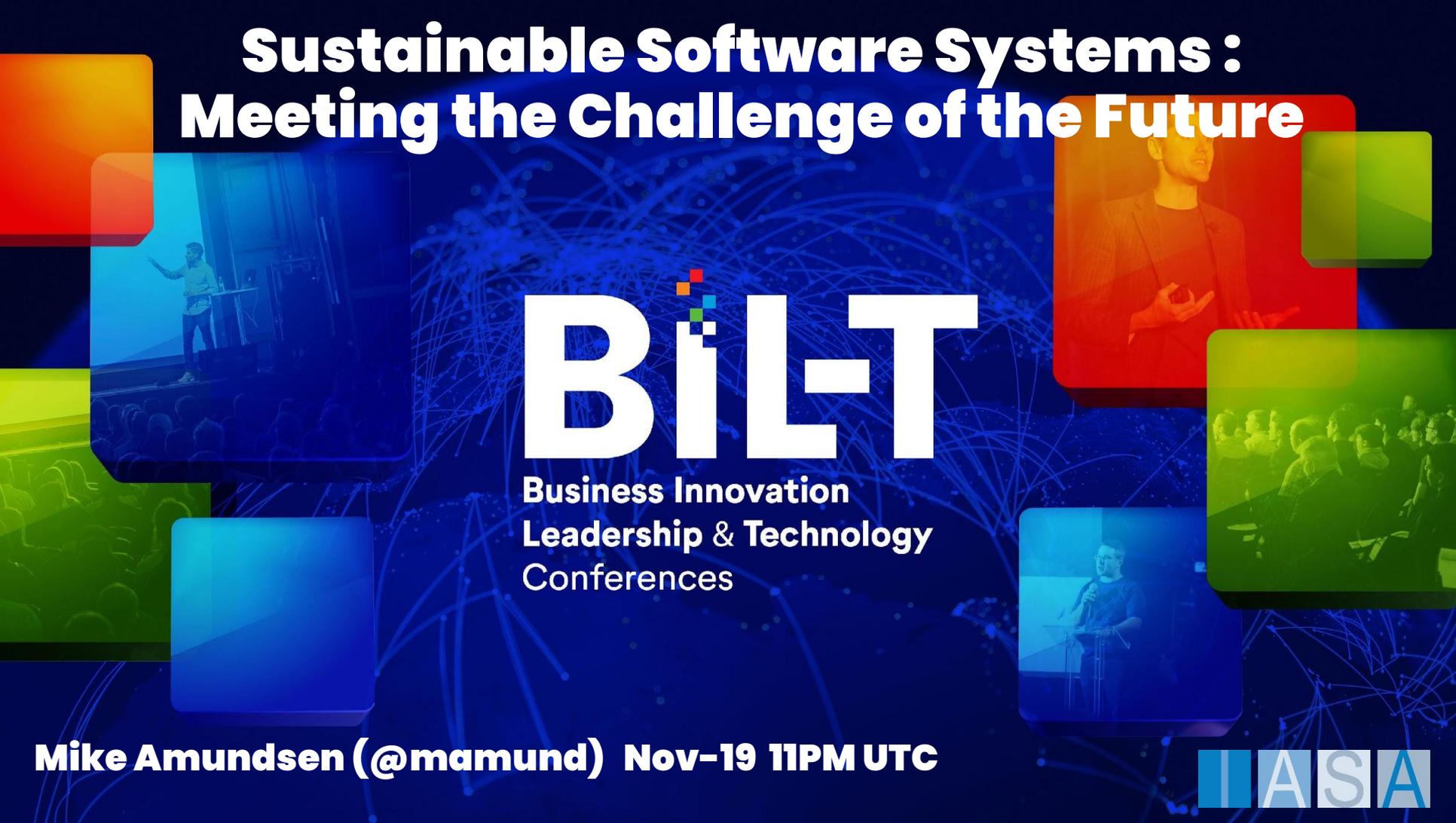


Sustainable Software Systems : Meeting the Challenge of the Future



BiLT

**Business Innovation
Leadership & Technology
Conferences**

Mike Amundsen (@mamund) Nov-19 11PM UTC



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Sustainable Software Systems

