COLLABORATIVE EDUCATION TEAMS DEVELOPMENT USING ALTERNATIVE METHODOLOGIES

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Why to group people?

- In **early stages** the software was developed by **good specialists** that have **high-abilities** usual in mathematics, 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.

- Education must prepare students for collaborative teams.

- From *sequential methodologies* that use may be waterfall or V methodologies for specialists, we use now **Agile/Scrum and Kanban as *incremental methodologies*** that are more adaptive based on "teams" that must be heterogeneous and more flexible.

- **Quantitative** methods used in grouping process offers acceptable results, but refinements from **alternative solutions based on inner discovery** will offer a high quality of teams generation.

Agenda

- Culture 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

- Neuroscience Typology Solutions

Culture 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.

- 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

- We may consider to determine general typologies:
    - - **Enneagram**, considering child thinking mechanism in the process to determine the **typology**. This is expressed by **RHETI test**.
    - - **Jungian-Kersey** – based on the theory of *psychological* types, by Carl Gustav Jung and *temperamental* theory, postulated by David Kersey. This is expressed by **MBTI type indicator** and **Belbin roles**.
    - - Initial **Yin/Yang and Chi** constitutions, **Ayurveda Indian medicine, Koshas, Doshas, Gunas**, etc., from oriental cultures, are other **alternative** mechanisms.

- ☐ 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 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

- 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 is **Person Based**, 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 **Dhyani Buddhas** from Indian/Tibet cultures describe in a precise mode that. They offer simple and 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/5 Koshas/3 Gunas/3 Doshas** from different cultures are able to refine the human typologies.

Dhyani Buddhas

- The **Five Dhyani Buddhas**, or Great Buddhas of Wisdom, are a central feature of Tibetan Buddhist belief and art.

- They are often found in Tibetan mandalas and thangkas.

- 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 Dhyani Buddhas are mentioned in most of the tantric systems and represent various physical and mental aspects

http://mydzi.blogspot.com

Symbolism of the 5 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/

TIBETAN TANKA
The Six States, The Wheel of Life

MOON Symbolizes Liberation

BUDDHA Points at Moon

YAMA Lord of Death Turns Wheel

Three Root Delusions
Greed (Pig)
Hatred (Snake)
Lust (Cock)

12 Links of Dependent Origination

DEVA Realm

HUMANS

ASHURA Realm

ANIMALS

HUNGRY GHOSTS

BEINGS IN HELL
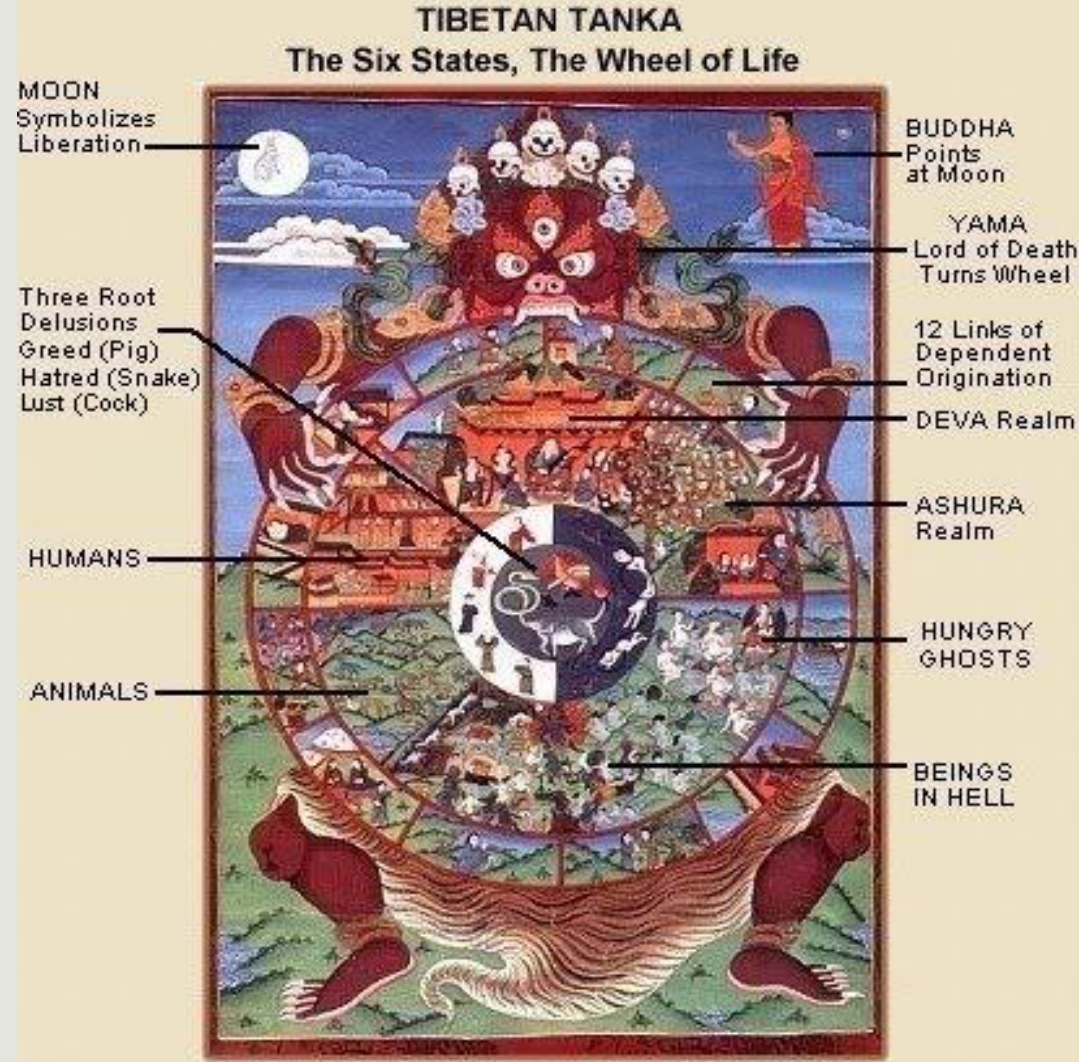
Dhyani Buddhas and Kālachakra correspondence (Bardo ThoDol)

- 1. **Ratnashambhava** (Ratna family) – **Human realm**; Poison: **pride**, vanity; Wisdom: **of perfect equality**

- 2. **Akshobya** (Vajra family) - The **infernal (hell) realm**; Poison: **angry**, hate; (**snake**) Wisdom: **of perfect mirroring**

- 3. **Amitabha** (Padma family) - The **realm of hungry ghosts (pretas)**; Poison: **desire**, attachment, lust; (**bird- cock**) Wisdom: **divine discriminating**

- 4. **Amogasiddhi** (Karma family) – The **realm of Ashura (anti-gods)**; Poison: **fear**, jealousy, envy; Wisdom: all accomplishing (**perfect realization**)

- 5. **Vairochana** (Tathagata family) – The **realm of Gods (Devas)**; Poison: **ignorance**, delusion, greed; (**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 Dhyani Buddhas)

The Nine Enneagram Types of Personality

- **1 THE REFORMER**: The Rational, Idealistic Type: Principled, Purposeful, Self-Controlled, and Perfectionistic - **Perfectionist**

- **2 THE HELPER:** The Caring, Interpersonal Type: Demonstrative, Generous, People-Pleasing, and Possessive -**Giver**

- **3 THE ACHIEVER**: The Success-Oriented, Pragmatic Type: Adaptive, Excelling, Driven, and Image-Conscious - **Performer**

- **4 THE INDIVIDUALIST**: The Sensitive, Withdrawn Type: Expressive, Dramatic, Self-Absorbed, and Temperamental - **Romantic**

- **5 THE INVESTIGATOR**: The Intense, Cerebral Type: Perceptive, Innovative, Secretive, and Isolated -**Observer**

