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AnyLogic[®] 6

MULTI-METHOD SIMULATION SOFTWARE
DECISION SUPPORT SYSTEMS
PROFESSIONAL CONSULTING SERVICES

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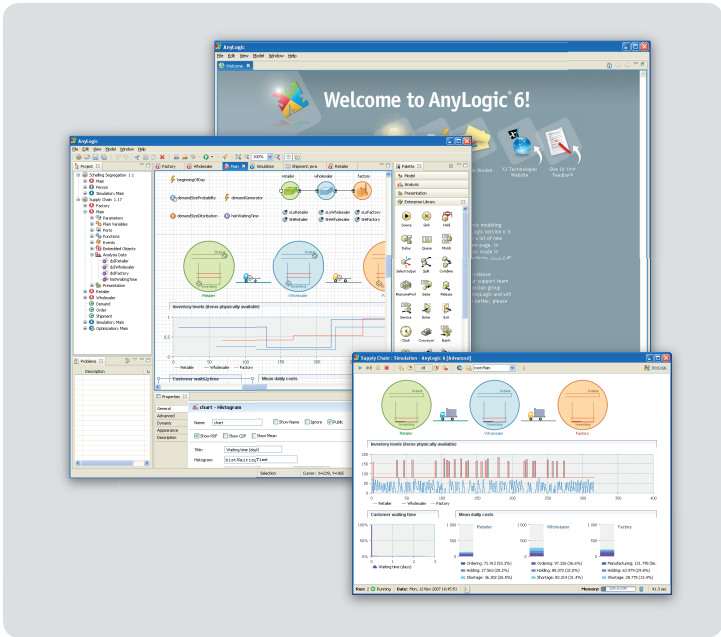
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AnyLogic is today's modern simulation application — it packs all the power you need across a broad spectrum of modeling challenges yet is highly visual and supports powerful presentation and collaboration.

AnyLogic runs on most operating systems and it is built on the popular Java and Eclipse platforms so many users find themselves in a familiar environment.

AnyLogic is the mature, top-of-the-line application that continues to evolve and keep pace with modern IT developments typically delivering two major upgrades each year.

Known for its flexibility, AnyLogic allows you to drag & drop models in Discrete Event, System Dynamics, or Agent based methodologies or combine them and add any custom functionality you may need.

REDUCE DEVELOPMENT COST AND TIME

- AnyLogic's visual development environment significantly speeds up the development process saving you time and budget
- The included object libraries provide the ability to quickly incorporate pre-built simulation elements
- Reusability through fully object oriented structure
- A visual integrated development environment makes it easy to change from other widely used IDEs to AnyLogic
- Pre-built object libraries show how the experts did it! These objects can be easily reused
- AnyLogic is based on Eclipse and works on Windows, Mac and Linux

DEVELOP MORE MODELS WITH ONE TOOL

- Develop agent-based, system dynamics, discrete-event, continuous and dynamic system models, or combine these methods within the same model. All with one tool
- AnyLogic supports the seamless integration of discrete and continuous simulations
- The native Java environment supports limitless extensibility including custom Java code, external libraries, and external data sources
- An extensive statistical distribution function set provides an excellent platform for simulating the uncertainty inherent in all systems
- A powerful experimental framework, built-in support for Monte Carlo simulations and advanced forms of optimization support a wide variety of simulation approaches



IMPROVE THE VISUAL IMPACT OF YOUR MODELS

- AnyLogic's simple yet sophisticated animation functions allow for the development of visually rich, interactive simulation environments
- Exporting models as Java applets allows users to quickly build working simulations that can be broadly disseminated or easily placed on a web site

RUN MODELS ANYWHERE

- The native Java environment provides multi-platform support
- You don't need a runtime license — with one click you can generate a Java applet that allows users to run a model anywhere
- AnyLogic models are completely separable from the development environment and can be exported as standalone Java applications. Your colleague or customers can receive fully-functional runtime models without the need to surrender or transfer your license