Meeting the Challenge of the Future

Mike Amundsen

@mamund

youtube.com/mamund





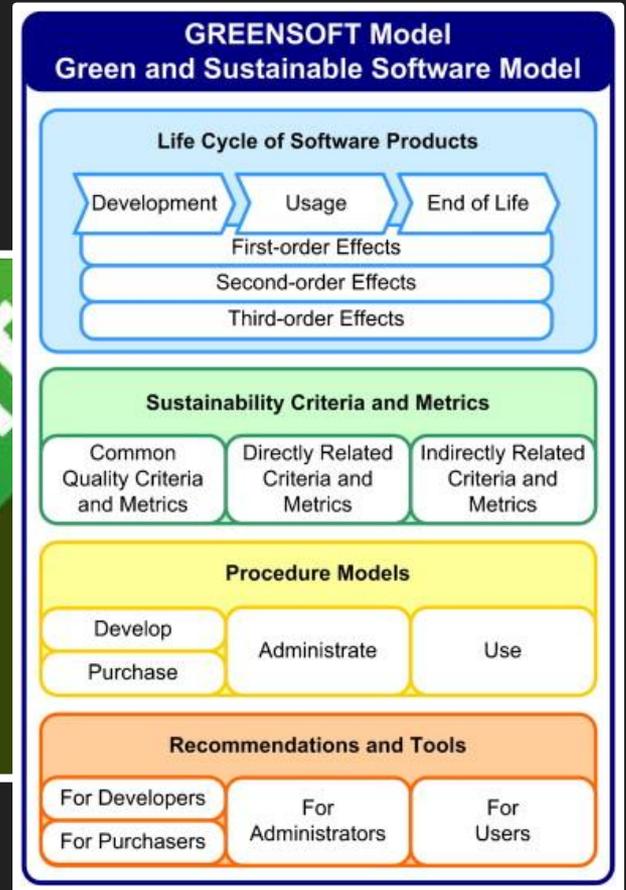
Mike Amundsen
@mamund

Sustainable Software





TM





Sustainable Software Development

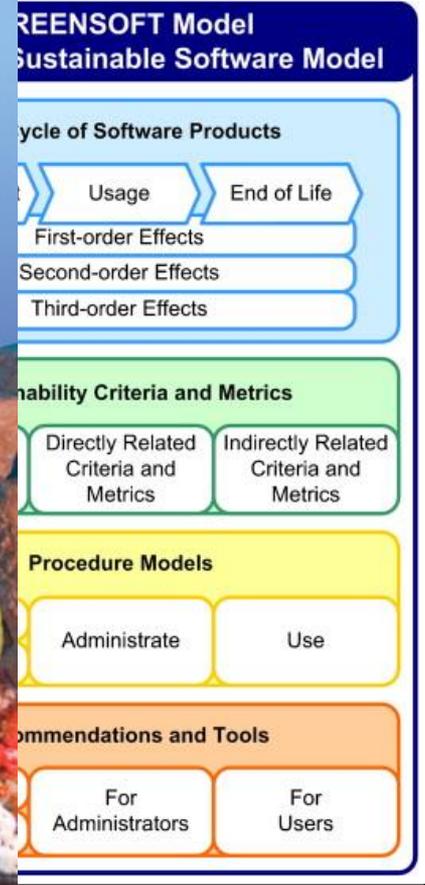
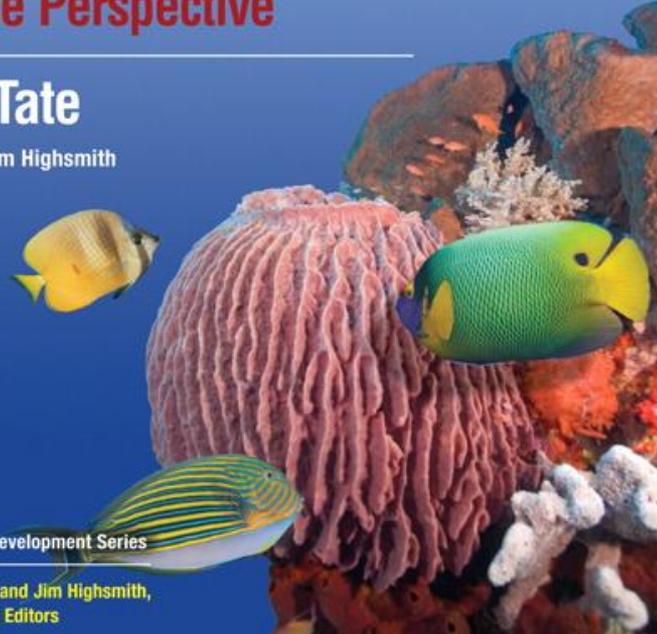
An Agile Perspective

