

Laxminarayan Institute Of Technology Alumni Association



ANNUAL EDITION: DECEMBER 2021

**ONE DREAM, ONE TFAM

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Ajay Deshpande [Food technology 1979 B.Sc Tech Graduate],

Chairman - LITAA

The Global Alumni Meet 2021 and this edition of LITAA Samvaad mark a fresh beginning after almost two years of disruption due to the COVID-19 pandemic. I take this opportunity to extend New Year's greetings to all LITians attending the meet, as well all recipients of LITAA Samvaad.

While in-person meetings and gatherings remained suspended during 2020 and a major part of 2021, LITAA Executive Committee continued regular meetings through remote meeting platforms to discuss subjects of importance such as incubation centre, autonomy and other developmental projects. I am happy to inform that RTM Nagpur University handed over the premises adjoining LIT canteen for setting up LIT Incubation Centre, a landmark project for LITAA that will boost entrepreneurship, research and product development. A formal Foundation Stone Laying ceremony took place on August 22, 2021 at the hands of Hon'ble Vice Chancellor Dr. Subhash Chaudhari. Another significant development is the submission of report of Dr. G. D. Yadav Committee by RTM Nagpur University to Government of Maharashtra.

The new Executive Committee of LITAA takes over from January 1, 2022. I congratulate the incoming team and look forward to working closely with them to take forward activities already initiated, as well as those under planning.

Let's all commit whole-heartedly to enhance alumni engagement to usher in an era of unprecedented excellence of our beloved alma mater.



Dr. Raju B. Mankar [M. Tech, Ph. D., Fellow DAAD Germany],

Director - LIT

Message from the Patron and Director (LIT)

I am extremely happy to know that Laxminarayan Institute of Technology Alumni Association (LITAA) is bringing out a special issue of "LITAA Samvaad" on the occasion of our much awaited event, Global Alumni Meet - 2021.

I wish that this issue, with its innovative theme "One Dream – One Team", will contain the news and information about the latest developments in LIT and events organized by LITAA; which will keep the alumni updated about the happenings in their alma mater.

I will ensure that this edition of "LITAA Samvaad" will reach our students through the official website of the institute.

I am thankful to the office bearers and the Editorial Team of "LITAA Samvaad" for their untiring efforts.



Message from the LITAA Samvaad Mentor

The privilege of being ideator and founder-editor of LITAA Samvaad is profoundly gratifying. The concept and its implementation delivered every result it promised- connecting alumni globally; creating a platform to showcase LIT, LITAA and LITians; and, generating revenue for LITAA operations.

The global pandemic experienced through 2020 and 2021 impacted LITAA Samvaad publication, just like it destabilized life and operations everywhere. However, the idea and the promise stayed strong and resilient. The moment GAM 2021 was finalized, so was this issue of LITAA Samvaad. The whole-hearted support of my colleagues in LITAA to this initiative is noteworthy and I thank all LITians for engaging in the journey of this publication.

This edition of LITAA Samvaad is designed and executed by the young and dynamic editor, Chinmay Garway. I am excited to handover the mantle to him and am confident that under his stewardship, LITAA Samvaad will scale higher benchmarks of allround success.

Message from the Editor

Sachin Palsokar

[B. Tech. (CE) 1995],

Mentor - LITAA

Samvaad

Chinmay Garway [B.Tech Chemical Engineering 2012 Batch graduate],

Editor - LITAA Samvaad

What's common between the Moon Landing, the Democracy-based nation-state, the idea we call a country, and conquering the entire Planet Earth?

It's the fact only the human creature aka the Homo Sapiens species has achieved these feats through sheer cooperation on a large scale. If you look around, you'd realise that all other animals can only cooperate in small groups. When animal groups get too large for the group's members, they tend to fracture and disperse into smaller groups.

Around 70,000 years ago, ancient humans realised that individuals can "bond" with an idea, story, or myth (like "God" or "money" or the "Limited Liability company") and trust that others who also believe such an idea, a story or a myth, will follow its rules; even if they don't know (or may never meet) each other. This cooperation with vast numbers of otherwise unknown people is what makes large institutions and large societies succeed and thrive — and this large-scale cooperation is ultimately what makes us human.

LIT Alumni Association is one such cooperative endeavour at a very large scale, and this large scale cooperation lies at the heart of our theme 'One Dream, One Team'.

I would like to extend my sincerest gratitude to you, dear reader, for your time, for going through this edition of LITAA Samvaad. I also want to extend my sincerest thanks to everyone who contributed to this edition of LITAA Samvaad by way of advertisements and articles.

Working on this issue of LITAA Samvaad gave me immense joy, and I hope you find it interesting.

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Activities of LITAA Executive Committee at a glance from Jan 2020

The current Executive Committee took office on January 1, 2020 and completes its tenure on December 31, 2021.

We began with many plans and aspirations. The key to accelerated delivery of results was maximizing alumni numbers who are engaged actively in LITAA operations. We had planned this to be the first step by way of visiting all chapters to expand our connect with LITians. Much to everyone's disappointment, the world came to a grinding halt due to COVID-19 pandemic and all plans of travel and in-person meetings remained suspended during 2020 and most part of 2021. However, LITAA Executive Committee continued regular meetings through remote digital platforms to discuss subjects of importance such as incubation centre, autonomy and other developmental projects.

A landmark achievement was submission of report of Dr. G. D. Yadav Committee by RTM Nagpur University to Government of



LITAA Executive committee along with Hon'ble Vice Chancellor of Rashtrasant Tukadoji Maharaj Nagpur University Dr. Subhash Chaudhari during the inauguration ceremony of LIT Incubation center.



Maharashtra paving the way for further development in LIT's march towards total autonomy. LITAA Chairman was a member of this committee.

A moment of fulfilment for LITAA was RTM Nagpur University handing over premises adjoining LIT canteen for setting up LIT Incubation Centre, a unique LITAA initiative that will boost entrepreneurship, research and development among LIT students as well as alumni. This project holds enormous potential and will help build all-round excellence. A formal Foundation Stone Laying ceremony took place on August 22, 2021 at the hands of Hon'ble Vice Chancellor Dr. Subhash Chaudhari. The work of revamping of the premises has already been started.

Another achievement was the pilot plant donated by our alumnus, Mr Datta Umalkar, B. Tech. 1974. The same broadly comprises three processes- Reactor, Distillation, and Gas Absorption. Similarly, Mr Ramesh Tarale, B.Sc. Tech. 1978 has donated a soap making pilot plant. Both these plants are currently under installation in the space within LIT Workshop allocated to incubation centre.

The future looks very bright as a world of exciting opportunities is on the horizon. With expanding membership of LITAA, a diverse knowledge-base and talent pool is now available to our alma mater. LITAA will continue to identify and be the bridge to bring contribution and resources from members as well as industry and administration for holistic growth of LIT.



Inauguration of LIT Incubation center at the hands of Hon'ble Vice Chancellor of Rashtrasant Tukadoji Maharaj Nagpur University Dr. Subhash Chaudhari on August 22nd 2021.

