



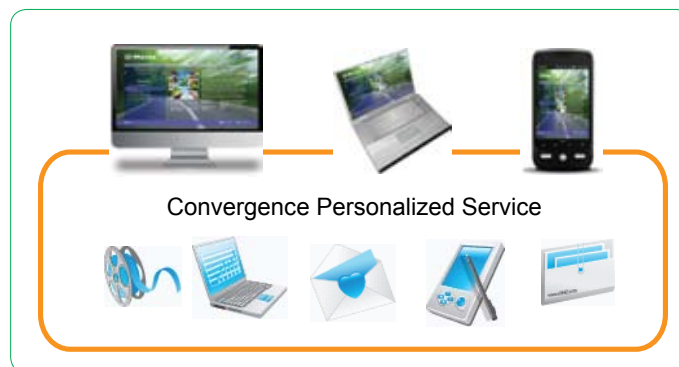
## Vision Convergence Enabling Platform

Personalized content recommendations available anytime, anywhere

### Opportunities in Convergence

Rapid developments in entertainment and communication are transforming expectations from traditional internet to mobile Internet, and the advent of game changing consumer products have resulted in permanent changes in the landscape of internet and digital media. Conventionally, operators have been used to providing and re-processing content that enable their subscribers to consume it through various access networks and terminals.

Service operators are being challenged to provide ways to take advantage of their multiple screens and devices. Users of today expect content to be available on all their devices, but they also expect service operator to present content that is relevant, easy to find, and adapted to their target device. Broadcast, Telecom and Internet Industries are constantly evolving, and consumer electronics are becoming more capable and more intelligent. This has set the stage for an age of rich and borderless content. Personalized contents have become a fashion, which has spurred an increase in motivation for operators to build personalized content platforms.



### Vision CEP Overview

Vision CEP (Convergence Enabling Platform) is an intelligent and personalized content recommendation system, built on technology for multi-source data mining. Vision CEP makes personalized recommendations to the users from a massive library of diversified contents, and offers multi-screen, interactive services that are well integrated. Instead of being overloaded and deterred, Consumers can finally spend more time consuming content.

Convergence opens doors to operators by allowing them to operate their services in modes that employ, personalized TV, social network TV, multiple-screen TV, and structured Web 3.0 that condenses massive libraries into digestible and relevant offerings. This truly paves the way to an evolutionary entertainment experience.

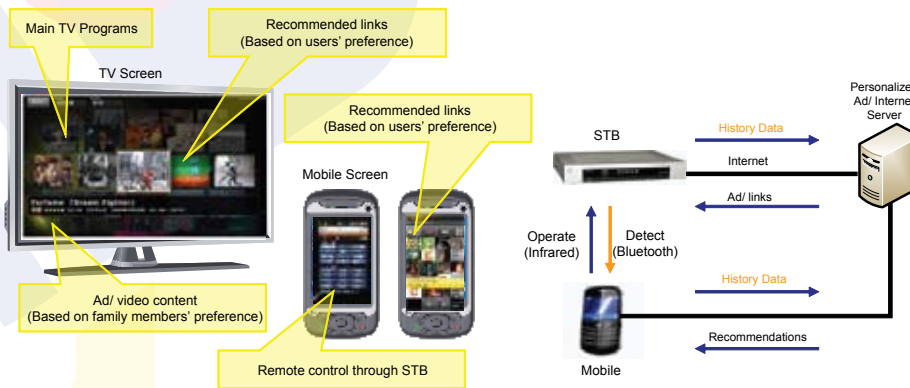
### Evolutionary User Experience

- Offer the best in diverse contents (Video, music, websites, graphic and text advertisements)
- Search and recommend relevant contents anywhere
- Establish personalized views that are customer-specific
- Improved TV experience that traditionally lack convenient search functionality
- Providing multi-screen interactive convergence services across multiple terminals

