"Croud" an ideal blend with SoLoMo testing

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2. Executive Summary

Yesteryears brands communicated identical information to its customers in a monotonous tone. The key words of “Customization” and “Customerization” was nearly absent. Today the reach and customization possibilities provided by Social media and Mobile space have made organizations venture into these apertures in a broad based manner.

The integration of SoLoMo (Social, Local and Mobility) has enabled businesses to open newer and exciting avenues to engage with customers and deliver customized products/services. The world of social media consists of many apertures like blog, podcasts and pure social networks. Testing across these medium is equally complex and challenging. Mobility poses its own challenges with respect to the OS fragmentation, diverse mobile devices and varying network modes. Global roll out of products/services need to factor in the content translations and local cultural norms.

The paper proposes “Croud – Testing” an optimal blend of Crowd testing and Cloud infrastructure as a solution for Enterprises to address these challenges. It provides deep insights into the ability of Croud testing to engage resources and utilize test infrastructure ‘On-demand’ to deliver project engagements with operational and cost efficiencies.
3. **Introduction – Problem Statement**

**Case Study ABC**—“ABC Corporation has recently created a multi-mobile platform application which enables connectivity “all the time” to users. He can be connected through his mobile phone for personalized / localized information available on the native language and integrated with social media platform. ABC operates in 23 countries with 50 different languages and our platform incorporates these languages. We would need a vendor who can test across all these different devices and languages. And we need him to foolproof every patch upgrade provided by various mobile devices with a turnaround time of 72 hours.”

**Case Study XYZ**—“We at XYZ have created a system where voice is converted to text and is stored in our internal social network. Since we operate across geography we have created the text to be visible in user’s own language. We need a vendor who can validate the end to end quality of the medium and we need to go live in 10 days.”

These are typical SoLoMo projects that an IT service provider can expect in the near future. With the digital environment getting more diverse with exponential growth of the mobility, social mediums and the ability of the mediums to drive localized contents complicates the systems and their quality proofing mechanism.

The only possible solution would be the “on-demand cloud based solution which can address the above hypothetical situations. “The need for on-demand customized solutions will create the need for Organizations to be flexible and adaptive” – the above statement summarizes the need for the whitepaper. With more organizations creating customer friendly solutions across the Social, Mobile and having them Localized (SoLoMo), the testing solution from IT service provider should be of “On-demand and Crowd”

![Readiness to Scale up](image1)
![Instant ramp ups & downs](image2)
![On-demand Capability](image3)
![Ever changing Infrastructure requirements](image4)
![Need for diversely skilled resources](image5)

The need for mechanism to verify the quality of the medium is also equally crucial. Due to developments in SoLoMo domain, IT service providers will need to perform projects of the following nature

- Most of the social, mobile and localization testing projects would be user centric targeted for global users and will demand shorter turnaround time.
- With faster developments, enhancements and patches the projects would be of high frequency, incorporating every small change happening in sentiment and Social media.
- The natural need of most of the clients would be to look for vendors who can provide the services on-demand. This will provide twin benefits of lower cost eliminating ramp up costs and idle time costs as well as faster turnaround time.
- The organization would face huge losses in case of delay in providing these quality solutions.
• Also the applications have to be proofed across patch releases of mobile operating systems and social media

For Organizations, projects of these natures would increase the complexity of the delivery. Following are some of the core problems with projects of this nature:
• There would be a need to ramp-up the necessary skilled resources within 2-3 weeks’ time frame. This becomes and Herculean task in the current model and policies of work force management
• There would be need to create an execution infrastructure within 1 week. The current procurement and infrastructure provisioning policies of any IT service provider would not be able to deliver the infrastructure in such a short time frame.
• Managing varieties of mobile devices, heir operating systems, versioning, multiple browsers, connectivity options, network operators, and form factors is a costly and time consuming task.
• Identifying a resource who has good understanding of social media and training them on numerous social media apertures would be a painstaking task
• Localization testing would also demand identifying resources with skill sets in French, Mandarin, Hindi, Arabic, etc this would involve higher training, recruiting, retention and idle time costs.

Social (So) + Local (Lo) + Mobile (Mo)

Location based, Social powered, and accessible on Mobile
4. **Crowd Testing**

The proposed solution should address the complexities of the SoLoMo projects mentioned above. With the popularity wave of Cloud computing and Crowd sourcing, many organizations have adopted the Crowd testing phenomenon. Bug bounty programs of Google, Facebook etc. and Beta testing stand testimony to the power of Crowd testing. The pure-play players of Crowd testing like uTest etc are well established in executing projects involving open information and Crowd testing.

