Agile and Sustainable

A Pragmatic Approach to Sustainable Tech

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About "Kelly"

– **Wears lots of hats:** Dad, Cat Slave, Mentor, Speaker, IT Professional, Handweaver, Game Designer, Novice Photographer, Leader, Cook, & Renaissance Person in Training

– **Can be found:** Online, wandering parks with a camera, behind a loom, playing/designing tabletop games, and conferences near you.
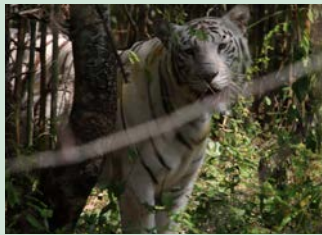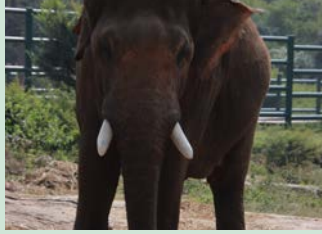
– Recent transplant to Northern Colorado

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My First Trip to India

Friendly Inhabitants

Great Food!

Comfortable Hotel Room

Wonderful People, too!

Namaste and Thank You for making me feel welcome!

Slides Available

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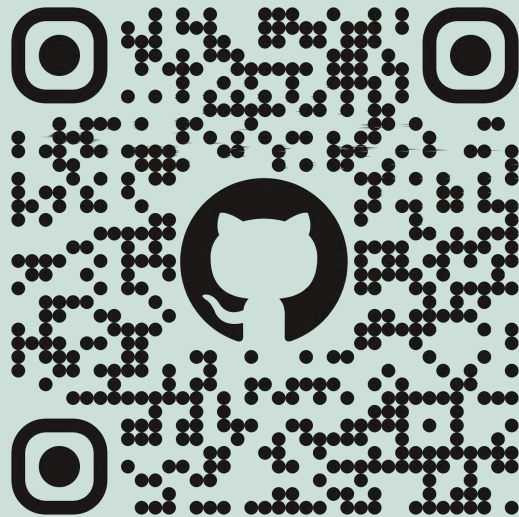
The slides for the talk will be available in a couple of formats -- plain and annotated; the annotated ones have notes and more information available.

Understanding Sustainability in IT

Definition: Practices that meet current tech needs without compromising future resources.
Importance: Ethical responsibility, economic benefits, regulatory compliance.

3 Step Plan For Sustainabiltiy

I'd like to propose a very simple and easy to follow three step plan to promote sustainability.

Our Plan

1. Talk about sustainability

2. ???

3. Save the World

Unfortunately, it's not a a problem which a simple three step plan can solve. So, let's step back and examine a more realistic and approach.

Let me explain....
No, there is too much. Let me sum up.
-- Inigo Montoya

There's a lot to cover in talking about an Agile approach to sustainability -- far more than can be covered in a talk. To that end, let's establish a starting point and go over the concepts at a high level.

If you take away nothing else today

The main points of the talk are, as follows:

Be Pragmatic

It's been said that the perfect is the enemy of the good. It's no less true when approaching sustainability. Rather than creating an elaborate plan with lots of complexity, it's better to address and talk about things which we can do *now* in order to make an immediate affect -- a win, if you will.

Once you have a win, it's easier to gain support from others and build a larger initiative and grow from there.

Make better choices

As IT professionals we have the ability to make choices about how we go about implementing solutions. There is very seldom a *best* solution -- we have choices and need to balance the costs associated with implementations. It's important in order to understand the associated costs and make our decisions based upon these costs and limitations. Sometimes it's as simple as making a *good* choice over a *bad* choice.

With time, practice, and experience we'll be better able to identify better choices.

Reduce pain points and make small gradual improvements

Just like agile development, agile sustainability should have short cycles -- there's much less risk involved with smaller changes and you'll also be able to see and/or isolate the impact individual changes make, which will help to prioritize other changes/improvements.

It's a Journey

Agile sustainability is very similar to DevOps in that they both take time and effort and, frankly, are never really done.

Why Sustainability Matters

The Global Context

– Climate change

– Scarce resources

The IT Impact

Energy Consumption

- Crypto
- AI
- "General" Computing

E-waste

– Cell phones

Carbon footprint

– IT is targeted to account for 14% of the world's carbon footprint

Other Resources

Water

Trees

Pollution

Environmental
– Climate change
– Greenhouse gas emissions
– Biodiversity loss
– Deforestation/reforestation
– Pollution mitigation
– Energy efficiency
– Water management

Social
– Employee safety and health
– Working conditions
– Diversity
– Equity and inclusion
– Conflicts and humanitarian crises

Governance
– Corporate governance:
– Preventing bribery
– Corruption
– Diversity of Board of Directors
– Executive compensation
– Cybersecurity and privacy practices
– Management structure.

Regulations

- SEC
- EU

Why ESG Matters to IT

– IT's role in corporate ESG reporting

– Challenges and opportunities for IT in ESG integration

We are uncovering better ways of developing software and hardware by doing it and helping others do it. Through this work, we have come to value...

The Sustainable IT Manifesto

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Energy Efficiency over Raw Performance

Prioritizing energy conservation, whether in the design of software algorithms or the architecture of hardware components, even if it means potentially sacrificing top-tier performance.

Resource Efficiency over Resource Abundance

Using resources like processing power, memory, and material components efficiently, reducing waste in both software and hardware production.

Long-term Sustainability over Short-term Gains

Making decisions in software and hardware design and development that favor lasting positive impacts on the environment, even if they don't provide immediate financial benefits.

