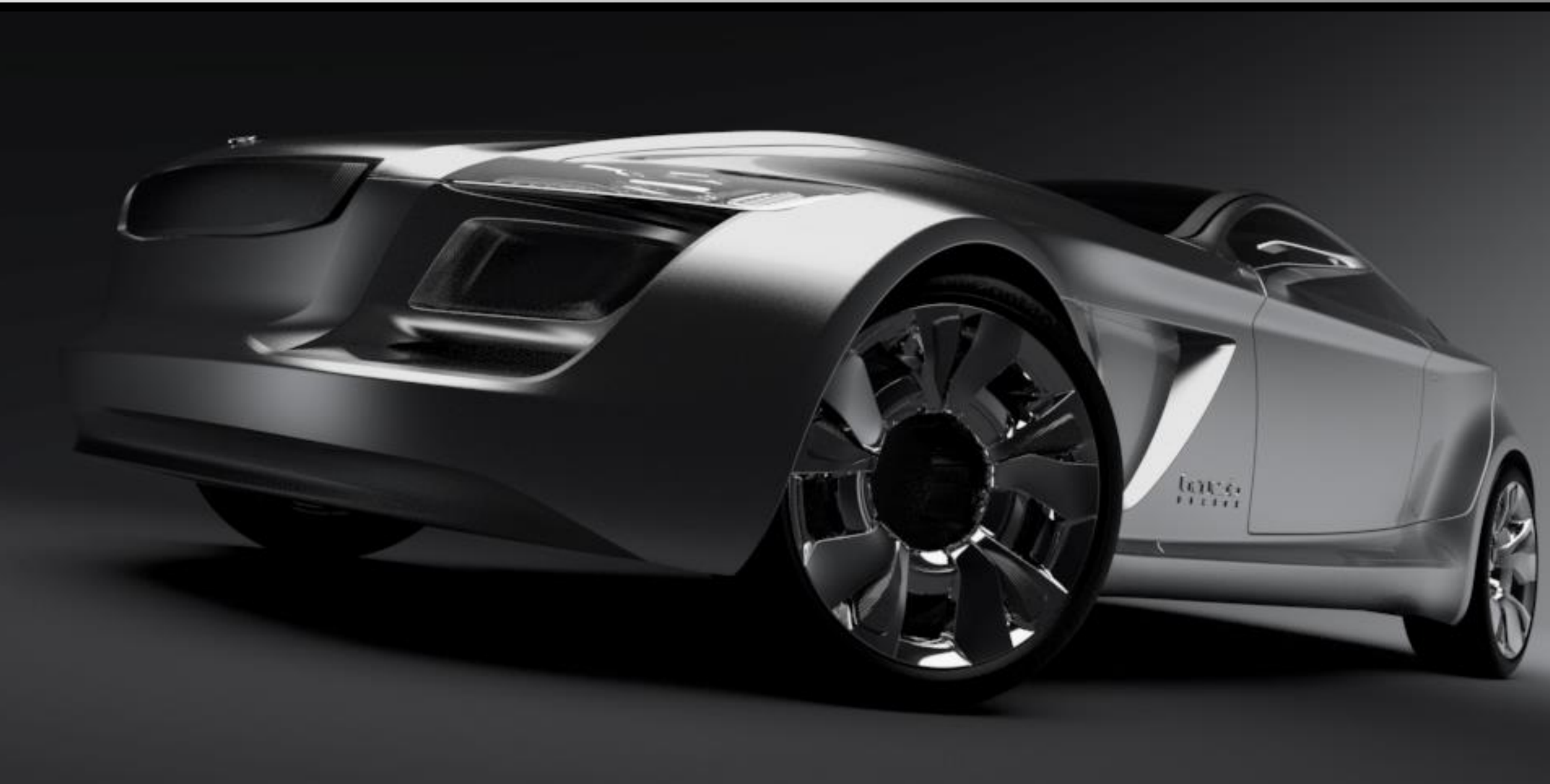
Autodesk® Alias® Surface Class-A: Accelerating Design Development



Simon Alford

majenta solutions

15yrs in Automotive

- Design and Body Engineering
- Freelance Class-A Digital Sculptor
- Alias, ICEM, NX, Imageware, CADDS4X

8yrs in Software Development

- Siemens PLM Software and SDRC
- Product Manager NX Automotive Design
- Led competitive benchmarks worldwide
- Automotive, Consumer Product and F1

2yrs in Reseller Channel (VAR)

- Technical Manager Majenta Solutions

Autodesk®

NX

SIEMENS

ICEM

SDRC

Imageware

DASSAULT SYSTEMES

Objective

"To challenge misconceptions about the use of Alias for Class-A and illustrate how Alias can deliver productivity and re-use benefits and in-turn help unite Design functions"

Agenda

- **Challenges facing Automotive Design**
  - External and internal challenges
- **Advantages of Alias for Class-A surfacing**
  - Business and technical benefits
- **Alias adoption challenges**
  - Misconceptions and barriers
- **Summary**
- **Q&A**

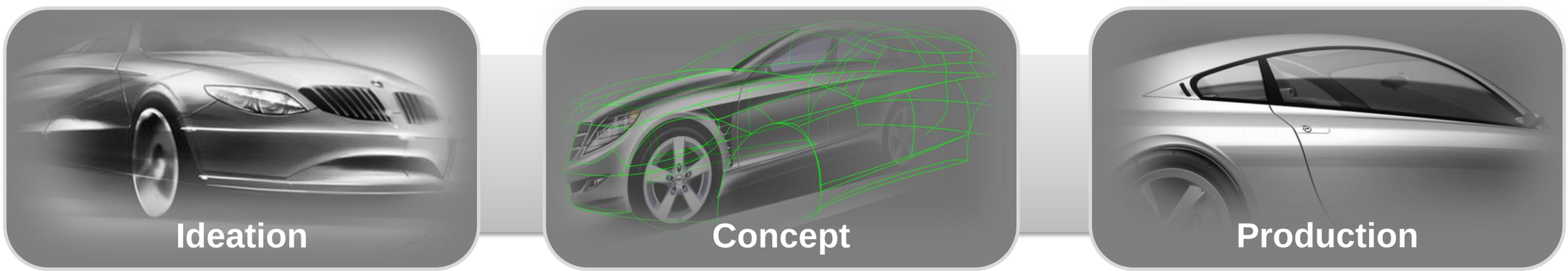
Challenges Facing Design: External

- **Market: rapidly expanding BRIC markets**
  - Different voice-of-customer requirements
- **Customer: high quality niche products**
  - Extended product range and ETO demand
- **Business: globalisation**
  - Globally distributed teams

Challenges Facing Design: Internal

Quality and technology are on a virtual level playing field and customers are looking to Design to make the difference

- **Design is under pressure…there is no margin for error**
- **Explore ideas, iterate themes and optimise Design – FAST!**
- **Consumer trends, VoC requirements, benchmarking, PQ targets**



How can Design do all of this and go faster?

Current Landscape: Minimal geometry re-use

Ideation

Concept

Production

Pre-PS *PS* *PTC* *PA/AA* *FAA*

Proportion and Stance

Theme Investigation

9 > 3 > 1

Production Design

Coarse *Feasibility* *Fine*

How to accelerate Design development?

