

Master TM - Grouping strategies for software development



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Why to group people?

- In early stages the software was developed by very good specialists that have **high-abilities** usual in mathematics, physics, engineering and business affairs.
- In this case the level of the developer was very important.
- Nowadays, “everybody” develops software, and the companies try to involve many members to fast develop dedicated software. The power of a company is given by the **power of teams** that must be innovative and able to be first on the market with an acceptable software product.
- Education must prepare students for collaborative teams.
- From sequential methodologies that use may be a waterfall or other methodologies for specialists, we use usually now **Agile/Scrum and Kanban methodologies** that are more adaptive based on “teams” that must be heterogeneous and more flexible.

Agenda

- Elements able to be used in grouping process
- Research results based on grouping concepts
- Myers-Briggs Type Indicator (MBTI)
- Riso-Hudson Enneagram Type Indicator (RHETI)
- Belbin Mechanism based on Roles
- Evaluations & Results
- Conclusions & Perspectives
- Alternative Typology Solutions

Elements able to be used in grouping process

- As **typologies** for members in a group we may consider:
 - -permanent (born) typology
 - -temporary (transitional- newfound) typology
- The **permanent** typology represents the **essence** of each person. The weight of this typology must be predominant. We may consider:
 - - **Enneagram**, considering child thinking mechanism in the process to determine the typology. This is expressed by RHETI.
 - - **Jungian-Kersey** – based on the theory of psychological types, by Carl Jung and temperamental theory, postulated by David Kersey. This is expressed by MBTI and Belbin roles.
 - - Initial **Yin/Yang and Chi** constitutions, **Ayurveda and Dosha** system, from oriental cultures, etc.
- The **temporary** typologies are influenced by the person **ego** in different moments of the evolution. This state is adapted to the concrete context and must be considered with a smaller weight in a grouping process

- The determination of typologies is dependent on the considered **culture** : Occidental or Oriental
- The wealth of themes, symbols, mythological references are similar between the two cultures.
- The **Occidental** system is quite rigid due to the cult or imposed precision (quantitative results).
- **Oriental** system has dynamic conceptual structures with multiple meanings with the ability to adapt to situations sometimes completely opposite.
- The **chaining logic** of phenomena at the Orientals is often different from **causal logic** of Occidentals
- **Transcendence** in Occidental culture has an **outside** origin with well stand-alone deities
- At Orientals we have an **inner** transcendence being mental productions of man, not having another reality besides his

- If we are not able to distinguish between temporary and permanent typology it is possible to have uncontrolled reactions of the involved persons in a group.
- Using a **quantized mechanism in the Occidental culture** the typology usual is determined considering relevant answers to relevant questions. This process should offer a tricky result.
- Analyzing the **profound state of each person the Orientals** are able to determine more accurate the permanent typology. Each person have a predominance characterized by a **basic “poison”** (delusion) with influences of other specific “poisons” (basic three or five poisons).
- The **5 Jinas (Dhyani Buddhas)** from Indian/Tibet cultures describe in a precise mode that. They offer clear solutions based on the so called **“wisdoms”** (enlightened minds) that are able to be considered in the human evolution process as a solution for the basic poisons.
- **Self-realization**, discovering the **Is-ness** will provide the true nature of beings and in this mode the possibility to be integrated with everyone in the most harmonious mode. This **Is-ness** state is **timeless, space less**, is permanent, no begin or end, and involves only **to Be, like Presence**.
- Associations with **basic 5 tattwas/5 elements/3 gunas** from different cultures are able to refine the human typologies.

The Five Jinas (Dhyani Buddhas)

- The **Five Jinas (Dhyani Buddhas)**, or Great Buddhas of Wisdom, are a central feature of Tibetan Buddhist belief and art.
- They are often found in Tibetan mandalas (is a geometric configuration of symbols) and thangkas (is a painting on cotton, silk, usually depicting a Buddhist deity, scene, or mandala).
- Each Buddha is believed to be capable of overcoming a particular evil with a particular good, and each has a complete system of iconographic symbolism.
- The five Jinas (Dhyani Buddhas) are mentioned in most of the tantric systems and represent various physical and mental aspects.



Symbolism of the 5 Jinas (Dhyani Buddhas)



Mental symbolism of the five Dhyani Buddhas		
Deity	Delusion	Enlightened Mind
Vairochana	ignorance, delusion	All-encompassing Dharmadatu Wisdom
Akshobhya	anger, hatred	Mirror-like Wisdom
Ratnasambhava	pride, miserliness	Wisdom of Equality
Amitabha	desire, lust	Discriminating Wisdom
Amogasiddhi	jealousy, fear	All-accomplishing Wisdom

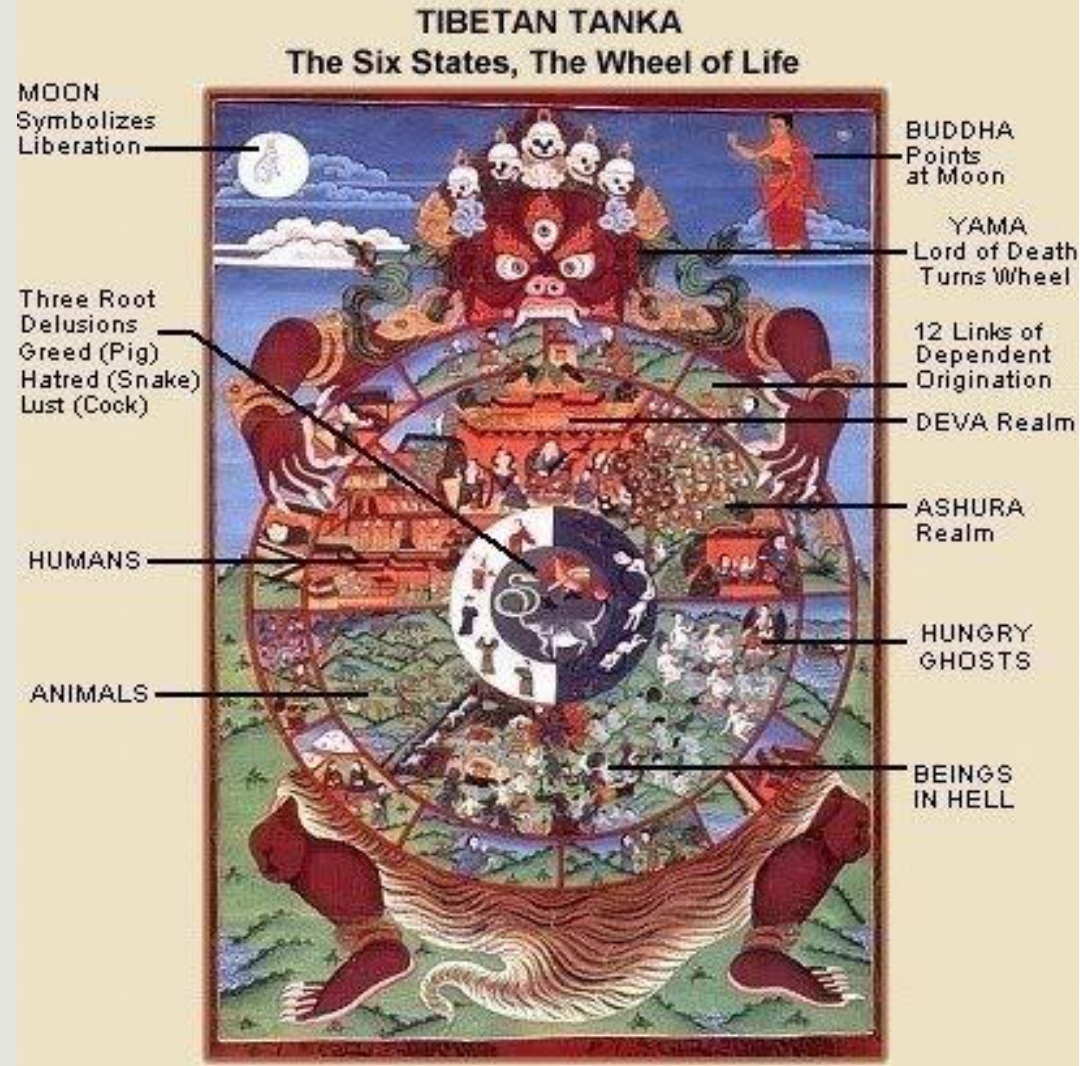
Physical symbolism of the five Dhyani Buddhas				
Deity	Element	Sense	Medical/physical	Organ
Vairochana	space	sight	energy channels	heart
Akshobhya	water	sound	blood flow	kidneys
Ratnasambhava	earth	smell	flesh	spleen
Amitabha	fire	taste	body heat	liver
Amogasiddhi	air	touch	inner winds	lungs

Kalachakra – The Wheel of Time as Human Interfaces

The Kalachakra is a term used in Vajrayana Buddhism that means **wheel of time** or "**time-cycles**".

The Kālachakra tradition revolves around the concept of **time (kāla)** and **cycles (chakra)**: from the cycles of the planets, to the cycles of human breathing, it teaches the practice of working with the most subtle energies within one's body on the path to enlightenment.

<http://traditionalartofnepal.com/the-wheel-of-life-explained/>



The Five Jinas (Dhyani Buddhas) and Kālachakra correspondence (Bardo ThoDol)

- 1. **Ratnashambhava** (Ratna) – **Human realm**; Poison: pride, vanity; Wisdom: of perfect equality
- 2. **Akshobya** (Vajra) – The **infernal (hell) realm**; Poison: angry, hate; (**snake**) Wisdom: of perfect mirroring
- 3. **Amitabha** (Padma) – The **realm of hungry ghosts (pretas)**; Poison: attachment, desire, greedy (**bird- cock**) ; Wisdom: divine discriminating
- 4. **Amogasiddhi** (Karma) – The **realm of Ashura (anti-gods)**; Poison: Jealousy, fear, envy; Wisdom: all accomplishing (perfect realization)
- 5. **Vairochana** (Tathagata) – The **realm of Gods (Devas)**; Poison: ignorance, delusion; (**pig**) Wisdom: all encompassing (of the absolute space)
- The **realm of Animals** is annihilated by reflective glare in 5 colors of owning knowledge divines (the 5 Jinas (Dhyani Buddhas))

The Enneagram of Personality



1. Perfectionist, Reformer
2. Helper, Giver
3. Performer, Producer, Achiever
4. Tragic Romantic, Individualist, Connoisseur
5. Observer, Investigator, Sage
6. Devil's Advocate, Loyalist, Troubleshooter, Guardian
7. Epicure, Enthusiast, Visionary, Dreamer, Generalist
8. Boss, Top Dog, Challenger, Confronter
9. Mediator, Peacemaker, Preservationist

- The points on the **Enneagram** figure indicate a number of ways in which nine principal ego-archetypal forms, or types of human personality, called Enneatypes, are psychologically connected (in **the center** we have a **ten** point that **will unify the all 9 typologies**, an could be considered the **Is-ness** discovery)

Chinese Constitutional Type

- In traditional Chinese medicine there are the concepts of **yin, yang and chi (Qi)**.



