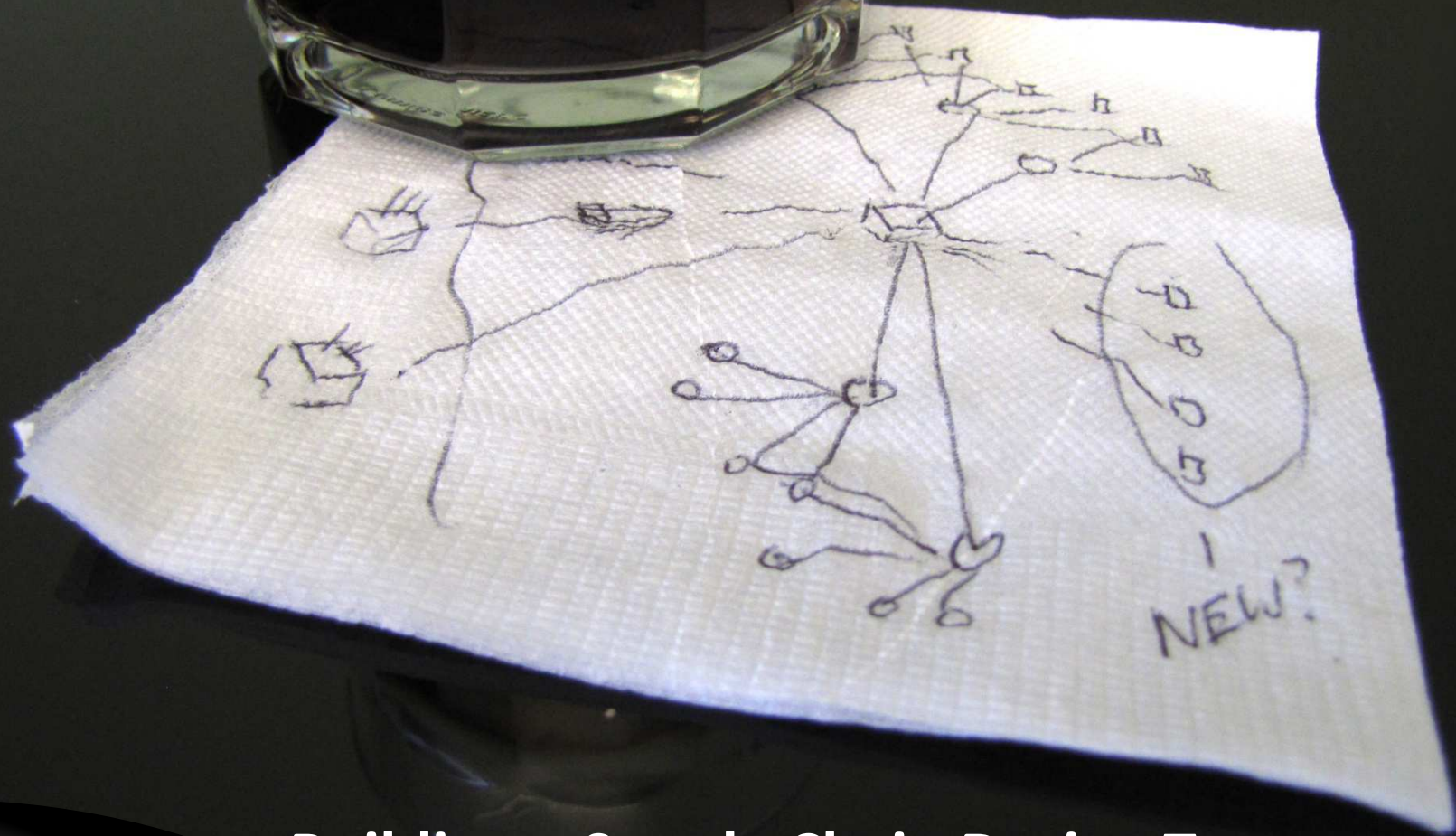
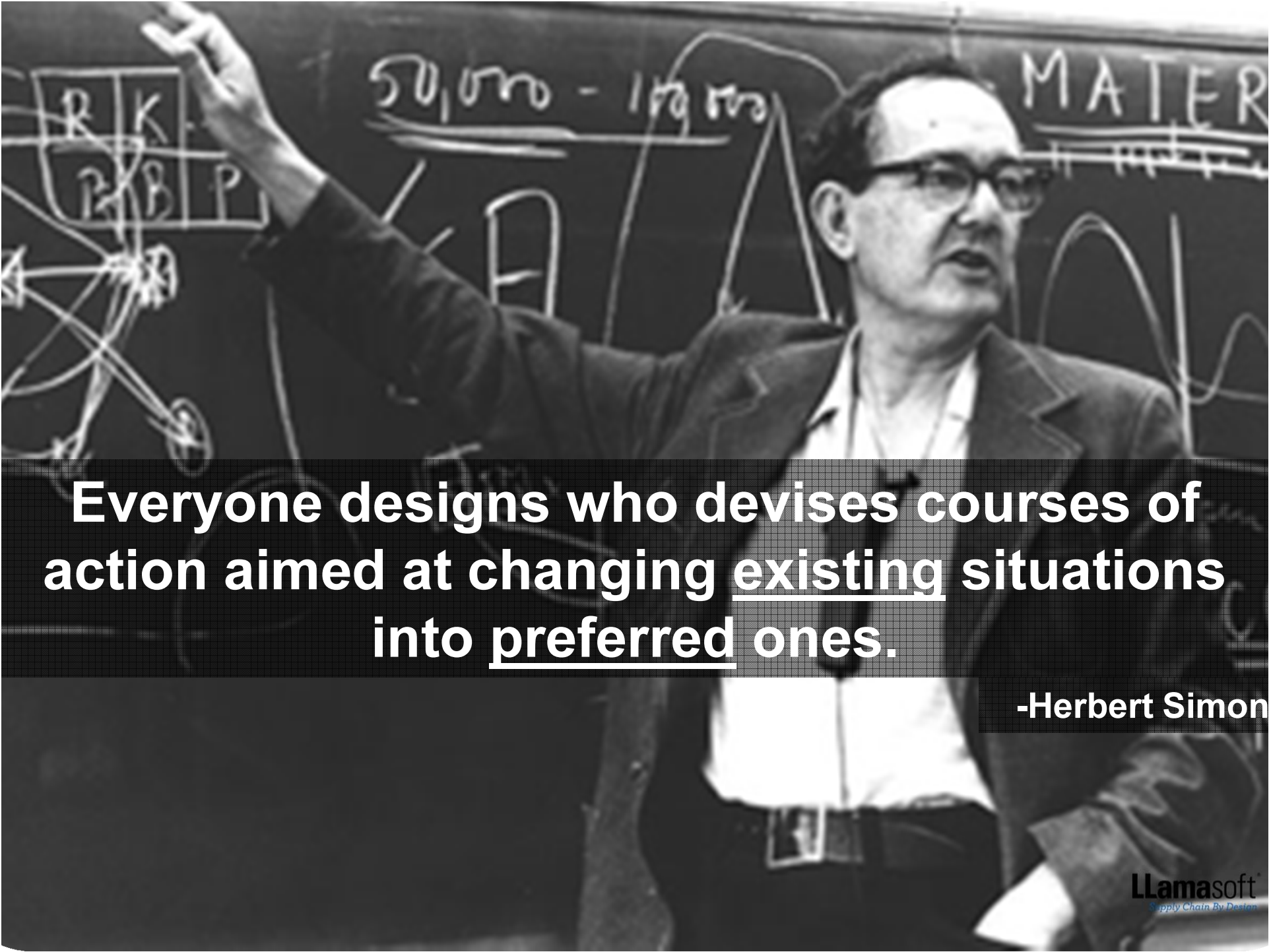


Advances in Supply Chain Design



Building a Supply Chain Design Team

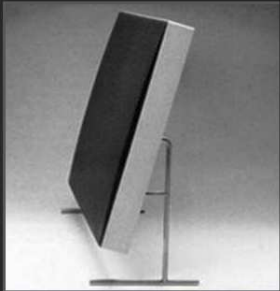
St. Louis - Top Management Night 2014

A black and white photograph of Herbert A. Simon, a prominent figure in cognitive science and operations research. He is shown from the waist up, wearing a suit and glasses, pointing his right hand towards a chalkboard. The chalkboard is filled with various mathematical and logical diagrams. On the left, there is a grid with letters R, K, P, B, and P. In the center, there are several large, stylized letters and numbers, including '50,000 - 100,000' and 'K A'. On the right, the word 'MATER' is visible. The background is dark, and the chalkboard is light-colored, creating a high-contrast scene.

Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.

-Herbert Simon

Designed by:
Dieter Rams for Braun



DIETER RAMS (1932-), Ten Principles

Good design...

