Strategies for Profiting from the Trends That are Transforming Our Industry and Market

NSAA Continuing Education
April 27, 2012

There’s NO Silver Bullet!

Sorry ...
Back to “Normal”? 

or ... 

A “New Normal”? 

“ ... everything about the structure of the Canadian construction industry, internally and externally, is going to change.” Geoff Smith, CEO, Ellis Don
“Get Outside of Your Comfort Zone”

And when the first heart attack comes, it’s amazing how many people find the self-discipline to start living right.
And when the first heart attack comes, it’s amazing how many people find the self-discipline to start living right.

Crisis

Why?

"If you don’t know where you are going, you’ll likely end up somewhere else.”

Yogi Berra

Why?

FOCUS

- You wouldn’t start building without a plan …
- Focus your ideas, dreams
  - maintain focus = consistency
  - consistent application of resources
  - consistent messages from entire team
- Markets
- Services
- Character and culture
- Competition
Why?

- Value
- Manage Growth
- HR recruitment/retention
- Transition and succession
- Financial success – sustained profitability
- Financing
- Personal and professional fulfillment

Importantly...

While maintaining consistency and focus, a solid strategy, effectively implemented and monitored ... ensures you adapt to changing times in a controlled, managed way

What’s the Brix level of your carrot?

Forget ‘certified organic’—the real test of food lies in a 19th-century measurement

Differentiate
“No.”

"Too many firms have made growth and size, rather than differentiation, their strategic priority.”

"... it is certain business decay if you try to please all market segments.”

"If you can’t afford to say no until you’re successful and distinguished, then you’ll never be successful and distinguished.”

David Maister

"Branding and culture are two sides of the same coin.” Zappos CEO Tony Hsieh

"Culture Creates Experience. Experience Creates Brands. Brands create value.” Bruce Philp
Components of Business Strategy

*Four key questions* ...

1. What do we do?
2. What value are we creating and delivering?
3. For whom do we do it?
4. How do we excel at doing it?

*... regular, formal review ...*

How?

- Inputs – incl. outside of the industry
- Consider impact on your business
- Opportunities
- Risks
- Create possibilities
- Weigh the options e.g. cost/benefit analysis
- Decide
- Tactics and execution

Strategic Plan

- Mission
- Vision
- Strategic Objectives
- Key Performance Indicators

Mission

Description of the purpose of the organization.

- “To change the world through technology”
  - SONY
- “We excel at moving people”
  - GO Transit
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Vision

Graphic depiction of the future state of the organization.
- Defines the culture, reflects beliefs and values
- “The Network is the Computer”- Sun
- “McDonald’s vision is to be the world’s best quick service restaurant experience. Being the best means providing outstanding quality, service, cleanliness, and value, so that we make every customer in every restaurant smile.”

Hubbert Curve

© 2009

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Opportunities? Threats?

- capital cost increment less than believed
- innovation and risk
- new tech
- construction process
- new complexities
- specialists? Design, construction, ops ... 
  - LEED® AP
- need for robust systems
- durability
Living Building Certification

• Net-zero x 3
• No water from off site
• No energy from off site
• No waste sent off site
Defossilizing Fuels

- Transportation: Fitter Vehicles, Smarter Use
- Buildings: Design for Better Living
  - Understanding Today’s Building Quagmire
  - The Efficiency Revolution
  - The Conundrum and the Challenge
  - Solving the Efficiency Puzzle
- Industry: Remaking How We Make Things
- Electricity: Repowering Prosperity
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Nuclear Fusion
Beaming Power From Space
Turning Waste Heat into Tornado Power
Capturing Efficiency Through Biomimicry
Making Fuel Refineries Out of Algae
Raising the Bar on Energy Storage

$125 B

$200 B

50 yr Strategic Plan
3.1 > 5% of GDP
12% > 22% maintenance
Study is on the RCCAO website
Infrastructure

- Transportation and Transit
- Heavy civil
- Education – elementary, secondary, post-secondary ... satellites
- Research, commercialization hubs
- Hospitals PLUS ongoing redevelopment – continuum of care, LTC, community-based
- Social and affordable housing
- Culture, tourism, justice, social ...
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Our oldest grandson, then 7, asked “Nana, what’s that?”

Nana answered and then explained how it works. “It looks really old, Nana.”

“Yes, it’s almost 25 years old!”