TÊTE-Â-TÊTE WITH HON'BLE LITAA CHAIRMAN-ELECT MR. MADHAV LABHE

At the outset, with folded hands I sincerely thank all the EC members for unanimously electing me as the Chairman of LITAA for the term 2022-24. I promise you that I shall try my level best to come up to your expectations.

Further I thank the concerned alumni for unanimously electing the entire team of office bearers for the term 2022-24

It shows solidarity of any organization when the team of office bearers is elected unanimously. It is really an honor for me and signifies a good beginning. Well begun is half done, they say!



Our term will start from January 01, 2022 and shall be over by December 31, 2024. Through this article, I shall take this opportunity to sketch a roadmap of our term by expressing my concepts, ideas, views, and thoughts about how I would like to carry forward LITAA activities for next term 2022-24. I shall be happy to submit this plan for kind perusal of this august readership.

The very word LITAA has three segments LIT, Alumni, Association. Segment LIT includes Institute, Faculty & Students. Other two segments "Alumni & Association" are self explanatory. The focus of our team would be that all the concerned segments are benefited by our activities.

We are extremely thankful to outgoing Chairman Mr. Ajay Deshpande and team for giving us a great legacy. The present EC team has started / initiated some of the good projects like LITAA Samvaad, Incubation Center etc, activities like Global Alumni Annual Meet and drives like Membership Drive, Donations Drive etc all those projects, activities and drives we shall continue with joy & pride. That is our perpetual proud legacy.

Along with above mentioned activities, projects and drives we plan to execute a total of 6 programs by way of physical gatherings and 6 virtual Webinars per year. So total 12 physical gatherings and 12 Webinars in the term of 2 years.

Physical gatherings:



We would preferably like to celebrate following days through physical gatherings for this term. Detailed plan of event can be worked out later with mutual discussion. These gatherings will increase the fellowship

- Rao Bahadur D. Laxminarayan Birthday (Thursday, 13 January 2022)
- LIT Foundation Day and Guru Poojan: From the available literature we understand that first batch of LIT started on 1st August 1942 (https://litnagpur. in/history). In the memory of the day we wish to celebrate the day (Monday, August 01, 2022). As a token of Gratitude to our teachers we wish to felicitate old and present faculty members of LIT on the occasion
- Rao Bahadur D. Laxminarayan Co-memorial Day (Friday, 30 September 2022)
- Kojagiri Pornima: On or around Sunday October 9, 2022
- Diwali Milan: On or around Saturday, October 29, 2022
- Global Alumni Meet (preferably on Saturday December 24, 2022)
- During these physical gatherings we intend to take up
- Cultural Programs: On Global Alumni meet, Kojagiri and Diwali Milan celebration

Laxminarayan Institute Of Technolog Alumni Association

- > Kite Flying: On January 13, 2022 or on Republic Day (January 26, 2022 (Wednesday
- > Blood donation Camp: On R. B. D. Laxminarayan Birthday (Thursday, 13 January 2022)
- > Health Check up Camp: On or around World Health Day April 07, 2022 (Thursday)
- > **Tree Plantation:** On LIT Foundation Day (Monday, August 01, 2022)

As LITAA is a big family in itself we shall encourage Alumni to participate in gatherings and cultural programs along with their better-halves, and children, especially on Kojagiri, Diwali Milan, and Global Alumni Meet.

Webinars or virtual meetings:

We plan to execute 6 (even more if so required) virtual meetings or Webinars per year, with the help of various LITAA Chapters (North, South, Central, Pune, Mumbai, and Overseas) and also as joint venture with various Industrial Organizations like VIA, VED, BIA etc. Some of the organizations have expressed their interest and willingness for such loint-Webinars. Details will be worked out later.

These Webinars will be on various Industrial sectors Chemical Engineering and Technology like Oil & Soap Technology, Food Technology, Renewable Energy Sector, Agro Based Industries, Bio-fuel, Bio-gas and Ethanol Based Industries, Municipal Solid Waste management, Waste Water management & Effluent Treatment, Fine Chemicals, Petroleum Oil & Natural Gas etc. We can identify experts from our Alumni fraternity itself to speak on these subjects.

Formation of committees:

We intend to execute all the projects, activities drives through various committees that would be formed on lines similar to committees formed in earlier EC. However some of the committees would be clubbed for ease of operations. If required additional committees would be formed. To promote the participation of LIT Faculty members in LITAA activities we would prefer to keep one faculty member in each committee along with regular Alumni.

Incubation Centre:

This is our dream project. We shall drive this project with more energy by putting additional team members.

Pilot plant Area development:

As a part of development of Incubation Centre (Phase 1): we shall take up the job of complete renovation of pilot plant area, installation & commissioning of pilot plants received so far. We shall try to add some of the pilot plants as well.

Legal & Statutory compliances:

We shall try our best to complete all legal and statutory requirement of LITAA within time during our tenure. An exclusive team will work on this task.

Directory of members:

This long pending task will be taken up on topmost priority.

Autonomy to LIT:

This is a long cherished dream of all of us. We shall try our best to get this status to LIT during our tenure. All out efforts will be carried out. A special task force will be constituted to accomplish this task.

Digital Library Project:

This is a long pending project. Some donations are received and some are committed. We intend to take up this project after proper deliberations.

Efforts for COE:

In last EC this project was introduced. Considerable efforts were made. We shall take up this project further and shall explore various possibilities to initiate it.

Lectures and Seminars:

Various educational programs like motivational lectures, industry interaction lectures, business awareness lectures, entrepreneur training etc. would be taken up through Incubation Centre.

Special Training and Placement support:

Would be provided through existing training and placement center of LIT for non-qualifying students. Idea is that each student should a get a job through campus placement.

Interaction with various chapters:

Regular interaction with various chapters would be an important agenda of this Executive Committee. We highly appreciate efforts of South Chapter in conducting "LITAA Quiz" last year. We shall encourage other chapters to take up such novel and variety program. We will appreciate suggestions from various chapters that will cement the bond between chapters and bonds with Central Chapter.

If possible we may think of introducing additional chapters like Goa, Middle East etc. if sufficient members are registered.

















Publicity Cell:

A special emphasis would be given on Publicity of various projects, programs, activities, drives and gathering that LITAA would take up. This publicity would be through newspapers, local TV and Cable Network, social media (FaceBook, WhatsApp, LinkedIn, Instagram, Telegram and Twitter etc) and various magazines of LITAA. Young Generation Alumni from the LITAA Youth Forum would be preferably given the charge of this job.

Youth Forum:



Connectivity with young generation Alumni would be established by creating a special Youth Cell. We shall be adapting young Alumni (Chinmay Garway & team) as special invitees who would take care of this cell. We shall request our Mentors to propose a couple of young faculty members for this cause.

Transparency:



Transparency in all the activities would be the topmost priority of this team. We shall try our best to furnish all the information on our website.

Official communication:



Our official communication would be through official Emails and through our official Website only. So members are requested to follow this practice. Publicity cell will take care of it.



Active Website:

We shall put our best efforts to make our website more active.

Additional Team members:



As it is evident that "LITAA 2022-24" calendar is full of events and activities. We will need additional hands to accomplish the tasks that are planned. So we would like to adopt additional members to take up these tasks. They will be special invitees to EC. At present we are adding Mr. Ajay Meshram, Mr. Sanjay Kashettiwar, Mrs. Mili Juneja, Mr. Chinmay Garway. In future we will add some more names to this list.

