



BACK ON TRACK

Professor :

Yves Weinand
Architect and Civil engineer

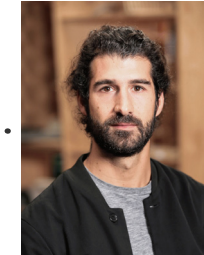
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Assistants :

Sacha Favre
Architect - General organisation

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Petras Vestartas
Architect - Parametric teaching

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Technical Support :

Nicolas Rogeau
Architect - Parametric consulting

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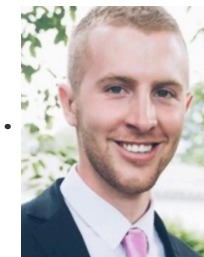
Aryan Rezaei Rad
Civil engineer - Dimensioning consulting

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Bertrand Himmer
Civil engineer - Dimensioning consulting

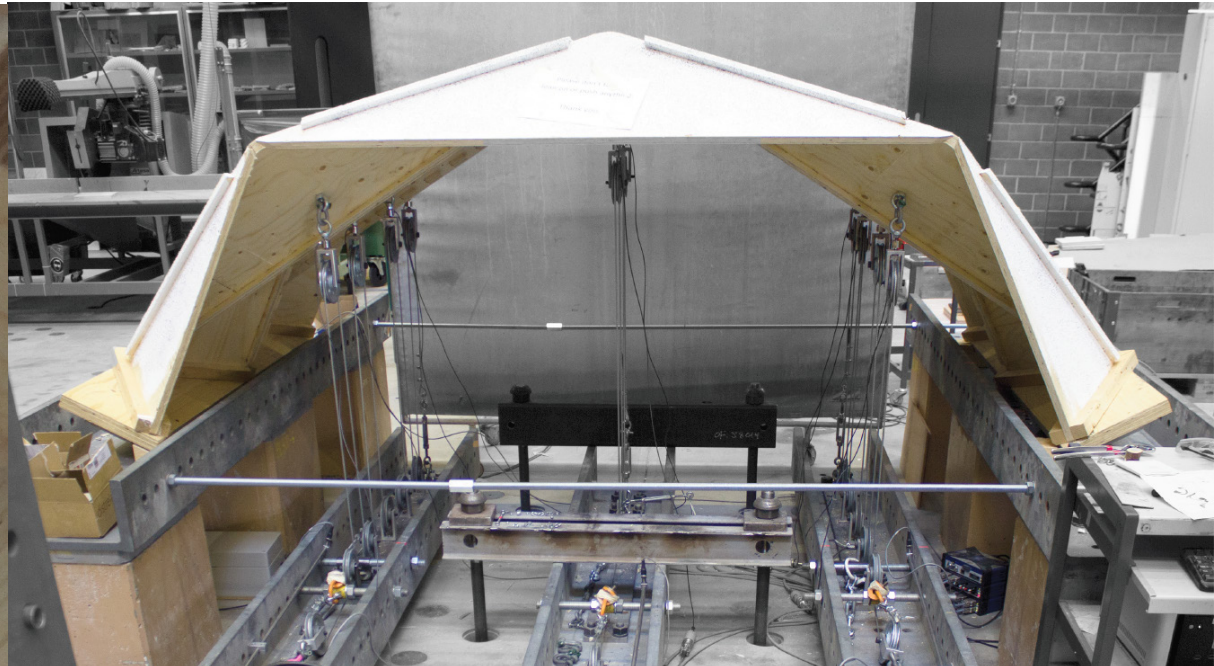
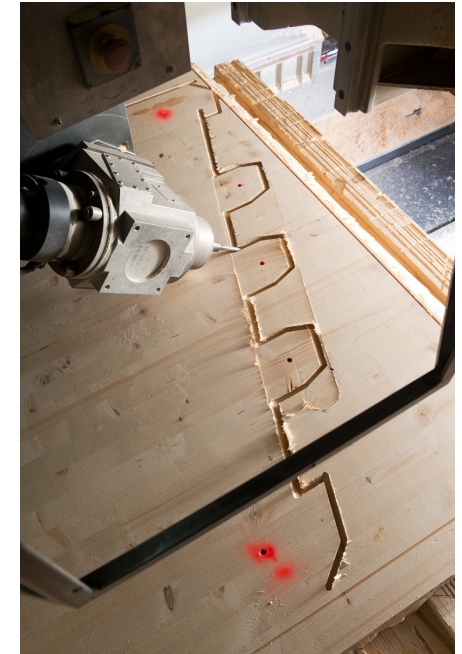
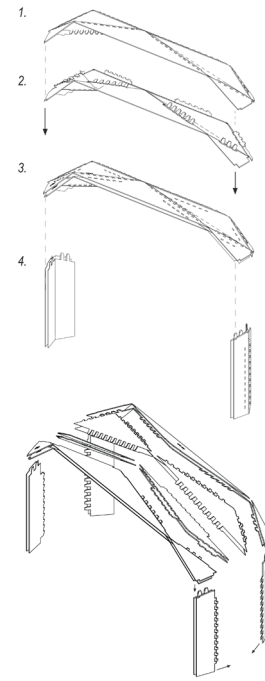
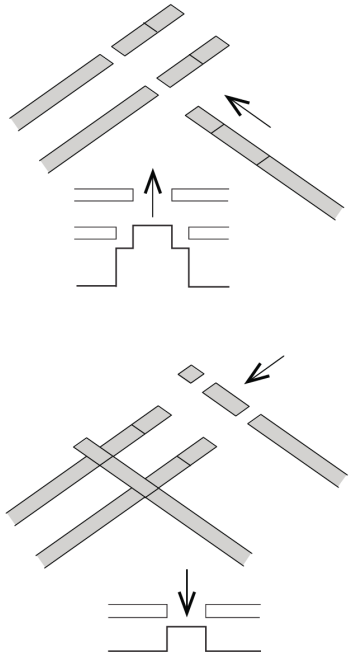
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Loic Pelletier
Timber engineer - CNC Consulting

