

Southbeach Modeller + AI = Superpowers!

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<https://www.southbeachinc.com/help/gpt.html>

Summary

The paper discusses the use of visual models as prompts for AI systems and presents an example conversation using a Southbeach visual model to analyze the water crisis in Australia and suggest technical and policy solutions.

Southbeach Notation is well-suited for AI enhancement because it provides a structured and comprehensive framework for representing complex systems and problems. The notation distinguishes between useful and harmful elements, as well as increasing and decreasing effects, allowing for a clear understanding of the interactions and dynamics within a system. This level of detail and specificity in the notation enables AI systems to analyze and interpret visual models more effectively, generating insights and suggestions that are tailored to the specific context and objectives of the user. Moreover, Southbeach Modeller's ability to generate 'solution directions' (ideate) over the relationships in the model, using language language scripts tailored to different problem-solving techniques (5whys, TRIZ, SCAMPER etc.) or application domains (technology, business, society), provides a rich source of additional prompts during analysis.

Prompt Engineering

In the era of ChatGPT and other large language models (LLMs), a new discipline known as "prompt engineering" has arisen. Since LLMs cannot yet read our minds, the quality of the prompts provided by users significantly influences the responses generated by the AI system. The principle of "garbage in, garbage out" applies: the quality of the input determines the quality of the output. Consequently, users across the Internet are exchanging templates and strategies for crafting optimal prompts. Detailed prompts yield more relevant answers, and requesting the AI model to assume a specific expert persona is just as crucial. The more accurately you define your request, the more likely you are to receive the desired outcome. However, many users, having grown accustomed to the simplicity of 'Googling', where brief queries suffice, may find it challenging to compose a detailed prompt for an AI system. So, despite the widespread sharing of checklists and templates for crafted prompts, not everyone has the time to curate a collection of prompts or to tailor generic templates to their specific needs. Instead of using natural language, could a picture paint a thousand words?

Visual Models as Prompts

Southbeach Solutions provides a visual modelling and ideation software tool. The company has been experimenting with the use of visual prompts as a novel method of initiating a rich 'chat' with a large language model (LLM). These experiments have produced remarkable results. The AI can identify objects and relationships within the visual model and can use this information as a detailed prompt. Transfer from the modeling canvas to the chat interface is as straightforward as copy/paste.

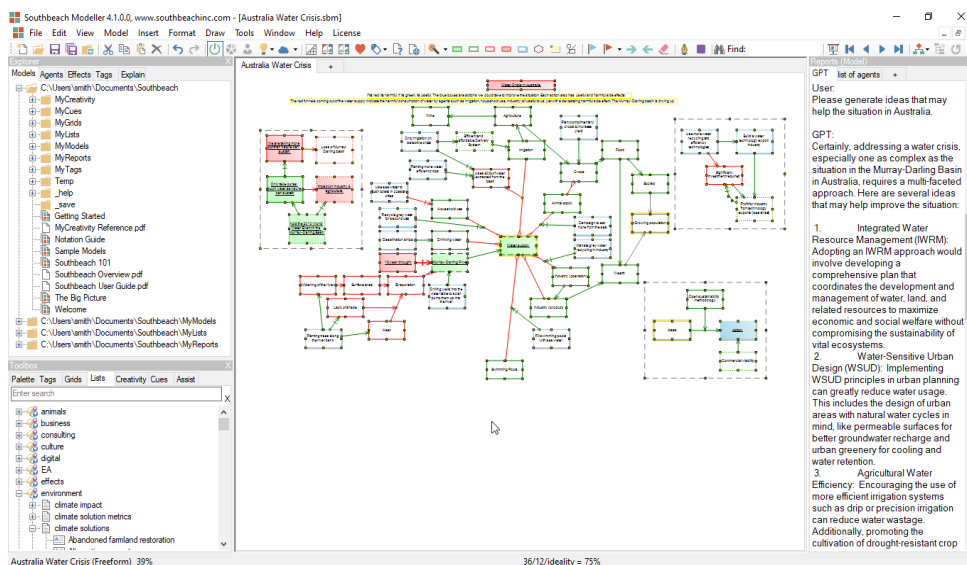


Figure 1 – Screenshot of Southbeach Modeller, Australian Water Crisis

Is this helpful? A sufficiently detailed visual model provides significantly more information to a generative AI system than a textual prompt does. Any form of diagram, including the simple mind map, will suffice. However, structured diagrams, such as Southbeach diagrams, offer more semantic content to the AI. The Southbeach Notation is notable for distinguishing various elements, including useful and harmful agents and effects (increasing and decreasing), goals, risks, issues, events, and actions, as well as modifiers like sufficiency, insufficiency, dysfunction, and others.

Could other types of diagrams work as well? Certainly. There's no reason why BPMN, XML, SysML, and many other design notations couldn't also be effective as AI prompts. However, Southbeach Notation is particularly well-suited for AI enhancement due to its explicit support of ideation. It views the world through the lens of useful and harmful elements within any system or situation—be it technical, business, or societal—and models their interactions. Similar to the TRIZ methodology, this approach identifies valid directions for solution-finding. While a model created in Southbeach may not include all the details necessary for practical software implementation, it provides the structure required for innovation. (Please contact me if any part of this explanation is unclear.)

An AI Assistant for Southbeach

OpenAI¹, the creators of ChatGPT and ChatGPT Plus, offer users the ability to configure (also known as train) custom GPT models and share these with others. Southbeach Solutions has tailored a GPT specifically for its software and notation, resulting in a powerful AI Assistant² that possesses a deep understanding of Southbeach far beyond that of a standard chatbot.

The rest of this paper presents a detailed example to showcase the potential of this approach. We begin with a high-level model of the Water Crisis in Australia. This model was developed over ten

1 <https://openai.com/>

2 <https://www.southbeachinc.com/help/gpt.html>

years ago, during the nascent stages of Southbeach's development, at a time when AI was not a consideration. Our experiment will explore what unfolds when we introduce this model to the customized GPT. The ensuing conversation will illustrate the interactive process.

