

Toluca, Mexico / Cincinnati, Ohio

PRODUCT IDENTITY FOOTPRINT: A SET OF TOOLS TO CLARIFY THE FRONT
END OF INDUSTRIAL DESIGN PROJECTS IN ORDER TO START AND DEVELOP
PRODUCTS THE RIGHT WAY.

Jorge Mauricio Rodríguez Cuevas

RODZ+

Juan Antonio Islas Muñoz

University of Cincinnati



Presenters



Jorge Rodriguez

Design and innovation consultant, RODZ+

Education: Industrial Designer from UNAM, Automotive Design from CCS

Experience: 20+ years of academic and industry experience

Clients: Ford, Mazda, Audi, Chrysler, among others



Juan Antonio Islas Munoz

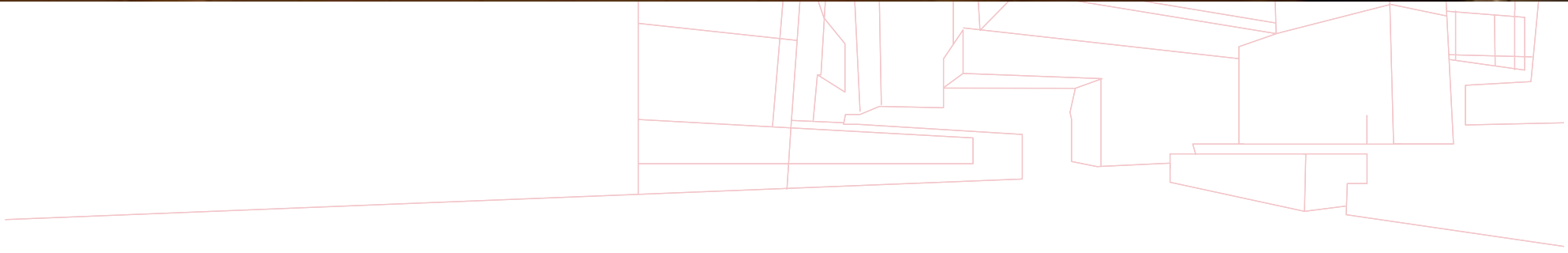
Head of Transportation Design, University of Cincinnati

Education: Industrial designer from UASLP, Master of Design from DAAP

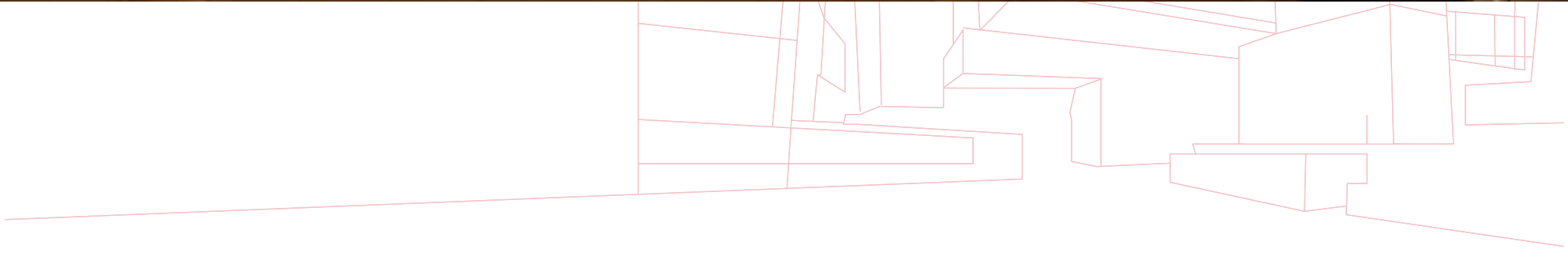
Experience: 10 years of academic and industry experience

Clients: GM, Chrysler, Crown Lift Trucks, Boeing, P&G, among others.

INTRODUCTION



INTRODUCTION





Symphony No.5

C minor Op. 67

Ludwig van Beethoven
(1770-1827)

$\text{♩} = 130$

First system of the score, measures 1-10. The music is in C minor, 2/4 time. The bass line features a rhythmic pattern of eighth notes, while the treble line has a more melodic, dotted rhythm. Dynamics include *ff* (fortissimo) and *p* (piano). Pedal points are marked with 'Ped.' and asterisks.

Second system of the score, measures 11-20. The music continues with a crescendo leading to a fortissimo (*f*) section. Pedal points are marked with 'Ped.' and asterisks.

Third system of the score, measures 21-30. The music features a fortissimo (*ff*) section followed by a piano (*p*) section. Pedal points are marked with 'Ped.' and asterisks.

Fourth system of the score, measures 31-38. The music includes a crescendo section. Pedal points are marked with 'Ped.' and asterisks.

Fifth system of the score, measures 39-46. The music features a fortissimo (*sf*) section followed by a fortissimo (*f*) section. Pedal points are marked with 'Ped.' and asterisks.

A collage of various musical scores, including piano and violin parts, arranged in a layered, overlapping fashion. The scores are in different keys and time signatures, and some include dynamic markings like *crescendo* and *sf*. The collage is set against a background of red, geometric, angular lines.



Ludwig van Beethoven
(1770-1827)

Musical score for "The Rose Tree" in 2/4 time, marked $\text{♩} = 150$. The score is in B-flat major (two flats) and features a piano introduction. The piano part begins with a forte (*ff*) dynamic, playing a rhythmic pattern of eighth notes. The vocal part enters with a melody of eighth notes. The score includes a piano (*p*) section with sustained chords. The lyrics "The Rose Tree" are written below the piano part, with asterisks marking specific measures.

11

The musical score for 'The Little Boat' is written for piano. It features a treble and bass staff. The key signature has two flats (B-flat and E-flat), and the time signature is 3/4. The melody in the treble staff begins with a quarter rest, followed by eighth and sixteenth notes. The bass staff provides a harmonic accompaniment with chords and moving lines. Dynamics include *cresc.* and *f*. Performance markings include *ped.* and ** ped. **.

20

ff

p

p

30

Ped. *

Ped. *

Ped. *

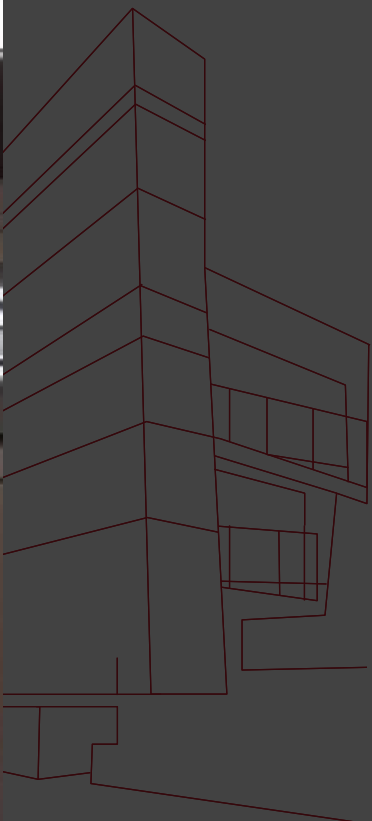
A musical score for the song 'The Rose Tree'. The score is written for piano (p) and features a treble and bass clef. The key signature is one flat (B-flat). The melody is primarily in the treble clef, with some accompaniment in the bass clef. The score includes a green vertical line indicating a section change, and a 'cresc.' marking indicating a crescendo. The lyrics 'The Rose Tree' are written below the melody.

38

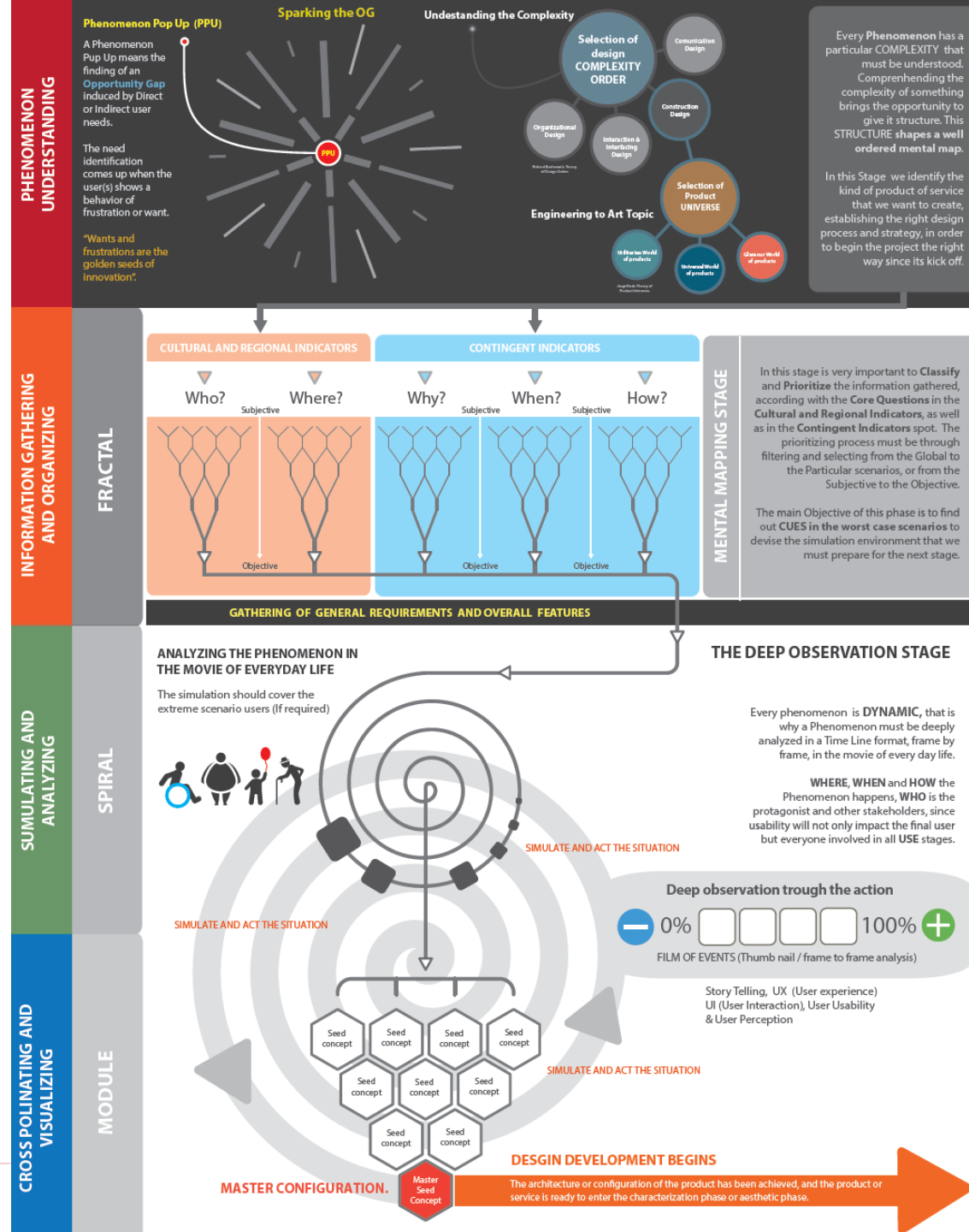
sf *sf* *sf* *sf* *f*

Ped * Ped * Ped * Ped * Ped * Ped

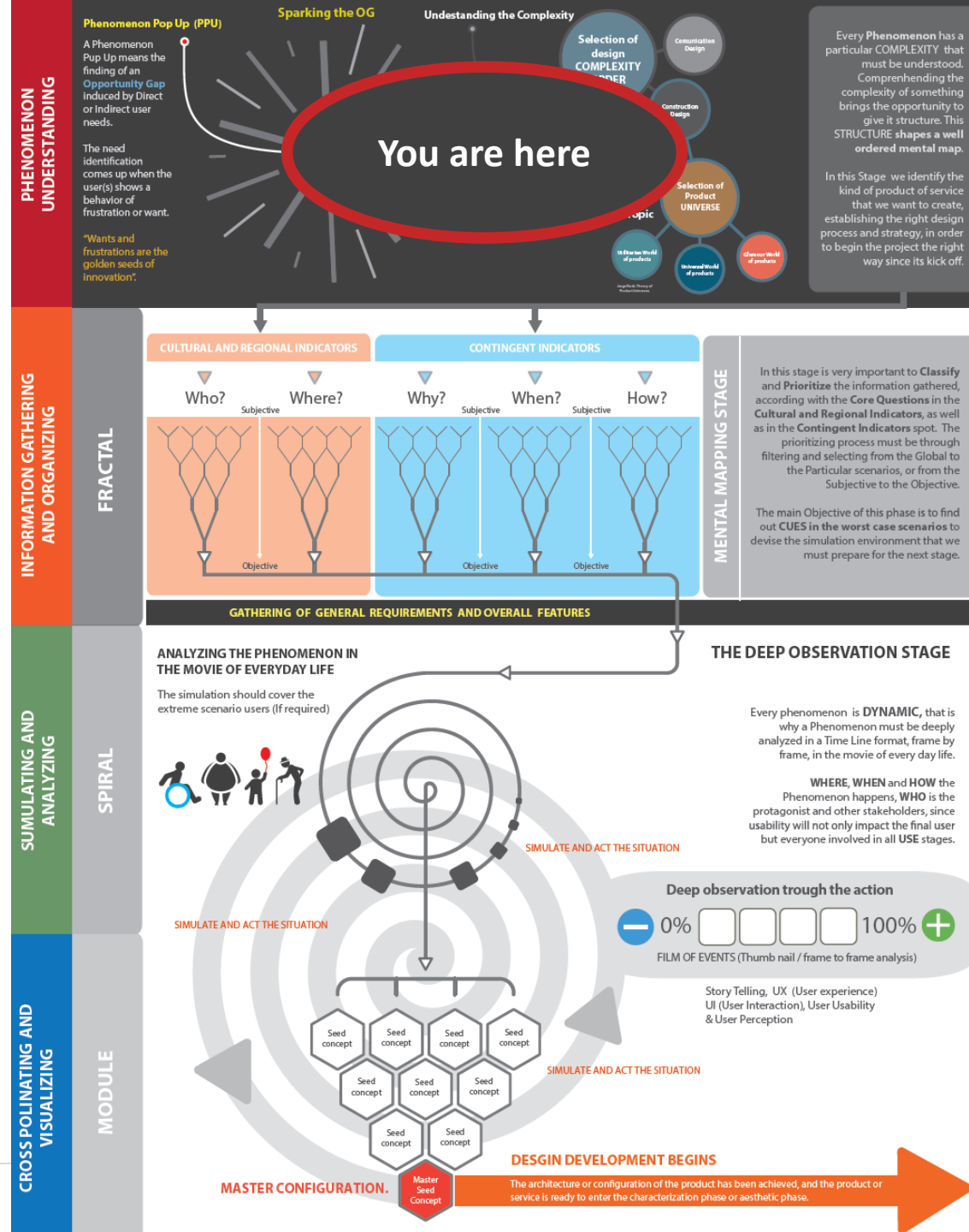
A collage of musical score pages for 'The Rose Tree' by J. S. Bach. The pages are arranged in a layered, overlapping fashion against a background of red geometric lines. The visible pages include piano accompaniment and vocal staves. The piano parts feature complex chordal textures and arpeggiated figures, while the vocal parts show a melodic line with various ornaments and dynamics. The score is written in G major and 3/4 time. The collage includes page numbers such as 11, 20, 30, 38, 46, 76, and 11. The 'JSCC MUSIC' logo is visible on several pages. The overall composition is artistic and visually engaging, highlighting the intricate details of the musical notation.



The Innovation Meta-Map



The Innovation Meta-Map



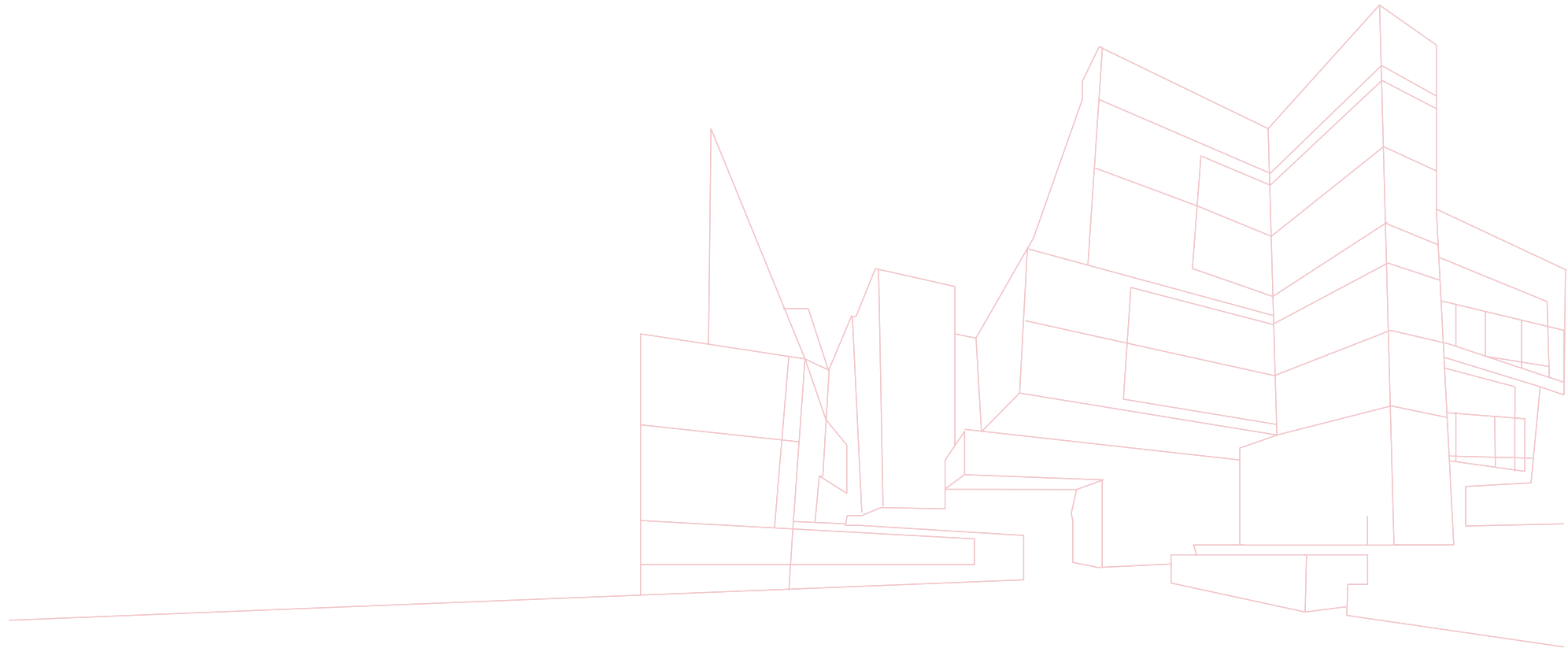
Abstract



Abstract

Observation: industrial design projects tend to start with the wrong approach

Consequence: loss of resources, time, professional relationships



Abstract

Observation: industrial design projects tend to start with the wrong approach

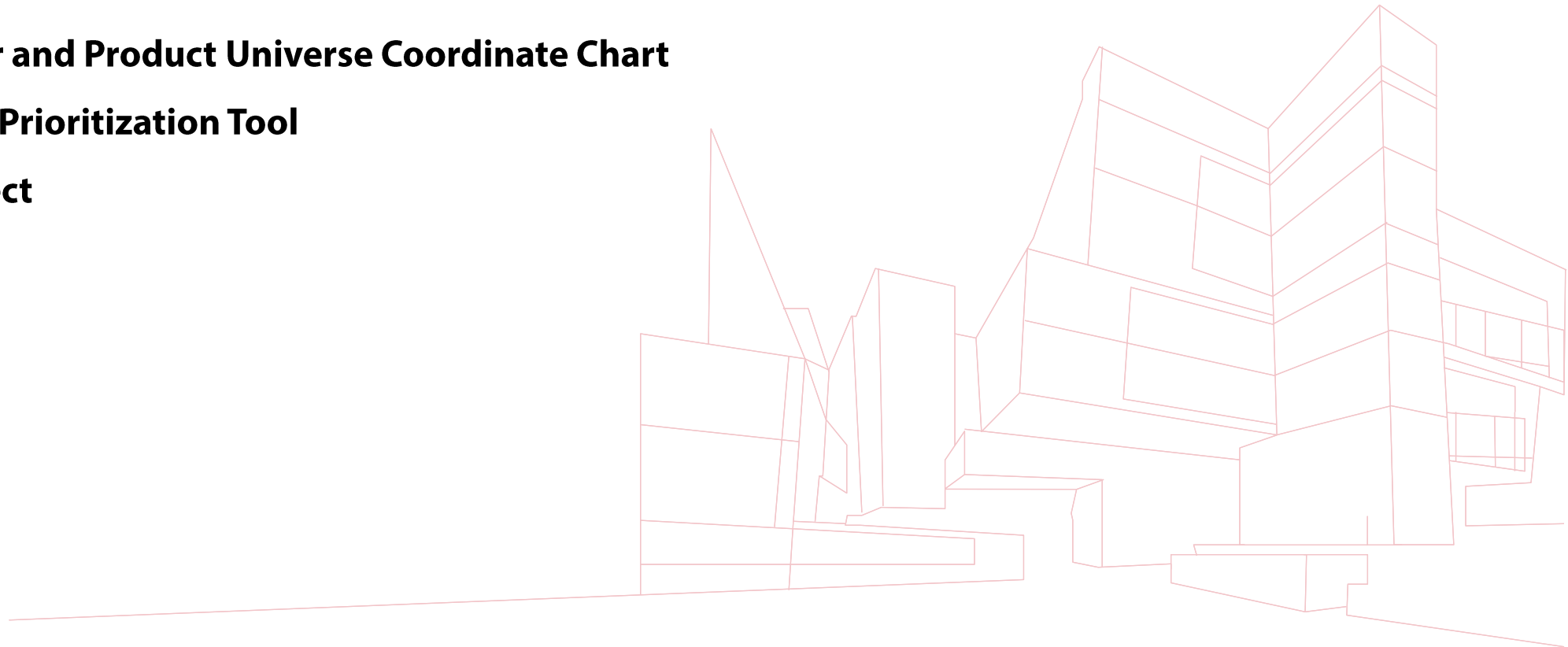
Consequence: loss of resources, time, professional relationships

Proposal: PRODUCT IDENTITY FOOTPRINT

Design Order and Product Universe Coordinate Chart

Value Factor Prioritization Tool

Type of Project



Abstract

Observation: industrial design projects tend to start with the wrong approach

Consequence: loss of resources, time, professional relationships

Proposal: PRODUCT IDENTITY FOOTPRINT

Design Order and Product Universe Coordinate Chart

Value Factor Prioritization Tool

Type of Project

Goal:

To **clarify the Fuzzy Front-end** (Vogel, Cagan) by providing **a shared and co-developed view** by the development team, that can **increase the chances for success** and **decrease uncertainty** of project development.



