

Introduction of Software Project Management

Yong ZHANG
September, 2020



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Tsinghua University

Contacts

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<https://dagege.github.io/>



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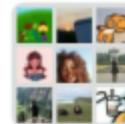


Formal course notice!



Homepage, homework, PPTs,
course videos,!

WeChat



2020 SPM Course



该二维码7天内(9月20日前)有效，重新进入将更新



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← → C 不安全 | 180.76.145.135/moin/SpmEng/2020

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FrontPage RecentChanges HelpYou Research Papers SpmEng/2019/Groups **SpmEng/2020**

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Teacher: Yong Zhang, Email: zhangyong05@tsinghua.edu.cn

Teaching assistant: Yu Chen, Email: y-c19@mails.tsinghua.edu.cn

Time: 13:30 - 16:05

Venue: XinShui 331

- Groups
- Course PPTs
- Course Videos
- Assignments Templates
- Question Bank
- Class videos and photos
- FAQ
- Useful links:
 - [..../WikiUsage](#)
 - <http://www.kathyschwalbe.com/>
 - <https://www.16personalities.com/free-personality-test>



Groups



1 Leader (3 members)

Wiki - http://180.76.145.135/moin

文件 查看 收藏

http://wiki.riit.tsinghua.edu.cn/west/SpMcEng/2015/Groups?action=recall&rev=65 加速器

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清华大学信息门户 SpMcEng/2015/Group

The Groups

No.	1	2	3	4	5	6	7	8	9	Group Name	Logo	Group Leader	Group Members
1	😊	😊	😊	😊	😊	😊	😊	😊	😊	Creatrix spatium		Alisher Khodzhaev(阿利舍尔)	Alexander Yun, Do Philip Junker
2	😊	😊	😊	😊	😊	😊	😊	😊	😊	hasp		Kölker Stephan Ludger(史蒂夫)	Dau Hauke, Mayer Antti



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Wiki - http://180.76.145.135/moin

No.	01	02	03	04	05	06	07	08	09	10	Name	Logo	Slogan	Leader
1	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	KOALIFE		Your health is our concern	Michael Mogford
2	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	Team Rocket		Prepare for trouble! And make it double!	James
3	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	MagicEye		Cause AI can do wonders	Benjamin Pennant
											Red Hot	

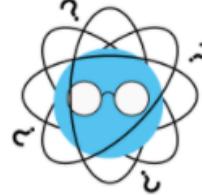


Wiki - http://180.76.145.135/moin

No.	1	2	3	4	5	6	7	8	9	10	Name	Logo	Slogan
1	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	Health Chain		Health is Wealth – Keep this treasure Safe
2	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	山水集团 / Shanshui Group		缺德不缺利 / Make profit, discard morality!
3	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	Bealth		Improving Health Outcomes one Block at a Time



Wiki - http://180.76.145.135/moin

No.	Name	Project	Homework	Logo	Slogan	Leader	Members
1	MUTE	>>>	>>>	 Mute Technologies Don't mute yourself. Use Mute.	Don't mute yourself, use Mute.	Sami Emre Erdogan	Andrei Gliniuk Eduard Ergen
2	FoodCheck	>>>	>>>	 Foodcheck Simple health tech, Foodcheck!	Simple health tech, Foodcheck!	Amitoj Padwal Kulwinder	Adam Kantor Carles
3	AILEARN	>>>	>>>	 A blue brain inside a circular path with question marks.	Through study you will learn how to study.	Tobias Skjelvik	Håvard Fare Schneider, Ida
4	OptimAlisers	>>>	>>>	 A dark blue steering wheel with a green horizontal bar in the center.	Choose Life, Choose OptimAlisers.	Simon Mariani	Youngin Kim



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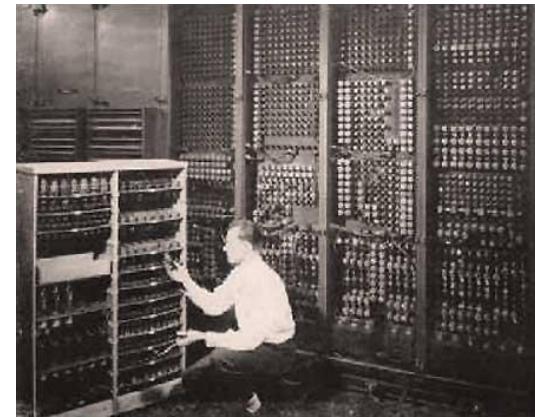


Contents

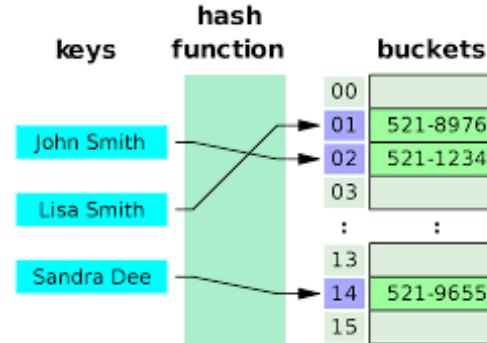
- About the course
- What is a project?
- What is project management?
- Project manager and PMP
- Summary

Difference with Other Courses

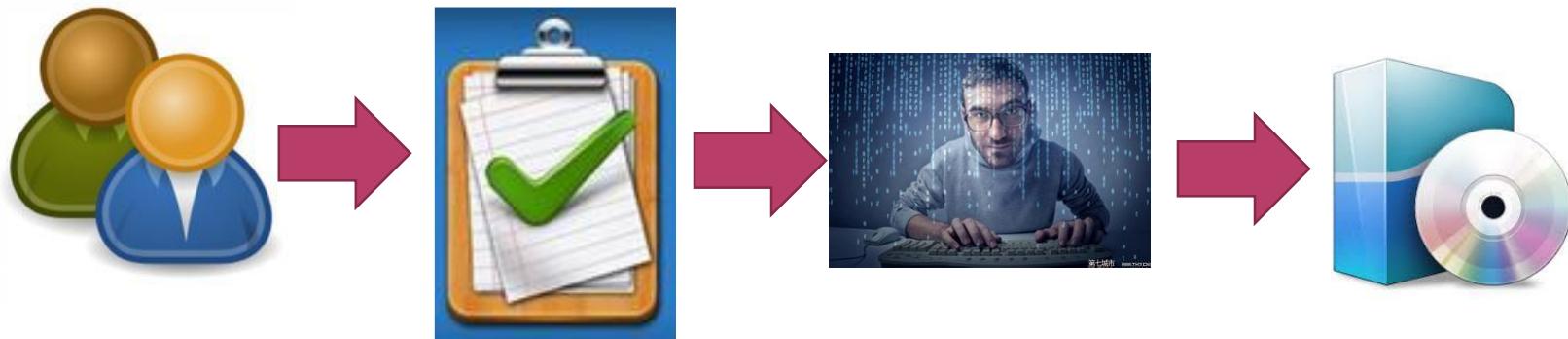
- Computer Architecture
- Digital Circuits
- VLSI



- Data Structure
- Combinatorics
- Machine Learning
- Distributed Database
- Internet
- Multimedia



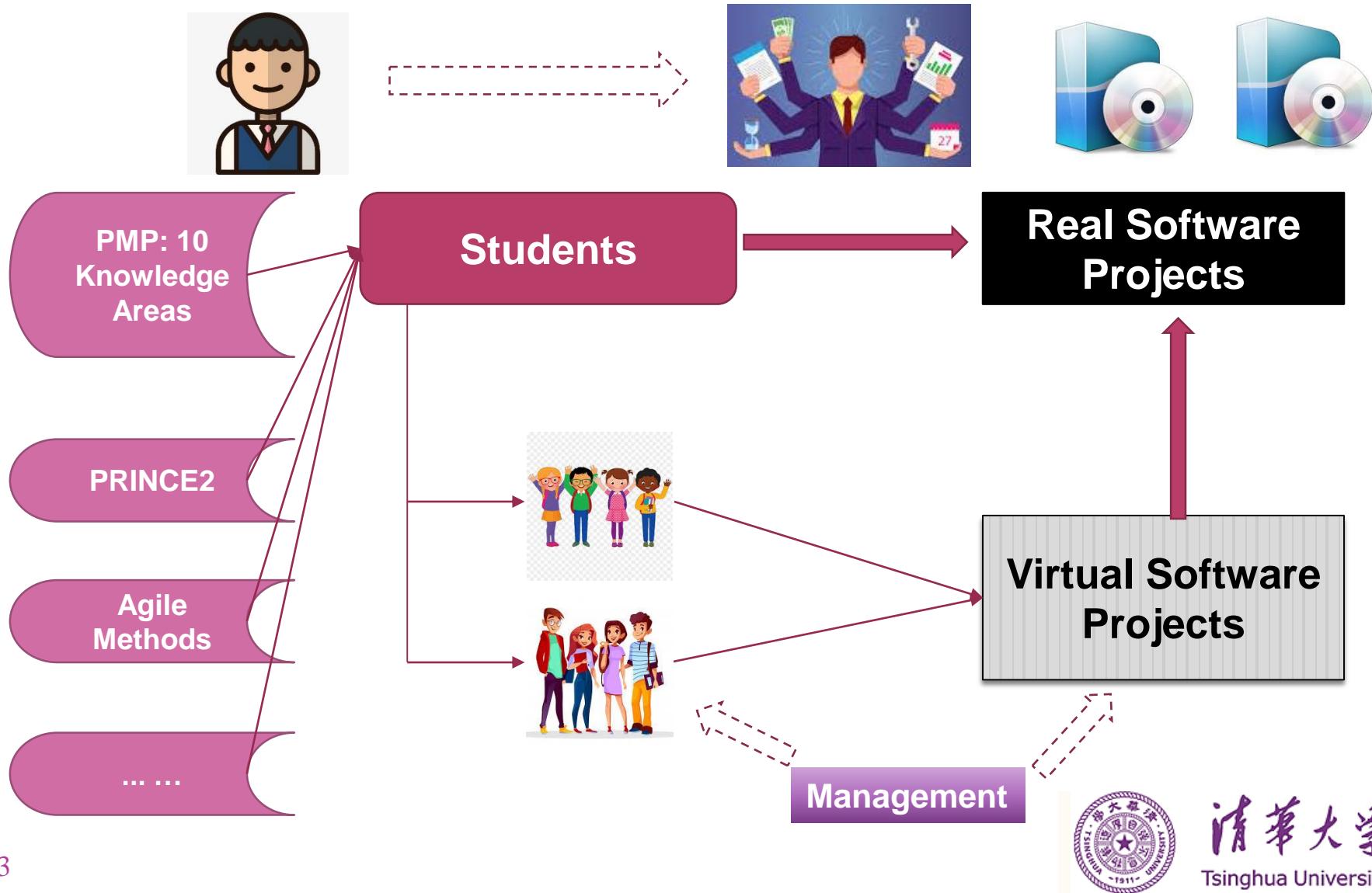
Difference with Other Courses



March 03	March 10
Task 1 5 days 50% Mar 6 Mar 12	Task 2 2 days 0% Mar 13 Mar 14
Task 3 5 days 0% Mar 13 Mar 19	



