

Department of Applied Mathematics and Computational Sciences University of Cantabria UC-CAGD Group



COMPUTER-AIDED GEOMETRIC DESIGN AND COMPUTER GRAPHICS:

INDUSTRIAL FORMATS

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Standard industrial formats

A keypoint in industry is *the ability to transfer geometric information between different CAD/CAM software*.

Many different formats have been developed for this purpose. Among them:

VDA (Germany)

-Developed by VDA (Verband Der Automobilindustrie = Association of the German Automotive Industry) -Appeared in the early 90s (first version in 1991). -Based on *polynomial representation*.

SET (France)

-SET stands for Standard d'Échange et de Transfert -Developed as a French standard in 1985 by Aerospatiale - Intended to store the 100% of any product definition data

IGES (USA)

-IGES stands for Initial Graphics Exchange Specification -Developed in the early 80s, as a part of a project with the National Bureau of Standards. -Based on *B-spline representation*.

CATIA (USA)

-Developed by IBM. -Appeared in the early 90s (first version in 1991).

- Used for many automotive and aerospatial companies

STEP

-STEP (Standard for the Exchange of Product Model Data) is an international standard born to improve the IGES format.

PHIGS

-PHIGS (Programmer's Hierarchical Interactive Graphics System) is an international standard specifying a device-independent interactive graphics programming interface. -Emerged in the mid of 80's. -Incorporated NURBS in 1992 as part of PHIGS PLUS extension.



- IGES (Initial Graphics Exchange Specification) was developed in the early 80s, as a part of a project with the National Bureau of Standards.

- About 1988, PDES (Product Data Exchange Specification) was also developed, containing all the IGES features. Here, IGES implies IGES/PDES.

Some Features:

- NURBS curves, surfaces and 3D-solids are supported.
- Bézier curves and surfaces are considered particular cases of the B-splines ones.
- Only positive weights are allowed.
- Control points and weights are separate items in this format.

Example:	Some Entitie	<i>s</i> :	
Door of a car		Number	Entity
		100	Arcs
5733 Kb.		110	Lines
(73426 lines)		112	Spline curves
		126	B-spline curves
		128	Nurbs surface
		144	Trimmed Nurbs surface

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Section

Based on Bspline representation.



80 characters

