

SOME SYSTEMS ENGINEERING URLs

As at December 2018

The URLs listed are on systems engineering, or are directly relevant to systems engineering, for example, by providing systems engineering resources such as papers, blogs, Q&A, etc.

URL	Systems Engineering Relevance
http:// 12manage.com/methods_checkla nd_soft_systems_methodology.h tml	A site dedicated to applying systems thinking to non-systematic situations. The website gives a thorough explanation of Checkland's Soft Systems Methodology. The page contains links to methods, models and theories related to communication, decision-making and valuation and ethics and responsibility.
http://aacei.org	Site of the Association for the Advancement of Cost Engineering containing resources relevant to cost managers and engineers, project managers, planners and schedulers, estimators, bidders, and value engineers.
http://acasa.upenn.edu/	Ackoff Collaboratory for Advancement of the Systems Approach contains relevant research and ideas to develop systems thinking and systems education.
http://aceit.com	Site capturing Automated Cost Estimating Integrated Tools (ACEIT) - a family of applications that support program managers and cost/financial analysts during all phases of a program's life cycle.
<u>http://achats.defense.gouv.fr/arti</u> <u>cle33349</u>	AGATE (Atelier de Gestion de l'ArchiTEcture des systèmes d'information et de communication) is a framework for modelling computer or communication systems architecture. It is promoted by the Délégation Générale pour l'Armement (DGA), the French government agency which conducts development and evaluation programs for weapon systems for the French military.
<u>http://ackoffcenter.blogs.com/ac</u> <u>koff_center_weblog</u>	A weblog for the advancement of the System Approach started by Dr Russel Ackoff from the University of Pennsylvania. It provides the latest research in Systems Thinking. The site contains a forum for interaction with others in the field.
http://acq.osd.mil/se/index.html	Site of the Office of the Deputy Assistance Secretary of Defense (ODASD) Systems Engineering page which focuses on best engineering practices including shaping technical planning and management and helping program managers identify and mitigate risks. Site contains resources, policies and guidance on Systems Engineering applicable to the defense and other industries.

URL	Systems Engineering Relevance
http://acqnotes.com/Attachment s/Systems%20Engineering%20Sta ndards%20A%20Summary.pdf	A link to a free .pdf download summarizing standards and models in Systems Engineering. Standards covered include: MIL-STD-499, ANSI/EAI 632, IEEE 1220, ISO/IEC 15288 and CMMI.
http://acronyms.thefreedictionar y.com	A list of universally used acronyms.
http://actifsource.com/	A site dedicated to the development of a domain specific tool that turns a software specification into running code.
http://aeroastro.mit.edu/	Site of MIT AeroAstro - the oldest Aerospace program in the US with a tradition of solving industrial-strength problems.
http://agileadvocate.blogspot.co m	A blog on Agile project management.
http://aiaa.kavi.com/public/pub_ rev/G-043- 201X_for_PR_July_2011.pdf	Free downloadable standard on the preparation of Operational Concept Documents.
<u>http://aiaa.org</u>	Site of the AIAA (American Institute of Aeronautics and Astronautics) which serves "to advance the arts, sciences, and technology of aeronautics and astronautics, and to promote the professionalism of those engaged in these pursuits".
http://appel.nasa.gov/	APPEL Knowledge Services unites the award-winning curriculum and career development tools from the Academy of Program/Project & Engineering Leadership (APPEL). The extensive online tools and materials from APPEL and CKO are featured on the unified APPEL Knowledge Services website, which combines critical aspects of both original websites in a single location.
http://appliedsystemsthinking.co m/testimonials.html	Systems Thinking resources and services that will help to develop technical skill and improve effectiveness when applying the principles of Systems Thinking and tools.
http://architectureframework.co m/	A web community dedicated to Enterprise Architecture Frameworks and their related technologies.
http://asd-ste100.org/	Simplified language of the specification of the ASD-STE100; the Specification for the Preparation of Technical Documentation in a Controlled Language.
http://asingh.com.np/?q=node/3	Personal blog by Abhishek Singh which contains articles and discussions about Linux, open source tools and technology in general.
http://asq.org/learn-about- quality/idea-creation- tools/overview/nominal- group.html	This page contains a useful overview of the Nominal Group Technique, a structured method for group brainstorming that encourages contributions from all participants. This method can be used in Systems Thinking and Requirements Elicitation exercises among others.
http://asq.org/sixsigma/	A forum on Six Sigma practices and quality information.

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http://availagility.co.uk/2008/10/ 28/kanban-flow-and-cadence/	Interesting article on work flow in software development.
<u>http://aticourses.com/sampler/T</u> <u>opFiveSystemsEngineeringIssues_</u> <u>In_DefenseIndustry.pdf</u>	A link to a .pdf report on the problems that exist in the complex defense industry, affecting both industry players as well as government participants. In this report, a Task Group was formed, inputs were solicited in advance, and a reconciliation meeting with 18 members held, in which 100 issues were raised. The group found that the bulk of the issues fell into five categories. These categories, as well as the process of carrying out the study, are detailed in this report.
http://bing.com/images/search?q =systems+engineering+process& qpvt=systems+engineering+proce ss&form=IGRE&first=1&cw=1903 &ch=1014	Bing search engine display of systems engineering processes including DoD, DAU and INCOSE Systems Engineering Process Models.
http://bigfuture.collegeboard.org /majors/engineering-systems- engineering	This website assists high school students in shaping their future and exploring careers by providing information on college majors in various subjects. The webpage specifically discusses SE- related majors providing a list of universities offering SE and its associated majors.
http://blog.eie.org/systems- thinking-skills-in-the-engineering- classroom	A blog containing information about strategies for promoting systems thinking amongst children. The site describes methods for developing systems thinking in students in ways that move beyond remembering facts and include techniques such as invention and evaluation to develop engineering skills in a hands-on fashion.
http://blogs.crescendo- technologies.com/deploiement- ingenierie-systeme- intro/?%20goback=.gde_67221_ member_122024118/	A French blog on system engineering deployment techniques.
http://www- 01.ibm.com/software/rational/an nounce/	Site of IBM Rational Software platform that contains online software trials, case studies and solutions. Areas include analytics, business solutions, IT infrastructure, mobile and social platforms and others.
http://boydsays.com/2010/01/zo ds-axioms-principles-of- engineering.html	Interesting article by former CTO of Yahoo, Zod Nazeem. Article captures Nazeem's perspective on the ten most important principles of engineering management.
<u>http://bulldozer00.com/uml-and-</u> <u>sysml/</u>	Light-hearted but relevant blog on life-long learning, social networking, connectivity, interfaces and other topics. Specific interests discussed include UML, SysML, software architecture, project management and innovation amongst many others.

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http://burgehugheswalsh.co.uk/s ystems-engineering/	Burge Hughes Walsh is a training and consultancy company in Systems Design and Process Improvement. This website provides valuable information and resources on Systems Thinking, Systems Engineering, Lean Organization, Six Sigma and Leading Change.
http://burgehugheswalsh.co.uk/s ystems-engineering/tools.aspx	A webpage containing a list of systems engineering tools and techniques to assist with eliciting and managing information as part of the systems engineering approach.
http://caminao.wordpress.com/a bout/reflections-for-the- perplexed/	This webpage contains some intriguing definitions of systems engineering terms, contrasted in pairs. Note: not all definitions are recommended but the reference serves as a matter of interest and curiosity.
http://caminao.wordpress.com/a bout/umlcharp-manifesto/	This website, under the caption "Caminao's Way – Do Systems Know How Symbolic They Are?" contains critical evaluation of UML and SysML. Included are some principles and a technical blueprint for re-engineering UML. The website overall contains significant systems engineering content, written from a software engineering perspective. It is a good read and reference for those working in software-intensive projects, developing software, or managing software development.
http://cesames.net/	Cesames is a French acronym for Centre d'Excellence Sur l'Architecture, le Management et l'Economie des Systèmes). The site contains an extensive selection of downloadable papers, standards and books relevant to system architecting, organized into twenty categories. Most of the papers are in English.
http://cesun.org/	Site of Council of Engineering Systems Universities (CESUN) was established in 2004 and includes universities from North America, Europe, Asia, Australia and Asia. The council provides a mechanism for university members to work together and encompasses activities in systems engineering, technology and policies, engineering management and many more.
http://clearconceptualthinking.bl ogspot.com/	A blog developed by Rofl Goetz dedicated to requirements, projects and systems.
http://www.clexchange.org/curri culum/roadmaps/	Road Maps is a self-study guide to learning system dynamics. It is organized as a series of chapters and was developed by the System Dynamics in Education Project (SDEP) at MIT under the direction of Professor Jay Forrester. This website gives access to ten chapters of Road Maps, all available for free download. Road Maps teaches the reader how to identify different kinds of systems in existence and how to model these systems. It is a resource for beginners and advanced system dynamics modelers, and requires no previous system dynamics knowledge and only basic math skills.
http://cmmiinstitute.com/	The CMMI Institute helps to build capability and deliver results. Site contains information on training and certification as well as informational resources on CMMI and related methodologies.

