

# Introduction to WAP

W@P



Securing the next E. **E-services**

# Why is wireless technology important?

- 800 million e-commerce users predicted by 2004
- Over 144 million mobile users today in Europe
- Vendors project 50% of all new phones will be WAP enabled in the near future

# How can wireless technology be used?

- Personal finance
  - Stock management, bill payment
- Retail
  - Online shopping
- Travel
  - Reservations, changes
- Information services
  - News, alerts
- Enterprise
  - Field services
- Entertainment
  - Online game portals



# Example of wireless transaction

Scroll through menu

Select *Services*

Select *Bookmarks*

Select *Banking*

Authentication

Banking options:

*Checking Summary, Savings Summary,*

*Money Transfer, Customer Service*

Select *Money Transfer*

Enter:

Amount of money to transfer

Account number that money is coming from

Account number that money is going to

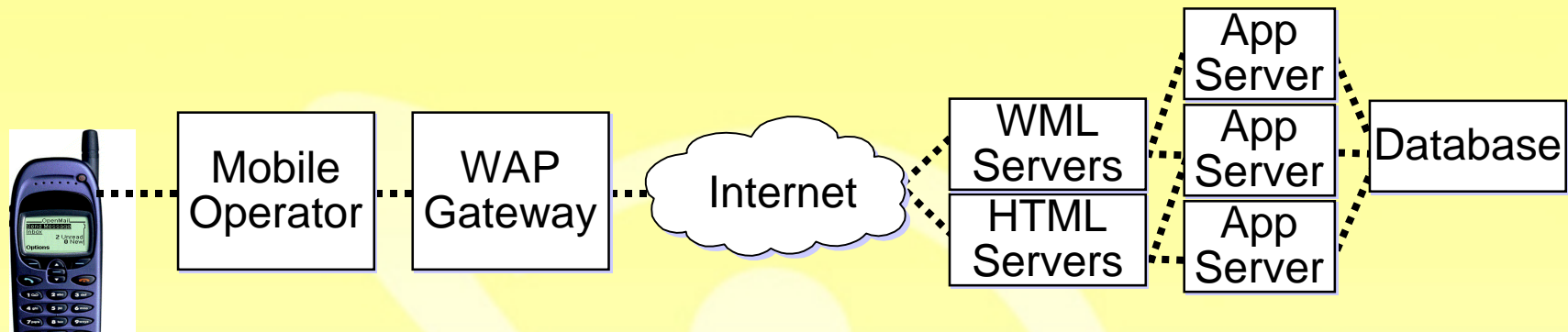
Select *Transfer*



# WAP makes it possible

- WAP = Wireless Application Protocol
- The WAP Forum is the worldwide standards body which develops and promotes the WAP standard
- WAP includes protocols for end to end services between servers and small form factor, thin clients such as phones and PDAs
- WAP browsers understand Wireless Markup Language (WML), designed with small screens and relatively low speed data links in mind

# Wireless Application Protocol (1)



- WAP is an end-to-end application protocol that:
  - Allows mobile terminals to communicate with server applications
  - Guarantees interoperability among different terminals and servers
  - Implements end-to-end security between WAP client and WAP gateway

# Wireless Application Protocol (2)

- WAP is an application environment that:
  - Allows easy construction of end-to-end applications where the client part is downloadable
  - Makes any client application run on any mobile terminal
  - Protects the terminal from hostile applications

# Wireless Application Protocol (3)

## (Contd.)

- WAP-compliant infrastructure and client browsers allow communication that is:
  - Air-interface independent (i.e. GSM, TDMA, CDMA)
  - Device-independent (i.e. mobile phone, Palm device, WinCE)



# WAP Application Environment

- WAP Gateway allows a WAE user agent (eg. a browser) navigate internet/intranet content

- Origin servers provide application services and content

- Content can be static or dynamic:

- HTTP servers can act as origin servers

- Applications can generate and serve content directly

code (e.g. CSD) and

translation from HTML s

browser is an example of an user agent

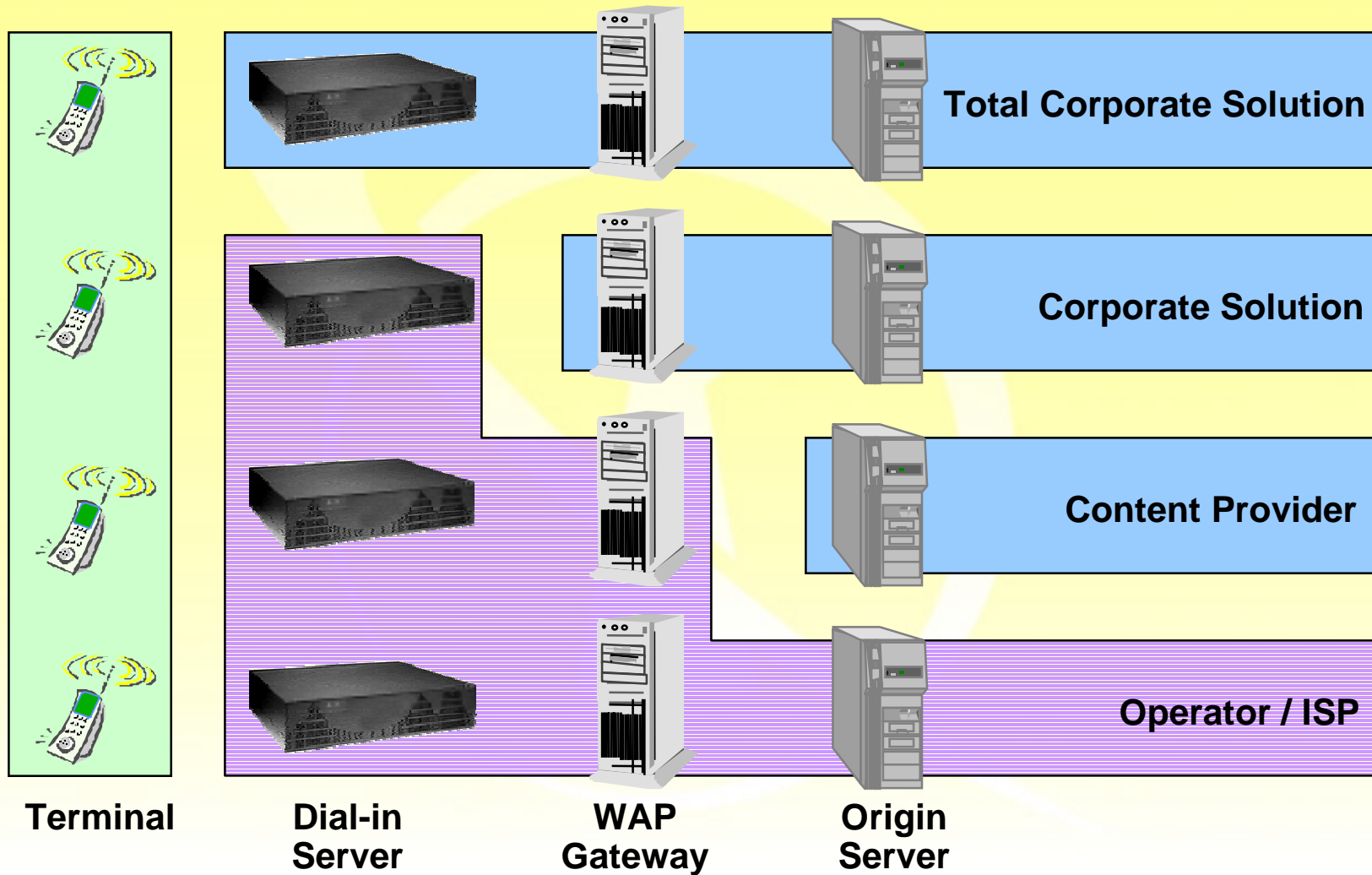
Wireless Application Environment (WAE) allows integration of domain-specific user agents with varying architectures and environments

WAP Terminal



WAP Gateway

# WAP deployment scenarios



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# WAP vs WEB

- Technologically WAP is a sibling to WWW
- Both environments are based on browsing concept, i.e. the client requests and loads documents from server
- Similar features are presented in the following table:

<b>Application</b>	WML	WMLS	WTA	HTML	JavaScript
<b>Session</b>	WSP			HTTP	
<b>Transaction</b>	WTP				
<b>Security</b>	WTLS			SSL	
<b>Transport</b>	Bearers			TCP/IP	

