THE ELEGANT SOLUTION –
Toyota’s Formula for Mastering Innovation

PREFACE

Believe it or not, Toyota implements a million ideas a year.

These ideas come in from every level of the organization.

At Toyota every idea counts.

Toyota practises “Good Enough Never Is”

Toyota thinks differently from others.
   “How to Think differently”
   “How to create compelling customer value”
   “How to flow that value through streamlined processes”
   “How to embed a real discipline around the pursuit of perfection”

Toyota culture is continuous focus to bring higher levels of employee productivity, engagement, continuous improvement and constant creativity.

Defining Innovation
Innovation is trying to figure out a way to do something better than it is ever done before.

Defining Elegant Solution (Innovation)
Elegant Solution is the simple one (as against complex) which makes the greatest impact. The solutions are backed by thorough study even extending for some years by continuous more improvements towards perfection. The solution will be enduring and definitely not a transient one.

In fact, Elegant Solution is Innovation at its best.

Elegance is finding the aha solution to a problem.

For this Creativity plays a part.
   Simplicity plays a part
   Intelligence plays a part
   Add Subtlety, Economy and Quality
   YOU GET ELEGANCE

How does Toyota go about towards Elegant Solution (Innovation)

They adopt three principles for this.

I. Ingenuity
II. Pursuit of Perfection
III. Fit
We discuss the same as below –

I. INGENUITY

Home Truth - Increased competition in any present day business environment demands Innovative Thinking – How to do the job better, Cheaper, than the competitor.

The solution will be obviously Creativity.  
But this alone is not enough. It requires more i.e. Application.  
What we desire is “Applied Creativity” which is the definition for Ingenuity.

Applied Creativity –

It is not

Sitting around, Dreaming up earth shattering ideas in concocting a new secret to beat the competition.

A bevy of high ranking executive managers involved in a costly and complex process.

An Ivory Tower edict with specific marching instruction handed down in command and control function.

About a company

Artistic Expression

It is

Making the best use of everyone’s expertise

Making a quick dip in the basic fundamentals to produce something of value.

About each individual person’s contribution

About every man who blends his skills with a mindset of artist and discipline of scientist.

Invoking Ingenuity (Applied Creativity) –

Conventional Thinking is that Creativity is a special quality, a talent given to a few and is a natural gift of God.

This is totally wrong. At least in our business operation.

Businesses are getting more competitive. Jobs are getting more specialized. Budgets are continuously shrinking and deadlines are continuously tightening.

To meet, we have no other choice to find a solution to Applied Creativity and that too this should be everyone’s job.
How do you Invoke Ingenuity – Simple Answer – “Dig your own job”

Where to Dig (Engagement)
Dig your job

How to Dig (Exploration)

Where to Dig
This essentially means how you personally connect with the work allotted to you. Understanding clearly what is the meaning of your work to your organization. If your ties with your work is strong Creativity flows more freely.
You should not lose sight what is the meaning behind your work for the large organization you are working.
Why is your work more important.
Understand what is it that your organization is fighting for.
Generally, highest quality, lowest cost and shortest time.

How to Dig
Within the limitation of your resources and leveraging your constraints to drive new ideas and methods.
Drive for new thinking “Is there a better way”
“Is there a different way”
“How to optimize my resources”
“Am I in the rut of conformity of thought”
“Have I forgotten to ask questions”
“Am I afraid to ask (to others who might have trod the same path)”

The real MUSE for Creativity is to ask the 6 questions above.

Obstacles for Ingenuity (The usual excuses) –
Our organization is too bureaucratic.
My ideas don’t count.
I don’t get the resources I need.
My boss won’t let me.
My subordinates are lazy and incompetent.

Conclusion for Ingenuity –
Ingenuity starts with your daily work and the job in front of you – Dig your own job.
This is a different mindset but it is certainly a form of leadership.
II. PURSUIT OF PERFECTION –
Perfection is the highest standard of excellence, the ideal.

Our aim in Innovation is to achieve this perfection – Innovation will be at its best.

The solution thereof would be the one which would stand the test of time.

Toyota, Apple, Gore, GE reaches out for such perfection. For them perfection is always, always the target. For this perfection they are prepared to invest in time apart from efforts and cost.

Toyota in Lexus brought out the best car of the world but that took them 8 long years besides efforts and cost. Result was from the very first day of launch, they beat their competitors BMW, Mercedes, Cadillac, Jaguar, Audi, Polo. Lexus became the best of the best.

Indirect contrast we have the example of cell phones where models change almost every year with more and different doohickeys. The Cell phone takes pictures, sends messages, records videos, plays music ------ but its main function of making calls is------ just OK.

A Discipline of Increments –
Perfection pursuit has to be continuous incremental, evolutionary improvement.

Each day should show the incremental improvement.

Time to achieve perfection should not be a constraint.

There cannot be such “C’mon people now, let us get Creative, Let us all get together try to do something better”.

The pursuit has to be disciplinary, not programmatic.

It can’t be relegated to a department.
It can’t be reserved for top level management.
It can’t be eliminating defects.
It must be the daily work of everyone in the organization and not a sideline event or activity.
It is the requirement of relentless vigil and an eye for detail by everyone.
It demands a strong discipline of everyone to optimize the quality, cost, speed, the basic requirements of Innovation.
It must be universally understood to be a path for the future.
Everyone has to own it.

Obstacles
The kind of discipline demanded is a fundamental mind shift.
That makes it hard.
There is no easy way.