Course Organization



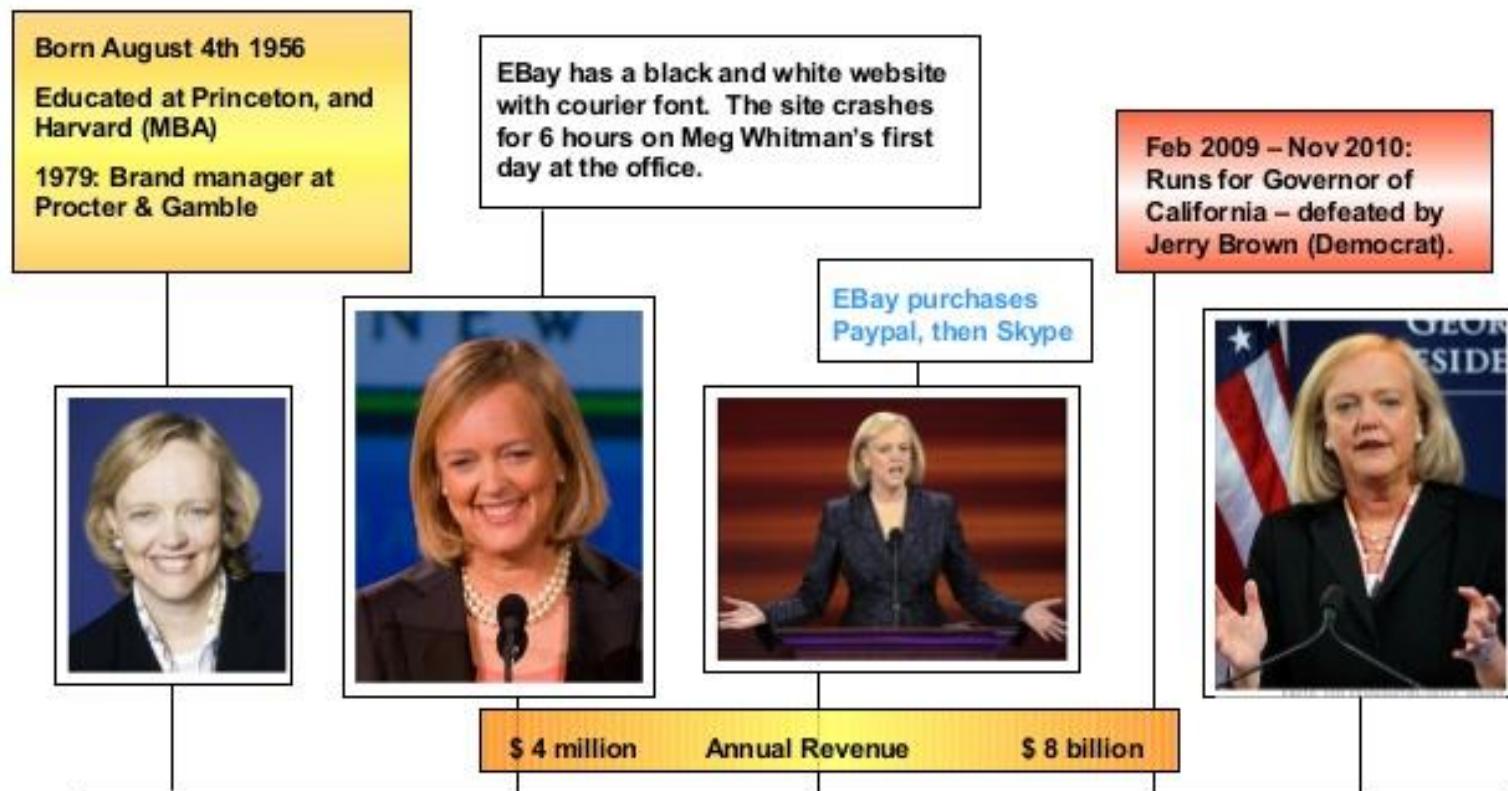
Minimal Requirements

- One programming language

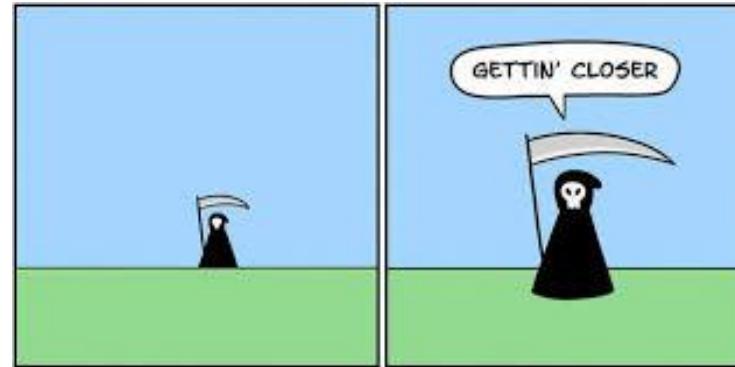
Not a good programmer?



Meg Whitman – EBay CEO 1998 - 2007 & HP CEO from Sept.2011



What are you most worried about?



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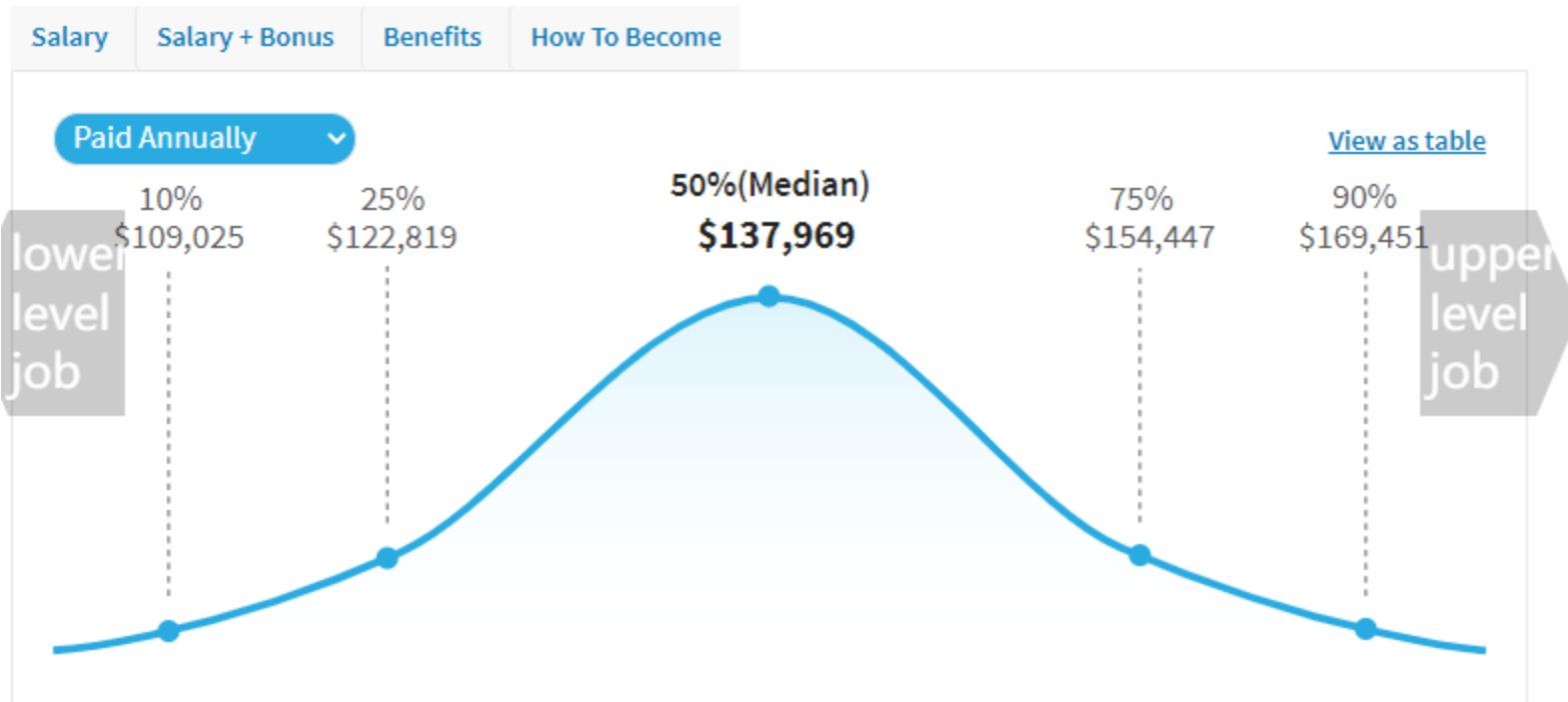
Project Management Manager Salary in the United States

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How much does a Project Management Manager make in the United States? The average Project Management Manager salary in the United States is \$137,969 as of August 27, 2020, but the range typically falls between \$122,819 and \$154,447. Salary ranges can vary widely depending on many important factors, including [education](#), certifications, additional skills, [the number of years](#) you have spent in your profession. With more online, real-time compensation data than any other website, Salary.com helps you determine your exact pay target.

