

Prof. Dr. Frank J. Furrer:

Hauptseminar Summer Term 2017:

**From *ALGORITHMIC* Computing to
AUTONOMIC Computing**



Seminar Day 2 - Juli 12, 2017

Content:

1. Introduction (F.J. Furrer)
2. Presentations and Feedback (all)
3. Final Words (F.J. Furrer)

Name	Presentation	Feedback
Furrer, Frank J.: <i>Introduction</i>	09:20 – 10:00	
Schneider, Michael	10:00 – 10:15	10:15 – 10:25
Rose, Christian	10:25 – 10:40	10:40 – 10:50
Horn, Richard	10:50 – 11:05	11:05 – 11:15
Break	11:15 – 11:35	
Höschele, Daniel	11:35 – 11:50	11:50 – 12:00
Furrer, Frank J.: <i>Final Comments</i>	12:00 – 12:30	
Final Discussion	12:30 – 12:40	

1. Introduction (F.J. Furrer)

2nd Round:

Observations and Recommendations

Good:

- Topics chosen and delineation
- Storylines
- Content
- Structure
- Personal contributions

Not yet satisfactory:

- Title
- State of the art (Existing work)
- Research (Literature)
- Visibility of personal contributions
- Conclusions (recommendations, ...)
- Number of figures (!)



<http://rebeccamancy.net/?p=468>

Main Reason:

<http://1.bp.blogspot.com>



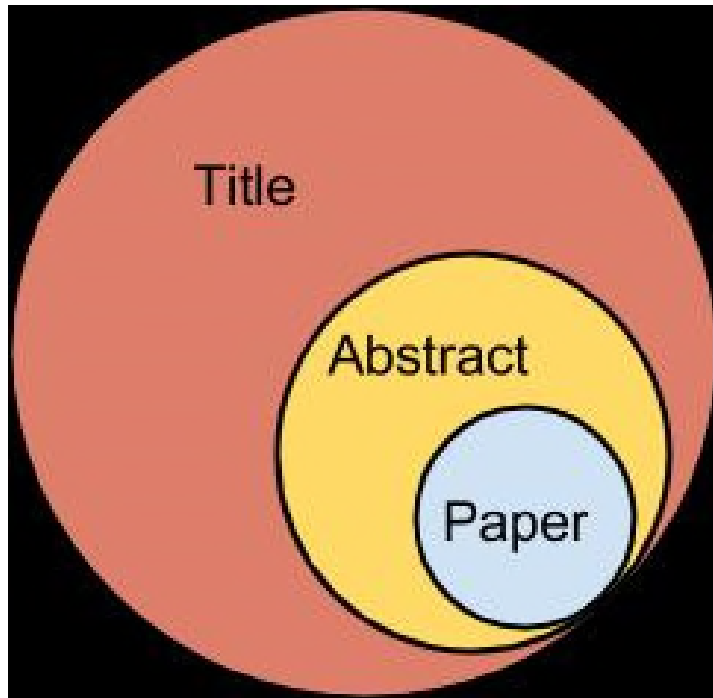
Time investment
• Not sufficient

3 CREDITS
= 90 hours work
Seminar: 10 hours
⇒ **80 hours**

Planning
Work schedule

Title:

<http://blogs.nature.com/naturejobs/2014/11/03>



Answer the following questions:

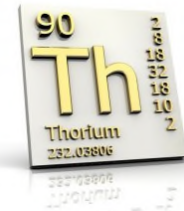
1) Do the *keywords* in your title adequately represent the *content* of your paper?

2) What is the *promise* in the title to your *reader*?

3) Does the paper *deliver* the promise?

Title:

«THORIUM – The Green Energy Source of the Future»



State of the Art(SoA):

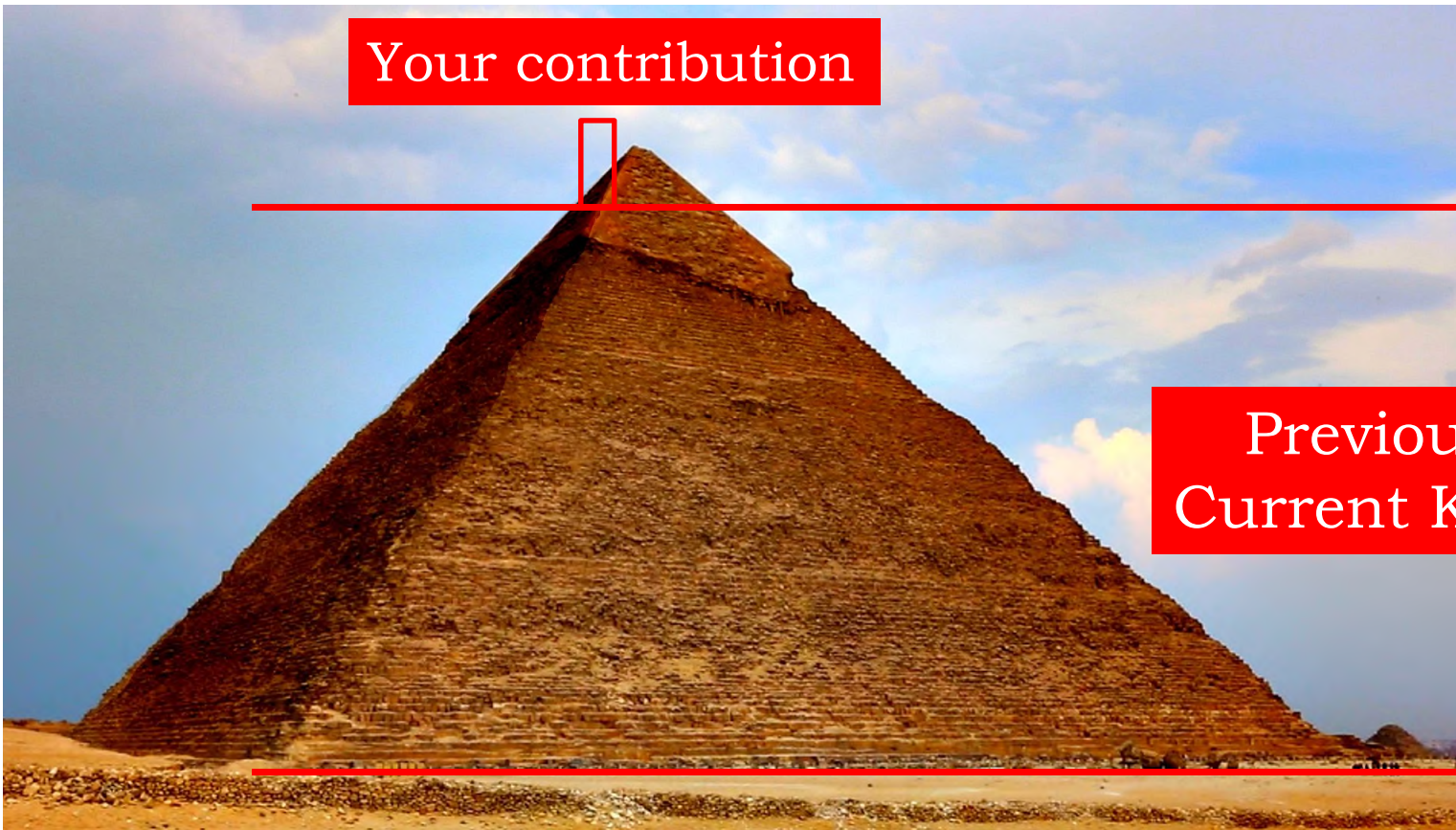
The state of the art (SoA) must be:

- **described** – *correct, current, competent*
- **attributed** – *fair, complete, traceable*

Your contribution

Previous Work
Current Knowledge

<https://i.ytimg.com>



State of the Art:

The state of the art (SoA) must be:

- **described** – *correct, current, competent*
- **attributed** – *fair, complete, traceable*



Why?