# Wireless Transport Layer Security (WTLS)

- Provides connection security between two applications
- Security services:
  - Confidentiality (encryption)
  - Data integrity (hash, HMAC)
  - Authentication (symmetric and public-key)
- Supports also datagram transports
- Supports both server and client certificates

# Wireless Application Environment (WAE)

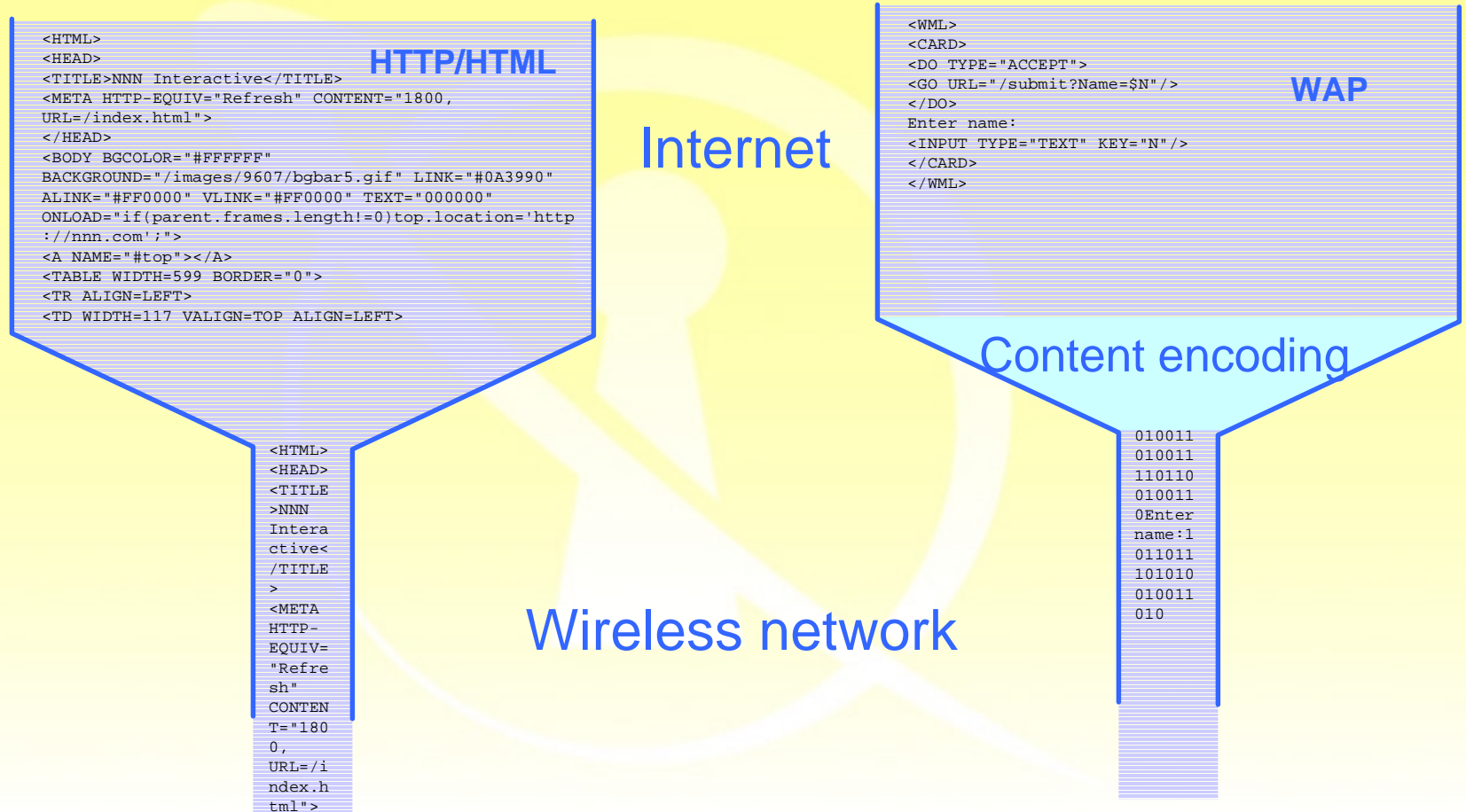
- Wireless Mark-up Language (WML)
  - Derived from HTML
  - Also binary format
- WMLScript (WMLS)
  - Derived from JavaScript
  - Remove network round-trips
  - Expose network and device specific functionality
  - Build-in standard libraries
- Wireless Telephony Applications (WTA)
  - Access to telephone functionality
  - Call establishment and messaging
- Content formats
  - images, vCalendar, vCard, etc.