- **6 THE LOYALIST**: The Committed, Security-Oriented Type: Engaging, Responsible, Anxious, and Suspicious - **Guardian**

- **7 THE ENTHUSIAST**: The Busy, Fun-Loving Type: Spontaneous, Versatile, Distractible, and Scattered -**Generalist**

- **8 THE CHALLENGER**: The Powerful, Dominating Type: Self-Confident, Decisive, Willful, and Confrontational -**Boss**

- **9 THE PEACEMAKER**: The Easygoing, Self-Effacing Type: Receptive, Reassuring, Agreeable, and Complacent - **Mediator**
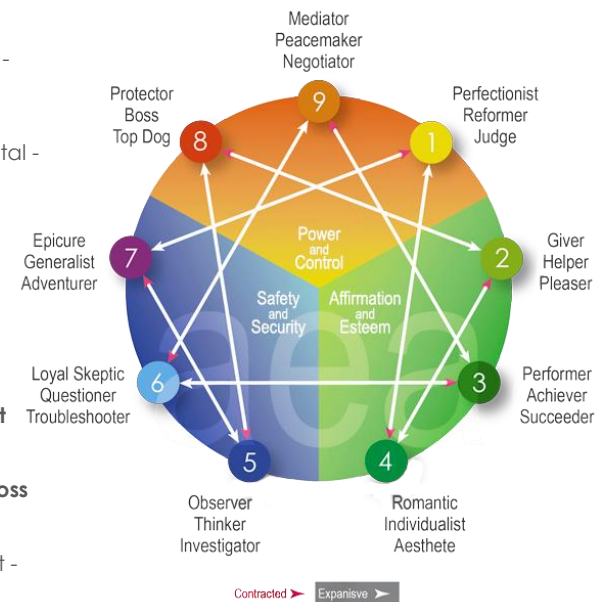
The points on the **Enneagram** figure indicate a number of ways in which **nine principal ego-archetypal forms**, or types of human personality, called **Enneatypes**, are psychologically connected (in the **center** we have a **ten point** that will unify the all **9 typologies,** and could be considered 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, fire, earth, metal 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	◉	○	○	○
General weakness	◉	○	○	○
Shortness of breath	◉	○	○	○
Cold and pale skin	◉	○	○	○
Hair loss	◉	○	○	○
Slow recovery from illness	◉	○	○	○
Frequent chills	◉	○	○	○
Anorexia or muscle wasting	◉	○	○	○
Poor appetite	◉	○	○	○
Discouragement, sadness or fear	◉	○	○	○
Impotency (males) or loss of sexual desire (males or females)	◉	○	○	○
Frequent illness (low immune system)	◉	○	○	○
Weakness of the legs	◉	○	○	○
Pale tongue	◉	○	○	○
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**	

FIVE ELEMENTS
CYCLES OF GENERATION AND CONTROL
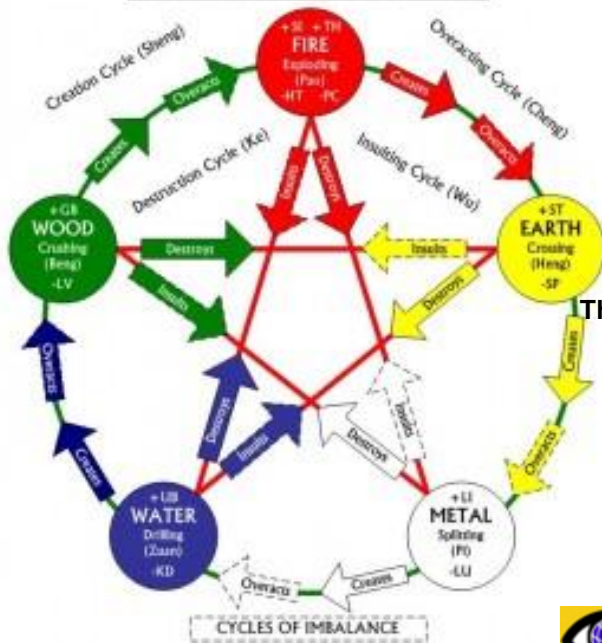
The Affinity Relationships Between Five Elements

1. Water can help tree (Wood) grow
2. Wood can help Fire to burn
3. Fire can help to produce dust (Earth)
4. Earth can help mineral (Metal) to form
5. Metal 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
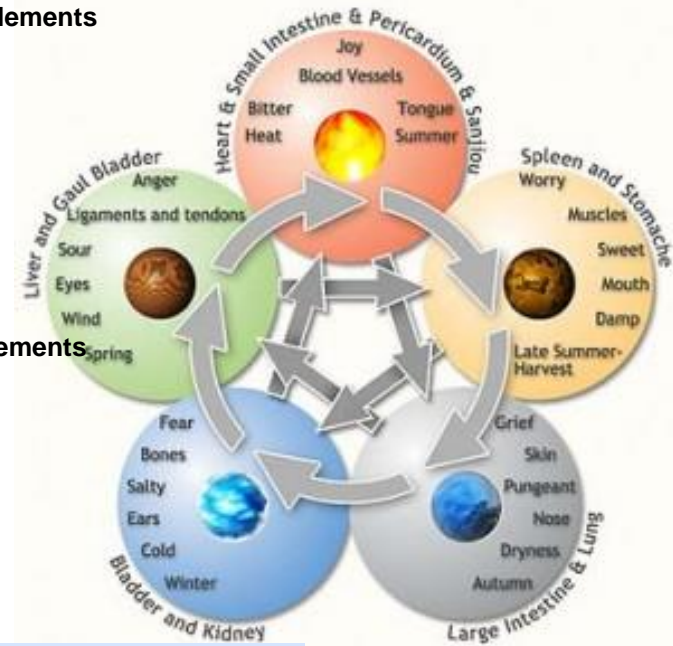
The Five Basic Elements of the Universe
Symbols of Energy, Movement, Change, and Development

- Creates
- Overacts
- Destroys
- Insults

Fire, Earth, Water, Metal and Wood are different types of energy in a state of constant interaction and flux with one another

The most important of all is the balance of all five elements
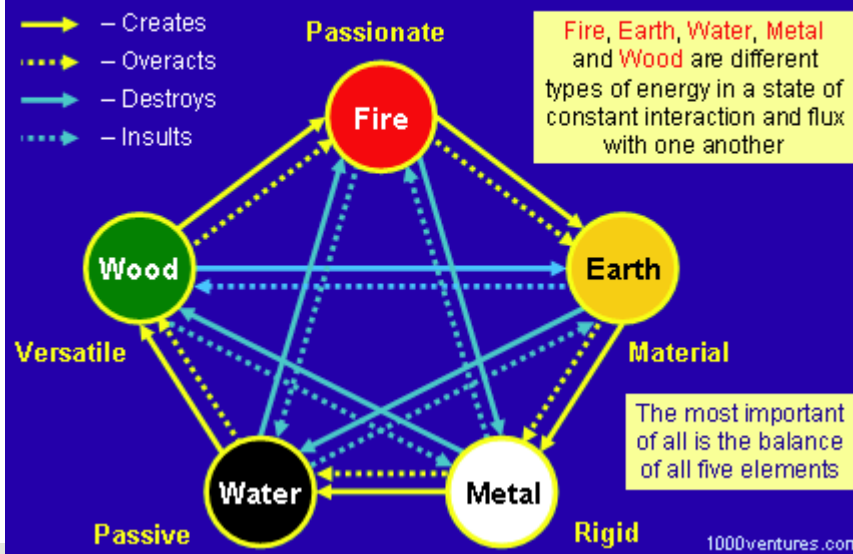
The Classification of Things According to the Theory of the Five Elements

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

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.

Earth   Air   Water   Fire   Spirit

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

Adi Shakti (Initial Consciousness-Force)
It manifests itself as Sahasradala Chakra existing in every point of space.