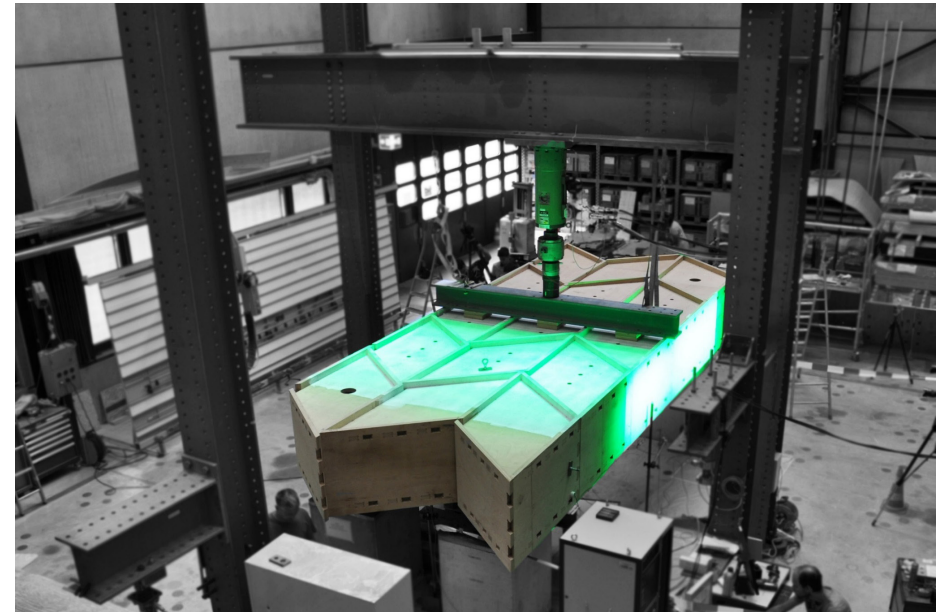
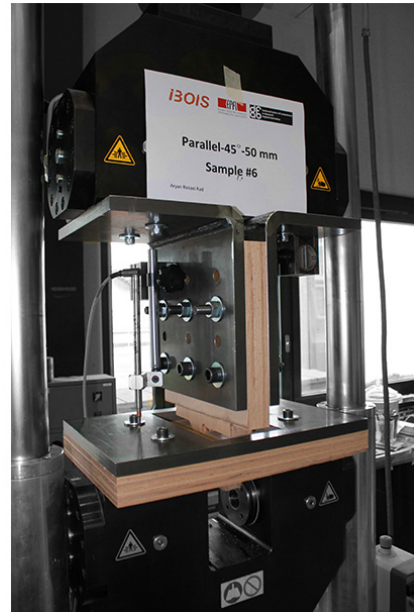
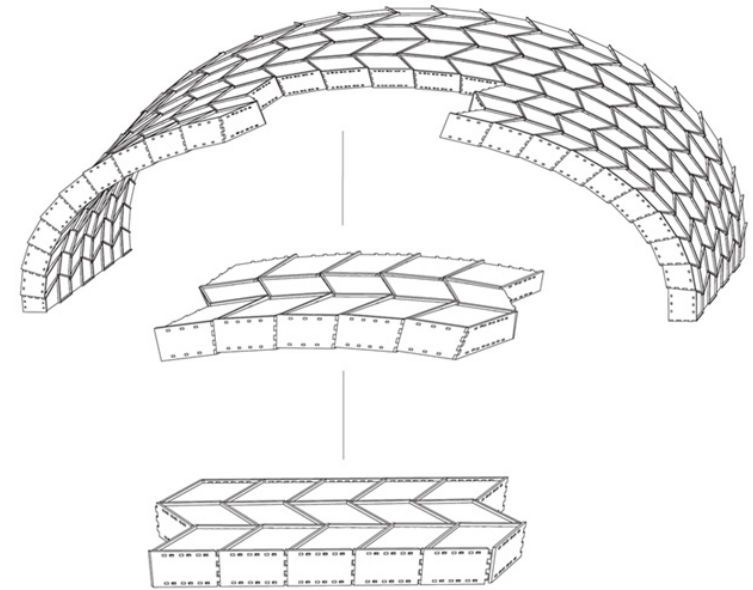
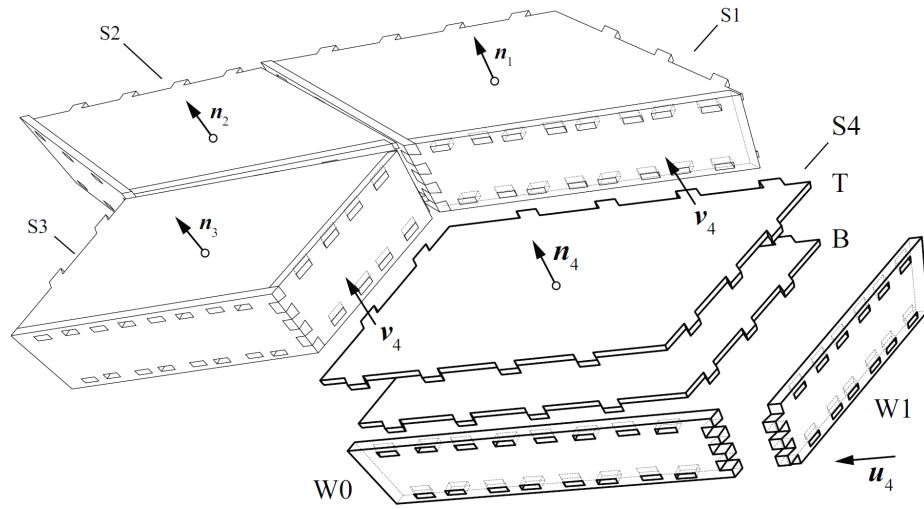
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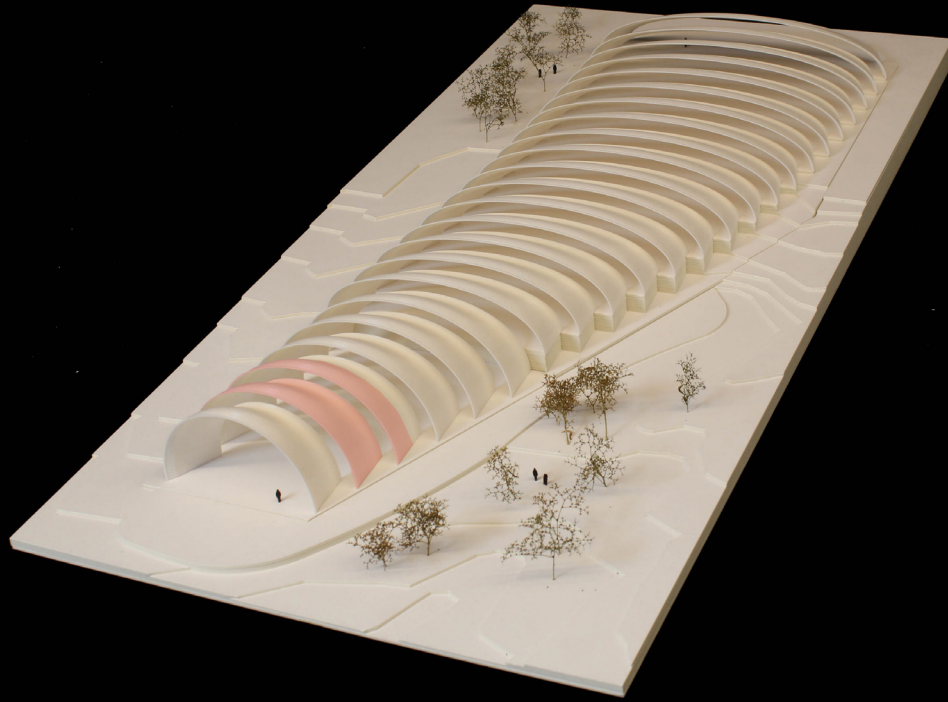