The expectation of most Organizations that data has to be secure prevents these models to be readily adopted. The cost benefits of Crowd testing are not realized by these organizations. There is a need for secured Crowd testing which would enable greater benefits. Crowd testing is a synergized process of leveraging Captive crowd within an enterprise and utilizing Secured Cloud infrastructure.

Captive crowd would be the resources within the enterprise distributed across different geo locations around the globe. Secured private Cloud infrastructure would host mobile devices (as well as desktop systems) which could be leveraged through 3rd party service providers such as Perfecto Mobile, Device Anywhere etc or through setting up your own cloud infrastructure.

Crowd is the next evolution of Crowd testing mechanism. Following details the synergy between Crowd and Cloud on how it can co-exist.

We performed Factor analysis by which we identified the crucial factors of success of these mediums:

<table>
<thead>
<tr>
<th>Continuous process improvement</th>
<th>Improving crowd information readiness of Organization</th>
<th>Create ready to use infrastructure provisioned on demand</th>
<th>Rewards and incentives mechanism</th>
<th>Addressing the appraisal myth</th>
</tr>
</thead>
</table>
and the strengths of different delivery mechanisms. By grouping the matching crucial factors with strengths of medium we were able to identify the synergy between Croud testing’s on demand based delivery mechanism and SoLoMo (Social, Mobile, and Localization) testing.

5. **Mechanism to take Croud forward**

5.1 **Continuous process improvement to optimize testing**

There is a need to improve our business processes to enable success of the Crowd testing model. We should create courses on consumer behavior, online behaviors and other related fields to associates. This would help improve our testers from simple technical quotient driven testing to consumer related testing. This is crucial for the SoLoMo Space.

5.2 **Improving crowd information readiness of Organization**

There is a need to integrate our various systems to deliver information about availability of projects on demand. We would have to Leverage the social media of the organizations to create awareness regarding on demand testing opportunities. The system would integrate with project billing infrastructure and other relevant platforms.

The current database of associates should also gather information regarding their current presence in different social media’s, their current mobile device configuration and their locations of travel. This would enable us to inform the associates about the availability of a short 20 minutes test case for projects on social media like mySpace. Hence widening the crowd and effectively utilizing them. Leverage the current social media of the organizations for gathering detailed information. The system should also make sure that the security aspects of client are not compromised as the testing would be performed by IT vendor’s employees.

5.3 **Create ready to use infrastructure provisioned on demand**

Some projects demand a specialized infrastructure to address testing needs. Crowd sourcing can leverage the various infrastructures available at Mobile testing, performance testing in an On-demand basis, and also create its own stock of infrastructure consisting of latest handsets having the latest technologies like Bluetooth testing, NFC testing, broadcast instruments. By Organizing and providing access to large pool of career-testers and best in class infrastructure we would be able to deliver high quality testing for the SoLoMo apertures.

Infrastructure could be extended to hosting desktop systems as well where testing tools (Test management, Automation and Performance tools) are deployed and can be accessed on-demand.

5.4 **Rewarding and Incentive mechanism**

Adequate rewards and accumulation of organizational reward points for every single activity performed by associate in crowd sourcing model would be a great pull for the crowd sourcing platform. All their expenses would have to be paid by cost + rewards
model this includes providing incentives to meet the expenses incurred by the resources like data usage charges etc. The benched associates could earn reward points and contribute effectively to IT vendor by this crowd sourcing mechanism. The performance of the crowd in the testing activity would be saved in the system. This would be used for further invitations and rewards.

5.5 Governance
Governance plays an essential part in the success of the Crowd testing. It is the crucial link for the high quality delivery of the project. The governance team should moderate and engage the crowd. The Governance should be empowered to handle end-to-end process management through a platform. The system created should enable the Project stewards to check the Real-time progress check. A best in class Testing Dashboard is crucial for Crowd testing and Organizations can learn, build and evolve best practices over the time.