Autodesk Alias **ICEM Surf**

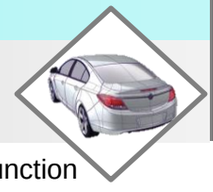
Visualisation (RTT Delta-gen, VRED, Bunkspeed, Showcase, Maya, 3ds Max)

Studio: Clay and Engineering

Optical Quality Process

Cubing Process

Feasibility



Function

Legend

PS: Program Start PTC: Program Target Compatibility PA/AA: Program Approval/Appearance Approval FAA: Final Appearance Approval

Tomorrow with Autodesk: Seamless Design

Ideation

Concept

Production

Pre-PS *PS* *PTC* *PA/AA* *FAA*

Proportion and Stance

Theme Investigation

9 > 3 > 1

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Autodesk: geometry re-use within Class-A and across Design

Autodesk Vault

Autodesk Alias (Creative and Production Design)

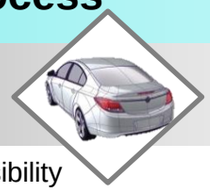
Autodesk Visualisation (VRED, Showcase, Maya, 3ds Max)

Autodesk virtual Clay (T-Splines, Maya)

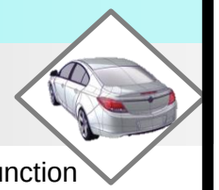
Studio: Clay and Engineering

Optical Quality Process

Cubing Process



Feasibility



Function

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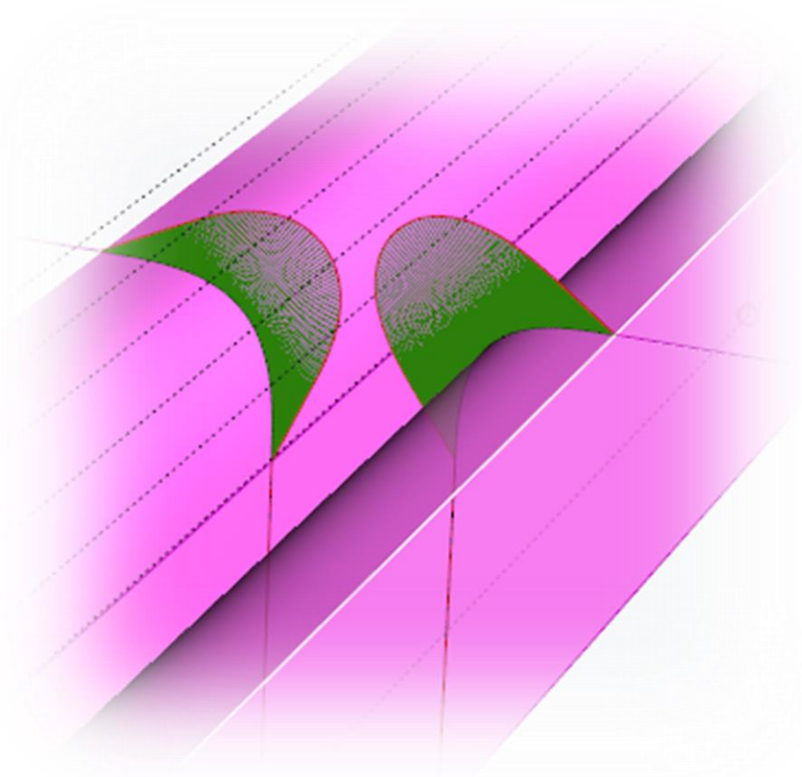
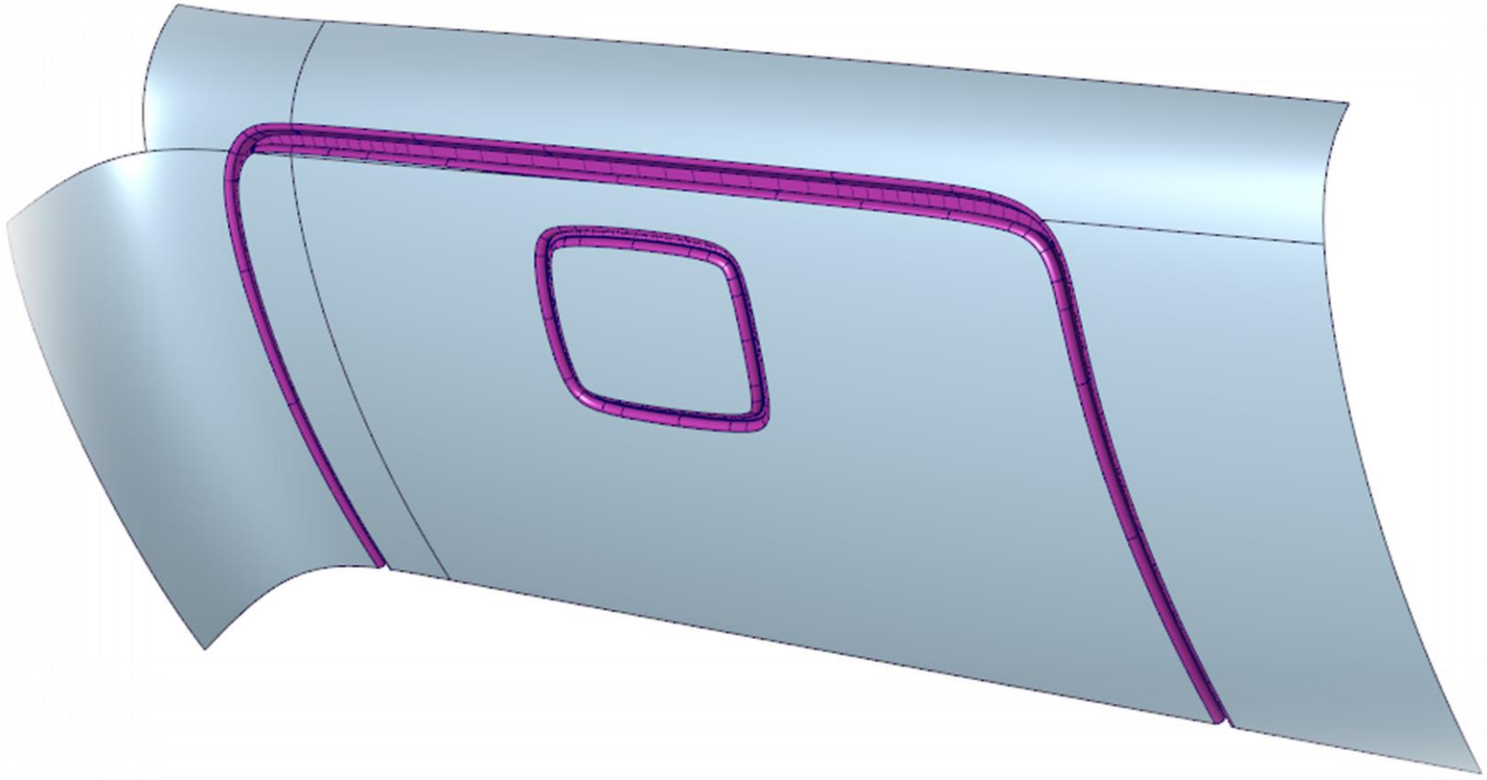
PS: Program Start PTC: Program Target Compatibility PA/AA: Program Approval/Appearance Approval FAA: Final Appearance Approval

Alias Advantages: Business benefits

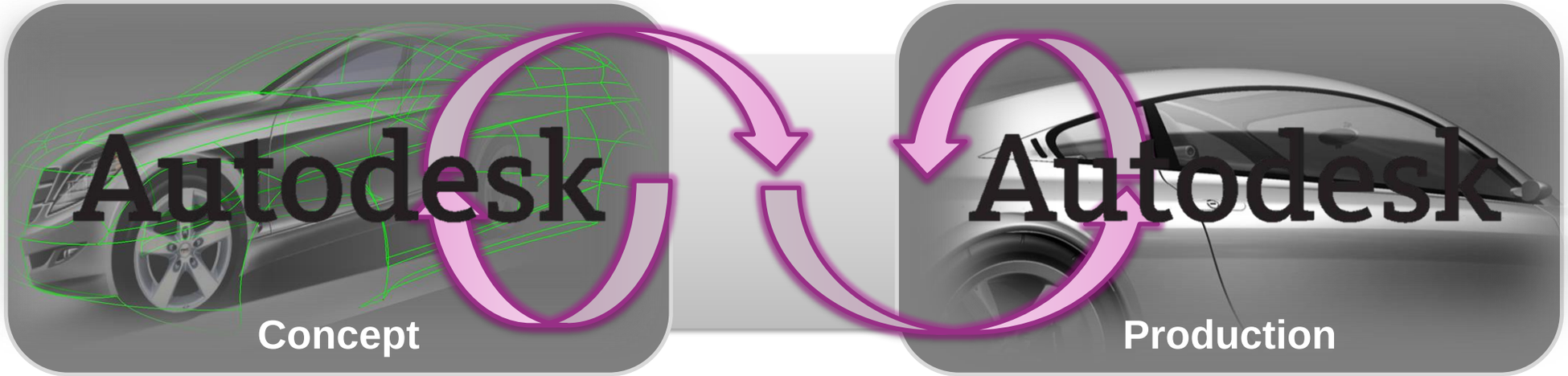
- **Improved productivity - geometry re-use within Class-A**
  - Construction History for change propagation and geometry re-use
  - Reduce ‘delete/re-create’ workflows synonymous with legacy ICEM practises
  - Automated tools help optimise and refinement Design