In what follows: Human text is in italics. Everything else is AI generated. The conversation between human and AI is presented in the order it occurred. No copy edits of the transcript. No fakery.

LLM Transcript: Climate Change and the Water Crisis in Australia

User:

I am going to share a Southbeach visual model with you as an image. As a first step in analysis, please tell me what the model is about.

Southbeach Assistant:

Please go ahead and share the Southbeach visual model you'd like to analyze.

User:

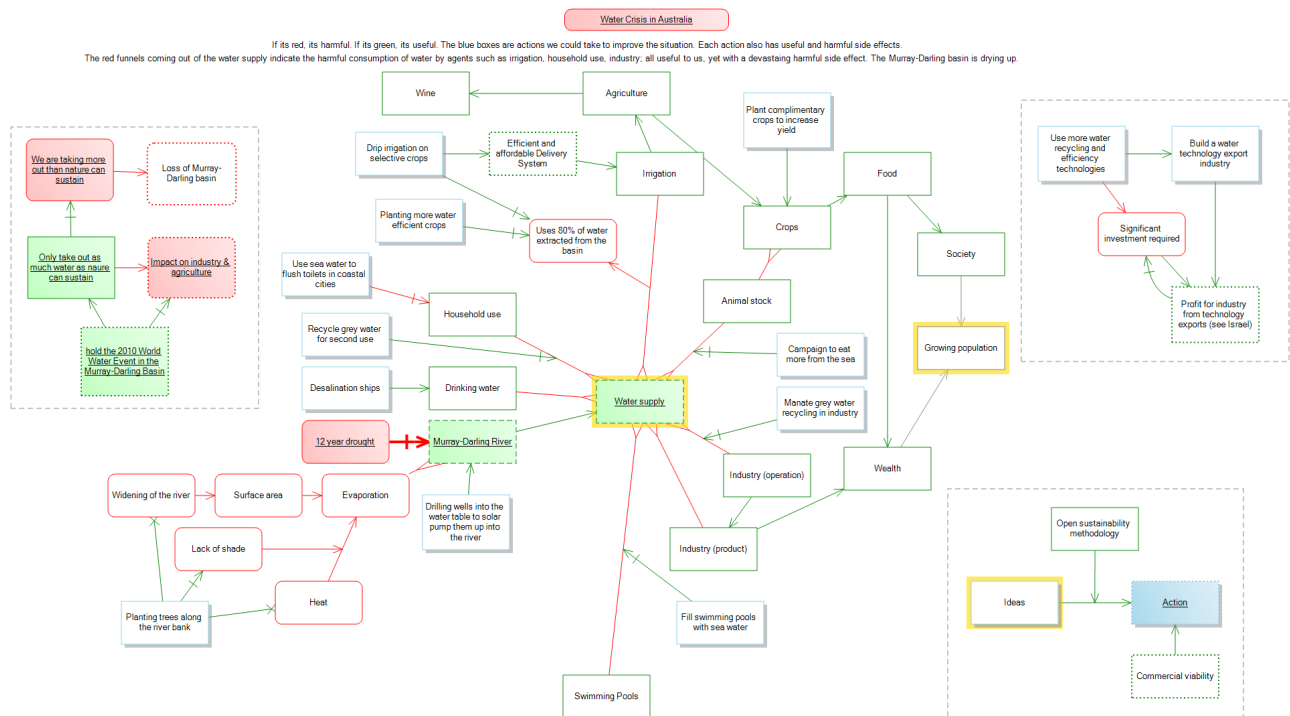


Figure 2 – Copy/paste from Southbeach canvas to GPT prompt

Southbeach Assistant:

The Southbeach visual model you've provided appears to be an analysis of the water crisis in Australia, focusing on the situation regarding the Murray-Darling basin. This model utilizes Southbeach Notation to visually represent a complex situation involving environmental, economic, and social elements. Here's a summary of what the model illustrates:

Central Theme: The water supply, specifically the Murray-Darling River, is at the core of the model,

depicted as a yellow-green rectangle. The river's role is connected to a wide array of factors, from agriculture to household use, indicating its foundational importance.

Harmful Effects: Harmful elements and effects are highlighted in red. For example, the 12-year drought, the widening of the river, evaporation, and heat are interconnected, showcasing environmental challenges. The red dashed boxes on the left indicate actions or situations that are recognized as harmful, such as the loss of the Murray-Darling basin due to over-extraction of water and the impact this has on industry and agriculture.

Useful Elements: Useful elements are shown in green, illustrating positive aspects or proposed beneficial actions. Planting trees along the river bank to provide shade and mitigate heat, or promoting campaigns to eat more from the sea, are examples of solutions that can improve the situation.

Actions and Proposed Solutions: Blue boxes denote actions or interventions, such as using sea water to flush toilets in coastal cities, desalination ships, or drilling wells to supplement the river flow. These actions also have associated positive and negative effects, indicating the complex trade-offs in managing the water crisis.

Interconnections and Contradictions: The model uses arrows to depict the relationships between different elements. For instance, industry (operations and products) is linked to the water supply, as is the growing population, indicating the demand pressures on water resources.

Innovation and Strategy: There are gray dashed lines that seem to represent strategic considerations, such as significant investment required for water technology export industry and an open sustainability methodology leading to commercial viability. This indicates forward-thinking and long-term planning.

Ideas and Commercial Actions: At the bottom right, there's a flow from "Ideas" to "Action" and then to "Commercial viability," suggesting a process for turning concepts into practical solutions with economic benefits.

Overall, the model provides a visual mapping of the various elements impacting the water crisis in Australia, highlighting the complex interactions between human activity, environmental conditions, and potential solutions. It serves as a comprehensive analysis and decision-making tool for stakeholders to consider various facets of the situation, the implications of actions, and potential pathways toward sustainability and improvement.

User:

Thank you. Using the visual model and your understanding of it as context, please take on the persona of an expert environmentalist. Suggest the types of solutions that the Australian government could develop as policy.