The personalities of the development team



■ The personalities of the development team

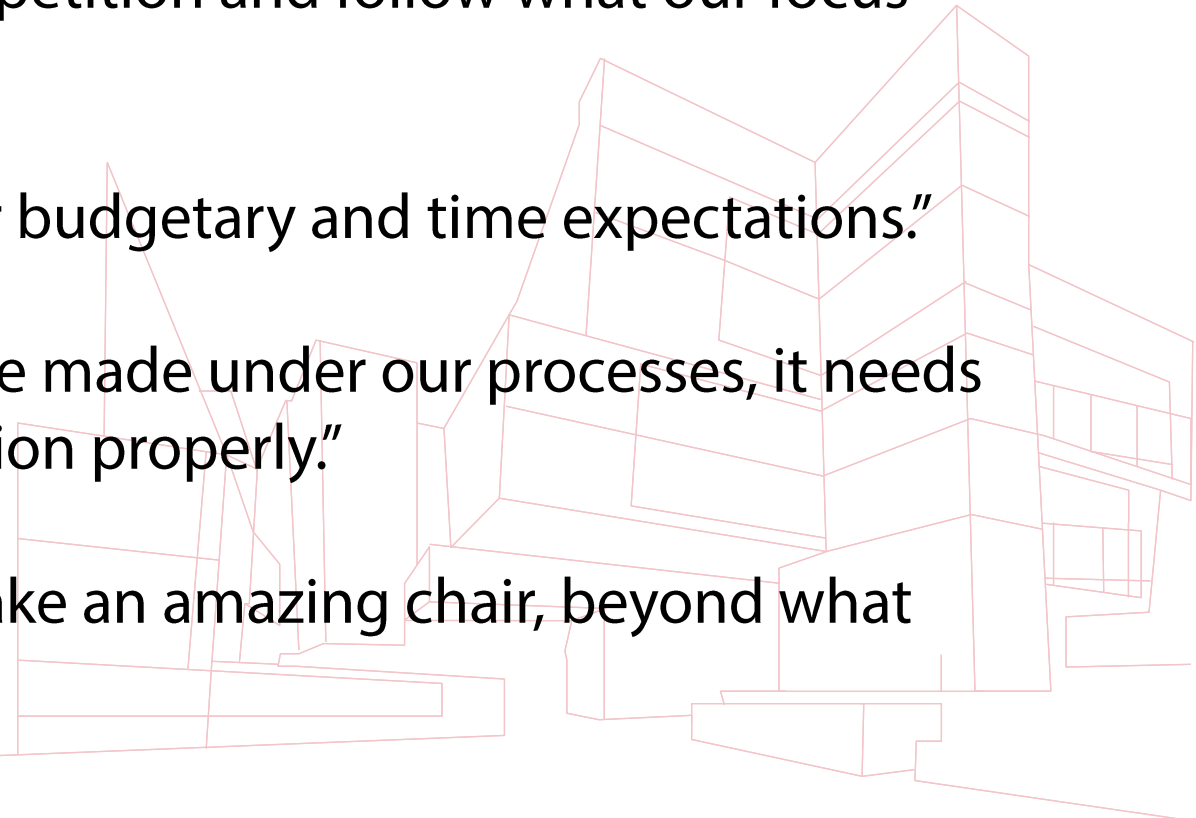
Project sponsor: “I know exactly how the new chair should be, because I understand the problems of my company.”

Marketing team: “We need to match the competition and follow what our focus groups say. It needs to follow the new trends.”

Planning team: “The new chair has match our budgetary and time expectations.”

Engineering team: “The new chair needs to be made under our processes, it needs to meet the project plan, and it needs to function properly.”

Designer team: “This is the opportunity to make an amazing chair, beyond what chairs do today. Let’s do some innovating!”



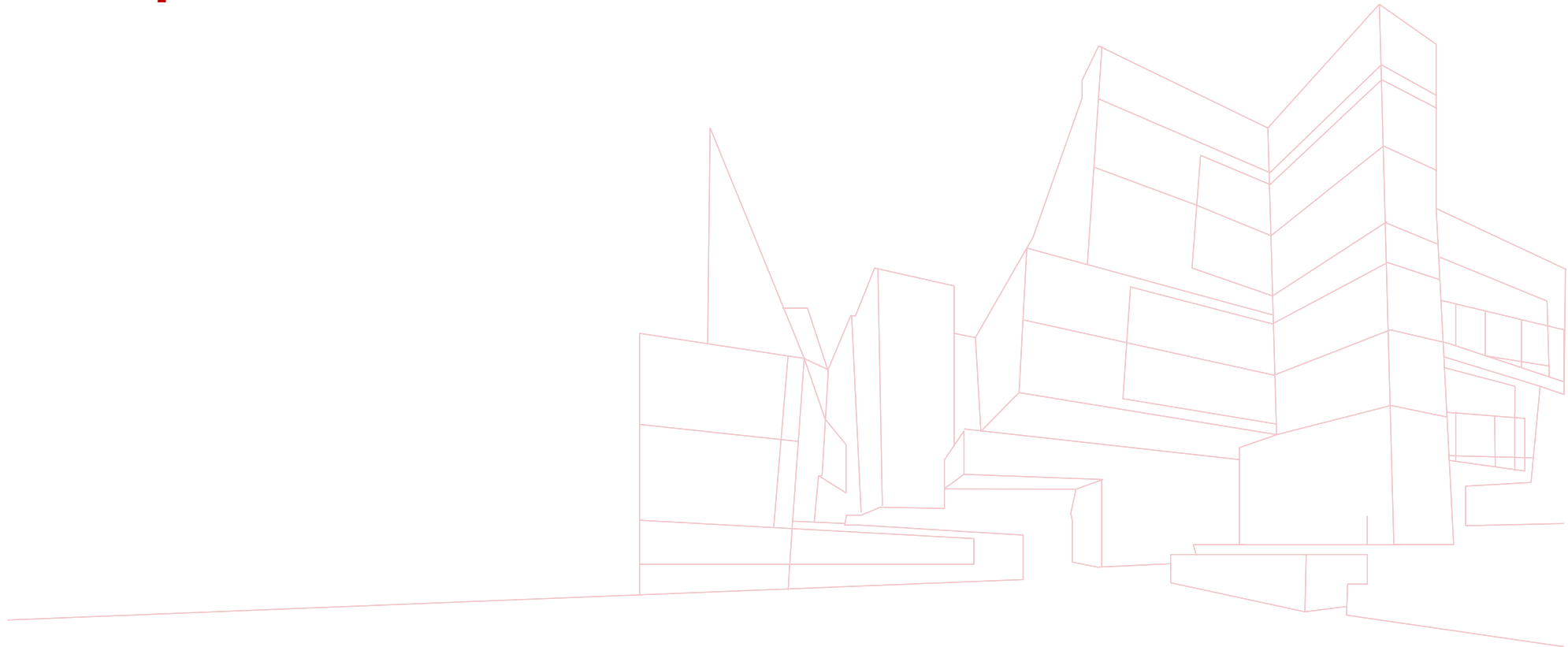
Commonly misunderstood concepts in early project development



Commonly misunderstood concepts in early product development

TYPE OF DESIGN INVOLVED

DISCIPLINES | HUMAN RESOURCE EXPERTISE



 Commonly misunderstood concepts in early product development

TYPE OF DESIGN INVOLVED
DISCIPLINES | HUMAN RESOURCE EXPERTISE

WHAT NEEDS TO BE PRIORITIZED
DESIGN AND MANUFACTURING STRATEGY



 Commonly misunderstood concepts in early product development

TYPE OF DESIGN INVOLVED
DISCIPLINES | HUMAN RESOURCE EXPERTISE

WHAT NEEDS TO BE PRIORITIZED
DESIGN AND MANUFACTURING STRATEGY

TYPE AND SCOPE OF THE PROJECT
A REAL ECONOMIC AND TIME PANORAMA



Theoretical foundation



ENGINEERING UNIVERSE



RATIONAL
DIMENSION

EMOTIONAL
DIMENSION



ART UNIVERSE



From art to engineering



Purpose:
PRACTICAL AND ECONOMIC

Effectiveness = efficacy + efficiency



Purpose:
EMOTIONAL AND ECONOMIC

Transmit or provoke

ENGINEERING UNIVERSE



RATIONAL
DIMENSION

EMOTIONAL
DIMENSION



ART UNIVERSE





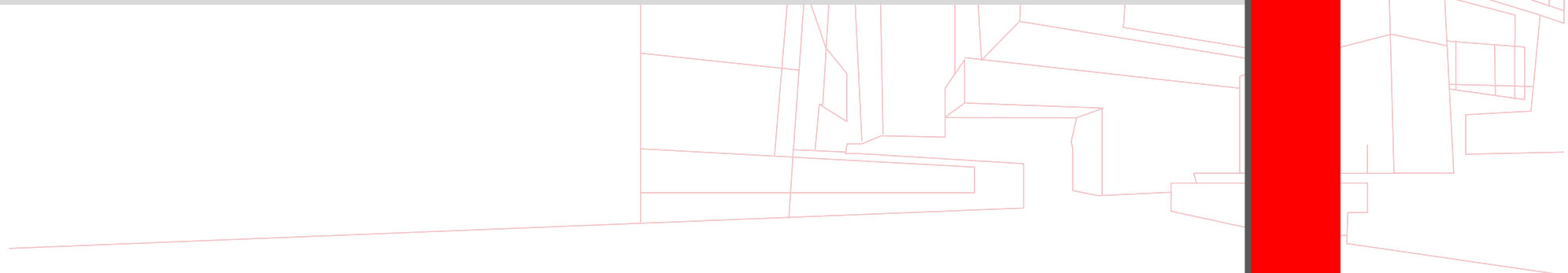
RATIONAL
DIMENSION

EMOTIONAL
DIMENSION



DESIGN UNIVERSE

GLOBAL PURPOSE = PRACTICAL + ECONOMIC + EMOTIONAL PURPOSES





RATIONAL
DIMENSION

EMOTIONAL
DIMENSION



DESIGN UNIVERSE

GLOBAL PURPOSE = PRACTICAL + ECONOMIC + EMOTIONAL PURPOSES



DESIGN MULTIVERSE



**RATIONAL
DIMENSION**

**EMOTIONAL,
DIMENSION**



Utilitarian product universe



Transitional-wholistic product universe



to utilitarian

UNIVERSE OF TRANSITIONAL-WHOLISTIC PRODUCTS

to emotional



Emotional product universe



to transitional-wholistic

UNIVERSE OF EMOTIONAL PRODUCTS

to art



DESIGN MULTIVERSE

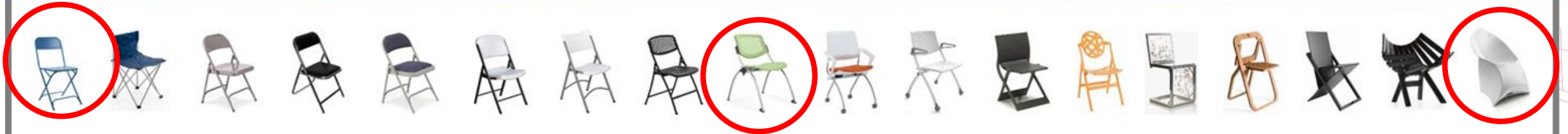


**RATIONAL
DIMENSION**

**EMOTINAL
DIMENSION**



DESIGN MULTIVERSE

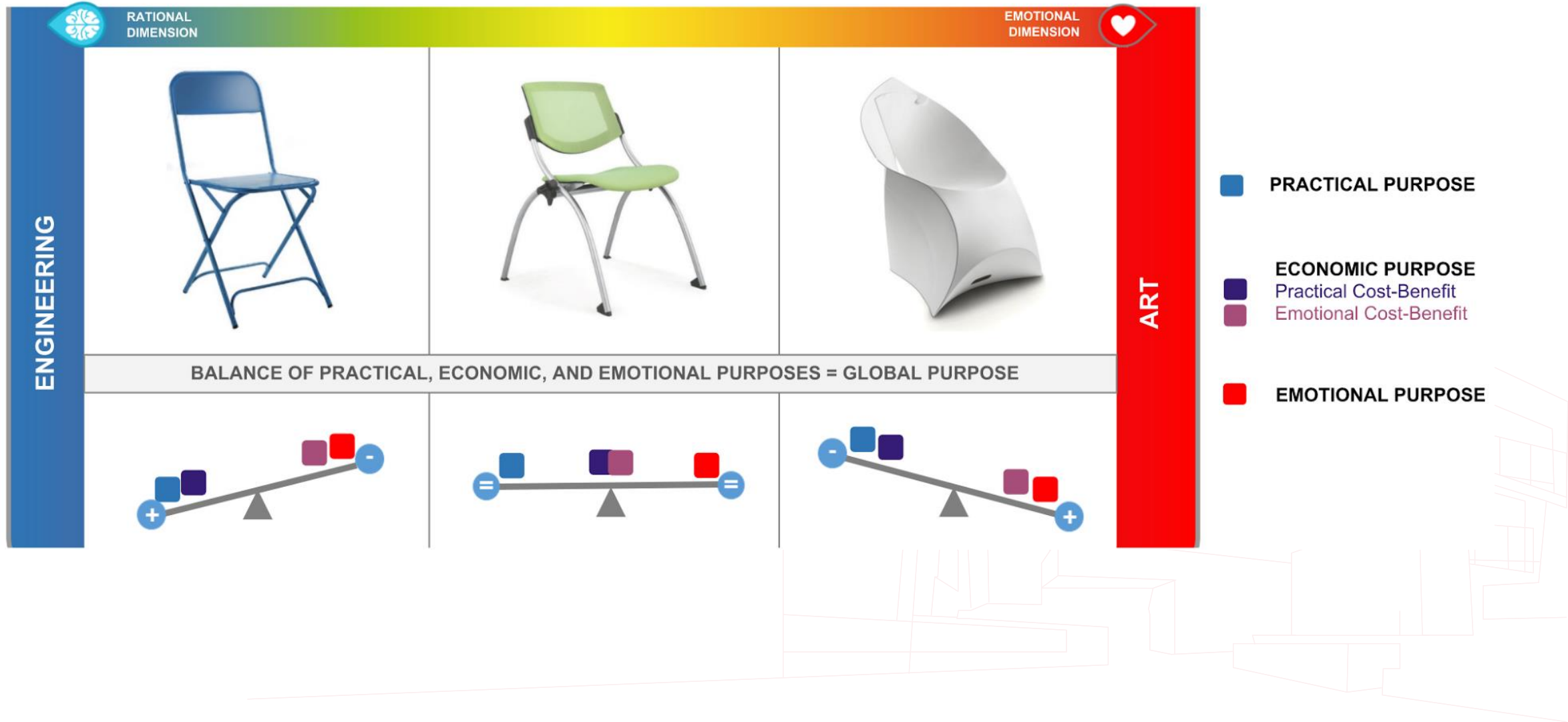


RATIONAL
DIMENSION

EMOTINAL
DIMENSION



A product's global purpose



UTILITARIAN UNIVERSE

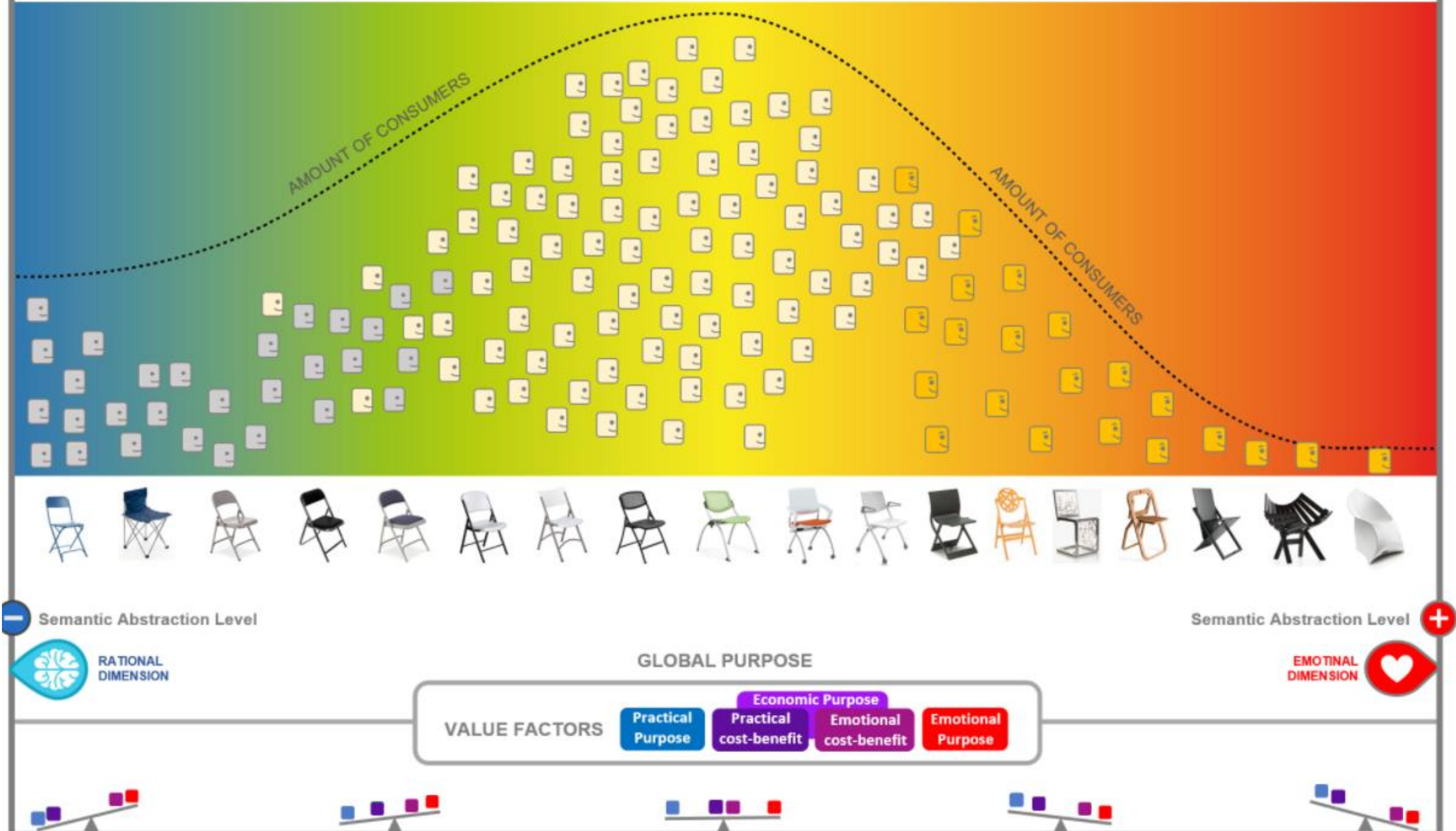
PRACTICAL AND ECONOMICALLY BIASED

TRANSITIONAL-WHOLISTIC UNIVERSE

PRACTICAL, ECONOMICALLY AND EMOTIONALLY BALANCED

EMOTIONAL UNIVERSE

AESTHETIC AND EXPERIENCE BIASED



Buchanan's design orders

ORDER OF COMMUNICATION

Signs Symbols, Images & Print

ORDER OF CONSTRUCTION

Physical Objects

ORDER OF INTERACTION

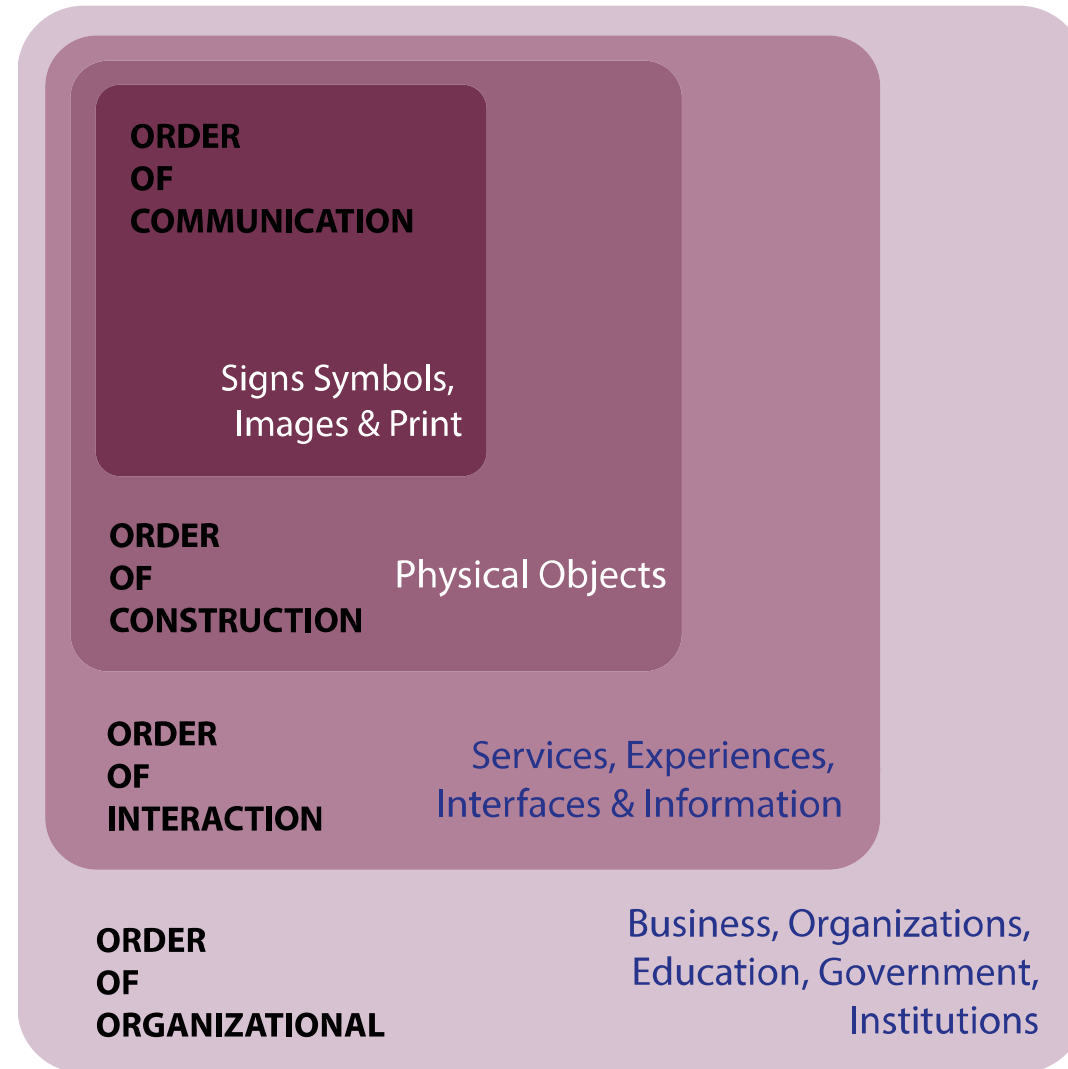
Services, Experiences,
Interfaces & Information