“Does it still work?”, he asked, being so used to his parents getting a new cell phone or laptop every two years.
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Gensler
Expertise | Projects | Viewpoint | About Us

01
Destination Airports
02
Manpower’s Makeover
03
SFO’s Terminal 2 ushers in air travel’s sustainable, passenger-friendly era
04
Value-Based Retail

KieranTimberlake

Our Approach

To further our understanding of architecture and develop new ways to see, design and make the products around us, the firm sponsors substantial research into design, development and innovation. Through research into new materials, processes, assemblies and products, KieranTimberlake seeks ways to improve the art, quality and craft of architecture.

In 2003, KieranTimberlake published the book refabricating ARCHITECTURE (Rizzoli) which examines how manufacturing methodologies are applied to transform building construction. The premise of this book is based on our belief that architecture is not about style but about substance, and the very methods and processes that underlie its making.

KieranTimberlake seamlessly integrates research into design. Creativity and innovation are found in new processes, new organizations, new materials and as yet unforeseen opportunities and they are unlocked by the collaboration of architects, consultants, clients and clients. We dedicate four professionals and 10% of our gross revenue to ongoing research. We send this research team and the number of projects that we explore to grow. This commitment to research brings added value and important innovation to our commissioned architectural projects.

RISK

5%
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Ceramic rods used as solar screen

Lowest 10 rows of ceramic rods providing solar shading had to be removed because of NYC human orangutans!

Plywood protecting laminated glass canopy
"Risk Management"

"the art and science of recognizing, preventing, and mitigating threats and uncertainties"

• assumes that threats and dangers are identifiable and manageable

A Few Examples of Owner Risks

• Policy
• Project Strategy
• Site
• Approvals
• Finance
• Design

• Bid
• Construction
• Completion
• Commissioning
• Life Cycle
• Operational

Risk Management ... NOT!

"I'm sure things will work out just fine!"

Private Sector Risks

1. the "usual" business risks
2. project risks
3. risks "unique" to design and construction
4. "design professional" risks
Private Sector Business Risks (twists)
- structural/organizational
- financial
  - P/L, A/R, A/P, cash flow, balance sheet, operating line
- business development
  - rfp’s; bids; markets; specialize/niche?
- human resources
- insurance

Private Sector Business Risks
- legislation/law governing business
  - Proposed Accessibility Standard for Information and Communications
- political, public policy
- IT
- technical performance
- reputation
- quality management
- not to mention ...

So, TRANSFER what risks???
- Schedule *
- Budget *
- Finance
- Owner’s consultant’s liabilities
- Accuracy of site info.
- User/owner changes
- Changes in law, codes
- "Fitness for purpose"
- Maintenance
- Subsoils
- Environmental
- Operational
- Innovation
- Energy Performance and Energy Costs
- LCC and performance
- ...
Private Sector Risks “Unique” to Design/Construction of Buildings

- rapid, endless 'churn' in building technology
- delivery models = DBB, DB, CM, P3
- form of contract
- Green and sustainable design, incl certifications such as LEED®, Green Globes™
- innovation
- the “weakest link” in the team
- adversarial relationships

Risk Shifts in Traditional DBB

Shift in Risks

New Risks

- Information Technology
  - CAD, Project Internets, BIM
- Building Technology
  - New or unproven products/systems
  - Sustainable Design
- Perfection
- Innovation in a litigious world
- Finance
- "design"
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Largest Risks for Designers
"The study found that design errors were the most common allegations that triggered claims (involved in 35 percent of the claims), followed by errors in specifications, construction observation, inspection services, surveying, building code interpretations, shop drawing reviews and cost/quantity estimations. However, when it came to settling matters, technical issues were involved in 20 percent of all claims while everyday business practices related to the majority of claims."
DPIC Companies - 2000

Risk as a "Professional"
- personal responsibility
  - Limitations Acts
- standard of care – litigation, licence
  - the watchfulness, attention, caution and prudence that a reasonable person in the circumstances would exercise
  - standard is higher than for a member of the public
- standards set by profession
- expert testimony
- risk as an employee

Experience ...
Manifestations of risk transfer – a few examples
- inappropriate, unbalanced indemnification
- uninsurable risks
- excessive bonding or insurance requirements
- demand for unrealistic warranties
  - e.g. perpetual warranty
- no provision for contingencies
- "no change orders"

Experience ...
- "just shoot me now" contracts
- "reverse auction" procurement
- liability for third parties
- responsibility for changes in Codes, etc.
- guarantee of obtaining approvals
- elimination of ADR
- unbalanced termination provisions
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Just one example ...

