Biomimicry and Business

webinar
Look to the abundance of lessons nature has to offer and develop a biomimetic design that solves an important food system challenge while supporting the health of our planet.
TODAY’S WEBINAR

PRESENTATION
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• Certified Biomimicry Professional
• Clean Tech Program Manager for the City of San Diego

Q & A
Why Business Planning?
"Meeting the needs of the present without compromising the ability of future generations to meet their own needs." – World Commission on Environment and Development
Crossroads - Sustainability
Why Business Planning?

To figure out FIT: your function, your niche, your value in your desired ecosystem.

**Source:** Value Proposition Design, Strategyzer.com
Why Business Planning?

How well do you “fit”?

In business planning terms:

• Product/Service
• Place
• Price
• Promotion
• People & Planet
Triple Bottom Line
Social Enterprise

Social enterprises are revenue-generating businesses with a twist.

- Whether operated by a non-profit organization or by a for-profit company, a social enterprise has two goals:
  - To achieve social, cultural, community economic
  - And/or environmental outcomes; and, to earn revenue.
B Corporation

B Corps are for-profit companies certified by the nonprofit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency.
How does business planning work with a design process?

- Scope
- Ideate
- Assess
- Iterate
Types of Fit

1. Product-Solution Fit
   - on paper

2. Product-Market Fit
   - in the market

3. Business Model Fit
   - in the bank
Business planning is about pattern recognition

10 of Nature’s Unifying Patterns

1. Nature uses only the energy it needs and relies on freely available energy.
3. Nature is resilient to disturbances.
7. Nature uses chemistry and materials that are safe for living beings.
8. Nature builds using abundant resources, incorporating rare resources only sparingly.
9. Nature is locally attuned and responsive.
10. Nature uses shape to determine functionality.
System Thinking Approach

**THE ICEBERG**
A Tool for Guiding Systemic Thinking

- **EVENTS**
  What just happened?
- **PATTERNS/TRENDS**
  What trends have there been over time?
- **UNDERLYING STRUCTURES**
  What has influenced the patterns?
  What are the relationships between the parts?
- **MENTAL MODELS**
  What assumptions, beliefs and values do people hold about the system? What beliefs keep the system in place?

*Image credit: Northwest Earth Institute*
FOOD PRODUCTION
Growing and harvesting crops, Livestock/seafood
Soil nutrients, Irrigation, Pest control, Erosion,
Energy, Climate

PROCESSING & DISTRIBUTION
Spoilage prevention, Packaging,
Water use, Transportation, Supply
chain management, Community food security

RESOURCES RECOVERY
Food and packaging waste,
Collection and capture logistics,
Utilization opportunities, Returning
nutrients to the system

CONNECTIONS TO OTHER SYSTEMS
Economic System, Social Systems,
Political and Regulatory Systems,
Health System, Ecological Systems

some FOOD SYSTEM challenges & leverage points
Lean Launch Approach to Business Planning

Business planning should be done for two reasons (Steve Blank):

• To organize one’s thoughts
• To turn hypotheses/guesses into facts

With BGDC, turn some guesses into facts…

• Value Proposition: Describes your solution to other species in your ecosystem
• Market Segment: Defines who needs your solution
• Industry Sector: Identifies your market ecosystem
• Competition: Existing keystone species.
• Partners: Create a symbiotic value chain

Source: Value Proposition Design
Biomimicry Business Model Canvas

<table>
<thead>
<tr>
<th>KEY PARTNERS</th>
<th>KEY ACTIVITIES</th>
<th>VALUE PROPOSITIONS</th>
<th>CUSTOMER/STAKEHOLDER RELATIONSHIPS</th>
<th>CUSTOMER/STAKEHOLDER SEGMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KEY RESOURCES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COST STRUCTURE</td>
<td></td>
<td></td>
<td></td>
<td>REVENUE STREAMS</td>
</tr>
</tbody>
</table>

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# Biomimicry Business Model Canvas

**Project Name:**

**Project Purpose:**

## KEY PARTNERS
- Describes the network needed to make the business model work:
  - Who are our Key Partners and suppliers?
  - Which Key Resources are we acquiring and Key Activities do they perform?
  - Do we reward cooperation and encourage diversity?
  - Do we strive for symbiotic rather than parasitic or altruistic partnerships?