ORDER OF ORGANIZATIONAL

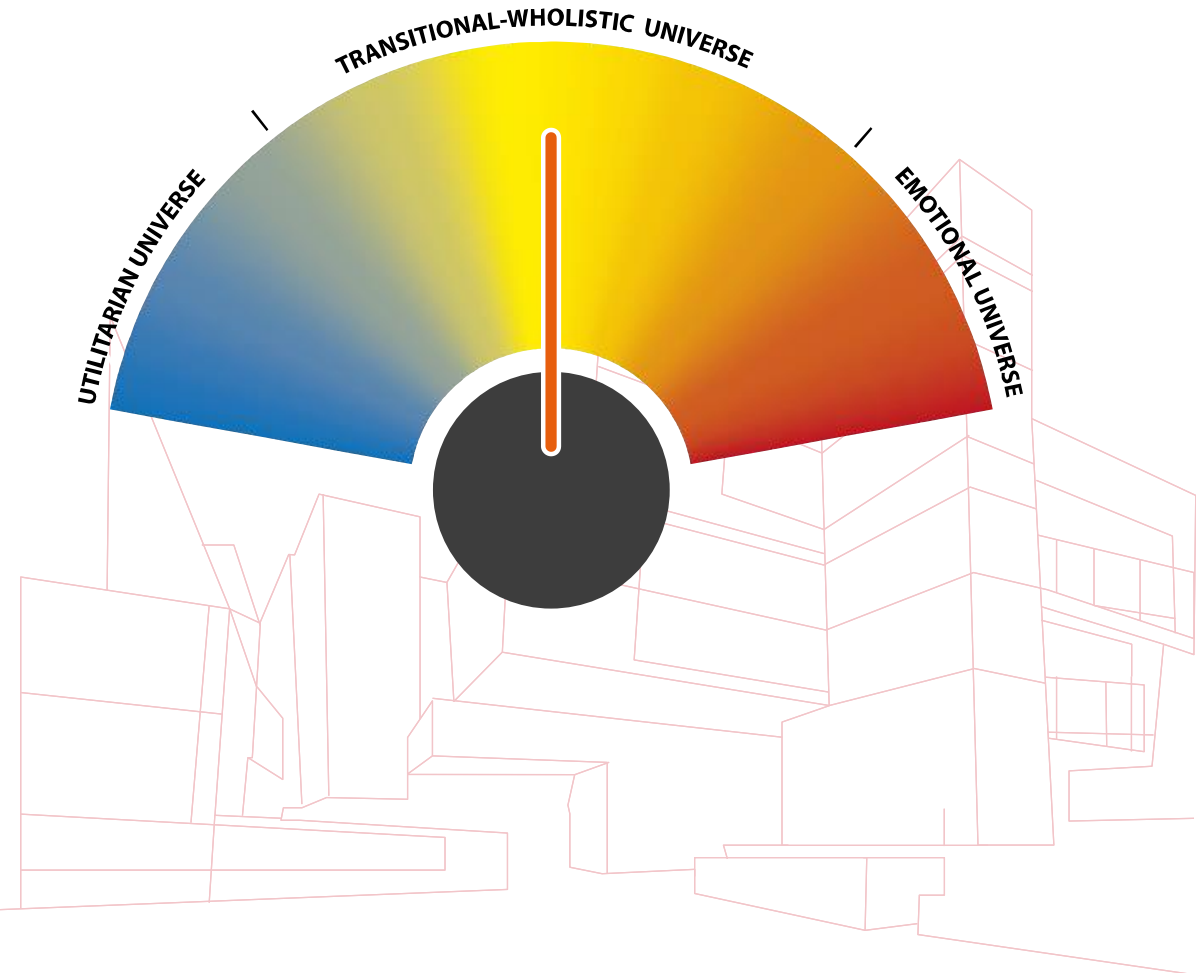
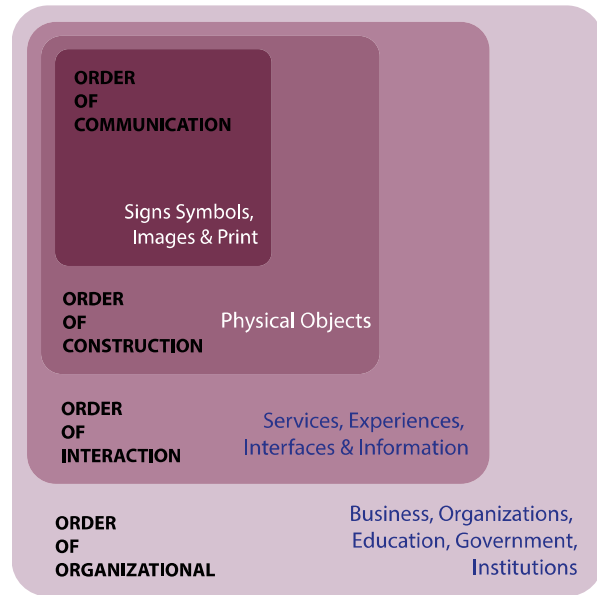
Business, Organizations,
Education, Government,
Institutions



Buchanan's design orders

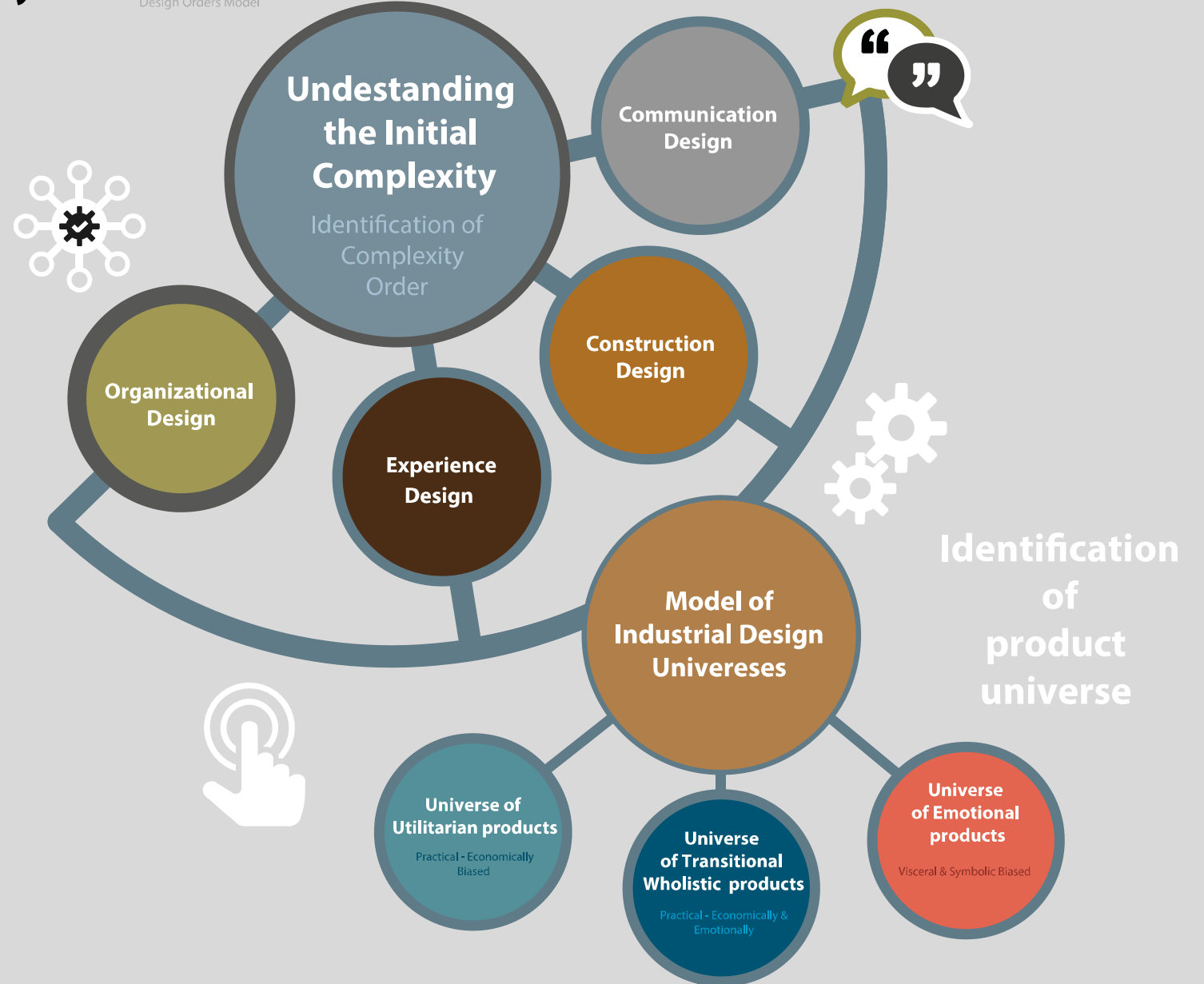


Design order and product universe coordinate chart

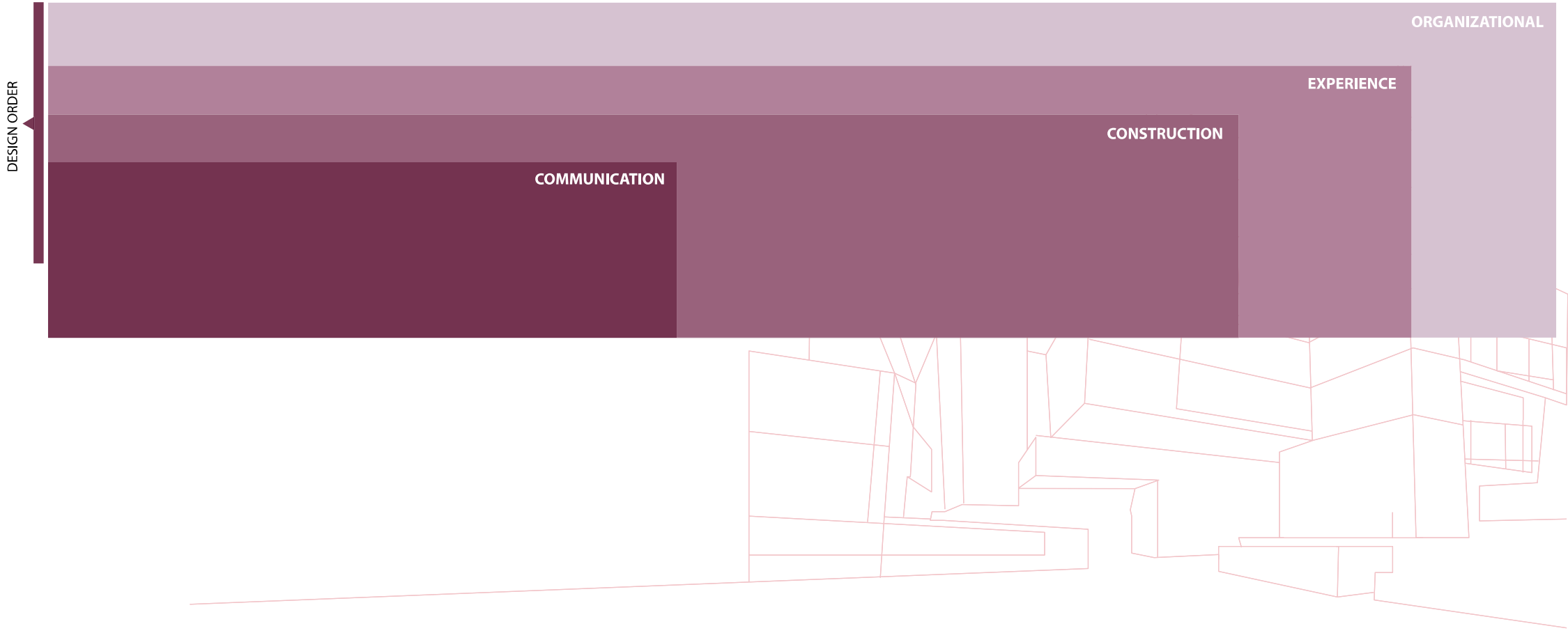


Understanding the initial Complexity

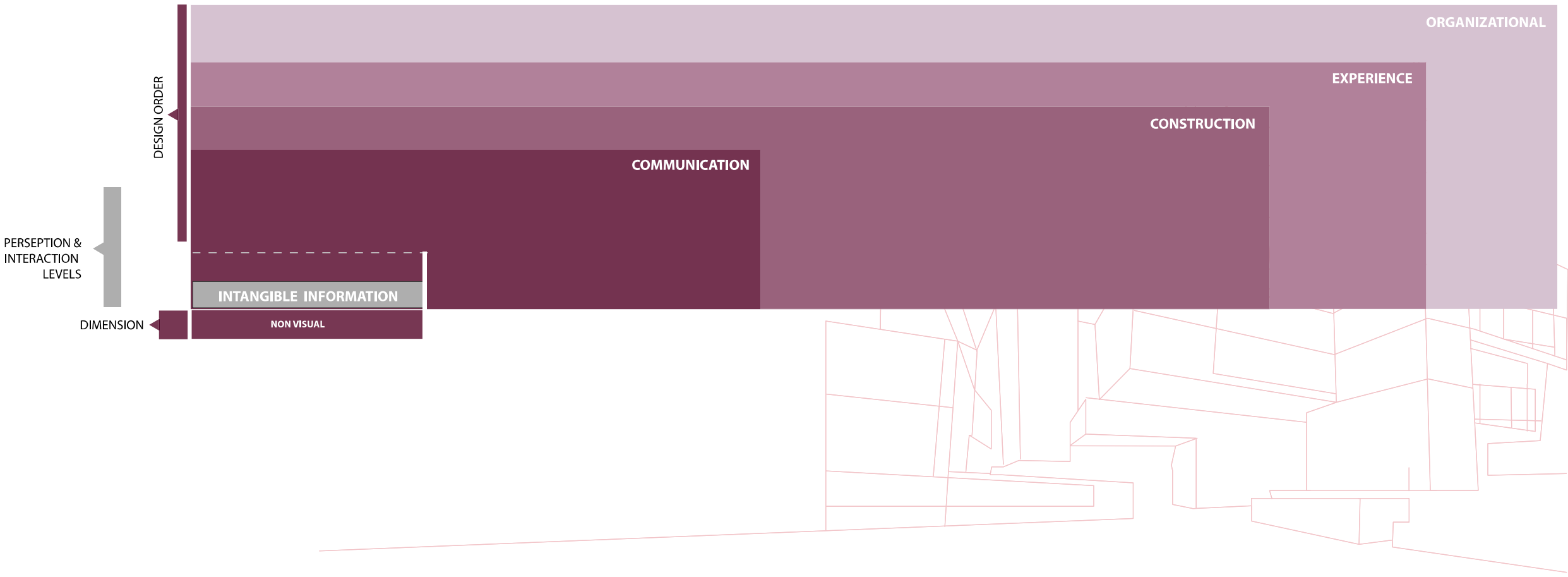
Richard Buchanan's
Design Orders Model



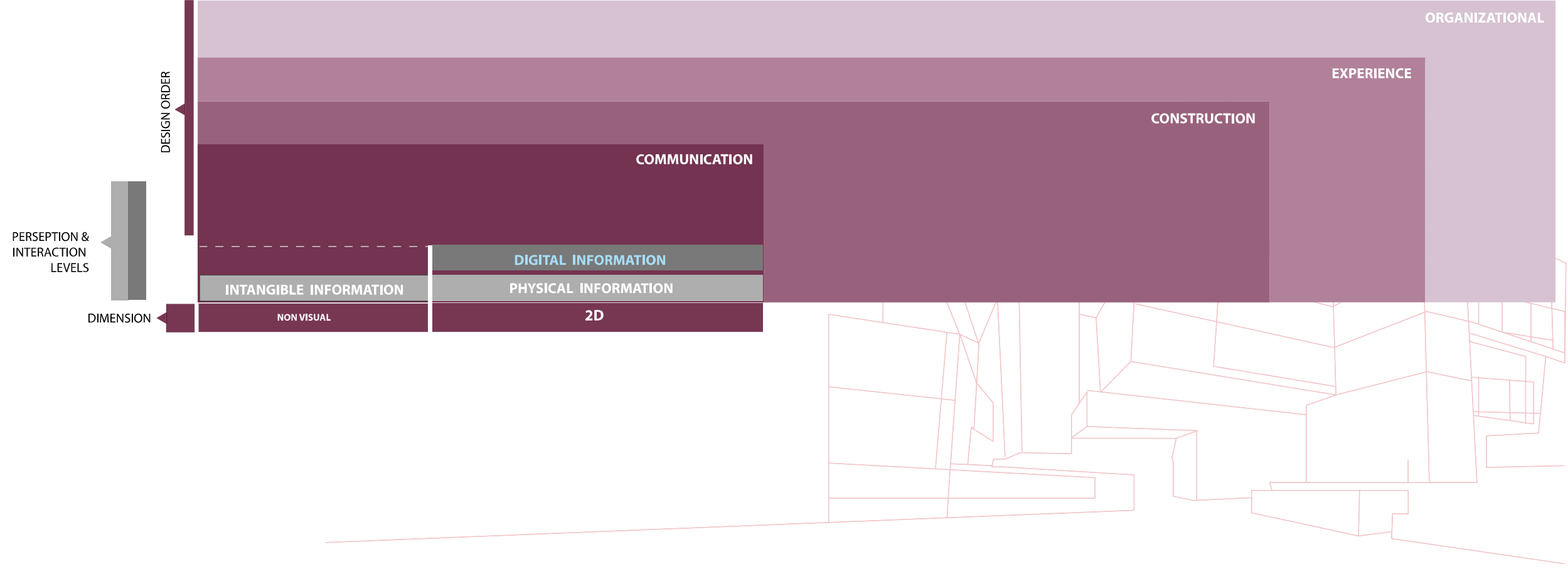
Design order and product universe coordinate chart



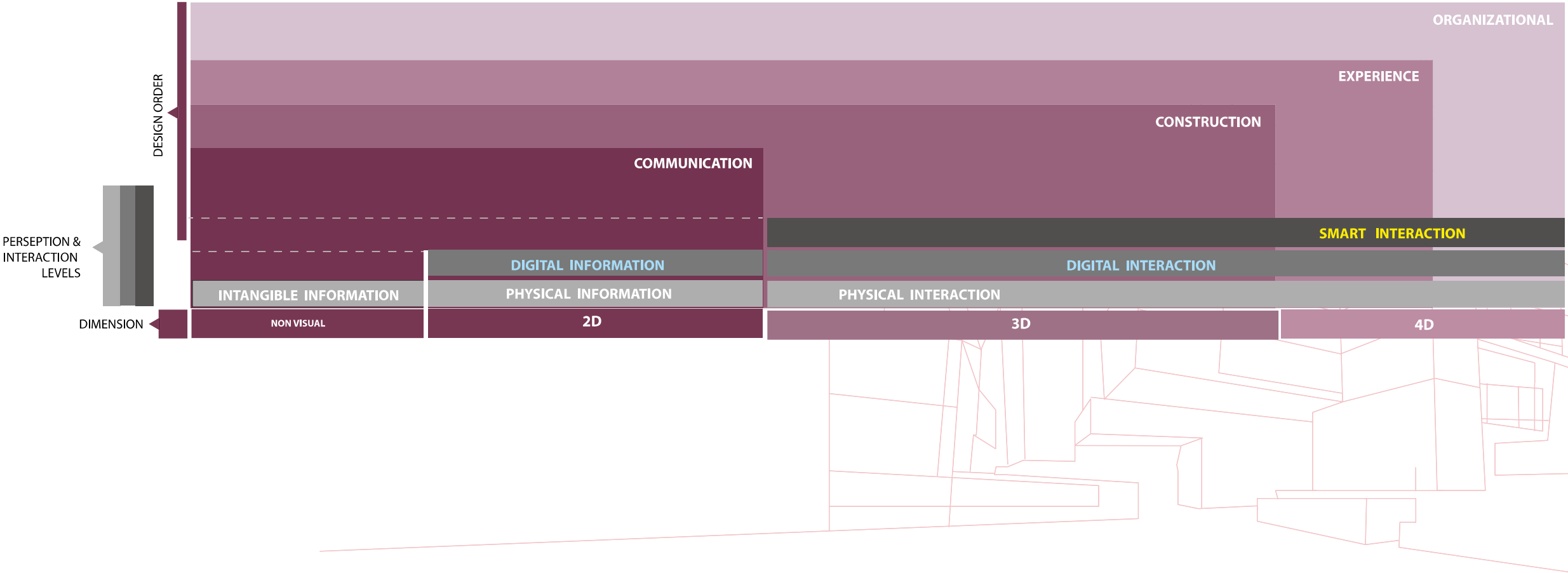
Design order and product universe coordinate chart



