



# Introduction to DevOps with Chocolate, LEGO and Scrum Game

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Dana Pylayeva

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Dana Pylayeva  
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*To my all-time favorite LEGO, games, and Star Wars consultant—my daughter Erica. Thank you for your curiosity, playfulness, love, and ideas.*

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# About the Author



In her 17 years of industry experience **Dana Pylayeva** has been exposed to different areas of IT as a Java developer, an architect, a DBA manager, a Scrum master and an Agile coach.

Dana holds an MS in robotics and mechatronics from Moscow State University of Technology "STANKIN," as well as a CSM, CSPO, and CSP certifications from Scrum Alliance. She speaks internationally on a variety of topics: DevOps culture, User Story Mapping, working effectively with distributed teams, and designing and facilitating Agile games.

Dana enjoys taking an active role in the Agile community by volunteering at Agile 20xx conferences, and assisting as a submission coach and a reviewer at conferences organized by Agile Alliance and Scrum Alliance.

Dana is one of the co-organizers of the NYC Scrum User Group, Play4Agile North America, and Agile Coach Camp US 2017, as well as the founder of the Big Apple Scrum Day community conference in NYC.

# About the Technical Reviewer



**Bernie Maloney's** career started with a flash and a bang. Literally. His first position was designing devices that protect telephone networks from lightning strikes. A few career pivots later, he had a flash of insight: it was possible to tap into latent potential in every person, every team, and every organization. Across his 25 years of engineering and leadership experience, he's worked with firms including Bell Telephone Laboratories, HP, TiVo, Cisco and more. In addition to his client work, he teaches Agile Product Development at Stanford Continuing Studies. Leading through influence more rather than authority, Bernie believes a little structure goes a long way, and can lead to success at work, while still having fun.

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# CHAPTER 1



# Introduction

If you are familiar with the origin of the DevOps term, and can't wait to start facilitating the game, feel free to skip this chapter. Otherwise, read on to learn about people and ideas that brought the DevOps movement to life. Find out about the role Twitter played in coining the term "DevOps" and read about the book that inspired the creation of the *Chocolate, Lego and Scrum* game.

## Brief History of DevOps

It is hard to imagine now that about eight years ago we didn't have the DevOps term in our tech vocabulary. Organizations around the world were experimenting with Agile processes and practices in their development teams and were noticing significant improvements in their ability to build software faster.

The life on the operations side of the house was quite different. It was a time of large data centers, expensive relational databases, and physical servers that had to be ordered from vendors with more than three months of lead time. Building a new QA environment, loading production-like data, or deploying new code into production required manual efforts on the part of IT operations. More often than not, development teams had very few insights into the world of IT operations and vice versa. Collaboration between the two departments was very limited.

It was a time of scheduled monthly deployments, emergencies, pagers, SOPs, and escalation procedures. Occasionally, these emergencies were caused by a release of a new version of applications, implemented earlier by the development teams. Yet, it was an on-call Database Administrator (DBA) or an on-call System Administrator (SA) who were called to fix them in the middle of the night.

This was the way things were.

One day, a Belgian IT consultant, Patrick Dubois, decided that he would aim to expand his area of expertise by working at every part of IT organization. What he discovered was a striking difference of goals, incentives, processes, and tools between development and operations.

Desperately trying to find like-minded people interested in helping bridge the gap between Dev and Ops, Patrick stumbled upon a bird-of-a-feather session on "Agile Infrastructure" proposed by Andrew Shafer at the Agile 2008 conference in Toronto. The two of them later formed the "Agile System Administration" Google group. However, at that time, there were so few people interested in the topic that the group didn't get much traction.

This all changed at the Velocity 2009 conference, when John Allspaw and Paul Hammond shared their experience of Developers and Operations collaboration at Flickr in their pivotal presentation “10 + Deploys Per Day.” This presentation had pushed the limits of what was possible at that time and inspired many followers.

Encouraged by this talk and, at the same time, disappointed that he couldn’t attend it in person, Patrick decided to organize his own conference. He put together a two-day event in which Developers and Operations could come together to exchange ideas and to collaborate. This inaugural DevOpsDays conference brought to Belgium a number of leading practitioners from around the world, who continued the conversations and collaboration on Twitter long after the event. Through this massive use in the post-conference conversations, the original #DevOpsDays Twitter hash tag became too long. The “Days” was dropped. The #DevOps hash tag and the DevOps movement were born.

The DevOps movement has come a long way since then. At the earlier stages of its development, DevOps was only for unicorns—the Flickrs, Etsys, Amazons and Netflixes of the world. Nowadays, DevOps practices, tools, and philosophy have become widely adopted by large enterprises and small startups alike. The DevOps Enterprise Summit 2016 highlighted success stories from Macy’s, Nordstrom, GE Capital, Disney, Capital One, the US Department of Homeland Security, and many others.

In spite of the fast-growing popularity of the movement, there is still no single standard definition of the term DevOps. Is this a tool, a mindset, a new department, a job title? There are many different definitions of what it is, to the extent that Gartner analysts in their “Seven Steps to Start Your DevOps Initiative” recommended as step number one: “Define DevOps for You.”

My personal favorites are the following two DevOps definitions:

*“A mix of patterns intended to improve collaboration between development and operations. DevOps addresses shared goals and incentives as well as shared processes and tools.”*

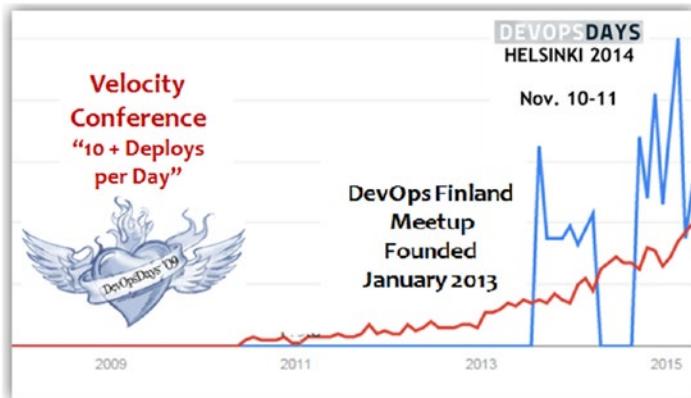
—Michael Hüttermann, DevOps for Developers

*“A movement of people who care about developing and operating reliable, secure, high performance systems at scale.”*

—Jez Humble, <https://www.thoughtworks.com/insights/blog/state-devops>

DevOps continues to also be a “movement of people who care” to organize local DevOps meetups in their cities and countries. The people, who continuously learn, translate DevOps books into their local languages, build communities, and help others to embrace DevOps culture.

Their impact on DevOps popularization is hard to deny. Take this Google Trends graph for DevOps in Finland, for example (Figure 1-1). In spite of a rising interest in DevOps worldwide, there was little to no interest in Finland until January 2013, when a new “DevOps Finland” meetup was founded by Erno Aapa, an engineer and a DevOps enthusiast from Helsinki. The second spike of interest in November 2014 can be attributed to DevOps Days Helsinki being organized by local practitioners.



**Figure 1-1.** Google trends, search term “DevOps”, worldwide vs. Finland

Similarly, in Russia, DevOps became known in the IT community through the efforts of Alexander Titov, Ivan Evtukhovitsh and Nikita Borzykh. These DevOps enthusiasts founded “DevOps Moscow in Russian” in January of 2013, kicked off the “DevOps Deflope” podcast, and contributed to the effort of translating “The Phoenix Project” into the Russian language.

Through my work on the Chocolate, LEGO and Scrum game, I was fortunate to meet some of these amazing people—[Alexander Titov](#) from Russia, DevOps community leaders from Japan (Tsuyoshi Ushio, Yasunobu Kawaguchi, and many others)—thank you for your hard work and passion, for making a difference in your local DevOps communities!

## An Inspiration for Chocolate, LEGO and Scrum Game

My interest in the DevOps movement originated from the time I stepped into a DBA Manager role. I had years of experience under my belt as a PowerBuilder and Java developer, an Application Architect and, as a typical developer, very few insights into Operations world. It was an opportunity for me to step up and try something new. I remember thinking:

*“How hard can it be? I know how to write a CREATE TABLE statement or implement a stored procedure, among other things. Surely, I can take it on!”*

Little did I know what I was getting myself into—the second level of escalation meant carrying a pager 24x7. Thanksgiving weekend, which I’ve always enjoyed, had turned into a nightmare. The round-the-clock support, war room and hourly conference calls with senior management—all to ensure that Black Friday traffic would not be impacted by database performance. If it wasn’t for the help of my amazing team members, I doubt I would’ve survived!

A few years later, I came across “The Phoenix Project” by Gene Kim, Kevin Behr, and George Spafford, and I couldn’t put the book down! It was describing *my experience and my pain*, yet it was showing the way out. It was through the discovery of this new knowledge and a desire to share it with others, the idea of creating this game was born.

At that time, I was one of the organizers of ThinkShare, a company-wide internal learning forum that enabled a cross-pollination of knowledge among various technology groups. Our October agenda was wide open and it turned out to be a perfect opportunity to play-test the MPV (minimum playable version) of the game.

Greatly improved since then, the game now starts with the end-to-end simulation of issues experienced by many organizations, specifically the ones that implement Scrum framework on the development side, but keep operations function as an organizational silo. Trapped in waterfall land, the operations team becomes a bottleneck in a flow of value through the organization. Lack of timely customer feedback due to the limited number of releases, misalignment of goals between the groups: these are just some of the systemic problems highlighted by the game.

If your organization is considering DevOps, a great way to start is by generating some interest and excitement around the topic. Using the **Chocolate, Lego and Scrum** game as part of your DevOps adoption strategy will help you popularize the DevOps ideas and make them digestible at all levels of organizations.

The game combines ideas from “The Phoenix Project” with the experience gained from real-life challenges encountered by development and operations teams in many organizations. Security vulnerabilities, environments patching, deployment code freeze, development and operations silos: the game helps simulate an end-to-end product delivery process and visualize the bottlenecks in the value delivery flow. The gamified format helps create a safe place for participants and facilitates their experimentation and learning.

## Why LEGO and Chocolate?

Studies at Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, and Harvard Medical School found that our brain assembles the data received from sensory inputs into a complete picture that becomes a memory of an event. Engaging multiple senses while learning helps amplify learning effectiveness. Additionally, when we experience an emotional reaction, it becomes a part of the memory, strengthening it dramatically. Sharon Bowman in her “Training from the Back of the Room” work emphasized positive emotional experiences, multi-sensory stimulation and novelty among the elements used in brain-friendly trainings.

The **Chocolate, LEGO and Scrum** game is designed to engage all five senses and tap into the emotional side of the brain. Working with LEGO and Chocolate, participants experience the downside of local optimization and learn to expand their view to include the entire system. Using avatars, personas, and role cards, participants gain an understanding of Dev and Ops roles as well as their interdependencies. They try out a mindset of each role for the duration of the game.

Throughout the game they experience a range of emotions and learn to expand the boundaries of individual roles, acquire T-shaped skills and expand the Scrum-team circle to include Operations. They build new environments, protect them from Hackers’ attacks and work with demanding customers, trying to satisfy their ever-changing demands. The game takes players through a gamified DevOps transformation journey, facilitating their first baby steps towards embracing the DevOps culture.

## Why Scrum?

According to *10th Annual State of Agile Survey from VersionOne*, Scrum remains the number one Agile development methodology practiced by organizations around the world. While the survey reports that 68% of respondents practice Scrum or Scrum/XP hybrid in 2015, it also highlights an interesting trend. When asked about Agile techniques they use, a number of respondents reported a decreased use of iteration planning. Instead, organizations began experimenting with *transitioning towards flow-based methods*.

Why is this important?

Planning and developing features in iterations significantly improved an organization's ability to deliver these features to its customers (as compared to a traditional, sequential development model). However, with the accelerating speed of innovation and fluctuating market demands, the customers are no longer willing to wait weeks or months for a feature they need now.

Customers expect innovation and speed. They expect their service providers to deliver value continuously and judge digital service quality based on their overall experience.

Just like a slow-loading page of a travel site can cause consumers to go to another site and book their vacation there, a company that can't accelerate speed to market can lose its customers to the competitors.

One other benefit of faster delivery is in its enablement of an accelerated feedback loop. With timely feedback from the end-users, product development organizations increase their likelihood of delighting the customers with their product. This experience is well simulated in the *Chocolate, Lego and Scrum* game.

Starting from a common baseline of the Scrum framework, participants experience firsthand some of the bottlenecks that iterative planning creates. They begin to realize that through practicing Scrum, the development team creates large batches of "potentially shippable increments." These increments, if not deployed into production in time, may lead to outdated features, incompatible code and potential service outages after deployment. Thus a development process, locally optimized with Scrum, has all the potential to cause global degradation in the overall flow of value.

## Who is this game for?

It is for you, if you are working with an organization exhibiting at least one of the following dynamics:

- Agile practices and principles are used in the development organizations only, while Operations continues to use a plan-driven waterfall approach.
- Your developers have no idea about the post-deployment performance of their software.
- Delayed, infrequent deployments of "potentially shippable product increments" cause service disruption in production.

- Every new security vulnerability causes a major panic and requires a lengthy manual patching of all the environments.

If you are searching for ways to highlight current misalignment of goals between three major groups in a typical organization (business/customers, development team, and operations team) (see figure 1-2), this game is for you.



**Figure 1-2.** Misalignment of goals in a typical product development organization

This game can be facilitated as part of a stand-alone DevOps training or as a DevOps extension to a standard Scrum training. Detailed descriptions of the roles, their responsibilities, and their dependencies make it possible to adopt the game for an ITIL training as well.

## CHAPTER 2



# About this book

This book provides a detailed description of the game for various room configurations, group sizes, and the overall session duration. The following is included in the book:

- three variations of the game adjusted to a specific session timebox (75 min, 90 min and 3 hours)
- five options of the room setup for small, medium, large, and extra-large group sizes
- detailed description of all roles and their dependencies
- list of supplies
- facilitator script and debriefing points
- design highlights of the Chocolate, LEGO and Scrum Game
- play history and photos from workshops
- sample learning outcomes from previous workshop participants

## What's included in the appendix

This book contains an appendix with images of all flipcharts to be created by a facilitator in preparation for the game. In addition, the appendix contains images of optional workshop handouts and role cards.

Please note that the detailed instructions provided in this book enable you to facilitate the game without the handouts. However, you can significantly enhance the players' experience with the handouts suggested. See sample role cards in Figure 2-1.



**Figure 2-1.** Sample role cards included in the appendix

## Role cards

- Scrum team role cards (Danny Developer, Tim Tester, Patricia Product and Samuel Scrum)
- Operations team role cards (Adam Admin, Sara Security, Robert Release)
- Business team role cards (Benjamin Business)
- Hacker role card (Harry Hacker)

## Special instructions cards

- private instructions for Adam Admin (Sprint 1)
- private instructions for Patricia Product (last Sprint)

In the standard and abbreviated versions of the game, this card will be distributed in Sprint 3. In the extended version, this card will be distributed in Sprint 4.

- private instructions for Sara Security (Sprint 1)
- private instruction for Sara Security (Sprint 2,3)
- private instructions for Benjamin Business (Sprint 2)

## Team handouts

- Definition of Done page with a photo of a small “development-done” package and a large “deployment-ready” package
- Chocolate, LEGO and Scrum game flow for Sprint 1

## Electronic version of the appendix

For ease of creating the cards and handouts, an electronic version of the appendix is available for download at the book's information page on Apress. You can find it by pressing the “Download source code” button on <http://www.apress.com/book/9781484225646>.

## CHAPTER 3



# Rules of the Game

## Summary and objectives of the game

ChocolateLegoScrum.com is a fictitious company that's trying to become profitable in a highly competitive market. The game uses building LEGO animals as a way to simulate development of software features. Chocolate candies act as a technical supporting documentation.

This fairly large organization consists of multiple Scrum teams, one silo IT Operations team and a group of business stakeholders. The business stakeholders represent various markets and collectively drive current market demand. *Product Owners* of each Scrum team work with the *Business Stakeholders* to understand current demand (LEGO animals to build and their desired quantity) and document product backlog items for their teams. *Scrum teams* then work to implement and test these stories as well as deliver them to *IT Operations* for packaging and deployment.

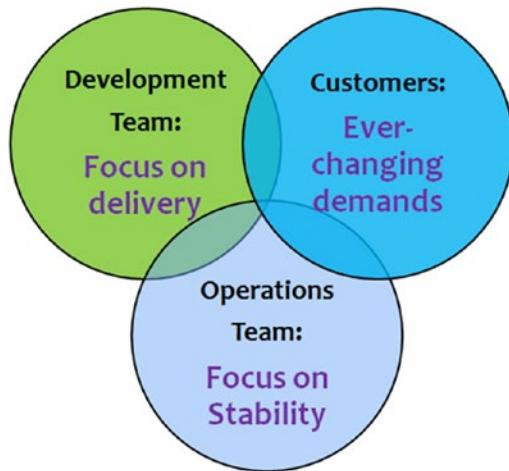
Just like in the real world, before a client can get access to a new version of the software, every product backlog item has to be implemented, tested, meet acceptance criteria, and pass performance and security tests. If new products from a team get accepted by *Business Stakeholders*, the *Product Owner* of that team will earn money and share them with her team members.

The basic game is played in three Sprints, while the extended version has an additional fourth Sprint. At the end of each Sprint, teams have an opportunity to inspect and adapt the process. Surprise rules and surprise characters are introduced in each Sprint. Players learn to respond to change and modify the game strategy accordingly.

The main objective of the game is to maximize total value delivered to the market by the ChocolateLegoScrum.com organization

*The learning objectives of the game are*

- understand and learn to address a traditional common misalignment of goals of the three major groups in product development (figure 3-1);



**Figure 3-1.** Misalignment of goals in a typical product development organization

- experiment with decoupling of a Sprint (as a planning unit) from a Release (as a deployment unit) by minimizing the batch sizes, increasing frequency of releases, amplifying feedback loop and moving away from cyclical delivery towards continuous flow of value;
- understand how widening individual skills within a Development Team to span both coding and testing, plus working together with Operations and Security members can have a positive impact on organization's ability to eliminate the delivery constraints and pursue the improvement of the overall process.

## Basic game flow

The game flow (figure 3-2) reflects a collaborative nature of the interactions between Development and Delivery teams. In order to achieve the objectives, Scrum teams will need to learn to collaborate with their partners from IT Operations and Security. They need to be prepared to stop the work and address security issues after hacker attacks as well as respond to changes in the rules of the game. These changes will be introduced via individualized special instructions cards, distributed by a facilitator. See *Special Instructions* section in the Appendix.

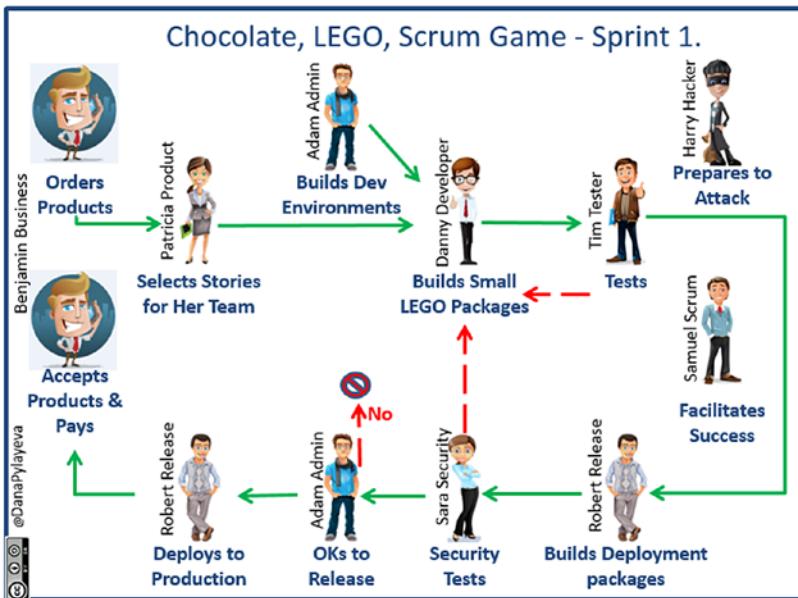


Figure 3-2. Basic game flow

## Game Roles and Avatars

### Scrum Team

#### Patricia Product

Patricia (figure 3-3) is a Product Owner who works with *Development Team* and *Benjamin Business*. She is responsible for maximizing the value of the product and the work of the Development Team.