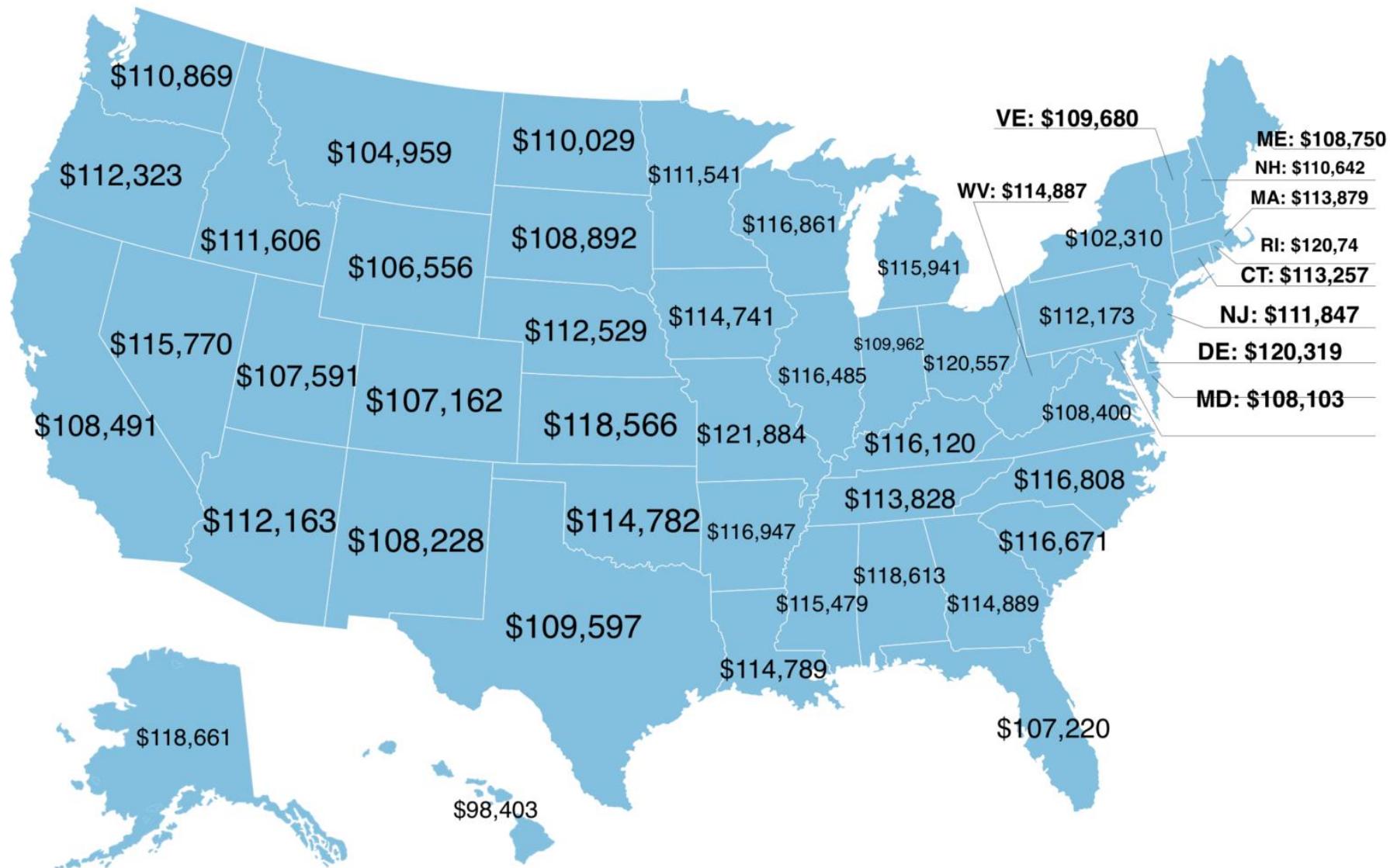
 [Top 15 Jobs Most Likely to Be Fired during COVID-19](#)



<https://www.salary.com/research/salary/benchmark/project-management-manager-salary>



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Earn 23% More

- According to the 2018 PMI® Project Management Salary Survey, the median salary for project managers is \$115,761. Project Management Professional (PMP®) credential holders reported higher average salaries than non-certified project managers, earning upwards of \$20,000 more than non-credential holders, with median salaries in the United States now exceeding \$120,000, according to the survey.



Average Salary in China

Career	Avg. gross salary
Manager	CNY 369,678
Teacher	CNY 186,699
General Manager	CNY 839,911
Director	CNY 772,006
Human Resources Manager	CNY 352,033
Marketing Manager	CNY 335,105
Architect	CNY 256,023
Project Manager	CNY 303,458
Engineer	CNY 183,281
Software Developer	CNY 278,955

<https://www.averagesalarysurvey.com/china>



Who can get high salary?



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(71) 315
CAPITAL

A CRITIQUE OF POLITICAL ECONOMY

6000

BY KARL MARX

VOLUME I
THE PROCESS OF CAPITALIST PRODUCTION

*TRANSLATED FROM THE THIRD GERMAN EDITION, BY
SAMUEL MOORE AND EDWARD AVELING*

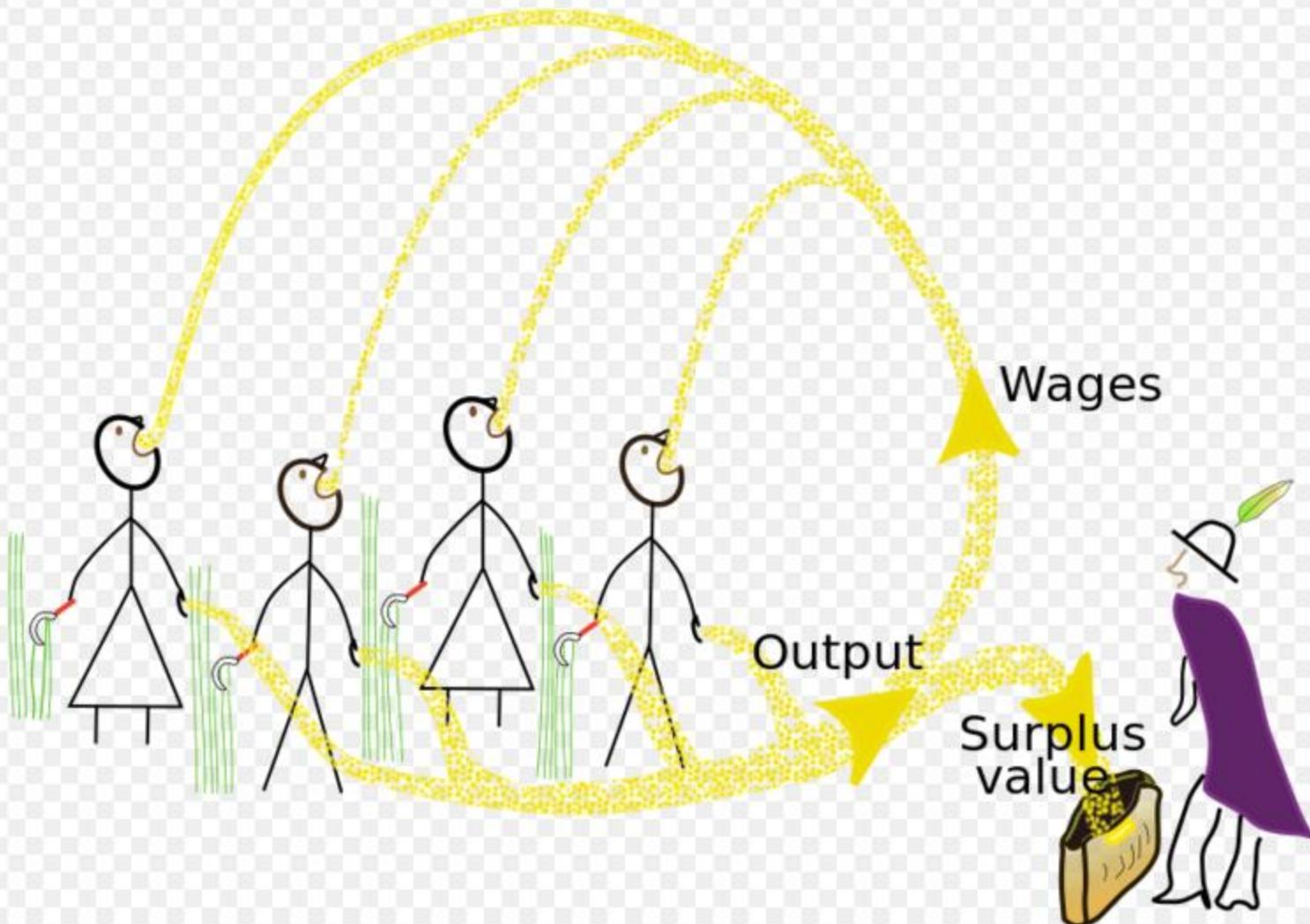
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BY ERNEST UTERMANN

CHICAGO
CHARLES H. KERR & COMPANY
1926



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Career Path



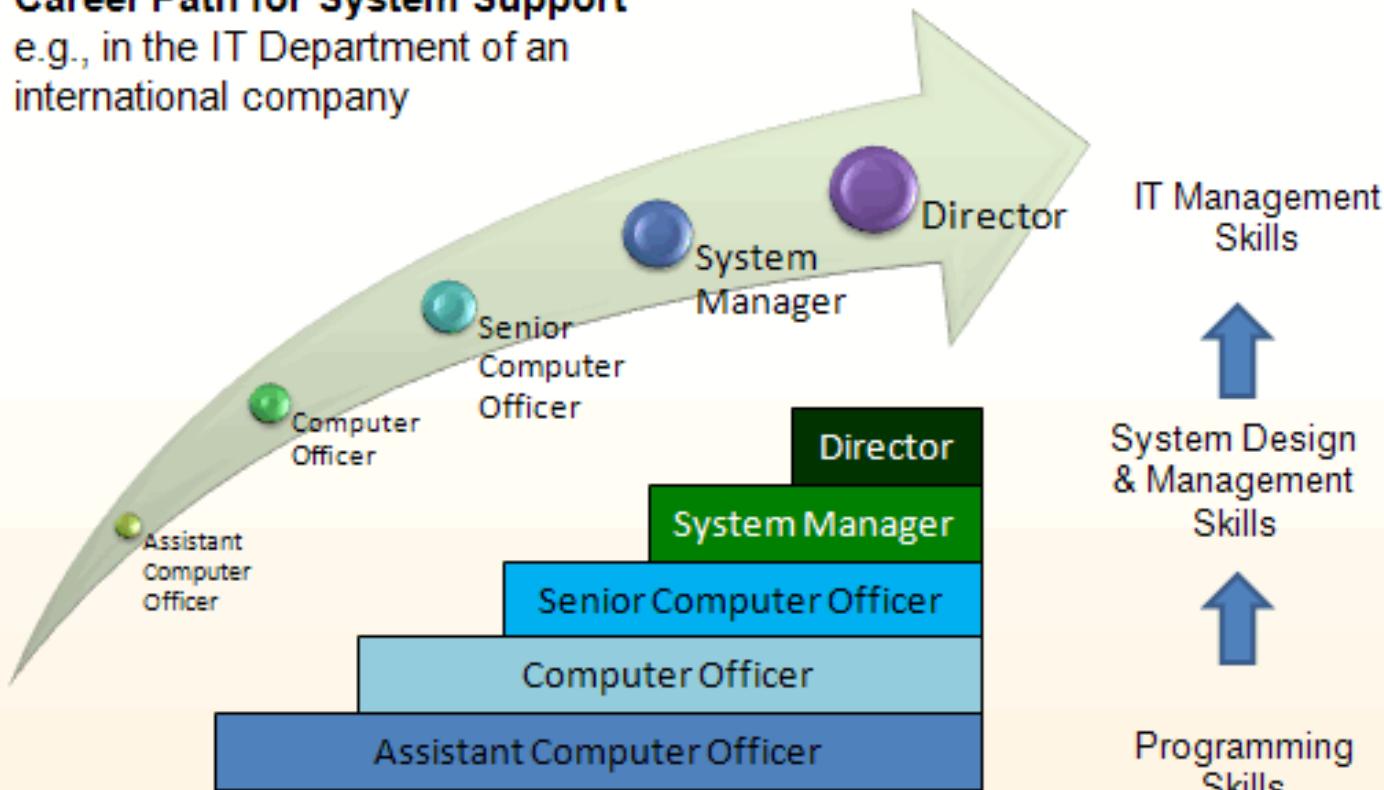
Career Path

Vice
President

Process

Career Path for System Support

e.g., in the IT Department of an international company



Do Not Want A Boss?



