

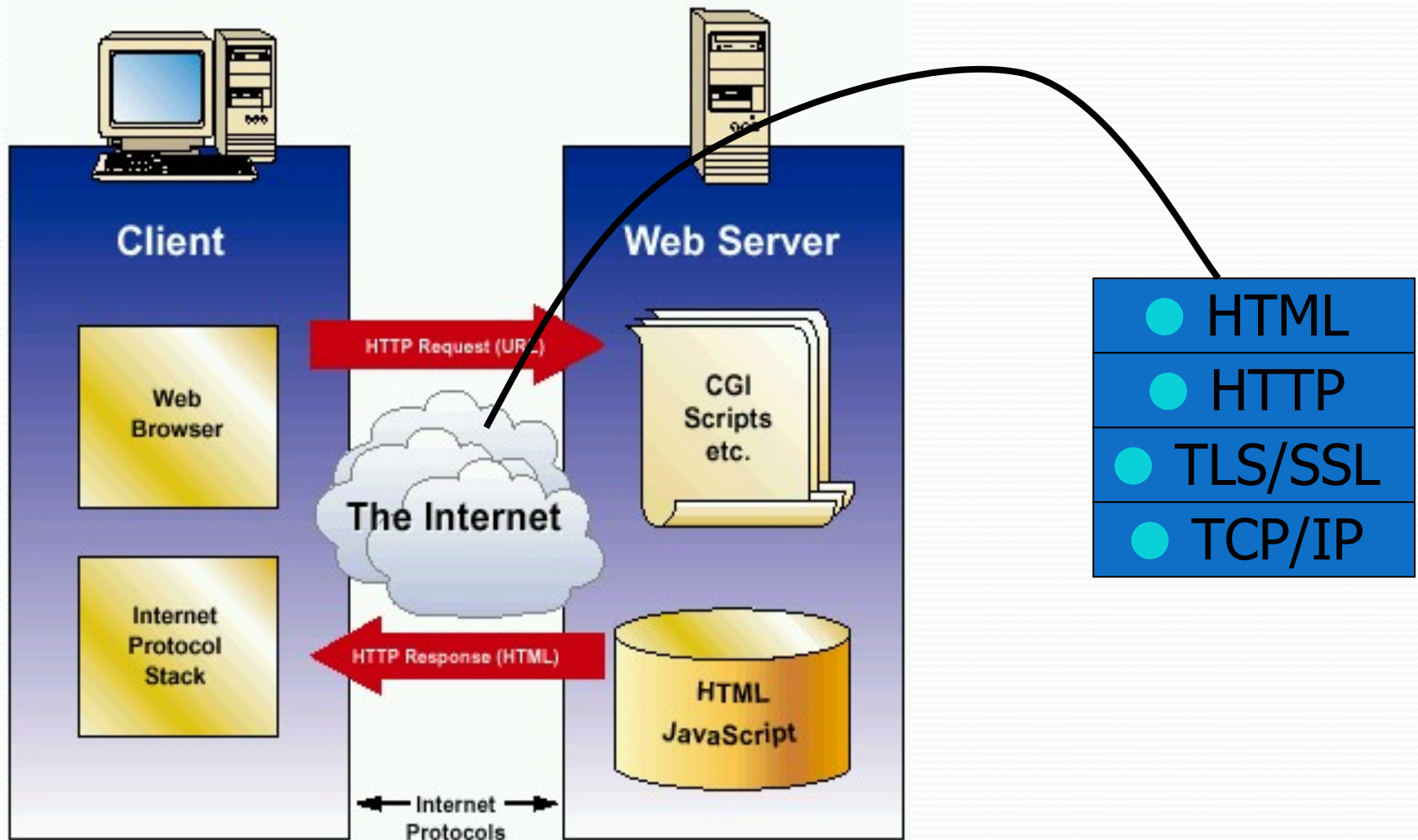
Mobile Computing – Wireless Application Protocol (WAP)

- **WAP:** Empowers mobile users with wireless devices to easily access and interact with information and services.
- It is a **standard** created by wireless and Internet companies to enable Internet access from a cellular phone.
- **wapforum.org**
 - co-founded by Ericsson, Motorola, Nokia, Phone.com
 - 450 members in 2000, comprise of Handset manufacturers, Wireless service providers, ISPs, Software companies in the wireless industry
 - Goals:
 - deliver Internet services to mobile devices
 - Enable applications to scale across a variety of transport options and device types.
 - Independent from wireless network standards.
 - GSM , CDMA IS-95, TDMA IS-136, 3G systems (UMTS, W-CDMA)