# WML

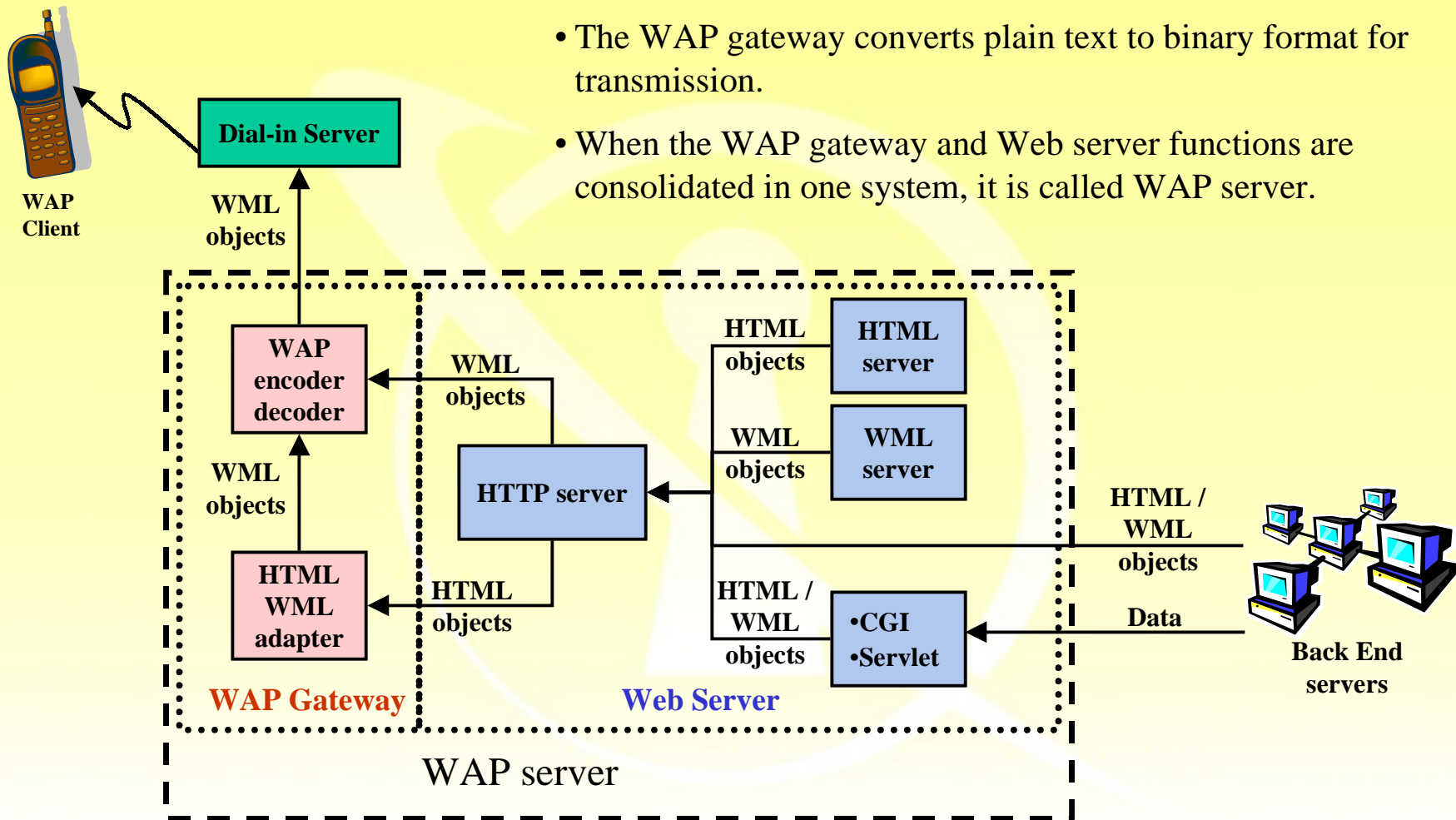
- Support for text and images
- Support for user input
  - text entry, options selections, task invocation
- Navigation and history stack
  - URLs
- International support
  - Unicode
- Narrow-band Optimization
  - card / deck concept
- State and Context Management

