Innovating on Behalf of Customers

Constantin Gonzalez, Principal Solutions Architect, Amazon Web Services
What we’ll discuss

• Rapid, disruptive change
• Innovation process
• Customer obsession
• Culture, principles, mechanisms
• Examples: Siemens and OTTO.de
• Amazon’s experience
Average life span of an S&P 500 company in the year 2015: 15 Years
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In the 1920s: 67 Years
The world is changing
The world is changing Faster
Digitization
Digitization

= 

Data → Value
Digitization = Data → Value
Why “customer-centric” now?
Digitization = no switching costs
What do customers want?
“If I had asked my customers what they wanted they would have said a faster horse”
What do customers need?
“People don't want to buy a quarter-inch drill, they want a quarter-inch hole.”

– Theodore Levitt
“Customers don’t buy products or services; they ‘hire’ them to do a job. Understanding customers does not drive innovation success. Understanding customer jobs does.”
What do customers value?
The Amazon flywheel

LOWEST COST STRUCTURE → LOWEST PRICES → SELECTION → GROWTH → CUSTOMER EXPERIENCE → TRAFFIC → SELLERS
Price
Selection
Convenience
AWS pricing philosophy

Infrastructure

Economies of scale

More infrastructure

More AWS usage

More customers

Reduced prices

Lower infrastructure costs

Ecosystem

Global footprint

New features

New services

67 price reductions since 2006
### AWS selection: 125+ services

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**Marketplace**

- Business Apps
- Business Intelligence
- DevOps Tools
- Security
- Networking
- Databases
- Storage
- Analytics
- Data Warehousing
- Business Intelligence
- Hadoop/Spark
- Streaming Data Analysis
- Streaming Data Collection
- Dev/Ops
- One-Click App Deployment
- Resource Templates
- Build and Test
- Application Lifecycle Management
- DevOps Resource Management
- Triggers
- Mobile Analytics
- Mobile App Testing
- Targeted Push Notifications
- Mobile Services
- API Gateway
- Single Integrated Console
- Identity
- Sync
- Mobile Analytics
- Mobile App Testing
- Targeted Push Notifications
- IoT
- Rules Engine
- Device Shadows
- Device SDKs
- Device Gateway
- Registry
- Local Compute
- AI
- Machine Learning
- Image Recognition
- Text to Speech
- Conversational Interface
- Deep Learning Frameworks
- ENTERPRISE APPS
- Virtual Desktops
- Sharing & Collaboration
- Corporate Email
- App Streaming
- Communications
- HYBRID ARCHITECTURE
- Data Integration
- Integrated Networking
- Integrated Identity & Access
- Integrated Resource & Deployment Management
- Integrated Devices & Edge Systems
- MIGRATION
- Schema Conversion
- Exabyte-Scale Data Migration
- Application Migration
- Database Migration
- Server Migration
- APP SERVICES
- Queuing & Notifications
- Workflow
- Search
- Email
- Transcoding
- Analyze and Debug

**APP SERVICES**

- Business Apps
- Business Intelligence
- DevOps Tools
- Security
- Networking
- Databases
- Storage

**ANALYTICS**

- Data Warehousing
- Business Intelligence
- Hadoop/Spark
- Streaming Data Analysis
- Streaming Data Collection

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**APP SERVICES**

- Queuing & Notifications
- Workflow
- Search
- Email
- Transcoding
- Analyze and Debug
AWS convenience

- Resources in minutes
- RESTful APIs
- AWS Console
- AWS CLI
- AWS SDKs
- Automation
Digitization = Data → Value

What customers buy
What you have = Data → Value
Digitization

= 

Data → Value

What you must build
Digitization = Data → Value

What you must build (cannot outsource)
Digital companies are becoming Builders
Digitization = Data $\rightarrow$ Value

How to build innovative things customers value?
Digital Innovation
A minimum viable product (MVP) is a product with just enough features to satisfy early customers, and to provide feedback for future product development.

– Wikipedia
Idea → build → Product → measure → Data
Metrics
A scorecard for each service team.
A graph for every metric that customers care about.
Any metric going beyond the line is considered a breach worthy of correction.
“The thing I have noticed is when the anecdotes and the data disagree, the anecdotes are usually right. There's something wrong with the way you are measuring it.”

–Jeff Bezos
Cause of Error (CoE) reports

1. Brief, no-blame description of what went wrong
2. Customer/business impact
3. Detail root cause analysis
4. Metrics and Graphs
5. Security implications, if any
6. Lessons learned
7. Corrective actions
8. Action items
9. Related items (Trouble Tickets, etc.)
5 Whys
Idea

learn

build

Data

Product

measure
New KPI: Time to Revenue

Idea

build

Data

Product

learn

measure
New KPI: Time to Revenue

Idea

build

Data faster

Product

measure

learn
New KPI: Time to Revenue

Idea → build → learn → measure → Data → Idea

How?
Digital transformation
Microservices

- Service-oriented
- Single-purpose
- Connected with APIs
- Highly decoupled

“Microservices”
Digital transformation +
Digital transformation
Culture and organizations
What’s wrong with today’s organizations?
In our organization, decisions take too long!
Hierarchies
Hierarchies
Hierarchies
Amazon Leadership Principles

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

https://www.amazon.jobs/principles
Employees are Leaders
With all these meetings, emails and bureaucracy, I can hardly get any work done at all!
Traditional organizations
Organizations are systems
Traditional organizations
Traditional organizations
Traditional organizations

Who is the owner?