Patricia starts the game in Sprint 1 by approaching the business team, selecting one of the product backlog item work cards from the Animal Exchange Marketplace, and clarifying details and characteristics of LEGO Animals expected by *Benjamin Business*. She then brings the work card to her development team (*Danny Developer* and *Tim Tester*) and guides them through implementation of this item. Note that product backlog items are defined as small batches of 3–10 animals per each item and must be delivered in the quantity indicated on a work card. Patricia works with *Benjamin Business* to collect feedback and receive money for the products accepted by Business Stakeholders.

Patricia will receive a special instruction in the last Sprint, which will modify her role. See *Special Instructions* section in the Appendix



**Figure 3-3.** *Patricia Product*

## Danny Developer

Danny (figure 3-4) is a member of Development Team His goal is to build quality products quickly.

When *Patricia Product* shows him the first product backlog item, he is ready to jump into action and get his hands dirty. Oh, no... He doesn't have an environment to work in! *Danny* needs to find a system administrator from IT Operations (*Adam Admin*) who can build an environment for *Danny*.

Once the environment is created, *Danny* starts building a LEGO animal. There are no standard instructions. He needs to work with *Patricia Product* and *Benjamin Business* to know what needs to be built. He must paste a small number label on each animal, place it into a small clear package, add a chocolate candy, and close the package. Now it is ready to be tested by *Tim Tester*.

*Danny* may have to redo his work, if defects are found during testing, including security testing. Just like any other member of Development Team, *Danny* can't independently deploy into production and needs to rely on another member of IT Operation (*Robert Release*).



**Figure 3-4.** *Danny Developer*

## Tim Tester

*Tim* (figure 3-5) is a new member of Development Team. His goal is to ensure product quality. He has recently transitioned from a functional QA department. The first Sprint highlights a very common dysfunction: Tim hasn't completely embraced a new mindset and still operates as the single owner of quality in the team. Through the game Tim will acquire new skills and will become a truly cross-functional member of the Development Team.

*Tim* validates that the development package created by *Danny Developer* meets all acceptance criteria, which are:

- Each package contains a LEGO animal and a chocolate candy.
- Each animal has a small number label affixed to it.
- The contents of the package don't fall out if turned upside-down.

If a package doesn't meet acceptance criteria, *Tim* sends the package back to *Danny* for rework. *Tim* also works with another member of IT Operations, release engineer (*Robert Release*), and runs integration tests on the deployment package *Rob* builds. *Tim* verifies the following acceptance criteria for deployment package:

- It contains a Product Backlog Item work card.
- It contains a number of small development packages with animals and chocolate.
- It has a label with Team Name and Sprint Number on it.
- The package is closed.
- The type of animals and their quantity are the same as indicated on the work card.



**Figure 3-5.** Tim Tester

## Samuel Scrum

*Samuel* (figure 3-6) is a *Scrum Master*. His goal is to facilitate the success of his team. He is a servant-leader who coaches the Development Team in self-organization and cross-functionality. He helps to remove impediments to the Development Team's progress. He ensures the Scrum Team adheres to Scrum theory and practices such as timeboxing

each Sprint. Further, he helps the team and organization continuously improve through empirical process development with practices like Retrospectives. *Samuel* can help *Patricia Product* in her communication with *Benjamin Business* and the *Development Team*. *Samuel* can request additional supplies from the facilitator. He can work with the *IT Operations* group to find people with the right skills.



**Figure 3-6.** *Samuel Scrum*

## IT Operations Team **Adam Admin**

*Adam* (figure 3-7) is a system administrator in the IT Operations team. His goal is to keep the production environment stable. *Adam* is the only one in the organization who knows how to build environments (figure 3-8) for *Danny Developer* or *Tim Tester*, how to perform environment upgrades, install security patches after hacker attacks, or completely rebuild the environments. *Sara Security* calls *Adam* any time she discovers security issues with the environments.

*Adam* monitors the production environment to prevent unauthorized deployments. He is the only person who can give a “go ahead” to *Robert Release* for production deployment. *Adam* will receive a special instruction in Sprint 1. See the *Special Instructions* section in the Appendix.



**Figure 3-7.** Adam Admin



**Figure 3-8.** Development environment built by Adam: a square-shaped space created by applying a layer of household masking tape

## Robert Release

*Robert* (figure 3-9) is a release engineer in the IT Operations team. His goal is to keep the production environment stable. *Robert* is in charge of building deployment packages. Every deployment package (figure 3-10) contains a PBI work card as well as a corresponding number of development packages with LEGO animals and chocolate. Once packaged, *Robert* writes on the deployment package a *development team* name and a *Sprint number* during which this package was built.



**Figure 3-9.** Robert Release

Once a deployment package is ready, it is then verified by *Tim Tester* and sent for security testing to *Sara Security*. If no security issues are found, the package is ready for deployment. *Robert* now works with *Adam Admin* to find out when is the next deployment window. If the deployment window is on, *Robert* delivers the deployment package to *Benjamin Business*.



**Figure 3-10.** Deployment package built by Robert Release

## Sara Security

*Sara* (figure 3-11) is a security engineer in the IT Operations team (figure 3-11). Her goal is to keep the production environment secure. *Sara* is well-versed in the latest vulnerabilities and security bugs. *Robert Release* works with her to perform a final pre-deployment security scan.



**Figure 3-11.** Sara Security

*Sara* works with her designated development team. Each sprint, *Sara* randomly selects three numbers and writes them into her “known issues catalog”(figure 3-12). These become the “security bugs” for this sprint.

*Sara* performs a security scan by checking the small number labels on each LEGO animal against her catalog of known issues.

She fails a test of a development package if a LEGO animal has one of these numbers on the small label. When this happens, an entire deployment package will have to be sent back to the development team for rework.

*Sara* will receive a special instruction for Sprint 2 and 3 that will expand her role. See the *Special Instructions* section in the Appendix.



**Figure 3-12.** Known security issues catalog

---

**Tip** As a facilitator, you should instruct each Sara Security to work with a specific development team. Ensure that the range of the small number labels (dev team) is same as the range of numbers in the "known issues catalog" used by Sara Security.

---

## Business Team

### Benjamin Business

*Benjamin* (figure 3-13) is a business stakeholder who represents various markets and has insights into current market demands. For the purpose of this game, his goal is to simulate the unpredictability of market demands. *Benjamin* works with *Patricia Product* to communicate the demand for specific LEGO animals and the current market price of these animals.



**Figure 3-13.** Benjamin Business

Benjamin updates the *Animal Exchange Marketplace* poster (figure 3-14) to reflect current demand and a current market price for various animals. When he accepts the products, he pays the current market price for LEGO animals and updates the *Delivery Board* (figure 3-15) to reflect the amount he paid to Scrum teams for the packages they delivered.

If asked by *Patricia Product* or other members of *Scrum teams*, he can provide early feedback on the LEGO Animals "in progress" or even join the team. He may reject the entire deployment package if animals don't meet his expectation. *Benjamin* will receive a special instruction in Sprint 2. See the *Special Instructions* section in the Appendix.

	Demand	Batch Size	PRICE PER BATCH \$		
			Sprint 1	Sprint 2	Sprint 3
DOGS	15	5	100		
CATS	9	3	50		
SNAKE	3	5	50		

Figure 3-14. Animal Exchange Marketplace poster

DELIVERY BOARD				
TEAM	Sprint 1	Sprint 2	Sprint 3	
1				
2				
3				

Figure 3-15. Delivery board poster

## Surprise character Harry Hacker

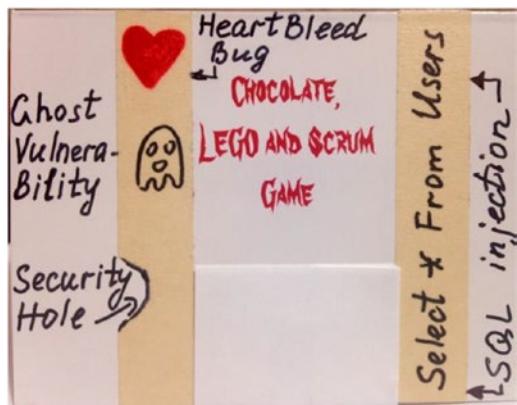
Harry (figure 3-16) is a cybercriminal. His goal is to exploit the security vulnerability of various websites, and ChocolateLegoScrum.com in particular.

Harry exploits security holes (simulated by cutting gaps in the masking tape of the “environments”). He takes advantage of the “Heartbleed” bug and exploits “Ghost” vulnerability (simulated by drawing hearts and ghosts on the masking tape of the “environments,” see figure 3-17).

Harry’s actions create a lot of impediments for the Development Teams as they must stop the implementation until all security patches are applied. Sara Security must monitor the environments now and needs to request security patches when a breach is identified. Adam Admin is the only one who can install security patches or rebuild environments after the hacker’s attack.



**Figure 3-16.** Harry Hacker



**Figure 3-17.** Security issues introduced by Harry Hacker in one of the environments

## CHAPTER 4



# Game Components

## Supplies for the facilitator

- Stopwatch ([bit.ly/CLS\\_timer\\_interval](http://bit.ly/CLS_timer_interval))
- Camera, phone or tablet to take pictures
- AHA! Moment poster (figure 4-1 or similar)
- 3" x 3" Sticky notes, any color ([bit.ly/CLS\\_stickies](http://bit.ly/CLS_stickies)). You will need about 2 pads per each table in the workshop.
- Black fine-point markers ([bit.ly/CLS\\_markers](http://bit.ly/CLS_markers)). You will need one marker per each workshop participant.
- Extra supply of building blocks ([bit.ly/CLS\\_bricks\\_opt2](http://bit.ly/CLS_bricks_opt2)) if running this workshop as an extended version. Plan on additional 300 blocks per each Scrum Team.
- Extra chocolate if running this workshop as an extended version. Plan on additional 8 ounces pack ([bit.ly/CLS\\_choco](http://bit.ly/CLS_choco)) per each Scrum Team.
- Disposable table covers ([bit.ly/CLS\\_tablecover](http://bit.ly/CLS_tablecover)). Plan on bringing one per each table in the workshop. Use separate colors for each group: Business, Operations, Development, and Security.



**Figure 4-1.** AHA Moment poster

**Tip** Bring a set of disposable table covers (figure 4-2) to protect tables before the workshop. This simplifies a post-workshop clean up and helps to visually differentiate between Scrum teams, Operations team, Security team and Business team.



**Figure 4-2.** Disposable table covers

## WHERE TO BUY YOUR SUPPLIES

Please use your favorite office supplies, bulk, or discount store to gather game components. The links provided in this chapter are for your reference and convenience only. The author of this book is not affiliated with any online stores referenced in this chapter.

# List of Supplies for Sprint 1

## Role Cards

Every workshop participant will use a role card as a reference for the selected role and its dependencies in this simulation. There are nine distinct roles. Please reference the table 4-1 to find out how many cards you need to print for each role, based on the size of your group. Use the electronic version of this book's appendix to simplify printing.

**Table 4-1.** Number of role cards needed for each role based on the group size

Group Size	15 - 22	22 - 28	31 - 42	42 - 56	69 - 84
<b>Number of Scrum Teams</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
Benjamin Business	2	2-4	3-6	4-8	12
Sara Security	1-2	2	3	4	6
Robert Release	1-2	2	3	4	6
Adam Admin	1-2	2	3	4	6
Harry Hacker	0	2	1-3	2-4	3-6
Patricia Product	2	2	3	4	6
Samuel Scrum	2	2	3	4	6
Tim Tester	2-4	2-4	3-6	4-8	6-12
Danny Developer	4-6	6-8	9-12	12-16	18-24

## Supplies for one Scrum Team

## Supplies for Development Team

(See Figure 4-3)

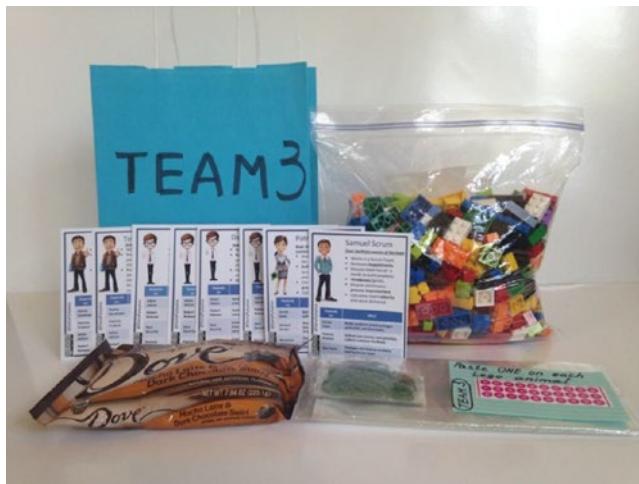
- A mix of basic building blocks (650 - 700 pieces per each Development team. Any of the following options will work for this simulation:
  - Option 1: LEGO Classic Large Creative Brick Box ([bit.ly/CLS\\_bricks\\_opt1](http://bit.ly/CLS_bricks_opt1))
  - Option 2: Building Bricks Regular colors ([bit.ly/CLS\\_bricks\\_opt2](http://bit.ly/CLS_bricks_opt2))

- One pound of small chocolate candies (for example:[bit.ly/CLS\\_choco](http://bit.ly/CLS_choco))
- One package (20 ct) of 9 1/2" x 4" clear party bags ([bit.ly/CLS\\_bags\\_clear](http://bit.ly/CLS_bags_clear))
- About 100 small rubber bands per each Scrum Team. One package ([bit.ly/CLS\\_bands](http://bit.ly/CLS_bands)) of rubber loom bands will be sufficient for all teams in the workshop.
- One page of small number labels per each Scrum Team. One package ([http://bit.ly/CLS\\_labels\\_number](http://bit.ly/CLS_labels_number)) will be sufficient for all teams in this workshop.
- Team Handout sheet: Use the electronic version of this book's appendix to print a double-sided handout (Definition of Done + Chocolate, Lego and Scrum Game Flow).

---

**Tip** There will be a point in the game, when members of Operations team will need to start working closely with Scrum Teams. To help Operations locate the right team, give each Scrum Team a number. Write a team number on a small paper bag and use it to pack Scrum Team supplies. In the extended version of this workshop, ask Scrum teams to come up with their own team names.

---



**Figure 4-3.** Supply set for one development team for Sprint 1

## Supplies for Patricia Product

- 3" x 5" Index cards, any color (about 20 cards per each team). One pack ([bit.ly/CLS\\_index\\_reg](https://bit.ly/CLS_index_reg)) should be sufficient for up to five teams.

## Supplies for Operations Team

### Supplies for Adam Admin

- One roll of 1" masking tape ([bit.ly/CLS\\_tape](https://bit.ly/CLS_tape))
- Adam's role modification for this sprint: special instruction card for Sprint 1. All special instructions cards can be found in this book's appendix. Please follow the instructions in the appendix to access the electronic version for better printing.

## Supplies for Robert Release

- One box (16 - 20 ct) of gallon-size resealable bags ([bit.ly/CLS\\_bags\\_gallon](https://bit.ly/CLS_bags_gallon))
- Set of all-purpose 1" X 3" rectangular labels ([bit.ly/CLS\\_labels\\_wht](https://bit.ly/CLS_labels_wht)).

## Supplies for Sara Security

- “Known security issues” catalog card (figure 4-4) can be printed from the electronic version of this book's appendixs



**Figure 4-4.** Known security issues catalog

## Supplies for Other Roles

### Supplies for Benjamin Business

- 3" x 5" Index cards any color (about 20 per each team). One pack ([bit.ly/CLS\\_index\\_reg](http://bit.ly/CLS_index_reg)) should be sufficient for up to five teams.
- Play money ([bit.ly/CLS\\_money](http://bit.ly/CLS_money))
- Animal Exchange Marketplace poster (figure 4-5)
  - Delivery Board poster (figure 4-6)

	Demand	Batch Size	PRICE PER BATCH		
			Sprint 1	Sprint 2	Sprint 3
DOGS	15	5	100		
CATS	9	3	50		
SNAKE	3	5	50		
	15	5			

Figure 4-5. Animal Exchange Marketplace poster

DELIVERY BOARD			
TEAM	Sprint 1	Sprint 2	Sprint 3
1			
2			
3			

Figure 4-6. Delivery Board

### Supplies for each Harry Hacker

- One pair of 5" blunt scissors ([bit.ly/CLS\\_scissors](http://bit.ly/CLS_scissors))
- One red fine-point marker ([bit.ly/CLS\\_markers\\_red](http://bit.ly/CLS_markers_red))

## Additional supplies for Sprint 2

Scrum Team

Development Team

None

## **Patricia Product**

None

## **Operations Team**

### **Adam Admin**

None

## **Robert Release**

None

## **Sara Security**

- Special Instruction card Sprint 2- 3. All special instructions cards can be found in the book's appendix. Please follow the instructions in the appendix to access the electronic version for better printing.

## **Supplies for Other roles:**

### **Benjamin Business**

- Special Instruction card Sprint 2. All special instructions cards can be found in the book's appendix. Please follow the instructions in the appendix to access the electronic version for better printing.

### **Harry Hacker**

None

## **Additional supplies for Sprint 3**

(See figure 4-7 for full cross-training simulation set)

## **Scrum Team**

### **Development Team**

- Small round stickers (Orange) for cross-training simulation activity ([bit.ly/SLC\\_labels\\_round](http://bit.ly/SLC_labels_round)).

## **Patricia Product**

None

## **Operations Team**

### **Adam Admin**

- Two rolls of 1" painter's green masking tape to simulate an installation of Total Security Suite across all the environments in Sprint 3 ([bit.ly/CLS\\_tape\\_green](http://bit.ly/CLS_tape_green))
- Small round stickers (Green) for cross-training simulation activity ([bit.ly/SLC\\_labels\\_round](http://bit.ly/SLC_labels_round)).

## **Robert Release**

- Small round stickers (Green) for cross-training simulation activity ([bit.ly/SLC\\_labels\\_round](http://bit.ly/SLC_labels_round)).

## **Sara Security**

- Small round stickers (Red) for cross-training simulation activity ([bit.ly/SLC\\_labels\\_round](http://bit.ly/SLC_labels_round)).

## **Supplies for Other roles**

### **Benjamin Business**

None

## **Harry Hacker**

None



**Figure 4-7.** Cross-training simulation set for Sprint 3

---

**Tip** Distribute all Sprint 3 and Sprint 4 supplies during Sprint 3 when facilitating a standard or an abbreviated version of the game.

---

## Additional supplies for Sprint 4

This simulation game has an optional Sprint 4, which is facilitated as part of the extended (three hours) version of this workshop.

### Scrum Team Development Team

- One package (25 ct) of 5"x11" transparent green party bags ([bit.ly/CLS\\_bags\\_green](http://bit.ly/CLS_bags_green))
- May need additional building blocks (about 300 blocks per each Scrum team) and more chocolate (8 ounces pack per team).

### Patricia Product:

- Special instruction card for last sprint. All special instructions cards can be found in this book's appendix. Please follow the instructions in the appendix to access the electronic version for better printing.
- Twenty 2.5" x 3" index cards (for story splitting).

**Note** This set ([bit.ly/CLS\\_index\\_sm](http://bit.ly/CLS_index_sm)) (or similar) will be sufficient for up to five players in Patricia Product role.

---

## Operations Team

### Adam Admin

None

### Robert Release

None

### Sara Security

None

## Supplies for Other roles

### Benjamin Business

None

### Harry Hacker

None

## Complete list of component links

- [http://bit.ly/CLS\\_bands](http://bit.ly/CLS_bands)
- [http://bit.ly/CLS\\_bags\\_clear](http://bit.ly/CLS_bags_clear)
- [http://bit.ly/CLS\\_bags\\_gallon](http://bit.ly/CLS_bags_gallon)
- [http://bit.ly/CLS\\_bags\\_green](http://bit.ly/CLS_bags_green)
- [http://bit.ly/CLS\\_bricks\\_opt1](http://bit.ly/CLS_bricks_opt1)
- [http://bit.ly/CLS\\_bricks\\_opt2](http://bit.ly/CLS_bricks_opt2)
- [http://bit.ly/CLS\\_choco](http://bit.ly/CLS_choco)
- [http://bit.ly/CLS\\_index\\_reg](http://bit.ly/CLS_index_reg)
- [http://bit.ly/CLS\\_index\\_sm](http://bit.ly/CLS_index_sm)
- [http://bit.ly/CLS\\_labels\\_number](http://bit.ly/CLS_labels_number)
- [http://bit.ly/SLC\\_labels\\_round](http://bit.ly/SLC_labels_round)
- [http://bit.ly/CLS\\_labels\\_wht](http://bit.ly/CLS_labels_wht)
- [http://bit.ly/CLS\\_markers](http://bit.ly/CLS_markers)
- [http://bit.ly/CLS\\_markers\\_red](http://bit.ly/CLS_markers_red)
- [http://bit.ly/CLS\\_money](http://bit.ly/CLS_money)
- [http://bit.ly/CLS\\_scissors](http://bit.ly/CLS_scissors)
- [http://bit.ly/CLS\\_stickies](http://bit.ly/CLS_stickies)
- [http://bit.ly/CLS\\_tablecover](http://bit.ly/CLS_tablecover)
- [http://bit.ly/CLS\\_tape](http://bit.ly/CLS_tape)
- [http://bit.ly/CLS\\_tape\\_green](http://bit.ly/CLS_tape_green)

## CHAPTER 5



# Room Setup

This chapter outlines five options for a room configuration, based on the size of the group and the number of tables available in the workshop room. Each option has been play-tested and optimized for best players' experience.