## KEY ACTIVITIES
- Describes the most important things an enterprise must do to make its business model work:
  - What is required to deliver Value Propositions to each Customer?
  - Do we leverage cyclical processes?
  - Do we use chemistry & materials that are safe for living beings?

## VALUE PROPOSITIONS
- Describes the bundle of products and services that create value for a specific Customer Segment:
  - What does the customer expect?
  - What cost to serve the customer?
  - Do customers integrate into our systems and feedback loops?

## CUSTOMER/STAKEHOLDER RELATIONSHIPS
- Describes the relationship an enterprise establishes & maintains with a Customer Segment:
  - Are we delivering value to a customer that is locally attuned and responsive?
  - Do our features, advantages & benefits fit better than competitors and substitutes?
  - Do we create conditions conducive to all life? Refer to nature’s unifying patterns in the Toolbox.

## CUSTOMER/STAKEHOLDER SEGMENTS
- Defines the different groups of people or organization an enterprise aims to reach and serve:
  - Who are our most important or biggest customers?
  - Do we help solve a most important, frequent or bothersome job? Create gain and/or reduce pain?
  - If addressing a social/environmental need or market failure, who will pay/generate revenues?

## KEY RESOURCES
- Describes the most important assets required to make a business model work:
  - What is required to deliver Value Propositions to each Customer?
  - Do we use resources efficiently?
  - Freedly available energy?

## KEY RESOURCES
- Types of resources:
  - Physical, Intellectual, Human, Financial

## KEY RESOURCES
- Motivations for partnerships:
  - Optimization and economy
  - Reduction of risk and uncertainty
  - Acquisition of particular resources and activities

## KEY RESOURCES
- Categories:
  - Production, Problem Solving, Platform/Network

## KEY RESOURCES
- Describes how an enterprise communicates with and reaches its Customer Segments to deliver a Value Proposition:
  - Which are best or cost-efficient?
  - How are we integrating with customer routines?
  - Do we use feedback loops?

## KEY RESOURCES
- Channel phases:

## KEY RESOURCES
- Examples:
  - Personal assistance, Self-Service, Automated Services, Communities, Co-creation

## KEY RESOURCES
- CHANNELS
  - Examples:
    - Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform

## KEY RESOURCES
- COST STRUCTURE
- Describes all costs incurred to operate a business model:
  - What are the most important costs inherent in our business model?
  - Are we optimized (modular and nested) rather than maximized?
  - Are we building with abundant (not rare) resources?

## KEY RESOURCES
- How is your business: Cost driven (lean structure, low price, automation, outsourced) or Value driven (focused on value creation)?

## KEY RESOURCES
- Revenue Streams
- The cash an enterprise generates from each Customer Segment:
  - For what value are customers willing to pay? For what/how do they currently pay?
  - How much contribution do they make to Revenue Streams?
  - Are we seeking information/feedback from customers to anticipate change?

## KEY RESOURCES
- Types: Asset sale, usage fee, subscription fee, lend/rent, lease, license, brokerage fees, advertising. Fixed pricing. Dynamic pricing.

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Customer Segmentation

The first step in thinking about designing a value proposition…put a face on it!

Who are your Customers?

What about Stakeholders, if addressing market failures?

Source: Business Model Generation
Value Proposition

A bundle of products and/or services that meet a customer need

Tangible goods to intangible experiences

Locally attuned and responsive

Source: Business Model Generation
Connecting to your Customer/Stakeholder

Customer Relationships

Channels

Source: Business Model Generation
The Value (Proposition) Map describes the features of a specific value proposition in your business model in a more structured and detailed way. It breaks your value proposition down into products and services, pain relievers, and gain creators.