### Advanced Technologies

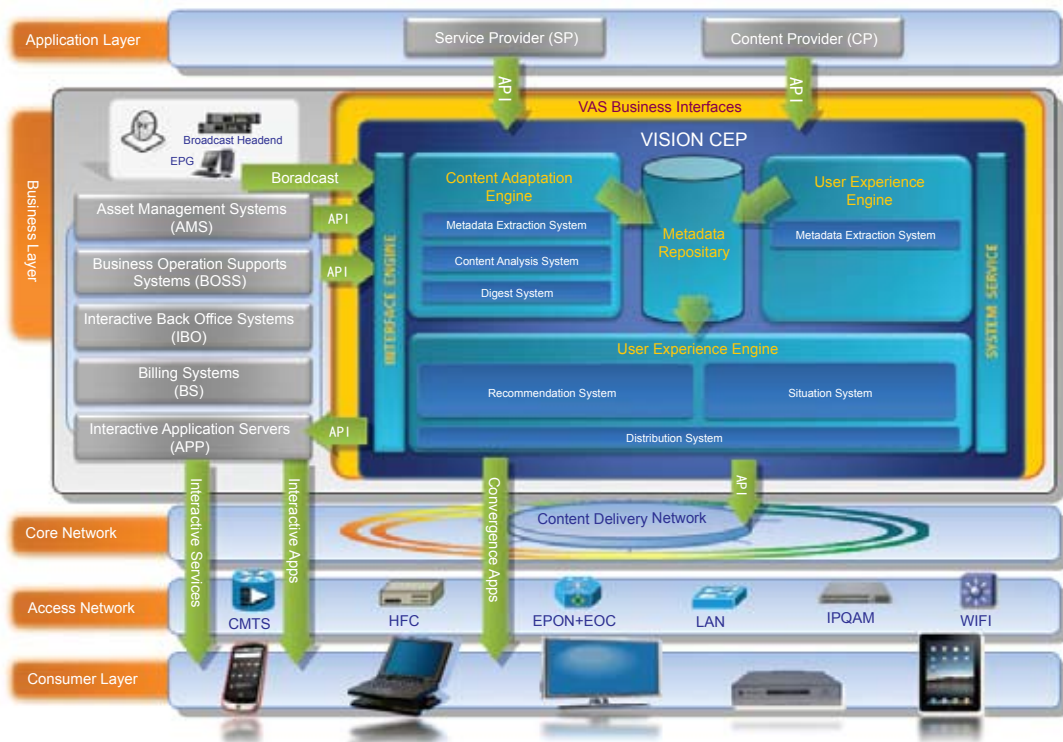
- Comprehensive support for three screen convergence
- Selection of intelligent recommendation models according to circumstances
- Incorporation of structured Web 3.0
- Inference Reasoning through Bayesian Network Modeling

Vision CEP recommends personalized contents based on users' preferences. Users view recommendations through the TV and mobile devices, using the mobile phone as their remote control. Vision CEP supports various access networks, such as broadcast cable TV, IPTV, mobile network, Internet, and Wi-Fi; and different terminals, such as set-top-boxes, mobile internet connected devices and PCs.



## Vision CEP System Architecture Diagram

The core engine of Vision CEP is based on a framework of Web 3.0, convergence operating expertise, leading technology that has incorporated 26 technological patents and advanced Bayesian Network modeling. It's an effective convergence platform that analyzes and processes user info, history, contents and scenes through inference algorithms that recommend the most appropriate content to users.



## Vision CEP Main Modules

### Content Adaptation Engine (CAE)

Video content processing refers to the analysis, extraction and filtering of useful metadata (still images, caption and voice), as well as metadata transformation. It has three sub systems:

- Metadata Extraction System - Extract useful key words from live video or offline contents
- Content Analysis System - Search and filter associated contents from extracted metadata (e.g: info from Internet and social network)
- Digest System - Convert live programs or offline contents into magazine format

### User Experience Engine (UEE)

This module extracts, transforms and loads (ETL) user experience metadata from operators, content provider, service providers or 3rd Party applications (e.g: user info and user history log), into a Metadata Repository.

## Synchronized Experience Engine (SEE)

Upon request, this system invokes the Content Adaptation Engine to filter and analyze contents, before analyzing the results through recommendation models for classification and matching. Finally, system will export the recommendation results to the distribution system as an XML package. The SEE module includes three sub systems:

- Recommendation System makes recommendations based on multi-dimensional data in metadata repository & real-time user conditions
- Situation System evaluates users' current situation according to their mood, personality and location
- Distribution System distributes and synchronizes recommendations seamlessly across devices

## Metadata Repository

Carrying and storing users' multi-dimensional data; based on user history logs, users' behaviors, purchases, clicks, content attributes, user attributes and optional info, such as users' mood, personality and situation.