EXCELLENT SUPPORT AND CONSULTING SERVICES

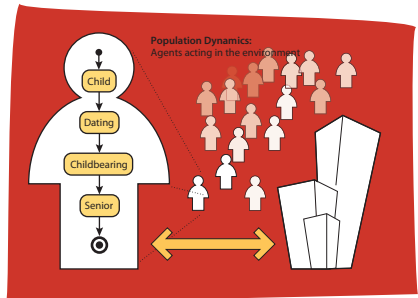
- We answer all questions, including modeling help, within 48 hours. Some questions involving the development simulation solutions may take longer.
- We provide full range of consulting services from classroom training to turn-key model development
- Recent surveys give us a 90% support satisfaction rate and we're working hard to make it 100%!

ANYLOGIC — MULTI-METHOD SIMULATION TOOL

AnyLogic supports all business modeling methods in place today:

Discrete Event, System Dynamics, and Agent Based modeling.

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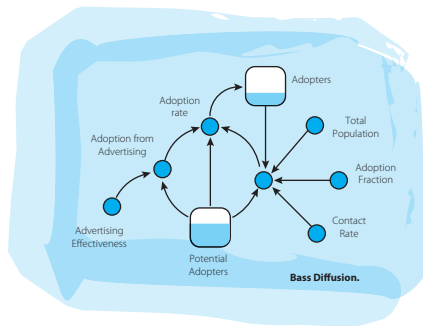
AGENT BASED

AnyLogic provides a visual language which significantly simplifies development of agent based models:

- UML Statecharts are used to define agent behaviors,
- Action charts - to define algorithms,
- Environment objects help to describe the agent environment and to collect the statistics
- Events are used to describe occasional or time-certain occurrences

These constructions allow you to describe almost all the behavioral aspects of agents - and you can always write specific Java code if you would like to model something special or unanticipated. Agent Based models can be seamlessly combined with Discrete-Event and System Dynamics models. The agents themselves may be included inside system dynamics stock & flow diagrams and/or flow charts. In other words, you may combine different simulation methods within one model in any way: hierarchically, series hand-off, parallel, etc.

The unique flexibility of the modeling language enables the user to capture the complexity and heterogeneity of business, economic and social systems to any desired level of detail. AnyLogic's graphical interface, tools, and library objects allow you to quickly model diverse areas such as manufacturing and logistics, business processes, human resources, consumer and patient behaviors.



SYSTEM DYNAMICS

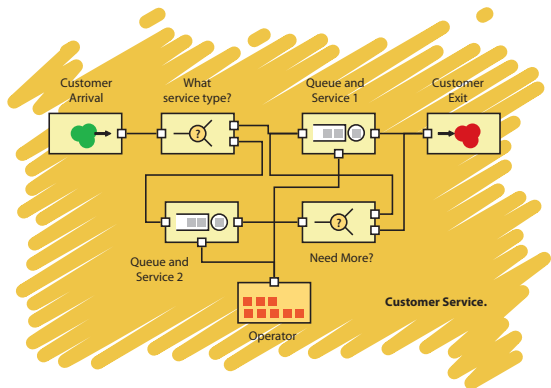
AnyLogic completely supports system dynamics' stock & flow diagramming in the same way as a traditional system dynamics tool. But AnyLogic provides much more functionality:

- In AnyLogic you can develop custom interactive animations in your model which can explain much more to your customers than Stock & Flow diagrams that are only intuitive to developers.
- You can combine your model with others, for example you can model the market in system dynamics while the manufacturing and supply chain use Agent-based and discrete-event methods.
- You can import your SD models from VenSim ® or iThink/Stella.

Since AnyLogic is based on the Eclipse platform it employs the latest technologies and as a result the AnyLogic Development Environment is modern and easy-to-use when compared with most other simulation modeling tools. .

DISCRETE-EVENT

Discrete-event or process-centric modeling is fully supported by AnyLogic. AnyLogic includes the Enterprise library which allows you to create any kind of discrete-event model – just drag & drop blocks, connect them, and parameterize. Enterprise library has default animations for every block but you can develop your own animation of any complexity which could animate the process you model and allow you to manage model parameters in run-time.