- There are also **five Chinese elements**: wood(*air*), fire, earth, metal (*ether*) and water in addition to the concepts of chi.
- Based on an Occidental mechanism is developed a process to determine the **9 constitutions** with different quizzes.
- These constitutions are briefly presented in the next slide
- The quiz after the next slide is designed to determine which areas you are excess or deficient in and whether your chi is sagging or deficient. (<http://treelite.com/quizzes/chinese-constitutional-quiz/>)

Chinese Yin/Yang and Qi Constitutions

Chinese herbal medic

(<http://tcmdiscovery.com/2007/11-5/200711516631.html>)

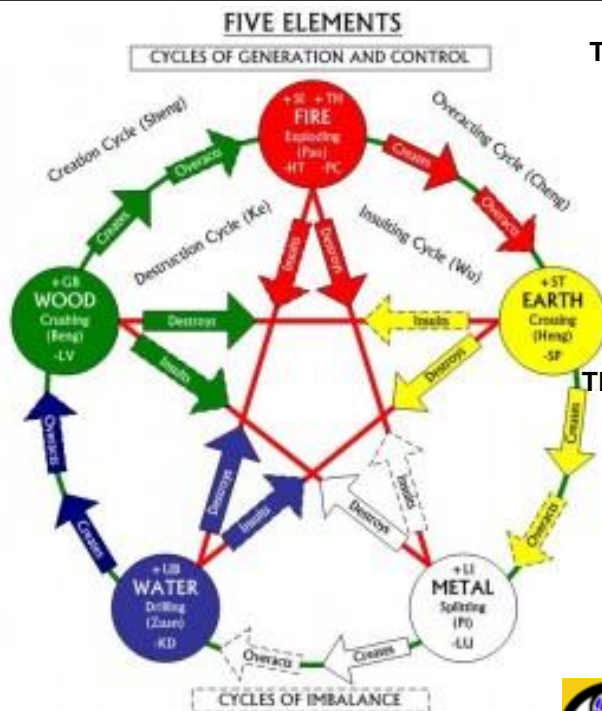
- •1 Constitution with yin deficiency
- •2 Constitution with yang deficiency
- •3 Constitution with qi deficiency
- •4 Constitution with blood deficiency
- •5 Constitution with excessive yang
- •6 Constitution with blood stasis
- •7 Constitution with phlegm and dampness
- •8 Constitution with qi depression
- •9 Neutral Constitution

Conditions for Deficient Qi

Please select the one that applies the best:	None	Past/ Mild	Current/ Moderate	Severe
Extreme or chronic fatigue	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General weakness	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortness of breath	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cold and pale skin	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hair loss	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Slow recovery from illness	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequent chills	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anorexia or muscle wasting	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discouragement, sadness or fear	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impotency (males) or loss of sexual desire (males or females)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequent illness (low immune system)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weakness of the legs	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pale tongue	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Total for Deficient Qi:			0	

Results

Element	Total Excess	Total Deficient	Total for Element
Wood	0	0	0
Fire	0	0	0
Earth	0	0	0
Metal	0	0	0
Water	0	0	0
Yang/Yin	0	0	0
Sagging/Deficient Qi	0	0	0
Grand Totals	0	0	

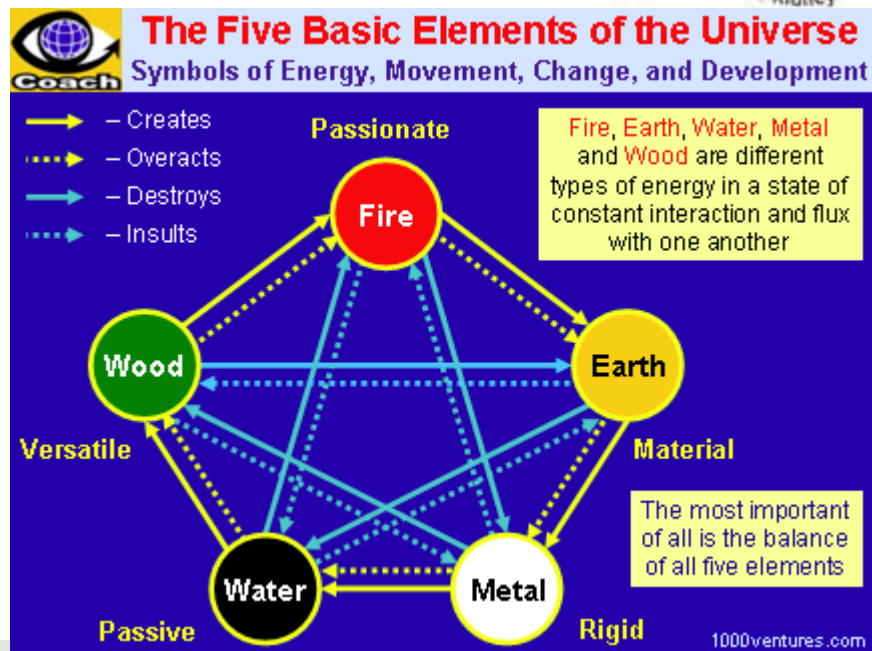
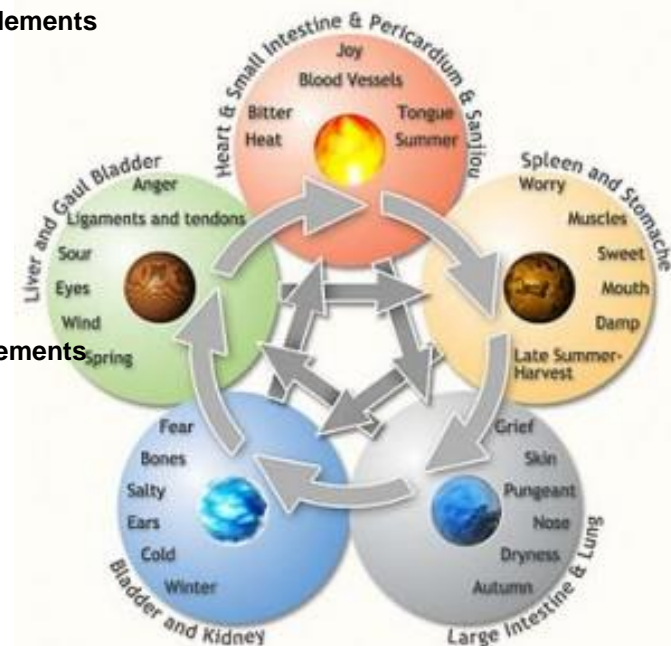


The Affinity Relationships Between Five Elements

1. Water can help tree (Wood) grow
2. Wood(Air) can help Fire to burn
3. Fire can help to produce dust (Earth)
4. Earth can help mineral (Metal) to form
5. Metal(Ether) can hold Water

The Enmity Relationships Between Five Elements

1. Water quenches Fire
2. Fire melts Metal
3. Metal chops Wood
4. Wood parts Earth
5. Earth absorbs Water



The Classification of Things According to the Theory of the Five Elements

Five Elements	Human Organs	Sense Organs	Emotions	Season	Growth & Development	Color	Taste
Wood-Air	Liver	Eye	Anger	Spring	Germination	Green	Sour
Fire	Heart	Tongue	Joy	Summer	Growth	Red	Bitter
Earth	Spleen	Mouth	Worry	Late Summer	Transformation	Yellow	Sweet
Metal-Ether	Lung	Nose	Grief	Autumn	Reaping	White	Pungent
Water	Kidney	Ear	Fear	Winter	Storing	Black	Salty

Business Classification According to the Theory of the Five Elements

Five Elements	<u>Company</u>	<u>Organization</u>	<u>Innovation</u>	<u>Selling</u>
Wood-Air	<u>Innovation</u>	<u>Capabilities</u>	<u>Ideas</u>	<u>Value innovation</u>
Fire	<u>Purpose</u>	<u>Leadership</u>	<u>Challenge</u>	<u>Customer Care</u>
Earth	<u>Organization</u>	<u>Culture</u>	<u>Inspired people</u>	<u>Creating Customer Value</u>
Metal-Ether	<u>Processes</u>	<u>Empowered Employees</u>	<u>Innovation System</u>	<u>Marketing and Selling</u>
Water	<u>Selling</u>	<u>Performance Management</u>	<u>Learning</u>	<u>Studying Customer Needs</u>

The Five Basic Elements of the Universe-Fire, Earth, Metal, Water, Wood, Vadim Kotelnikov,
http://www.1000ventures.com/business_guide/crosscuttings/cultures_5_basic_elements.html

Tattwas and Antah karana

The **tattwas** (or tattvas) are primal energies that underlie the five elements of Hindu philosophy -- akasha or akasa (ether- spirit), apas (water), tejas (fire), vayu (air) and prithivi (earth).

The term tattwas means realities or states of being. Each of the five basic tattvas has a specific symbol/glyph used for visual and identification purposes (in a detailed mode are used 36 tattwas – Swara yoga).

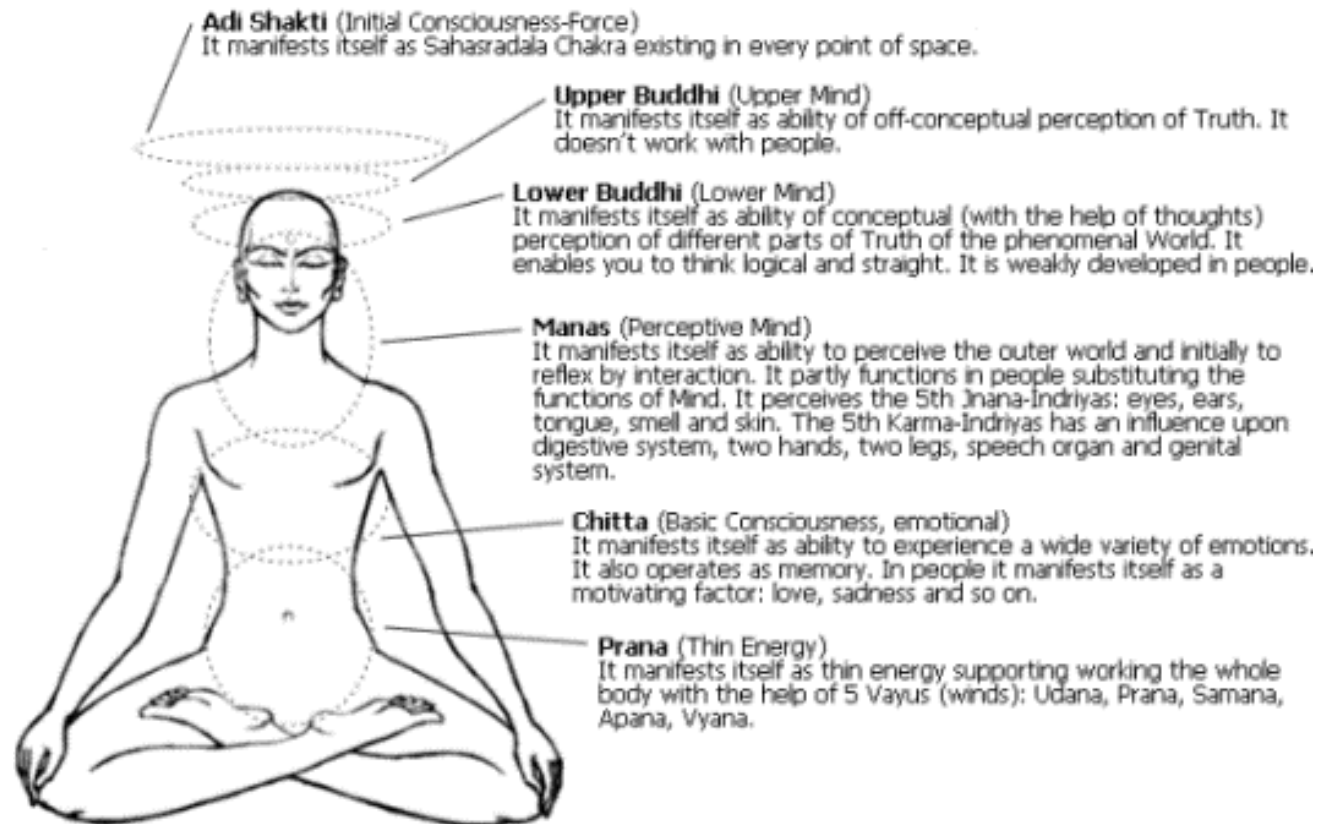
Between the **Chinese and Indian/Tibetan** traditions, simplistically **Wood** is associated to **Air**, and **Metal** to **Ether**. The other elements are the same.



Antah Karana

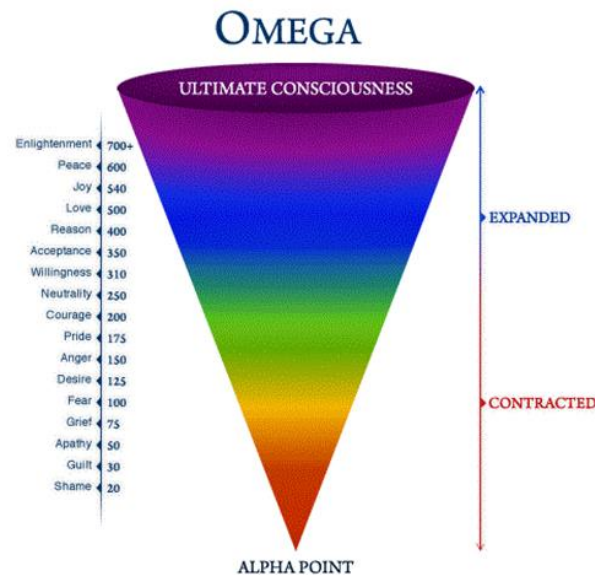
- In Vedāntic literature, **antah karana** (the totality of mind levels) is organized into four parts:
- **1. Ahamkāra (ego)** – identifies the Atman (self) with **the body as 'I', as person**. Subject to sensory, sensual and intellectual experiences
- **2. Buddhi (intellect)** – controls decision making – analytical, critical and comparative to acquire understanding and knowledge
- **3. Manas (the rational mind)** – controls sankalpa (will or resolution)- sees, perceives and analyzes the subtle and gross awareness
- **4. Chitta (memory)** – deals with remembering and forgetting – seer (clairvoyant) aspect of consciousness
- We may also consider a relation with the so-called **koshas**.