When scaling up the game, pay attention to the right balance of players and roles in each group.

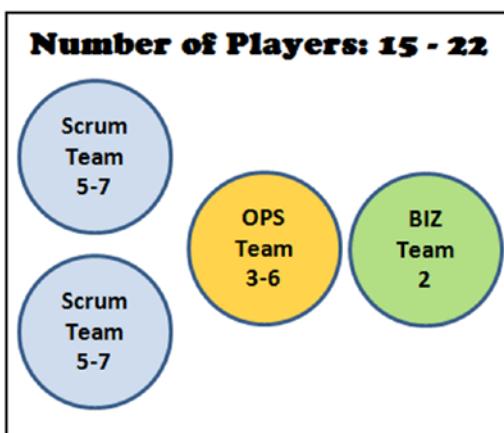
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**Tip** Get early access into your workshop room (or check the floor plan) to select your optimal setup. Ensure enough space for people to move around during the workshop.

---

## Small group (15 - 22 people)

Since the game is focused on organizational dynamics during DevOps transformation, you will need at least 15 players for an effective simulation. The venue plan (see figure 5-1) allows you to run it with a group of 15 - 22 people.



**Figure 5-1.** Room setup for a small group

## Two Scrum Teams

*Option for a five-people Scrum Team:* Patricia Product, Samuel Scrum, two Danny Developers, one Tim Tester

*Option for a seven-people Scrum Team:* Patricia Product, Samuel Scrum, three Danny Developers, two Tim Testers

## Operations Team

Ideally you want to have one of each Operations role (Adam Admin, Robert Release and Sara Security) per each Scrum Team table. In the case of two Scrum Teams, you will need six people to play the Operations roles.

For a really small group you can reduce the number of Operations players to three people only. This modification will introduce a new dynamic. Use it as an opportunity to drive parallels with organizations that practice allocating team members to more than one project.

## Business Team

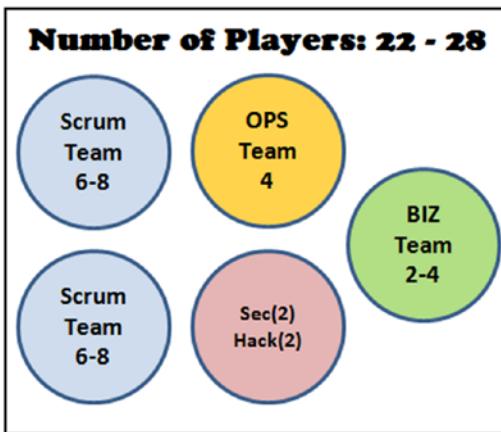
Identify at least one Benjamin Business per each Scrum Team.

## Harry Hacker

For the smallest version of the game (15 people) the role of the *Harry Hacker* needs to be performed by a facilitator.

## Medium group (22 - 28 people)

If you are planning a workshop for a group of 22 - 28 people and your room is set up with five tables, you can experiment with the following layout (figure 5-2).



**Figure 5-2.** Room setup for a medium size group

The main difference from the Small version is a separate Security team. For this configuration you can have the following setup.

## Two Scrum Teams

*Option for a six-people Scrum Team:* Patricia Product, Samuel Scrum, three Danny Developers, one Tim Tester

*Option for an eight-people Scrum Team:* Patricia Product, Samuel Scrum, four Danny Developers, two Tim Testers

## Operations Team

In this room configuration, the Operations table will have two *Adam Admins* and two *Robert Releases*, one per each Scrum Team table.

## Security Team

A separate security table will have two *Sara Securities* and two *Harry Hackers*.

## Business Team

There will be one or two *Benjamin Business* per each Scrum Team.

## Large group (28 - 42 people)

This setup is similar to a medium group configuration, with the exception of an additional Scrum team table and a proportionally scaled number of Operations, Security and Business roles (see figure 5-3).

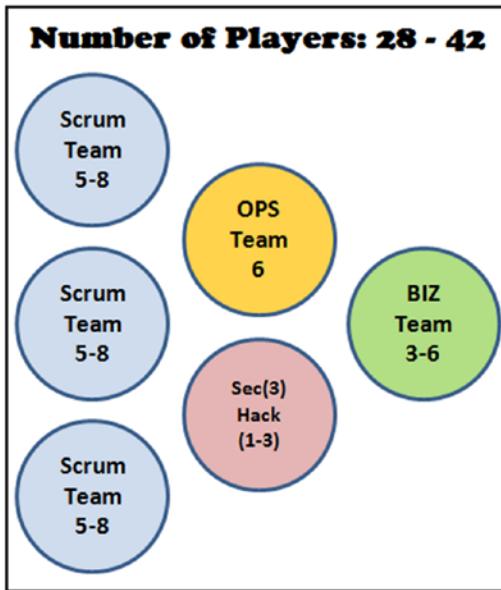


Figure 5-3. Room setup for a large size group of 31-42 participants

Please note, if you have a group of exactly 28 people, your choice of room setup will depend on the number of tables in the room and your personal preference between this setup (figure 5-3) and a previous configuration (figure 5-2).

## Three Scrum Teams

*Option for a six-people Scrum Team:* Patricia Product, Samuel Scrum, three Danny Developers, one Tim Tester

*Option for an eight-people Scrum Team:* Patricia Product, Samuel Scrum, four Danny Developers, two Tim Testers

## Operations Team

In this room configuration, the Operations table will have three *Adam Admins* and three *Robert Releases*, one per each Scrum/Development team table.

## Security Team

A separate security table will have three *Sara Securities* and up to three *Harry Hackers*.

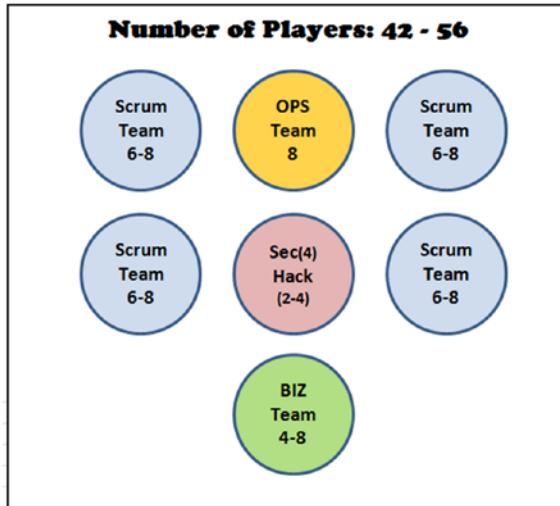
## Business Team

There will be one or two *Benjamin Business* per each Scrum team.

## Large group (42 - 56 people)

This room setup is appropriate for a large room with seven tables and the group size from 42 to 56 people (see figure 5-4).

Please note, if you have a group of exactly 42 people, your choice of room setup will depend on the number of tables in the room and your personal preference between this setup (figure 5-4) and a previous configuration (figure 5-3).



**Figure 5-4.** Room setup for a large group of 42-56 participants

## Four Scrum Teams

*Option for a six-people Scrum Team:* Patricia Product, Samuel Scrum, three Danny Developers, one Tim Tester

*Option for an eight-people Scrum Team:* Patricia Product, Samuel Scrum, four Danny Developers, two Tim Testers

## Operations Team

In this room configuration, Operations table will have four *Adam Admins* and four *Robert Releases*, one per each Scrum/Development team table.

## Security Team

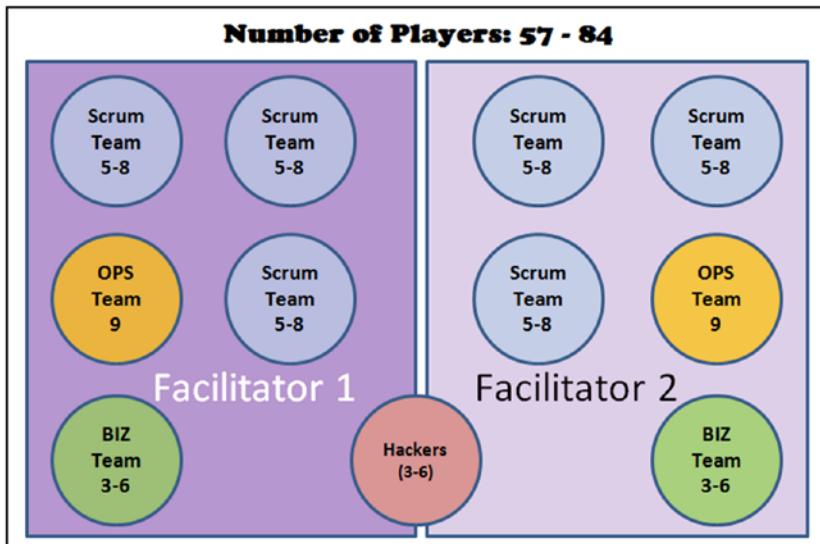
A separate security table will have four *Sara Securities* and up to four *Harry Hackers*.

## Business Team

There will be one or two *Benjamin Business* per each Scrum team. The business table will have a total of four to eight people.

## Extra-large group (57 - 84 people)

This is the largest group size, play-tested by the author (figure 5-5). You will need to enlist help from an additional facilitator, if you ever need to run the games with a group of this size.



**Figure 5-5.** Room setup for an extra-large group with two facilitators

## Second facilitator

Please plan on prepping the second facilitator ahead of time on game dynamics and their role in the workshop. While the workshop will be facilitated by the main facilitator, the second facilitator's involvement will greatly enhance participants' comprehension and their overall satisfaction with the game.

The second facilitator's goal is to help spot check every team in their area for any confusion among the participants as well as address known "red flags" (see Chapter 7 for detailed description of the "red flags" indicating lack of engagement or lack of understanding of the roles).

## Six Scrum Teams

*Option for a five-people Scrum Team:* Patricia Product, Samuel Scrum, two Danny Developers, one Tim Tester

*Option for a six-people Scrum Team:* Patricia Product, Samuel Scrum, three Danny Developers, one Tim Tester

*Option for an eight-people Scrum Team:* Patricia Product, Samuel Scrum, four Danny Developers, two Tim Testers

## Two Operations Teams

In this configuration, each Operations table will have three *Adam Admins*, three *Robert Releases* and three *Sara Securities*.

## Hacker Island

A separate hacker table will have three to six Harry Hackers.

## Two Business Teams

Each business team will have two *Benjamin Business players* per each Scrum team (total of six players per each table).

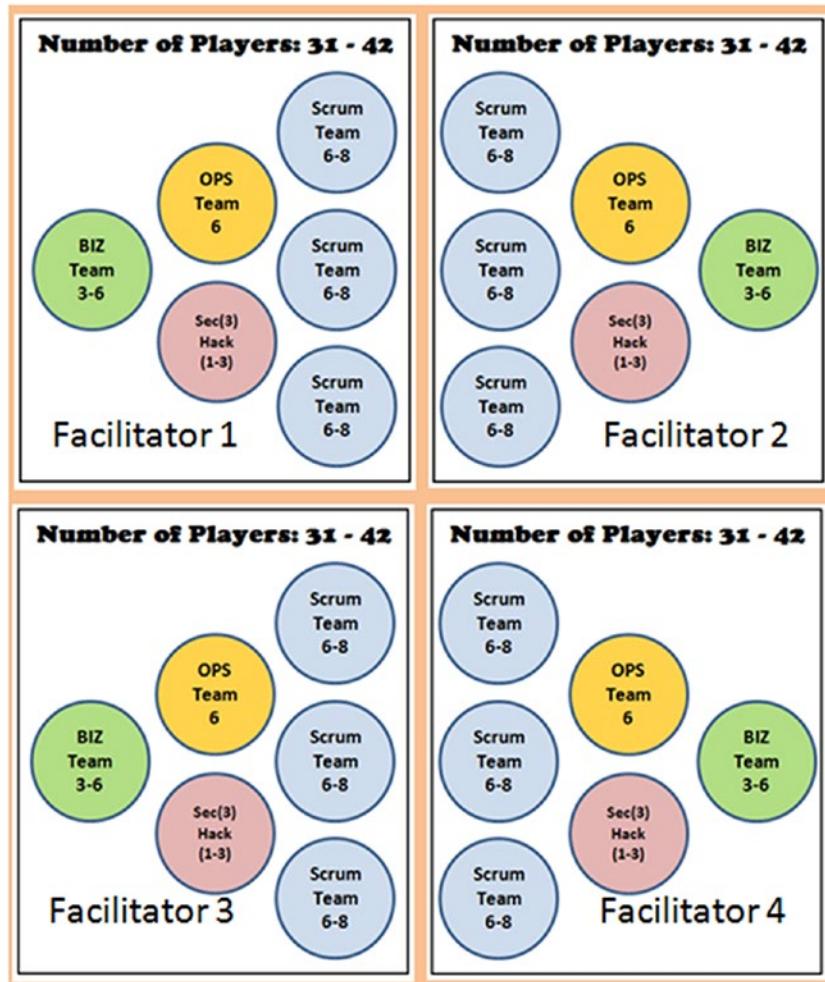
---

**Tip** You will need to set up two independent *Animal Exchange Marketplace* posters and two independent *Delivery* boards

---

## Scaling the game beyond 84 people

Scaling the game beyond 84 people will mean running multiple instances of the Large (31-42) configuration in parallel with the help of multiple facilitators (figure 5-6). This will require independent Animal Exchange Marketplace boards, independent Delivery boards and multiple AHA Moment posters available around the room. Due to the added complexity of this setup, more time will be required for clarification and debriefing.



*Figure 5-6. Room setup for a parallel run of the game with four additional facilitators (124 - 168 participants)*

Running the game in parallel will also benefit from establishing clear physical boundaries between every simulation instance. This could be achieved by setting up a row of flipchart stands or stretching a long ribbon alongside the “border,” etc. Feel free to experiment with what works best in your specific room.

You will need to enlist multiple facilitators (one per simulation instance). As a main facilitator you will be delivering the presentation part, providing game onboarding instructions to the entire group, establishing the overall timeboxes (as per facilitation script in Chapter 7) and running large group debriefings. This room setup will require multiple hand-held microphone to be available to your secondary facilitators.

Please plan on prepping your facilitators ahead of time on game dynamics and their role in the workshop. While the workshop will be facilitated by the main facilitator (you), secondary facilitators’ involvement will greatly enhance participants’ comprehension and the overall satisfaction with the game.

The secondary facilitators’ goal will be to spot check every team in their instance of the simulation. They will be looking for signs of confusion among the participants as well as aiming to address known “red flags” (see Chapter 7 for detailed description of the “red flags”).

## CHAPTER 6



# Know Your Timebox

How much time do you have available for facilitating this game? Your timebox will determine the overall session plan.

This chapter offers three session plans for a standard, an abbreviated, and an extended “in-depth” version of the game. Select the one that’s appropriate to your timebox.

---

**Note** Chapter 7 includes scripts for the three sessions to support you in each of the activities mentioned in this chapter.

---

## Inspired by 4 C Framework

These session plans are inspired by 4C framework, introduced by Sharon L. Bowman in her “Training from the BACK of the Room” work. This framework helps learners to start from building **Connections** with the material being presented. Followed by a short “need-to-know” introduction to the **Concepts**, the framework continues to bring in a **Concrete Practice** and closes off every learning cycle with **Conclusions**.

The workshop follows this model and allows participants to progress through short cycles of participatory, brain-friendly learning experience. Every cycle concludes with a debriefing (Conclusions).

Keep in mind that the biggest benefit to the participants comes from the game debriefing. It allows them to reflect on their emotions, accomplishments, and learning experienced through the game, to discuss them with other players, to draw parallels, and to build connections with their real-life experience.

The standard session allocates 30 min for debriefing, the abbreviated version allocates only 15 min and the extended “in-depth” version allocates 50 min for debriefing. The three session plans included in this chapter offer a variety of debriefing techniques to help you facilitate it even if the time is short. Don’t shorten the debriefing time! The game you facilitate is only “means to an end”. Debriefing is where the learning comes together for your players.

## Standard session plan – 90 min

This is the standard session duration recommended for the game. It includes brief talking points for the facilitator (concept introductions and game rules walk-through), three short (10 min) sprints and debriefings. (See table 1-1).

**Table 1-1.** Session plan for 90 min timebox

Activity	Duration	Description	Goal of this activity
Turn and Talk	4 min	Ask participants to pair up, introduce themselves and tell each other what they already know about DevOps.	Connection: Connect participants with each other and the topic.
Introduce yourself	1 min	Your own introduction. Keep it short.	Introduction
Introduce the topic	5 min	Briefly introduce Dev, Ops, and Business Goals Misalignment. Talk about issues with Cyclical Value Delivery.	Concept: Introduce the concepts for Sprint 1 simulation.
Game setup	10 min	Provide a quick overview of the game, call out different roles and dependencies. Ask participants to pick a role for themselves, read the role card, and explain it to their neighbor.	Onboard players and introduce basic rules.
Sprint 1	10 min	Instruct the participants to start Sprint 1 simulation, distribute <i>Special Instructions</i> cards to <i>Adam Admins</i> . Keep a timer visible at all times.  Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: Demonstrate “potentially shippable product” accumulation with Scrum.

*(continued)*

**Table 1-1.** (continued)

<b>Activity</b>	<b>Duration</b>	<b>Description</b>	<b>Goal of this activity</b>
Sprint 1 Debriefing	5 min	Start with the development team and ask them how much they delivered in Sprint 1. Bring their attention to a Delivery Board. Ask the business if they received any products this sprint. Had any team encountered security issues?	Conclusion: Review Sprint 1 experience with different teams.
Sprint 2	10 min	Distribute <i>Special instructions</i> cards to <i>Benjamin Business</i> and instruct participants to make the following changes in Sprint 2: 1) Scrum team will become more crossfunctional; Danny Developer and Tim Tester will start helping each other to build/test products; 2) Scrum Team will invite Sara Security in and will start collaborating with her from the beginning. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: Optimizing Scrum Team, "Shift Security to the Left".
Spring 2 Debriefing	10 min	Bring attention to the Delivery Board again. What was different in Sprint 2 experience? What have participants observed in each group?	Conclusion: Debrief Sprint 2 experience with different teams. Gain system-wide perspective.

(continued)

**Table 1-1.** (continued)

<b>Activity</b>	<b>Duration</b>	<b>Description</b>	<b>Goal of this activity</b>
Introduce DevOps	5 min	Use the slides provided in the appendix to introduce DevOps concepts. Talk about ways of improving the flow of work through the delivery pipeline.	Concept Introduction: DevOps
Cross-training	5 min	Distribute cross-training kits to the participants. Ask them to find someone from a different role and pair up for a cross-training.	Concrete practice: Help participants build their T-shaped skills.
Sprint 3	10 min	Distribute <i>Special instructions</i> cards to <i>Patricia Product and</i> additional supplies for Sprint 3 (see Chapter 4). Run simulation with the new rules. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: One-piece flow, T-shaped skills, Simplified deployment.
Final debrief	15 min	Ask the players to write at least one of their takeaways on a post-it note. Discuss these at their tables and then have each table present a summary to the rest of the workshop participants.	Conclusion: Allow for a final reflection in a group discussion format.

## Abbreviated session plan – 75 min

This is the shortest recommended session duration (see table 1-2). It includes very short 5 min debriefs after each sprint. Additionally, in this version the final debriefing is replaced by *Share Your Aha! Moments* activity.

**Table 1-2.** Session plan for 75 minutes timebox

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
Yes	Turn and Talk	4 min	Ask participants to pair up, introduce themselves and tell each other what they already know about DevOps.	Connection: Connect participants with each other and the topic.
Yes	Introduce yourself	1 min	Your own introduction. Keep it short.	Introduction
Yes	Introduce the topic	5 min	Briefly introduce Dev, Ops, and Business Goals Misalignment. Talk about issues with Cyclical Value Delivery.	Concept: Introduce the concepts for Sprint 1 simulation.
Yes	Game setup	10 min	Provide a quick overview of the game, call out different roles and dependencies. Ask participants to pick a role for themselves, read the role card and explain it to their neighbor.	Onboard players and introduce basic rules.
Yes	Sprint 1	10 min	Instruct the participants to start Sprint 1 simulation, distribute <i>Special Instructions</i> cards to <i>Adam Admins</i> . Keep a timer visible at all times.  Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: Demonstrate “potentially shippable product” accumulation with Scrum.

