Legacy Applications Modernization
Step by Step

About the Company

MainTrend

- Founded in 2002
- Unites high-level information technology and organization architecture professionals.
- Areas of specialization:
  - Legacy modernization from Oracle Rally to Java (Enterprise Edition) environment
  - Legacy modernization from Sybase PowerBuilder to JEE or .NET environments
  - Borland Delphi modernization to JEE environment
  - Oracle PL/SQL to Java modernization
  - Legacy environments
  - Architecture, Foundations, Database and Application development in Java and .NET environments
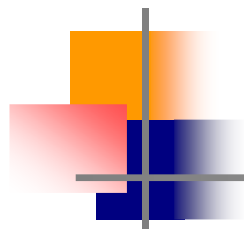
Relevant Projects

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Duke Energy

A large U. S. power corporation

Departamento de la Familia

A large U.S. government agency

Ministry of Industry, Trade & Labor
משרד התעשייה, המסחר והתעסוקה

A large Israel government agency

Partners

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Modernization

Rewriting from scratch

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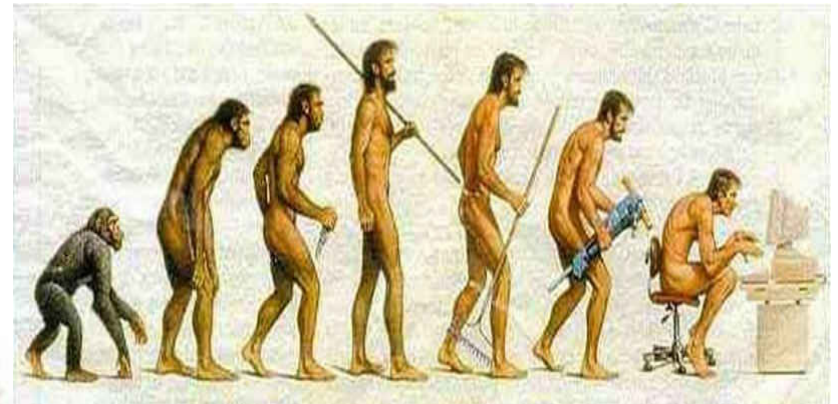
- Very expensive and cost-ineffective

- Long "time-to-production" cycle

- Wasting of resources for maintaining of the existing application during the long development of the new one.

- Risky in terms of budget, time and functionality

"Legacy code" often differs from its suggested alternative by actually working and scaling.
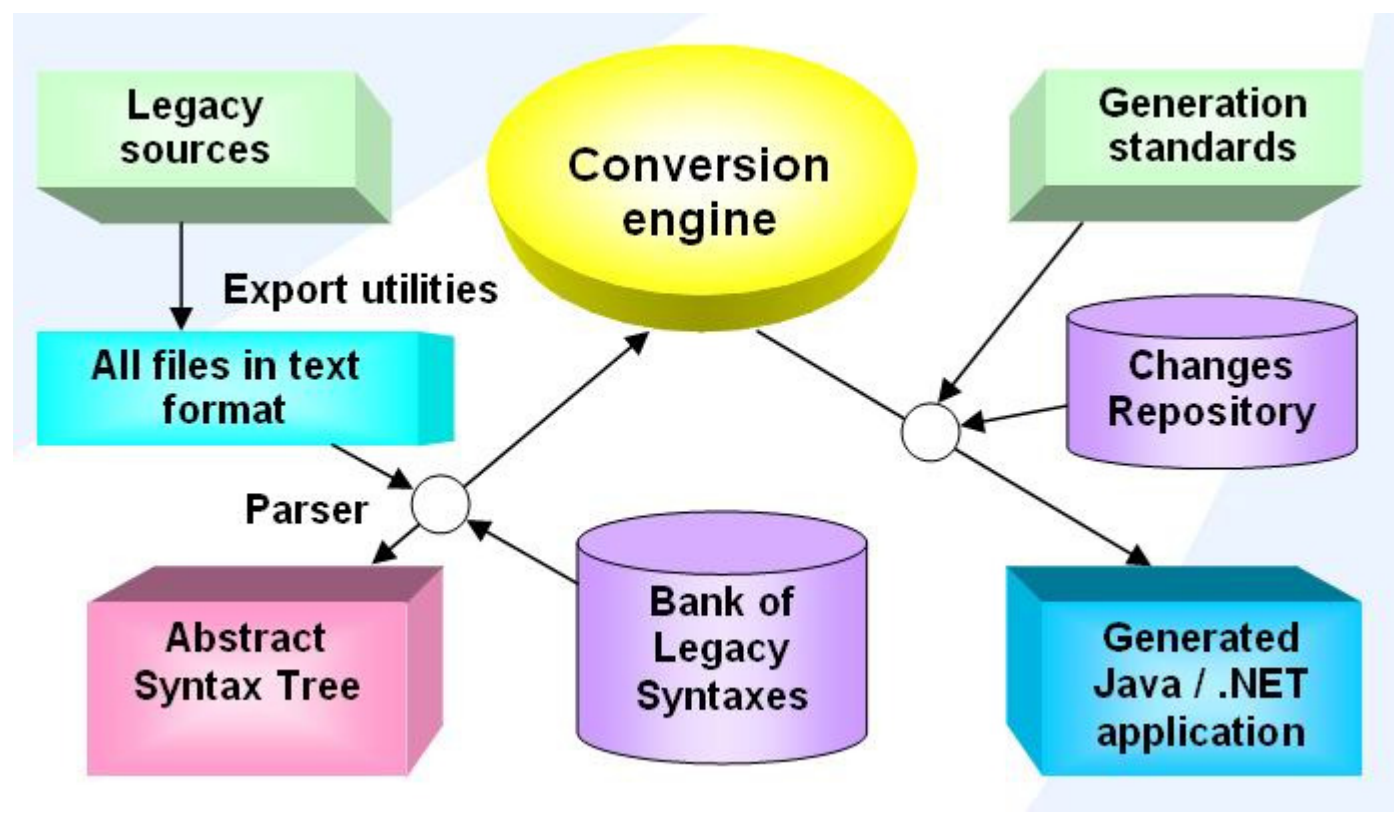   Bjarne Stroustrup, the father of C++
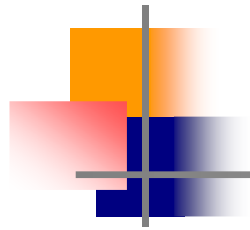
Automated Modernization

