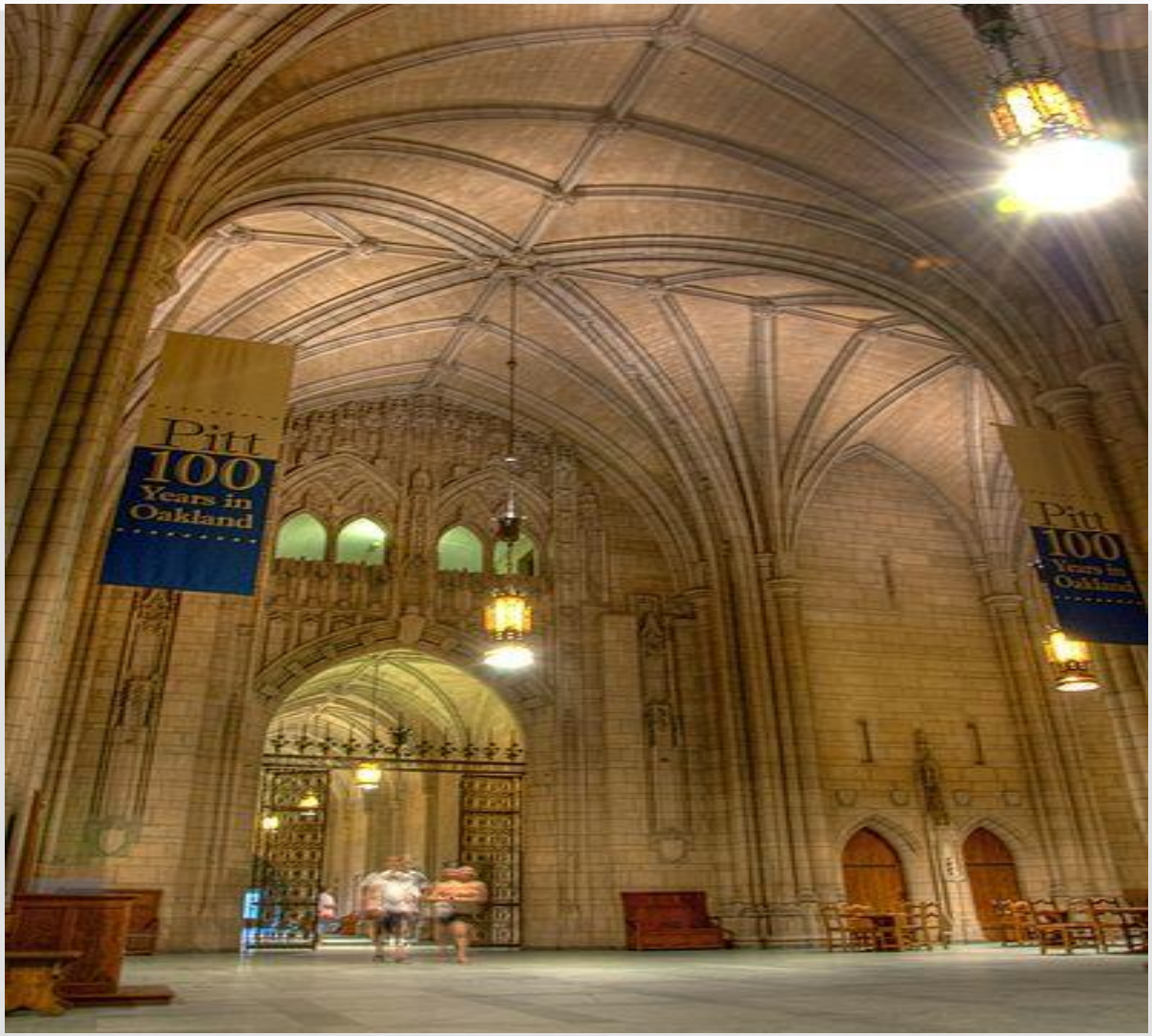
SERVICE ORIENTED ARCHITECTURE

THANKS TO ALL THE SOURCES FROM WHICH THESE SLIDES ARE PREPARED.

THANK YOU VERY MUCH!

ARCHITECTURE

WHAT IS ARCHITECTURE?



