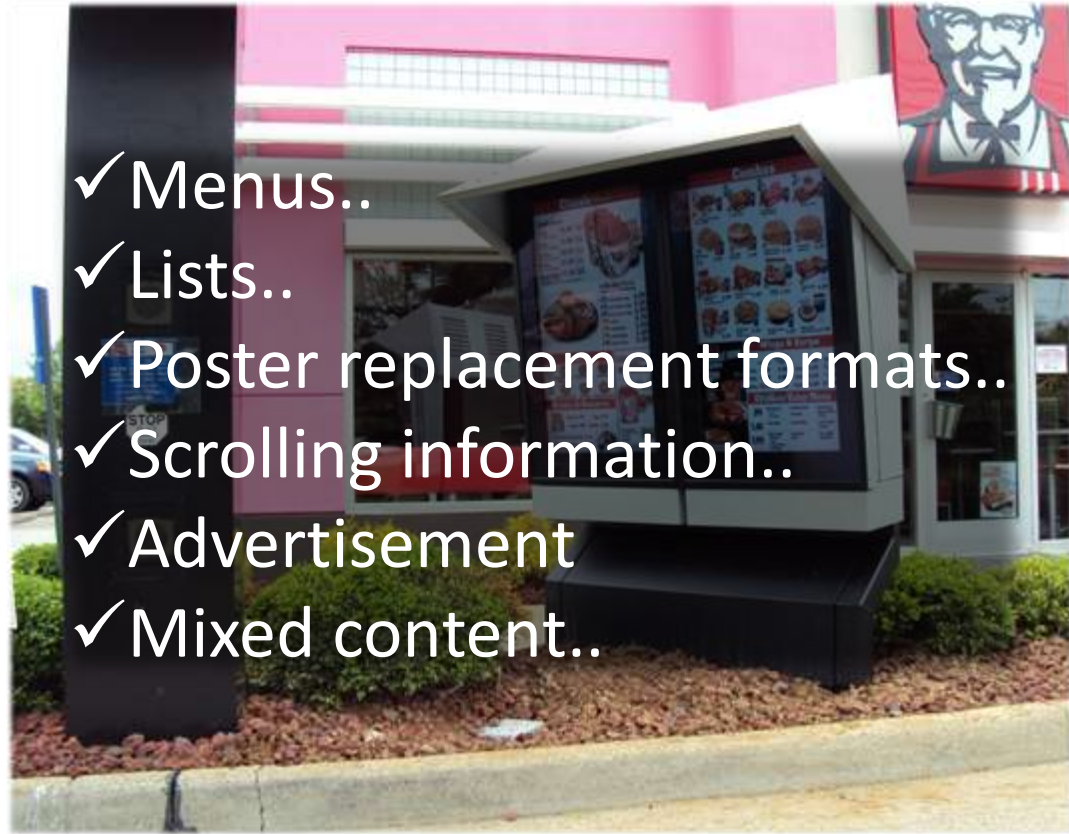
- Orientation
- Thermal Management
- Form and Function
- Mechanical Structure



Architecture

- Orientation
- Thermal Management
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Portrait ?



- ✓ Menus..
- ✓ Lists..
- ✓ Poster replacement formats..
- ✓ Scrolling information..
- ✓ Advertisement
- ✓ Mixed content..

Landscape ?

Architecture

- Orientation
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Architecture

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Landscape ?



- ✓ Overhead limited height..
- ✓ Crowded public environment..
- ✓ Line-of-sight thoroughfare..
- ✓ TV and film preview ..
- ✓ Re-purposed commercials..
- ✓ Entertainment

