

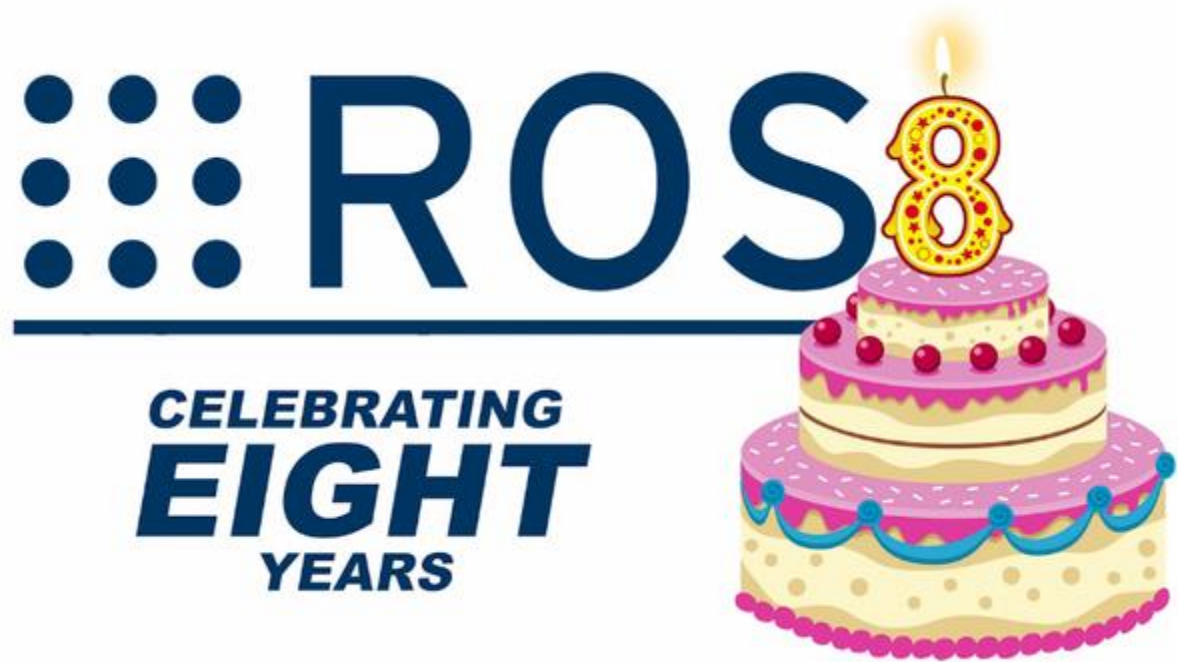
ROS 8년간의 분석

2016. 07. 17

ROBOTIS

Open Source Team

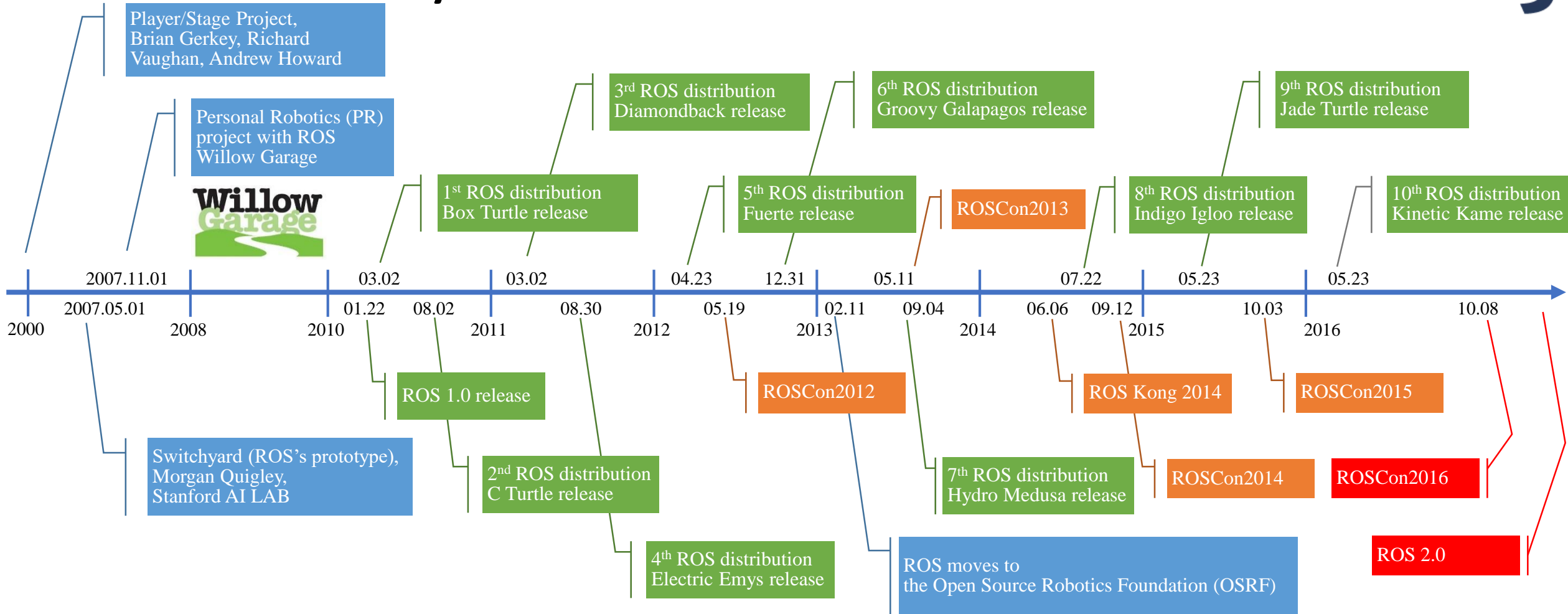
Yoonseok Pyo



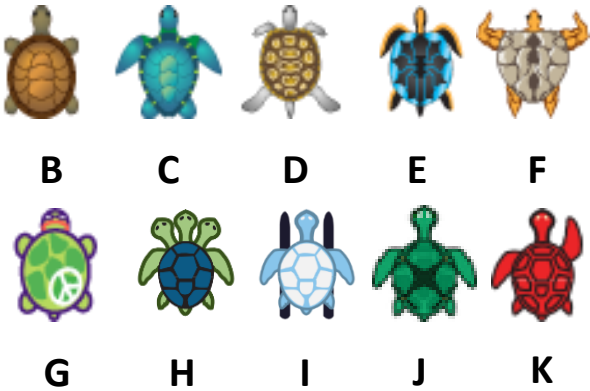
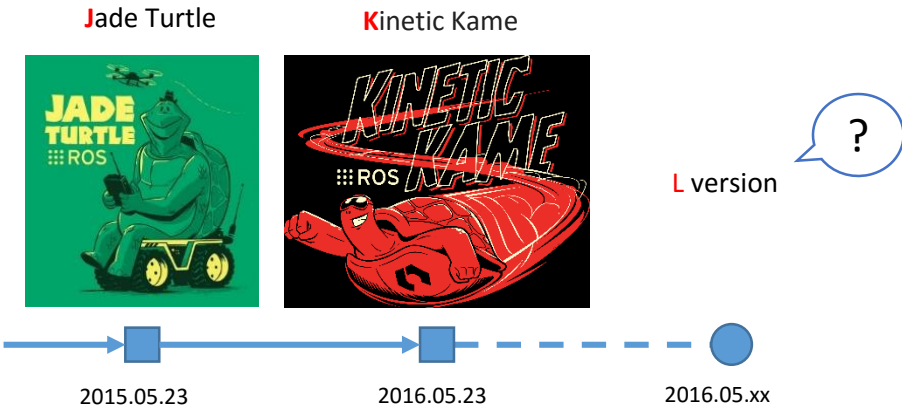
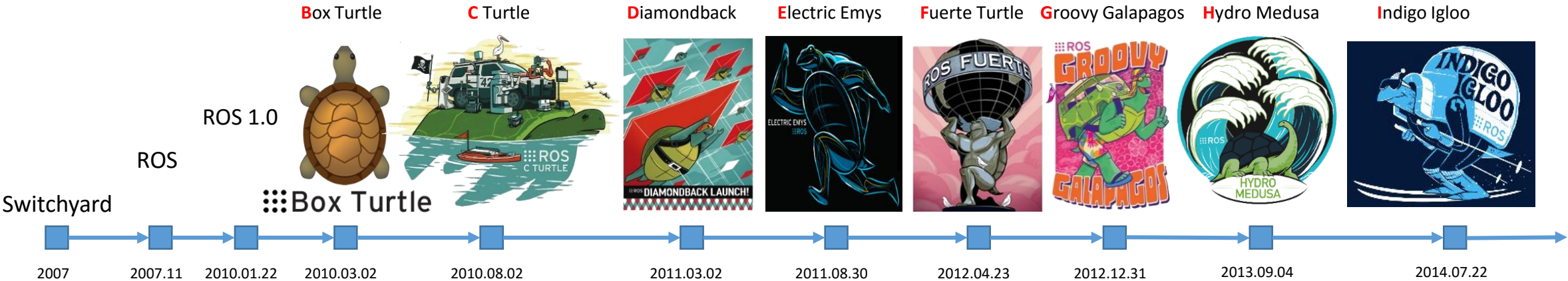
CELEBRATING
EIGHT
YEARS