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Do Your Own Business?

- How to find and select a project?
- How to build a team?
- How to control the scope?
- How to control the cost?
- How to control the time?
-



CHAOS Report

- The number of successful IT projects has more than doubled, from 16%(1994) to 37%(2010)
- The number of failed projects decreased from 31%(1994) to 21%(2010)
- US IT projects
 - Year Total Failed
 - 1994 \$250 billion \$140 billion
 - 2006 \$346 billion \$53 billion
- In a more recent study, PricewaterhouseCoopers surveyed 200 companies from over 30 countries: over half of all projects failed.



2017

- 70 percent of projects fail. [source: 4 PM]
- The failure of IT costs the U.S. economy about \$50-\$150 billion annually. [source: Harvard Business Review]
- Just 40 percent of projects at IBM meet the company's three key goals (schedule, budget, and quality). [source: IBM]
- 17 percent of IT projects go so badly, they threaten the existence of the company. [source: McKinsey & Company in conjunction with the University of Oxford]
- Only 2.5 percent of companies successfully complete 100 percent of their projects. [source: Gallup]
- 80 percent of "high-performing" projects are led by a certified project manager. [source: Wrike]
-

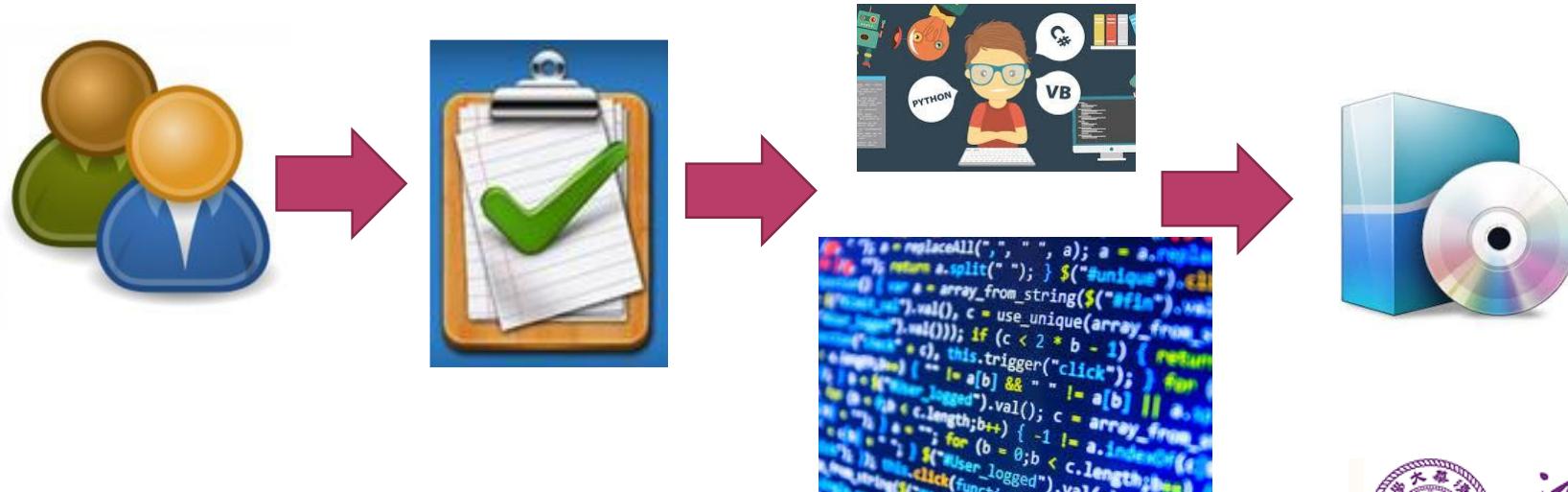
<https://blog.mavenlink.com/21-shocking-project-management-statistics-that-explain-why-projects-continue-to-fail>



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Course Goals

- Understand project management process groups, knowledge areas with methods
- Familiar with the management tools (e.g. MS Project)
- The ability to apply process groups and knowledge areas in **virtual/real** software projects



Reference Book (1)

Information Technology Project Management 9th Edition

by Kathy Schwalbe (Author)

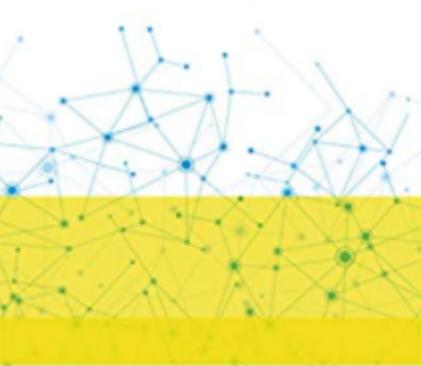
★★★★★ 89 ratings

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What is ISBN?



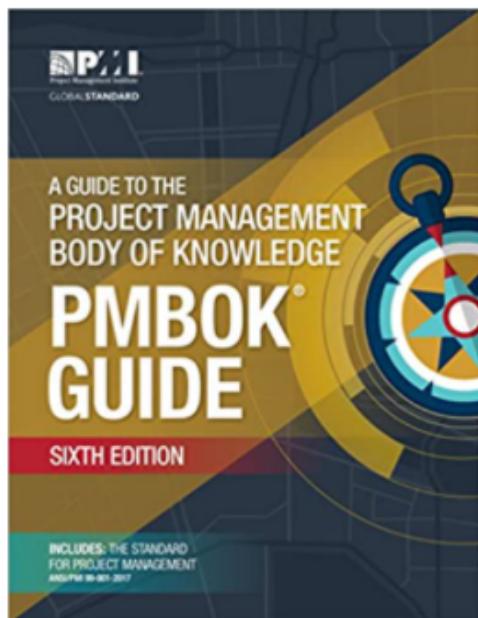
Reference Book (2)

A Guide to the Project Management Body of Knowledge (PMBOK® Guide)–Sixth Edition 6th Edition, Kindle Edition

Format: Kindle Edition

★★★★★ 2,124 ratings

Part of: PMBOK® Guide (3 Books)



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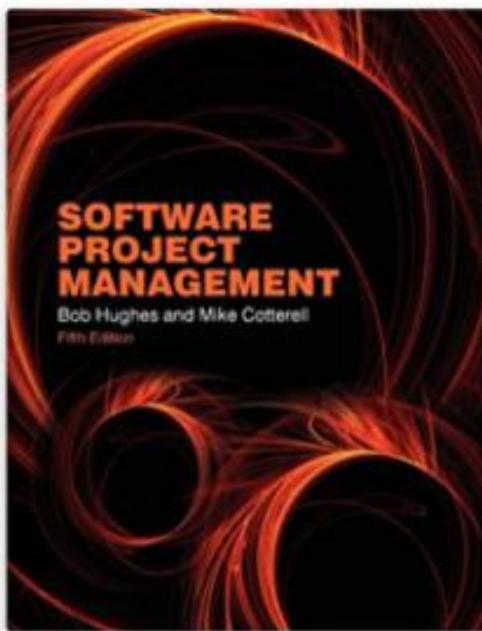
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Reference Book (3)



[Software Project Management] [By: Hughes, Bob] [May, 2009] Paperback – May

1, 2009

by Bob Hughes (Author)

[▼ Hide other formats and editions](#)

	Price	New from	Used from
› Paperback	\$146.13	\$108.93	\$62.59
Paperback, May 1, 2009	—	\$125.93	—



Schedule

Date	Topic	Date	Topic
09-16	Introduction	11-11	Quality
09-23	SDC	11-18	Resource
09-30	Process Group	11-25	Communication
10-07	Integration	12-02	Risk
10-14	Scope	12-09	Procurement
10-21	Schedule	12-16	PRINCE2
10-28	Cost	12-23	Sitcoms
11-04	Report/Stakeholder	12-30	Openbook Examination



Composition of Grade

No	Content	Deliverable	Points	Deadline
1	Design personal homepage	Web page	2	09-18
2	Design Group homepage	Web page	3	09-29
3	Kick-off meeting	Report/Video	2/1	09-29
4	Design of virtual software product	Report/Video	4/1	10-13
5	Triple constraints	Report/Video	8/1	11-03
6	Mid-term Presentation	Presentation	10	11-04
7	Knowledge areas except triple constraints	Report/Video	8/1	12-15
8	Sitcom	Sitcom	14	12-23
9	Open-book examination (100/300 + 50)	/	45	12-30
10	Extra points (by group leader)	/	2	/



Mid-term Presentation



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Short sitcoms



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Short sitcoms



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Short sitcoms



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Class Discipline

- On time
- Active
- Collaboration
- Three important days: **11-04, 12-23, 12-30**



Contents

- About the course
- What is a project?
- What is project management?
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潔手七式 7 Steps of Hand Hygiene Technique

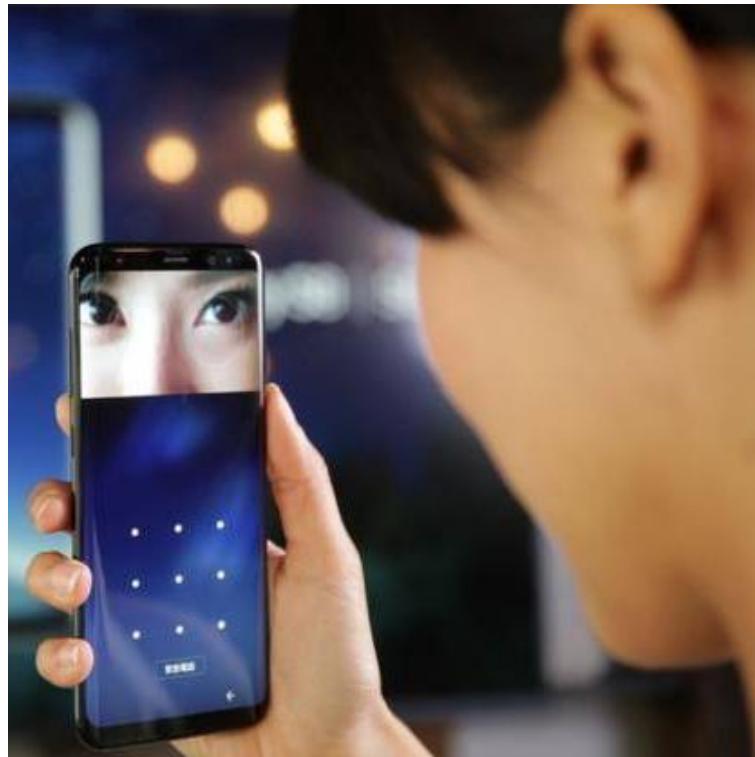


Use liquid soap and water, or an alcohol-based handrub on our palms,



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Plan how you would develop a magic mirror to detect the health status of a person.