Antah karana- four aspects of mind



17 levels of consciousness and emotional scale (Sir David R. Hawkins, Abraham-Hicks)

	Level	Scale (Log of)	Emotion	Process	Life-View
P O W E R	Enlightenment	700-1,000	Ineffable	Pure Consciousness	Is
	Peace	600	Bliss	Illumination	Perfect
	Joy	540	Serenity	Transfiguration	Complete
	Love	500	Reverence	Revelation	Benign
	Reason	400	Understanding	Abstraction	Meaningful
	Acceptance	350	Forgiveness	Transcendence	Harmonious
	Willingness	310	Optimism	Intention	Hopeful
	Neutrality	250	Trust	Release	Satisfactory
F O R C E	Courage	200	Affirmation	Empowerment	Feasible
	Pride	175	Dignity (Scorn)	Inflation	Demanding
	Anger	150	Hate	Aggression	Antagonistic
	Desire	125	Craving	Enslavement	Disappointing
	Fear	100	Anxiety	Withdrawal	Frightening
	Grief	75	Regret	Despondency	Tragic
	Apathy	50	Despire	Abdication	Hopeless
	Guilt	30	Blame	Destruction	Condemnation (Evil)
	Shame	20	Humiliation	Elimination	Miserable



Koshas/Doshas/Gunas

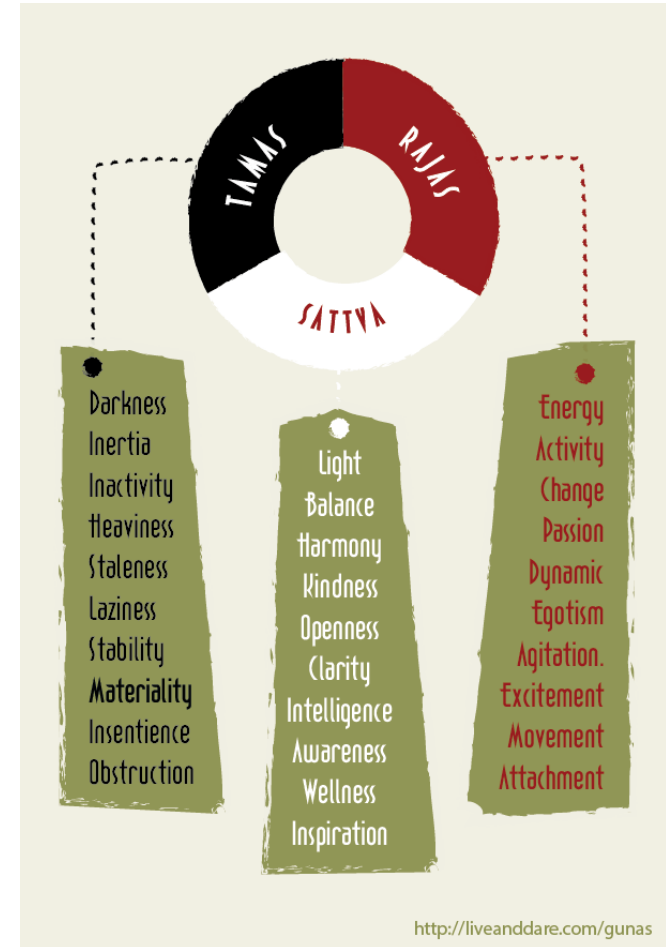
- 1. **Annamaya kosha**, "foodstuff" sheath (Anna - Physical)
- 2. **Pranamaya kosha**, "energy" sheath (Prana/apana)
- 3. **Manomaya kosha** "mind-stuff" sheath (Manas)
- 4. **Vijnanamaya kosha**, "supra-mental, wisdom" sheath (Vijnana)
- 5. **Anandamaya kosha**, "bliss" sheath (Ananda)
- Using **pranayama** technics from traditional Yoga we may control the **three Doshas** or **humors of the body**, which are known as **Vata**, **Pitta**, and **Kapha** (known as *wind*, *bile* and *phlegm*).
- In Yoga, all matter in the universe arises from the fundamental substrate called **Prakriti**. From this ethereal Prakriti the **three primary Gunas** (qualities) emerge creating the essential aspects of all nature — **matter (body)**, **energy (speech)** and **lower consciousness (mind)**.
- These **three Gunas** are **tamas** (darkness), **rajas** (activity), and **sattva** (beingness).

The three Gunas

In the philosophy of Yoga, all matter in the universe arises from the fundamental substrate called Prakriti. From this ethereal Prakriti the three primary gunas (qualities) emerge creating the essential aspects of all nature — **energy**, **matter** and **consciousness**.

These three gunas are **tamas** (darkness), **rajas** (activity), and **sattva** (beingness). All three gunas are always present in all beings and objects surrounding us but vary in their relative amounts.

A guna can be **increased** or **decreased** through the interaction and influence of external objects, lifestyle practices and thoughts.



The Casts, Gunas, Agile Software Job Skills

Brahmana (Brahmin): Consist of those engaged in scriptural education and wise teaching, essential for the continuation of wisdom and knowledge; "Nirguna and Saguna Brahma" are used to describe the brahman or the ultimate reality – pure **Sattva** Guna - Wise Masters, **Leaders with wise vision (Software and other domains)**

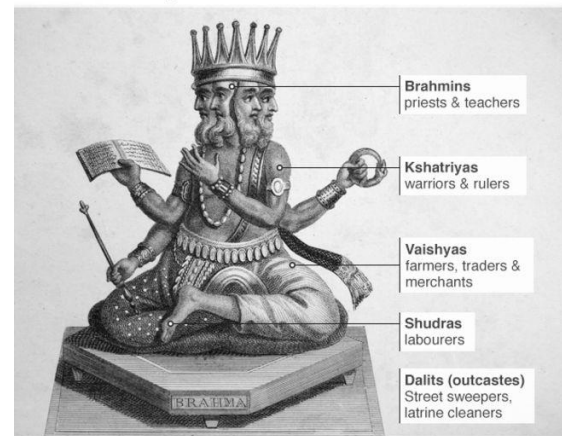
Kshatriya: Take on all forms of public service, including administration, maintenance of law and order, and defense – **Sattva/Rajas** Guna – **Product Owner**

Vaishya: Engage in commercial activity as businessmen – **Rajas** Guna- **Project managers – Scrum Masters**

Shudra: Work as skilled and semi-skilled laborers – **Rajas/Tamas** Guna- **Developers/ testers involved**

Dalits: Work as unskilled labor in a robotic manner – **Tamas** Guna – **Not involved developers/testers, other unqualified persons**

Brahma and the origins of caste



Source: Alamy

BBC

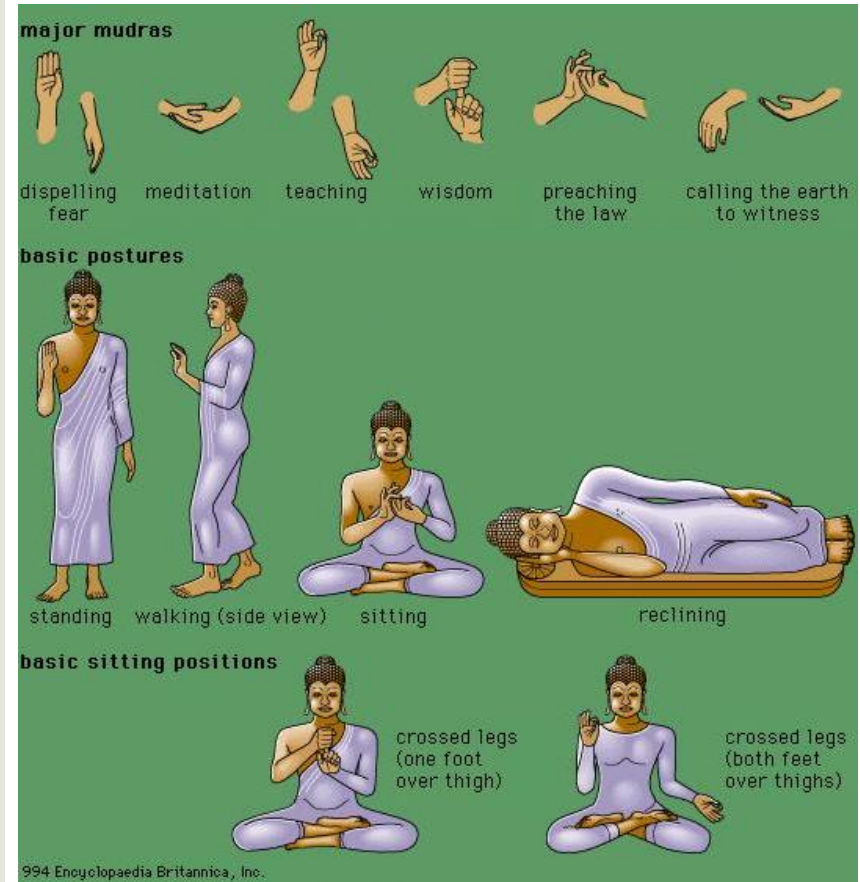
Mudras

As a solution able to improve the global health of a member in a group, mudras that are called **psychophysiological** postures, movements or attitudes, are very efficient.

Yoga mudras aim at **rebalancing** the energy field or pranic structure.

Each mudra has a different effect on the body, mind, feelings, emotions and prana.

The yogis considers the use of mudras to be very valid and important in rebalancing the flow of prana in the Anamaya, Manomaya and Pranamaya kosha system.



Main Elements and Basic Tattwas

We have 7 main chakras.

Sahasrara – is unmanifest consciousness

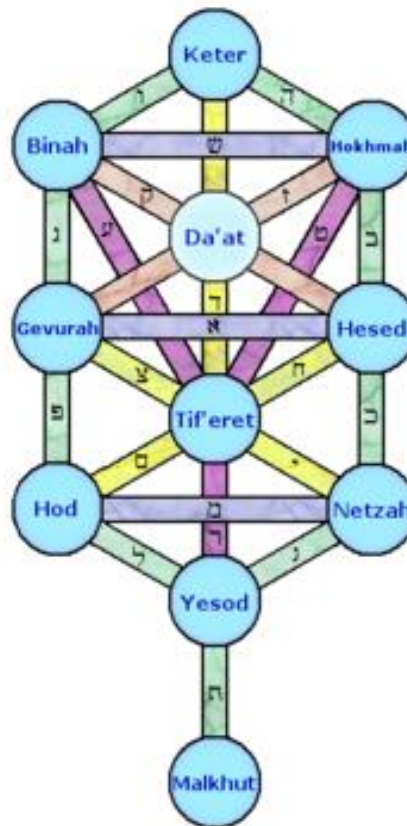
Ajna – is Mahat, the command center. Mahat is the supreme intelligence, all knowing aspect of omniscience, ahamkara or ego manifestation.

(Brahman have 3 states of manifestation by omniscience, omnipotence and omnipresence)

Element <i>Mahabhuta</i>	Role in Existence	Sense <i>Tanmatra</i>	Jnanendriya	Karmendriya	Chakra
Ether/Space <i>Aakasha</i>	Space	Hearing/Sound <i>Sabda</i>	Ears	Vocals/ Mouth	Vishuddha
Air/Wind <i>Vayu/Pavana</i>	Movement	Touch <i>Sparsa</i>	Skin	Hands	Anahata
Fire <i>Agni/Tejas</i>	Energy	Sight <i>Rupa</i>	Eyes	Feet	Manipura
Water <i>Jala/Apas</i>	Force of attraction	Taste <i>Rasa</i>	Tongue	Genitals	Svadhista
Earth <i>Prithvi/Bhumi</i>	Solidity	Smell <i>Gandha</i>	Nose	Anus	Muladhara

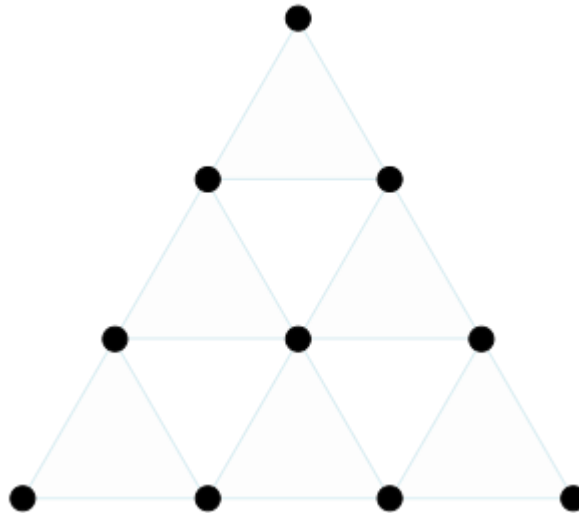
Jewish Kabala

- **Sephirot** meaning emanations, are the **10 attributes/emanations in Kabbalah**, through which Ein Sof (The Infinite) reveals himself and continuously creates both the physical realm and the chain of higher metaphysical realms (Seder hishtalshelus).