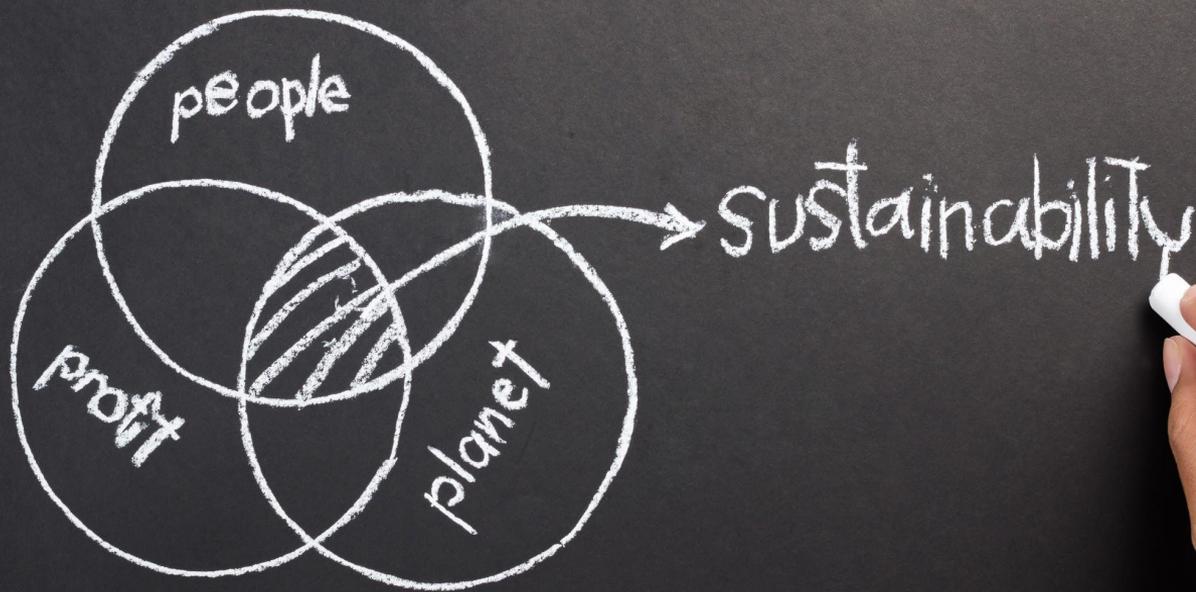
Kevin Tate

Foreword by Jim Highsmith

Agile Software Development Series

Alistair Cockburn and Jim Highsmith,
Series Editors





Alex Rivera

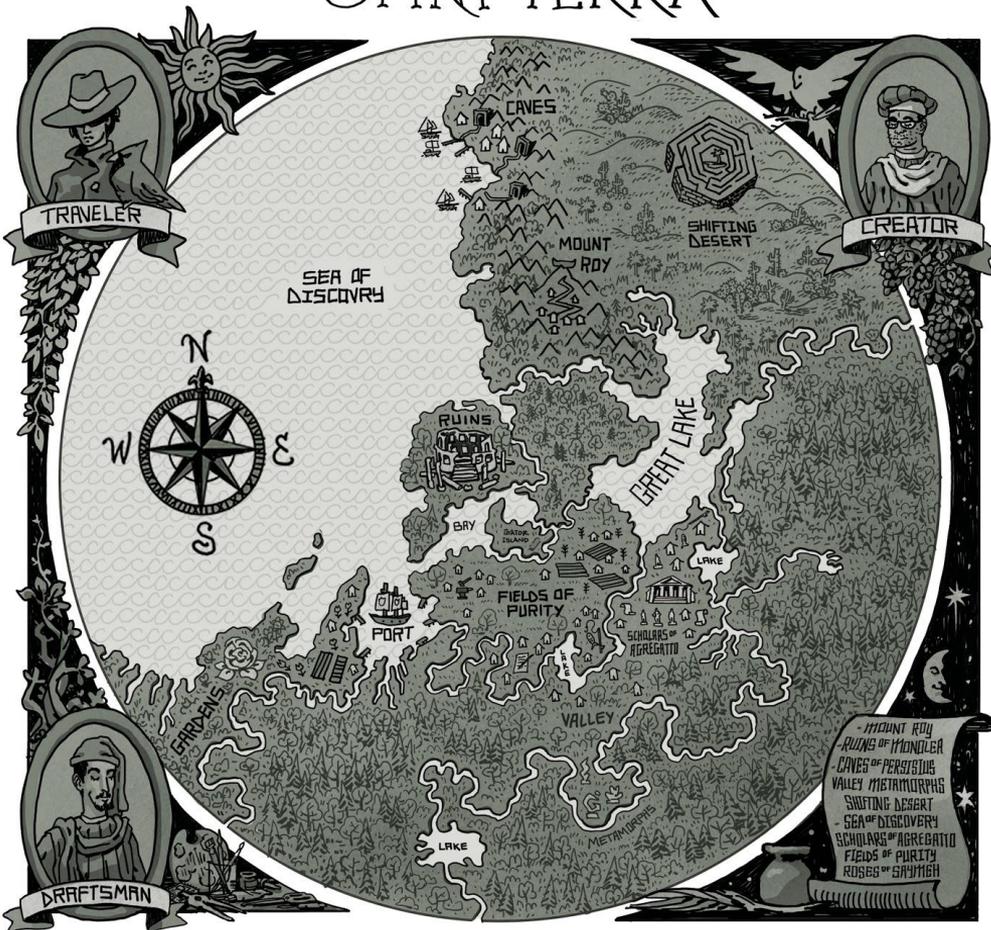
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FIELDS OF PURLIN
RUSSES BY SHUNTEH



Sustainability

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

-- Brundtland Commission, 1987

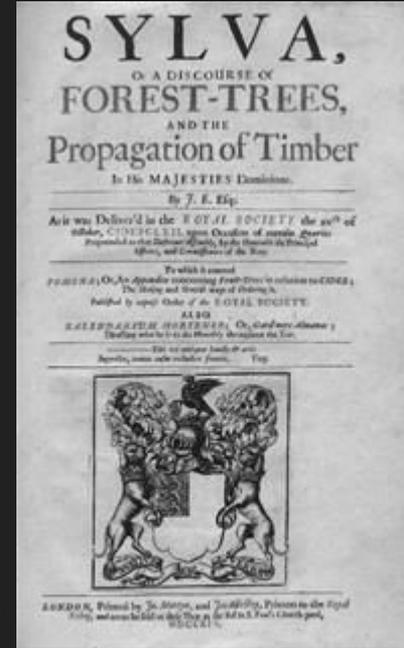
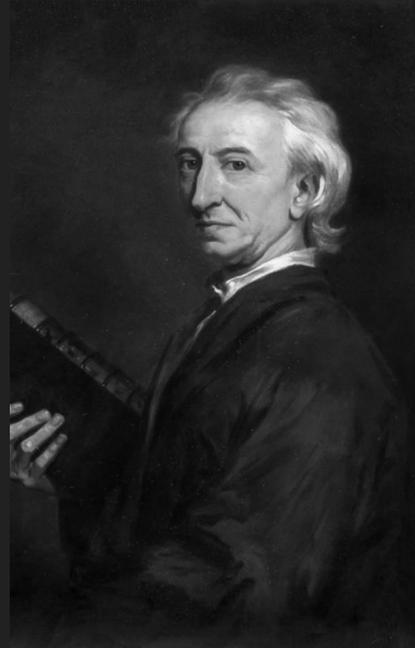


**OUR
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AND DEVELOPMENT

"A gardener's work is never at an end."

-- John Evelyn (1620-1706)



It can be difficult to foresee the challenges of the future ...



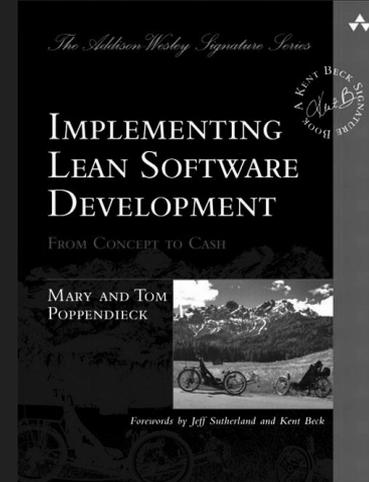
**It can be difficult to foresee the
challenges of the future ...**

**How do we plan for the
unknown?**



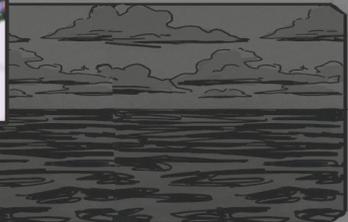
"Delay commitment until the last responsible moment, that is, the moment at which failing to make a decision eliminates an important alternative."

-- Tom and Mary Poppendieck, 2003





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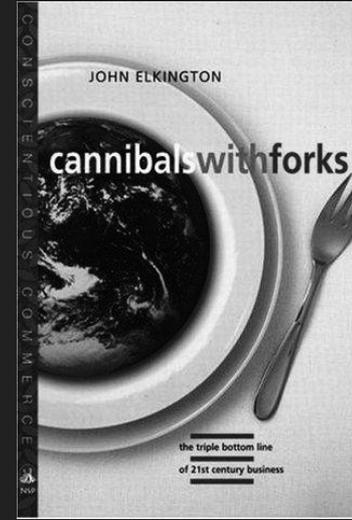
SEA OF DISCOVERY
SAILORS OF ADVENTURE
FIELDS OF PURITY
RIVERS OF KNOWLEDGE