HOW DO I BENEFIT FROM ACCESS TO DIFFERENT MODELING METHODS

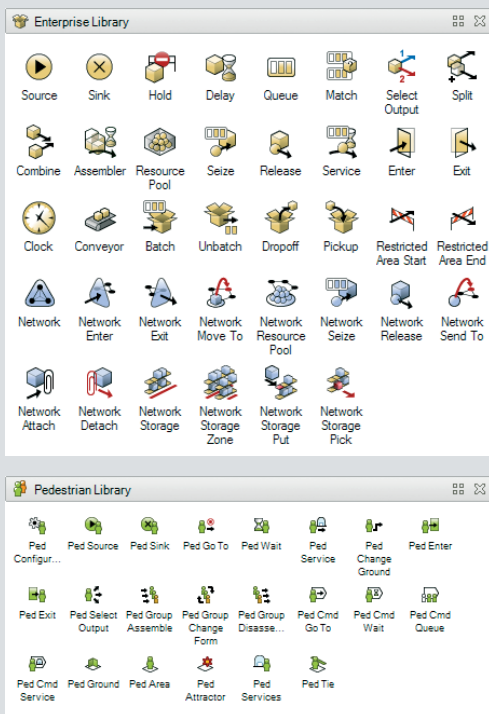
Modeling is based on abstraction, simplification, quantification, and analysis. But why let your tools dictate these first two steps? It may be possible to model the actions of autonomous entities via System Dynamics but why introduce this additional abstraction and attendant assumptions if Agent Based tools are available? Conversely, why use Discrete methods to model continuous variables when SD methods are at hand? And if the environment you are modeling is complex enough why deliberate on which set of abstractions are closest to reality when one tool can provide them all?

AnyLogic is extremely flexible simulation software and provides you with various ways to develop your model. If there is a individual data use an agent-based approach., If there is only information about global dependencies then use system dynamics. If system can be easily describe as a process we would suggest a discrete-event approach. , And if the system is complex enough it probably has all those aspects and you should consider combining methods.

With AnyLogic you are never limited by a particular simulation method, you can always choose the most efficient one, or combination to address the problem..

ANYLOGIC LIBRARIES

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Enterprise Library and Pedestrian Library elements
as they shown at palette

ENTERPRISE LIBRARY

The Enterprise Library is a discrete-event simulation library containing objects you can use to rapidly simulate complex discrete-events systems such as:

- Manufacturing processes with detailed shop floor layout
- Simple and complex service systems (e.g. banks, airports, hospitals etc.)
- Business processes with activity-based costing
- Logistics and supply chain models

The Enterprise Library allows you to create flexible models, collect basic and advanced statistics, and effectively visualize the process you are modeling to validate and present your model.

PEDESTRIAN DYNAMICS LIBRARY

The AnyLogic Pedestrian Library is for simulation of pedestrian dynamics at a detailed “physical level”. It considers the sizes of individual objects, their behavioral rules, their ability to speed up and slow down, their vision range, walls, obstacles, stairs, priorities, etc. This allows the modeler to gain much deeper insight into the system being modeled. He can accurately measure and optimize system properties, discover bottlenecks, and predict dangerous situations that otherwise would remain unrevealed.

RAIL YARD LIBRARY

The new Rail Yard Library allows you to efficiently model, simulate, and visualize rail yard operations of any complexity and scale. You can also naturally and easily combine the rail yard models with discrete event or agent based models of related transportation, loading and unloading, resource allocation, maintenance, business processes, etc. The Rail Yard Library produces detailed, yet very high performance simulations, which is important when you use the optimizer to identify the best yard management policies

