



# THE BEERGAME

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Instructors starter guide

# Overview

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- The Beergame software has been developed to be used in a class-room / workshop context, where people meet in one place and play the beergame.
  - The advantage of playing in a class-room context is that people can engage with each other and have a much more interactive game and learning experience.
- The software is a client-server software. The beergame server needs to run on the instructor's computer, while the players connect via an IP network using a standard browser software running on their computers.
  - You might use a computer lab or peoples' laptops in a seminar room.
  - Refer to page 4 for setting up a suitable network.
- The standard distribution of the beergame software has been configured for usage with USB sticks.
  - The server software is being stored on and runs from a USB stick.
  - Also, a browser environment (Firefox portable) is being delivered that can be handed out to the players using a set of additional USB sticks.
  - See next page for preparing the USB sticks and using the game
- If you to start the beergame server from a harddisk, please make sure to copy the complete contents of the zip file (see next page) to the root directory of the respective harddisk (e.g. C: or D:)
- PLEASE NOTE: I strongly (!) recommend using the Firefox Browser, the Internet Explorer might lead to unexpected behaviour.

# Setting up your USB sticks

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- The USB stick version of the beergame is distributed as two zip files:
  - The first zip file (bg\_server.zip) needs to be unpacked to an empty USB stick, which serves as the server stick. It is recommended to use a stick with a good read performance (e.g. 20 Mbit/s), because otherwise the game might be slowed down. Please contact me in case of doubts.
  - The second zip file (bg\_player.zip) can be used to prepare USB sticks for each player group in order to provide them with the right browser version with Flash plugin installed (see below).
- The beergame server can be started from the server USB stick on any MS Windows computer that has access to a TCP/IP network (see next page). Make sure the machine supports USB 2.0!
- In order to participate in the game, all players (the students) need access to the TCP/IP network from a computer that features a recent browser (best: Firefox!) with a recent version of Macromedia Flash installed (version 8 or 9 recommended).
  - The best way to provide the students with this environment is to hand out the specially prepared USB sticks that feature a portable firefox browser with the flash plugin already installed (see above).
- Having prepared the USB sticks you can now start playing, once you made sure that the network infrastructure is in place (see next page).

# Setting up the network (some tips)

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- The software requires an IP-based network
  - the Beergame server is essentially a tomcat web server
  - the clients log in via an Internet browser
- There are only two basic requirements
  - The server computer needs to have rights to be accessible on port 8080
    - you need to disable any firewall software on the server machine or allow incoming traffic on port 8080 (configure firewall software)
    - make sure that the network infrastructure allows for a computer to start a web server and be accessible on port 8080 (this can be problematic in tight corporate or University network infrastructures)
  - All computers (server and all clients) need to be in the same IP range
    - you can check if all computers have similar IP numbers : e.g. 192.168.11.xxx
    - typically, problems occur when 1) computers have set an IP address manually (e.g. to access a company network) or 2) you work with a mixed infrastructure and some computers get their IPs from a wired LAN, while others connect via wireless
- What works well or might work (in my order of favourability):
  - Use an existing computer lab with desktop computers and working LAN.
  - Set up your own infrastructure with a router, a switch and a set of LAN cables (cable-based infrastructures are more reliable!) and use the participants' laptop computers.
  - Set up your own wireless infrastructure with a router/access point.
  - Use an existing University/corporate LAN (might cause problems with starting a server, because ports are not open, firewall blocks server)
  - Use an existing wireless connection (problematic: computers often get their IPs renewed by the access point in public wireless LANs: if this happens to the server during play, you're screwed).

# Starting the Server (1/2)

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- Begin by plugging in your server USB stick to your machine.
- Normally your machine has the Autostart feature turned on, so that the following window will appear automatically.

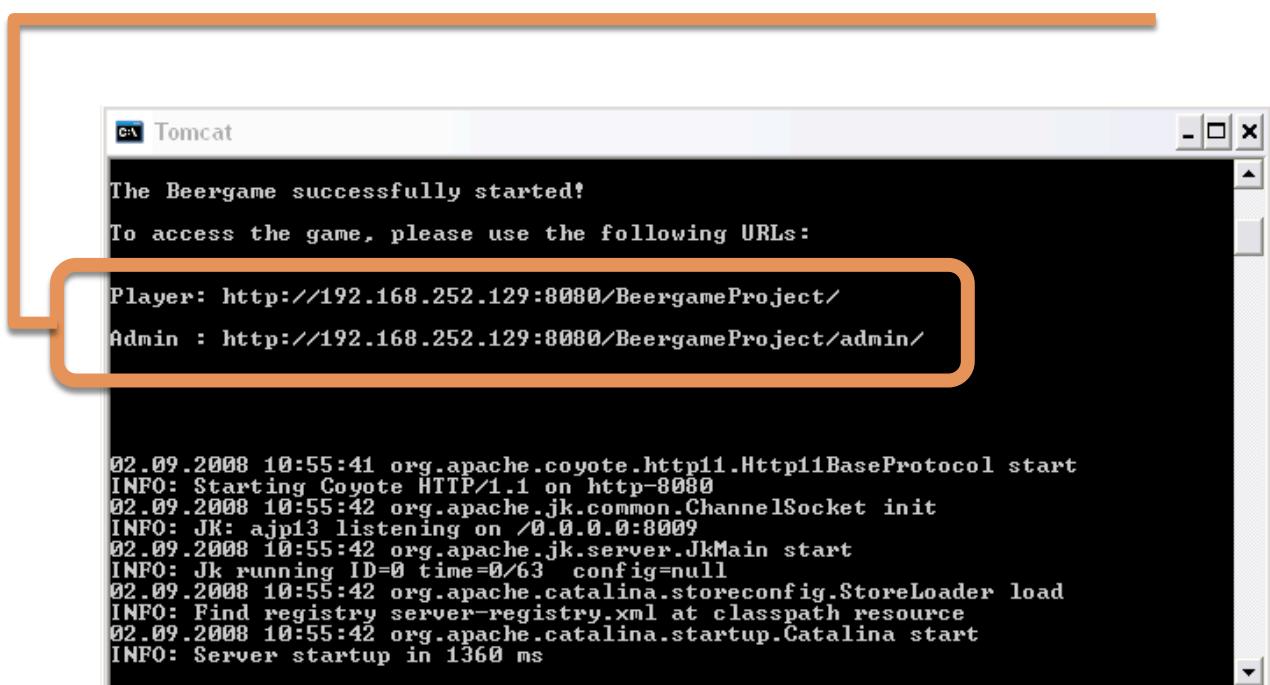


- Press OK and the beergame starts automatically.
  - Should the window not appear, open the root directory of your USB stick and double-klick the file Beergame\_Server\_START.bat

# Starting the Server (2/2)

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- A black terminal window appears with a message generated by the beergame server that states your IP address.
  - The first URL is for the students to start the game in their browser.
    - Copy the URL to the class room board.
  - With the second URL you access the beergame admin console on your own machine.