Project Definition

A **temporary** endeavor undertaken to create a **unique** product, service, or result



All members have to work together to overcome the obstacle, look like building the bridge to cross the river

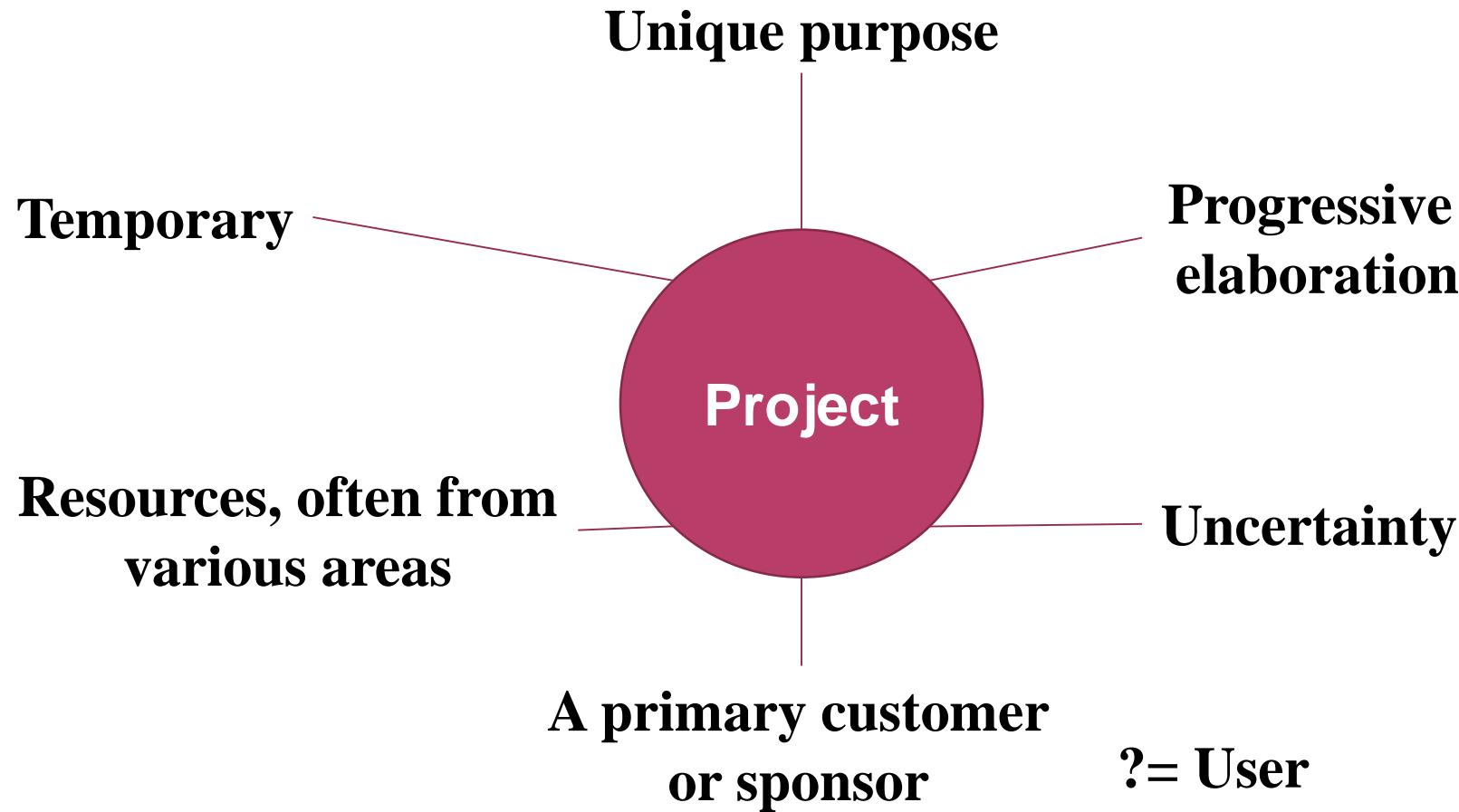


Issue management is the process to make others aware of the problem and then resolve it as quickly as possible

What is an IT project/software project?



Project Attributes



Strategic Technologies, Gartner, 2020

1. Hyper automation
2. Multiexperiences
3. Democratisation
4. Human augmentation
5. Transparency and traceability
6. Enhanced edge computing
7. The distributed cloud
8. Autonomous things
9. Practical blockchain
10. AI security



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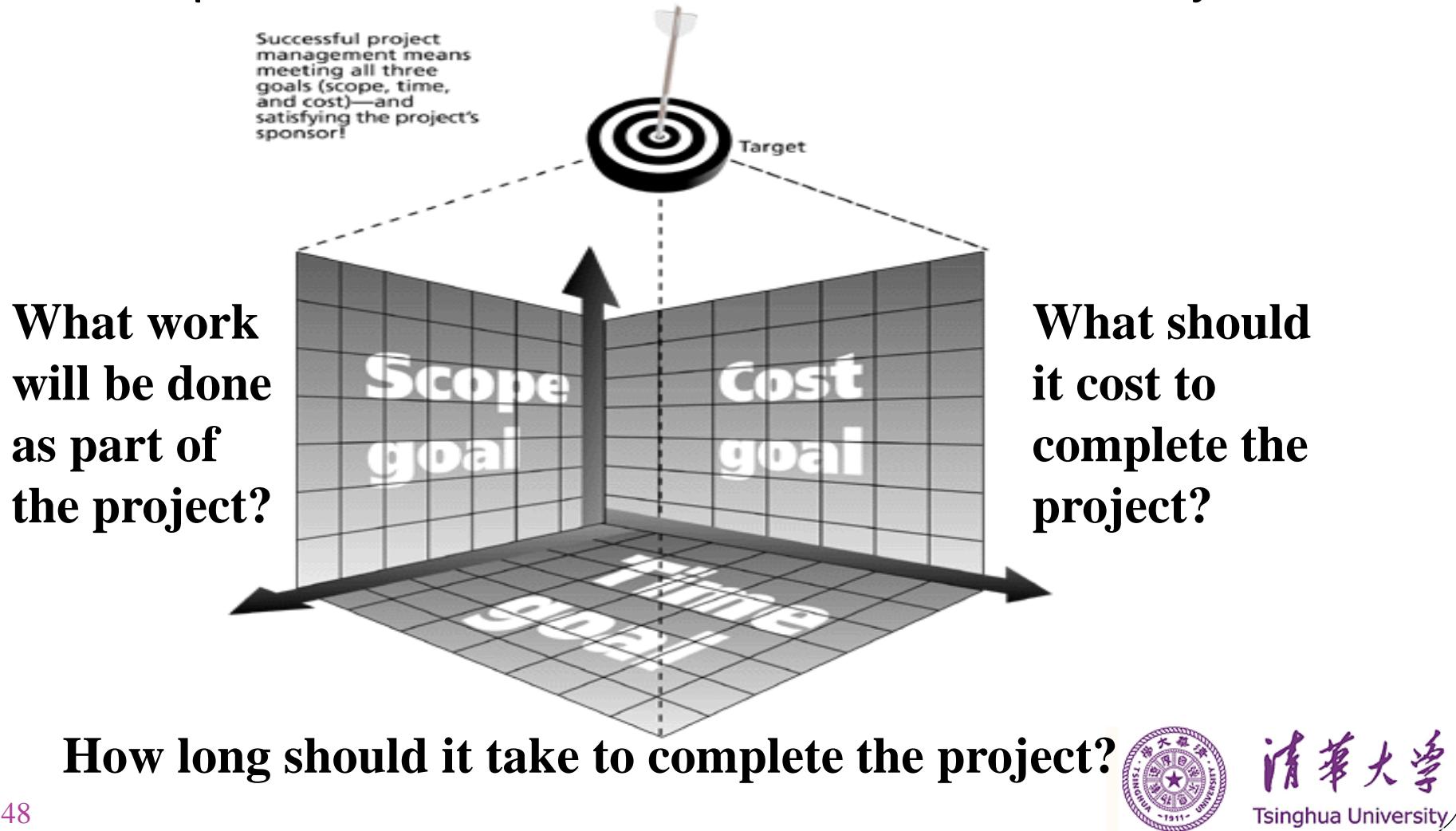
Project Examples?

- A small software development team adds a new feature to an internal software application
- The automobile industry develops a Web site to streamline procurement
- A company develops a new system to increase sales force productivity
- Your secretary cooks a cup of tea for you every morning
- A government group develops a system to track child immunizations.



The Triple Constraints

- Every project is constrained in different ways



- Who's duty to balance these three often competing requirements?

Enough?



What Is a Success Project

- The project met scope, time and cost goals



- The project satisfied the customer/sponsor



What Helps Projects Succeed?

- Executive support
- User involvement
- Experienced project manager
- Clear business objectives
- Minimized scope
- Standard software infrastructure
- Firm basic requirements
- Formal methodology
- Reliable estimates
- Other criteria, such as small milestones

2011 U.S. Government:

1. Adequate funding
2. Staff expertise
3. Engagement from all stakeholders

In China?

Culture



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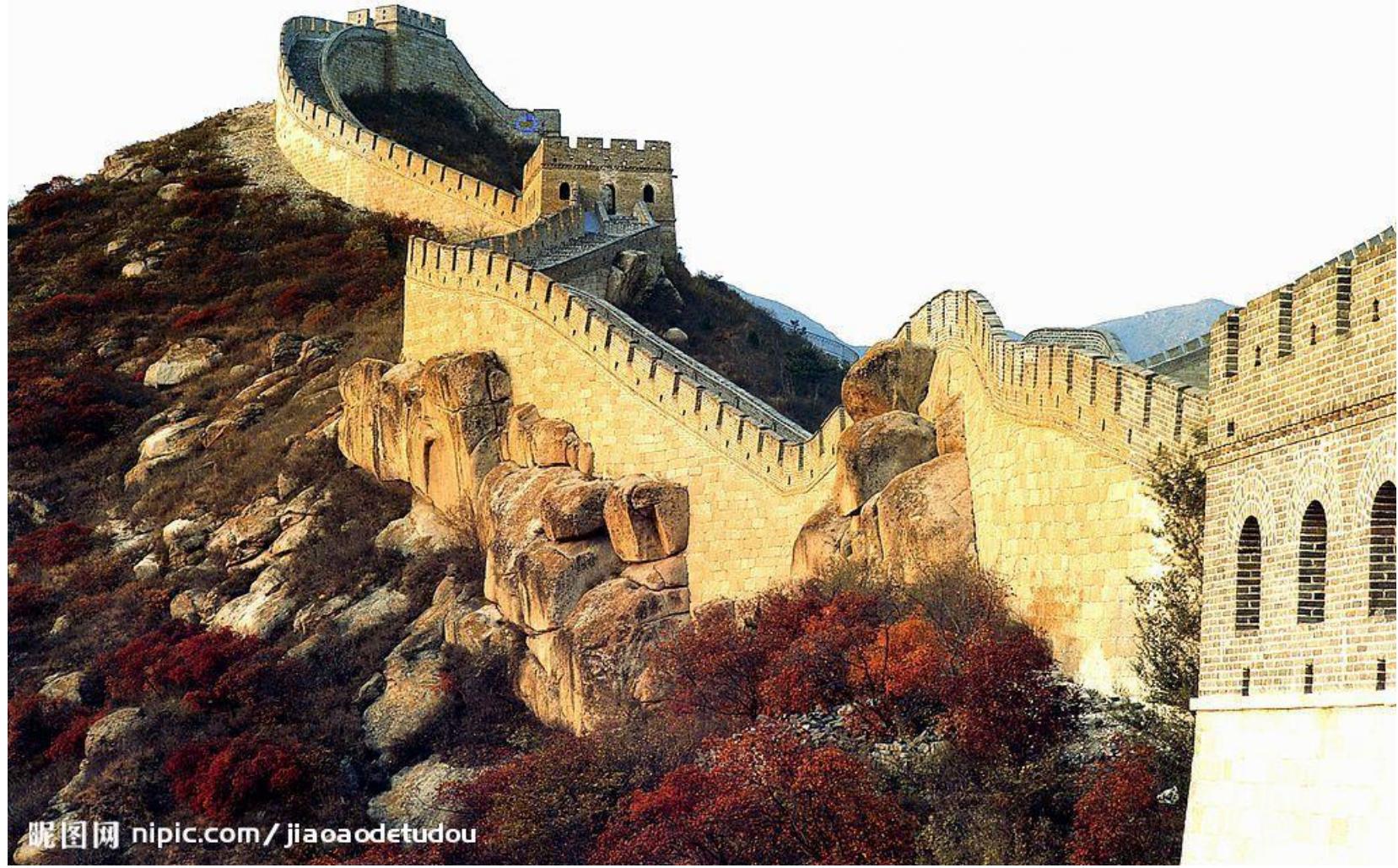
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2570 BC: The Great Pyramid of Giza Completed