FEATURES COMPARISON OF ANYLOGIC EDITIONS

Feature	AnyLogic Educational	AnyLogic University Researcher	AnyLogic Advanced	AnyLogic Professional
<i>Operating systems</i>				
Windows, Mac, Linux	•	•	•	•
<i>Modeling methods</i>				
Agent-Based, Systems-Dynamics, Discrete-event, Combined	•	•	•	•
<i>Model Development Environment</i>				
Workspace for Multiple Models	•	•	•	•
Visual Notation for Model Development (e.g. Libraries, Action Charts, Statecharts, Equations, Events, Functions, Parameters etc.)	•	•	•	•
Problem Resolution Assistance	•	•	•	•
Voting for New AnyLogic Features	•	•	•	•
Wizard for Creating New Models	•	•	•	•
Basic Model Debugging	•	•	•	•
Professional Model Debugging		•		•
Event Queue view				•
Teamwork and Concurrent Version System (CVS) Integration				•
Geographic Information System (GIS) Integration	•	•		•
CAD Drawing Import				•
Sharing AnyLogic Licenses with USB Dongle				•

Feature	AnyLogic Educational	AnyLogic University Researcher	AnyLogic Advanced	AnyLogic Professional
<i>Animation</i>				
Business Graphics	•	•	•	•
Basic Controls	•	•	•	•
Professional Controls				•
3D animation	•	•	•	
Professional 3D animation				•
<i>Database Connectivity</i>				
Basic Components	•	•	•	•
Professional Components				•
<i>Libraries</i>				
Enterprise Library	•	•	•	•
Pedestrian Library	(limited)	(limited)		•
Rail yard Library				•
Development custom libraries				•
Open custom libraries	•	•	•	•
<i>Exporting model</i>				
Simulation Applet (Java Applet)	•	•	•	•
Simulation Application				•
<i>Experiment framework</i>				
Standard set of experiments	•	•	•	•
Professional set of experiments		•		•
<i>Other</i>				
Saving, Restoring and Exporting Simulation Output from Experiment User Interface				•
Saving and Restoring Model Snapshot				•

ANYLOGIC FOR EDUCATORS

With AnyLogic, educators are in luck. As opposed to open source programming environments AnyLogic give them access to a high level polished application that can be applied to teaching any of the major simulation methodologies. With AnyLogic you can replace a boxful of tools: Vensim, MatLab, NetLogo, and Arena and concentrate on learning simulation and modeling and not the particular eccentricities and menus of multiple applications. AnyLogic is based on Java — a very common language in the university environment and a significant percentage of students take to it very comfortably and relish the ability to extend models with Java programming. Of course its available in Mac and Linux for the university environment.

XJ Technologies has structured several educational licenses to put this powerful application within reach of any teaching environment.

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EDUCATIONAL LICENSE

There are two classes of educational license: Single and Department and they vary based on the range of installs. The single license is just that, one installation dedicated to teaching simulation for about the price of a spreadsheet application. The Department license provides a full copy of AnyLogic to anyone in the entire University Department — the Industrial Engineering Department, for example. As the number of users goes up the license approaches shareware prices. There are two options for educational license — “Home Use” and “OptQuest”. “Home Use” option is a true bargain in that it provides multiple installs on home computers\laptops of faculty/department staff and students. This is not a limited “student version”— this is a full license. The educational licenses are in perpetuity with maintenance and support renewal every year. “OptQuest” option is the best optimization engine for simulation models developed by OptTek company.

And don't forget, AnyLogic support is “content support” - not just technical support. Students can e-mail substantive questions about modeling approaches and solutions which can be an added resource to the class.

UNIVERSITY RESEARCHER LICENSE

Many professors do more than just teach — they do paid research or grant work. For them we've recently created the powerful University Research License which is intended for these types of public research uses and not just teaching. University researcher has all features of AnyLogic Advanced plus some features of AnyLogic Professional which are important for research purposes: professional model debugger and full set of simulation experiments.. Now researchers don't have to choose between software they use for teaching and software they use for their own work — AnyLogic's new license delivers all the power they need.

