

Migration Strategies

- Migration: when to do it and when not to
- Data migration
- Application migration
- Complete system migration -- mainframe unplugs
- Migration gateways

Amjad Umar

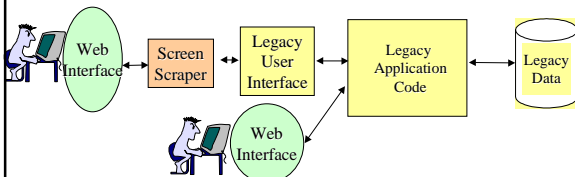
Migration

- Gradual migration of legacy applications may be needed for:
 - Long range, high business value applications.
 - Support of highly growth-oriented business processes.
- Migrations must be managed carefully:
 - Long range investments.
 - Risks involved.
- Rule of thumb:
Life cycle of the REASON for migration should be longer than the life cycle of the migration itself.
- Several approaches to gradual migration:
 - User interface migration (user interface reengineering).
 - Data migration (data reengineering).
 - Complete application migration (application reengineering).
 - System migrations (mainframe unplugs).

Copyright (A. Umar) 2002

User Interface Engineering

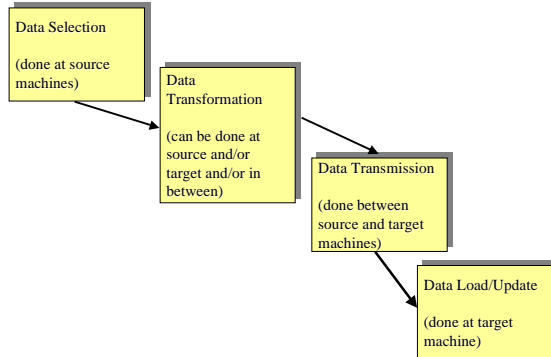
- Extends the useful life of a legacy app.
- Known as "face-lift."
- Common approaches:
 - "Wrap" legacy user interface with screen scraper.
 - Replace legacy user interface with GUI.



- Trade-offs in performance, time and cost to implement.

Copyright (A. Umar) 2002

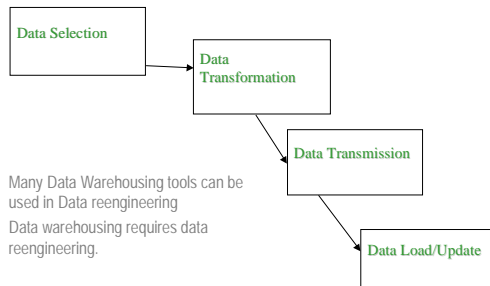
Data Extraction/Load



Copyright (A. Umar) 2002

Data Reengineering

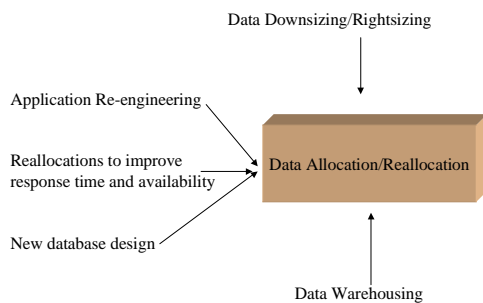
- Data is moved from one platform to another, usually after conversion.



- Many Data Warehousing tools can be used in Data reengineering
- Data warehousing requires data reengineering.

Copyright (A. Umar) 2002

Data Allocation/Reallocation



Copyright (A. Umar) 2002

Application Reengineering

- Complete application is re-architected and gradually migrated.
- Challenge: keep dual systems in operation.
- General Steps for re-architecture and Migration:
 - Choose parts (p1, p2, pn) of the legacy application (user interfaces are usually chosen first).
 - Migrate these parts to the target (future) application.
 - Use a “migration gateway” to mediate between legacy application and the target application.
 - Use this process iteratively until the entire application has been migrated.