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<u>http://cognitivesystemsdesign.ne</u> <u>t/</u>	INCOSE-affiliated site based on Cognitive Systems Design. This is the design of a system that performs the cognitive work of knowing, understanding, planning, deciding, problem-solving, analyzing, synthesizing, assessing and judging through integration and perception. It is a distributed system comprised of people in diverse roles and capabilities.
http://cosysmo.mit.edu/	A site dedicated to the COSYSMO (Constructive Systems Engineering Cost Model) a model designed to estimate systems engineering efforts for large-scale systems. A number of academic and demonstration versions of tools are available for download.
http://cpntools.org/	CPN Tools is a tool for editing, simulating, and analyzing Colored Petri Nets.
http://craftofscientificwriting.co m/	Writing guidelines designed to help people in engineering and science to write about their work. Site contains exercises on grammar, punctuation, style, definitions and other topics to improve competence in English. Visitors to the site are welcome to print and distribute any resources on the site, as long as credit to the site is given.
http://csse.usc.edu/csse/	SSE is a research center at the University of Southern California aimed at evolving and unifying theories and practices of Systems and Software Engineering. Site contains publications, resources and events relevant of 42 related industries.
http://csse.usc.edu/csse/research /SEEM/index.html	Site of the Center for Systems and Software Engineering at the University of Southern California. Webpage is for the Systems Engineering Effectiveness Measures course and includes a course description and access to free tools.
http://cybsoc.org	Site of the Cybernetics Society - a UK national learned society and professional body promoting pure and applied cybernetics. It holds scientific meetings, conferences, and social events, and engages in other activities to encourage public understanding of cybernetics and its associated disciplines.
http://datta.vic.edu.au/content/s ystems-engineering-electronics- links-resources	This website is home to Design and Technology Teachers Association (DATTA) Victoria containing a page with access to links and resources on robotics, further study in Systems Engineering, teacher resources, university project ideas for hands-on approach to problem-solving.
http://defence.gov.au/casg/	This webpage contains some interesting downloads relating to the performance of Australian defence projects. The standard DEF(AUST) 5679 / Issue2 - Safety Engineering for Defence Systems, is also available for download.
<u>http://derby.ac.uk/departments/</u> <u>dbs/</u>	Information about Derby Business School based in the United Kingdom. School centers on forward thinking and works closely with the business community to incorporate guest lecturers, internships and mentor support into the curriculum.

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http://dft.designsforthinking.com /tsi-usa/	Thinking Schools International (TSI) is for teachers, schools, educational bodies and countries wanting to develop thinking skills using techniques that have had a proven impact across the globe.
http://discuss.it.uts.edu.au/piper mail/planetkr/	Archive of various articles, papers and tutorials written on Knowledge Representation from July 2003 to present.
http://dodmrl.com/	A collaborative website of Industry, Academia and DoD providing references and tools contributing to the Manufacturing Readiness Levels Body of Knowledge.
http://donellameadows.org/	Site is dedicated to preserving the legacy of Donella (Dana) Meadows who was an inspiring leader, scholar, writer and teacher. The site contains access to Dana's published works including articles, columns and letters. It aims to develop new resources in applying her ideas to current issues to be made available to students, practitioners and leaders.
http://dot.nd.gov/divisions/maint enance/docs/OverviewOfSEA.pdf	Link to a free-to-download .pdf document providing an Overview of the System Engineering process as captured by the North Dakota Department of Transportation. Document outlines objectives of various SE activities along with inputs, outputs, processes and reviews for each of the main phases as captured in the widely used V Model.
http://easterbrook.ca/steve/2009 /03/a-requirements-modeling- challenge/	A site dedicated to systems thinking in computing, climate change and sustainability. This particular link will lead to a requirements modeling challenge where visitors can test their ability to capture goals, develop solutions and assess feasibility of the solutions thereof.
http://ecss.nl	Site of the European Cooperation for Space Standardization (ECSS) - an initiative established to develop a coherent, single set of user-friendly standards for use in all European space activities.
http://ee.iitb.ac.in/~apte/CV_PRA _TRIZ.htm	A site containing 1,2 and 5-day courses and publications on the TRIZ methodology.
http://eeat.cis.gsu.edu/ifip2.9/	IFIP Working Group is dedicated to developing a better understanding of requirements analysis for large projects and the interpretation and documentation of requirements to permit developers to construct a system which will satisfy them.
http://en.wikipedia.org/wiki/Arch itecture_of_Integrated_Informati on_Systems	ARIS (Architecture of Integrated Information Systems) is an approach to enterprise modeling. It offers methods for analysing processes and takes a holistic view of process design, management, work flow, and application processing.
<u>http://en.wikipedia.org/wiki/Cap</u> ability_Immaturity_Model	Capability Immaturity Model (CIMM) in software engineering is a parody acronym and semi-serious effort to provide a contrast to the Capability Maturity Model (CMM). CIMM asserts that organizations can and do occupy levels below CMM level 1. This webpage gives information on the various CIMM levels with descriptions.

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http://en.wikipedia.org/wiki/CIM OSA	CIMOSA stands for "Computer Integrated Manufacturing Open System Architecture." It is an enterprise modeling framework, which aims to support the enterprise integration of machines, computers and people. The framework is based on the system life cycle concept, and offers a modeling language, methodology and supporting technology to support these goals.
http://en.wikipedia.org/wiki/Gen eralised_Enterprise_Reference_A rchitecture_and_Methodology	Information about the generalized architecture framework; a framework for enterprise integration and business process engineering.
http://en.wikipedia.org/wiki/List of_systems_engineering_universi ties	This list of systems engineering at universities gives an overview of the different forms of systems engineering (SE) programs, faculties, and institutes at universities worldwide.
http://en.wikipedia.org/wiki/Syst ems_engineering	Informational page on what Systems Engineering entails and how it is defined.
<u>http://en.wikipedia.org/wiki/TAFI</u> <u>M</u>	TAFIM is a reference model from 1990s for enterprise architecture. It provides enterprise level guidance for the DoD Technical infrastructure from services to standards, concepts, components and configurations.
http://en.wikipedia.org/wiki/Trea sury_Information_System_Archit ecture_Framework	The TISAF was developed by the U.S. Department of the Treasury in 1997, and led to the development of the Treasury Enterprise Architecture Framework (TEAF). TISAF was the first-generation framework. The TEAF represents the second generation Framework for Treasury.
http://en.wikipedia.org/wiki/TRIZ	Wikipedia link explaining the principles, essentials of understanding and use of TRIZ methods industry.
http://engineering.wayne.edu/ise /research/current.php	A list of current and research projects undertaken by or involving the Industrial and Systems Engineering department at the College of Engineering. Projects showcased include ones related to healthcare, design tools and human factors in engineering. An interesting site to discover the application of Systems Engineering as well as to see the caliber of work and the great projects undertaken by the university and its students.
http://eng-tips.com	A group of 'intelligent work forums' for engineering professional from all streams of engineering - aeronautic to petroleum engineers and project and configuration management - to connect and share ideas and knowledge and ask questions in the respective fields.
http://epubs.siam.org/action/sho wBookSeries?seriesCode=cs	The SIAM series on Computational Science and Engineering (CS&E) publishing research monographs, advanced undergraduate- or graduate- level textbooks, and other volumes of interest to an interdisciplinary CS&E community of computational mathematicians, computer scientists, scientists, and engineers.