Upper Buddhi (Upper Mind)
It manifests itself as ability of off-conceptual perception of Truth. It doesn't work with people.

Lower Buddhi (Lower Mind)
It manifests itself as ability of conceptual (with the help of thoughts) perception of different parts of Truth of the phenomenal World. It enables you to think logical and straight. It is weakly developed in people.

Manas (Perceptive Mind)
It manifests itself as ability to perceive the outer world and initially to reflex by interaction. It partly functions in people substituting the functions of Mind. It perceives the 5th Jnana-Indriyas: eyes, ears, tongue, smell and skin. The 5th Karma-Indriyas has an influence upon digestive system, two hands, two legs, speech organ and genital system.

Chitta (Basic Consciousness, emotional)
It manifests itself as ability to experience a wide variety of emotions. It also operates as memory. In people it manifests itself as a motivating factor: love, sadness and so on.

Prana (Thin Energy)
It manifests itself as thin energy supporting working the whole body with the help of 5 Vayus (winds): Udana, Prana, Samana, Apana, Vyana.

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
	Courage	200	Affirmation	Empowerment	Feasible
F O R C E	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

OMEGA

ULTIMATE CONSCIOUSNESS

Enlightenment 700+
Peace 600
Joy 540
Love 500
Reason 400
Acceptance 350
Willingness 310
Neutrality 250
Courage 200
Pride 175
Anger 150
Desire 125
Fear 100
Grief 75
Apathy 50
Guilt 30
Shame 20

EXPANDED

CONTRACTED

ALPHA POINT
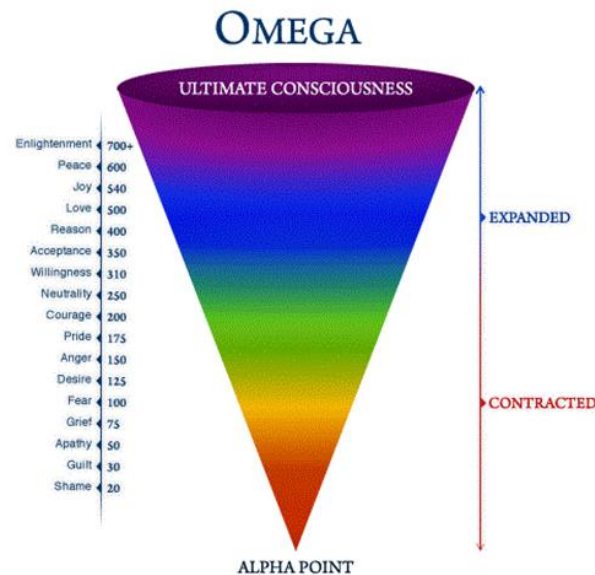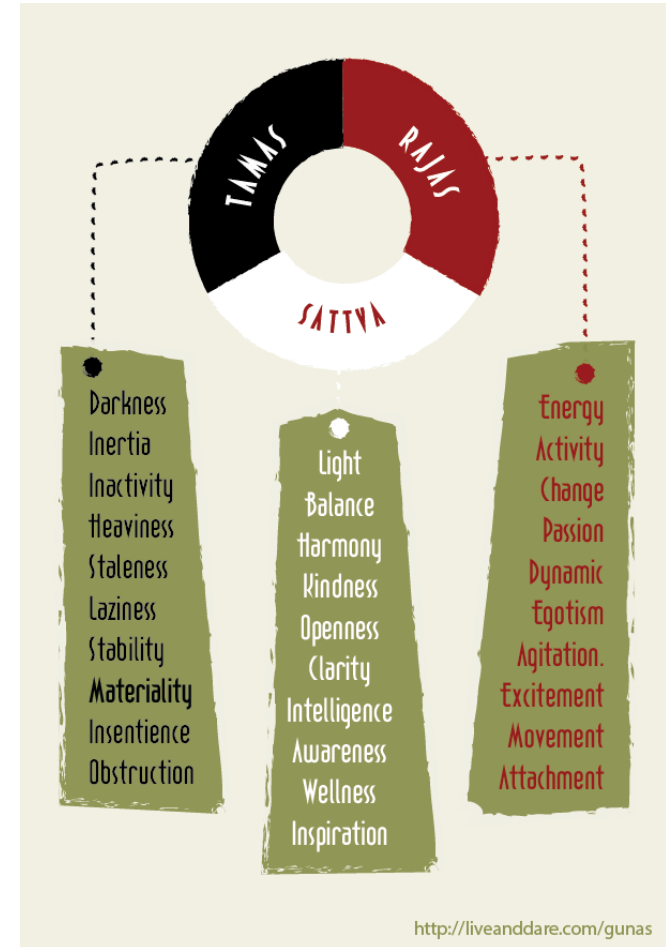
Koshas/Doshas/Gunas

- **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

The 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.

TAMAS   RAJAS

SATTVA

Darkness	Light	Energy
Inertia	Balance	Activity
Inactivity	Harmony	Change
Heaviness	Kindness	Passion
Staleness	Openness	Dynamic
Laziness	Clarity	Egotism
Stability	Intelligence	Agitation
Materiality	Awareness	Excitement
Insentience	Wellness	Movement
Obstruction	Inspiration	Attachment

http://liveanddare.com/gunas

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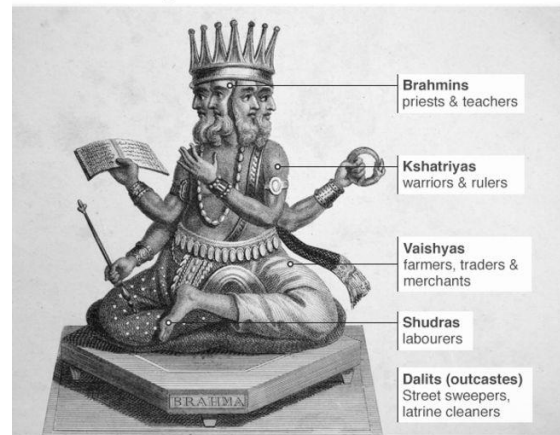
Kshatriya: Take on all forms of public service, including administration, maintenance of law and order, and defense –**Sattva/Rajas** Guna – *Product Owner*

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/ involved testers*

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

Brahma and the origins of caste

Brahmins priests & teachers

Kshatriyas warriors & rulers

Vaishyas farmers, traders & merchants

Shudras labourers

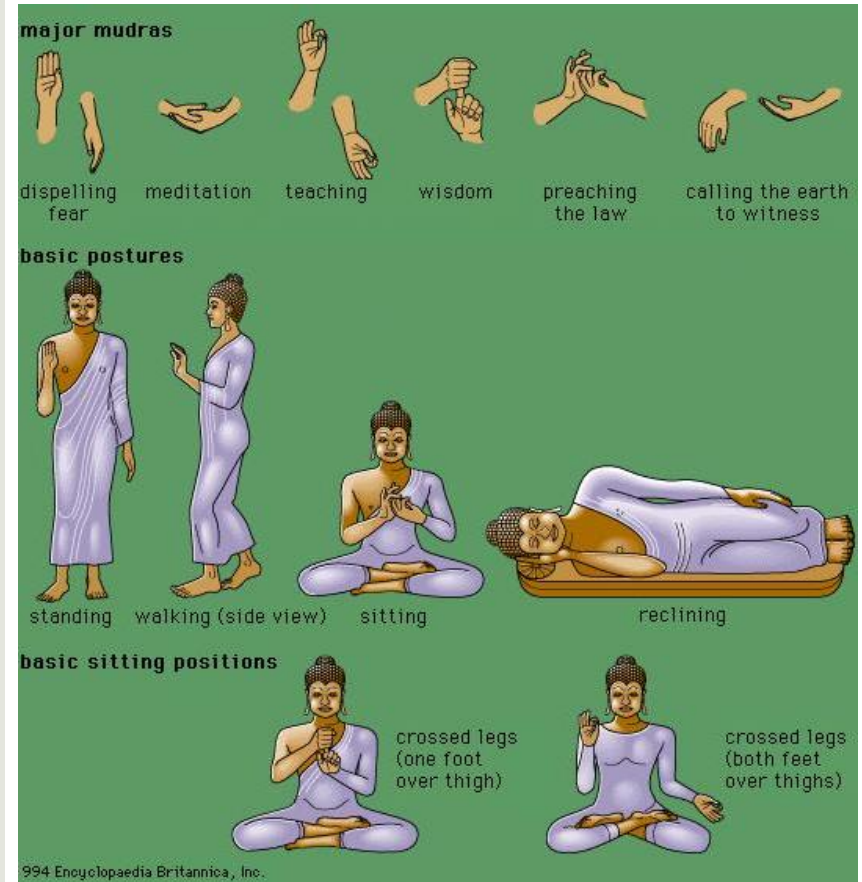Dalits (outcastes) Street sweepers, latrine cleaners