Alias Advantages: Business benefits

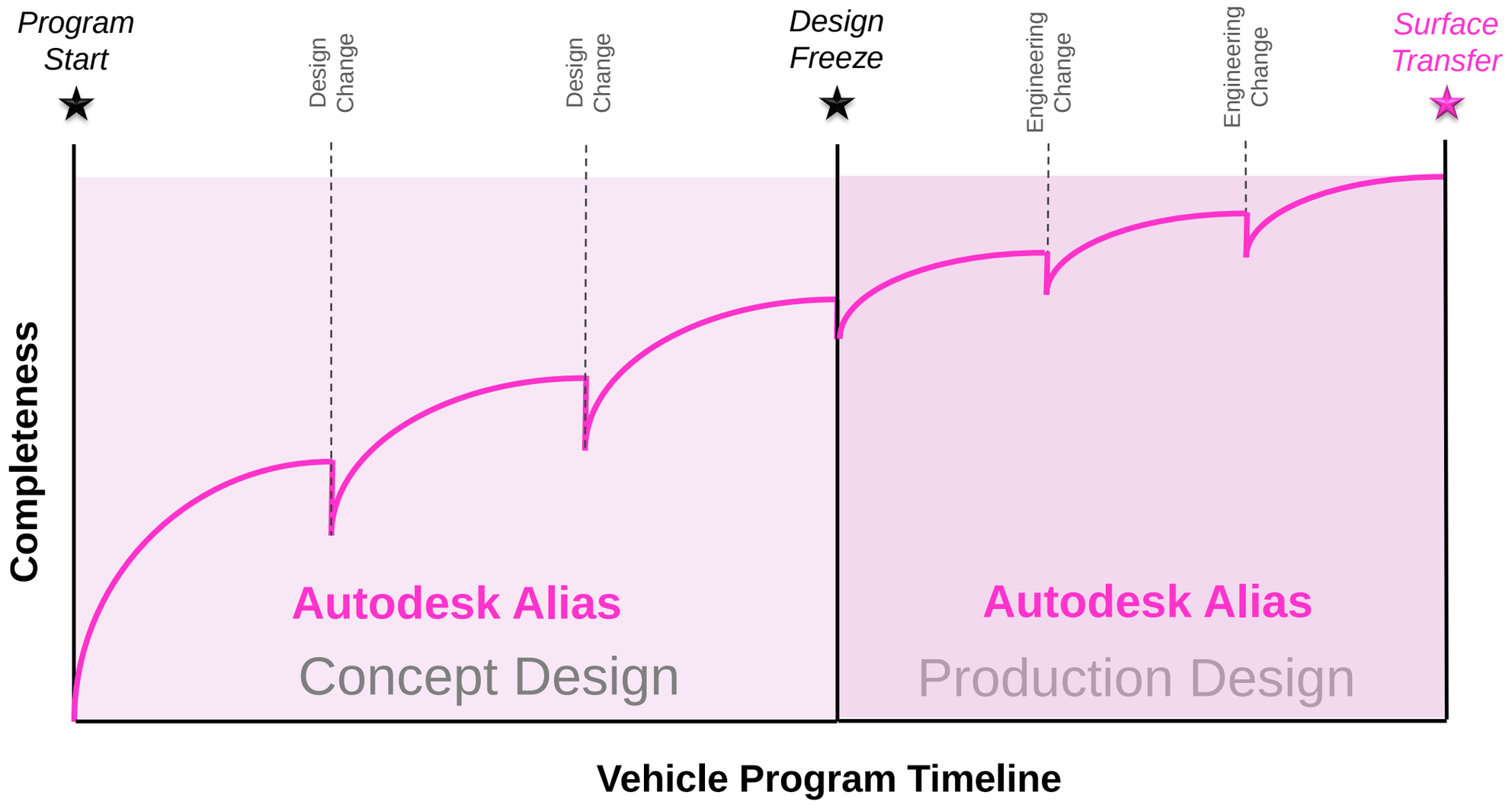
- **Improved productivity - geometry re-use across Design**
  - Mature surface geometry from Concept through Production
  - Reduce the ‘delete/re-create’ cycle between Concept and Production



Geometry re-use helps accelerate Design development

Alias Advantages: Business benefits

- **Improved productivity - geometry re-use across Design**

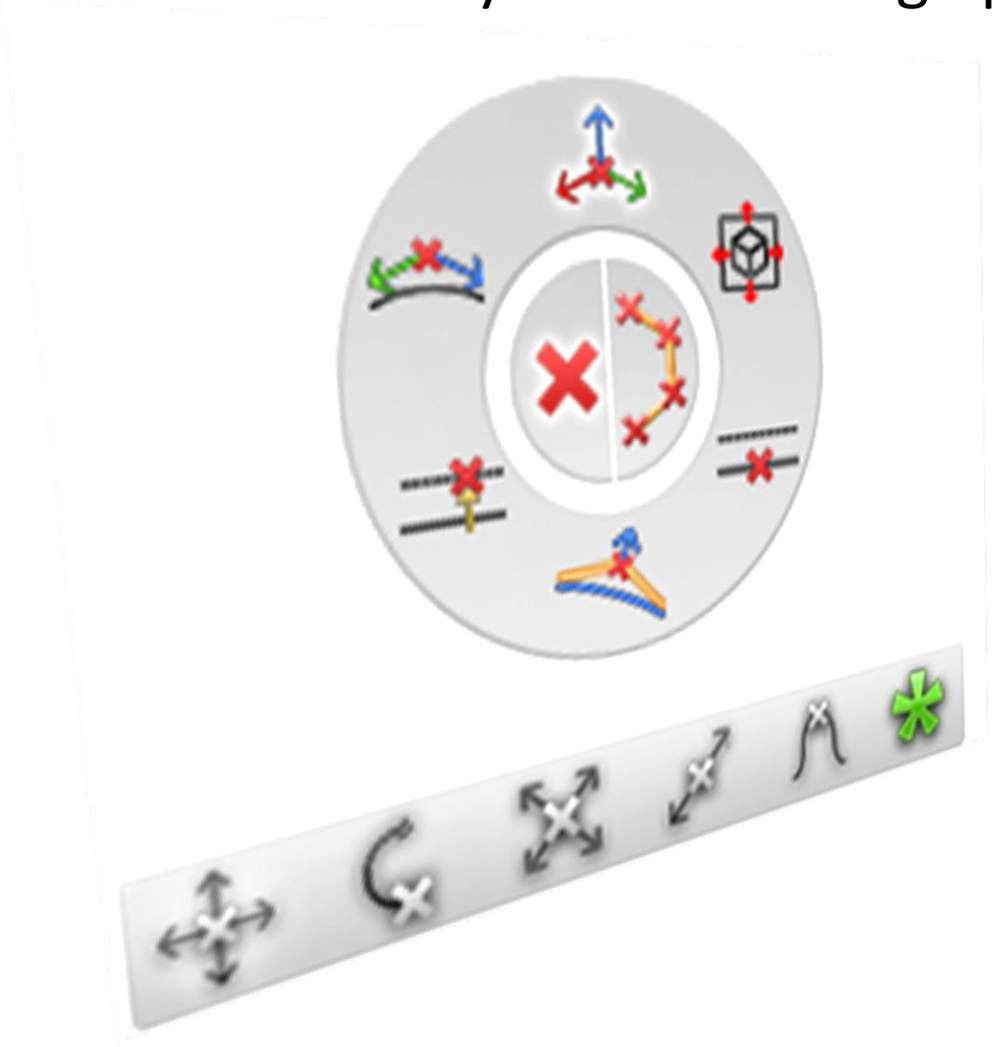


Alias Advantages: Business benefits

- **Designers can easily communicate with Digital Sculptors**
  - Smoother transition from Concept Design to Class-A
  - Improved communication helps preserve the “Design Intent”
- **Flexible resourcing**
  - Alias resource across Design helps manage program peaks
  - Resource options: Alias graduates vs. diminishing ICEM user-base
- **Reduced cost of ownership**
  - Consolidate training and personnel costs
  - Simplify software maintenance and support

