Building a repository of Engineering excellence with a view to re-use across the organization

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Theme: Leveraging India's skilled population for competitive edge

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Abstract:

Typical large organizations, have a wealth of experience that can be shared & re-used. Digitization furthers the effortless flow of such information.   Given the right framework, sharing can be institutionalised and immense benefits realised. Objective and mature attitude of people, both to share their success and to implement something not invented in own department is the other pre-requisite.

On these lines, a program called NBEES (Nokia Bangalore Engineering Excellence Synergy) was launched in August 2016. Each Business Unit nominated a Champion for this program. These nominees formed the core team of NBEES. Excellence @work case studies from different Business Units were collected to create a categorized Repository of Excellence (RoE). Beyond just the high level view, details were provided. The team identified case studies, that could potentially be re-used. Deep dive discussions ascertained their applicability. Expected benefits were quantified. Top 20 entries of the RoE were recognized and the Top 3 rewarded. Motivation is essential for sustenance of such a program.

The framework of NBEES can be applied to Indian Government Departments. RoE can span across districts, states & Central Departments. Categorisation can enable easy search. Success stories of Projects on water conservation, waste management, traffic control can be part of the RoE.

Leveraging demonstrated success from skilled colleagues, could significantly accelerate growth – a head start when a team learns about a similar project already executed elsewhere. Quantum savings of money, time and energy and fostering a culture of collaboration gives a definite competitive advantage.

Intent:

The intent is to focus on strengths and successes inside a large organization that could be spread across different teams, share specifics and apply the learnings in other teams. Benefit seen is not re-inventing the wheel, finding expertise within the organization and saving on external training costs, leap-frog in technology/tools. The saved resources can then be used for added innovation, project work that brings revenue. Celebration of success rather than focus only on defects/failures and recovery. The concept is generic and can be applied to any organization including to the Government of India.

Table of Contents

Contents

Introduction

Nokia is a global Telecom & IT company with more than 100, 000 employees worldwide. Nokia Bangalore is also host to as many as 20 different business lines – some completely located in Nokia Bangalore and others partially. At any given time, teams from different Business Units are engaged in Architecture, design, coding, testing, deployment, field trials, customer support for their respective programs. The demanding nature of this work leaves little time to discuss across businesses and collaborate on work items. Moreover, in recent times (2016) Nokia acquired another Telecom giant Alcatel Lucent. Now some teams do not even know each other and are just starting to learn about their charter via an integration process that is underway. The **N**okia **B**angalore **E**ngineering **E**xcellence **S**ynergy program was started towards the end of 2016 and served the additional purpose of being an active integration measure. The program is about collaboration and synergy, about harnessing collective experience to move ahead at an accelerated pace. About bringing the green parts of project reports to the limelight (instead of the red).

Here we are elaborately describing the NBEES program with an intent to extend the same concept to the Government and any other large organizations.

NBEES program can be described using its key elements:

- The team
- Repository of Excellence
- The practices
- Measures of success

Figure 1: The 2017 NBEES Web site/Repository

Repository of excellence

The **N**okia **B**angalore **E**ngineering **E**xcellence **S**ynergy program is essentially a crowd sourced program. The members to this program were invited after discussing and clarifying the program to the business leaders. They 'nominated' people who were already positive thinkers and it took little time to align them to the program. These were people who had spent enough time in their teams to know their basic strengths and near term plans, making them suitable to outline what areas of work their success stories were likely to come from. This helped in defining the categories for the repository.

Categories of the repository

Nokia Bangalore has mostly software development, customer support teams. A large group of services and a small group of Business developers are also in this site. The 7 categories for the Repository of excellence created:

- *Dev Ops & CI/CD:* This covered success stories in the area of continuous delivery/continuous integration or DevOps

- *Testing and Coding:* This covered test automation best projects, Creative test strategies innovative Coding techniques

- *Design & Architecture:* This covered architecture and design approaches that had proved to be very robust, scalable, fist time right

- *Operational Excellence:* This was the most generic umbrella category under which onboarding best practices, massive opex saving lab practices and other operational aspects were covered

- *Exceptional expertise:* This category was aimed to celebrate the masters in each specific area e.g. tool usage, coding, testing or any area. The idea was to describe the team/individual highlighting the exceptional skill(s). This enabled other teams to also get their consultancy if required. Additionally, it gave these experts a forum to showcase their ability and be recognized and appreciated

- *Lab & Push to cloud:* Many teams are in the process of moving their products completely or partially to cloud. This category provided an opportunity to share experiences and gain from each other's learnings in this area.