(continued)

**Table 1-2.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
Yes	Sprint 1 Debriefing	5 min	Start with the development team and ask them how much they delivered in Sprint 1. Bring their attention to a Delivery Board. Ask the business if they received any products this sprint. Had any team encountered security issues?	Conclusion: Review Sprint 1 experience with different teams.
Yes	Sprint 2	10 min	Distribute <i>Special instructions</i> cards to <i>Benjamin Business</i> and instruct participants to make the following changes in Sprint 2: 1) Scrum team will become more cross-functional; Danny Developer and Tim Tester will start helping each other to build/test products; 2) Scrum Team will invite Sara Security in and will start collaborating with her from the beginning. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: Optimizing Scrum Team, “Shift Security to the Left.”

(continued)

**Table 1-2.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
No <i>(reduced duration)</i>	Spring 2 Debriefing	5 min	Bring attention to the Delivery Board again. What was different in Sprint 2 experience? What have participants observed in each group?	Conclusion: Debrief Sprint 2 experience with different teams. Gain system-wide perspective.
Yes	Introduce DevOps	5 min	Use the slides provided in the appendix to introduce DevOps concepts. Talk about ways of improving the flow of work through the delivery pipeline.	Concept Introduction: DevOps
Yes	Cross-training	5 min	Distribute cross-training kits to the participants. Ask them to find someone from a different role and pair up for a cross-training.	Concrete practice: Help participants build their T-shaped skills.
Yes	Sprint 3	10 min	Distribute <i>Special instructions</i> cards to <i>Patricia Product</i> and additional supplies for Sprint 3 (see Chapter 4). Run simulation with the new rules. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 5 min Sprint Demo - 2 min Retrospective - 1 min)	Concrete practice: One-piece flow, T-shaped skills, Simplified deployment.

(continued)

**Table 1-2.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
No <i>(reduced duration)</i>	Share your final Aha! Moments	5 min	Ask the players to write one of their takeaways on a post-it and add it to Aha! Moment poster on the way out.	Conclusion: Allow for a final reflection in a very short timebox.

## Extended “In-depth” session plan – 3 hours

The three hours long session provides an opportunity to include Sprint 4 and facilitate the final debriefing in a fishbowl format. (See table 1-3). This version of the game maximizes learning opportunities for the participants. The 3 hours workshop runs in two parts with a short 10 min break.

**Table 1-3.** Session plan for 3 hours timebox

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
Yes	Turn and Talk	4 min	Ask participants to pair up, introduce themselves and tell each other what they already know about DevOps.	Connection: Connect participants with each other and the topic.
Yes	Introduce yourself	1 min	Your own introduction. Keep it short.	Introduction
No (New)	Define DevOps for you	5 min	Ask participants to call out their favorite definition of DevOps	Connection to the topic
Yes	Introduce the topic	5 min	Introduce Dev, Ops, and Business Goals Misalignment. Talk about issues with Cyclical Value Delivery.	Concept: Introduce the concepts for Sprint 1 simulation.

(continued)

**Table 1-3.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
Yes	Game setup	10 min	Provide a quick overview of the game, call out different roles and dependencies. Ask participants to pick a role for themselves, read the role card and explain it to their neighbor.	Onboard players and introduce basic rules.
No (New)	Meet your customer	5 min	Ask all <i>Patricia Products</i> to walk up to the Animal Exchange Board, meet <i>Benjamin Business</i> and select a first user story for her team.	Onboarding
No (increased)	Sprint 1	15 min	Instruct the participants to start Sprint 1 simulation, distribute <i>Special Instructions</i> cards to <i>Adam Admins</i> . Keep a timer visible at all times.  Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 8 min Sprint Demo - 3 min Retrospective - 2 min)	Concrete practice: Demonstrate “potentially shippable product” accumulation with Scrum.

(continued)

**Table 1-3.** (continued)

<b>Same as 90 min Version</b>	<b>Activity</b>	<b>Duration</b>	<b>Description</b>	<b>Goal of this activity</b>
No (increased)	Sprint 1 Debriefing	10 min	Start with the development team and ask them how much they delivered in Sprint 1. Bring their attention to a Delivery Board. Ask the business if they received any products this sprint. Had any team encountered security issues?	Conclusion: Debrief Sprint 1 experience with different teams.
No (increased)	Sprint 2	15 min	Distribute <i>Special instructions</i> cards to <i>Benjamin Business</i> and instruct participants to make the following changes in Sprint 2:  1) Scrum team will become more cross-functional; Danny Developer and Tim Tester will start helping each other to build/test products; 2) Scrum Team will invite Sara Security in and will start collaborating with her from the beginning. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 8 min Sprint Demo - 3 min Retrospective - 2 min)	Concrete practice: Optimizing Scrum Team, “Shift Security to the Left.”

(continued)

**Table 1-3.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
Yes	Spring 2 Debriefing	10 min	Bring attention to the Delivery Board again. What was different in Sprint 2 experience? What have participants observed in each group?	Conclusion: Debrief Sprint 2 experience with different teams. Gain system-wide perspective.
No (new)	Break	10 min	Short break and distribution of additional building blocks and chocolate if needed for part two.	
No (increased)	Introduce DevOps	10 min	Use the slides provided in the appendix to introduce DevOps concepts. Talk about ways of improving the flow of work through the organization. Introduce theory of constraints and talk about different type of bottleneck (including people with highly specialized skills)	Concept introduction: DevOps
No (increased)	Cross-training	10 min	Distribute cross-training kits to the participants. Ask them to find someone from a different role and pair up for a cross-training.	Concrete practice: Help participants build their T-shaped skills.

(continued)

**Table 1-3.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
No (increased)	Sprint 3 - DevOps	15 min	Distribute additional supplies for Sprint 3 (see Chapter 4). Run simulation with the new rules. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution - 8 min Sprint Demo - 3 min Retrospective - 2 min)	Concrete practice: T-shaped skills, Ability to address bottleneck in overall process, Simulate automated environment provisioning.
No (new)	Sprint 3 Debriefing	10 min	Bring attention to the Delivery Board again. What was different in Sprint 3 experience for each team? What changes have they observed in each role?	Conclusion: Debrief Sprint 3 experience with different teams. Continue building system-wide perspective.
No (new)	Introduce Continuous Delivery	10 min	Introduce Continuous Delivery concepts: delivery pipeline, “one piece flow”	Concept: Introduce Continuous Delivery
No (new)	Sprint 4 - Continuous Delivery	15 min	Distribute green packages to development team, <i>Special Instructions</i> and small index cards for <i>Patricia Product</i> . Continue the game with Continuous Delivery simulation. Sprint timeline breakdown: (Sprint Planning - 2 min Sprint Execution/ Demo/ Deployment - 11 min Retrospective - 2 min)	Concrete practice: Ability to address bottleneck in overall process. Continuous delivery simulation with “one piece flow” and simplified deployments.

(continued)

**Table 1-3.** (continued)

Same as 90 min Version	Activity	Duration	Description	Goal of this activity
No (new)	Final debrief with Fishbowl format	20 min	Set up five chairs in a semi-circle in front of the room and facilitate the final debriefing in a fishbowl retrospective format. Start by inviting the first 4 volunteers from a different role.	Conclusion: Allow for a final reflection.

### **FISHBOWL RETROSPECTIVE FORMAT**

Only people who are sitting in the fishbowl (on one of the 4 chairs) can speak. One chair remains open as an invitation to join. Anyone is invited to join the fishbowl as long as there is an empty chair. Whenever the last chair is taken, someone from the group must leave the fishbowl before someone else can join to speak.

## CHAPTER 7



# Be a Gamemaster

*Chocolate, Lego and Scrum* game is a cooperative role-playing game. As a facilitator, you will play the role of the Gamemaster. You will create an environment for players to interact, weave their stories together, and improvise as their game unfolds.

You will be asked a lot of questions by the players. Be sure to understand well what every character may or may not do and how each character contributes to the overall game experience (see chapter 3).

## A sample facilitator's script for the standard and the abbreviated versions of the workshop

If you would like to use the slides provided in the electronic version of the appendix, you may choose to use this script as a reference.

Please note, the abbreviated version of this workshop is nearly identical to the standard version, with the main difference being the duration of *Sprint 2 debriefing* and *Final debriefing*. The sample script provided in this section will outline these variations for both the standard and abbreviated timebox.

This script is just your starting point and is neither final nor set in stone. Experiment, enhance and simplify to make it more engaging for your learners.

---

**Note** You will be timeboxing a lot of activities in this workshop. Use the timer of your choice and make it visible to the workshop participants. This workshop will be very noisy. Make sure your timer can be heard by the players. You may find this interval timer handy, especially for timeboxing Sprints: [bit.ly/CLS\\_timer\\_interval](http://bit.ly/CLS_timer_interval).

---

### Turn and Talk (4 min)

As people are gathering in the workshop room, use the following script to introduce the slide in figure 7-1.

"Hello everyone. As you walk into the room, please pick a table and ask your neighbors three questions:

What is your name?

What is your role?

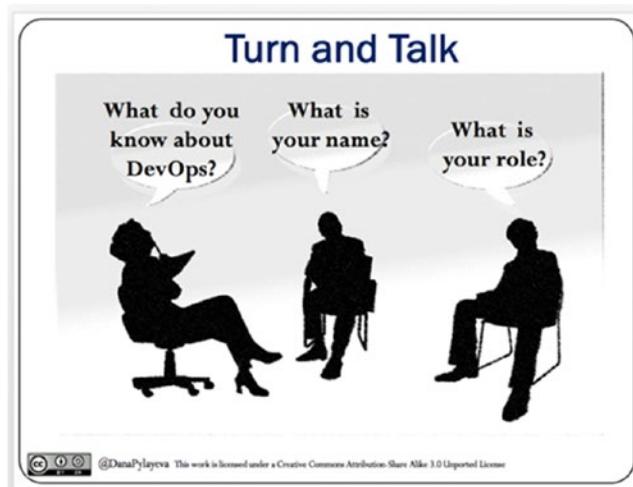
What do you know already about DevOps?"

When it's time to start the session, follow up with the callouts to a few tables:

"What did you learn about people at your table?

Who is already using DevOps practices today?

Who is just starting to learn about DevOps?"



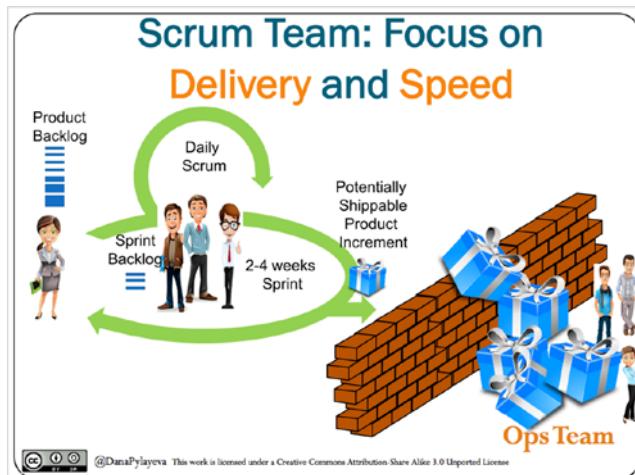
*Figure 7-1.* Turn and Talk slide

## Introduce yourself (1 min)

Your own introduction. Keep it short.

## Introduce the topic (5 min)

Briefly talk about issues with cyclical value delivery. Introduce Dev, Ops, and Business goals misalignment (figure 7-2 through 7-4)



**Figure 7-2.** Focus of a Scrum team slide

“Let’s look closely at some of the issues in a typical organization, where Development teams practice Scrum while Operations teams operate in a traditional sequential manner.

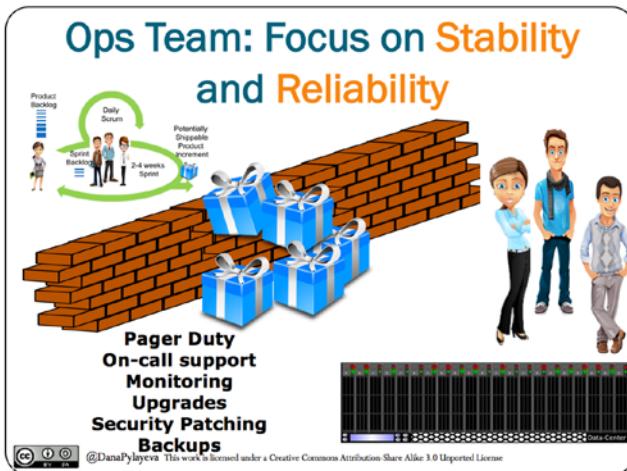
Scrum teams are focused on delivering features and maintaining good flow. At the end of each Sprint they are expected to deliver a potentially shippable increment of a product. More often than not, they throw this increment “over the wall” and move onto the next Sprint.

What happens to it afterwards is not their concern—their Sprint is DONE!”

Introduce Operations team’s perspective with slide 7-3:

“What do we have on the other side of the wall? Life isn’t pretty—escalation procedures, on-call pager duty, monitoring—everything to ensure that current systems that generate revenue are stable and have adequate throughput. The Operations team is focused on “keeping the lights on.”

Operations resist change. They know, when all these increments accumulate in IT operations, they can cause deployment issues and lead to post-deployment firefighting in production.”

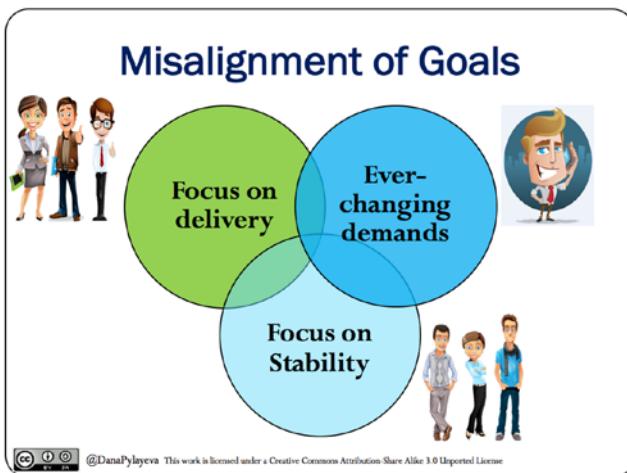


**Figure 7-3.** Focus of Ops team slide

Use slide 7-4 to talk about misalignments of goals:

“Add to that a continuously increasing pressure from the customers with ever-changing demands and you get a complete picture.

When deployments are rare and manual, it is close to impossible to reconcile these goals. What is the solution and how can we move forward? Let's experiment and find out!”



**Figure 7-4.** Misalignment of goals slide

## Game Setup (10 min)

Use slides from figure 7-5 through 7-10 to introduce the game rules:

“Welcome to Chocolate, Lego and Scrum simulation game!

Inspired by “The Phoenix Project,” this game will let you experience 3 Sprints in the life of development and operations.

We will simulate the flow of work through an enterprise, reconcile the goals of Business, Development, and Operations, as well as demonstrate the benefits of moving from cyclical to continuous delivery of value.

Adjust the following paragraph to your room setup, and the number of development, operations, and business teams:

“In this room we have three Scrum teams, one operations team, and one business team. Go ahead, open the gift bags on your tables, take out the roles package, and pick a role for yourself.

Take two minutes to learn about your roles and introduce your game avatar to the team members at your table. Notice the dependencies you have on other team members and other teams.”

### ***Facilitator Prompt: Start a visible timer: 2 min***



**Figure 7-5.** Game roles slide

Bring their attention to the Game flow handout (figure 7-6):

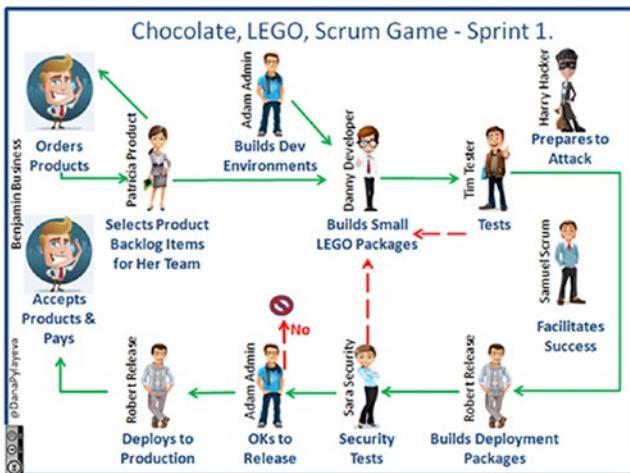
“On your tables you will find a Game flow handout.

Game starts with Patricia Product working with Benjamin Business to select the first product backlog item for her team.

In the mean time, Danny Developer and Tim Tester need to find Adam Admin from the Ops team so that their environments can be created.

When Danny has an environment and knows what to build, he can start building Lego Animals. The package has to be tested by Tim Tester and packaged by Rob Release. Sara Security has to run a security scan on it.

It is only then, with Adam Admin’s permission, that the deployment package can be deployed into production by Rob Release. If Benjamin Business likes it, he will pay money for it to the Scrum team.”



**Figure 7-6.** Game flow handout

Point out to the participants that they can reference acceptance criteria on the back of the handout (figure 7-7).

Chocolate, LEGO, Scrum Game.	Small Dev. Package
<ol style="list-style-type: none"> <li>Each package contains one LEGO animal (according to a Product Backlog Item(PBI) work card) and one chocolate candy.</li> <li>Each LEGO animal has a small label with a number affixed to it.</li> <li>The contents don't fall out if turned upside-down.</li> </ol>	
Deployment Package	<ol style="list-style-type: none"> <li>Contains a PBI work card.</li> <li>Contains a number of small packages with one LEGO animal and one chocolate in each.</li> <li>Has a label with Team Name and Sprint Number on it.</li> <li>The package is closed.</li> <li>Type of animals and their quantity same as in PBI work card.</li> </ol>

**Figure 7-7.** Acceptance criteria handout

How will the players know *what kind* and *how many* Lego animals they need to build? Explain the rules of the Animal Exchange Marketplace (figure 7-8).

	Demand	Batch Size	PRICE PER BATCH \$		
			Sprint 1	Sprint 2	Sprint 3
DOGS	15	5	100		
CATS	9	3	50		
SNAKE	5	5	50		





**What Will You Build?**  
**Ask the Business Team!**

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**Figure 7-8.** Animal Exchange slide

“How do we know what to build? All orders are placed at the Animal Stock Exchange. Business team can ask for any type of animal, request features they want and decide a price for it. There are a few cards on the board to get us started.”

Additional clarification for the business team:

“Orders can be placed in the increments of the batch sizes. Each order from the market (for example, “5 dogs” or “10 giraffes”) is counted as one story. To generate business value, the story must be delivered to the market in its entirety. Remember, you will be paying money to the team! Don’t agree to accept broken products and don’t purchase items that exceed the quantity you’ve ordered.”

Instruct the business team to designate one person to be in charge of updating the Delivery Board (figure 7-9) with the total value of products delivered by each team during a particular Sprint.

DELIVERY BOARD			
TEAM	Sprint 1	Sprint 2	Sprint 3
1			
2			
3			

*Figure 7-9. Animal Exchange slide*

Invite all Patricia Product players to approach business stakeholders at this time.

“At this time can all players with the Patricia Product role raise their hands? Thank you. Go to the business team and pick the first PBI card from the board. Discuss with your business partners the kind of animal they would like to get built. Let’s take 3 minutes for this.”

---

***Facilitator Prompt: Start a visible timer: 3 min***

---

Once the 3-min timebox is over, continue with the script for figure 7-10:

"Remember, if you are Danny Developer or Tim Tester, you can't start your work if you don't have an environment. Adam Admin is the only one who knows how to build it. Go find him and ask him to create the environments for you."



**Figure 7-10.** Environments Sample slide

## Sprint 1 (10 min)

---

### **Facilitator Prompt: Start a visible timer: 10 min**

---

Start Sprint 1 (figure 7-11). Instruct Scrum Masters in each team to monitor the timeboxes on the interval timer (visible on the screen):

1. Sprint Planning - 2 min
2. Sprint Execution - 5 min
3. Sprint Demo - 2 min
4. Retrospective - 1 min

**Sprint 1: Cyclical Value Delivery With Scrum**

- Dev and Ops are separate teams
- Sys Admin** controls release schedule
- Security** test is at the end of the Sprint

Activity	Duration
Sprint Planning	00:02:00
Sprint Execution	00:05:00
Sprint Demo	00:02:00
Retrospective	00:01:00

Total: 00:02:05:502      Restart when done!      Off

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**Figure 7-11.** Sprint 1 slide

At this time find Adam Admins and give them envelopes with Special Instructions for Sprint 1. This is a *Secret Information* in the game, only revealed to Adam Admin:

“Deployment is not allowed in Sprint 1. We are in the **code freeze**. As system administrators you will need to make sure that nothing gets deployed into production this Sprint!”