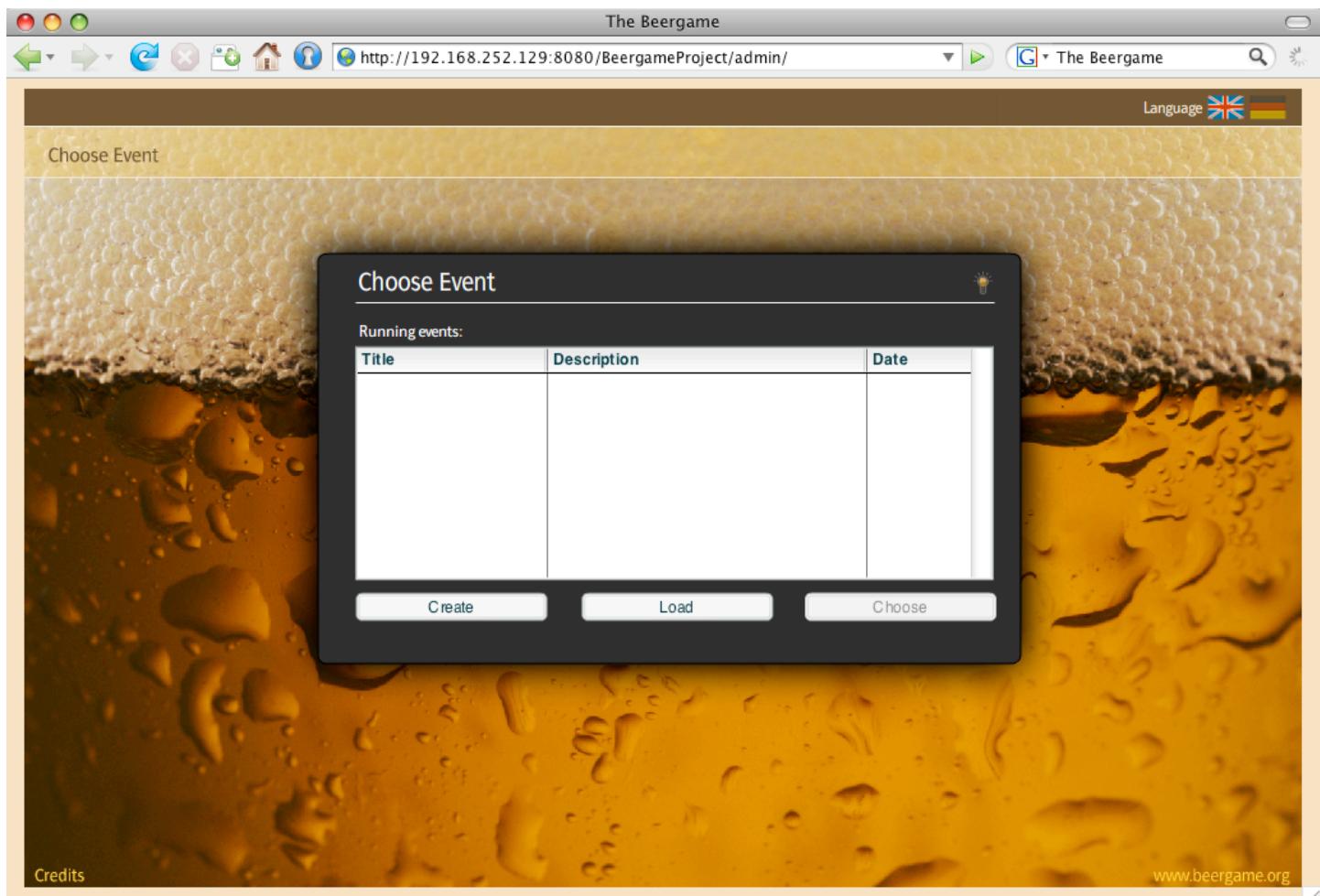
The Beergame successfully started!  
To access the game, please use the following URLs:  
Player: <http://192.168.252.129:8080/BeergameProject/>  
Admin : <http://192.168.252.129:8080/BeergameProject/admin/>

```
02.09.2008 10:55:41 org.apache.coyote.http11.Http11BaseProtocol start
INFO: Starting Coyote HTTP/1.1 on http-8080
02.09.2008 10:55:42 org.apache.jk.common.ChannelSocket init
INFO: JK: ajp13 listening on /0.0.0.0:8009
02.09.2008 10:55:42 org.apache.jk.server.JkMain start
INFO: Jk running ID=0 time=0/63 config=null
02.09.2008 10:55:42 org.apache.catalina.storeconfig.StoreLoader load
INFO: Find registry server-registry.xml at classpath resource
02.09.2008 10:55:42 org.apache.catalina.startup.Catalina start
INFO: Server startup in 1360 ms
```

# Accessing the admin console

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- Enter the admin URL into your Firefox browser address field.
  - Should you not have a recent firefox browser (with flash plugin) installed on your computer, you might want to use the firefox portable distributed as part of the player USB stick zip file.
- The following window will appear:



- The first thing you need to do now is to create a new event.
  - Click the **Create** button.