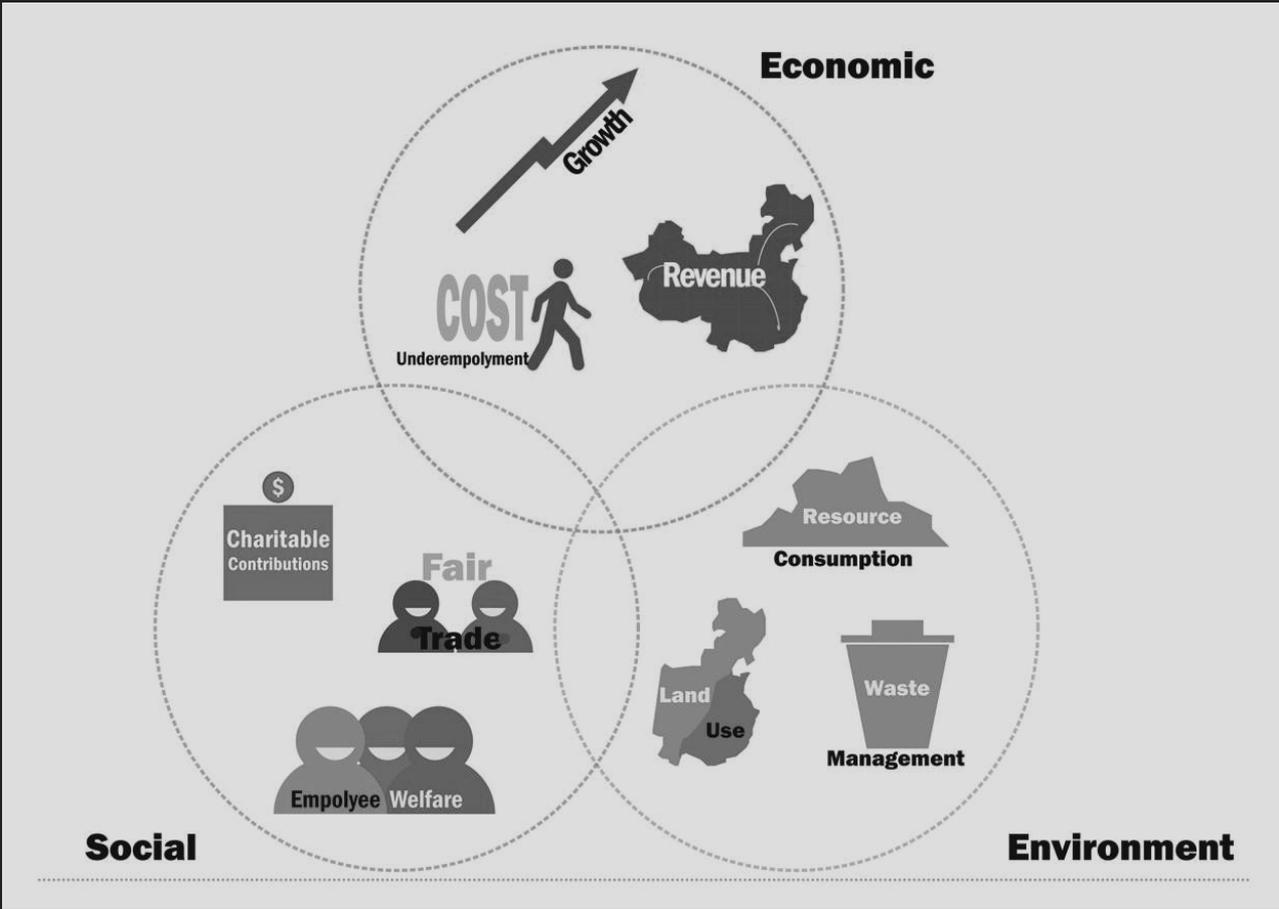


Profit

"The TBL agenda focuses corporations not just on the economic value that they add, but also on the environmental and social value that they add – or destroy."

-- John Elkington, 2004





Effective and efficient are not the same things ...



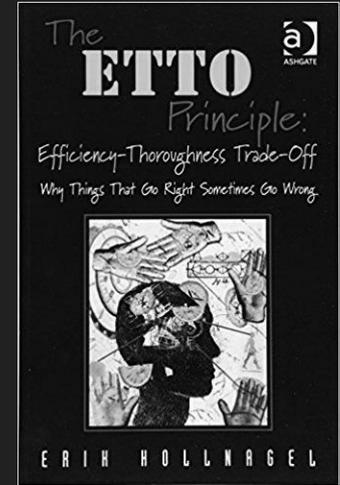
**Effective and efficient are not the
same things ...**

**And sometimes they exist in
conflict with each other.**



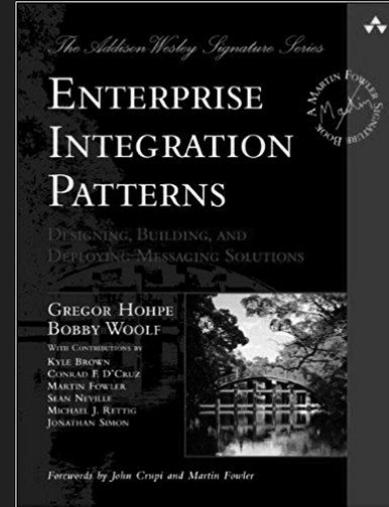
"It follows from the ETTO principle that it is never possible to maximise efficiency and thoroughness at the same time."

-- Eric Hollnagel



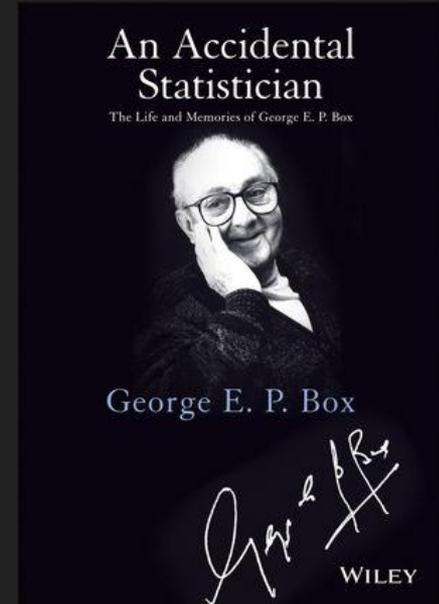
"People at Google don't say 'IT' (information technology) because the business & tech work closely together - IT is an integral part of the business."