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.

major mudras

dispelling fear | meditation | teaching | wisdom | preaching the law | calling the earth to witness

basic postures

standing | walking (side view) | sitting | reclining

basic sitting positions

crossed legs (one foot over thigh) | crossed legs (both feet over thighs)

994 Encyclopaedia Britannica, Inc.

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 *Mahabhuta*	Role in Existence	Sense *Tanmatra*	Jnanendriya	Karmendriya	Chakra
Ether/Space *Aakasha*	Space	Hearing/Sound *Sabda*	Ears	Vocals/ Mouth	Vishuddha
Air/Wind *Vayu/Pavana*	Movement	Touch *Sparsa*	Skin	Hands	Anahata
Fire *Agni/Tejas*	Energy	Sight *Rupa*	Eyes	Feet	Manipura
Water *Jala/Apas*	Force of attraction	Taste *Rasa*	Tongue	Genitals	Svadhistana
Earth *Prithvi/Bhumi*	Solidity	Smell *Gandha*	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).
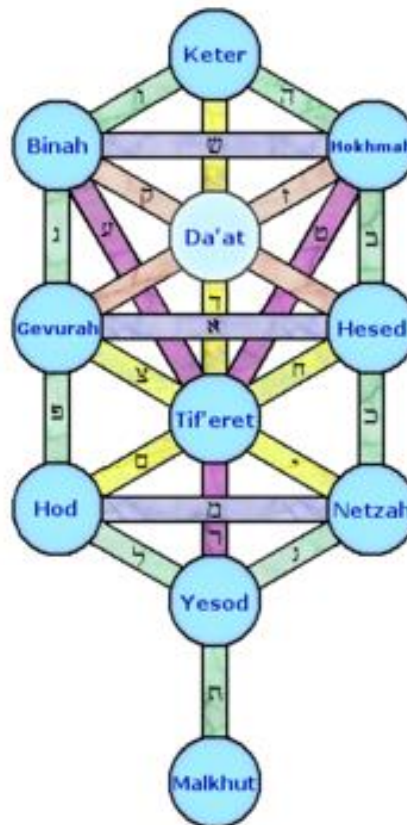
Greek Tetractys

- 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**.
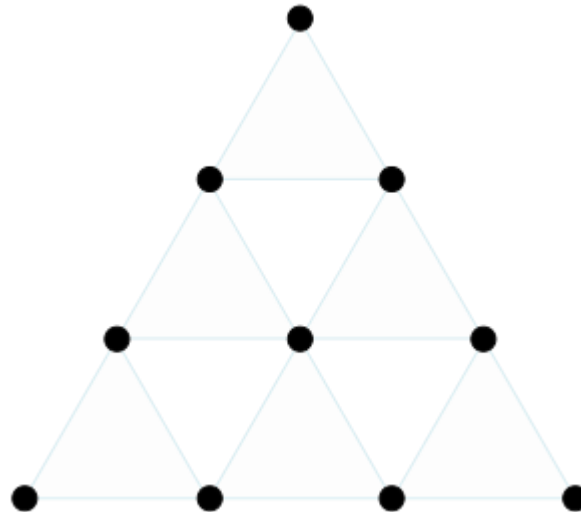
Cultures Conclusions

- Enneagram, Yin/Yang and Chi constitutions, Kabala-Sefirot, Tetractys consider 9/10 points with important significances.

- The five elements, five main tattwas, five 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 as **Presence** 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. The same thing is available for teams software in companies.

- Classical grouping strategies based on **persons** must take into account the student's **personality** and the **compatibilities** of group members.

- As **previous work**, we analyzed in some dedicated e-learning environments developed for grouping process the advantages of using typologies in this process.

- We introduced a grouping mechanism based on the student/people typologies and their **Neuro-Linguistic Programming (NLP)** profile. Typologies are determined, according to the **Enneagram** methodology using **RHETI tests**, refined in the first case with **Myers-Briggs Type Indicator (MBTI)** test.

- The **tests** were realized considering Bachelor and Master of Science students in different educational and practical work activities involving software companies.

- 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, Kosha, 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		A	B
1			2			3			4			5			6			7		
8			9			10			11			12			13			14		
15			16			17			18			19			20			21		
22			23			24			25			26			27			28		
29			30			31			32			33			34			35		
36			37			38			39			40			41			42		
43			44			45			46			47			48			49		
50			51			52			53			54			55			56		
57			58			59			60			61			62			63		
64			65			66			67			68			69			70		
			Copy to →						Copy to →						Copy to →					

	E	I				S	N				T	F				J	P			

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.					☐				
	I've been pragmatic and down to earth.		☐							
2	I have tended to take on confrontations.							☐		
	I have tended avoid confrontations.	☐								
3	I have typically been diplomatic, charming, and ambitious.			☐						
	I have typically been direct, formal, and idealistic.				☐					
4	I have tended to be focused and intense.								☐	
	I have tended to be spontaneous and fun-loving.									☐
5	I have been a hospitable person and have enjoyed welcoming new friends into my life.						☐			
	I have been a private person and have not mixed much with others.					☐				

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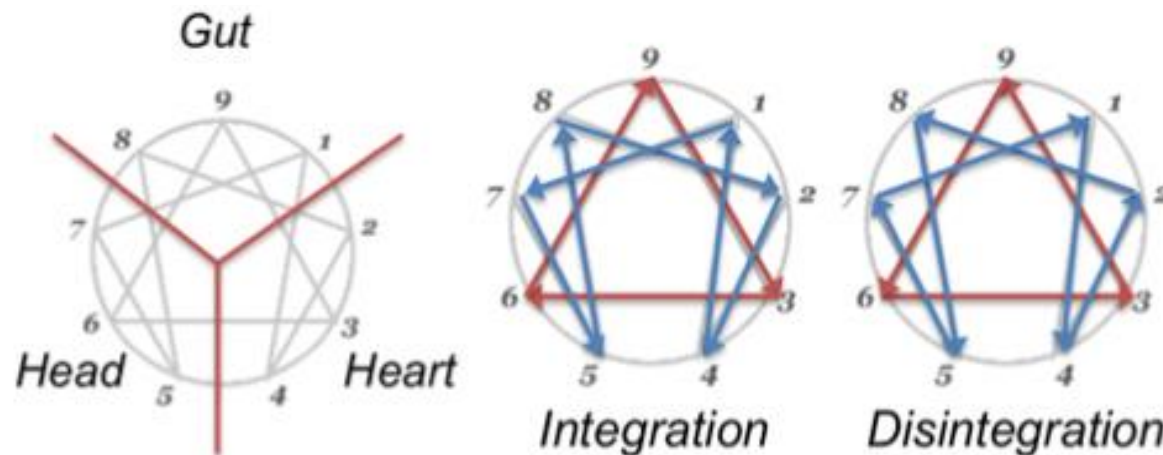
- Each Enneatype is connected with two other types, in different triads.
- These connections show how one Enneatype behaves under integrative (growth-extensive) or disintegrative (stress- contracted) conditions.
- We considered in our first research, **alternative 1**, one base typology, one typology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