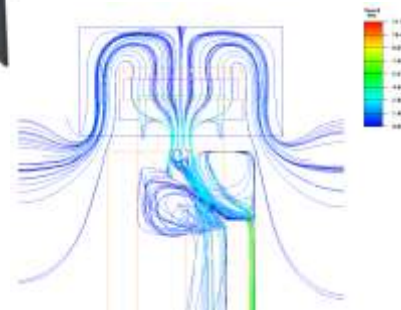
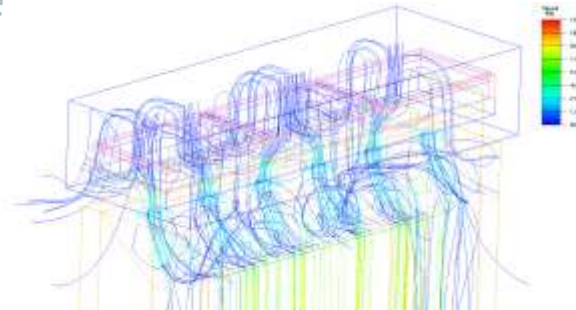
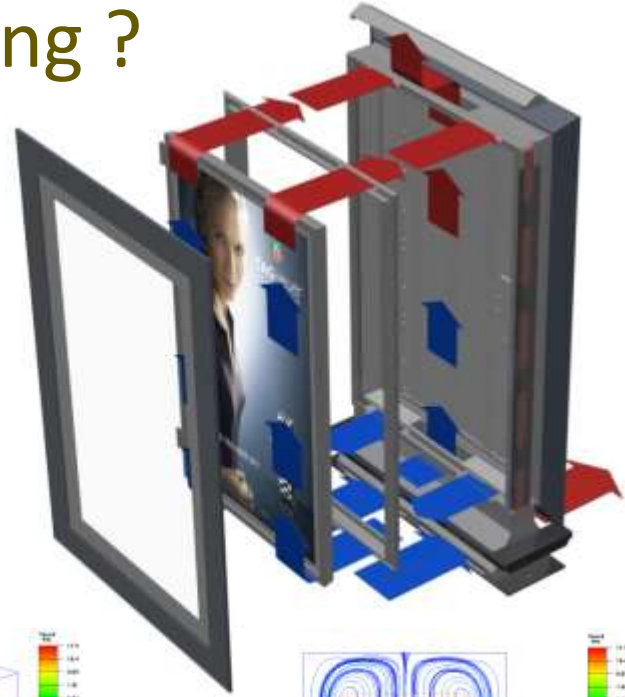


Architecture

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Passive cooling ?

- ✓ Direct airflow
- ✓ HEX isolation
- ✓ Filtration
- ✓ Profile management
- ✓ Split streams
- ✓ Volumetric flow control
- ✓ Sealing
- ✓ Noise abatement



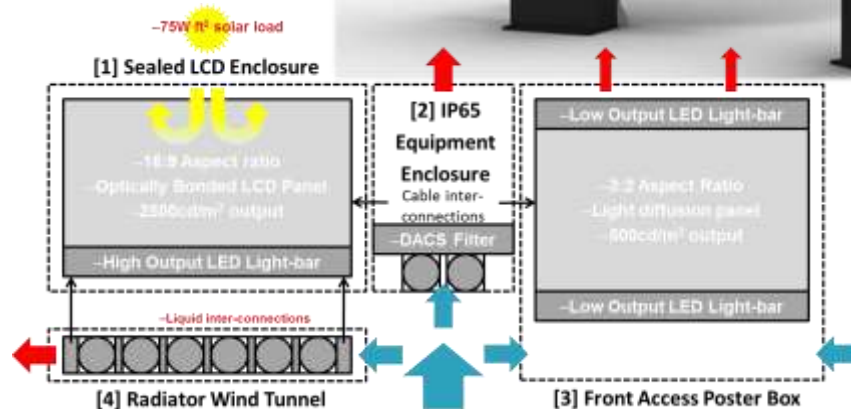


Architecture

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Active cooling ?

- ✓ Single chamber ?
- ✓ Multi-chamber ?
- ✓ Air conditioning
- ✓ Liquid cooling
- ✓ Refrigeration
- ✓ Closed loops
- ✓ Thermal shock
- ✓ Power management
- ✓ Condensation





Architecture

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Shape and appearance relevant to interactive engagement



Architecture

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Scale relative to the audience



Architecture

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Color and decorative pattern relative to culture