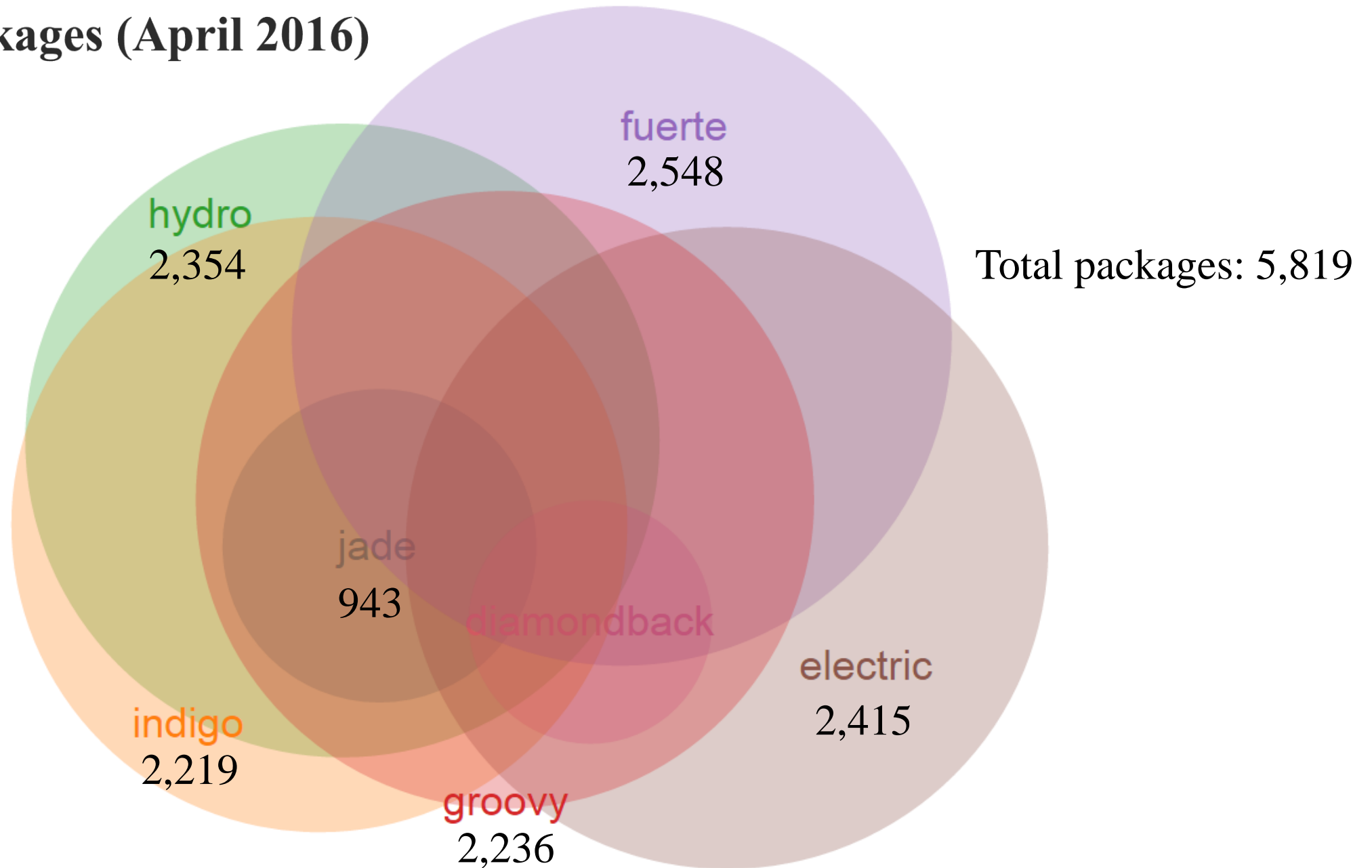
ROS History



























































































ROS Versions, Posters, Icons

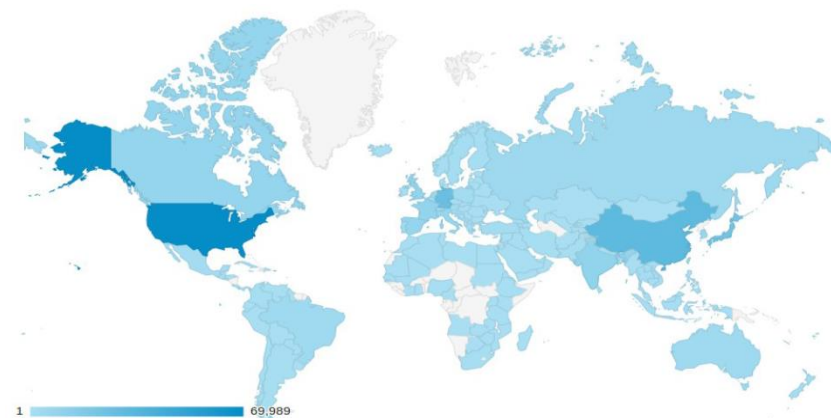


Known packages (April 2016)

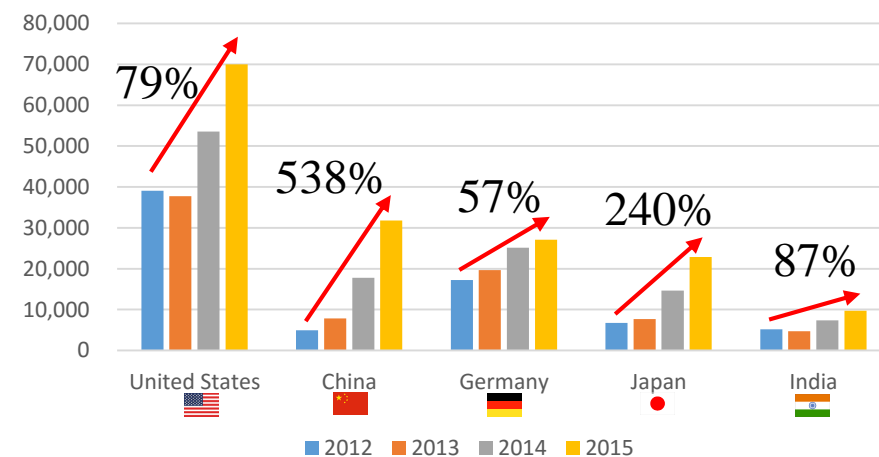


Visitor locations (official wiki.ros.org, not include data of mirrors)