- Demonstrate your knowledge of the field
- (Academic) Fairness
- Continuity

SoA Research \approx 30% of the time-effort for a paper

Literature Search



Literature Search



Reference List



State of the Art



Own Contribution

- Each search engine works slightly differently, so it's worth taking the time to read any available **help pages** to figure out the best way to use each one.
- When you're beginning your literature search, **try several different key words**, both alone and in combination. Then, as you view the results, you can narrow your focus and figure out which key words best describe the kinds of papers in which you are interested.
- As you read the literature, **go back and try additional searches** using the jargon and terms you learn while reading.

Source: https://www.sciencebuddies.org/science-fair-projects/top_science-fair_finding_scientific_papers.shtml

Keywords

- Keywords characterize the content of your paper
- Keywords are used for classification/search
- Keywords are **standardized**, not «invented» by the author



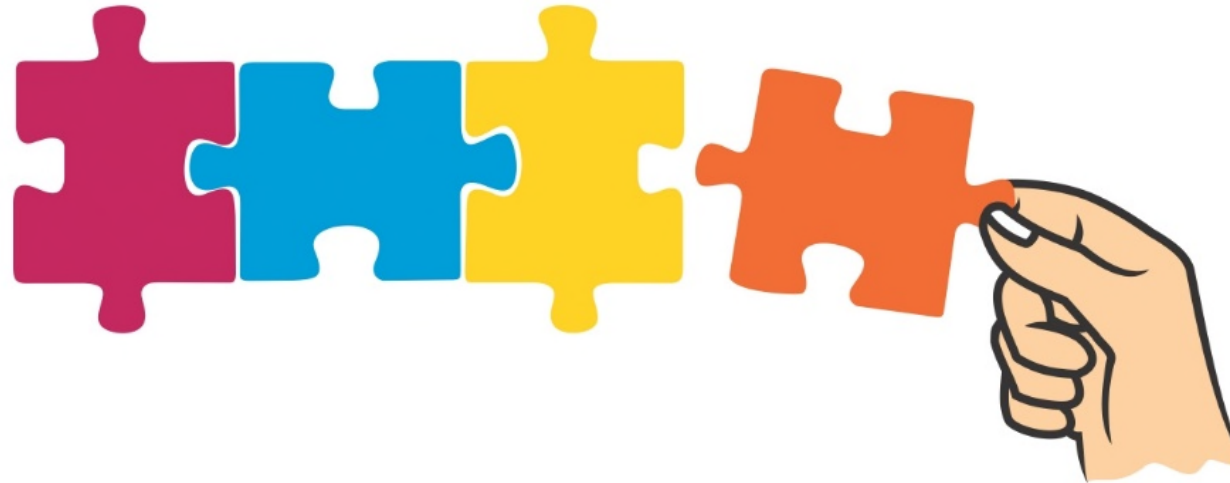
Computing Classification System, 2012 Revision

Association for Computing Machinery

30 March 2012

<http://www.acm.org/publications/class-2012>

Visibility of the **personal contribution**
= *Value* of the paper



This paper has shown
This paper has demonstrated
We have contributed
The new conclusion

Conclusions/Recommendations



<http://mehr-motivation.com>

Your work must animate/motivate the community to go on

The next steps
The important open questions
The next topic of research

Figures

http://www.stiegfried-busch.de

Ursachen der Irrationalitäten

Suchen wir die tieferen Ursachen dieser gigantischen Verschwendung, der betäubenden Irrationalität, dieser offenbar unaufhaltsamen Abenteurersucht. Es gibt mehrere:

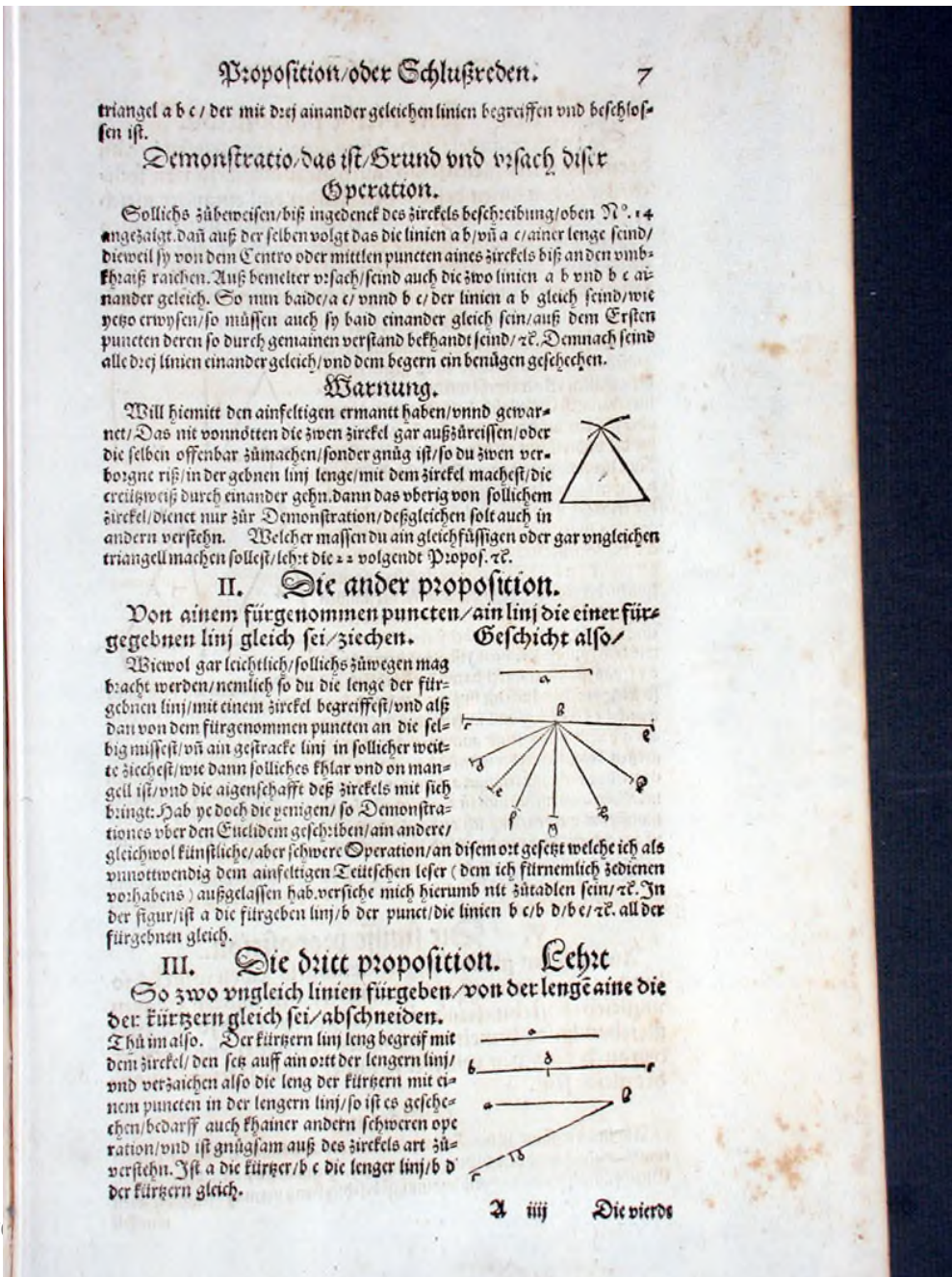
Zunächst ist ein Hang zur „Gigantomanie“ zu entdecken, die offensichtlich Politiker und Vorstände beseelt: Alle Bahnanlagen der ganzen Stadt kommen unter die Erde, eine Art Manhattan wird möglich, Stuttgart wird „Metropole“. München und Frankfurt... alle anderen Städte, denen dies auch angetragen wurde, lehnten es ab – nur Stuttgart, sich Bundesweit diskriminiert fühlend, stieg ein. Nun, wo die Zerstörung Platz greift, merken die Bürger, dass sie Opfer werden, Opfer von – so formulierte es Benedikt Weibel, der ehemalige Vorstand der Schweizer Bundesbahnen – Geltungssucht und Größenwahn!

