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CI Plus 1.3 Specification – Operator Benefits

White Paper

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Glossary

STB	Set Top Box
PIN	Personal Identification Number
CE	Consumer Electronics
CI	Common Interface
CAM	Conditional Access Module
DVB	Digital Video Broadcasting
EPG	Electronic Programme Guide
Host	Any device that includes a CI Plus (CI+) compliant CAM slot
VOD	Video On Demand
URI	Usage Rules Information
LSC	Low Speed Communications
FTA	Free To Air
AES	Advanced Encryption Standard
SD	Standard Definition
HD	High Definition
ARPU	Average Revenue Per User



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1 Abstract

This white paper outlines the latest additional features and improvements to the CI Plus Standard, as incorporated in the CI Plus 1.3 Specification, with a view to helping operators understand the key benefits that these enhancements will bring to their offerings within the CI Plus ecosystem going forward. By incorporating new features applicable to content provider, operator, host and consumer CAM alike, the CI Plus 1.3 specification now alleviates some of the concerns that operators may previously have had with product offerings in the CI Plus market. This paper first addresses each feature in isolation and outlines the potential revenue generating benefits that each brings for an operator. A conclusion is offered that demonstrates how, collectively, these new features can help operators in leveraging the commercial benefits of the CI Plus 1.3 Specification.

2 The CI Plus evolution

The CI Plus specification is continuously evolving in order to address renewed requirements that many players in the PAY-TV market may have. These requirements often pose technical and commercial challenges that can only be addressed by incremental revisions of a standard such as CI Plus. While each revision of a specification offers improvements, there has to always be a compromise between an exhaustive list of features and time to market.

The current CI Plus market, still poses the following logistical challenges for operators:

- The dependency on Host manufacturers product lifecycles and customization requirements
- Having to co-ordinate with potentially more than one CE manufacturer (CAM and Host) for an operator product launch
- Content owner and studio distribution requirements and rights
- Geographical regulation on child protection
- The recording and storing of PAY-TV content

There also remain challenges to close the “user experience” gap between products in the vertical STB market and the combined host and CAM products in the CI Plus market. These are:

- Parental control issues (Host and CAM pin codes)
- Personalise “look and feel” of graphics and user interface: following operator brand image
- Lack of services such as VOD, Catch-up TV, EPG



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CI Plus 1.3 represents the next step in the evolution of CI Plus to provide an enriched feature set to support the business models of the PayTV industry while maintaining backward compatibility among products already in the market (Hosts and CAMs).

3 Why CI Plus 1.3?

The CI Plus 1.3 specification addresses all of the aforementioned challenges with the following main features

1. Operator service list management (Operator profile)
2. PVR improvement
3. Improved PIN Code Management
4. Enhanced CI Plus copy protection (URI)
5. HD Graphics
6. Increased LSC Channel Bandwidth
7. Specific support for cable VOD (Host control)

By first considering each of these in isolation we can then outline commercial benefits that they bring as a whole to an operators CI Plus offering.

3.1 Operator service list management (Operator profile)

Historically, TV manufacturers have a product release cycle that consists of a major release in March and a minor (or upgrade) release in September. In the current CI+ market an operator must co-ordinate with a host or iDTV manufacturer in accordance with these timelines to incorporate customization such as channel listing, parental control management, operator logo etc. However, TV manufacturers like to avoid the integration of such vertical features in their products.

The addition of Operator Profiling to the CI Plus 1.3 specification affords autonomy to operators and host manufacturers alike. Under the 1.3 specification the CAM provides the channel listing parameters (channel number, frequency etc.) and these can be updated while in use. In addition, the CAM can also provide the service logo to be inserted into the EPG of the Host. This breaking of interdependency reduces the customization of a host or TV for a given market and affords an operator more control over their own product timelines, reducing costs and time to market.

3.2 PVR improvement

The PVR mechanism in today's CI+ market is one of a CAM descrambling and saving content to a consumer hard drive with no operator control on content playback.



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The CI Plus 1.3 specification facilitates the addition of a playback license from the CAM to the content stored on the hard drive. This opens up new revenue generating channels such as playback twice, playback timeout, subscription monitoring (renew subscription before playback) etc. In addition, the operator contract with the content provider can be strengthened given that the content provider's usage rules can be applied in full under this license mechanism. This increases the amount of content an operator can offer to consumers for recording: a commercial win-win for operator and content provider alike.

3.3 Improved PIN Code Management

One of the major concerns of many operators is that of PIN code management. Currently, a host manages a PAY-TV and FTA PIN code and in addition the CAM also manages a PAY-TV PIN code. Certain PAY-TV events require the entry of the PIN codes from both the host and the CAM for live watching and these PIN codes are different. Furthermore, if a user wants to record such events, it is currently required to enter the PIN code before recording begins, thereby requiring the end user to be present to initiate recording.