Southbeach Assistant:

Certainly, the visual model provides a robust platform to consider a multifaceted approach to the water crisis. As an environmental expert, I would suggest the following policy recommendations for the Australian government to consider:

Sustainable Agriculture Practices: Encourage the use of drip irrigation and the planting of more water-efficient crops. Policies could offer incentives for farmers adopting these practices, which could reduce the stress on the Murray-Darling basin.

Water Recycling and Reuse: Mandate the recycling of grey water in industry and for agricultural irrigation. This could include subsidies for the installation of grey water treatment facilities and the development of guidelines to ensure the safe use of treated water.

Desalination and Alternative Water Sources: Invest in desalination technology to provide additional sources of potable water. While expensive, modern advances can make desalination a more viable option, and policy should support R&D in this area.

Riverine Environment Preservation: Develop programs for planting trees along the riverbanks to reduce evaporation and improve the local ecosystem. Such reforestation efforts can also bolster biodiversity and enhance the river's natural resilience to drought.

Smart Water Management Technologies: Promote the development and adoption of water-saving technologies within households and industries. Smart meters and leak detection systems, for example, can significantly reduce water wastage.

Public Awareness Campaigns: Implement educational programs to promote water conservation among citizens. Awareness of the impact of water usage on the Murray-Darling basin can drive community-level conservation efforts.

Regulatory Framework for Water Rights: Reevaluate water rights and allocations, ensuring they reflect current and projected water availability. This might require tough policy decisions but is essential for the sustainable management of the basin.

Climate-Resilient Infrastructure: Upgrade existing water infrastructure to cope with the extreme weather conditions induced by climate change. This includes building resilience into dams, levees, and canals.

Innovation in Food Production: Support research into and the development of drought-resistant crop varieties. Furthermore, encourage diversification of agriculture to include crops that are less water-intensive.

Economic Diversification: Since agriculture is a major consumer of water, policies that support economic diversification can reduce dependency on water-intensive industries. This could include encouraging sectors like technology, services, or renewable energy.

Transboundary Water Management: Engage in regional cooperation with neighboring countries and states for shared water resources management. This ensures that all parties have a vested interest in sustainable practices.

Monitoring and Compliance: Establish a robust system for monitoring water usage and enforcing regulations. Penalties for non-compliance should be stringent to ensure adherence.

Each of these policy suggestions is a piece of a larger puzzle. The Australian government could leverage the Southbeach model to further analyze the interdependencies and consequences of these policies, facilitating informed decision-making that balances environmental conservation with economic and social needs.

User:

Thank you again. As a next step in our analysis of the model and your suggested solution directions, please perform a Gap Analysis: Determining the gap between the current state (as depicted in the cause-effect model) and the desired state or goal, to focus efforts on bridging this gap. This is one

of the modes of analysis supported by Southbeach.

Southbeach Assistant:

To perform a Gap Analysis using the Southbeach model and the proposed solutions, we first need to define the current state as depicted in the model and the desired state or goal. The Gap Analysis will help to focus efforts on bridging the gap between the two.

Current State:

- The Murray-Darling basin is experiencing a 12-year drought, impacting water supply.
- The river is overutilized for agriculture, leading to loss of the basin.
- Industry and household use contribute to water scarcity.
- Current practices are not sustainable, and there's a lack of adequate policy to address the crisis fully.

Desired State:

- A resilient and sustainable water supply that supports the environment, agriculture, industry, and households.
- Adoption of water-efficient practices in agriculture and industry.
- A diversified economy with less reliance on water-intensive processes.
- Healthy riverine ecosystems with stable biodiversity.

Gap Analysis:

- Environmental Sustainability:
 - Current: Environmental degradation due to over-extraction and mismanagement.
 - Desired: Recovery and maintenance of the basin's ecological health.
 - Gap: Need for policies enforcing sustainable water usage and conservation methods.
- Agricultural Practices:
 - Current: High water consumption due to inefficient practices.
 - Desired: Adoption of water-efficient crops and irrigation methods.
 - Gap: Incentive structures and support for farmers to transition to sustainable practices.
- Water Recycling:
 - Current: Limited reuse of grey water.

- Desired: Widespread implementation of water recycling in all sectors.
- Gap: Investment in infrastructure for water treatment and recycling.
- Public Awareness and Education:
 - Current: Public unawareness of the severity of water issues.
 - Desired: A well-informed public practicing water conservation.
 - Gap: Comprehensive awareness campaigns and educational programs.
- Technology and Innovation:
 - Current: Insufficient investment in water-saving and desalination technologies.
 - Desired: Leading-edge technologies widely adopted.
 - Gap: Funding and research directed towards innovation in water technology.
- Infrastructure Resilience:
 - Current: Existing infrastructure is not equipped to handle prolonged droughts.
 - Desired: Infrastructure that is robust and adaptable to climate variations.
 - Gap: Upgrading and developing resilient water infrastructure.
- Economic Policies:
 - Current: Heavy reliance on water-intensive industries and agriculture.
 - Desired: A diversified economy with sustainable industries.
 - Gap: Policies that encourage economic diversification and support less water-intensive sectors.
- Policy and Governance:
 - Current: Outdated policies and lack of enforcement.
 - Desired: Strong regulatory frameworks and governance for water management.
 - Gap: Development and implementation of comprehensive water policies and stricter regulation.

By addressing these gaps with targeted actions and policies, the Australian government can move from the current state towards the desired state, ensuring the sustainability of the Murray-Darling basin and the welfare of the communities and ecosystems that depend on it. The Southbeach model can continuously be updated to reflect progress and highlight new gaps as solutions are implemented and conditions evolve.