ANYLOGIC FOR CONSULTING AND DEVELOPERS

People who build models for others — such as consultants and developers — will relish AnyLogic's powerful visual aspects. Any model can be exported as a Java applet and distributed to clients or colleagues with a simple menu command. These applets run in any browser with no simulation software required. Now you can deliver powerful products and place them on web sites, share them in collaborative workflows, or simply e-mail them to any recipient. No matter how good your presentation skills a working model that your client can easily interact with is your best salesman.

And for complex applications requiring reading/writing data to database or file AnyLogic Professional provides 5 included runtime licenses which can be used to create and activate Standalone Simulation Applications. Consultants can now deliver advanced solutions to clients without surrendering their developer license.

In addition to all these delivery advantages, the AnyLogic development environment with its libraries and drag-&-drop features supports faster development. This is attractive to those project managers who remember that time is still money. All this backed by our content support to make sure your team is as productive as they can be. And if your project needs, our consultants are ready to augment your team with

skilled professional modelers on short notice.

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ANYLOGIC FOR BUSINESS

AnyLogic is not just for academics and consultants. Our largest customers are the leading enterprises who know that simulation is the next best thing to hindsight. Physical experiments are fine at the bench-top scale — but simulation allows you to experiment at a massive scale that would be totally impractical for physical experiments. You cannot build multiple distribution systems to test efficiency! The following examples on Decision Support, Supply Chain, Transportation, and so forth are just a taste of the range of problems your company can analyze with AnyLogic.

DECISION SUPPORT FOR YOUR BUSINESS

In addition to AnyLogic, the most flexible and comprehensive software tool, XJ Technologies also delivers expert business and technical consulting in a responsive and cost-effective manner.

Our consulting team has a unique combination of deep mathematical, optimization, software development, and simulation skills with, of course, an unparalleled background in developing AnyLogic solutions. Our customers benefit from our ability to rapidly understand the essentials of our their business issue and identify what and how can be improved. Our local teams can support client-facing activities and support problem definition and requirements elicitation in the local language. Or our team of experts can operate as your “back room consultants” supporting your efforts in serving your commercial or intra-company clients.

With a natural competitive advantage of having been the support center for thousands of AnyLogic users for years, we have the best possible knowledge of how simulation modeling works in business applications.

INDUSTRY APPLICATIONS

MANUFACTURING

- Strategic planning of manufacturing development
- Day-to-day manufacturing management
- Optimization of manufacturing and business processes
- Material flow management
- Decision support and risk assessment

Decisions regarding Manufacturing development, optimization, or reorganization are driven by many factors and can be costly while the potential benefits are often hard to justify prior to implementation. Traditionally, decisions are made based upon intuition and past experience, sometimes with the support of spreadsheet tools. But these approaches can be risky and are far from modern management decision support. Simulation is one of the most powerful techniques currently being used to analyze manufacturing systems, evaluate the impact of changing various system parameters, and making the right probabilistic or multi-scenario informed decision.

Simulation modeling is widely used in manufacturing for various problems from intermediate process optimization to strategic management. Simulation allows you to test capital-intensive strategies “in silico”. Even the implementation of well-understood manufacturing strategies such as JIT or Lean benefit from simulation that allows you to analyze not just the specific process but the manufacturing system as a whole.

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Reducing the number of physical experiments and changes through the use of simulated experiments, for example, can be a huge advantage in personnel change management and “process fatigue”.

SUPPLY CHAIN MANAGEMENT

- Strategic planning of supply chains based on market trends, company goals and competitor strategies
- Adaptive operational management of supply chains in dynamically changing internal and external conditions (demand dynamics, change of suppliers, competitors' activity)
- Our large and diverse project experience enables us to consider supply network management in conjunction with strategic planning, marketing, and HR management. Thus we create not just elegant, but workable solutions.

Supply chain management involves managing multiple flows of goods and information across complex networks of suppliers, carriers, freight forwarders, logistics service providers and many other players. Backed by domain experts who know supply chain management and the challenges you face, our decision support systems will help you manage complexity, increase your profitability, and improve customer service to enhance competitiveness.