# What is an event?

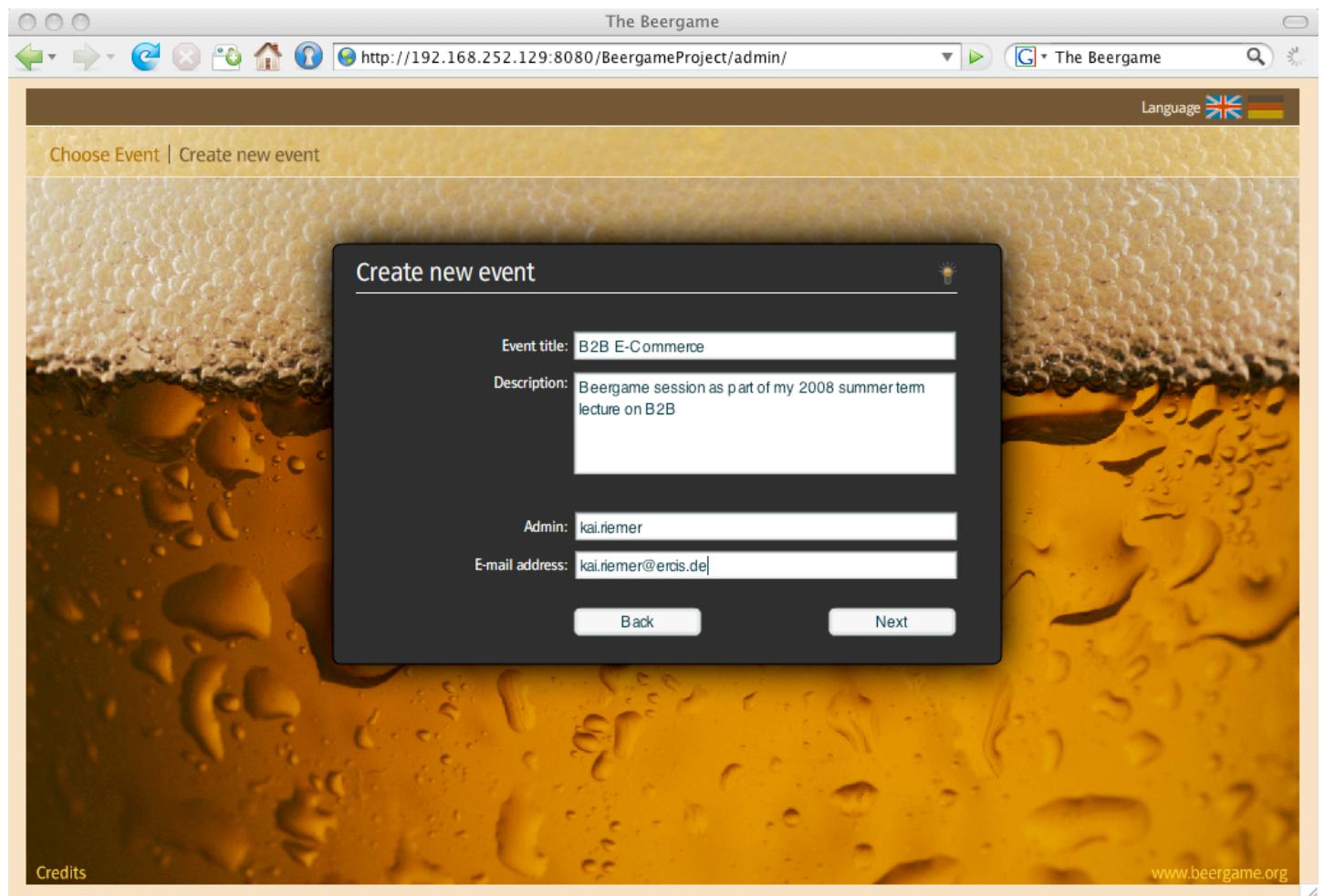
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- In the beergame an event is essentially a session.
  - An event is created and then configured using the beergame parameters.
- An event can host multiple games.
  - A game equals one supply chain group.
  - So you need to create multiple games within the event should you have more than one supply chain being played by the students
- A game usually consists of 4 players (supply change stages)
  - Normally a supply chain consists of four players, but you can vary the setup between 3 and 5 supply chain players
- A player in the game is played by one or more seminar participants sitting in front of one computer.
- If you want to play the beergame in the standard setup and then again with information sharing turned on, you need to create a new event for the second round of playing.
  - Hence, you need to run through the whole setup again.
  - It is also recommended that the players restart their browsers (better unplug and replug their USB sticks) between the two events/sessions.

# Create an event

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- Having clicked the **Create** button, the following window appears:



- Enter an event title (this name is displayed to the players when they enter the game)
- For your later reference you also need to enter a short description, your name, and email address. This data is not displayed to the players and for your own use only.

# Configure the beergame

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- Click **next** in the Create event window and the Game settings console opens:

The screenshot shows the 'Game settings' configuration interface for 'The Beergame'. The interface is divided into several sections:

- Initial values:** Stock: 15, Incoming Delivery: 5, Backorder: 0, Incoming Order: 5.
- Shipping Delay:** Length (Rounds): 2, Amount: 5.
- Information Sharing:** Shippings: not visible, Customer demand: not visible, Inventories: not visible, Send messages: admin only.
- Costs:** per unit on stock: 0.5, per unit backorder: 1.
- Supply chain levels:** Length of supply chain: 4.
- Game Rounds:** Transition: automatically, Max. Rounds: 40.
- Customer demand:** A graph showing demand over 40 rounds. It starts at 0, jumps to 5 at round 1, and jumps to 10 at round 5, remaining constant thereafter.
- Buttons:** add, edit, delete, Row of numbers, Load settings, Save settings, Create Event.

- This is the place where you decide on the nature of the beergame.
- The beergame comes with standard settings that simulate the bullwhip effect and do not allow for any information sharing.
  - You can load another set of settings with a standard setup for a second round in which you simulate the value of information sharing.