Advisory Board:



Donation Drives:



All our projects run on donations received from members and various organisations. Special donation drives will be taken up. More concentrated efforts will be put up to acquire FCRA status. Various means will be explored to collect more funds for LITAA.

Membership Drive:

MEMBER CARD

All of us know that LITAA exists due to its members. So membership drive is the most important recurring job for any EC. We are not exception. Special efforts will be taken up to increase number of members. Young generation members will be encouraged to take up this task.

Regular interaction of EC members:



EC meeting would be religiously conducted each month. Preferably physical meeting would be conducted at LITAA Office at LIT Campus. We shall make special arrangement for live broadcasting of the proceedings of the meeting by Web links. EC members of other chapters can participate in meeting virtually by connecting through Web link.

Team Efforts:



All above tasks are possible only with concentrated and united team efforts. I am happy that a highly positive thinking team is with me to complete these tasks. Our way ahead is not simple but we have capacity to overcome all the odds that may come our way. Team matters. We shall work hand in hand and shoulder to shoulder to complete our tasks. Together we can make wonders. Friends let us put our all out efforts to achieve our goals.

Thank you very much. Namaskar

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A SUCCESSFUL CHEMICAL ENGINEER

Dr. Mukund N. Patharkar

P.E.; Retired Senior Project Manager, Nashville,Tennessee, USA; Email: mpatharkar99@gmail.com

This article is dedicated to every young chemical engineer of the LITAA Youth Forum. Gained through sheer hard work during my professional experience of the past 50+ years in the field of chemical engineering, I have described the basic technical, social, and interpersonal skills needed for a successful career for a chemical engineer who is just entering the professional world right out of college as well as for engineers midway in their careers.

This is a compilation of my observations and the experience that was gained throughout my career in the field of Chemical Engineering, that has spanned over 5 decades. This world and technology is moving at a breakneck speed. Many newer fields will be coming your way like Industrial engineering, instrumentation & process control, automation, DCS control, Global warming, novel rocket propulsion technologies, Renewable Energy Sources; Solar, wind energy, Hydrogen economy, novel packaging solutions for consumer products as well as industrial products, and advanced materials.

Today's Chemical Industry has changed a lot in India, so we shall discuss where it has been and where it is headed and your role in shaping the future of the chemical industry as a young chemical engineer...about the Basic Technical skills you will need as well as some social, interpersonal and intrapersonal skills you will have to possess.

Chemical Industry in India:



The role of a chemical engineer has changed and metamorphosed massively over the recent past couple of decades, as the chemical industry has changed, has advanced and matured.

Today's chemical industry in India has come a long way in the last 20-30 years. It has advanced from mineral processing to specialized steel industry; From basic Inorganic and fine organic chemicals to advanced Pharmaceuticals; to personal hygiene products, soaps, detergents to polymers, and to petroleum refining and specialized petrochemicals. Atomic energy and other forms of energy have emerged and are seeing rapid metamorphosis. India produces a lot of pharmaceuticals and vaccines and has become a global hub for manufacturing and supplier of medicines as well as vaccines to the world. But make no mistake, most of the research and development for these drugs were done somewhere else in the world, and not in our country.

There is an acute shortage of raw materials in India for these pharmaceuticals and they come from either America or Europe or China. The energy sector as a whole and nuclear energy in particular has come a long way in terms of generation, transmission, and storage; but some of you will find yourselves dealing with issues like what to do with the nuclear waste that has been accumulating over the past so many decades.

Many large industries like steel and cement have grown exponentially but may need optimization to make them energy efficient. In many places wastewater and sewage goes into running water streams adding to pollution. You will be asked to design a waste treatment plant with ZERO emissions whatsoever. This Is a worthwhile challenge, and anyone who manages to crack this puzzle will be handsomely rewarded by the world at large!

In the last 30-40 years, the plastic industry has grown by leaps and bounds. You may be asked to build plants to recycle all the plastic we are generating. Petroleum products have changed our lives, but it has been a victory at a very high price - and with a lot of pollution, greenhouse gases and warming of the earth. Many of you will be involved in business to phase out coal and petroleum as energy sources and come up with renewable green energy sources. Rocket technology and space exploration are upcoming industries and many of you might find yourselves designing higher payload rockets. These might have more optimised propulsion technologies that have a higher power payload, or they might have completely new propulsion technologies entirely. These are some intensely exciting challenges for a young chemical engineer, and the world is yours for space exploration!

Basic Tools:



industry, you will need the basic education in Chemical Engineering, computing skills as well as business acumen like economics, cost analysis, administration skills in your Professional career: You have learned advanced Chemical engineering, some of it you may use it, but believe it or not, if you remember basic things like Gas laws, Boyle's law, Stoichiometry; I kg-mole, reactions; how many moles or reactants make how many moles of product;these basics will put you on a first step to make a material balance and equipment sizing.

Knowing a few other things will give you energy balance. And you will be on your way with a rough sizing of equipment that you are likely to design.

You will need basic level rudimentary knowledge of electrical engineering to come up with power requirements for equipment, as well as instrument engineering, civil engineering. All these engineers will always require inputs from you in order to complete any and every project.

You may have high skill in computational Process simulation, but without basic knowledge of heat transfer coefficients, possible yield and other factors you will not understand the results spit out by computer nor will you succeed in getting the proper results in the real world – always remember that the real world is significantly more different and complex than that of a computer simulation. Use computer skills to your advantage but it is no substitute for basic fundamental knowledge of chemical engineering. Always follow up, keep yourself up to date on new things, concepts, newer ideas, new trends.

And you as a young chemical engineer will be asked to provide solutions. So basic knowledge of Stoichiometry, gas laws, thermodynamics, heat transfer coefficients, mass transfer, ability to do heat and material balance will always put you ahead of the rest of engineers.

Social Skills:



a) Don't ever think you know everything and that things will be given to you on a silver platter. Those who are willing to learn new things everyday will succeed in their professional career as well as in life and will race past those who are not willing to adopt and learn new things. Even at my advanced age, I try to learn at least one new thing every day. Understand that learning new things is full of joy, and once you experience this joy, you will find yourself in possession of the faith and the courage that is necessary to learn new things. Understand that the professional world out there is one of cut-throat competition, and the professional world rewards rather handsomely those who learn new skills, and those who have constantly evolving social skills. Despite your technical knowledge, it is your social skills that will determine how successful you become in your professional career.

b) Always be prompt, respect others, treat everybody with respect as you would like to be treated. Respect others even though your advice or word is not followed through. Treating others with dignity is a crucial thing that will help you go a long way not just in your professional career but also in your personal life.

c) Always improve on anything that comes your way before you pass it on to others. In your career, new designs, calculations, ideas, process improvement will come to you for comment. Do not just pass it. Make most of it by appropriate inputs and comments as to what you think about and how you could improve that piece of work, concept, design. If you do that your work will get noticed, you will get noticed and it will lead to a sure path of progress in your career.

d) Always be Proactive, take initiative, and respond positively. The world doesn't appreciate negativity. Always strive for continuous improvements and cost reduction while not compromising on quality and safety.

