

مقدمتنا في خدمات الويب

Introduction to Web Services

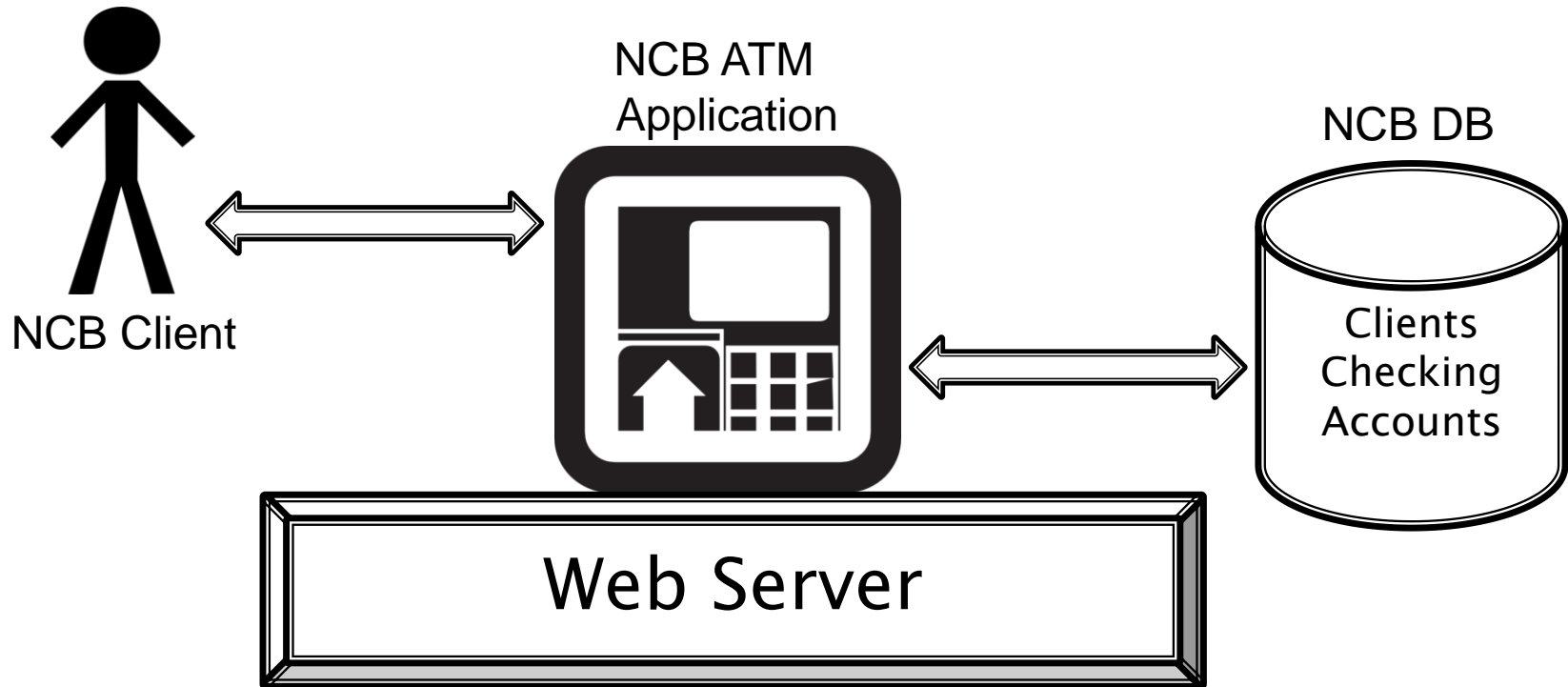
History

- ▶ **Structured Programming**
- ▶ **Object-oriented Programming**
- ▶ **Distributed Computing**
- ▶ **Electronic Data Interchange**
- ▶ **World Wide Web**
- ▶ **Web Services**

