"TEACHING USEFUL KNOWLEDGE: Some principles of Useful Knowledge, and Some Classical Ideas about Undergraduate Basics"

By Tom Gilb tom@Gilb.com www.Gilb.com http://tinyurl.com/InspireGilbSlides = slides for my talk For Inspire Conference, http://tinyurl.com/InspireGilb This is this papers site. References are in the book Value Planning (gilb.com) on request. http://concepts.gilb.com/dl940 = Slides used in the 16Apr2019. BCS Insr

http://concepts.gilb.com/dl940 = Slides used in the 16Apr2019, BCS Inspire conf., Solent Univ., Southampton

10.9 WHAT PROFESSORS SHOULD REALLY TEACH: Lasting Wisdom

and 10.10 WHAT PROFESSORS SHOULD REALLY TEACH: Clear, deep, useful sets of professional concepts

are directly derived from my (digital only) book 'Value Planning. Here is access to a full copy of the book.

Value Planning https://www.gilb.com/offers/SN2UR7vu/checkout

FREE GIFT REVIEW COPY FOR YOU ALONE. NO COUPON CODE RE-QUIRED.

This will give access to all references, and to deeper knowledge itself.

Including

• A quick look at a student exercise, with theme Spreading Knowledge in

Poland, as an example of applying the above methods.

10.9 WHAT PROFESSORS SHOULD RE-ALLY TEACH: Lasting Wisdom

Principle 10.9

You should focus your energy on acquiring knowledge with a long half-life.

Part 1 Principles of Knowledge, from a Business Graduate Point of View [URL43, complete paper]

Summary

There are some very basic things that planners should be taught. These things are both fundamental and classic. They are *fundamental* because we can reuse them in a very wide variety of planning situations. They are *classic* in the sense that they have a very long usefulness half-life. They are probably useful for at least a career lifetime.

When I was in my Twenties, I decided to collect, to learn and to develop these planning basics [F7]. Now, in my Seventies, I am more than ever convinced that these fundamentals should be shared with students.

The fundamentals are: Principles (heuristics, laws), Measures (ways to quantify critical factors), Concepts (really useful definitions of fundamental planning ideas), and Processes (really useful planning processes). I have published these in several books [1] and papers already. I would like to argue here, why they need teaching, in undergraduate studies, for business schools and any planning domain.

I believe that their usefulness and longevity, are demonstrated in my own decades of work, are acknowledged by many professional colleagues and some academics, and are hopefully self-evident upon examination.

Hopefully this sub-chapter (& 10.10) can stimulate others to adopt at least the general idea, if not my exact artefacts.

My Principles of Useful Knowledge .

UNIVERSALITY: 1. Knowledge is more useful, when it *applies to more circumstances*. ETERNALITY: 2. Knowledge is more worth learning, if it can be *applied for a long time*, after learning it. VALUE: 3. Knowledge is more useful, if there is a high *value* from applying it. SHARING:

4. Knowledge is more useful, if it can *easily be shared* with others. PROOF:

5. Knowledge is useful, when early *feedback can prove its usefulness,* in practice.

SYNCHRONOUS:

6. Knowledge is more useful, when it can be *used together with a larger body of knowledge.*

MEASURABIILITY:

7. Knowledge is more useful, when the *results of its application can be measured.*

ACCEPTANCE:

8. Knowledge is more useful, when it is *widely accepted in your culture*. COST:

9. Knowledge is more useful, when the *cost of applying it is low*. GENERATION:

10. Knowledge is more useful, when is can be used *to generate even more-useful knowledge*.

I hope these principles are self-evident observations. I hope that these principles characterize the class of knowledge that institutes of higher learning should be focussing on.

Here is some of my inspiration for suggesting what should be taught at undergraduate level: See complete quote [F15], from Prof. Christopher Strachey, Oxford

Quote 10.9 A. An academic plea for sanity.

.... "The premise is that it is clearly wrong to teach undergraduates the state of the art; one should teach them things which will still be valid in 20 years time: the **fundamental concepts** and **underlying principles**. **Anything else is dishonest**.

But at the moment we are in a very primitive state of development; we don't know the basic principles yet and we must learn them first. If universities spend their time teaching the state of the art, they will not discover these principles and that, surely, is what academics should be doing.

But, before teaching students we must get our basic principles right."

[Strachey 1969] First Oxford Computer Science Professor



Christopher Strachey (1916 Hampstead-1975 Oxford)

Here is a discussion of my Principles of Principles, in the light of the Principles of Knowledge, above.