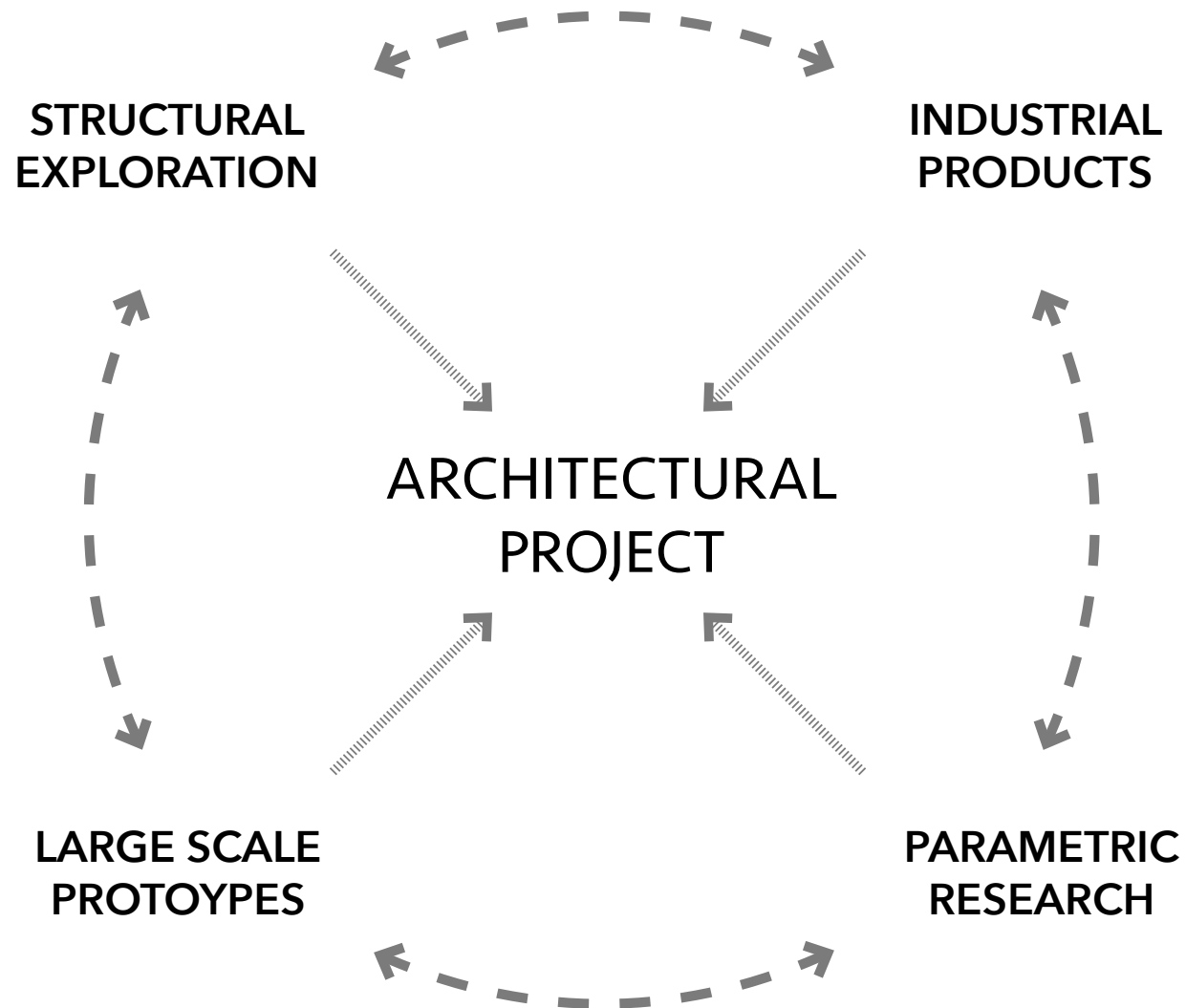
TIMBER PAVILLION FOR VIDY THEATRE, 2017-2018



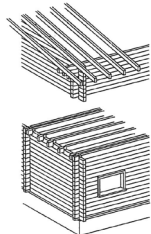


MULTIPURPOSE HALL IN LUXEMBOURG, 2018-2019

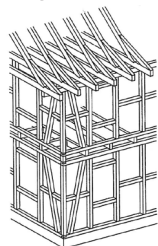




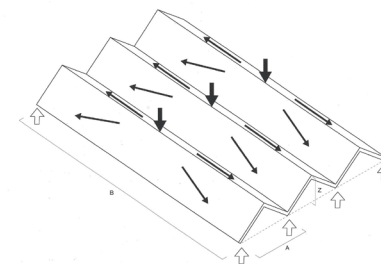
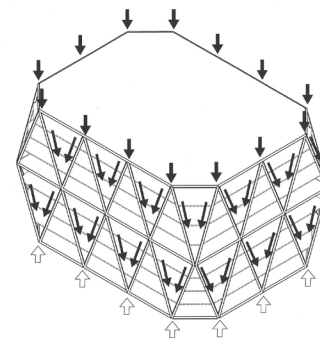
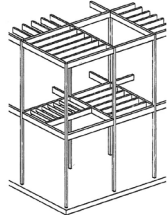
madriers



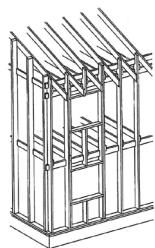
colombage



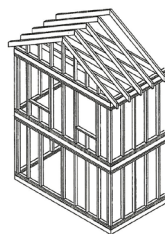
poteau poutre



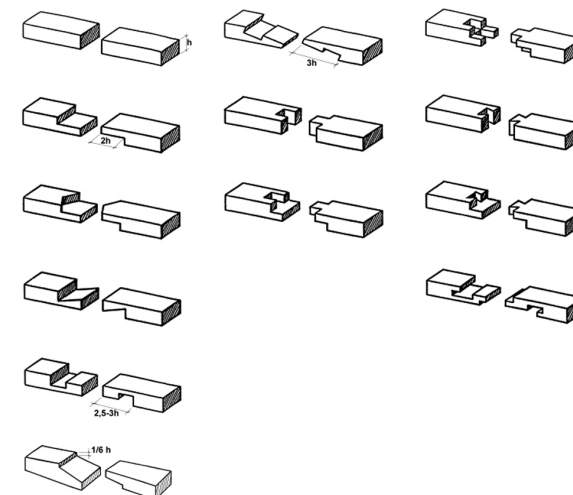
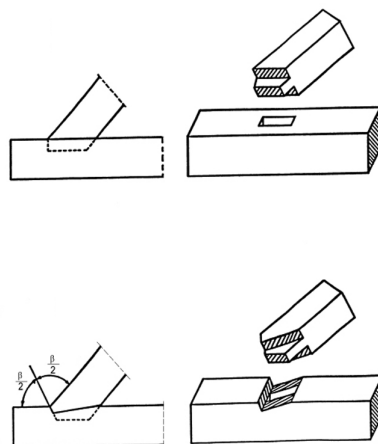
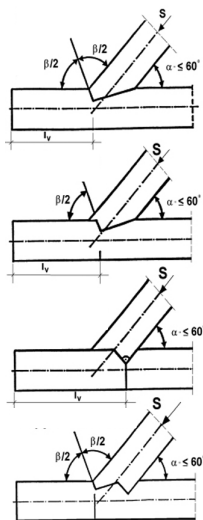
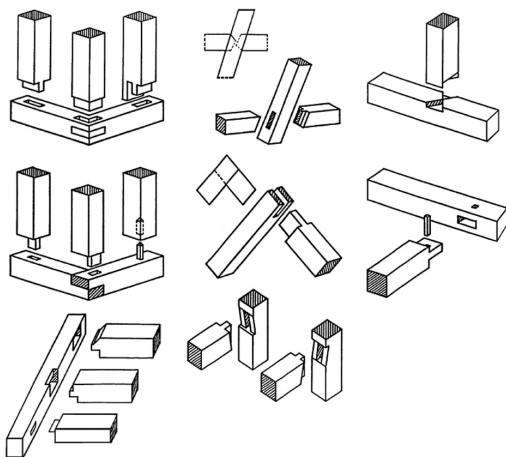
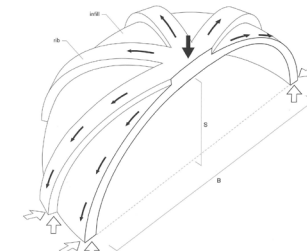
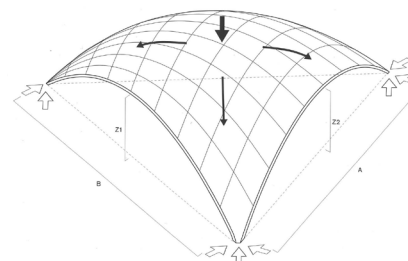
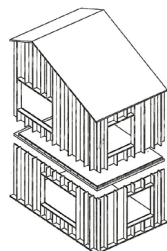
ossature en pans de bois