Supply chain management includes three basic stages: Decision-making, Order monitoring, and Documenting.

Decision-making is the most sophisticated stage. Here you have to analyze a great number of interrelated, dynamic and random events. Nevertheless, most of the supply chain management systems can offer you only the ability to monitor and document the process, which is of course necessary, but not fundamental. Supply chain management systems equipped with simulation based decision support allow for optimizing the supply chain according to your requirements and considerably increase its efficiency and agility.



TRANSPORTATION AND FLEET MANAGEMENT

Decision support in transportation logistics is one of our primary areas of expertise. We offer decision support solutions for:

- Strategic and operational transportation and fleet control based on the real-time data monitoring, accumulated statistics and simulation-based forecasts
- Optimal fleet management: planning of maintenance, purchases, renting or leasing of trucks, rail cars, ships, airplanes
- Risk assessment and risk management in transportation logistics

Transportation and fleet management includes many different aspects: transportation acquisition, transportation planning, routine maintenance planning, fleet maintenance and scheduling, and risk management as well as human resources management.

Our decision support systems help our clients deal with any these complicated issues, including the most challenging task - transportation management. Simulation modeling will allow you to maximize the transportation load, minimize your costs, and also calculate the probability of traffic costs overrun. You will be able to “play” various schemes of transportation and fleet management, which will allow you to reveal and prevent potential problems.

We will help you to:

- Increase fleet turnover and efficiency
- Provide information support for your business processes
- Evaluate efficiency and risk of any decision
- Increase your competitiveness and profitability

SCHEDULING AND PLANNING

- Activities planning
- Long-term and short-term scheduling
- Time management

Almost any manufacturing or logistics activity needs to be scheduled in some way. If conditions such as a small fleet size, the lack of stochastic inputs, or modest dependencies exist then a basic schedule can be developed with simple tools. But, more often, manufacturing challenges deal with a complicated technological process, stochastics, complex dependencies, and/or a substantial transportation fleet. In this case scheduling becomes too complex for manual scheduling.

A large variety of products with different reset periods create a scenario which calls for precise scheduling in order to increase output. Often this type of scheduling problem (or any other interrelated dynamic events planning in time) is so complicated that it cannot readily be solved analytically. The surest way to determine the optimal schedule is to perform an exhaustive search for all possible scenarios. This no easy task either since events develop in time, and the further forward we look the more options we get, therefore the more calculations we have to make, and so on. The complexity blossoms.

Therefore, in order to perform complex scheduling, we use a combination of simulation models and special optimization heuristics, which deliver schedules for our clients which meet their needs. Selecting the most suitable method of scheduling depends on the specific problem. We believe that our extensive knowledge and experience with complex planning and scheduling, makes us well suited to offer our clients powerful and comprehensive solutions.



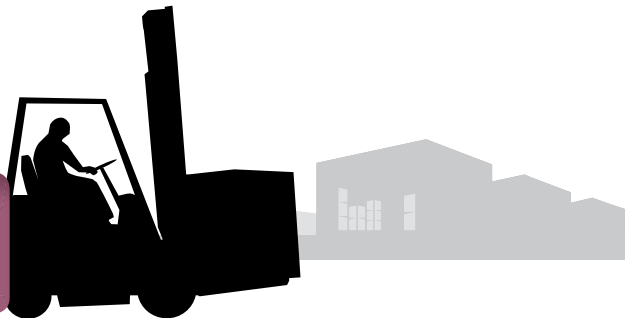
WAREHOUSE AND TERMINALS LOGISTICS

- Our consulting services also include of warehouse logistics problems:
- Longer-term planning of warehouse infrastructure based on business dynamics
- Day-to-day warehouse resource management

Detailed simulation modeling of warehouses based on physical dimensions of buildings, fork-lift-trucks, shelves, products and pallets, aimed at finding the optimal management policy

The warehouse is an essential part of any supply chain. Effective supply chain management is impossible without considering all parameters of the warehouse, its resources and product movement dynamics. The performance of the entire logistics structure substantially depends on the efficiency of warehouse logistics.