Victorian Gothic or Neo-Gothic architecture

Victorian Free Classical style

Adelaide Town Hall

ARCHITECTURE

- Architecture implies a consistent and coherent design approach. Essential principles include:
- Consistency: The same challenges should be addressed in a uniform way.
- Reliability: The structures created must be fit to purpose and meet the demands for which they are designed.
- Extensibility: A design must provide a framework that can be expanded in ways both foreseen and unforeseen.
- Scalability: The implementation must be capable of being scaled to accommodate increasing load by adding hardware to the solution.

SERVICES

WHAT ARE SERVICES?

- Black-box components with well-defined interfaces
  - Performs some arbitrary function
  - Can be implemented in myriad ways
- Accessed using well-known message exchange patterns.

CHARACTERISTICS OF SERVICE

- Service- a software component accessed via a network
- Services defined by well-published interfaces
- Services are loosely coupled and promote location transparency
- Services encapsulate reusable business services
- They communicate with each other via messages passing

WHAT CAN SERVICES DO?

- Perform business logic
- Transform data
- Route messages
- Query databases
- Apply business policy
- Handle business exceptions
- Prepare information for use by a user interface
- Orchestrate conversations between multiple services

HOW ARE SERVICES IMPLEMENTED?

- Enterprise JavaBeans™ (EJB™) technology
- BPEL
- XSLT
- SQL
- Business rules
- Mainframe transaction
- EDI transform
- Humans (yes, really!)
- …

SOA

SERVICE ORIENTED ARCHITECTURE

- A style of building reliable distributed systems
- SOA delivers functionalities as services emphasizing loose coupling between interacting services

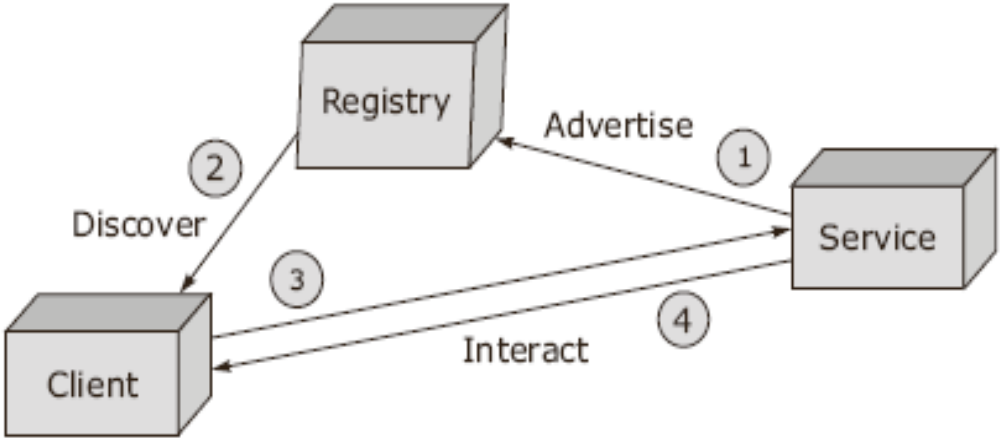


Figure 13-14 Service interaction cycle

SOA DEFINED

- "SOA is the architectural style that supports loosely coupled services to enable business flexibility in an interoperable, technology agnostic manner. SOA consists of a composite set of business-aligned services that support a flexible and dynamically re-configurable end-to-end business process realization using interface-based service descriptions." From a paper by Borges, Holley and Arsanjani.

WHY IS SOA DIFFERENT?

(1) Terminology: Both IT people and business people know what a service is.

(2) Interoperability: The interfaces and the wire protocols are based on standards.

(3) Extension and Evolution not rip and replace.

(4) Reuse of both functionality and machine resources.

