



Automation of Mastering and Playout Operations in a D-Cinema Workflow

- **Architected** and developed application servers and clients in record time
- **Built** mastering, configuration and playout applications that enable the Digital Cinema workflow
- **Performed** unit, integration, and system testing
- **Efficient** project planning and tracking that helped deliver quality product on time
- **High-agility** & flexibility, leading to effective collaboration
- **Adopted** CMM processes to streamline and discipline the engineering effort
- **Provided** 24-hour technical support during deployment

Situation

With the world of technology going the digital way, traditional cinema cannot be far behind. It is in fact on the brink of breaking through to the new world of Digital Cinema (D-Cinema). The key to unlocking this potential is the effective and seamless handling of film data from acquisition to post-production and transmission via digital means.

A leading multimedia company aimed at enabling the Digital Cinema workflow by automating mastering operations in a studio and playout in a digital theatre.

Challenge

Celstream was delving into new territory with limited domain knowledge. Other issues we had to deal with during the developmental stages of our solution were:

- Use of new technology in building a robust product - Skins, DCOM™
- Concurrent development across geographically distributed sites
- Fierce competition for this solution to be used in the premiering of a digital cinema
- Non-availability of required hardware - HD source, HD monitors, Theatre Automation Systems

Our engineering team had to be ramped up to meet the client's requirement. The timelines were aggressive with short iteration cycles and Celstream's responsibility was to ensure low-cost development and enable faster time-to-market.

Celstream Response

After building a team by drawing talented engineers from a common resource pool, our engineers went about understanding the customer usage scenarios and gaining complete domain knowledge. Some of the proactive steps taken by the team to reach the solution were:

- Theatre visits to understand the current workflow and draw up requirements.
- Interactions with third party security service providers to understand security requirements and also their SDK.
- Rapid ramp-up and training of the engineering team.
- Architected and developed application servers and clients in record time - Cinema Master, Player, GPI configuration application
- Built simulators to test theatre automation systems - lights, curtain, fire etc.
- Built regression tools for testing the application servers.

Celstream's multifaceted solutions for the client provided:

- Content compression, encryption, chunking and distribution to theatres
- User authentication and content decryption at the theatre
- Construction of a sequence including Ads, Trailers, Credits, Movie and GPI triggers
- Monitoring status of the theatre screen from a status GUI
- Link Encryption and Decryption
- Control of theatre automation systems like lights, AC, screen etc.

Celstream helped reduce development and testing time and costs by using tested reusable components. Through efficient project planning and tracking, our team delivered a high quality product on time. We also provided 24 hour technical support during deployment.



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Dedicated efforts from the Celstream team helped our customer meet his Time-to-Market objectives in the increasingly competitive market.

We ensured product development in geographically distributed locations to leverage 24x7 benefits. Our mature, multi-site development process enabled seamless operation across sites.

Technology

- VC++[®], COM/DCOM[™]
- XSL, XML[™]
- OOAD, UML[™], Use cases, Rational Rose[®]
- Skins
- Windows[®]
- Clearcase Multisite[®]
- Starteam, Python[™], VisualTest, NUnit
- Security SDK, Hasp Dongle

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