

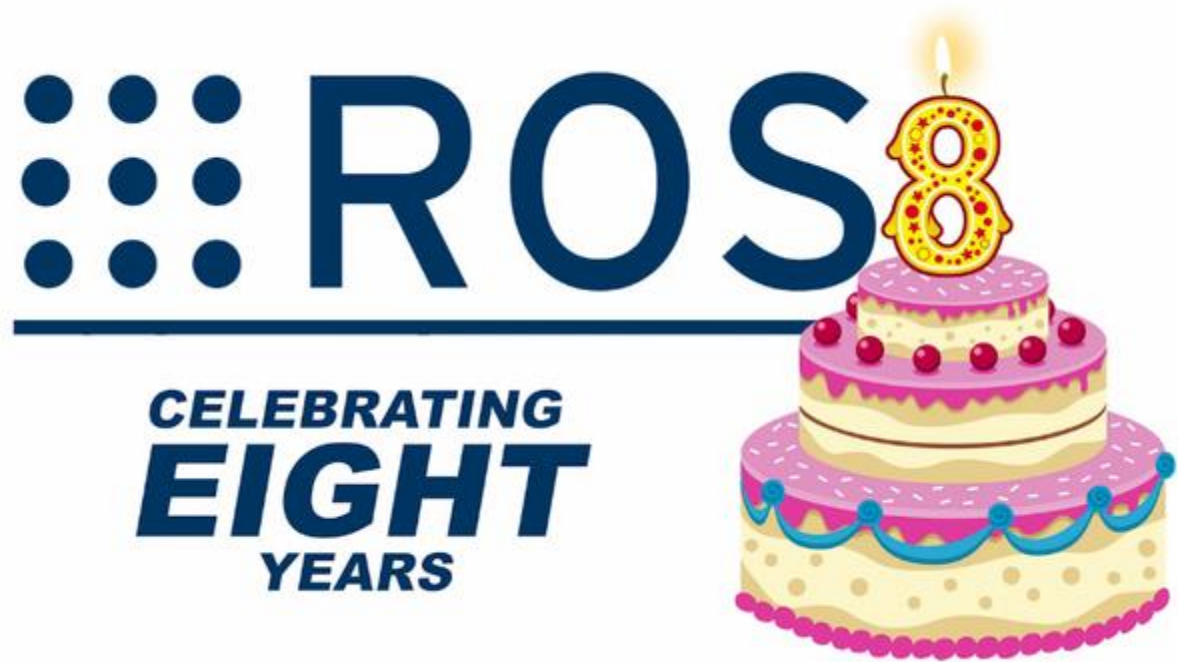
ROS 8년간의 분석

2016. 06. 19

ROBOTIS

Open Source Team

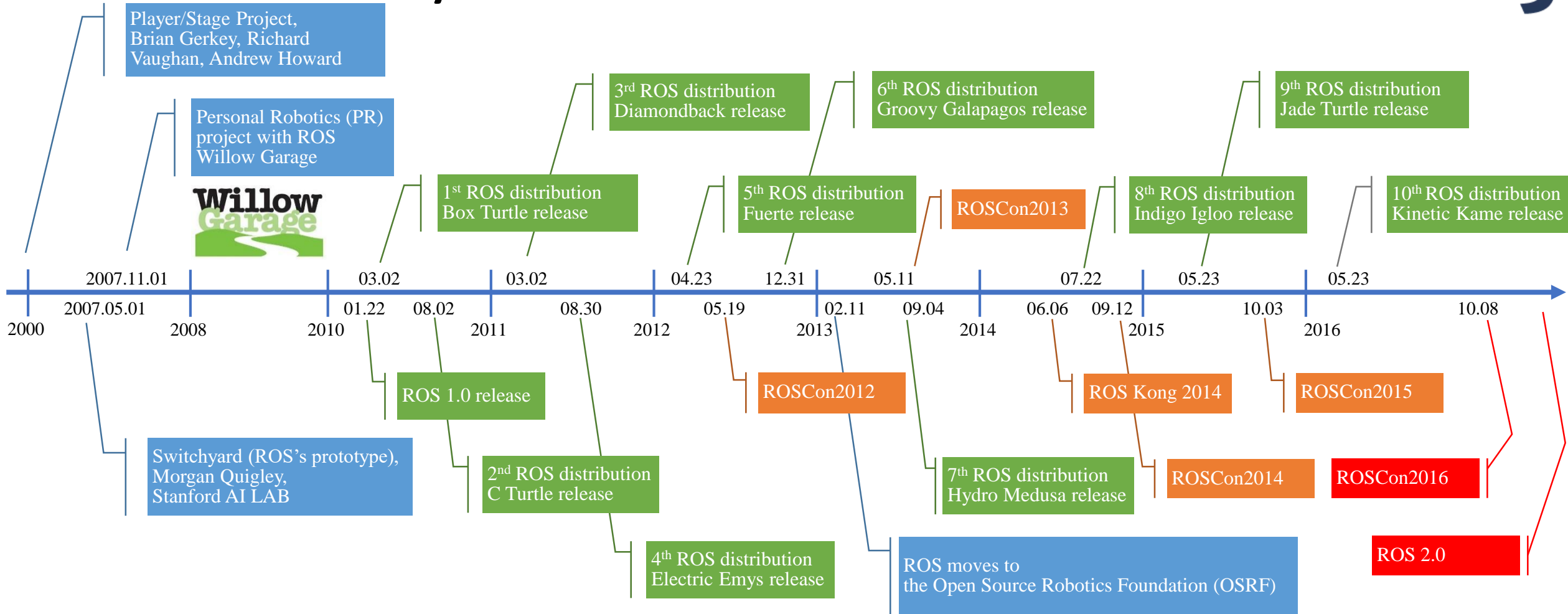
Yoonseok Pyo



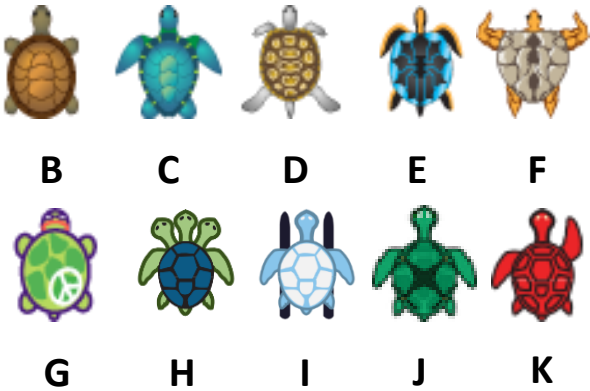
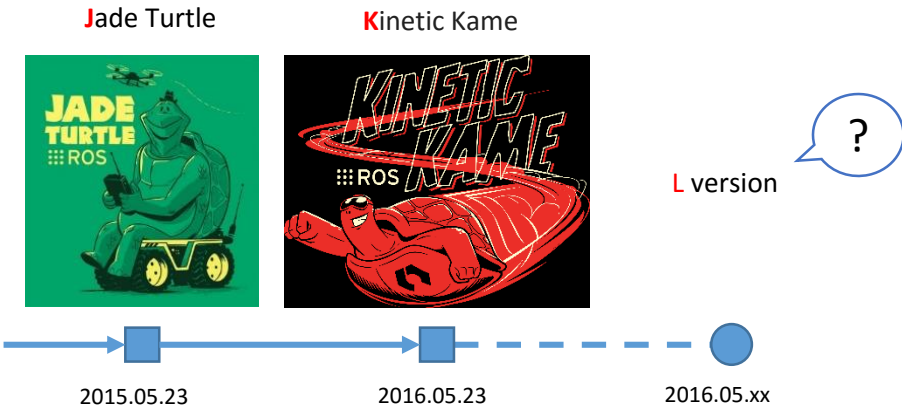
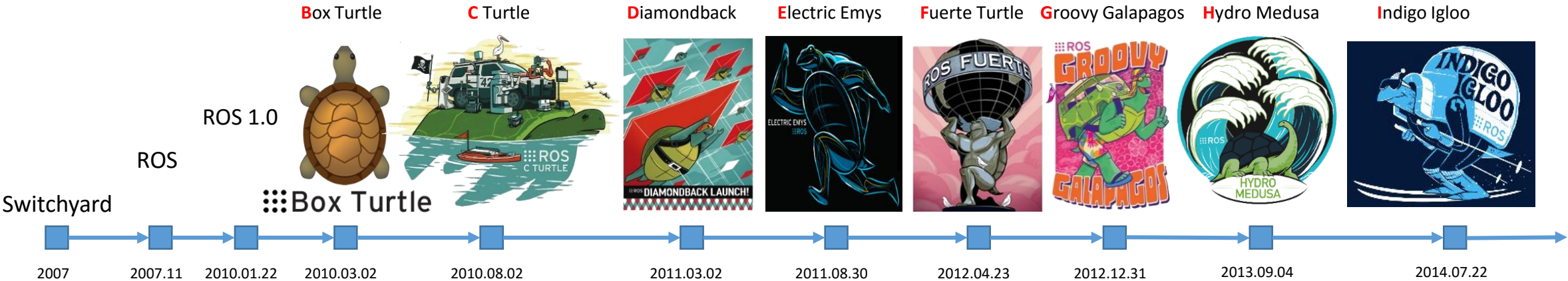
CELEBRATING
EIGHT
YEARS