One of the most substantial simulation modeling applications is the analysis of warehouse/terminal networks. Simulation models help you analyze various options of warehouse/terminal locations, evaluate terminals response to traffic growth, and define the priority of terminal development. An AnyLogic analysis would be based on real stochastic characteristics, delivering accurate results.



TRANSPORTATION NETWORK

The transportation network consolidates all the resources and processes needed for storing and delivering cargo: transportation, delivery routes, warehouse and terminals, loading/unloading docks, and the associated information systems. Transportation network management, is a broader, more strategic view than fleet or terminal management. In fact, transportation network management gives you the control over the entire transportation system, so the problem of effective transportation network management actually adds up to the effective management of all its resources and processes. The ability to consider not only the entire system, but evaluating each of its component-to-component interactions brings decision-making to a new performance level which includes financial risk reduction.

MARKETPLACE AND COMPETITION

Agent Based Modeling (sometimes combined with System Dynamics) is currently the most efficient approach to modeling consumer behavior as well as the behavior of competing companies pursuing independent strategies. AnyLogic allows you to graphically capture the key states, transitions and interactions of individual consumers, populate the model with real numbers of agents-consumers (perhaps using your CRM data), and simulate the dynamics of the market.

- Consumer behavior
- Brand loyalty and product switching
- Promotion response
- Competitor behavior
- Simulation-based Strategist Games
- Marketplace models combined with Supply Chains, Logistics and Manufacturing Model
- New product introductions where comparable historical consumer data does not exist

ABOUT XJ TECHNOLOGIES

Some facts:

- We've been in business for more than 15 years operating out of three offices in Europe and the US.
- Our product, AnyLogic, is a worldwide leader in the simulation software market. We maintain our lead by typically releasing 2 major updates each year.
- Our network of 27 distributors gives us global presence
- We provide comprehensive and customized training in North America, Europe, South Africa, and Australia
- Our technical support answer the most questions in 48 hours
- Our professional consulting services cover all phases from the initial problem analysis to the development and deployment of complete decision support systems
- Our customers include more than 400 companies & 550 universities worldwide



SELECTED CLIENTS

Accenture	Lawrence Livermore National Laboratory
Air Force Research Laboratory	Lilly
AKBANK	Lockheed Martin
Alcatel	Los Alamos National Laboratory
Allstate Corporation	Matsushita
Aptima	McDonald's
AstraZeneca Pharmaceuticals	MITRE
Boeing	Mitsubishi
Booz Allen Hamilton	National Aeronautics and Space Administration
Bristol-Myers Squibb	National Defence and Canadian forces
Canadian National Railways	National Research Council of Canada
Cargill	Nippon Sheet Glass
Caterpillar	North Atlantic Treaty Organization
Central Economics and Mathematics Institute RAS	Norwegian Defence Research Establishment
Centrotherm photovoltaics	NTT Data Corporation
Companhia Vale do Rio Doce	Oerlikon Solar
Consolidated Contractors Group S.A.L.	Orange County Health Department
Diamond Consultants	OSRAM
DSO National Laboratories	Pfizer
EIFER	Pitney Bowes
EMC2	PricewaterhouseCoopers
ETH Zurich	Profactor Research and Solutions
Fraunhofer	Raytheon Systems
Gazprom	Royal Caribbean Cruises
GEFCO	RTI International
General Delegation for Ordnance	RUSAL
General Dynamics	Sandia National Lab
General Mills	Savings Bank of the Russian Federation
General Motors	Schiller Automation
Genesys	Severstal
German Aerospace Center	Tessella
Health Market Science	Thales
Hewlett Packard	Time Warner Cable
HSBC	T-Systems
IBM	UK Home Office
IKERLAN	US NAVY
Japan Science and Technology Agency	Veolia Environnement
Johns Hopkins University	Vimpelcom
Johnson & Johnson	Volvo

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