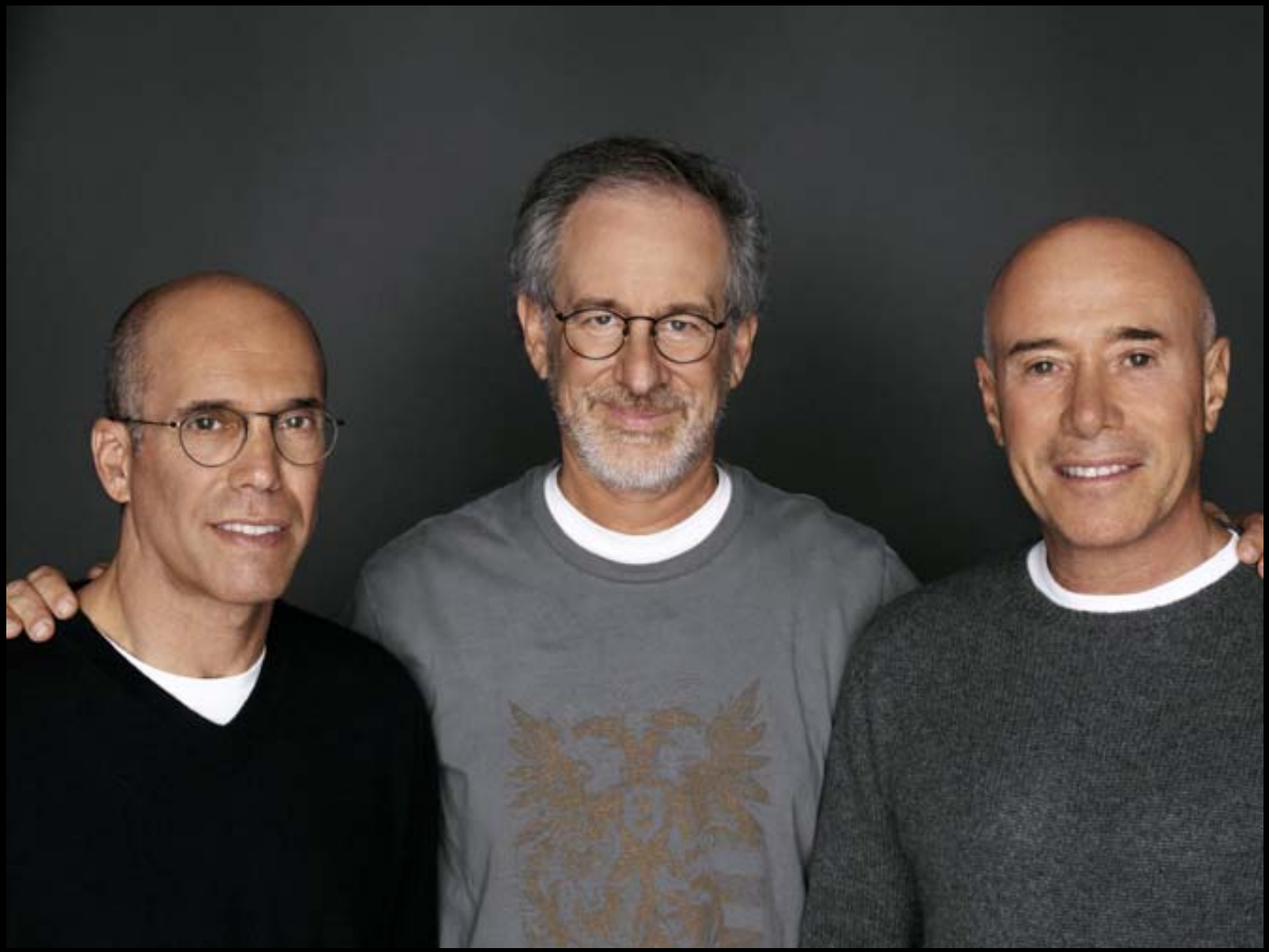

DREAMWORKS
ANIMATION SKG®



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DreamWorks Animation SKG

DreamWorks Animation
Glendale, CA

PDI/DreamWorks
Redwood City, CA

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DreamWorks Animation

- Premiere CG Animation Company
- Ambitious Creative Targets
- Technical Innovation is Paramount
- Unprecedented Scale
- Virtualized Global Studio

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What It Takes to Make a DreamWorks Animated Film

- 24 months pre-production, 18 months production.
- 400 artists, animators and technicians.
- 200 characters modeled and surfaced.
- 45,000 story panels
- 1,500 set designs.
- 30+TB of disk space.
- 6000+ processors.
- 12+ million CPU render hours.

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Strategy

- Leverage technology whenever possible.
- Make key strategic alliances with industry partners
- Create tools that make artists more efficient.
- Create an environment for parallel work.
- Build flexibility into the studio

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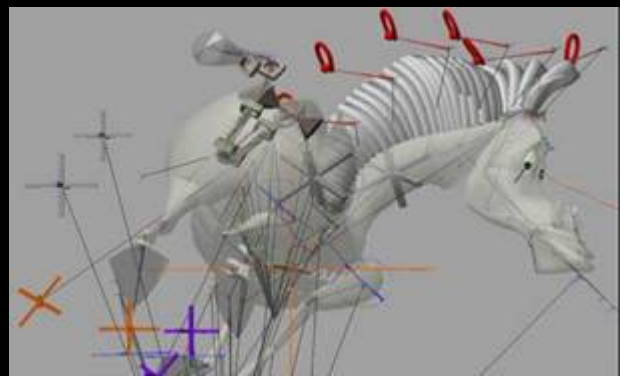
Animation 101

- Typical project is 80 minutes
- Sub-divided into sequences, then scenes
- That’s 115,200 final images
- In 35-50 sequences; 1200-1500 scenes
- Sequences are worked whole
- Nightly renders feed daily reviews



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"Art is never finished,
only abandoned"

- Leonardo da Vinci

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Where's The Grid?

- We couldn't do this without Grid computing
- Definitions vary – Grid of clusters?
- Dedicated Farms at each site
- Overflow via HP's Utility Rendering Service (URS)
- Workstations join at night, when idle
- Varied machine configuration

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And, it’s batch scheduled

- Scenes represented as a dependency graph of nodes, called a ”group”
- Each node is a scheduled “job”
- Jobs are “steered” based on resource need, priority, affinity, more
- Platform LSF at the heart
- With our own glue ware

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Challenges

- Security for Content and Applications
- Agile Artists across geography
- Databases and File systems define the state of a sequence; Large file counts
- Expected machine configuration
- Job complexity is always climbing
- Visibility and Control

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Challenges (cont)

- Just in Time delivery
- Additional post-delivery content
- Internationalization of content
- Additional play out venues

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Meeting the Challenge

- Scalable distributed file systems; P2P file sharing at runtime; Aggressive caching
- Virtualization to get Hardware Normalization
- WAN Optimization; Wide Area file service
- Smaller schedulable jobs thru finer grained dependency graphs

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Meeting the Challenge (cont)

- Affinity and history-based job scheduling
- Fair share allocations, market based barter system for trading allocations
- True Grid – Utility computing

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