Next, stop by Sara Security’s table and instruct Sara Security to open her *Special Instructions* envelope. It’s time to select three security issues for first Sprint.

“Open your envelopes. Pick three random numbers within the range specified in the instructions card. These will be security issues for the current Sprint. Do not share this information with your Scrum Teams. When a Scrum Team brings you a deployment package for testing, search for these numbers on the Lego animals. If you find one, send the entire package back for rework.”

Instruct Samuel Scrum players to ensure Scrum team follows the process and to help them remove impediments. Walk around the room and verify rules comprehension.

As you walk around the room, address individual questions as they come up and watch out for the following red flags:

- Developers or testers are working without a dedicated environment. Call this out and instruct them to find Adam Admin.
- Someone is deploying products into production in Sprint 1. Call Adam Admin’s attention—we are in the code freeze!

- Teams are skipping security tests. Call this out and instruct them to find Sara Security.
- Confused Patricia Product. Clarify the rules and expectations of the role.
- Disengaged Samuel Scrum. Clarify the rules and expectations of the role.

## Sprint 1 Debriefing (5 min)—expose the difference in perspectives

When the timebox ends, facilitate a short debriefing.

Start with the Scrum teams:

“Has anyone run a 1-min Retro at the end of the Sprint? What were your observations?

How much were you able to deliver in Sprint 1?”

Given the short Sprint duration, it is possible that some teams will not have any packages completed. A more typical scenario would be that one of the development teams will report some number of packages delivered into production.

“Let’s check the Delivery Board. The board is EMPTY! Let’s hear from Benjamin Business. Have you received any products this Sprint?”

The board is empty at the moment, as nothing had been *deployed* into production. How can this be?

After watching surprised developers’ faces for a few seconds, ask one of the Adam Admins to read out loud the Special Instructions card he got at the beginning of this Sprint. We were in a code freeze!

Had any team encountered security issues? If yes, ask them to share their experience with others.

## Sprint 2: Optimizing Scrum Team (10 min) “Shift security to the left.”

Announce the following rule changes for Sprint 2 (figure 7-12)

“Let’s make some changes for Sprint 2. **First**, we will make our Development Team truly cross-functional. Both Danny Developer and Tim Tester may now work on any development or testing tasks to help build faster and with better quality. **Second**, Samuel Scrum, go ahead and invite Sara Security to join your Scrum Team. She will now work with the team from the very beginning. **Last**, no more code freeze, Robert Release may deploy now.”

**Sprint 2: Optimizing the Scrum Team**

- Move **Security** to the left - learn about security issues **before** implementation.
- First release into production: Only **Release Engineer** can deploy.

Activity	Duration
Sprint Planning	00:02:00
Sprint Execution	00:05:00
<b>Sprint Demo&amp;Deployment</b>	<b>00:02:00</b>
Retrospective	00:01:00

Total 00:07:13:994      Restart when done      Off

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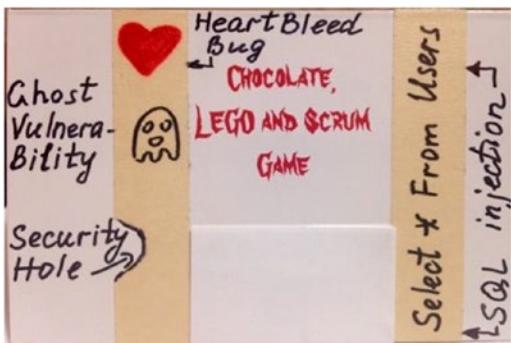
**Figure 7-12.** Sprint 2 slide

Start Sprint 2.

#### **Facilitator Prompt: Start a visible timer: 10 min**

Distribute Special Instructions to Benjamin Business (*it's time to start changing prices on the Lego Animals*) and Sara Security (*watch out for Harry Hacker—start checking the environments this Sprint*).

Now find your Harry Hackers and instruct them to start hacking if they haven't started in Sprint 1. Let them roam around and randomly introduce security issues into environments (figure 7-13)

**Figure 7-13.** Security Issues/Hacks

---

**Note** At this time, players are very engaged in the development process. Harry Hackers can do a lot of damage before getting noticed by teams.

---

Walk around the room, address individual questions as they come up and watch out for the following red flags:

- Development team is working in the environment that has security issues (hacked)—call Sara Security. She must halt further work for this development team until environment is patched.
- Someone (other than Robert Release) is deploying products into production in Sprint 2. Call Adam Admin's attention—unauthorized deployment must be stopped.
- Disengaged Samuel Scrum. Remind him, he is the Master of Scrum, a servant leader, and needs to be helping the team and organization follow the process, ensure the team has everything they need, and remove impediments.
- Timid Harry Hacker—clarify the rules and encourage more hacking. You as a facilitator may need to step in and hack a few environments too!
- Business is excited to receive their first products and forgetting to track the value they received on the Delivery Board.

## Sprint 2 Debriefing (\* min)—Ineffectiveness of Local Optimization. Running into system constraints.

---

**Note** To Adjust Your Timebox:

10 min – if you are facilitating a **standard** session,

5 min – if you are facilitating **abbreviated** session (adjust the number of questions accordingly)

---

Review Delivery Board again and compliment the teams on the delivered value. Discuss with the participants how the small steps taken toward expanding their skill helped them speed up the development. The next step is a system-level optimization in Sprint 3.

You may say something like this:

"Has anyone run a 1-min Retro at the end of this Sprint? What were your observations?

Was your experience different in Sprint 2? What has changed in the dynamic after Sara Security got to be included in the Scrum team?

Let's hear from the Business team. How was it for you this Sprint?

Now to Scrum teams. How was it for you? What surprised you the most?

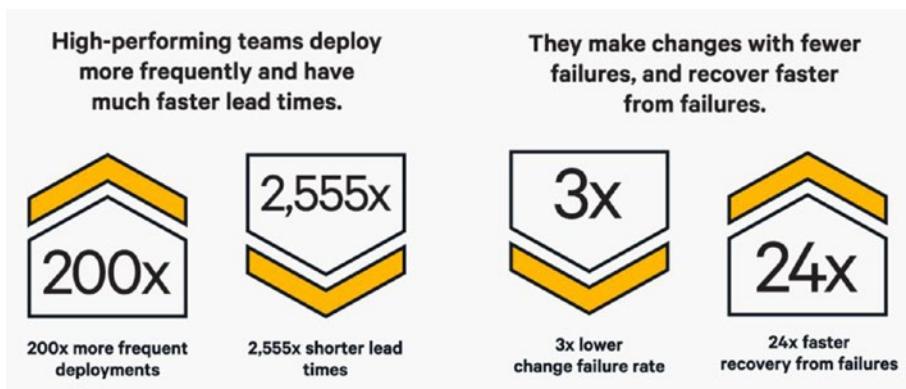
Operations team, Security—would you like to share your perspective?

Harry Hacker, what happened when teams realized you were hacking their environments?"

Expected outcome: teams were able to deliver, but might have found that the price of their animals had dropped. Additionally, unable to patch their own environments, they were slowed down by security patches at times. Highly specialized skills of the team members caused systemic issues and led to bottlenecks.

## Introduce DevOps (5 min)

Bring players' attention again to the slow speed of delivery and massive inefficiencies of the current process. Transition to the DevOps introduction (figure 7-14):



**Figure 7-14.** Findings reported by 2016 State of DevOps Report, Puppet Labs

"Did you notice how the different goals of each team, lack of communication, and highly specialized roles of the players prevented them from delivering value to the business? That is exactly the problem area in which DevOps can help! According to "2016 State of DevOps Report" by Puppet Labs, organizations experience both increased speed of delivery as well as increased stability with DevOps.

Continue presentation (figure 7-15):

"There are many ways to start your DevOps initiative and each one will require changes in technology, people, process, and culture. One way to start would be from visualizing your process.

Get a better understanding of how a *value delivering planned work* moves through your organization. Learn to optimize that.

Understand where *unplanned work* causes the most disruption and how you can minimize its impact.

Be aware of different types of bottlenecks:

**Tool:** Lack of appropriate tools may limit the ability of the system to produce more.

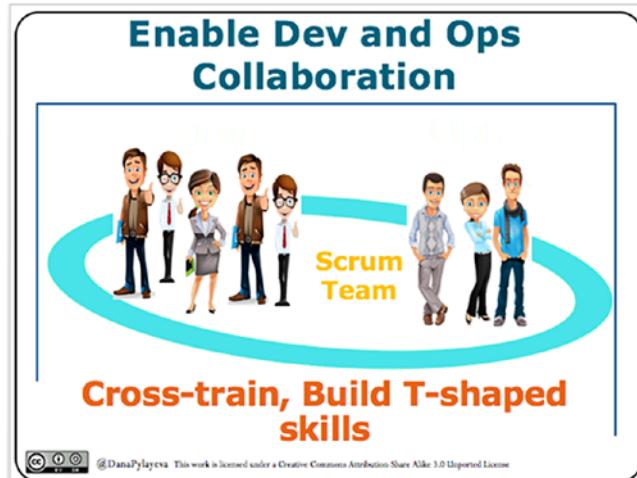
**People:** Mental models held by people or lack of skills can cause behavior that becomes a constraint. There are many examples of this type of bottleneck. Front-end vs. back-end developers on a Scrum Team is one of the examples. Another very common anti-pattern we experienced in Sprint 1: Tim Tester was only doing ‘testing tasks’ and Danny Developer was only doing ‘development.’ Even though they were in a Scrum Team, they acted based on their old ‘functional team’ mental model.

**Policy:** A written or unwritten policy can impede the system’s ability to deliver.”



**Figure 7-15.** Optimize your flow

“Bring Operations into your team! (figure 7-16). They know how your system runs in production and can provide valuable metrics on its performance and scalability. Leverage that feedback to make your system more resilient. Go one step further and start cross-pollination of knowledge in your team. Instead of having “I”-shaped skills (deep specialization in one area), work on developing T-shaped skills (deep specialization in one area and complimentary skills in many other areas).



**Figure 7-16.** Collaboration beyond Scrum team

Always look for opportunities to split your Product Backlog Items into smaller vertical slices. Smaller sized PBIs make it easier to move towards creating a ‘one-piece flow’ of value through the delivery pipeline.”(figure 7-17)



**Figure 7-17.** Smaller Batches

"How many of you have implemented Continuous Integration (CI) on your projects? CI practice requires developers to check in their code into a shared repository multiple times a day. With every check-in, an automated build kicks in to validate and expose issues faster.

Both the small batches and CI are the prerequisite for implementing Continuous Delivery. Continuous Delivery allows teams to have software always in 'release-ready' state and to get any changes into production safely, quickly, and in a sustainable way."

## Cross-training (5 min)

Distribute cross-training kits (figure 7-18) to the participants and explain the cross-training activity.



**Figure 7-18.** Cross-training simulation set for Sprint 3

Once it is completed, they will be able to play additional roles and help elevate the constraints in the overall process. For example, in case of environment patching, it will now be one of the skill sets of Adam Admin and all of his trainees.

**Note** Remember to adjust the script to accurately reflect the three colors of the stickers you were able to obtain.

"Now we are ready to start our DevOps transformation. Let's work on developing the T-shaped skills. Every group has received a set of stickers. Scrum team got the orange stickers, Operations got green ones and Sara Security received the red stickers. Walk around the room and find someone from a different role. Explain your role and give this person one of your stickers to indicate the cross-training completion. We will take 3 minutes for cross-training."

**Facilitator Prompt: Start a visible timer: 3 min**

## Sprint 3. DevOps transformation (10 min)

Time to start Sprint 3 (figure 7-19). Distribute *Special Instructions* cards to *Patricia Product* and additional supplies for Sprint 3 and Sprint 4 (see Chapter 4) (with the exception of green masking tape). Run simulation with the new rules:

- team agrees to move to “one-piece flow,” no large PBIs
- simplified/automated deployment process

“It’s time to start the Sprint 3. We are no longer required to deliver in batches. Start splitting your Product Backlog Items to enable a ‘one-piece flow.’ Patricia Product, use the half-sized index cards from your package to create individual PBIs. We will also simplify the deployment process. On your tables you will find new green packages. Now instead of building a feature in a small package and then assembling them all in a deployment package, the feature will be built directly in a new green deployment package. The package will need to include a small PBI work card created by Patricia. Everyone who has been cross-trained by Robert Release can now deploy into production. No special permission from Adam Admin is required.”

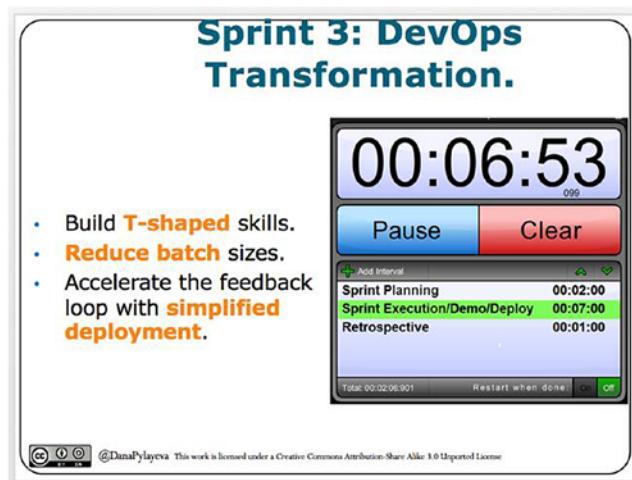


Figure 7-19. Sprint 3. DevOps Transformation

---

### Facilitator Prompt: Start a visible timer: 10 min

---

Start Sprint execution. A few minutes into the Sprint, call everyone’s attention.

“There has been a major security breach across all environments. The company invested in a Total Security Suite. It must be installed now in all the environments. Good news—everyone who was trained by Adam Admin can do it now!”

Give out rolls of green masking tape to Adam Admin and his trainees. Additionally, instruct Harry Hacker that he can no longer hack the environments after the Security Suite installation.

---

Let Adam Admin and his trainees self-organize around the tape sharing. Some people will pair; others will prepare strips of tape. Either of the approaches will highlight a need for collaboration and can be used to draw parallels to Community of Practice during debriefing.

---

Walk around the room, address individual questions as they come up, and watch out for the following red flags:

- Developers or testers are still packing in individual clear packages and then large deployment packages. Clarify that this is no longer necessary; remind them about the green package.

---

**Note** As a facilitator you may use this as an opportunity to modify the game and call these large packages “bugs.”

---

- Confused Patricia Product. Clarify what she needs to do with PBI splitting: for each “5 dogs” work card she needs to create 5 individual “a dog” cards using the half-size index cards from her last Sprint package.
- Harry Hacker is trying to hack the green tape—clarify that he can’t hack it.
- Delivery Board is not updated. Remind the business to update the board regularly.
- Business hasn’t changed the prices and has not asked for new animals. Remind them to drop the price on one animal and encourage them to ask for new ones.

## Final Debrief (\* min)

---

### **Note To Adjust Your Timebox:**

15 min – if you are facilitating a **standard** session

5 min – if you are facilitating **abbreviated** session

---

Bring everyone’s attention to the Delivery Board and the significant increase in delivery in Sprint 3 with the DevOps.

Ask the players to write at least one of their takeaways on a post-it note. Give them two minutes for silent brainstorming activity.

---

***Facilitator Prompt: Start a visible timer: 2 min***

---

**STANDARD OPTION:** Ask the workshop participants to discuss their takeaways at their tables for another 2 minutes and then have each table present a summary to the rest of the workshop participants. When the session timebox is up, thank the players for their participation in the workshop and ask them to add their post-its to the Aha! Moment poster on the way out.

**ABBREVIATED OPTION:** Thank the players for their participation in the workshop and ask them to add their post-its to the Aha! Moment poster on the way out.

## Sample facilitator script for the extended “in-depth” session

Three hours-long session provides an opportunity to include Sprint 4 and facilitate the final debriefing in a fishbowl format.

This version of the game maximizes learning opportunities for the participants. Note that the game you facilitate is only a “means to an end”. Debriefing is where the learning comes together for your players.

Don’t shorten the debriefing time! It is the time for your participants to reflect on their emotions, accomplishments, and learning experienced through the game, to discuss them with other players, to draw parallels, and to build connections with their real-life experience.

The 3-hours workshop runs in two parts with a short 10-min break.

Facilitating this game in a 3-hours timebox provides the most valuable experience to the participants (refer to chapter 6 for complete timeline breakdown).

---

**Note** While there are a few sections of the script below that are identical to the standard version of the workshop, they are included here to streamline the facilitator’s experience. Repeated sections are marked with an asterisk symbol (\*).

---

### Turn and Talk (4 min)\*

As people are gathering in the workshop room, use the following script to introduce the slide in figure 7-20.

“Hello everyone. As you walk into the room, please pick a table and ask your neighbors three questions:

What is your name?

What is your role?

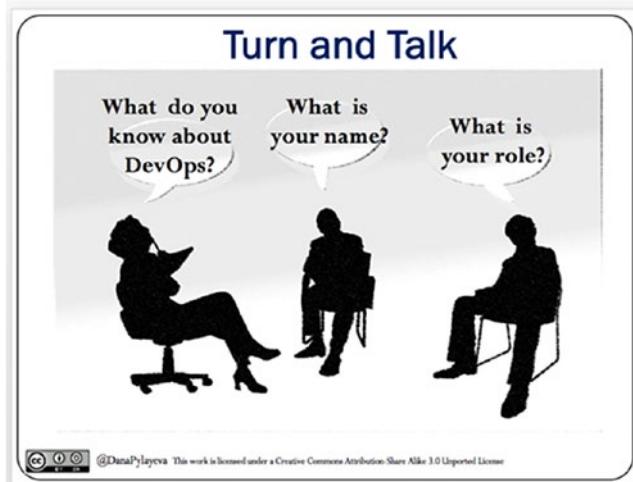
What do you know already about DevOps?"

When it's time to start the session, follow up with the callouts to a few tables:

"What did you learn about people at your table?

Who is already using DevOps practices today?

Who is just starting to learn about DevOps?"



**Figure 7-20.** Turn and Talk slide

### Introduce yourself (1 min)\*

Your own introduction. Keep it short.

### Define DevOps for you (5 min)

Ask participants to take a minute to think about their favorite DevOps definition and discuss it at their tables.

"In spite of the high popularity of DevOps, there is no common definition. Even Gartner analysts in their "Seven Steps to Start Your DevOps Initiative" recommend as step one: "Define DevOps for you." What is YOUR favorite definition?"

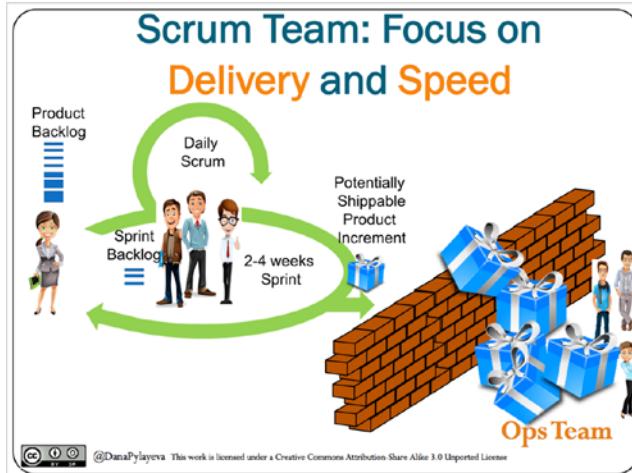
Take a few answers from various tables and follow up with your favorite definition. Alternatively, you may share the one below:

*"A mix of patterns intended to improve collaboration between development and operations. DevOps addresses shared goals and incentives as well as shared processes and tools."*

—Michael Hüttermann *DevOps for Developers*

## Introduce the topic (5 min)\*

Briefly talk about issues with cyclical value delivery. Introduce Dev, Ops, and Business goals misalignment (figure 7-21 through 7-23)



**Figure 7-21.** Focus of a Scrum team slide

“Let’s look closely at some of the issues in a typical organization, where development teams practice Scrum while Operations teams operate in a traditional sequential manner.