Interpersonal Skills:



a) First understand the task at hand, and then educate others to complete your tasks successfully. Prioritize your efforts and tasks in order to achieve the goals of the project in a timely fashion and within budget. When you know the task at hand, and you know people's skills and your relationship dynamics with people, you can effectively delegate tasks. This way, you can focus on tasks that require less effort but have a high output. These facets form the crux of what is called a management role.

b) Always have a vision for yourself, your organization about your task as well as about your project. Always keep in mind the END point. Every work function and effort should be directed towards achieving that end point or goal.

c) Always select what you can control and influence based upon your knowledge and experience to improve the value and quality of your project. We live in a world that is getting increasingly complex and uncertain. In such a world, focusing on only things you can control is a skill that every young chemical engineer must learn.

d) Always do your homework, come prepared for the meetings. Have an agenda. Get input from others. Start your project related meetings on time with an agenda for the meeting. Discuss related topics, cover new input/items from the team members. End meetings on time, because time is important to others. Always spell out a path forward.

e) The people who have a habit of asking questions, and especially asking extraordinary and difficult questions usually get outstanding results. Don't be afraid to ask absurd questions. Ask out of the box questions. Don't be afraid to disturb the status quo. Always check the question "What if". Surround yourselves with highly successful people who will challenge you.

f) Many of the tasks are interdependent. Cooperate, collaborate with the team members to find better, cost effective, timely and creative solutions. Constantly challenge yourself and your team members to improve the quality of work. Building teamwork is a Win-Win strategy.

g) Constantly challenge yourself and your team members to improve the safety and quality of the work.

Synergise:



Combine the strengths of people through positive teamwork, so as to achieve goals.

Always conduct a process / project hazard study early in the project to mitigate unsafe design. This study should be repeated about halfway through the project and at the end of the engineering.

Include process safety for runaway reactions and other factors that can cause problems, liabilities later and affect schedule, costs.

Intrapersonal skills:



Finally create a condition in you and people around you where you take time to ensure your mind, body and spirit are ready to take on the challenges of continuous rigor of improvement. Always consider activities like Yoga and a little meditation for yourself and team members. These activities improve your intrapersonal relationship – the relationship that you have with your own self. You will have good interpersonal relationships with others only when you have a good intrapersonal relationship with your own self. Always remember that most successful people take active steps to prevent stressful conditions and burnout on the job. The only way to do this is to have a good intrapersonal relationship with your own self by practices like yoga or meditation. My best wishes to you for a long and a fulfilling professional career in chemical engineering!



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PROJECT PROFICIENCY IMPROVEMENT

USING ONION MODEL APPROACH FOR PROCESS PLANT PROJECTS

By Dr. Pramod Deshpande

Sr. Associate Professor, National Institute of Construction Management and research Pune, Trainer in project engineering and project management Email: pramodd40@ rediffmail.com

Process plant Project cycle

The Process plant project cycle involves the project phases such as project feasibility, project development, project execution, and project commissioning and lastly project operation. There is need to identify the scope and specification process equipment, plant and machinery. Along with this time and cost estimation for the project. The specification detailing leads to, quality, safety needs during project execution and operation of process plant. For identifying various scopes and services, expertise in project environment needs mechanism.

Project Engineering

The project engineering is an activity defined as the transformation of "process design" and "engineering details" information into project work requirement; for execution of project along with needs of process plant. Project engineering leads to the defining and checking of specification for major equipment that is process equipment and minor scope such as supporting and auxiliary supplies required as plant machinery for operation of the process plant.

Project engineering, also involves the specification development for project scope; that is services, expertise, quality standard specification development, based on codes and standard for execution of project work. This leads to detailing of specification for man, material, machines needs for cost effective and seamless project management. The work breakdown structure is basis for such detailing exercise.

Onion Model

The Onion Model is the concept to identify mechanical, electrical and other engineering work requirements along with interface work requirement in project design and execution. Identification of interface multi-engineering activity is reflected while implementing Onion model. The model is the guiding principle for identifying and defining detail engineering scope and specification need and interface engineering specification needs, as well as activities.

Following example explain the same, for the development of trenches for piping and electrical system

cable trays, for mechanical engineering design , detailing and construction methods, requires specification for electrical system detailing cable routing for cable trays and its sizing and also the plant layout. Multi engineering stream activities are interdependent and needs project coordination for engineering and execution. The onion model helps in identifying defining predecessor, successive, and parallel activities for interface scope design and work. Also help in developing construction, erection methods for interface work. The project engineering along with onion model approach leads to seamless project management for deliverables of process plant project.

Onion Model for Process Plant Project.

- The project scope of process plant in terms of design engineering, and activities, and also construction of respective engineering stream work sequence, will be formulated with onion model. The project deliverables are represented like the onion layers.
- The model represents the sequence of engineering design detailing, and construction activates related engineering streams,
- The model is developed a long process engineering as this is the heart of project,
- > The process design activity defines the civil, mechanical, electrical engineering design needs ,
- The construction, erection work is defined by process design need and respective engineering needs,
- The sequence of civil, mechanical, electrical, Instrumentation work follows same pattern as design sequence,
- The model repents the inter dependability of different engineering needs,
- The model represent the inter dependability of design detailing ,construction and erection work,
- The model helps in identifying interface design engineering, and construction specifications and any other similar needs



The model also helps in detailing, tracking and monitoring the interface activates during project execution.

This is followed by implementation of information technology needs for process monitoring. The lota and similar technology development help in process information models to monitor and track the operating parameters during operation phase of project. The model can be explained as under:

Consider the simple case of the process plant project to produce potable water from raw water; the process steps are decided by specification of raw water and potable water quality needs; the guiding specification may be world health organization standards for potable water.

The review of, process and project goal suggests that the process becomes the core of the onion model and leads to the development of equipment specification. In project development phase, the specifications are detailed out based on process design parameters such as pressure, temperature. This is followed by understanding of equipment supplies specification and construction work and methods interims of civil, mechanical, electrical and instrumentation; specification. The respective construction and erection needs can also be identified form from project engineering detailing whereas the onion model helps in sequencing the design and construction activates.

The model facilitates to identify the interfacial activates to complete the engineering supplies and construction work. This can be detailed out with lowermost level of work breakdown structure level; say Level 4.

This exercise is repeated with each scope of work, or packages; (WBS) so that all the primary interface work shall be listed along with specification and resources requirements.

Once the design engineering needs are listed in terms of work; based on these needs the resources specification and quantity can be identified. The concept also helps in detailing quality, and safety needs for the project scope. This helps in developing the work methods; and work standards can be defined for erection and construction.

This detailing is carried out by implementing principles of project engineering. Once the need, specification, quantity, resources are defined for major scope, minor scope and interface needs. The requirement of man, material, machine and money can be defined accurately this leads to the seamless project management with higher project proficiency.

In case of process plant project, one of the difficult tasks is to identify and define the "interface activities", for seamless execution of project. Onion model, envisage interfacial design and construction needs; say between civil-mechanical; mechanical-electrical; civil-electrical so on so forth, can be detailed out, for project execution. The concept is indicated diagrammatically in following Figure 1. All interface design and construction activities are projected considering the process needs; which is the core of the onion model and project activities revolve around process design and engineering.