# HTML vs WML

- Big pipe - small pipe syndrome



# WAP server architecture





# Nokia WAP server 1.1

- Nokia WAP Server is a Wireless Application Protocol server product offering
  - Full standard compliance
  - Easy management
  - Expandability
  - Server functionality - application and content hosting
  - Independence of operator specific telecom infrastructure
  - Open programming interfaces
- Nokia WAP Server supports GSM Data and GSM-SMS bearers
- Nokia WAP Server supports WTLS security, and additionally terminal access control and HTTP Proxy authentication
- Nokia WAP server is a Java application

# Nokia WAP server Pros and Cons

- PROS
  - Recognized brand name
  - Graphical administration interface
  - Simple installation
  - Multi-platform
  - Terminal, URL and user access control
- CONS
  - Monolithic architecture

# TAS WAP server 3.1.1

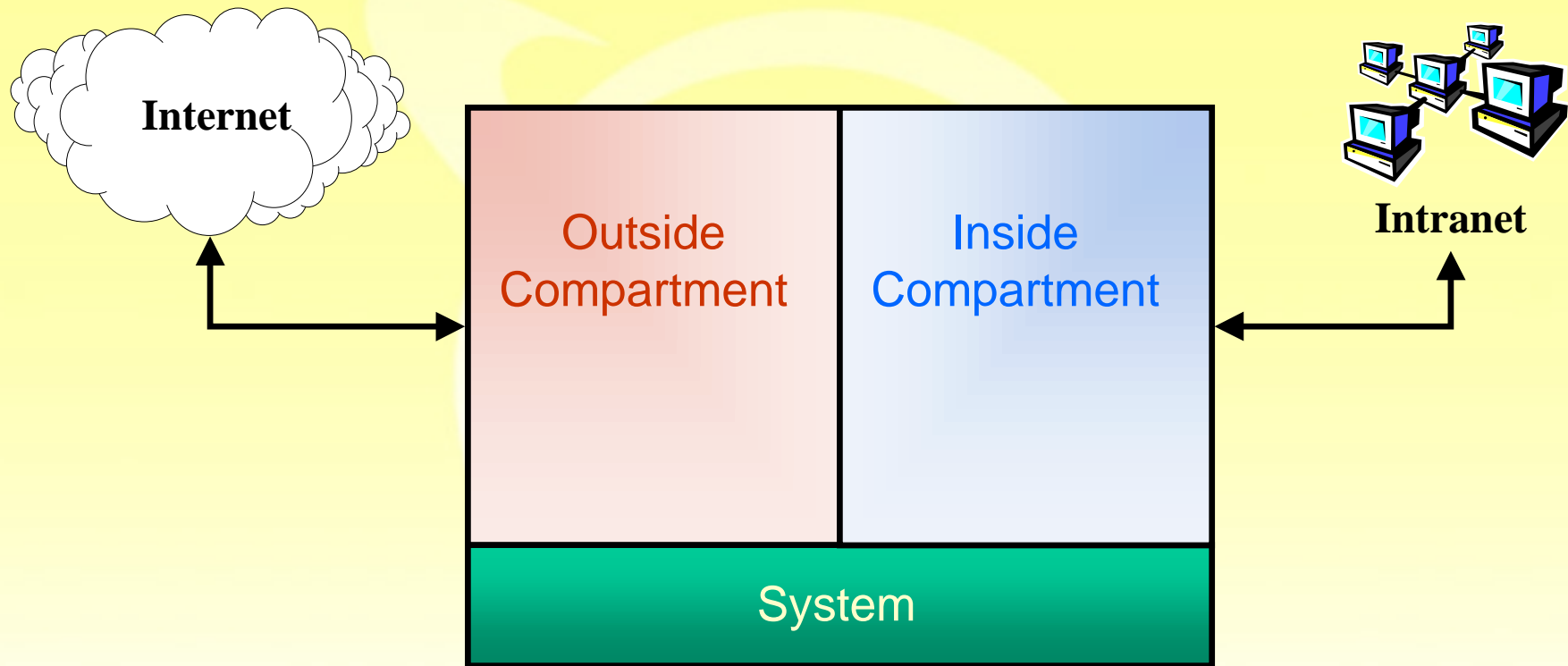
TAS WAP server is a module of Tantau Application Server.