...is **innovative**

...makes a product **useful**

...is **aesthetic**

...makes a product **understandable**

...is **unobtrusive**

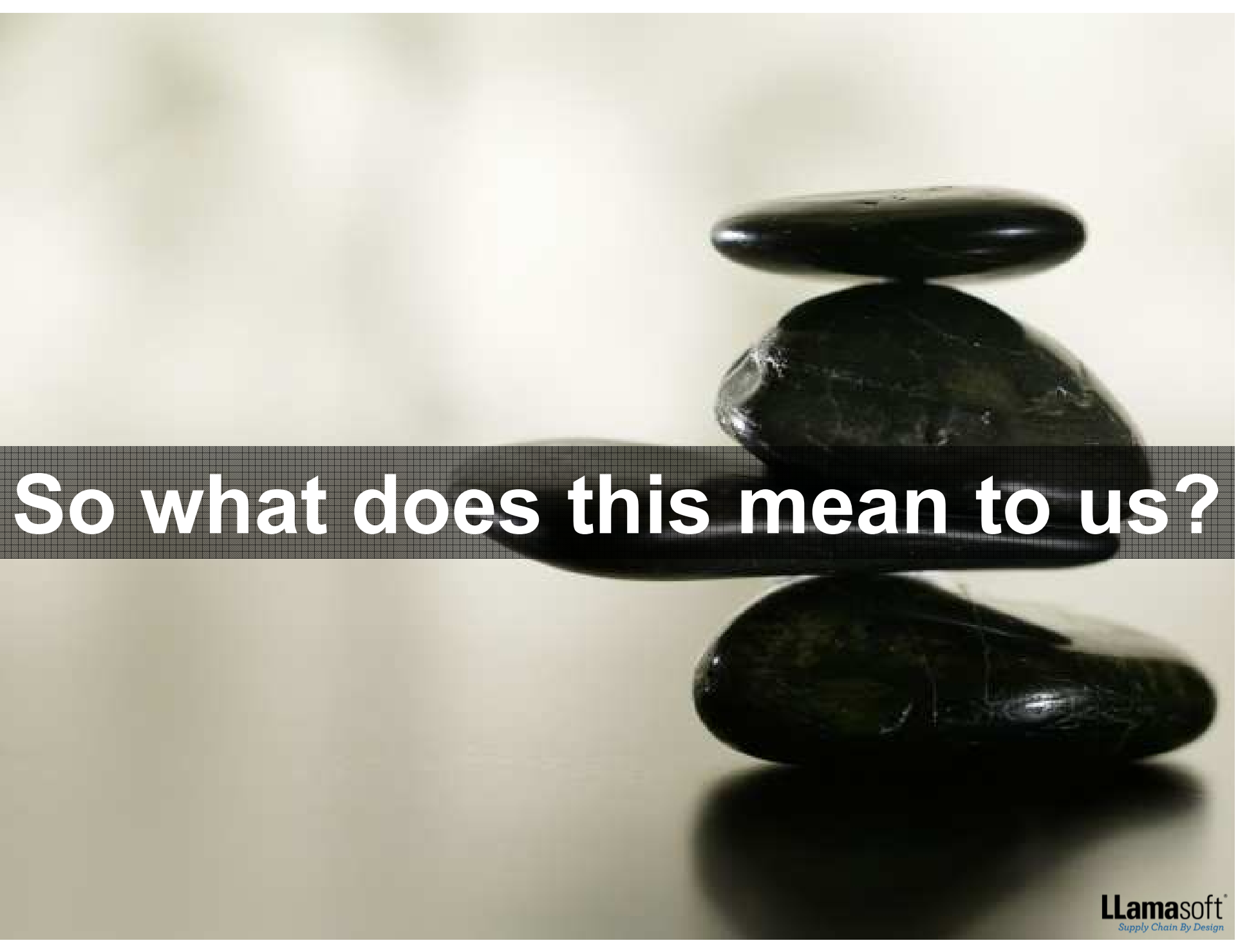
...is **honest**

...is **long-lasting**

...is **thorough, down to the last detail**

...is **environmentally friendly**

...is **as little design as possible**

A photograph of three smooth, dark, rounded stones stacked vertically on a light-colored, reflective surface. The top stone is the smallest and most perfectly round. The middle stone is larger and has a more irregular shape. The bottom stone is the largest and also has an irregular shape. The stones are balanced precariously. A horizontal band with a fine grid pattern is superimposed over the middle of the stack, containing the text "So what does this mean to us?".

So what does this mean to us?

A black and white photograph of a man with grey hair, wearing a striped polo shirt and a dark apron, leaning over a large display of fruit. He is holding a piece of fruit in his hand, examining it. The display consists of many large crates or bins filled with round fruits, likely apples or oranges. Several signs are visible in the background and foreground, some with handwritten text like "SPECIAL", "BANANA PEARS", and "\$1.00". The setting appears to be an outdoor market stall.

Start with the customer

LLamasoft
Supply Chain By Design

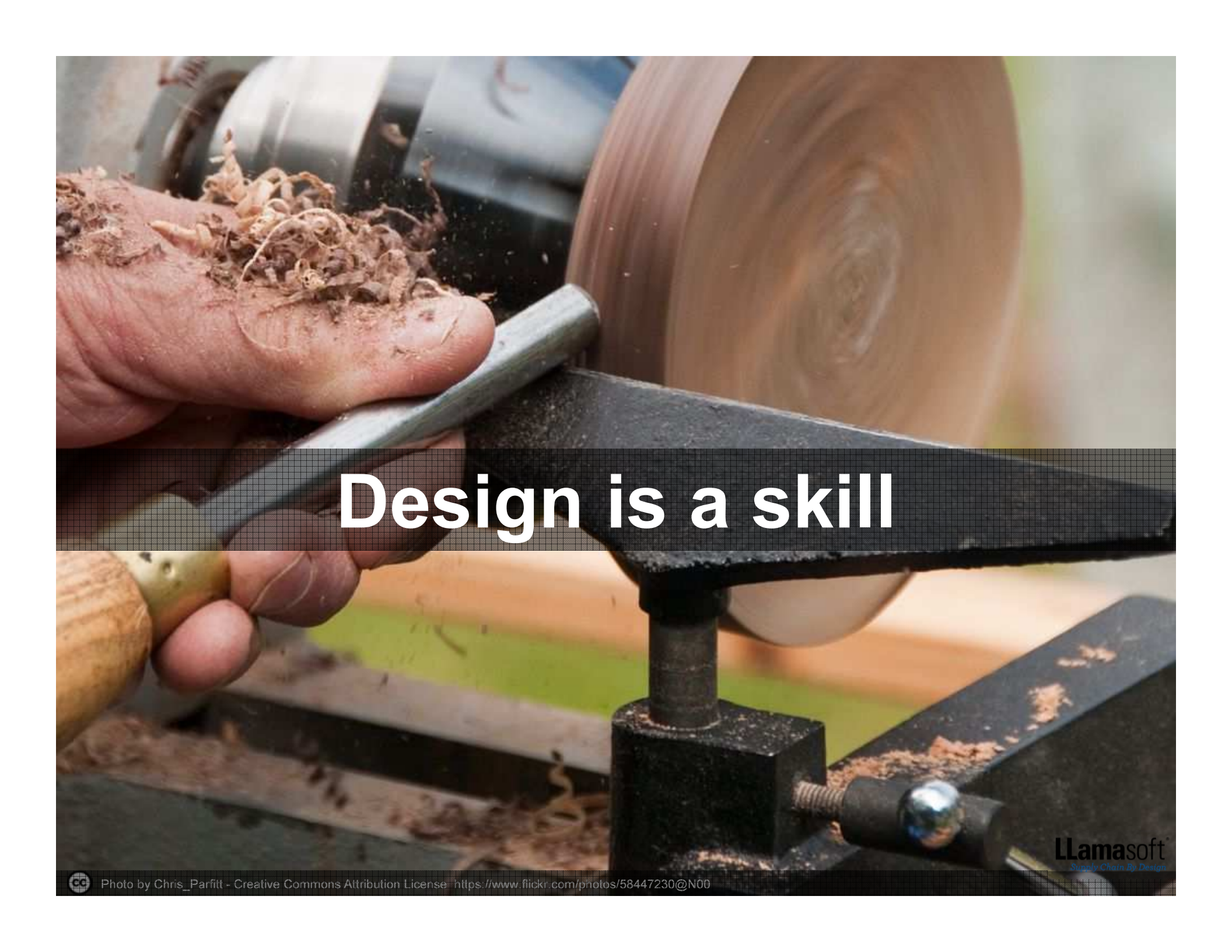


Photo by Leon Fishman - Creative Commons Attribution License <https://www.flickr.com/photos/30003814@N03>