This model also helps in sequencing parallel and consecutive activities and work for different engineering stream. For example the electrical cable routing needs to be defined while designing the civil and mechanical work, and also needs to be carried out in specific sequence during construction phase. WBS explains the work but not the sequence for work. This helps in planning and scheduling the work.

For the proficient delivery of project management the requirements along with specification and quality should be available handy, these two concepts project engineering and onion model together lead to identifying the requirements accurately.



Conclusion

The proposed onion model development is in line with the earlier models proposed, in communication, human resource management. The implementation of onion model concept with project engineering activity leads to higher proficiency of project management. The model gives the sequential path and leads to identifying the hierarchy of project activates in design development and project execution. The onion model facilitates detailing and accurate specification development for scope of supply, resources and also construction activity. The model helps in defining inter phase activities and multiengineering needs for process plant project. Hence, the onion model can represent the process plant engineering project as whole from concept to completion.

This also concludes that for engineering projects the core of onion model is process calculations and process engineering. The interface activities across different streams of engineering such as civil, mechanical electrical engineering depends on process engineering.



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UPCOMING GREAT TECHNOLOGIES

By Vinayak Marathe

[LIT Chemical Engineering Batch 1979 graduate] Former Sr. Vice President at Reliance Industries Limited

Innovation Description

In the current global scenario, with unprecedented focus on reduction in carbon emissions, this technology is committed to bring sustainable technological solution for the world. As a result of this commitment, the Algae-tooil (A2O) technology initiative is a clear focus on utilizing carbon emissions to generate renewable alternatives to fossil crude. This innovation is about leveraging fundament advancements made in Biology over the last few decades, in developing sustainable and renewable fuels by harnessing sunlight, the primary energy source on this planet. **In countries like India, terrestrial cropsbased renewable fuel options such as bioethanol and biodiesel pose serious sustainability challenges in** terms of availability of freshwater and arable land. Hence this technological innovation focuses on marine microalgae production using sunlight, seawater and anthropogenic CO, on non-arable wastelands.

The process for producing renewable bio-oil from algae, aka the "A2O process", entails several sub-steps that include: seawater sourcing; CO₂ sourcing; nutrients (fertilizers) sourcing; generation of algal inoculum (seed) culture; production of algal biomass in open ponds; recovery of algal biomass from pond water; conversion of algal biomass into algal bio-oil; and recycling of water, nutrients & CO₂. A simple block diagram is presented in Figure 1 to depict this overall A2O process.



Figure2:

Representative block diagram for A2O process. Solid arrows (->) represent process streams, dashed arrows (-->) represent recycle streams, while curvy-green arrows (~>) represent focused scientific/ technological development efforts.

This innovation is the first of its kind in India. The uniqueness of this facility is the integrated process that starts with CO₂ and raw seawater, which enables production of algal bio-oil and algal biomass at significant scale, in a continuous mode.



Differentiation

No use of freshwater in Algae cultivation process

A2O process does not use any freshwater in the algae cultivation process which makes this biofuel producing route a non-conventional and sustainable option. This process utilizes seawater which makes it more attractive with geographical advantage available to India in form of very long coastline. The entire scale up of the technology will happen in non-arable land. Technology will utilize CO2 emitted to the atmosphere by various industries. 1 kg of algae will consume over 2.5 kgs of CO₂. From CO₂ capture and sustainability point of view, the integration of CO₂ (from existing CO₂ emitting plants) as a feed to A2O process provides an excellent solution to a potential future environmental challenge by utilizing CO₂ into a resource for production of renewable bio-crude. This offers a potential solution for bringing down net GHG emissions of any refinery/industry. This solution is incredibly attractive as it offers to convert a liability i.e. CO₂, into a resource, renewable crude oil. Further, if we look from feed perspective, at the downstream end of A2O value chain it offers the flexibility of integrating algal bio-crude as feed to the existing refinery for its eventual blending with/ replacement of fossil crude post some pre-processing (up-gradation) step. This will be a big boost to the India aspiration of reducing fossil fuel dependency.



Commercial feasibility and scale up

This innovative technology is much ahead on the progress and commercialization path not only at national level but at global level also. Globally, the advancement in India in terms of scale, productivity, and end to end process are far ahead of developed countries which are also working on algae as future solution to fossil fuel.

Potential to boost precipitation to prevent draught in the long term

Another noteworthy aspect of this technology is the concurrent production & atmospheric release of oxygen during the process of algal photosynthesis. In future, massively spread of cultivation of marine algae on non-arable wastelands using seawater will lead to increase in surface area available for effective evaporation which may eventually improve rains. In areas prone to draught this can potentially bring huge positive change, which would indirectly benefit rural economies through better rains and improved agricultural produce.

Innovation in entire value chain

While there are companies ventured into this field, pilot plant in India has focused on end-toend algae to oil value chain. India focus is not only on the business aspect but also on fundamentals such as thermodynamics, algal biology, photosynthesis, advanced biotechnology, engineering sciences, process technology development, process engineering innovations, recycling of energy, water, nutrients and CO₂, and on sustainable integration of all the above aspects. The focus on entire value chain gives an edge in terms of capabilities and synergetic innovations at the interfaces of technology value segments of the entire chain.

Algae contains Lipid, Proteins, and Carbohydrates. Mastering the technology of cultivation and harvesting has opened opportunities for new proteins rich products for human and also non-human consumption.

Results/Outcome

The innovative A2O work of RIL, while being headquartered out of Mumbai, has a significant global presence through various academic, scientific and business partnerships. The primary research laboratory is in Mumbai while our field test-bed facility is at a location adjacent to our Jamnagar refining complex.

Creation of world's one of the largest marine algae germplasm collection:

The Biology team has now created perhaps world's largest marine algae germplasm collection that houses well over 1,200 strains collected from multiple locations across India. Several of these strains have been successfully cultivated outdoors over different seasons. Chemical and Physical harvesting systems have been proven to concentrate the algae at 15-20% concentration, this concentration is required for the optimum performance of downstream units -Dryer and Hydrothermal liquefaction.

Development of robust nutrient management and crop protection strategies:

Robust nutrient management and crop protection strategies that are primarily focussed on the hypothesis of minimization have been developed. This has helped reduce costs related to nutrient wastage, crop protection chemicals & frequent culture re-inoculations.

Deep understanding of algal growth in 'open to the sun' ecosystems:

Advanced biotechnology tools & photobiology tools are deployed for understanding the intricacies of algal growth in 'open to the sun' ecosystems exposed to various biotic and abiotic stress factors. Study has helped in enhancing capabilities on perennial productive cultivation using high-salinity tolerant strains that can thrive under extreme conditions of light and temperature. The most difficult part of algae cultivation is understanding of photosynthesis. This is one of the key knowledge bases developed which has helped to operate the cultivation of highest photosynthesis efficiency.

Improving light utilization and growth kinetics of green algae:

Significant progress has been made in terms of improving understanding of light utilization and growth kinetics of green algae. Complex growth models developed for predicting algal growth have helped substantialize the role of multiple growth-contributing factors in open ponds. Integration of the light utilization driven growth kinetics model with computational fluid dynamics (CFD) based hydrodynamic models have helped pond designs.