User:

Good. What I'd now like you to do is focus, specifically, on the 3rd level cause-effects in the situation and suggest novel solutions. I have used Southbeach Modeller to extract those and am sharing them with you here:

C33. Efficient and affordable Delivery System produces Irrigation

C34. Crops produces Food

C35. Industry (operation) produces Industry (product)

C36. Surface area produces Evaporation

C37. Heat produces Evaporation

C38. Drip irrigation on selective crops produces Efficient and affordable Delivery System

Explanation, not included in chat: To generate the 3rd level effects, a Southbeach 'report' was used consisting of the following lines:

```
[*(rootnode, MI) "{this}"; E]
```

```
[*(MR, MI) "{this}"; continue]
```

```
[*(MR, MI) "{this}"; continue]
```

The first line selects root nodes in the diagram. These are then used to find relationships with other nodes. This new set of nodes then becomes the target for finding 3rd level effects.

Southbeach Assistant:

Given the third-level cause-effect relationships extracted from the Southbeach model, we can suggest novel solutions for each that focus on innovation and systemic improvement.

C33. Efficient and Affordable Delivery System produces Irrigation:

- Novel Solution: Implement a dynamic water allocation system using IoT sensors and AI to optimize irrigation schedules based on real-time data from soil moisture sensors and weather forecasts. This system could also integrate a marketplace for water credits, allowing farmers to trade water allocations based on their current needs, thus ensuring efficient use of available water resources.

C34. Crops produce Food:

- Novel Solution: Develop genetically modified crops that require less water and are more resilient to changes in climate. These crops could be engineered to grow in higher salinity conditions, which is beneficial in areas where freshwater is scarce but seawater or brackish water is abundant.

C35. Industry (operation) produces Industry (product):

- Novel Solution: Foster the adoption of a circular economy within industrial operations where waste products from one process serve as input materials for another. Additionally, incentivize the shift towards servitization, where the emphasis is on selling services rather

than products, reducing material and water usage.

C36. Surface area produces Evaporation:

- Novel Solution: Install floating solar panels over water bodies to reduce evaporation. This serves the dual purpose of generating renewable energy while conserving water, especially in reservoirs and water treatment ponds.

C37. Heat produces Evaporation:

- Novel Solution: Create evaporative barriers using biodegradable, water-absorbent polymers that can be spread over the surface of water bodies during peak heat periods. These barriers would minimize evaporation without harming aquatic ecosystems.

C38. Drip Irrigation on Selective Crops produces Efficient and Affordable Delivery System:

- Novel Solution: Leverage precision agriculture technologies to go beyond drip irrigation. Use drones for micro-irrigation, delivering water directly to the root zones of plants. Pair this with AI-driven analysis of crop health imagery to ensure water is only used where absolutely necessary.

Each of these solutions takes advantage of contemporary technology and innovative thinking to address the specific cause-effect relationship identified. By focusing on these third-level cause-effects, policy-makers and stakeholders can create targeted interventions that address both symptoms and root causes of water scarcity in the Murray-Darling basin and beyond.

User:

Wonderful. OK, I am now going to share a new model.

Southbeach Assistant:

I'm ready to take a look at your new model. Please go ahead and share it.

User:

<copy-paste from Southbeach Modeller canvas>

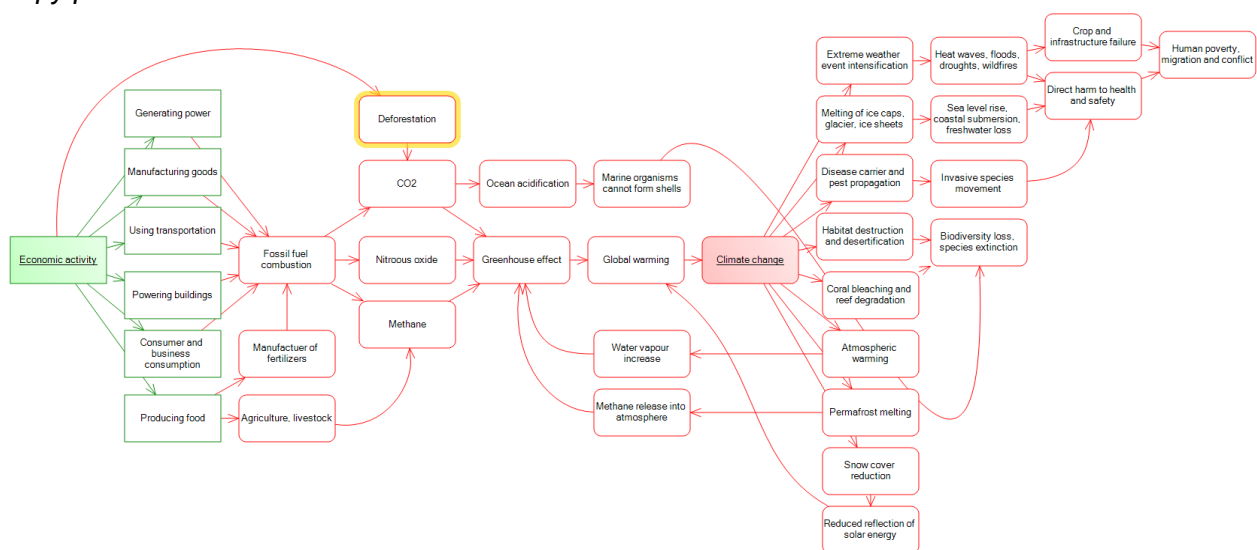


Figure 3 – High level climate change model – Southbeach Notation

Southbeach Assistant:

The new Southbeach model focuses on the relationship between economic activities and their environmental impacts, particularly concerning climate change. Let's break down the model and then provide an interpretation of what it describes.