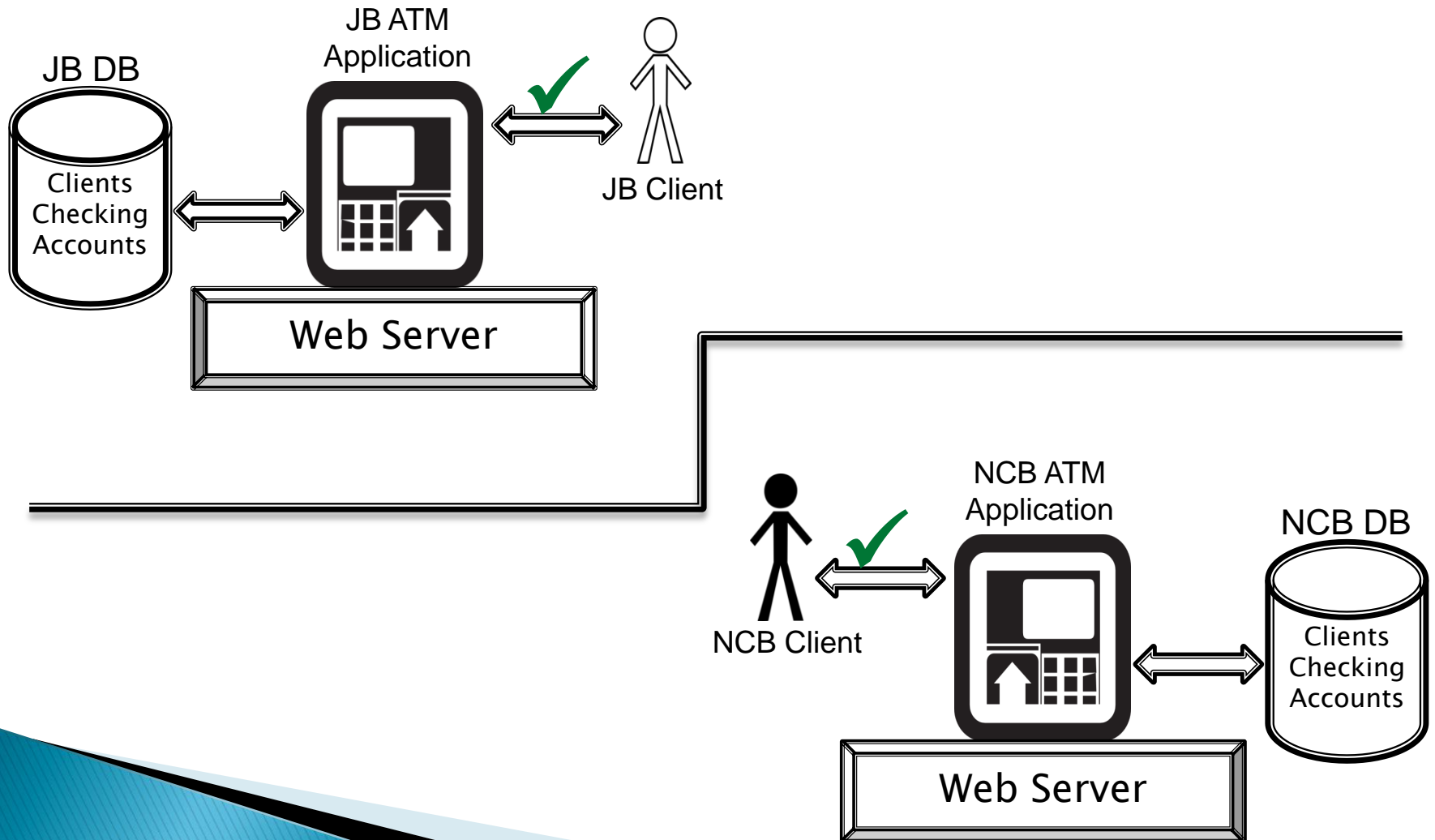
World Wide Web (www)