Greek Tetractys

- The **tetractys** or tetrad, is a triangular figure consisting of **ten points arranged in four rows**: one, two, three, and four points in each row, which is the geometrical representation of the fourth triangular number.
- As a mystical symbol, it was very important to the secret worship of the **Pythagoreans**.



Cultures Conclusions

- Enneagram, Yin/Yang and Chi constitutions, Kabala-Sefirot, Tetractys consider 9/10 points with important significances.
- The five elements, five main tattwas, five Jinas (Dhyani Buddhas) may be associated and correlated in a refinement process.
- Chi-Gong simple exercises, Tai chi, Visual creative meditations, Yoga asana, pranayama and mudra, Reiki, etc. are other solutions that should be integrated in this process.
- Self-discovery, arriving in the Is-ness will offer the possibility to be integrated in the life with bliss and no limitations.
- Among all these spiritual cultures we have connections that could be used for a deeper understanding.
- All these elements should be integrated to develop intelligent (even wise) software solutions to generate more efficient groups able to work as team members.

Research results based on grouping concepts

- Students are often encouraged to work in groups to solve complex tasks and develop collaboration skills in practical activities. The same thing is available for team's software in companies.
- Classical grouping strategies don't take usual into account the student's **personality** or the **compatibilities** of group members.
- As **previous work**, we analyze some dedicated applications developed for grouping process using typologies.
- We introduce an alternative grouping method based on the student/people typologies and their **Neuro-Linguistic Programming (NLP)** profile. Typologies are determined, according to the **Enneagram** methodology using **RHETI**, refined with **Myers-Briggs Type Indicator (MBTI)** test. The proposed grouping method was tested using e-learning environments.
- The **tests** were realized considering Bachelor and Master of Science students in different educational and practical work activities. Companies teams should use the same grouping mechanism. The total number of working groups observed during our first experiments was 52. Out of these team groups, only about half accepted to use the proposed technique to develop projects (during the case study period, the technique was optional).
- To improve the results as a new step we integrated a mechanism based on **Belbin Roles**.
- Improvements should be considered using Yin/Yang and Qi constitutions in correlations with the 5 elements and 5 basic Indian tattwas, or other alternative grouping methods (Zodiac, Numerology, Ayurveda Dosha, Gunas, etc.)

Grouping strategies

■ Ability-Level Grouping

- Homogeneous: high-ability students/peoples are favored
- Heterogeneous: low-ability students/peoples are more productive

■ Personality Predisposition Profiling

- Students/peoples with different personalities deal with group learning/working in very different ways
- Determining the **personality** it is important for understanding members' influence in the group formation and development

Myers-Briggs Type Indicator (MBTI)

- ▣ The most highly used psychological instrument in companies (> 2 million people complete the MBTI each year)
- ▣ Based on **Jung-Kersey typologies**
- ▣ Measures 4 different dimensions of human preferences:
 - ▣ Extroversion-Introversion (EI)
 - ▣ Sensing-iNtuition (SN)
 - ▣ Thinking-Feeling (TF)
 - ▣ Judging-Perceiving (JP)

Grouping based on MBTI

- Groups with complementary preferences in Thinking-Feeling (TF) and Sensing-iNtuition (SN) outperformed groups where the members have the same preferences (Blaylock)
- Groups with a greater balance of extroverts and introverts, sensing types and intuitive types, and thinking and feeling types performed at a higher level than the less balanced group (Bradley and Hebert)
- Diversity in group members' personalities adds unique attributes that are necessary for group success (Neuman, Wagner and Christiansen)

MBTI Test

- 1. At a party do you:**
 - a. Interact with many, including strangers
 - b. Interact with a few, known to you
- 2. Are you more:**
 - a. Realistic than speculative
 - b. Speculative than realistic
- 3. Is it worse to:**
 - a. Have your “head in the clouds”
 - b. Be “in a rut”
- 4. Are you more impressed by:**
 - a. Principles
 - b. Emotions
- 5. Are more drawn toward the:**
 - a. Convincing
 - b. Touching

	Col 1			Col 2			Col 3			Col 4			Col 5			Col 6			Col 7				
	A	B		A	B		A	B		A	B		A	B		A	B						
1			2			3			4			5			6			7					
8			9			10			11			12			13			14					
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22			23			24			25			26			27			28					
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36			37			38			39			40			41			42					
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Riso-Hudson Enneagram Type Indicator (RHETI)

- Scientifically validated forced-choice personality test with 144 paired statements that can be used to determine a typology
- **RHETI** determines the base typology (chief feature - ego-archetypal form)
- Correlation to the Jungian function
 - Type 1 – Extroverted Thinking
 - Type 2 – Extroverted Feeling
 - Type 3 – no corresponding type
 - Type 4 – Introverted Intuiting
 - Type 5 – Introverted Thinking
 - Type 6 – Introverted Feeling
 - Type 7 – Extroverted Sensing
 - Type 8 – Extroverted Intuiting
 - Type 9 – Introverted Sensing

Riso-Hudson Enneagram Type Indicator Test

		A	B	C	D	E	F	G	H	I
1	I've been romantic and imaginative.					<input type="checkbox"/>				
	I've been pragmatic and down to earth.		<input type="checkbox"/>							
2	I have tended to take on confrontations.							<input type="checkbox"/>		
	I have tended avoid confrontations.	<input type="checkbox"/>								
3	I have typically been diplomatic, charming, and ambitious.			<input type="checkbox"/>						
	I have typically been direct, formal, and idealistic.				<input type="checkbox"/>					
4	I have tended to be focused and intense.								<input type="checkbox"/>	
	I have tended to be spontaneous and fun-loving.									<input type="checkbox"/>
5	I have been a hospitable person and have enjoyed welcoming new friends into my life.						<input type="checkbox"/>			
	I have been a private person and have not mixed much with others.					<input type="checkbox"/>				

Columns

A B C D E F G H I

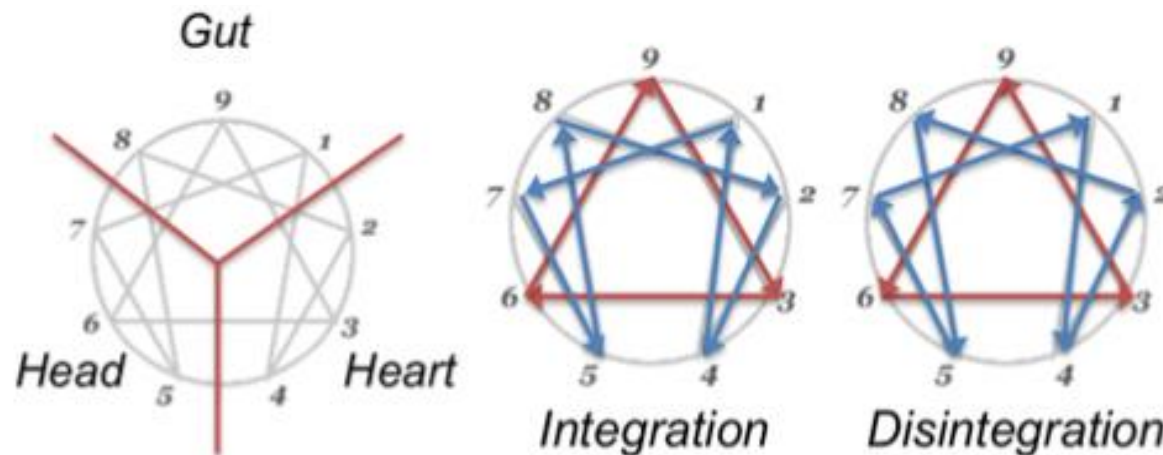
Numerical Values



Personality Type

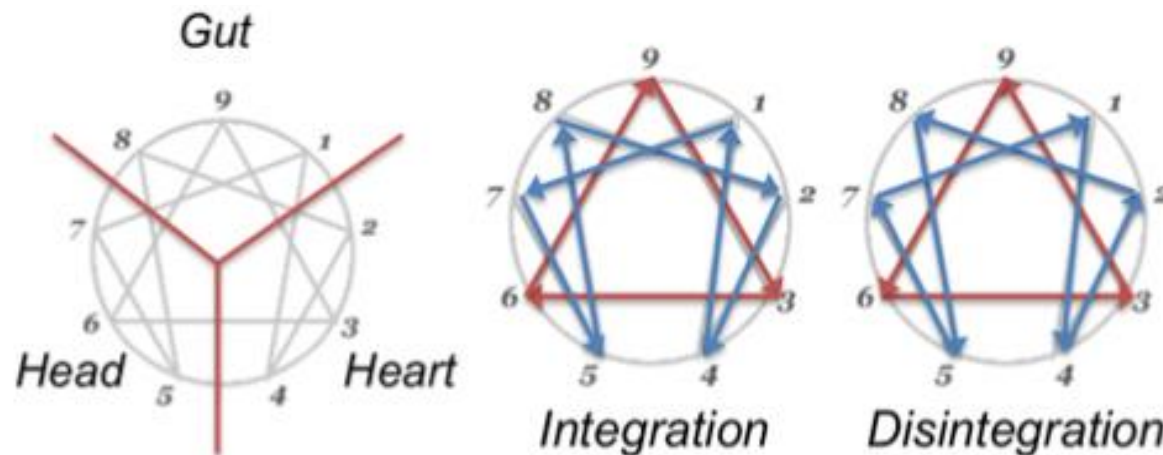
Nine Six Three One Four Two Eight Five Seven

Enneagram Triads, Integration and Disintegration



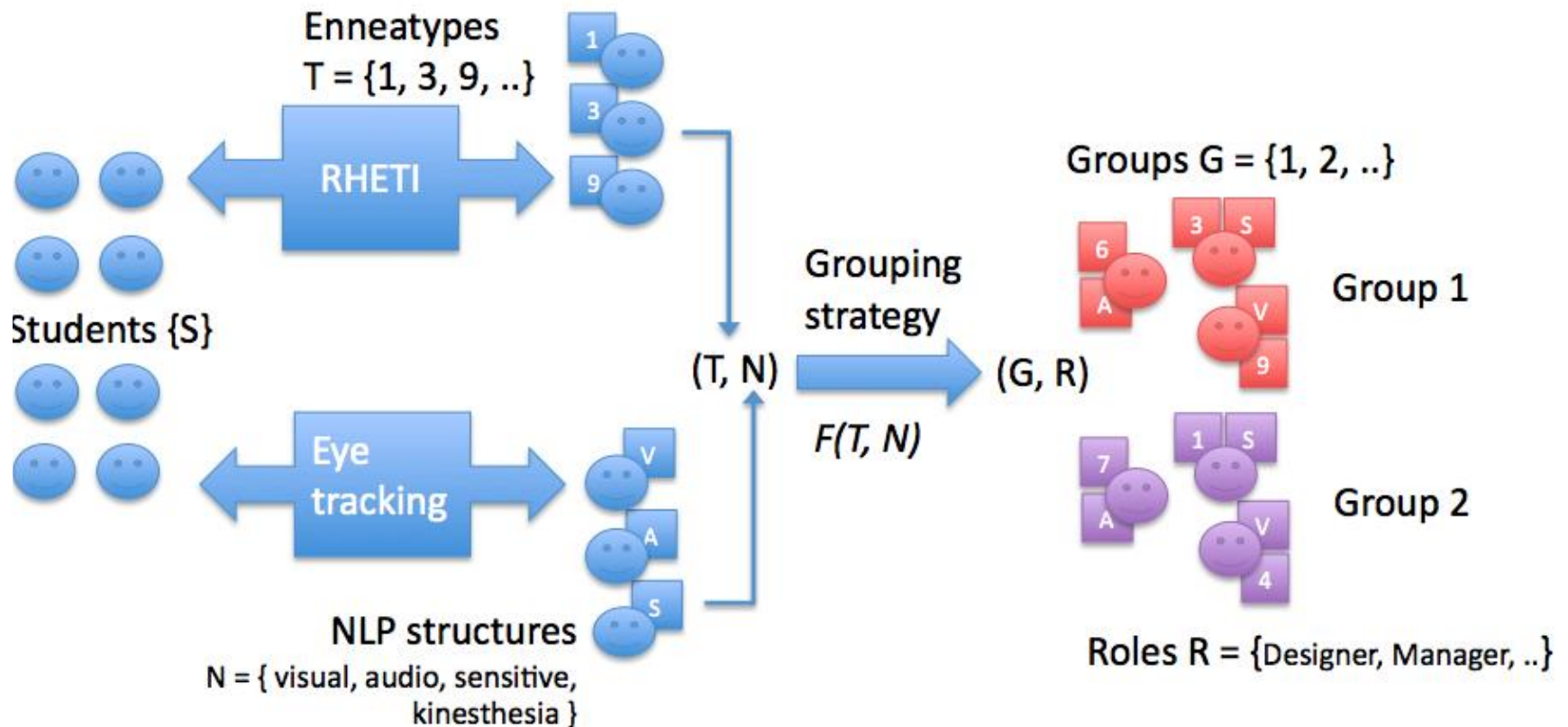
- Each Enneatype is connected with two other types, in different triads.
- These connections show how one Enneatype behaves under integrative (growth) or disintegrative (stress) conditions.
- We considered in our first research, **alternative 1**, one base typology, one typology on the integration direction and one typology on the disintegration direction
- **Alternative 2** was based on Gut, Heart and Head triads.