Proposed solution
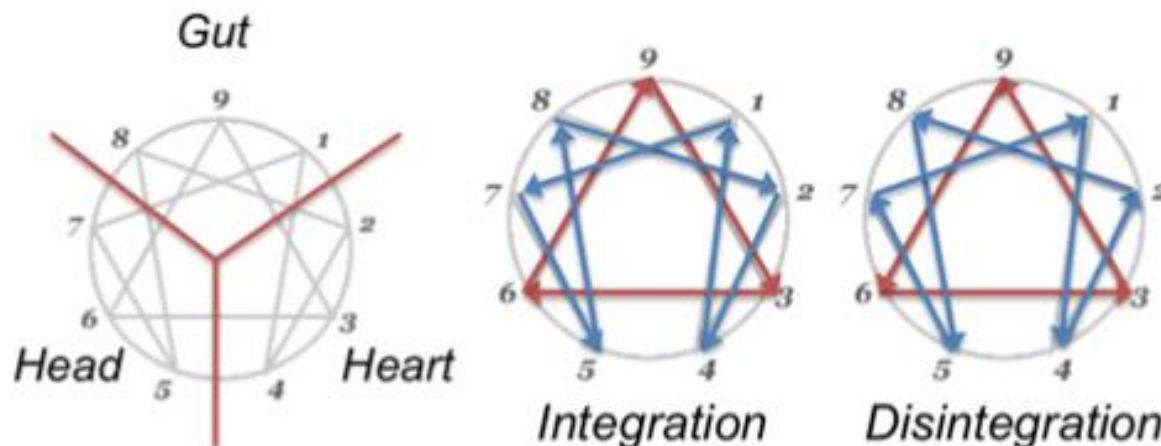
- The ideal group structure will have members with typologies 3, 6 and 9.
- Other possible grouping typologies are: (1, 7, 4), (2, 4, 8), (4, 1, 2), (5, 8, 7), (7, 5, 1), (8, 5, 2), using 1, 2, 4, 5, 7 and 8 as Chief Feature
- This ensures typology diversity.

- But what about preference for visual/ audio/sensitive elements ? With **NLP** we are able to determine visual, auditory, sensitive and kinesthesia structures.

Initial Grouping Strategy
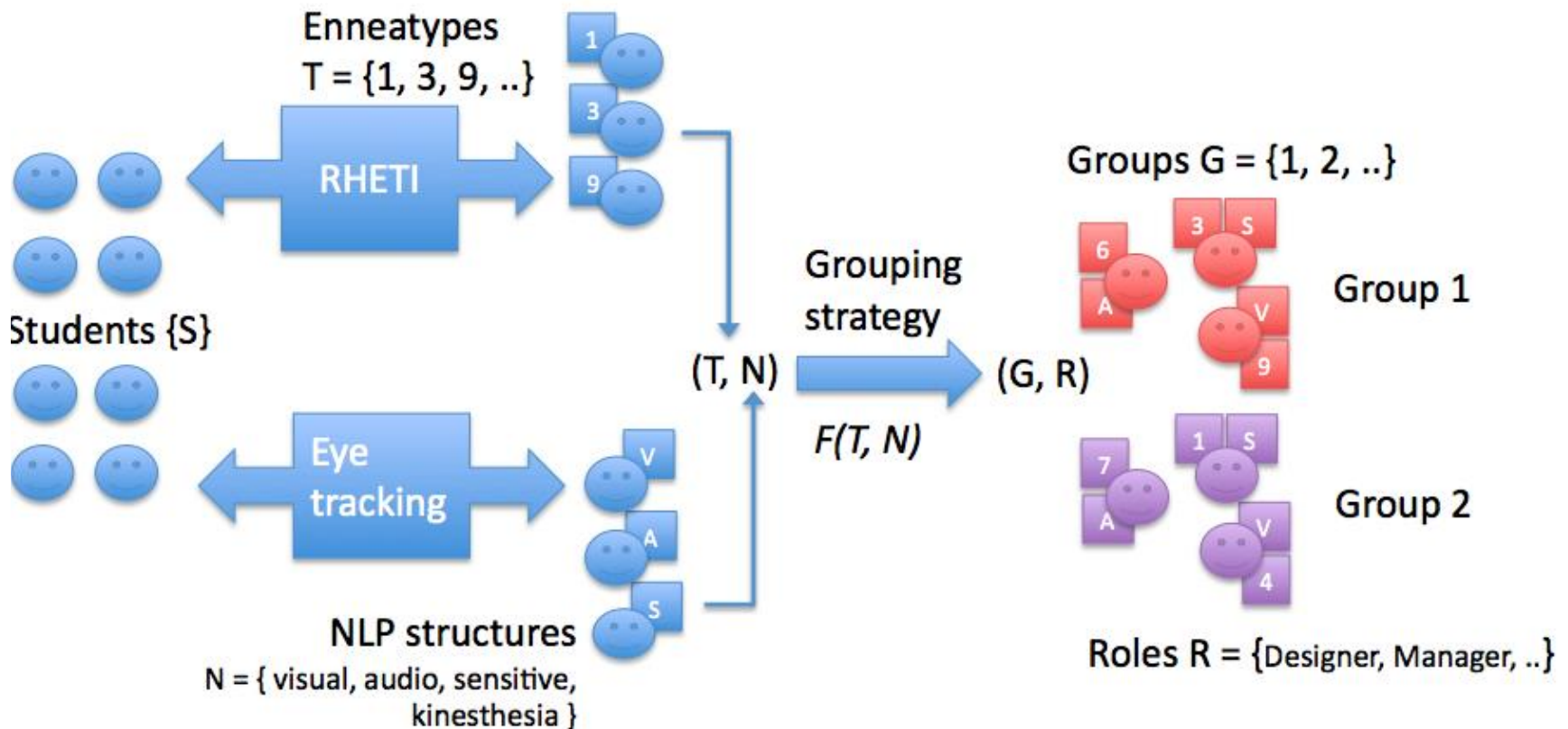
Grouping strategy algorithm
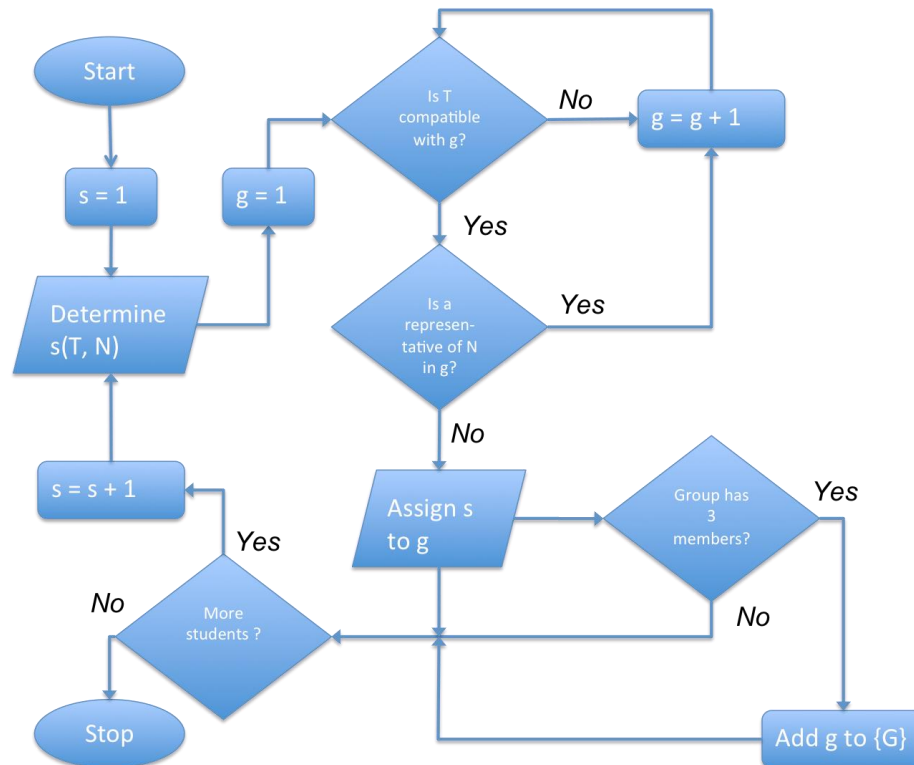
First eLearning platform based on NLP profile