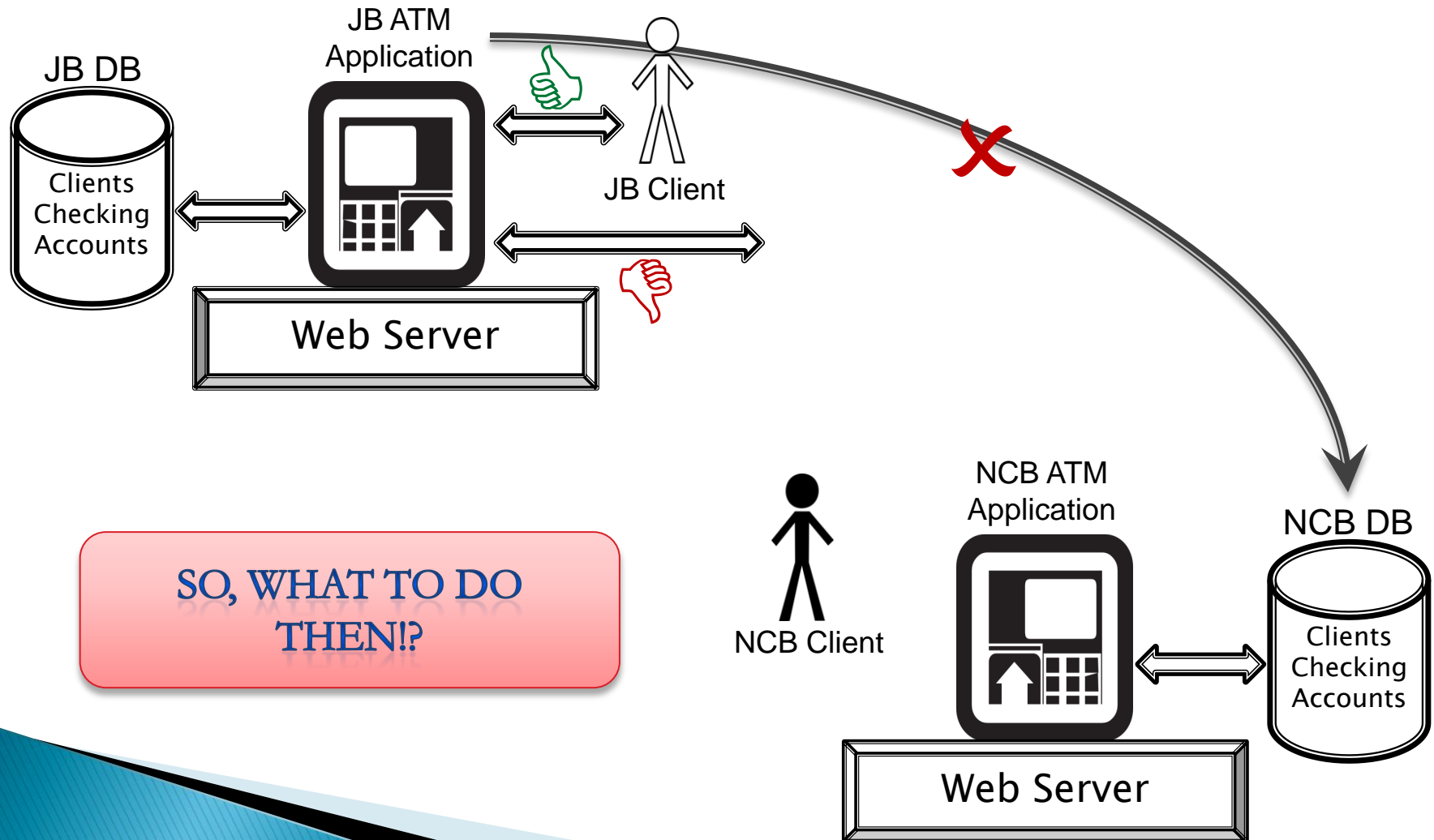
A Simple ATM Application



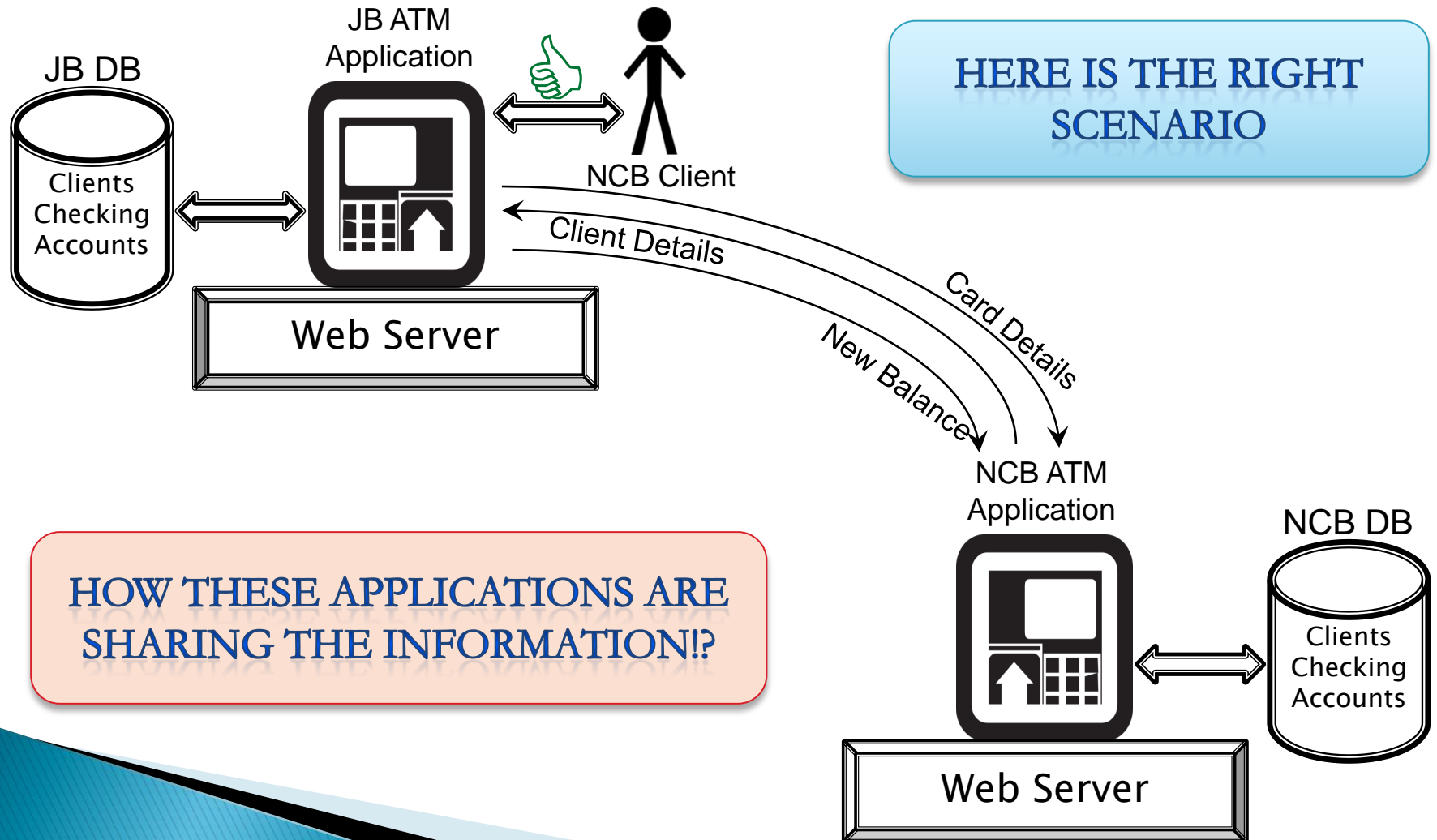
Two Banks Example



Using other Bank's ATM (direct connection)



Using other Bank's ATM (indirect connection)



The Answer is:

using
Web Services

▶ **Definition:**

- A web service is a service offered by an electronic device to another electronic device, communicating with each other via the World Wide Web.
- [On w3.org,] A web service is a software system designed to support interoperable machine-to-machine interaction over a network.

Web vs Programmable Web

- ▶ **The Web you use is full of data:** book information, opinions, prices, arrival times, messages, photographs, and miscellaneous junk. It's full of *services*: *search engines*, online stores, weblogs, wikis, calculators, and games.
- ▶ Rather than installing all this data and all these programs on your own computer, you install one program (a web browser) and access the data and services through it.

Web vs Programmable Web

- ▶ **The programmable web is not necessarily for human consumption:** its data is intended as input to a software program that does something amazing.
- ▶ The main difference is that instead of arranging its data in attractive HTML pages with banner ads and cute pastel logos, the programmable web usually serves XML documents.

Book: RESTful Web Services-O'Reilly, 2007

Communication & Standards

- ▶ **Another Definition:** A web service is a collection of open protocols and standards used for exchanging data between applications or systems.
- ▶ Any reliable communication is dependent on a shared language (set of vocabularies and grammar rules).
- ▶ Because web services deals with inter-organization communication, they must be built based on universal standards.
- ▶ Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer.

Basic Terminology and Standards

- ▶ **WS: Web Service**
- ▶ **WSDL: Web Service Definition Language**
- ▶ **SOAP: Simple Object Access Protocol**
- ▶ **XML: eXtensible Markup Language**
- ▶ **UDDI: Universal Description, Discovery, and Integration**
- ▶ **API: Application Programming Interface**
- ▶ **REST: REpresentational State Transfer**
- ▶ **JSON: JavaScript Object Notation**
- ▶ **SOA: Service Oriented Architecture**

Web Service Architecture

▶ The three major roles:

- Service Provider
- Service Registry
- Service Consumer

▶ The three major operations:

- Publishing: making services available
- Finding: locating web services
- Binding: using web services

Web Service Architecture