Architecture

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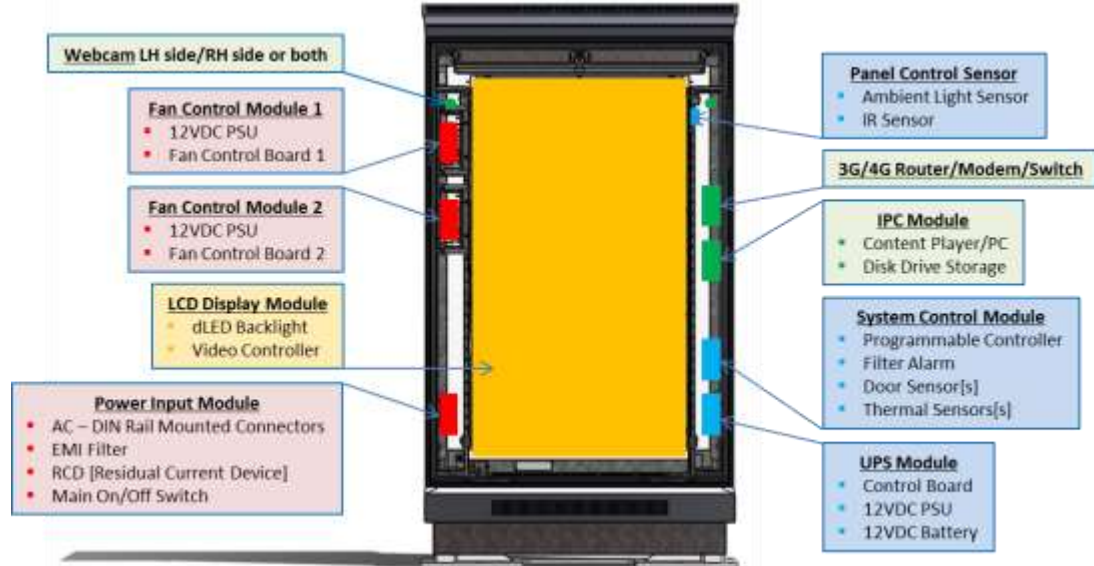
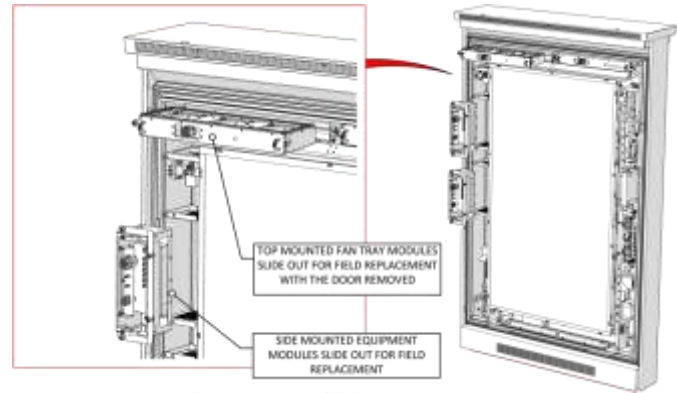
- ✓ Material selection
- ✓ Site assembly
- ✓ Weight
- ✓ Safety compliance and certification



Architecture

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- ✓ Modularity
- ✓ Integrated equipment
- ✓ Platform compatibility
- ✓ Scalability
- ✓ Flexibility





Environment

- Weather
- Temperature and Radiation
- Vandalism and Physical Interaction
- Dirt and Contaminants



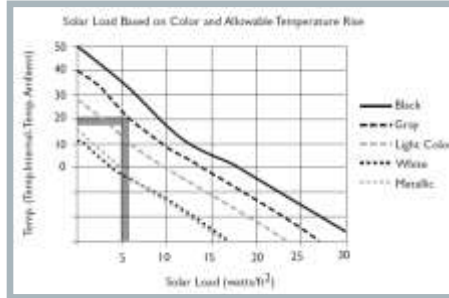
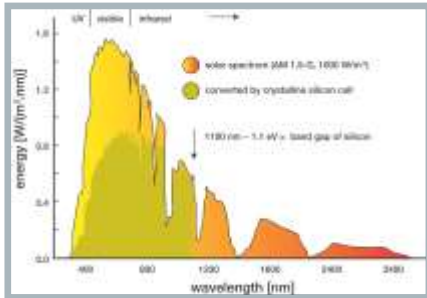
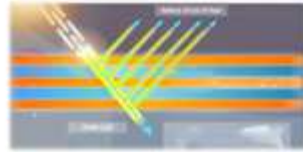
- ✓ Rain and humidity
- ✓ Ice, hail and snow
- ✓ Wind
- ✓ Sandstorm



- ✓ Solar radiation
- ✓ Electromagnetic interference
- ✓ Radio frequency interference
- ✓ Extreme high ambient temperature
- ✓ Extreme low ambient temperature

Environment

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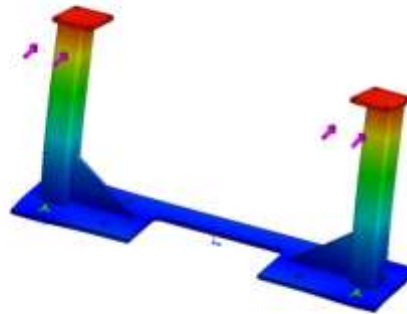


Environment



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- ✓ Impact and abuse
- ✓ Structural analysis [FEA]
- ✓ Seismic compliance
- ✓ Road traffic incidents [RTI]





Environment

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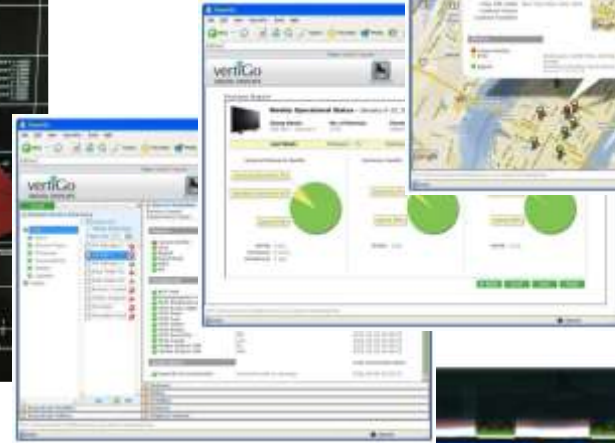
- ✓ Airborne particles
- ✓ Oil mist
- ✓ Magnetic brake dust
- ✓ Pollutants
- ✓ Graffiti
- ✓ Insects and rodents