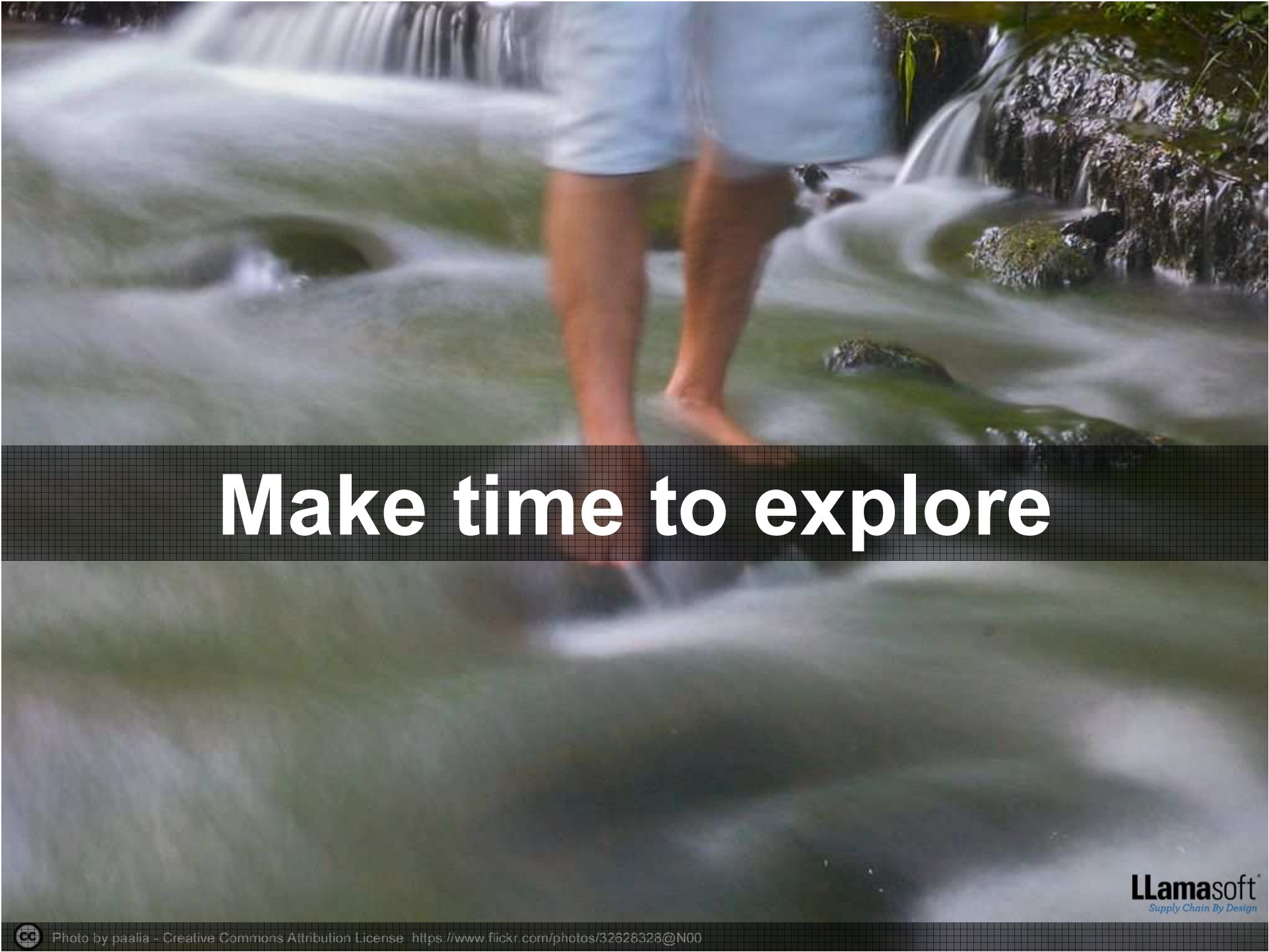


Design is a process

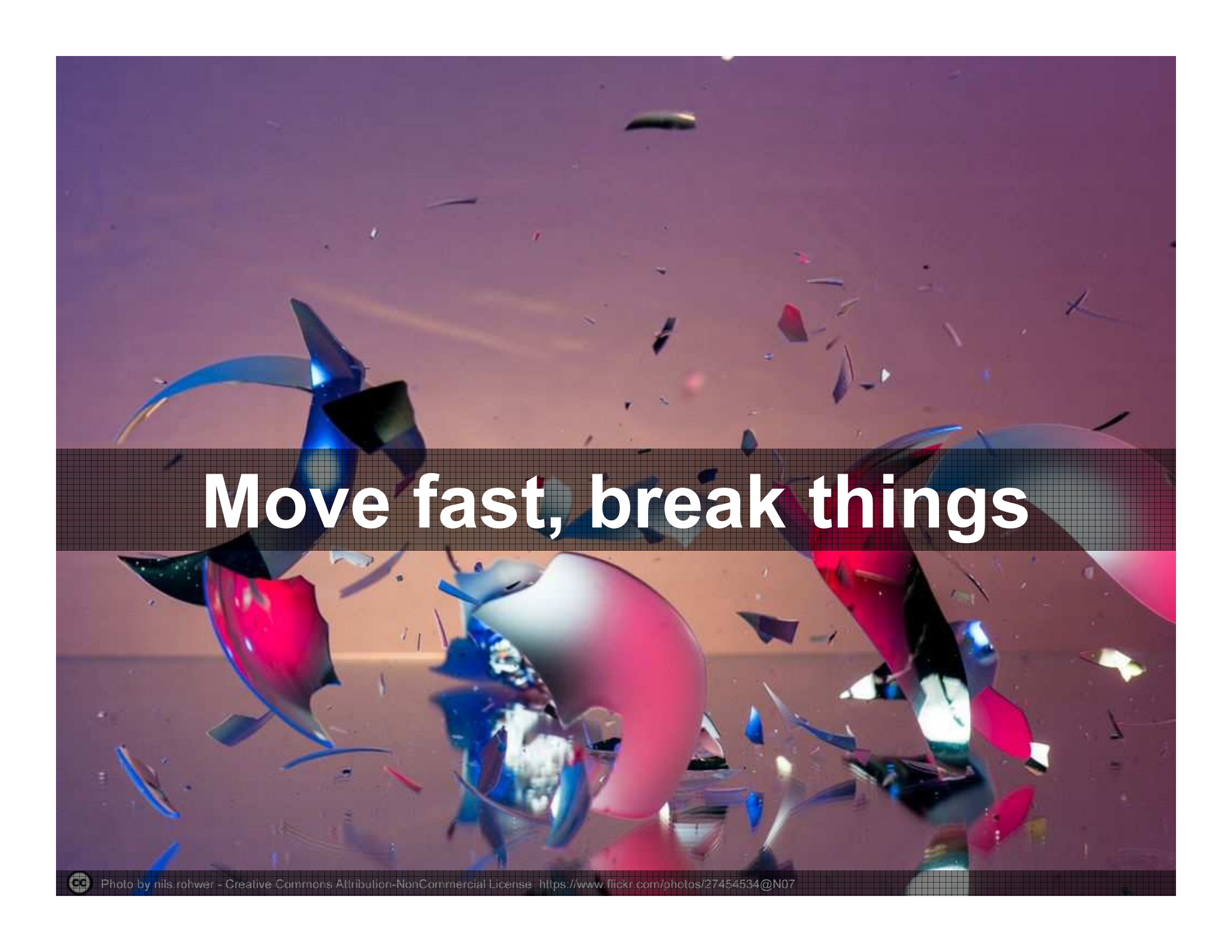
LL Masoft
Supply Chain Design



Design is a skill

A photograph of a person's legs and feet standing in a shallow, flowing stream. In the background, a small waterfall cascades over rocks. The water is clear and greenish, and the surrounding area is lush with green foliage. The text "Make time to explore" is overlaid in white on a dark, semi-transparent band across the middle of the image.

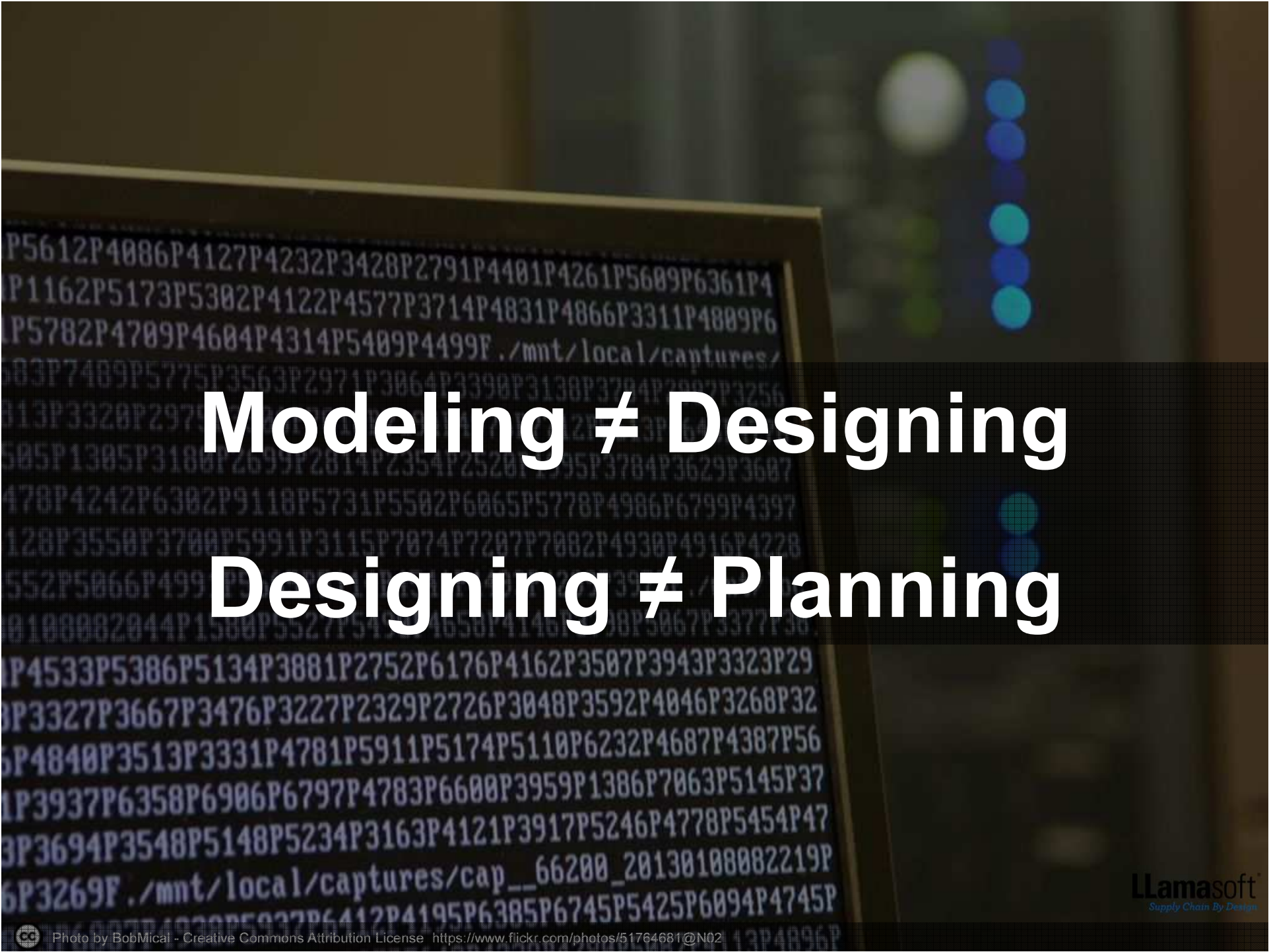
Make time to explore



Move fast, break things



Photo by nils.rohwer - Creative Commons Attribution-NonCommercial License <https://www.flickr.com/photos/27454534@N07>



Modeling $\neq$ Designing
Designing $\neq$ Planning

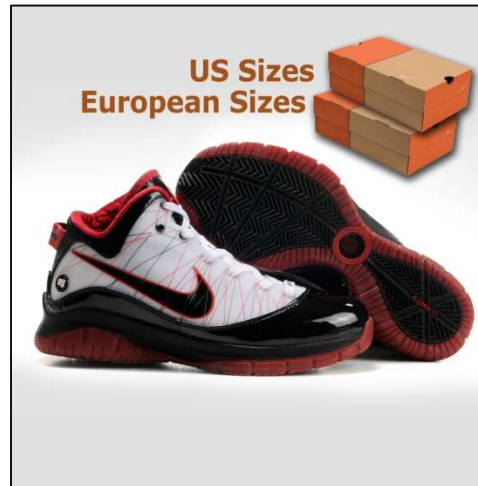
Isn't Design the same thing as Planning?