Just one of the many 'objectionable' requirements in a recent Ontario RFP for architectural services ...

If at the conclusion of the bidding process in stage 4, the lowest compliant bid received exceeds the cost provided in the bidding documents by an amount (the “Overage”) greater than the contingency reserve, in addition to the remedies contemplated in GC3 (as modified by these terms) the Board may set-off the Overage against the fees owing to the architect (the “Set-Off”). If there are insufficient fees owing to pay the Overage by way of the Set-Off, the Board may require the architect to reimburse the remaining Overage.

So, TRANSFER what risks???

- Schedule
- Budget
- Finance
- Own Consultant liabilities
- Accuracy of site info.
- Users e.g. changes
- Changes in law, codes
- “Fitness for purpose”
- Maintenance
- Subsoils
- Environmental
- Operational
- Innovation
- Energy Performance and Energy Costs
- LCC and performance
- ...

Taking on and Managing Risk

1. Identifiable
2. Measurable
3. Manageable
4. Reward

“The Right Balance”

Risk AND REWARD
Risk Management Principle 1

Decisions

Risk Management Principle 2

80/20

Risk Management Principle 3

Balancing Risk

AND REWARD

Risk Management Principle 4 = Strategy

1. Identify
2. Assess and evaluate - What if?
   - Likelihood – 80/20
   - Impact
   - Responsibility/accountability
3. Make the Decision
   - Prioritize
   - Plan (Reduce, Reject, Transfer, Retain/Manage)
4. Risk Management Plan
   - Implement
   - Monitor
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Risk Assessment Table

<table>
<thead>
<tr>
<th>Description of Risk</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Issues: S, K, and C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Biological Issues: T, U, and V</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Environmental Impact: A, B, and C</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economic Impact: D, E, and F</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Political Impact: G, H, and I</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Risk Assessment Matrix

- Highest Overall Risk
- Lowest Overall Risk

Risk Assessment Table (rev)

Risk Register
A final word ...

Communication

OK, one last final word ...

Collaboration

Aggressive Procurement Strategies

• For builders, "Supplementary Conditions from hell"
• For designers, "RFP’s from hell"
• Reverse auctions – construction AND design
• Lowest, LOWEST, LOWEST PRICE
• One-sided contracts

Service and Ops

<table>
<thead>
<tr>
<th></th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design/Construction</td>
<td></td>
</tr>
<tr>
<td>+ Asset Management</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>5%</td>
</tr>
</tbody>
</table>
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**Underperforming**

Profitability

**Design Build**

Owner → Design Builder → Designer
Bundling? Think about ...

- Regional economic benefits/impact
  - Short AND long term
- Protecting Traditional Markets for Local Industry
- Local Knowledge and Local Relationships
- Local capacity
- Attract knowledge from outside local area that would improve outcomes?
- Broader economic benefits
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Bundling? Think about ...

- Project specific conditions calling for bundling?
- Similarity of work
- Public interest not compromised
- Value for money
- Economies of scale/cost efficiencies
- Fair and transparent procurement practices
- Schedules
- Financing?

Bundling? Think about ...

- O and M component calling for bundling?
- Design consistency
- Design quality
- Risk allocation
- Build quality
- Maintaining local knowledge and competition
- Efficiency in PM

SHARED

- vision
- objectives
- risk
- … and reward

Project Alliance

Gain
Pain

$ Proj OH
Direct Proj Cost
Profit
Corp OH

Project Cost and OH guaranteed
Profit and Corp OH at risk (pain)
Potential Gain if improve on “targets”
Performance Contracting

- **Maximum Incentive**
- **Target**
- **Base Fee**
- **Maximum Penalty**

Metric (e.g., Annual Cost of Energy)

Integrated Project Delivery

- **Project**
- **Owner**
- **Design**
- **EPC**
- **FM**

Project = Shared Goal
Shared Risk and Reward

IPD – Input Early

- **Impact of decisions**
- **Cost of changes**

Project life cycle
"Way of thinking and behaving that focuses on the customer or client to add value and eliminate waste."