Proposed solution

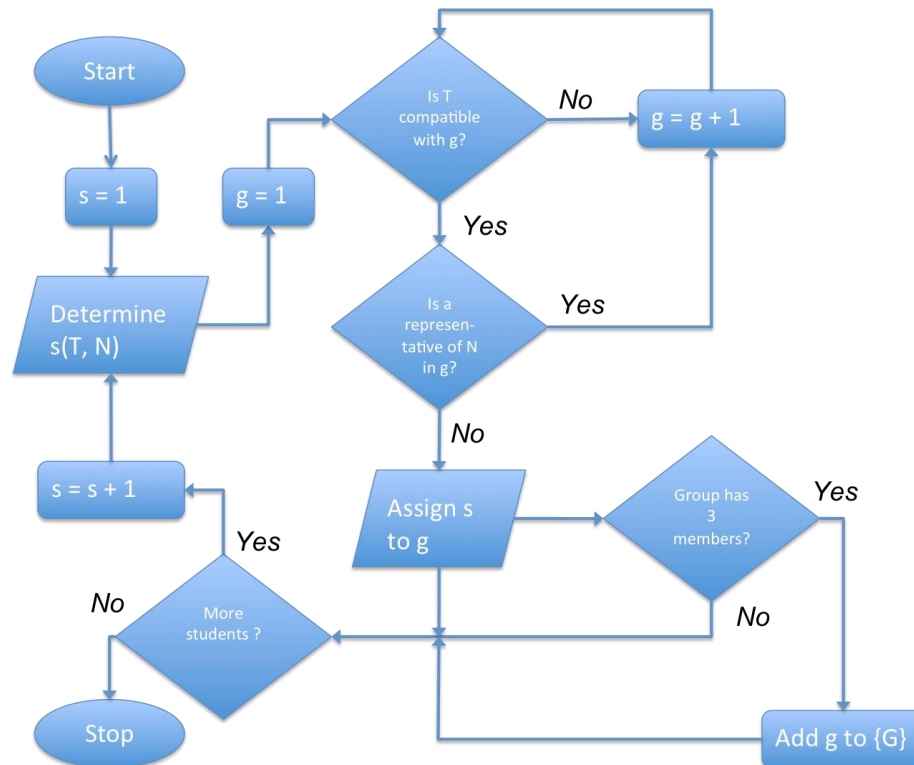


- The ideal group structure will have members with typologies 3, 6 and 9.
- Other possible grouping typologies are: (1, 7, 4), (2, 4, 8), (4, 1, 2), (5, 8, 7), (7, 5, 1), (8, 5, 2), using 1, 2, 4, 5, 7 and 8 as Chief Feature
- This ensures typology diversity. But what about preference for visual/ audio/sensitive elements ? With NLP we are able to determine visual, auditory, sensitive and kinesthesia (feelings and sensations) structures.

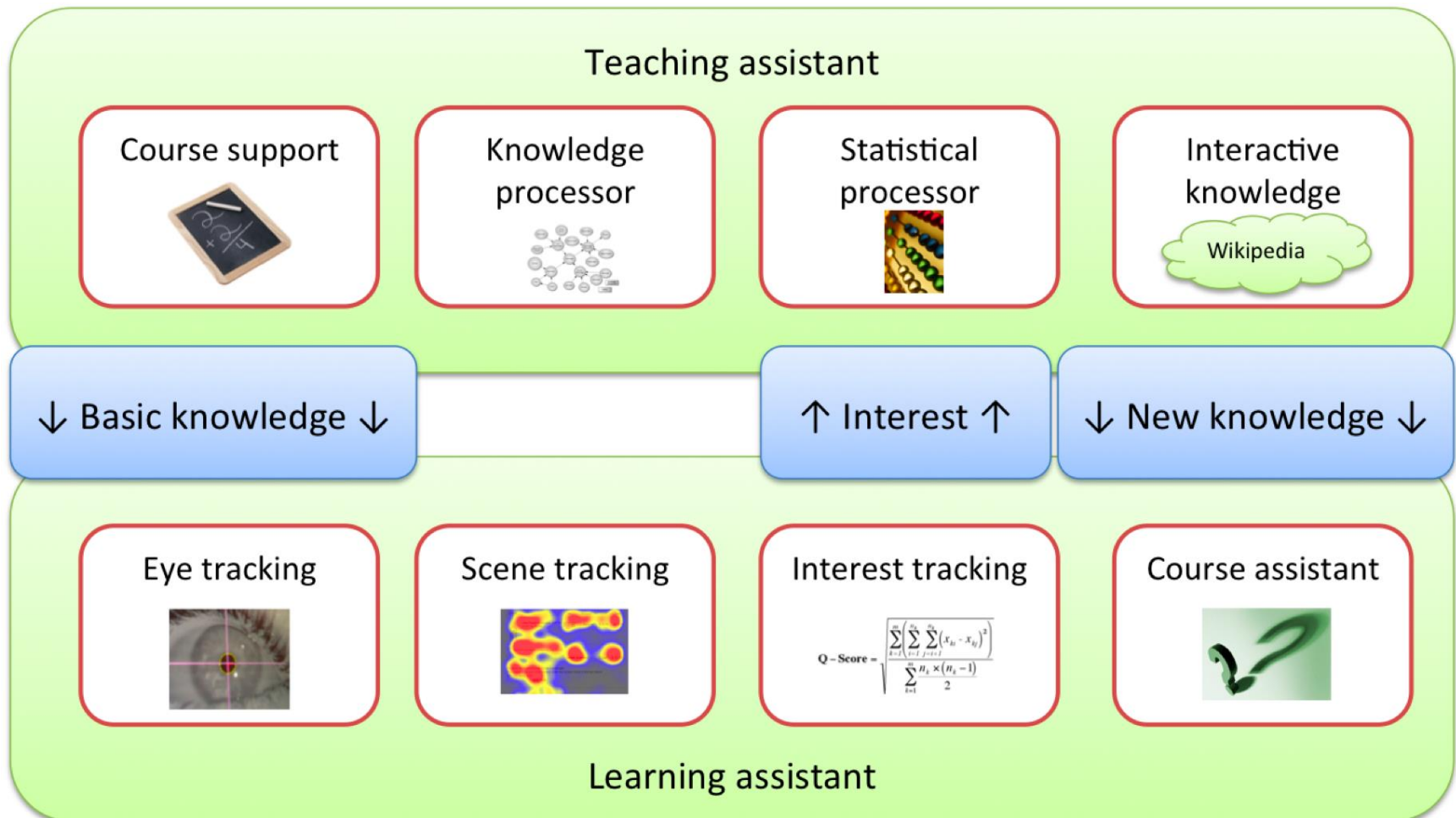
Initial Grouping Strategy



Grouping strategy algorithm



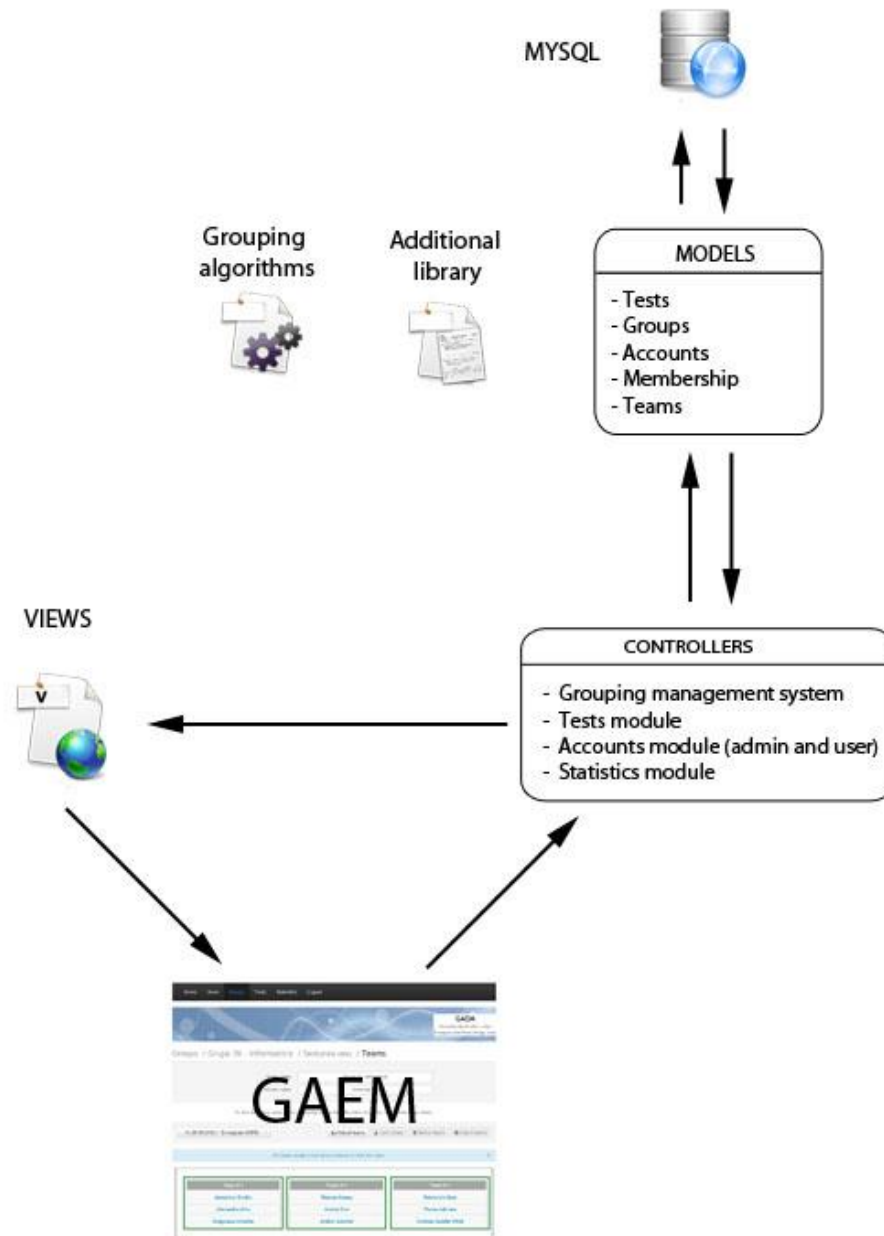
First eLearning platform based on NLP profile