OVERVIEW OF SOA

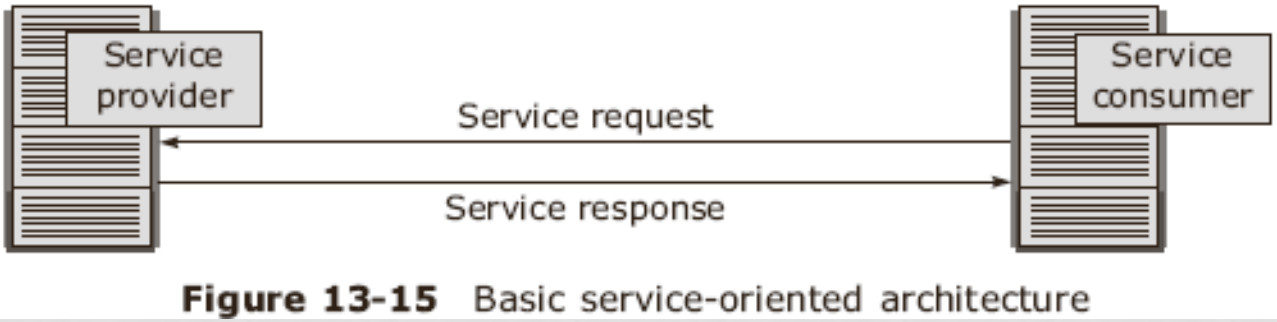
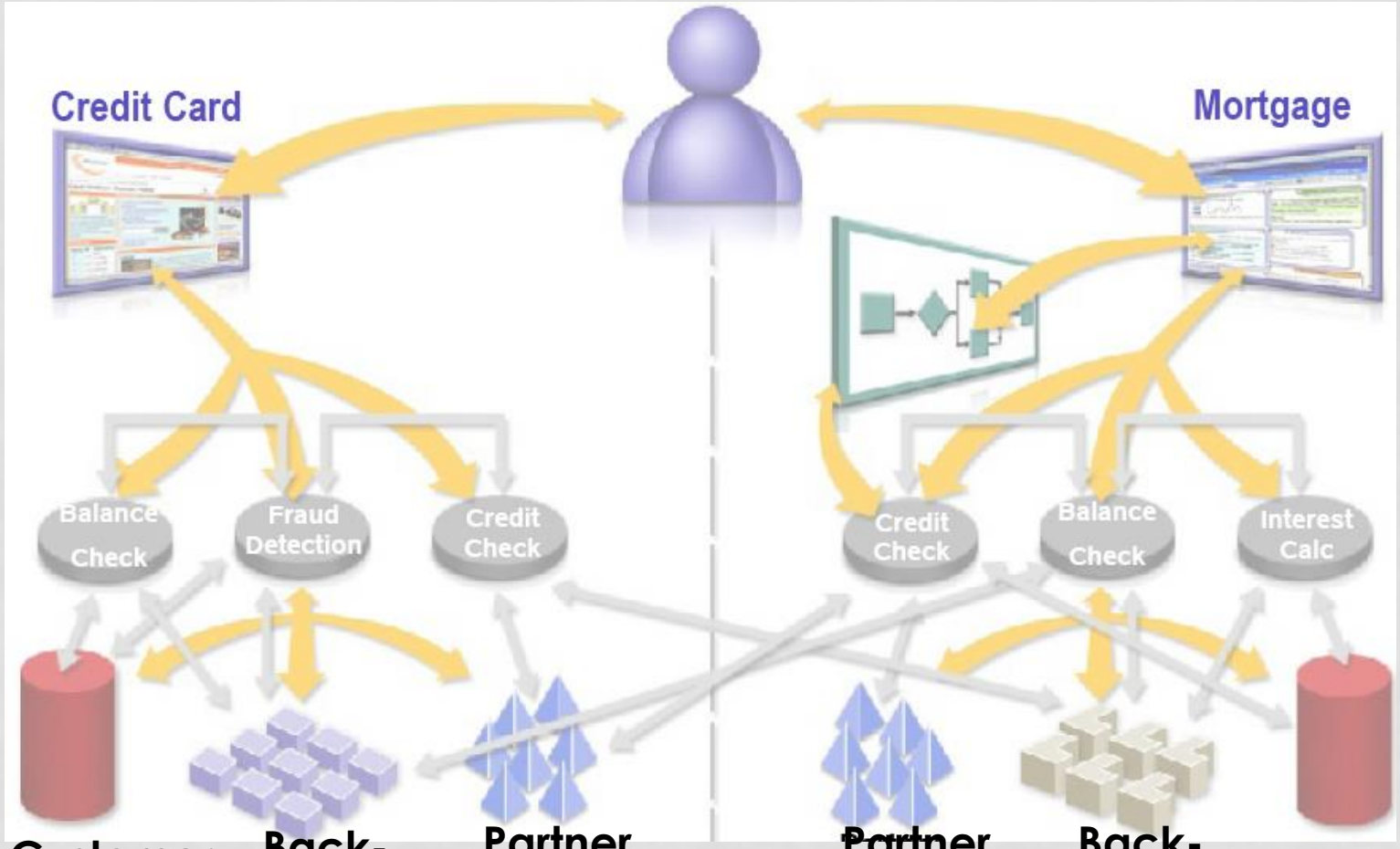