Design



Design conveys a **fundamental supply chain structure** intended to meet certain business objectives

Planning



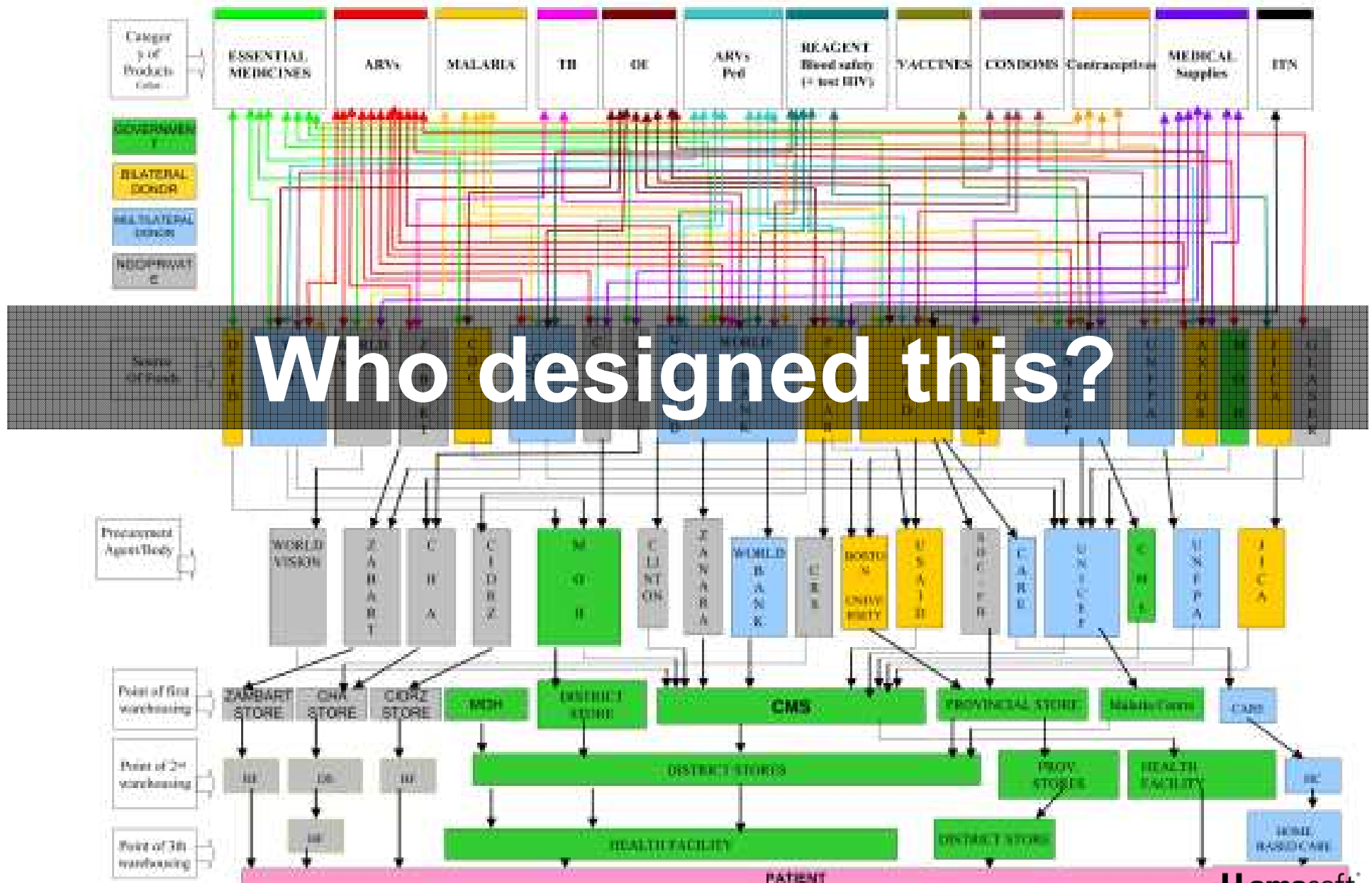
Planning **determines the actions** to be taken to satisfy anticipated demand within the constraints imposed by the supply chain structure

Execution



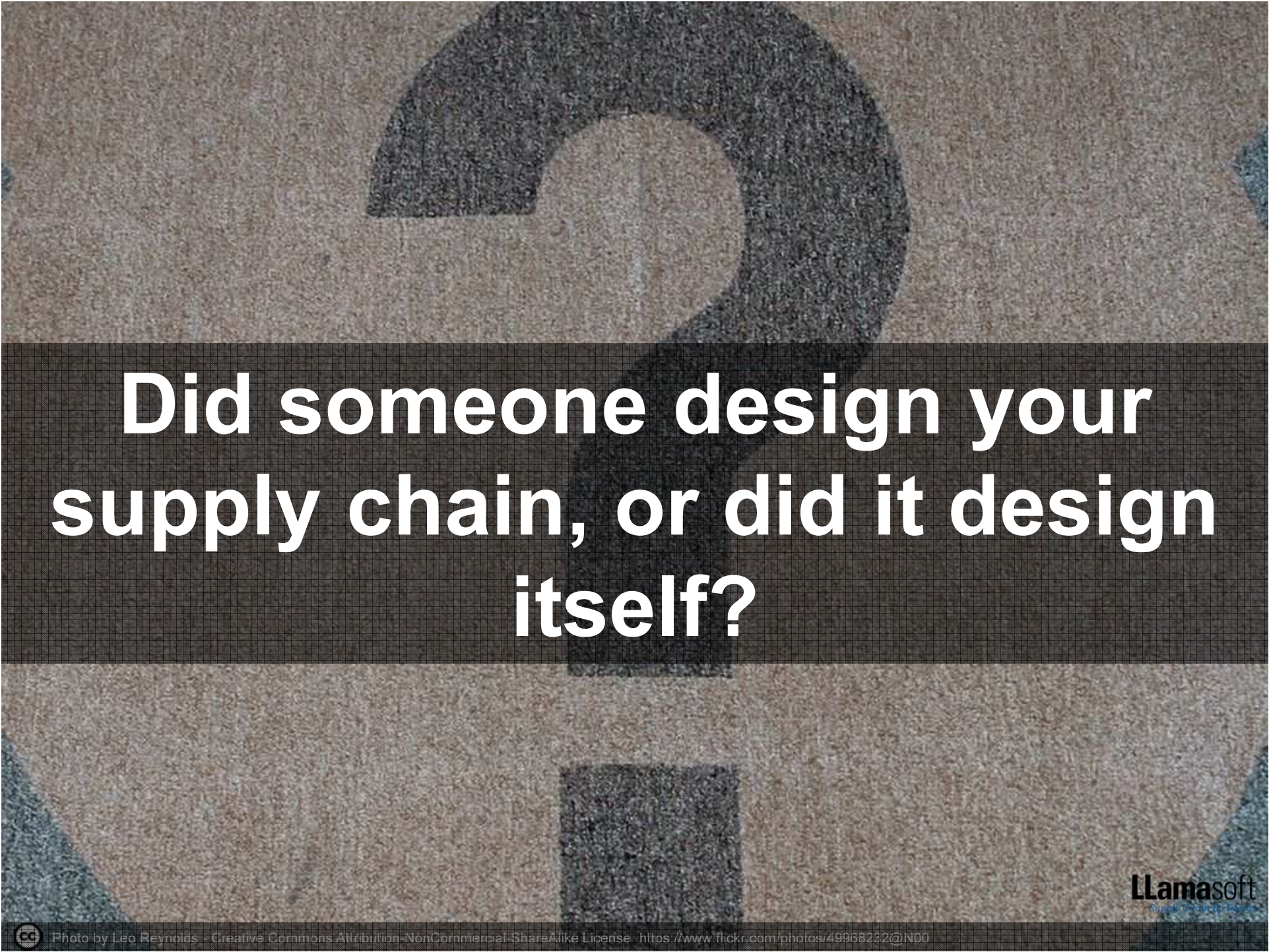
Execution **takes action** to meet actual demand within the time and cost constraints determined to be acceptable at the onset of the design

Drugs flow supply chain in Zambia



Who designed this?

http://bupublichealth.files.wordpress.com/2009/04/complex-supply-chain_01.png



**Did someone design your
supply chain, or did it design
itself?**

A series of black silhouettes on a white background showing the progression of human evolution. From left to right: an ape-like creature, a more upright hominid, a modern human holding a spear, another modern human holding a spear, and a modern human using a microscope. The silhouettes are arranged in a line, suggesting a timeline of development.