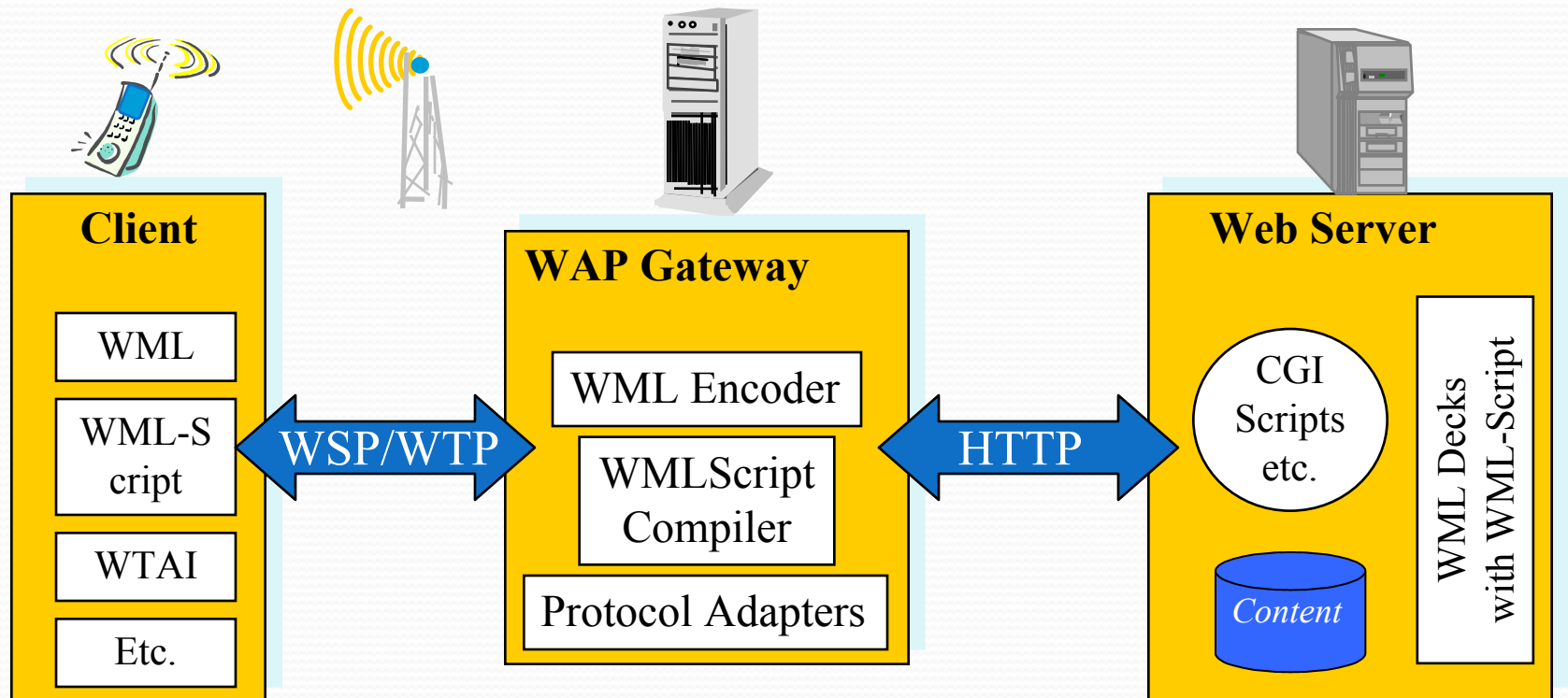
WAP Main Features

- **Browsers**
 - “Micro browser”, similar to existing web browsers
- **Markup language**
 - Similar to HTML, adapted to mobile devices
- **Script language**
 - Similar to Javascript, adapted to mobile devices
- **Gateway**
 - Transition from wireless to wired world
- **Server**
 - “Wap/Origin server”, similar to existing web servers
- **Protocol layers**
 - Transport layer, security layer, session layer etc.
- **Telephony application interface**
 - Access to telephony functions