-- Gregor Hohpe, 2017



"All models are wrong, but some are useful."

-- George Box (1919 - 2013)

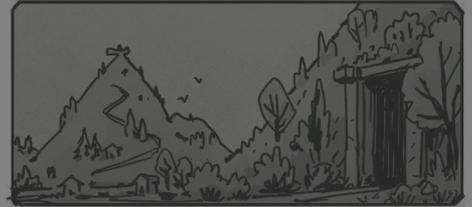


*"Your Data Model is not your Object Model is
not your Resource Model is not your
Message Model."*

-- Mike Amundsen



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SCHOLARS AGREGATIO
FIELDS OF PURITY
RIVERS OF KNOWLEDGE



People

"Social variables refer to measurements of education, equity and access to social resources, health and well-being, quality of life, and social capital."

Indiana Business Review (2011)



The screenshot shows the top portion of a web page. At the top left is the logo for IBR (Indiana Business Review), which includes the text "IBR" in a large, bold, serif font, followed by "INDIANA BUSINESS REVIEW" in a smaller, sans-serif font. Below this is the tagline "52 years of economic insights for Indiana". To the right of the logo is the text "The IBR is a publication of the Indiana Business Research Center at IU's Kelley School of Business". Below the logo is a small icon of a person and the text "Ψ". A dark horizontal bar contains the text "Get PDF of this article". The main title of the article is "The Triple Bottom Line: What Is It and How Does It Work?". Below the title are the names of the authors: "TIMOTHY F. SLAPER, PH.D." and "TANYA J. HALL", each followed by their respective titles and affiliations. The main body of the article begins with a paragraph about sustainability and then a paragraph about John Elkington's work.

IBR | INDIANA BUSINESS REVIEW
52 years of economic insights for Indiana

The IBR is a publication of the Indiana Business Research Center at IU's Kelley School of Business

Ψ

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The Triple Bottom Line: What Is It and How Does It Work?

TIMOTHY F. SLAPER, PH.D.
Director of Economic Analysis, Indiana Business Research Center, Indiana University Kelley School of Business

TANYA J. HALL
Economic Research Analyst, Indiana Business Research Center, Indiana University Kelley School of Business

Sustainability has been an often mentioned goal of businesses, nonprofits and governments in the past decade, yet measuring the degree to which an organization is being sustainable or pursuing sustainable growth can be difficult.

John Elkington strove to measure sustainability during the mid-1990s by encompassing a new framework to measure performance in corporate America.' This accounting framework, called the triple bottom line (TBL), went beyond the traditional measures of profits, return on investment, and shareholder value to include environmental and social dimensions. By

"Government will never run the way Silicon Valley runs because democracy is messy.

And part of government's job is dealing with problems nobody else wants to deal with."

Barack Obama, 2016



This "Dance of the Knowing" is more than just a celebration...



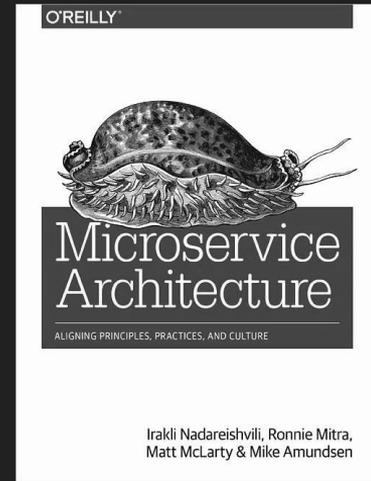
**This "Dance of the Knowing" is
more than just a celebration...**

**It is also a reminder that we are all
connected in fundamental ways.**



*"How we structure our company --
the way we communicate -- has an
impact on the things that we build."*

— Ronnie Mitra



<https://www.youtube.com/watch?v=4nvanSt3bQY>

**The group — as a whole — is
more important than any one
individual...**



The group — as a whole — is more important than any one individual...

And the group gets its characteristics from the individuals that make up that group.



The Theseus Paradox



<https://03varvara.wordpress.com/2010/06/22/konstantinos-volanakis-the-argo-2nd-half-of-the-19th-century/>

Change is inevitable...



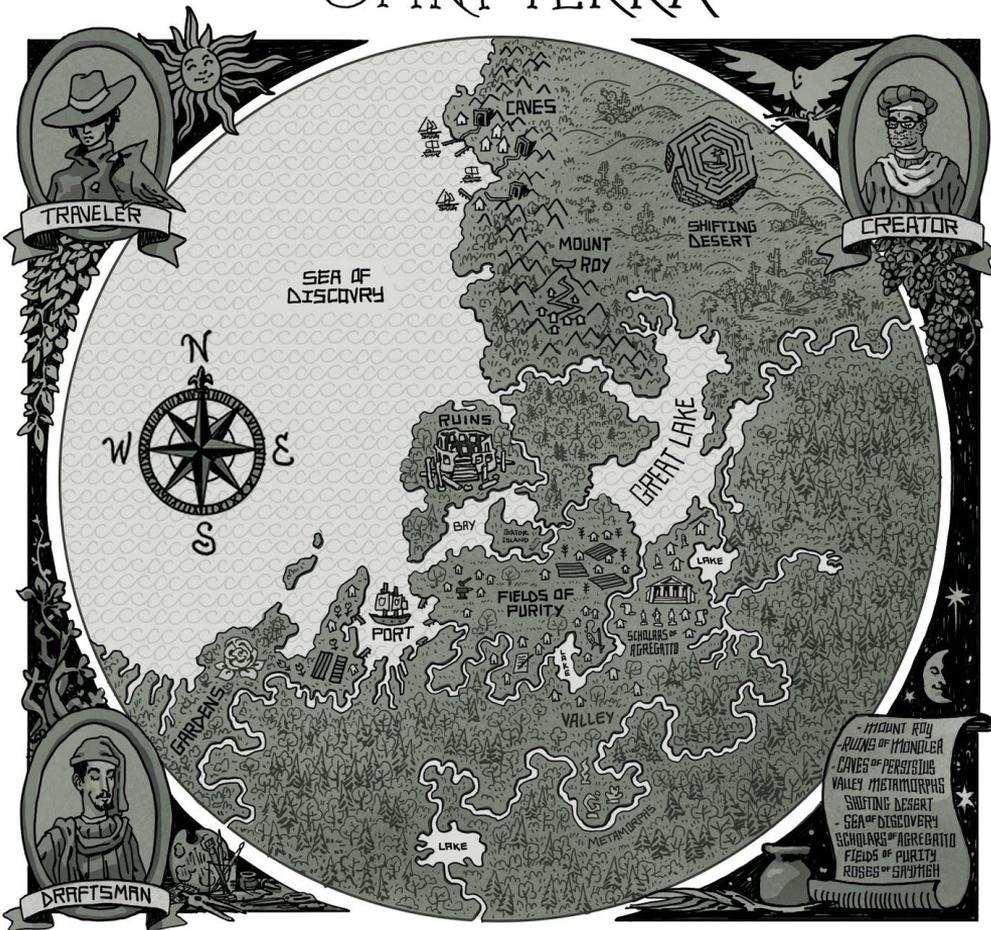
<https://03varvara.wordpress.com/2010/06/22/konstantinos-volanakis-the-argo-2nd-half-of-the-19th-century/>