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<u>http://evolved-</u> <u>analytics.com/?q=support/learnin</u> <u>g/modeling/modelLifeCycle</u>	Link to an article on the Evolved Analytics website about the Model Building Lifecycle that describes the process of converting data to information and then to knowledge and finally to understanding. The write-up describes how the onus for extraction of wisdom from a model lies with the user and that the underlying system will almost always change over time. These changes ought to be captured in terms of parameters to avoid decay of accuracy of the model overtime.
http://excelsoftware.com	A site dedicated to developing knowledge about professional tools used for system models, requirements management, software design, screen prototypes, PERT charts, code generation and reengineering.
http://expertchoice.com	Software and consulting services dedicated to help with strategic enterprise decision management.
http://fas-method.org/content/	A site containing plugins, publications and training on the FAS method developed by Jesko G. Lamm and Tim Weilkiens. The FAS method is a use- case-driven creation of a functional architecture for systems enabling the description of systems independent of their technology.
http://firstlegoleague.org/	First Lego League is dedicated to inspiring future innovators to think imaginatively and grow through teamwork. Teams address real-world problems such as food safety, recycling, etc. that culminates in the designing, building and programming of a robot with Lego technology. The Challenge presents a hands-on and exciting method to stimulate creative thinking amongst the youth.
http://galorath.com	Galorath's SEER Suite of tools enables project managers, cost analysts and engineers to make timely, accurate, and insightful decisions.
http://geraldmweinberg.com/Site /Home.html	Blog of Gerald Weinberg containing his recommended books and podcasts on various topics including quality software, requirements and general systems thinking.
http://gilb.com/	Gilb offers consulting in agile quantified engineering methods to yield success in product development.
http://gilb.com/blog	This is the website of Tom and Kai Gilb. The site contains leading ideas on project management, stakeholder values, quantification, agile, quality, requirements, quality control, and systems engineering. There are hundreds of downloadable files containing valuable information authored by Tom Gilb, Kai Thomas Gilb and other authors.
http://go-systems.blogspot.com	A blog about Systems Engineering at the US Naval Academy.
http://gov.uk/government/collect ions/infrastructure-and-projects- authority-assurance-review- toolkit	The Infrastructure and Projects Authority (IPA) of the UK Government's web page contains a collection of general guidance on reviews such as project validation review, strategic assessments, business justification reviews and delivery strategies for projects. As the IPA arranges and manages more than 200 independent assurance reviews of major government projects each year, the documents are useful in doing IPA as well as non-IPA reviews for government or medium risk reviews.

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http://gradschools.com/search- programs/systems-engineering	Site showcasing all Systems Engineering graduate programs from locations across the globe.
http://graffletopia.com/stencils/8 49	A library of OmniGraffle stencils for SysML diagram elements. Site includes stencils for iPhone, Android, etc., and programming available for purchase with some stencils available free to download. OmniGraffle is a drawing application which allows graphics to be quickly created by keeping lines connected to shapes even when they are moved, providing powerful styling tools, and importing and exporting Microsoft Visio files.
http://groups.google.com/group/ sysmlforum/browse_thread/thre ad/022cc68c0d00113b	Ana Gallego and Ignacio González Alonso have uploaded to an open source server the first SysML diagrams using a hybrid method to perform a Model Driven Scientific Method. They feel it could benefit any PhD student or any scientist interested in designing new complex experiments in a multidisciplinary team or any other researcher who is using a complex arrangement for their research.
http://hal.pratt.duke.edu/	Site of the Humans and Autonomy Lab (HAL) located at the Duke Robotics Facility focused on research in the multifaceted interactions of human and computer decision-making.
http://herdingcats.typepad.com/ my_weblog/earned_value/	A blog addressing performance based project management that looks at principles, processes and practices that will increase the probability of project success.
http://hfes.org	Site dedicated to the Human Factors and Ergonomics Society (HFES) which promotes the discovery and exchange of knowledge concerning the characteristics of human beings that are applicable to the design of systems and devices of all kinds.
http://iainstitute.org	Site of the Information Architecture Institute (IAI) - a non-profit volunteer organization dedicated to advancing and promoting information architecture through research, education, advocacy and community service.
http://iassc.org/	Home of IASSC that provides accredited third party Lean Six Sigma certification.
http://ibm.com/developerworks/ community/blogs/07f4f478-c082- 4196-8489- e83384d85a70/entry/agile_se_m anifesto?lang=en	Blog article by Hazel Woodcock outlining changes that can be made to the highly popular Agile manifesto that would better equip the manifesto for Systems Engineering processes. The blog post describes (on a principle-by- principle basis) the reasons why the original Agile Manifesto is not applicable to general SE processes. Open discussion is invited on the blog to encourage process improvement in narrowing down the refined principles for the described SE-adapted process.
http://ibm.com/developerworks/ mydeveloperworks/blogs/require mentsmanagement/?lang=en	A blog about requirements management containing articles on technical topics, evaluation software and events.

URL	Systems Engineering Relevance
http://ichnet.org	Site dedicated to ICH (Interpretability Clearing House) - a non-profit organization that aims to advance the capability and integrity of information and communication infrastructures.
http://ideasgroup.org/	This is the website of IDEAS, the International Defence Enterprise Architecture Specification for exchange. The purpose of the project is to develop a data exchange format for military Enterprise Architectures. The initial scope for exchange is the architectural data required to support coalition operations planning. Topics include communications systems, networks, software applications and many others.
http://idss.mit.edu/	IDSS is the institute for Data, Systems and Society within MIT that aims to advance education and research in analytical methods, decision systems, statistics and data science. The site contains information on the research and activity of the IDSS as well as news about the center and information on relevant events.
http://ieeesmc.org/	The IEEE Systems, Man and Cybernetics society site has information on various topics. These include fields of interest (integration of different theories, development of systems engineering technology and the application of this into hardware and software), representative applications and areas of interest (large scale systems, optimization, etc.).
http://ieeesystemscouncil.org/	The Systems Council integrates IEEE activities regarding aspects of multiple disciplines and specialty areas including risk management, quality assurance, systems architecture and many more. Site contains publications and documents relevant to the field.
http://igrafx.com/products/flowc harter/	iGrafx FlowCharter software facilitates the creation of graphical representations of processes allowing people to easily comprehend business information.
http://incose.org	The International Council on Systems Engineering (INCOSE) is a not-for- profit membership organization and international authoritative body promoting the application of an interdisciplinary approach and means to enable the realization of successful systems. It was formed to develop, nurture and enhance the system engineering approach to multi- disciplinary system product development. Contains lots of references, links to systems engineering sites, papers on systems engineering and much, much more.
<u>http://incose.org/about-systems-</u> engineering/se-standards	The webpage includes a list constructed by INCOSE of current SE standards. INCOSE liaises with existing standards developing organizations to contribute to the development of standards and reports in planning new work items.
http://incose.org/incose- member-resources/chapters- groups	Information on INCOSE chapters according to sectors: Americas, EMEA, Asia-Oceania