The benefits of crowd sourcing are as follows

- The On-demand nature of the testing projects enables greater saving across projects.
- Faster turnaround time of delivery improves the ROI and also accelerates go-to-market timelines for the entire value chain
- Positive impact on project as the resource idle time is negligible and effective infrastructure is utilization
- Improved turn-around time & ability to service multiple requests

5.6 Factor Analysis of Requirement of SoLoMo vs. delivery models

<table>
<thead>
<tr>
<th>Requirements of SoLoMo</th>
<th>Croud Sourced</th>
<th>CoE &amp; Project delivery Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readiness to Scale up</td>
<td>Yes</td>
<td>Delayed</td>
</tr>
<tr>
<td>Instant ramp ups &amp; downs</td>
<td>Immediate</td>
<td>Idle Time</td>
</tr>
<tr>
<td>On-demand Capability</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Ready to deploy Tool</td>
<td>Available</td>
<td>Not available</td>
</tr>
<tr>
<td>Ready to use Infrastructure and less scaling needed</td>
<td>Ready to use but Standardized</td>
<td>Customized but heavy</td>
</tr>
</tbody>
</table>

The comparative analysis revealed that there is high synergy between SoLoMo and Crowd testing. Executing SoLoMo with Crowd would soon become the expectation and requirement of Clients in the near future.
6. **Way forward for Crowd and SoLoMo**

The immediate steps to attaining a success of Crowd sourcing model would be a process realignment to facilitate greater success of Crowd sourcing. The delivery mechanism for SoLoMo has to change from the current managed test services or a core project delivery mechanism to a crowd sourced testing delivery. Following details the next steps needed for the creation of IT vendor Crowd Delivery Model.

1. Crowd Registration: Skills, BYOD, Social Media availability
2. New project request and requirements notified to relevant crowd
3. Crowd logs in to the platform, tests the product, utilizes BYOD / integrated Cloud infrastructure
4. Share test results, analysis and issues via the Crowd platform
5. Analyze findings and deliver the project

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**6.1 Addressing the case studies**

- CoE based Delivery
  - Business analyst is onboard to evaluate the requirements.
  - The infrastructure is provisioned and there is a wait time to ramp up
  - Coordinate with various language CoE’s for onboarding the language specific resources
  - Utilize the procurement team for procuring the devices with the necessary connectivity and application download options
  - Waiting for team to ramp up and training is started finally delivery of project is done

- Crowd Based Delivery
We explored the possibilities of solving the Case Studies ABC and XYZ using project management through the traditional CoE based delivery model and crowd testing delivery model.

Thus it is realized that Crowd based model would be able to address requests of the SoLoMo type with minimal ease due to significant time savings associated with resource onboarding and infrastructure provisioning. There is a greater ROI, time saving because of the crowd testing mechanism.
7. Summary and Conclusion

Hawthorne’s experiments have been the basis of all industrial solution because of its realistic and humanistic approach. The paper adopts a similar behavioral approach to the problem of testing SoLoMo. The need for Organizations to create an ideal delivery model to address SoLoMo testing can have only one solution i.e Crowd testing.

Organizations would have to maintain a repository of users who use social networks and their mobile devices. This provides a ready to use “on-demand device and cloud based infrastructure “which could be leveraged across projects. A simple factor analysis method of comparing the critical success factors involved in SoLoMo testing with Strengths of other delivery models have revealed the better synergy of Crowd testing with SoLoMo. These were identified to be an ideal blend.

Hence there is a need for Organizations entering into the SoLoMo testing aperture to have a strategic crowd and on demand testing infrastructure in place. The synergy that exists in these mediums detailed across the whitepaper would enable organizations reap greater benefits by synergizing Crowd with SoLoMo. Also, Croud testing can be extended to other types of testing involving desktop applications such as Localization testing, exploratory tests and Geo-specific testing.

The paper also explores the challenges and details the recommended solutions to these challenges. Systems approach revealed infrastructure and operational challenges in developing the model. Hence recommendations on Infrastructure, processes have been made. The humanistic approach to analysis revealed that Appraisal being the critical motivation factor the fact that associates believing that staying under one manager for long would help them achieve better appraisal will be detrimental to the Organization in long run and for the Crowd Delivery model. The paper henceforth recommends detailed activity based appraisal hence every activity performed by associate should be graded immediately. This enables the user to move projects and work on crowd mode without any apprehensions of left behind in appraisal.

The detailed process transformations detailed in the paper would help organization realize the power of Crowd Testing. On the whole it can be concluded that with the right mix of solutions and processes Crowd testing would make an ideal blend with SoLoMo.