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	

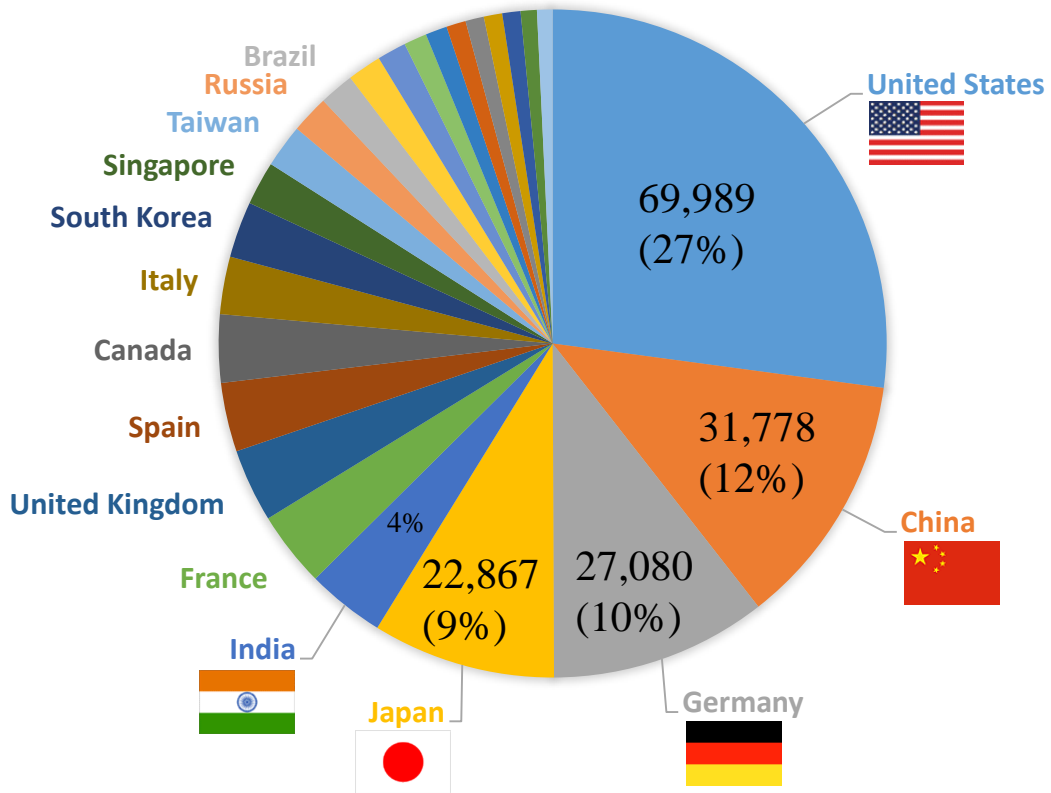


Top 5 (2015)

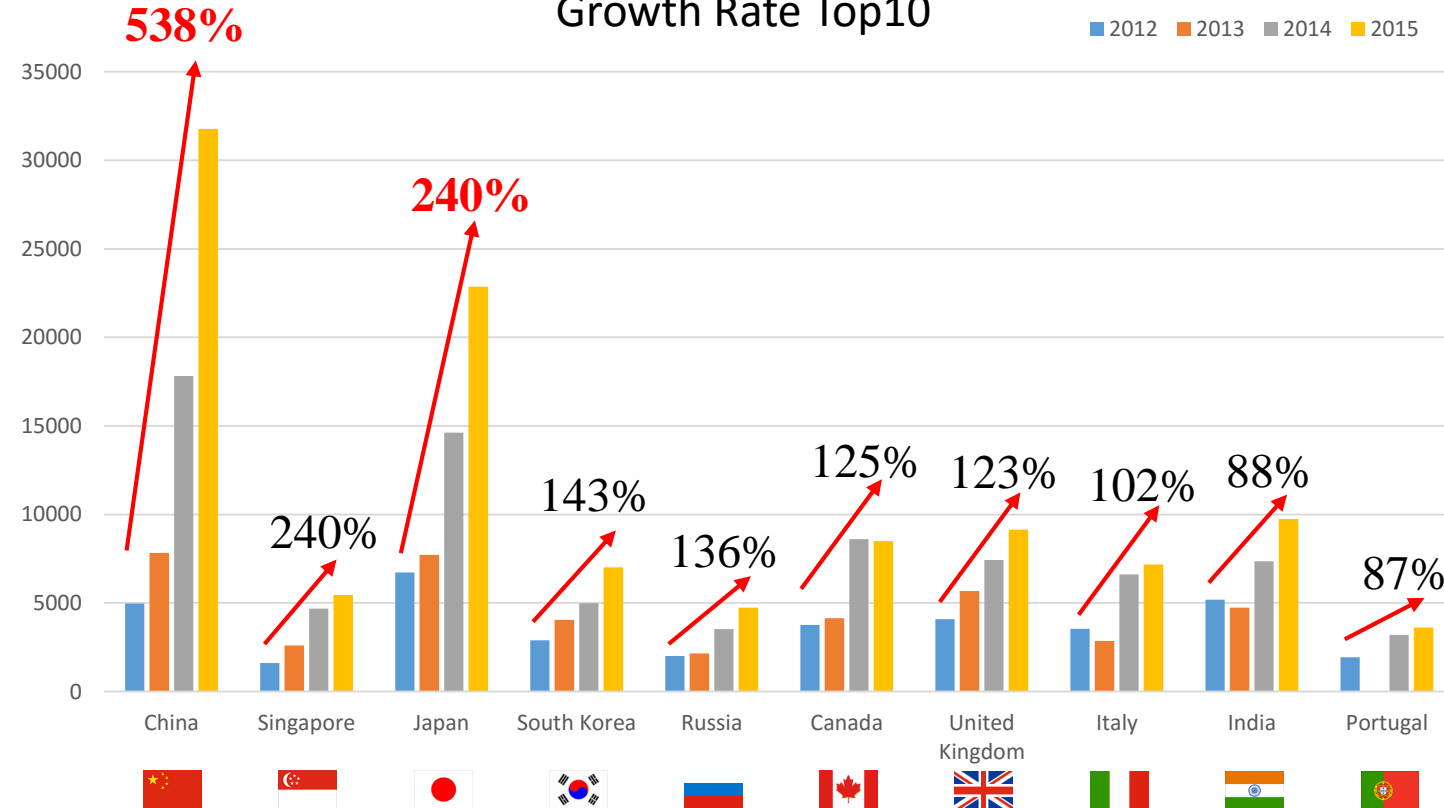


Visitor locations (official wiki.ros.org, not include data of mirrors)

