Electronic & Digital Cinema
A Practical View

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NATO

Practical Questions

- Is It Good Business?
  - High Cost of Equipment
    Cost = 4-5x Current Technology
    Turnover = 3-4x Current Technology
  - Where Will the Money Come From?

- Is There Good Access to Movie Product?
  - The 7 Major Studios Today Will Not Release to a Common Format

What Will Enable Rollout?

- All Studios Must Release to a Common Format
  - “Newco” announcement a good step
- Standards Must Insure Interoperability Among Components
  - SMPTE
  - MPEG
  - ITU
- Studios and Exhibitors Have to Sort Out the Business Issues
- Equipment Costs Must Come Down

Potential of “Newco”

- Reach Agreement on Minimum Quality
- Qualify Equipment
- Validate Equipment Security
- Develop Brand for Digital Cinema

What Will Enable Standards?

- Studios and Cinematographers Must Agree
  - Basic Quality Issues
    - Colorimetry
    - Minimum resolution
    - Compression
- Exhibitors and Studios Must Agree
  - Content Packaging Flexibility
  - Friendly Content Protection
  - Controlled Access to Business Data

Exhibition and Standards

- NATO User Requirements for Digital Cinema
  - Available at both NATO's and MKPE's website
- December 2001 Letter From 20 Major Exhibition Organizations Around the World
  - "Cinema Operators Worldwide Call for Global Digital Cinema Technical Standards"

International Exhibition Standards

- **Our Goal**:

  To encourage the development of fully interoperable, competitive products that can be maintained at relatively low cost, in the manner of today's film projection systems. We need to accomplish this while providing a minimum digital presentation quality that exceeds that of film, and that meets the quality needs of the creative community. To achieve this goal, international cooperation is needed.

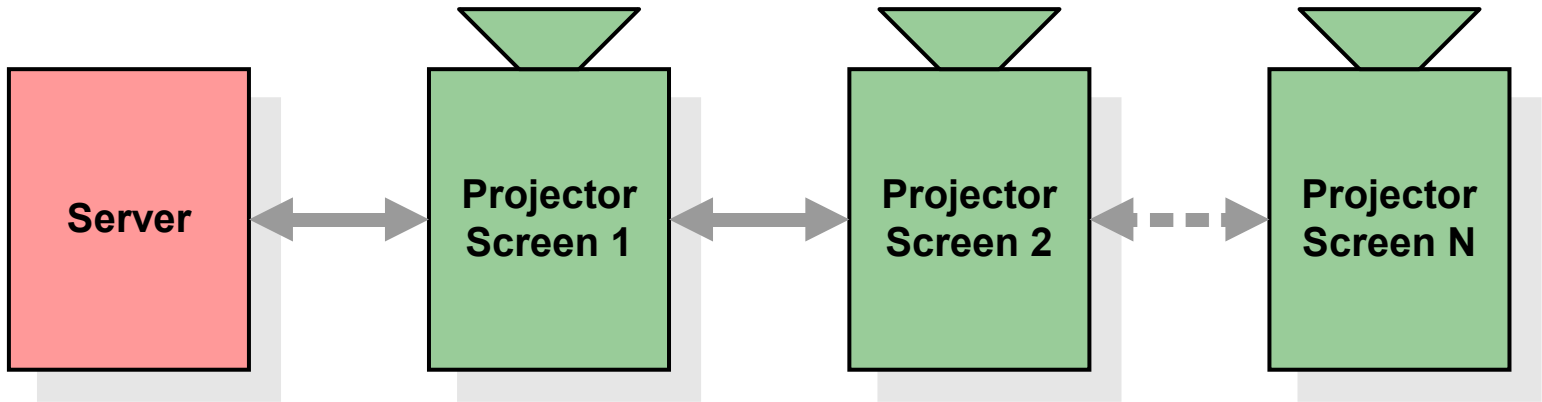
International Exhibition Standards

- **Our Needs**:
  - Minimum presentation standards for image projection, including color gamut, contrast ratio, and pixel count.
  - International standards for digital image and audio data representation, storage, and play out.
  - System support for more than one method of movie data delivery (e.g., physical, satellite transmission, fiber, etc.)
  - International acceptance of a single encryption algorithm.
  - Rules for digital rights expression and for electronic methods of exhibitor authorization that duplicate the current rights and facilities existing in 35mm technology.
  - International acceptance of a single image compression algorithm.
  - International standard for a single audio compression, if implemented.
  - International standards for electronic interfaces, networks, and protocols used on all equipment, including secure interfaces.