- Load-balancing
- Native database and application connectivity
- Intercommunication facilities to support cross-platform application integration
- Object-based design, enabling replication of components
- Support of asynchronous communications between application components
- Distributed architecture
- Application partitioning across multiple platforms
- Support of the ServerNet system interconnect technology
- WAP over Circuit Switched Data (CSD)
- WSP connection-mode and connectionless

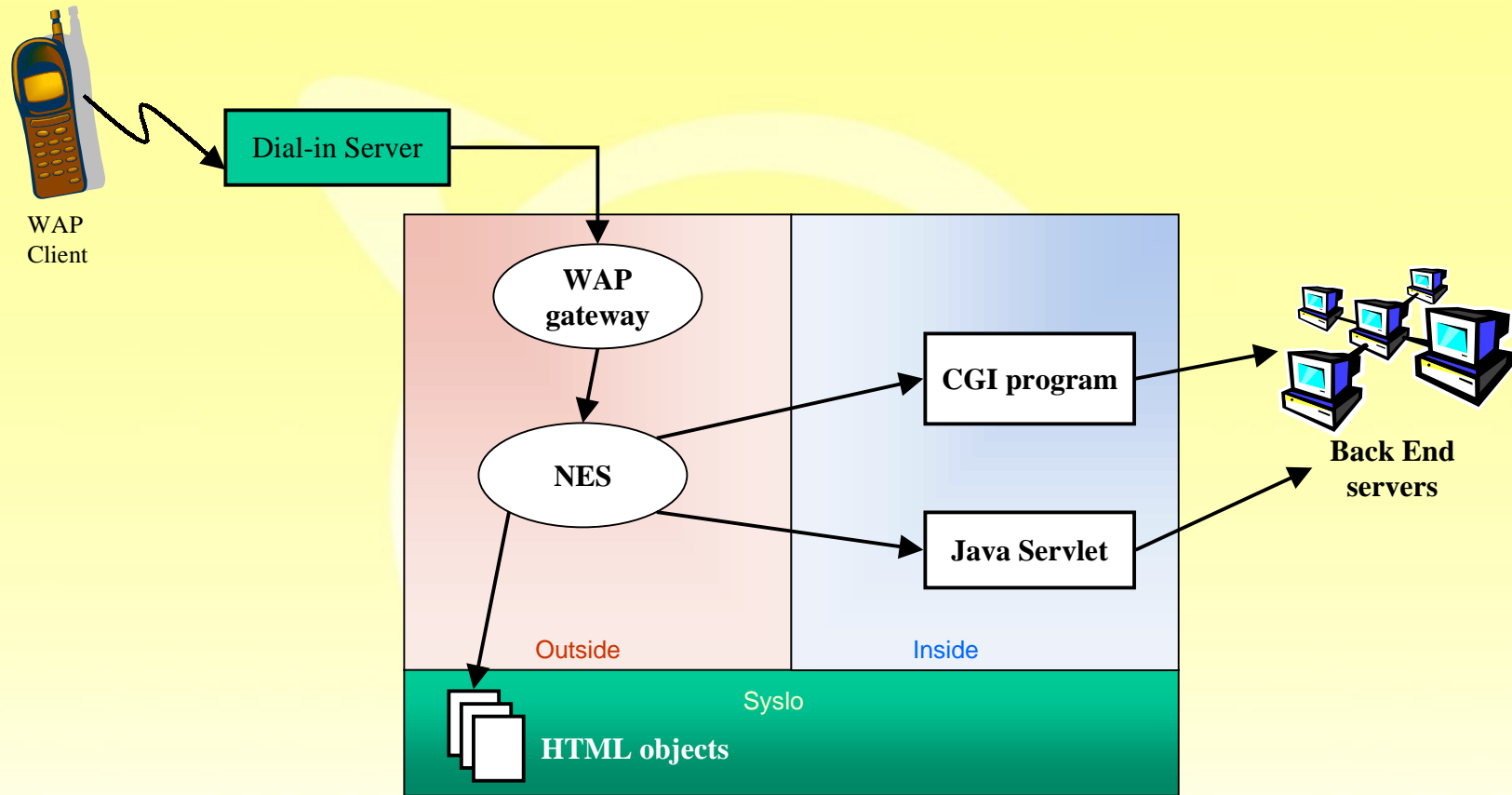
# TAS WAP server Pros and Cons

- PROS
  - Dynamic architecture
    - Ensemble of CORBA-objects can be configured to run in several processes and/or different hosts
  - High performance
  - Scalable
  - Starts CGI programs as separate processes
- CONS
  - Complex configuration
  - Command line interface