Thinking Fast & Slow

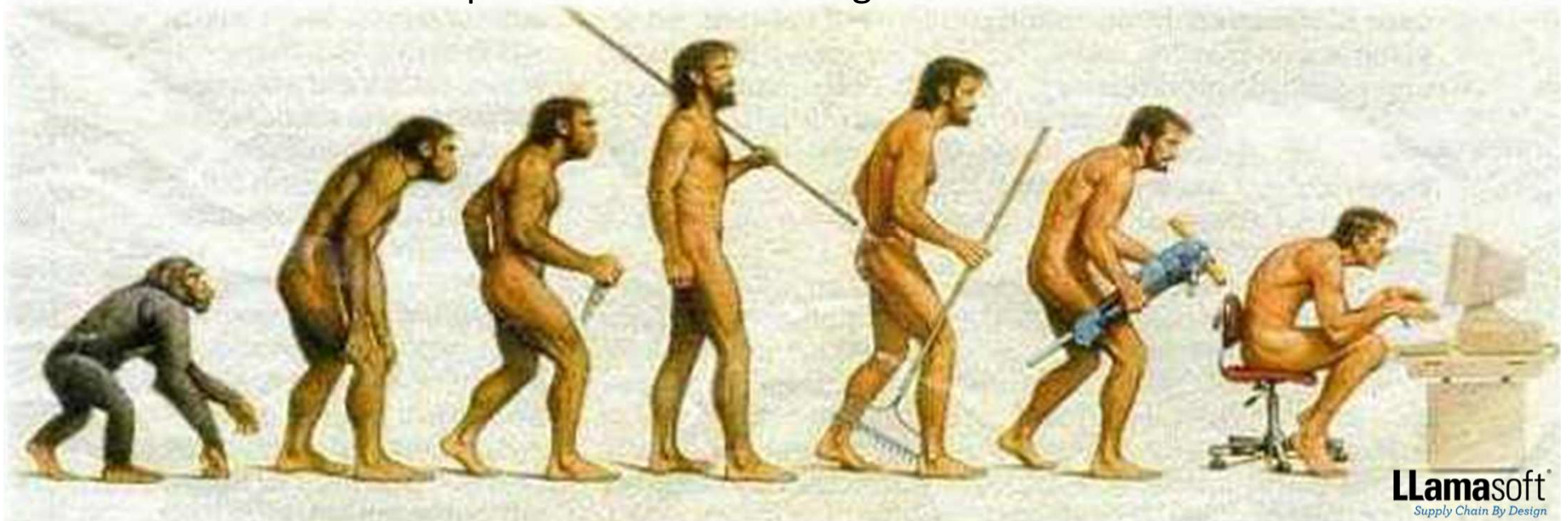
Daniel Kahneman

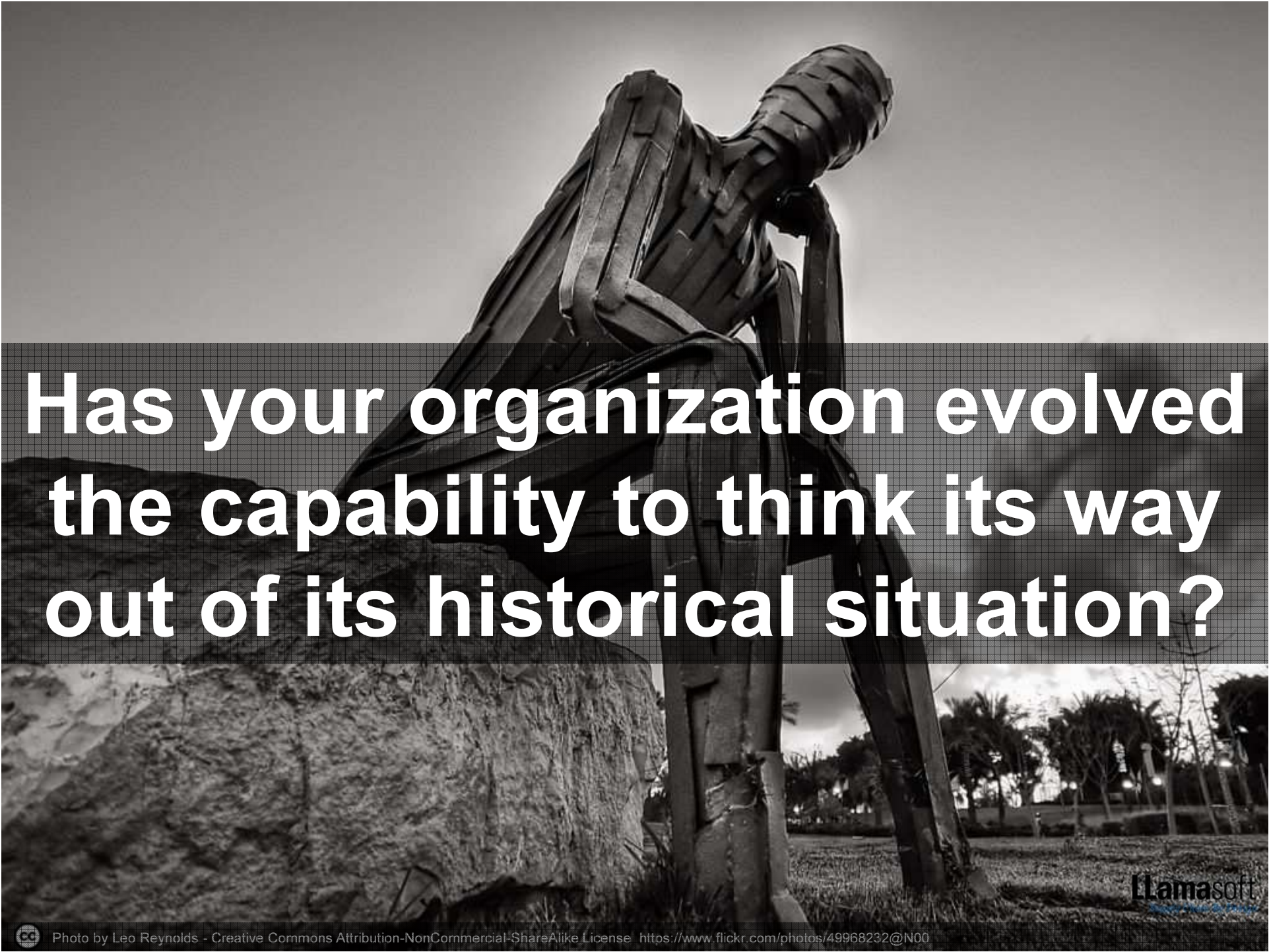
Thinking Fast & Slow, Daniel Kahneman

System 1 (FAST THINKING) runs our days, keeps us alive. Flee or fight?

System 2 (SLOW THINKING) lets us examine and reframe our problem solving approach. Hunt or farm?

SLOW THINKING evolved to let us to THINK our way out of long term problems and into long term solutions





**Has your organization evolved
the capability to think its way
out of its historical situation?**

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LLAMASOFT.COM



that was easy:

- Simulating the entire North American Network
- Integrating Optimization
- Collaborative R&D



- Projects and support in China, Europe, North America, Brazil
- Co-developing new Nike SC Design COE
- Strategic Investment in LLamasoft



- Enterprise standardization
- Central and regional capabilities
- Close partnering with service providers

Top companies are setting up internal Supply Chain Design teams



GENERAL MILLS

- Enterprise license and high recurring revenues
- Co-development partner for new product Supply Chain Sherpa
- Internal COE up and running



- 3 Full time staffers in JDPAC
- Extensive R&D program
- Simulation and optimization
- Guru is “indispensible” to TRANSCOM’s operations

LLamasoft
Supply Chain By Design

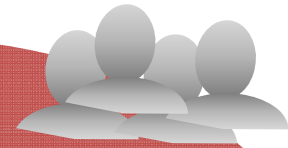
Key Elements of a Supply Chain Design Team



Technology

*Acquire the **right technology** to answer the business problem(s)*

- Know the right technology to use
- Scale to model end to end enterprise
- Integrate and automate to reduce time to answer



People

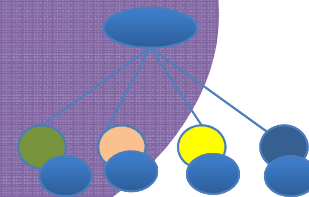
Empower individuals to develop design skills and design thinking

- Develop career roadmap
- Understand that communication to business leads is critical – telling the story
- Provide support and training plan as ongoing process

Process

*Enable organizational excellence through **standardized processes***

- Project intake and delivery methodology
- Project Portfolio Management
- Knowledge Share, Learning
- KPI tracking and management
- Organizational Design



What is Working Well for Supply Chain Design Organizations?

- Shift from Ad Hoc to Integrated Process
- Executive leadership fully endorses importance
 - Leaders know design drives business value
 - Supply chain supports, not hinders, the business
- Properly define Mission and Scope
 - Where Design fits with the rest of the organization
 - Choosing the right initiatives
- Create the right structure for the organization
 - Developing a scalable, repeatable process
 - Develop technical expertise in technology
 - Balancing centralized and decentralized processes
- Put the right people and skills in place
 - Developing people
 - Understanding the required skills





**So how do you justify
developing Supply Chain
Design capabilities in your
organization?**

A close-up photograph of a US dollar bill, focusing on the intricate patterns and textures of the paper. The image is slightly blurred, emphasizing the fine details of the currency. A dark, semi-transparent horizontal band is overlaid across the middle of the image, serving as a background for the title text.

Found Money in the Supply Chain

What makes found money so great?

It's Fast

You just reached into your pocket and there it was!

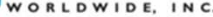
It's Easy

You didn't work long hours, toiling and sweating to earn that money.

It's Unexpected

You hadn't planned on having that extra cash when you started the day.

Who is finding the money?