Change is inevitable...

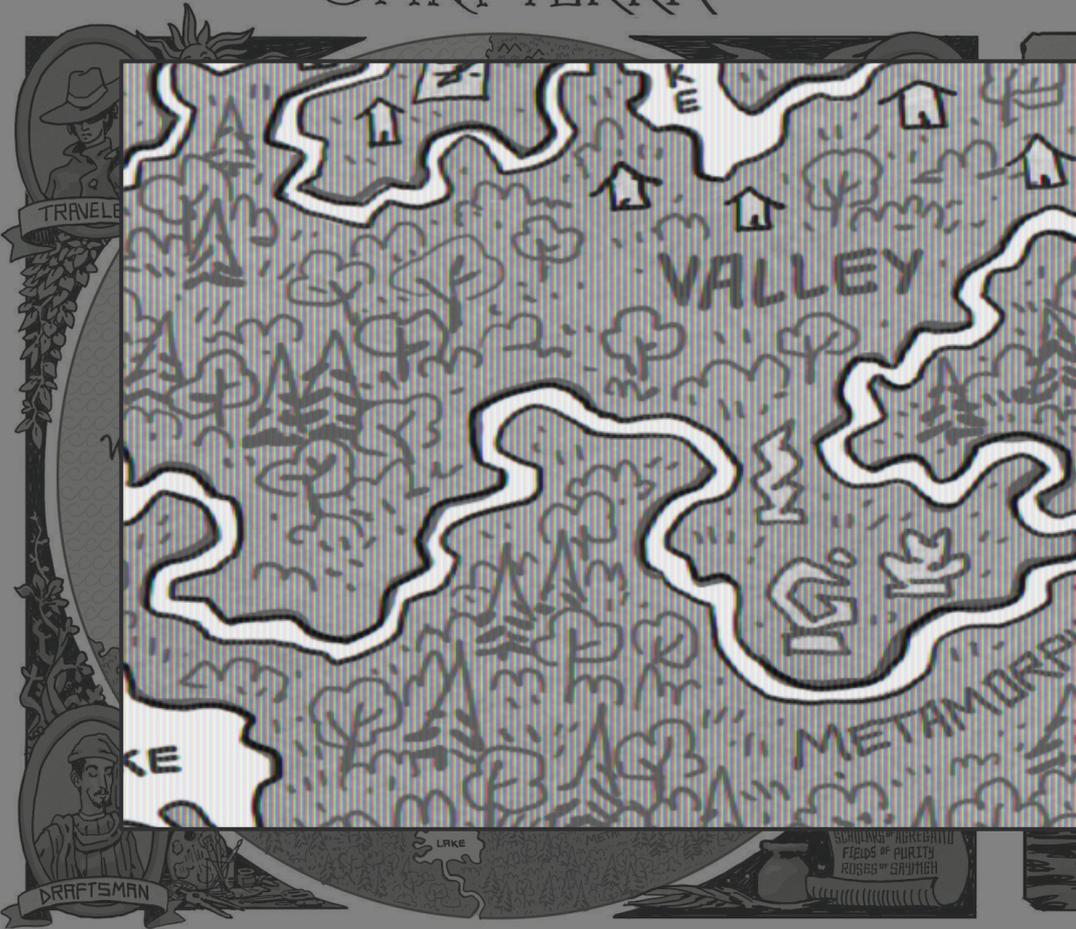
**We don't build static
systems; they're dynamic.**



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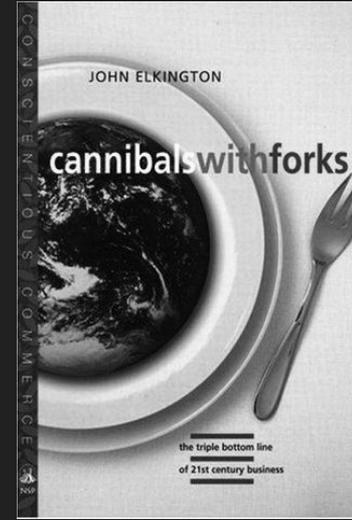




Planet

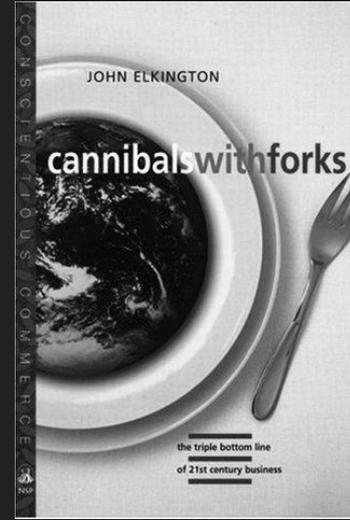
"A TBL company endeavors to benefit the natural order as much as possible or at the least do no harm and minimise environmental impact."

-- John Elkington, 2004



*"A TBL company endeavors to benefit the **natural order** as much as possible or at the least do no harm and minimise environmental impact."*

-- John Elkington, 2004



"The 'environment' is where we live; and 'development' is what we all do in attempting to improve our lot within that abode. The two are inseparable."