Visitor in 2015

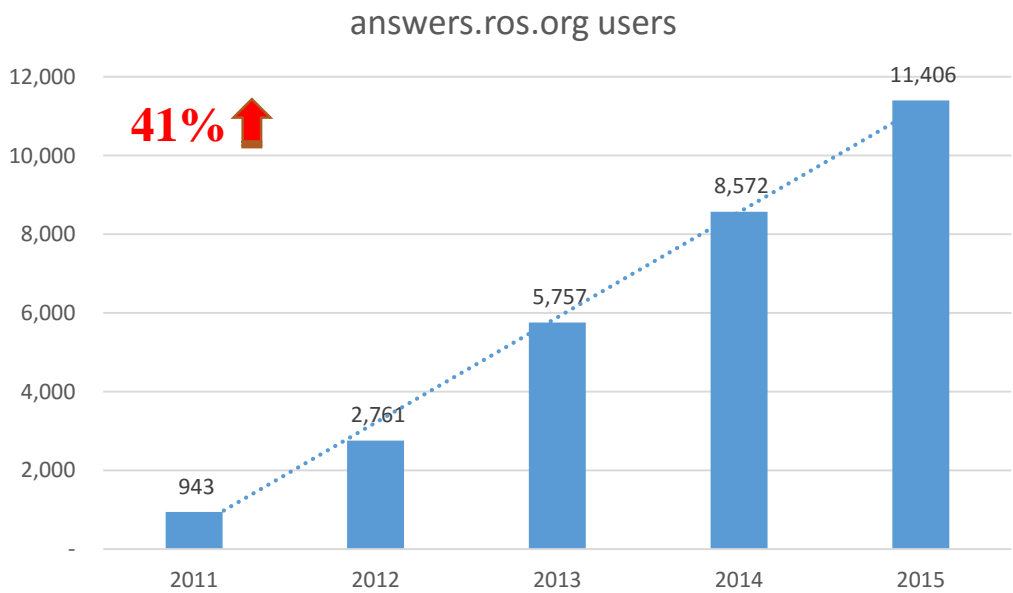
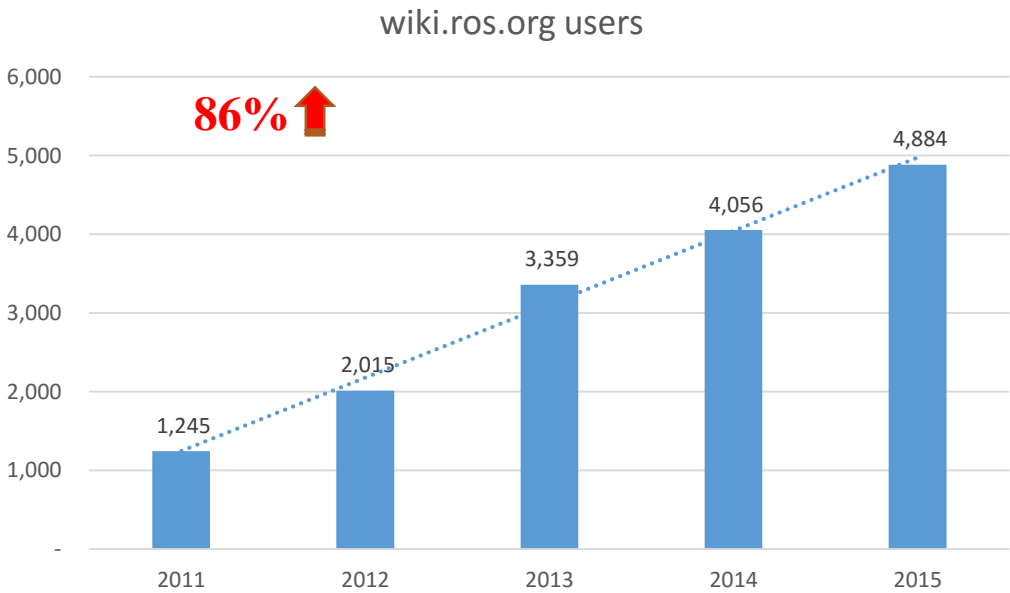
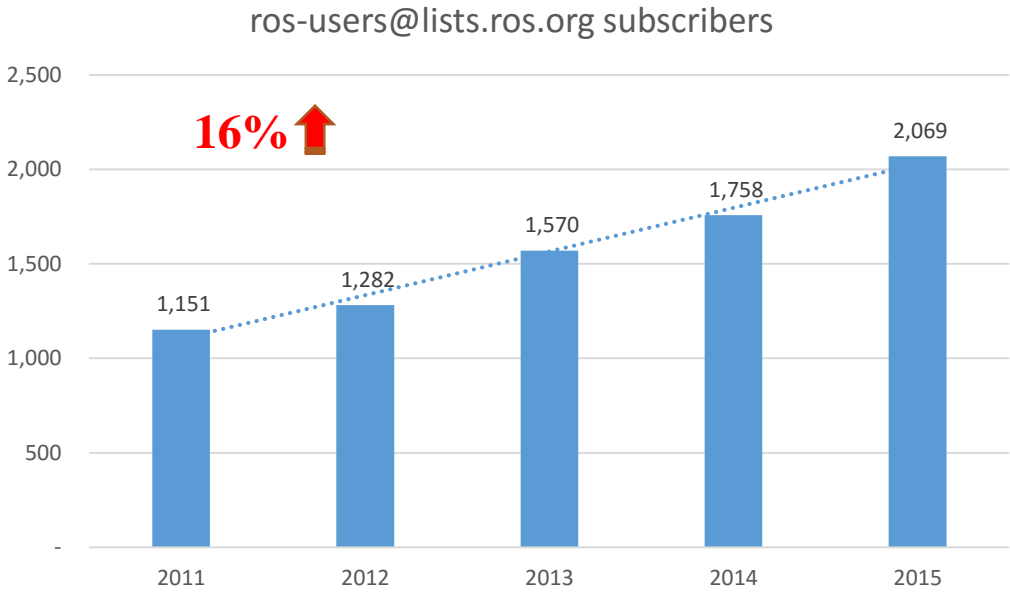


Growth Rate Top10



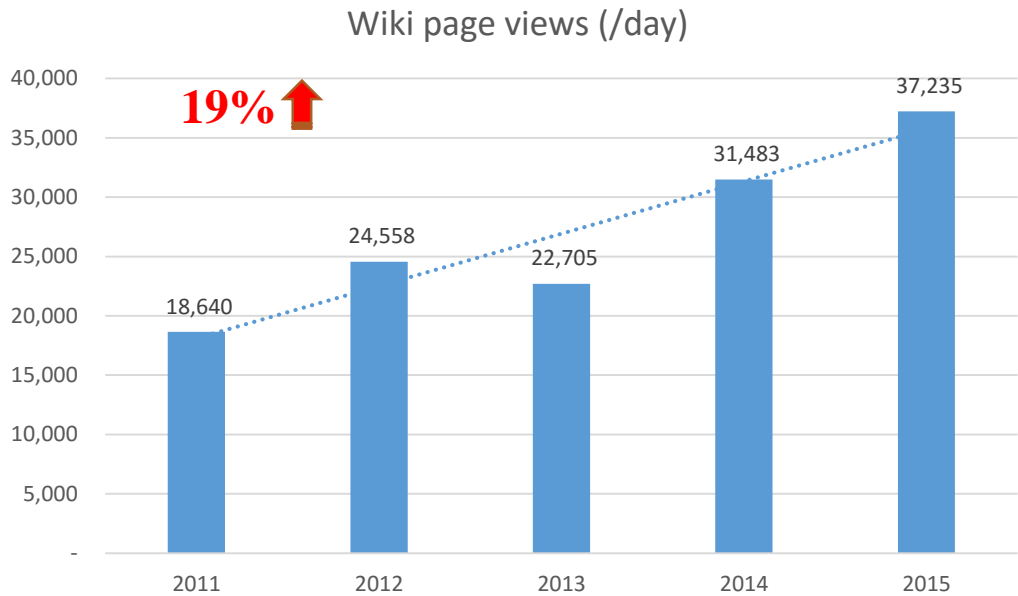
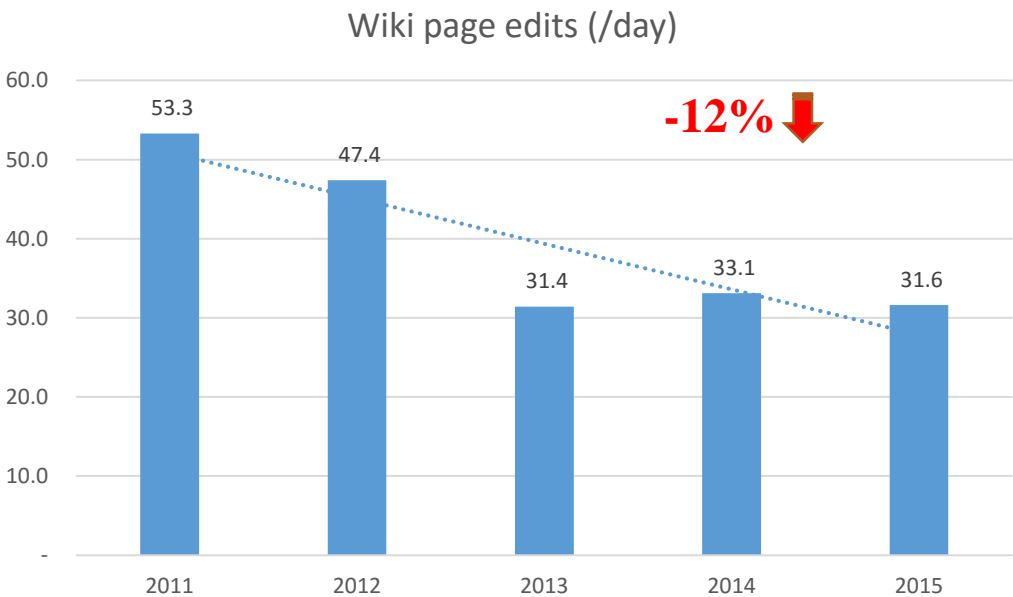
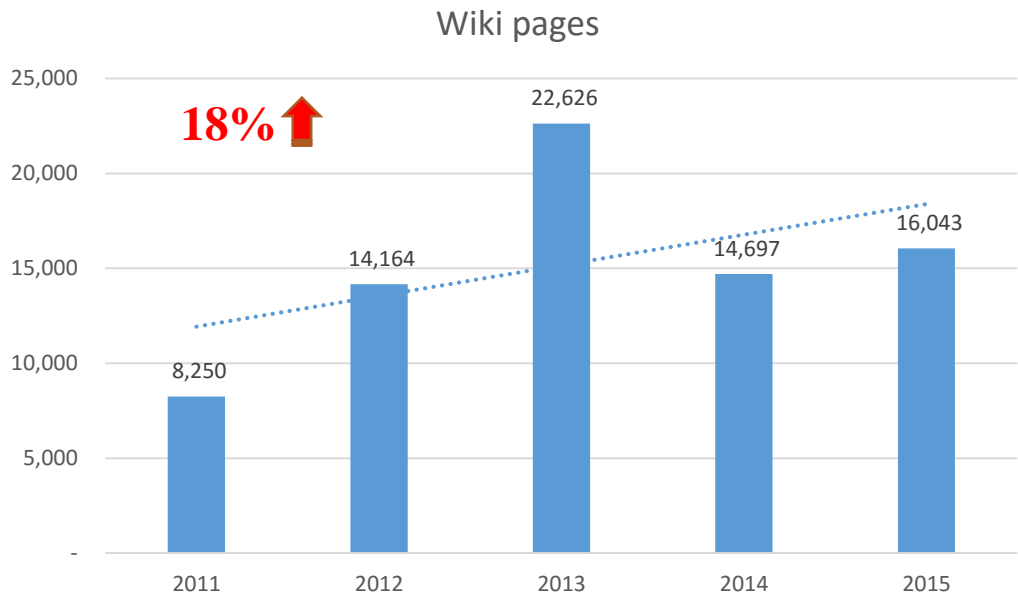
Membership Metrics