# The value of information sharing

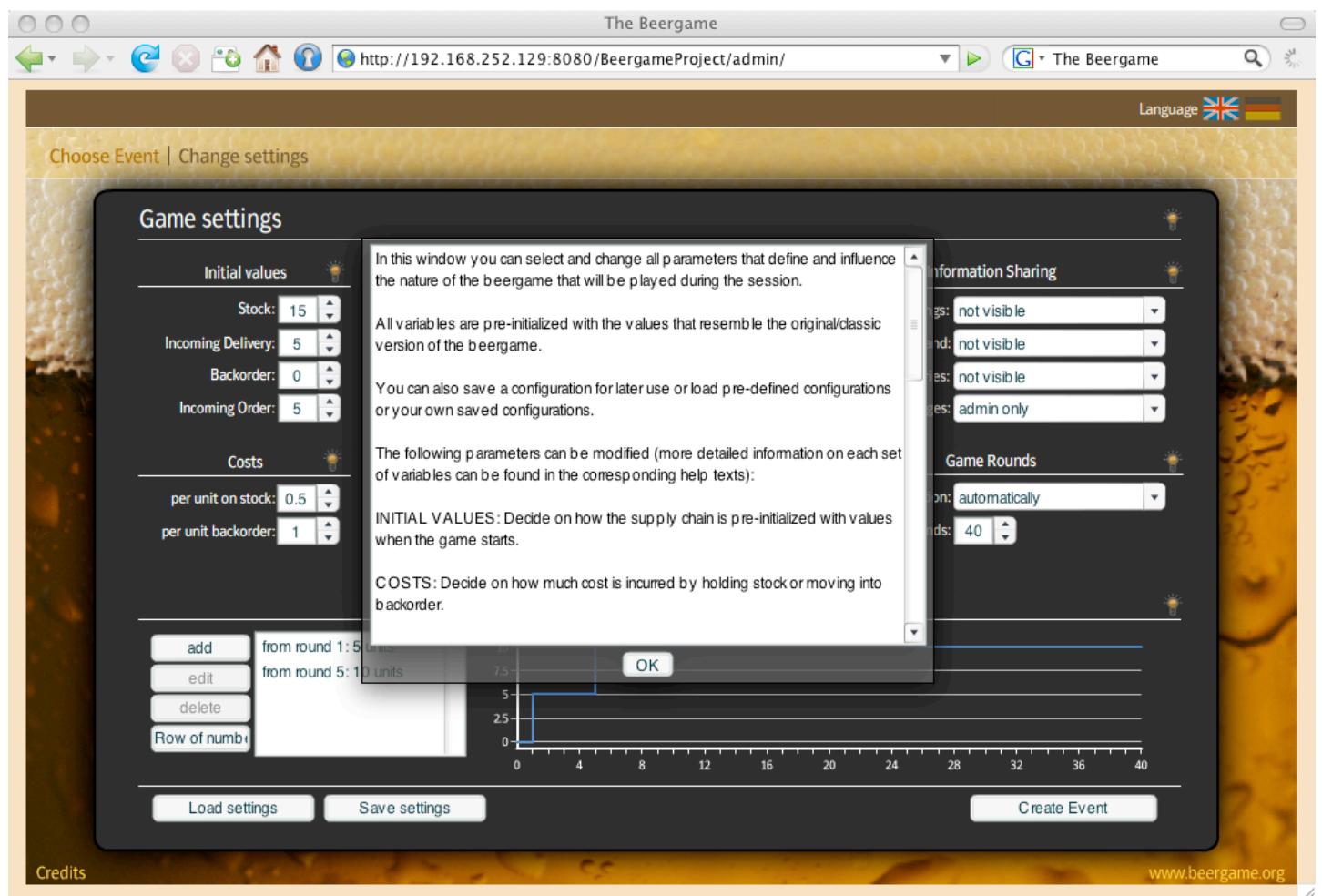
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- As you know, the idea of the beergame is to demonstrate the creation of the bullwhip effect, which is essentially the result of the way supply chains are structured and of a lack of information sharing and collaboration.
  - When played with the standard settings the software allows doing just that.
- But you can do more!
  - Using the various features for enabling information sharing you can also demonstrate the value of information in the supply chain.
  - Obviously, this is something you cannot do in the traditional versions of the game!
- Please note: For a good learning experience...
  - ...you should always play one session using the standard beergame setup before enabling information sharing. That way the players experience the bullwhip effect first and can then, in a second step, appreciate the value of information sharing.
- The following features can be used:
  - SHIPPINGS: implements tracking & tracing.
  - CUSTOMER DEMAND: implements POS data sharing.
  - INVENTORIES: implements ERP data access.
  - SEND MESSAGES: allows players to collaborate
  - SHIPPING DELAY: speeds up the supply chain
- Please refer to the help texts in the software for more information...

# Using the help texts

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- All settings and their effect on the beergame are described in the help texts that can be accessed by clicking on the little light bulbs.