### LEAN P D

- Define "Value" for Client
- "Waste" = resources that don’t build value
- "Make only what the customer ordered"
- Time + Money + Quality – all three!
- Team
- Share Risk and Reward – target value
- "Pull Planning" – make project run seamlessly
  - Designing, planning, managing, building
- "Last Planner"

### LEAN Opportunities and Benefits

#### 3 Opportunities

- Impeccable coordination in design, construction and between design and construction
- Project unfolds as a production system
- Project shared as a collective enterprise

#### … benefits

- 20-30% schedule saving through managed trades
- Decreased cost, less contingency
- Jointly manage risk
- Better relationships with Clients and Owners
- Greater quality design and construction
- Increased safety

### Schedule Challenges

The traditional "push" schedule says:

- P and E Rough
- Slab on Grade
- Wall studs
- M, E, P Rough
Schedule Challenges

But what REALLY happens ...

- Under-slab rough-in completed on time
- Slab on Grade
- Wall studs
- M, E, P Rough

Granular base not ready on time so concrete delayed
Drywall contractor showed up but couldn't work ... Sorted materials in the trailer then left ... then came back but had to leave for another job ... then came back but smaller crew ...
M. E. P arrived, couldn't do much ... Downsized crew ...
Result is it all drags out ...

The LEAN Key

- Manage the trades more efficiently
- Use "pull" planning ... When will work be at the point where the next trade can arrive and work productively? i.e. "hand-off"
- Commitments to those dates because everyone has "skin in the game" – sharing the incentive $$ ... or sharing the pain!
- "Last Planner" in LEAN planning
  - Actual trades are involved in planning

The LEAN Key – Planning!

- Master Scheduling
  - set milestones
- Phase Scheduling ("Pull")
  - Define hand-offs and satisfaction metrics
- Look ahead planning
  - Break down tasks (trades!)
  - Design operational plan
  - Identify and eliminate constraints
  - Analyse tasks made ready, tasks anticipated

The LEAN Key – Planning!

- Look Ahead Planning
  - IMPORTANT! – act on reasons for failure i.e. learn from failure ... Continuous improvement
- Weekly Work Planning
  - Realistic commitments from all form a network of commitments to each other
- Learning
  - Maintain a constant cycle of measure, analyse, learn ...
  - Then design and execute solutions
LEAN Risk Management

- Risk is fairly shared ... Risk managed by the party(ies) best able to manage it
- In traditional delivery we try to imagine all the risks up front, then build robust contract provisions hoping to shift the risk
- In LEAN and Integrated Project Delivery, we minimize overall risk by reducing unknowns working together through the project

Characteristics of LEAN and IPD

**Design**
- Design what owner values
- Draw only for deliverables
- Budget used as a critical design criterion
- With trades involved from outset, real-time, realistic costing - "target value design"
- "Pull plan" information exchanges
- Delay decisions until you really need to decide

**Construction**
- Teams formed early
- Core group (with skin in the game) manages
- Target Value Design continues
- "Pull plan" delivery
- Built in safety and quality management plans
- Integration of trades to create "flow"

LEAN P D

- Target Value Design
  - Determine "usual cost" of project, commit to reduce by %age - that’s the incentive envelope
- Manage one contingency
  - Rather than all parties, trades, suppliers, etc. each carrying their own, with no central management
- Save labour through efficiency
  - Savings shared among that core group with "skin in the game"

Key Point ... Contingency

- In lump sum construction contract, all in the supply chain carry a contingency
- Designers build contingency into their budgets
- Owner carries a contingency
- All separately "managed", "secret"
- If a trade works more efficiently, it keeps the benefits to itself
Key Point – Sharing Benefits

• In lump sum, if a trade can work more productively, it keeps all of the benefit to itself
• Meantime, no incentive for others to enable that trade to work more efficiently
• In LEAN IPD benefits are shared by all of the parties with 'skin in the game'
• Core group is managing for mutual benefit, best project outcome

For instance …

• Two storey high-end industrial building with lots of plumbing from below-grade to 1st and 2nd floor and through roof
• Plumber and structural devise a scheme where plumber can prefab stacks off-site and erect in coordination with structural steel
  – Major $$$ savings on plumbing
  – a bit extra $ on structural
  – Whole team shares the savings!