	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%



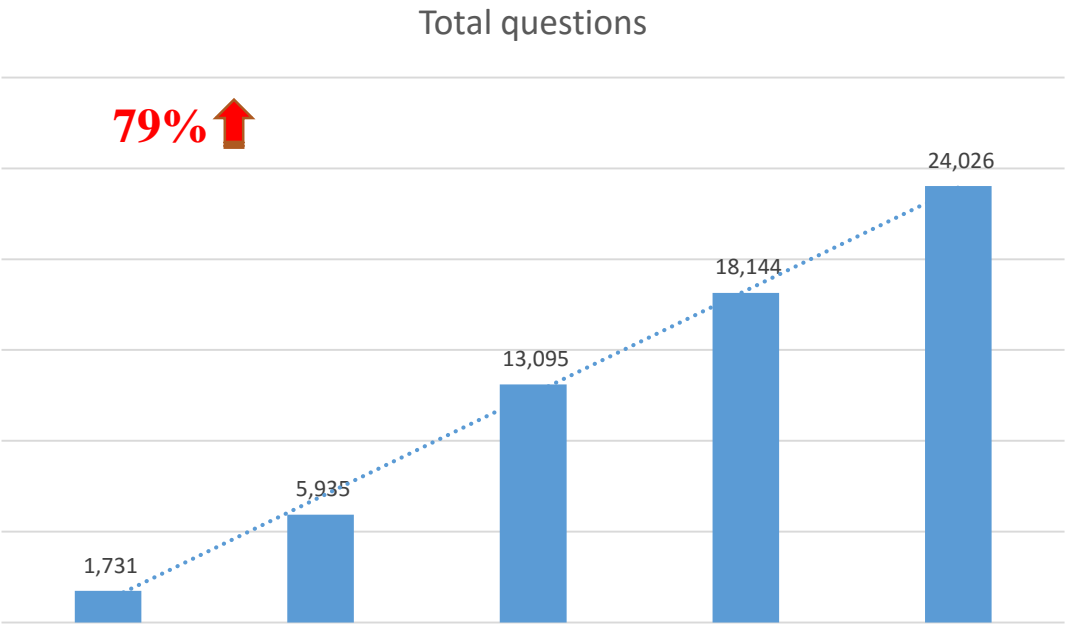
Activity Metrics (wiki.ros.org)

	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%

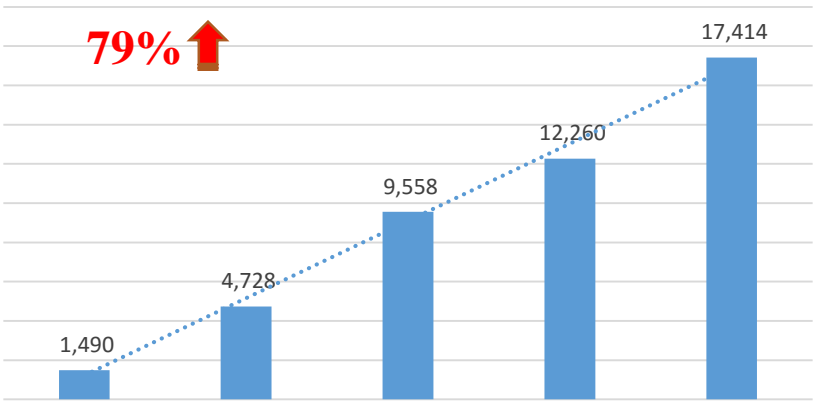


Activity Metrics (answers.ros.org)

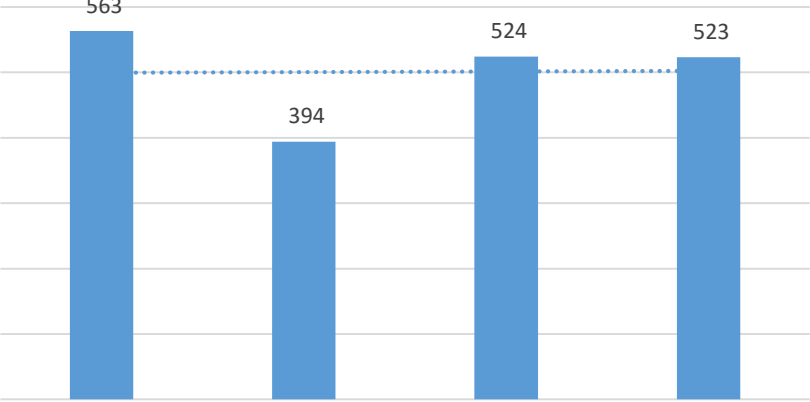
	2011	2012	2013	2014	2015	Compound Annual Growth Rate
Total questions	1,731	5,935	13,095	18,144	24,026	93%
Answered questions	1490	4728	9558	12260	17414	85%
New questions (month)		563	394	524	523	-2%
New questions (day)		18.7	12.7	16.9	16.9	-3%