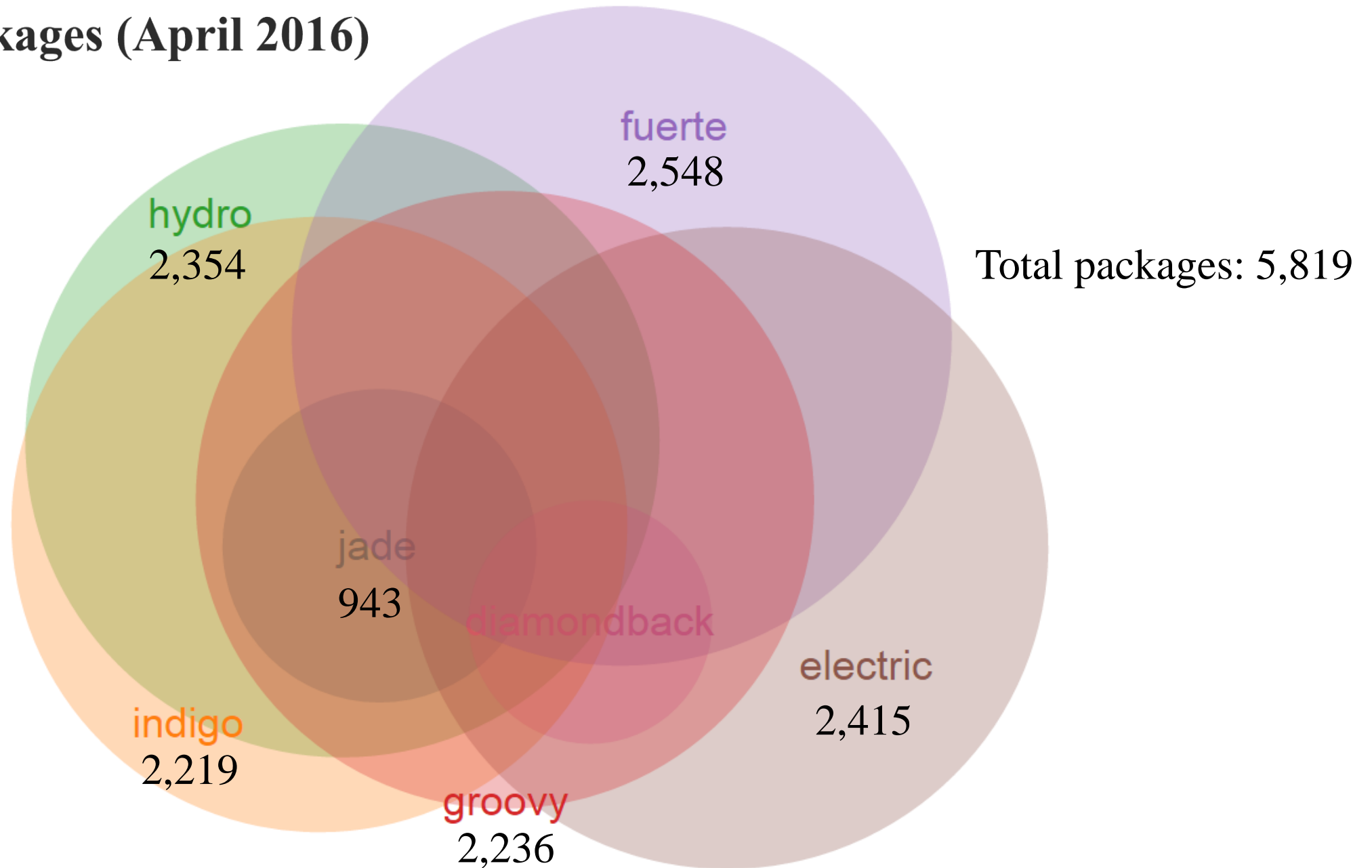
ROS History


























































ROS Versions, Posters, Icons

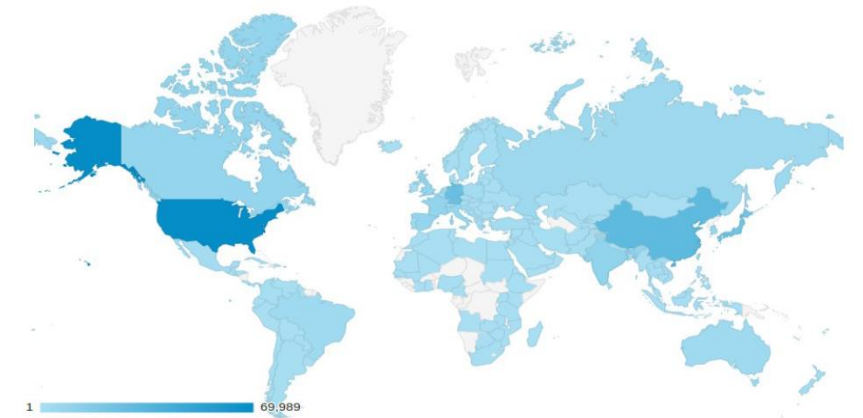


Known packages (April 2016)

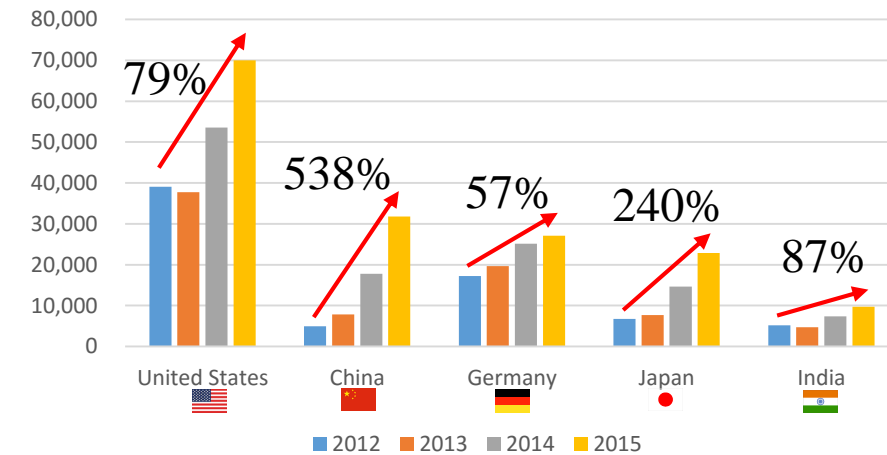


Visitor locations (official wiki.ros.org, not include data of mirrors)

2012			2013			2014			2015		
 United States	39,112		 United States	37,773		 United States	53,530		 United States	69,989	
 Germany	17,225		 Germany	19,666		 Germany	25,133		 China	31,778	
 Japan	6,725		 China	7,822		 China	17,812		 Germany	27,080	
 Spain	6,563		 Japan	7,714		 Japan	14,619		 Japan	22,867	
 India	5,187		 United Kingdom	5,672		 Spain	9,192		 India	9,740	
 France	5,074		 India	4,745		 Canada	8,611		 France	9,431	
 China	4,975		 Australia	4,734		 France	8,399		 United Kingdom	9,143	
 United Kingdom	4,095		 Canada	4,145		 United Kingdom	7,434		 Spain	8,617	
 Canada	3,754		 Brazil	4,122		 India	7,360		 Canada	8,497	
 Italy	3,549		 France	4,074		 Italy	6,623		 Italy	7,176	
 South Korea	2,890		 South Korea	4,050		 Brazil	5,837		 South Korea	7,022	
 Australia	2,706		 Spain	3,951		 South Korea	4,988		 Singapore	5,457	
 Brazil	2,341		 Italy	2,849		 Australia	4,828		 Taiwan	5,411	
 Netherlands	2,214		 Singapore	2,612		 Singapore	4,688		 Russia	4,732	
 Mexico	2,168		 Russia	2,162		 Russia	3,534		 Brazil	4,359	
 Russia	2,005		 Mexico	2,097		 Portugal	3,194		 Australia	4,252	
 Portugal	1,941		 New Zealand	2,073		 Netherlands	2,556		 Portugal	3,623	
 Sweden	1,633		 Sweden	2,040		 Switzerland	2,454		 Switzerland	2,871	
 Singapore	1,604		 Turkey	1,849		 Poland	2,279		 Poland	2,706	
 Austria	1,447		 Switzerland	1,795		 Taiwan	2,252		 Netherlands	2,431	
 New Zealand			 Portugal			 Mexico			 Mexico	2,306	
 Turkey			 Netherlands			 Turkey			 Turkey	2,302	
 Switzerland			 Poland			 Austria			 Austria	2,277	
 Poland			 Taiwan			 New Zealand			 New Zealand	2,019	
 Taiwan			 Austria			 Israel			 Israel	1,938	
 Israel			 Israel			 Sweden			 Sweden		