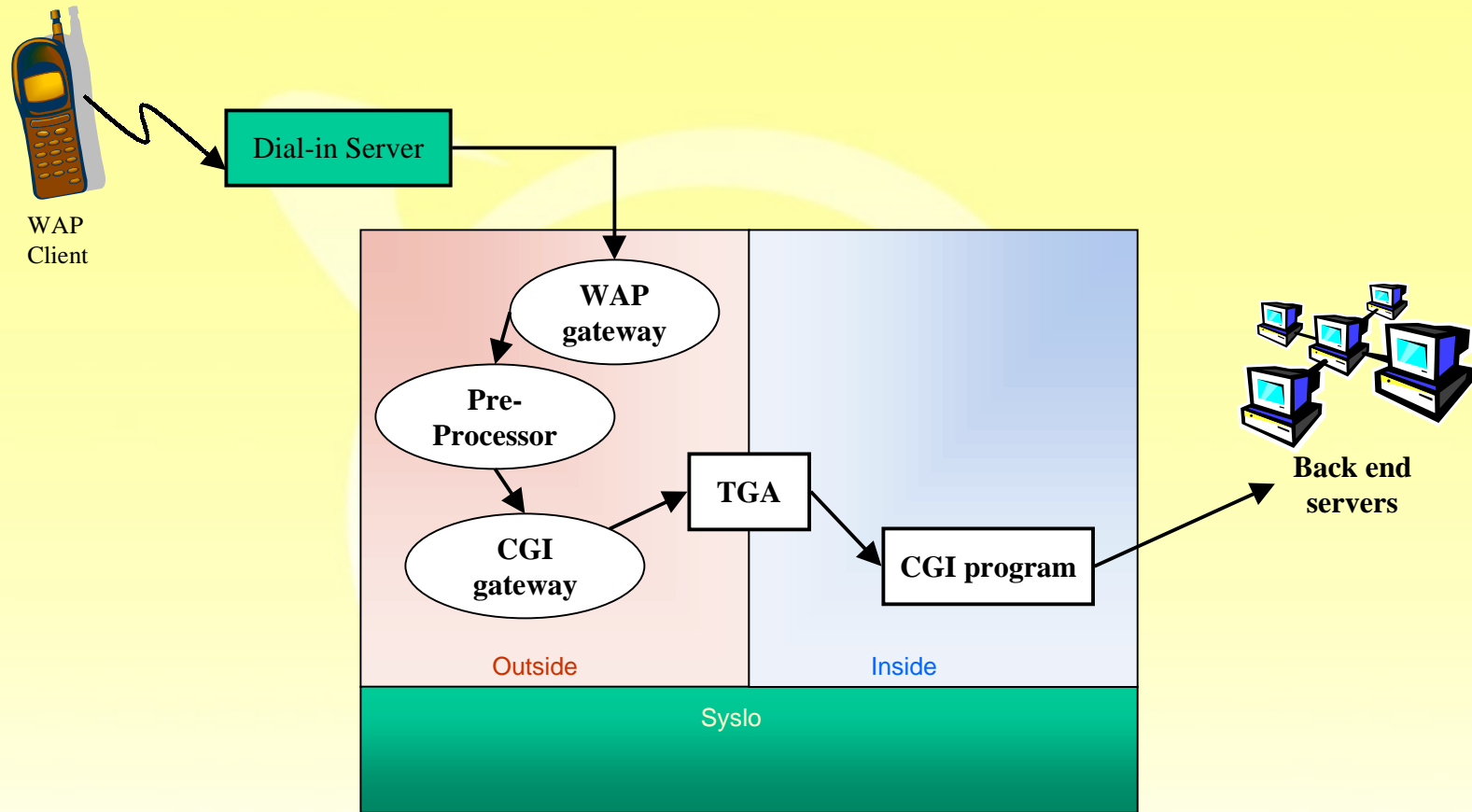
# Virtual Vault Security



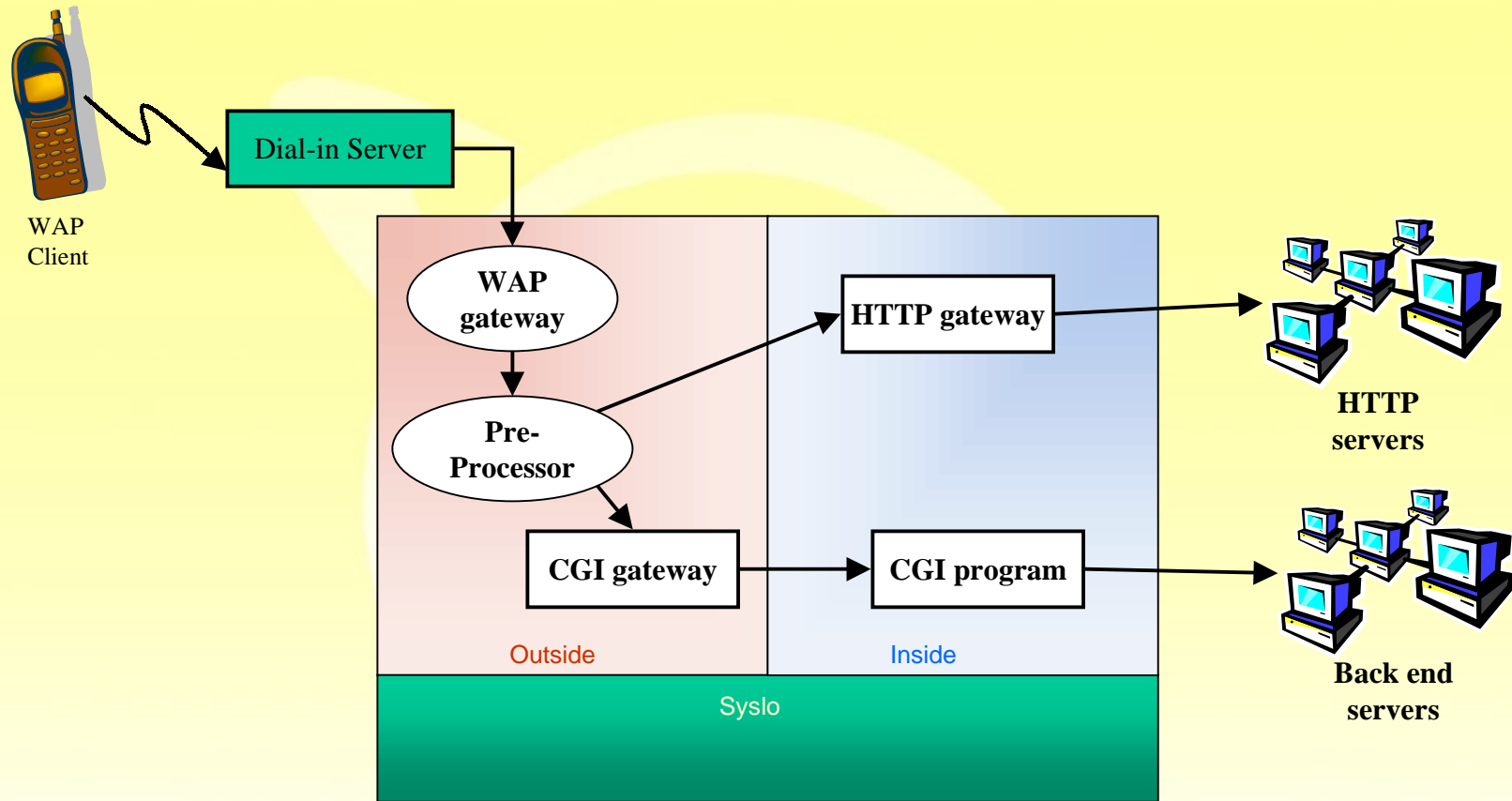
# WAP Gateway to VV NES



# WAP Gateway to non-Web application via TGA



# Advanced TAS/VV Integration





# WAP is in our future



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