

Active Beauty

MySKin - Personalised cosmetics delivery device

Confidential – Full deck for the teaching team - Nov. 2021



Givaudan

engage your senses



OK Google

J'ai 5 heures de cours et je rejoins Ania pour un café – ce soir je vois Luis – ma peau est terne et sèche – tu me fais un expresso pour ma peau ?



OK Google

Après mes cours je me fais un jog avec Isham et je vois Ana pour un ciné – j'ai un nouveau bouton et la peau qui brille – donne moi un shot pour être au top!



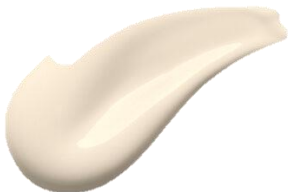
OK Google

J'ai 5 heures de cours et je rejoins Ania pour un café – ce soir je vois Luis – ma peau est terne et sèche – tu me fais un expresso pour ma peau ?

#user #age #gender
#time #location #weather
#issues

OK Google

Après mes cours je me fais un jog avec Isham et je vois Ana à 18h00 pour un ciné – j'ai un nouveau bouton et la peau qui brille – donne moi un shot pour être au top!



The Why ?

An evolving market context

- The Beauty and Personal Care market represents 485 billions USD worldwide
- Several trends are impacting this industry (such as sustainability, transparency, ageing of the population, the rise of local cultures,..), among which the DIY and personalisation represents an opportunity for the future
- Some companies and brands have launched personalised offers (see Skinsei) or specific devices to answer such consumers' expectations (see romy.paris, Emuage, Perso L'Oreal)
- The « personalised skincare » trend is actively pushed by the «quantify yourself » habit based on connected devices and skin diagnosis applications on smartphones
- In the frame of this growing trend for personalised/custom made cosmetics, this project aims at creating an innovative device usable by all family members to answer their skincare routine in an intuitive and convient way.



The What ?

A multidisciplinary project

This project aims at designing a device delivering a custom dose of cream or gel containing active ingredients which will take care of the skin of each consumers depending on their age, skin colour, location and activity.

A first proposal is made based on 6 different formulas:

- A cream base
- A gel base
- 4 specific formulas (ach one for a dedicated benefit)

The user experience has been defined as follows:

- The device asks questions to the user (either on an inteintegrated screen or through a smartphone application)
- The device calculates the proper combination of the 6 formulas
- The device delivers this combination and stores the users' data for further data analysis (statistics/AI based recommendations)

Last but not least, the device must be easy to use, for all ages and genders



The How ?

A team work from A to Z

- This project covers different fields expertise:
 - Economy : a proper analysis of existing solutions (mainly devices) should be done by the team to inspire them on the project (market survey), and avoid duplicating existing solutions
 - Biology: each formula contains specific molecules acting on skin metabolism. The team will need to understand the mode of action of these compounds and the rational of their combination
 - Physico-chemistry: the teams will receive the composition of the formulas and will need to study their viscoelasticity in order to be able to design the proper dispensing system (such as perisaltic pumps)
 - Mathematics: the team will have to build the users' questionnaires, convert these answers into numerical variables, and set up the algorithm that will drive the pumps dispensing the combination of the formulas.
 - Engineering: the teams will need to imagine the outside design of the device (how will it look like, how convenient to use will it be ? Would their friends/family use it if it was created ?), as well as the hardware (pumps, cartridges, etc)
 - Interface design: the team will have to create a visual interface asking questions to users, which will enable the device
 - Language: all documents are in English (UK) and must be prepared by the team in this language.
 - Presentation skills: the final project should be presented by the team in French or English as if the team was a start up trying to raise funds from investors to kick off their company and launch the product in Sephora.



Bear in mind!