- *Business Development:* The aim was to capture Business development success stories, like effective presentations, winning marketing strategy etc.

RoE Data

A timeline was set for data entry into the repository. Each NBEES member worked with his/her business unit to contribute to the ROE. At the end of November 2016, there were 124 entries
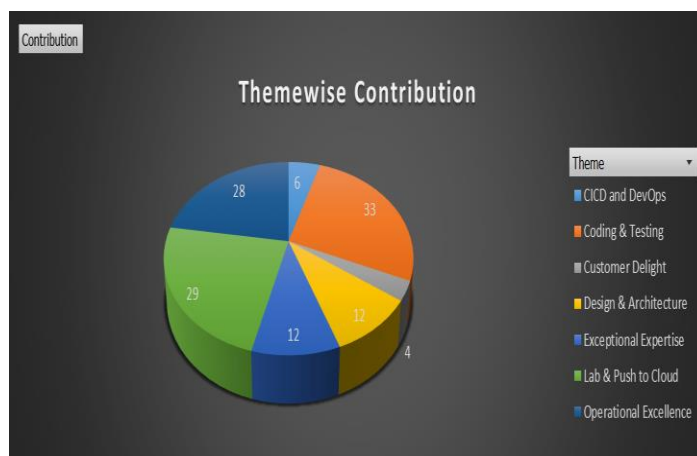

Figure 2: Category/theme distribution

Reward and recognition

In order to give the NBEES program some visibility and to encourage the contributors, a reward and recognition scheme was devised. The NBEES team was divided into small groups of 2 to 3 that looked closely at the entries in each category. The criteria for selection was agreed as follows:

- Problem severity: from lowest to highest:
    - Technology transition -> Low efficiency->Quality failure -> Blocking Project Progress
- Impact of solution: from lowest to highest:
    - Team-> Business Unit -> Site ->Global
- Benefit in Euro/INR
- Potential for re-use (most weightage was given): from lowest to highest:
    - Team -> BU-> Site-> Global

Each sub group proposed top 4 from a category/theme. Then collectively the top 20 entries were selected for recognition. Each of the top 20 contributing teams was requested to create a single slide capturing the essence of the success story. An example of one of the top 20 entry's one slide summary of an RoE entry is seen in Figure 3.

Figure 3: One slide describing an RoE entry

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An expert panel of 3 judges selected the top 3 entries from among the 20 to award the first second and third prizes. A small awards ceremony was organized where all the business leaders, all participating teams and the judges were invited. The leaders were appreciative of the program and declared it as the focus area for 2017.

Re-use

During the short time of about 6 weeks it was difficult for the NBEES team to review all entries and select some for re-use. Few potential re-use proposals were made. However, at least one entry (1st prize winner) was selected for re-use by 4 business lines. After it was communicated to the team that their practice has been identified for re-use, Presentations were made by the team to the business units that were considering re-use. Open Q&A forums were provided. This was found to be very useful not only to clarify but also cross fertilization of ideas happened.

Measure of success

In addition to the intangible integration benefit, pride in the Nokia Bangalore site and breaking of silos, one way to measure the success of the program is by checking on the sustainability/continuity. The growth of the repository and the re-use proposals and their fulfilment is also a good marker.

In May 2017, an event was organized to attract more focus to NBEES. As a result of that, the RoE grew from 124 to 259.

■ CI/CD	
■ Coding & Testing	
■ Customer Delight	
■ Design & Architecture	
■ Exceptional Expertise	
■ Operational Expertise	
■ Push to Cloud	
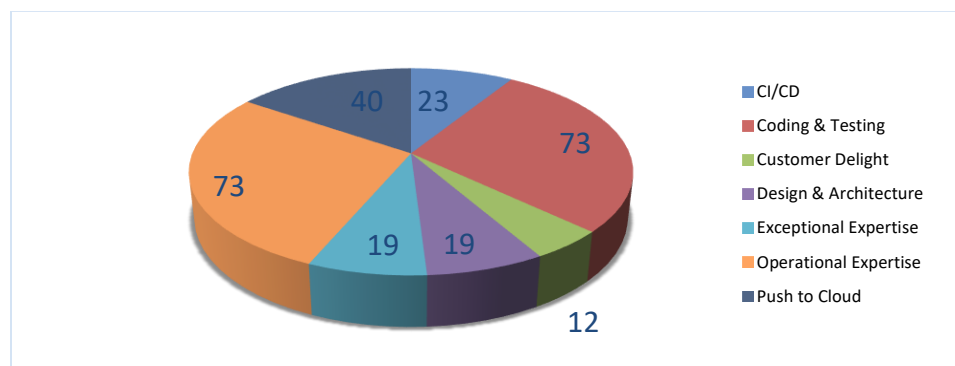
Figure 4: Category/Theme wise distribution 2017