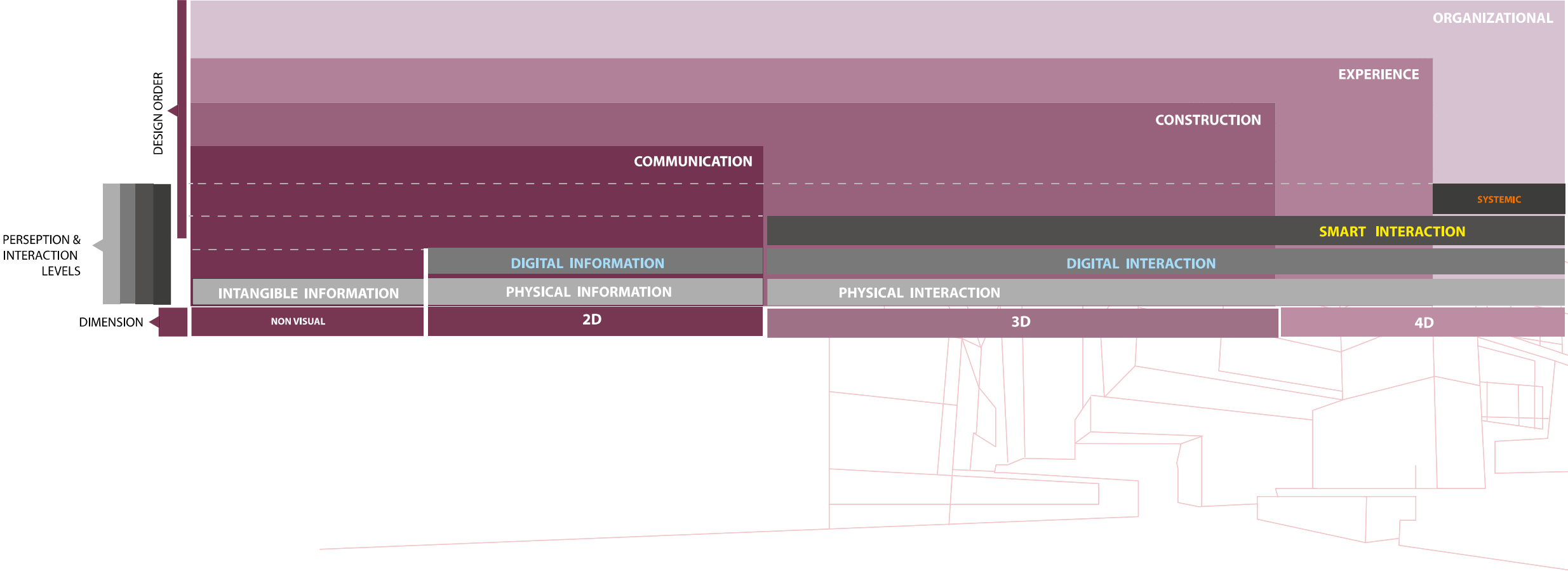
Design order and product universe coordinate chart



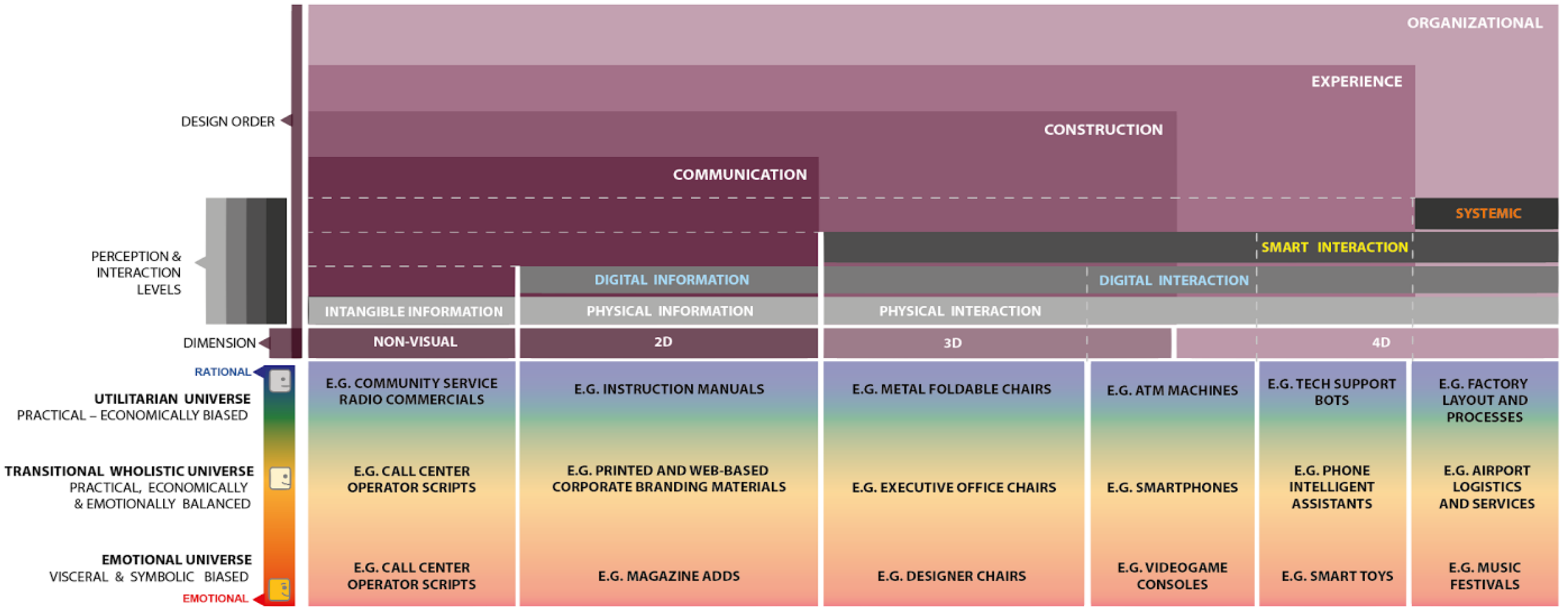
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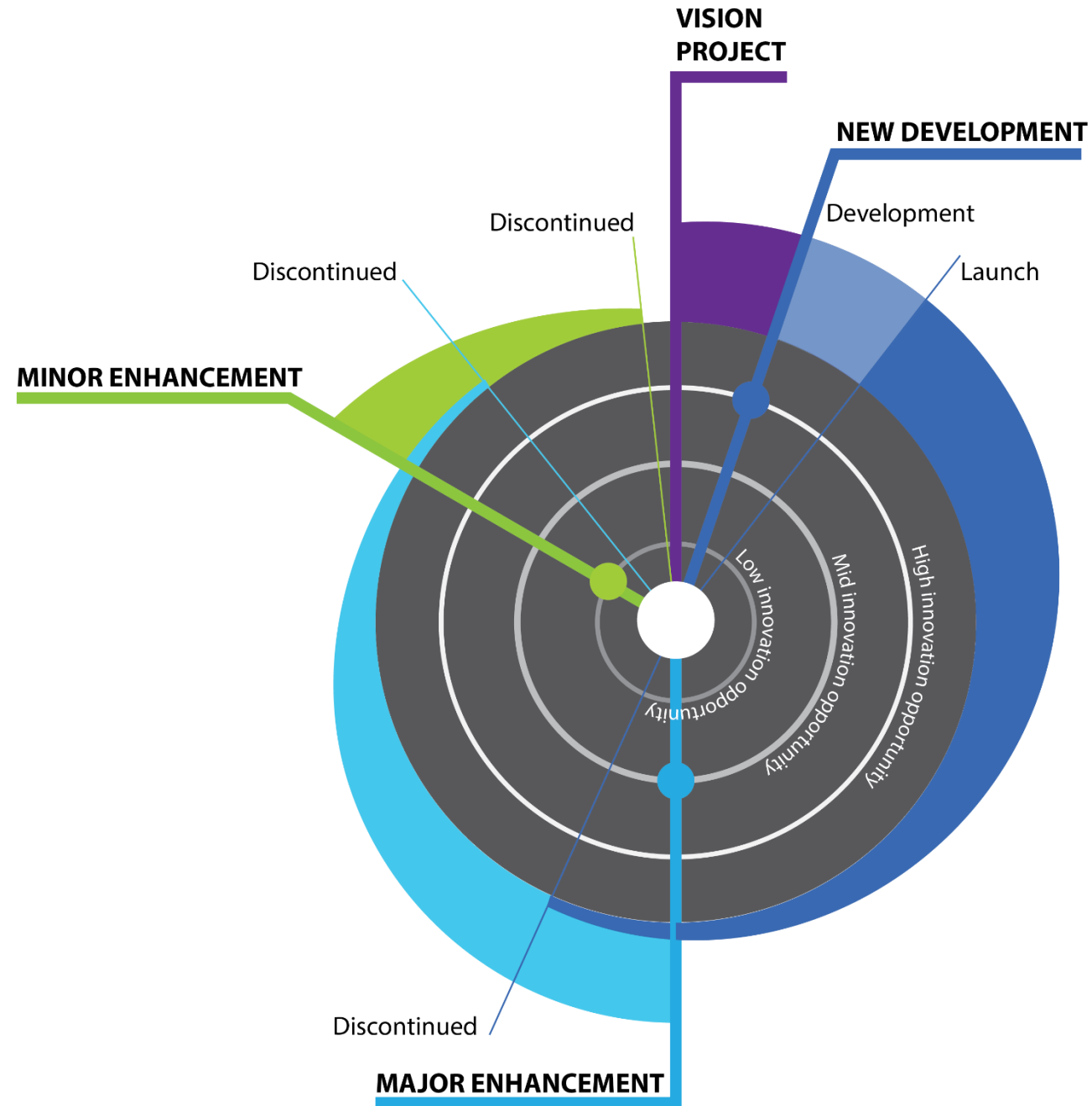
Design order and product universe coordinate chart



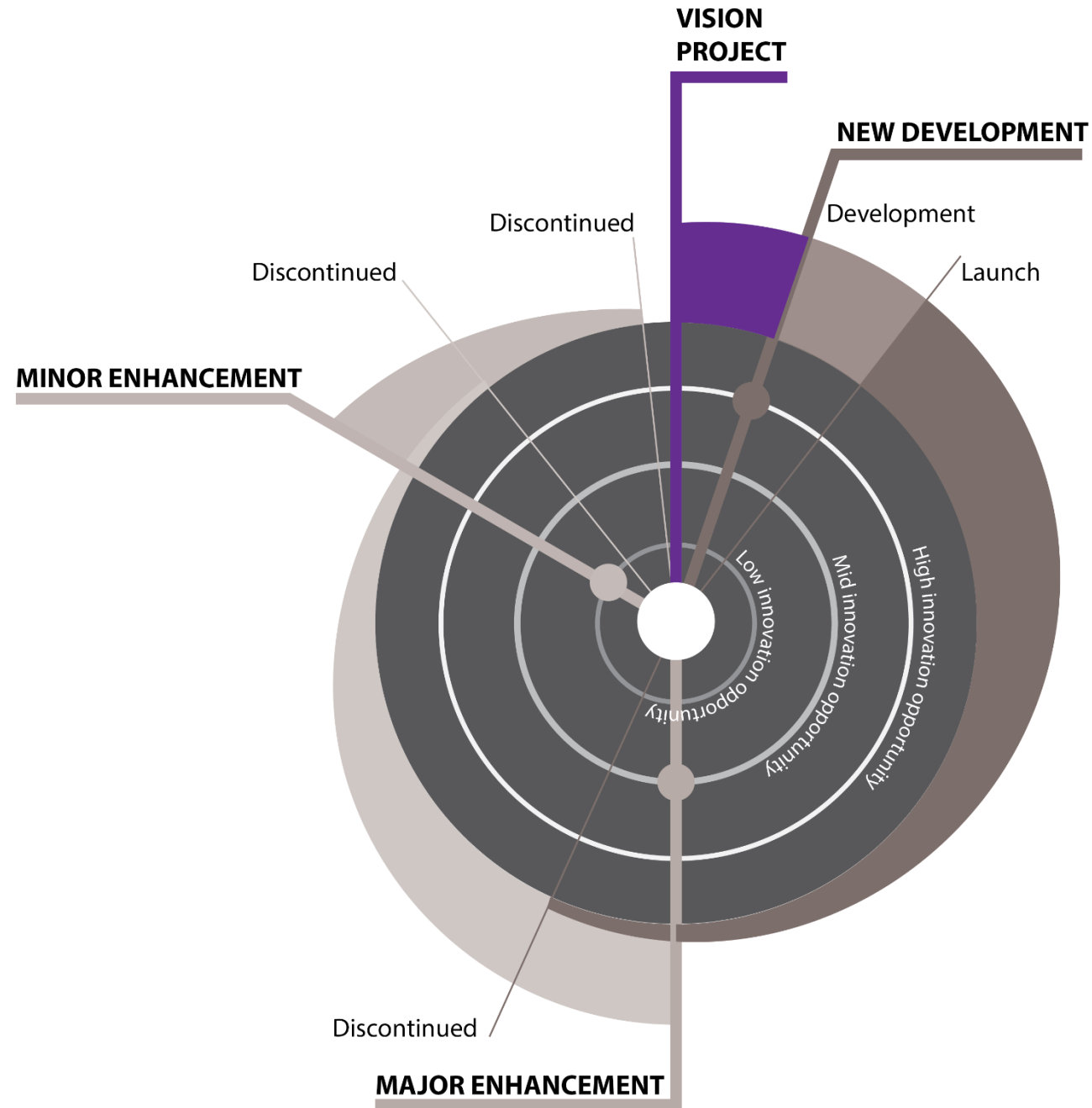
Design order and product universe coordinate chart