Commissioning of an integrated facility for producing bio-oil from autotrophic algae.

This first-of-its-kind integrated, continuous-processing facility consists of multiple process systems for algae biomass recovery and the world's largest algal oil production reactor system capable of producing over quarter of barrel of algal bio-oil every day. These systems are well supported by a network of key utilities such as seawater, compressed air and electricity. Basic fertilizers such as urea, phosphoric acid and trace metals that are required for algal growth are dosed to the algal production systems (ponds) using automated feeding systems.

Outcome for the country as a whole:

Bio-Refinery and green fu

Futuristic A2O production facilities (Bio-refineries) to be like the modern day refineries wherein, while processed fuel will provide green energy solution for transportation and industrial operations.

Agriculture, Food and Nutrients

The A2O process has potential to co-produce value added products such as animal feed, food and nutraceuticals. The value added products such as bio-fertilizers has the potential to make agriculture a more sustainable process. In changing climatic conditions, this can help in solving the problem of food scarcity in a sustainable manner.



Sustainability and Viability proven

- Biomass productivity > World's largest raceway ponds
- No fresh water for algae cultivation (Sustainability)
- Cultivation power of less than 1 kW/acre (Sustainability)
- Nitrogen and phosphorus consumption ~stoichiometry (Viability)
- Algae harvesting process at 0.025 kWh/kg algae (Viability)
- Developing and deploying processes for recycling of water, CO, and nutrients at scale. (Sustainability)
- End-to-end' process being demonstrated & validated for commercial viability of algal biofuel feedstock production
- Other high-end technologies for algae processing (microfiltration, centrifugation, drying etc.) demonstrated and validated at scale
- HTL can be even extended to treat and generate value from any organic waste



With the sustainable solution to the world, this technology will support the rural economy.

Ref- Experience from the Reliance Industries Limited world largest A20 pilot plant facility at Jamnagar.



Oil Exploration and production

The A2O production facilities (Bio-refineries) will produce Bio-crude which can be processed in the conventional refineries thus effectively reducing overall consumption of fossil based crude oil in refinery operation. This will eventually reduce the CO₂ emission from oil exploration and production as less quantity of Crude will be needed.



Industries such as Refineries and Power Plants, source of concentrated CO₂

The business model for A2O revolves around delivering a "closed cycle" CO₂ management solution for industries with heavy CO₂ footprints. By using CO₂ emanating from such industries (refineries and power plants) as feed for A2O operation, the closed cycle CO₂ management can be achieved, which will eventually bring down the net GHG emissions.

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VALORISATION:

A NEW APPROACH FOR FOOD INDUSTRY WASTE UTILIZATION

By Dr. Renu Khedkar

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The food processing industry produces large volumes of wastes, both solids and liquids, generated during the production, preparation and consumption of food. These wastes pose increasing disposal and potentially severe pollution problems and represent a loss of valuable biomass and nutrients. Due consideration to proper utilization and disposal of solid waste is the need of the hour for sustainable industrial development. These wastes are a source of essential nutrients, bio active compounds and various value added products of commercial value can be produced from these by products.

Globally, India stands second after United States with 160 million hectares of arable land (52.6% of land area). It is also the second largest food producer in the world. Today, it produces over 260 million tonnes of food grains, 269 million tonnes of agriculture produce and 132 million tonnes of milk. The production of food is increasing every year and India is the largest producer of many fruits, vegetables, milk, pulses, millets while second largest producer of cereals like wheat and rice. The share of agriculture in GDP has increased to 19.9 per cent in 2020-21 from 17.8 per cent in 2019-20 and 15.4% in 2016-17. Agriculture in India is providing employment to nearly 50% of the population. Despite of achieving accolades for the stupendous performance in food grain production, India's share in agricultural exports was only 2.27% according to WTO's trade statistics. Also, it is estimated that the extent of food wastage in India is around ₹92,000 crores per annum.

India's food-processing sector covers fruit and vegetables; meat and poultry; milk and milk products, alcoholic beverages, fisheries, plantation, grain processing and other consumer product groups like confectionery, chocolates and cocoa products, soya-based products, mineral water, high protein foods, health foods, fast food, ready-to-eat breakfast cereals etc.

The food processing industry produces large volumes of wastes, both solids and liquids, generated during the production, preparation and consumption of food. These wastes pose increasing disposal and potentially severe pollution problems and represent a loss of valuable biomass and nutrients. Due consideration to proper utilization and disposal of solid waste is the need of the hour for sustainable industrial development. Efficient management of waste can bring down the cost of production of processed foods and minimize the pollution hazard. Concept of 4-R which comprises of Reduce, Reuse, Recycle and Recover is the ultimate solution to optimize utilization of solid waste while minimizing environmental problems. The different techniques of the solid waste treatment include landfill, composting, aerobic and anaerobic digestion and thermal degradation techniques like pyrolysis and incineration but these food processing wastes are rich in essential nutrients such as carbohydrates, proteins, phytochemicals and compounds with nutraceutical properties. So, industries have now focussed strategies for utilization of the waste to minimize the cost of production, generate new avenues of economic realization and also the environmental protection.

Valorisation refers to an industrial process of reusing, recycling and converting of waste into value added products. Value addition is a key to sustainable growth for the economic development of farmers and growers because efficient utilization of by products has direct impact on the economy and environment protection. Non utilization of by products leads to loss of potential opportunities for ramping up of revenue and also leads to increasing load of disposal of these wastes.

Whey is an important by product of dairy industry. It is a highly polluting product because of its high BOD and COD. It mainly consists of lactose and proteins. The whey is utilized in many ways. It is blended with food materials to produce fruit based beverages, custards and bakery products. The concentrated whey is used as whey protein and dried whey. On pasteurisation, whey cream and sweet whey is obtained. Lactose is also produced from whey. It is used as a substrate in fermentation to produce D-Lactic acid, ethyl alcohol, vitamins and also bio based packaging such as Polyhydroxy Butyrate (PHB). Biotechnological approach for the dairy waste utilization has also yielded the biofuel, hydrogen. Bioelectricity is the electrical current and electrical potential generated by or occurring within living cells, tissues, and organisms. Bioelectricity has been obtained from milk whey using microbial fuel cell technology. Biosurfactants play an important role in bioremediation. They have been synthesized from whey obtained from cheese industry. Bioactive peptides having properties such as anticancer effect, antimicrobial property, antihypertensive property has been produced from dairy waste.



As also, the fruits and vegetable processing industry produces a large amount of waste e.g. peels, pomace, seeds, rinds, stems, leaves during the processing operations. Due to the high moisture content, they are highly perishable and degrade faster producing foul odour and growth of pathogens. These are rich in carbohydrates, vitamins, minerals, polyphenolic compounds, enzymes, proteins, dietary fibre, pigments and essential oils. The valuable products that are prepared from fruit and vegetable waste are enzymes, proteins, carbohydrates, furfurals, amino acids, lipids, organic acids, phenols, activated carbon, degradable plastic composites, cosmetics, biosorbent, resins, medicines, foods and feeds, methane, biopesticides, biopromoters, secondary metabolites, surfactants, fertilizer and other miscellaneous products.