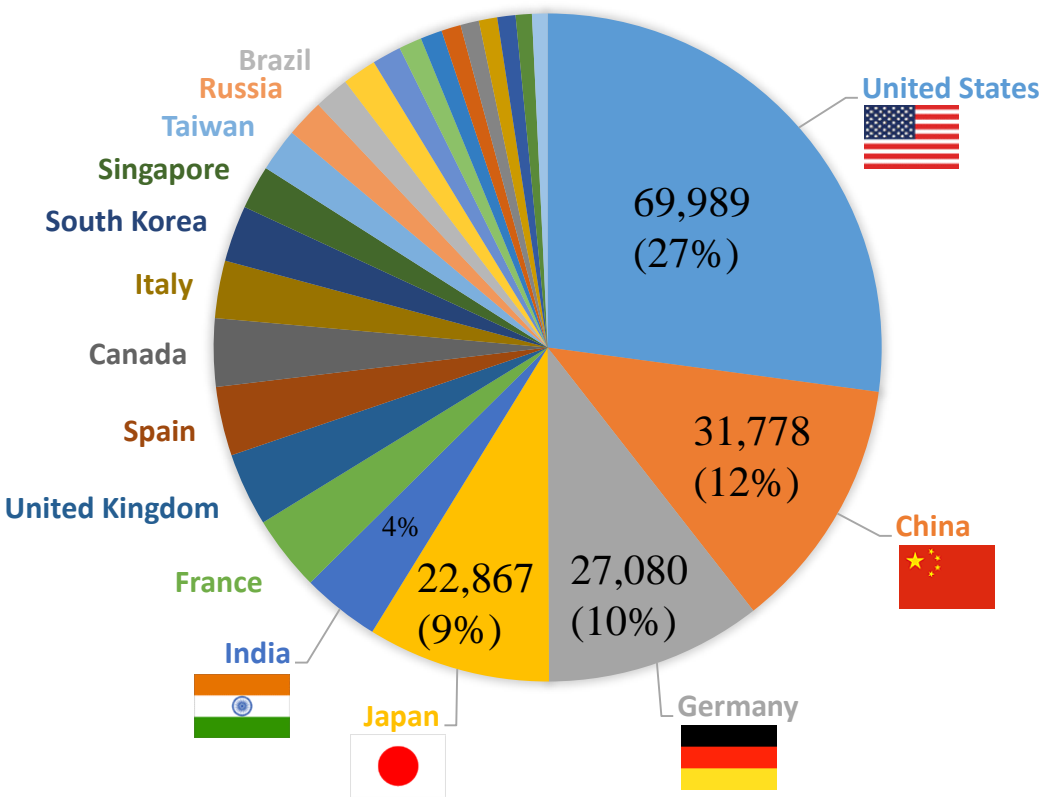


Top 5 (2015)

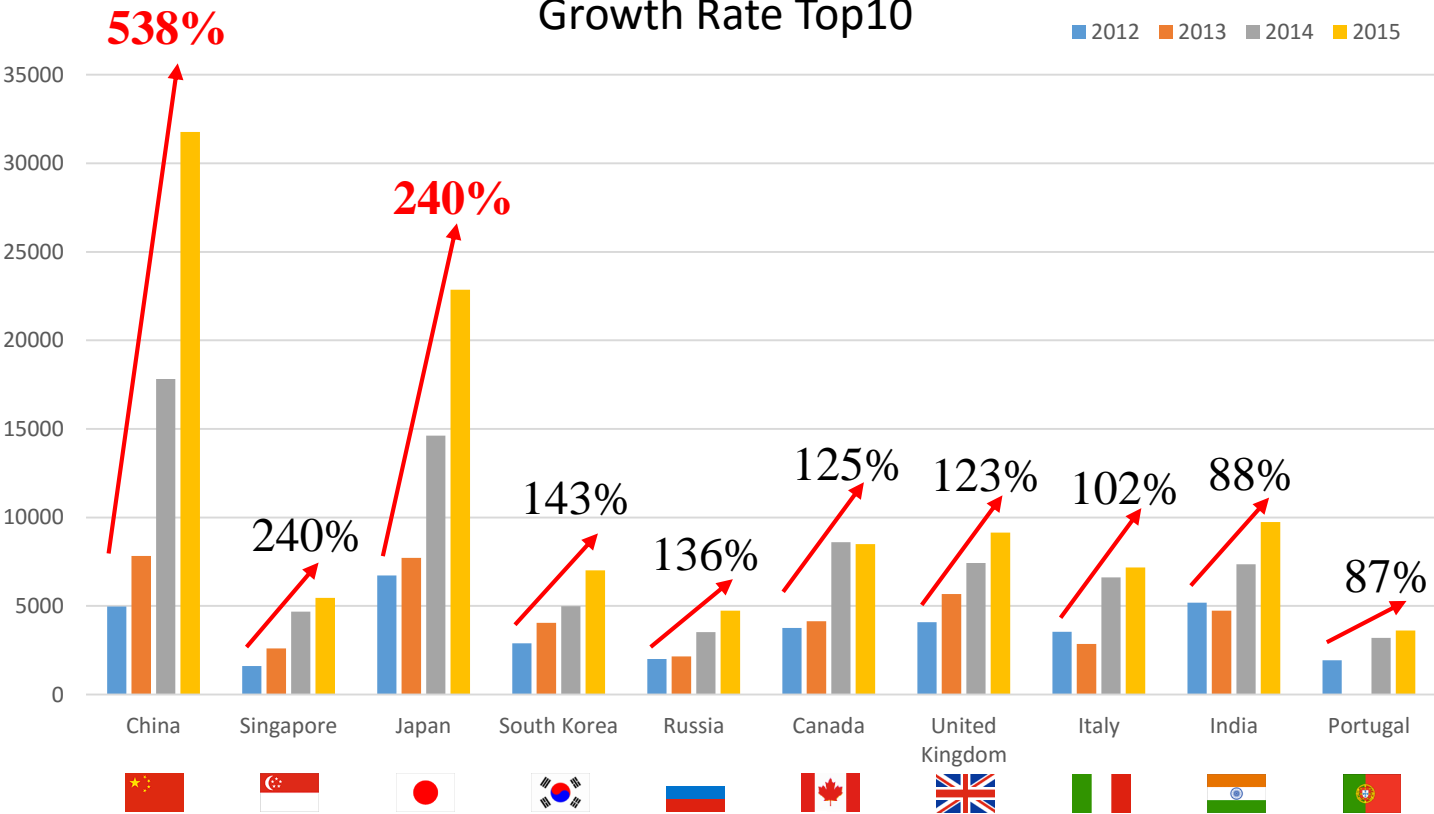


Visitor locations (official wiki.ros.org, not include data of mirrors)