<u>1. The Notion of Usefulness of Principles</u>:

A 'principle' is a short statement that guides people to take certain decisions or action. It is condensed wisdom. Principles are useful, if they remind us, or teach us, to act in a better way, than we otherwise would do.

For example: The Risk Principle

"There is lots of uncertainty and risk of deviation from plans in any project.

You cannot eliminate risk. But, you can document it, plan and design for it, accept it, measure it and reduce it to acceptable levels. You may want to avoid risk, but it doesn't want to avoid you." (1 page 23).

This principle tries to warn about the inevitability of risk. It also is specific about what you can *do* about risk. It teaches that you cannot eliminate risk, but you can try to manage it in various ways.

From the departure point of this principle, the teacher can then be more specific on how to identify, specify and mitigate risks. See this book, Chapter 7 on Risk.

2. The Notion Of Half Life of Principles

If a principle were to become obsolete in a few years – perhaps because of new technology or new economics, then it would be less valuable to learn, and might even be dangerous to continue to practice beyond its true lifetime. So I prefer principles that we can imagine 'always were true', and we can so no clear reason why they 'will not be true for the foreseeable future".

I use this as a thought test, for all principles that I publish. [URL5, URL20]

It takes decades, from when a principle is stated, until it becomes taught in any substantial way. The student has decades of their future in which to apply a principle. So it makes good sense that the principle is something we can rely on in the long term.

3. The Notion of Fundamentality of Principles

Principles should be *fundamental*. They should be basic tools for everyday use in planning, engineering, discussing, decision-making, and reasoning. We should be able to use them as the basis for all our more-detailed actions and thinking processes. For example:

The Principle of 'Quality In, From the Beginning'

Quality needs to be designed into processes and products, Cleaning up bad work is a loser, but cleaning early is better than late. *A stitch in time still saves nine, But an ounce of prevention is still worth a pound of cure.* " Source [1] CE, page 24.

The above principle applies to all planning work. We humans seems to have a strong natural tendency to clean up our faulty work, when faults are discovered, rather than to consciously discover how we can prevent the faults, from getting into our work, in the first place.

This principle is fundamental. It is at the basis of all improvement efforts in a planning process. It is the basis for a paradigm shift for many professionals I deal with; the shift from 'fix problems', to 'prevent problems'.

Students should be taught such profound principles, before they waste years discovering them, if ever.

"As to methods, there may be a million and then some, but principles are few. The man who grasps principles can successfully select his own methods." - Ralph Waldo Emerson I reuse this quote here. It is so apt.

In 'Competitive Engineering' I have offered 100 such principles [1, URL20]. I have 'brainstormed' many more, in other books and papers, including this one. I am sure many others will continue to develop, principles that deserve to be taught formally.

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My concern is that we place far too little emphasis on selecting and teaching these principles. My concern is that students do not even get a dozen good principles, to base their professional work on. I think we need a course called something like "The Most Important Fundamental Planning Principles".

Practical Tip 10.9

If you are going to learn a new idea, ask yourself whether it would have worked for the last hundred years, and might well work the next hundred. If not, there may be better things to spend your time on.

"Change your opinions, keep to your principles; change your leaves, keep intact your roots."

- <u>Victor Hugo</u> (1802-1885), <u>Intellectual Autobiography: Ideas on Litera-</u> <u>ture, Philosophy and Religion</u>



Policy 10.9 TEACH THE CLASSICS In university education, and in Business Corporate Training, we will try to teach powerful, fundamental, eternal principles. Why? Better value for teaching effort More effective for the planner to know if they can apply them

10.10 WHAT PROFESSORS SHOULD *REALLY* **TEACH:** Clear, deep, useful sets of professional concepts

Principle 10.10: Clear concepts, are powerful tools for reasoning. Unclear concepts are a waste of everybody's time.

"Mystification is simple; clarity is the hardest thing of all." — <u>Julian Barnes</u> (1946-), <u>Flaubert's Parrot</u>



Concepts versus Terms

Most planners seem to use a personal, and seemingly accidental, definition of a 'planning concept word', like 'strategy'.

They seem *not* be aware, that almost *all other* project participants would *define*, and thus 'interpret' same term *differently*.

They seem to *not* have reasonably clear and useful concepts, of the most fundamental planning concepts, such as 'requirement', 'design', 'architec-ture', 'measure', and 'quantify'.

This subchapter is going to comment on *two related but different* notions:

Notion 1. the intellectual necessity, for a professional domain to have clearly defined 'Global' (Planguage concept *375 [URL63 D]) domain concepts: a higher-level education *teaching* necessity, in our opinion.