Would you buy and
use what you have
created



Elements for the teaching team

Interface proposal – Algorithm - Formulas

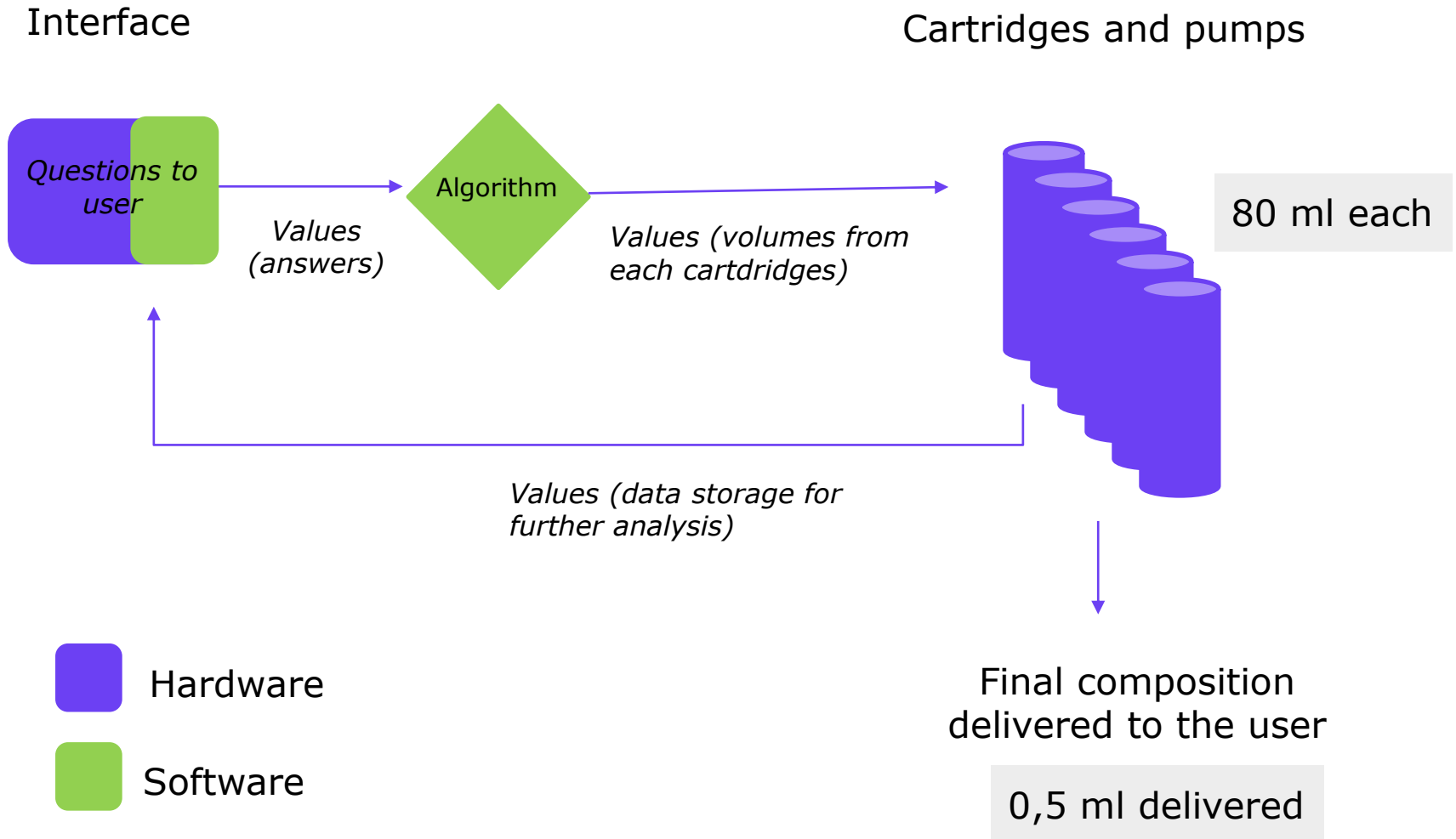


Givaudan

engage your senses

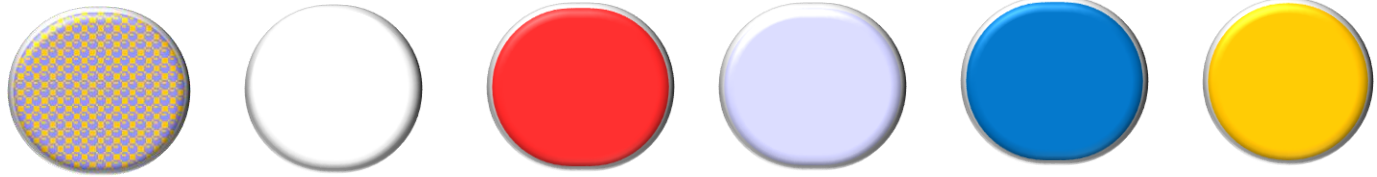


Suggested process flow And user experience



The 6 formulas

Complementary texture, actives, colour and fragrances



Cartridge nb	#1	#2	#3	#4	#5	#6
Usage	SOOTHING HYDRATION	BALANCE	ANTI AGEING	WHITENING	ANTI POLLUTION	SUNCARE
Colour	Pale yellow	White	Red	White	Blue	Yellow
Texture	Gel basis	Cream basis	Gel	Light emulsion	Gel liquid	Oil
Fragrance	Design A	Design B	-	-	-	-
Actives ingredients	Cristalhyal Mariliance Hydreis	Cristalhyal Yogurtene- Balance Unitrienol	Ultrafiller Tightenyl Unisooth EG28 Redens'in	Megassane Brightenyl Axolight	Depollutine Muciliance Neurophroline Unicontrol	SPF 50 Uniprotect
Sensorial ingredients	Easilyance	Uniprosyn PS18	Unitamuron H22	SensHyal Xyliance		U 1946 Kendi oil
Visual ingredients	-	-	-	Flashwhite	-	-

* Requires preliminary tests in the device

Basis Gel – SOOTHING & HYDRATION

CristalHyal® - Easyliance® - Marilience™ - Hydreis™

Phase	INCI name	Commercial name	Supplier	Dosage
A	Aqua/Water Phenoxyethanol Sodium hylauronate Carbomer Water, Sodium hydroxide	Phenoxetol CristalHyal® Carbopol ETD 2050 Sodium Hydroxyde 30%	Clariant Givaudan AB Lubrizol Brenntag	SQ 100% 0.5% 0.5% 1% 0.707%
B	Acacia senegal gum, Hydrolyzed rhizobian gum Aqua/Water	Easyliance®	Givaudan AB	3% 7%
C	Water, Propanediol, Rhodosorus marinus extract	Marilience™	Givaudan AB	3%
D	Hydrolyzed beta-glucan, Sodium benzoate, Potassium sorbate, Citric acid	Hydreis™	Givaudan AB	1%
E	Fragrance	Les Bains EAG61613/00	Givaudan	0.2%

Process:

- 1- Prepare A and B under gentle stirring until total homogenization;
- 2- At room temperature add successively B, C, D and E in A under gentle stirring until total homogenization.