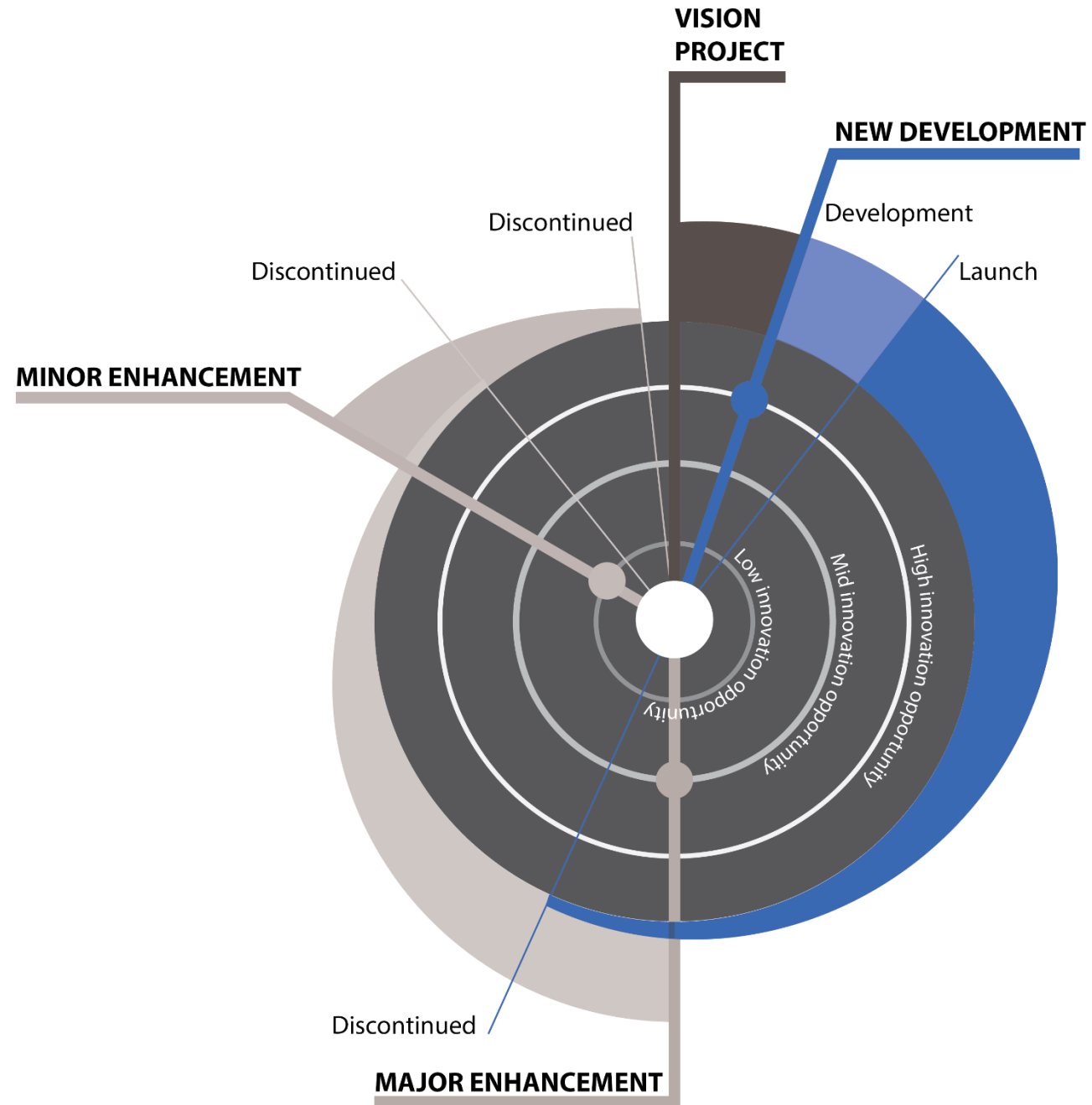
Types of project



Types of project



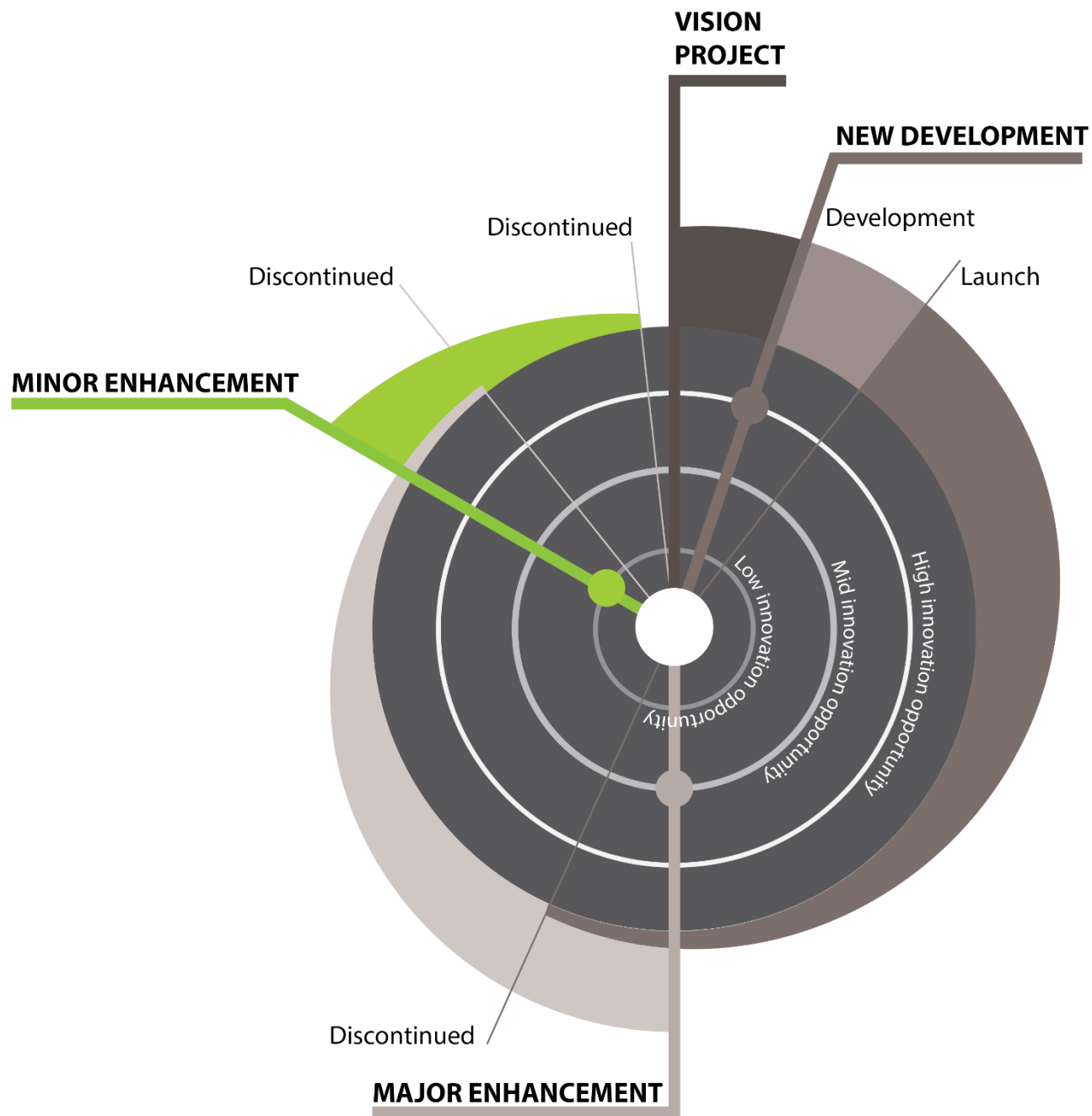
Types of project



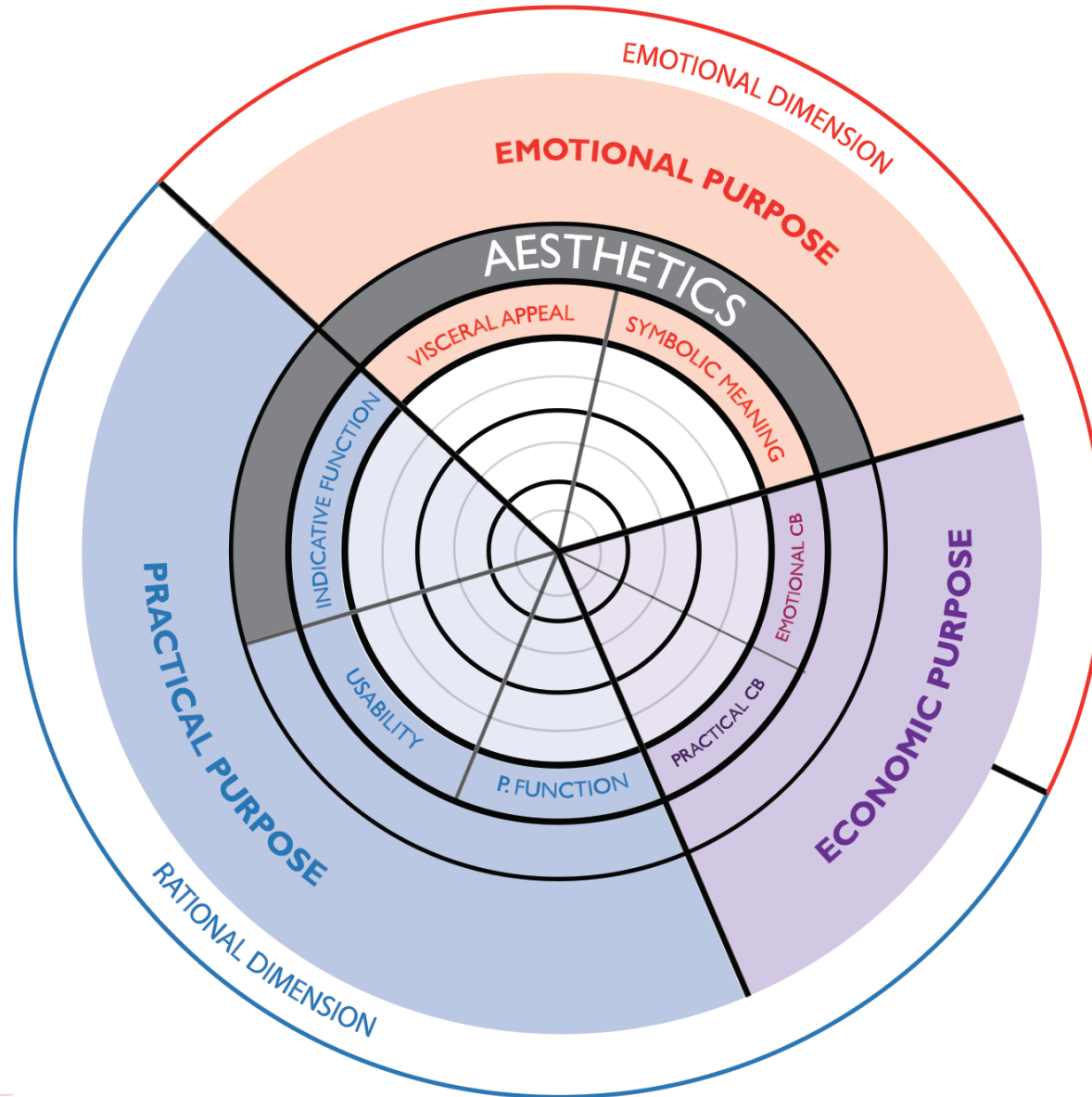
Page 10 of 10



Types of project



Value Factor Prioritization Tool

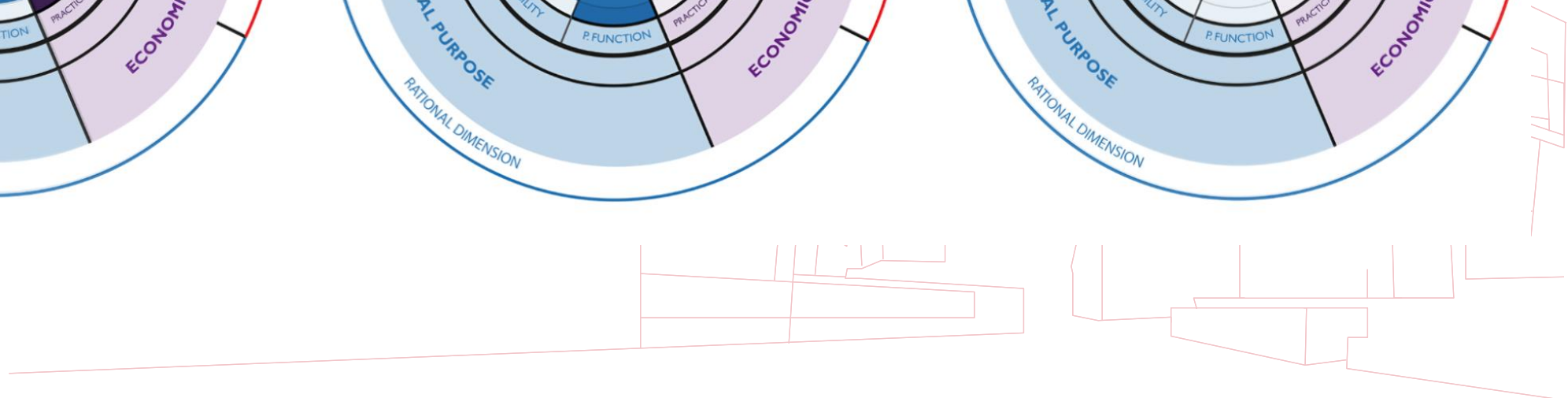
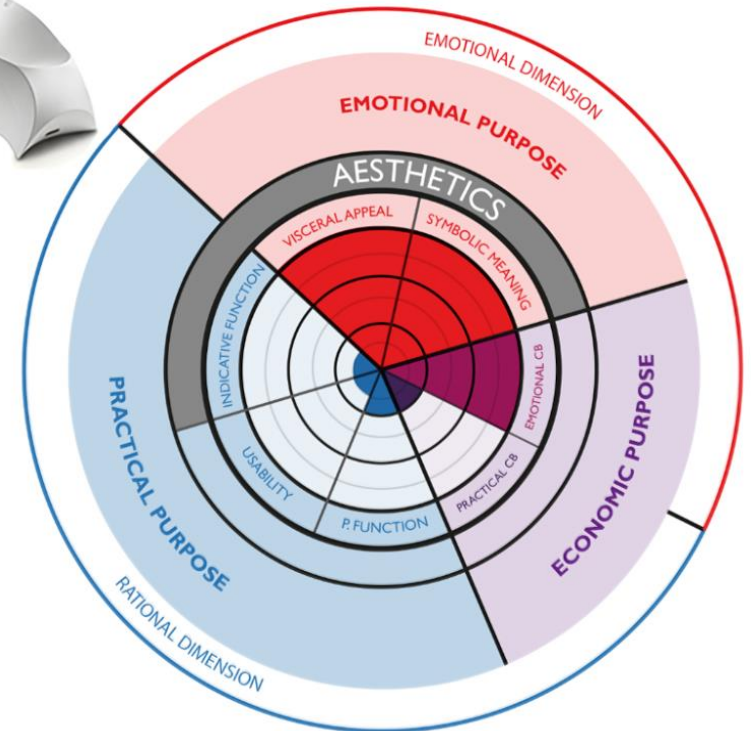
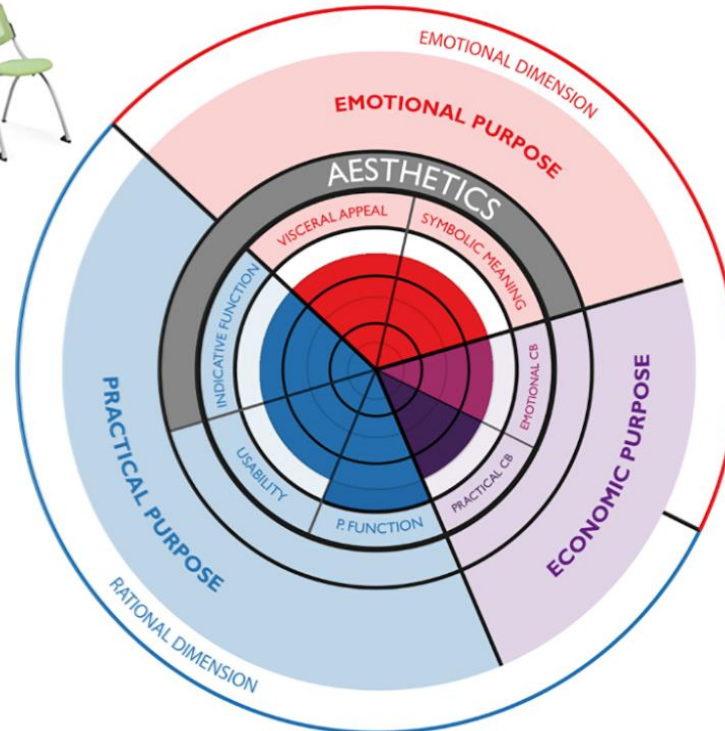
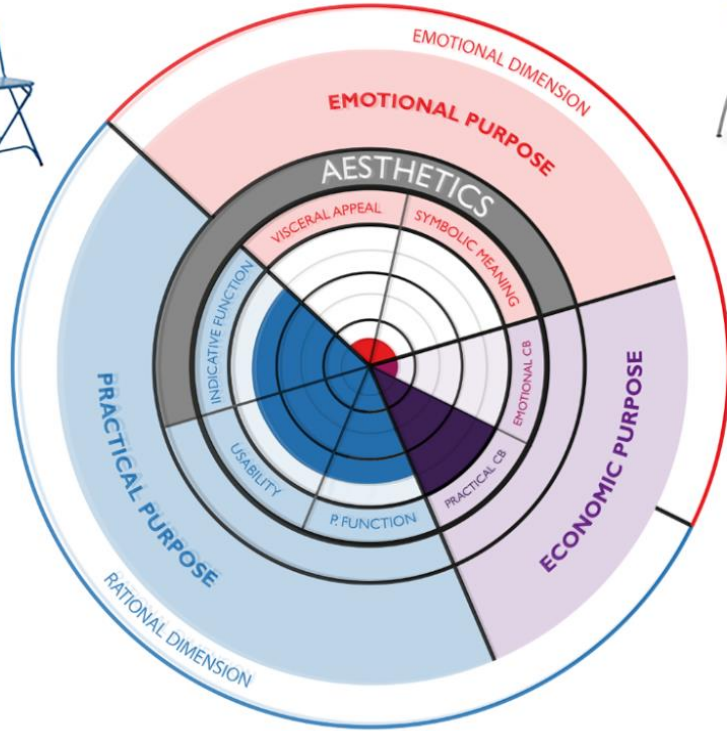


Value Factor Prioritization Tool

VALUE FACTOR	VALUE SUB-CATEGORY		Low to no priority		Mid-priority		High priority	
PRACTICAL PURPOSE	How easy-to-use, intuitive, or ergonomic does the product have to be?	Usability	1	2	3	4	5	6
	How much does the product function need to be understandable?	Indicative function	1	2	3	4	5	6
	How effectively and reliably does the product have to work?	Practical function	1	2	3	4	5	6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit	1	2	3	4	5	6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit	1	2	3	4	5	6
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal	1	2	3	4	5	6
	How much does the product rely on connecting and resonating with the person’s aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning	1	2	3	4	5	6



Value Factor Prioritization Tool

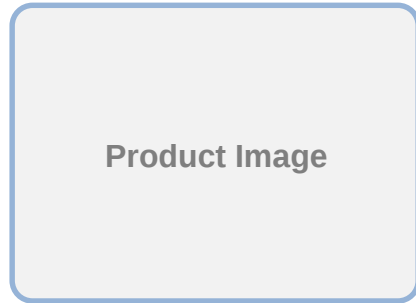


Product Identity Footprint



PROJECT STUDY

PRODUCT UNIVERSE



ETHOS = General definition according to the product universe guidelines.



**RATIONAL
DIMENSION**



**EMOTIONAL
DIMENSION**



Prosaic or Poetic Meaning level in the Aesthetic Syntax Elements



**COLD
INTERACTION**

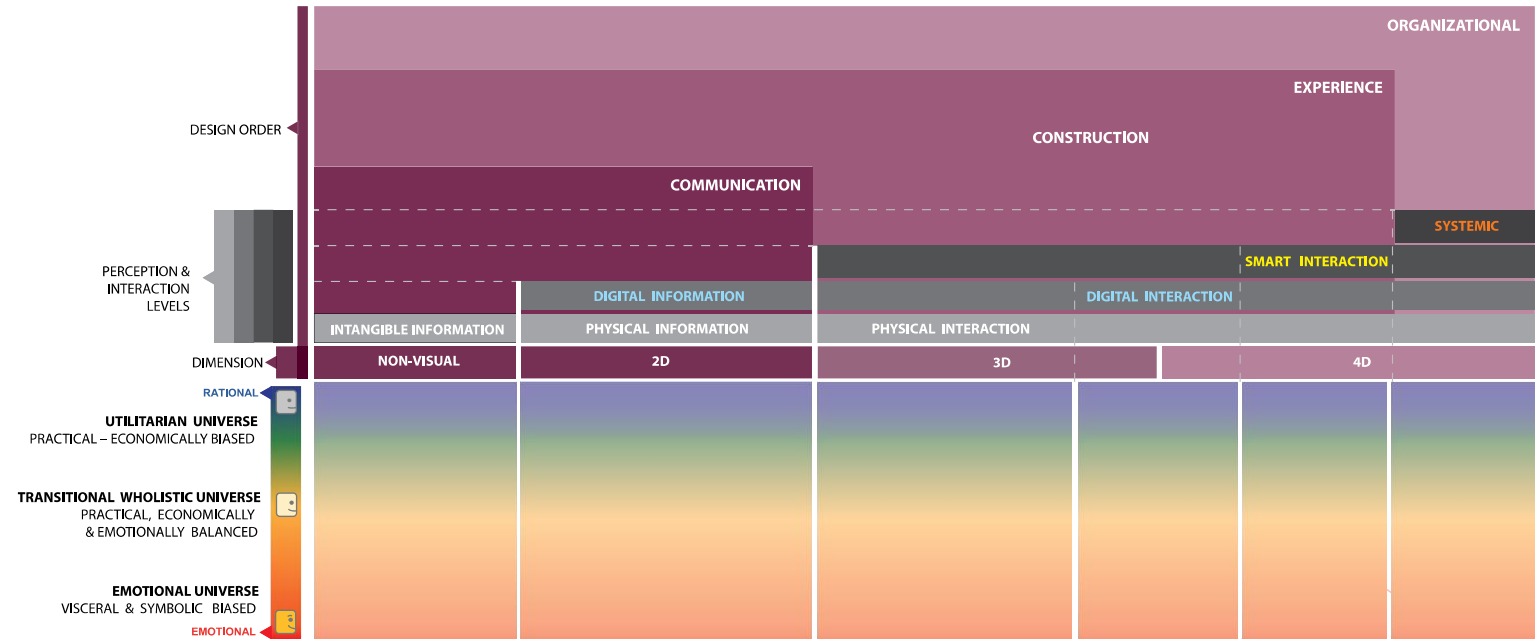


**WARM
INTERACTION**



**EMOTIONAL
INTERPLAY**

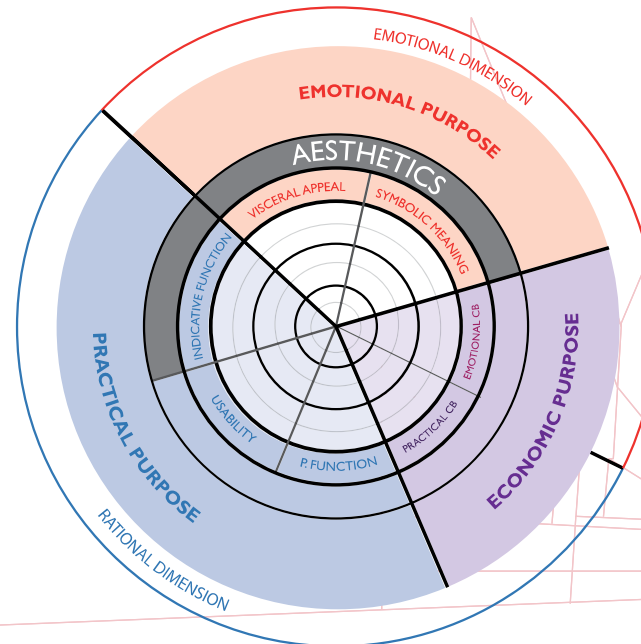
DESIGN ORDER AND PRODUCT UNIVERSE COORDINATE CHART



UNDERSTANDING THE INITIAL COMPLEXITY

Identification of the complexity characteristics of the order to which the product or service belongs to.

- Disciplines involved for project development.
- Human resource disciplines required.
- Identification of most suitable strategy for design and manufacturing.
- Exploration of project scope.
- Definition of the real vision that the client needs to crystallize the project.
- An economic scenario that demonstrates where the customer should focus resources



Type of project

Product to be developed

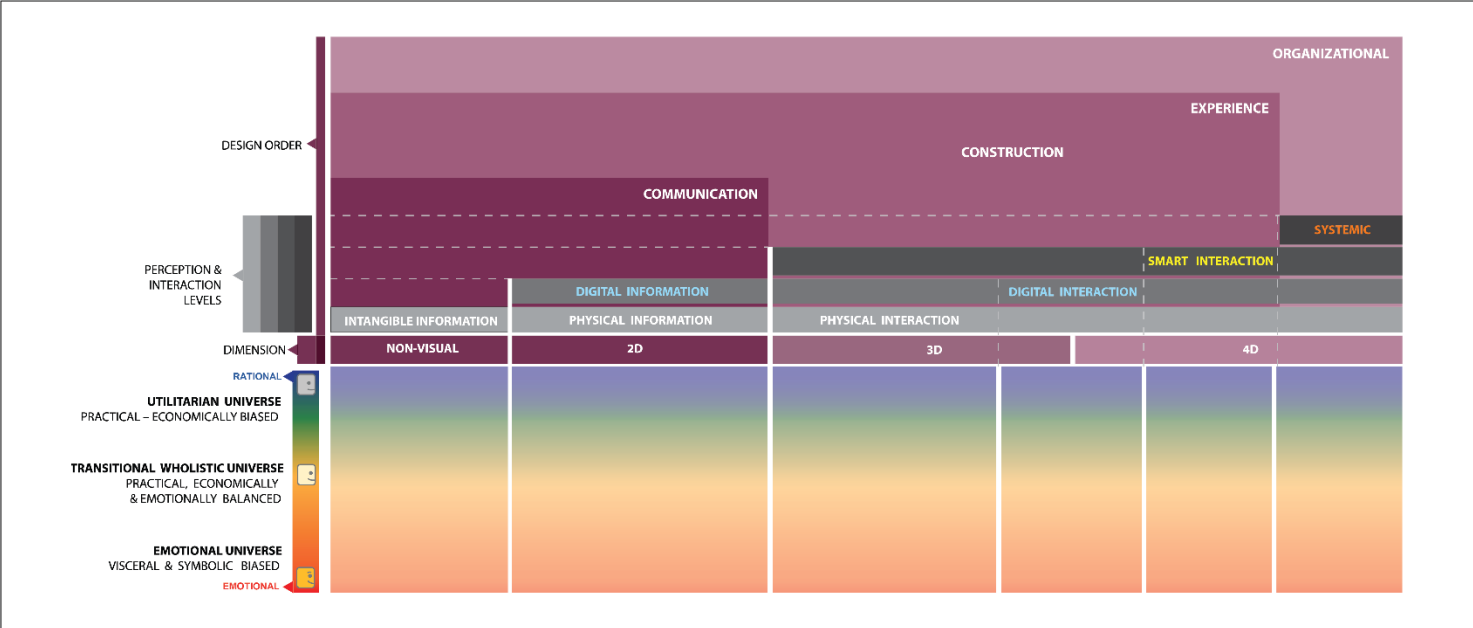
name and picture

Practical purpose:

Economic purpose:

Emotional purpose:

Design order and product universe coordinate chart



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority				
PRACTICAL PURPOSE	How easy-to-use, intuitive, or ergonomic does the product have to be?	Usability	1	2	3	4	5	6
	How much does the product function need to be understandable?	Indicative function	1	2	3	4	5	6
	How effectively and reliably does the product have to work?	Practical function	1	2	3	4	5	6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit	1	2	3	4	5	6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit	1	2	3	4	5	6
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal	1	2	3	4	5	6
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning	1	2	3	4	5	6

Design and manufacturing strategy

Disciplines involved for development:

Human resource expertise required:

Economic and time panorama:

Design and manufacturing strategy:

Type of project

MAJOR ENHANCEMENT

Product to be developed



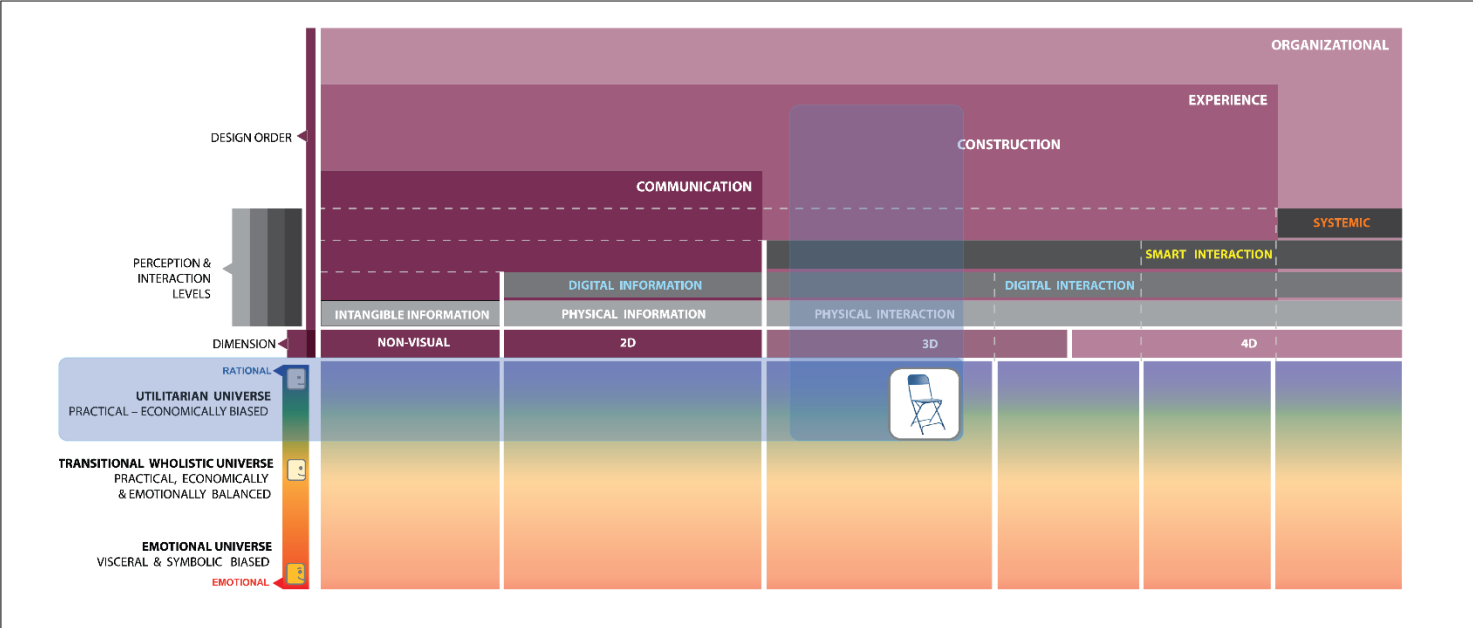
Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

Economic purpose:
The minimum amount of manufacturing processes (just sheet metal cutting, tube bending, spot welding, and painting) shows this product is intended to be made as cheaply as possible.