Notion 2. the practical necessity, in addition to the above, of having, in a given planning document, in other words 'Locally' (Planguage concept *376 [URL63 D])) *precise pointers* of one kind or another, to *local definitions* of potentially unclear or ambiguous terms.

Both these notions are necessary for ease of writing, and ease of precise understanding of a planning document.

The **first tactic**, Global, definitions, have the following *advantages*: *Define once, re-use thousands.* A 'culture' (like 'those who use Planguage', or 'those educated to a given MBA degree') can pre-define the several hundred, most-frequently needed, concepts. This is a one-time effort (and can be instant and free if you adopt a known standard such as Planguage), and can be carefully done by deep experts, or teams. It can be improved over time.

But, then, with global concepts defined, the individual planner does not have to 're-invent the famous wheel', 'badly'. And the 'plan reader' does not have to guess, each time, badly, either.

With frequent long-term use of a concept, and fairly standard pointers (like 'Stretch Level', written with Capital letters, or bold, or underlined etc. as a formal signal) the plan reader, and writer, can be confident of understanding terms, *without* even looking terms up. Only the novice or outsider will need to look up the term's concept definition.

Unfortunately, there is 'no such thing', as far as I can observe, as a global concept definition set in use for most all management planning. I am sure there are local exceptions, including Planguage, but the normal planning document we see internationally has no such Global Concept glossary in practical use. People 'just use' the same widely-used terms, 'Alignment', 'Mission', 'Strategic' for example with no known reference to any standard, even locally in the corporation, definitions. We cannot know what they mean. And I suspect, *they*, the plan specification writers, do not *ei-ther*, until proven otherwise. They are just 'parroting' conventional terms.

The second, subject, **Local Concept definitions**, is a logical necessity for tailoring a plan to current local needs. Planguage is heavily oriented towards local tailoring of concepts, from the vantage point of about 700 Globally alredy-defined Planguage concepts, as a base. [URL64, 'Agile Planguage' paper].

Practical Tip: 10.10 A: **STEAL MY GLOSSARY**, please.

You can, freely, without license or permission, take into use our Planguage Concept Glossary, now, and modify it to your needs when you like. [URL63, especially A]. Academics and Corporations, be my guest! Nice if you credit the Source! Nice if you share your version with others freely.

Practical Tip: 10.10 B . The 'Ambiguity Test'.

As a consultant, I need to dramatically demonstrate to my clients, at meetings, that they *really do not understand* key terms in plans (and one form of plan is a management slide-deck presentation), **in exactly the same way.** So, I will pick a term; hopefully one on which some discussion of meaning has just happened at the meeting. I will also judge, or ask participants, if it is critical, to have a clear agreed definition, of the term.

I then ask all participants to write down *their* interpretation of the term. It is important that this is *in the context* of that plan, and a particular organization. Definitions are VERY local!

I then ask people to read their interpretations aloud, and I key them in, showing them on a screen, for all to see.

What is 'guaranteed', is that no two definitions are *exactly* alike. What is also a pretty sure fact, is that there is no 'official' written definition in the plan, or elsewhere.

There is often a local plan glossary; but it fails to cover most all the ambiguous terms! No one can be bothered to define all words used. But the dictionary does *not* contain our local domain interpretation. So the measured density of ambiguous terms is still about 30% of all words used, according to our frequent (SQC) measurements of real plans internationally. In the opinion of top managers who are used to decide what is unclear! [URL1, URL44, URL45, URL46]

Another piece of fun, is when the client or Director's definition is very different from everybody else's.

This 'ambiguity test' can hopefully result in management agreement to 'get more formal' about defining critical terms, much better. Practical 'clarity' tactics, such as rules about clarity, Specification QC, Defect Exit levels, as discussed in this book, might hopefully follow.

I have a backup plan for the unlikely event that two people ever give me exactly the same definition. I will ask them to define one-or-more words in *their* definition. I do not expect to get identical answers.

The point emerges. We all have different interpretations. If the term is critical to a plan, there is only one reasonable solution. We need to have a formal written definition, in the plan, or a link to it. That will be the 'right' definition.

This has legal and contractual implications, of course. But the worst scenario is the cost of lawyers, billing you at great cost, discussing the interpretation of words, which you *could* have clarified for 3 minutes of work, a year ago.