Big ideas will draw applause and spotlight. But soon they fade away without the discipline, the incremental approach. E.g. Leonardo da Vinci had big ideas – he put in his books - machines which can fly – we got this only 500 years later.
The Toyota Way –
Toyota established “Pursuit of Perfection” by a benchmark method.

They made the benchmark “The Most Ideal” and worked backwards to remove anything that stands in the way to Ideal.

This was their brand of “Continuous Improvement”.

They adopted this in “Toyota Lexus Model”

**Conclusion**

Perfection define –

a. If you want big leaps, take small steps
b. If you want quantum impact, sweat the details
c. If you want to boil the ocean, do it one cup at a time
d. If you want excitement, get boring.

### III. FIT –

Innovation can be called great only if it offers a meaningful improvement, however small in the use of everyday and everyone in the organization.

Innovation is great when it fits seamlessly into the everyday beat of those who use it.

It is the right thing at the right time for the right people.
It fits right as if it has always been there.
E.g. Thomas Edison incandescent lighting lamps - displacing gas lighting.
Principles into Practices

The Three Principles – Ingenuity, Pursuit of Perfection & Fit were earlier said to be the Principles for Innovation.

For progressive discerning organization, the practice of these three principles are a must and they should have absolute priority.

Without these the organization will be only all about the money. This balloon will eventually burst.

How to make these three principles actionable –
Bringing them to life, Applying them, and building a capability to find elegant solutions.

There are many tools for practicing these three principles.
However we shall be discussing only one of them – “Let Learning Lead” (for others kindly refer book).

LET LEARNING LEAD
Learning and Innovation go hand in hand.

But Learning comes first.

Without Learning, there cannot be Innovation.

This Learning Process is by which we improve and advance.

This Learning is not about books or lectures or workshops.

This Learning is on the job and of the job – the only true way to innovate.

This Learning must be integrated in our daily work.

Learning about the job and with the constant question “Why it cannot be done better” triggers Creativity down the line.

Learning therefore definitely comes first.

That’s called “Learnership”

Toyota – Learnership and the Ohno Circle
It is said that Toyota is the ultimate Learning Organization.

They have “Perpetual Learning”

This is totally ingrained in the organization.

What Toyota teaches is “Thinking”

How to think critically is something handed over from Mentor to Disciples.

This thinking comes from the power of observation.
**Ohno Circle**

Mr Ohno of Toyota had his own version of teaching “Thinking”.

He used to draw a circle in the shop floor of the factory which is a bottleneck area.

He used to make his men stand inside the circle all day long and watch the process. And also continually asking “Why”.

The person in the first or two hours understands the process.

After perhaps two hours he begins to see the problem.

In the third and fourth hour he starts asking “Why”.

Then finally he finds the root cause of the problem.

Then he thinks the counter measures.

Simple indeed!

What Ohno’s circle does – Is making the person think deeply and think for himself.

**Learnership Decoded – The scientific method**

The Learnership experience generally occur in a 4 phase cycle.

1. Questioning
2. Solving
3. Experimenting
4. Reflecting

Various versions (basic principles being the same) have been adopted by various agencies for tackling problems.

Japanese during war days – Plan – Do – Check – Act (PDCA)
Caption Boyd in aircraft dog fights – Observe – Orient – Decide – Act (OODA)
Department of Defense USA – Scan – Analyze – Respond – Assess (SARA)

Thus different organizations tackling problems in their specific work have adopted their own routine for solving them.
Towards a Grand Unified Process
If the organization does not have a solid routine for solving problem we suggest the Grand Unified Process for solving problems (Innovation).

The beauty of IDEA Loops is that they can apply to any profession for his problem to be solved innovatively.

A doctor in the emergency room.
An Inventor in his workshop.
An Artist at her easel.
A Scientist in his laboratory
An Operator on a 911 call (Emergency)
An Accounts Officer targeting date for submitting Profit & Loss Statement to the Organization.
An Engineer programming new software
A Mechanical Engineer minimizing cycle time for maintenance of machinery
A Civil Engineer optimizing his cycle time for any process

The beauty of IDEA Loops is that they can apply to all situations.

Investigation, Design, Execution and Adjustments are the Universal Common Denominators to Successful Innovations.
Each phase is focused on a few key questions.

**Investigate**
- What are you trying to do and why?
- What are the facts and issues?
- What’s the problem and cause?

**Adjust**
- What worked, what didn’t, and why?
- What adjustments must be made?
- What are the next steps?

**Design**
- What does perfection look like?
- What ideas exist for achieving it?
- What is the best solution?

**Execute**
- What do you expect will happen?
- How will you test the solution?
- What is the scope of impact?

**HANSEI**
Application of IDEA is not enough.

It must be accompanied by “Hansei” which is the Japanese word for Reflection

Hansei is the rigorous review conducted after action has been taken.

This is a huge and absolutely vital part of Learning.

This is a reality check even after the success of the solution to the problem.

Hansei means the team examining the course of action and the interim measures and not just the final results.

Hansei demands a thorough critical session. Hansei meetings are stern and serious.

Hansei fosters real learning and insight.

Hansei is performed regularly irrespective of performance.

Hansei addresses regularly –
- What was supposed to happen
- What actually happened
- Why was the difference

These 3 questions allow learning for future development.
CONCLUSION
We do hope that the synopsis has brought home the message that Innovation is “Lean Construction” practices at its best.

While closing this synopsis, we request an attempt for a format of one page for implementation IDEA in any Process / Processes in Civil Construction.

We further would desire if the three Principles could be translated into Lean Construction with specific applications.