Alias Advantages: Technical benefits

- **Enhanced user efficiency**
  - UI interaction model enables users to go-faster
  - Alias UI is extremely easy to customise
  - Construction History enables change propagation



Alias Advantages: Technical benefits

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"Best of both worlds"

Explicit ICEM	Alias Autodesk	Feature based DS NX
- Almost exclusively Bezier - Limited associativity in UM	- Non-linear **Construction History** - NURBs and Bezier flexibility	- Linear **Timestamp History** - Parametric Expressions - Associative constraints
- High quality Bezier Algorithms	- Geometry re-use - Enables change propagation - Discreet, flexible and easy-to-use - No Timestamp order issues	- Extensive geometry re-use and change propagation - Knowledge driven Templates - Common Design/Eng. solution
- Change is time consuming - Delete and re-create cycle - Limited geometry re-use	- Freeform editing not supported	- New and different way of working - Requires up-front planning - Timestamp History limits scope and magnitude of change - Freeform editing can be limited

Alias Adoption Challenges: Geometry quality

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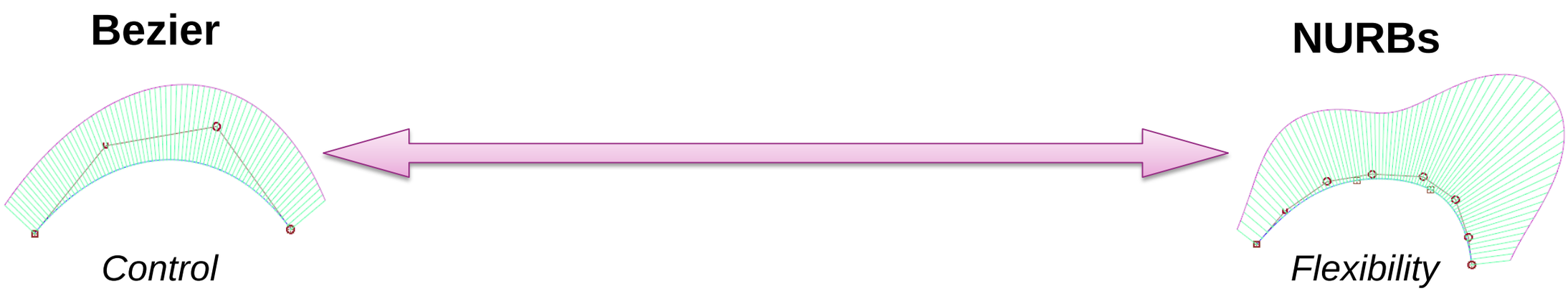
“Best of both worlds” - Bezier and NURBs hybrid modelling

- **Bezier**
  - Easy to control and predictable
  - Multiple surfaces required to capture complex forms - slow
- **NURBs**
  - Accurate and flexible for creation of complex forms - fast
  - Can be difficult to control and unpredictable if math is heavy



Alias Adoption Challenges: Geometry quality

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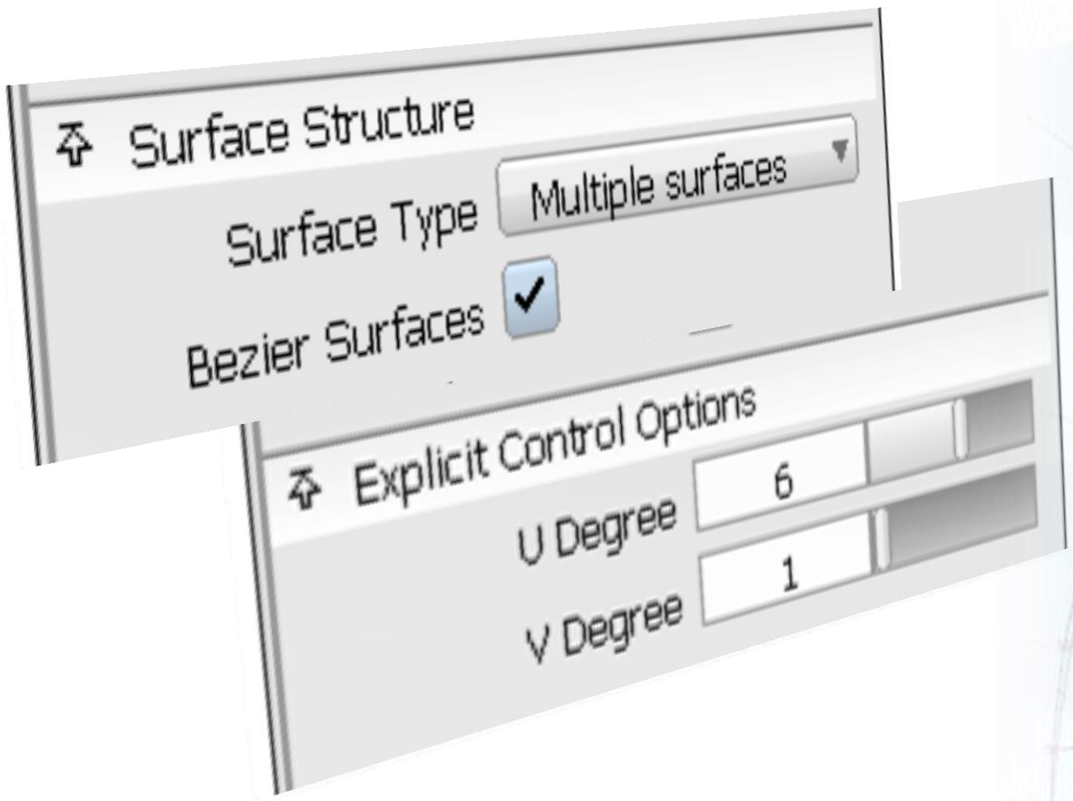
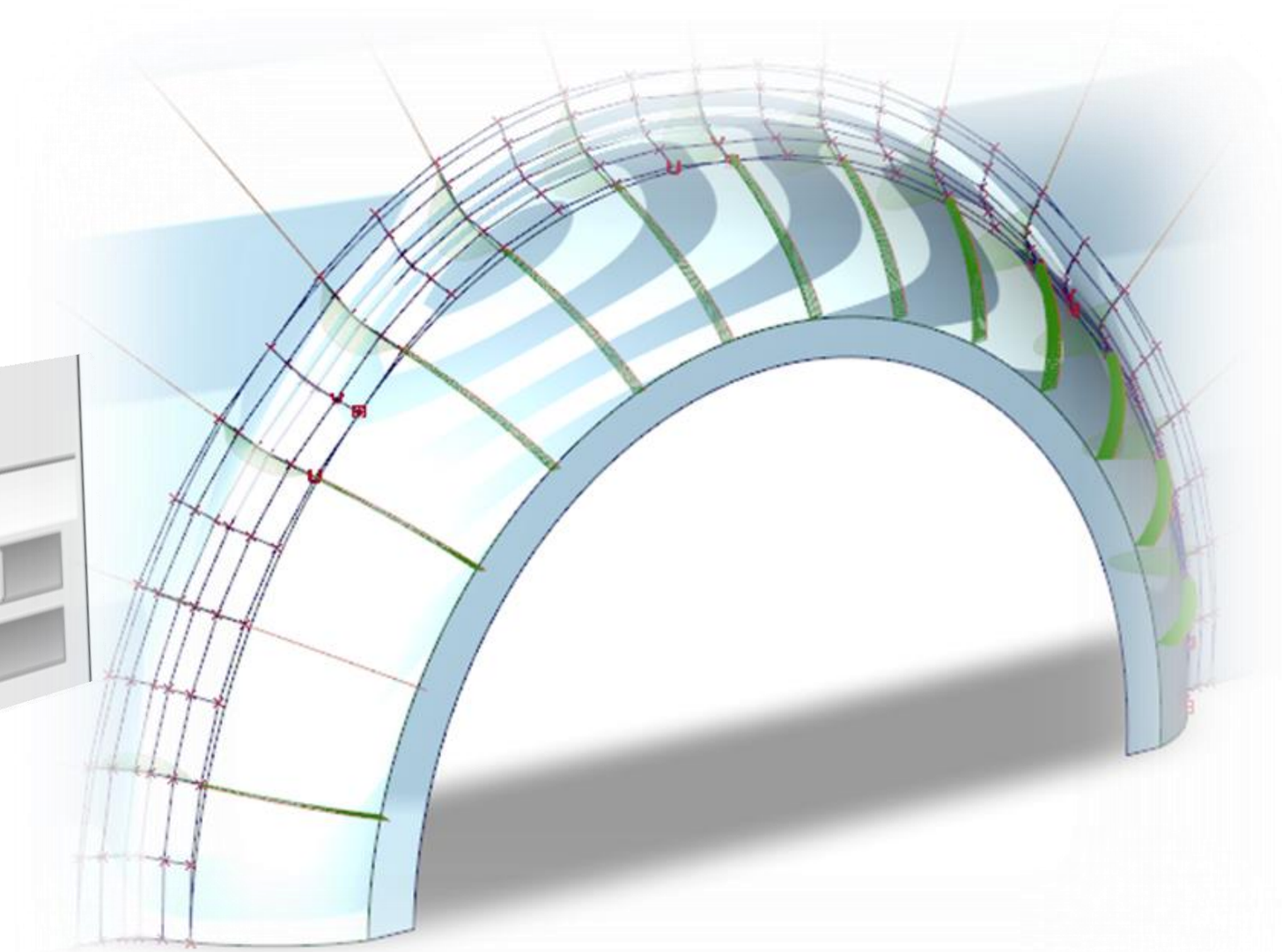
Alias is capable of creating Bezier Class-A quality geometry