Ein zweites Ursachentfeld liegt in der DB: es wurde und wird geschickt verborgen: Die DB Planer wussten und wissen, dass das Konzept und dessen Ziele sich gar nicht verwirklichen lassen. Wenn der Bahnbetrieb zu Bauzeiten weiter gehen muss, ist nur eine schmale Baugrube längs des Bahnhofgebäudes möglich, die nur 8 (statt derzeit 17) Gleise erlaubt und beengte Bahnsteige mit schmalen Treppen bedingt. Damit sind die Sicherheit und die Leistungsfähigkeit sowie der Komfort der heutigen Anlagen nicht erreichbar. Wegen vorhandener S-Bahn- und U-Bahn-Tunnel muss der Tiefbahnhof mit Gefälle gebaut werden, was gegen deutsche und internationale Sicherheitsbestimmungen verstößt. Wegen der Tieflagen und der beengten Zu- und Abgänge ist der Brand- und Katastrophenschutz gemäß der Versammlungsstätten-Verordnung nicht erreichbar. Warum wurde dies zunächst verschwiegen und erst spät von Mitarbeitern an die Öffentlichkeit gebracht („121 Risiken“, publiziert im Magazin „stern“)? Die DB konterte zunächst mit irreführender Propaganda, verschleierte Gutachten und behauptete unzutreffende Kosten. Seitdem mehr und mehr Experten die Falschbehauptungen der DB kritisieren und sogar Strafanzeigen erstatteten, schweigt sie zu den meisten Verwürfen.

Damit ist ein viertes Ursachentfeld für die aktuelle Lage evident: Die DB AG und ihre Gremien haben unüberwindbare Mauern des Schweigens errichtet und pflegen konsequente Ignoranz gegenüber der Fachwelt der Fachpresse, den anerkannten Experten, dem kritisch gewordenen Publikum und sogar gegenüber dem Bundesrechnungshof und dem wissenschaftlichen Dienst des Deutschen Bundestags. Selbst wohlmeinende Schreiben und Vorschläge werden einfach ignoriert, offensichtlich in der Hoffnung, dass sich Vorschläge, Kritiken und Klagen von selbst erledigen, wenn erst einmal die „Umwkehrbarkeit“ mit maximalen Zerstörungen erreicht ist. Dies erscheint wohl auch deshalb erfolgversprechend, weil in den vergangenen Jahren die Medien dieser Ignoranz weitgehend folgten und kritiklos auch den unglaubwürdigsten Statements der DB folgten. Es gibt nur wenige Ausnahmen, vor allem in Berichten des Magazins „stern“. Aber auch in der ZEIT konnte man jüngst über den geplanten Bahnhof lesen: „weil er ein Symbol der Macht ist... Es geht um Merkel und Grube, um Ehre und Eitelkeiten...“

Neben dem Hang zur „Gigantomanie“, die offensichtlich die Promotoren bewegt, kann als weitere Ursache der Reiz des vielen Geldes gesehen werden, ausgelöst durch die Vision, dass Milliarden Euro Steuergelder in diese Stadt fließen sollen – zum eigenen Vorteil und zu Lasten anderer! Hotels und Gaststätten, Vermieter, die tausende Gastrbeiter für die Tunnelbaustellen beherbergen, Handwerker und Bauunternehmer freuen zu profitieren. Gerade dafür scheinen die Schwaben anfällig: Wirkt hier die Freude eigener Vorteilsnahme, ja vielleicht sogar „Habsucht“, das unablässige Bestreben nach mehr Hab' und Gut – egal wie viel man schon besitzt?

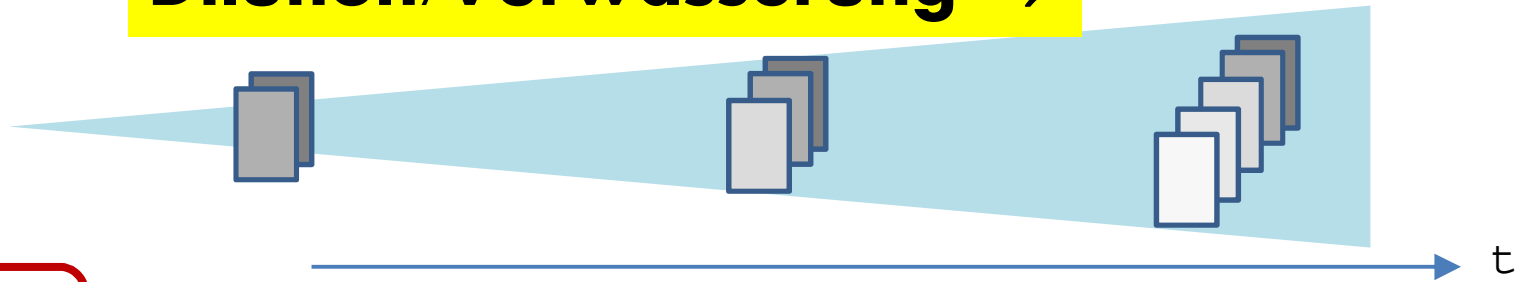
3



http://www.ub.unibas.ch


Focus:

Dilution/Verwässerung ⇒



Key statements	Where and how communicated in the paper	Clarity & impact satisfactory?
<u>Primary</u> key statement:	✓	✓
<u>1st secondary</u> key statement:	✓	✓
<u>2nd secondary</u> key statement:	?	
<u>3rd secondary</u> key statement:	✓	?
... is more adequate?	?	

Final Check





Focus:

Dilution/Verwässerung ⇒



Concept (Begriff)	Really necessary for the storyline of the paper?
<u>Concept (Begriff) 1:</u>	✓
<u>Concept (Begriff) 2:</u>	✓
<u>Concept (Begriff) 3:</u>	?
<u>Concept (Begriff) 4:</u>	✓
... etc.	



State of the Reviews
(2nd Round)

General Comments



<http://www.careeradict.com>

Peer Reviews:

Good:

- Fairness
- Comments
- Relevance



<http://rebeccamancy.net/?p=468>

Not yet satisfactory:

- Involvement
- Depth
- Questions



Peer Evaluations: Some "Do's"

1. Do treat the writer with courtesy and respect.
2. Do comment on the performance, not the person.
3. Do focus on how the argument is supported (or not), rather than whether you agree or disagree with it.
4. Do aim for balance and completeness in pointing out strengths and problem areas.
5. Do comment on specific examples of strengths and problem areas.
6. Do aim to help the writer see how to improve future work as well as the current draft.

Peer Evaluations: Some "Don't's"

1. Don't use snippy marginal comments such as "So what?" or "What's your point?"
2. Don't get into debates over unresolvable questions of individual value and belief (for example, questions relating to religion, gun control, or abortion).
3. Don't argue with the writer. Raise objections or ask for explanations only to clarify and suggest ways of strengthening the argument.
4. Don't confine your comments to mechanical details.
5. Don't make vague, global comments.
6. Don't rewrite for the writer

<http://www.mhhe.com/mayfieldpub/maner/resources/peer5.htm>
<http://onlinelibrary.wiley.com/doi/10.1002/9780470750803.app1/pdf>

2. Presentations and Feedback

2nd Round:

Procedure

Presentation
(15 mins)



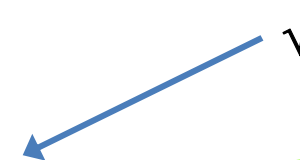
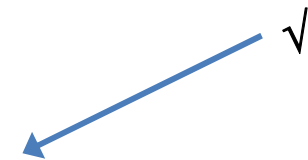
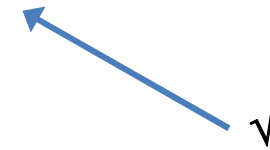
FEEDBACK: Each participant:

1. One positive comment
2. One improvement comment

Audience
Feedback
(10 mins)