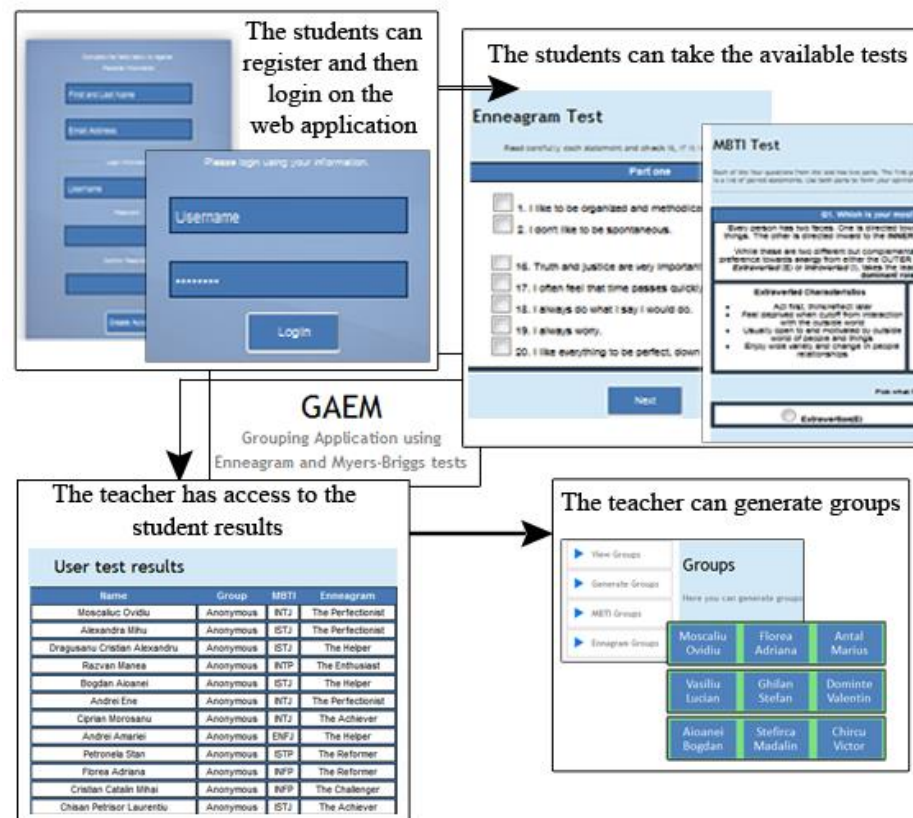
First eLearning components

- Two components - corresponding to the two parties involved in the learning process:
 - *Learning assistant*
 - *Eye tracking*
 - *Scene tracking*
 - *Interest tracking*
 - *Course assistance*
 - *Teaching assistant*
 - *Course management*
 - *Knowledge processor*
 - *Statistical processor*
 - *Interactive knowledge*

Second eLearning MVC architecture



Second eLearning application



Mapping among Enneatypes and MBTI

Enneagram Type	Associated MBTI Types
1-Perfectionist	ISTJ, ESTJ
2-Helper	ESFJ, ENFJ, ISFP, ESFP, ENFP, ISFJ
3-Performer	ENTJ , ENTP
4-Individualist	INFP, INFJ
5-Thinker	INTP, INTJ, ISTP, ISTJ
6-Loyalist	ISFJ, ISTJ
7-Enthusiast	ESTP, ENTP, ENFP, ESFP
8-Leader	ESTJ, ENTJ
9-Mediator	ISFP, INFP

Proposal algorithm grouping

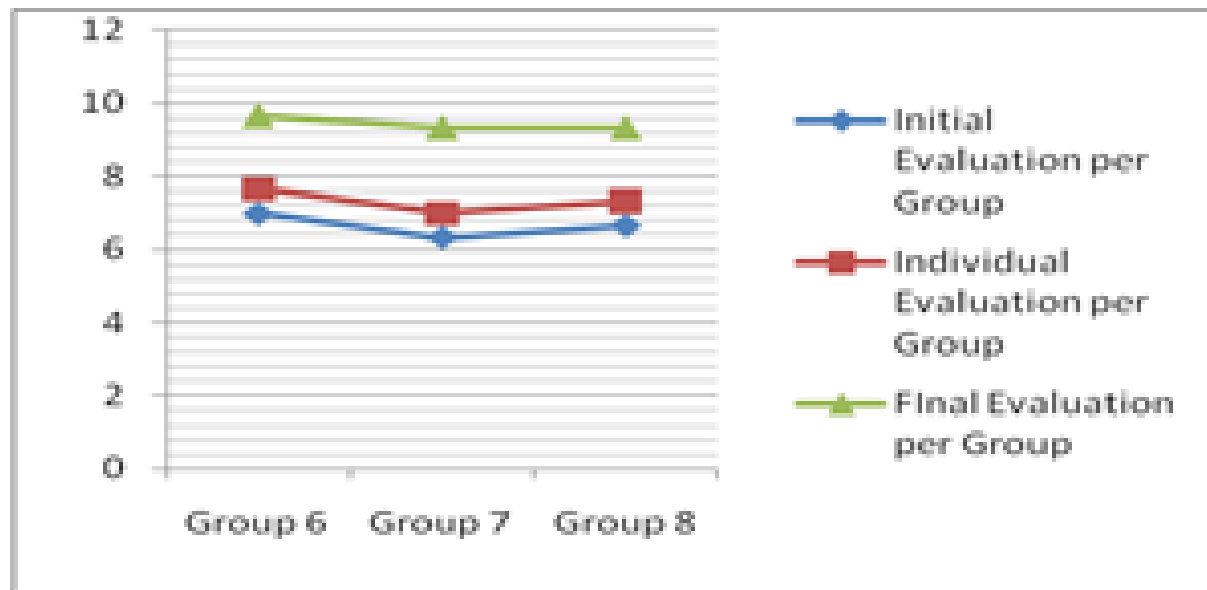
- **Alternative 1:**
- a) Enneagram integration/disintegration directions grouping and MBTI refinement:
- Grouping based on the following typologies:
(1,7,4), (2,4,8), (4,1,2), (5,8,7), (7,5,1), (8,2,5)
- b) Refinement by verifying if enneagram typology corresponds to MBTI typologies
- **Alternative 2:** Enneagram grouping in triads: Gut, Head, Heart and refinement with MBTI as Alternative 1 b).

Evaluations

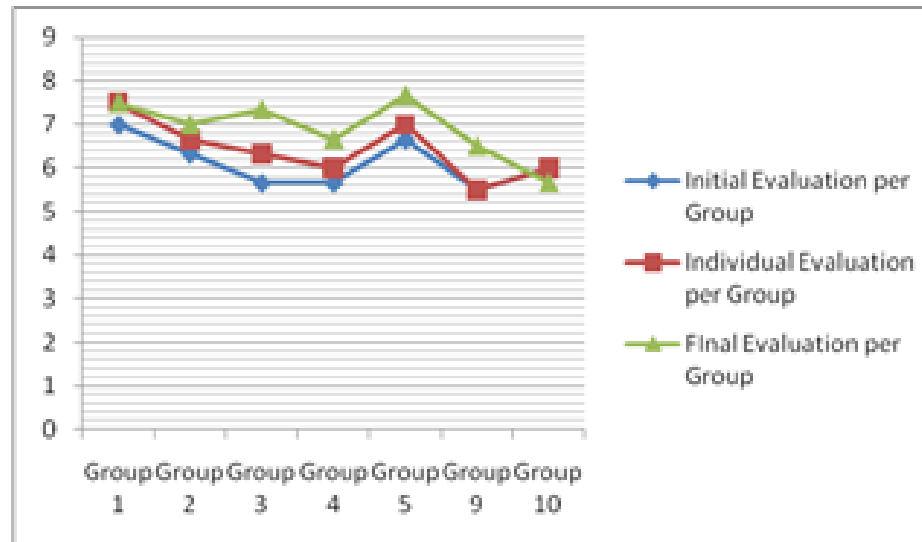
- Case studies were conducted over a period of more years with students in their first year of Bachelor of Science classes and the students in the first and second year of Master of Science.
- The first part of each semester is dedicated to local tests and on observing the students with the eye tracking system, while they are using it to follow the theoretical aspects. (*Initial Evaluation*)
- At the middle of the semester, the students are individual evaluated and take the RHETI test and are assigned to working groups according to the proposed strategy. (*Individual evaluation*)
- Each working group is assigned a project, which is evaluated at the end of the semester. (*Final Evaluation*)

Group Results (10 Groups)

Alternative 1	Group 6	Group 7	Group 8
Initial Evaluation per Group	7	6.33	6.66
Individual Evaluation per Group	7.66	7	7.33
Final Evaluation per Group	9.66	9.33	9.33



Alternative 2	Group 1	Group 2	Group 3	Group 4	Group 5	Group 9	Group 10
Initial Evaluation per Group	7	6.33	5.66	5.66	6.66	5.5	6
Individual Evaluation per Group	7.5	6.66	6.33	6	7	5.5	6
Final Evaluation per Group	7.5	7	7.33	6.66	7.66	6.5	5.66



Finally Group10 does not respect the Alternative1 and Alternative2 of the algorithm and the application will consider it as a non-classified group. The students' results were not relevant concerning the individual and group evaluation. They are classified in a manual mode.

General Results

- At the end of the experiments, three aspects were relevant:
 - Members of groups assigned using the proposed strategy based on Enneatypes and NLP profile with MBTI refinements proved to communicate more than members of classical teams. Communication featured brainstorming and all these aspects manifested in making the group more productive.
 - Members of groups that used brainstorming inside, showed better improvement, not in terms of acquired knowledge in particular, but in terms of learning how to combine knowledge with creativity. In about 25% of the brainstorming groups the evolution was spectacular.
 - The developed products were original, full of creativity and reliable.

Company Evaluation

- Another experiment was conducted during the summer first year students' internship at the Cluj-Napoca subsidiary of Wirtek, a Danish software company.
- Three rounds of internship stages were scheduled, while each internship stage took three weeks. Twelve students were admitted for each stage and they were grouped in two teams.
- The internship was focused on developing software projects considering new technologies in C# and Java.

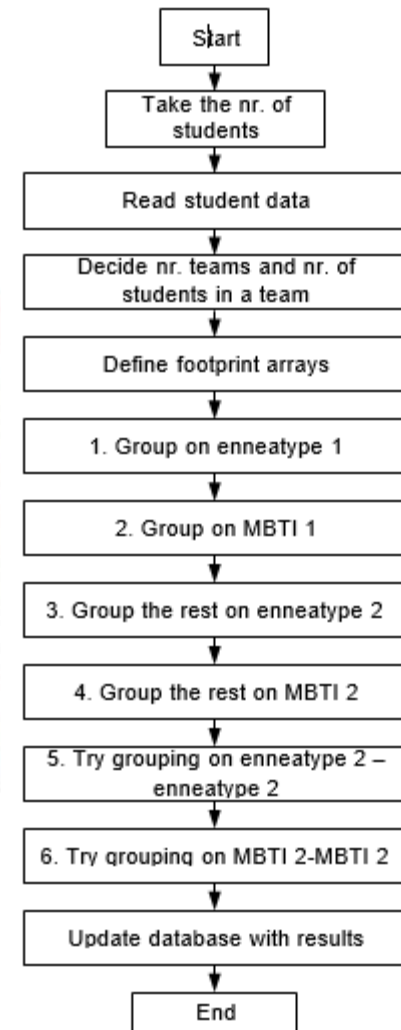
Results

Criterion	Round 1	Round 2	Round 3
Group composition	Best students	Students with little software competencies	Students with average software competencies
Grouping strategy	Personal choice	Proposed method	MBTI
Obtained technical competencies	Very good	Good	Good
General training response	Linear evolution	Exponential evolution	Linear evolution
Collaboration	Limited (each student worked on individual tasks)	Very good	Good

Third eLearning application

- A new grouping algorithm called “Footprints”, that it’s a semi-opportunistic grouping mechanism (based on a greedy method) was integrated to create the working groups. Our tests show that the efficiency of the algorithm is about 93%.