- The existing application logic is automatically preserved
- Low risks in terms of the project scope and schedule
- Easier deployment and shorter end-user learning curve
- You always can go back
- Maximum use of the existing manpower
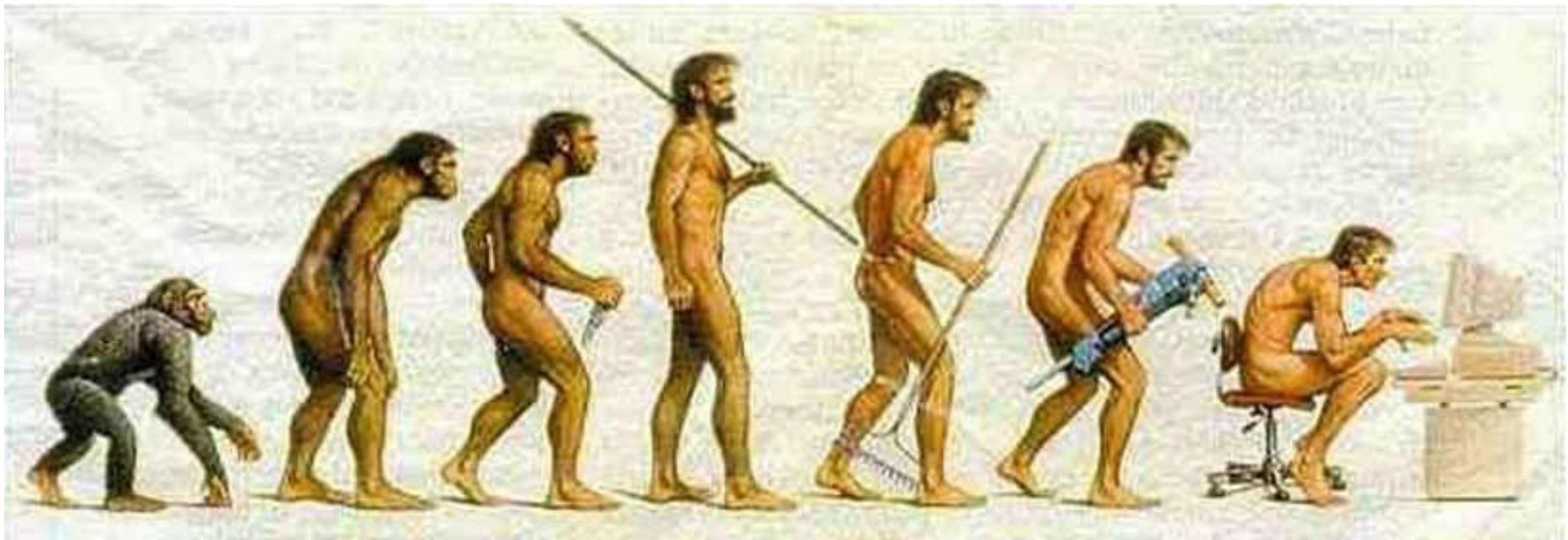
Modernization Process: Steps

1. Learning the Application and the Environment

Objective
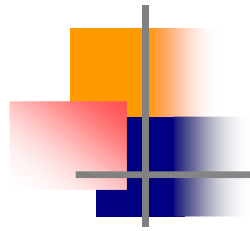
Understanding the application and its environment.

Process

Learning the application.
Obtaining the source code.
Identifying exceptions.
Mapping external interfaces.
Understanding the target environment.

Schedule

About three weeks for a medium-size application

Deliverables

Draft version of the System Architecture (S.A.) for the application.
Application sizing and modernization project estimations
Target platform and "modernization feasibility" recommendations

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Objective

Preparation of the original application for the conversion.

