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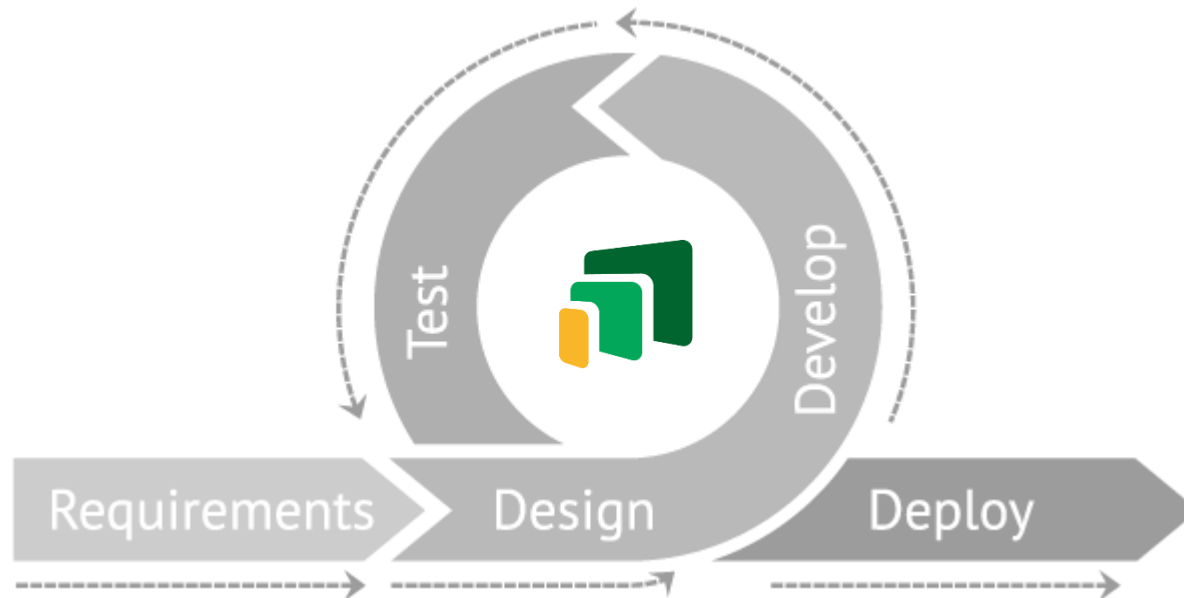
CASE STUDY

Polyglot programming

Case Study: Polyglot programming



Software architecture and implementation



Comprehend the Client

Profound understanding of client's business environment and goals.



Goal

Identification of all the problems, cause and requirements.



Solution

Designed with innovative thinking and extensive experience in SW engineering.



Results

Optimize for success. More efficient and effective usage of resources.

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Comprehend Client

Profound understanding of client's business environment and goals.

Technology

Multinational semiconductor company

One of the biggest semiconductor company in the world with a great history of designing and manufacturing integrated circuits.

An innovative thinker and solution provider in numerous industries, with key focus on empowering the society of future.

Client successfully delivers wide range of solutions from analog to embedded silicon chips making an impact in technologies we encounter on daily basis.



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Goal

Identification of all the problems, cause and requirements.

Big picture

Expertise in software architecture

The client's end goal is to develop new desktop application from scratch based on the best functionalities of the two legacy applications which was not maintained for a while. One legacy application was web based and the other one was desktop application.

Since the application needed to be developed from scratch to fit very specific customer's needs it was necessary to comprehend big picture as best as possible, perform requirement analysis, perform feasibility study, plan the basic project approach and create a blueprint of the software architecture.

The application will be used by hundreds of client's engineers on daily basis and will improve client's productivity by saving hours of work for each engineer.



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Solution

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Investigation

Understand business needs and propose solution

First task was to pick the most essential set of functionalities with highest added values for the proof of the concept and propose software architecture and technology stack:

Steps taken:

- determined most essential set of functionalities with highest added values and organize them by priorities
- proposed technology stack based on customer's environment, communication between software components and available human resources and their expertise



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Implementation

Technology stack

Technology stack :

- IDEs: PyCharm Professional (Cython integration, remote development)
- SCM: SVN, Bugzilla (to be replaced with Jira and Bitbucket)
- GUI Framework: PyQt
- Languages: Python, Cython, C, bash, CSS, skill, Perl
- Methodologies: AGILE



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Solution

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Implementation

Model/Controller and Model/View(/Delegate) combined

Separated the application architecture into three main parts:

- Business logic (“backend”) written in Python composed of Cython Adapter (sets of C-functions exposed to Python using Cython) and API that manipulates data streams, performs verification, validation and requested actions and returns output data.
- Proprietary customer specific part that is responsible to generate JSON files using skill and Perl and to translate the JSON files into agreed data structure(s), using Python, consumed by API.
- GUI (“frontend”) written in Python using PyQt Framework that communicates with API using an interface.

API is flexible, thus, it is possible to replace the PyQt with any other GUI framework easily.

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Solution

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SCM and CI Support

Development of core services

- Developed proof of the concept.
- Tested the feasibility of the project (performance and functionality).
- Developed prototype that showed the basic functionalities. The architecture is modular and allows extensions of the functionality at a later stage without much effort.
- Created pipelines for building, deploying and testing the application.
- Applied tools for usage metrics.
- Maintenance of existing functionalities and implementing new functionalities based on the client's requests.
- Wrote the documentation based on the functional requirements provided by client.

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Results

Optimize for success. More efficient and effective usage of resources.

SW Engineering

Development of core services

- Started with a backlog with desired functionalities based on the deprecated but very useful applications.
- Developed modern, scalable and maintainable architecture.
- Software implemented and delivered on time.
- Transparent collaboration empowered with excellent communication
- Thorough understanding of client's processes and our wish to upgrade the work environment raised our partnership to a whole new level.
- 2+ years of successful collaboration



LET'S CONNECT!

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*Where passion
leads to excellence*

ABOUT US

AVISTO Eastern Europe

AVISTO Eastern Europe is a service provider that focuses on empowering Industrial automation and Semiconductor projects by offering tailored made solutions in areas of Embedded Systems, Test Automation, Application Software and DevOps.

Established in 2007, AVISTO currently operates three design centers in Serbia and boasts a strong network of experienced engineers empowered by high level of technical adaptability to meet the specific requirements and demands of clients' projects.

As a French company and a member of the Advans Group, which comprises over 1000 engineers, AVISTO can deliver comprehensive product-based development support to clients at the enterprise level.

THANK YOU