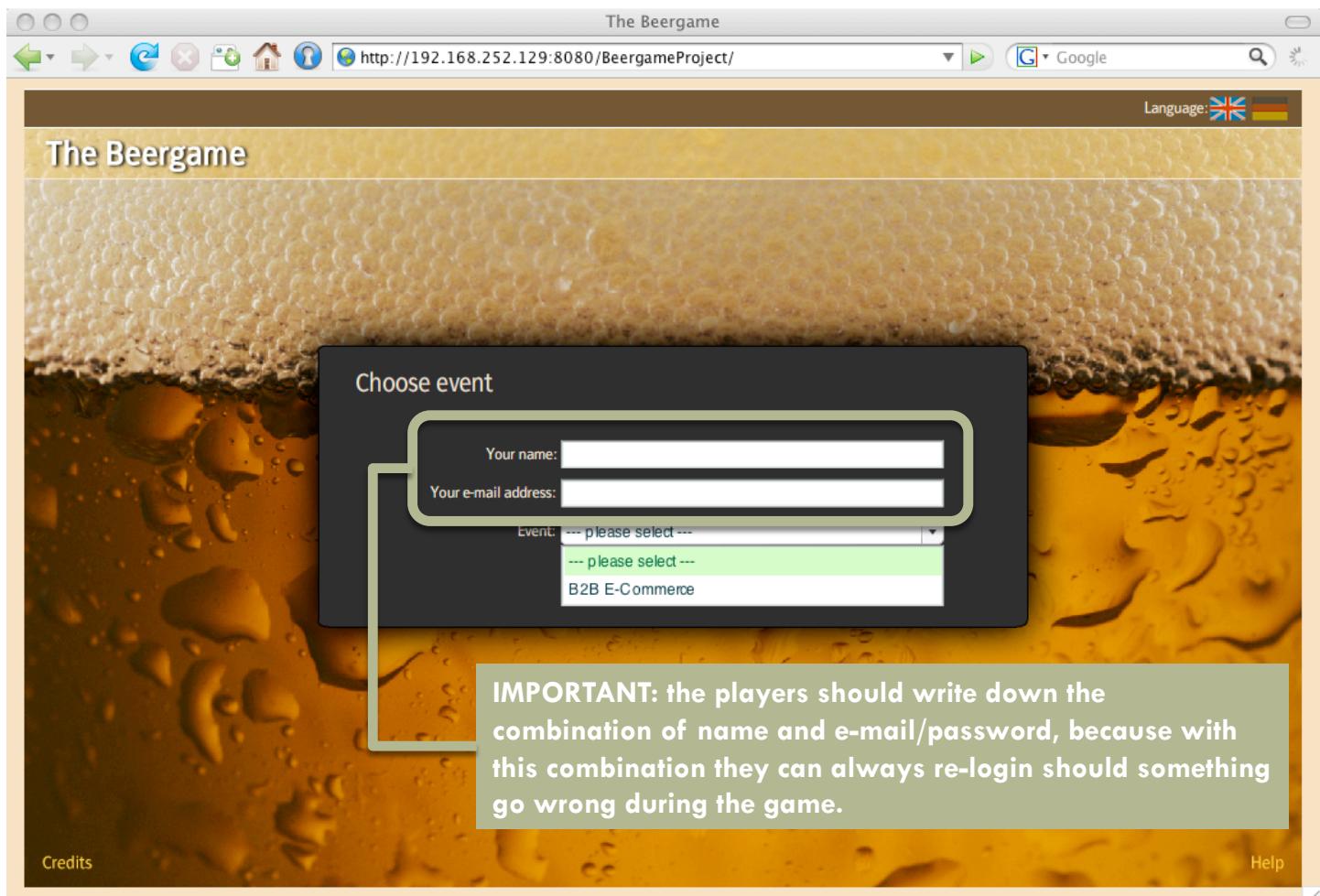


- Please use these help texts to familiarise yourself with the various beergame options.
  - It is all there, right in the game!
- When you are ready to go, press the **Create Event** button!

# Players are now ready to log in!

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- Now is the time to provide the students with the URL so that they can enter the game (e.g. they can use the USB sticks to start a browser).
- Make sure that all players can see the following window in which they can select the event you have just created:

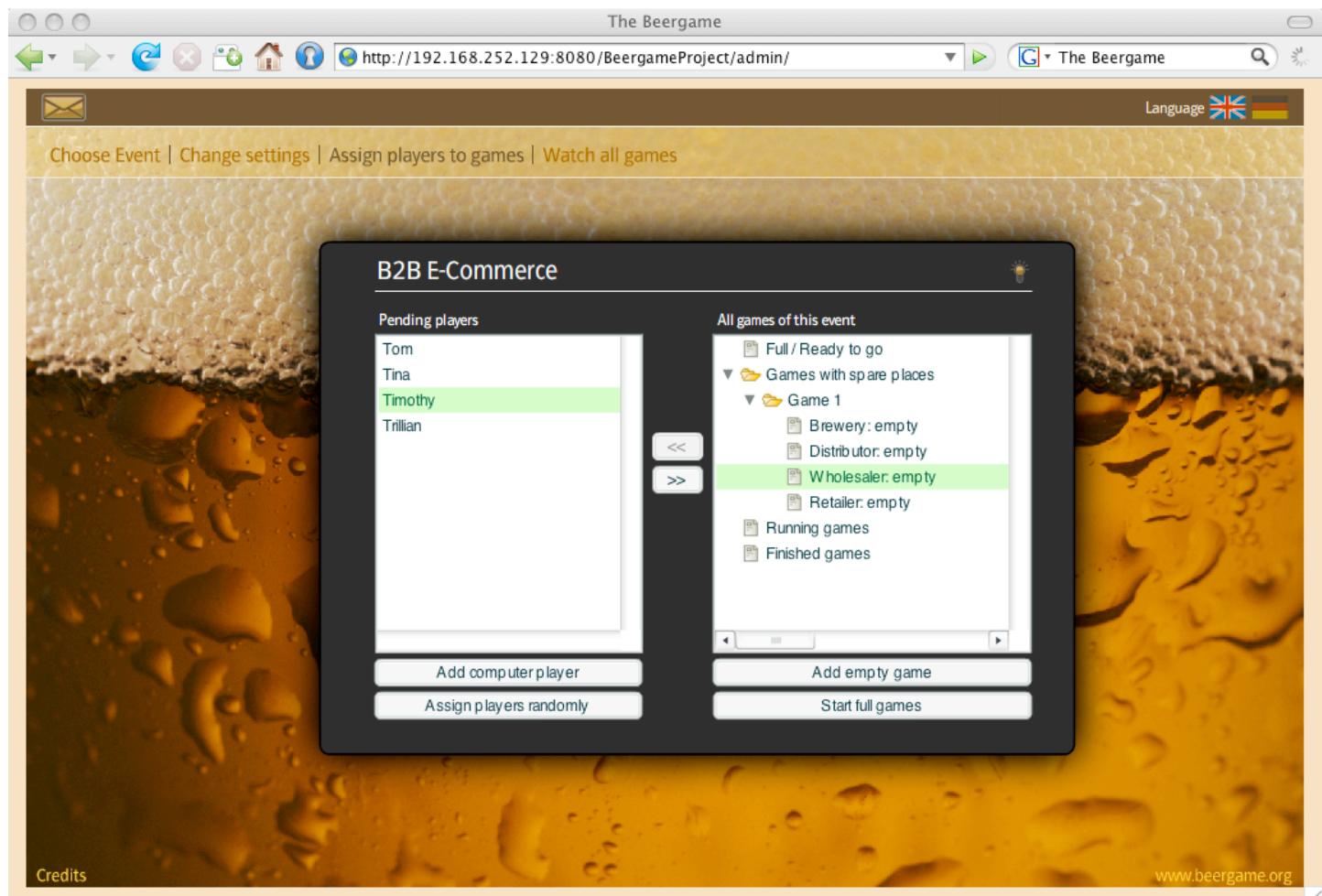


- Every player (group) needs to decide on a name and put in an e-mail address (or otherwise a password) in order to access the game.
- After selecting the event they need to click on **Enter event**.