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http://incose.org/products-and- publications	eNote is a monthly update on a single page delivered directly to your email box. This is a compilation of INCOSE news, event announcements, and items of interest to the systems engineering community. eNote features INCOSE information as well as notes from systems engineering and related fields.
http://incose.org/products-and- publications/periodicals#INSIGHT	INSIGHT is the magazine of International Council on Systems Engineering. It is published four times per year. It is dedicated to providing informative articles on the state of the art and practice in Systems Engineering. It also contains status and information about INCOSE's technical work programs, and events, editorials, book reviews, trends, and how-to-do articles that are pertinent to the many aspects of a systems engineer's job.
http://incose.org/products-and- publications/webinars/page/10	This webpage, accessible to INCOSE members, provides access to over forty 1-hour webinars on aspects of Systems Engineering such as agile systems, integration, systems engineering measurement and foundation of relational complexity theory.
http://incose.org/systems- engineering- certification/certification- program-history	Website of the history of the certification program by INCOSE. After three years of intensive research and development, INCOSE established its Professional Certification Program in March 2004 to provide a formal method for recognizing the education, experience, and knowledge of systems engineers through the "Certified Systems Engineering Professional" (CSEP) designation.
http://incoseonline.org.uk/Progra m_Files/Publications/zGuides_9.a spx?CatID=Publications	This INCOSE site contains information on Model-Based Systems Engineering (MBSE) - a formalized application of modeling to support system requirements, analysis, design and verification and validation.
http://informs.org	Website of INFORMS - world's largest professional association dedicated to promoting best practices and advances in operations research, management science, analytics, decision-making and outcomes.
http://innoslate.com/systems- engineering/	Site of Innoslate - a full life cycle systems engineering tool that enables model-based diagrams, requirements management, life cycle traceability, verification and validation, simulation and much more. Site offers a free trial and training for the software.
http://intechopen.com/books/sys tems-engineering-practice-and- theory/complex-systems-design- methodology-for-systems- engineering-collaborative- environment	Online-readable and downloadable access to Chapter 2 of 'Systems Engineering Practice and Theory' written by Guido Ridolfi, Erwin Mooij and Sabrina Corpino. The chapter outlines methodologies designed for implementation in collaborative environments to support the engineering team and the decision-makers in the activity of exploring the design space of complex-system, typically long-running, models.
http://isd-inc.com	Site of Integrated System Diagnostics (ISD) - a multinational corporation dedicated to the 'dissemination and successful application of model-based process improvement technology'.

URL	Systems Engineering Relevance
http://iseesystems.com/	Site of ISEE Systems- a site dedicated to increasing understanding the world through modeling and simulation software. Includes consulting services and applications.
http://isixsigma.com/dictionary/	A dictionary of terms frequently used within the Lean Six Sigma framework.
http://iso.org/standard/33833.ht ml	Site of ISO 19439:2006, Enterprise integration - a framework for enterprise modeling that specifies a framework to conform to requirements of ISO 15704 which is a basis to coordinate development in modeling enterprises.
http://iso.org/standard/44344.ht ml	ISO/IEC 15939:2007, Systems and software engineering - Measurement process. ISO/IEC 1593:2007 defines a measurement process applicable to System and Software Engineering Management disciplines. Note: this has been revised by ISO/IEC/IEEE 15939:2017.
http://iso-architecture.org/	This URL serves the websites of ISO/IEC/IEEE 42010: Systems and Software engineering - architecture description and other activities related to architecture. Sections of the site are for: ISO/IEC/IEEE 42010 (the latest edition of IEEE Std 1471:2000); Architecture Evaluation; Architecture Viewpoint Library; and IEEE Std 1016:2009 Standard on Software Design Descriptions.
http://isssp.com/	Home of the International Society of Six Sigma Professionals (ISSSP) which is committed to promoting the adoption, advancement and integration of Lean Six Sigma in Business.
http://itu.int/ITU-T/studygroups/	This is the home page of the International Telecommunication Union (Union internationale des télécommunications, in French), previously the International Telegraph Union. The ITU is a specialized agency of the United Nations which is responsible for information and communication technologies. The ITU also collaborates with the Object Management Group, home of UML and SysML.
<u>http://itu.int/en/ITU-</u> <u>T/studygroups/2013-</u> <u>2016/Pages/default.aspx</u>	ITU standardization work is carried out by the technical Study Groups (SGs) in which representatives of the ITU-T membership develop recommendations (standards) for the various fields of international telecommunications. The SGs drive their work primarily in the form of study questions. Each of these addresses technical studies in a particular area of telecommunication standardization. This webpage lists the ITU SGs and the area(s) of study of each, with links to questions under study.
http://ixda.org	Site of The Interaction Design Association (IxDA) - a non-profit, member- supported organization dedicated to the discipline of interaction design.
http://jamasoftware.com/platfor m/	A product development platform that is highly configurable for hybrid applications to allow effective capturing, definition and execution against customer requirements.

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http://jbconsultinginternational.c om/Pages/default.aspx	A consulting agency with over 45 years of experience in System Maturity Investment, Strategic Planning, Technology Maturity Assessment amongst others. Site includes information on documents, tools and links related to these areas.
<u>http://jhuapl.edu/ott/Technologi</u> <u>es/Copyright/SysML.asp#</u>	This page from the Johns Hopkins University, Applied Physics Laboratory, provides downloadable material for courses and tutorials in Model-Based Systems Engineering using Object Management Group Systems Modeling Language (OMG SysML [™]) and Object-Oriented Systems Engineering Method (OOSEM).
<u>http://jiludwig.com/Template_Gu</u> <u>idance.html</u>	Webpage containing templates for Managing Requirements such as checklists, standards, guidance, plans and project document templates, free to download. The website also contains definitions of requirements management as well as discussions on requirements management techniques and traceability concepts.
http://jiscmail.ac.uk/lists/enginee ring-integration.html	An email discussion list dedicated to engineering integration.
http://jiscmail.ac.uk/lists/ergono mics.html	An email discussion list dedicated to ergonomics.
http://johnstark.com/fwcce.html	John Stark Associates are Management Consultants who focus on improving performances of the product development process. This link directs you to an informative article on Concurrent Engineering.
http:// kitchensoap.com/	This is a blog about a range of software, systems and human factors- related topics including engineering management and cognitive systems engineering. The blog created by John Allspaw contains access to talks, books and various materials on complex systems and web operations. A useful resource for anyone involved in the abovementioned fields and in web operations or capacity planning, particularly.
http://layrib.com	Site containing resources on various risk responses and risk management methods.
http://lboro.ac.uk/research/syste ms- net/grandchallenges/researchgra ndchallengesforsystemsengineeri ng/	This page offers a breakdown of topics of the Grand Challenges for Systems Engineering Research. These topics have been selected as the areas requiring research and further exploration to promote the systems engineering approach in solving complex problems.
<u>http://less.works/resources/grap</u> <u>hics/index.html</u>	The Agile Manifesto was widely known to be applicable to agile development for small groups. Bas Vodde and Craig Larman became interested in Agile and Scrum for large product developments and combined their experience in Nokia Siemens Networks to create the LeSS Framework. LeSS has been applied to teams ranging from 2 to 2500 in size and in a variety of types of products. The site gives access to various learning and training resources related to Agile and Scrum including graphical resources and games developed by Bas and Craig.

URL	Systems Engineering Relevance
http://linkedin.com/	Several Systems Engineering-related LinkedIn Groups are available on LinkedIn. A few include: Agile Systems Engineering Forums, Systems Engineering Jobs Forums and Systems Engineering.
http://lumina.com/	Analytica, developed by Lumina Decision Systems, is a visual software tool for creating, analyzing, and communicating quantitative business models.
http://maad.com	Micro Analysis and Design Operation offering consulting services and software products dedicated to human-systems integration, human factors engineering, computer simulation and modeling, and customer software development.
http://maintenance.org/	The Association of Asset Management Professionals (AMP) is an informative forum site. Topics include: reliability engineering, maintainability engineering, machinery condition monitoring and predictive maintenance, Enterprise Asset Management (EAM) & Computerized Maintenance Management Systems (CMMS).
http://maintenance.org/topic/diff erence-between-fmea-and-fmeca	Discussion on the real difference between Failure Modes and Effects Analysis (FMEA) and Failure Modes Effects and Criticality Analysis (FMECA).
http://malotaux.eu/	N R Malotaux Consultancy offers consultancy, coaching and training services to aid with projects in order to cope with customer's changing requirements, meeting deadlines, improving business productivity and satisfying customer expectations.
http://leadershipchallenge.com/r esource/challenging-the-process- with-the-marshmallow- challenge.aspx	A team-building challenge developed by a Fellow at renowned leader in 2D and 3D design software, Autodesk. The 18-minute task requires teams to build the tallest free-standing structure out of 20 pieces of spaghetti , one yard of tape, one yard of string and one marshmallow. The challenge is designed to simulate innovation and creativity and enhance collaboration between team members- a great challenge to kick start a meeting or to get the creative juices flowing within a team.
http://mazur.net/triz/	An informational website on the TRIZ innovative product development method including worked examples from the engineering perspective.
<u>http://mckinsey.com/industries/r</u> <u>etail/our-insights/the-how-of-</u> <u>transformation</u>	A webpage dedicated to helping organizations facilitate transformation. The webpage explains the 'what' and 'how' of the McKinsey transformation approach and provides tips for leading companies out of a crisis as well as how to keep transformations on track. A valuable read for all companies seeking to execute a transformation process successfully by developing suitable 'performance infrastructure'.
http://mid.de	MID is a German modeling company with expertise in business process management, business intelligence and software development life cycle. Site contains resources relevant to the above topics.