- Oranges, carrots, apple, peas have been successfully utilized as a substrate in fermentation to produce organic acids, ethanol and vitamins etc.
- The waste residues in most of the fruits and vegetables are rich in polyphenolic content and phytochemicals. The phytochemical compounds exhibit anti-cancer activity, anti-microbial activity, antioxidant activity and immune-modulatory effects and hence reduce the chances of cardiovascular diseases.
- Dietary fibre acts as a protective agent against cardiovascular diseases, colon cancer and diabetes. The fruit and vegetable by- products of apple, pear, potato peel etc., are consumed as food supplements enriched with fibers and also utilized as gelling and thickening agent. These are easily digestible and hence increases the bulk of food and prevents from constipation.
- Polysaccharides such as starch, cellulose, hemicellulose and pectin are found in plants. Apple and citrus wastes are the main sources for the production of commercial pectin.
- Fruit and vegetable wastes have good proportion of protein such as carrot pomace, apple pomace, mosambi peel, green pea peels, mango peel, pineapple peel, banana peel, orange peel, potato solid waste, tomato solid waste etc.
- Organic acids have great importance because of their varied application from food to pharmaceutical industry, particularly, lactic acid, acetic acid, oxalic acids. Acids such as citric, malic, tartaric and succinic have been used traditionally as preservatives in foods. The horticultural wastes are rich in moisture, carbohydrate, protein and fats therefore, these can be utilized by a mixture of enzymes for the preparation of valueadded commodities.
- SCP (Single cell protein) are rich in protein (60–82% dry cell weight), carbohydrates, nucleic acids, vitamins and minerals and also rich in lysine and methionine which are limiting in most plant and animal food. The fruit

and vegetable residues also act as substrate for the production of SCP.

- The most important role of fruit and vegetable waste/ residues is to process a large variety of enzyme from microbial fermentation They have been used in various industries such as bakery, meat, brewing, dairy industry etc.
- A biopolymer called Polylactic Acid (PLA) having properties similar to polystyrene can be produced from carrot processing waste, beet molasses, potato starch, etc

Further, India ranks first in the livestock wealth. The contribution of livestock industry is > 12% GDP. Majority of waste produced in the meat industry is during slaughtering. The slaughter house waste consists of the part of the animal which can't be sold in the market or used in any other meat product. It includes bones, tendons, skin, blood, internal organs and the contents of the gastro-intestinal tract.

- Animal blood has high heme iron and protein and has been used in many countries in blood sausages, blood pudding, biscuits, bread, blood curd and blood cake. It is also used in fertilizers and animal feed. It is used as a protein supplement, vitamin stabilizer and a source of trace minerals. Blood plasma has excellent foaming capacity and can be used to replace egg in the bakery industry.
- Animal hides have been traditionally used in shelters, clothing and containers. It is also used as leather shoe and bags, sports equipment, cosmetic products, edible gelatine and glue.
- Bones have been used in soups and for gelatine. Bone marrow can also be used as food. Meat and bone meal (MBM) is widely used in animal feed as a protein source in place of proteinaceous feeds because of its content of available essential amino acids, minerals and vitamin B₁₂.
- Glands and organs have been used as food. They also have been used in medicine. They secrete enzymes. Brain, nervous system and spinal cord is a source of cholesterol. Liver extract has been used by the pharma industry as a source of vitamin B12.
- The exploitation of by-products of food processing as a source of various value added products is a promising field for the farmers, growers and industry since it increases profits and lowers cost. The utilization of these wastes is necessary for sustainable management of resources and to accelerate the economic activity. Commercialization of these technologies will help in reducing the damage to the environment.
- There is a pressing need of the hour to develop cost effective technologies which could benefit the industry and the environment equally.

MY MENTORING JOURNEY

By Ulhas Vairagkar

[B.Tech Chemical Engineering, 1978 Batch graduate]

I like interacting and talking to young people. I realized a bit late in my life that I like to teach. I use 'teach' here in a conventional sense. I love to study the subjects (Math, Science, Economics, History & Political Science) that I teach to school kids and enjoy chatting with kids. While learning to teach, I realised how wonderful NCERT books are. Further, I do not know the answers to quite a few questions that the kids ask, I have to constantly seek help from Google devta! I believe that if one wishes to learn something well and likes the subject, there is nothing like teaching!

Let me get back to mentoring. In my last avatar at T.I.M.E. (an organization that trains students for MBA test-preparation), while I enjoyed teaching subjects like Data Sufficiency, Data Interpretation and Logical & Critical Reasoning that are a part of entrance exam for MBA, I believe, I helped more students and colleagues by 'counselling' and helping them to take better life decisions. The range of my 'counselling' included pre-marriage & post-marriage counselling, divorce counselling, mid-career counselling besides the 'plain vanilla' career counselling. While counselling, I discovered that I gained as much from it as they may have. It also helped me build closer relationships with many students as well as colleagues/others.

Post-'retirement' from T.I.M.E., I have continued to counsel/guide/advise various ex- students/colleagues and others in the similar way I used to do earlier. The broad rules and style that I had decided for myself continue to be in force. My favourite tools are 'why and how'. I do not prescribe, nor recommend any solution but ask several probing and follow-up questions, help them to generate alternate options and more than anything else, listen and offer a nonjudgemental, 'safe' space.

Mentoring is a relationship based on mutual trust and respect. Usually, a mentor is much older & more experienced while the mentee is younger, who wishes to develop him/herself personally/professionally. However, effective mentoring is not a one-way street and adds value to both the parties. Mentoring when conducted on one-to-one basis is more effective compared to the mentoring done on one-to-many basis. When I came to know about Mentor Together (MT) during my excursions on internet, I applied and went through a well-structured screening process, which by itself was a good learning for me. After qualifying, I awaited to be allotted a 'mentee'. One fine day, I was informed about Shital Dhole being the 'allotted one'. I was surprised, for I was expecting a male mentee. I was under the impression that gender matching is de rigor while matching mentor-mentee. Anyway. Our first conversation was mostly about getting to know each other. We clicked. I do not fully comprehend why two persons click almost instantaneously. Sometimes, it takes more time to click and sometimes 'clicking' just doesn't happen! In the past, similar 'clicks' have happened with me with only a few persons. Within the first few minutes of meeting and talking, one senses a connection. Psychologists and researchers have some plausible explanations, but it is still an unsolved mystery till now.

Shital reminded me a lot of my childhood in terms of her dreams, her innocence and naivety. But she is more hardworking, more tenacious, more down-toearth and more ambitious compared to what I was at her age. When we started discussing the first module of MT's structure, our conversation was business-like, serious and sticking to the structure. But within the next 10-15 minutes, it became a friendly banter since it does not take much for Shital to erupt into peals of laughter. And once it starts, it continues for quite some time.

She is from a small village in Maharashtra and belongs to a farming family. A bright student, she is a recipient of scholarships during her diploma and degree courses in Civil Engineering. She is currently in her final year of engineering and aspires to become an IAS officer.