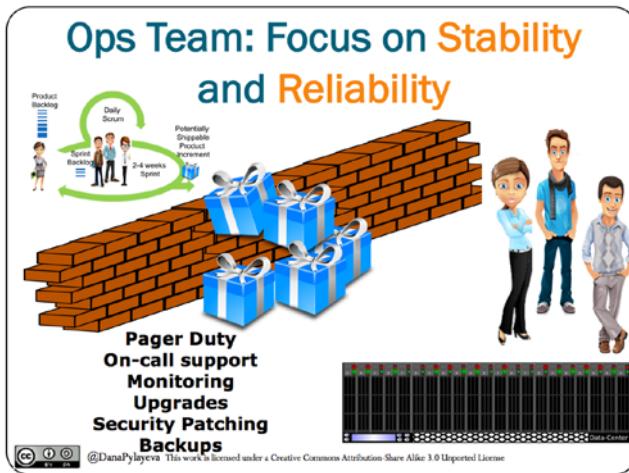
Scrum teams are focused on delivering features and maintaining good flow. At the end of each Sprint they are expected to deliver a potentially shippable increment of a product. More often than not, they throw this increment ‘over the wall’ and move on to the next Sprint.

What happens to it afterwards is not their concern—their Sprint is DONE!”

Introduce Operations team’s perspective with slide 7-22;

“What do we have on the other side of the wall? Life isn’t pretty—escalation procedures, on-call pager duty, monitoring—everything to ensure that current systems that generate revenue are stable and have adequate throughput. The operations team is focused on ‘keeping the lights on.’”

Operations resist change. They know, when all these increments accumulate in IT operations, they can cause deployment issues and lead to post-deployment firefighting in production.”

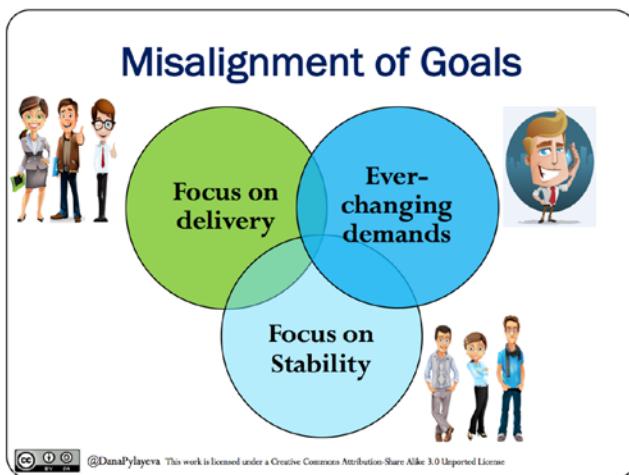


**Figure 7-22.** Focus of Ops team slide

Use slide 7-23 to talk about misalignments of goals:

"Add to that a continuously increasing pressure from the customers with ever-changing demands and you get a complete picture."

When deployments are rare and manual, it is close to impossible to reconcile these goals. What is the solution and how can we move forward? Let's experiment and find out!"



**Figure 7-23.** Misalignment of goals slide

## Game Setup (10 min)\*

Use slides from figure 7-24 through 7-29 to introduce the game rules:

“Welcome to Chocolate, Lego and Scrum simulation game!

Inspired by ‘The Phoenix Project,’ this game will let you experience 4 Sprints in the life of development and operations.

We will simulate the flow of work through an enterprise, reconcile the goals of Business, Development, and Operations, as well as demonstrate the benefits of moving from cyclical to continuous delivery of value.

Adjust the following paragraph to your room setup, the number of development, operations, and business teams:

In this room we have three Scrum teams, one operations team and one business team. Go ahead, open the gift bags on your tables, take out the roles package and pick a role for yourself.

Take two minutes to learn about your roles and introduce your game avatar to the team members at your table. Notice the dependencies you have on other team members and other teams.”

### ***Facilitator Prompt: Start a visible timer: 2 min***



**Figure 7-24.** Game roles slide

Bring their attention to the Game flow handout (figure 7-25):

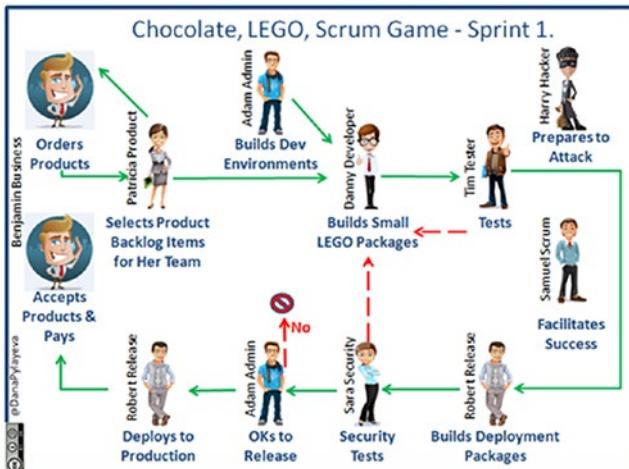
“On your tables you will find a Game flow handout.

Game starts with Patricia Product working with Benjamin Business to select the first product backlog item for her team.

In the mean time, Danny Developer and Tim Tester need to find Adam Admin from the Ops team so that their environments can be created.

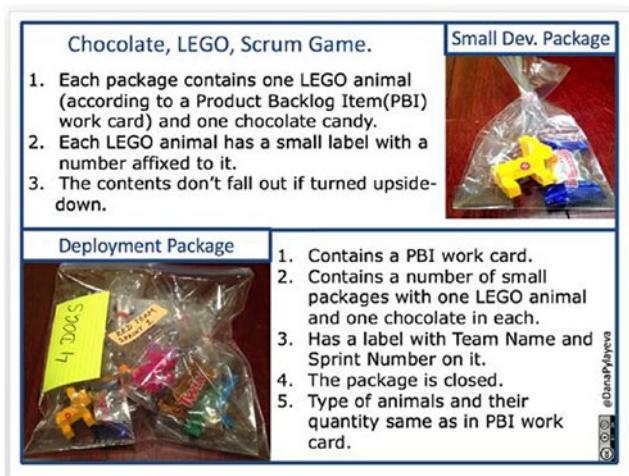
When Danny has an environment and knows what to build, he can start building Lego Animals. The package has to be tested by Tim Tester and packaged by Rob Release. Sara Security has to run a security scan on it.

It is only then, with Adam Admin's permission, that the deployment package can be deployed into production by Rob Release. If Benjamin Business likes it, he will pay money for it to the Scrum team."



**Figure 7-25.** Game flow handout

Point out to the participants that they can reference acceptance criteria on the back of the handout (figure 7-26).



**Figure 7-26.** Acceptance criteria handout

How will the players know *what kind* and *how many* Lego animals they need to build? Explain the rules of the Animal Exchange Marketplace (figure 7-27).

**Lego Animal Exchange**

	Demand	Batch Size	PRICE PER BATCH
			Sprint 1 Sprint 2 Sprint 3
DOGS	15	5	100
CATS	9	3	50
SNAKE	5	5	50

Time  
1-  
2-  
3-

What Will You Build?  
Ask the Business Team!

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Figure 7-27. Animal Exchange slide

"How do we know what to build? All orders are placed at the Animal Stock Exchange. The business team can ask for any type of animal, request features they want, and decide a price for it. There are a few cards on the board to get us started."

Additional clarification for the business team:

"Orders can be placed in the increments of the batch sizes. Each order from the market (for example, "5 dogs" or "10 giraffes") is counted as one story. To generate business value, the story must be delivered to the market in its entirety. Remember, you will be paying money to the team! Don't agree to accept broken products and don't purchase items that exceed the quantity you've ordered."

Instruct the business team to designate one person to be in charge of updating the Delivery Board (figure 7-28) with the total value of products delivered by each team during a particular Sprint.

**DELIVERY BOARD**

TEAM	Sprint 1	Sprint 2	Sprint 3
1			
2			
3			

Figure 7-28. Animal Exchange slide

"Remember, if you are Danny Developer or Tim Tester, you can't start your work if you don't have an environment. Adam Admin is the only one who knows how to build it. Go find him and ask him to create the environments for you." (figure 7-29)



**Figure 7-29.** Environments Sample slide

## Meet your customer (5 min)

Call out all *Patricia Products* from all development teams and walk with them to the business table.

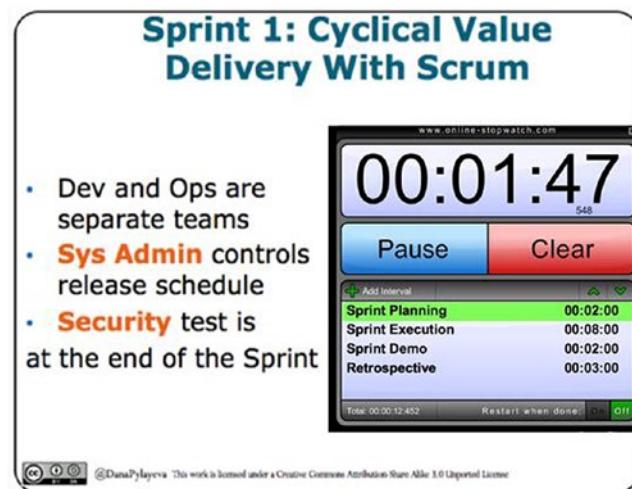
"It's time to meet your customer! If you have a Patricia Product role card, please come forward and join me for a customer visit. Please meet your customer: Benjamin Business. You will be working together pretty closely for the next 4 Sprints. Review the Animal Exchange Board together and discuss what animal is needed the most at the current market. Pick up a PBI work card for that animal and bring it back to your development team. Let's take 3 min for this."

### **Facilitator Prompt: Start a visible timer: 3 min**

## Sprint 1 (15 min)

Start Sprint 1 (figure 7-30). Instruct Scrum Masters in each team to monitor the timeboxes on the interval timer (visible on the screen):

1. Sprint Planning - 2 min
2. Sprint Execution - 8 min
3. Sprint Demo - 2 min
4. Retrospective - 3 min

**Facilitator Prompt: Start a visible timer: 15 min**

**Figure 7-30.** Sprint 1 slide for extended version

At this time find Adam Admins and give them envelopes with *Special Instructions* for Sprint 1. This is a *Secret Information* in the game, only revealed to Adam Admin:

“Deployment is not allowed in Sprint 1. We are in the **code freeze**. As system administrators you will need to make sure that nothing gets deployed into production this Sprint!”

Next, stop by Sara Security’s table and instruct Sara Security to open her *Special Instructions* envelope. It’s time to select three security issues for the first Sprint.

“Open your envelopes. Pick three random numbers within the range specified in the instructions card. These will be security issues for the current Sprint. Do not share this information with your Scrum Teams. When a Scrum Team brings you a deployment package for testing, search for these numbers on the Lego animals. If you find one, send the entire package back for rework.”

Instruct Samuel Scrum players to ensure the Scrum team follows the process and to help them remove impediments. Walk around the room and verify rules comprehension.

As you walk around the room, address individual questions as they come up and watch out for the following red flags:

- Developers or testers are working without a dedicated environment. Call this out and instruct them to find Adam Admin.
- Someone is deploying products into production in Sprint 1. Call Adam Admin’s attention—we are in the code freeze!

- Teams are skipping security tests. Call this out and instruct them to find Sara Security
- Confused Patricia Product. Clarify the rules and expectations of the role.
- Disengaged Samuel Scrum. Clarify the rules and expectations of the role.

When the timebox ends, facilitate a debriefing.

## Sprint 1 Debriefing (10 min)—expose the difference in perspectives

Start with the Scrum teams:

“Has anyone run a 3-min Retro at the end of the Sprint? What were your observations?

How much were you able to deliver in Sprint 1?”

It is very likely that in this version at least one of the development teams will report that they've built a number of packages.

“Let's check the Delivery Board. The board is EMPTY! Let's hear from Benjamin Business. Have you received any products this Sprint?”

The board is empty at the moment, as nothing had been *deployed* into production. How can this be?

After watching surprised developers' faces for a few seconds, ask one of the Adam Admins to read out loud the Special Instructions card he got at the beginning of this Sprint. We were in a code freeze!

Had any team encountered security issues? If yes, ask them to share their experience with others.

## Sprint 2: Optimizing Scrum Team (15 min) “Shift security to the left.”

Announce the following rule changes for Sprint 2 (figure 7-31)

“Let's make some changes for Sprint 2. **First**, we will make our Development Team truly cross-functional. Both Danny Developer and Tim Tester may now work on any development or testing tasks to help build faster and with better quality. **Second**, Samuel Scrum, go ahead and invite Sara Security to join your Scrum team. She will now work with the team from the very beginning. **Last**, no more code freeze, Robert Release may deploy now.”

**Sprint 2: Optimizing the Scrum Team**

- Move **Security** to the left - learn about security issues **before** implementation.
- First release into production: Only **Release Engineer** can deploy.

www.online-stopwatch.com  
00:01:36  
00:03:00  
Pause Clear  
Add Interval  
Sprint Planning 00:02:00  
Sprint Execution 00:08:00  
Sprint Demo & Deployment 00:02:00  
Retrospective 00:03:00  
Total: 00:23:00  
Restart when done Off Save Timer

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**Figure 7-31.** Sprint 2 slide

Start Sprint 2.

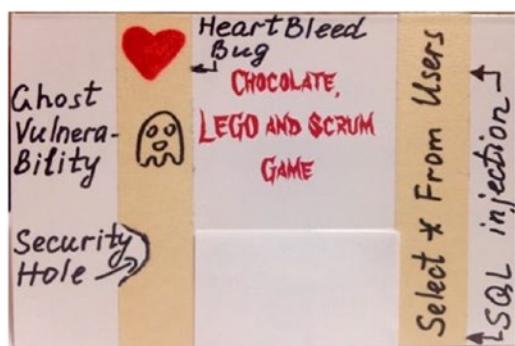
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**Facilitator Prompt: Start a visible timer: 10 min**

---

Distribute Special Instructions to Benjamin Business (*it's time to start changing prices on the Lego Animals*) and Sara Security (*watch out for Harry Hacker—start checking the environments this Sprint*).

Now find your Harry Hackers and instruct them to start hacking if they haven't started in Sprint 1. Let them roam around and randomly introduce security issues into environments (figure 7-32).



**Figure 7-32.** Security Issues/Hacks

---

**Note** At this time, players are very engaged in the development process. Harry Hackers can do a lot of damage before getting noticed by teams.

---

Walk around the room, address individual questions as they come up, and watch out for the following red flags:

- Development team is working in the environment that has security issues (hacked)—call Sara Security. She must halt further work for this development team until environment is patched.
- Someone (other than Robert Release) is deploying products into production in Sprint 2. Call Adam Admin's attention—unauthorized deployment must be stopped.
- Disengaged Samuel Scrum. Remind him, he is the Master of Scrum, a servant leader and needs to be helping the team and organization follow the process, ensure the team has everything they need, and remove impediments.
- Timid Harry Hacker—clarify the rules and encourage more hacking. You as a facilitator may need to step in and hack a few environments too!
- Business is excited to receive their first products and forgetting to track the value they received on the Delivery Board.

## Sprint 2 Debriefing (10 min)—Ineffectiveness of Local Optimization. Running into system constraints.\*

Review the Delivery Board again and compliment the teams on the delivered value. Discuss with the participants how the small steps taken toward expanding their skill helped them speed up the development. You may say something like this:

"Has anyone run a 3-min Retro at the end of this Sprint? What were your observations?

Was your experience different in Sprint two? What has changed in the dynamic after Sara Security got to be included in the Scrum team?

Let's hear from the Business team. How was it for you this Sprint?

Now to Scrum teams. How was it for you? What surprised you the most?

Operations team, Security—would you like to share your perspective?

Harry Hacker, what happened when teams realized you were hacking their environments?"

Expected outcome: teams were able to deliver, but might have found that the price of their animals had dropped. Additionally, unable to patch their own environments, they were slowed down by security patches at times. Highly specialized skills of the team members caused systemic issues and led to bottlenecks.

## Break (10 min)

Use this opportunity to distribute additional building blocks and chocolate as well as cross-training simulation set (figure 7-33).

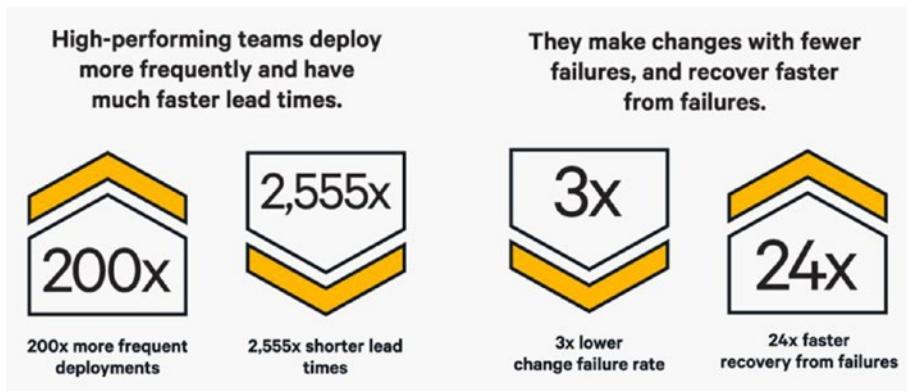


**Figure 7-33.** Cross-training simulation set for Sprint 3

## Introduce DevOps (13 min)

Bring players' attention again to the slow speed of delivery and massive inefficiencies of the current process. Transition to the DevOps introduction (figure 7-34):

"Did you notice how different goals of each team, lack of communication, and highly specialized roles of the players prevented them from delivering value to the business? That is exactly the problem area in which DevOps can help! According to "2016 State of DevOps Report" by Puppet Labs, organizations experience both increased speed of delivery as well as increased stability with DevOps.



**Figure 7-34.** Findings reported by 2016 State of DevOps Report, Puppet Labs

Continue presentation (figure 7-35):

“Ready to start your DevOps transformation initiative? There are many ways to start and each one will require changes in technology, people, process, and culture.

One way to start would be from visualizing your flow. Get a better understanding of how a value delivering *planned work* moves through your organization. Learn to optimize that.

Understand where *unplanned work* causes the most disruption and how you can minimize its impact.

Be aware of different types of bottlenecks:

**Tool:** Lack of appropriate tools may limit the ability of the system to produce more.

**People:** Mental models held by people or lack of skills can cause behavior that becomes a constraint. There are many examples of this type of bottleneck. Front-end vs. back-end developers on a Scrum Team is one of the examples. Another very common pattern we experienced in Sprint 1: Tim Tester was only doing ‘testing tasks’ and Danny Developer was only doing ‘development.’ Even though they were in a Scrum Team, they acted based on their old ‘functional team’ mental model. This narrow specialization hindered the team’s ability to deliver.

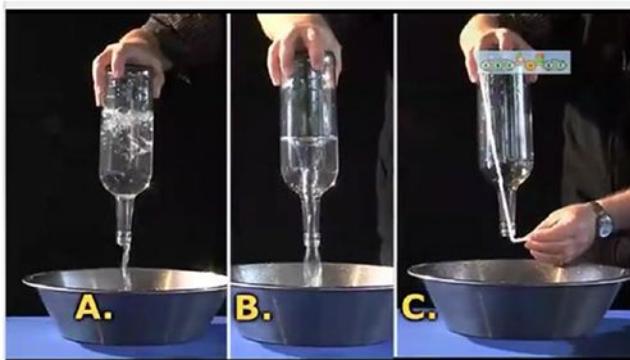
**Policy:** A written or unwritten policy can impede the system’s ability to deliver.”



**Figure 7-35.** Optimize your flow

Introduce your audience to Theory of Constraints. You may want to show all or part of this 6-min video. An excellent physical demonstration of Theory of Constraints by Arrie van Niekerk (figure 7-36):

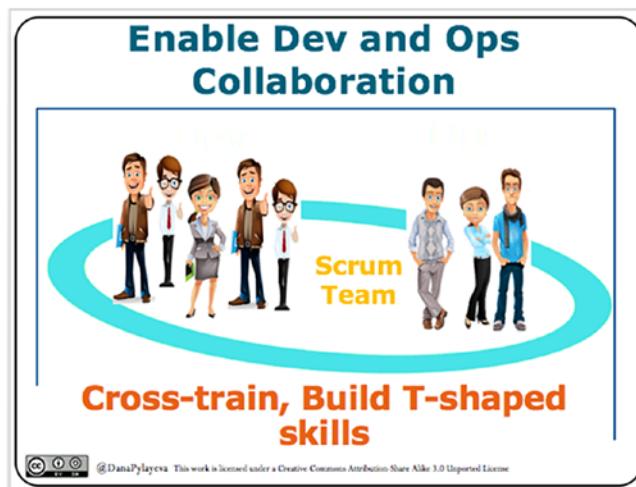
<https://www.youtube.com/watch?v=PMiTVDiNQ4>



Theory of Constraints 3 Bottle Demo to improve Flow

*Figure 7-36. Optimize your process to optimize the flow.*

"In order to start addressing the bottlenecks in your process, bring Operations into your team! (figure 7-37) They know how your system runs in production and can provide valuable metrics on its performance and scalability. Leverage that feedback to make your system more resilient. Go one step further and start cross-pollination of knowledge in your team. Instead of having "I"-shaped skills (deep specialization in one area), work on developing T-shaped skills (deep specialization in one area and complimentary skills in many other areas).