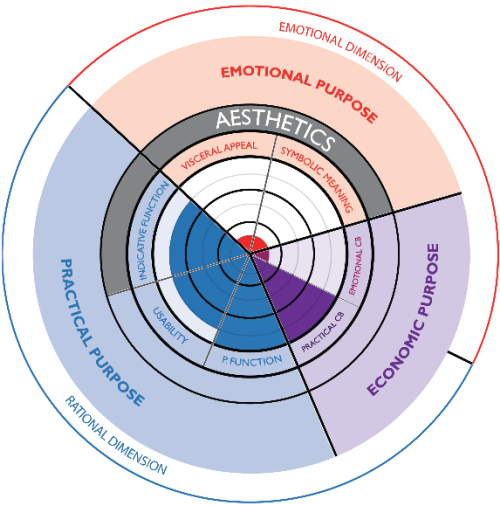
Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability in a context of short sojourn time periods and thus comfort is less important than transportability and storage.		5
	How much does the product function need to be understandable?	Indicative function (where nothing is indicated through visual or other cues, the product is very simple to understand).		5
	How effectively and reliably does the product have to work?	Practical function (it is highly important to provide short-term seating and storage).		6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit (All resources should be allocated to comply with it at the lowest cost possible).		6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit (Not important at all).	1	
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal (Not important at all).	1	
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning (Not important at all).	1	



Design and manufacturing strategy

Disciplines involved for development:
Industrial design and product engineering

Design and manufacturing strategy:
Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.

Human resource expertise required:
Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.

Economic and time panorama:
according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Type of project

MAJOR ENHANCEMENT

Product to be developed



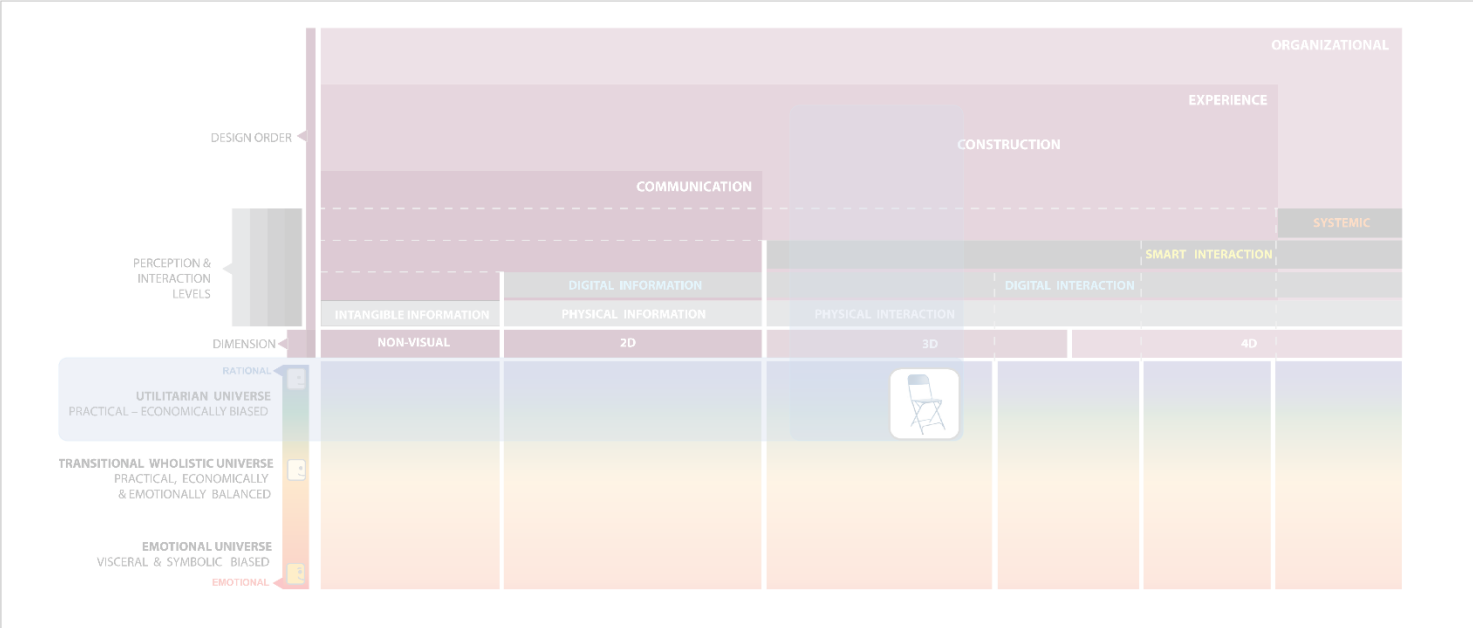
Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

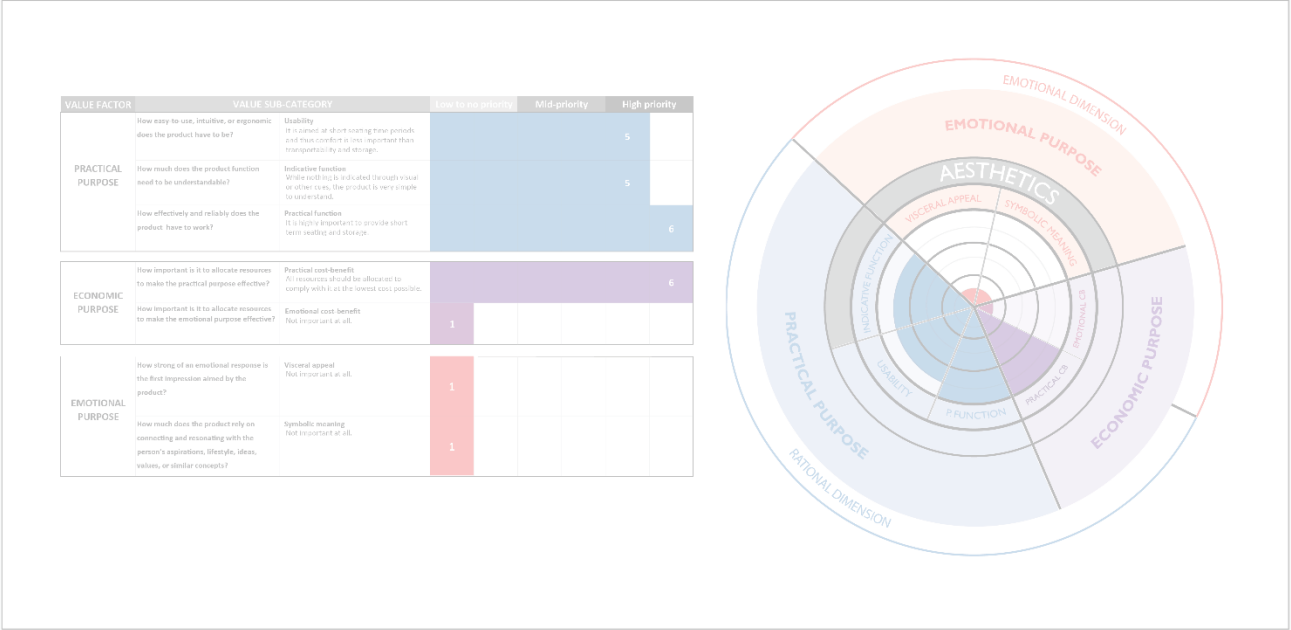
Economic purpose:
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There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart

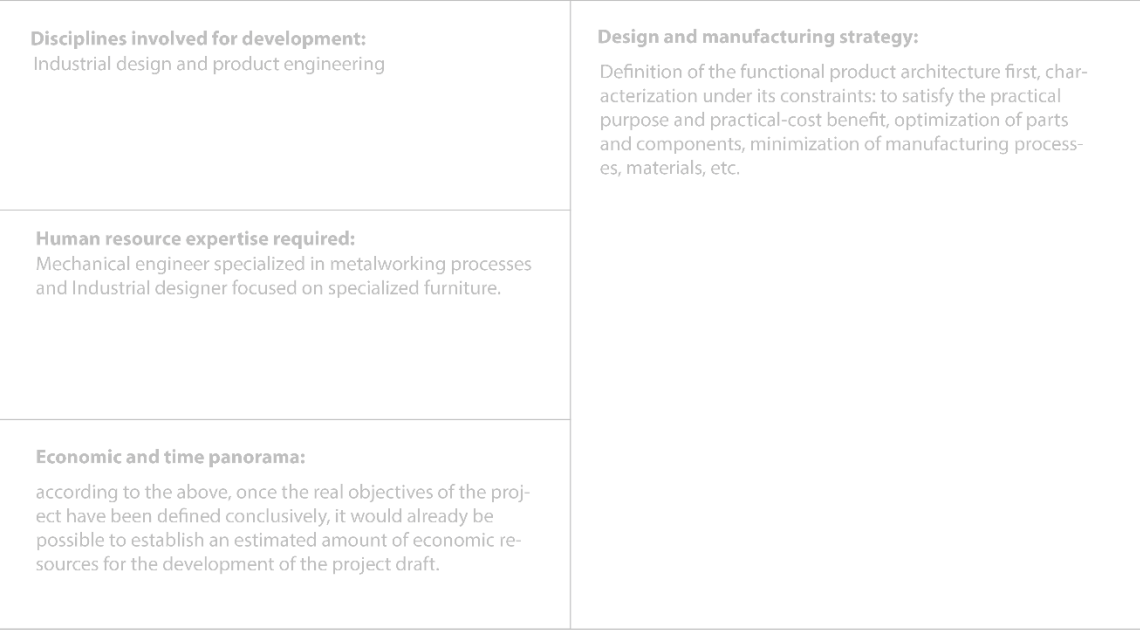


Value factor prioritization tool



VALUE FACTOR	VALUE SUB-CATEGORY	Low to mid priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability It is a virtue or short learning time periods and thus comfort is less important than transportation by and storage.		5
	How much does the product function need to be understandable?	Indicative function When nothing is indicated through visual or other cues, the product is very simple to understand.	5	
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	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit Not important at all.	1	
EMOTIONAL PURPOSE	How strong of an emotional response to the first impression aimed by the product?	Visceral appeal Not important at all.	1	
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning Not important at all.	1	

Design and manufacturing strategy



Disciplines involved for development:

Industrial design and product engineering

Design and manufacturing strategy:

Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.

Human resource expertise required:

Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.

Economic and time panorama:

according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Type of project

MAJOR ENHANCEMENT

Product to be developed

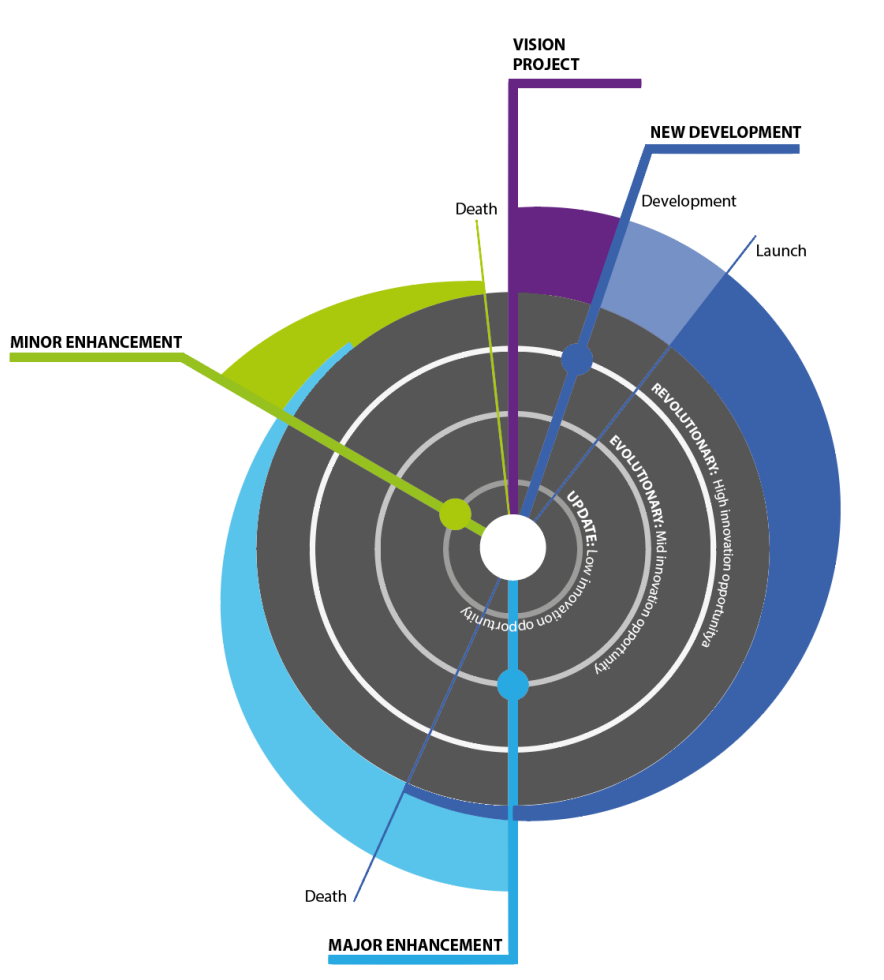


Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

Economic purpose:
The minimum amount of manufacturing processes (just sheet metal cutting, tube bending, spot welding, and painting) shows this product is intended to be made as cheaply as possible.

Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.



Type of project

MAJOR ENHANCEMENT

Product to be developed

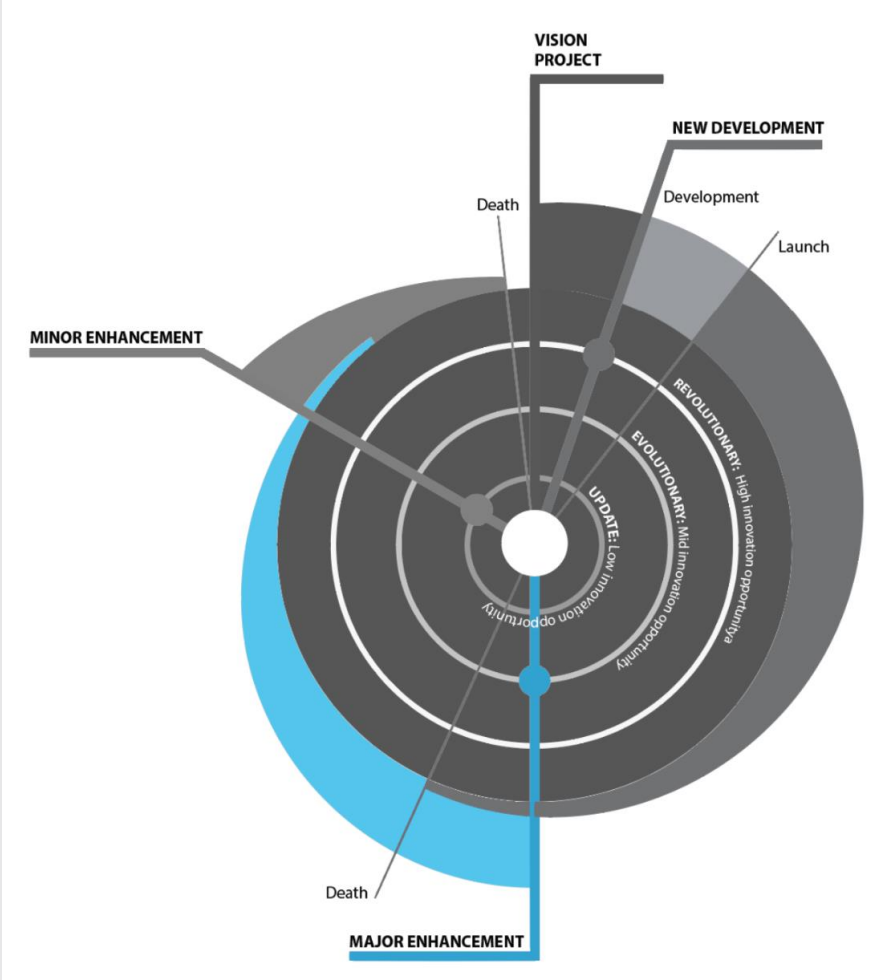


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Type of project

MAJOR ENHANCEMENT

Product to be developed

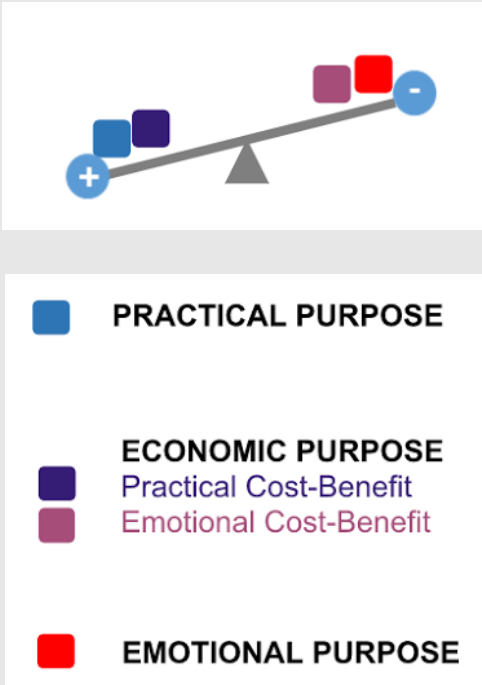


Metallic folding chair

Practical purpose:
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Type of project

MAJOR ENHANCEMENT

Product to be developed



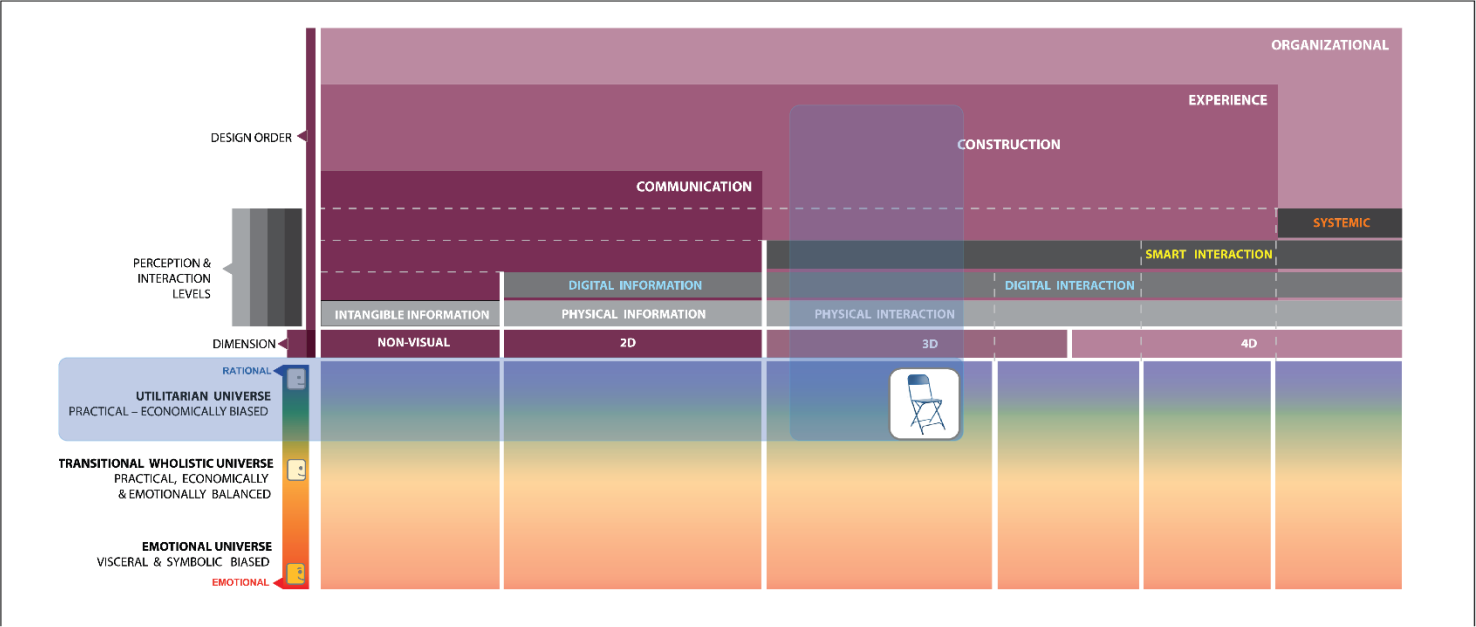
Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