Copyright (A. Umar) 2002

LEGACY APPLICATION MIGRATION STEPS [Brodie 1995]

Legacy application decomposition:

1. Incrementally analyze the legacy application.
2. Incrementally decompose the legacy application structure.

Target application design:

3. Incrementally design the target application interfaces (user, foreign application)
4. Incrementally design the target application code.
5. Incrementally design the target database.

Target environment installation:

6. Incrementally install the target environment.
7. Incrementally create and install the migration gateway.

Legacy application migration:

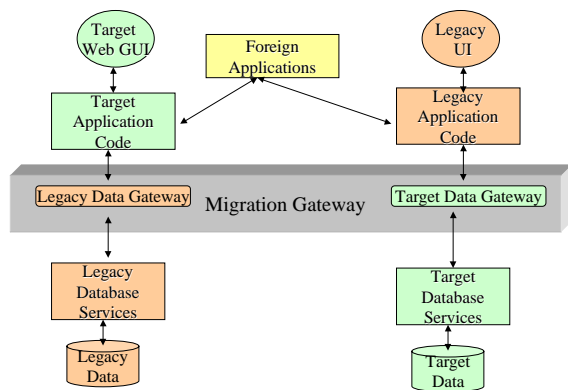
8. Incrementally migrate the legacy database.
9. Incrementally migrate the legacy application code.
10. Incrementally migrate the legacy interfaces.

Cutover:

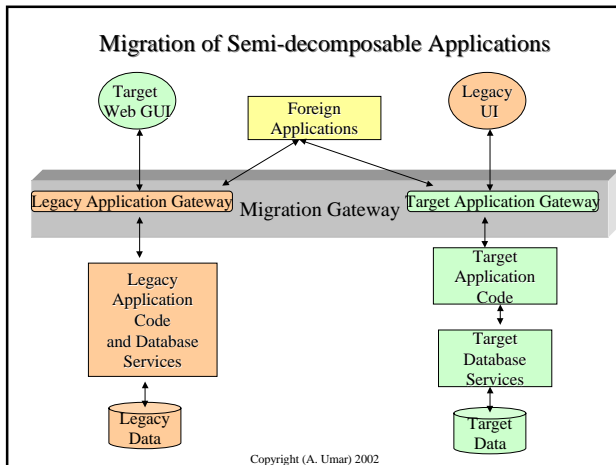
11. Incrementally cutover to the target application.