While in 2016, there was participation from 12 Business units, in 2017, it was almost 20 Business Units. Some contributed to the RoE, some new teams only made re-use proposals because they had no historical data yet. Others helped in organizing the event, in Judging and shortlisting. The improvement in mindset and understanding of the NBEES concept manifested as a huge increase in the re-use proposals. Around

40 proposals for re-use were recorded. 14 out of these were confirmed proposals. Confirmed re-use proposals name the specific project where the re-use is envisaged and provide the plan and schedule for the same. An example of a confirmed proposal can be seen in Figure 5

Figure 5: Re-use Proposal form from NBEES site

Proposed Model for State Repository of Excellence

Many NGOs and government agencies try to solve common problems of society at local level. These experiments and case studies can be widely used across districts and at different levels of society. A Repository of Excellence can be created at State level to share successful experiments & also to reward the best!

Case studies of successful experiments done at local panchayat, village, taluka or district levels should be entered with following details:

- Experiment Title
- Social problem addressed
- Solution Description
- Investment Required

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- Benefits

- Situation post experiment (What was changed)

- Agency who conducted this Experiment

- Team Names & Contact information

- High-level schedule

As an example, for easy access and focused search, repository can be categorized into following areas:

Education	Health	Safety	Transport	Waste Management	Tourism	Water Management	Housing	Employment

Building the Repository

Entering case studies: Following process can be used for creating successful entry in RoE

1. Anyone having successfully completed an experiment to solve social problems, can create an entry into State Repository of Excellence

2. Every Category in the repository will have a moderator and governing body consisting of experts in the field

3. Once the entry is created, moderator will check for completeness before it is approved and visible to all

Ranking the Case Studies

1. All approved case studies will be available for public to vote and rank

2. Expert committee will review and share their comments about the experiment

3. Ranking of case studies can be based on following parameters

    a. Experts Ranking

    b. Public Ranking

    c. Benefits / Savings

    d. Return on Investment

    e. Ease of replication and potential savings if reused at State level

Multiply Success through large scale Re - use:

Expert committee for each category can short-list and recommend schemes to government which can be taken up for large scale deployments.

NGOs and agencies can research projects and learn from successful experiments. Anyone can pick up projects of interest to them and implement them in their locality

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Repository should have comprehensive tracking of reuse to understand scaling of the solution.

Rewards & Recognition
Quarterly, Half-yearly and Annual rewards can be given for best success stories to motivate teams working on the projects and to celebrate well-being of people.

Examples of success stories that appear to be candidates for an RoE at the National level are:

- The Lake rejuvenation project of Lake Kaikondrahalli Bangalore (a collaborative effort of NGOs and BBMP). The lake restoration of Mansagar Lake in Rajasthan, Integrated domestic water management Arghyam project of Maharashtra could be entries in the water management category.
- Co-operative tourism projects of Kerala & Himachal Pradesh
- Super 30 project from Bihar that leads BPL children to IIT. Sadhana project from Bangalore (helps talented under-privileged girls to prepare for NEET/JEE), Vanasuma Charitable Trust (helping BPL children complete High school and get to college) could be entries in the Education category

Lessons Learnt

If there is a clear vision and like-minded people, a program can succeed even if it is in addition to the regular budgeted activities. Collaboration is beneficial and feeds on itself. Once teams realized that there is opportunity to both show off and be appreciative, to share and to re-use, to teach and to learn, then the NBEES program was almost on auto pilot.

Conclusion

Streamlining collaboration through the NBEES program converted a vision into reality. The concept is easy to apply to organizations of all types including the Government of India. This can be applied at any hierarchical level – district, state or center. Just as in Nokia, so also in governance, many teams could be engaged in the same tasks in their own project context. Some of these teams could have achieved outstanding success. Every success story has potential to scale, save time and money. Ideally, the Repository of Excellence should get populated and re-used without having to "manage" it. This would leverage India's skilled population, spread over different parts of the country, resulting in the much needed competitive edge.

References

The work described in this paper is original and not based on any reference material. We would like to use this opportunity to add an acknowledgement to the management of Nokia Bangalore and our R&D colleagues who made the NBEES program a reality.