- **Bezier for blocks, transitions, blends and gap conditions**
- **Explicit user control**
  - Bezier control options





Alias Adoption Challenges: Geometry quality

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OPTIONAL – using NURBs for Class-A?

- **NURBs for design details where accuracy is paramount**
  - Building on Bezier block surface quality
  - E.g. vents, pockets, cut-outs, grey-zones etc.
- **NURBs for tools that require minimal post-creation editing**
  - Rolling ball radius blends
  - 1st flange and fillets
  - Panel gap conditions

Alias Adoption Challenges: Geometry quality

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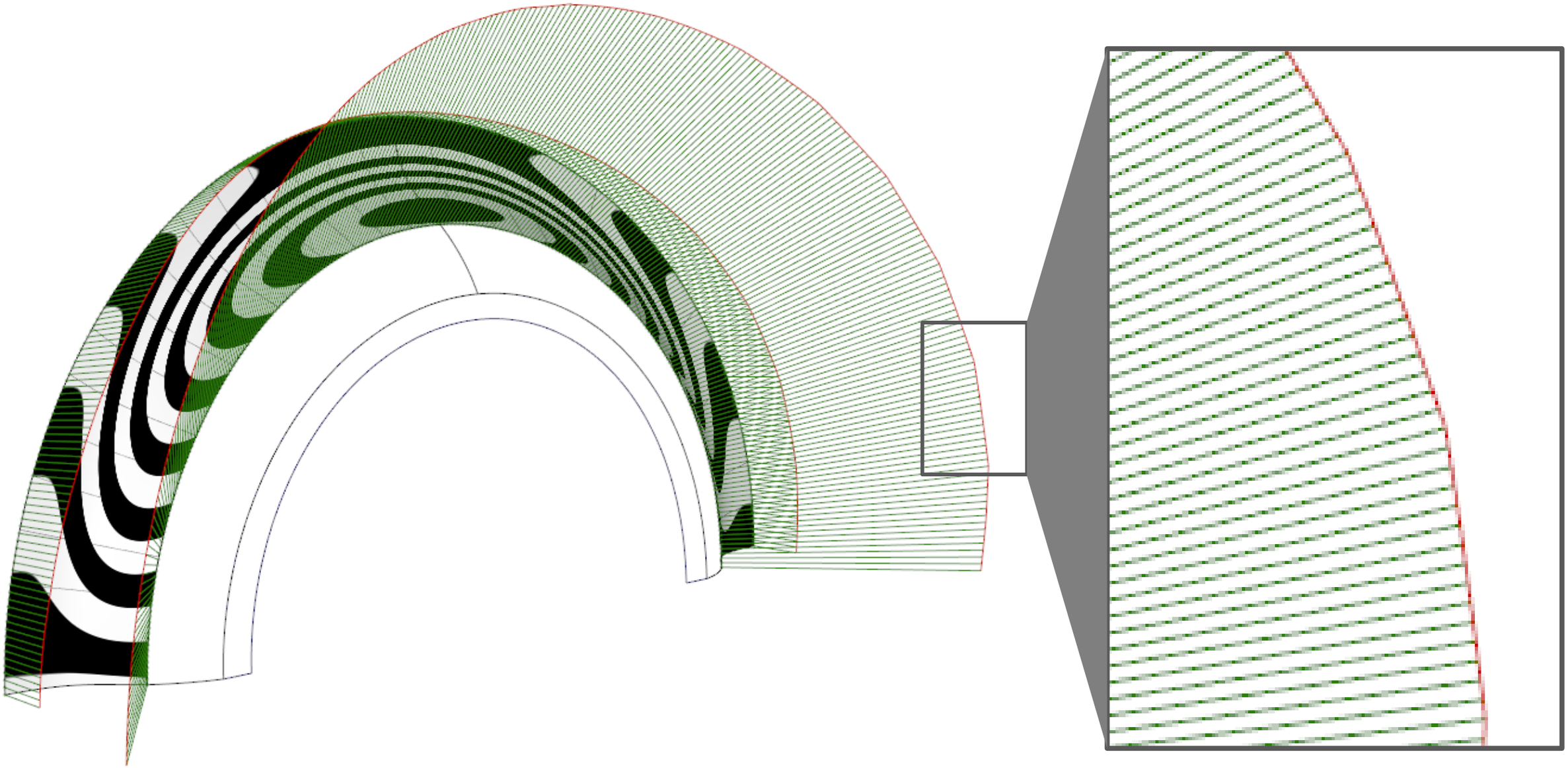
OPTIONAL – can NURBs be used for Class-A?