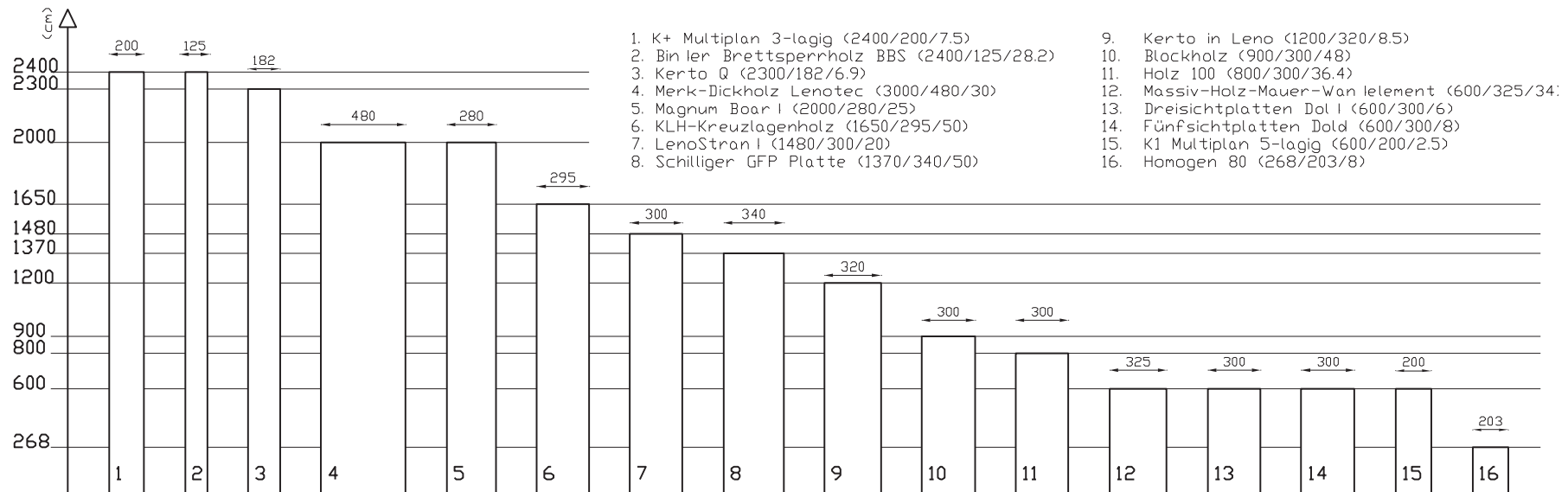


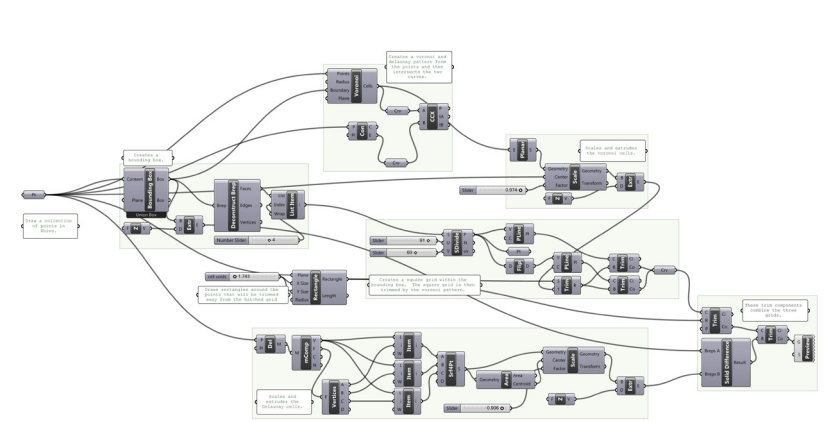
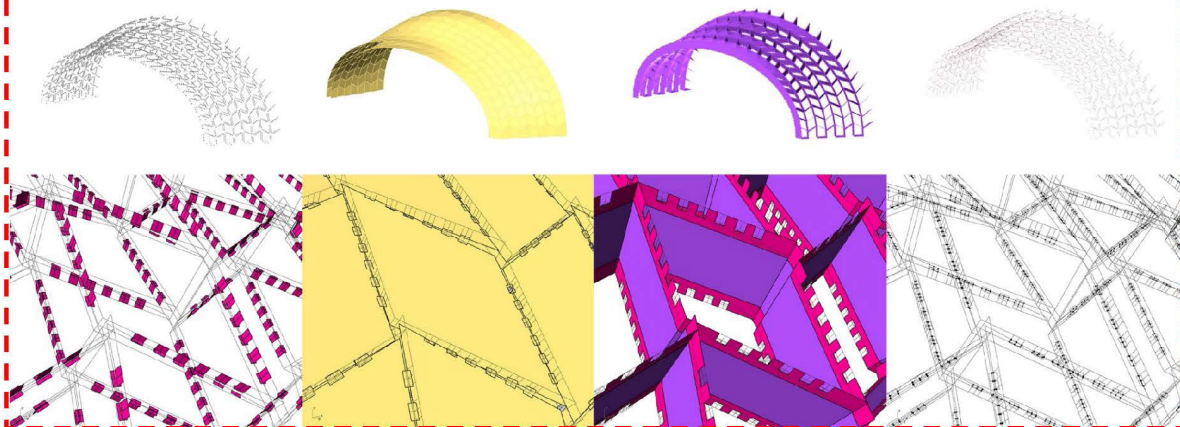
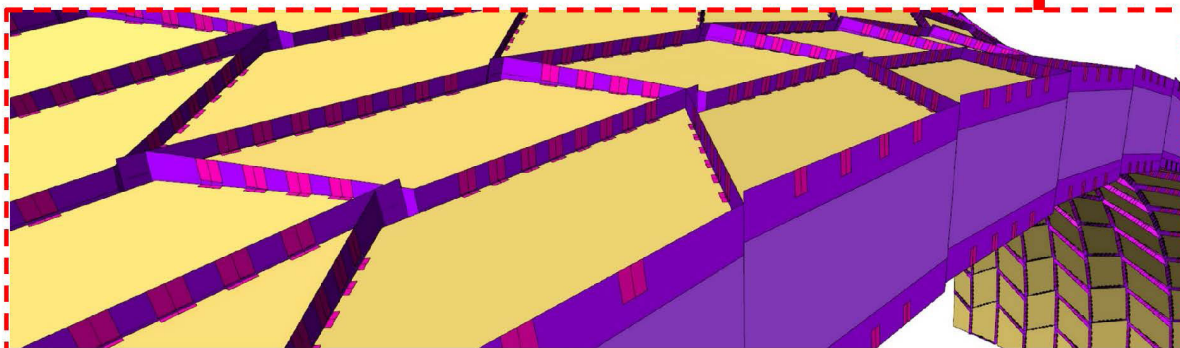
ossature bois (/ panneau)