The CI Plus 1.3 specification mandates that the CAM indicates its' PIN code management capabilities to the Host and the host adapts its' PIN code management accordingly. For example, if the CAM indicates that it manages the PAY-TV events PIN code, then the host handles only the PIN code for the FTA channels. The user can also program both these codes to be the same thereby affording a PIN transparency that simplifies the end user experience. Additionally, an operator can now decide how they wish to apply PIN codes for recording certain events: PIN code on recording start or PIN code on the start of recorded content playback. There is now also the addition of time accurate PIN code check during content playback.

3.4 Enhanced CI Plus copy protection – URI

The CI Plus 1.3 specification now takes into account the Motion Picture Association of America (MPAA) remarks regarding HD analogue output. These remarks consider that the HD analogue output of current CI Plus devices poses a possible threat to content security and therefore will potentially limit access to HD content in CI Plus devices in the future. Most STB's in the vertical market do not have analogue output for this reason.

Content providers can now control the signaling of premium content to be available only for the digital output of a CI Plus device. This can be signaled via the Digital Only Token (DOT), a new control within the CI Plus 1.3 URI.

Again operator and content provider relationships can be strengthened by such an addition to URI, opening up more premium HD content to operator and consumer alike with improved



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revenue generating options for the operator and improved consumer satisfaction with operator offerings.

3.5 HD Graphics

Current CI Plus specification only supports SD graphics. The CI Plus 1.3 specification now mandates that if the host supports HD graphics the CAMs CI Plus browser application shall adapt to the host capabilities. This enables the CAM to embed both SD and HD applications and leverage an improved browser experience for the end user.

3.6 Increased LSC Channel Bandwidth

CI Plus products offer limited support for a number of features that are prevalent in many other areas of the PAY-TV market. The 1.3 specification now specifies an increased minimum LSC channel bandwidth (1Mbs) that must be implemented as mandatory in CI Plus 1.3 compliant devices with some supporting much higher rates (3-4Mbs). This increased LSC channel bandwidth affords the opportunity to address Cable VOD services and enhanced browser experiences for the end user.

3.7 Specific support for cable VOD (Host control)

VOD is one of the major generators of revenue for many operators in the STB market and the CI Plus specification sought to address the issues that prevent easy entry into this market for CI Plus devices particularly in relation to Cable operators. A number of the CI Plus 1.3 features can be used to enable cable VOD

The increase in LSC channel bandwidth now enables CAMs to access VOD catalogues for browsing via the internet. The added feature of HD graphics makes for a higher quality user interface in support of such VOD browsers. The provision of “dynamic tuning” now allows the cable head end to inform the CAM as to which channel the TV should be tuned to in order to view the selected VOD content. For cable operators with CI Plus offerings the potential for new services and increased ARPU is obvious by the addition of these features in support of a true VOD on Cable solution.

4 Schedule

CI Plus LLP published the V1.3 specification in January 2011. In accordance with the 18 month sunrise period of CI Plus LLP licensing agreement, all new CI Plus devices registered after the 1st of August 2012 will have to conform to the CI Plus 1.3 specification.

5 Test and certification

In order to ensure conformance to the CI Plus 1.3 specification, the CI Plus appointed test centre has developed a CI Plus V1.3 Test Bench. All new CI Plus devices registered from 1st



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August 2012 are required to pass V1.3 Tests. In addition a CI Plus V1.3 Test Tool shall be made commercially available for license from the CI Plus appointed test centre.

With the CI Plus 1.3 specification, the CI Plus LLP took the opportunity to increase certification test coverage thereby reducing the possibility of interoperability issues between host and CAM.

6 Conclusion

Operator concerns about product launches in the existing CI Plus markets are comprehensively addressed by the CI Plus 1.3 specification. It's clear that an opportunity now exists for an operator to strengthen relationships with content providers, host manufacturers, CAM manufacturers and consumers alike by leveraging all the advantages that CI Plus 1.3 has to offer them in the PAY-TV market. In doing this an operator can in turn increase revenue generating opportunities through:

- The provision of more premium content
- Greater security for the content provider
- Flexible product offerings for consumer
- Improved product services
- Overall improved user experience

The improvements made in the CI Plus 1.3 specification provide a clear indication of CI Plus LLPs intent to converge on a solution that addresses the competition the vertical STB market currently provides. With increased competitiveness on a features and services basis, operators can truly leverage the advantages of simple to use CI Plus products that facilitate consumer adoption of their PAY-TV offerings.

The CI Plus specifications new developments have since been transferred to DVB which will continue to develop the CI Plus standard, in addressing multi-tuner and IP distribution use cases mainly, as well as enhancing CI Plus interaction with various user interface systems.