Aspect: Hazy gel – Viscosity: 7000 mPa.s (Brookfield DVIII Ultra, Cylinder 3, Speed 12 at 20°C) – pH at 20°C: 5.32

Basis cream - BALANCE

CristalHyal® - Yogurtene® Balance - Unitrienol™ T-27 - Uniprosyn® PS-18

Phase	INCI name	Commercial name	Supplier	Dosage
A	Cetearyl wheat straw glycosides, Cetearyl alcohol Dimethicone Caprylic/ Capric triglyceride Phenoxyethanol	Xyliance Xiameter PMX-200silicone fluid 350cSt Miglyol 812 N Phenoxetol	Givaudan AB Dow corning Sasol Clariant	4.25% 0.5% 9% 0.5%
B	Aqua/Water Acrylates/ C10-30 alkyl acrylate crosspolymer Sodium hyaluronate Sodium stearyl glutamate	Carbopol ETD 2020 CristalHyal® Amisoft HS 11PF	Lubrizol Givaudan AB BASF	SQ 100% 0.35% 0.5% 0.75%
C	Inulin, Yogurt powder	Yogurtene® Balance	Givaudan AB	1%
D	Farnesyl acetate, Farnesol, Panthenyl triacetate	Unitrienol™ T-27	Givaudan AB	2%
E	Butylene glycol, Hydrolyzed oat protein, Niacinamide, Adenosine triphosphate	Uniprosyn® PS-18	Givaudan AB	3%
F	Water, Sodium hydroxide	Sodium Hydroxyde 30%	Brenntag	1%
G	Fragrance	NOADORE EAG61532/00	Givaudan	0.2%

Process:

- 1- Prepare A and B and heat at 75°C under gentle stirring in a Bain-Marie until total homogenization;
- 2- At 75, add A in B under rotor-stator at 3000 rpm until total homogenization;
- 3- Cool down under rotor-stator at 1500 rpm;
- 4- At 35°C, add successively, C, D, E, F and G in AB until total homogenization.

Aspect: Cream- Viscosity: 28900 mPa.s (Brookfield DVIII Ultra, Spindle E, Speed 12 at 20°C) – pH at 20°C: 5.82

ANTI - AGEING

Redens'In™- Unitamuron® H-22 - PrimalHyal™ Ultra Filler - Tightenyl® - Unisooth™ EG-28

Phase	INCI name	Commercial name	Supplier	Dosage
A	Aqua/Water Phenoxyethanol Acrylates/ C10-30 alkyl acrylate crosspolymer Water, Sodium hydroxide	Phenoxetol Carbopol Ultrez 21 Sodium Hydroxyde 30%	Clariant Lubrizol Brenntag	SQ 100% 0.5% 0.6% 0.588%
B	Sucrose palmitate, Water, Caprylic/ Capric triglyceride, Glyceryl linoleate, Commiphora mukul resin extract, Sodium hyaluronate, Tocopherol, Phenoxyethanol Aqua/Water	Redens'In™	Givaudan AB	10% 20%
C	Water, Pentylene glycol, Tamarindus indica seed gum Sodium acetylated hyaluronate	Unitamuron® H-22 PrimalHyal™ Ultra Filler	Givaudan AB Givaudan AB	0.5% 10%
D	Water, Glycerin, Disodium acetyl glucosamine phosphate, Sodium glucuronate, Magnesium sulfate	Tightenyl®	Givaudan AB	10%
E	Water, Propyl gallate, Gallyl glucoside, Epigallocatechin gallatyl glucoside	Unisooth™ EG-28	Givaudan	4%

Process:

- 1- Prepare A and B under gentle stirring until total homogenization;
- 2- At room temperature add successively B, C, D and E in A under gentle stirring until total homogenization.

Aspect: White light gel – Viscosity: / – pH at 20°C: 5.6

WHITENING

Xyliance™ - Megassane®- Brightenyl®- Axolight® - SensHyal® - Flashwhite Unisphere®

Phase	INCI name	Commercial name	Supplier	Dosage
A	Cetearyl wheat straw glycosides, Cetearyl alcohol Dimethicone Caprylic/ Capric triglyceride Phenoxyethanol	Xyliance™ Xiameter PMX-200silicone fluid 350cSt Miglyol 812 N Phenoxetol	Givaudan AB Dow corning Sasol Clariant	3.6% 0.5% 12% 0.5%
B	Caprylic/ capric triglyceride, Phaeodactylum tricornutum extract	Megassane®	Givaudan AB	1%
C	Aqua/Water Sodium stearoyl glutamate	Amisoft HS 11PF	Basf	SQ 100% 0.4%
D	Farnesyl acetate, Farnesol, Panthenyl triacetate	Brightenyl®	Givaudan AB	10%
E	Butylene glycol, Hydrolyzed oat protein, Niacinamide, Adenosine triphosphate	Axolight®	Givaudan AB	15%
F	Water, Sodium hydroxide	SensHyal®	Givaudan AB	5%
G	Mannitol, Microcrystalline cellulose, Titanium dioxide, Caprylic/ Capric triglyceride, Propylene glycol, Glyceryl stearate citrate, Decyl glucoside, Hydroxypropyl methylcellulose, Citrus limon (Lemon) fruit extract, Cucumis sativus (Cucumber) fruit extract	Flashwhite Unisphere®	Givaudan AB	2%

Process:

- 1- Prepare A and C and heat at 75°C under gentle stirring in a Bain-Marie until total homogenization;
- 2- At 75, add B in A and then C in AB under rotor-stator at 3000 rpm until total homogenization;
- 3- Cool down under rotor-stator at 1500 rpm;
- 4- At 35°C, add successively, D, E, F and G in ABC until total homogenization.