panneau







import rhinoscriptsyntax as rh

DbIHeight=0.6

DbIEyesHeight=1.2

T=1

IntRows=20

C=0.15

CrvField=rh.GetObject("select field borders",4)

CrvStands=rh.GetObject("select fist line of the stands",4)

ArrClosestPoint=rh.CurveClosestObject(CrvField,CrvStands)

D=rh.Distance(ArrClosestPoint[1],ArrClosestPoint[2])

R=DbIHeight+DbIEyesHeight

PtCentre=rh.CurveAreaCentroid(CrvField)

BaseCrv=rh.CopyObject(CrvStands,[0,0,DbIHeight])

Srf=rh.ExtrudeCurveStraight(CrvStands,[0,0,0],[0,0,DbIHeight])

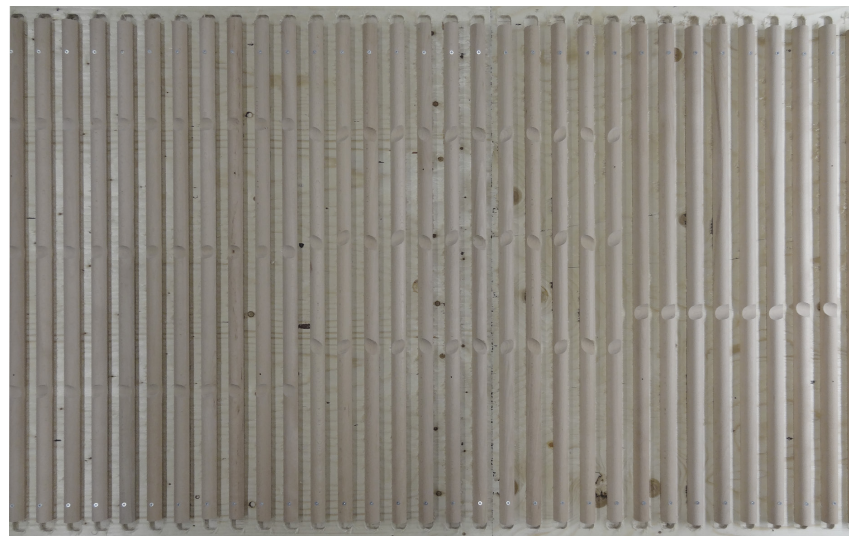
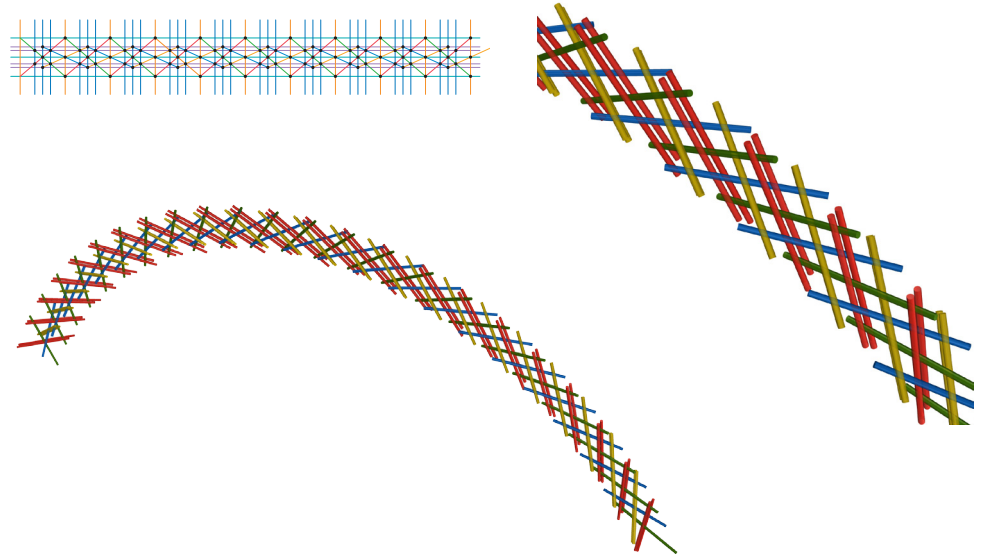
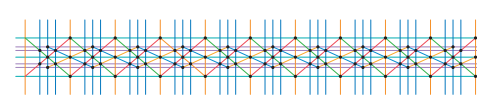
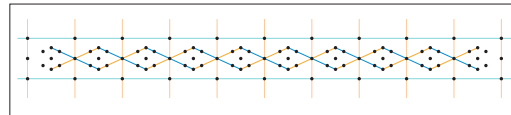
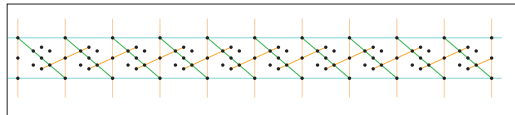
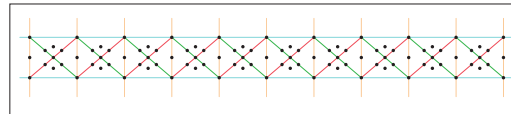
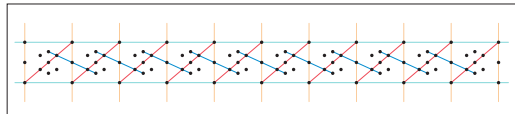
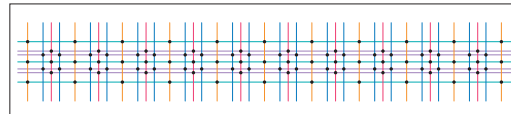
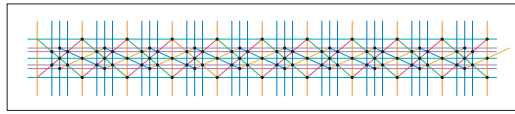
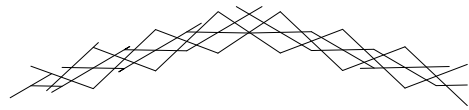
CrvOffset=rh.OffsetCurve(BaseCrv,PtCentre[0],-1*T)