Economic purpose:
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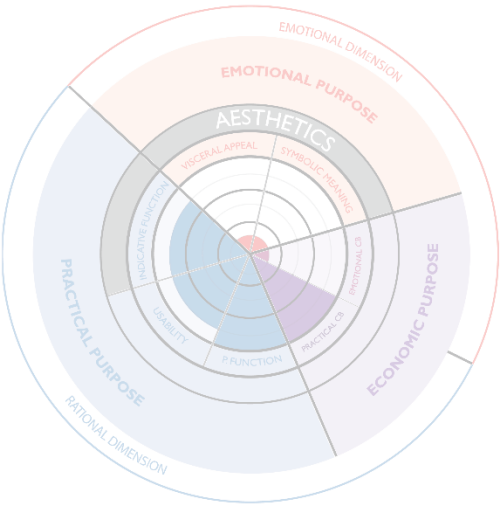
Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart



Value factor prioritization tool

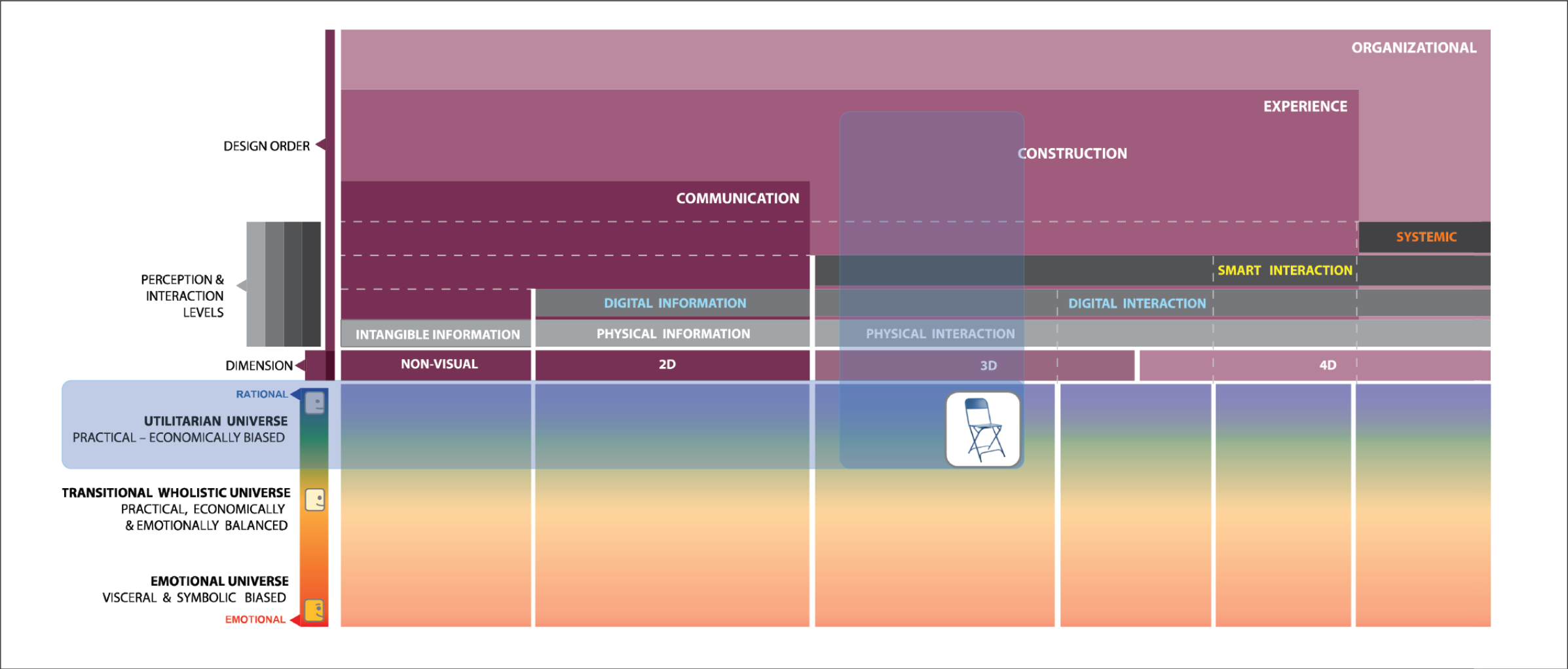
VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability It is easier or short learning time periods and thus comfort is less important than transportation by and storage.		5
	How much does the product function need to be understandable?	Indicative function When nothing is indicated through visual or other cues, the product is very simple to understand.		5
	How effectively and reliably does the product have to work?	Practical function It is highly important to provide short-term seating and storage.		6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost benefit All resources should be allocated to comply with it at the lowest cost possible.		6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost benefit Not important at all.	1	
EMOTIONAL PURPOSE	How strong of an emotional response to the first impression aimed by the product?	Visceral appeal Not important at all.	1	
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning Not important at all.	1	



Design and manufacturing strategy

Disciplines involved for development: Industrial design and product engineering	Design and manufacturing strategy: Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.
Human resource expertise required: Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.	
Economic and time panorama: according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.	

Design order and product universe coordinate chart



Type of project

MAJOR ENHANCEMENT

Product to be developed



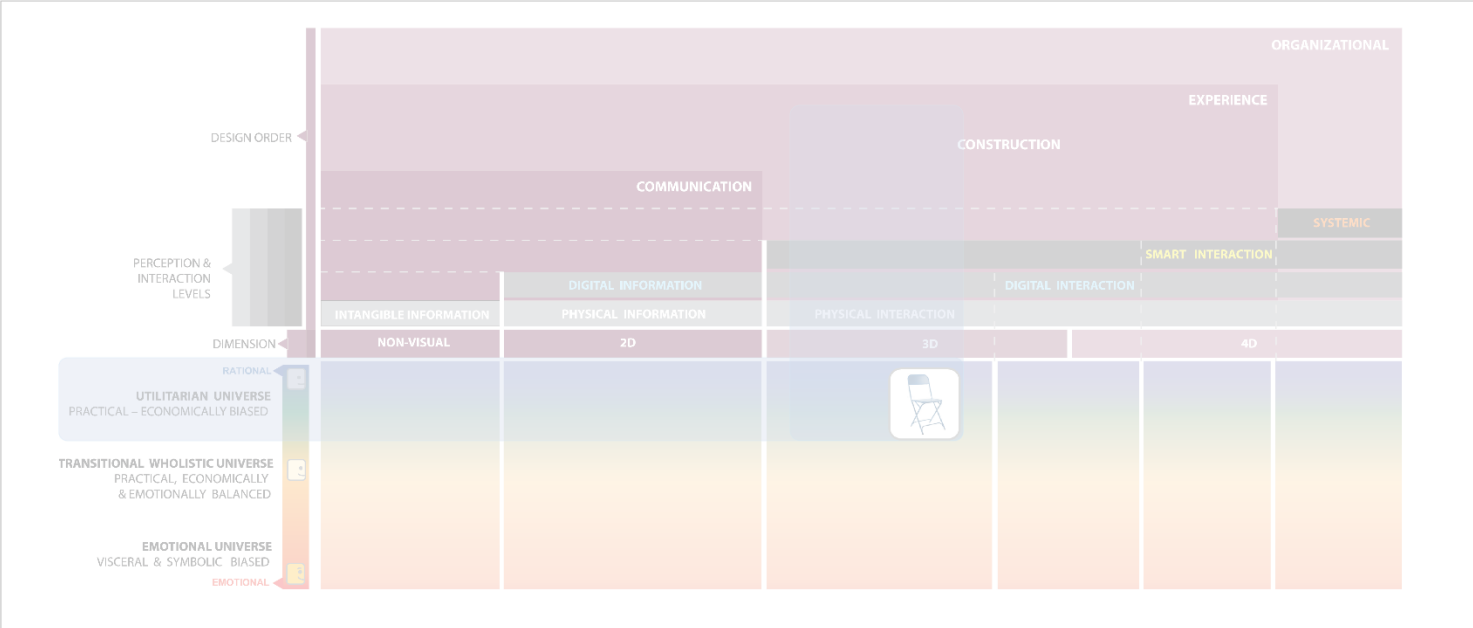
Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

Economic purpose:
The minimum amount of manufacturing processes (just sheet metal cutting, tube bending, spot welding, and painting) shows this product is intended to be made as cheaply as possible.

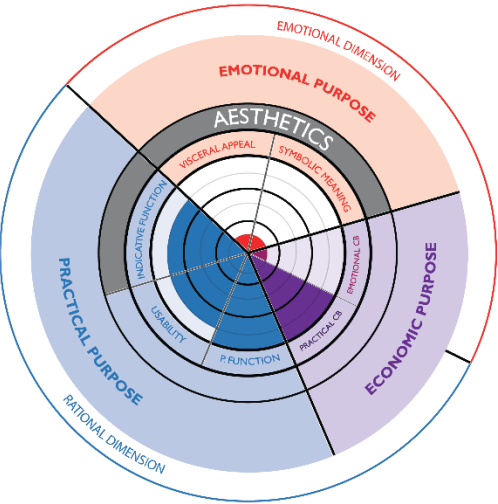
Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability in a context of short sojourn time periods and maximum comfort is less important than transportability and storage.		5
	How much does the product function need to be understandable?	Indicative function (where nothing is indicated through visual or other cues, the product is very simple to understand).		5
	How effectively and reliably does the product have to work?	Practical function (it is highly important to provide short-term seating and storage).		6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit (All resources should be allocated to comply with it at the lowest cost possible).		6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit (Not important at all).	1	
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal (Not important at all).	1	
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning (Not important at all).	1	



Design and manufacturing strategy

Disciplines involved for development:
Industrial design and product engineering

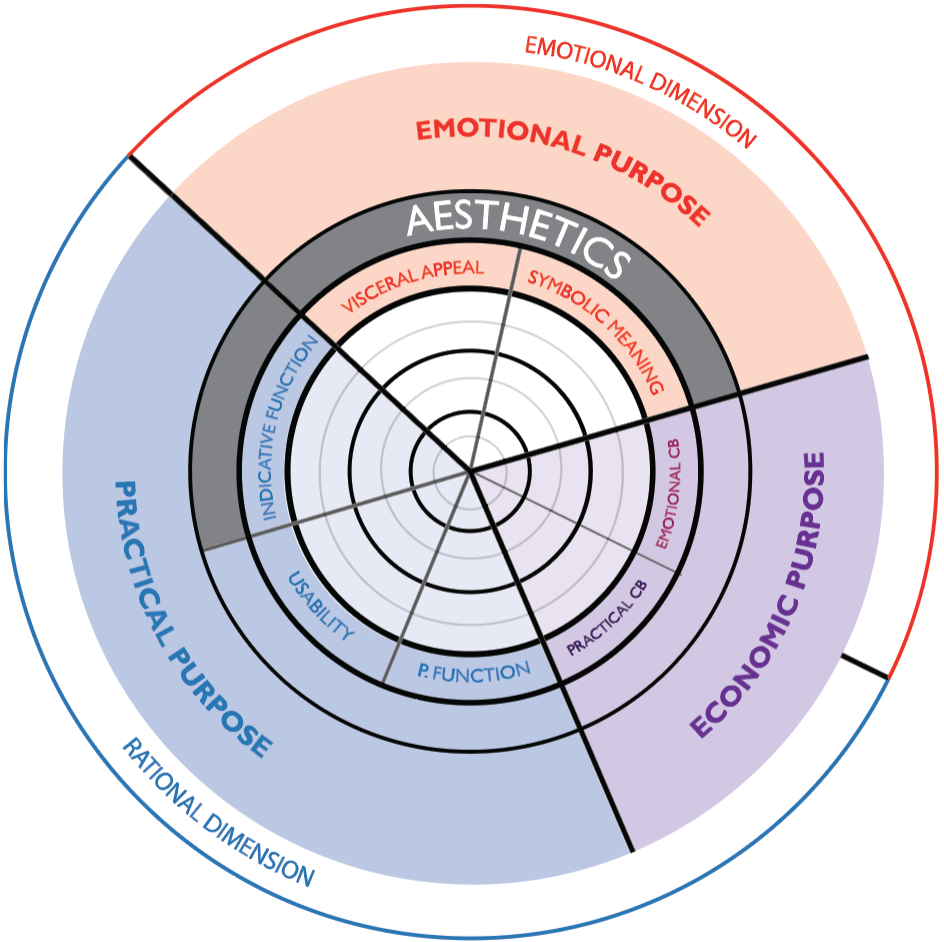
Design and manufacturing strategy:
Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.

Human resource expertise required:
Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.

Economic and time panorama:
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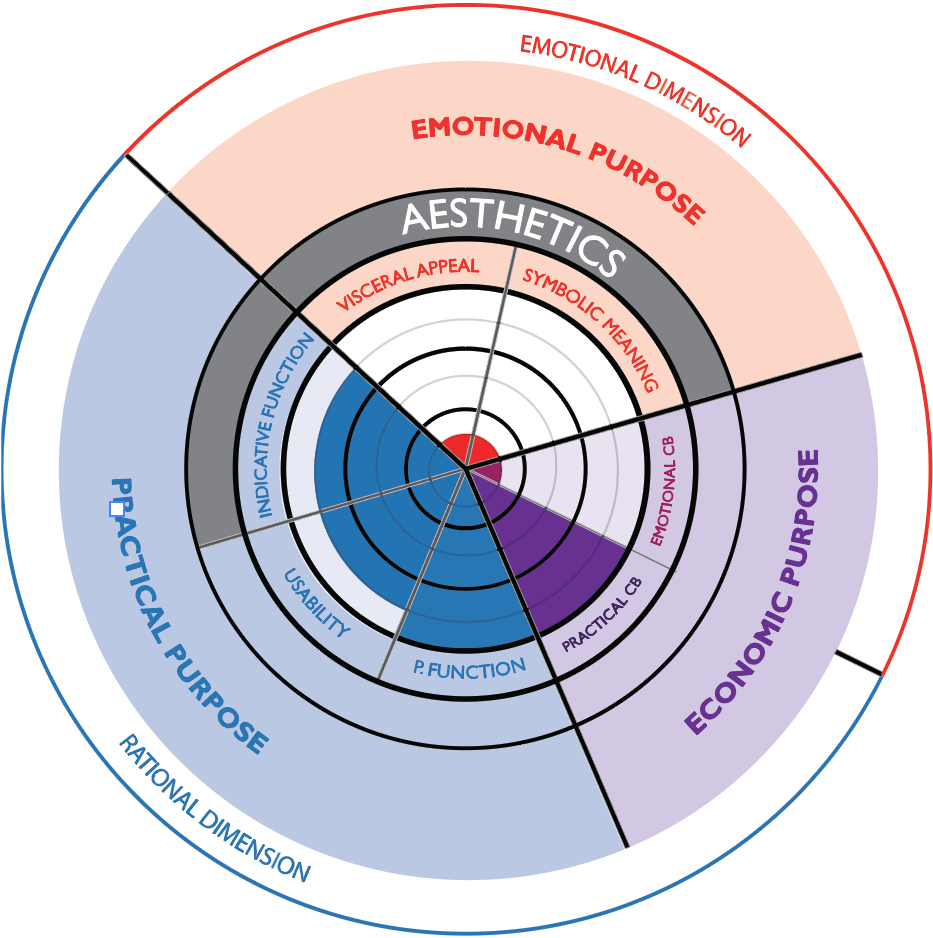
Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority		Mid-priority		High priority	
PRACTICAL PURPOSE	How easy-to-use, intuitive, or ergonomic does the product have to be?	1	2	3	4	5	6
	How much does the product function need to be understandable?	1	2	3	4	5	6
	How effectively and reliably does the product have to work?	1	2	3	4	5	6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	1	2	3	4	5	6
	How important is it to allocate resources to make the emotional purpose effective?	1	2	3	4	5	6
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	1	2	3	4	5	6
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?		2	3	4	5	6



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY		Low to no priority			Mid-priority		High priority	
PRACTICAL PURPOSE	How easy-to-use, intuitive, or ergonomic does the product have to be?	Usability It is aimed at short seating time periods and thus comfort is less important than transportability and storage.						5	
	How much does the product function need to be understandable?	Indicative function While nothing is indicated through visual or other cues, the product is very simple to understand.						5	
	How effectively and reliably does the product have to work?	Practical function It is highly important to provide short term seating and storage.							6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit All resources should be allocated to comply with it at the lowest cost possible.	6						
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit Not important at all.	1						
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal Not important at all.	1						
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning Not important at all.	1						



Type of project

MAJOR ENHANCEMENT

Product to be developed



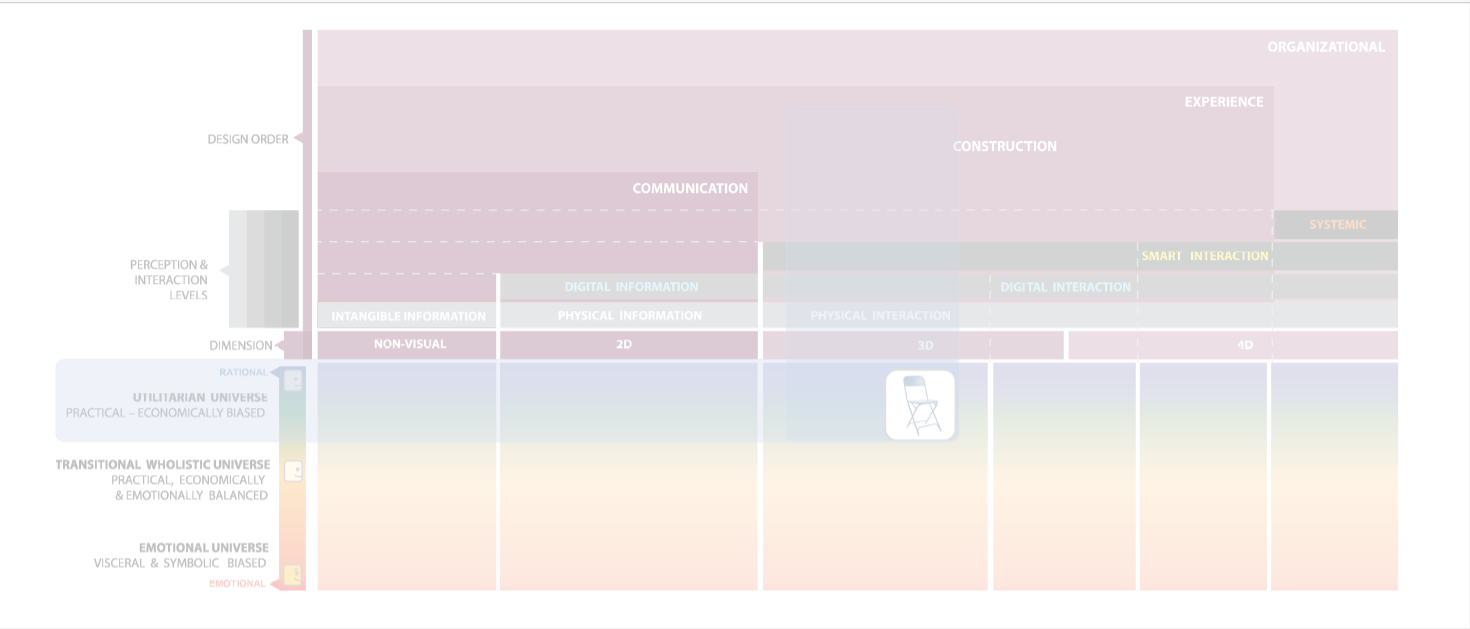
Metallic folding chair

Practical purpose:
To provide short-term seating in restaurants, cafes, or events while being easy to store and transport.

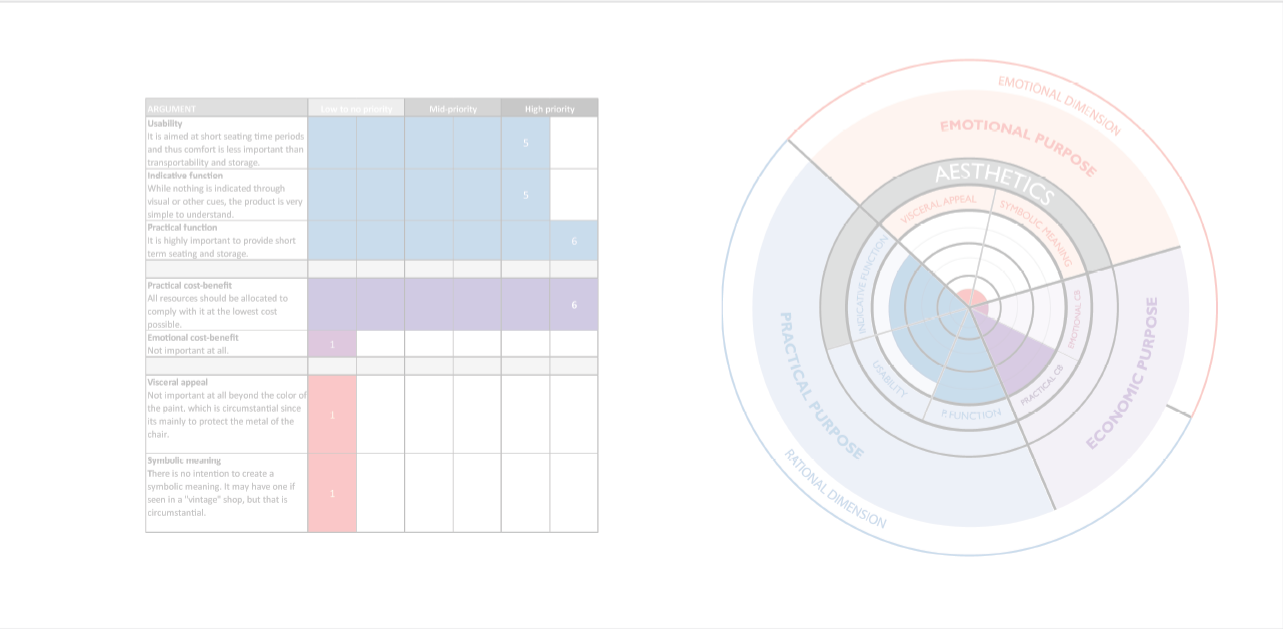
Economic purpose:
The minimum amount of manufacturing processes (just sheet metal cutting, tube bending, spot welding, and painting) shows this product is intended to be made as cheaply as possible.

Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart



Value factor prioritization tool



Design and manufacturing strategy

Disciplines involved for development:
Industrial design and product engineering

Design and manufacturing strategy:
Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.

Human resource expertise required:
Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.

Economic and time panorama:
according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Design and manufacturing strategy

Disciplines involved for development: Industrial design and product engineering	Design and manufacturing strategy: Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing processes, materials, etc.
Human resource expertise required: Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.	
Economic and time panorama: according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.	

Type of project

MAJOR ENHANCEMENT

Product to be developed



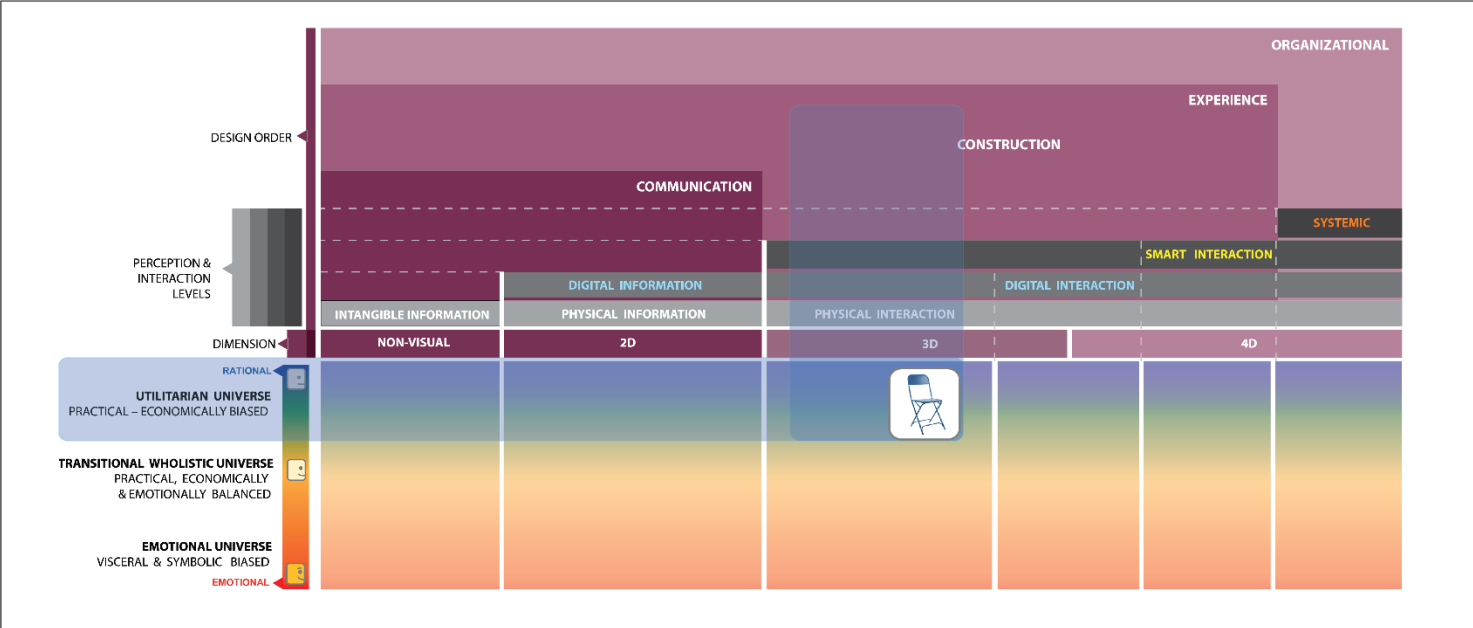
Metallic folding chair

Practical purpose:
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Economic purpose:
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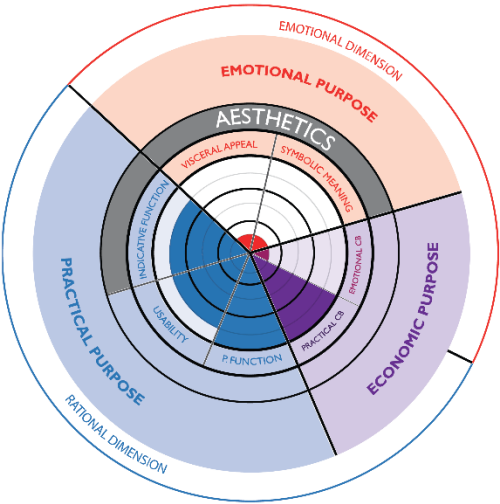
Emotional purpose:
There is no aim to produce any response from the user. Only color could be used as possible.

Design order and product universe coordinate chart



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability in a context of short spanning time periods and thus comfort is less important than transportation and storage.		5
	How much does the product function need to be understandable?	Indicative function: When nothing is indicated through visual or other cues, the product is very simple to understand.		5
	How effectively and reliably does the product have to work?	Practical function: It is highly important to provide short-term seating and storage.		6
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit: All resources should be allocated to comply with it at the lowest cost possible.		6
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit: Not important at all.	1	
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal: Not important at all.	1	
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning: Not important at all.	1	



Design and manufacturing strategy

Disciplines involved for development:
Industrial design and product engineering

Human resource expertise required:
Mechanical engineer specialized in metalworking processes and Industrial designer focused on specialized furniture.

Economic and time panorama:
according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Design and manufacturing strategy:
Definition of the functional product architecture first, characterization under its constraints: to satisfy the practical purpose and practical-cost benefit, optimization of parts and components, minimization of manufacturing process-

Functional product architecture is developed first.

Product characterization is developed to match.

Type of project

NEW DEVELOPMENT

Product to be developed



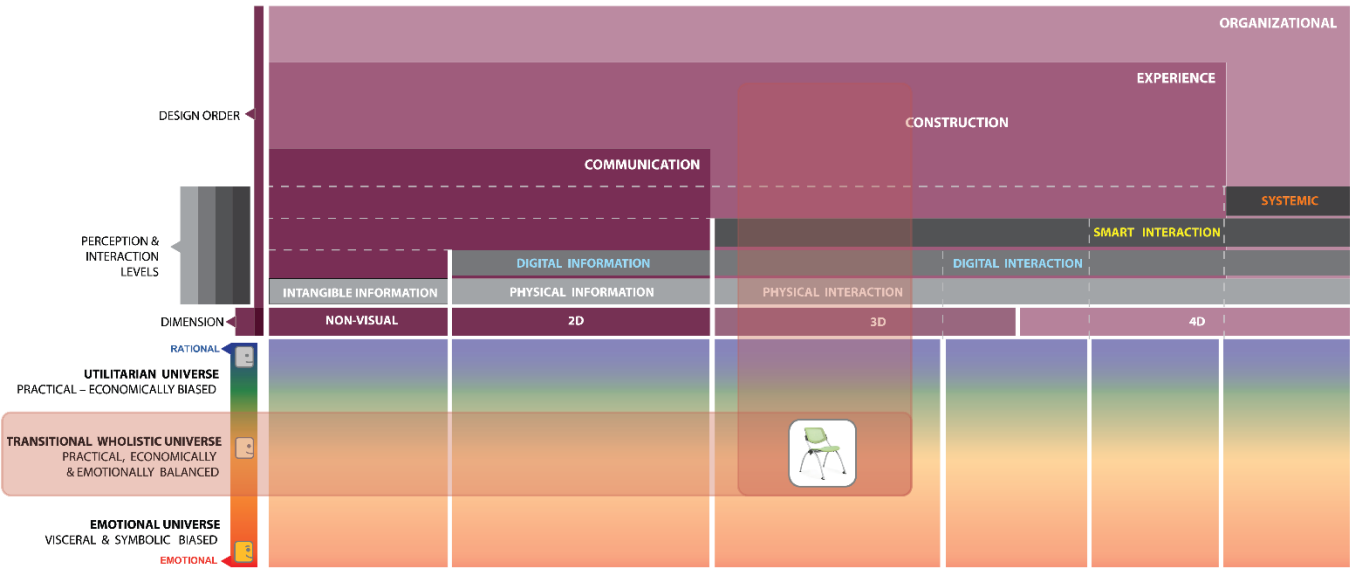
Simple OEM Middle East green fabric folding staff office chair

Practical purpose:
Provide seating sessions for seminars in executive settings. The product needs to fold to be stored in rooms that have transformable settings.

Economic purpose:
The product should look right up to the executive space standards, work flawlessly every time, and be competitive in terms of market price.

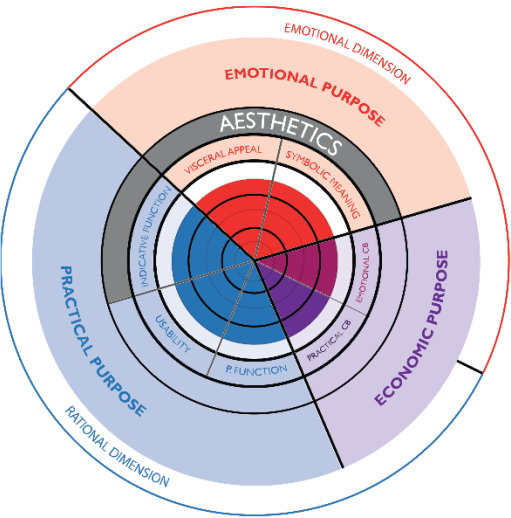
Emotional purpose:
The chair should look professional and refined while blending with the environment.

Design order and product universe coordinate chart



Value factor prioritization tool

VALUE FACTOR	VALUE SUB-CATEGORY	Low to no priority	Mid-priority	High priority
PRACTICAL PURPOSE	How easy to use, intuitive, or ergonomic does the product have to be?	Usability Comfort and ergonomics are important for no-learn seating sessions.		5
	How much does the product function need to be understandable?	Indicative function Touchpoints for operation are indicated with colors and material changes.		5
	How effectively and reliably does the product have to work?	Practical function The product needs to fulfill the practical purpose flawlessly and reliably every time.		5
ECONOMIC PURPOSE	How important is it to allocate resources to make the practical purpose effective?	Practical cost-benefit Important. Resources should be allocated to provide a comfortable chair for its intended use spans, make it foldable.		5
	How important is it to allocate resources to make the emotional purpose effective?	Emotional cost-benefit Important. Resources should provide quality materials and manufacturing processes.		5
EMOTIONAL PURPOSE	How strong of an emotional response is the first impression aimed by the product?	Visceral appeal Important, while the chair does not seek to stand out, it is pleasing to the eye and its use of color is calculated and executed intentionally.		5
	How much does the product rely on connecting and resonating with the person's aspirations, lifestyle, ideas, values, or similar concepts?	Symbolic meaning It only needs to look like a "chair" in an executive professional environment, but does not need to create more intense emotions. Office is money.		5



Design and manufacturing strategy

Disciplines involved for development:
Industrial Design, Product Engineering, Ergonomics and Materials Engineering.

Human resource expertise required:
Mechanical engineer specialized in metalworking processes, Polymer Engineer, and Industrial Designer focused on specialized furniture, Specialist in Ergonomics and Human Factors, Specialist in Textiles.

Economic and time panorama:
according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Design and manufacturing strategy:
Definition of the functional product architecture and characterization simultaneously and at the same importance level:

- Research (market, users)
- Opportunity area identification and definition of target.
- Identification of type of project.
- Selection of best design proposal.
- Design engineering of parts and components, iterative prototyping and optimization.
- Manufacturing and new product marketing.

Functional product architecture and product characterization should be co-developed at the same importance level.

Type of project

NEW DEVELOPMENT

Flux chair

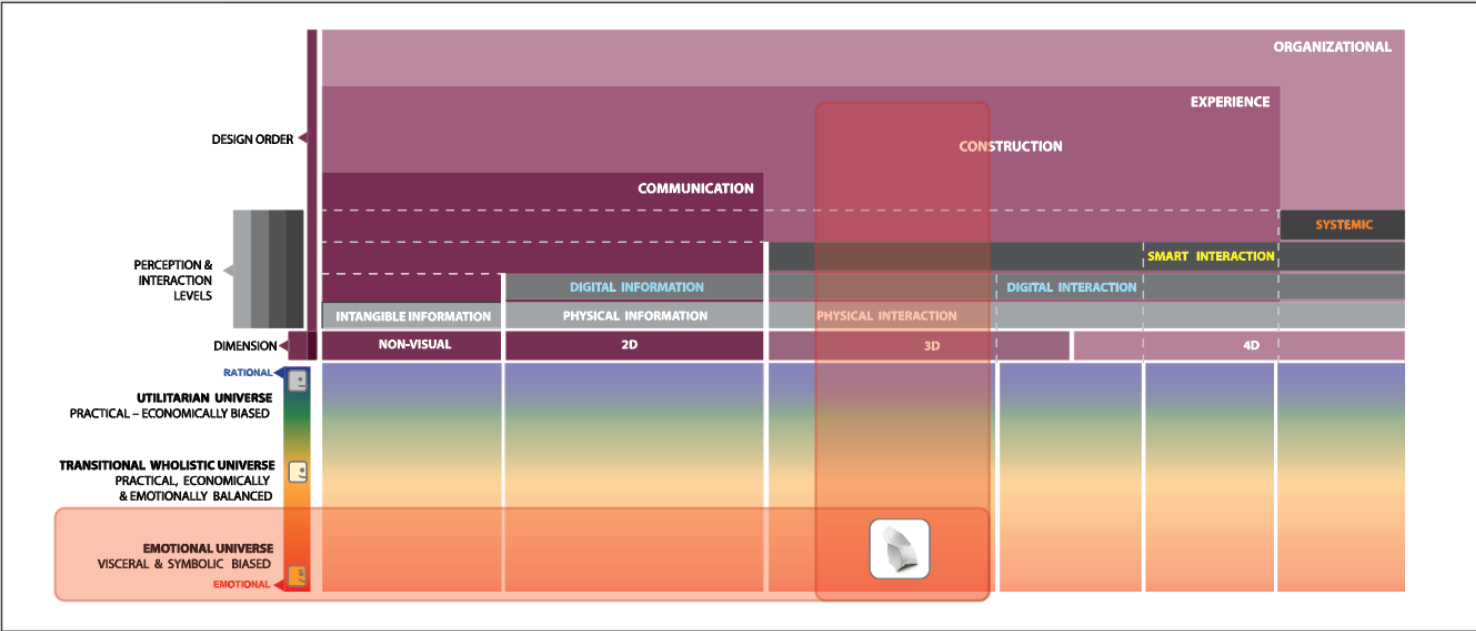


Practical purpose:
Provide seating in the home environment and fold flat for storage.

Economic purpose:
While the chair is made with simple manufacturing, processes, and materials, the bulk of the price comes from its “high design”, thus, the emotional cost-benefit is more important.

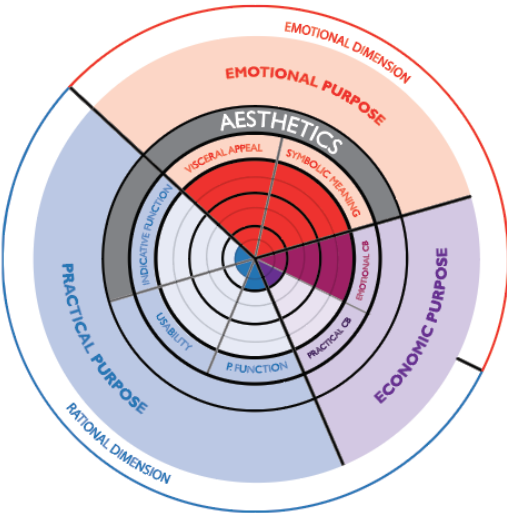
Emotional purpose:
The chair is also a piece of decoration. It should produce joy when observed. It should be a talking point in the home.

Design order and product universe coordinate chart



Value factor prioritization tool

Design purpose	Priority	Low priority	Mid priority	High priority
PRACTICAL PURPOSE Provide seating in the home environment and fold flat for storage.	Usability Comfort and human factors are not a priority. The chair forces the user to sit in a specific way without Indicative function It is also very difficult to assemble, requiring video tutorials online. Practical function Not very important, the product is more a piece of decoration than an actual piece of furniture so it only needs to comply with its function for short periods of time with little frequency. The chair has good reviews on wear but they also mention it has disassembled while in use.	1		
ECONOMIC PURPOSE While the chair is made with simple manufacturing processes and materials, the bulk of the price comes from its "high design."	Practical cost-benefit Not very important as it is more a piece of decoration than a high-use product. Emotional cost-benefit Very important, all the resources are put into the materiality and looks rather than function and use.	2		
EMOTIONAL PURPOSE This chair is also a piece of decoration. It should produce joy when seeing it. It is a talking point in the home.	Visceral appeal Highly important. It should stand out in the home environment. Symbolic meaning It seeks to be unique and thus make the user feel unique in turn.			6



Design and manufacturing strategy

Disciplines involved for development:
Industrial Design and / or artist.

Human resource expertise required:
Industrial designer with knowledge in patterns and descriptive geometry or specialist in origami.

Economic and time panorama:
according to the above, once the real objectives of the project have been defined conclusively, it would already be possible to establish an estimated amount of economic resources for the development of the project draft.

Design and manufacturing strategy:
Product characterization first, functional architecture is created to meet the proposal:

Immediate immersion in the process of conceptualization and prototyping at scale for morphological and functional architecture is developed to match.

Conclusions



■ Conclusions

The Product Identity Footprint helps understand:

TYPE OF DESIGN INVOLVED
DISCIPLINES | HUMAN RESOURCE EXPERTISE

WHAT NEEDS TO BE PRIORITIZED
DESIGN AND MANUFACTURING STRATEGY

TYPE AND SCOPE OF THE PROJECT
A REAL ECONOMIC AND TIME PANORAMA



■ Conclusions

Potential additions:

MARKET ANALYSIS TOOL

OPPORTUNITY GAP OR SATURATED MARKET

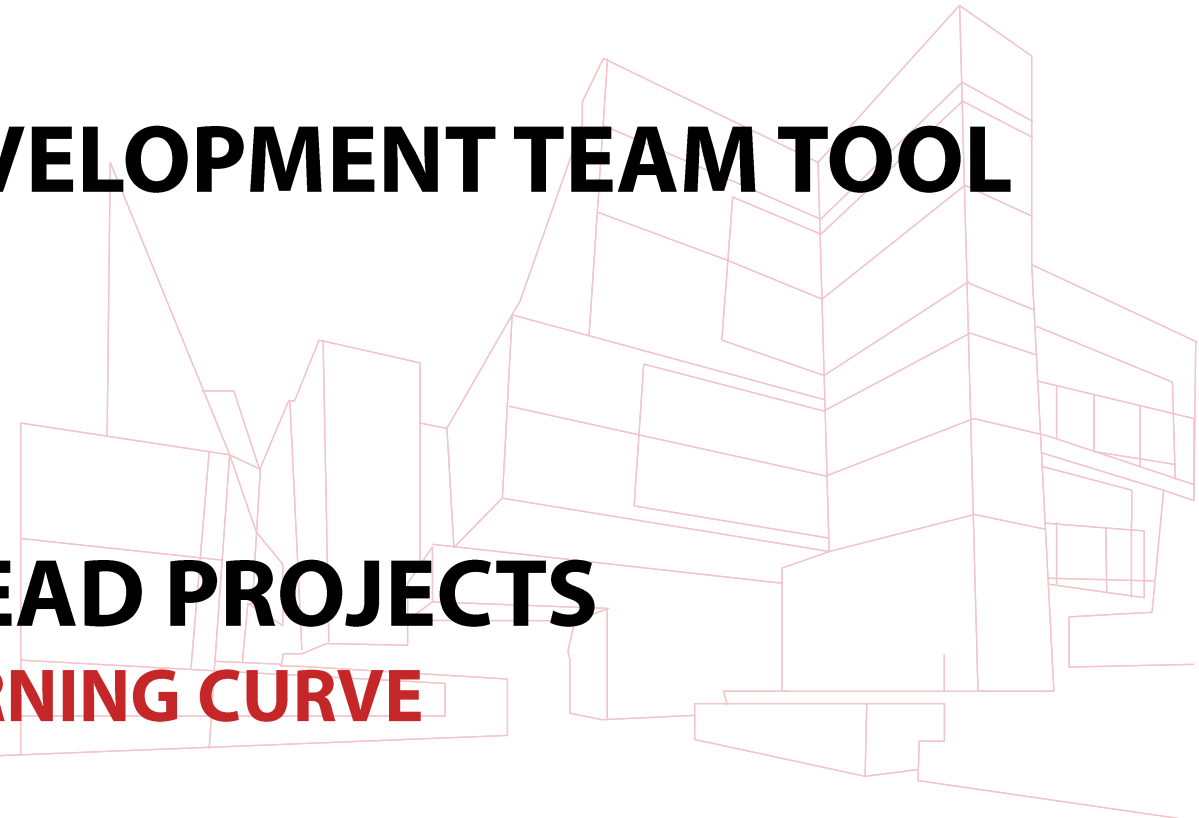
DESIRED ATTRIBUTES OF DEVELOPMENT TEAM TOOL

BEYOND THE REQUIRED DISCIPLINES

Limitation:

EXPERIENCE REQUIRED TO LEAD PROJECTS

BUT IT CAN STILL SHORTEN THE LEARNING CURVE



Toluca, Mexico / Cincinnati, Ohio

PRODUCT IDENTITY FOOTPRINT: A SET OF TOOLS TO CLARIFY THE FRONT
END OF INDUSTRIAL DESIGN PROJECTS IN ORDER TO START AND DEVELOP
PRODUCTS THE RIGHT WAY.

Jorge Mauricio Rodríguez Cuevas

RODZ+

Juan Antonio Islas Muñoz

University of Cincinnati