*Figure 7-37. Collaboration beyond Scrum team*

## Cross-training (7 min)

Bring everyone's attention to the cross-training kits on their tables (distributed during break) (figure 7-33) and explain the cross-training activity.

Once it is completed, they will be able to play additional roles and help elevate the constraints in the overall process. For example, in case of environment patching, it will now be one of the skill sets of Adam Admin and all of his trainees.

**Note** Remember to adjust the script to accurately reflect the three colors of the stickers you were able to obtain.

"Now we are ready to start our DevOps transformation. Let's work on developing the T-shaped skills. Every group has received a set of stickers. Scrum team got the orange stickers, Operations got green ones, and Sara Security received the red stickers. Walk around the room and find someone from a different role. Explain your role and give this person one of your stickers to indicate the cross-training completion. We will take 5 minutes for cross-training."

### ***Facilitator Prompt: Start a visible timer: 5 min***

Once the cross-training timebox is up, start Sprint 3.

## Sprint 3. DevOps transformation (15 min)

"It's time to start the Sprint 3 (figure 7-38). We are no longer confined by our role titles. If you were cross-trained, you can now perform that additional role. For example, everyone who has been cross-trained by Robert Release can now deploy into production. No special permission from Adam Admin is required."

### Sprint 3: DevOps Transformation.

- First steps toward DevOps
- Build **T-shaped** skills.
- Automate environments provisioning— anyone can do it!
- Optimize the system



Activity	Duration
Sprint Planning	00:02:00
Sprint Execution\Demo\Deploy	00:10:00
Retrospective	00:03:00
Total	00:15:00

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**Figure 7-38.** Sprint 3—DevOps Transformation

***Facilitator Prompt: Start a visible timer: 15 min***

---

Start Sprint execution. A few minutes into the Sprint, call everyone's attention.

"There has been a major security breach across all environments. The company invested in a Total Security Suite. It must be installed now in all the environments. Good news—everyone who was trained by Adam Admin can do it now!"

Give out rolls of green masking tape to Adam Admin and his trainees. Additionally, instruct Harry Hacker that he can no longer hack the environments after the Security Suite installation.

---

Let Adam Admin and his trainees self-organize around the tape sharing. Some people will pair, others will prepare strips of tape. Either of the approaches will highlight a need for collaboration and can be used to draw parallels to Community of Practice during debriefing.

---

Walk around the room, address individual questions as they come up, and watch out for the following red flags:

- Scrum Team continues to work in the old environments. Ask them to stop the work and get them upgraded.
- Adam Admin is the only one who performs environment upgrade. Remind him to get help from his trainees.
- Harry Hacker is trying to hack the green tape—clarify that he can't hack it.
- Delivery Board is not updated. Remind the business to update the board regularly.
- Business hasn't changed the prices and has not asked for new animals. Remind them to drop the price on one animal and encourage them to ask for new ones.

## Sprint 3 Debriefing (10 min)—First results

Review the Delivery Board again and compliment the teams on the delivered value. Discuss with the participants the impact of cross-training on their ability to optimize the system as a whole. You may say something like this:

"Has anyone run a 3-min Retro at the end of this Sprint? What were your observations?

How has your experience changed this Sprint?

Let's hear from Adam Admin this time. What about Robert Release?

Let's hear from the Business team. How was it for you this Sprint? Have you changed any prices on the market?

Now to Scrum teams. How was it for you? What surprised you the most?"

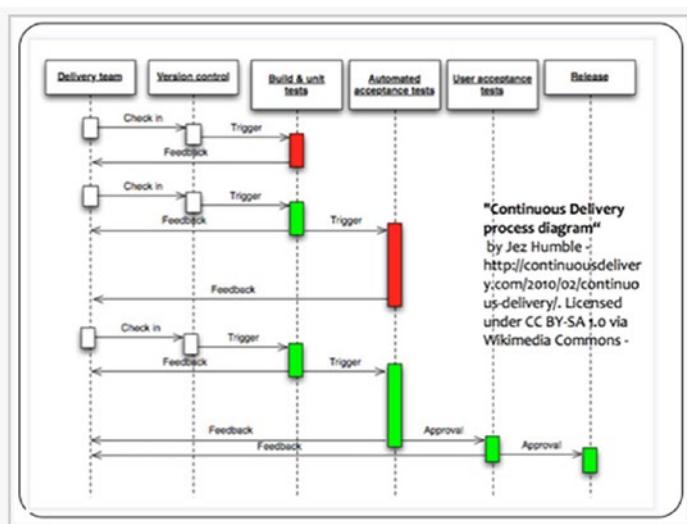
Expected outcome: teams were able to deliver more products and were able to respond faster to emergencies.

## Introduce Continuous Delivery (10 min)

Introduce Continuous Delivery and delivery pipeline (figure 7-39, 7-40):



**Figure 7-39.** Continuous Delivery definition



**Figure 7-40.** CD process diagram

“Continuous Delivery allows teams to have software always in ‘release-ready’ state and to get any changes into production safely, quickly, and in a sustainable way.”

Touch on the importance of Continuous Integration:

“How many of you have implemented Continuous Integration (CI) on your projects? CI practice requires developers to check in their code into a shared repository multiple times a day. With every check-in, an automated build kicks in to validate and expose issues faster. CI is a prerequisite for implementing Continuous Delivery.”

Talk about small batches:

“One of the principles of Continuous Delivery talks about working in small batches. Look for opportunities to split your Product Backlog Items into smaller vertical slices. Smaller sized PBIs make it easier to move towards creating a ‘one-piece flow’ of value through the delivery pipeline.”

Use traffic analogy to talk about one-piece flow (figure 7-41).



**Figure 7-41. Smaller Batches**

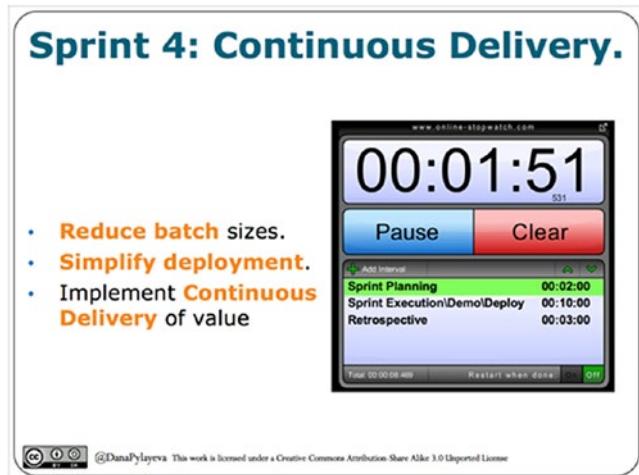
While not covered in this simulation game, as a facilitator you may choose to expand on the changes in architecture that are essential with Continuous Delivery as well as the benefits from wrapping every engineering change in a feature flag.

## Sprint 4 Continuous Delivery (15 min)

Prepare the teams for Sprint 4 (figure 7-42). Distribute *Special Instructions* cards and half-size index cards to *Patricia Product*.

Distribute green packages to Scrum Teams and run last Sprint of the simulation with the new rules:

- team agrees to move to “one-piece flow”, no large PBIs
- simplified/automated deployment process



**Figure 7-42.** Sprint 4: Continuous Delivery

“It’s time to start the Sprint 4. We are no longer required to deliver in batches. Start splitting your PBIs to enable a ‘one-piece flow.’ Patricia Product, use the small half-size index cards from your package to create individual stories.

We will also simplify the deployment process. On your tables you will find new green packages. Now instead of building a feature in a small package and then assembling them all in a deployment package, the feature will be built directly in a new green deployment package. The package will need to include a small half-size PBI work card created by Patricia. Everyone who has been cross-trained by Robert Release can now deploy into production. No special authorization is required in this Sprint.”

#### **Facilitator Prompt: Start a visible timer: 15 min**

Walk around the room, address individual questions as they come up and watch out for the following red flags:

- Developers or testers are still packing in individual clear packages and then large deployment packages. Clarify that this is no longer necessary, remind them about the green package.

**Note** As a facilitator you may use this as an opportunity to modify the game and call these large packages “bugs.”

- Confused Patricia Product. Clarify what she needs to do with PBI splitting: for example, for each “5 dogs” work card she needs to create 5 individual “a dog” cards using the half-size index cards from her Sprint 4 package.

- Harry Hacker is trying to hack the green tape—clarify that he can't hack it.
- Delivery Board is not updated. Remind the business to update the board regularly.
- Business hasn't changed the prices and has not asked for new animals. Remind them to modify price on one animal and encourage them to ask for new ones.

Once the timebox is up, bring everyone's attention to the Delivery Board and the large pile of green packages on the Business Team table.

## Final debriefing with Fishbowl format—20 min

Set up five chairs in a semi-circle (or a straight line if the space is tight) in front of the room. Explain the rules of this format (figure 7-43):



Figure 7-43. Fishbowl retrospective

"Only people who are sitting in the fishbowl can speak. Anyone is invited to join the fishbowl as long as there is an empty chair. Whenever the last chair is taken, someone from the group must leave the fishbowl before someone else can join to speak."

For our first group, let's ask for volunteers from different roles and then anyone can join."

By this time people will be excited to talk and share their ideas and game feedback. Remember, if you would like to share an observation or respond to a comment, you need to get into the fishbowl and sit on one of those 5 chairs.

## CHAPTER 8



# Play history and modifications

## Minimum Playable Version (Version 0)

This game originated as a small experiment for an internal meetup at **Rakuten Marketing** (figure 8-1). Inspired by “The Phoenix Project” and empowered by “Gamification” training from Coursera, the author pulled together a story plot, some basic rules and props, and then gathered colleagues to play-test it.

The first game players had to use name tags for their roles. Even though most of the current game dynamics hadn’t been invented at that time, the game still turned out to be fun. It also helped the players to broaden their views and learn new things about DevOps and each other’s roles. The game was far from perfect, but it showed a lot of promise!



**Figure 8-1.** Rakuten Marketing Thinkshare meetup, November 2013

## First Public Workshops with version 1.0

Fast-forward to the game’s first public appearance at **Global Scrum Gathering New Orleans (SGNOLA)** in May 2014 (figure 8-2).



**Figure 8-2.** Global Scrum Gathering, New Orleans, May 2014

The game had been improved with new Scrum Team's and Operations Team's role cards (figure 8-3). It now had a solid story plot and simulated market demand fluctuations with Animal Exchange dynamic. With introduction slides, debriefings, and a final retrospective at the end, it evolved into a full 90-min workshop.



**Figure 8-3.** First role cards (version 1.0)

The first participants' feedback was mixed. Some of them wondered whether the game had the right balance of learning vs. fun and hoped for more learning. The others liked the game and wished for some written guidance on its facilitation. The feedback from the former and interest from the latter inspired the author to pursue further game development and to start the work on the first facilitator guide at Leanpub.

**Global Scrum Gathering Berlin** (2014) brought in more feedback on the role cards, requests for more instructions, and an idea of remixing the workshop for better "concept" and "concrete practice" rhythm.

This feedback was incorporated into the next version of the workshop at **Toronto Agile and Software 2014** (figure 8-4) and included the following:

- better game flow;
- supplemental players' handouts (5-7 pages of instructions with additional details of all roles and their interdependencies);
- table covers (to simplify clean-up);
- stickers (to "Level Up" at the game's end).



**Figure 8-4.** Toronto Agile and Software, October 2014

At **Play4Agile 2015** the game was facilitated for a group of 14 Agile Coaches (figure 8-5). This experience had proven to be the most impactful for further game development. Feedback and new ideas inspired the next version of the game (v2.0) and resulted in the following changes:

- introduction of two new characters (Benjamin Business and Harry Hacker);
- avatar substitution for Tim Tester, Robert Release, and Adam Admin;

- complete redesign of all role cards with the addition of clear role dependencies;
- retirement of supplemental players' handouts.



*Figure 8-5. Play4Agile, February 2015*

## Public workshops with version 2.0

The re-invented role cards (figure 8-6) were introduced in Russian at **Agile Days 2015** in Moscow, where the game was facilitated in 90-min format. The game received good feedback on the new cards' design at that time.



Figure 8-6. Russian role cards for Agile Days 2015

The English version of this design (figure 8-7) became the standard for all workshops that followed. Around the same time, a Russian version of facilitation instructions was published on Leanpub. For the first time since the initial release of the book, the cards were made available on Leanpub in both languages.

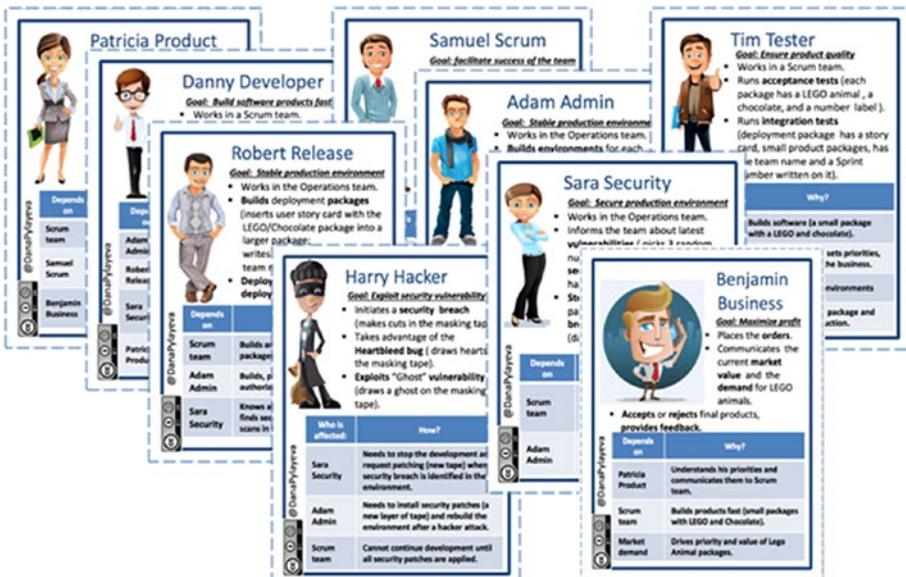
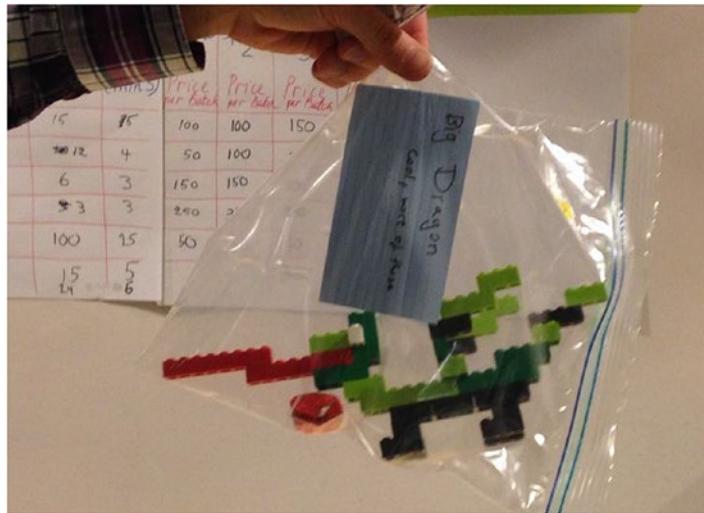


Figure 8-7. Role cards for version 2.0 of the game

The next set of modifications was undertaken for a 3-hours workshop at **XP2015**. The following changes improved the game further:

- a better delineation of the Animal Exchange Marketplace dynamic (with a facilitator-defined first set of PBIs and their prices and participant-driven price/demand changes later in the game);
- introduction of play money (this had a major impact on people's engagement and increased their interest in building more complex products (figure 8-8));
- continuous delivery simulation in Sprint 4 (figure 8-9) (with individual green "secure" packages permitted for direct deployment to "production");
- Total Security upgrade in Sprint 3 (simulates with a request to rebuild all the environments with a layer of green tape).



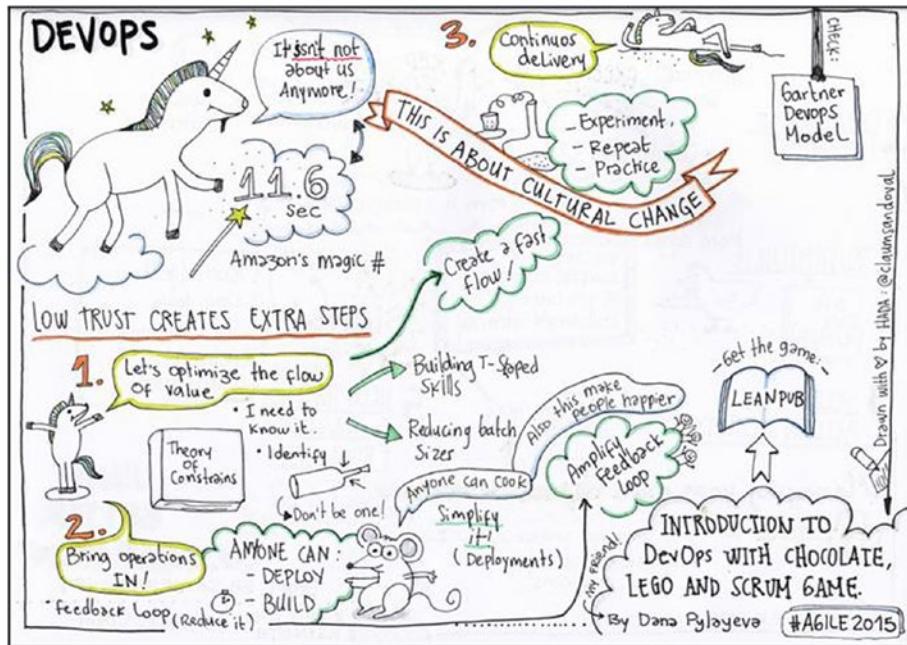
**Figure 8-8.** XP2015—big dragon with a flame—done!



**Figure 8-9.** XP 2015—stakeholders made happy with continuous delivery

The XP2015 experience was valuable and effective for both the participants as well as the facilitator. The three-hours timebox provided ample time for the debriefings. The small group size of 30 people allowed for a lot of interaction and individual attention for each participant.

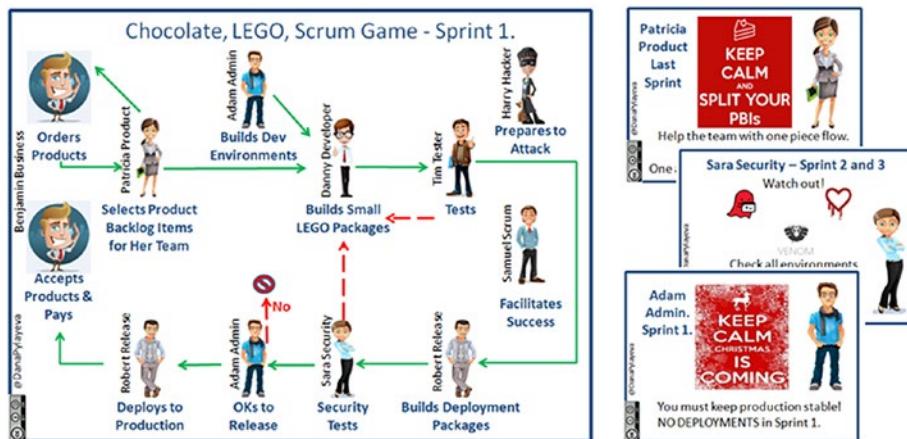
The **Agile 2015** experience was the most rewarding and the most challenging by far. The author had to *scale the game up* to 100 players and at the same time *scale it down* to a 75-min timebox. This was also the first time when a secondary facilitator was engaged to assist with managing the Animal Exchange Marketplace dynamic. In spite of all these challenges, the workshop was successful and delivered clear learning for the participants (see figure 8-10).



**Figure 8-10.** A sketchnote created by Claudia Sandoval during the workshop

With all the feedback gathered at Agile 2015, the next modification was in order.

The new iteration of the game brought in a one-page handout with a clear flow sequence chart as well as new modification cards (figure 8-11).