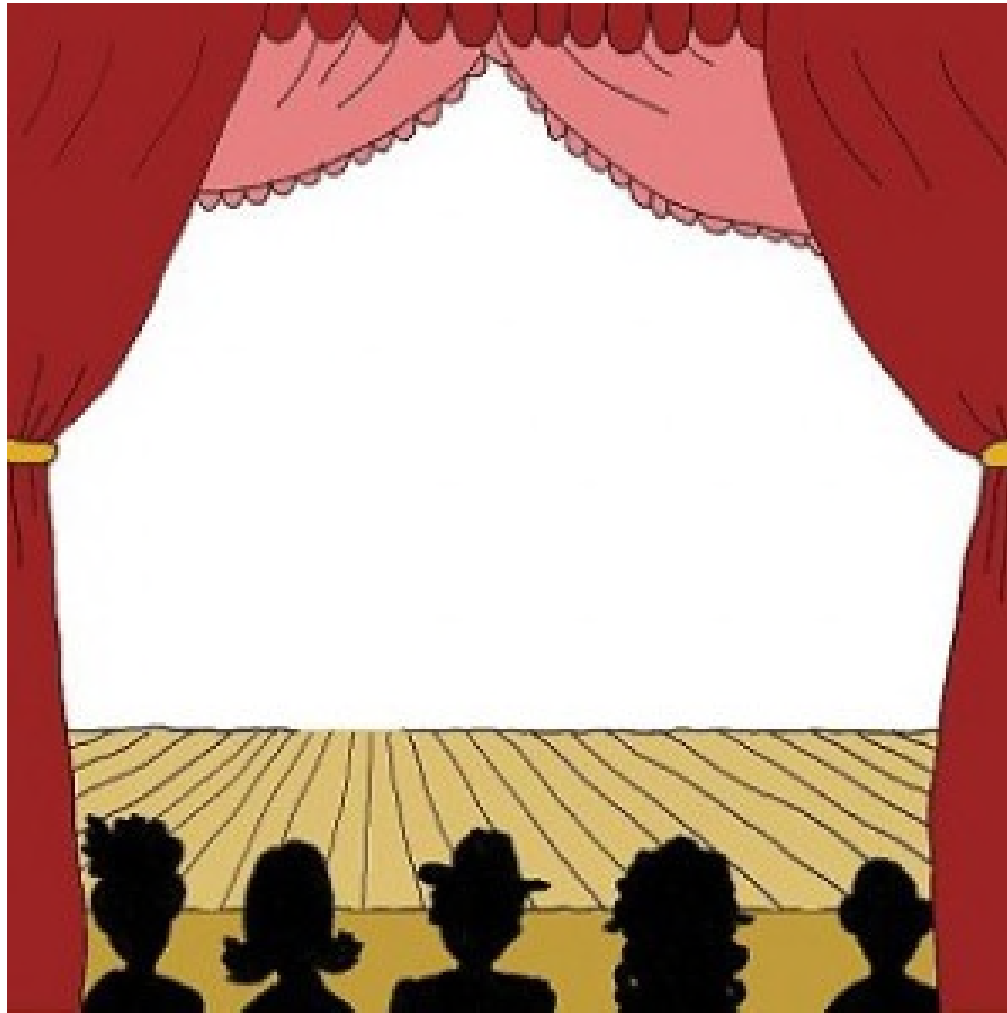
Storyline	• Logical	Excellent	<input type="checkbox"/>
	• Consistent	Good	<input type="checkbox"/>
	• Attractive	Improvable	<input type="checkbox"/>
Illustrations Pictures	• Clear	Excellent	<input type="checkbox"/>
	• Fitting/Adequate	Good	<input type="checkbox"/>
	• Granularity	Improvable	<input type="checkbox"/>
Animation	• Power of Expression	Excellent	<input type="checkbox"/>
	• Support of Speaker	Good	<input type="checkbox"/>
	• Unnecessary effects	Improvable	<input type="checkbox"/>
Density	• Timing	Excellent	<input type="checkbox"/>
	• Too dense (per slide or per time unit)	Good	<input type="checkbox"/>
	• Too slow (more material per slide or per time unit)	Improvable	<input type="checkbox"/>
Delivery	• Balance of slides	Excellent	<input type="checkbox"/>
	• Bullet point lists	Good	<input type="checkbox"/>
	• Personal style	Improvable	<input type="checkbox"/>
	• Interaction with the audience	Excellent	<input type="checkbox"/>
	• Complementary speech/illustrations	Good	<input type="checkbox"/>
		Improvable	<input type="checkbox"/>

Storyline	<ul style="list-style-type: none"> • Logical • Consistent • Attractive • Clear 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Illustrations Pictures	<ul style="list-style-type: none"> • Fitting/Adequate • Granularity • Power of Expression • Support of Speaker 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Animation	<ul style="list-style-type: none"> • Focussed (message of the slide) • Speed • Unnecessary effects • Timing 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Density	<ul style="list-style-type: none"> • Too high • Too low • Balance of slides • Bullet point lists 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Delivery	<ul style="list-style-type: none"> • Personal style • Interaction with the audience • Complementary speech/illustrations 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Message	<ul style="list-style-type: none"> • Precise • True • „catching“ 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>



Name	Presentation	Feedback
Furrer, Frank J.: <i>Introduction</i>	09:20 – 10:00	
Schneider, Michael	10:00 – 10:15	10:15 – 10:25
Rose, Christian	10:25 – 10:40	10:40 – 10:50
Horn, Richard	10:50 – 11:05	11:05 – 11:15
Break	11:15 – 11:35	
Höschele, Daniel	11:35 – 11:50	11:50 – 12:00
Furrer, Frank J.: <i>Final Comments</i>	12:00 – 12:30	
Final Discussion	12:30 – 12:40	

<http://www.ioannamartin.tv/inspiration/will-you-ever-meet-your-ideal-client/>



... the stage is yours!

Name	Presentation	Feedback
Michael Schneider	10:00 – 10:15	10:15 – 10:25

Storyline	<ul style="list-style-type: none"> • Logical • Consistent • Attractive • Clear 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Illustrations Pictures	<ul style="list-style-type: none"> • Fitting/Adequate • Granularity • Power of Expression • Support of Speaker 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Animation	<ul style="list-style-type: none"> • Focussed (message of the slide) • Speed • Unnecessary effects • Timing 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Density	<ul style="list-style-type: none"> • Too high • Too low • Balance of slides • Bullet point lists 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Delivery	<ul style="list-style-type: none"> • Personal style • Interaction with the audience • Complementary speech/illustrations 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>
Message	<ul style="list-style-type: none"> • Precise • True • „catching“ 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>

✓

✓

✓

✓

✓

✓

Name	Presentation	Feedback
Christian Rose	10:25 – 10:40	10:40 – 10:50

Storyline	<ul style="list-style-type: none"> • Logical • Consistent • Attractive • Clear 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	✓ ✓ ✓ ✓ ✓ ✓
Illustrations Pictures	<ul style="list-style-type: none"> • Fitting/Adequate • Granularity • Power of Expression • Support of Speaker 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Animation	<ul style="list-style-type: none"> • Focussed (message of the slide) • Speed • Unnecessary effects • Timing 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Density	<ul style="list-style-type: none"> • Too high • Too low • Balance of slides • Bullet point lists 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Delivery	<ul style="list-style-type: none"> • Personal style • Interaction with the audience • Complementary speech/illustrations 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Message	<ul style="list-style-type: none"> • Precise • True • „catching“ 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	

Name	Presentation	Feedback
Richard Horn	10:50 – 11:05	11:05 – 11:15

Storyline	<ul style="list-style-type: none"> • Logical • Consistent • Attractive • Clear 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	✓ ✓ ✓ ✓ ✓
Illustrations Pictures	<ul style="list-style-type: none"> • Fitting/Adequate • Granularity • Power of Expression • Support of Speaker 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Animation	<ul style="list-style-type: none"> • Focussed (message of the slide) • Speed • Unnecessary effects • Timing 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Density	<ul style="list-style-type: none"> • Too high • Too low • Balance of slides • Bullet point lists 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Delivery	<ul style="list-style-type: none"> • Personal style • Interaction with the audience • Complementary speech/illustrations 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Message	<ul style="list-style-type: none"> • Precise • True • „catching“ 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	



coffee break

Name	Presentation	Feedback
Daniel Höschele	11:35 – 11:50	11:50 – 12:00

Storyline	<ul style="list-style-type: none"> • Logical • Consistent • Attractive • Clear 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	✓ ✓ ✓ ✓ ✓
Illustrations Pictures	<ul style="list-style-type: none"> • Fitting/Adequate • Granularity • Power of Expression • Support of Speaker 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Animation	<ul style="list-style-type: none"> • Focussed (message of the slide) • Speed • Unnecessary effects • Timing 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Density	<ul style="list-style-type: none"> • Too high • Too low • Balance of slides • Bullet point lists 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Delivery	<ul style="list-style-type: none"> • Personal style • Interaction with the audience • Complementary speech/illustrations 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	
Message	<ul style="list-style-type: none"> • Precise • True • „catching“ 	Excellent <input type="checkbox"/> Good <input type="checkbox"/> Improvable <input type="checkbox"/>	