Case 10.10 at Major USA Multinational in Cincinnati Ohio. We used 4 Program managers, checking one page for 30 minutes. Counting ambiguous and unclear concepts in a page of Project Requirements. The 'team' of 4 found about 60 'unique' Major defects in the page, which is about one-third of the defects *actually there* 'right now'. So there are about 180 major defects in the page of about 300 words. This page was about 'quality requirements', including security (example 'use a password'). And the project was, as a consequence, predictably (we did the prediction correctly before knowing the truth) two-years delayed (40,000 hours), of which 1 year delay had already been experienced.

Planners cannot even seem to get 'conceptual clarity' about *ends* and *means*, since they constantly declare some 'means' to be their 'ends'. The 'use a password' instance, in case 10.10 above, instead of a 'Security Objective' definition [URL1B, URL66] is a practical example of this mix-up. Planners normally mix strategies, directly, into their statement of objectives. "*We are going to get much better productivity through the Magic Method X".* And sometimes, they even forget to mention which objective they are addressing, as in the example about 'password' above.

I have personally given up hoping, that people can agree on the meaning of words. It is not the words that are critical, it is the *concept* definitions that we need to learn. We can then *assign* words or symbols to the concepts, in order to reference them. We can 'declare' in writing, the set of words we use, to reference concepts, in a paper, a book or slides.



Figure 10.10 A. I advocate **detaching the concept definition** itself, from a wide variety of devices (concept pointers) which can be used to **reference** the concept. [1] CE page 323. These concept pointers can be words (in any and all languages), synonyms, numbers, and symbols [URL34].

My primary concerns are that:

we do not have a **rich enough** set of planning concepts.

For example: We need to distinguish between many types of requirements, many types of designs, many types of constraints – and much more. See Figure 10.10 B below.

We use 'words' with no **agreed** meaning, as though others would know what we mean, correctly.

2.14 has an agreed meaning (even better on a defined Scale) 'Pie' is open to interpretation.

<u>Goal</u>

Planguage Concept: *109

A goal is a primary numeric target level of performance. An implication of a Goal specification is that there is, or will be, a *commitment* to deliver the Goal level (something not true of a Stretch or Wish target specification). Any commitment is based on a trade-off process, against other targets, and considering any constraints. The specified Goal level may need to go through a series of changes, as circumstances alter and are taken into consideration.

A specified Goal level will reasonably satisfy stakeholders. Going beyond a Goal level, at the cost of additional resources, is not considered necessary or profitable – even though it may have *some* value to do so.

A Goal parameter is used to specify a performance target for a scalar attribute.

Planguage 10.10 An example of a concept definition: Planguage Term *109, also called Goal in the CE book. But, called other synonyms in other cultures.

Defining concept number `*109'.

The term 'Goal' is assigned, in order to cross-reference concept *109, for the purposes of the CE book, *only* [1, CE, page 366, URL63 D].

Anyone else can assign any other term or symbol they want to, in order to reference concept *109. For example, we can assign the terms "Commitment', 'Main Objective', 'Promised Level', 'Dead-lined Target' to *109.

But they should somehow 'clearly connect' their 'synonyms' for *109 to the *109 concept definition.

One Planguage tool to connect to a concept Glossary, is to write the terms (all words of it) in **C**apital **L**etters, to declare, to signal, that it is a *formally defined* concept. So, if you want to be certain of the exact meaning, look at the Concept Glossary (or somewhere in your Plan).

It follows logically, that in one plan, there should not be more than one such defined term.

It is a Planguage rule that if we need to distinguish such potentially ambiguous terms (same Tag, more than one concept definition), we can prefix the term with a Hierarchical Tag (*146). We can for example refer to **Productivity.**Goal [Asia]

Or

CE.Planguage or **Intel.**Planguage

We can also directly Tag any element of a Planguage specification, to give it a Unique cross reference.

Unique Tag 123: Stretch [Asia, 2025] 60%.

I personally prefer to **bold** and <u>underline</u> the tag of any primary specification (**Unique Tag 123**), so the eye quickly catches the main definition site.

One client writes all tags in a wiki format (WordOne, WordTwo) so that they are automatically made into a referenced link everywhere else.

Figure 10.10 B. A hierarchy of related concepts in Planguage. [Figure G20 in URL63 D]

Suggestions to planners and planning teachers and managers.

I would suggest that we need to define our key concepts much better.

Then, we need to teach a decent set of the concepts systematically.

We need to teach them in the context of practical processes for planning.

We also need to teach people to know, *when* they need to define their local use of terms, in their specifications.

Planguage Concept Glossary 401



Figure G20

Requirement Concepts.