**Figure 8-11.** New game elements introduced after Agile 2015

The addition of modification cards formalized “surprise instructions” previously delivered verbally by a facilitator. These changes proved to be beneficial for further game streamlining and tested very well in **Global Scrum Gathering Prague** (figure 8-12) and **Rakuten Technology Conference** (figure 8-13).



**Figure 8-12.** Global Scrum Gathering Prague 2015 (90 min—60 people)



**Figure 8-13.** Rakuten Technology Conference 2015 Tokyo (90 min—45 people)

A mechanism for feedback collection was further improved with the introduction of the *Aha! Moment* poster at **Agile and Beyond 2016** (figure 8-14). This made the “conclusion” part of the workshop much more effective and facilitated post-workshop sharing of key takeaways.



**Figure 8-14.** Agile and Beyond 2016—first use of the Aha! Moment poster

At the time of writing, the *Chocolate, Lego and Scrum Game* is scheduled for three more public appearances at the following gatherings:

- Regional Scrum Gathering Porto, December 2016
- Agile/Lean Practitioners of North Jersey, December 2016
- Agile Practitioners 2017, January 2017

How will the game change before and after these events? Will there be a new game version at some point? How can you as a future facilitator help the game evolve? While the game has a good balance at the moment, the feedback from participants can always trigger new ideas.

As you start facilitating the game yourself, keep an eye on what works best in your setting and what part of the game can be simplified further. Experiment with the game dynamic and try new props, share your discoveries and pass your feedback to the author and other facilitators in the community.

Stay connected! Tweet your photos with #chocolategogame.

Ask your questions, share your modifications, post your participants' *Aha! Moment* on the game's new Facebook page: <http://bit.ly/chocolegogameconnect>.

# CHAPTER 9



## Key takeaways

This chapter provides samples of the “Aha Moments” (figure 9-1) shared by participants in their final debriefings of Chocolate, Lego and Scrum game at various conferences. Takeaways are grouped by themes. The original style of the comments has been preserved.



**Figure 9-1.** Sample of key takeaways shared by the participant

## Cross-training

“Understanding all the roles in DevOps makes it easier to be productive.”

“Cross-training, while beneficial, initially impacts the throughput of the team.”

“Cross-training helped connect with the team as opposed to ordering them.”

“Cross-training enabled teams to grow and interchange skills.”

“Share what you know, cross-train!”

“Cross-training in development, environments and security reduced stress and chaos.”

“Sharing knowledge leads to innovation.”

“T-shaped skills help team move faster/takes pressure off individual.”

## Security

“Move security to the left.”

## Focus on a Sprint Goal

“When goal is visible (per sprint), people will naturally want to overcome institutional silos, otherwise people will be complacent”

## Misalignment of goal and incentives between Development and Operations

“Ops doesn’t see the money when they are not part of the rest of the delivery team.”

## Open Communication

“Communication up and down the org is very important.”

“Collaboration and willingness to work together + have fun is a key!”

## Value of Early Feedback

“PO’s don’t know what they really want.”

“Build prototype first to show and validate.”

“Done is better than perfect”

## DevOps Culture

“Team members should work closely.”

“Roles may be shared.”

“Unicorn rises!”

## Feedback on the simulation game

“Lots of fun, great energy, and group dynamic. Tangible illustration of benefits of DevOps ► CI ► CD.”

“Lots of takeaway values. Gamified environment actually made it easier to have conversations/exchange experience with people at my table.”

“Fun. Informative, interactive—drove home important key real live problems”

## The value of “Aha! Moments”

As you start facilitating the game yourself, the benefit of gathering the Aha! Moments will become even more apparent. Yes, the sheer act of inviting your group to think and write makes the workshop conclusion stronger. Collecting their thoughts and putting their takeaways on paper helps your players internalize their learning. This last moment of reflection allows them to draw new parallels from a “magic circle” of the game to their real-life experiences.

Additionally, these tweet-size reflections allow you to gauge effectiveness of the simulation, closing the feedback loop and giving you ideas for the next round.

Keep an eye on what works best in your setting and what part of the game can be simplified further. Experiment with the game dynamic and try new props, share your discoveries and pass your feedback to the author and other facilitators in the community.

Stay connected! Tweet your photos with #chocolatelegogame.

Ask your questions, share your modifications, and post your participants' *Aha! Moment* on the game's new Facebook page: <http://bit.ly/chocolegogameconnect>.

## APPENDIX A



# Handouts, Role Cards, and Posters

The comprehensive game description provided in this book will allow you to customize the game to your environment, your group size, and your settings. The images of role cards, game handouts, and flipchart posters included in this appendix will help you to prepare as facilitator and enable a good game flow for your learners.

## Electronic version of the appendix

To facilitate printing, an electronic version of the appendix is available for download at the book's information page on Apress. Click on *Download source code* button to be redirected to a corresponding GitHub repository on Apress.

---

**Tip** Print the role cards on a heavy cardstock or laminate them if you plan to run the game with a large number of groups.

---

## Role cards

Every workshop participant will use a role card as a reference in this simulation. There are nine distinct roles. Based on your group size you will need to print an appropriate number of role cards for each role. Please reference the table [A-1](#) to find out how many cards you need to print.

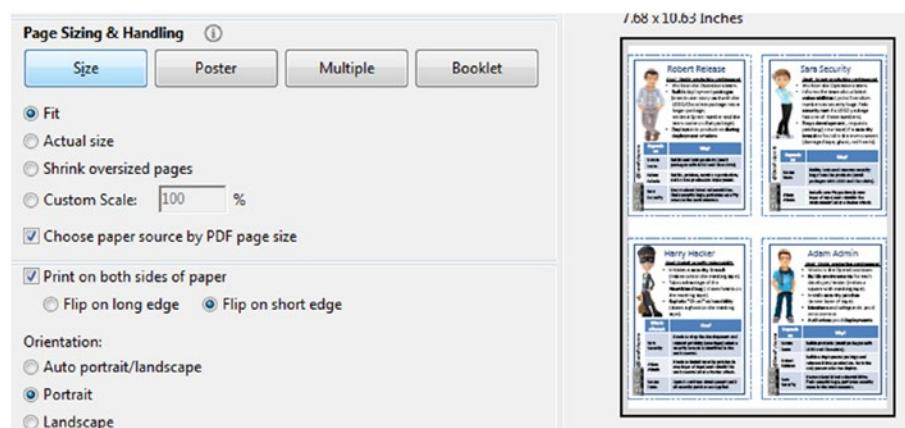
## APPENDIX A ■ HANDOUTS, ROLE CARDS, AND POSTERS

**Table A-1.** Number of role cards needed for each role based on the group size

Group Size	15 - 22	22 - 28	28 - 42	42 - 56	57 - 84
<b>Number of Scrum Teams</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
Benjamin Business	2	2-4	3-6	4-8	6-12
Sara Security	1-2	2	3	4	6
Robert Release	1-2	2	3	4	6
Adam Admin	1-2	2	3	4	6
Harry Hacker	0	2	1-3	2-4	3-6
Patricia Product	2	2	3	4	6
Samuel Scrum	2	2	3	4	6
Tim Tester	2-4	2-4	3-6	4-8	6-12
Danny Developer	4-6	6-8	6-12	12-16	12-24

You can make copies of the pages in this appendix or download an electronic version of the cards for a high-quality printing.

Please note, there are four role cards per page. Please use the aforementioned settings when printing to avoid additional adjustments between Letter and A4 paper sizes (Figure A-1):



**Figure A-1.** Printer setting for role cards printing

## Patricia Product role card



### Patricia Product

**Goal: Maximize the value of the product and the work of the Development Team**

- Helps the Development Team to pick the next Product Backlog Item (PBI) for implementation.
- Clarifies PBIs with Benjamin Business (the type of LEGO animal to build).
- Collects **feedback**.

Depends on	Why?
Dev. Team	Builds products (small packages with LEGO and Chocolate).
Ops Team	Deploys products into production, finds and addresses emergencies.
Samuel Scrum	Removes Impediments, time boxes, facilitates process improvements.
Benjamin Business	Places orders, sets prices, accepts or rejects the products, gives feedback.

@DanaPyayeva

## Danny Developer role card



**Danny Developer**

**Goal:** Build quality products fast

- Works in a Scrum team.
- **Builds and tests software** (a small package with a LEGO animal and a chocolate candy).
- Pastes a label with a number on each LEGO animal.

Depends on	Why?
Adam Admin	Builds and patches the environments (dev, staging, prod).
Tim Tester	Performs variety of tests as per team's Definition of Done.
Robert Release	Builds a deployment package and releases it into production.
Sara Security	Finds security bugs, performs security scans of the environments.
Patricia Product	Defines/clarifies and prioritizes PBIs. Gets feedback from Business

@DanaPyayeva



## Tim Tester role card



**Tim Tester\***

*Goal: Ensure product quality*

- Runs **acceptance tests** (each package has a LEGO animal , a chocolate, and a number label ).
- Runs **integration tests** (deployment package has a PBI work card, small product packages, team name and a Sprint number).

\* Separate QA role is a common anti-pattern on a new Scrum Team.

Depends on:	Why?
Danny Developer	Builds software (a small package with a LEGO and chocolate).
Patricia Product	Defines/clarifies and prioritizes PBIs. Gets feedback from Business.
Adam Admin	Builds/patches the environments.
Robert Release	Builds a deployment package and releases it into production.

@DanaPyayeva

## Samuel Scrum role card



**Samuel Scrum**

*Goal: Servant Leadership for the Scrum Team*

- Works in a Scrum Team.
- Facilitating Scrum events
- Coaches the Development Team in self-organization and cross-functionality.
- Removes **impediments**.
- Ensures team has everything needed to build products.

Depend on	Why?
Scrum team	Builds /tests products (small packages with LEGO and Chocolate).
Patricia Product	Defines/clarifies and prioritizes PBIs. Gets feedback from Business.
Ops Team	Packages and deploys products built by Scrum team. Handles emergencies.

@DanaPylayeva



## Adam Admin role card



**Adam Admin**

**Goal:** *Stable production environment*

- Works in the Operations team.
- **Builds environments** for each developer/ tester (makes a square with masking tape).
- Installs **security patches** (a new layer of tape).
- **Monitors** production environment.
- **Authorizes** production **deployments**.

Depends on	Why?
Scrum team	Builds products (small packages with LEGO and Chocolate).
Robert Release	Builds a deployment package and releases it into production. He is the only person who can deploy.
Sara Security	Knows about latest vulnerabilities, finds security bugs, performs security scans in the environments.

@DanaPylayeva

## Robert Release role card



### Robert Release

**Goal: Stable production environment**

- Works in the Operations team.
- **Builds deployment packages** (inserts PBI work card with the LEGO/Chocolate package into a larger package; writes a Sprint number and the team name on that package).
- **Deploys into production during deployment window.**

Depends on	Why?
Scrum team	Builds and tests products (small packages with LEGO and Chocolate).
Adam Admin	Builds, patches, monitors production, authorizes production deployment.
Sara Security	Knows about latest vulnerabilities, finds security bugs, performs security scans in the environments.

@DanaPylayeva

## Sara Security role card



### Sara Security

Goal: Secure production environment

- Works in the Operations team.
- Informs the team about latest **vulnerabilities** ( picks 3 random numbers as security bugs. Fails **security test** if a LEGO package has one of these numbers).
- **Stops development**, requests patching ( new tape) if a **security breach** is found in the environment (damaged tape, ghost, red hearts).

Depends on	Why?
Scrum team	Builds, tests and removes security bugs from the products (small packages with LEGO and Chocolate).
Adam Admin	Installs security patches (a new layer of tape) and rebuilds the environment after a hacker attack.

@DanaPylayeva



## Harry Hacker role card



### Harry Hacker

**Goal: Exploit security vulnerability**

- Initiates a **security breach** (makes cuts in the masking tape).
- Takes advantage of the **Heartbleed bug** ( draws hearts on the masking tape).
- **Exploits “Ghost” vulnerability** (draws a ghost on the masking tape).

Who is affected:	How?
Sara Security	Needs to stop the development and request patching (new tape) when a security breach is identified in the environment.
Adam Admin	Needs to install security patches (a new layer of tape) and rebuild the environment after a hacker attack.
Scrum team	Cannot continue development until all security patches are applied.

@DanaPplayeva



## Benjamin Business role card



**Benjamin  
Business**

**Goal:**  
**Respond quickly to changes  
in market demand**

- Communicates the current **market value** and the **demand** for LEGO animals.
- Places the **orders**.
- **Accepts/rejects products, provides feedback.**

Depends on	Why?
Patricia Product	Maximizes the value of the product and the work of the Development Team
Dev. Team	Builds/tests products fast (small packages with LEGO and Chocolate).
Ops Team	Deploys products into production, finds and addresses emergencies.

@DanaPyayeva



## Special Instructions cards

### Special Instructions for Adam Admin (Sprint 1)

Adam  
Admin.  
Sprint 1.

@DanaPylayeva

KEEP  
CALM  
CHRISTMAS  
IS  
COMING



You must keep production stable!  
NO DEPLOYMENTS in Sprint 1.

BY SA

## Special Instructions for Sara Security (Sprint 1)

If you are using this card for more than one simulation, you may consider pasting a white sticker over each Sprint space. A new sticker can be re-applied to prepare the card for the next simulation.



**Sara Security's Threats  
and Security bugs catalog**

**Chocolate, LEGO  
and  
Scrum Game**

**Scrum Team:** \_\_\_\_\_

**Sara Security**

At the beginning of each Sprint, select three random numbers between \_\_\_\_\_ and \_\_\_\_\_. Write them down. These are security bugs for this Sprint.

**Sprint 1:** \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

**Sprint 2:** \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

**Sprint 3:** \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

## Special Instructions for Sara Security (Sprint 2, 3)

**Sara Security – Sprint 2 and 3**

Watch out!



VENOM

Check all environments  
for security issues.  
Stop Development!  
Request Security Patch.

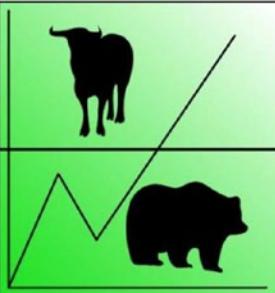


@DanaPylayeva

CC BY SA

## Special Instructions for Benjamin Business (Sprint 2)

**Benjamin  
Business  
(Starting  
Sprint 2 )**



Start reducing prices of animals on  
the board.  
Request new animals.  
Offer to pay more for new products.

@DanaPylayeva

CC BY SA

## Special Instructions for Patricia Product (Last Sprint)

Patricia  
Product  
Last  
Sprint

@DanaPylayeva

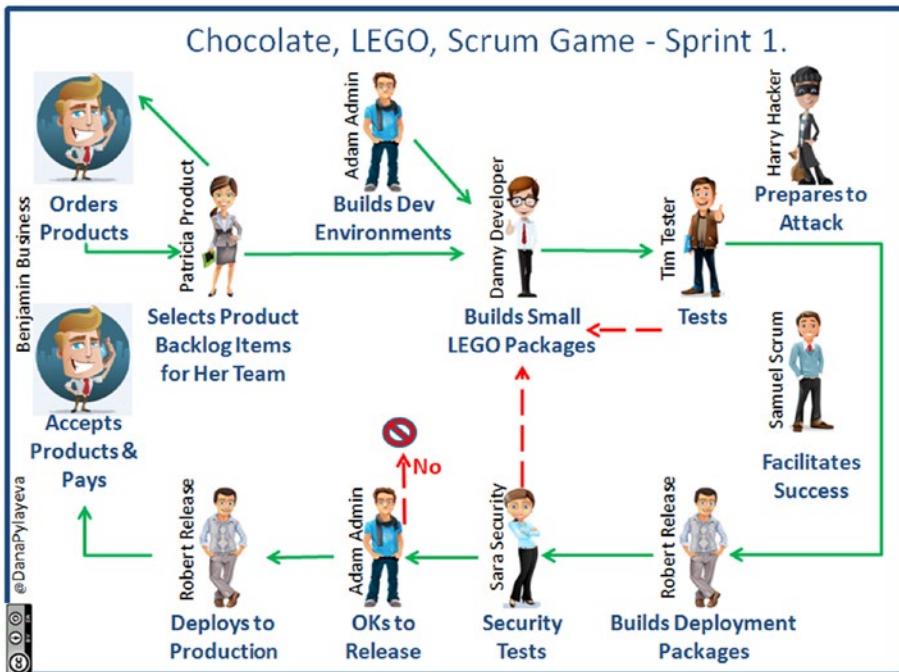
CC BY SA

KEEP  
CALM  
AND  
**SPLIT YOUR  
PBIs**

Help the team with one piece flow.  
Split large batches.  
One animal per product backlog item.

## Team Handouts

### Chocolate, LEGO and Scrum game flow



## Definition of Done

Chocolate, LEGO, Scrum Game. 1. Each package contains one LEGO animal (according to a Product Backlog Item(PBI) work card) and one chocolate candy. 2. Each LEGO animal has a small label with a number affixed to it. 3. The contents don't fall out if turned upside-down.	
Deployment Package 	1. Contains a PBI work card. 2. Contains a number of small packages with one LEGO animal and one chocolate in each. 3. Has a label with Team Name and Sprint Number on it. 4. The package is closed. 5. Type of animals and their quantity same as in PBI work card. <small>eDenaPilatova</small>

## Posters

The following posters will need to be created by the facilitator in preparation for the game. These posters will be displayed on a wall or a white board next to a business table.

### Animal Exchange Marketplace poster

	Demand	Batch Size	PRICE PER BATCH \$		
			Sprint 1	Sprint 2	Sprint 3
DOGS	15	5	100		
CATS	9	3	50		
SNAKE	5	5	50		

Time  
1-  
2-  
3-

## APPENDIX A ■ HANDOUTS, ROLE CARDS, AND POSTERS

List first three animals (with the Sprint 1 prices) on the Marketplace.  
List the batch sizes and starting demand.

---

Demand = Batch size \* number of development teams.

---

Use index cards to create “batch-sized” Product Backlog Item (PBI) work cards for each animal. Attach them to Demand cell for each animal on the Animal Exchange board. These cards will be picked up by Patricia Product, worked on by the team, and included in each deployment package.

### PBI work card

This is a card that will be displayed on the Animal Exchange Marketplace board to signify a demand for a specific quantity of a LEGO animal.

Initial set of cards will need to be prepared by a facilitator. Starting Sprint 2, these cards will be created by Benjamin Business (in collaboration with Patricia Product).

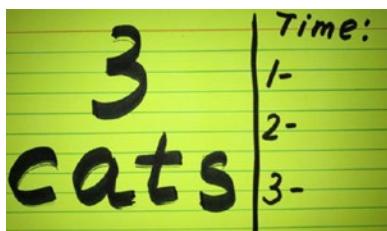
The card contains the following very basic information:

- a type of Lego animal
- desired quantity
- Optional:

End of Test Time for each animal (to track the length of time each item spends in Operations)

The time tracking element is still under development. It is included in this appendix as an inspiration for further experiments with the game.

As a facilitator you may want to start measuring the cycle time and lead time for each item, draw a cumulative flow diagram, and have the team experiment with Kanban elements in Sprint 3.



## Value Delivery Board

TEAM	Sprint 1	Sprint 2	Sprint 3
1			
2			
3			

## Aha! Moment Poster

This is a poster you will use to collect the feedback from the teams' final retrospective in the short version of the game. Feel free to modify the poster design.



# Bibliography

## Books that inspired this game

- Kim, Gene; Behr, Kevin, and George Spafford. *The Phoenix Project. A Novel About IT, DevOps, and Helping Your Business Win.*
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- Humble, Jez and David Farley. *Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation.*
- Rubin, Kenneth S. *Essential Scrum: A Practical Guide to the Most Popular Agile Process.*
- Reinertsen, Donald G. *The Principles of Product Development Flow.*
- Hüttermann, Michael. *DevOps for Developers.*
- Bowman, Sharon. *Training from the Back of the Room.*

## Web resources

- <http://www.scrumguides.org/scrum-guide.html>
- <https://www.gartner.com/doc/2847717/seven-steps-start-devops-initiative> (paid content)
- <https://puppet.com/resources/white-paper/2016-state-of-devops-report>
- <http://stateofagile.versionone.com/>
- <http://itrevolution.com/the-history-of-devops/>
- <http://itrevolution.com/the-convergence-of-devops/>
- Seminal presentation that catalyzed the DevOps movement:  
<http://www.slideshare.net/jallspaw/10-deploys-per-day-dev-and-ops-cooperation-at-flickr>
- <http://www.innolution.com/resources/val-home-page>

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