URL	Systems Engineering Relevance
http://mfpt.org/index.htm	Home of MFPT - a non-profit society dedicated to technology failure prevention. MFPT represents a community of engineers, failure analysts, maintenance specialists and scientists. The site contains link to newsletters, proceedings and conference papers on topics related to technology and the human interface to technology.
http://mftrou.com	Vault of free articles written by Lyndsay Swinton, creator of Management for the Rest of US, dedicated to business management.
http://millennium-project.org/	Site of the Millennium Project aimed at furthering studies and research to improve humanity's prospects for building a better future. Site contains relevant program, publications and news on the state of the future, research methodologies and global futures information systems.
http://mindtools.com	Mind Tools contains over 2500 skill-building resources that offer training in management and leadership skills, career planning and time management. The site has aided more than 140,000 professionals by developing skills and techniques typically taught in MBA classes or management programs.
http://mitre.org/capabilities/syst ems-engineering/se-resources	Site of MITRE Systems Engineering containing resources such as guides, models, papers, toolkits and books geared towards excellence in Systems Engineering and associated skills.
<u>http://mitre.org/work/systems_e</u> ngineering/	An overview of Systems Engineering by MITRE developed to convey the accumulated knowledge on the field from MITRE's perspective. Site includes useful downloads including a Systems Engineering Guide which is free to download.
http://modaf.com/	Site dedicated to MODAF users and tool vendors and is a portal for MODAF-related news, jobs, tools, discussions, etc.
http://model-based-systems- engineering.com/	Site by Tim Weilkiens containing highly relevant information related to SysML and MBSE. Includes access to books written by Weilkiens on SysML and MBSE-related fields.
http://modelio.org/	An open source modeling tool that supports UML2, BPMN2, XMI, MDA, SysML, TOGAF, SoaML and UML Testing profile. The tool is intended code developers, business architects, software architects, system architects and analysts.
http://modeliosoft.com/en/featu res/system-engineering-sysml- support.html	Modelio offers SysML and UML support products to enable SysML modeling integrated with UML, integrated requirement analysis support, traceability and impact analysis. The software is easily extensible to software modeling and embedded software systems.
http://modernanalyst.com	Modern Analyst is a site intended for training providers, tool vendors and experienced practitioners and contains many articles and resources related to business systems analysis, including the monthly Modern Analysis Journal which highlights events, forums, blogs and a host of other information relevant to the industry.

URL	Systems Engineering Relevance
http://modernrequirements.com	Modern Requirements is a Microsoft affiliated Requirements Management Tool that allows defining and management of requirements.
<u>http://myengineeringsystems.co.</u> <u>uk/</u>	This site is dedicated to helping people improve methods of learning so that desired outcomes are achieved, in other words how to solve problems ingeniously. Topics include mostly engineering-related topics but include other information of other areas as well. The site uses systems thinking to address purpose, complexity, change and evolutionary learning.
http://nap.edu/read/18752/chap ter/4	This website gives access to an online-readable version of the report titled 'Specialized Degree-Granting Graduate Programs of the Department of Defense in STEM and Management' which focuses on the graduate science, technology, engineering, mathematics and management (STEM+M) education issues of the Air Force, Navy, and Marines. The report assesses the cost, benefits, and organizational placement of DoD institutions that grant degrees in STEM+M and evaluates alternative ways – for example, civilian institutions and distance learning – to ensure adequate numbers and high-quality education outcomes for DoD personnel.
http://nasa.gov/news/reports/NA SA_SE_Behavior_Study.html	Link to a paper on a Systems Engineering Behavior Study about the shared understanding regarding the practice of systems engineering across the NASA agency.
http://nasa.gov/pdf/580677main 02 Steve Jolly Systems Engine ering.pdf	A link to a .pdf presentation that highlights the roles and responsibilities of a systems engineer. The presentation discusses the dangers of making assumptions, lessons learned about systems engineering, precepts to systems engineering, a comparison pf project management to systems engineering management and systems engineering management pitfalls.
http://navalengineers.org	Website of the American Society of Naval Engineers (ASNE) dedicated to advancing knowledge and practice of naval engineering in public and private applications and operations. Site contains links to other related sites, information, meetings and events, publications and scholarships.
http://naval-technology.com	Site dedicated to providing information about projects, products, services, exhibitions, conferences, news, views and contacts from the global Naval industry.
<u>http://ncbi.nlm.nih.gov/books/N</u> <u>BK22835/</u>	A link to the full contents of Chapter 3 in Building a Better Delivery System: A New Engineering/Health Care Partnership on The Tools of Systems Engineering. The chapter, through making use of specific examples in the health care industry, describes how timely collection of data, analysis, and sharing of process and outcome data would benefit all stakeholders in an organization.
http://ndia.dtic.mil/2017/systems /2017systems.html/	This site contains numerous presentations from the National Defense Industrial Association 20th Annual Systems Engineering Conference, Springfield, Virginia (USA), October 23 - 26, 2017.

URL	Systems Engineering Relevance
http://newsystemsthinking.com/	A site developed by Tripp Babbitt, creator of 'The 95 Method' for Transformation through Innovation- a revolution in innovation philosophy stemming from the Deming philosophy often applied in organization.
<u>http://niwotridge.com/PMasSE/i</u> ndex.html	An online book written by Glen B. Alleman who has had several years of experience in the aerospace and government program management domain. The book supports the notion that Systems Engineering is a powerful tool for integrating issues in program management methods. Alleman states that Systems Engineering integrates heuristic and participative processes and is a blend of product and process management.
http://nomagic.com/	This is a site of the tool vendor No Magic Inc. for the UML and SysML CASE tool MagicDraw. No Magic guides the visitor through the tutorial trails that explain practical modeling, diagramming and engineering techniques with MagicDraw UML.
http://nomagic.com/mbse/	Site of No Magic's MBSE Solution that enables modeling and support of system requirements, analysis and simulation, design and verification and validation; compliant to multiple standards.
http://nomtbf.com/	This is a site by Fred Schenkelberg devoted to the eradication of the misuse of MTBF – Mean Time Between Failure, a commonly used indicator in reliability studies. What started as a simple observation has developed into a personal mission by Fred Schenkelberg to stop the misuse, misunderstanding and misinformation circling around MTBF.
http://ocw.mit.edu/courses/engi neering-systems-division/	This webpage lists MIT Engineering Systems Division courses available online for free.
http://omg.org/mda	OMG's Model Driven Architecture (MDA) provides an open, vendor- neutral approach to business and technology change by separating business and application logic from underlying platform technology.
http://omg.org/ocsmp/	OMG Certified Systems Modeling Professional (OCSMP) Certification program offers certification for different modeling languages at different levels of competency.
http://omgSysML.org/	Site of Object Management Group (OMG) dedicated to Systems Modeling language.
http://omgwiki.org/MBSE/doku.p hp	Home of Model-Based Systems Engineering (MBSE) Wiki supporting the activities of the MBSE initiative sponsored by INCOSE and OMG Systems Engineering DSIG.
http://omgwiki.org/OMGSysML/d oku.php?id=sysml- modelica:sysml_and_modelica_in tegration	This is the home page of a working group to explore the synergies between the OMG systems modeling language SysML and Modelica.