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

MYSQL

Grouping algorithms

Additional library

MODELS
- Tests
- Groups
- Accounts
- Membership
- Teams

VIEWS

CONTROLLERS
- Grouping management system
- Tests module
- Accounts module (admin and user)
- Statistics module

GAEM
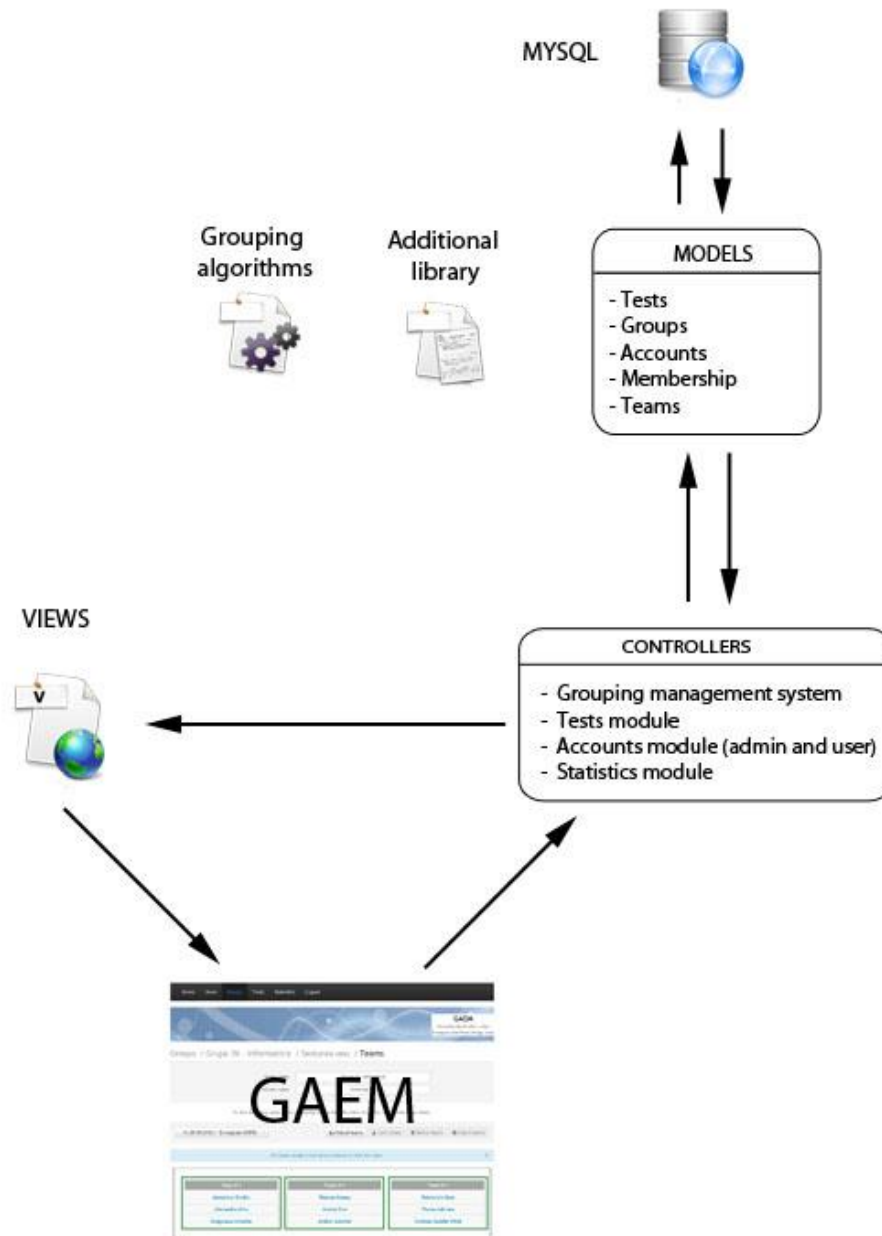
Second eLearning application
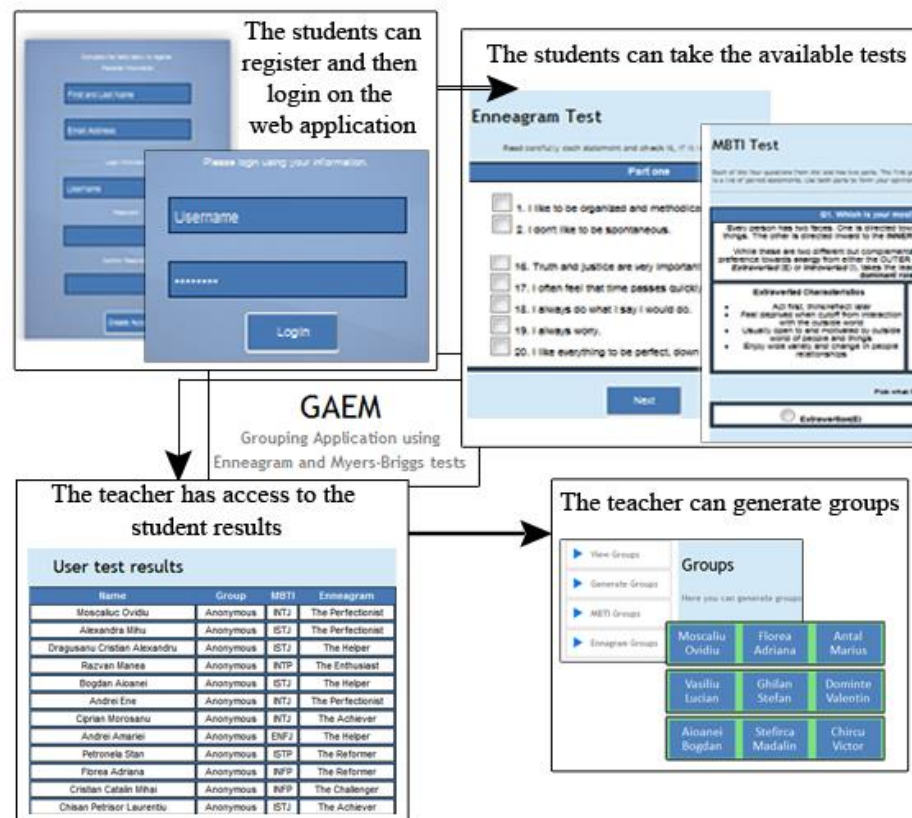
Mapping among Enneatypes and MBTI