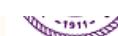




昵图网 nipic.com / jiaoaoetudou

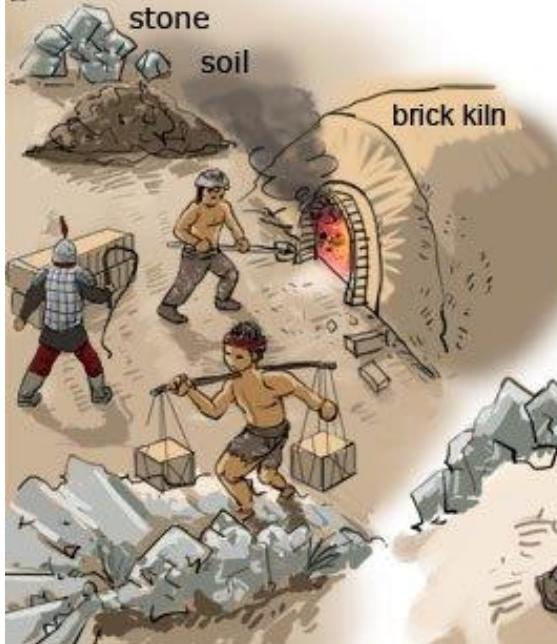
208 BC: Construction of the Great Wall of China

55



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How the Great Wall Was Constructed



Designed by: Cullen Chen



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blog.sina.com.cn/wykyk





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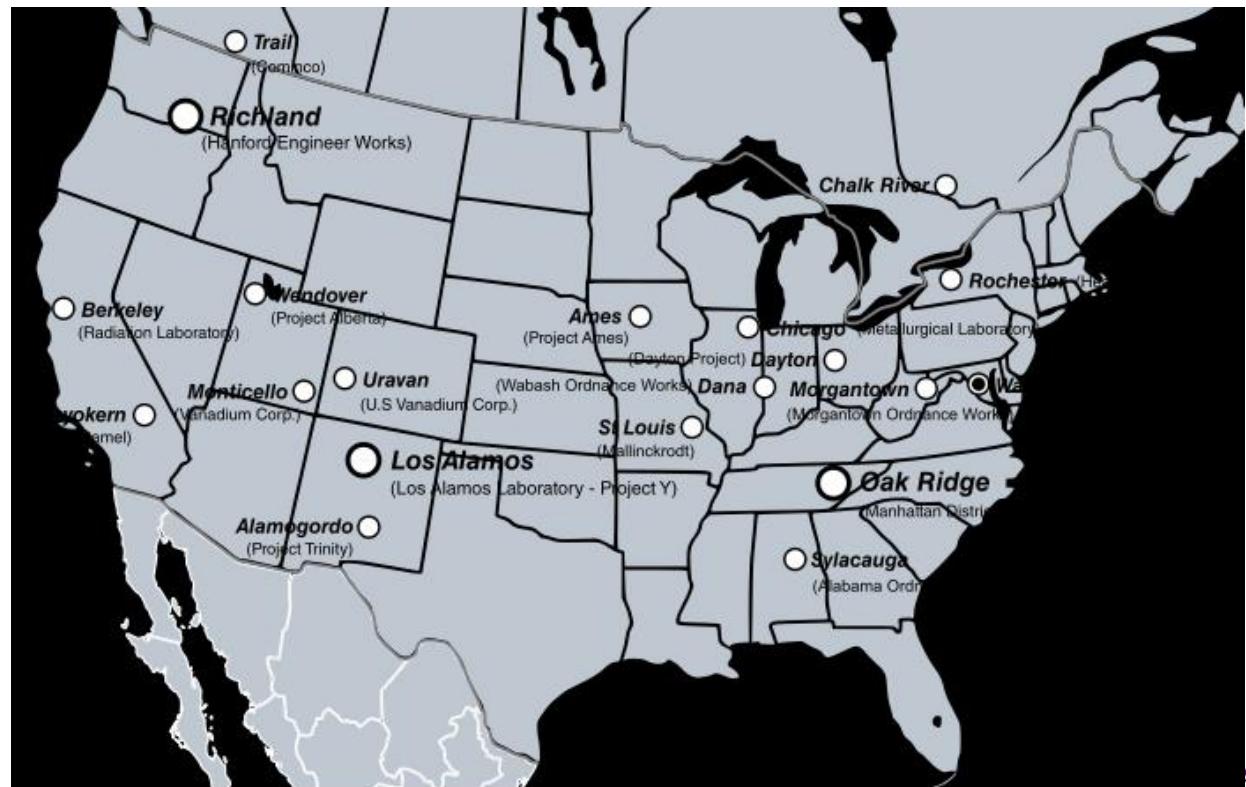
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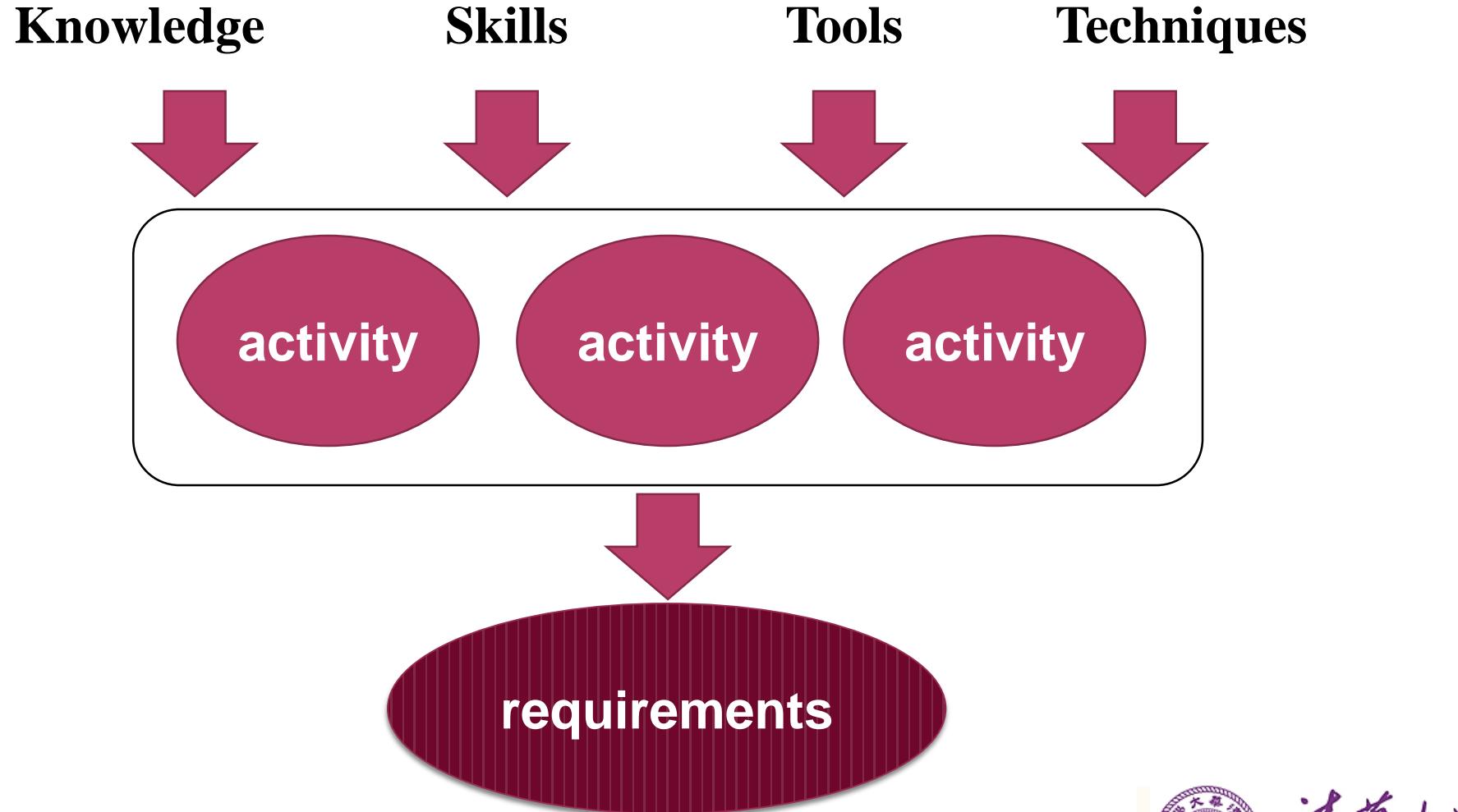
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Manhattan Project

- Began 1939
- 130,000 peoples
- US\$2 billion (roughly equivalent to \$24.4 billion as of 2011)



Project Management



Project Management History

Two main international project management societies:

- US: PMI – PMP
- UK: PRINCE II
- International Project Management Professional, IPMP



1956: The American Association of Cost Engineers (now AACE International) Formed

1969: Project Management Institute (PMI) Launched to Promote PMP

2017: 6th Edition of PMBOK Guide Released

2012: 5th Edition of PMBOK Guide Released

2008: 4th Edition of PMBOK Guide Released

1998: PMBOK Becomes a Standard

1987: A Guide to the Project Management Body of Knowledge (PMBOK Guide) Published by PMI