Model Breakdown:

- Economic Activities:
 - Economic activities like generating power, manufacturing goods, using transportation, powering buildings, consumer and business consumption, and producing food are considered useful (green elements) as they are essential for the functioning of society and the economy.
- Environmental Impact:
 - These economic activities lead to fossil fuel combustion, which is harmful (red elements) as it results in the emission of greenhouse gasses like CO₂, nitrous oxide, and methane.
 - Deforestation is also depicted as a harmful process linked to CO₂ emissions.
- Greenhouse Gases and Effects:
 - The model shows the harmful effects (red lines) of greenhouse gases contributing to the greenhouse effect and global warming.
 - Ocean acidification is a direct consequence of increased CO₂, leading to marine organisms' inability to form shells.
- Global Consequences:
 - A series of climate change impacts are depicted, including extreme weather events, melting of ice caps, habitat destruction, and sea-level rise.
 - These climatic changes lead to a variety of societal and ecological harms such as direct harm to human health, biodiversity loss, crop and infrastructure failure, and human poverty, migration, and conflict.

Interpretation:

This model presents a cause-and-effect relationship where economic growth, while necessary, leads to environmental degradation through mechanisms like the greenhouse effect and deforestation. The consequences are widespread and interconnected, affecting not just the natural world but also human societies across the globe.

In addressing the identified issues, the model highlights the importance of balancing economic development with environmental stewardship. Solutions must be targeted at the source, such as transitioning to renewable energy sources, implementing energy-efficient technologies, and encouraging sustainable manufacturing and agricultural practices. At the societal level, strategies must be put in place to mitigate the impacts of climate change, which includes bolstering infrastructure, protecting vulnerable communities, and preserving biodiversity.

This visualization aids policymakers and stakeholders in understanding the complexity of climate change and the urgency with which novel and integrated solutions need to be developed and deployed.

User:

Good. I am now going to demonstrate a feature of Southbeach Modeller, which is its ability to generate solution-finding 'directions'. The software tool contains 100s of such rules and scripts, covering a wide range of analysis modes. For this example I have picked one called 'improve.harmful.combined'. It has generated a list of 'problems' for you to consider around one targeted area of the model. It is concerned with the impact of climate change on marine life.

Southbeach Assistant:

Absolutely, I'm here to assist. Go ahead and share the list of problems generated by the 'improve.harmful.combined' script from the Southbeach Modeller, and I will provide insights and suggestions

User:

Suggest solutions to the following problem directions. Please adopt the persona of a Phd level marine biologist.

D1. Find a way to alter the environment, or alter the way the 'Marine organisms cannot form shells' interacts with the environment to make the harmful 'Marine organisms cannot form shells' less harmful, more useful, or less able to impact other parts of the system

D2. Make the harmful 'Marine organisms cannot form shells' less harmful, more useful, or less able to impact other parts of the system

D3. Disrupt, isolate or ring fence, or reduce the lifespan of the harmful 'Marine organisms cannot form shells'

D4. Find a way to alter the environment, or alter the way the 'Ocean acidification' interacts with the environment to make the harmful 'Ocean acidification' less harmful, more useful, or less able to impact other parts of the system

D5. Make the harmful 'Ocean acidification' less harmful, more useful, or less able to impact other parts of the system

D6. Disrupt, isolate or ring fence, or reduce the lifespan of the harmful 'Ocean acidification'

D7. Find a way to alter the environment, or alter the way the 'Biodiversity loss, species extinction' interacts with the environment to make the harmful 'Biodiversity loss, species extinction' less harmful, more useful, or less able to impact other parts of the system

D8. Make the harmful 'Biodiversity loss, species extinction' less harmful, more useful, or less able to impact other parts of the system

D9. Disrupt, isolate or ring fence, or reduce the lifespan of the harmful 'Biodiversity loss, species extinction'

Southbeach Assistant:

Addressing your request requires a methodical approach by applying the principles and notations of Southbeach Modeller to systematically tackle each of the presented problems. The overarching

goal is to explore ways to mitigate harmful effects, enhance beneficial outcomes, and ensure sustainability. Here's a structured approach based on the capabilities of Southbeach Modeller and the insights from its underlying methodologies, including TRIZ (Theory of Inventive Problem Solving) and Southbeach's unique notation for representing and solving complex problems.

D1 & D2. Marine Organisms Cannot Form Shells

- Alter the Environment or Interaction:
 - Innovation and Improvement: Explore the introduction of alkaline materials to oceans to counteract acidification, enhancing the environment for shell formation,
 - Risk Assessment and Solution-Finding: Assess the long-term impacts and feasibility of such interventions on marine ecosystems to ensure no unintended harmful consequences arise,

D3. Disrupt, Isolate, or Reduce Lifespan of the Issue

- Scenario Planning and System Thinking: Develop targeted breeding programs for marine organisms to enhance their resilience against acidic conditions, using genetic insights to potentially disrupt the negative trend,
- Leverage Point Identification and Sustainability Evaluation: Identify key areas in oceanic regions where interventions could yield the most significant benefits, focusing on high-biodiversity hotspots to protect critical species,

D4 & D5. Ocean Acidification

- Alter the Environment or Interaction:
 - Optimization and Benchmarking: Research and implement ocean fertilization techniques to promote algae growth, which can absorb CO₂ and mitigate acidification. Benchmark against natural oceanic cycles to gauge effectiveness,
 - Compliance Check and Multidisciplinary Analysis: Ensure any geoengineering solutions comply with international environmental laws and guidelines, engaging with stakeholders to evaluate ethical implications,

D6. Disrupt, Isolate, or Reduce Lifespan of Ocean Acidification

- Feedback Loop Analysis and Resilience Evaluation: Explore the use of artificial reefs to create positive feedback loops for carbonate buffering, enhancing marine resilience against acidification effects,

D7, D8 & D9. Biodiversity Loss, Species Extinction

- Alter the Environment or Interaction:
 - Stakeholder Engagement and Equity and Justice Evaluation: Collaborate with indigenous communities and local stakeholders to incorporate traditional ecological knowledge in conservation strategies, ensuring equitable solutions,

- Scenario Development and Testing: Use Southbeach models to simulate various conservation strategies, like protected areas and wildlife corridors, testing their impact on biodiversity preservation,

Implementation via Southbeach Modeller

- Utilize the improvement, innovation, and optimization modes of analysis to generate a variety of solution paths. Incorporate risk assessment to evaluate potential negative outcomes of proposed solutions,
- Leverage system thinking and pattern recognition to identify systemic causes and effects, ensuring that solutions address root issues rather than symptoms,
- Engage in scenario planning and sensitivity analysis to explore the potential future impacts of interventions, adapting strategies as necessary to remain effective and sustainable,
- Apply multidisciplinary analysis to incorporate diverse perspectives and knowledge bases, ensuring comprehensive and innovative solutions that are culturally sensitive and scientifically sound.