Srf2=rh.AddLoftSrf([BaseCrv,CrvOffset])

N=(((R+C)*(D+T))/D)-R

R=R+N

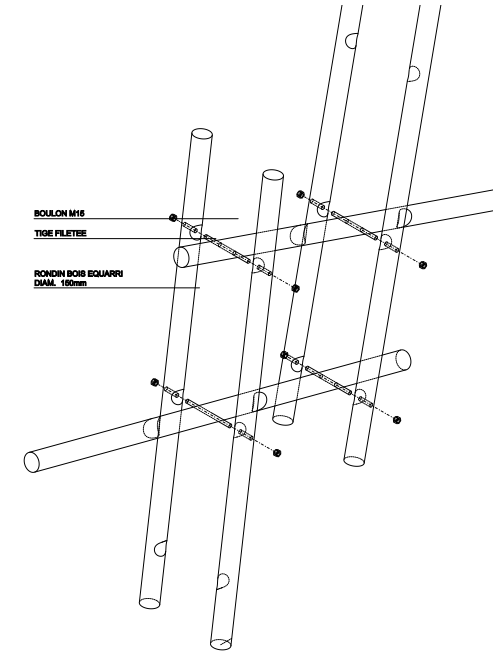
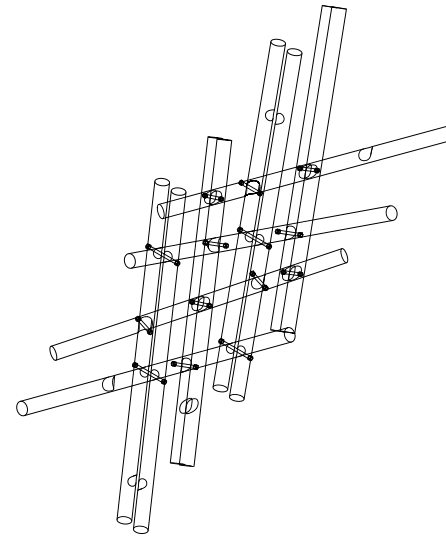
D=D+T