Aspect: Cream- Viscosity: 38200 mPa.s (Brookfield DVIII Ultra, Spindle E, Speed 12 at 20°C) – pH at 20°C: 4.85

POLLUTION

Mucilance®- Depollutine®- Neurophroline® - Unicontrolon® C-49

Phase	INCI name	Commercial name	Supplier	Dosage
A	Aqua / Water Galactaric acid	Mucilance®	Givaudan AB	SQ 100% 0.3%
B	Water, Arginine PCA, Phaeodactylum tricornutum extract, Phenoxyethanol	Depollutine®	Givaudan AB	15%
C	Water, Propanediol, Tephrosia purpurea extract	Neurophroline®	Givaudan AB	15%
D	Water, Propylene glycol, Citrus lemon (Lemon) extract, Fumaria officinalis flower/ Leaf/ Stem extract, Fumaric acid	Unicontrolon® C-49	Givaudan AB	5%
E	Water, Sodium hydroxide	Sodium Hydroxyde 30%	Brenntag	SQ pH 6.5

Process:

- 1- Prepare A under gentle stirring until total homogenization;
- 2- At room temperature add successively B, C and D in A under gentle stirring until total homogenization.
- 3- Adjust the pH with E to pH 6.5

Aspect: pale yellow liquid – pH at 20°C: 6.56

SUNCARE

Uniprotect® PT-3 - Kendi oil - Unimer U-1946

Phase	INCI name	Commercial name	Supplier	Dosage
A	Aleurites moluccanus seed oil VP/ Hexadecene copolymer, Octyldodecanol Butyl methoxydibenzoylmethane	Kendi oil Unimer U-1946 Escalol 517	Givaudan AB Givaudan AB Ashland	5.4% 1% 1%
B	Ethylhexyl salicylate	Escalol 557	Ashland	0.3%
C	Octocrylene	Escalol 597	Ashland	1%
D	Homosalate	Escalol HMS	Ashland	0.5%
E	Panthenyl triacetate, Ethyl linoleate, Oleyl alcohol, Tocopherol	Uniprotect® PT-3	Givaudan AB	1%

Process:

- 1- Prepare A and heat at 45°C under gentle stirring in a Bain-Marie until total homogenization;
- 2- At room temperature add successively B, C, D and E in A under gentle stirring until total homogenization.