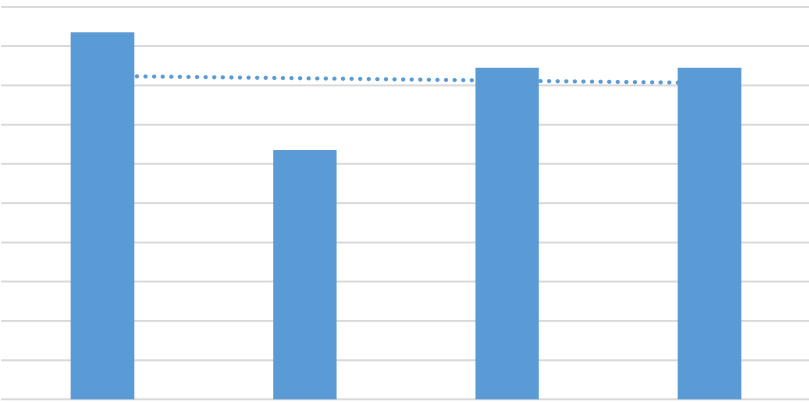
Answered questions



New questions (month) -2% ↓



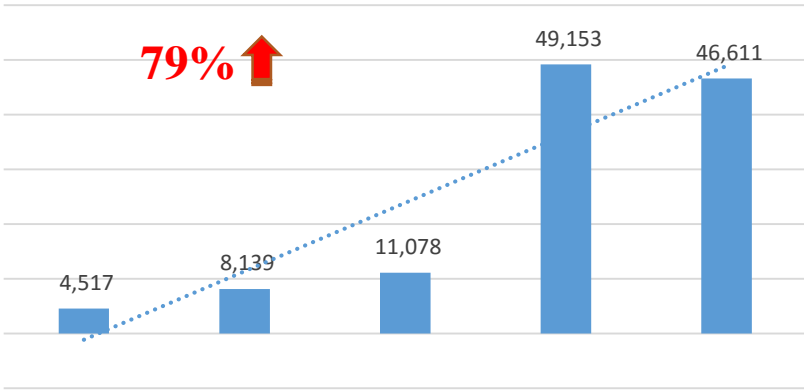
New questions (day) -3% ↓



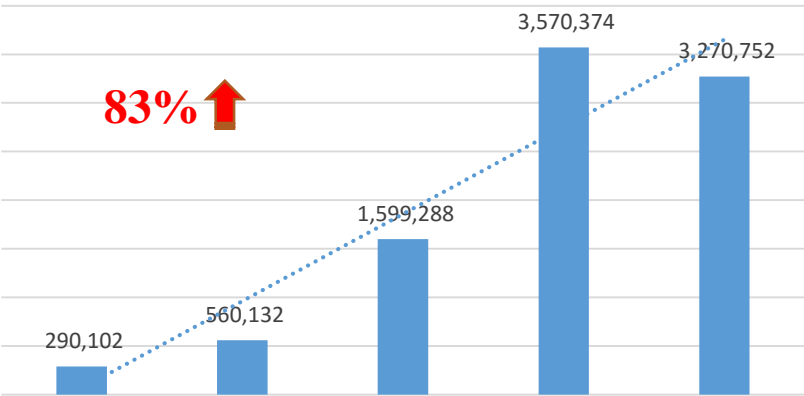
Code Metrics (Binary Downloads)

	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%

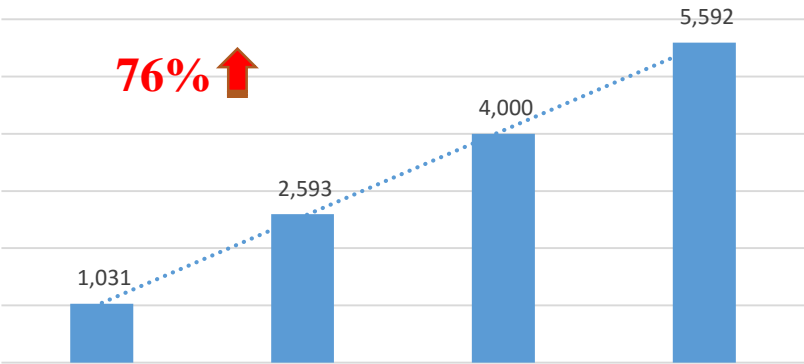
Total Unique IP addresses downloading .deb files



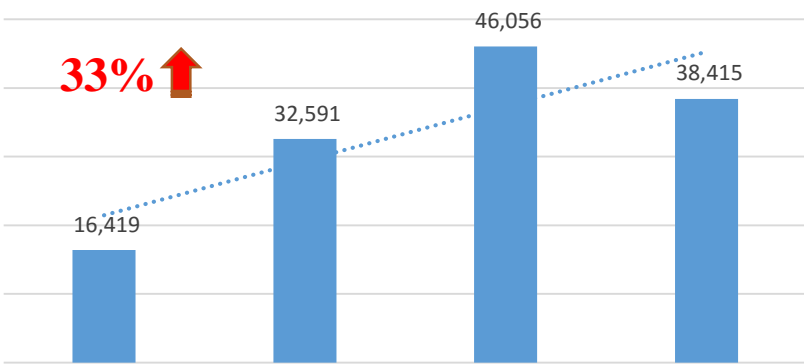
Total downloads of .deb packages



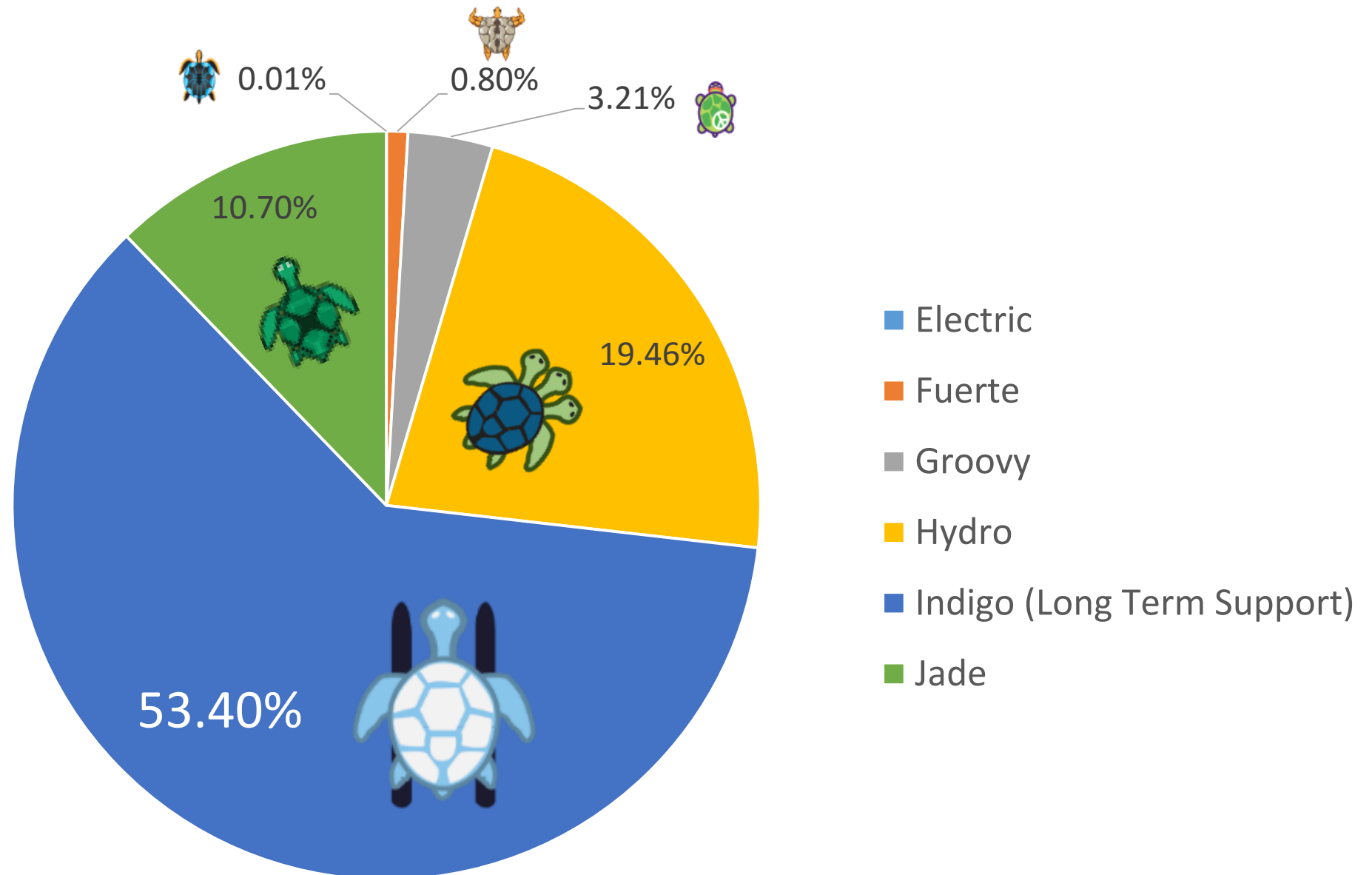
Unique package names downloaded as .deb files