-- Brundtland Commission, 1987



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*"The 'environment' is where we live; and 'development' is what we all do in attempting to improve our lot within that abode. **The two are inseparable.**"*

-- Brundtland Commission, 1987



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AND DEVELOPMENT

"Seven generation stewardship is a concept that urges the current generation of humans to live and work for the benefit of the seventh generation into the future."

-- Great Law of the Iroquois



"Seven generation stewardship is a concept that urges the current generation of humans to live and work for the benefit of the seventh generation into the future."

-- Great Law of the Iroquois



**Change is rarely a discrete
jump...**



**Change is rarely a discrete
jump...**

**And how is it that things which
seem solid can change?**



"Microservices encourage architects and developers to develop systems that can be changed faster."

-- Sam Gibson, 2015



A screenshot of a ThoughtWorks blog post. The page has a dark header with the ThoughtWorks logo and navigation links: Clients, Services, Products, Insights, Events, About us, Careers. Below the header is a secondary navigation bar with links for Microservices, Cloud, IoT, Security, Transformation, Experience Design, Retail, Career Hacks, and a link for All Topics (26). The main content area has a dark background with the title "Monoliths are Bad Design... and You Know It" in white. Below the title is a small profile picture of Sam Gibson, his name "Sam Gibson", and his bio "Hacker of Things, CODE ADVENTURER". There are also tags for "Microservices", "Sydney", and "Technology". A row of social media sharing icons is visible below the bio. The main text of the article begins with "Tightly coupled software presents the biggest difficulty when teams are looking to extend or change systems. As systems get larger, coupling limits the scope of change and self perpetuates. The easiest way to extend tightly coupled code is often to weave in even more interdependence."

<https://www.thoughtworks.com/insights/blog/monoliths-are-bad-design-and-you-know-it>

"Microservices encourage architects and developers to develop systems that can be changed faster."

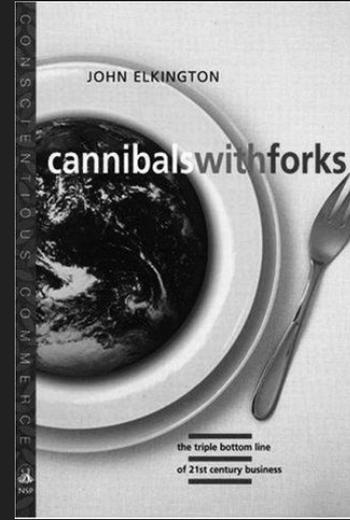
-- Sam Gibson, 2015



<https://www.thoughtworks.com/insights/blog/monoliths-are-bad-design-and-you-know-it>

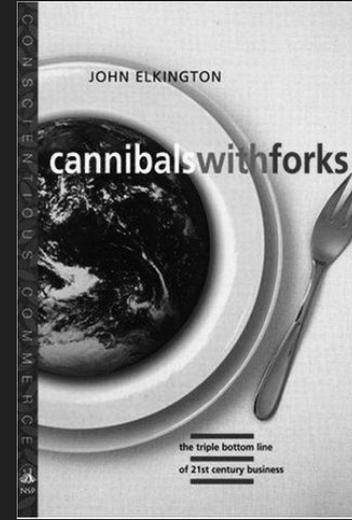
"The challenge will be to work out new ways of cooperating with suppliers, customers, and other stakeholders."

-- John Elkington, 2004



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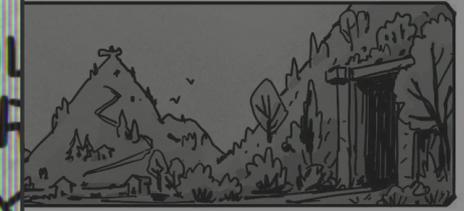
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SAILING AGRICULTURE
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RUSSES OF SHIPMENT



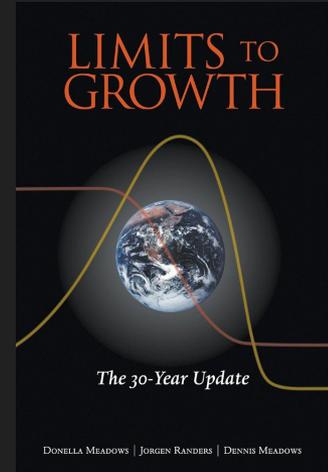




SUSTAINABILITY

"Running the same system harder or faster will not change the pattern as long as the structure is not revised."

-- Donella H. Meadows, 1972



Profit

Focus on *value*, not just profit.

Align IT with company values.

Question the value of what you
give away.



People

Empower your people.

Make sure IT serves, not demands.

Be aware of how 'labor saving tech' really works.

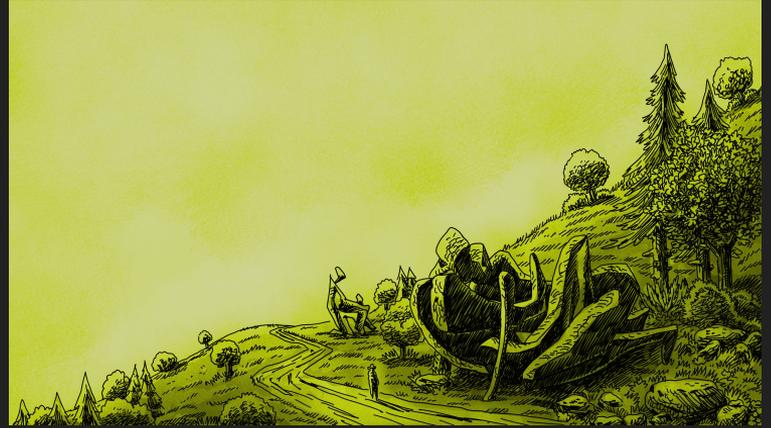


Planet

Leverage change, don't fight it.

**Take responsibility for your
environment.**

**Take note of how your tech affects
those around you.**



Meet the needs of the present...



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**Meet the needs of the present...
Without compromising the future.**



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**THE WORLD COMMISSION
ON ENVIRONMENT
AND DEVELOPMENT**

Social media "has eroded the core foundations of how people behave by and between each other."