Visitor in 2015

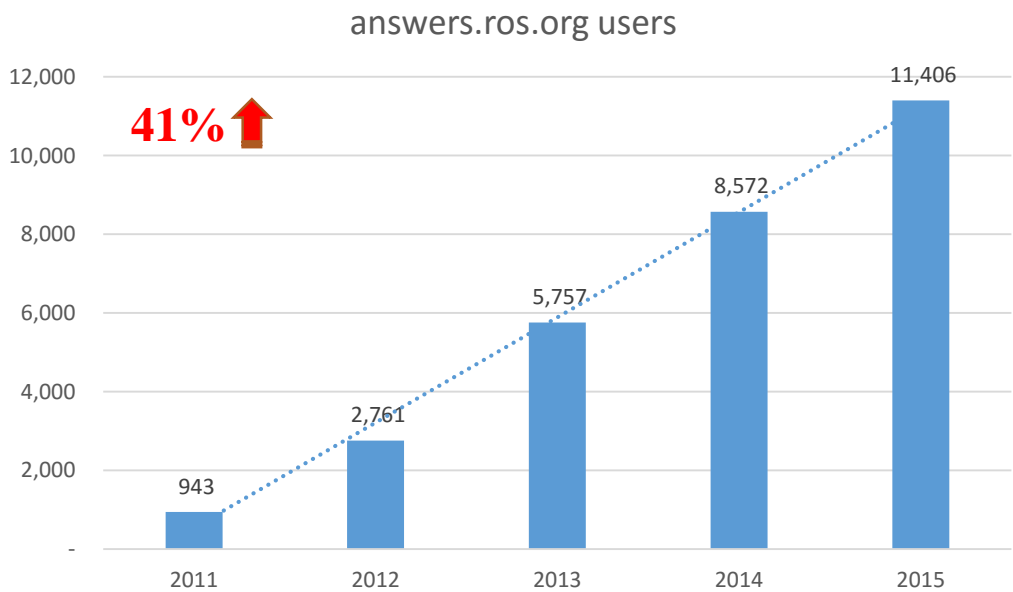
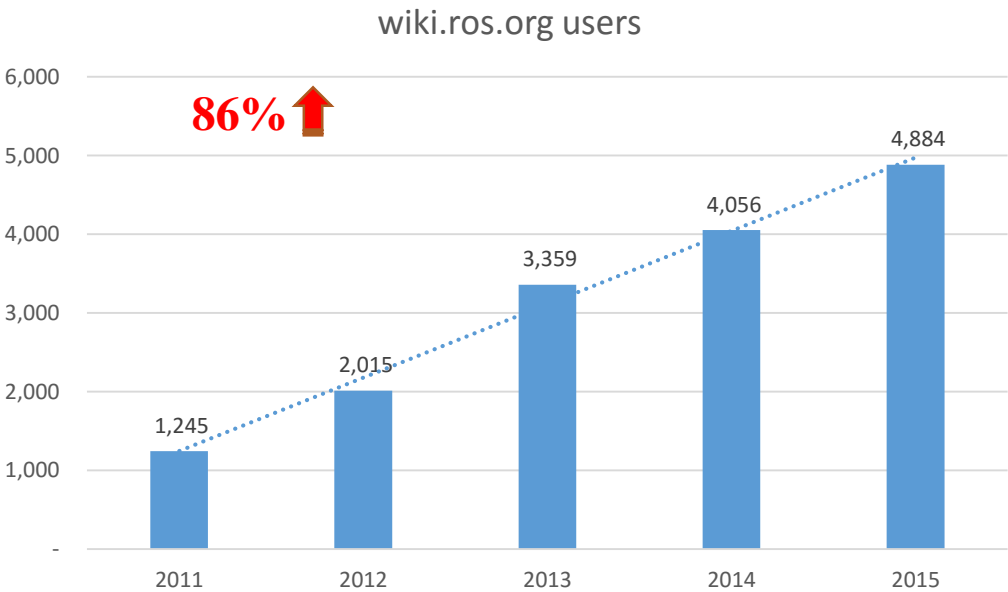
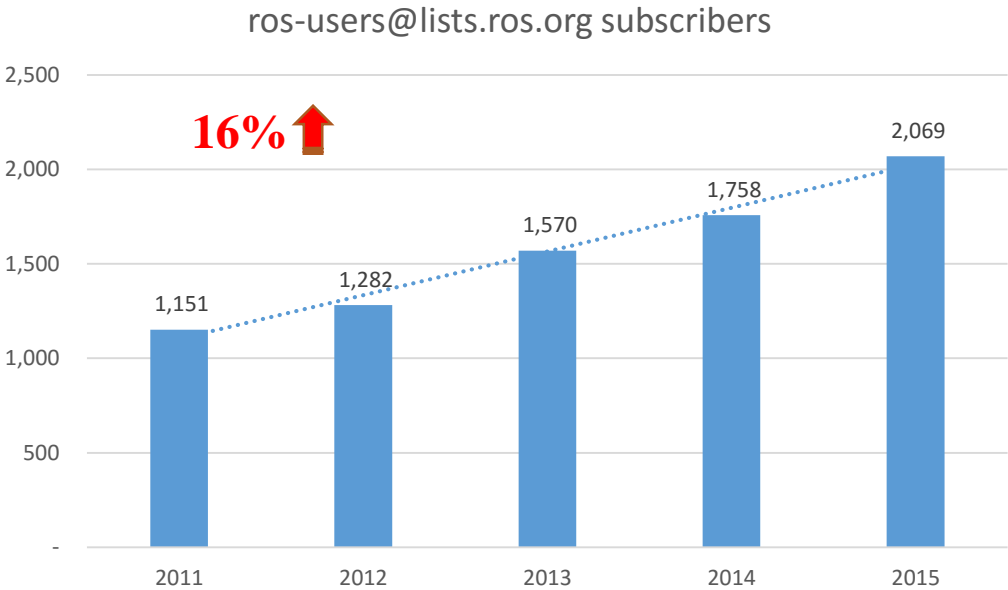


Growth Rate Top10



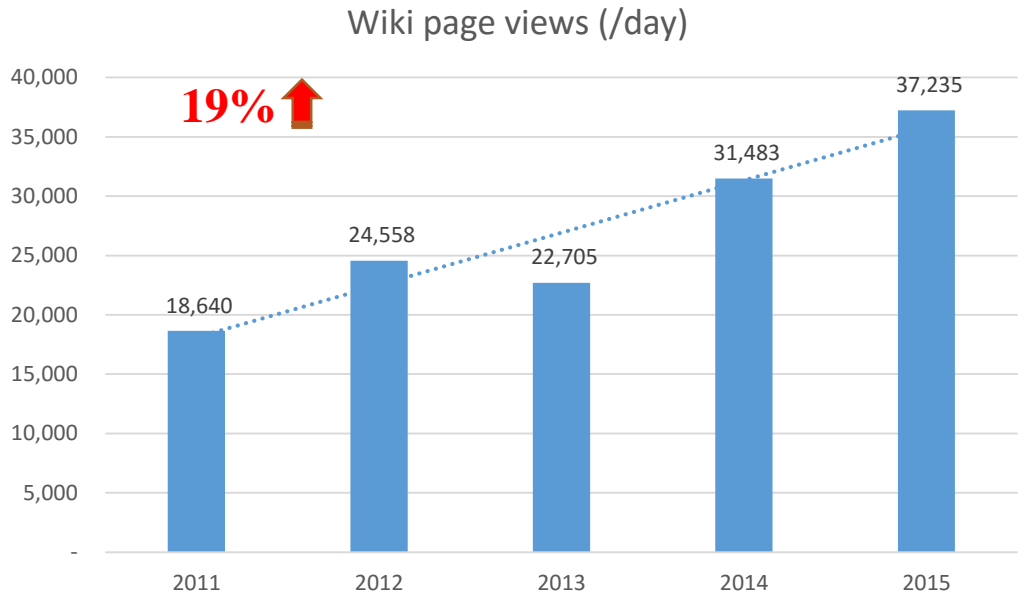
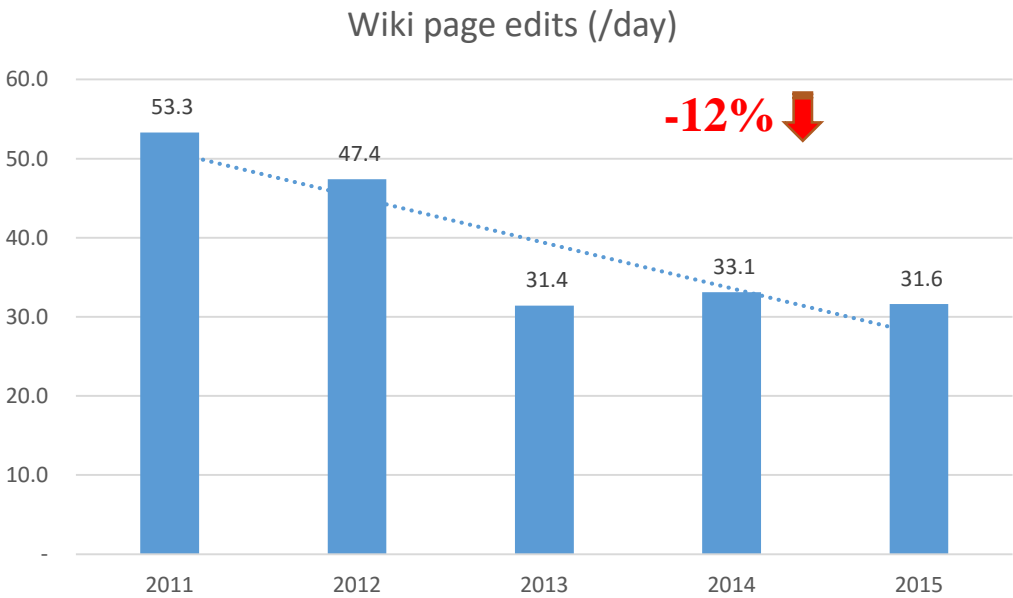
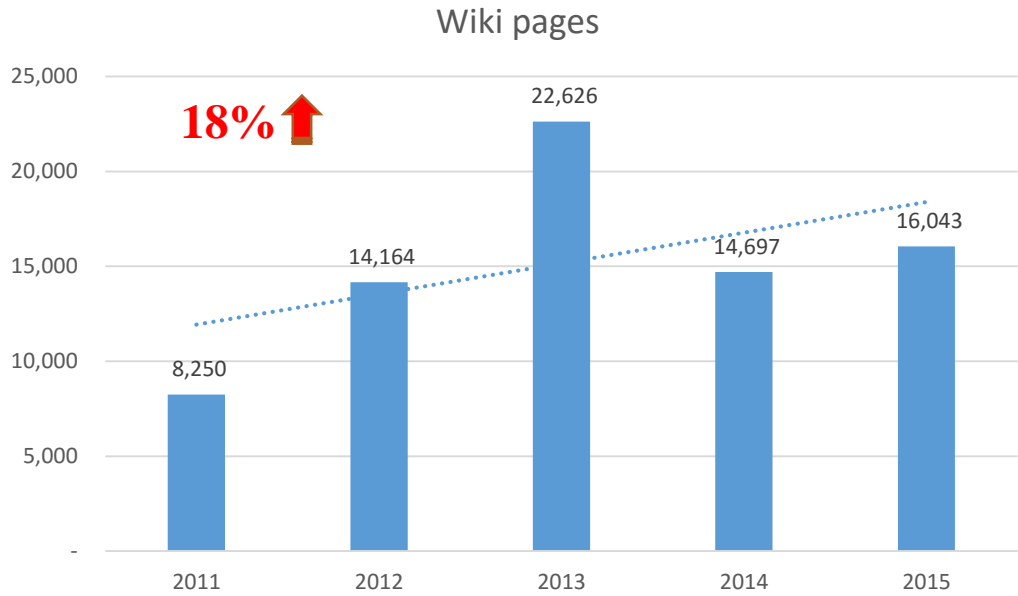
Membership Metrics