Coming to MT's programme. It is well-structured, consisting of 15 sessions/modules to facilitate the interaction between the mentor and mentee. The mentors offer their time and support on a pro bono basis. A mentor is allotted one mentee at a time and the interactions are on one-to-one basis. Both mentor and mentee are required to independently go



through each of these modules by themselves. Each module includes case studies / exercises / quizzes / videos. Both mentor and mentee must independently answer the questions in the module and record their answers and reflections on web/android app.

After completing this, both get on a call at a mutually convenient time and discuss the questions, their respective answers, reflections and any related issues that may come up during the discussions. Each of our calls lasted anywhere from 60 to 120 minutes and I enjoyed our discussions immensely. There is no person present from MT on these calls and they come into the picture only in case the conversations do not flow smoothly.

The modules include and focus on areas like personal vision, values and beliefs, challenges in personal and professional life, decision-making, planning to achieve one's goals and self & emotional management. The mentor may also plan for sessions not covered in the structure based on the needs of mentee articulated in the discussions. We had three additional sessions – one on 'career goals' using Simon Sinek's video 'importance of why', second on knowing oneself using MBTI and Johari window and the third on 'how to improve verbal and written English communication skills' which was based on Shital's weakness identified by her. It takes about 4-6 months to complete all the modules. We had about 15 sessions at a frequency of about one session every 7-10 days.

I strongly believe in the power of stories. One of the reasons we clicked because we both like to share our stories. Shital and I shared many stories from our respective lives. Her stories of struggles, her gentle laughter and her compassion were fascinating as well as inspirational. For me, it was a trip down memory lane.

Our discussions ranged across many areas – some related and some not related to the various modules. We discussed about our values, how they have evolved and how they have shaped our beliefs, attitudes and behavior. We had interesting discussions about caste, religion, gender and their influence in our lives. We also shared our views about the people who have impressed and influenced us.

A fair amount of time in our interactions was spent in discussing about why IAS and why Shital wishes to become an IAS officer. We discussed about the power and authority that the IAS officer wields and a judicious use of it can bring about the change in the lives of less-advantaged persons and address the socio-economic ills in India. On my suggestion, Shital wrote a long essay for herself 'Why I wish to become an IAS officer' that helped her build greater clarity and conviction.

The discussions also included how to prepare for the various stages of UPSC exams that an aspirant must clear to qualify as an IAS officer and the degree of difficulty in qualifying. The difficulty level and number of attempts that may be needed to clear UPSC exams also brought home the need to consider parallel plans to earn a livelihood to support her family during this period and whether one needs a plan B if UPSC does not work out.

Shital shared her challenges in her personal and college life when she left her home and stayed in the hostel for the diploma course after class X. One of our calls was taken by her while she was working on her farm. My wife and I could see lush green fields on the video call and got introduced to her mother and brother. This was possibly the point when Shital transited for me from a mentee to be more like a daughter, a family member.

It is more than three months since our formal interaction as a mentor and mentee has ended but we keep in touch. It is such a joy talking to this simple, sweet and ambitious girl whose self-belief, positivity and down-to-earth nature has been like a fresh and gentle breeze in our lives.

Thank you Shital for being Shital! I am sure that your dedication, focussed efforts and never-say-die spirit will make your dreams come true.

Thank you Mentor Together aka MT for connecting me with Shital.

I am lucky to have gotten connected to another bright and chirpy mentee through Mentor Together. More about her some other time.







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- Kuloor Memorial Award for the Best Technical Paper published in the Institute Journal "Indian Chemical Engineer" in its issues for 2020
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- Awarded with "Best Teacher Award for the year 2021" in the field of higher technical education by Rashtrasant Tukadoji Maharaj Nagpur University Nagpur.
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- Headed Mahindra research valley's ESOPs, a social network to empower and skill enhancement for underprivileged kids

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- Bagged the Thermax Innovation Award
- Bagged the Thermax Operational Excellence Award
- Bagged the Thermax Super Achiever Award
- Bagged the Thermax Proficient Employee Awards (X2)
- Currently studying at TU Delft (World Ranking-13)

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- Nominated Vishwas Shinde Batch - 1987
- Successful Businessman, Started EPC firm ELIXIR CONSULTANT UK and running consulting business in UK, middle east ,Australia , India & USA
- sanjay.rinke@elixiruk.com



Crystal Glass Mosaics Opaque Glass Mosaics Diamond Glass Mosaics Stainless Steel Mosaics Hand Cut Murals







- Bagged the prestigious MTC Global Outstanding Corporate Award, Management Consulting 2021
- Bagged the Young Personality of the Year Award Male (Below 40 years) at 2nd International Business and Academic Excellence Awards (IBAE) 2020

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chairman@psachem.com



 Article " Emergence of a new World Order, post pandemic.
Published in Indo Gulf times, December 5 - 11, 2020

smbenvprojects@gmail.com



ARUN SRIVASTAV ATRIBUTE



Dear Arun,

It's only a few months now that you are not with us.

It is still difficult to believe, as we are preparing for our annual get together that our most vivacious, the most high-flying achiever and our the most down to earth friend is not amongst us.

It wasn't so long ago that we last met at Lonavala for our three days sojourn and what a fantastic time we had! We remember talking about you having a very modern haircut generally seen these days in the younger lot and many of were surprised that a Government of India's Cabinet Secretary level person could even contemplate sporting such a haircut, let alone actually getting it! Little did we suspect that it was forced on you to some extent because of the deadly ailment you carried then. Needless to say, it went very well with your youngish looks and jovial personality.

The scientific fraternity shall remember you for some very crucial and fundamental work in the Department of Atomic Energy, leading the national level team there and even chairing the international council in the great ITER project. The project is probably nearing completion now but we are sure you will be sorely missed at this once-in-a-lifetime moment of fulfilment when it gets commissioned. Many of us had only a very hazy idea of what this was all about but you always took time and efforts to explain to us this highly complex project requiring contribution from several participating countries. You rose in your career as high as one could but always remained a smiling and cheerful friend to us, always willing to spend time with us, ready to participate in all our common activities. To you, it was second nature, but we probably could never make you fully realize just how immensely proud we were of you. One doesn't give serious compliments to a dear friend, though one really should. And you were always going to be with us, none of us had the remotest inkling of the cruel blow of fate that was to fall on us. And you knew, but you never told.

We are flooded with memories of unforgettable moments, starting from college days with all those night excursions during the hostel life, to our progress in life with family and kids. And now when most of us, calling it a day for our professional careers, are looking forward to a life of contentment and enjoyment with friends, we are without the cheerleader of our batch. We can only cherish those moments and move on with a yearning pang for the years that are no more.

But you will live forever in our memories.

Yours LIT 1979-83



IN FOND MEMORY OF





KIRAN PURANDARE

1980 Batch, B.Tech (Chemical Engineering)



ANANT SHANKAR PUROHIT 1957 Batch,

B.Tech

Preparations for Global Alumni meet 2021

LIT Alumni Association has planned a grand Global Alumni meet 2021, which will be held on 25 December 2021. This LITAA Global Alumni meet 2021 shall see participation of LIT Alumni from all over the world.

This edition of LITAA Samvaad shall be unveiled on this auspicious occasion of Global Alumni meet 2021.



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