- **Yes - NURBs “Degree” settings are important**



Alias Adoption Challenges: Geometry quality

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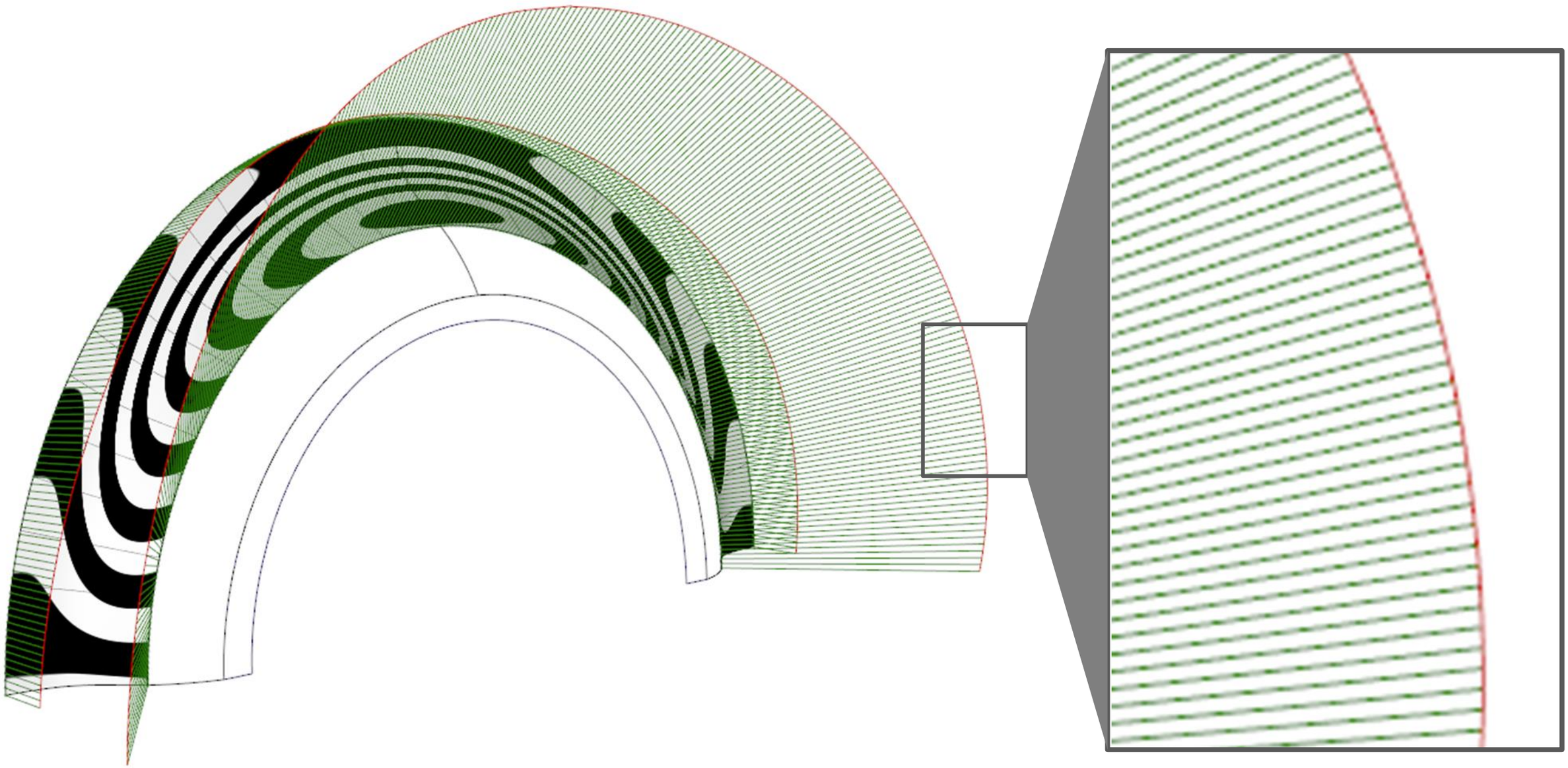
OPTIONAL – can NURBs be used for Class-A?

- **Optimum NURBs setting for Class-A quality = Degree 5**



Alias Adoption Challenges: User culture

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"Raising awareness of Design requirements will help breakdown barriers between Concept and Class-A"

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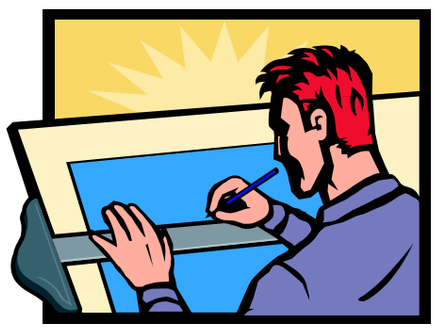


Autodesk

CAS user persona

- Creative and artistic
- Industrial Design educated

CAS requirements

- Refine the "Design Intent"
- Explore and iterate
- Studio Engineering inputs

Class-A user persona

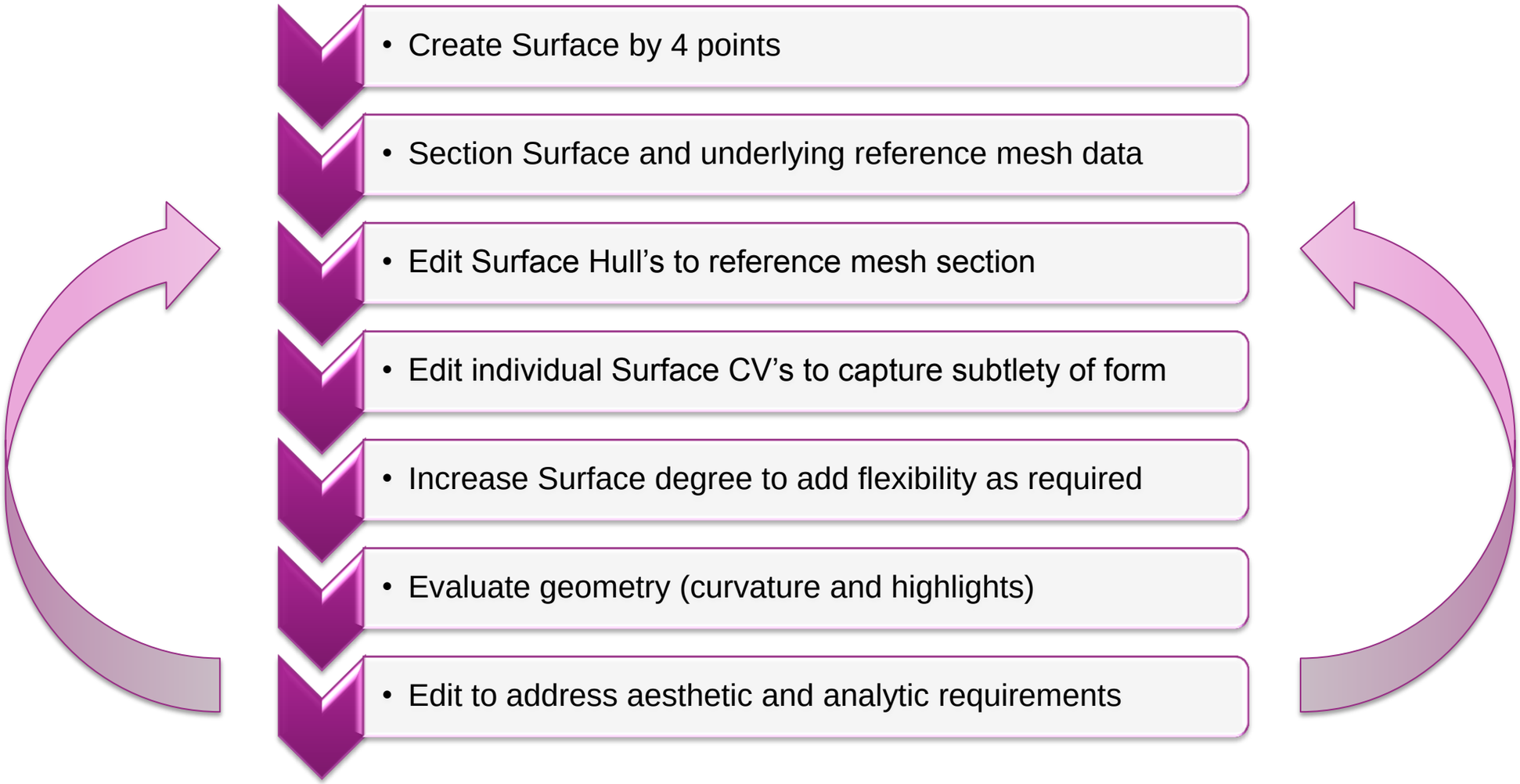
- Precise and exacting
- Body Engineering expertise

Class-A requirements

- Deliver the "Design Intent"
- Optimise and refine
- Manufacturing constraints

Alias Adoption Challenges: Alias workflow

- **Resistance to change**
  - Long term ICEM users *may* be reticent to change?
  - No need for concern…Alias uses industry standard ‘freeform’ workflow: -