	2011	2012	2013	2014	2015	Compound Annual Growth Rate
ros-users@lists.ros.org subscribers	1,151	1,282	1,570	1,758	2,069	16%
wiki.ros.org users	1,245	2,015	3,359	4,056	4,884	41%
answers.ros.org users	943	2,761	5,757	8,572	11,406	86%



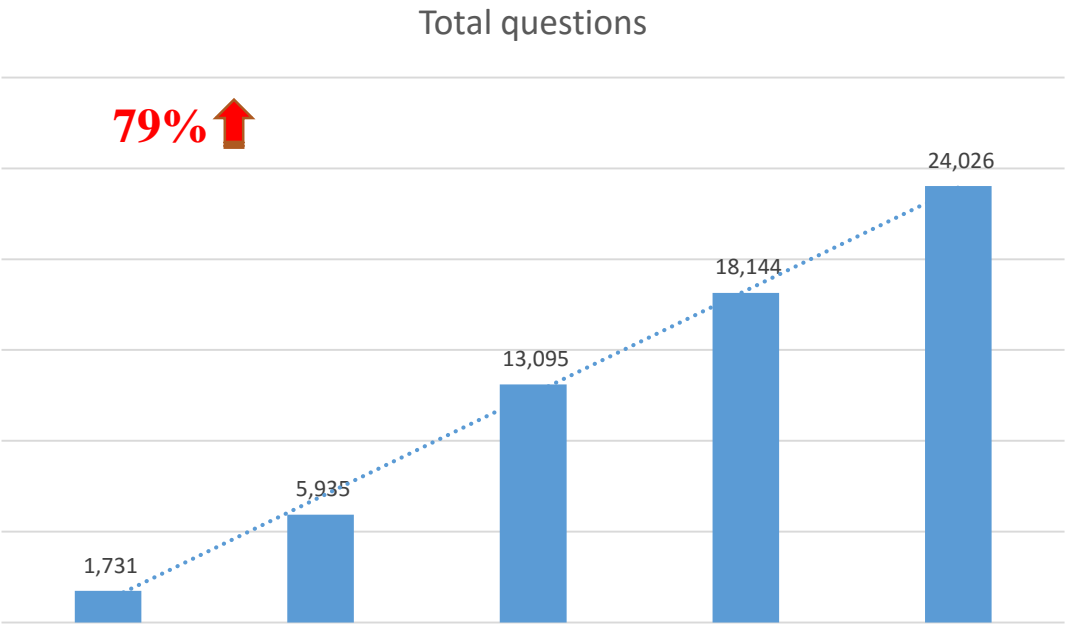
Activity Metrics (wiki.ros.org)

	2011	2012	2013	2014	2015	Compound Annual Growth Rate
Wiki pages	8,250	14,164	22,626	14,697	16,043	18%
Wiki page edits (/day)	53.3	47.4	31.4	33.1	31.6	-12%
Wiki page views (/day)	18,640	24,558	22,705	31,483	37,235	19%

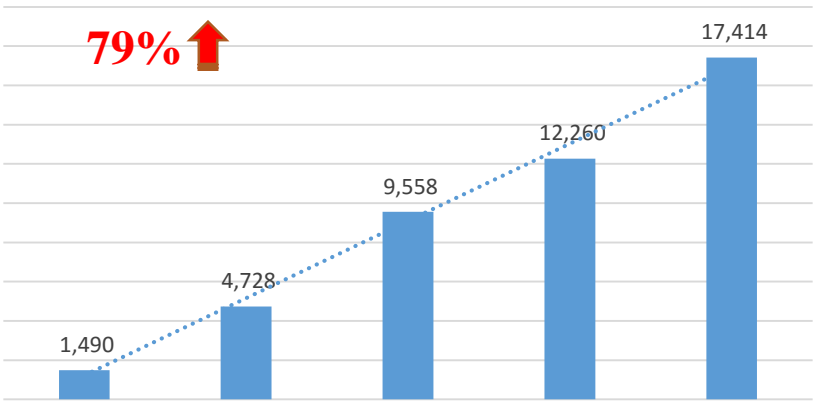


Activity Metrics (answers.ros.org)

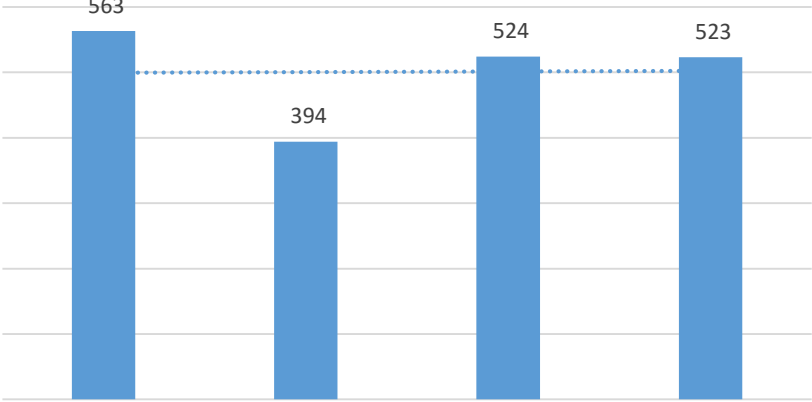
	2011	2012	2013	2014	2015	Compound Annual Growth Rate
Total questions	1,731	5,935	13,095	18,144	24,026	93%
Answered questions	1490	4728	9558	12260	17414	85%
New questions (month)		563	394	524	523	-2%
New questions (day)		18.7	12.7	16.9	16.9	-3%



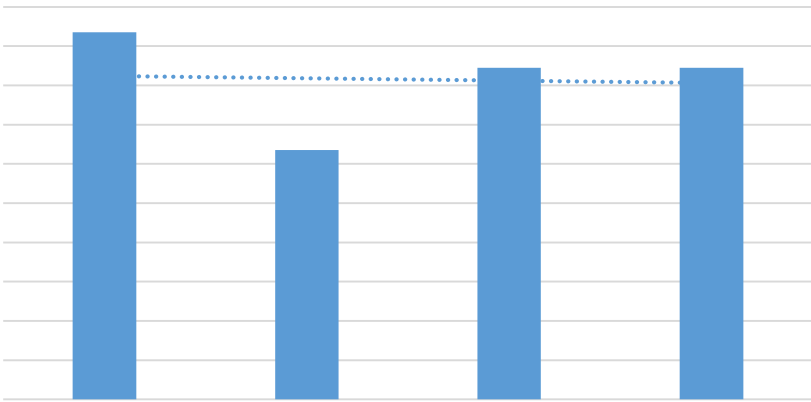
Answered questions



New questions (month) -2% ↓



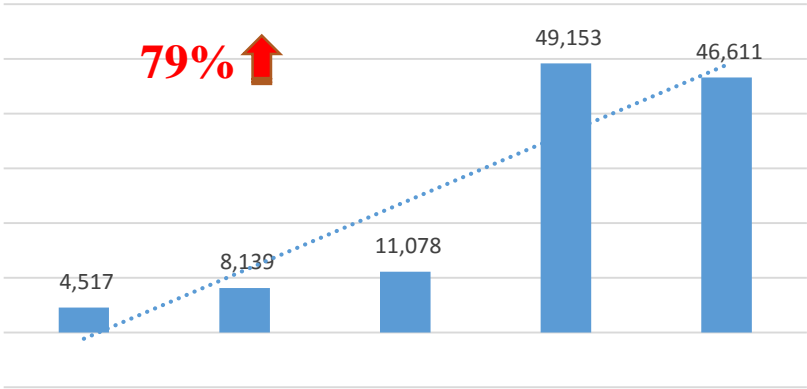
New questions (day) -3% ↓



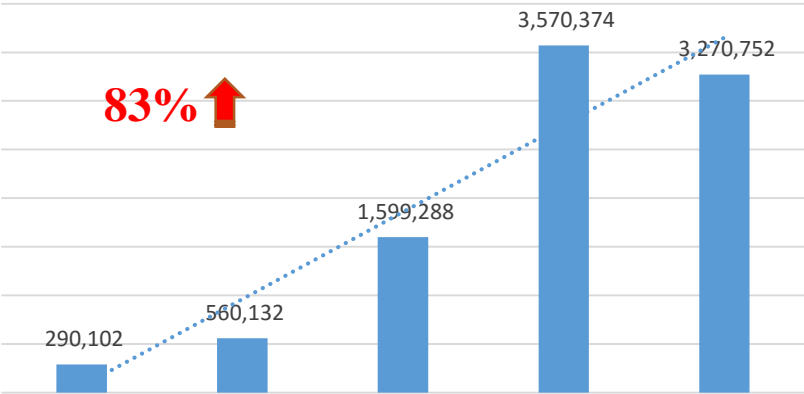
Code Metrics (Binary Downloads)