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

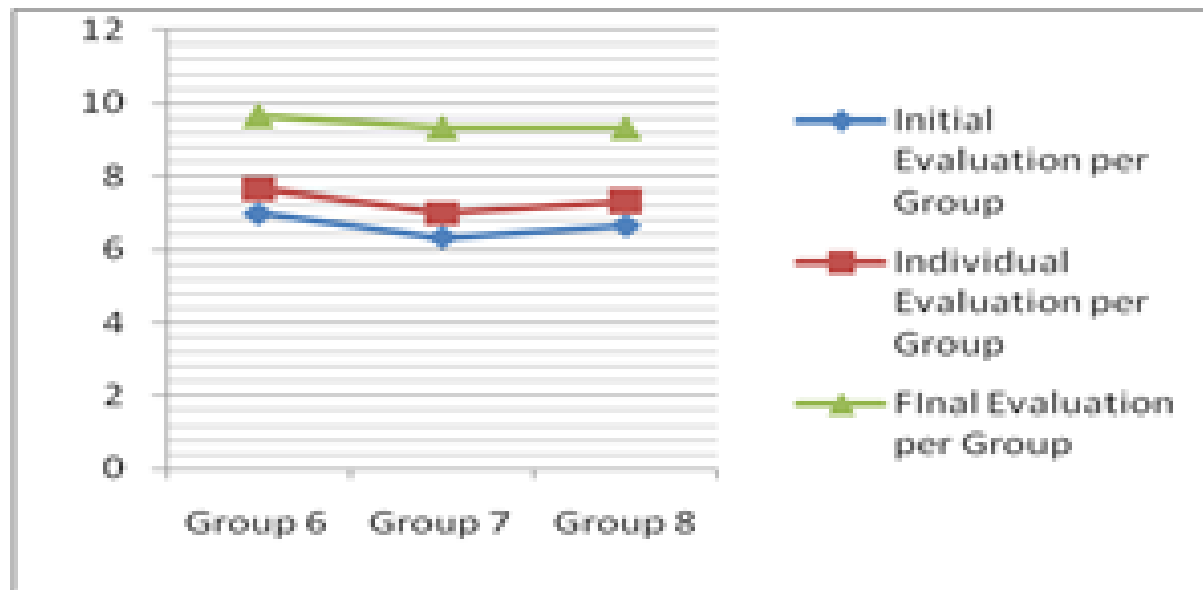- **Alternative 1:**

- 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).

Educational 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, take the RHETI and MBTI tests and are assigned to working groups according to a 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
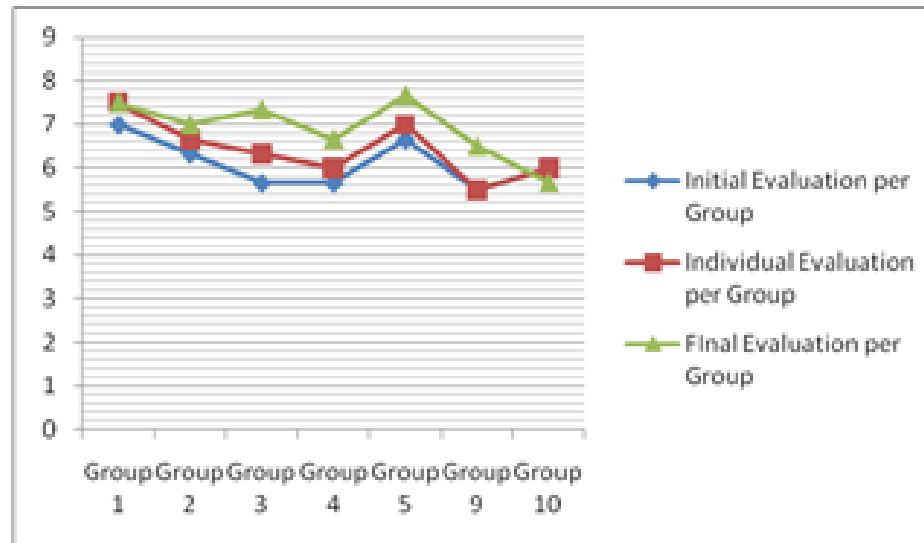
Finally Group10 does not respect the Alternative1 and Alternative2 of the algorithm and the application will consider it as a non-classified group. The students' results were not relevant concerning the individual and group evaluation. They are classified in a manual mode.

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.

Company 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

- 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%.

- Automated classification was provided.

Group	Option	Succes	Uncertainties	% Succes	% Uncertainties
I A	3	20	2	90,9091	9,0909
	4	20	2	90,9091	9,0909
	5	20	2	90,9091	9,0909
II B	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

Start

Take the nr. of students

Read student data

Decide nr. teams and nr. of students in a team

Define footprint arrays

1. Group on enneatype 1

2. Group on MBTI 1

3. Group the rest on enneatype 2

4. Group the rest on MBTI 2

5. Try grouping on enneatype 2 – enneatype 2

6. Try grouping on MBTI 2-MBTI 2

Update database with results

End
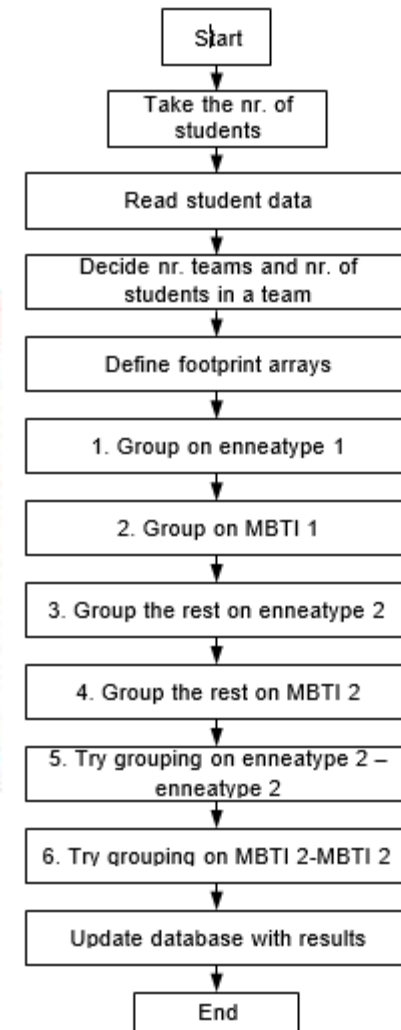
Belbin Mechanism based on Roles

◻ 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), IMPlementer (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

Employee Dashboard

Team 2

	All ⇕	Search...			Clear

Employee full name ⇕	Position ⇕	Belbin ⇕	MBTI ⇕	Enneagram ⇕	Actions
Cristian Pop	teamleader	Shaper	ISTJ	The Peacemaker	ℹ
Maxime Pipe	senior front-end developer	Completer Finisher	ESTJ	The Peacemaker	ℹ
Tai Nitta	junior back-end developer	Team Worker	ENTJ	The Helper	ℹ

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 Thirdd Role The Loyalist	**zodiac** Cancer
zodiac Asc Capricorn	**numerology** 5

Yuriko Doll	senior beck-end developer	Implementer	INFJ	The Challenger	ℹ
Ben Dolores	junior front-end developer	Shaper	ENFP	The Peacemaker	ℹ

Employer Dashboard

Grouping Algorithm

- Step 1: grouping of all employees based on **Belbin** roles

- 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 best result of the algorithm represents the team with the ***highest total*** score
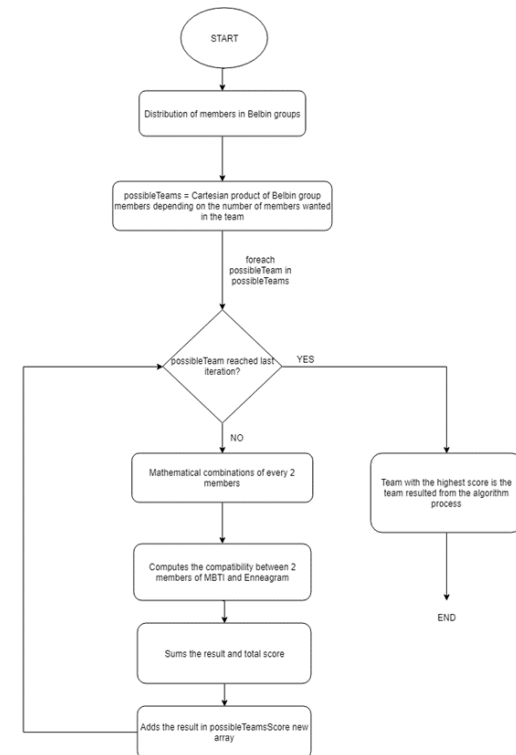
Case study

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

START

Step1

Distribution of members in Belbin groups

Step 2

possibleTeams = Cartesian product of Belbin group members depending on the number of members wanted in the team

foreach possibleTeam in possibleTeams

Step 3

possibleTeam reached last iteration?