Alias Adoption Challenges: Alias workflow

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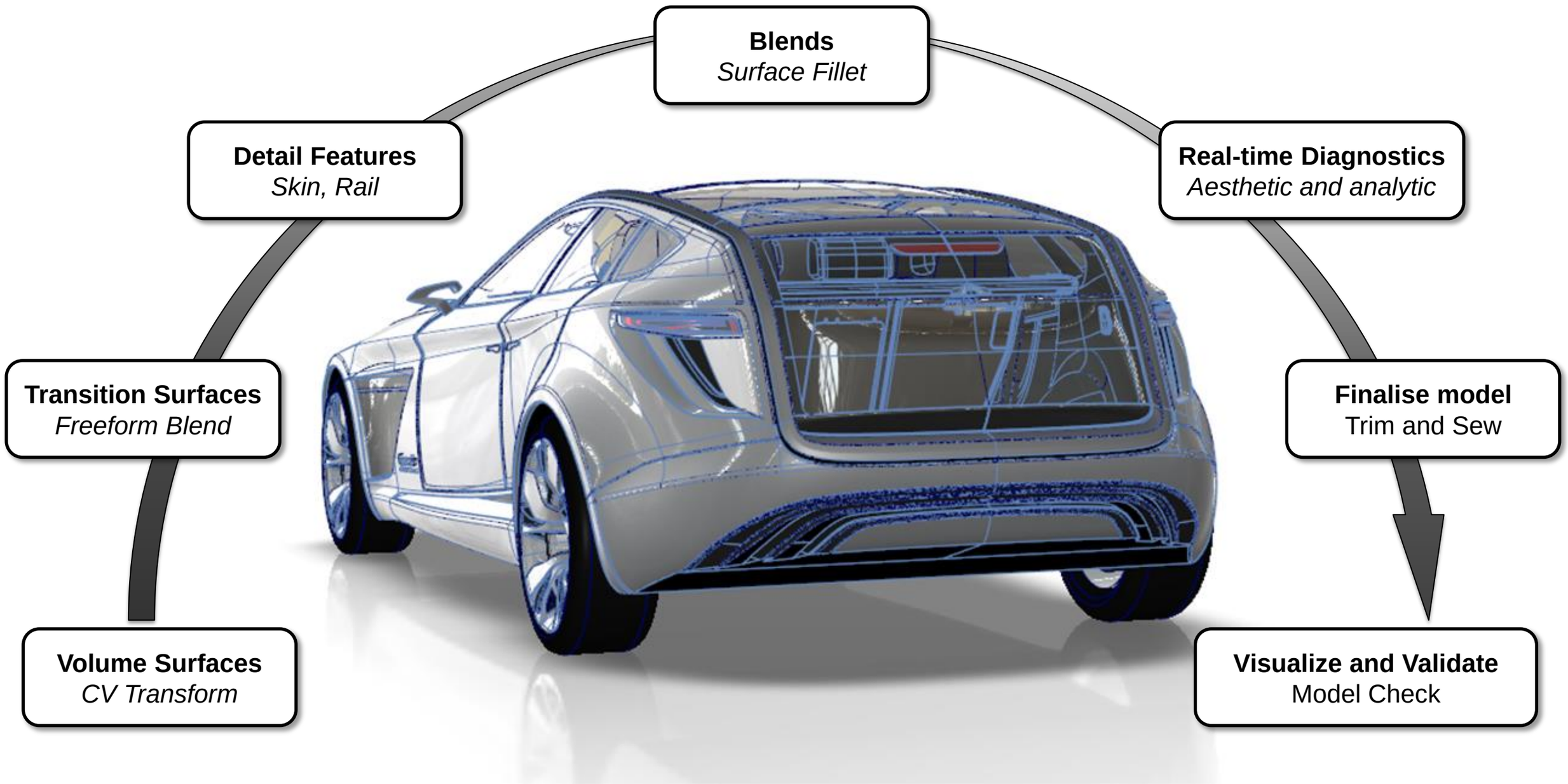
- **Alias Surface development workflow**



Alias Adoption Challenges: ICEM-to-Alias training

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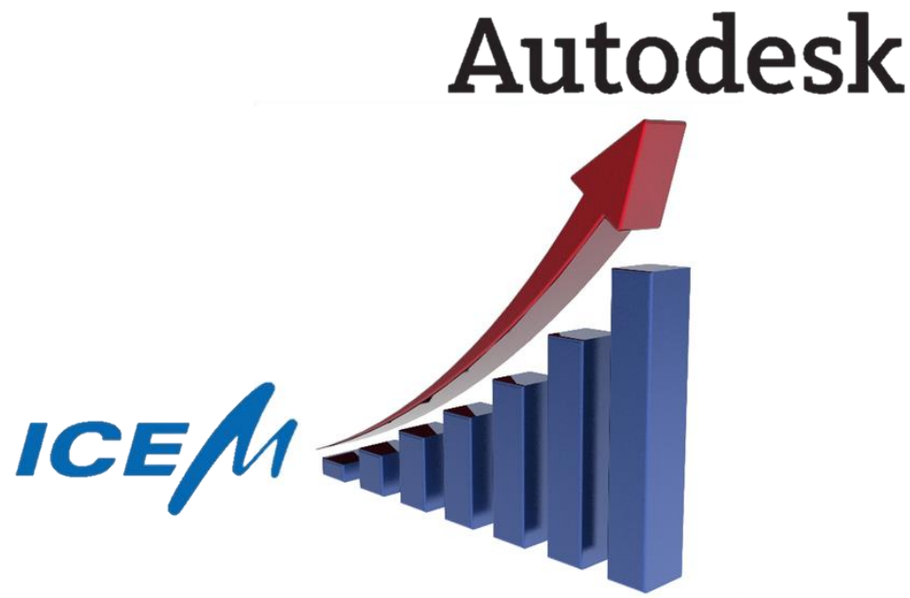
ICEM-to-Alias conversion training - the “ramp-up to productivity”

- **Many factors influence how quickly ICEM users learn Alias**
  - Desire and openness to learn Alias
  - Existing surface modelling expertise and level of confidence
  - Complexity of work tasks after receiving training
  - Pressure of delivering production work - inclination to revert to ICEM
  - Cultural and political agendas - pressure for Alias to succeed/fail?
- **Critical success factors**
  - Receiving professional ICEM-to-Alias training
  - Access to expert advise and support



Alias Adoption Challenges: ICEM-to-Alias training

- **Majenta Academy Training**
  - Autodesk certified product training: Alias, VRED, Showcase, Maya, 3ds Max
  - Proven “ICEM-to-Alias” conversion training at premium OEM’s in the UK
  - Expert instructors conversant with industry best practices and procedures
- **Majenta Consulting Services**
  - On-site at-elbow support for rapid post training productivity ramp-up
  - Includes: Concept Design, Production Design and Visualisation
  - Automotive and Transportation, Creative Media and Consumer Product