	2011	2012	2013	2014	2015	Compound Annual Growth Rate
Total Unique IP addresses downloading .deb files	4,517	8,139	11,078	49,153	46,611	79%
Total downloads of .deb packages	290,102	560,132	1,599,288	3,570,374	3,270,752	83%
Unique package names downloaded as .deb files		1,031	2,593	4,000	5,592	76%
Number of unique versions of .deb packages downloaded		16,419	32,591	46,056	38,415	33%

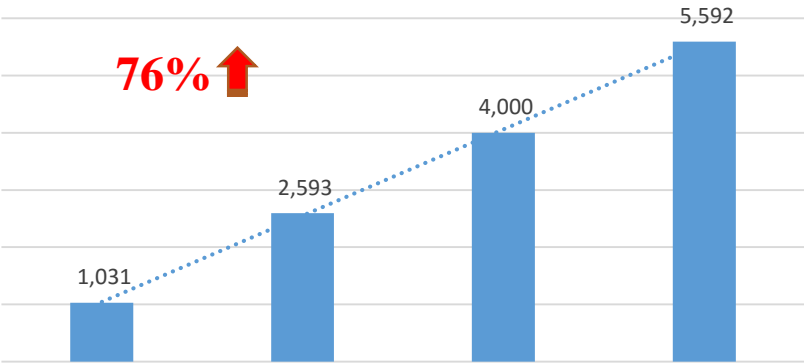
Total Unique IP addresses downloading .deb files



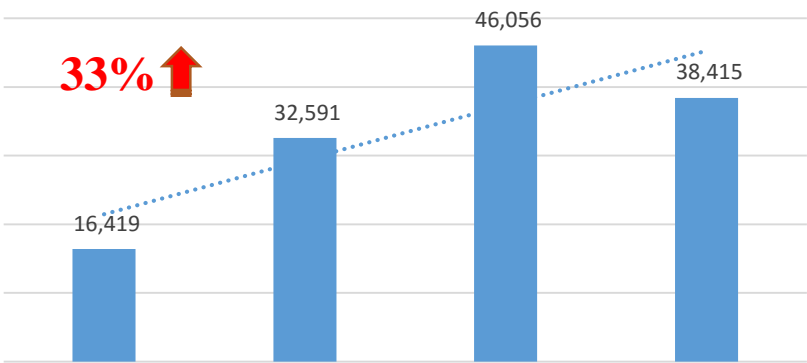
Total downloads of .deb packages



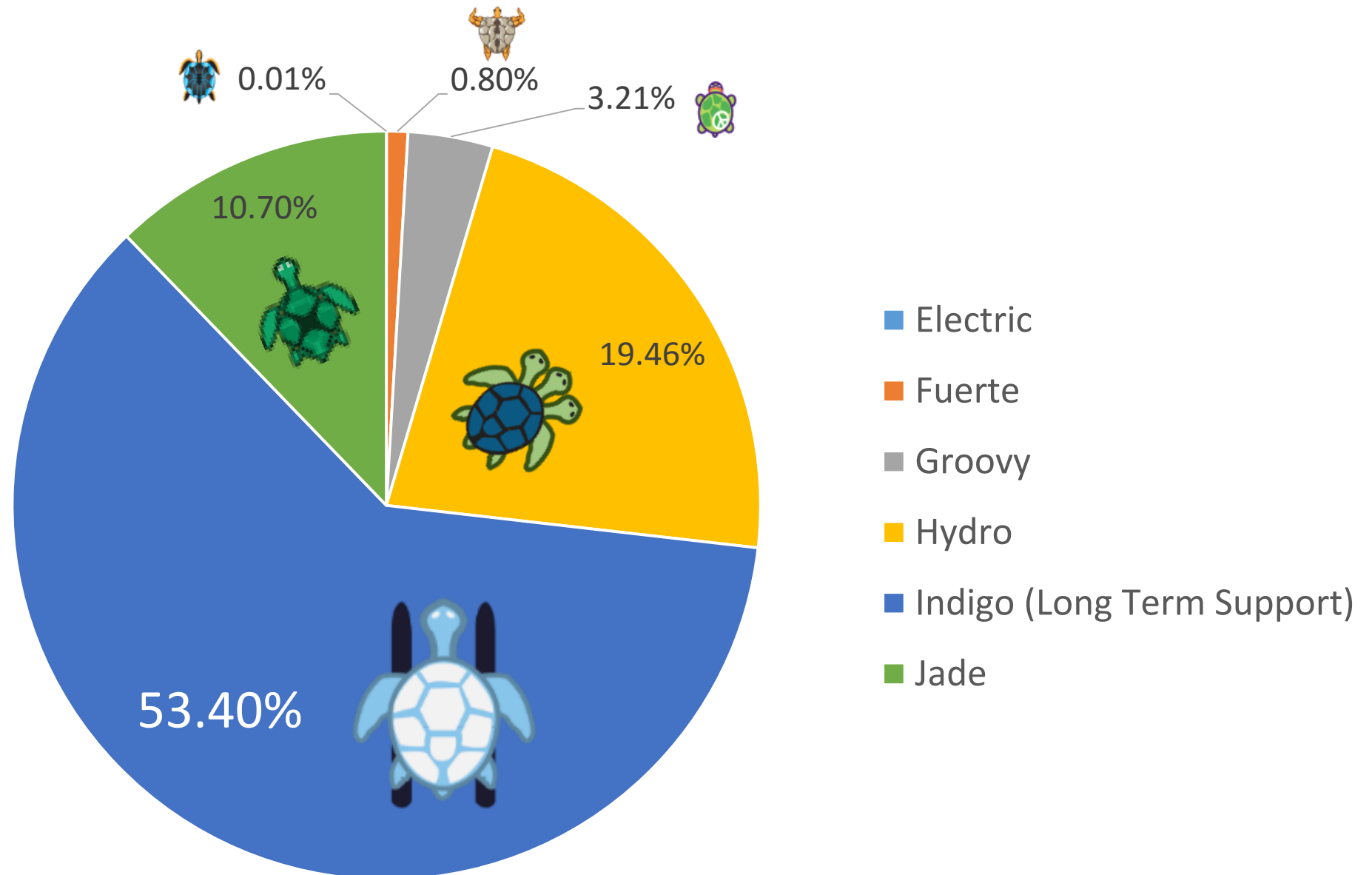
Unique package names downloaded as .deb files