LARGE SCALE PROTOTYPES

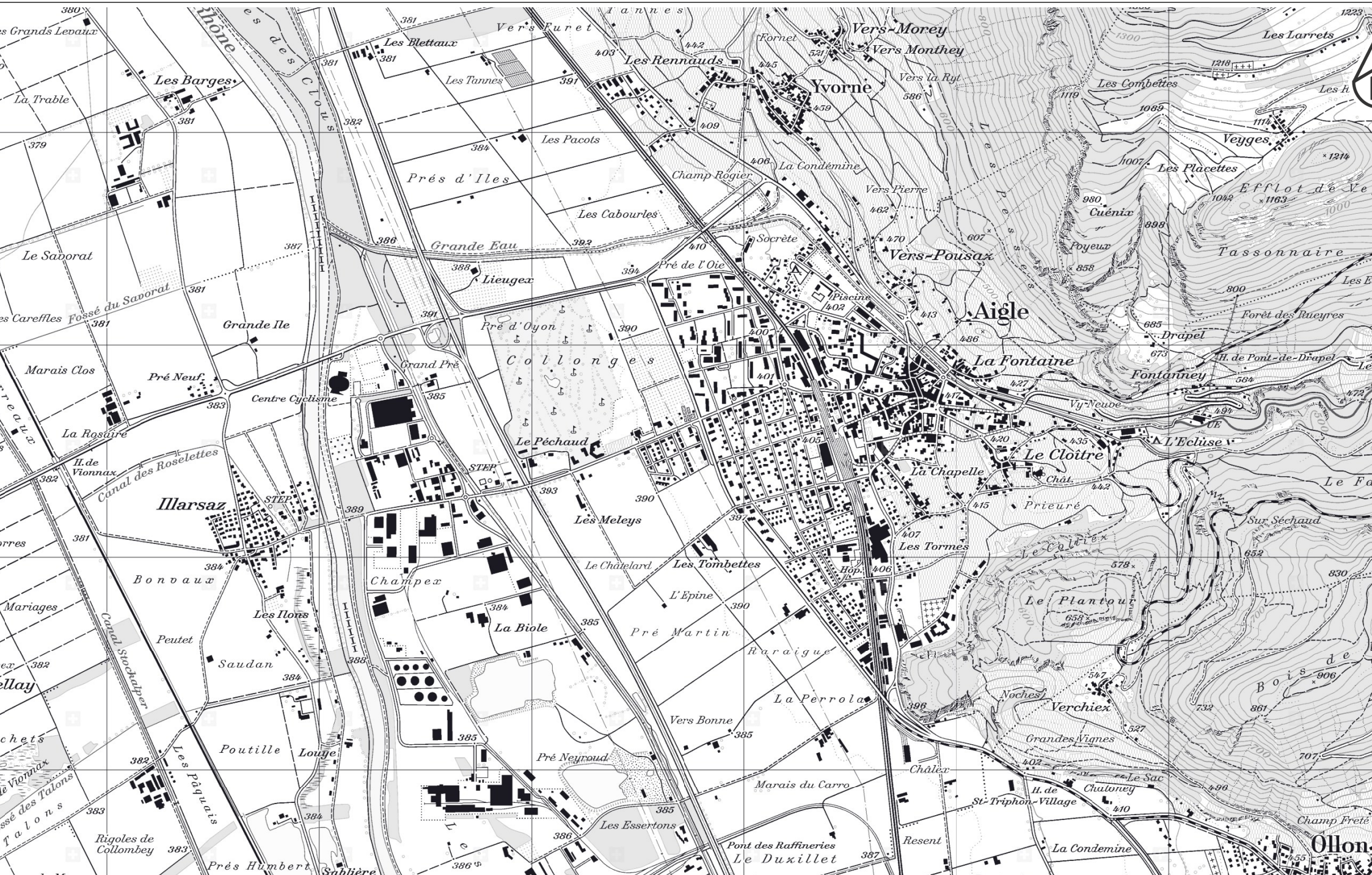


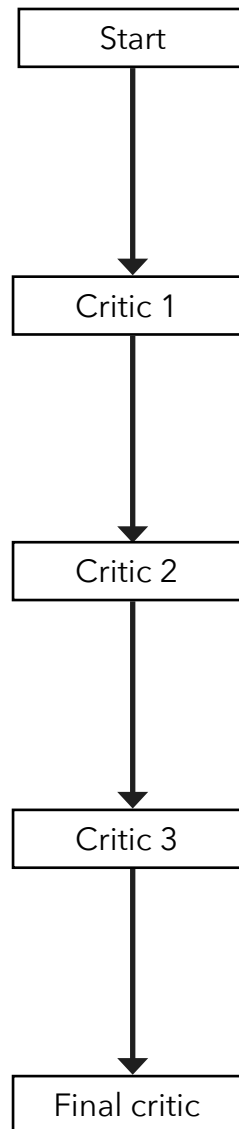
LARGE SCALE PROTOTYPES





SITE : UNION CYCLISTE INTERNATIONALE IN AIGLE



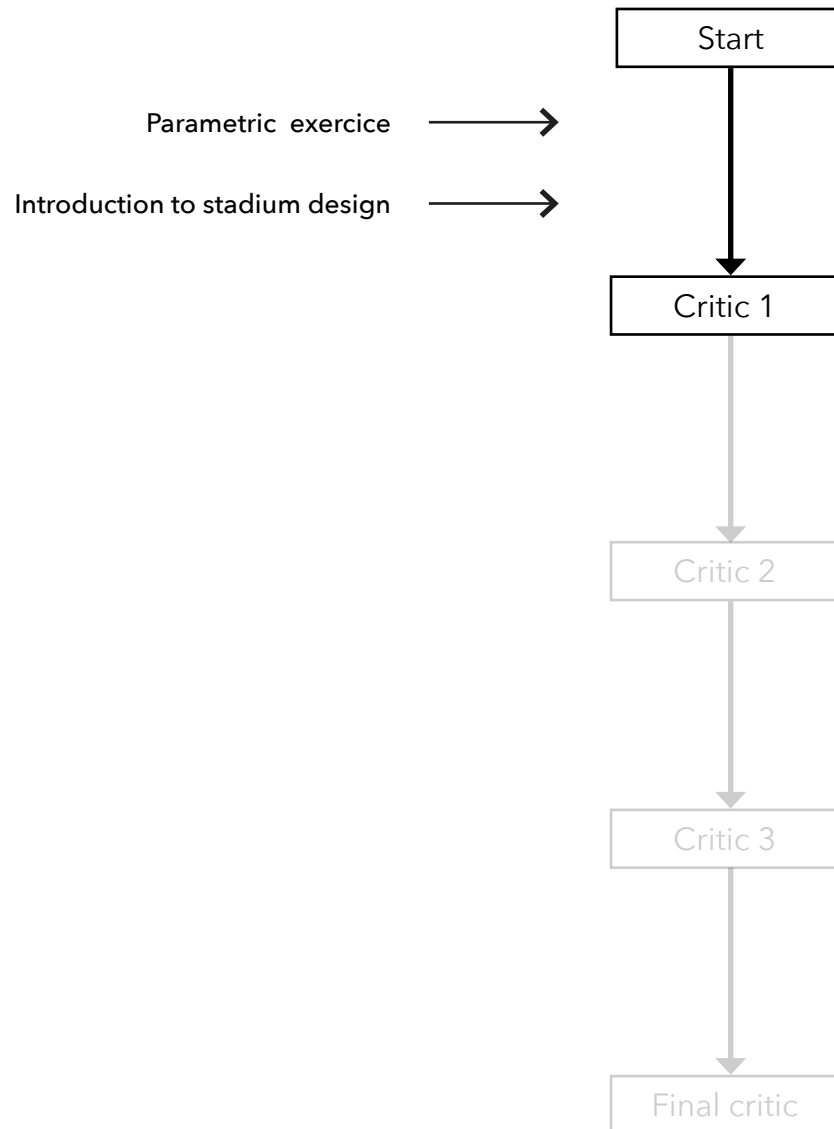


PHASE 1 :
CONCEPT AND PARAMETRIC TRACK

PHASE 2 :
DESIGN AND PARAMETRIC STRATEGIES

PHASE 3 :
STRUCTURAL EXPLORATION AND DETAILING

PHASE 4 :
FINAL DEVELOPEMENT AND PROTOTYPES



Theme

An initial conceptual kicking phase pushes you to quickly find intuitive and innovative concept for the envelope. Introduction classes on spatial structures and stadia history give a basic knowledge on the main design issues concerning this particular typology. Parallel to this brainstorming, introduction courses on parametric tools are given.

Based on a predefined geometry, you will learn to implement a new structure to support the track.

Objectives

Conceptual sketch for the envelope.

The general concept of the envelope and structure is defined through sketches, conceptual models and 1/500 plans. The goal is to get a strong concept with clear ideas concerning :

Parametric model for the track structure

Implement a parametric model of structure for the track.



Theme

Based on the conceptual key elements, you translate your concept into a schematic design in the site. Courses about timber construction and timber products give a better understanding of construction constraints. Specific classes about parametric strategies and kangaroo solver introduce the tools to explore global geometries. Individual consulting sessions are given for the parametrisation of the key points of each project.