Group	Option	Succes	Uncertainties	% Succes	% Uncertainties
IA	3	20	2	90,9091	9,0909
	4	20	2	90,9091	9,0909
	5	20	2	90,9091	9,0909
IIB	3	19	1	95,0000	5,0000
	4	19	1	95,0000	5,0000
	5	18	2	90,0000	10,0000
III C	3	23	1	95,8333	4,1667
	4	22	2	91,6667	8,3333
	5	23	1	95,8333	4,1667
Media:				92,8956	7,1044



Belbin Mechanism based on Roles

- Dr. Meredith Belbin
- The result of these researches was first published in 1981, and the theory of team roles was immediately recognized and accepted by the academic and business environment as a very important human resource management tool.
- **Action**-oriented roles: SHaper (SH), IMPlémenter (IMP), Completer Finisher (CF)
- **Relationship**-oriented roles: COordinator (CO), TeamWorker (TW), Resource Investigator (RI)
- **Brain** roles: PLant (PL), Monitor Evaluator (ME), SPecialist (SP)

Belbin Test (Self Perception)

SECTION A

WHEN INVOLVED IN A PROJECT WITH OTHER PEOPLE

TICK		POINTS
	1. I can be relied upon to see that work that needs to be done is organised	
	2. I pick up slips and omissions that others fail to notice	
	3. I react strongly when meetings look like losing track of the main objective	
	4. I produce original suggestions	
	5. I analyse other people's ideas objectively, for both merits and failings	
	6. I am keen to find out the latest ideas and developments	
	7. I have an aptitude for organising people	
	8. I am always ready to support good suggestions that help to resolve a problem	

	SH	CO	PL	RI	ME	IMP	TW	CF
A	3-	7-	4-	6-	5-	1-	8-	2-
B	1-	6-	5-	8-	4-	7-	3-	2-
C	7-	4-	6-	2-	3-	5-	8-	1-
D	2-	3-	6-	4-	5-	1-	8-	7-
E	6-	5-	1-	7-	3-	4-	2-	8-
F	6-	4-	5-	1-	3-	8-	7-	2-
G	5-	7-	6-	3-	2-	1-	8-	4-
TOTAL								

Start Page Application

Team Role Management

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Welcome to Team Role Management application!

Here you can sign in as an employee or an employer to take tests, see your employees test results and create a team based on their roles

As an employee, you must have your employer CODE, so you can be connected to your employers company directive

In order to take tests and see your results, you must create an employee account

Sign In!

You can log in if you have an account

Here you can sign to create an account and chose what do you want to be, an emplyer or an employee.

[Sign in!](#)

Whats your personality?

You can take all 3 tests

Know your weeknesses and your strengths! Here you can take all 3 tests so you and your employer may know your personality.

[Belbin](#)

[MBTI](#)

[Enneagram](#)

All you need to know

Read about us / contact us

You can read all about us and about this tests! or you can contact us for every information you want to know and we will answer!

[Contact us!](#)

Employee Dashboard

Team 2					
All Search... Clear					
Employee full name	Position	Belbin	MBTI	Enneagram	Actions
Cristian Pop	teamleader	Shaper	ISTJ	The Peacemaker	
Maxime Pipe	senior front-end developer	Completer Finisher	ESTJ	The Peacemaker	
Tai Nitta	junior back-end developer	Team Worker	ENTJ	The Helper	
age	33	belbin First Role	Team Worker		
belbin Second Role	Co-ordinator	mbti	ENTJ		
enneagram First Role	The Helper	enneagram Second Role	The Reformer		
enneagram Third Role	The Loyalist	zodiac	Cancer		
zodiac Asc	Capricorn	numerology	5		
Yuriko Doll	senior beck-end developer	Implementer	INFJ	The Challenger	
Ben Dolores	junior front-end developer	Shaper	ENFP	The Peacemaker	

Employer Dashboard

Unassigned employees 6 All employees 10 Assigned employees 4

All

Search...

Clear

Employee full name	Position	Belbin	MBTI	Enneagram	Actions
Wes Carwile	junior front-end developer	Shaper	ISTJ	The Loyalist	<div><div></div><div></div></div>
Ray Abney	mid front-end developer	Monitor Evaluator	ESTJ	The Reformer	<div><div></div><div></div></div>
Un Pal	mid back-end developer	Monitor Evaluator	ENTP	The Enthusiast	<div><div></div><div></div></div>
Emma Palafox	junior front-end developer	Team Worker	ISTJ	The Loyalist	<div><div></div><div></div></div>
Eunice Brockington	junior front-end developer	Completer Finisher	ISTJ	The Achiever	<div><div></div><div></div></div>
Alfred Frick	junior front-end developer	Co-ordinator	INFP	The Reformer	<div><div></div><div></div></div>

Records / page

7

« < 1 > »

Create a team All teams

Team title

Team 2

Employee full name	Position	Actions
Maxime Pipe	senior front-end developer	<div><div></div><div></div></div>
Tai Nitta	junior back-end developer	<div><div></div><div></div></div>
Yuriko Doll	senior back-end developer	<div><div></div><div></div></div>
Ben Dolores	junior front-end developer	<div><div></div><div></div></div>

Select a team

Team 2

0

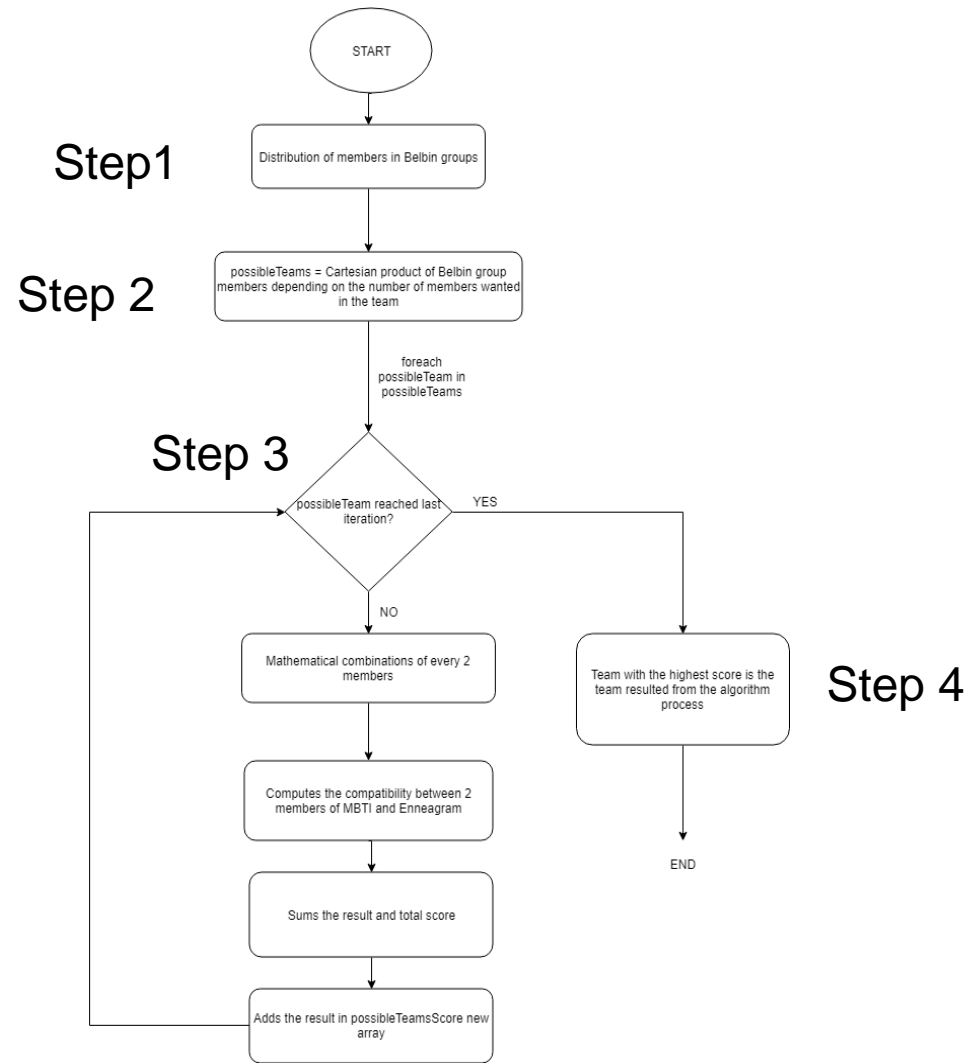
Auto

Grouping Algorithm

- Step 1: grouping of all employees not assigned to Belbin groups
- Step 2: a vector is generated that contains the Cartesian product of all the members in the previous step, depending on the number of members desired in the team
- Step 3: for each possible team, the MBTI and Enneagram compatibility score between each two members is calculated and the sum of these scores as a total score.
- Step 4: the result of the algorithm represents the team with the best total score

Case study

Nume	Belbin 1	Belbin 2	MBTI	Enneagram 1	Enneagram 2	Enneagram 3
Wes Carwile	SH	IMP	ISTJ	Loyalist	Challenger	Reformer
Ray Abney	ME	SH	ESTJ	Reformer	Individualist	Helper
Maxime Pipe	PL	CF	INTJ	Individualist	Achiver	Enthusiast
Tai Nitta	TW	CO	ENTJ	Helper	Reformer	Loyalist
Un Pal	ME	IMP	ENTP	Enthusiast	Helper	Loyalist
Yuriko Doll	IMP	PL	INFJ	Challenger	Reformer	Investigator
Ben Dolores	SH	RI	ENFP	Pacemaker	Individualist	Achiver
Emma Palafox	TW	SH	ISTJ	Loyalist	Reformer	Helper
Eunice Brockington	CF	CO	ISTJ	Achiver	Loyalist	Individualist
Alfred Frick	CO	PL	INFP	Reformer	Enthusiast	Challenger



Step 1

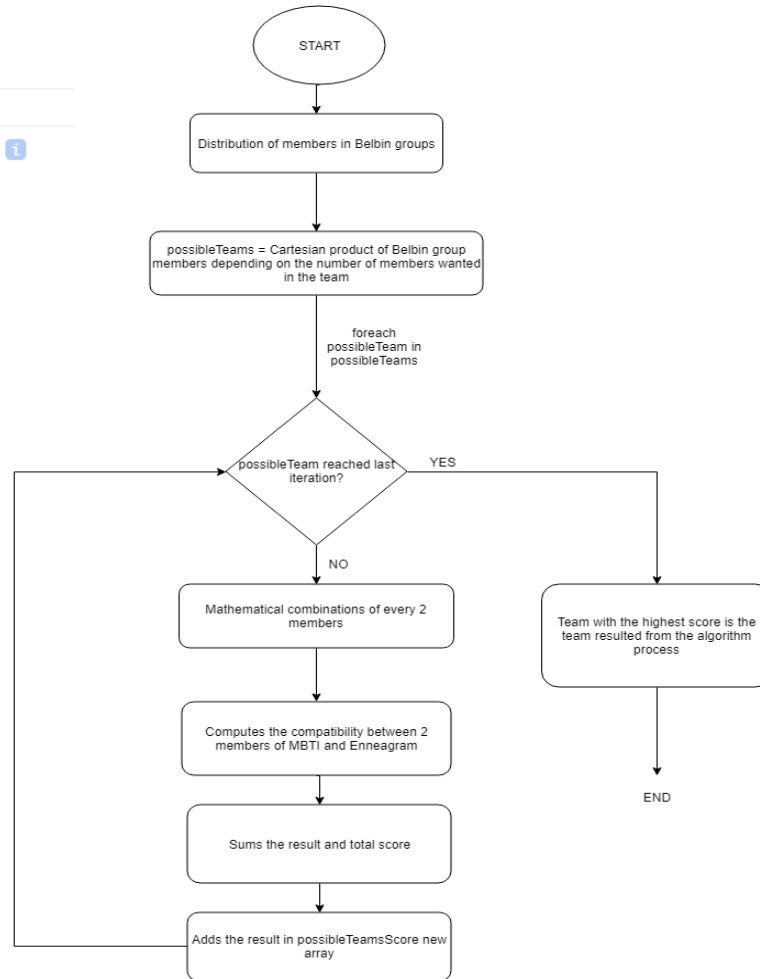
belbGroup

▼ (3) [Array(4), Array(3), Array(3)] ⓘ

► 0: (4) [{...}, {...}, {...}, {...}]

► 1: (3) [{...}, {...}, {...}]

► 2: (3) [{...}, {...}, {...}]