3. Final Words

- Next step
- Tutorial: Soft Skills

<http://piperreport.com>



Monday,
August 7, 2017

3. Final Words

- Next step
- **Tutorial: Soft Skills**

<https://equip2merge.files.wordpress.com>



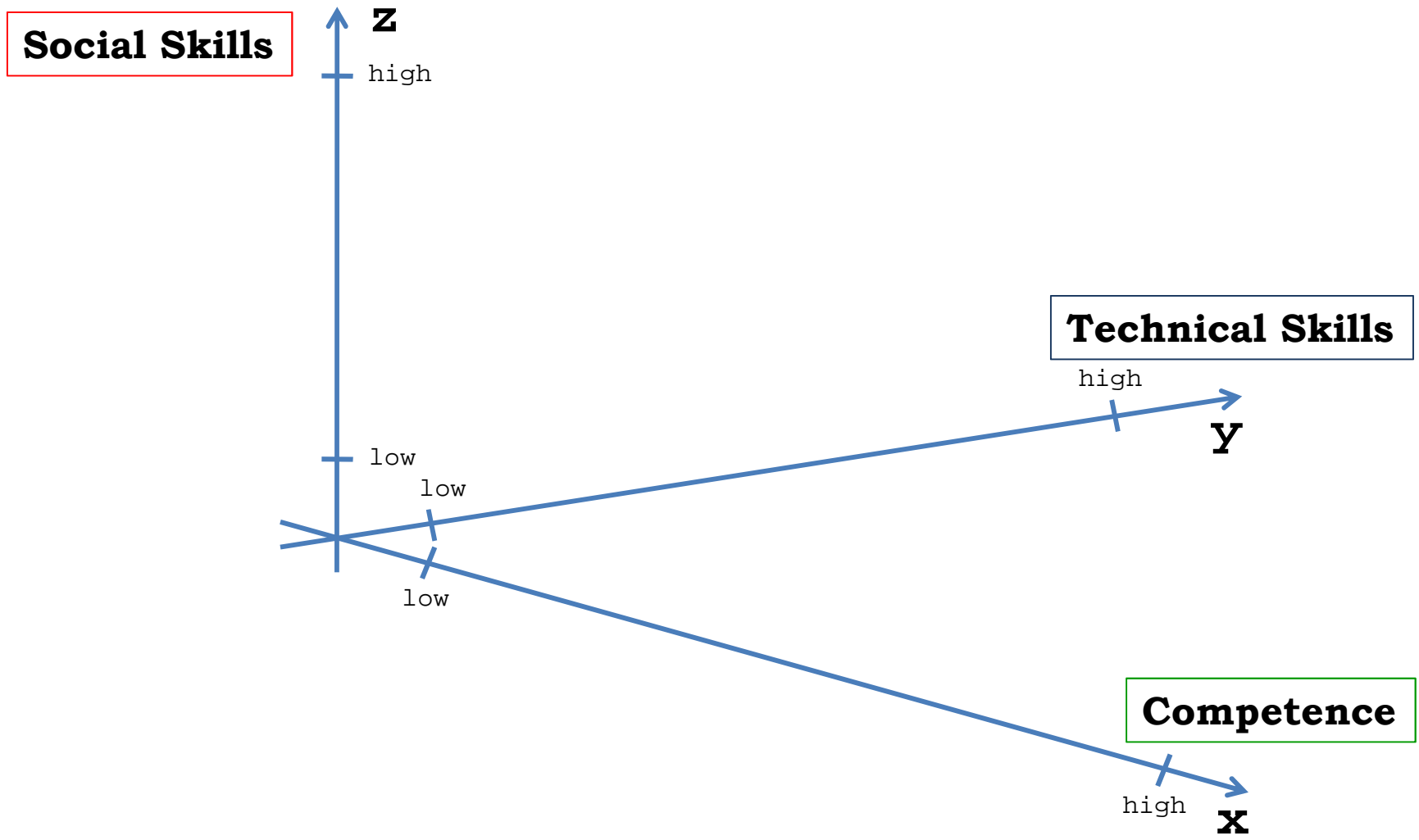
Soft Skills =

Personal attributes that enable someone to interact effectively and harmoniously with other people.

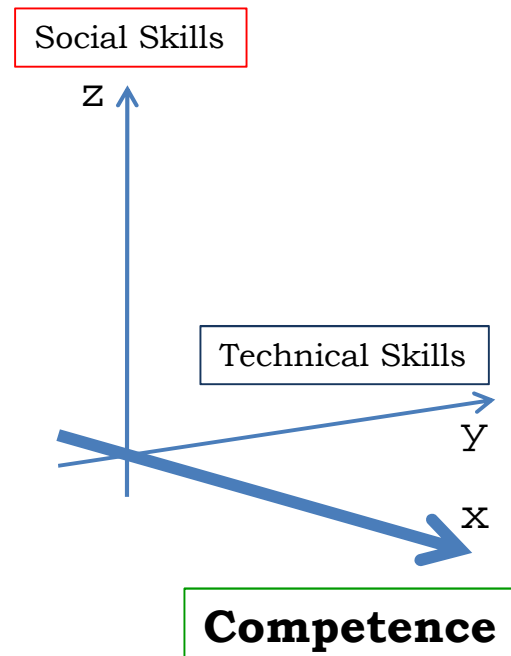
<http://www.oxforddictionaries.com>



Skills Coordinate System



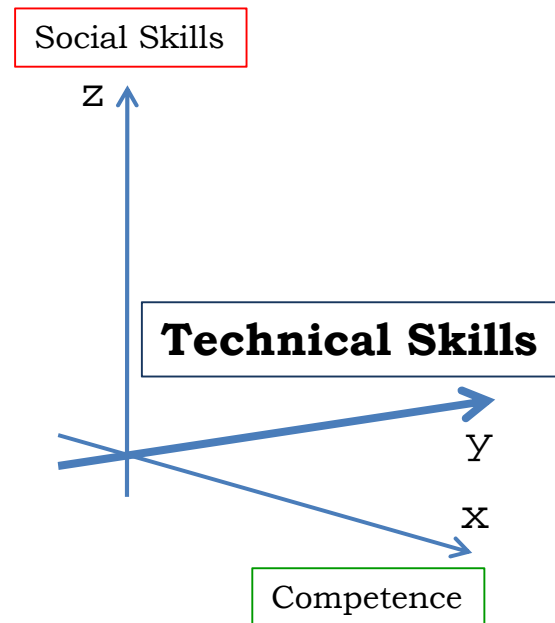
Skills: **Competence**



(Professional) Competence

- IT (architecture) knowledge
- IT (practical) experience
- State-of-the-Art knowledge (broad, hardware, software, processes)
- Technology mastering (HW & SW)
- Business knowledge
- Innovation capability
- Implementation power & persistence
- Vision

Skills: **Technical Skills**



Technical Skills

- Communication skills (speech & writing)
- Presentation skills (oral, graphical & writing)
- Logical reasoning capability
- Efficiency & effectiveness
- Languages
- „Architecture Feel“ (Simplicity & beauty)