Automotive / Industrial Manufacturing	Consumer Goods	Defense
 RENAULT  CHRYSLER  CATERPILLAR  Ford  AGC	 COLGATE-PALMOLIVE  Energizer  PACTIV  Kimberly-Clark  Unilever	 DEPARTMENT OF DEFENSE  USTRANSCOM  NORTHROP GRUMMAN 
Hi-Tech / Electronics	Food	Beverage
 intel  Tyco Electronics  PHILIPS  ERICSSON  CISCO  brother  Seagate	 Kellogg's  PEPPERIDGE FARM  Campbell's  Del Monte  HERSHEY'S  GENERAL MILLS  Frito Lay  Pinnacle  glanbia	 Coca-Cola  AB InBev  LION  PEPSICO  Heineken  DIAGEO  DR PEPPER SNAPPLE
Life Sciences	Grocery	Logistics
 Johnson & Johnson  COVIDIEN  gsk  Baxter  Wyeth  MEDLINE  Life Labs  Carestream  HEALTH	 DELHAIZE  Kroger  Winn-Dixie  B's  GIANT EAGLE  SAFEWAY  SUPERVALU	 DHL  Expeditors  ARMADA  C.H. ROBINSON  WORLDWIDE, INC.  ModusLink  KENCO
Apparel	Manufacturing	Petroleum
 NIKE  COACH  deckers  Columbia Sportswear Company  POLO RALPH LAUREN	 Rockwell Automation  GE  Cenveo  MWV  MEADWESTVACO  GAF  GAF MATERIALS CORPORATION	 ExxonMobil  MI SWACO  CALTEX  BAKER HUGHES  ConocoPhillips  Schlumberger
Public Health	Retail	Chemical
 World Health Organization  SCMS  USAID  The World Bank  JSI  John Snow, Inc.	 Walmart  BEST BUY  TOYS R US  CVS pharmacy  Limited Brands  IKEA  TARGET  GRAINGER  Advance Auto Parts	 Mosaic  syngenta  lyondellbasell  3M  Kraton  UNIVAR  DOW CORNING



Visibility

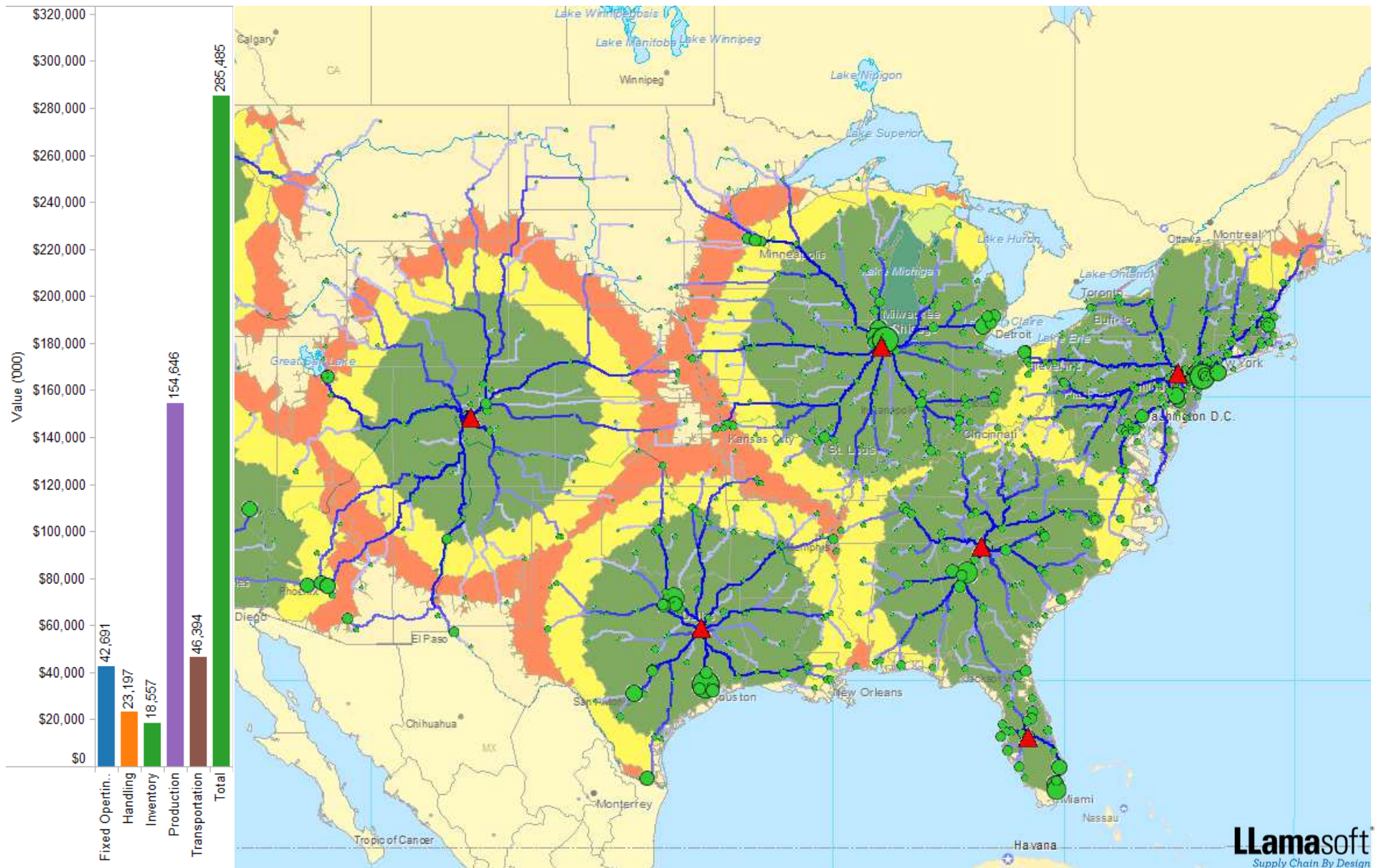
LLamasoft
Supply Chain By Design



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Visibility: How does my supply chain perform today?





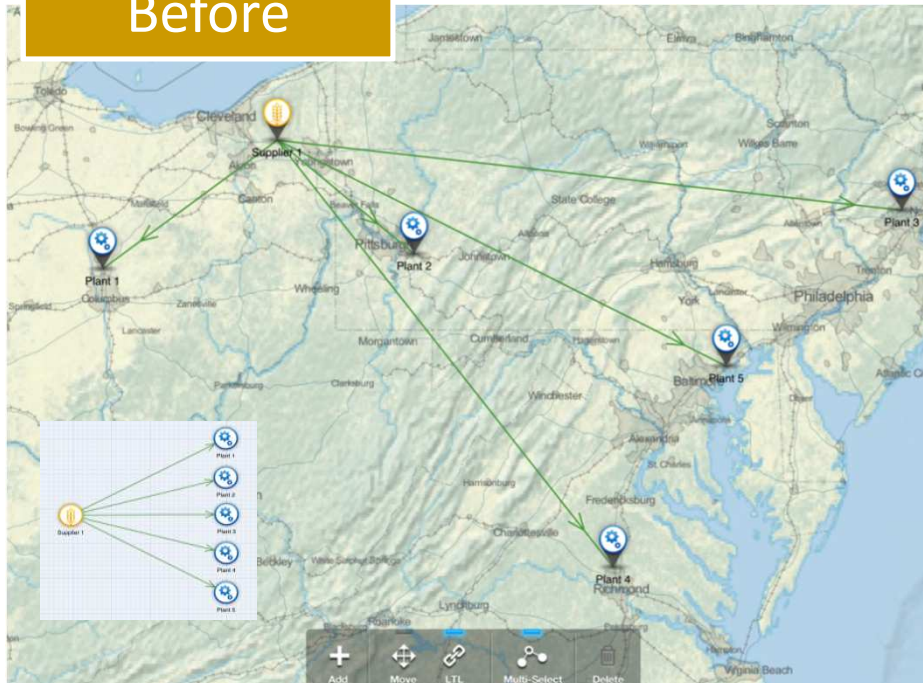
Product Flowpath Optimization

Llamasoft
Smart Value by Design

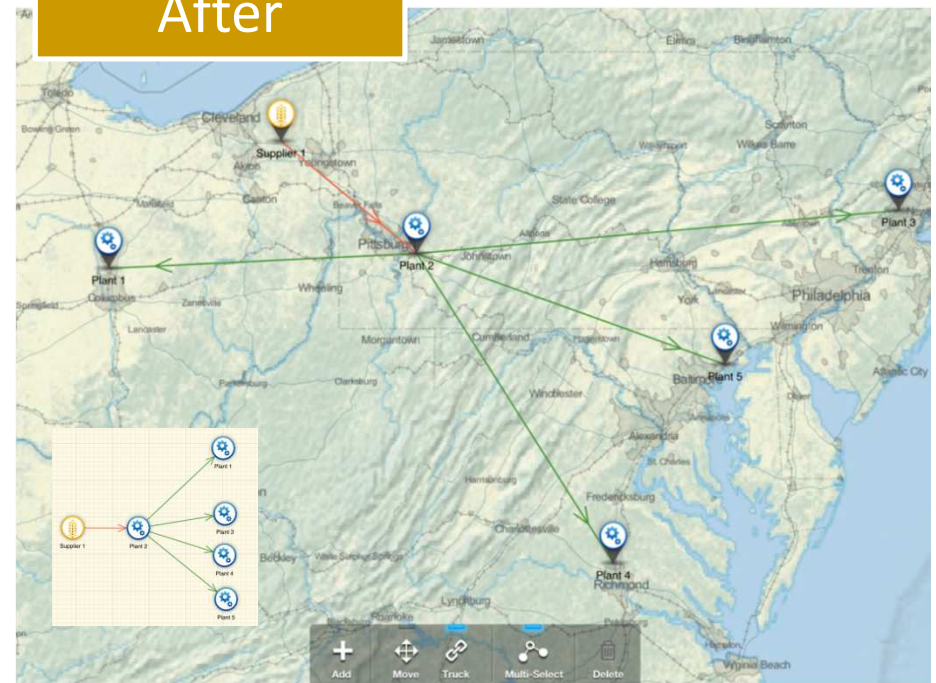


Product Flow-Path Optimization

Before



After



Using one or more plants as an **inbound consolidation center** can reduce yearly supply chain costs by millions of dollars