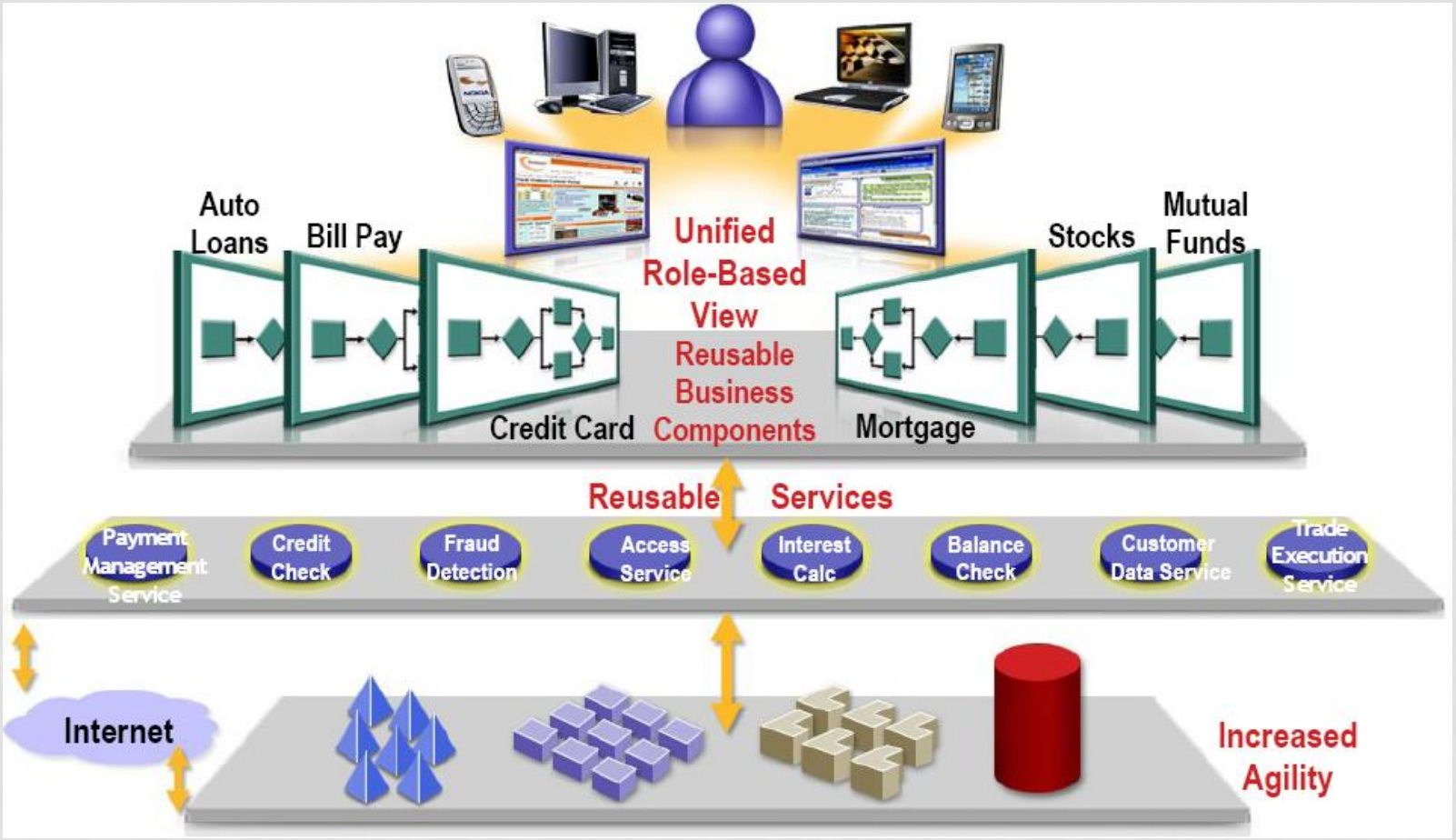
Figure 13-15 Basic service-oriented architecture