Aspect: yellow oil

Questions to be asked to users

Demographic info

1. Name - Surname

Check box Mr/Mrs

2. What you age ?

15-20 / 20-30 / 30-40 / 40-50 / 50-60 / 60+

3. What is your skin type?

dry – oily – mixed

4. What is your skin phototype?



Questions

Environment info

5. We are in [location] today. Where shall you spend your day today?

Inside / Outside

Countryside / City → Select your country/city

6. It is XX:XX AM now. Do you want a day or night skin Rx ?

DAY

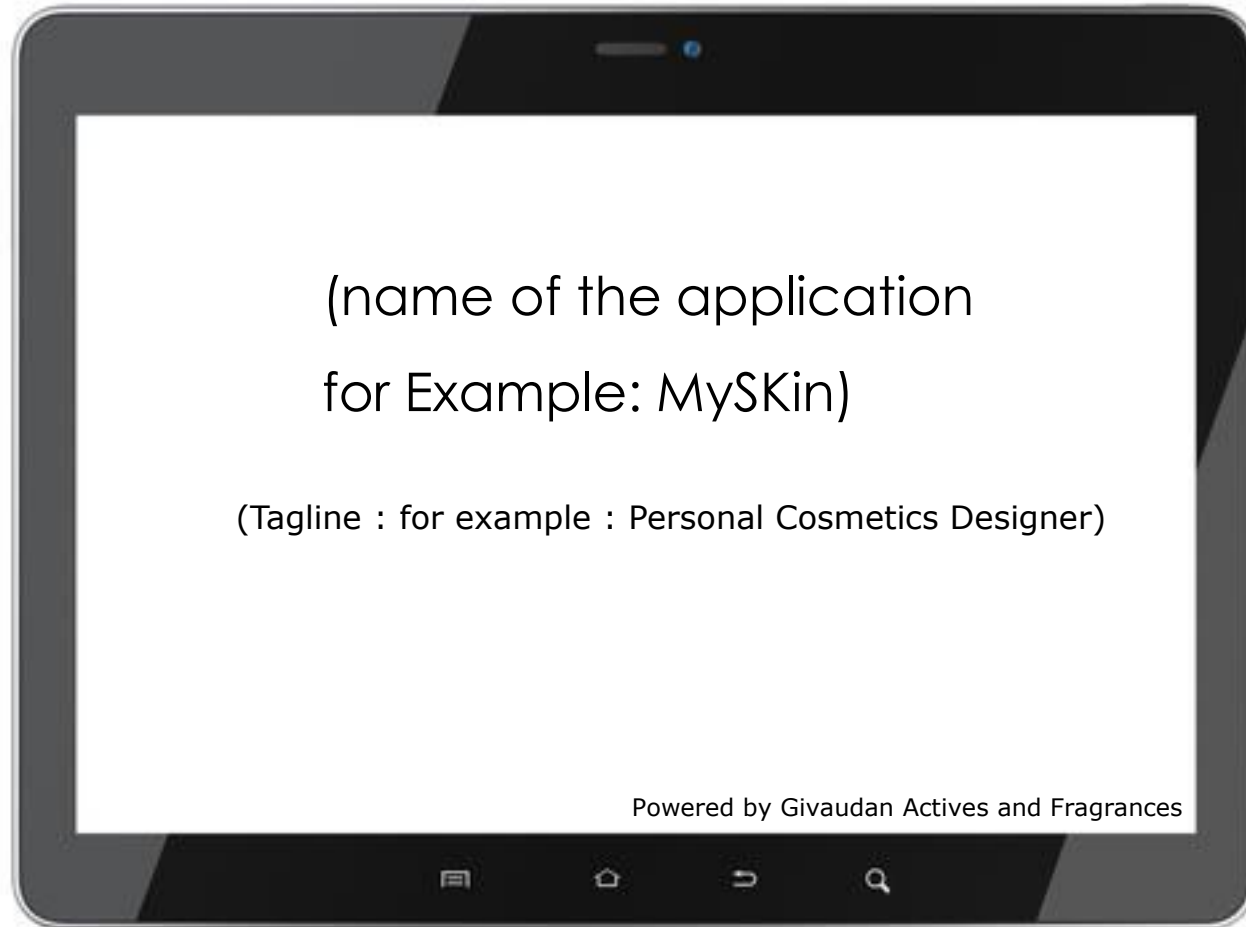
NIGHT

Customization info

7. What is your main skin concern today?

1. Sensitive skin
2. Sebum reduction
3. Wrinkles treatment
4. Dark circles
5. Radiance
6. Whitening
7. Age spots
8. Pollution protection
9. Anti-stress
10. Hydration
11. UV protection

Design (suggested visual)



Elements for the teaching team

Examples product biological data



Givaudan

engage your senses



Biological mode of actions (summary)

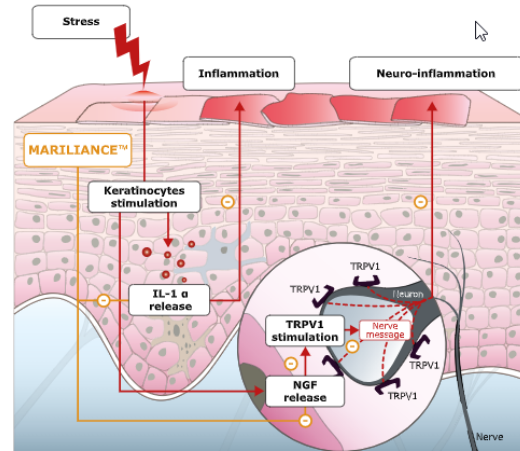
TRPV-1 mediated neuro inflammation

It exists different kind of inflammation; the classical pathway, involving cytokines release (Interleukines) with visible effects, and; the neuro inflammation, perceived by subject only.

When skin is assaulted by external factors, the keratinocytes in the epidermidis will firstly release Interleukine-1 α (IL-1 α) as an immediate inflammatory response. In a second time, the keratinocytes will communicate with neuron fibers through the Nerve Growth Factor (NGF).

The NGF is responsible of the activation of its specific receptor the trkA (Tropomyosin receptor kinase A) which will interact with the TRPV1 receptor and enhance its expression level at the surface of nerve fibers. TRPV1 controls the release of neuropeptides and delays barrier recovery.

Upon time a number of inflammatory mediators are released and will increase the sensitivity of nociceptors to noxious stimuli² leading to



PrimalHyal™ Ultrafiller, the cosmetic alternative to dermal fillers

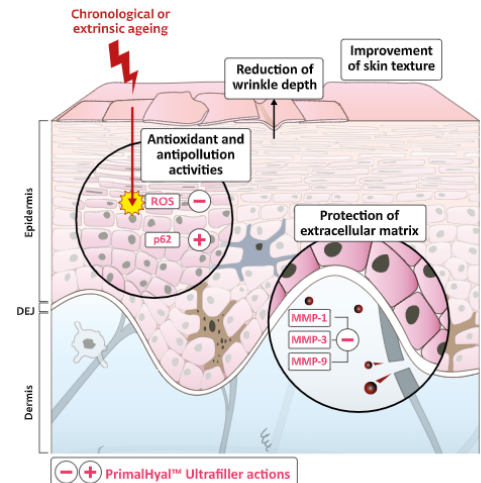
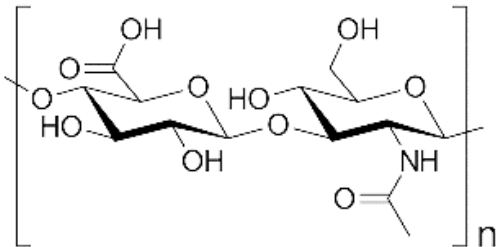
To answer this unmet need, Active Beauty experts have designed PrimalHyal™ Ultrafiller, a new generation of topical HA, by optimising the bioavailability of a specific MW of HA, thanks to its full acetylation.