-- Chamath Palihapitiya, 2017



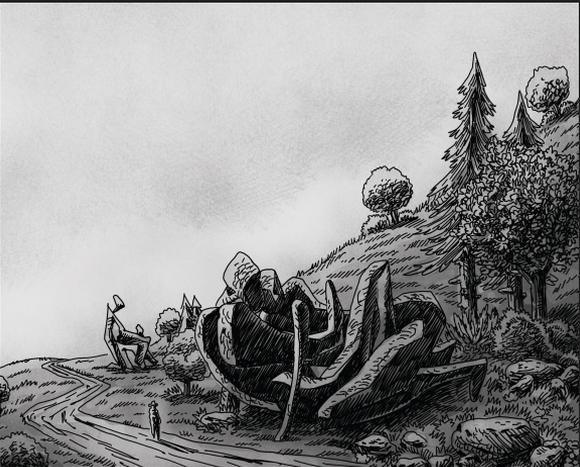
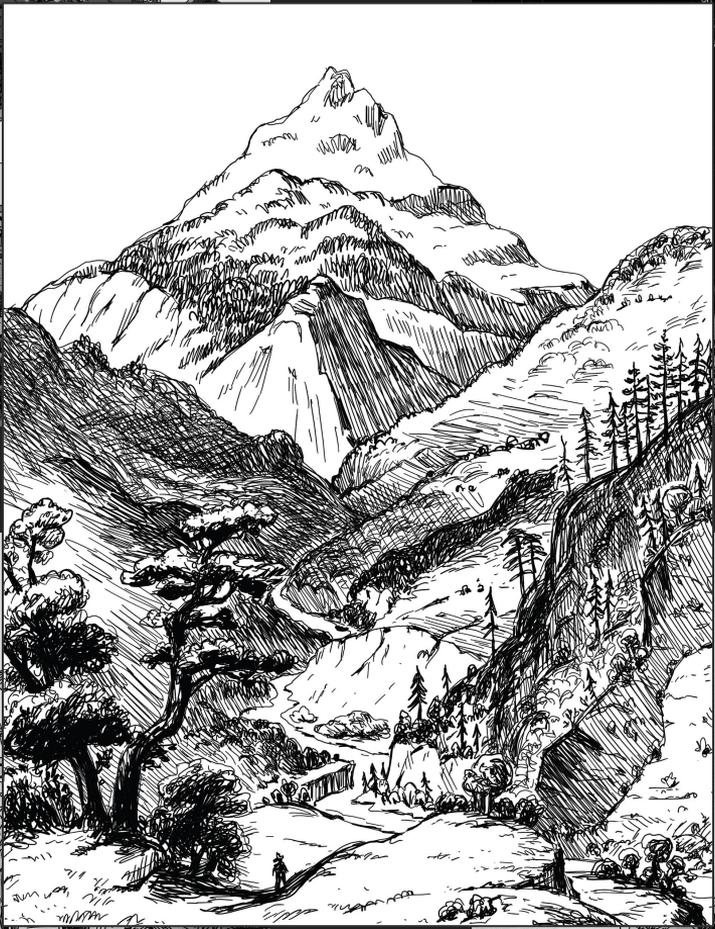
"Society is demanding that companies, both public and private, serve a social purpose."

-- Larry Fink, 2018

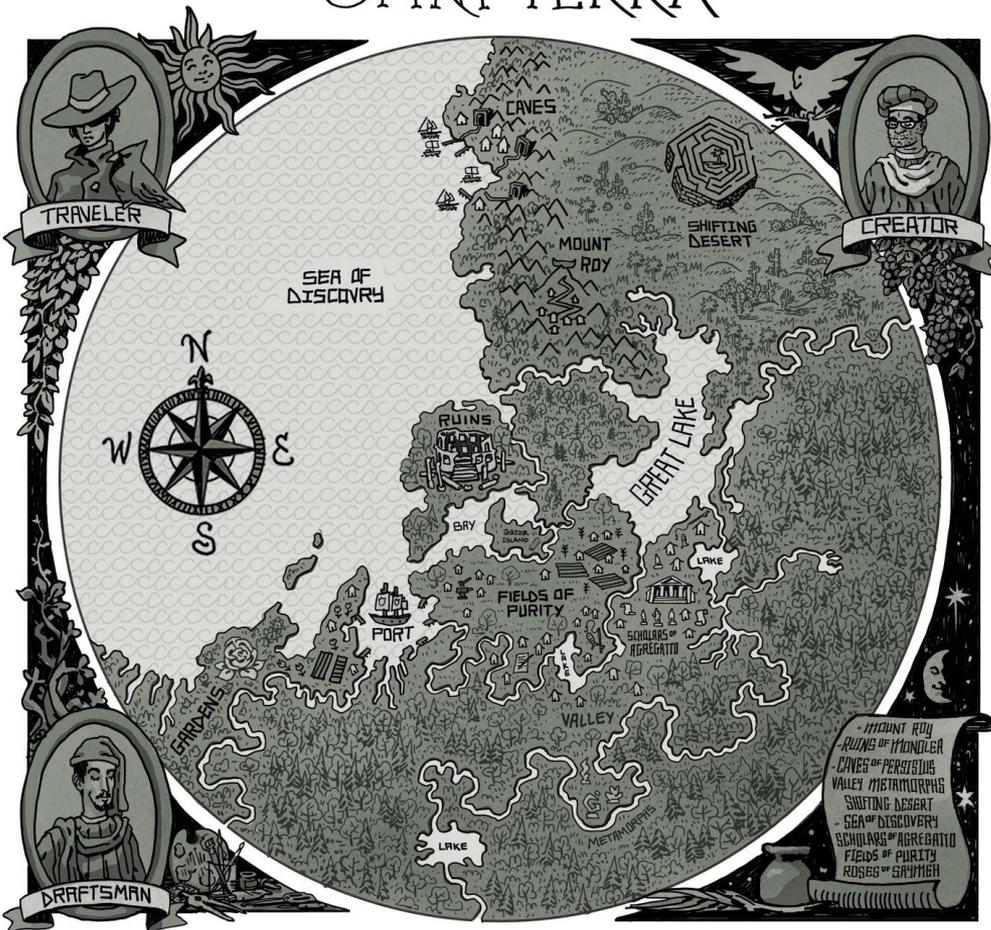


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Sustainable Software Systems

Meeting the Challenge of the Future

Mike Amundsen

@mamund

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