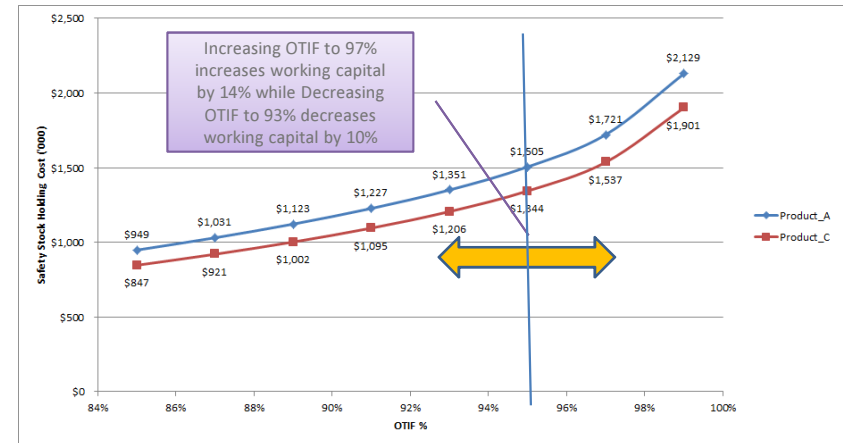
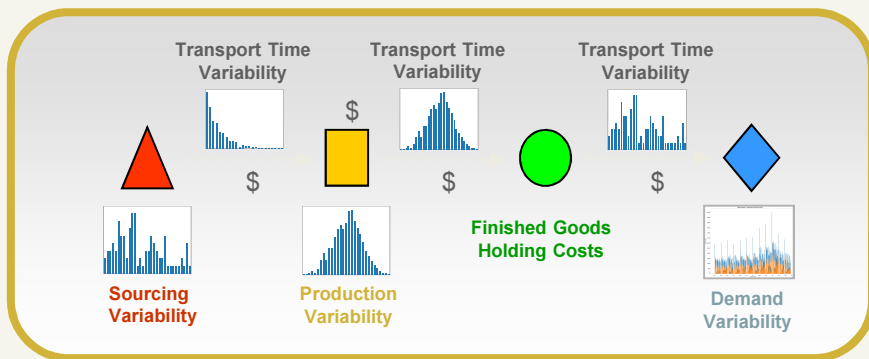


Demand Segmentation and Inventory Rightsizing



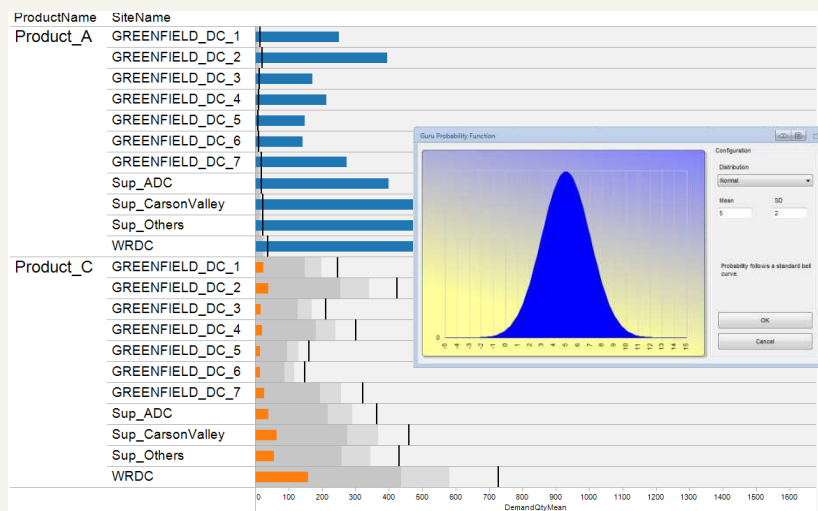
Demand Segmentation and Inventory Right-Sizing

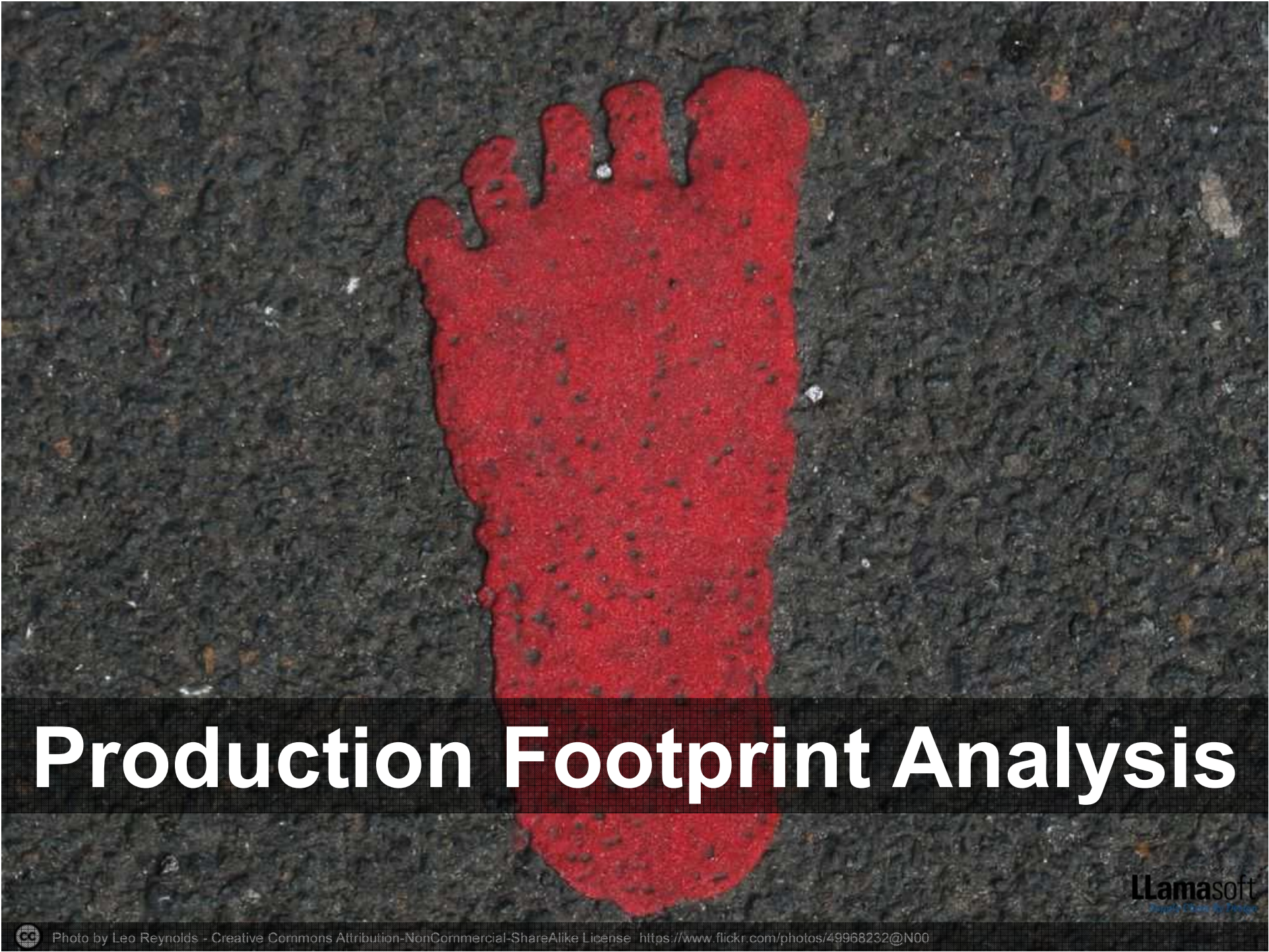
Multi-Echelon Safety Stock Optimization



Multi-echelon inventory optimization Fuel company optimizes inventory levels across sites and tanks and identified \$15.9 M in savings by shifting coverage to optimal echelons

Demand & Lead Time Profiling



A large, vibrant red footprint is stamped onto a dark, textured asphalt surface. The footprint is oriented vertically, with the toes pointing towards the top of the frame. The red color is bright and contrasts sharply with the dark, grainy background of the pavement. The footprint shows some internal texture, suggesting it might be made of a granular material like paint or powder.