- Services are natural building blocks allowing to organize capabilities naturally, similar to objects and components
- SOA consists of a service provider and service consumer that requested a service
- Loose coupling is closely associated with SOA
- Its benefits are: flexibility, scalability, replacability and fault tolerance

PRE-SOA SCENARIO

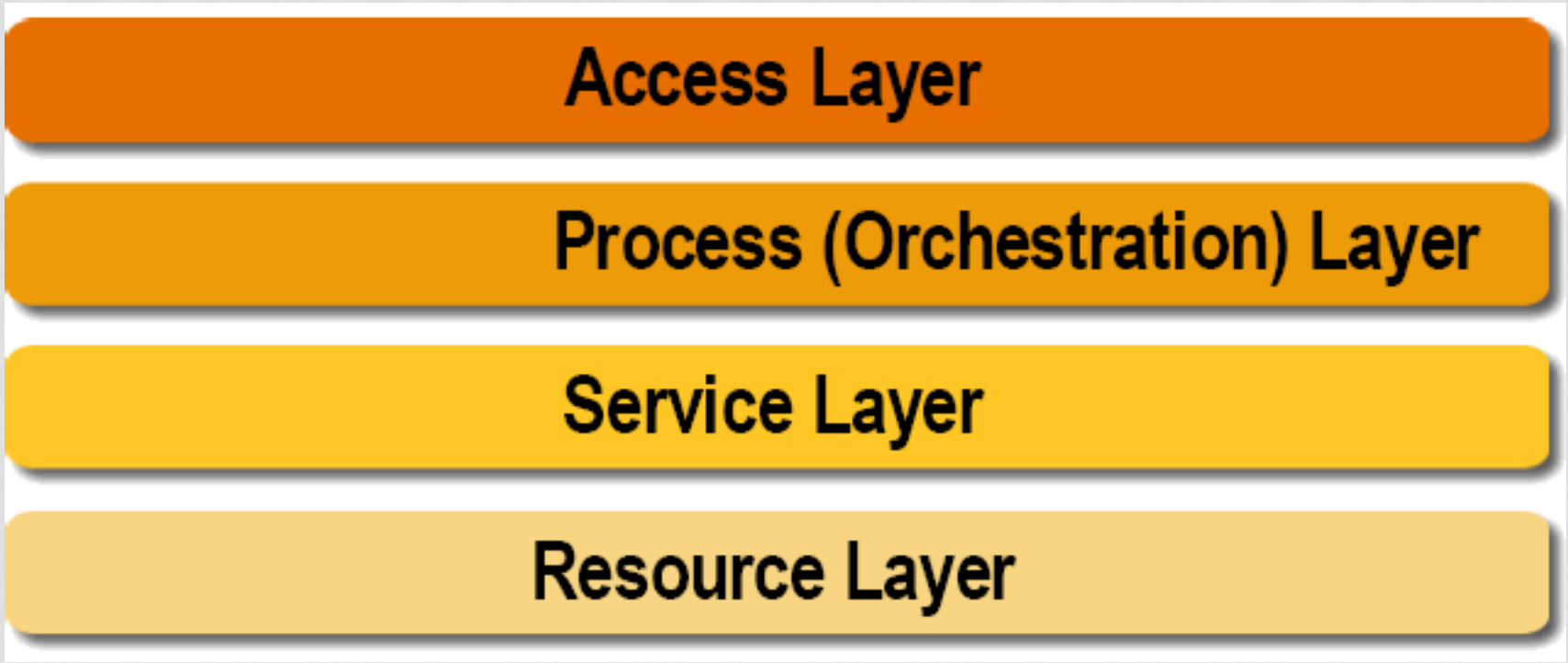


SOA-ENABLED SCENARIO



SOA LAYERS

- Shared Network-based **Layered** Services



BENEFITS OF SOA

- Flexible (Agile) IT
  - Adaptable to changing business needs
- Faster time to market
  - Reuse existing code, minimize new development
- Business and process-driven
  - New business opportunities
- Greater ROI
  - Leverage existing IT asset

SOA AND WEB SERVICES

- XML (eXtensible Markup Language)
- SOAP (Simple Object Access Protocol)
- WDSL (Web Services Description Language)

HTTP and HTTPS are ubiquitous and do not raise issues of firewall traversal

THANKS