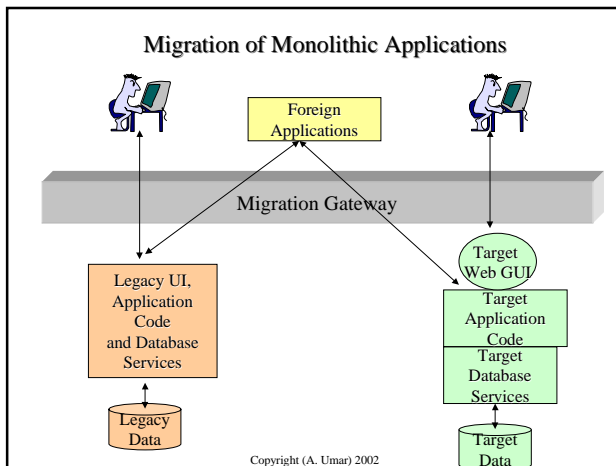
Copyright (A. Umar) 2002

Migration of Decomposable Applications



Copyright (A. Umar) 2002

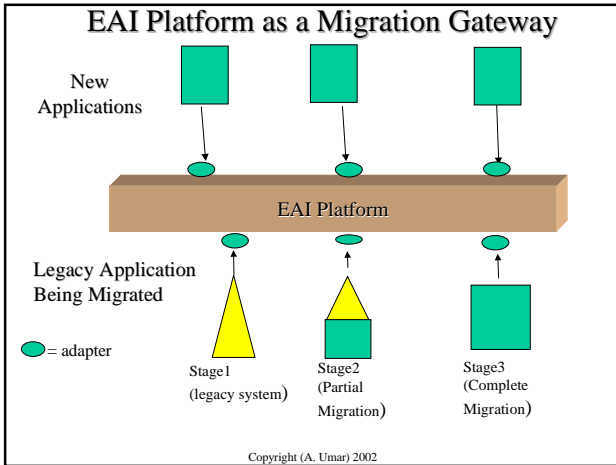


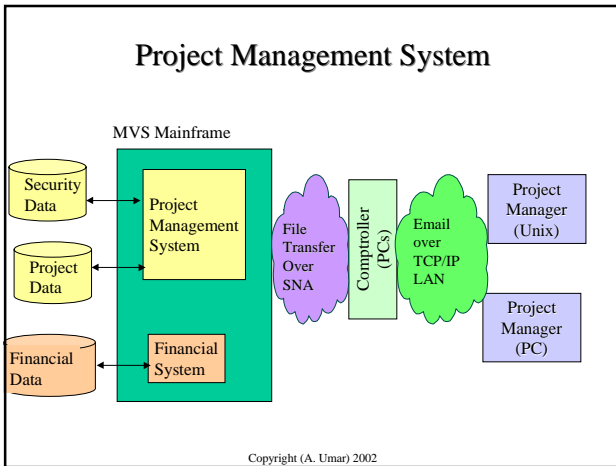


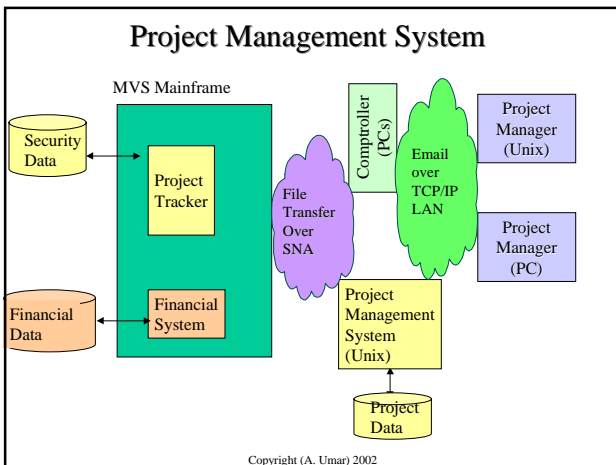
Application Reengineering

- It is easier to migrate well structured (decomposable) applications.
- Migration gateways play a key role.
- Hide the migration details from end users.
- Enterprise Application integration platforms (mediators) can also serve as migration gateways.

Copyright (A. Umar) 2002







Reverse Engineering

- Discover design and specifications from source code
- Information is represented as data flow diagrams, flow charts, etc.
- Should be able to add value by discovering objects
- Several case tools and approaches
 - Generate call graphs (e.g., Graphical Designer, CIA, cflow)
 - Program slicers for decomposing programs
 - Domain specific approaches (e.g., finance)
 - Concept understanding for design patterns
 - Object discovery (many research prototypes)
 - Others

Copyright (A. Umar) 2002

Application Re-hosting (Mainframe Unplugs)

- All applications from an older machine may be migrated ("mainframe unplugs")
- Motivated by:
 - Costs of mainframe
 - Applications too closely tied to each other
- Rarely successful due to effort
- Example: Moving all financial apps from mainframe to Unix or Windows NT

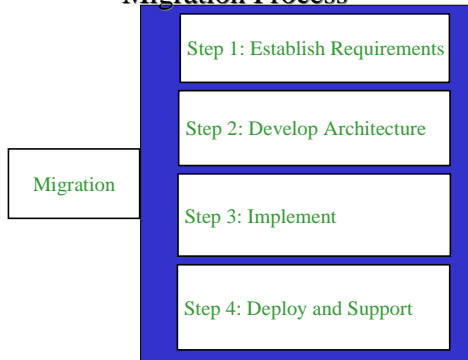
Copyright (A. Umar) 2002

Impact Matrix For Migration

	Legacy App 1	Legacy App2	Legacy App3
Business Processes Impacted			
New Applications Impacted			
End User Tools Impacted			
Databases Impacted			

Copyright (A. Umar) 2002

Migration Process



Copyright (A. Umar) 2002