# Assign players to games

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- You can now see a window that shows on the left side the players who entered. These players need to be assigned to games:

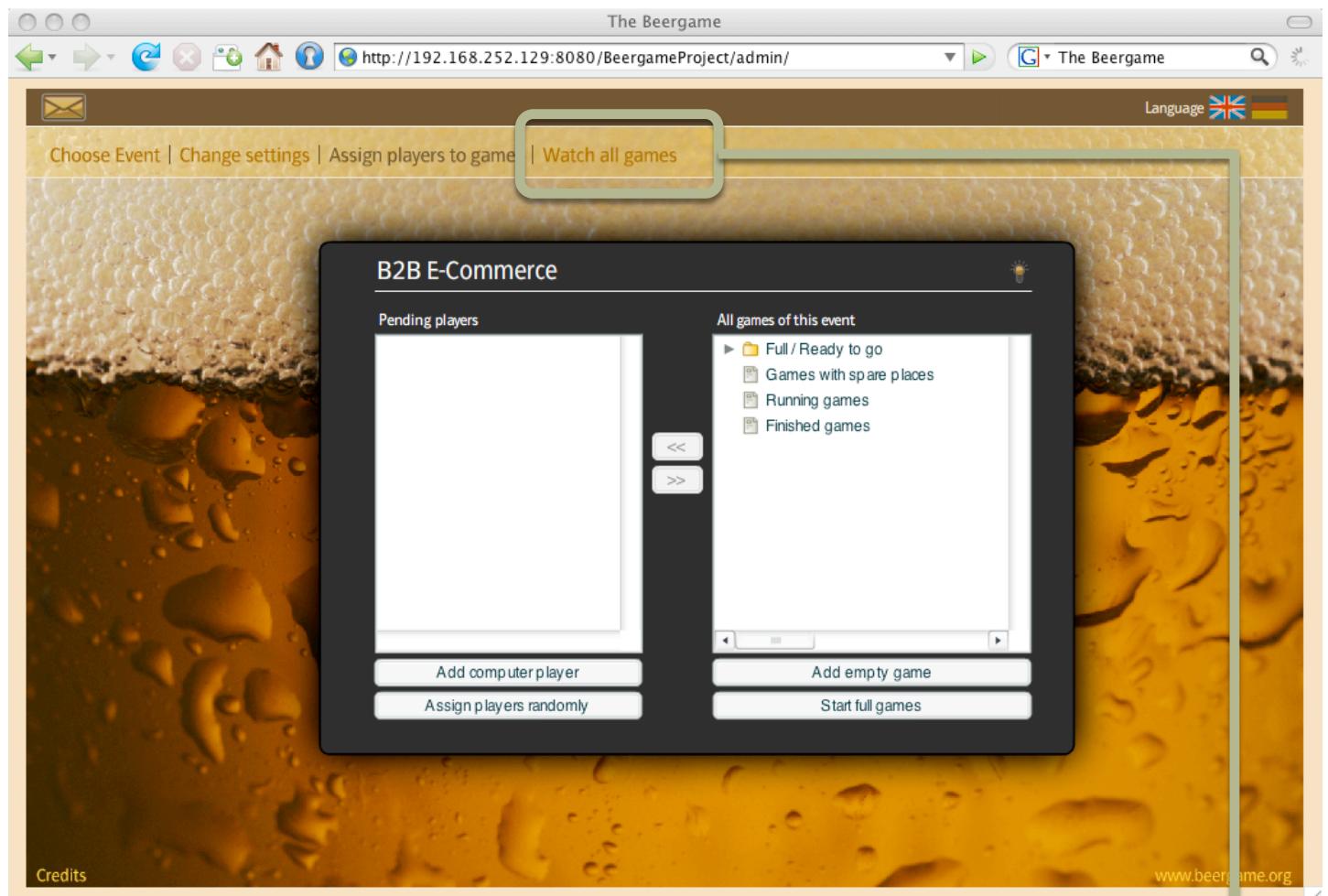


- First, press **Add empty game** as often as you need supply chains.
- Now, add players to games either randomly, or by selecting a name on the left, then a role on the right and then pressing >>.
- That way you can match supply chains with the seating order in your classroom or computer lab.

# Start the game(s)!

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- When all players have been assigned, your window should look like this:

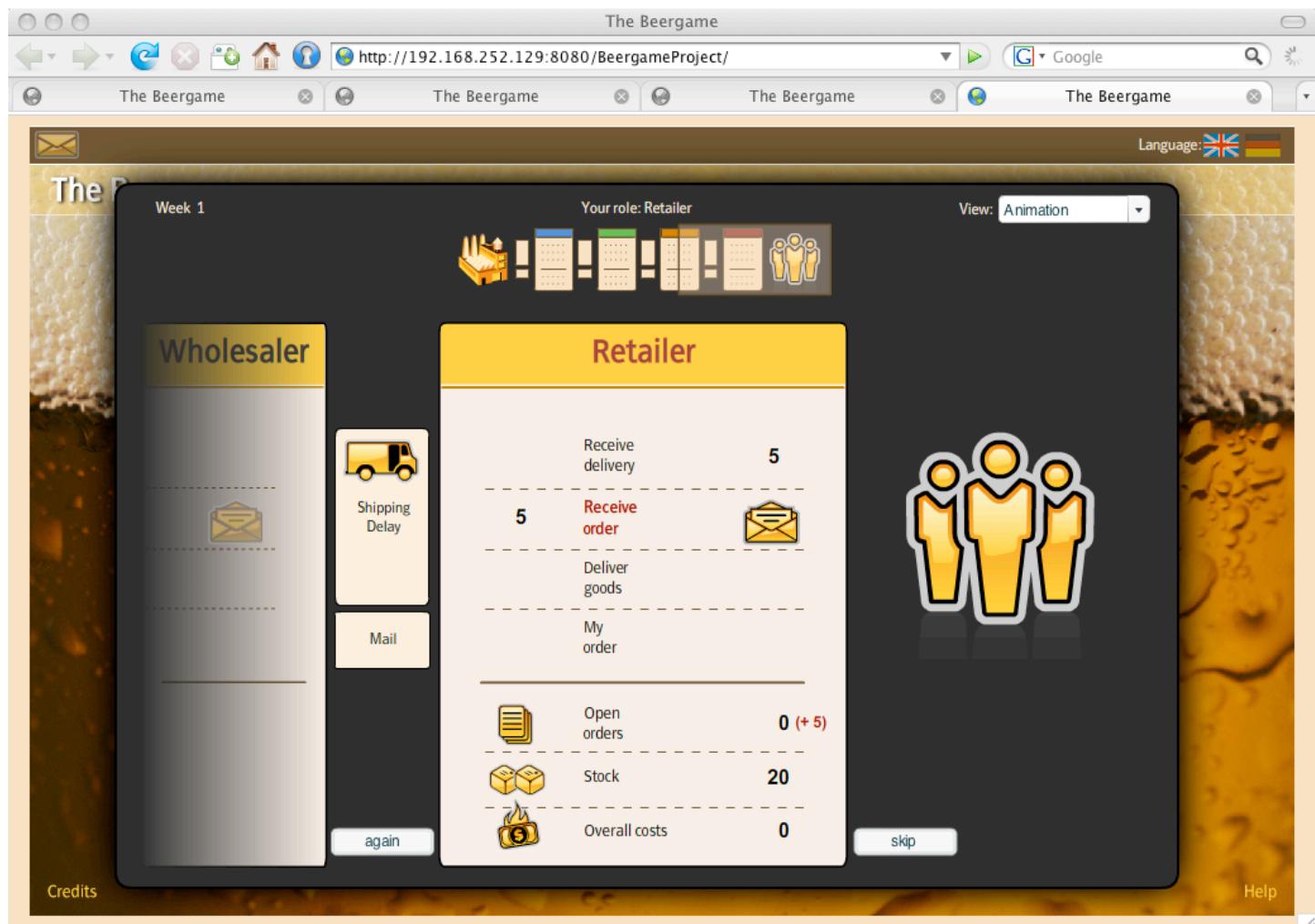


- You are now ready to go: press **Start full games!**
- The players will now see the game window!
- In order to watch the game progressions please press **Watch all games** in the top-level navigation.

# This is what the players should see:

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- The players should now see the first beergame animation being played:



- The players can skip the animation by pressing **skip** or see it **again**.
- They can also switch to a table mode (top right corner: **View**)
- The window displayed above shows the retailer; its position in the supply chain is visualised using the supply chain icons at the top.

# Watch all games (1/2)

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- Having clicked on **Watch all games**, you are now provided with a list of all running games:

The screenshot shows a web browser window titled "The Beergame". The address bar displays the URL <http://192.168.252.129:8080/BeergameProject/admin/>. The page has a header with links for "Choose Event", "Change settings", "Assign players to games", and "Watch all games". A language selection dropdown shows "Language" with icons for English and German. The main content area is titled "Watch all games" and contains a table with the following data:

Game	Rd.	Brewery	Distributor	Wholesaler	Retailer	State
1	1	S:15, O:0, C:7.5	S:15, O:0, C:7.5	S:15, O:0, C:7.5	S:15, O:0, C:7.5	running

Below the table are three buttons: "send message", "Show game details", and "go to next round". The footer of the page includes links for "Credits" and "www.beergame.org".

- The table shows for every game the data of the current round and the game state (running/finished). For each player all current data is displayed (Stock, Order, Cost). An 'X' marks when a player has already placed an order and is ready to go to the next round.

# Watch all games (2/2)

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The screenshot shows a web-based application titled 'The Beergame' with a URL of <http://192.168.252.129:8080/BeergameProject/admin/>. The interface has a yellow header bar with navigation icons. Below the header is a menu bar with links: 'Choose Event', 'Change settings', 'Assign players to games', and 'Watch all games'. The main content area is titled 'Watch all games' and contains a table with one row of data. The table has columns for Game, Rd., Brewery, Distributor, Wholesaler, Retailer, and State. The first row shows values: Game 1, Rd. 1, Brewery S:15, O:0, C:7.5; Distributor S:15, O:0, C:7.5; Wholesaler S:15, O:0, C:7.5; Retailer S:15, O:0, C:7.5; and State running. At the bottom of the table are three buttons: 'send message', 'Show game details', and 'go to next round'. The background of the application window features a honeycomb pattern.

- By selecting a game and pressing **Show game details** you can access a window with all data for this game.
- Please note: Should you have opted for a manual transition between rounds in the game setup, you need to manually move games to the next round by selecting a game and pressing 'go to next round'. Please remember that you can always change this to automatic by clicking on 'Change settings' in the top level navigation of the beergame (at the top of the beergame window).

# Game details window

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- Here, you can see all the live data for the game you selected:

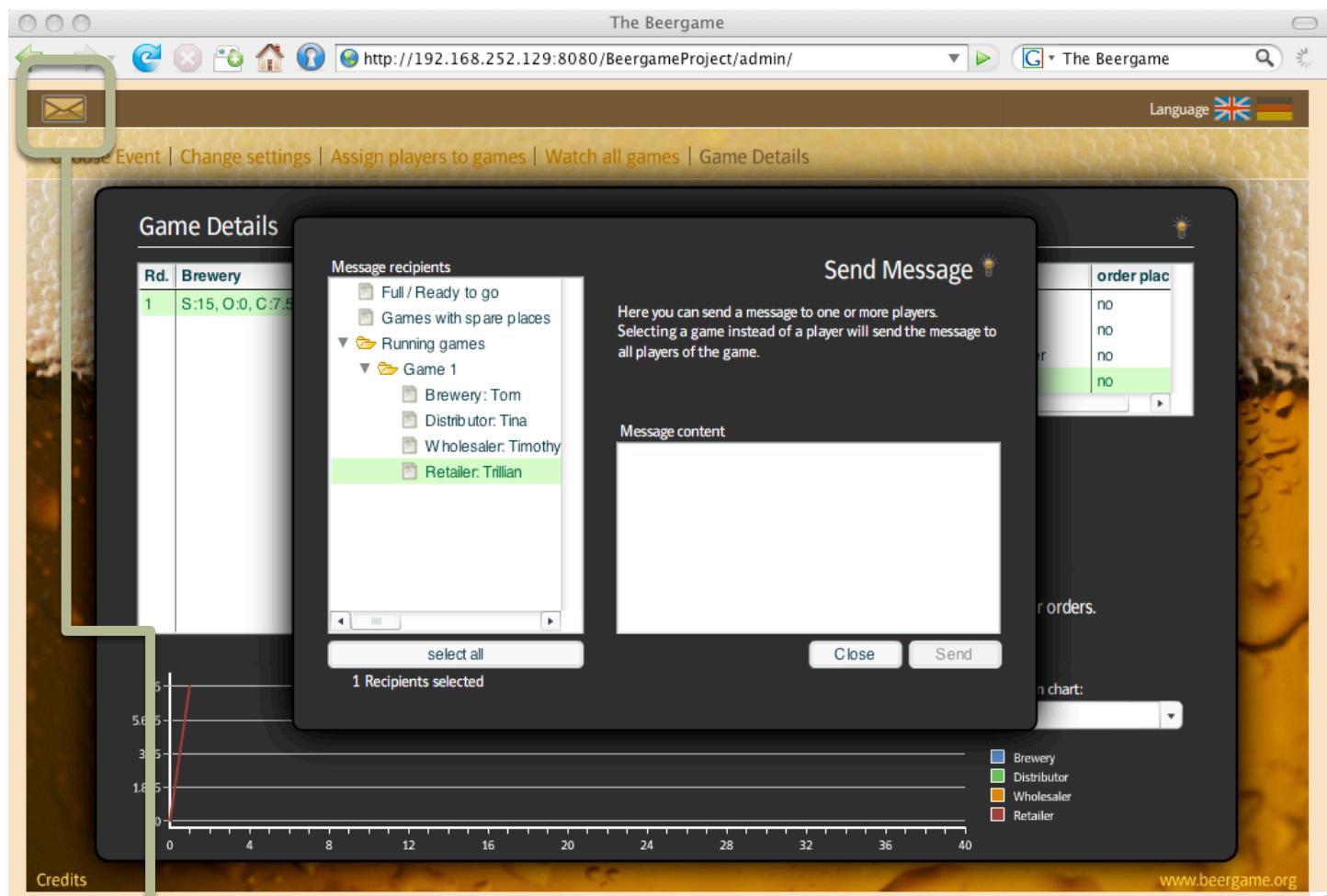
The screenshot shows the 'Game Details' page of 'The Beergame'. At the top, there's a navigation bar with links: 'Choose Event', 'Change settings', 'Assign players to games', 'Watch all games', and 'Game Details'. Below the navigation is a table titled 'Game Details' showing data for Round 1 across four roles: Brewery, Distributor, Wholesaler, and Retailer. The table rows show initial values: S:15, O:0, C:7.5 for all. To the right of the table is a list of player names (Tom, Tina, Timothy, Trillian) with their roles (Brewery, Distributor, Wholesaler, Retailer) and a status of 'no' for 'order placed'. Below this is a section with three buttons: 'send message', 'download excel file', and 'go to next round'. A message at the bottom says 'Round: 1 / 40', 'State: Round in progress.', and 'Players are placing their orders.' At the bottom left is a chart showing inventory levels over 40 rounds, with a red line starting at 7.5 and dropping to 0 by round 1. A legend indicates the colors for each role: Brewery (blue), Distributor (green), Wholesaler (orange), and Retailer (red). The bottom right corner shows the website 'www.beergame.org'.

- You can see a table view of all data progressing round by round.
- You can use the chart to watch cost, order and inventory progression.
- When the game is finished you can download the data produced by the players of this game and save it in excel format using the corresponding button.

# Sending messages

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- You can select a player name or all names and press the send message button in order to contact the students:



- Your inbox is always accessible in the top left corner by clicking on the envelope icon. Here, the software also signals when you have received new mail.

# Navigating back

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- In order to leave the detailed game view, use the top-level navigation:

The screenshot shows the 'Game Details' screen of 'The Beergame' software. At the top, there's a navigation bar with links: 'Choose Event', 'Change settings', 'Assign players to games', 'Watch all games', and 'Game Details'. Below this is a table titled 'Game Details' with columns for 'Rd.', 'Brewery', 'Distributor', 'Wholesaler', and 'Retailer'. A green box highlights the first row of this table. To the right of the table is a list of player names with their roles and 'order plac' status. Below the table is a message area stating 'Round: 1 / 40', 'State: Round in progress.', and 'Players are placing their orders.' At the bottom left is a line graph showing stock levels over 40 rounds. On the right side, there are buttons for 'send message', 'download excel file', and 'go to next round'. A dropdown menu 'Show in chart:' is set to 'Costs', with options for 'Brewery', 'Distributor', 'Wholesaler', and 'Retailer'. The bottom right corner shows the website 'www.beergame.org'.

- Click on **Watch all games** in order to watch the progression of all supply chains.
- Click on **Change settings** in order to make changes to the settings, e.g. in order to change the number of rounds to be played or to adjust the customer demand.

# Enjoy the game!

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- But please respect our educationware licence:

The screenshot shows a web-based application titled 'The Beergame'. The main menu bar includes 'Choose Event', 'Change settings', 'Assign players to games', 'Watch all games', and 'Game Details'. A sub-menu 'Credits' is selected. The central window displays the 'Credits' information for 'The Beergame, Version 1.1 (2008-06-30)'. It details the idea, concept, and visual design by Kai Riemer, and the software design and development by Florian Christ. It also states that the software is educationware and can be used free of charge in the context of higher education, such as university teaching. It specifies that the software may not be used for commercial purposes or distributed online. A legend on the right indicates that colors represent different roles: Brewery (blue), Distributor (green), Wholesaler (orange), and Retailer (red). A chart at the bottom left shows a line graph with values 0, 3.75, 5.625, and 7.5 on the y-axis and 0, 4, 8 on the x-axis.

- The software may be used free of charge in the context of higher education, e.g. in university teaching.
  - The software may however not be used for commercial purposes (e.g. in management seminars), nor is it allowed to make the software available online (for either purpose).
  - The distribution of the software is also not allowed. The software can be accessed by contacting the developers through the beergame portal.
  - A commercial licence (one-off 'peace of mind' fee) is available upon request.
- Please respect these conditions.

# Visit our web portal!

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- On the beergame portal you can find more beergame-related information.



- Most importantly, you will find information on how to best incorporate the game in teaching B2B E-Commerce classes.
- On the portal you can also leave comments re your beergame experiences (go to 'comments').

- The BEERGAME
  - Idea, concept and visual design by Kai Riemer.
  - Software design and development by Florian Christ.
- Contact the developers:
  - Dr. Kai Riemer
  - University of Münster
  - European Research Center for Information Systems (ERCIS)
  - eMail: [mail@beergame.org](mailto:mail@beergame.org)
- Version of this document: v 1.2: 2009-01-30