Number of unique versions of .deb packages downloaded

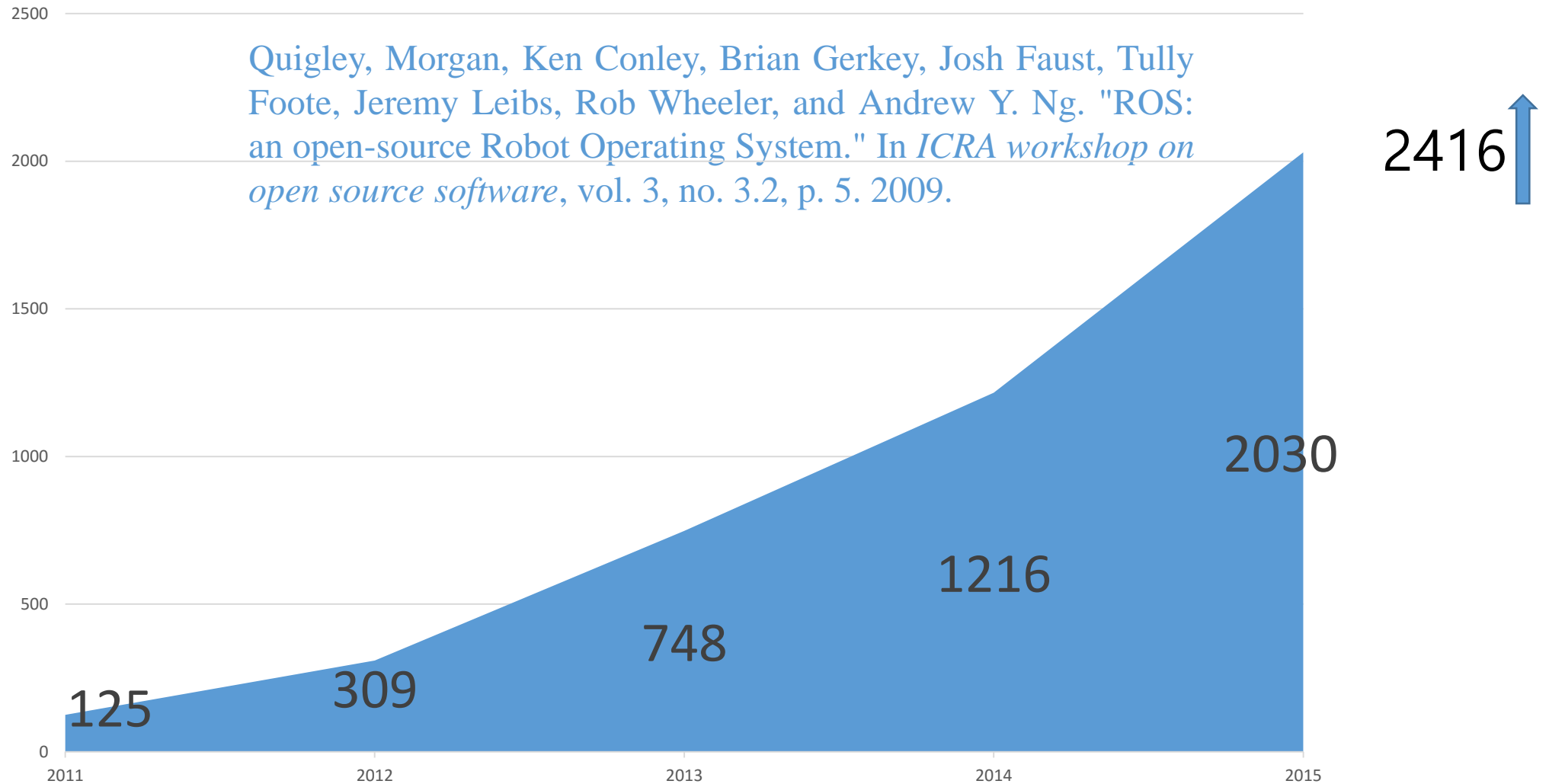


Code Metrics (Binary Downloads by rosdistro, 2015)



Research use

Number of papers citing “ROS: an open-source Robot Operating System”

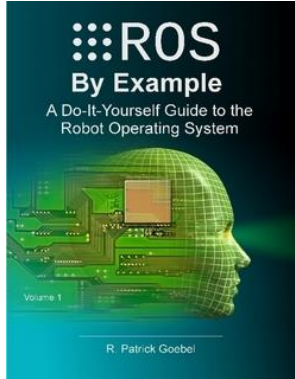


University courses listed on wiki.ros.org/Courses

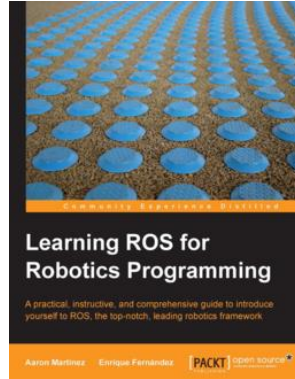
- Brown University, USA
- Case Western Reserve University, USA
- Cornell University, USA
- CU Boulder, USA
- Northwestern University, USA
- Siena College, USA
- Stanford University, USA
- University at Albany, USA
- University of Pennsylvania, USA
- University of South Carolina, USA
- University of Texas at Austin, USA
- Washington University in St Louis, USA
- KU Leuven, Germany
- Leibniz Universität Hannover, Germany
- DEI - University of Padova, Italy
- Sapienza University of Rome, Italy
- Kyushu University, Japan
- Tokyo University, Japan
- Bar-Ilan University, Israel
- Prince Sultan University, Saudi Arabia
- University of Birmingham, United Kingdom
- Université de Sherbrooke, Canada
- University of Zagreb, Croatia