## Interface Engine

Interface Engine provides standard interfacing capability to each business system of the operator platform.

## System Services

System Services monitor all Vision CEP components centrally, rapidly integrating all components into the operator's application system. It provides single sign-on, from where an operator can access all modules of the Vision CEP service, and providing a convenient way for maintenance and management.

## Vision CEP New User Experience

### Intelligent Recommendation

Vision CEP utilizes user info, family info, viewed TV contents, and Internet browse records, establishes a user preference model through synchronized caption analysis technology and data mining technology and conducts auto search in the repository and Internet for recommended contents.

### Online Recommendation

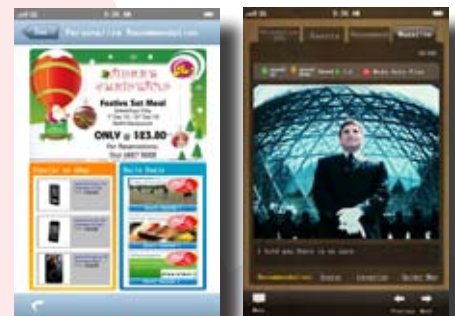
Vision CEP provides real-time, applicable and precise recommendations according to user parameters, historical transaction records, browse history and scenes from live broadcasts.

### Personalized multi-dimensional recommendation

Vision CEP provides a unified portal, allowing the user to access more network resources, enrich their audio and visual experience, and reduce the time to change screens and search, offering personalized VOD, websites, target advertisements and their favorite assets.

### TV Magazine

This feature converts live TV contents and offline HD video (highlights) into highly compressed magazine format through closed caption processing, image analysis and speech recognition, providing TV programs in a format suitable for broadcast on a mobile device consisting of still scenes and video streams. TV Magazine provides high-quality video more efficiently and conveniently on any video devices without adjusting screen resolution.



### Target Advertisement Placement

This feature categorizes users based on attributes, currently viewed programs and services, and analyze the TV viewing period and location to automatically seek for the best broadcast time slot and placement of appropriate advertisements.

### TV Anywhere

This feature can extend VOD and live TV for use on other terminals, such as mobile phones and desktop PC. Video is broadcast over different networks and VOD streaming or downloading on different screens are supported. An intelligent TV bookmark feature enables play resumption and broadcast switch over on various networks. Intelligent Group based recommendation is available for improving the social experience. A My Favorites feature supports assets tagged by users' on different networks.

### Social TV

The system processes mainstream social networks automatically, making use of blogs and tweets, analyzing and filtering the freshest comments to both the contents browsed and the end-users' personal attributes. Recommended contents closely match to what the user will likely be interested in.

## Synchronized experience through handheld device

Users make use of a personalized remote control EPG that provides access to broadcast TV, Video and other Services supplemented with recommendation technology. They have access to a borderless library of video contents at their fingertips.

## Personalized email and SMS marketing

This feature collects user data, analyzes and processes the data through recommendation engine to select suitable catalog product info for the user in an accurate manner, and sends the info to the user via email, multimedia messages and SMS.

## Recommend contents based on user location

This feature offers precise and diverse recommendations to the user according to their location. Interesting leisure, shopping and entertainment information is automatically offered when the User is most interested in it.



Personalized Recommendations

## Vision CEP Benefits

### Open Interface

- Open interface ensures easy integration with third party system

### Modular Structure

- Modular components ensure high availability and rapid failover, able to extend deployment and configuration

### Patented Technologies

- TV magazine and recommendation (based on history, user attributes and scenes) adopt 26 patented technologies

### WEB 3.0 Blueprint

- WEB 3.0 is to provide more effective resources, an orderly and efficient integration of digital communications, information processing, real-time information, social networking and entertainment, laying solid foundation for convergence services

### Innovative TV Experience

- Vision CEP brings personalized contents and multi-screen interactive services to users at various terminals

### Marketing benefits

- Increase clicks and purchases
- Enhance publicity of operators, content providers, value-added service providers, and maximize profits
- Increase user reliance and promote user growth



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