URL	Systems Engineering Relevance
http://craftofscientificwriting.co m/	Writing guidelines designed to help people in engineering and science to write about their work. Site contains exercises on grammar, punctuation, style, definitions and other topics to improve competence in English. Visitors to the site are welcome to print and distribute any resources on the site, as long as credit to the site is given.
http://opensocialrobotics.org/	This is the website of Mary-Anne Williams, a Research Professor and Director of the Innovation and Enterprise Research Laboratory of the University of Technology, Sydney, in Australia. The site provides insights into aspects of innovation, on which systems engineering is dependent for creation of better systems.
http://pascal.computer.org/sev display/index.action	Software and Systems Engineering Vocabulary. SEVOCAB includes definitions from international Standards including ISO/IEC and IEEE.
http://pdm-if.org	Product Data Management Implementer Forum (PDM-IF) dedicated to accelerating development and general availability of PDM Interoperability solutions according to ISO standards.
http://planetproject.wikidot.com	A site containing useful checklists of principles, processes and rules for requirements, projects and systems.
http://plaza.ufl.edu/jtruett/abe5 643c/ssmfinal.html	An online guide containing information on the soft systems methodology spanning a range of topics such as naming relevant systems, developing conceptual models, comparing conceptual models with reality and implementing desirable changes.
http://plm.automation.siemens.c om/en_us/	Siemens PLM Software is a provider of product lifecycle management (PLM) and manufacturing operations management (MOM) software.
http://pmdoi.org/	An online declaration of interdependence to strive to deliver agile and adaptive approaches that link people, projects and value.
http://polarsys.org/	Home of PolarSys, which offers a number of open source solution for Systems Engineering. Such a popular and widely-used solution is Capella - a model-based engineering solution that helps engineers to build better architectures. Capella provides tools necessary for collaboration between engineers using shared architectures.
http://portal.modeldriven.org/pr oject/foundationalUML	Open source software which is a reference implementation for the OMG specification called the Semantics of a Foundational Subset for Executable UML Models is downloadable from this page.
http://posccaesar.org/	POSC Caesar Association (PCA) - initiator of ISO 15926 - is a non-profit global-standardization member organization that promotes the development of open specifications to be used as standards for enabling the interoperability of data, software and related matters.
http://process-trak.com	A tool dedicated to the automated workflow of CMMI implementation.
http://profs.etsmtl.ca/claporte/E nglish/VSE/index.html	This website captures projects, case studies, surveys and other research carried out by the working group as well as other information on very small entities involved in the development of maintenance of systems and/or software.

URL	Systems Engineering Relevance
http://projectengineer.net/	An online blogging community dedicated to assisting in project management by providing a place for project managers to improve their skills for free. The site contains project-management related tutorials and discussions that will be useful for any project manager or team leader.
http://projectmanagement.com/ default.cfm	A one-stop shop for answering questions related to Project Management that deal with project management challenges with confidence. Website contains over 11,000 articles, 1,000 templates and 550,000 peer connections for expert advice. Other features include tools and training directories, technique repository and PM Prep questions to help visitors to the site better prepare for certification.
http://properosolutions.com/blo g/	A blog on the review and the pros and cons of Agilo for Scrum.
http://psmsc.com/	Practical Software and System's Measurement (PSM) was developed to meet the needs of software and system technical challenges. This site contains guidance in PSM facilitating an information-driven measurement process that addresses the unique technical and business goals of the organization.
http://ptc.com/developer-tools	If you are an engineer developing complex, mission-critical systems and need to create native, embedded or real-time applications, build graphical user interfaces, or if you're looking to build, compile, execute, render, script and port code across UNIX, Linux, and Windows platforms, PTC claims to have the tools to support your specific development approach and target platform.
http://pubs.opengroup.org/archit ecture/togaf8- doc/arch/chap37.html#tag_38_0 2	A site dedicated to all the architecture frameworks. This link specifically assesses the comparison of TOGAF with the C4ISR, CORBA, EAP, FEAF etc.
http://qaiusa.com/	Quality Assurance Institute offers consulting, training, certification, coaching and mentoring in Agile methods.
http://ralphyoung.net	This is a website dedicated to project management and improving requirements practices. It offers useful ideas, suggestions, recommendations, and resources.
http://reading.ac.uk/computer- science/	Department of Computer Science at the University of Reading dedicated to the current expansion and future growth of popular computer science programs and research activities.
http://releaseteam.com	Site of ReleaseTeam - a company offering consultancy and training services towards DevOps (software development and software operation).
http://reqbib.com/index.htm	This site provides a searchable bibliography of over 6000 requirements- related papers and books.
http://reqif.de/en/	Home of ReqIF- that contains articles, documents, manuals and tutorials on requirements management and specifications.

URL	Systems Engineering Relevance
http://requirementsassistant.nl	Requirements Assistant is a requirements analysis tool designed to ensure that requirements are complete, consistent, feasible and unambiguous.
<u>http://requirementstechniques.c</u> om/	A site containing requirements techniques tools for the business analyst. The toolbox provides techniques to enable understanding of viewpoints and to help with eliciting requirements. The site provides information on selecting the right technique based on the situation, the type of projects and nuances such as organizational culture and internal politics.
http://research.it.uts.edu.au/re/r e-archive/	A vault of 2123 requirements engineering and related articles written by various others from November 2001 to May 2005.
http://research.it.uts.edu.au/re/r e-OldArchive/	A vault of 792 requirements engineering and related articles written by various authors from February 1997 to May 2000.
http://resg.org.uk	This is the Requirements Engineering Specialist Group site dedicated to enhancing expertise and knowledge regarding requirements engineering specifically applicable for engineers, researchers and students.
http://resources.sei.cmu.edu/libr ary/asset-view.cfm?assetID=8177	Journal on the effectiveness of system engineering. This survey quantifies the relationship between the application of systems engineering best practices to projects and the performance of those projects.
http://risktrak.com	RiskTrak International (RTI) developed RiskTrak - a software tool that aids in the identification, definition, estimation and analyses of uncertainties.
http://rm-odp.net/	The Reference Model of Open Distributed Processing (RM-ODP) is based on precise concepts from distributed processing developments. It is a framework for system specification containing: object modeling, system specification, definition of system infrastructure and a framework for assessing conformance.
http://ronjeffries.com/	A blog containing articles relating to a wide variety of software and related areas including XProgramming and Agile development.
http://rspa.com/	Site of R.S. Pressman and Associated, Inc. – a company that provides services and products to aid companies in improving their software engineering practices. Site includes product information, process models and resources pertaining to software engineering.
http://rspa.com/spi/reqmengr.ht ml	This site of Roger Pressman contains links to a wide range of requirements engineering resources.
https://www.sciencebuddies.org/ science-fair-projects/engineering- design-process/engineering- design-process-steps#keyinfo	This page is dedicated to teaching young learners Engineering Design Process by breaking down each step of the design process and offering accompanying detail for each step. The site offers examples, workloads and checklists for each step to help with thorough learning of the engineering process. A useful site for any aspiring engineer and science student.

URL	Systems Engineering Relevance
http://sdm.mit.edu/	SDM - System Design & Management is MIT master's program in engineering and management. The site contains information on SDM industry, the program's alumni and information on recruitment and admissions.
http://search.slidegeeks.com/sea rch?w=systems+engineering	Site containing PowerPoint presentation templates for a host of domain- specific applications with a handful of slides geared towards expressing SE processes and concepts.
http://seari.mit.edu/	Systems Engineering Advancement Research Initiative (SEARI) of MIT conducts research and experimentation for advancing engineering of systems. The site contains relevant research, events, discussions and education materials.
http://sebokwiki.org/wiki/Guide_ to_the_Systems_Engineering_Bo dy_of_Knowledge_(SEBoK)	Informative guide to the Systems Engineering Body of Knowledge (SEBoK).
http://sebokwiki.org/wiki/Relatio nships_between_Systems_Engine ering_and_Project_Management	A link to a SEBoK Wiki page containing a discussion and references to this popular topic. There is much commonality between Systems Engineering and Project Management but also some differences. This page explores these similarities as well as the distinctions.
http://sebokwiki.org/wiki/Techni cal Leadership in Systems Engi neering	A page dedicated to Technical Leadership in Systems Engineering which complements management in the quest for excellent performance, a supportive environment for the project team and organization in general and how they can be resilient to challenges.
http://segoldmine.ppi-int.com/	A resource provided by Project Performance International which contains a multitude of informative reference material primarily relevant to Systems Engineering.
http://sei.cmu.edu/index.cfm	Site of the Software Engineering Institute (SEI) operated by Carnegie Mellon University - whose purpose is to help others make measured improvements in their software engineering capabilities.
https://resources.sei.cmu.edu/lib rary/asset- view.cfm?assetid=12291	Link containing a downloadable document of 'A Systems Engineering Capability Maturity Model' which describes the essential elements of an organization's systems engineering process that is crucial to ensure good systems engineering.
http://www.seisecure.com/about L	Site of Systems Engineering, Inc., an SBA Certified Small & Disadvantaged Engineering/Integration Firm which endeavors to satisfy requirements through applying advanced technological approaches. The company uses an engineering/integration approach known as the Modular Building Concept (MBC), a standardized and packaging approach, which presents an ideal approach to engineering large and diverse systems.
http://seilevel.com/	This is a commercial site which provides many useful requirements resource oriented towards software and business systems.