This structured approach underscores the versatility and depth of Southbeach Modeller in addressing complex environmental issues, highlighting the importance of systematic analysis, stakeholder engagement, and adaptive strategies for sustainable solutions.

User:

OK, good. Those are interesting ideas which we could explore further in a later chat. I will now share with you a detailed prompt called 'stakeholder analysis'. I want you to apply it to the climate change model. Here goes:

Objective: The goal is to conduct a comprehensive stakeholder analysis to identify and understand the diverse needs, expectations, and levels of influence of all stakeholders involved in or affected by the situation or process. This analysis aims to ensure that the development and implementation of solutions are inclusive, equitable, and capable of addressing the concerns of all stakeholder groups.

Prompt Details:

Identification of Stakeholders: Compile a comprehensive list of all stakeholders related to the situation or process. This includes individuals, groups, organizations, and communities that are directly or indirectly affected, as well as those who have influence over the outcomes.

Stakeholder Categorization: Categorize stakeholders based on their interest, influence, and impact regarding the situation or process. Use categorization frameworks such as the power/interest grid to prioritize stakeholders for engagement.

Assessment of Needs and Expectations: For each stakeholder or stakeholder group, assess their specific needs, concerns, and expectations related to the situation or process. What are their main interests, and how do they perceive the problem or opportunity?

Analysis of Influence and Power Dynamics: Evaluate the level of influence each stakeholder has over the situation or process, including the power dynamics between different stakeholders. How might these influence and power structures affect the implementation of solutions?

Engagement Strategies: Develop tailored engagement strategies for different stakeholder groups based on their categorization and assessed needs. Consider communication methods, participation in decision-making, and opportunities for collaboration.

Identification of Potential Conflicts: Identify potential conflicts or contradictions between the needs and expectations of different stakeholders. How can these conflicts be managed or resolved to the satisfaction of all parties?

Prioritization of Stakeholder Concerns: Prioritize stakeholder concerns based on the impact of addressing these concerns on the overall success of the solution. Which stakeholder needs and expectations are critical for the success of the project?

Feedback Mechanisms: Establish mechanisms for ongoing feedback and dialogue with stakeholders. This ensures that stakeholder concerns are continuously monitored and addressed throughout the implementation process.

Incorporation into Solution Design: Integrate the insights gained from the stakeholder analysis into the design and implementation of the solution. Ensure that the solution addresses key stakeholder concerns and leverages their influence positively.

Expected Outcome: The analysis should result in a comprehensive stakeholder analysis report that details the needs, expectations, and influence of all relevant stakeholders, alongside a strategic plan for stakeholder engagement and conflict resolution. This report should guide the inclusion of stakeholder perspectives in the development and implementation of solutions, ensuring broad support and minimizing resistance.

This prompt is designed to guide a thorough stakeholder analysis process, ensuring that solutions are developed with a deep understanding of and respect for the diverse perspectives and needs of all stakeholders. By systematically addressing stakeholder concerns, the aim is to foster inclusive and equitable solutions that are more likely to be successful and sustainable.

Southbeach Assistant:

To apply a comprehensive stakeholder analysis to the climate change model depicted in your visual, we would proceed as follows:

Identification of Stakeholders:

- **Directly Affected Parties:** These include coastal communities, small island nations, farmers, fishermen, and indigenous populations whose livelihoods are directly impacted by climate change.
- **Indirectly Affected Parties:** This group encompasses the global population at risk from increased weather events, and future generations who will face the long-term impacts of climate change.
- **Influencers:** Governments, policymakers, environmental NGOs, and intergovernmental organizations like the United Nations.
- **Regulators:** Government bodies responsible for creating and enforcing environmental legislation.
- **Corporates:** Businesses and industries, particularly those in the sectors of fossil fuels,

agriculture, manufacturing, and transportation.

- Investors: Those with financial interests in industries both contributing to and combating climate change, including banks and investment funds.
- Scientists and Academics: Individuals and institutions conducting research and providing data on climate change.
- Civic Society Groups: Local community groups, activist organizations, and the general public.
- Media: Outlets and platforms that inform the public and influence opinion on climate issues.

Stakeholder Categorization:

- High Power, High Interest: Governments, large corporations in the energy sector, and major investors.
- High Power, Less Interest: Some corporate entities that might be indirectly affected or responsible for climate change, such as technology companies.
- Less Power, High Interest: Environmental NGOs, civic society groups, and scientists who are highly engaged but possess less direct power to enact change.
- Less Power, Less Interest: Individuals who are aware of climate change but feel that they have little power or it's not a priority in their daily lives.

Assessment of Needs and Expectations:

- For each group, determine what they seek from climate change solutions. Coastal communities might need infrastructure to combat sea-level rise, while energy companies may seek new technologies to reduce emissions.

Analysis of Influence and Power Dynamics:

- Explore how the powerful entities like governments and corporations can shape outcomes and how less powerful stakeholders can be given a voice.

Engagement Strategies:

- Tailor engagement strategies for each group. High-power entities may require negotiation and policy incentives, while high-interest groups may be engaged through collaborations and public forums.

Identification of Potential Conflicts:

- Conflicts may arise between industrial stakeholders and environmental groups, or between short-term economic interests and long-term sustainability goals.

Prioritization of Stakeholder Concerns:

- Prioritize concerns based on their potential impact on climate change mitigation. Issues

like cutting carbon emissions are critical and should be prioritized.

Feedback Mechanisms:

- Establish channels such as public consultations, surveys, and workshops to receive ongoing feedback from stakeholders.