Number of unique versions of .deb packages downloaded

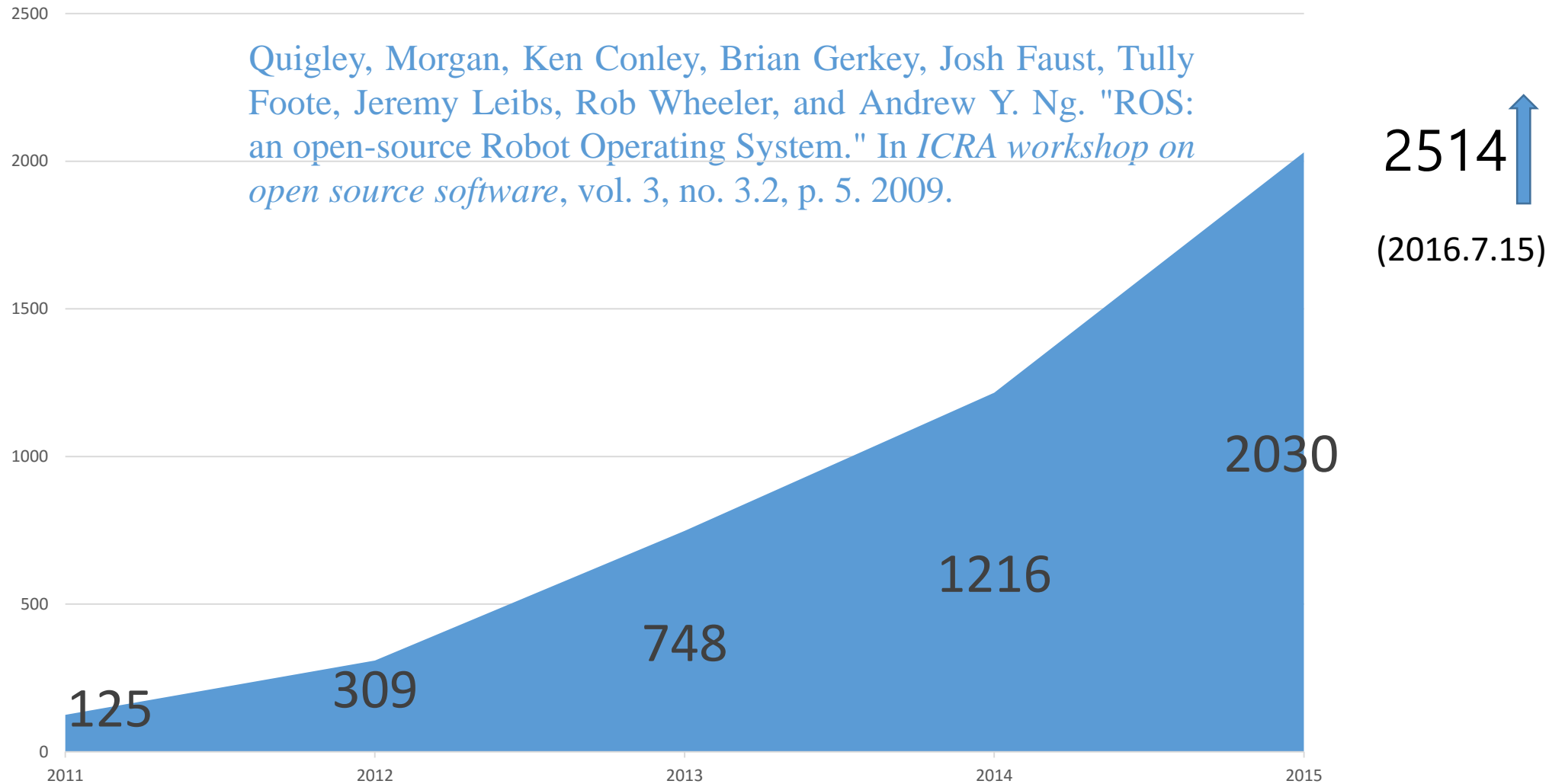


Code Metrics (Binary Downloads by rosdistro, 2015)



Research use

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

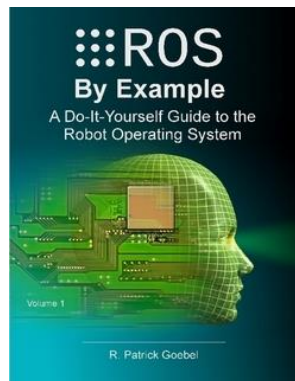


University courses listed on wiki.ros.org/Courses

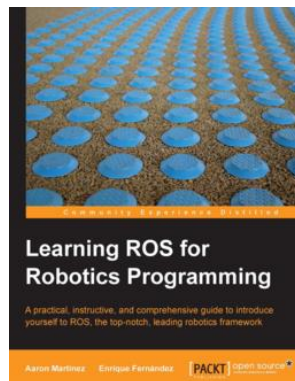
- Brown University, USA
- Case Western Reserve University, USA
- Cornell University, USA
- CU Boulder, USA
- Northwestern University, USA
- Siena College, USA
- Stanford University, USA
- University at Albany, USA
- University of Pennsylvania, USA
- University of South Carolina, USA
- University of Texas 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