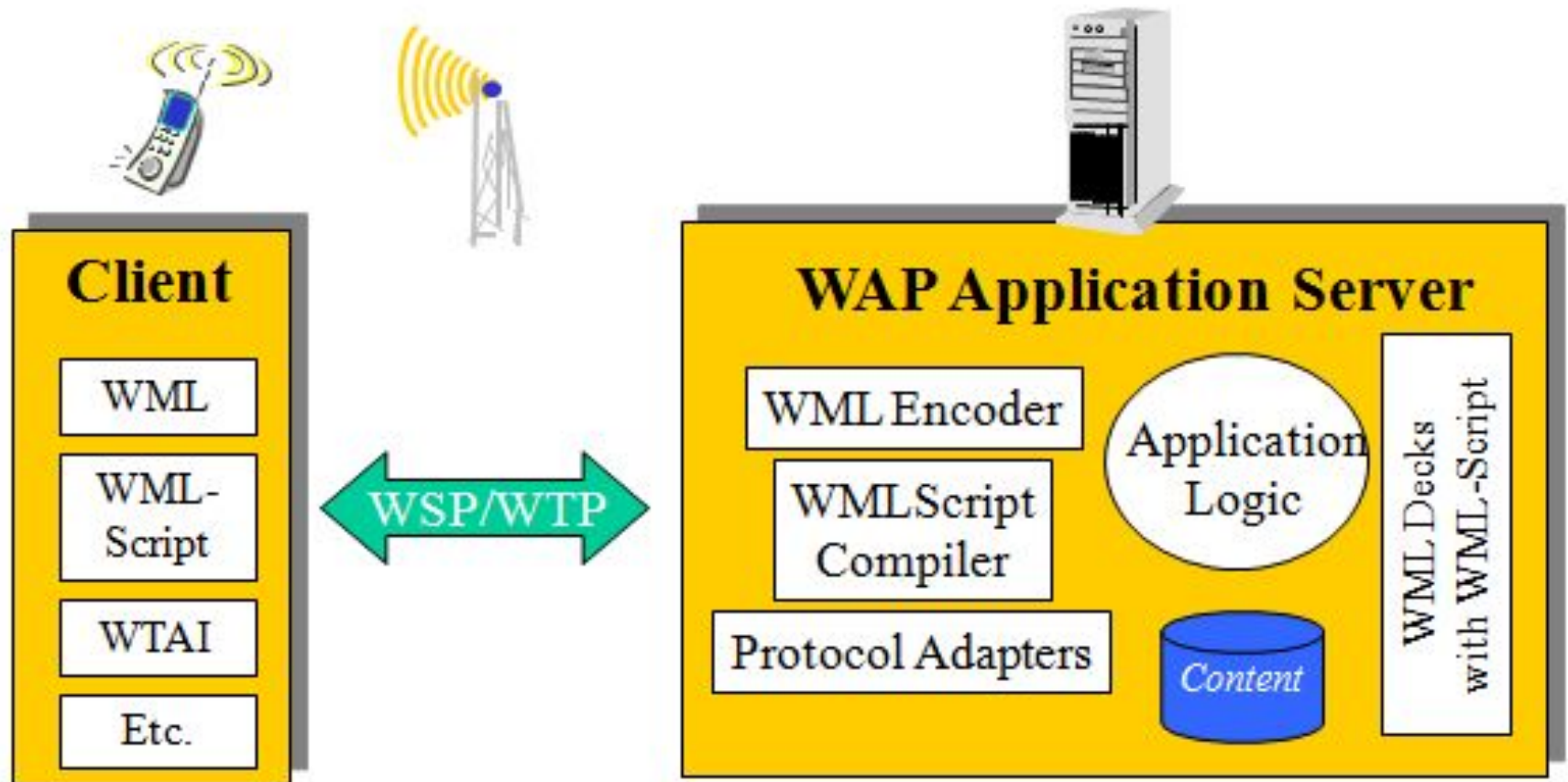
Internet Model



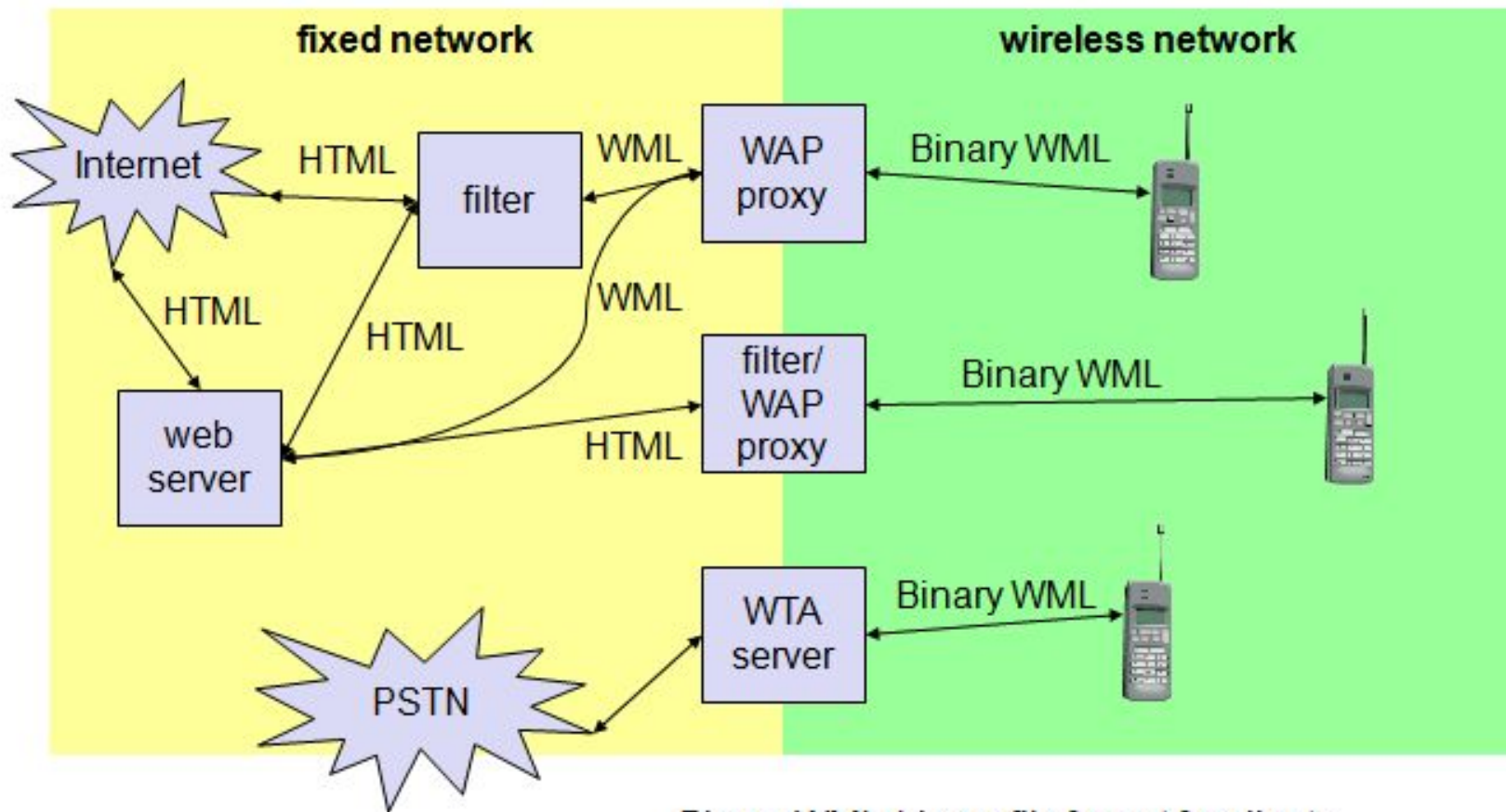
WAP Architecture



WAP Application Server



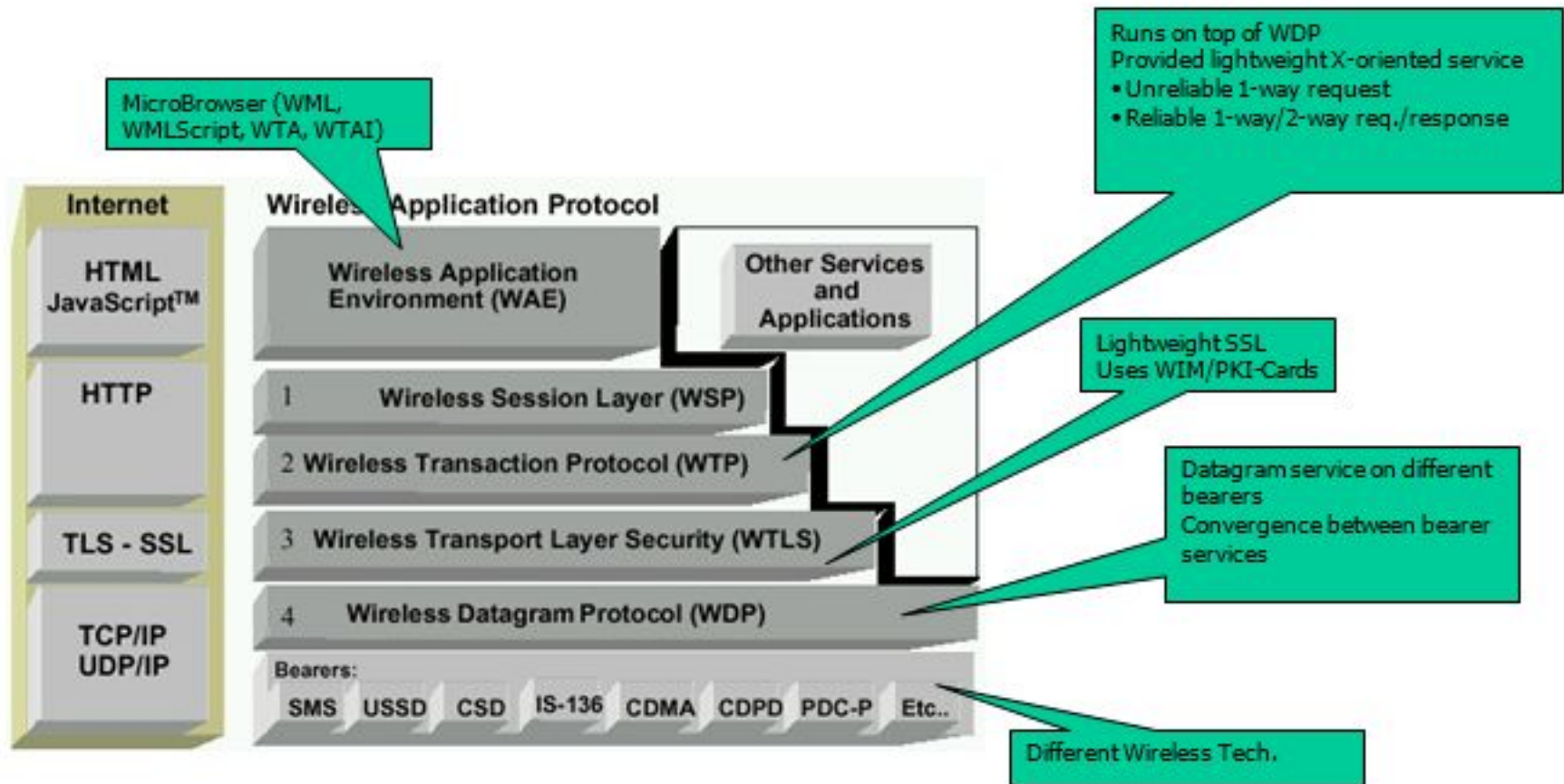
WAP: Network Elements



WAP Specifications

- Wireless Application Environment
 - WML Microbrowser
 - WMLScript Virtual Machine
 - WMLScript Standard Library
 - Wireless Telephony Application Interface (WTAI)
 - WAP content types
- Wireless Protocol Stack
 - Wireless Session Protocol (WSP)
 - Wireless Transport Layer Security (WTLS)
 - Wireless Transaction Protocol (WTP)
 - Wireless Datagram Protocol (WDP)
 - Wireless network interface definitions

WAP Stack



WAP Stack

- WAE (Wireless Application Environment):
 - Architecture: application model, browser, gateway, server
 - WML: XML-Syntax, based on card stacks, variables, ...
 - WTA: telephone services, such as call control, phone book etc.
- WSP (Wireless Session Protocol):
 - Provides HTTP 1.1 functionality
 - Supports session management, security, etc.
- WTP (Wireless Transaction Protocol):
 - Provides reliable message transfer mechanisms
 - Based on ideas from TCP/RPC
- WTLS (Wireless Transport Layer Security):
 - Provides data integrity, privacy, authentication functions
 - Based on ideas from TLS/SSL
- WDP (Wireless Datagram Protocol):
 - Provides transport layer functions
 - Based on ideas from UDP