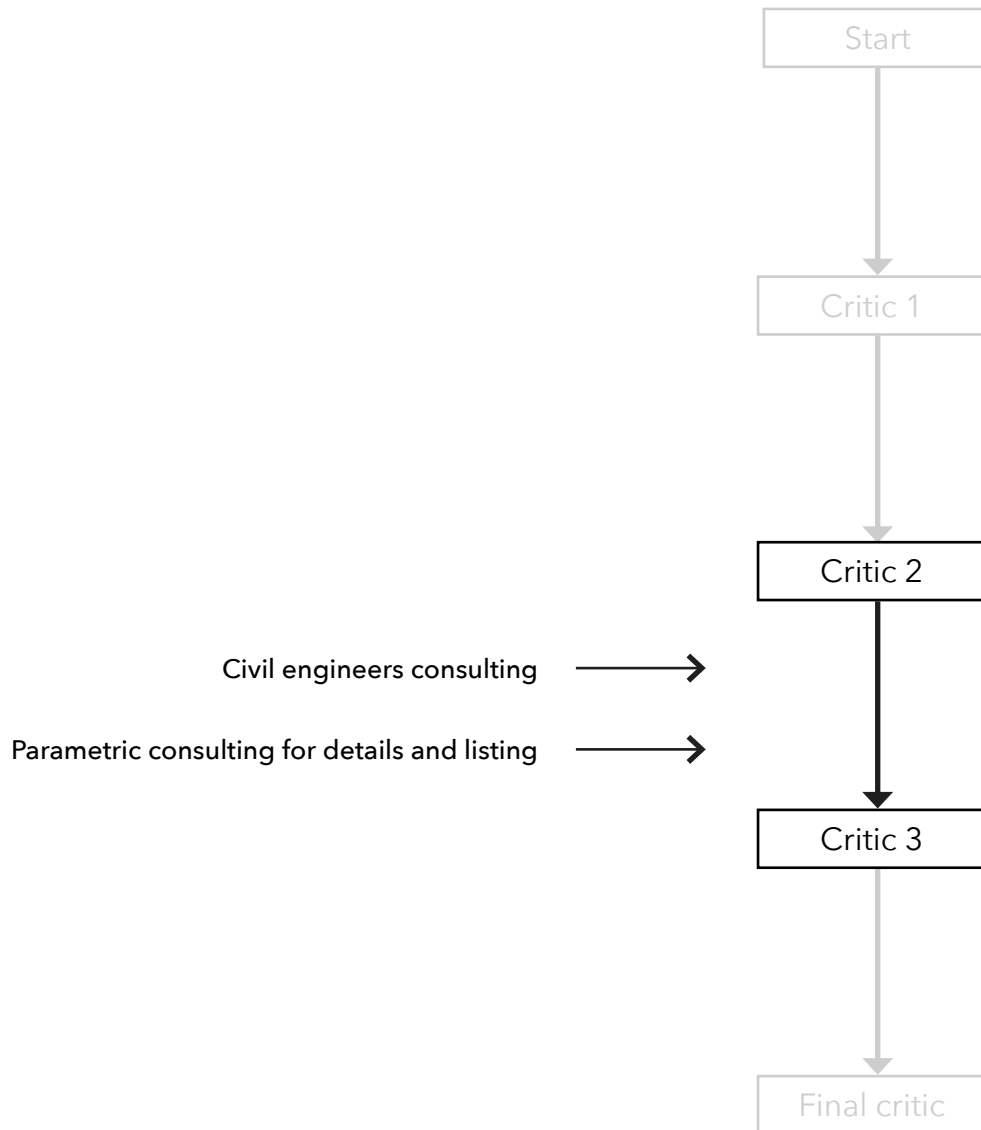
Output

Schematic design of the envelope

The schematic design should show clear definitions of the position of access and relation to the administrative building, a realistic floor plan including the tracks and programmatic elements, the general geometry of the envelope and structural system and materiality concepts and expression

Parametric strategies

A parametric research is conducted, based on the key points of the project. Design options are explored and tested based on selection criteria.



Theme

Based on your schematic design, you start to collaborate with PhDs civil engineers to get precise advice and implement realistic dimensions into the project. Parametric consulting focus on precise geometry and data output necessary for accurate decisions.

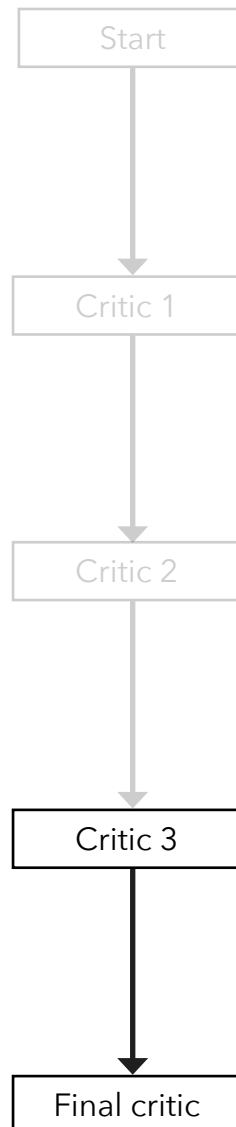
Objectives

Structural exploration

The schematic design is improved and identified issues are fixed. The structure become more realistic and integrate the feedback of the civil engineers. The description of structural and envelope elements is controlled and dimensions of the main elements are expressed. Parametric tools help to generate the output if required.

Details

Key points of the project are detailed with information on the type and thickness of materials. Each key part is addressed and get a design proposal.



Theme

With all the key points clarified, you push further the exploration of your idea with the making of prototypes of large-scale models of the envelope.

Objectives

The final project integrates the following elements into a coherent design :

Improved floor plan

A coherent floor plan for the velodrome with all the programmatic parts integrated. Access to the administrative building and exterior are managed
The track substructure is geometrically defined.

Structural parts

The structural system is understood and the dimensions of the main parts are optimised based on the consulting of civil engineers

Covering system and daylight

The key points of construction are detailed. The global geometry of the envelope is precisely defined and allow a full understanding of the project.

Large scale model and prototype

The innovative key elements of your project are tested on large scale model in order to get a better comprehension of the material constraints and structural challenge.

week	days	hours	activities		
Week 1	lundi 17 sept.		FÉRIÉ	PHASE 1	
	mardi 18 sept.	09h - 12h 13h - 18h	Intro IBOIS + Course 1 (Spatial structures) Trip to Aigle		
Week 2	lundi 24 sept.	09h - 12h 13h - 18h	Pechakucha + Course 2 (History of stadia and design issues) Parametric 1 (intro grasshopper)		
	mardi 25 sept.	09h - 12h 13h - 18h	Parametric 2 (track geometry and parameters)		
Week 3	lundi 1 oct.	09h - 12h 13h - 18h	Review on demand Review on demand		
	mardi 2 oct.	09h - 12h 13h - 18h	CRITIC 1		
Week 4	lundi 8 oct.	09h - 12h 13h - 18h	Parametric 3 : Kangaroo + Ngon		PHASE 2
	mardi 9 oct.	09h - 12h 13h - 18h	Parametric 4 : Kangaroo + Ngon		
Week 5	lundi 15 oct.	09h - 12h 13h - 18h	Course 3 (Timber anatomy + Timber products) Professor Review		
	mardi 16 oct.	09h - 12h 13h - 18h	Course 4 (Timber systems + details) Parametric consulting		
Week 6	lundi 22 oct.	09h - 12h 13h - 18h	Review on demand Review on demand		
	mardi 23 oct.	09h - 12h 13h - 18h 18h	CRITIC 2 Lecture by Hanif Kara (Akt II)		
Week 7	lundi 29 oct.	09h - 12h 13h - 18h	Project review + preparation of engineering files Parametric consulting		
	mardi 30 oct.	09h - 12h 13h - 18h	Project review Parametric consulting		
Week 8	lundi 5 nov.	09h - 12h 13h - 18h	Project review Engineers Consulting	PHASE 3	
	mardi 6 nov.	09h - 12h 13h - 18h	Project review Parametric consulting		
Week 9	lundi 12 nov.	09h - 12h 13h - 18h	Professor Review + Engineers Consulting		
	mardi 13 nov.	09h - 12h 13h - 18h	Professor Review + Engineers Consulting		
Week 10	lundi 19 nov.	09h - 12h 13h - 18h	Review on demand Review on demand		
	mardi 20 nov.	09h - 12h 13h - 18h	CRITIC 3		
Week 11	lundi 26 nov.	09h - 12h 13h - 18h	Project review Engineer consulting		
	mardi 27 nov.	09h - 12h 13h - 18h	Project review Parametric consulting		
Week 12	lundi 3 déc.	09h - 12h 13h - 18h	Project review Engineer consulting		
	mardi 4 déc.	09h - 12h 13h - 18h	Professor Review Parametric consulting		
Week 13	lundi 10 déc.	09h - 12h 13h - 18h			
	mardi 11 déc.	09h - 12h 13h - 18h	Semaine Atelier - fabrication of prototypes + parametric output		
Week 14	mardi 18 déc.	09h - 12h 13h - 18h	CRITIQUES FINALES		



WELCOME!



Where	GC H2 711
When	18th of Sept. 9am
Prerequisite	Rhino + Grasshopper installed
Info	sacha.favre@epfl.ch