"It's up to the artist to use language that can be understood, not hide it in some private code. Most of these jokers don't even want to use language you and I know or can learn . . . they would rather sneer at us and be smug, because we 'fail' to see what they are driving at. If indeed they are driving at anything--obscurity is usually the refuge of incompetence."

- <u>Robert A. Heinlein</u> (1907-1988) Science Writer, <u>Stranger in a Strange</u> Land



Practical Tip 10.10 C. Insist on written definitions

If you are not given <u>written formal definitions</u>, for words, in plans, consider asking for them: and if you can, consider adding definitions to the plan, yourself. "...it is precisely because the world appears to us to be multiple, ambiguous, and paradoxical, that we must strive to speak and write clearly." — <u>Mark Dintenfass</u>, Author



Policy 10.10 AVOID ANY CRITICAL PLAN MISUNDERSTANDING **We will make sure that all terms, critical to a plan, will have proper formal definitions. Either using a corporate planning term glossary, a Planguage Glossary** [URL34 B] **or by specifying definitions in the plan itself.**

Why?

Because it is cheap to do, and expensive to have your plans misunderstood.

A misunderstood plan, is a worthless plan.

Do you really want people to 'guess' what you mean?

A student project to 'spread knowledge in Poland'.

This was done in a 5 day masterclass I held in Katowice 2018. The subject was one which the ambitious students had great interest in. Most of my students were graduates, some having done or doing higher degrees or research. They seemed to be idealistic about planning their nation's future.

Some of them are in fact still working on more local aspects of this plan.



Fig-

1: The critical set of values fore knowledge sharing in Poland.

ure

Each value is defined with a Scale of Measure, and in the examples below.

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Type: Value, Labels: -						
v. 0.0.1 Draft (by gilbguest16 - 9 months ago)						
IS Part OI: 변 <u>ORITIOAL REQUIREMENTS</u>						
Ambition Level: Each partner must provide enough value to the other for the relationship to commence and sustain itself.						
C Scale:						
NPS for [Relationship Type] for defined [Partner Type]						
Short Description: , Time Units: Calendar Date						
Partner Type: defined as:						
Corporate Sponsor, Value Add, Competitor, Investor						
Relationship Type: defined as:						
Joint venture, Investor, Growth						
Source:						
Mark/Kuba						
Tolerable: Level: 0 When 12th October 2017						
Goal: Level: 0 When 12th October 2017						
Stakeholders: 3rd Party Partners, Angel Investor, Suppliers.						
Status: Level: 30 [Relationship Type = Growth, Partner Type = Corporate Sponsor] When 13th October 2017						

Figure 2: Mutual Benefit Value Quantified. NPS = <u>https://en.wikipedi-a.org/wiki/Net_Promoter</u>

This is a simple example of defining a value with a scale of measure, so that it is unambiguous, and progress can be tracked.

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- * STRATEGY TOP LEVEL. Cooperation With Companies						
Type: Solution Idea, Labels: -						
v. 0.0.1 Draft (& by tomgilb - 3 hours ago) 🔗						
Is Part Of: Discrimination STRATEGY TOP LEVEL						
Consists Of:	nal Companies 🍟 Business Partnerships 🍟 Collaborative Projects 🍟					
Community 🐳 Conferences 🍟 Employees Ex	Community 🛉 Conferences 🍟 Employees Exchange 🍟 Sharing Experience 🍟 Sharing Resources 🍟 Workshops					
Summary: By cooperating with other companies we can solve variety of problems and grow						
Description: Apprenticeships In International Companies, Workshops, Community, Conferences, Collaborative Projects, Empl						
Value Impact:						
Estimate:	CFO Satisfaction					
$\Delta 2 \pm 0$ (Credibility: 0)	: 0					
	: 0					
Value Impact:						
Estimate:	Return On Investment					
$\Delta 2 \pm 0$ (Credibility: 0)	: 0					
	: 0					
[DHA] Startup CFO	<u> </u>					
[DRA] Startup Founder	3					
[DRA] Students	3					
[DRA] Suppliers	<u> </u>					
[DRA] Target Market Users	3					
[DRA] Technology University	ā					

