Culture of Innovation

Enabling Everyone to Innovate

Kim d’Alquen
kimdalq@amazon.com
Head of Energy and Utilities
Business Development
Amazon Web Services
“We need to lower our operating costs to remain competitive. What can we automate?

“Our data is tied up in silos. We want to start to democrotise it and start to get business insights”

“Technology isn’t our challenge, its culture”

“Where should we start?”

“We need to build customer loyalty, how does Amazon do that”

“Help us identify unregulated revenue opportunities”

“We need a platform to let the business test emerging ideas and technologies”
[Video placeholder]
\[ f(\text{innovation}) = (\text{org} \ast \text{platform}) \]

\[ (\text{culture} \ast \text{mechanisms}) \]
\[ f(\text{innovation}) = (\text{org} \times \text{platform}) \]

cross-functional teams

Two-pizza teams

(culture \times \text{mechanisms})

developed decision making

close to the customer

devOps

quick iteration
To our shareowners (2015)

This year, Amazon became the fastest company ever to reach $100 billion annual sales. Also this year, Amazon Web Services is reaching $10 billion in annual sales.

One area where I think we are especially distinctive is failure. I believe we are the best place in the world to fail (we have plenty of practice!), and failure and invention are inseparable twins. To invent you have to experiment, and if you know in advance that it's going to work, it's not an experiment. Most large organizations embrace the idea of invention, but are not willing to suffer the string of failed experiments necessary to get there. Outsized returns often come from betting against conventional wisdom, and conventional wisdom is usually right. Given a ten percent chance of a 100 times payoff, you should take that bet every time. But you're still going to be wrong nine times out of ten. We all know that if you swing for the fences, you're going to strike out a lot, but you're also going to hit some home runs. The difference between baseball and business, however, is that baseball has a truncated outcome distribution. When you swing, no matter how well you connect with the ball, the most runs you can get is four. In business, every once in a while, when you step up to the plate, you can score 1,000 runs. This long-tailed distribution of returns is why it's important to be bold. Big winners pay for so many experiments.
Amazon once had an auction site called Amazon Auction, which went head-to-head with eBay. Auction shut down eventually, but it helped Amazon launch its own online marketplace for third party vendors called Amazon Marketplace, which is now a big part of its overall business.

Amazon’s first smartphone, the Fire Phone, hasn’t been discontinued, but it’s been a pretty big flop so far. Amazon wrote off $170 million worth of unsold Fire Phones last year, and its hardware division has been cutting jobs recently.
Amazon Achieves Speed and Agility with Two-Pizza Teams

- Small, decentralized teams are nimble

- Own/run what you build

Fosters Ownership & Autonomy
a platform for innovation

\[ f(\text{innovation}) = (\text{org} \times \text{platform}) \]

(culture * mechanisms)

able to bring ideas to life cost effectively and quickly
PACE OF INNOVATION

New capabilities daily

Launces

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AWS: millions of corporations serving millions of users

Accelerating Y/Y growth
Robust, fully featured technology infrastructure platform
AI/ML - Where to start? –

Sample use cases in Energy

**Energy Market:**
- Price forecasting - Scenario modeling
- Bid optimization

**Customer Experience:**
- Smart home services
- Automated Solar panel estimation calculation
- Contact center personalization, personalized, scale on demand
- Smart community experiences

**Operations:**
- Network modeling for Theft detection and anomaly detection
- Metering – Wiring error identification
- Metering – meter reading
- Safety wear compliance
- VR Training/ site induction
- Contractor / staff safety (location/ fatigue/ stress)
- New estate NMI allocation
- Exception management
- Weather prediction for optimal renewables dispatch
- Cyber security – malware threat detection

**Assets:**
- Predictive maintenance - Rust/ leak identification
- HV wire fault identification
- Pole top asset classification & fault detection
- Vegetation management optimization
- Digital Twin Network- Scenario modelling
\[ f(\text{innovation}) = (\text{org} \times \text{platform}) \]

- Customer Obsession
- Ownership
- Think Big
- Invent and Simplify
- Are Right, A Lot
- Hire and Develop the Best
- Earn Trust of Others
- Insist on the Highest Standards
- Deliver Results
- Dive Deep
- Bias for Action
- Learn and Be Curious
- Frugality
- Have Backbone; Disagree and Commit
- Earn Trust of Others
- Think Big
work backwards from the customer.

each new idea, starts with a write-up of a press release that helps capture the customer perspective of the problem we are trying to solve.

\[ f(\text{innovation}) = (\text{org} \times \text{platform}) \]

decision making process relies heavily on narratives.

very metrics driven culture.

operate in small, agile teams.
Working Backwards is a process

Use it to get clarity, not to document what you’ve already decided to do.
The 5 Questions

Working Backwards Questions

Who is the **customer**?
What is the customer problem or **opportunity**?
Is the most important customer **benefit** clear?
How do you know what customers **need** or **want**?
What does the customer **experience** look like?