YES

NO

Mathematical combinations of every 2 members

Team with the highest score is the team resulted from the algorithm process

Step 4

Computes the compatibility between 2 members of MBTI and Enneagram

Sums the result and total score

END

Adds the result in possibleTeamsScore new array

Step 1

```
belbGroup
▼(3) [Array(4), Array(3), Array(3)] ⓘ
  ▶ 0: (4) [{…}, {…}, {…}, {…}]
  ▶ 1: (3) [{…}, {…}, {…}]
  ▶ 2: (3) [{…}, {…}, {…}]
```

```
                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │
           ┌───────────────▼──────────────────┐
           │ Distribution of members in Belbin │
           │              groups                │
           └───────────────┬──────────────────┘
                           │
   ┌───────────────────────▼──────────────────────┐
   │ possibleTeams = Cartesian product of Belbin   │
   │ group members depending on the number of      │
   │ members wanted in the team                    │
   └───────────────────────┬──────────────────────┘
                           │  foreach
                           │  possibleTeam in
                           │  possibleTeams
                        ◇──▼──◇
                   possibleTeam reached last        YES
                        iteration?          ──────────────┐
                        ◇─────◇                            │
                           │ NO                            │
                           ▼                               ▼
           ┌───────────────────────────┐     ┌─────────────────────────┐
           │ Mathematical combinations  │     │ Team with the highest    │
           │ of every 2 members         │     │ score is the team        │
           └───────────────┬───────────┘     │ resulted from the        │
                           │                  │ algorithm process        │
                           ▼                  └────────────┬────────────┘
           ┌───────────────────────────┐                  │
           │ Computes the compatibility │                  ▼
           │ between 2 members of MBTI   │                 END
           │ and Enneagram              │
           └───────────────┬───────────┘
                           ▼
           ┌───────────────────────────┐
           │ Sums the result and total  │
           │ score                      │
           └───────────────┬───────────┘
                           ▼
           ┌───────────────────────────┐
           │ Adds the result in         │
           │ possibleTeamsScore new     │
           │ array                      │
           └───────────────────────────┘
```

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), Array(3), Array(3), Array(3), Array(3), Array(3), Array
(3), Array(3)]

Step 3

Mathematical combinations of every 2 members

Computes the compatibility between 2 members of MBTI and Enneagram

Sums the result and total score

Adds the result in possibleTeamsScore new array

```javascript
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],
        [4,4,4,4,5,4,4,3,3,3,3,2,2,2,5],
        [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) [{…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…}, {…},
  ▶0: {users: Array(3), mbtiScore: 13, enneagramScore: 11, totalScore: 24}
  ▶1: {users: Array(3), mbtiScore: 12, enneagramScore: 11, totalScore: 23}
  ▶2: {users: Array(3), mbtiScore: 13, enneagramScore: 10, totalScore: 23}
  ▶3: {users: Array(3), mbtiScore: 8, enneagramScore: 14, totalScore: 22}
  ▶4: {users: Array(3), mbtiScore: 13, enneagramScore: 8, totalScore: 21}
  ▶5: {users: Array(3), mbtiScore: 8, enneagramScore: 13, totalScore: 21}
  ▶6: {users: Array(3), mbtiScore: 6, enneagramScore: 14, totalScore: 20}
  ▶7: {users: Array(3), mbtiScore: 12, enneagramScore: 8, totalScore: 20}
  ▶8: {users: Array(3), mbtiScore: 12, enneagramScore: 7, totalScore: 19}
  ▶9: {users: Array(3), mbtiScore: 8, enneagramScore: 11, totalScore: 19}
  ▶10: {users: Array(3), mbtiScore: 7, enneagramScore: 12, totalScore: 19}
  ▶11: {users: Array(3), mbtiScore: 12, enneagramScore: 7, totalScore: 19}
  ▶12: {users: Array(3), mbtiScore: 12, enneagramScore: 7, totalScore: 19}
  ▶13: {users: Array(3), mbtiScore: 8, enneagramScore: 11, totalScore: 19}
  ▶14: {users: Array(3), mbtiScore: 10, enneagramScore: 9, totalScore: 19}
  ▶15: {users: Array(3), mbtiScore: 9, enneagramScore: 8, totalScore: 17}
  ▶16: {users: Array(3), mbtiScore: 8, enneagramScore: 9, totalScore: 17}
  ▶17: {users: Array(3), mbtiScore: 8, enneagramScore: 9, totalScore: 17}
  ▶18: {users: Array(3), mbtiScore: 13, enneagramScore: 4, totalScore: 17}
  ▶19: {users: Array(3), mbtiScore: 9, enneagramScore: 8, totalScore: 17}
  ▶20: {users: Array(3), mbtiScore: 12, enneagramScore: 5, totalScore: 17}
  ▶21: {users: Array(3), mbtiScore: 8, enneagramScore: 9, totalScore: 17}
  ▶22: {users: Array(3), mbtiScore: 10, enneagramScore: 6, totalScore: 16}
  ▶23: {users: Array(3), mbtiScore: 7, enneagramScore: 9, totalScore: 16}
  ▶24: {users: Array(3), mbtiScore: 6, enneagramScore: 10, totalScore: 16}
  ▶25: {users: Array(3), mbtiScore: 7, enneagramScore: 9, totalScore: 16}
  ▶26: {users: Array(3), mbtiScore: 6, enneagramScore: 9, totalScore: 15}
  ▶27: {users: Array(3), mbtiScore: 7, enneagramScore: 8, totalScore: 15}
  ▶28: {users: Array(3), mbtiScore: 9, enneagramScore: 6, totalScore: 15}
  ▶29: {users: Array(3), mbtiScore: 8, enneagramScore: 7, totalScore: 15}
  ▶30: {users: Array(3), mbtiScore: 9, enneagramScore: 5, totalScore: 14}
  ▶31: {users: Array(3), mbtiScore: 7, enneagramScore: 7, totalScore: 14}
  ▶32: {users: Array(3), mbtiScore: 6, enneagramScore: 7, totalScore: 13}
  ▶33: {users: Array(3), mbtiScore: 7, enneagramScore: 6, totalScore: 13}
  ▶34: {users: Array(3), mbtiScore: 6, enneagramScore: 5, totalScore: 11}
  ▶35: {users: Array(3), 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.

- 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** (expansive) and **disintegrative** (contracted) directions on the **Enneagram**, 2) **Gut-Body** as Power & Control, **Heart** as Affirmation & Esteem, **Head** as Safety & Security, Enneagram triads

- **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 67

Refinements of Grouping Process

- 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 *presence* level.

- 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 *as presence* is able to correlate that with the **wisdom**, which the oriental spirituality is able to associate using Dhyani Buddhas.

- The *Person* defined by **Roles, Psychological identy and Typologies** are able to be **changed many times**, but the *Presence* obtained by self-discovery is detached from everything.

- **Other solutions based on psychological traits, neuroscience, etc.** should be integrated. Refinements based on **clustering algorithms** and **collaborative filtering methods** should also be integrated in an open source architecture that should offer intermediary and comparative results.

Neuroscience Typology Solutions

- **MindMI System**: Ph.D. Grigore Dumitru, awarded inventory solution

- https://www.mindmisystem.com/en/psychological-reports/

- Using biological and physiological data, the connection between human personality traits and behavior is now investigated through individual *differences in brain functioning using neuroscience.*

- A recent cybernetic model of global personality traits is examining how specific personality traits exert control over human behavior.

Thank you.