Cooperation With Companies

From Level: Level? To Level: Level?					
Requirements	Sharing Experience	Apprenticeships I	·• Business Partners	Collaborative Pro	- 🛉 - Communit
Prestige Status: 400 → Wish: 50 Pos Position In Ranking for university [Area = Europe, @ 2018	.: <u>86%</u>	13%	29%	????	7777
(→ Prestige =: Status: 1k → Wish: 100 Position iA9 Position In Ranking for university [Area = World,] (Area = World, (Area = World,	.: <u>11%</u> co	56%	11%	89%	????
(→ Prestige =: Status: 20 → Wish: 3 Position i Δ9 Position In Ranking for university [Area = Poland, 2019	.: <u>6%</u> to	59%	????	????	????
Sum Of Values: 29	: 103 % 🗠 103	128 % 🗠 231	40 % 🗠 271	89 % 🗠 360	0 % 🗠
Sum Of Development Resources:29	: 0 % 🗠 0	0 % 🗠 0	0 % 🗠 0	0 % 🗠 0	0 % 🗠 🛰

Figure 3. The Stakeholders' set for Knowledge in Poland. DRA= Draft Status.

These are the national players, and we need to understand the values and set requirements for each of them. Figure 4. A complex strategy, Cooperation With Companies.

This is another example of expressing a critical stakeholder value clearly and quantitatively.

That does not mean that it is 'right'. But it is 'clear', and so if it is not right; this will be more obvious sooner.

Figure 5. The Cooperation sub-strategies rated against 3 'Prestige' objectives.

This is an Impact Estimation Table. The idea is that we try, as best we can, admitting ignorance and uncertainty, to estimate the impacts of our proposed strategies on our value requirement levels.

This will help us prioritize what to do and when.

When we do choose to implement a specific strategy, we can measure its real effect, get feedback, and then better decide what to do next. Learn. TEACHING USEFUL KNOWLEDGE Page 20 of 23 Tom Gilb

Ta	ag:	Prestige					
Le	evel:		Туре:				
	Select a Sp	ecification Level	()-> Value				
S	tatus:		Version: Show Sidebar				
	Draft		0.0.1				
La	abel?		(🖋 by tomgilb - 6 months ago) 🔇				
ls F	Part Of: 📴 C	RITICAL REQUIREMENTS					
ľ	Ambition Level: To have lots of candidates for students (more than one student applying for placement) from both Poland and foreign countries, be internationall.						
<u>4</u>	Scale: Position In Ranking for university to achieve in [Ranking] for given [Area].						
œ	% Stakeholders: Academics, Community, Marketing, Students, Technology University.						
۲	Status: Level: 1k Position in Ranking [Ranking = QS World University Ranking, Area = World] When 2017						
۲	Wish: Level: 500 Position in Ranking [Ranking = QS World University Ranking, Area = World] When 2018						
۲	Wish: Level: 100 Position in Ranking [Area = World, Ranking = QS World University Ranking] When 2019						
۲	Wish: Level: 200 Position in Ranking [Area = Europe, Ranking = QS World University Ranking] When 2018						
۲	Wish: Level: 50 Position in Ranking [Area = Europe, Ranking = QS World University Ranking] When 2018						
۲	Wish: Level: 10 Position in Ranking [Area = Europe, Ranking = QS World University Ranking] When 2019						
۲	Status: Level: 20 Position in Ranking [Area = Poland, Ranking = QS World University Ranking] When 2017						
Ē	Owner: Mar	Owner: Marta					

Figure 6. The 'Prestige Value requirement quantified.

So thesis another quantified value. It also has quite along list of required levels each for different circumstances.



Figure 7: an overview of the planning factors. Stakeholders, Values and Solutions.

This is an overview map of the planning territory.

The tags of each entity give access (hot button) to the detailed specification. Tool: <u>needsandmeans.com</u> /<u>valplan.net</u>

WHAT THIS STUDENT EXERCISE IS TEACHING

- 1. Stakeholder analysis is the source of requirements
- 2. Value requirements can always be expressed quantitatively
- 3.Multidimensional thinking:many values must be considered simultaneously
- 4. We can and must estimate the multiple effects of proposed strategies/designs/architectures/solutions.
- 5. Very complex real systems can be engineered systematically.

BIO TOM GILB

Tom Gilb has published more than 10 books. Like 'Value Planning' (2014-2019), 'Competitive Engineering' (2005), and 'Principles of Software Engineering Management (1988).

He has worked in international consulting and teaching, starting in the dark ages (1958 IBM).

He has been instrumental in nudging several disciplines forward, like Software Metrics (1976 book), and Agile (his 1988 PoSEM book is widely credited as foundational for the current Agile movement.

He is an Honorable Member of BCS. He is very active in BCS with courses (SG Quality) and lectures. He lives in Norway, and very often in London. More detail at <u>gilb.-</u> <u>com</u>