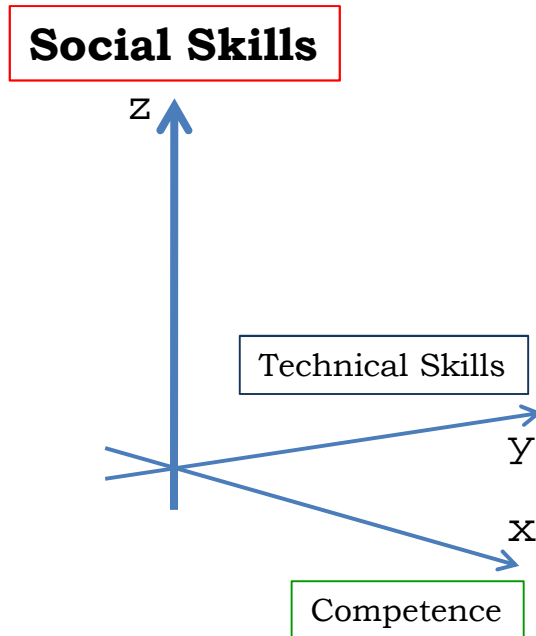
Efficiency:

Doing the things right

Effectiveness:

Doing the right things

Skills: **Social Skills**



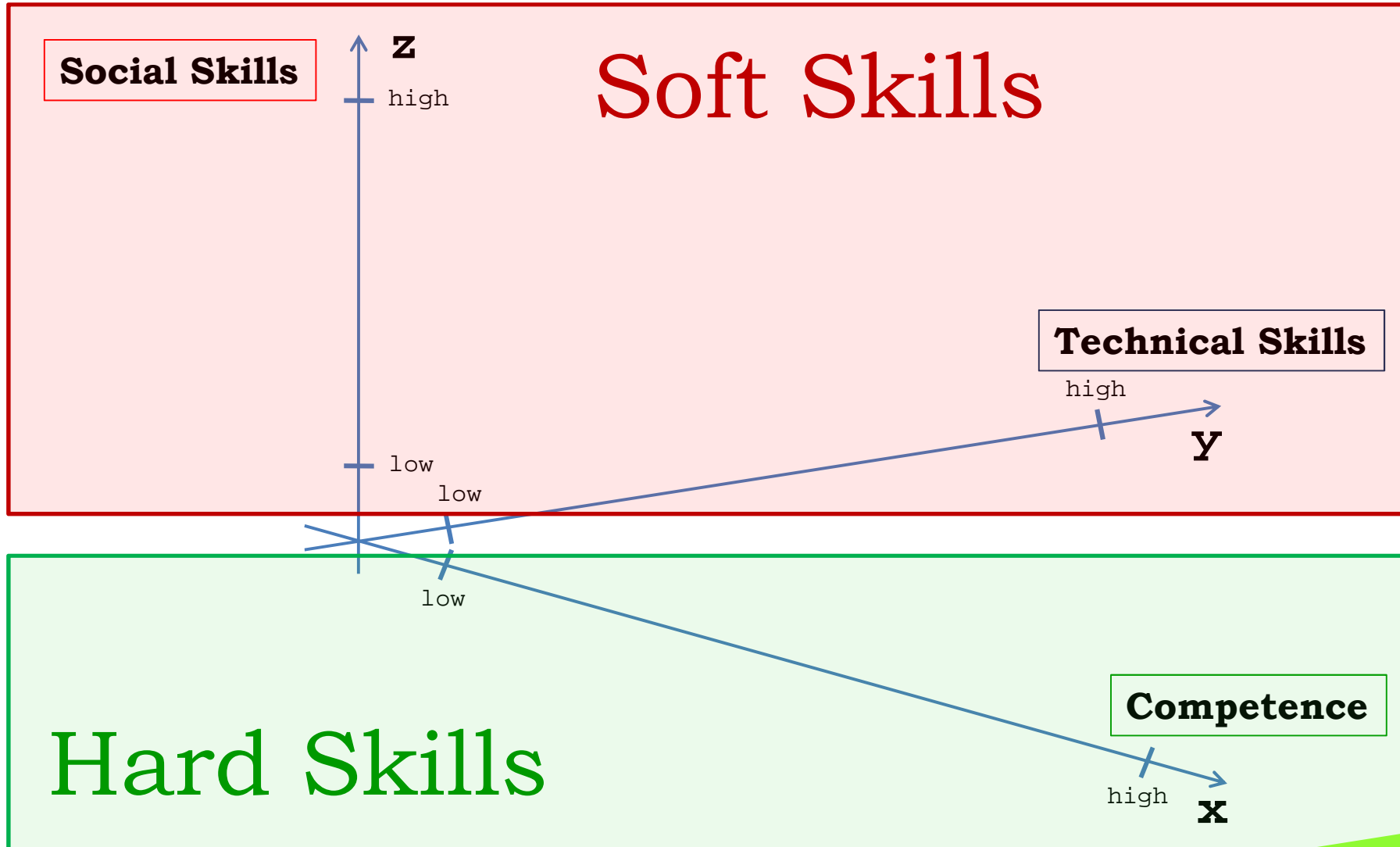
Social Skills

- Negotiation skills
- Persuasion capability
- People interaction capability
- Enthusiasm
- Leadership
- Life-long learning
- Socializing/Networking
- Team Work
- Honesty (Ethics)
- Work-life balance