Incorporation into Solution Design:

- Ensure that the design of climate change solutions incorporates stakeholder needs. For example, policy designs should consider both environmental sustainability and economic viability for businesses.

Expected Outcome:

- A comprehensive stakeholder analysis report that details the insights gained, accompanied by a strategic plan for inclusive and effective stakeholder engagement, addressing conflicts, and ensuring the solution's success.

By following this structured approach, we can aim to craft holistic and integrated strategies to combat climate change that are sensitive to the needs of all stakeholders involved, thereby enhancing the efficacy and sustainability of the solutions.

User:

OK, good. Again, we could expand on those suggestions later. Let's now try something else that also relies on your knowledge of Southbeach. I will share a news article about climate change and ocean warming. I would like you to extract from the short paper a list of cause-effect statements that I could use to improve my climate model. The cause-effect relationships you extract should be clear as to whether they are increasing or decreasing effects and whether they are acting on useful or harmful elements of the system. A suitable output format might be, for example, "X (useful) increases Y (harmful)". This way I can directly import them into my visual model.

Southbeach Assistant:

I'm ready to assist with your request. Please go ahead and share the article on climate change and ocean warming, and I'll help extract the cause-effect statements for incorporation into your climate model.

User:

<uploads article ocean.txt>

Southbeach Assistant:

Based on the information provided in the uploaded document, here are cause-effect statements extracted from the text regarding climate change and its impact on Europe's marine ecosystems. These statements are structured to indicate whether they are increasing or decreasing effects and whether they are acting on useful or harmful elements, suitable for creating or improving a climate model.

- Increasing carbon dioxide levels in the atmosphere (harmful) increase ocean acidification (harmful).
 - "Carbon dioxide and increasing temperatures contribute to creating climate change's 'deadly trio' for marine biodiversity: ocean acidification..."

- Rising global temperatures (harmful) increase sea warming (harmful).
 - "The main factors of climate change influencing Europe's seas are increasing levels of carbon dioxide in the atmosphere, rising global temperatures..."
- Lower oxygen levels in the water (harmful) increase the vulnerability of marine organisms (harmful).
 - "...lower oxygen levels in the water. So far, the ocean globally has absorbed 91% of the heat generated by increased greenhouse gas emissions to the atmosphere..."
- Ocean warming (harmful) decreases the availability of dissolved oxygen in seawater (harmful).
 - "Deoxygenation – the loss of oxygen in sea water – is a result of ocean warming."
- Increased nutrient loads (harmful) exacerbate low oxygen conditions (harmful).
 - "...or through indirect effects exacerbating impacts from the other drivers of change (e.g. increased nutrient loads leading to low oxygen conditions)."
- Ocean acidification (harmful) reduces calcium carbonate availability for marine organisms (harmful).
 - "Ocean acidification, primarily caused by carbon dioxide emissions, reduces calcium carbonate availability for organisms..."
- Warmer waters (harmful) increase oxygen demand by marine organisms (harmful).
 - "Warmer water alters organisms' metabolisms. For example, warmer water can increase oxygen demand."
- Marine heat waves (harmful) can kill native species (harmful).
 - "Marine heat waves are extreme events that can outright kill native species..."
- Increased precipitation or runoff from intensive farming (harmful) leads to higher nutrient concentration (harmful), contributing to ocean deoxygenation (harmful).
 - "Coupled with a rising nutrient concentration that can occur due to more precipitation or runoff from intensive farming, deoxygenation can lead to an expansion of hypoxic or anoxic conditions."
- Climate change impacts (harmful) lead to biodiversity loss and degraded ecosystem functions (harmful).
 - "The deadly trio leads to biodiversity loss, and degraded ecosystem functions and structures – often through non-linear, cascading effects."

These cause-effect statements highlight the intricate and multifaceted impacts of climate change on marine ecosystems, emphasizing the interconnectedness of various stressors and their cumulative effects on the health of marine biodiversity and ecosystem services. These statements

can serve as a foundation for modeling the impacts of climate change on marine ecosystems, aiding in the identification of critical intervention points for mitigating adverse effects.

User:

That's all for now. We will be sharing this transcript as a whitepaper and inviting others to begin experimenting with the use of visual models as prompts to AI systems.

Appendix – Southbeach Modeller

User:

What is unique about Southbeach Modeller?

GPT:

Southbeach Modeller is unique due to several key features that differentiate it from other visual modeling tools and software used for creativity, problem-solving, and idea generation. Here are some of its distinctive characteristics based on the provided documents:

Integrated Rules Engine (MyCreativity): Southbeach Modeller contains an embedded rules engine known as MyCreativity. This engine understands the Southbeach Notation object types, effects, modifiers, attributes, and tags and can recognize patterns within any Southbeach Model. It generates contextual sentences or ideation based on the model's structure and the relationships between its elements, offering unique insights and directions for innovation or problem-solving.

Rich Visual Notation: The software uses Southbeach Notation, which is adept at articulating intricate situations, problems, challenges, and opportunities. Unlike freeform diagrams or mind maps, each model maintains a consistent approach and interpretation, focusing on the concepts of useful and harmful functions, as well as increasing and decreasing influences.

Versatility in Methodology Application: Southbeach Modeller is not tied to any one methodology, making it a flexible tool for a wide range of applications. It synthesizes principles from various analytical strategies and brainstorming approaches, allowing users to implement known or novel problem-solving techniques.

Comprehensive Library for Systematic Analysis and Planning: It includes a diverse library of methods, diagrams, and strategic analysis tools. This enables users to apply Southbeach Modeller across different fields such as innovation management, problem-solving, optimization, strategic planning, design and review, and facilitation and collaboration.

User-Driven Ideation and Customization: Users can customize or template virtually any visual thinking and problem-solving approach, thanks to the software's scalability and extensibility. The application supports user-defined tags, types, and a rich set of modeling relationships, providing a highly adaptable environment for ideation.