PrimalHyal™ Ultrafiller behaves as a filler by penetrating deeply into the skin, quickly reducing wrinkles. It also stimulates skin epidermis and dermis metabolisms to:

- ▶ Protect the extracellular matrix by decreasing collagenases production and collagen degradation, even under photo-pollution,
- ▶ Restore the antioxidant defences through the sequestosome pathway², helping skin to fight against free radicals.

Four clinical tests have highlighted the unique consumers benefits of PrimalHyal™ Ultrafiller:

- ▶ **Flash filler effect:** decrease of wrinkles in only 1 to 6 hours,
- ▶ **Anti-ageing effect:** restore skin antioxidant potential, reduce nasogenian wrinkles and improve skin texture.



Questions in the app and associated values



Givaudan

engage your senses



Questions and respective values

Demographic info

1. Name - Surname

Check box Mr/Mrs (no value)

2. What you age ?

15-20 / 20-30 / 30-40 / 40-50 / 50-60 / 60+ (respective values 0,1,2,3,4,5)

3. What is your skin type?

dry – oily – mixed

(value oily=1, dry=0, mixed=0,5)

4. What is your skin phototype?

(respective values 0,1,2,3,4,5)



Questions

Environment info

5. We are in XXXX today. Where shall you spend your day today?

Inside / Outside (value 0/1)

Countryside / City (value 0/1) → Select your country/city

6. It is XX:XX AM now. Do you want a day or night skin Rx ?

DAY (value 0)

NIGHT (value 1)