ACADEMY

Alias Adoption Challenges: ICEM-to-Alias training

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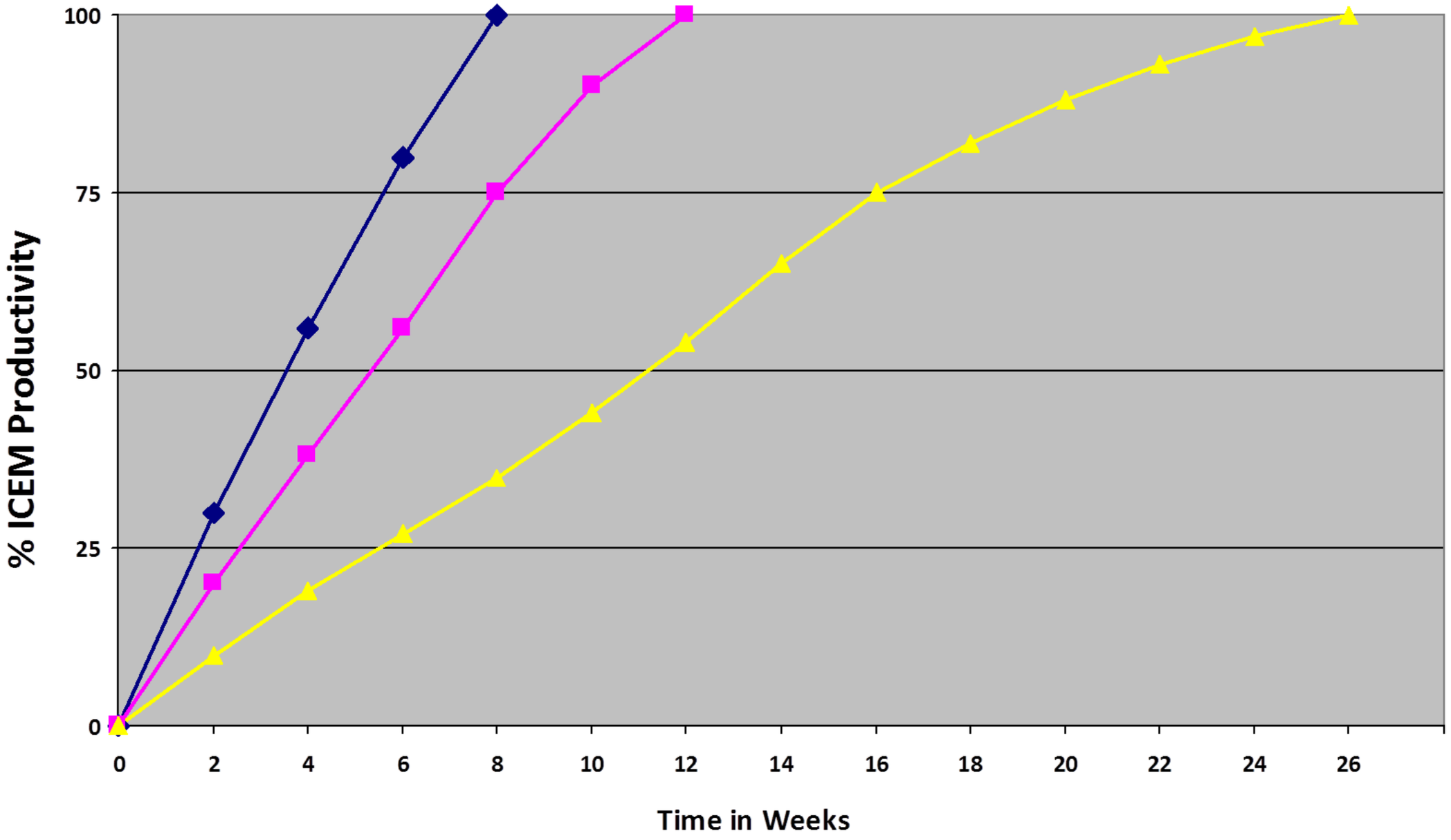
- **Majenta "ICEM-to-Alias" conversion training**
  - Training program focusing on a rapid user 'ramp-up to productivity'
  - ICEM equivalent productivity (or greater) within 2-3 months with support
- **Majenta recommend**
  - I2A conversion training + Alias Advanced training + on-site support
- **Risks - not utilizing Alias post training support**
  - Productivity ramp-up will be significantly protracted
  - Increased cost to the business due to slow 'ramp-up to productivity'
  - Unsupported training is at risk of failing

Alias Adoption Challenges: ICEM-to-Alias training

- **Fast Track** => I2A training + Alias Advanced training + on-site support
- **Supported** => I2A training + on-site support
- **Unsupported** => I2A training only



Alias Adoption Challenges: ICEM-to-Alias training

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ICEM-to-Alias conversion training - SPECIAL PROMOTION!!!

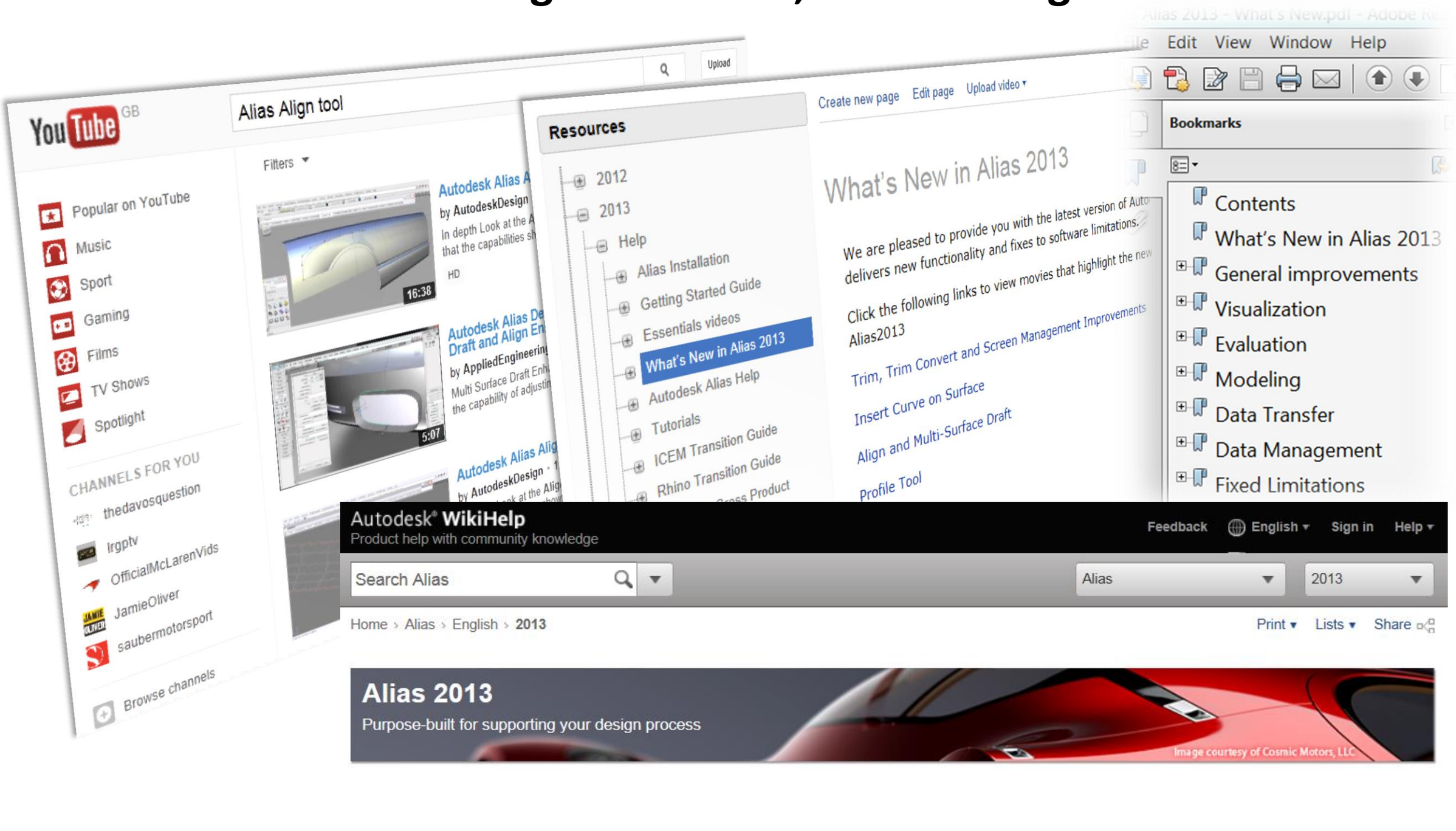
- **Autodesk and Majenta "I2A" Training Program**
  - Targeting OEM's, Suppliers and Professionals
  - I2A training delivered by Simon Alford
  - Supported by consultancy

To register interest contact:

simon.alford@majentasolutions.com

Alias Adoption Challenges: Alias training

- **Alias interactive learning – extensive, rich learning tools**



Summary

- **Improved productivity and efficiency**
  - Geometry re-use within Class-A and across Design
  - UI accelerators, construction history and automated tools make Alias fast!
- **Accelerated Design Development**
  - Seamless ‘joined-up’ Design development from Concept to Class-A
  - Mature the data and breakdown barriers within design
- **Deliver quality through best practice**
  - Hybrid Bezier and NURBs flexible modelling to Class-A quality
- **Training and support**
  - Majenta ICEM-to-Alias fast-track conversion training and support
  - Alias WikiHelp, e-learning and YouTube

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