Illustration …

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Actual Cost 1</th>
<th>Actual Cost 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour</td>
<td>$3,500,000</td>
<td>$2,800,000</td>
</tr>
<tr>
<td>Materials</td>
<td>$3,500,000</td>
<td>$3,500,000</td>
</tr>
<tr>
<td>FFE</td>
<td>$600,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>Design/PM</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Permits, Bonds, Misc</td>
<td>$400,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>Contingency</td>
<td>$1,000,000</td>
<td>$0</td>
</tr>
</tbody>
</table>

Target Cost: $10,000,000
Labour: $3,500,000
Materials: $3,500,000
FFE: $600,000
Design/PM: $1,000,000
Permits, Misc: $400,000
Contingency: $1,000,000
Contingency: $0

(Improve labour productivity 20% + manage without contingency = 17% less)
Ah, but who benefits??

• Traditional stip sum delivery ...
  – That 20% increase in productivity in labour, even though others have contributed innovative ideas, to a large degree enabled the savings, would all go to the labour component ... While the real cost of the labour has been reduced by $700K, labour still gets paid the full amount ... and pockets all of those savings

Note re Contingencies

• Not to suggest that there won’t be additional costs – it’s still a construction project, after all! ... The difference is that the target of the core team is to minimize those additional costs through:
  – Improved planning and execution
  – Innovation
  – Greater efficiency and productivity
  – Collaborative problem-solving

Ah, but who benefits??

• LEAN/IPD
  – Those savings are shared among the core team according to the formula negotiated at the outset of the project
  – PLUS ... by avoiding multiple contingencies, without central management (central control) AND by agreeing to exclude the contingency from the budget, the core team also can share in savings from contingencies

What it looks like ...

1. Owner and advisors prepare business case
2. Programming and design sufficient to prepare global estimates
3. Core Team assembled ... Owner, Design Team, Construction Team, Major Trades
   • They collocate to facilitate collaboration
4. Design continues to establish Preliminary Cost
What it looks like ...

5. Major suppliers added to process
6. Validate Expected Cost (under traditional process)
7. Target Value Design process continues to identify achievable Target Cost
8. Construction underway ... Core Team collaborates to protect maximum savings between Target Cost and Final Cost
9. Core Team shares savings
Fabrication

Home Delivery
MOMA
2008

Arx Hotel Construction time lapse building 15 storeys in 2 days (48 hrs)
by efficientenergy

More news on Yahoo!
- Video: Details show very promising
- Singer's pregnancy news leaked through Twitter

No stationary construction crane needed

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Consolidation

Diversification
Diversification

“Everyone is going to continue to invade each other’s space.”

Geoff Smith

Specialization?
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1873 Long Depression
• First Reset

1930s Great Depression
• Second Reset

2008 Great Recession
• Great Reset

1873 Long Depression
• First Reset
• Shift Agriculture > Industrialized
• Urbanization

1930s Great Depression
• Second Reset
• Innovation/Mass Production
• Suburbanization “Mad Men”

2008 Great Recession
• Great Reset
• Manufacturing > Knowledge/Idea-based
• Service jobs > Middle Class
• Consumption patterns e.g. Home ownership/car ownership
• Infrastructure e.g. Transit
• Megaregions plus Greater Density in Suburbs

The GREAT RESET
How New Ways of Living and Working Drive Post-Crash Prosperity

RICHARD FLORIDA
Bestselling Author of The Rise of the Creative Class

Strategies 4 Impact
Professional Service Firm

R. Flaming Architects

Oslo Streetview Image Detached

Oslo Streetview Image Detached
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Source: Bombardier
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Adaptive Reuse

Government Policy
- Affordable Housing ...
- Carbon Tax vs. Cap and Trade
- Climate change and sustainability
- Globalization
- Immigration policy
- Green Belt/Planning Legislation
- "red tape world"
- Infrastructure investment

Government Policy
- Accessibility Standards in Ontario
- Building Codes
- Bank of Canada
- AIT
- Regulatory
- Municipal bylaws
- Design review by municipalities

“Economy Spinning Its Wheels...”

Source: Alex Carrick, REED   October 11 2011

Canada Industry-Based GDP July11 (seasonally adjusted)
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Components of Business Strategy

Four key questions ...

1. What do we do?
2. What value are we creating and delivering?
3. For whom do we do it?
4. How do we excel at doing it?

... regular, formal review ...

"The necessary outcome of strategic planning is not analytical insight but resolve to accomplish something." David Maister