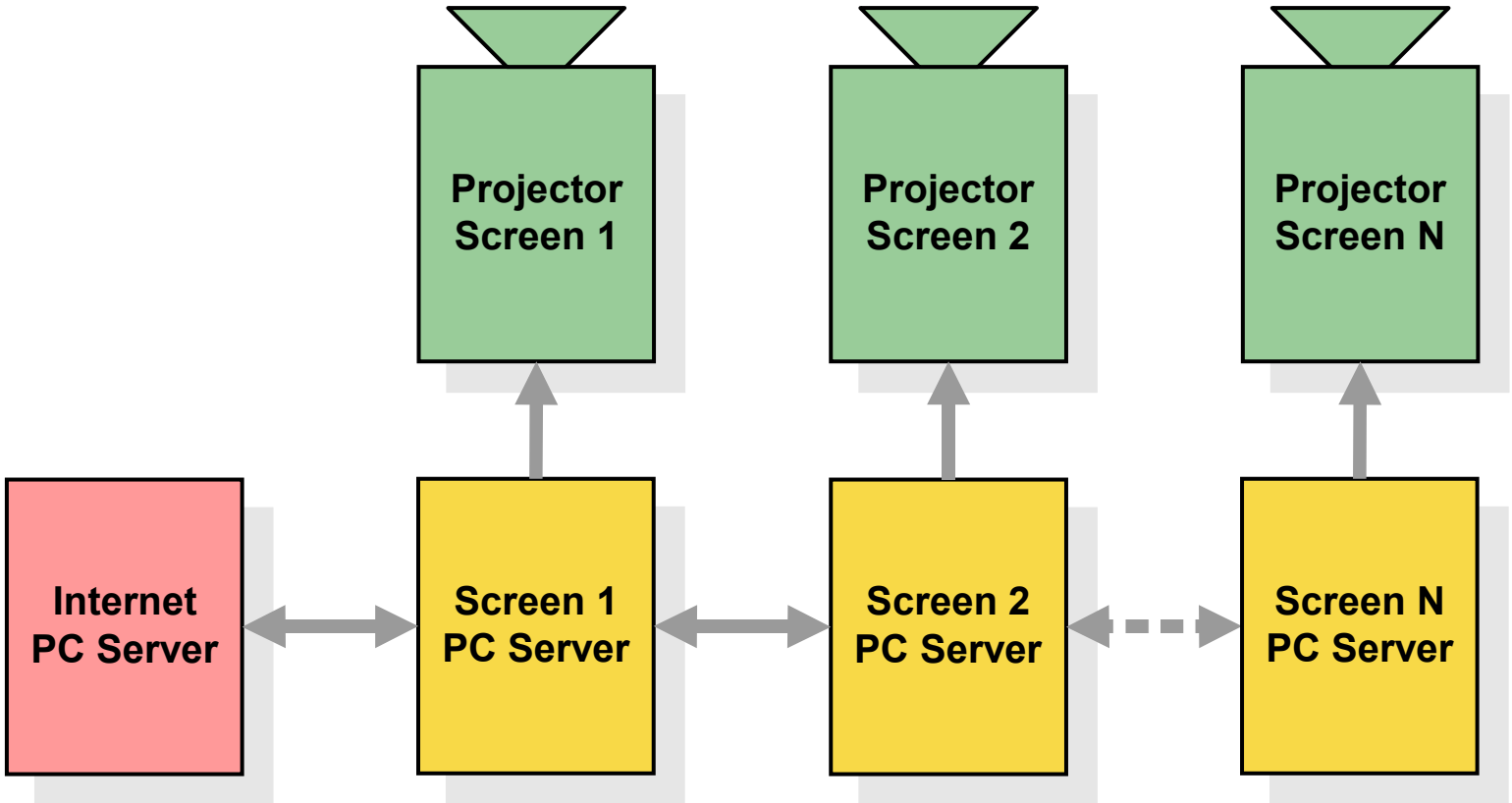
Big Port / Little Port

- Hollywood Focus is on 35mm Port (BIG PORT)
- Advertising Focus is on Slide Projector Port (LITTLE PORT)
- LITTLE PORT is Also Suitable for Alternative Entertainment
- Prediction: LITTLE PORT Will Develop as a Business Before BIG PORT

Little Port: Video Non-Sync



Little Port: Per-Screen Server



Little Port: System Advantages

- Low Cost Projector
- Low Cost Server
  - Low Compression Bit Rate
- No Content Security Required
- Suitable for Many Independent Movies
- BUT…Advertising Systems Require Backhaul Data
  - Backhaul Data Must Be Secure With Controlled Access

Summary

- Digital Cinema is Not Good Business Today
- Lot's of Work Ahead to Achieve Quality Agreements and Standards
- Exhibition Has Published User Requirements
- "Little Port" Will Drive Development of Electronic Cinema In Advance of Digital Cinema

Thank You

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