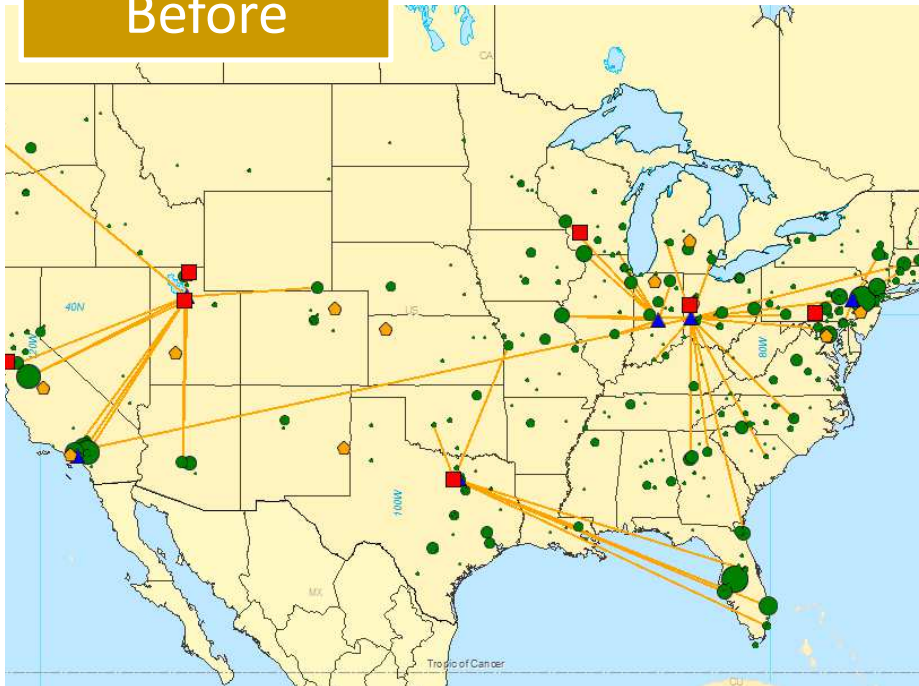
Production Footprint Analysis

Llamasoft
Supply Chain by Design

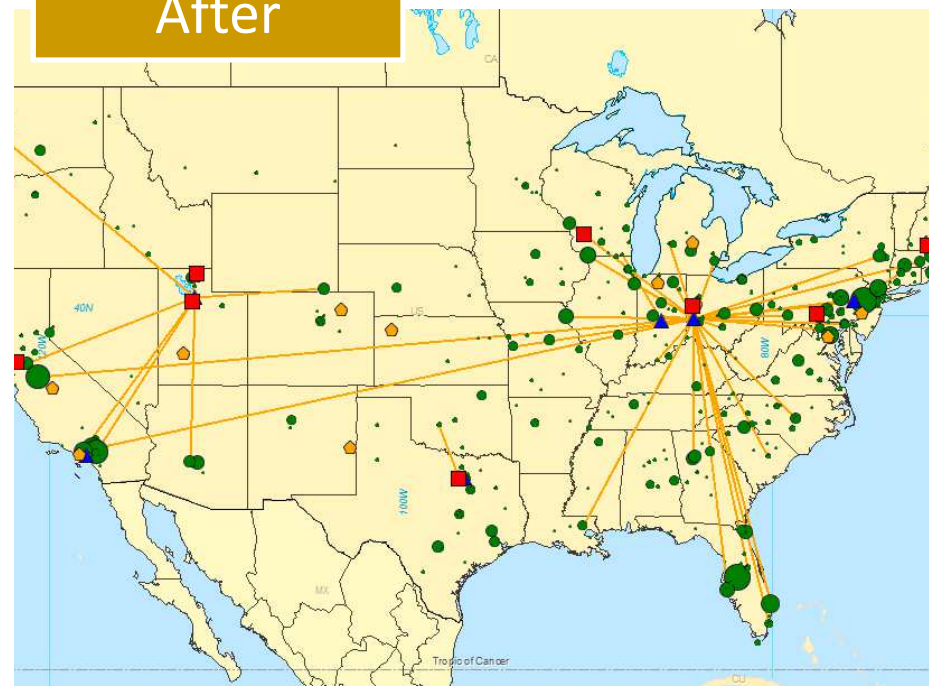


Production Footprint Analysis

Before



After



Using production modeling to simply **balance fixed and variable costs and capacity**, this company uncovered over \$50 million in cost savings in just one year



Transportation Route Optimization

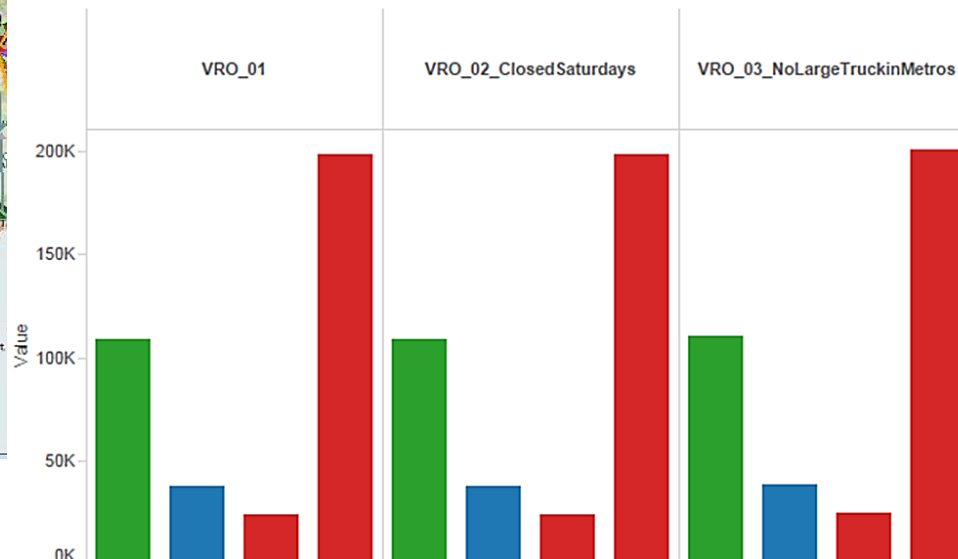
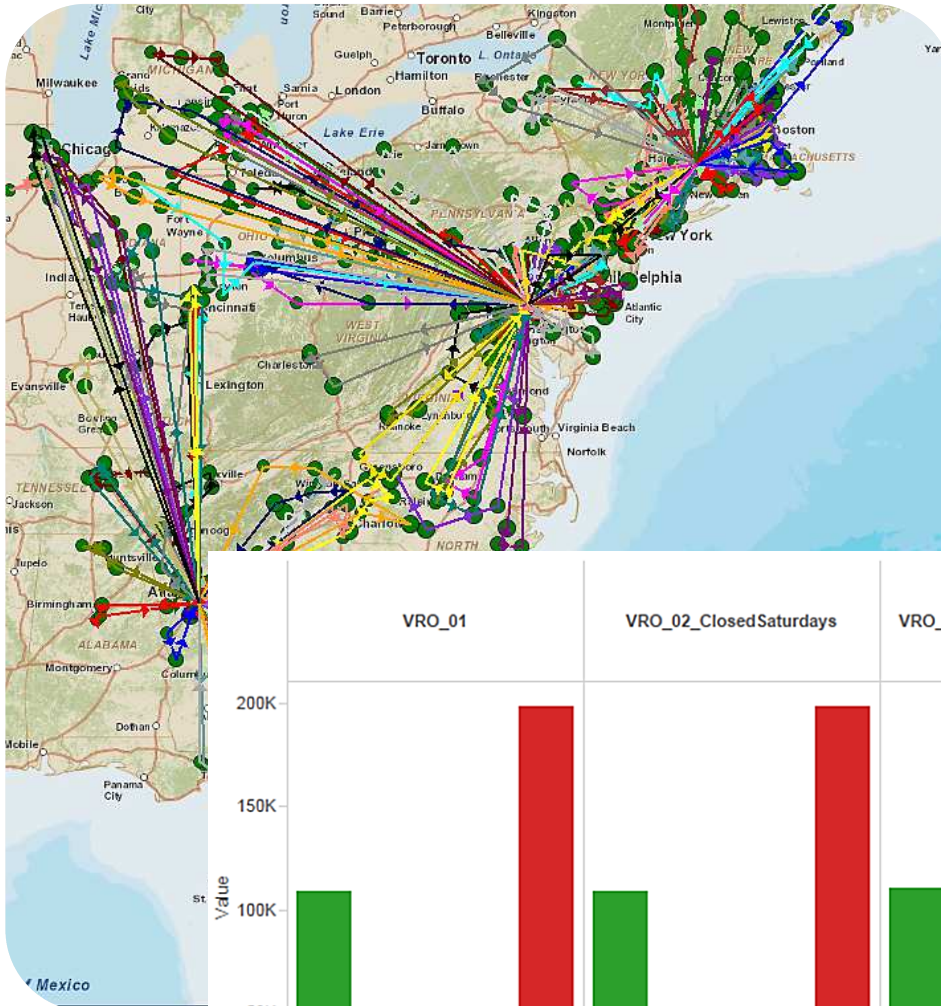
Llamasoft
Supply Chain



Photo by garryknight - Creative Commons Attribution-ShareAlike License <https://www.flickr.com/photos/6176740@N05>



Transportation Route Optimization



Vehicle route optimization can recommend the optimal combination of truck options to reduce the number or routes, trucks used and miles driven but maintain target service levels

Measure Names

- TotalDistanceCost
- DriveTimeCost
- TotalPerRepositionDistanceCost
- Route Cost



The Perfect Supply Chain

Llamasoft
Supply Chain By Design

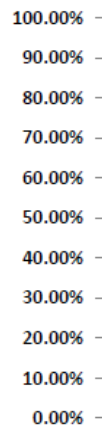
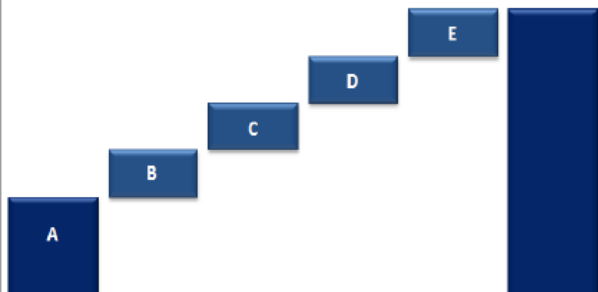


Photo by Rob Ellis' - Creative Commons Attribution License: <https://www.flickr.com/photos/45597153@N05/>



Bonus Idea: The “Perfect” Supply Chain

Zero-Based Approach



vs Baseline

	vs Baseline
Volume Phasing	1.66%
Cost to Serve	7.98%
Operational Efficiency	8.78%
SC Network	25.77%
Ideal Cost	55.80%

Volume Phasing
Warehouse Overtime
End of Period Efficiency
Logistics Planning

Cost to Serve
Customer Accessorial Charges
Routing Efficiencies
Secondary Truck Utilization

Operational Efficiency
Benchmark Rates
Carrier Mix
Mode Mix
Carrier Accessorials
Primary Truck Utilization
Transships

SC Network
Ambient US DC Reduction
Canada Ambient DC Reduction
Direct Deployment vs. Hub/Spoke
US Ice Cream DC Reduction
Creation of Integrated Factory DC's
Reduction of 3PM Facilities

“Unconstrained” optimization can identify the costs buried deep within your supply chain design

- Facility mission
- Modes
- Volatility
- Capacity

What would
you
change?



Questions?

Michael Detampel
LLamasoft, Inc.
mike.detampel@llamasoft.com

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