

Software Development

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Abstract: The paper is aimed towards research on software development. The paper covers introduction, trends, opportunities, problems along with solutions to these problems and concluding part. Software development is gaining importance in contemporary world and it is crucial to study its growing trends to cope up with readily advancing world. The purpose is to explore software development in different contexts. The material for research has been collected from books, articles and Internet.

Introduction

Software Development is computer programming, documenting, testing and bug fixing that is engaged in generating, preserving applications and frameworks needed in software release life cycle and consequently giving outcome in the form of software product. The term of software development refers to procedure of writing and maintaining source code, and if it is considered in broader terms it includes all that is engaged in between the outset of the wanted software to the final outcome of that software in a properly planned procedure.

Software development may have research, new development prototyping, modification, maintenance, reuse, reengineering, or any other processes that result in software products.

Software can be developed for a number of reasons, the three main reasons include: to meet specific demands of a specific client or business (custom software), to meet the perceived demand of few set of potential users (commercial and open source software) and for personal usage. (Scientist may write software for the purpose of automating an ordinary chore) (Cockburn, 2001)

Trends

There have been a number of trends in year 2014 due to the emergence of new computing advancements built on safe podium of mobile, social, cloud and big data capacities that is influencing business models and procedures. Keeping pace with new advancements and challenges is crucial and for that trends are introduced. Some of which are mentioned below:

1. **Innovation for the "third platform":**
Development on third platform has gain speed in the year 2014. It needed new skills in security, social, cloud, mobile, big data/analytics, IoT, HCL, gamification and cognitive computing.
2. **Usage of APIs Accelerates:**
A huge progress in seen in how APIs are placed to use to drive innovation and

make organizations more effectual and profit gaining.

3. **Designing for Hybrids:**
Developers should design private cloud services with a hybrid future vision. Future integration and interoperability shall be made possible while securing the enterprise meanwhile too.
4. **IoT and Embedded Systems:**
Need for skilled and trained developers so they can develop sense and respond to systems and other IoT based solutions too.
5. **Securing of the enterprise:**
Due to the arrival of distributed systems, mobile, IoT etc, protection has reduced making attack surface great. So there is need to secure the enterprise by the help of developers.
6. **Software defined everything:**
In the year 2014, enterprises and service providers have posed clear definitions.
7. **Application Containers:**
Containerizing and virtualizing the application is the next big trend. (Schuster, 2013)
8. **DevOps Adoption increases:**
DevOps requires cultural change including more collaboration more than just automating deployments.
9. **Integrating front and back office:**
Increasing of integration is needed between back office IT and operations.
10. **Open trend continues:**
Open standards, openflow, open source, openstack, open compute and open data.
11. **Hack days:**
It is also becoming popular every day.
12. **Hadoop:**
Hadoop ecosystem is growing too.
13. **HTML5 Growth:**
With more advancement more understanding of advantages of HTML5 has developed.
14. **Secure enterprise mobile apps:**

Developers require rolling out more protected options to famous mobile apps.

15. **Application performance management:**
Control over underperforming application environments is also a trend relevant to the study.
16. **Consumerization:**
There is need to have a check over what is being developed for consumers by developers.
17. **Crowd sourcing/ funding:**
It is also one of the trends in software development about crowd sourced and crowd funded new projects.
18. **Skills in demand:**
Developers who have deep cloud, big data/analytics, mobile and security development skills are in demand. (Chamberlin, 2014)

Opportunities

Software development provides a great variety of opportunities. It provides with a platform for innovation and creation in the contemporary world of technological advancements along with assisting communities to look into better future. In the perspective of career, it provides number of jobs as developer platforms lead, development managers, software engineers, IT product managers, and many other relevant jobs in all business systems and at all levels of management. This makes it vivid that software development is a field one can pursue to excel as it has a huge amount of opportunities to offer. (Lyons, 2014)

Problems

There are certain problems associated with software development.

1. **Requirements Gathering:**
A popular notion is garbage in garbage out. Any design is perfect to the extent of the correctness of the requirements. If requirements are not proper results will not be according to the expectations. This causes problems. Also, when requirements are unclear, unfinished and very general problems arise.
2. **Planning and Estimation:**
Usually estimations made about the cost and duration of projects is quite optimistic that results in overspending and much limited time to the market. This causes frustration from management too that ultimately alters the smooth processes.

Planning lacking proper management of workload and time also causes problems.

3. **Development:**
Some times in order to develop, and bring change problems may arise, requirements can change and cost and benefit can go wrong.
4. **Testing:**
Bug free software doesn't exist. The bugs are a big problem when it comes to software development. No one will have any clue about whether a program is good or not until ^{customer} complaints about it or system crashes.
5. **Collaboration:**
Project management and multi user development are major key procedures that require a lot of consideration. Also miscommunication between developers and costumers causes issues.
6. **Deployment:**
Deployment is also one of the problems. (Schetsen, 2013)

Solutions

Problems can be solved when giving attention and are analysed to be abolished. Some of the solutions are recommended here:

1. **Proper Requirements:**
The requirements should be accurate, vivid, complete, and attainable and need to be agreed by all.
2. **Realistic schedules:**
Adequate scheduling for time of planning, designing, developing, testing, fixing the bugs and re-testing the documentation should be permitted.
3. **Adequate testing:**
Initiate the testing as soon as one or more modules develop, re-testing after making changes can reduce problems.
4. **Proper time management:**
Proper analysis and sufficient time should be given for testing, identifying and fixing of bugs. (Mogagheghi, 2004)
5. **Adherence to initial requirements:**
Be prepared to shield against any sort of changes.
6. **Use of rapid prototyping:**
Using fast prototyping during design phase, so customers can locate what to expect is also a solution to existing issues.
7. **Betterment in Communication:**
Walkthroughs and inspections can make communication channels better along with

employing tools like email, groupware etc.
(Okafor, 2011)

Conclusion

By analysing what software development is and what are its recent trends it gives a clear picture that software development needs to be studied to meet the upcoming new demands. Though there are many opportunities are being provided by software development a number of issues are also being faced that are and can be managed through proper steps which will eventually make the process of software development even better flawless. (Suggest 5 common solutions to software development problems, 2012) Whatever may the case be it will keep growing, trends will keep changing and evolution will be seen that requires study to redefine its current status and in all notions its effectiveness and crucial position in today's world cannot be undermined.

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