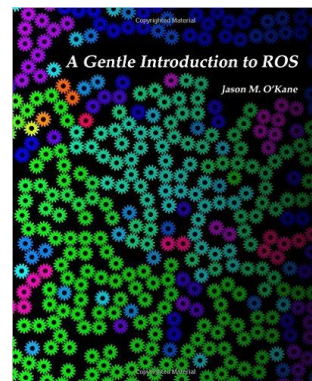
Books for ROS



September, 2012



September, 2013



October, 2013

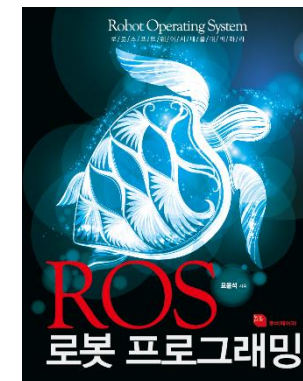


August, 2014



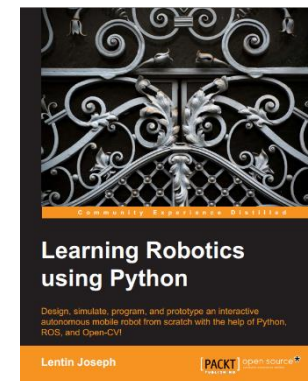
한국어

December, 2014

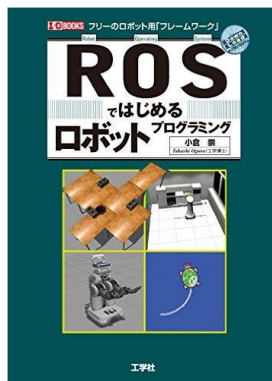


한국어

March, 2015

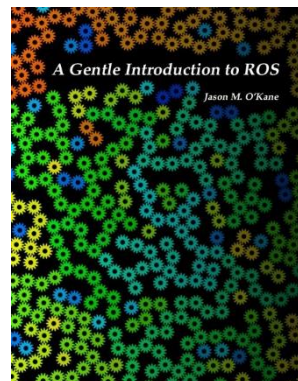


May, 2015

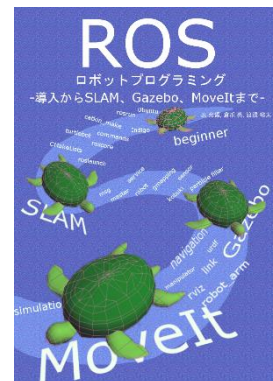


汉语

June, 2015

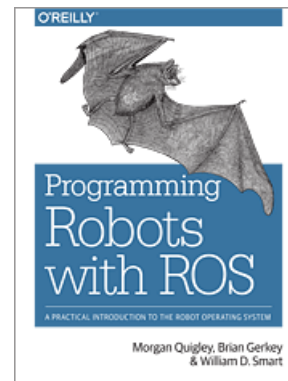


October, 2015



日本語

November, 2015



December, 2015

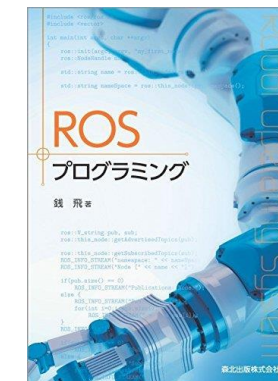


December, 2015



日本語





















































































December, 2015



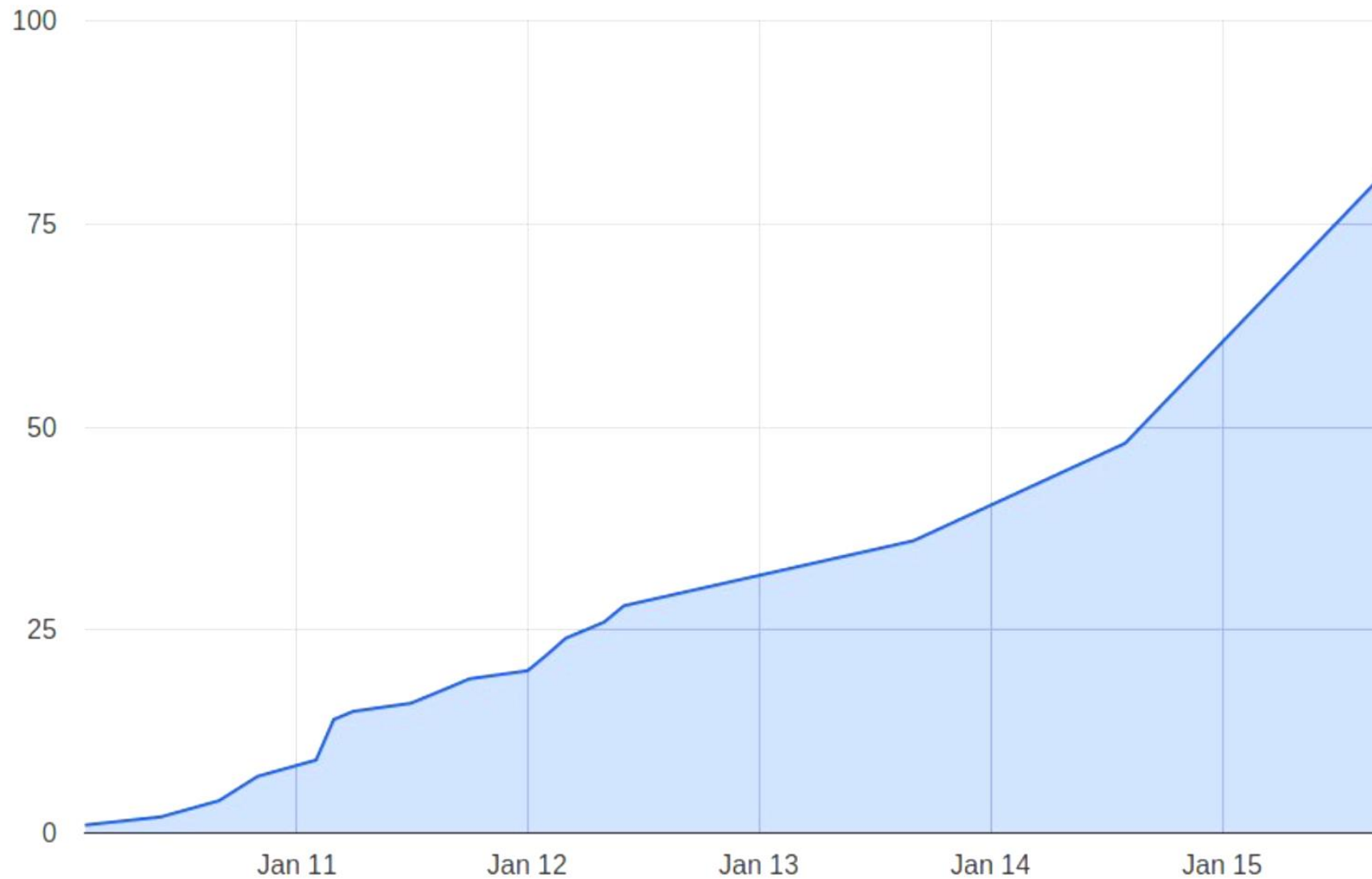
日本語

March, 2016

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



ubuntu



BOSCH

Invented for life



fetch
robotics



CLEARPATH
ROBOTICS™

rethink
robotics™



Google™



www.gaitech.hk

GaiTech International



Fraunhofer

IPA



Open Source
Robotics Foundation



Webots™
robot simulation

Robotnik

DOF hiDOF

ETRI

3DR

YUJIN ROBOT

YASKAWA

MOTOMAN ROBOTICS

**HEARTLAND
ROBOTICS**

ROBOTIS



MAGAZINO
simple storage

SCHUNK

oroWare

TOYOTA



I Heart Engineering

BLUE RIVER
TECHNOLOGY

synaptic

McCormick

Northwestern Engineering

**Master of Science
in Robotics**

SICK

Sensor Intelligence.

Shadow
Robot Company

NVIDIA

SwRI

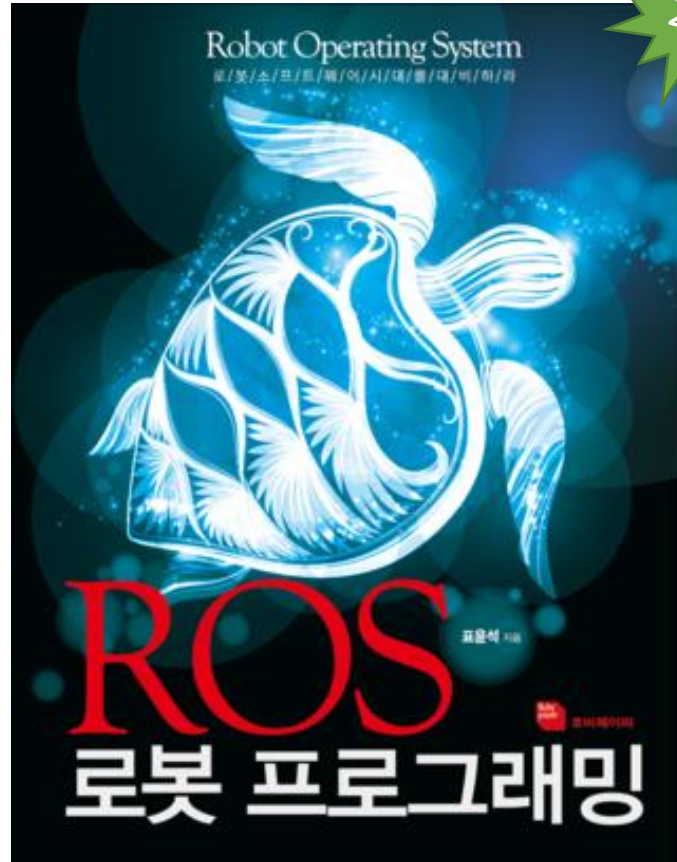


Erle Robotics

Metrics for Celebrating Eight Years



여기서! 광고 하나 나가요~



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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www.facebook.com/yoonseok.pyo