Unified Modelling and Knowledge Reuse: Southbeach Modeller offers unified modeling capabilities, allowing for easy reuse of knowledge through its extensive tag library and creativity engine. This feature promotes efficiency and consistency in modeling efforts.

Visual Effects and Modifiers: The software uses visual effects and modifiers to express different dimensions of a problem or design, such as harmful, insufficient, surplus, and dysfunctional

elements. This aids in the clear communication of ideas and the identification of improvement areas.

Facilitation of Collaboration and Communication: With its intuitive design and comprehensive modeling capabilities, Southbeach Modeller facilitates effective communication with stakeholders, enabling alignment and consensus building in complex projects.

These unique features make Southbeach Modeller a powerful tool for individuals and organizations seeking to innovate, solve problems, and design systems with a systematic and creative approach.

User:

Based on what you know about Southbeach, please suggest five cool things that users can do with the software.

GPT:

Based on the knowledge I have about Southbeach Modeller, here are five cool things users can do with the software:

1. **Visual Problem Solving and Innovation:** Users can visually map out problems and challenges, then use the software's unique notation to identify and categorize elements as beneficial, harmful, uncertain, or requiring more information. This visual approach helps in understanding complex problems and generating innovative solutions.
2. **Idea Generation with MyCreativity Engine:** Southbeach Modeller comes with a built-in 'MyCreativity' engine that can automatically suggest ideas, questions, and issues based on the current model. It can help users break through creative blocks and generate a wide array of ideas and solutions they might not have considered.
3. **Application of TRIZ Principles:** The software integrates TRIZ (Theory of Inventive Problem Solving) principles, allowing users to apply systematic innovation and problem-solving methods to their models. This can lead to highly creative and often non-obvious solutions for engineering and technical problems.
4. **Customizable Templates:** Users can create, customize, and save their templates. This feature allows for a quicker start on new projects and ensures consistency across models created for similar types of problems or projects.
5. **Exploration of Multiple Analytical Modes and Strategies:** By leveraging the 36 modes of analysis outlined within Southbeach Modeller's framework, you can explore a multitude of analytical strategies to tackle your project's unique challenges. This includes everything from improvement and innovation to risk assessment and scenario planning, offering a structured yet flexible approach to problem-solving and decision-making.

These features make Southbeach Modeller a powerful tool for anyone involved in problem-solving, innovation, and idea generation, providing a structured yet flexible approach to tackling complex challenges.

User:

Those are great ideas but they are very abstract. Please can you make them concrete by describing innovations and solutions that the user may implement:

GPT:

Certainly, here are more concrete examples of innovations and solutions users might implement using Southbeach Modeller:

1. Streamlining Business Processes: A user can map out the entire workflow of a business process, using the notation to mark inefficient or problematic areas. By applying the MyCreativity engine, the software can suggest alternative paths or improvements. For instance, a user could innovate a new, more efficient workflow for a customer service department, reducing response times and increasing customer satisfaction.
2. Product Development and Improvement: An engineer or designer could use Southbeach Modeller to deconstruct an existing product, identifying harmful or less effective elements. By applying TRIZ principles, the software might suggest inventive solutions to redesign a component to be more cost-effective, durable, or environmentally friendly, leading to a new, improved product version.
3. Environmental Solutions: An environmental consultant could use the software to analyze an ecosystem or pollution problem. By mapping out the various factors and their impacts, the consultant could use the MyCreativity engine to generate ideas for reducing pollution or mitigating negative effects, possibly leading to innovative environmental strategies or new green technologies.
4. Strategic Planning and Decision Making: A business strategist might use Southbeach Modeller to visually lay out the strengths, weaknesses, opportunities, and threats (SWOT) involved in a potential new market entry. The software could help in identifying the most critical factors and generating strategic initiatives that leverage strengths and opportunities while mitigating risks and weaknesses.
5. Healthcare Process Improvement: A healthcare administrator could model patient flow through a hospital department, using the software to highlight bottlenecks or points where patients experience delays. By employing the MyCreativity suggestions, the administrator might innovate new procedures or resource allocations that significantly improve patient throughput and care quality.

In each case, Southbeach Modeller acts as a catalyst for innovation, helping users visualize complex systems or problems and generating creative, often non-obvious solutions and improvements.

Summary of the Southbeach Notation³

Object palette:

Useful, harmful, and neutral actors, including goals, risks, actions, choices, issues, events and knowledge. With visual variations for insufficient action, excessive action, potential action, historical action and dysfunctional action. And a general purpose 'focus' and 'highlight'.

Effects palette:

Increasing and decreasing effects between all objects, including production, counteraction,

³ <https://www.southbeachinc.com/notation.html>

creation, destruction, contributory factor, detracting factor, consumption, storage, becomes (change), replaces (change), prevention, implementation, specification, use of, relation (simple), is_a (typing), opposition (to clarify difference between technical and physical contradictions) and user_defined effects. With visual variations for insufficient action, excessive action, potential action, historical action, dysfunctional action, necessary and inevitable effects, accelerated, delayed and questionable effects. Also NOT, negation; effect not acting.

Separations:

Use grids/charts/swimlanes/pools to separate visual model elements in any dimensions including user, space, time, parts, perspective, aspects, roles, probability, conditions and version.

Content included as of v4.1:

- 100s of carefully curated ideation scripts and rulesets (MyCreativity)
- 3500+ application-specific tags/tag groups
- 100+ pre-configured grids/charts/swimlanes/pools,
- 250+ topic-specific lists of reusable elements
- 400+ community donated models.

Author Biography

Howard Smith is the author of *Business Process Management: The Third Wave*. Now retired from his role as CTO at Computer Sciences Corporation (DXC), he created Southbeach Notation with his colleague Mark Burnett. The notation was later implemented by micro ISV Southbeach Solutions, a UK company. He is currently exploring the potential of LLMs for problem-solving and innovation and is the author of the *In Conversation with GPT* series of (10) books, available via Amazon worldwide.⁴

⁴ <https://www.amazon.com/dp/B0BYXPXSVZ>