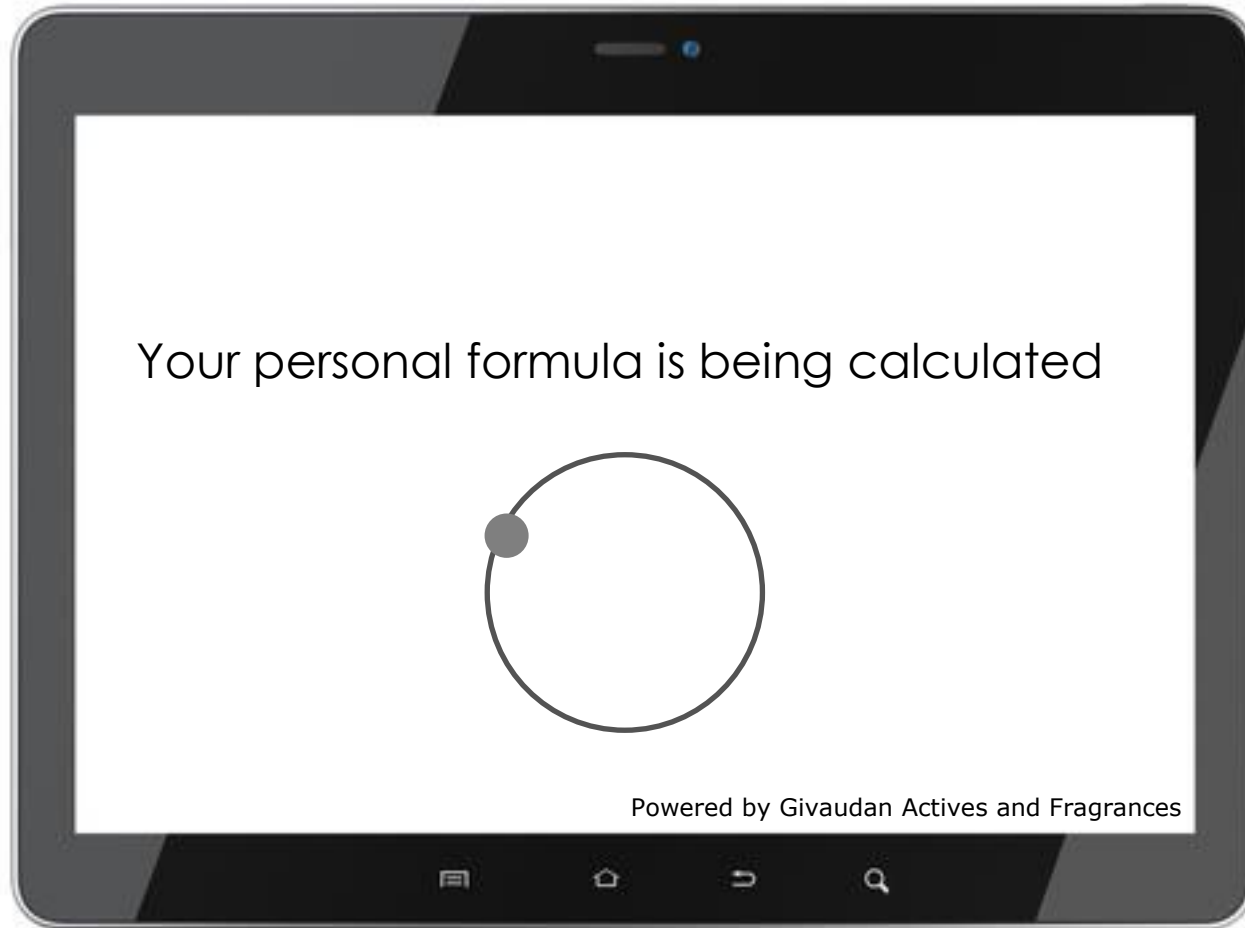
Customization info

7. What is your main skin concern today?

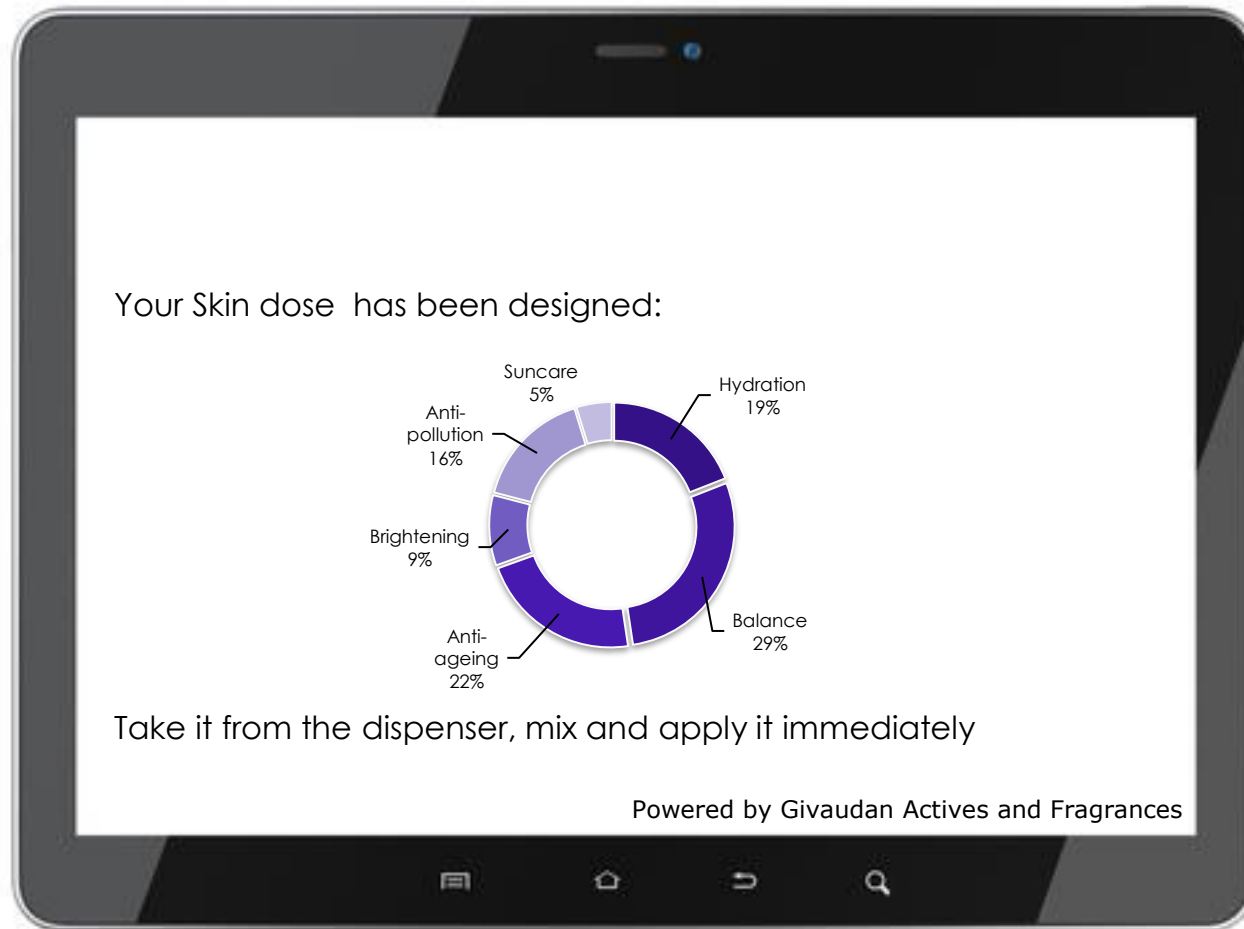
1. Sensitive skin
2. Sebum reduction
3. Wrinkles treatment
4. Dark circles
5. Radiance
6. Whitening
7. Age spots
8. Pollution protection
9. Anti-stress
10. Hydration
11. UV protection