Process

System integrity checks.

Building walkthrough scenarios (by the client) - scenarios "how an end-user works with the application".

Identifying failures.

Application fixing (if required), or documenting for after-conversion fixes.
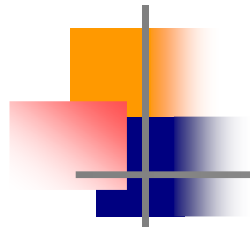
Schedule

About a month, depending on the application and the client availability.

Deliverables

Cleaned application

Bug report + fixes plan

Walkthrough scenarios (by the client), approved by MainTrend

MainTrend

Objective

Extracting of all the objects from the binary form to text files.

Process

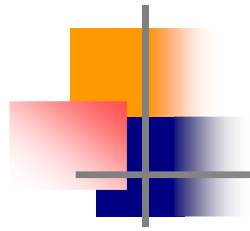Application consolidation.
Duplicates identifying.
Export of all the objects to text files.

Schedule

Less than a week.

Deliverables

Plain text source files for all the objects (correct versions).

Objective

Preparation of the intermediate files, required for the code generation step

Process

Parsing of the code of all the objects and building the abstract syntax tree and the dictionary for the application.

Managing relationships and inheritances.
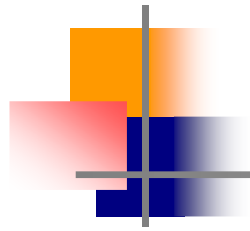
Deleting unnecessary objects.

Schedule

From a week to two weeks.

Deliverables

Abstract syntax tree for the application (xml files)

Application dictionary (xml file)

The second version of the S.A. document

Objective

Producing of the code according to the target environment.

Process

Automatic generation of the destination code.
First fixes according to the S.A.
Manual completion for exceptional objects (e.g. OLE).

Schedule

Defined in the S.A. depending on the size and complexity of the
application.

Deliverables

Application code migrated to the target environment.
A third version of the S.A. document.

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Objective

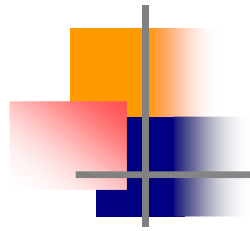UT environment building.
Performing of the unit tests.

Process

Preparation of the UT environment at the customer premises (servers, required software, test database etc.).
Linking the unit test application to the test database.
Installation of the UT application in the UT environment.
Performing of the unit tests.

Schedule

Defined in the S.A. depending on the size and complexity of the application, and on the availability of the customer.

Deliverables

UT environment installed at the customer premises
UT report

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Objective

In case the database platform is changed – to have the production database migrated to the new platform.

Process

Database metadata and database data migration.

Building reports for the application changes required in response of the database changes

Preparation of production servers and related software.
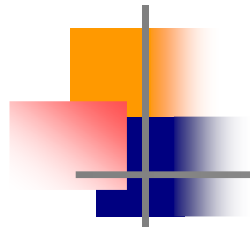
Tests and the database fine tuning.

Schedule

Defined in the S.A. depending on the size and complexity of the application, and on the availability of the customer.

Deliverables

Complete and working database.

Report of the performed database changes.

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Objective

Building of interfaces and links to external systems.
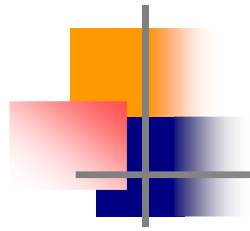Integration of all the application parts.

Process

Changes to match the new database structure.
Adjustments to the operating system.
Building interfaces to external systems.
Building and linking of external objects.
Making the integration of all the parts of the system

Schedule

Defined in the S.A. depending on the size and complexity of the application, and on the availability of the customer.

Deliverables

Customized application connected to external objects.

Objective

Integration tests including end-users involvement.

Process

Performed as a "Test and fix" cycle.

Performed in cooperation with the customer's end-users according to the walkthrough scenarios prepared in the second step.

Schedule

Defined in the S.A. depending on the size and complexity of the application, and on the availability of the customer.

Deliverables

Verified customized application connected to external objects.

10. Web-environment adaptation

Objective

Making adjustments to the thin-client browser-based environment.

Process

Adjustment of the web forms according to S.A.

Adjustment to the size limits to get the desired response times.

Fixes and adjustments which are found needed during the process.

Schedule

Defined in the S.A. depending on the size and complexity of the application, about a month for a medium-size application.

Deliverables

The application ready for the user acceptance test.

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Objective

Acceptance and moving to production.

Process

User acceptance tests.
Finishing of all the needed installations in the production environment.
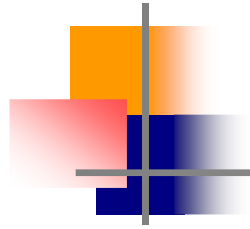Moving to production.
Training for the end-users.
Training for the client's developers.

Schedule

Defined in the S.A. depending on the size and complexity of the application, and on the availability of the customer.

Deliverables

The modernized application working in the production environment.

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Thank you