Project Name: ___________________________  Project Purpose: ___________________________

Fit: when your value map meets your customer profile. When your products and services produce pain relievers and gain creators that match one or more of the jobs, pains, and gains that are important to your customer.

Source: Value Proposition Canvas, copyright © Business Model Foundry, AG (download complete Canvas at Strategyzer.com)
Case Study: Biolytix Biopod

On site wastewater treatment & grey-water recycling system. Treats household food waste

Ecosystem in a tank: complex range of soil organisms including worms & beetles.

Uses energy in the waste, 90% less energy use

Humus filter eliminates smell
Case Study: Feast for the Future

Genius of People: Pueblo, Navajo & Apache communities working with Johns Hopkins Center for American Indian Health

Traditional flood irrigation methods

Food security, nutrition & indigenous knowledge
Assess your idea in a market context

The problem:
• 1/3 of all food is wasted globally
• Forty percent of food goes uneaten in the U.S
• Agriculture is 70% of water withdrawals, 30% of GHG
• 47% increase in packaging material (2025)
• Soil degradation costs ~ $40b/year

Key opportunity areas:
• Waste
• Water
• Energy
• Farmers & Finance
• Circular Economy Partnerships

Source: FAO, World Economic Forum
Imperfect Standard

Image credit: Imperfect Produce
Circular Economy Framework
Waste

US$19 billion in annual spending in the UK on food and drinks that could have been consumed but are instead discarded.

US$3.5 billion value of food waste ($100+/tonne in biogas/compost)

Packaging: By 2025, 1.8 billion new members of the middle class will want to buy packaged goods, rather than bulk. 250 lbs/packaging per person in OECD countries

Source: Climate Smart Agriculture, FAO
Water

Agriculture accounts for 70% of water withdrawals.

The impact of climate change on water use in agriculture in a wider context:

- increased water demand by all sectors;
- the degradation of water quality;
- and heightened competition for water at various levels (community, river basin and aquifer).

Source: Climate Smart Agriculture, FAO
Energy

Energy FOR and FROM the Agri-food System

Inputs and outputs:
• Behind Farm Gate
• Beyond Farm Gate

Food and Energy Losses

Figure 5.2
Indicative shares of final energy consumption for the food sector for high- and low-GDP countries

Source: Climate Smart Agriculture, FAO
Farmers & Finance

Resilience building:
Address the adaption deficit.

Climate proofing:
Adapting to incremental change.

Transformational change:
Adapt to qualitative changes, e.g.
- relocation of communities
- shift in agricultural systems

Source: Climate Smart Agriculture, FAO
Food System Nested Systems

Reduce Ag’s contribution to climate change (GHG, carbon storage)

Strengthen resilience to climate change and variability

Sustainably increases productivity and income
Resources

Biomimicry Toolbox
- METHODS >> Business Planning for Biomimicry
- Download the Biomimicry Business Model Canvas
- Access the Toolbox from [http://challenge.biomimicry.org](http://challenge.biomimicry.org)

Business Model Generation
Alexander Osterwalder & Yves Pigneur, 2010
[https://strategyzer.com](https://strategyzer.com)

Value Proposition Design
Alexander Osterwalder, Yves Pigneur, Greg Bernarda, Alan Smith, 2014
[https://strategyzer.com](https://strategyzer.com)

Lean Launchpad
Steve Blank
[http://steveblank.com](http://steveblank.com)
Q & A

Please type your question into the chat box.

Select “all attendees” from the drop down so that everyone can see your message.
Business Planning for Biomimicry

An introduction to identifying a market strategy

This section provides an introduction to business planning that will help you identify potential pathways to market. First, we’ll introduce you to two business innovation tools that you can use to start planning: the Business Model Canvas and The Value Proposition Canvas. Next we’ll provide some suggestions for how to make sure your innovation fits and provides value within the context of your customers’ needs.
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