1965: The International Project Management Association (IPMA) Founded

1975: PROMPTII Method Created by Simpact Systems Limited

1989: PRINCE Method Developed From PROMPTII

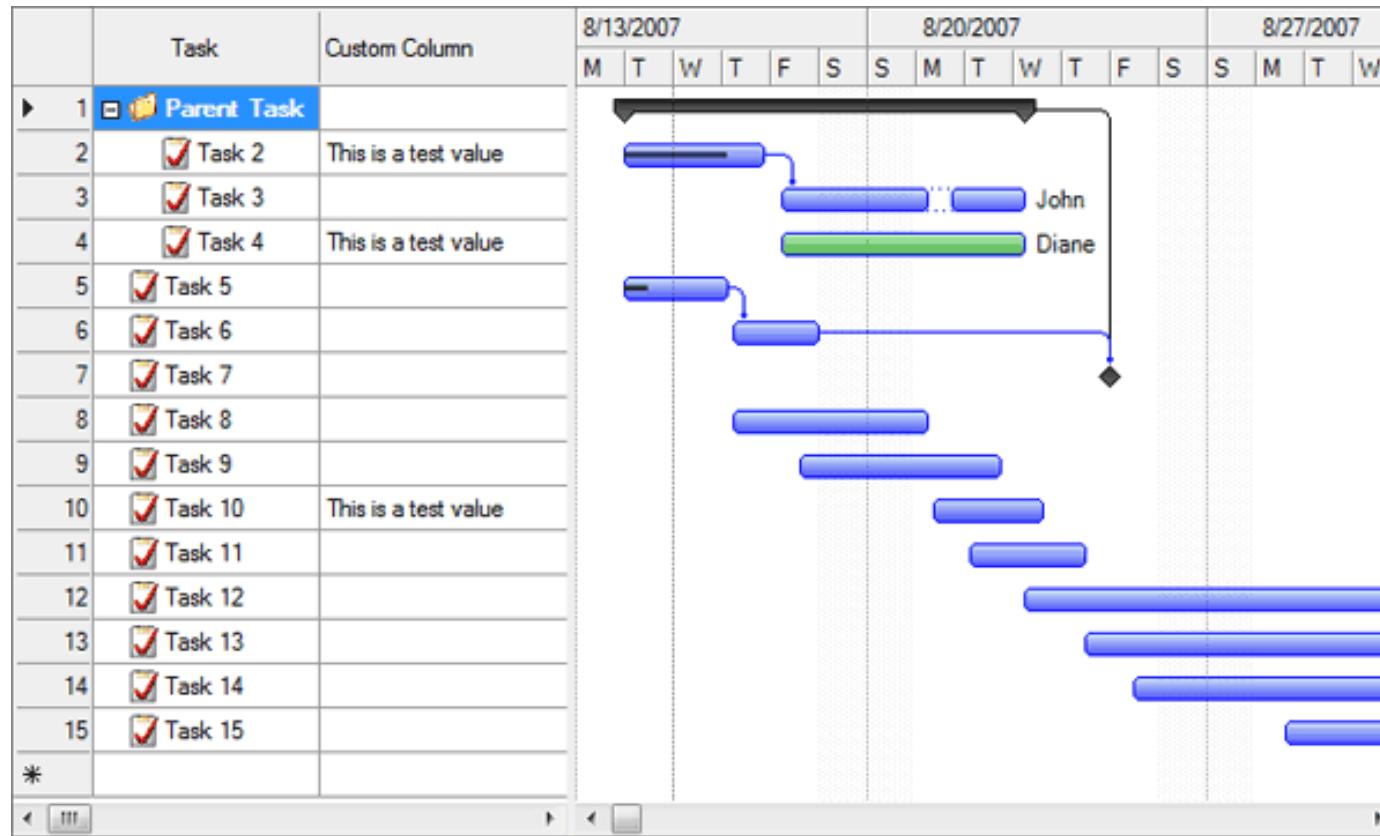
1996: PRINCE2 Published by CCTA

2009: Major PRINCE2 Revision by Office of Government Commerce (OGC)



- 1917: The **Gantt Chart** by Henry Gantt (1910-1915)
- 1957: The Critical Path Method (**CPM**) Invented by the Dupont Corporation
- 1958: The Program Evaluation Review Technique (**PERT**) Invented
- 1960s: The Earned Value Management (**EVM**) emerged as a financial analysis specialty in United States Government programs in the 1960s
- 1962: USDD Mandates the Work Breakdown Structure (**WBS**) Approach
- 1968: **Fishbone** diagrams created by Kaoru Ishikawa
- 1997: Critical Chain Project Management (**CCPM**) Invented

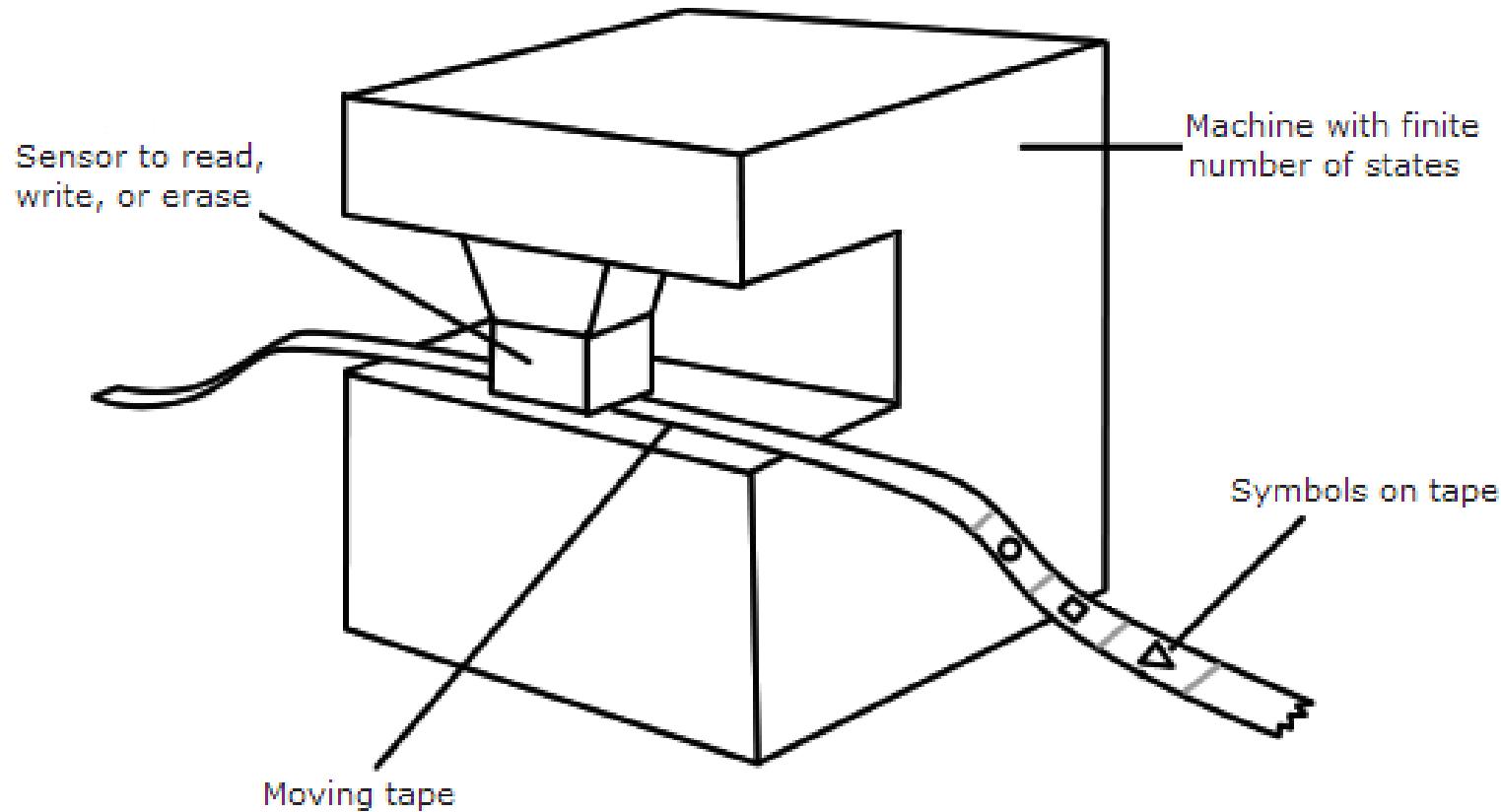




1917: The Gantt chart Developed by Henry Gantt (1861-1919)