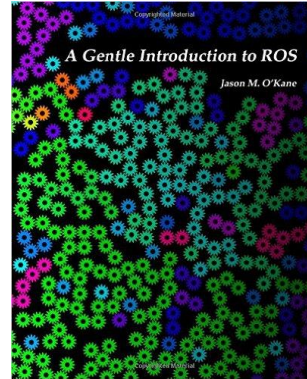
Books for ROS



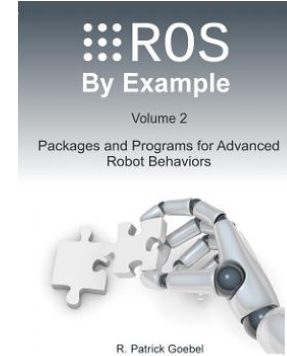
September, 2012



September, 2013



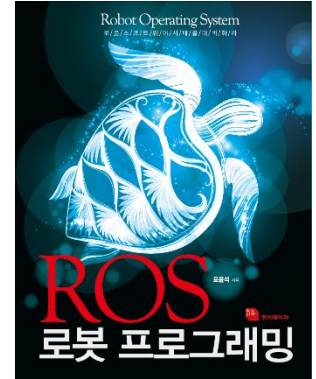
October, 2013



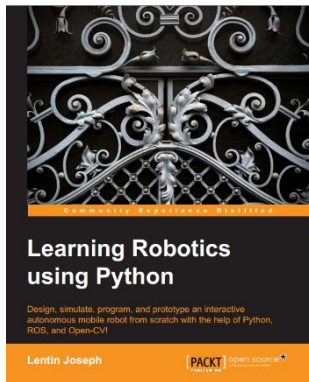
August, 2014



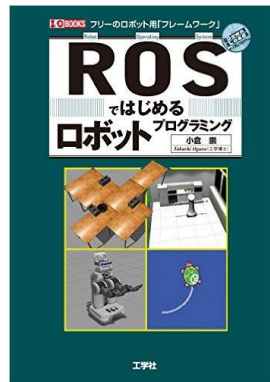
December, 2014



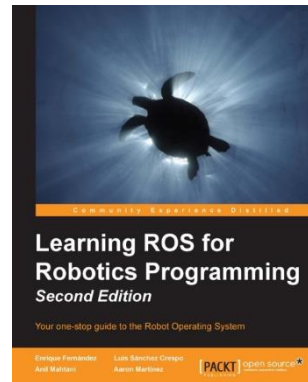
March, 2015



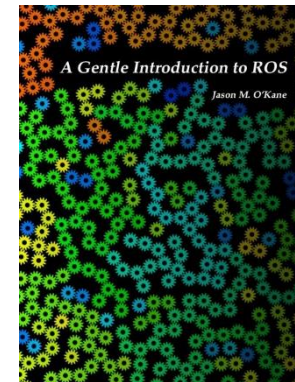
May, 2015



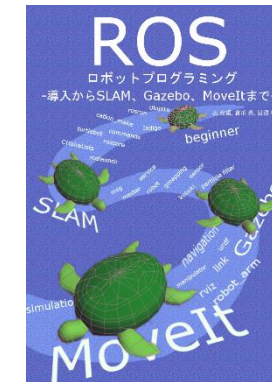
June, 2015



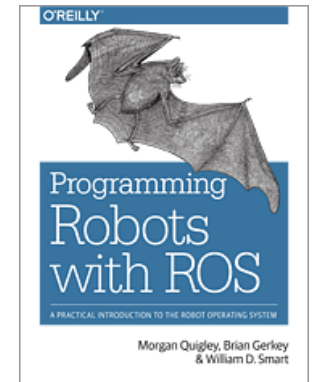
August, 2015



October, 2015























































































November, 2015

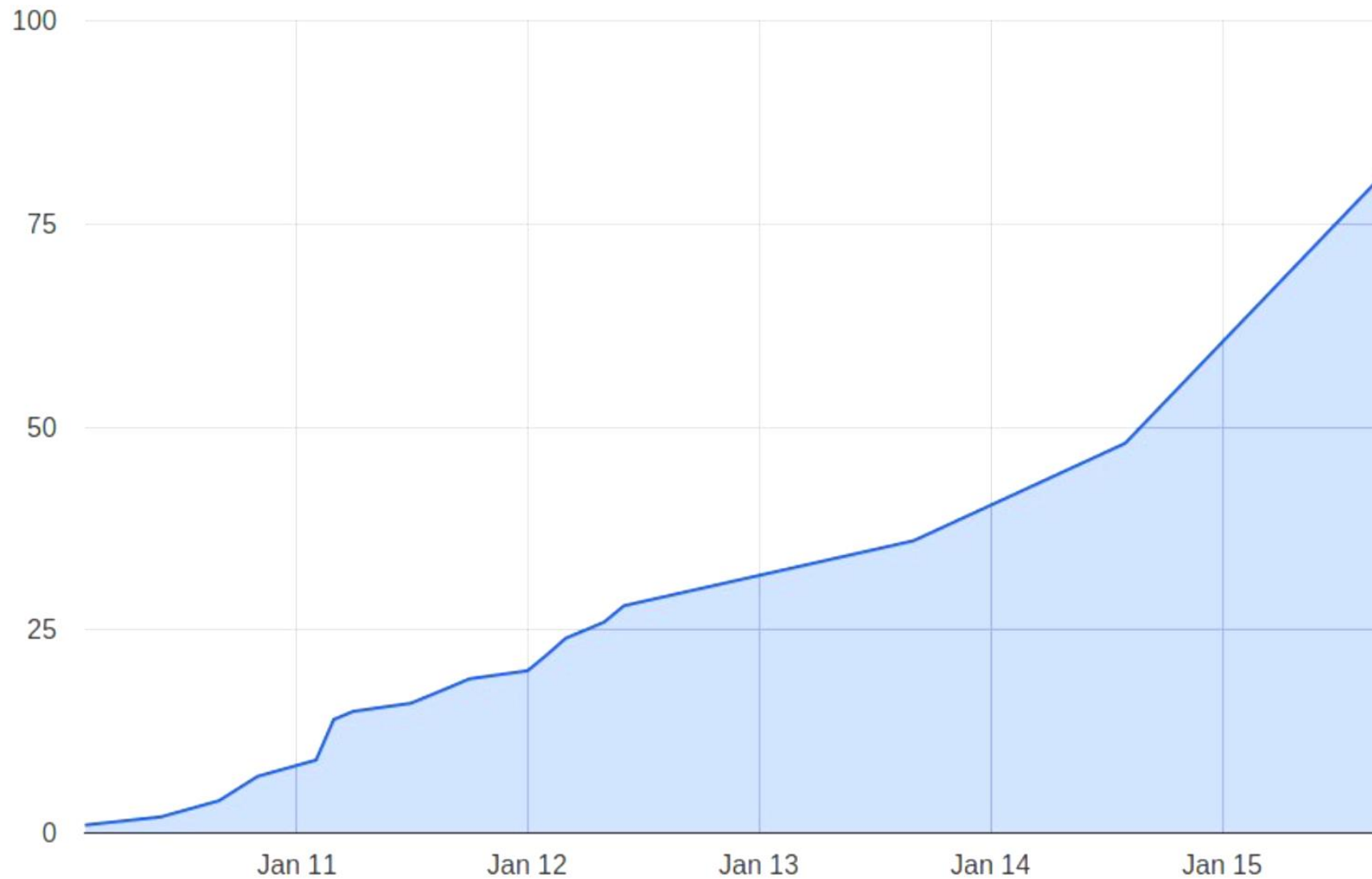


December, 2015

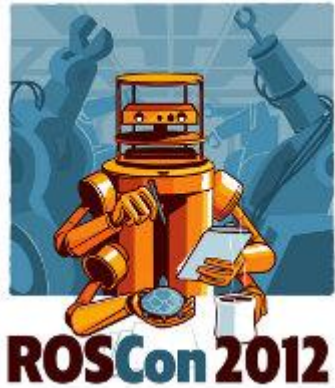
Robots listed on wiki.ros.org/Robots

 210 Stanley Innovation V3 Segway	 220 Stanley Innovation V3 Segway	 420 Omni Stanley Innovation V3 Segway	 440LE Stanley Innovation V3 Segway	 Erie-Brain 2	 Erie-Copter	 Erie-Copter Ubuntu Core special edition	 Erie-HexaCopter	 Motoman, Yaskawa (ROS-Industrial)	 Nav2	 Neobotix mpx-500	 Neobotix mpx-500
 440SE Stanley Innovation V3 Segway	 ABB Robotics (ROS- Industrial)	 Adept MobileRobots Pioneer family (P3-DX, P3-AT, ...)	 Adept MobileRobots Pioneer LX	 Erie-Plane	 Erie-Rover	 eurobot	 Fanuc Robotics (ROS- Industrial)	 Neobotix mpx-700	 Open Unit Robot	 Otto Bock SensorHand Speed	 PAL Robotics PMB-2
 Adept MobileRobots Seekur family (Seekur, Seekur Jr.)	 Aldebaran Nao	 Allegro Hand SlimLab	 AMIGO	 Festo Didactic Robotino	 Fetch robotics: Fetch	 Fetch robotics: Freight	 Fraunhofer IPA Care- O-bot 3	 PAL Robotics REEM- C	 PAL Robotics Tiago	 RazBot	 REEM
 AscTec Quadrotor	 Barrett Hand	 BipedRobot	 Bitcraze Crazyflie	 Fraunhofer IPA Care- O-bot 4	 Gostai Jazz	 GoTher! Robot	 I-Cart mini	 Robonaut 2	 RoboSavvy Self- balance platform	 Robotnik AGVS	 Robotnik GUARDIAN
 Clearpath Robotics Grizzly	 Clearpath Robotics Husky	 Clearpath Robotics Jackal	 Clearpath Robotics Kingfisher	 Innok Heroes	 Intel Edison	 iRobot Roomba	 Kawada Nextage / Hiro	 Robotnik RB-1	 Robotnik RBCAR	 Robotnik SUMMIT XL	 Robotnik SUMMIT-X
 Clearpath Robotics Ridgeback	 CoroWare Corobot	 Cyton-Gamma	 Denso VB060	 Kinova JACO	 Kinova MICO	 Kobuki	 Komodo	 ROS-Industrial	 Ros2Bot	 Shadow Hand	 Softbank Pepper
 Dr. Robot Jaguar	 Eddiebot	 Enova Robotics MiniLab	 Erie-Brain	 Lego NXT	 Lizi	 Maggie	 Merlin miobotPro	 Tulip	 TurtleBot	 Universal Robots (ROS-Industrial)	 Videre Elastic

Robots listed on wiki.ros.org/Robots



ROS Conferences



St. Paul, Minnesota, USA
19-20 May 2012



Stuttgart, Germany
11-12 May 2013



Hong Kong University
June 6, 2014



Chicago, Illinois, USA
September 12-13, 2014



Hamburg, Germany
May 3-4, 2015

ROS Conferences

ROSCon will happen October 8th-9th, 2016 in Seoul, Korea!



Sponsors



BOSCH
Invented for life



fetch
robotics



CLEARPATH
ROBOTICS™

rethink
robotics™

CRUISE



ubuntu



Google™



www.gaitech.hk
GaiTech International

Fraunhofer
IPA



Open Source
Robotics Foundation



Webots™
robot simulation

Robotnik



THE UNIVERSITY OF HONG KONG

ETRI

YUJIN ROBOT

DOF hiDOF

3DR

YASKAWA
MOTOMAN ROBOTICS

HEARTLAND
ROBOTICS

ROBOTIS



MAGAZINO
simple storage

SCHUNK

oroWare

TOYOTA

ROS
industrial
consortium

I Heart Engineering

BLUE RIVER
TECHNOLOGY

synapticor

McCormick

Northwestern Engineering

SICK
Sensor Intelligence.

Shadow
Robot Company

NVIDIA

SwRI

**Master of Science
in Robotics**

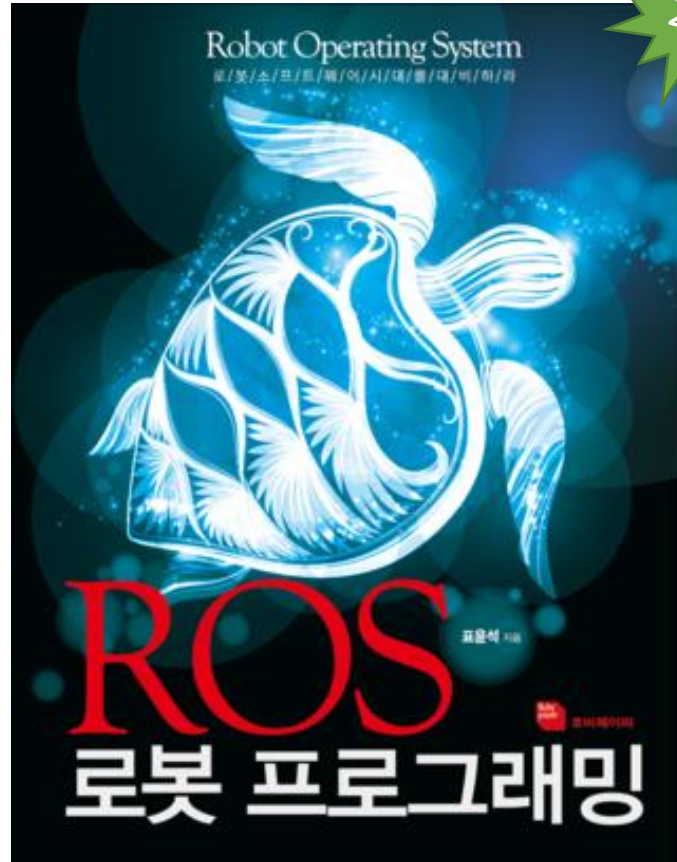


Erle Robotics

Metrics for Celebrating Eight Years



여기서! 광고 하나 나가요~



2쇄

국내 유일! 최초! ROS 책
비 영어권 최고의 책
인세 전액 기부

여기서! 광고 둘 나가요~



- 오로카
- www.oroqa.org
- 오픈 로보틱스 지향
- 풀뿌리 로봇공학의 저변 활성화
- 공개 강좌, 세미나, 프로젝트 진행

- 로봇공학을 위한 열린 모임 (KOS-ROBOT)
- www.facebook.com/groups/KoreanRobotics
- 로봇공학 통합 커뮤니티 지향
- 일반인과 전문가가 어울러지는 한마당
- 로봇공학 소식 공유
- 연구자 간의 협력

혼자 하기에 답답하시다고요?
커뮤니티에서 함께 해요~

끝.

표윤석

Yoonseok Pyo
pyo@robotis.com
www.robotpilot.net



www.facebook.com/yoonseok.pyo

Thanks for your attention!

표윤석

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pyo@robotis.com
www.robotpilot.net

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