Finance
Marketing
Sales
Traditional organizations
Traditional organizations

- Project management
- Meetings/confcalls
- Slides/documents/emails
- Long cycles
- Minimize risk
- Local optimization
Two-pizza teams

Full ownership

Full accountability

Aligned incentives

“DevOps”
Small autonomous teams are fast!

Idea

learn

build

Data

Product

measure
Thousands of teams
× Microservice architecture
× Continuous delivery
× Multiple environments

= 64 million deployments a year
(7305 per hour, or every 0.49 second)
Address all three layers

Idea

learn

build

Data

Product

measure

Business Development Operations
Address all three layers

- Idea
- build
- Product
- Data
- learn

Lean
Agile
DevOps

measure
What if my employees make mistakes?
« Invention requires two things: the ability to try a lot of experiments, and not having to live with the collateral damage of failed experiments »

Andy Jassy
CEO, Amazon Web Services
Mechanisms
“Good intentions never work, you need good mechanisms to make anything happen.”

— Jeff Bezos
A Mechanism for Customer Obsession

Work backwards from the customer
(1) Press Release
(2) FAQ
(3) User Manual
Narratives
Not slides
6 pages (max.)
Narratives

Not slides

6 pages (max.)

Read at the beginning of meetings
The process of **writing your ideas** helps you **refine your thoughts and articulate them effectively**, while **exposing key gaps** that you can refine before the meeting.
Battle station is heavily shielded

- Fire power greater than 1/2 Star Fleet.
- Defenses are designed around direct large-scale assault.
- Small one-man fighter should be able to penetrate the outer defenses.

Empire doesn’t want a small one-man fighter to be effective, or they’d have a fighter defense.
At many points during its investigation, the Board was surprised to receive similar presentation slides from NASA officials in place of technical reports. The Board views the endemic use of PowerPoint briefing slides instead of technical papers as an illustration of the problematic methods of technical communication at NASA.

The vaguely quantitative words “significant” and “significantly” are used 5 times on this slide, with de facto meanings ranging from “detectable in largely irrelevant calibration case study” to “an amount of damage so that everyone dies” to “a difference of 640-fold.” None of these 5 usages appears to refer to the technical meaning of “statistical significance.”

The low resolution of PowerPoint slides promotes the use of compressed phrases like “Tile Penetration.” As is the case here, such phrases may well be ambiguous. (The low resolution and large font generate 3 typographic orphans, lonely words dangling on a separate line.)

This vague pronoun reference “it” alludes to damage to the protective tiles which caused the destruction of the Columbia. The slide weaken important language with ambiguous language (sentence fragments, passive voice, multiple meanings of “significant”). The 3 reports were created by engineers for high-level NASA officials who were deciding whether the threat of wing damage required further investigation before the Columbia attempted return. The officials were satisfied that the reports indicated that the Columbia was not in danger, and no attempts to further examine the threat were made. The slides were part of an oral presentation and also were circulated as e-mail attachments.

In this slide the same unit of measure for volume (cubic inches) is shown a different way every time. 3 cu in, 1920 cu in, in 3 cu in rather than in clear and tidy exponential form 1920 inches. Perhaps the available font cannot show exponents. Shakiness in units of measurement provokes concern. Slides that use hierarchical bullet-outlines here do not handle statistical data and scientific notation gracefully. If PowerPoint is a corporate-mandated format for all engineering reports, then some competent scientific typography (rather than the PP market-pitch style) is essential. In this slide, the typography is so choppy and clunky that it impedes understanding.
More mechanisms

• Hiring process
• CoE Reports
• Ops Metrics Meetings
• Product Feature Requests
Customers are transforming their innovation processes now
Siemens and AWS closely collaborated to build MindSphere 3.0 using 40+ AWS services

• MindSphere is the cloud-based, open IoT operating system from Siemens for the Industrial Internet of Things
• Close collaboration from initial architecture to joint G2M
• Project duration 8 months from start to GA launch leveraging Siemens extensive domain expertise
• 100+ customers actively engaging 4 months after GA
MindSphere implementation in Siemens Monterrey Switchgear plant

- MindSphere implemented for OEE in the Siemens Monterrey manufacturing plant
- 8 week implementation time
- 10% annual OEE increase
- 3% improvement in first pass yield
- AWS allows for instant adjustments to improve efficiency
MindSphere application for Ham-Let group

- Ham-Let is a leader of industrial flow systems, valves, fittings, and components
- Using MindSphere – cloud based – open IoT operating system
- Valves provide device management, analytics, and visualization
- To detect real-time challenges, Ham-Let uses AWS IoT Analytics and AWS Greengrass to analyze data streams
Otto transformed their innovation cycle

Controllable, comprehensive scope of work

enable

Collective challenge interdisciplinary teams

our feedback

our result

learn

validate results

Cultivate reflection broaden horizons
Your Turn
Day 1 Workshop

• See your organization as a system
• Identify existing principles
  • Which help?
  • Which don’t?
  • Which are missing?
• Discover your data assets and digital business models
• Select 2-3 services you want to build
• Form 2-Pizza-Teams, establish mechanisms
• Go build!
Recommended Reading

- The Phoenix Project
- Systems Thinking: Managing Chaos and Complexity
- Principles by Ray Dalio
- The Lean Enterprise
Thank You!

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