Holistic Impact Awareness over Siloed Focus

Understanding and considering the broader impact of decisions, whether they pertain to software logic or hardware assembly, and recognizing their interconnectedness.

Return to Environment over Return on Investment

While profitability is essential, we should weigh the environmental benefits and contributions against the exclusive pursuit of financial returns.

Inclusive Collaboration over Isolated Decision Making

Including diverse perspectives, from software engineers to hardware technicians, to ensure that environmental considerations are comprehensively addressed.

Adaptive Planning over Fixed Roadmaps

Flexibility in planning, allowing for adjustments based on new information or changing environmental contexts in both software and hardware fields.

Transparent Reporting over Selective Disclosure

Being open and honest about the environmental impacts, both in software's energy consumption and the environmental cost of hardware production.

Continuous Environmental Learning over Static Knowledge

Committing to ongoing learning about environmental impact and sustainability, from understanding the energy costs of running software to recognizing the carbon footprint of hardware manufacturing processes.

Community and Ecosystem Wellbeing over Individual Benefits

Recognizing the importance of overall wellbeing and the impact of our software and hardware decisions on communities and ecosystems.

Eco-friendly Materials over Cheap Alternatives

When designing hardware, choosing materials that are sustainable, recyclable, or have a minimal environmental impact, even if they are costlier.

Device Longevity over Planned Obsolescence

Designing hardware that is durable and long-lasting, reducing the need for frequent replacements and thereby reducing electronic waste.

Everyone Contributes to Sustainability

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Agile Practitioner / Scrum Master

Facilitate sustainability disccusions & encourage continuous improvement

Analyst

Data center optimizations &
tracking sustainability metrics

DevOps

Energy-efficient infrastructure &
follow "The Three Ways"

Developer

Energy-efficient coding &
serverless computing.

End-user Support

Educate users, recommend energy-efficient settings and practices

Hardware Engineer/Designer

Design energy efficient hardware components & minimize environmental impact

Leadership

Set clear organizational goals around sustainability & make decisions that promote long-term sustainability over short-term gains

Manager

Sustainable project management
& ethical vendor selection

Product Owner

Set a clear vision for product & prioritize green aligning features/tasks

Quality Assurance (QA) Tester

Identify inefficiencies in software & collaborate to ensure product is both functional and green

Systems Architect

Ensure systems can support green practices

Practices

(not an exhaustive list)

I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it
-- Lord Kelvin

– Have good metrics; this helps compliance & lets you track improvements

Good DevOps Practices

– The Three Ways

– Infrastructure as Code

– Metrics

Cloud Optimization

- Use services that adjust according to demand.
- Use servers more efficiently

Energy-Efficient Hardware

Invest in tech with longer life-cycles and lower energy consumption.

E-waste Management

Proper disposal and recycling of IT equipment.

Sustainable Coding

– Streamlined and efficient code reduces processing demand.

– Choose good algorithms

Green Hosting Options

Choose providers committed to renewable energy.

Smart Testing

Do you really need to do a full regression every time code is checked into the system

Resource Management

– How many copies of data
– Network Traffic

Continuous Improvement

– Find a pain point & reduce pain

– Measure the Impact

– Rinse & Repeat

Benefits of Sustainable IT

- Reduced Operating Costs
- Avoiding Regulatory Complications
- Positive Environmental Impact
- Enhanced Company Reputation

Conclusion

Sustainability in IT is not just a trend, but a responsibility.

Every IT professional plays a pivotal role.

Small steps can lead to significant change.

Only you can promote sustainability

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Questions?

Thank You

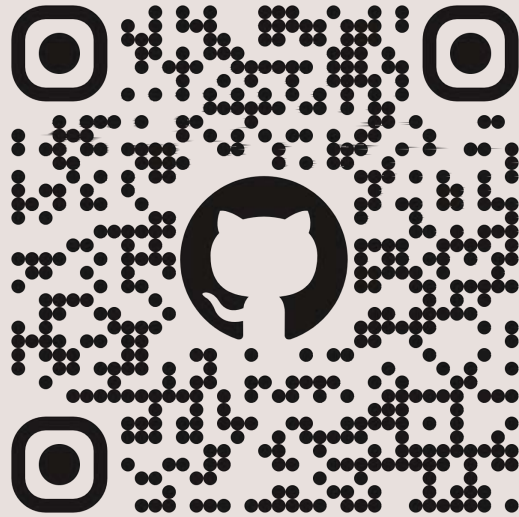http://MakingSoftwareGreener.com

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Organizations & Events

– [Green Computing Foundation I Making IT Sustainable](#)

– [Green Software Foundation I GSF](#)

– [SustainableIT.org](#)

– [Decarbonize Software I Coming in November 2023](#)

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Tools

- – [Cloud Computing And Sustainability Tools I Amazon Web Services](#)
- – [Cloud Computing And Sustainability Tools I Amazon Web Services](#)

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More Resources

- Greening Softwae
- The Sustainable IT Manifesto
- Green Software Ingrained in the Corporate Fabric - Meet Savannah Goodman of Google
- The Three Ways: The Principles Underpinning DevOps I Gene Kim

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More Resources

- – Bridging the gap: Sustainability cannot be a siloed approach
- – Optimizing your AWS Infrastructure for Sustainability, Part I: Compute | AWS Architecture Blog
- – Understanding your customer carbon footprint tool overview - AWS Billing
- – Estimating AWS EC2 Instances Power Consumption | by Benjamin DAVY | Teads Engineering | Medium

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More Resources

- Are you aware of your digital carbon footprint? - Capgemini UK
- Introduction to ESG
- You Can't Manage What You Can't Measure | Growthink
- You Are What You Measure