Wiki > Working Backwards
Artifacts from the Working Backwards process

Press Release

Amazon Campus Launches First Multi-Channel Student Store at the University of California Berkeley

SEATTLE BUSINESS WIRE - August 31st, 2014 - Since returning to school for the fall semester, Berkeley students experienced a fresh take on the college bookstore as the new Berkeley Student Store opened at 1527 Berkeley, Amazon.com.

The Amazon-only online store brings Amazon's broad selection, low prices, and convenient service to Berkeley’s campus and offers a number of additional student-focused features, including: the ability to pay with Amazon's popular Prime membership, the ability to ship to campus for free, the ability to ship to campus for free, and the ability to ship to campus for free.

“I've been an Amazon student for two years,” explained Senior Avery Brown. “Getting it right was huge. I've been ordering everything from Amazon since I got back to school. I really never have to

Students can access these campus-specific payment methods and shipping options along with the full textbook inventory typically available only through the university's licensed bookstore - by accessing the best experience when they visit Berkeley, Amazon.com. Sign up for Amazon Student and select 'Berkeley' as your campus to receive your free credit.

Visuals
We read, discuss, debate and ask questions.

Amazon’s Subscribe & Save program, customers previously created diaper subscriptions in a specific size which was replenished until the customer decided it was time to move up a size. This meant that parents needed to anticipate the change in diaper size and either cancel their existing subscription to create a new one, or go to the Manage Your Subscriptions page to update the existing subscription to the new size. This caused endless frustration for parents who ran out of diapers or missed the opportunity to save money.

With Amazon’s Subscribe & Save program, customers now have the ability to set up a single order for their baby needs for several sizes at a time. They will then be notified before the next box of diapers is due to ship - it’s too soon, there will be the single one-click process to keep calculating which size of diapers they should be buying for their baby.

With the introduction of the new feature, Amazon’s Subscribe & Save program, customers now have the ability to set up a single order for their baby needs for several sizes at a time. They will then be notified before the next box of diapers is due to ship - it’s too soon, there will be the single one-click process to keep calculating which size of diapers they should be buying for their baby.

Amazon’s Subscribe & Save program has evolved to meet the changing needs of parents. It’s now easier for parents to manage their diaper subscription and ensure their baby is always stocked with the right size of diapers. This new feature has been well-received by customers and has helped to reduce frustration and save money for parents.

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Most companies write the software, they get it all working, and then they throw it over the wall to the marketing department, saying ‘here is what we built, go write the press release.’ That process is the one that’s actually backwards.”

Jeff Bezos
Founder and Chief Executive Officer
Amazon.com, Inc.
Amazonian principles in action
Woodside – Innovation at scale

• Woodside deploys IoT for LNG facilities
• developed algorithms to identify signs of "foaming" and prevent these catastrophic events from LNG facility shutdown.
• 6 weeks to pilot.
• Scale plant wide & Scale business wide

Shaun Gregory, SVP & CTO of Woodside
Amazonian principles in action
Woodside Innovating at scale

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Shaun Gregory, SVP & CTO of Woodside
Experiment Example
Safety Compliance – Machine Learning (Deep Lens)

[Video placeholder]
Tranpower and Intelia.AI – line failure detection

**Challenge**
National inspection of assets only possible every 5 years using helicopters and manual inspection. Increased frequency would enable more effective asset management.

**Requirements**
- Cost positive
- Scalable
- Minimal tech disruption
- Minimal workflow change
- Future proof

**Specifications**
- 2000 x 80mb images per batch
- Process within 24 hours
- Better accuracy than human experts
- Deployable at the edge
Solution
Custom machine vision model
- Find power line in image
- Detect damaged section of power line
Cloud processing of images in batch
Present predictions to domain experts to confirm
Machine learning model improves to enable automation

POC: 4 weeks to achieve Version 2 results

Results
- Human: 5 days per 2,000 images
- Model Version 1: 10mins per image
- Model Version 2: 30-70 seconds per image
  - Optimisation logic seen in video →
- Accuracy: >93% Wire defects detected

Future
- Pending trial of Snowball Edge
- Greengrass deployment of models
- Cloud processing of images that only contain damaged wire

Wire Damage Detection Model Video (Youtube link)
Optika Solutions – Prescriptive analytics

[Video placeholder]
[Video placeholder]
Day 2 companies make high-quality decisions, but they make high-quality decisions slowly. To keep the energy and dynamism of Day 1, you have to somehow make high-quality, high-velocity decisions.
Never Stop Experimenting

Double Down on Day 1
Thank You!
kimdalq@amazon.com