A Turing Machine

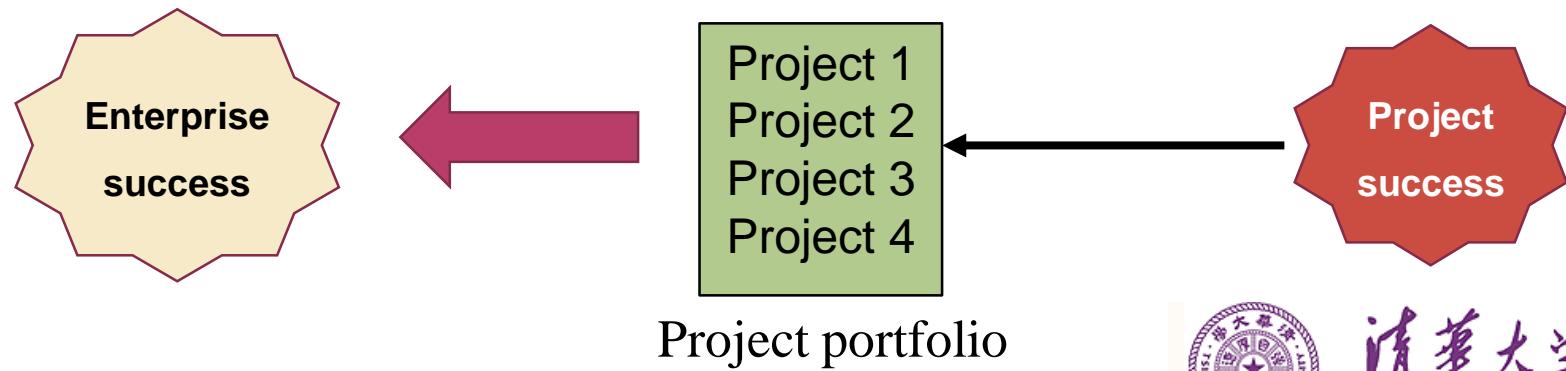
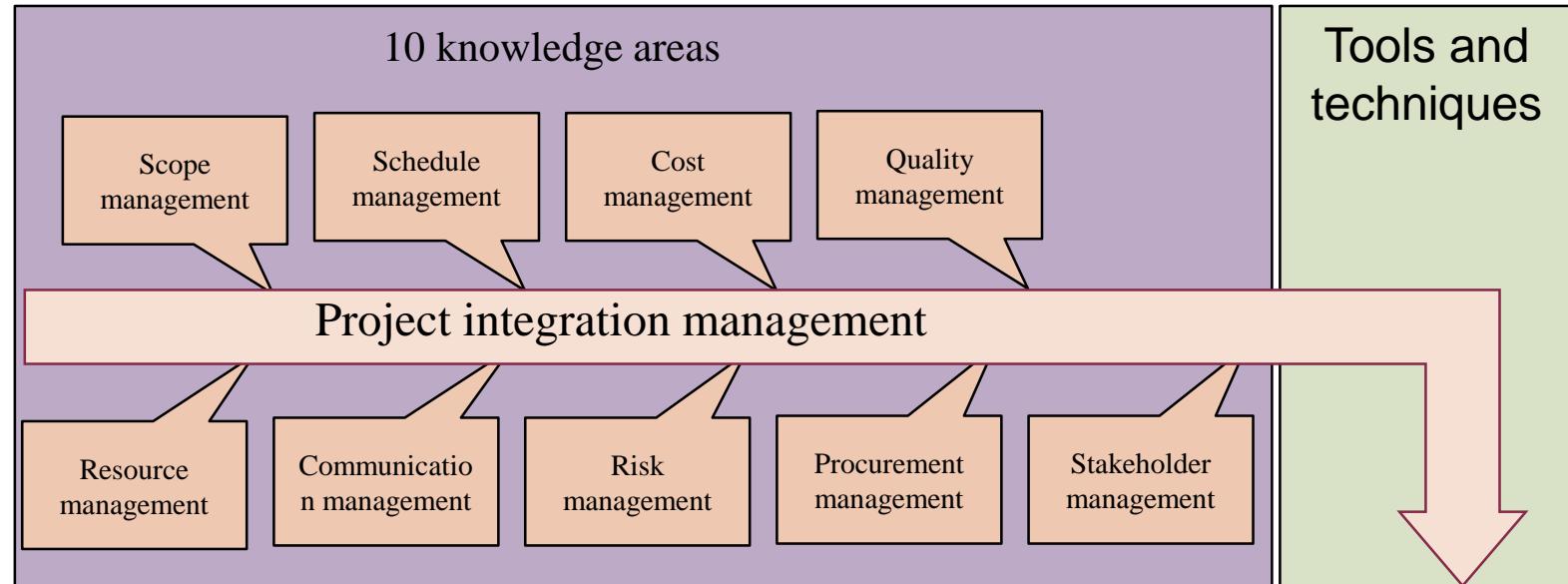


Project Management Process Groups

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

Project Management Framework

Stakeholders' needs and expectations



Project Stakeholders

Stakeholders are the people involved in or affected by the projects activities such as:

- Sponsor
- Project team
- Support staff
- Customers
- Users
- Suppliers

Anyone else?



Project, Program and Portfolio Management

- A program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually.
- Portfolio management involves organizing and managing projects and programs as portfolio of investments that contribute to the entire enterprise's success.

Three common programs: infrastructure, applications development, user support



Project Management Compared to Project Portfolio Management



Project portfolio management

1. Are we working on the right projects?
2. Are we investing in the right areas?
3. Do we have the right resources to be competitive?

Project management

1. Are we carrying out project well?
2. Are projects on time and on budget?
3. Do project stakeholders know what they should be doing?





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Project Manager

Works with the project sponsors, the project team, and the other people involved in a project to meet project goals.



Project Manager Job Description

IT project manager for a financial services firm:

- Manages, prioritizes, develops and implements information technology solutions to meet business needs.
- Prepares and executes project plans using project management software following a standard methodology.
- Establishes cross-functional end-user teams defining and implementing projects on time and within budget.
- Acts as a liaison between third part service providers

...



Suggested Skills for Project Managers

- The project management body of knowledge
- Application area knowledge, standards, and regulations
- Project environment knowledge
- General management knowledge and skills
- Soft skills or human relations skills

10 Most Important Skills and Competencies for Project Managers

- People skills
- Leadership
- Listening
- Integrity, ethical behavior, consistency
- Strength at building trust
- Verbal communication
- Strength at building teams
- Conflict resolution, conflict management
- Critical thinking, problem solving
- Understanding and balancing of priorities



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Nine Hottest IT Skills

Skill	Percentage of Respondents
Programming and application development	48
Project management	35
Help desk/technical support	30
Security/compliance governance	28
Web development	28
Database administration	26
Business intelligence/analytics	24
Mobile application and device management	24
Networking	22
Big data	20



If you stay in a technical role, do you need to know PM?



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Leader vs Manager

- A leader focus on long-term goals and big-picture objectives while inspiring people to reach those goals
- A manager often deals with the day-to-day details of meeting specific goals
- “Managers do things right, leaders do the right things”
- “Leaders determine the vision, and managers achieve the vision”
- “You lead people and manage things”

In fact?



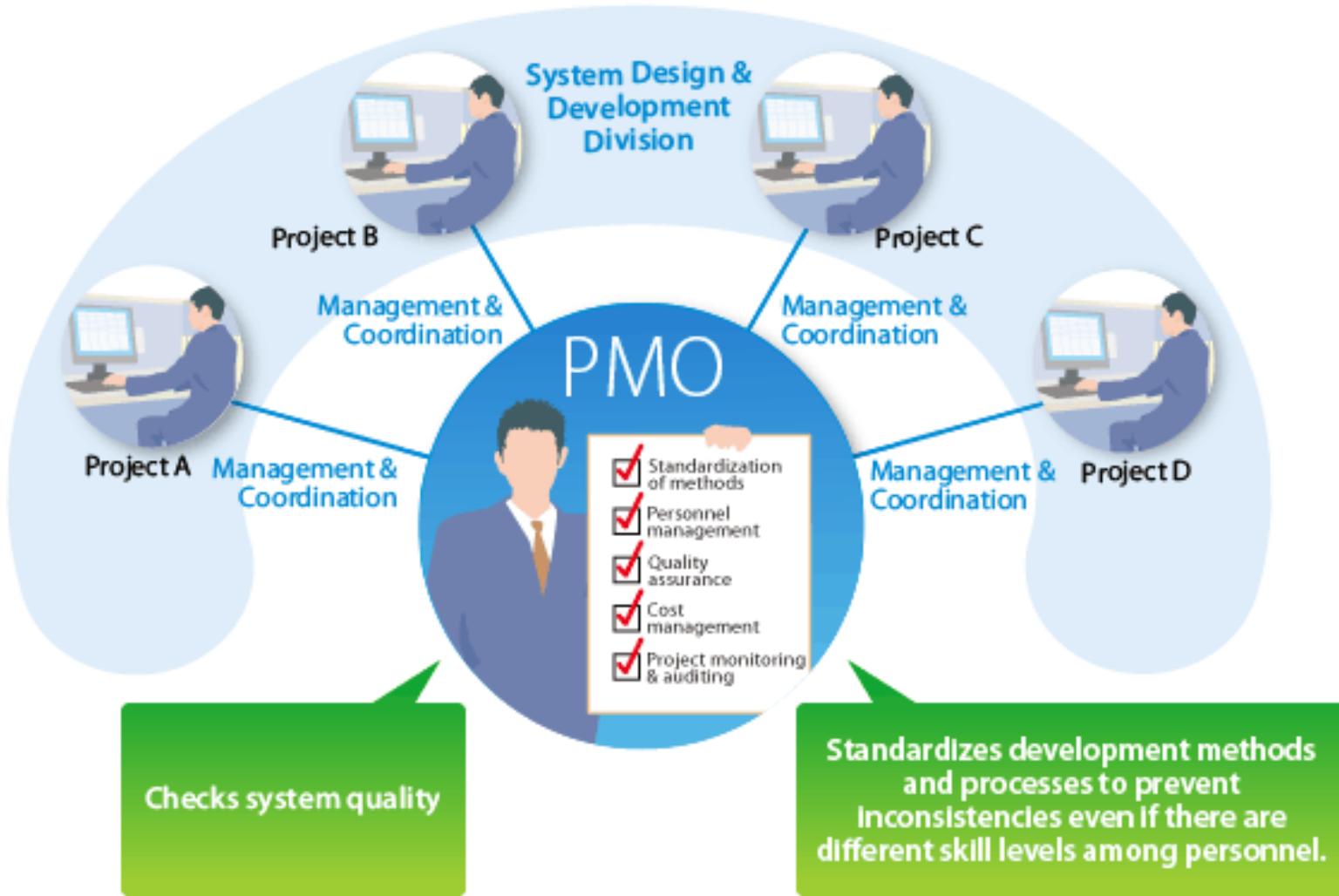
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PMO

- An organizational group responsible for coordinating the project management function throughout an organization
- In U.S., percentage of companies with PMOs
48% - 2000; 77% - 2006; 84% - 2010; 80%-2014



Goals of a PMO



The Project Manager of the Future

This *Pulse of the Profession®* In-Depth Report looks at the digital-age skills organizations demand from project leaders in disruptive times.

[DOWNLOAD REPORT](#)

Lu Wan, PMP



Tsinghua University

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Resource Hub

We've compiled a variety of free online resources, virtual events and even a sneak peek of new digital offerings to help you connect with the global community, build skills, and prepare to advance in a post-COVID-19 world. Explore and share these resources, and check back often for updates.

[LEARN MORE](#)

Project Management Institute

Project Management Institute (PMI) is the world's leading association for those who consider project, program or portfolio management their profession. Founded in 1969, PMI delivers value for more than 3 million professionals working in nearly every country in the world through global advocacy, collaboration, education and research.



**Project
Management
Institute.**[®]



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PMI Certificate Types

- Project Management Professional (PMP)
- Program Management Professional (PgMP)
- Portfolio Management Professional (PfMP)
- Certified Associate in Project Management (CAPM)
- PMI Professional in Business Analysis (PMI-PBA)
- PMI Agile Certified Practitioner (PMI-ACP)
- PMI Risk Management Professional (PMI-RMP)
- PMI Scheduling Professional (PMI-SP)



Project Management Professional

The PMP is the gold standard of project management certification. Recognized and demanded by organizations worldwide, the PMP validates your competence to perform in the role of a project manager, leading and directing projects and teams.

Among survey respondents to PMI's Earning Power Salary Survey, those with a PMP certification garner a higher salary (23% higher on average) than those without a PMP certification.*



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PMI report: “In China, a person with certification could make five to six times as much salary.”



Project Management Professional



Certification Number: 65551



If project managers can make more money by doing their jobs poorly, should they?

Ethics in Project Management

Should a project manager who is personally opposed to the development of nuclear weapons work on a project that helps produce them?





Contents

- About the course
- What is a project?
- What is project management?
- Project manager and PMP
- Summary

Review

- Project and three constraints of a project
- Project stakeholders
- Project management knowledge areas
- History of project management
- The role of the project manager
- Skills of project managers
- PMI and PMP





Yu Chen: “Wiki tutorial”



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Thanks!



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