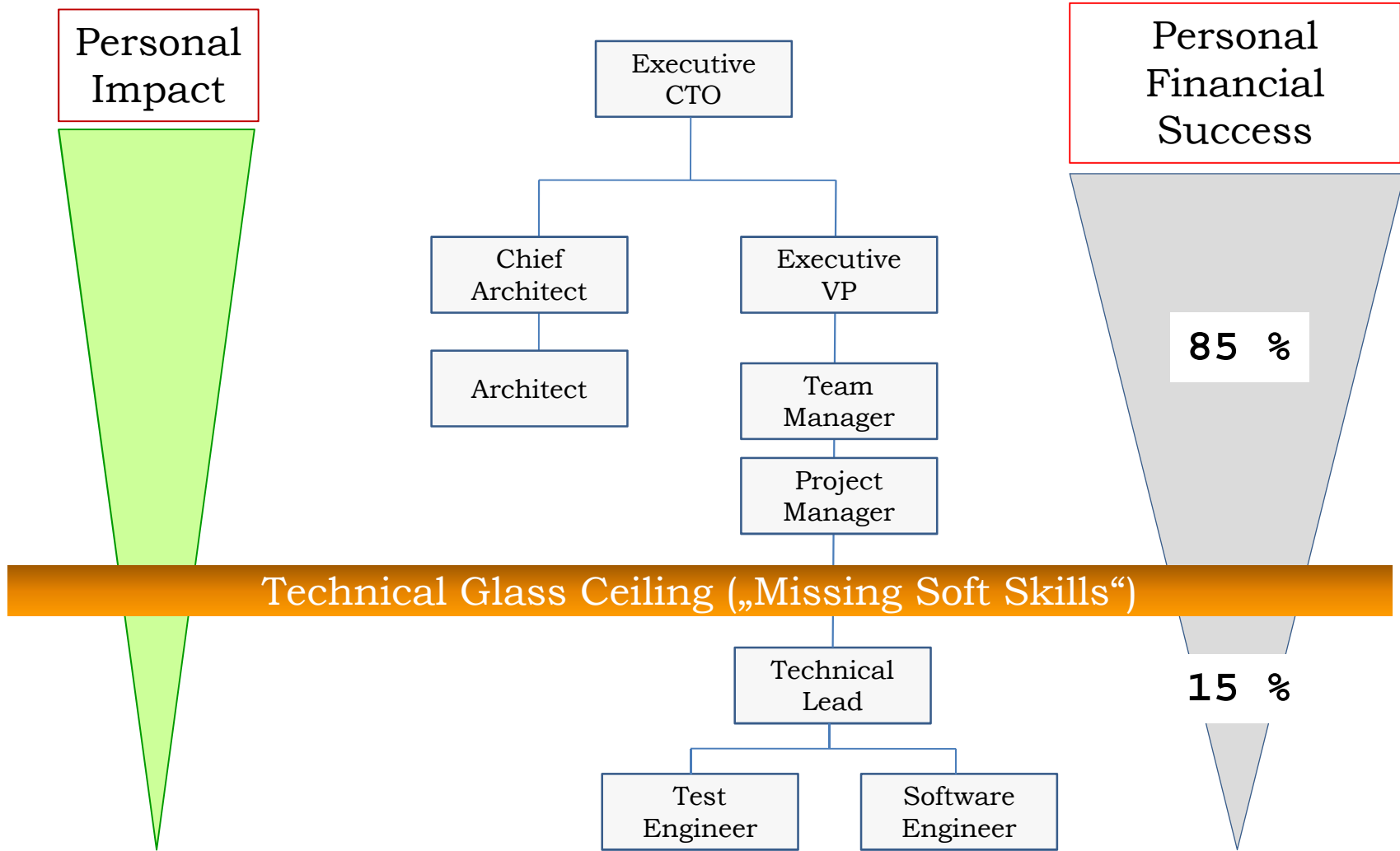


<http://samingersoll.com/life-work-balance>

Skills Coordinate System



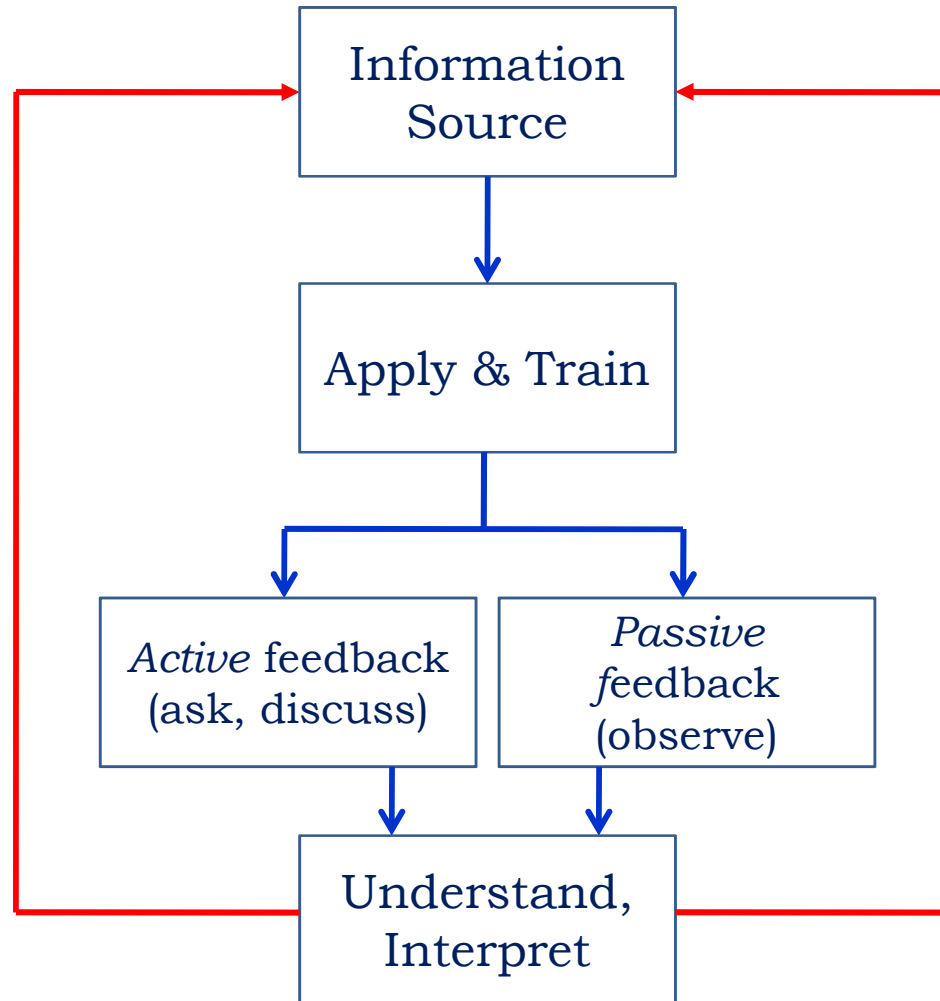
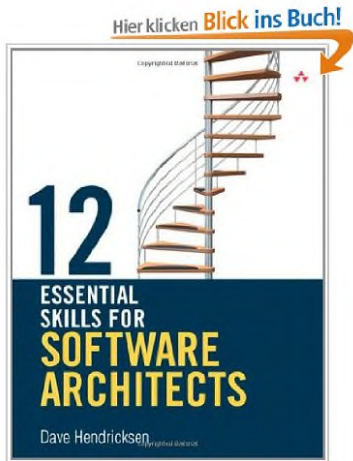
Hard Skills ↔ Soft Skills: Which are more important?



Dale Carnegie, 1937
ISBN 978-1-4391-9919-0

Dave Hendricksen, 2012, ISBN 978-0-321-71729-0

How can we learn *Soft Skills*?



Life-Long Learning:

„Half-Life of IT-Engineering Knowledge“

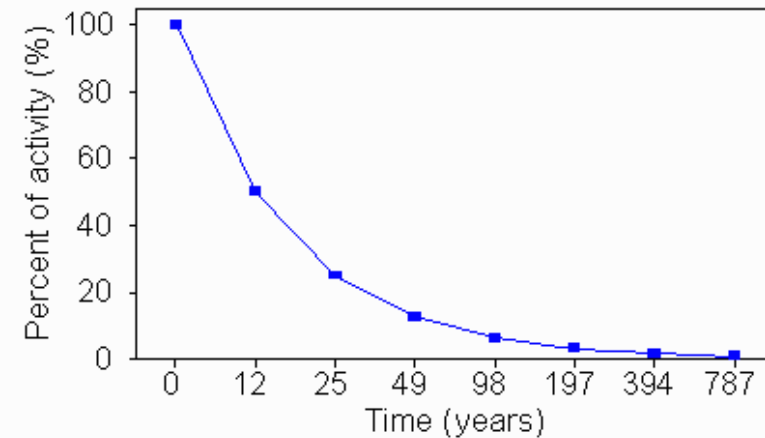
Which is the half-life of IT-engineering knowledge ?

Def: The time-span after which *half* of your current IT-knowledge has become obsolete

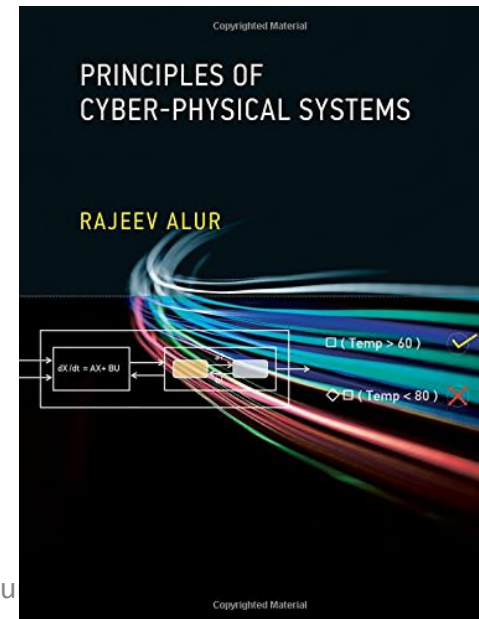
Field	Half-life (in years)
Physics	13
Mathematics	9
Economics	9
Computer Science	6

Decay Curve for Tritium

Amount of radioactivity vs time



<http://wwwchem.csustan.edu/chem3070/3070m04.htm>



Working
one
text-book
every
month !