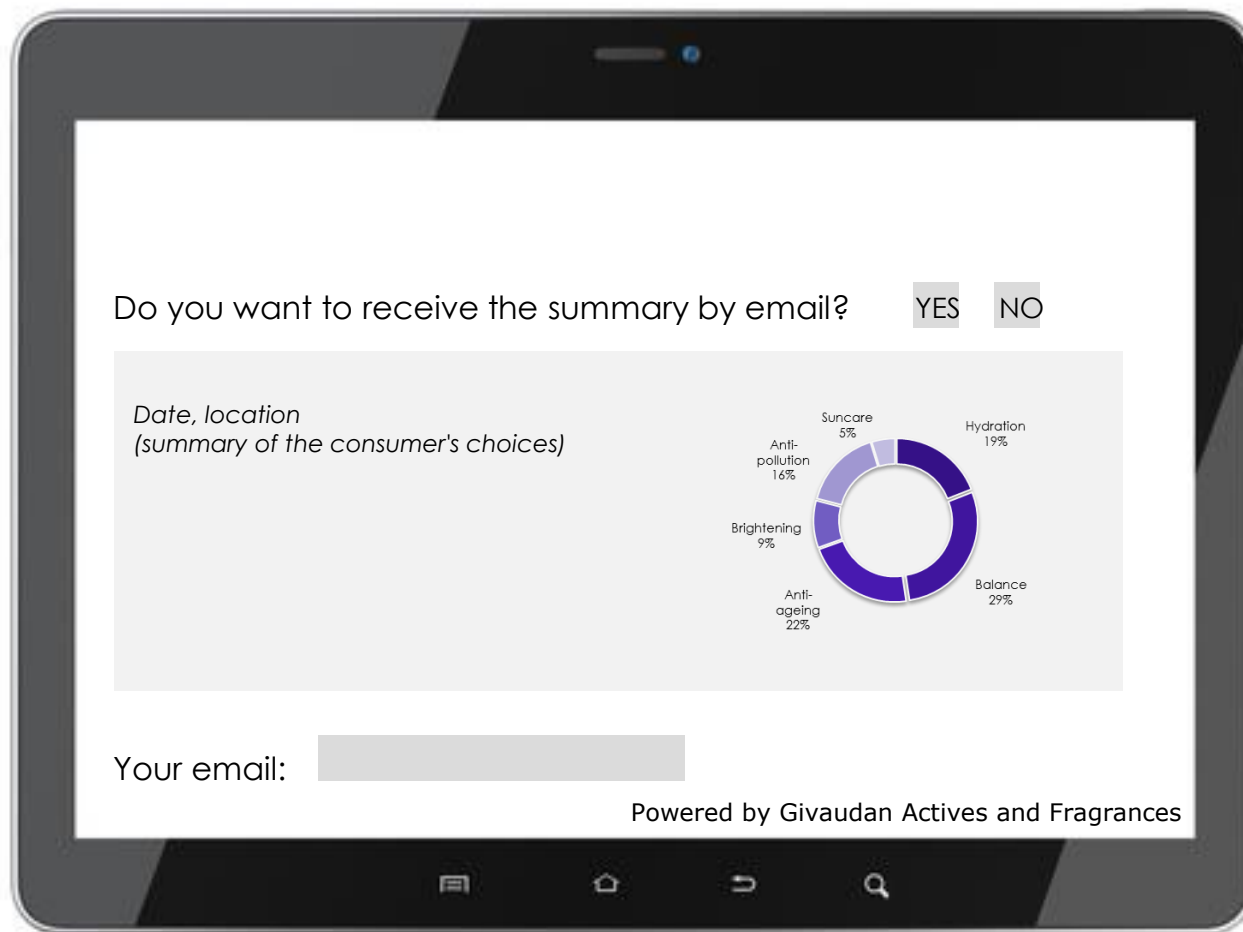
Design (suggested visual)



Design (suggested visual)



Design (suggested visual)



Algorithms for the design of the formula



Givaudan

engage your senses



Algorithms

Definitions

Vf= dispensed volume in ml

Base= ratio used from the C1 and C2 cartridges

Actives= ratio used from the C3 to C6 cartridges

Dose composition= $(\frac{4}{5} \text{ Base} + \frac{1}{5} \text{ Actifs}) \times \text{Vf}$

Algorithms

Calculation of the composition of the Basis

The use of C1 cartridge=f(Day, Sensitive, Hydration)

The use of C2 cartridge=f(Night, [Oily – Dry – Mixed], Sebum reduction)

$$C1i = (\text{Day} + (\text{Sensitive}/100) + (\text{Hydration}/100))/3 \text{ (value 0 to 1)}$$

$$C2i = (\text{Night} + [\text{Oily – Dry – Mixed}] + \text{oily skin})/3 \text{ (value 0 to 1)}$$

$$C1ratio = C1i / (C1i + C2i) \times 100$$

$$C2ratio = C2i / (C1i + C2i) \times 100$$

$$\text{Check sum: } C1ratio + C2ratio = 1$$

$$\text{Base} = C1ratio \% \text{ of C1 cartridge} + C2ratio \% \text{ of C2 cartridge}$$

Algorithms

Calculation of the composition of the Actives

The use of C3 cartridge=f (Age, Dark circles, Wrinkles)

$$C3i= (Age/5 + Dark\ circles/100 + Wrinkles/100)/ 3 \text{ (value 0 to 1)}$$

The use of C4 cartridge=f(Phototype, Radiance, Whitening, Age spots)

$$C4i= f(Phototype/5 + Radiance/100 + Whitening/100 + Age\ spots/100)/4$$

The use of C5 cartridge=f(Pollution, [inside/outside]+[countryside/city], Stress)

$$C5i=f(Pollution/100 + ([inside/outside]+[countryside/city])/2 + Stress/100)/3$$

The use of C6 cartridge=f(UV protection, Phototype, ([inside/outside]+[countryside/city]))

$$C6i=f(UV\ protection/100 + Phototype/5 + ([inside/outside]+ (1-[countryside/city])/2)/3$$

Algorithms

Calculation of the composition of the Actives

$$C3ratio = C3i / (C3i + C4i + C5i + Ci6) \times 100$$

$$C4ratio = C4i / (C3i + C4i + C5i + Ci6) \times 100$$

$$C5ratio = C5i / (C3i + C4i + C5i + Ci6) \times 100$$

$$C6ratio = C6i / (C3i + C4i + C5i + Ci6) \times 100$$

$$\text{Check sum: } C3ratio + C4ratio + C5ratio + C6ratio = 1$$

Actives = C3ratio % of C3 cartridge + C4ratio % of C4 cartridge + C5ratio % of C5 cartridge + C6ratio % of C6 cartridge

Thank you

Fabrice LEFEVRE, Ph.D.
Marketing and Innovation Director