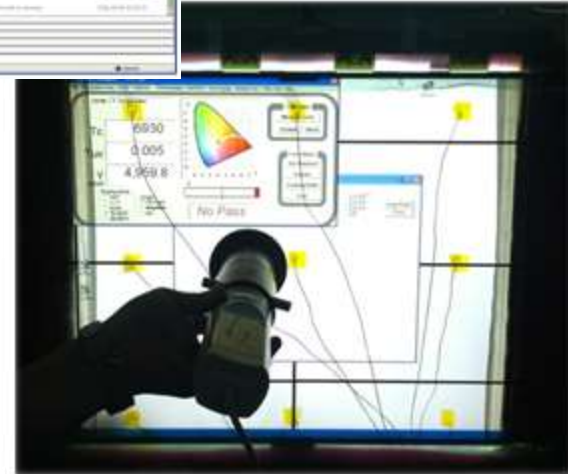


Operation

- Performance
- Reliability
- Access and Maintenance
- Cost of ownership



- ✓ Extreme high brightness
- ✓ High color saturation
- ✓ High contrast ratio
- ✓ Circular and $\lambda/4$ polarizers
- ✓ High Tni liquid crystal
- ✓ System management within operating thresholds



Operation

- Performance
- Reliability
- Access and Maintenance
- Cost of ownership



- ✓ Remote diagnostics
- ✓ 24/7/365 operation
- ✓ Real-time monitoring
- ✓ Peace of mind



Operation

- Performance
- Reliability
- Access and Maintenance
- Cost of ownership

- ✓ Ease and speed of installation
- ✓ Minimised human resources
- ✓ Quick & trouble free access
- ✓ On-site security
- ✓ Key module change-out
- ✓ On-time service





Operation

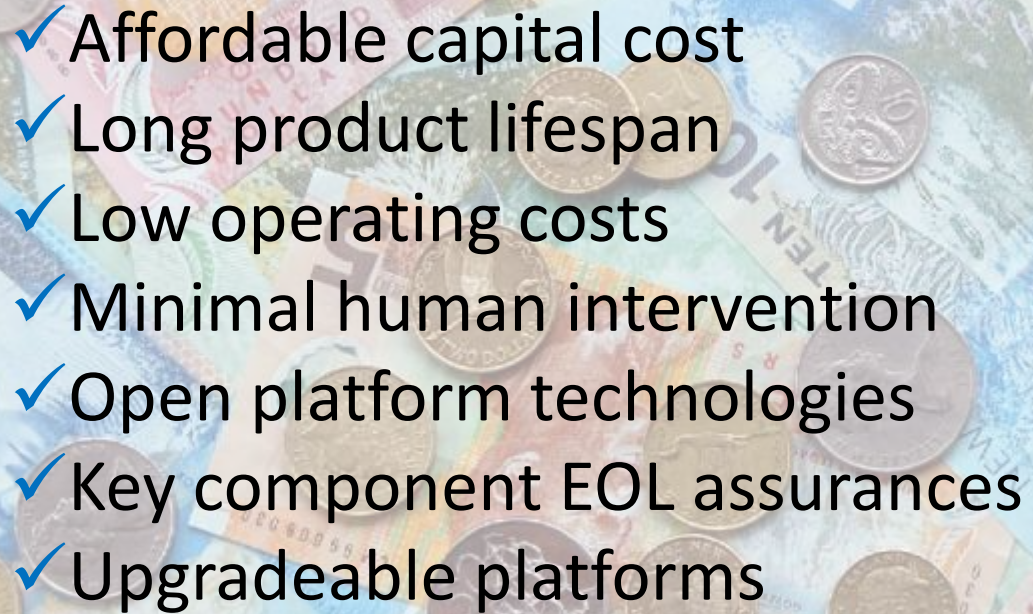
- Performance
- Reliability
- Access and Maintenance
- Cost of ownership





Operation

- Performance
- Reliability
- Access and Maintenance
- Cost of ownership

- 
- ✓ Affordable capital cost
 - ✓ Long product lifespan
 - ✓ Low operating costs
 - ✓ Minimal human intervention
 - ✓ Open platform technologies
 - ✓ Key component EOL assurances
 - ✓ Upgradeable platforms



The Outdoor Challenge

Thank You