URL	Systems Engineering Relevance
http://seilevel.com/requirements /blog/	A blog dedicated to requirements engineering containing articles and discussions on related topics.
http://sepatterns.typepad.com/s epatterns/	A blog dedicated to uncovering Systems Engineering patterns, cultivated by Dr. Robert Cloutier of Stevens Institute of Technology, New Jersey, USA.
http://sercuarc.org	The Systems Engineering Research Center (SERC) is a University-Affiliated Research Center (UARC) of the US DoD that aims to catalyze the growth of SE researchers and end users, accelerate SE competency and transform SE practice throughout the government. The site discusses research undertaken and has resources and information on relevant events.
http://sigchi.org	Site of Special Interest Group on Computer-Human Interaction (SIGCHI) - an international society for professionals, academics and students who are interested in human-technology and human-computer interaction.
http://societyforscience.org/isef/	Society for Science & The Public is a champion for science dedicated to expanding scientific literacy, effective STEM education and scientific research. The Intel® International Science and Engineering Fair® (Intel ISEF), the world's largest international pre-college science competition, provides an annual forum for more than 1,500 high school students from 65 countries, regions, and territories to showcase their independent research.
http://softreq-requirements- management.blogspot.com	A blog dedicated to the field of requirements management.
http://softstarsystems.com	Softstar presents tools for software engineering and systems engineering particularly COCOMO and COSYSMO, software cost and systems engineering cost estimation tools.
http://spacese.spacegrant.org/	This Space Systems Engineering website is sponsored by NASA's Exploration Systems Mission Directorate and the Texas Space Grant Consortium. The materials accessible from this website include 27 systems engineering lecture modules with accompanying example assignments and exams among many other resources.
http://sparxsystems.com	Sparx Enterprise Architect enables the visualization, analysis, modeling and testing of systems, software, processes and architectures.
http://spmn.com/lessons.html	SPMN Focus Team Initiative is aimed at improving and advising practices in software programs. The SPMN 16 Critical Software Practices specifically addresses the underlying cost and schedule drivers that have caused software-intensive systems to be delivered over budget and behind schedule.
http://standards.ieee.org/	Site of IEEE Standards Association, the leading consensus building organization that nurtures, develops and advances global technologies.
http://standards.iso.org/ittf/Publi clyAvailableStandards/index.html	A list with links to free ISO standards in the information technology field.

URL	Systems Engineering Relevance
http://standards.nasa.gov/	This is the website of the NASA Technical Reports Server. Using the Advanced Search feature, tens of thousands of downloadable resources on Systems Engineering and related topics can be found.
http://stc.org	Site of the Society for Technical Communication is an individual membership organization dedicated to advancing the arts and sciences of technical communication containing research and information about technical processes and products through various media forms.
http://strategic.mit.edu/	Site of MIT's Strategic Engineering department that is concerned with the process of architecting and designing complex systems that deliberately accounts for future uncertainly and context in order to maximize value of the life cycle.
http://strategic.mit.edu/	Site of Strategic Engineering Research Group (SERG), Massachusetts Institute of Technology embarks on the Strategic Engineering process of architecting and designing complex systems and products in a way that deliberately accounts for future uncertainty and context in order to maximize their life cycle value. This website contains a summary of our research and educational programs as well as links to specific research projects, publications current and former students, research staff, sponsors and downloadable materials.
http://strongerteams.wordpress. com	A blog dedicated to creating strong teams through teamwork, collaboration, team leadership and team building.
http://study.com/articles/Online Systems Engineering Degree a nd Certificate Program Informat ion.html	Site with reference information on systems engineering degrees and certificates for online learning.
<u>http://sunset.usc.edu/research/</u> <u>WINWIN/index.html</u>	Informational site on The WinWin Spiral Model that uses Theory W (Win- Win) to develop software requirements and architectural solutions with win conditions as determined among the project's stakeholders. The WinWin negotiation tool is a Unix workstation-based groupware support system allowing stakeholders to enter the preferred conditions to enable mutual agreements.
http://swe- sc.org/Seminar/CSEP_Overview- %20Heidel.pdf	Downloadable presentation containing an overview of the Systems Engineering Professional certification program by the International Council on Systems Engineering (INCOSE).
http://syseng.omg.org	Website capturing the developments of Systems Engineering Domain Special Interest Group (SE DSIG) - dedicated to the evolution of model- based system engineering standards.
http://sysml.org	SysML - Provides information and specifications related to Systems Modeling Language, a domain-specific modeling language for SE Applications.
http://sysmlforum.com	A forum with discussion relating to SysML.

URL	Systems Engineering Relevance
http://sysmlforum.com/sysml- resources/tutorials/	A list of online tutorials that teach SysML and Model-Based Systems Engineering (MBSA) in a manner that is completely independent of tools. Quotations are available on request. Both onsite and online courses are available.
http://sysmlforum.com/sysml- training/	Site contains a list of professional SysML training organizations conducting classes, workshops and seminars in SysML modeling and Model-Based Systems Engineering (MBSE).
http://sysmltools.com/	SysML.Tools provides comprehensive information about SysML modeling tools and contains reviews on popular commercial and open source SysML modeling tools.
http://systemdynamics.org/	Home of the System Dynamics Society - an international, non-profit organization devoted to encouraging the development of System Dynamics and system thinking around the world. Site contains relevant publications, activities and resources.
http://systemsengineeringblog.co m/extreme-review-a-tale-of- nakedness-alsatians-and-fagan- inspection/	This is a blog of Les Chambers, a true professional in the engineering of software-intensive systems. His article "Extreme Review: A Tale of Nakedness, Alsatians and Fagan Inspection" should be read by every graduate engineer.
http://systems-thinking.org/	A website capturing the 'journey in the realm of systems' including meta models of modeling and simulation, businesses and organizations and systems in general.
http://systemswiki.org/index.php ?title=Main_Page	Systems Thinking World reveals noteworthy stories about relationships and their implications to provoke thought, foster deeper understanding, insights and enable more effective action.
http://teamblue.unicomsi.com/pr oducts/system-architect/	UNICOM System Architect is an enterprise architecture tool that enables you to build and automatically generate data-driven views of your organization's enterprise architecture - its strategy, business architecture, operational architecture, data, application landscape, supporting systems, technologies, and infrastructure.
http://telelogic.se	Site dedicated to Telelogic (site in Swedish). Telelogic, a Swedish company offering solutions, consulting and education services for business process management, software development and systems technology.
http://thaisysml.blogspot.co.za/2 012/02/common- misunderstanding-in-using.html	An article about the appropriateness of using connectors between ports on boundaries in a SysML Block Definition Diagram (BDD).
http://thebalance.com/tech- career-profile-systems-engineer- 2071298	A website outlining the technical and non-technical skills a sound systems engineer should exhibit. The website outlines the responsibilities, career opportunities and objectives for a systems engineer in practice. A useful checklist to assess one's skillset at a high level.