Personality

„The fundamental principle behind any *soft skill* is to cultivate the perception in other people's minds that they can gain and benefit by engaging with us“

[Wushow Chou 2013, ISBN 978-1-118-52178-6]



<http://www.signalpatternslabs.com>

... and – very important:

Honesty
(Ehrlichkeit)

(Professional) Competence:

Your professional work must be (provably) correct and believable, as well as realistic

Behaviour:

Your behaviour must be truthful, fair and human in all situations



<http://warrencampdesign.com>

Praising and Reprimanding

<http://www.mindtools.com>



Praise:

- honest
- precise
- no „..., but ...“
- (can be) personal

„Your design of the module ABC is clear and elegant. I like it“



Reprimand:

- true
- precise
- fair
- constructive
- never personal

„You did not take into consideration that a suitable data structure is already existing“

<http://footage.shutterstock.com>

Software Engineering **Ethics**

ACM/IEEE: Software Engineering Code of Ethics and Professional Practice (© 1999)

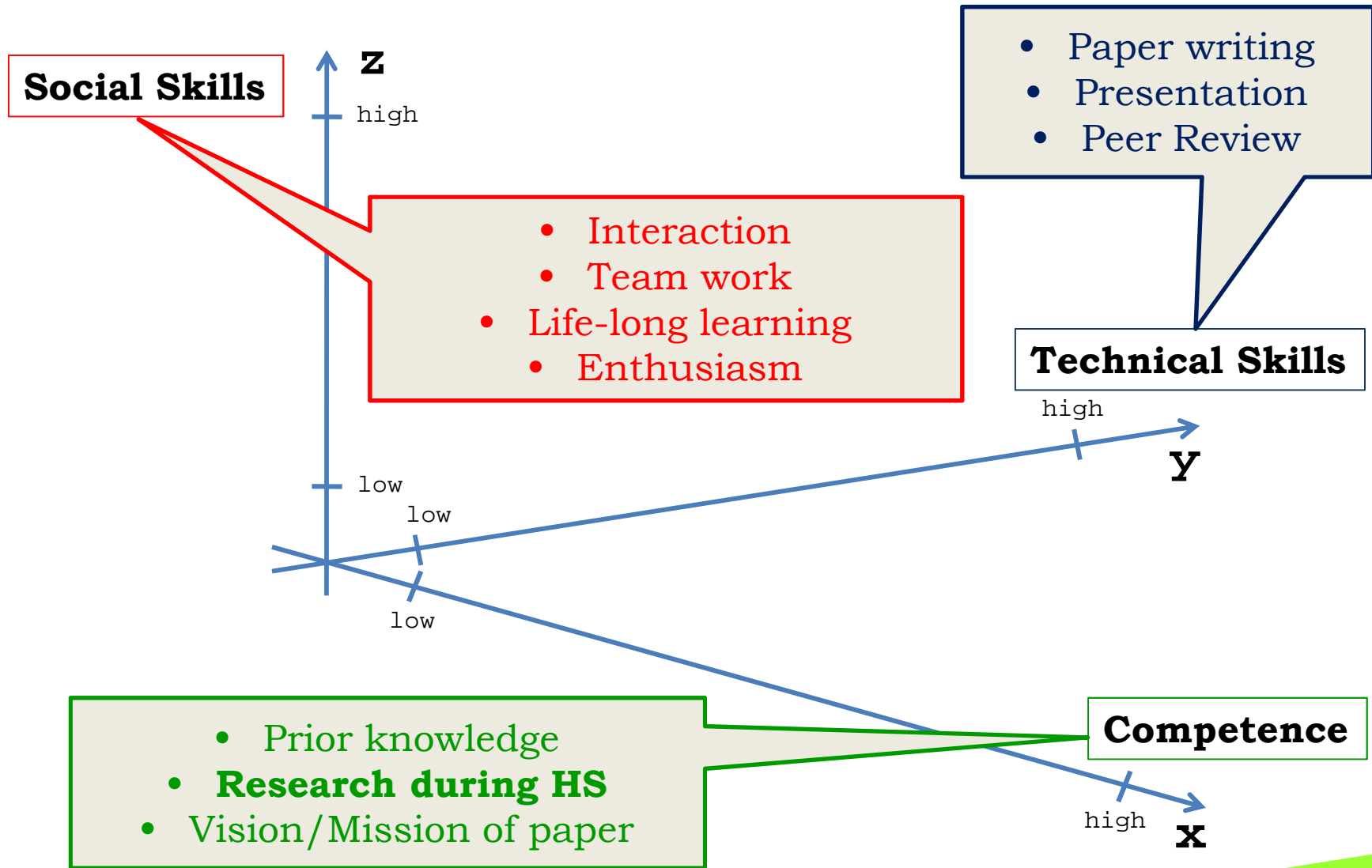


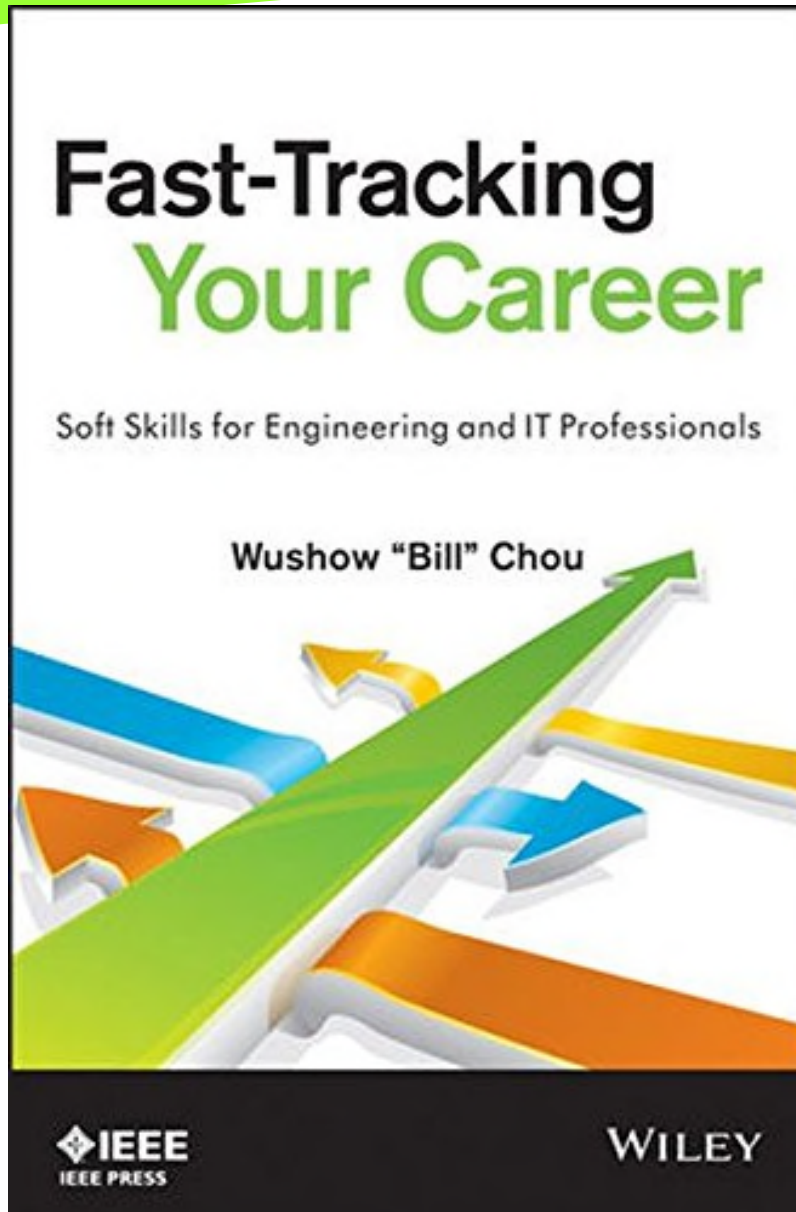
<http://courses.planetizen.com/course/planning-ethics>

1. PUBLIC - Software engineers shall act consistently with the public interest.
2. CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.
3. PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
4. JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.
5. MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
6. PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
7. COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.
8. SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

<http://www.acm.org/about/se-code>

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Wushow Chou:

**Fast-Tracking Your Career: Soft Skills
for Engineering and IT Professionals**

John Wiley & Sons, USA, 2013
ISBN-13: 978-1-118-52178-6

TECHNISCHE BERICHTE
TECHNICAL REPORTS
ISSN 1430-211X

TUD-FI14-04-August 2014

Dr. Frank J. Furrer, Jan Reimann (Eds.)
Institut für Software- und Multimediatechnik

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