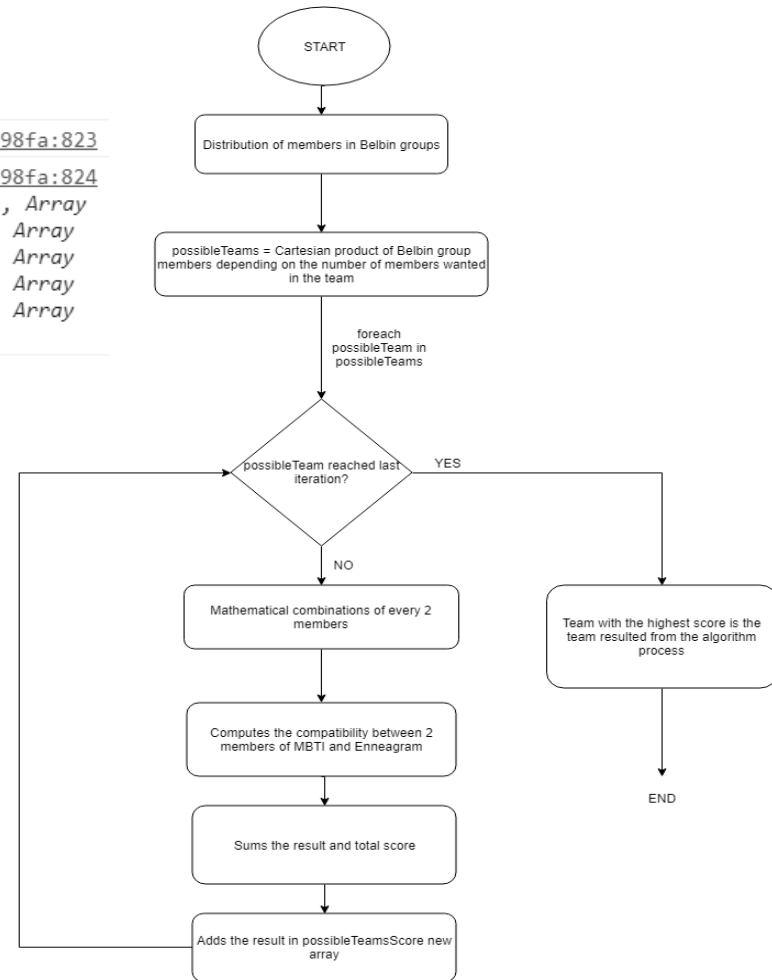
Step 2

possibleTeams

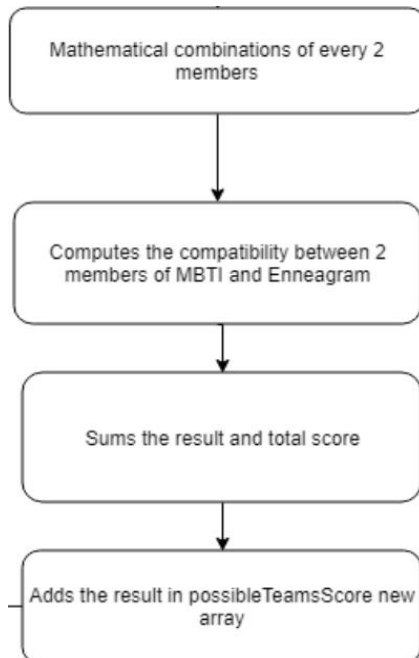
Dashboard.vue?98fa:823

Dashboard.vue?98fa:824

```
(36) [Array(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array
(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array
(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array
(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array(3), Array
(3), Array(3)]
```



Step 3



```

getMbtiCompatibility: () => {
  let x = ['INFP', 'ENFP', 'INFJ', 'ENFJ', 'INTJ', 'ENTJ', 'INTP', 'ENTP', 'ISFP', 'ESFP', 'ISTP', 'ESTP', 'ISFJ', 'ESFJ', 'ISTJ', 'ESTJ'];

  let matrix = [
    [4,4,4,5,4,5,4,4,1,1,1,1,1,1,1,1],
    [4,4,5,4,5,4,4,4,1,1,1,1,1,1,1,1],
    [4,5,4,4,4,4,4,5,1,1,1,1,1,1,1,1],
    [5,4,4,4,4,4,4,4,5,1,1,1,1,1,1,1],
    [4,5,4,4,4,4,4,5,3,3,3,3,2,2,2,2],
    [5,4,4,4,4,4,5,4,3,3,3,3,3,3,3,3],
    [4,4,4,4,4,5,4,4,3,3,3,3,2,2,2,5],
    [4,4,5,4,5,4,4,4,3,3,3,3,2,2,2,2],
    [1,1,1,5,3,3,3,3,2,2,2,2,3,5,3,5],
    [1,1,1,1,3,3,3,3,2,2,2,2,5,3,5,3],
    [1,1,1,1,3,3,3,3,2,2,2,2,3,5,3,5],
    [1,1,1,1,3,3,3,3,2,2,2,2,5,3,5,3],
    [1,1,1,1,2,3,2,2,3,5,3,5,4,4,4,4],
    [1,1,1,1,2,3,2,2,5,3,5,3,4,4,4,4],
    [1,1,1,1,2,3,2,2,3,5,3,5,4,4,4,4],
    [1,1,1,1,2,3,5,2,5,3,5,3,4,4,4,4]
  ];

  return {
    x: x,
    matrix: matrix
  },
}

getEnneagramCompatibility: () => {
  return [
    [8,7,6,5,4,3,2,1,10],
    [7,6,5,4,3,2,1,10,9],
    [6,5,4,3,2,1,10,9,8],
    [5,4,3,2,1,10,9,8,7],
    [4,3,2,1,10,9,8,7,6],
    [3,2,1,10,9,8,7,6,5],
    [2,1,10,9,8,7,6,5,4],
    [1,10,9,8,7,6,5,4,3],
    [10,9,8,7,6,5,4,3,2]
  ];
}
  
```


Algorithm Results (Step 4)

```

(36) [{"users": [{"mbtiScore": 13, "enneagramScore": 11, "totalScore": 24}], "mbtiScore": 13, "enneagramScore": 11, "totalScore": 23}, {"users": [{"mbtiScore": 13, "enneagramScore": 10, "totalScore": 23}], "mbtiScore": 8, "enneagramScore": 14, "totalScore": 22}, {"users": [{"mbtiScore": 13, "enneagramScore": 8, "totalScore": 21}], "mbtiScore": 8, "enneagramScore": 13, "totalScore": 21}, {"users": [{"mbtiScore": 6, "enneagramScore": 14, "totalScore": 20}], "mbtiScore": 12, "enneagramScore": 8, "totalScore": 20}, {"users": [{"mbtiScore": 12, "enneagramScore": 7, "totalScore": 19}], "mbtiScore": 8, "enneagramScore": 11, "totalScore": 19}, {"users": [{"mbtiScore": 7, "enneagramScore": 12, "totalScore": 19}], "mbtiScore": 12, "enneagramScore": 7, "totalScore": 19}, {"users": [{"mbtiScore": 12, "enneagramScore": 7, "totalScore": 19}], "mbtiScore": 8, "enneagramScore": 11, "totalScore": 19}, {"users": [{"mbtiScore": 10, "enneagramScore": 9, "totalScore": 19}], "mbtiScore": 9, "enneagramScore": 8, "totalScore": 17}, {"users": [{"mbtiScore": 8, "enneagramScore": 9, "totalScore": 17}], "mbtiScore": 8, "enneagramScore": 9, "totalScore": 17}, {"users": [{"mbtiScore": 13, "enneagramScore": 4, "totalScore": 17}], "mbtiScore": 9, "enneagramScore": 8, "totalScore": 17}, {"users": [{"mbtiScore": 12, "enneagramScore": 5, "totalScore": 17}], "mbtiScore": 8, "enneagramScore": 9, "totalScore": 17}, {"users": [{"mbtiScore": 10, "enneagramScore": 6, "totalScore": 16}], "mbtiScore": 7, "enneagramScore": 9, "totalScore": 16}, {"users": [{"mbtiScore": 6, "enneagramScore": 10, "totalScore": 16}], "mbtiScore": 7, "enneagramScore": 9, "totalScore": 16}, {"users": [{"mbtiScore": 6, "enneagramScore": 9, "totalScore": 15}], "mbtiScore": 7, "enneagramScore": 8, "totalScore": 15}, {"users": [{"mbtiScore": 9, "enneagramScore": 6, "totalScore": 15}], "mbtiScore": 8, "enneagramScore": 7, "totalScore": 15}, {"users": [{"mbtiScore": 9, "enneagramScore": 5, "totalScore": 14}], "mbtiScore": 7, "enneagramScore": 7, "totalScore": 14}, {"users": [{"mbtiScore": 6, "enneagramScore": 7, "totalScore": 13}], "mbtiScore": 7, "enneagramScore": 6, "totalScore": 13}, {"users": [{"mbtiScore": 6, "enneagramScore": 5, "totalScore": 11}], "mbtiScore": 6, "enneagramScore": 5, "totalScore": 11}], [{"length": 36}]]

```

Final Results

Nume	Belbin 1	Belbin 2	MBTI	Enneagram 1	Enneagram 2	Enneagram 3
Wes Carwile	SH	IMP	ISTJ	Loyalist	Challenger	Reformer
Ray Abney	ME	SH	ESTJ	Reformer	Individualist	Helper
Maxime Pipe	PL	CF	INTJ	Individualist	Achiver	Enthusiast
Tai Nitta	TW	CO	ENTJ	Helper	Reformer	Loyalist
Un Pal	ME	IMP	ENTP	Enthusiast	Helper	Loyalist
Yuriko Doll	IMP	PL	INFJ	Challenger	Reformer	Investigator
Ben Dolores	SH	RI	ENFP	Pacemaker	Individualist	Achiver
Emma Palafox	TW	SH	ISTJ	Loyalist	Reformer	Helper
Eunice Brockington	CF	CO	ISTJ	Achiver	Loyalist	Individualist
Alfred Frick	CO	PL	INFP	Reformer	Enthusiast	Challenger

General Conclusions and Perspectives

- Groups were composed by at least of 3 members, with compatible typologies (flexibility to second and third eLearning application).
- Typologies are determined according to the Enneagram methodology, with the RHETI test, MBTI and Belbin profile was determined based on standard companies' tests.
- The NLP profile also plays a role in the group structure, as each group needs to have a representative of each defined profile.
- Compatibilities are according to:
 - 1) the integrative and disintegrative directions on the Enneagram,
 - 2) Gut, Heart, Head, triads
- This also ensures that each group has a member from each Enneagram triad.
- Belbin Roles and MBTI correspondence with Enneatypes refines the results
- Our results show that groups created using these methods perform better than groups that don't take into account the personality factor, in terms of self-development, group communication, product quality.
- New refinements will be introduced including other quantifiable elements

Persons Refinements

- Each person has a predominant associated **element** that must be globally determined as a starting step using the birthday and the associated zodiac sign.
- This process must be refined based on the five chines elements and the associated Indian tattwas using the affinity/enmity relationships. In this case, an **inner discovery** must be initiated at the person level.
- Alternative medicine and psychology could be used.
- A harmonious person that is involved nowadays in different domains wants to have a correct and deeper understanding of himself.
- Analysing the **poisons** by an inner discovery is able to correlate that with the **wisdom**, which the oriental spirituality is able to associate using the 5 Jinas (Dhyani Buddhas).

- The new proposal based on the **nine Chinese constitutions** using Yin/Yang and Chi is in a testing process. The five elements, five main tattwas, five Jinas (Dhyani Buddhas), three Gunas, etc. may be associated and correlated in a refinement process.
- Among all these elements offered by spiritual cultures, there are connections that could be used for a deeper understanding.
- As a **unified spiritual point of view** that will be able to offer a harmonized solution in real life, we will propose in a local IT cluster and also for some PhD theses an open architecture based on components and services able to be used by the companies to better manage the employer's activity. Different components with specific facilities for dedicated refinements are able to be interconnected and, in this mode, efficient services will be provided.
- Other solutions based on psychological traits should be integrated. Refinements based on clustering algorithms and collaborative filtering methods should also be integrated in the open source architecture that should offer intermediary and comparative results.

Alternative Typology Solutions

- MindMI System: Grigore Dumitru, Ph.D., Create All Psychological Reports
- <https://www.mindmisystem.com/en/psychological-reports/>
- Human personality has been continuously investigated as a configuration of traits that reflect an individual's way of acting, feeling, thinking and adjusting to the environment.
- Psychological research is making progress in linking personality traits with specific behaviors and actions looking for individual differences in brain anatomy and physiology, in bodily functions and self-regulation processes, in sensation and perception, in information processing and thinking styles, in behavior and emotion regulation, interpersonal interaction and so on.
- Using biological and physiological data, the connection between human personality traits and behavior is now investigated through individual differences in brain functioning.
- A recent cybernetic model of global personality traits is examining how specific personality traits exert control over human behavior. These traits are seen as self-regulatory controls that underlie behavior patterns rather than manifest behavior itself. It seems that human beings mentally incorporate propensities of action into personality traits. These traits encode all the actions and controls necessary for a person to achieve a goal.



Thank you.