URL	Systems Engineering Relevance
http://theenterprisearchitect.eu	A blog by Johan den Haan relating to model-driven software development (MDE, MDD, DSL), products and product management. Site also includes information on shaping engineering teams.
http://theiet.org/communities/	Site of IET Communities - an online community for systems engineers to share ideas and expertise and to collaborate and learn.
<u>http://themanagersguide.blogspo</u> <u>t.co.za/</u>	The Manager's Guide contains blog posts and articles on Leadership and Systems Engineering. The site includes a self-study course in leadership for managers and workers who wish to prepare themselves for management roles. Articles contained address motivation and improvement in the workplace.
http://thesystemsthinker.com/	A vault of articles, case studies and guides on Systems Thinking with topics including: archetypes, fundamentals, leadership, scenario planning, system dynamics, strategy and personal mastery.
http://thinking.net/Systems_Thin king/systems_thinking.html	A vault of resources on systems thinking from creativity to cybernetics to cognition.
http://threesl.com	Structured Software Systems describe themselves as specialists in systems engineering and related disciplines, and are the developers of the Cradle systems engineering environment.
http://timreview.ca/article/878	The Technology Innovation Management Review (TIM Review) focuses on theories, suggestions and tools that will help technology companies of varying size. The article A Method and Tool to Support Management of Systems Engineering Projects aligns practices of systems engineering and project management for quick and efficient system development.
http://togaf.org/	The Open Group Architecture Framework (TOGAF) is a framework - a detailed method and a set of supporting tools for developing an enterprise architecture.
http://tpmm.info/	Site of TPMM - Technology Program Management Model. Access and info may be gained by request. TPMM is an activity model for technology development that is partitioned into phases and gate-qualifications using TRLs.
http://trak-community.org/	TRAK is a new, general enterprise architecture framework aimed at systems engineers.
http://triz.org/	Technical Innovation Center's site about TRIZ consulting, training and publishing services. TRIZ is a premier disruptive technology for innovation that is applicable to several industries and sciences.
http://triz-guide.com/	Home of the Institute of Innovative Design, a company dedicated to teaching the principles of intellectual search and design based on TRIZ by providing expertise of technical systems and projects.
http://triz-journal.com/	The TRIZ Journal provides many resources to increase awareness and knowledge about the 'Theory of Inventive Problem Solving' method that is TRIZ.

URL	Systems Engineering Relevance
http://ttool.telecom- paristech.fr/index.html	Site dedicated to the TTool toolkit containing Diplodocus, Avatar and SysML-Sec. The toolkit contains UML and SysML diagrams and the simulation and formal verification (safety, security and performance) of those diagrams.
http://tynerblain.com/blog/	A blog on Software Product Success, with particular emphasis on business analysis, product management, requirements and requirements models.
http://ui4all.ics.forth.gr	Developed by the ERCIM Working Group, the page is dedicated towards analyzing the requirements, identifying the viability, and demonstrating the feasibility of constructing 'user interfaces for all'.
http://uml.org	Site of Object Management Group (OMG)- an international, open- membership, non-profit technology standards consortium dedicated to Unified Modeling Language.
http://uml-sysml.org/sysml	A website (created by SysML France and thus originally in French- translation available on Google), containing instructions and information on Unified Modeling Language (UML) and Systems Modeling Language (SysML).
http://update.se.wtb.tue.nl/docu mentation/	This site contains access to tools for modeling languages Chi 3 and CIF 3 and cross platform scripting language ToolDef 2. The tools were developed by the Systems Engineering group of the Mechanical Engineering Department at Eindhoven University of Technology.
<u>http://usnews.com/best-</u> graduate-schools/top- engineering-schools/industrial- engineering-rankings	A listing of the top graduate engineering schools for industrial/ manufacturing/systems engineering. Each school's score reflects its average rating on a scale from 1 (marginal) to 5 (outstanding), based on a survey of academics at peer institutions. The methodology used for ranking the schools is explained thoroughly on the site.
http://uspi.nl/index.php/about	Site of Uitgebreid Samenswerkingsverband Procesindustrie - Nederland (USPI-NL)- a community of process industry experts. The site contains useful resources such as information on software requirements, frameworks, life cycle guidelines and standards.
http://uxnet.org	UXnet (The User Experience Network) is an archive of information from practitioners with knowledge on effective, functional, and strategic networking to enable cross-disciplinary collaboration between user experience professionals.
http://vasy.inria.fr/	This is the website of the VASY team of INRIA Rhone-Alpes. The team develops formal methods for safety-critical systems, notably formal specification languages and associated methodologies, compiling and rapid prototyping techniques, simulation, validation, verification, and testing.
http://vitechcorp.com/products/i ndex.shtml	Site of VitechCorp dedicated to System Engineering Tools - Core and Genesys which enable end-to-end coverage of system development from requirements to verification and validation and assimilation of data from across enterprise into the system model.

URL	Systems Engineering Relevance
http://watersfoundation.org/	Site of Waters Foundation which promotes Systems Thinking in Schools and is determined to making systems thinking accessible and practical in classrooms. The community encourages the sharing of concepts, habits and tools of systems thinking to enable understanding of complexities in system at school, in work and in life challenges.
http://webel.com.au/	Home of Webel - an Australian IT consultancy specializing in web application development, content management systems and model based software engineering and systems engineering technologies such as UML, XML and SysML.
http://weibull.com/	With over 6,000 pages, weibull.com is a vast website devoted entirely to the topic of reliability engineering, reliability theory and reliability data analysis and modeling. The site includes sections on important reliability engineering disciplines, including but not limited to: Reliability Life Data Analysis (Weibull Analysis), Accelerated Life Testing, System Reliability and Maintainability Modeling and Analysis.
http://wfs.org/	The World Future Society (WFS) is a non-profit helping individuals, organizations, and communities observe, understand and respond to social change appropriately and investigates the benign effects of applying anticipatory thinking to society.
http://wickedse.com/single- post/2017/09/24/WPRE	A blog capturing the debate about whether or not requirements engineering is to be considered a wicked problem as described by 'Wikipedia'.
http://wiki.developspace.net/Op en_Source_Engineering_Tools	A project aimed at bringing access to relevant open source engineering software tools for space systems development that have received input from DevelopSpace contributors and the space engineering community at large.
http://wiki.polarsys.org/Capella\	Capella is the Model-Driven Engineering (MDS) solution provided by Thales. This website is a Wiki Page intended for Capella end users and developers to collaborate. The page contains news, access to the Capella forum and free useful downloads.
http://winstonbrill.com/index.ht ml	Winston J. Brill and Associates present talks, keynotes, articles and other resources to encourage stimulation of creativity and innovation.
http://worldwidelearn.com/onlin e-education- guide/engineering/systems- engineering-major.htm/	A website containing information on various career choices including what it means to study the degree searched, what a career in education for that field entails and what degree programs are available in the Systems Engineering field.
http://wrobinson.cis.gsu.edu/IFIP 2.9/	The IFIP Working Group site offers information about Software Requirements to help develop a better understanding of the elicitation, specification, analysis and management of the requirements for large and complex software intensive systems.
http://wwisa.org/simonlabs.htm	A site presenting a traditional architectural approach to business strategy and software design via software, consulting and publishing services.

URL	Systems Engineering Relevance
http://youtube.com/watch?v=Ea p9kmlz_6k	This YouTube link presents an entertaining, short (three minute) video introduction to systems engineering.
http://youtube.com/watch?v=jOr E66l9fyw&feature=relmfu	The video at this URL, based on ideas of Donella Meadows (Thinking in Systems: A Primer 2008, Chelsea Green Publishing), describes different types of interventions that are possible in a system, and their potential leverage.
http://zachmaninternational.com /index.php	This is the website of the legendary John Zachman. The Zachman Framework™ is an Enterprise Architecture (EA) framework, which provides a formal and highly structured way of viewing and defining an enterprise.
http://ziprecruiter.com/blog/syst ems-engineer-job-description- sample-template	This free system engineer job description sample template can assist recruiters in attracting innovative and experienced systems engineers to their company. Requirements, benefits and perks specific to the company should be added to this template before advertising for employment.